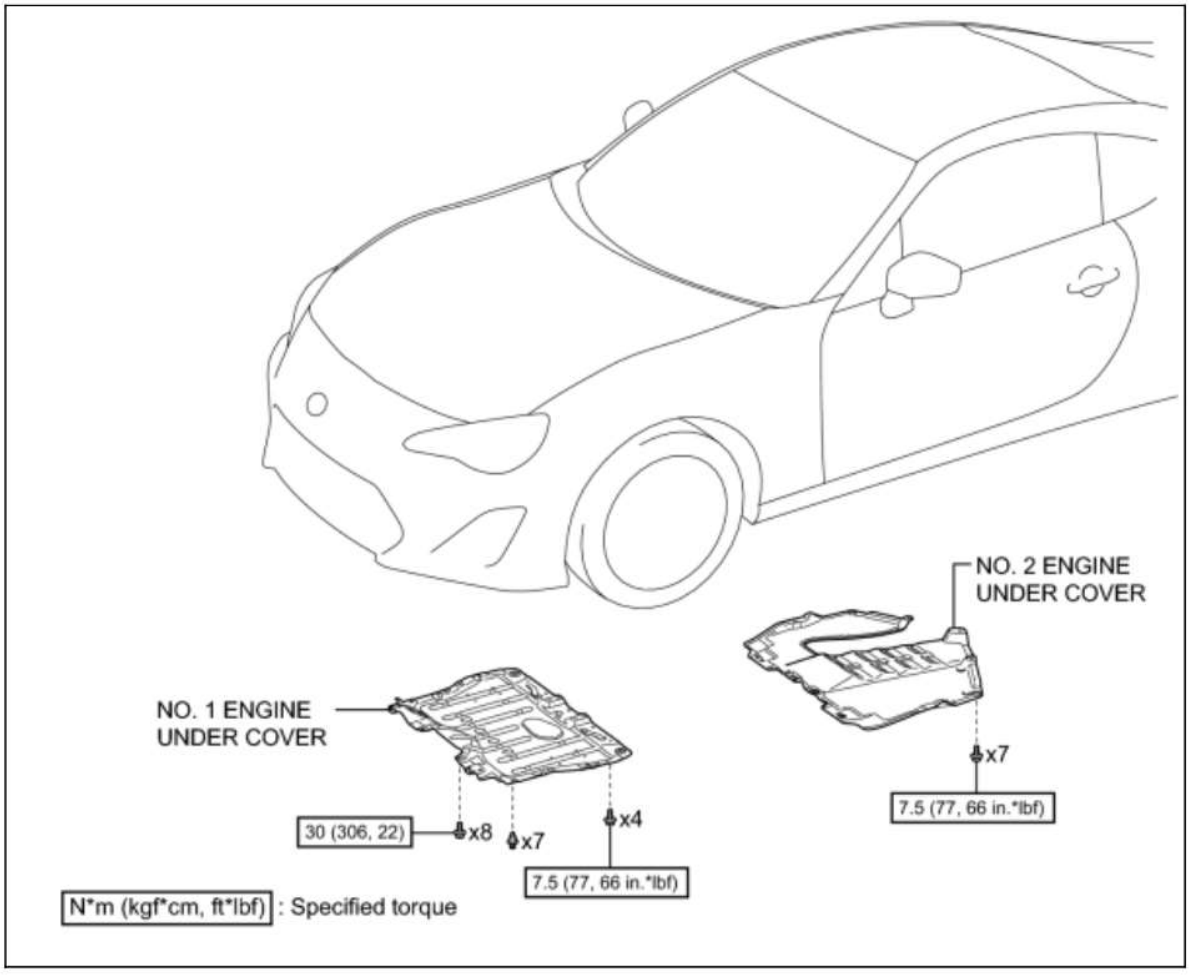
Last Modified: 3-27-2012	6.4 K	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NR9022X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION ASSEMBLY: COMPONENTS (2013 FR-S)		

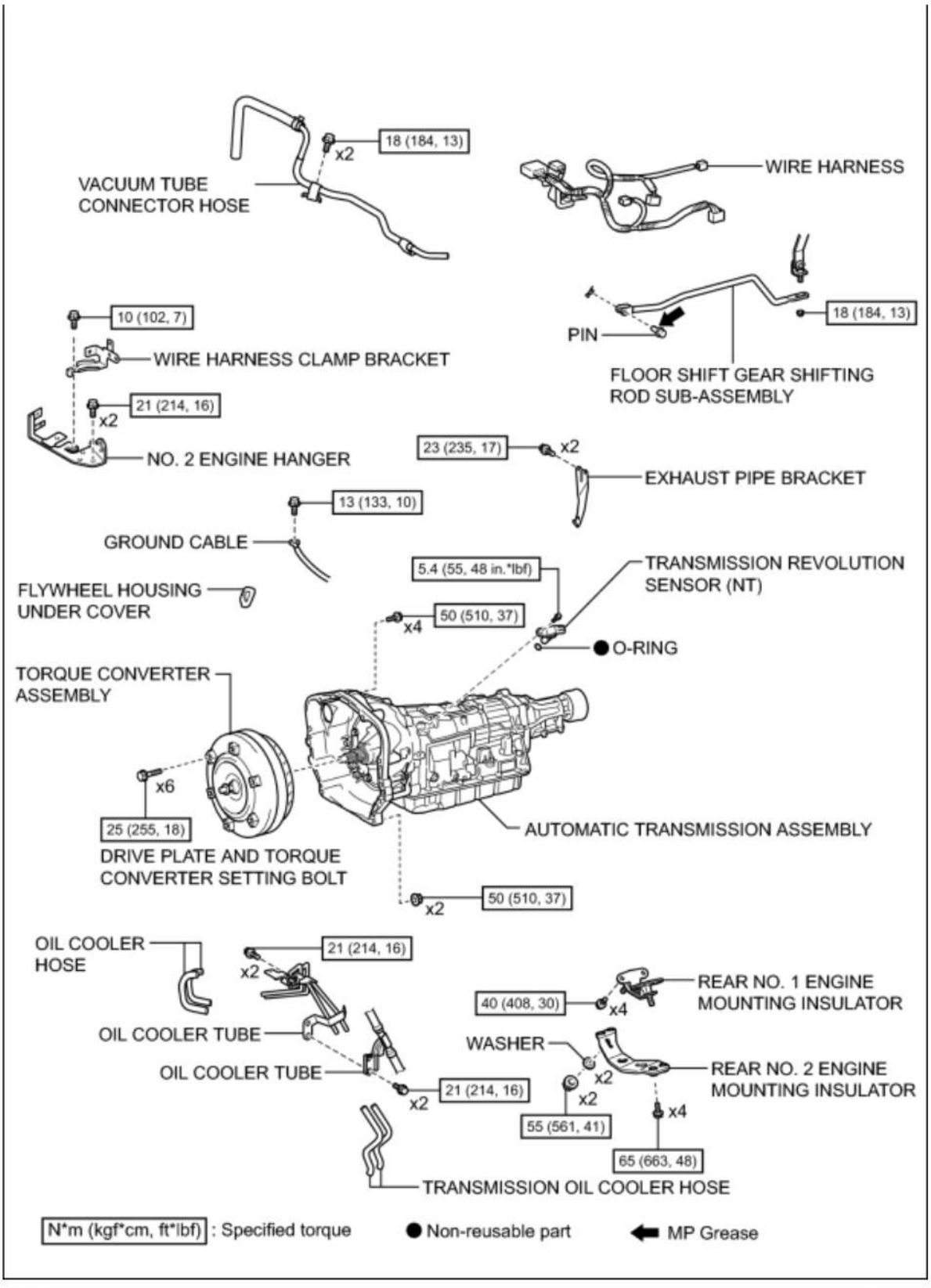
COMPONENTS

ILLUSTRATION



ILLUSTRATION

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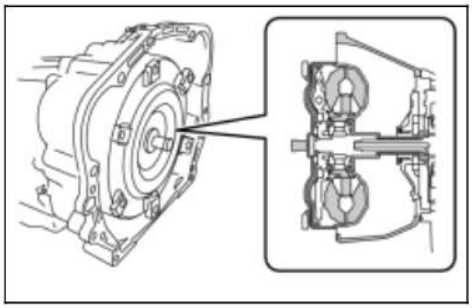


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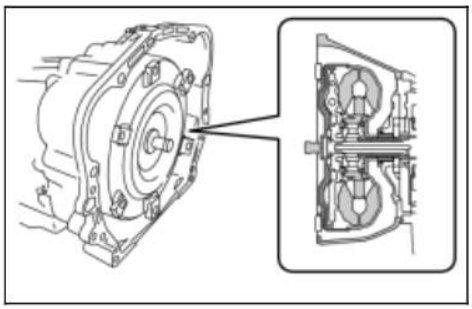
Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NR8040X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION ASSEMBLY: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL TORQUE CONVERTER ASSEMBLY



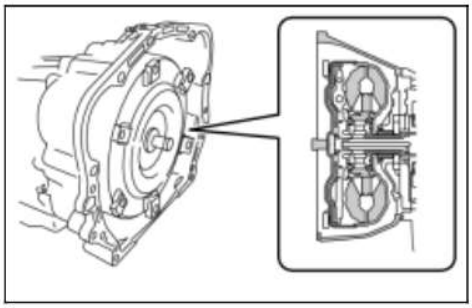
(a) Engage the splines of the input shaft and turbine runner.



(b) Engage the splines of the stator shaft and stator while turning the torque converter assembly.

HINT:

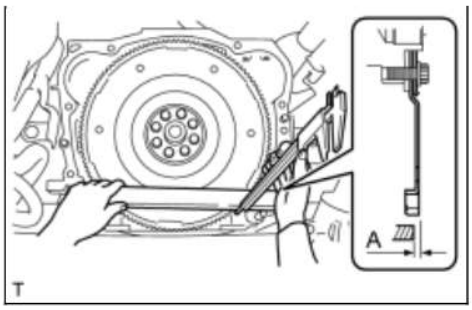
If the stator shaft splines are difficult to engage with the stator splines, move the torque converter back approximately 10 mm (0.394 in.) and engage the splines while rotating the torque converter assembly.



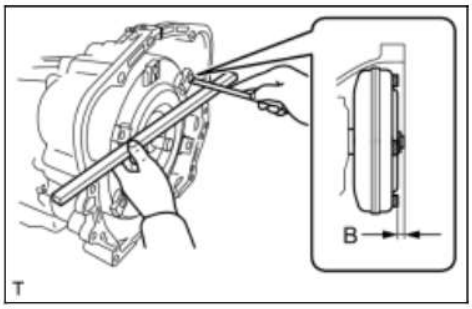
(c) Turn the torque converter assembly to engage the key of the oil pump drive gear into the slot on the torque converter assembly.

(d) Using a vernier caliper and straightedge, measure dimension A between the transmission contact surface of

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the engine and the torque converter contact surface of the drive plate.



(e) Using a vernier caliper and straightedge, measure dimension B shown in the illustration and check that dimension B is more than dimension A, which was measured in the first step.

Standard::

B = A + 1 mm (0.0394 in.) or more

NOTICE:

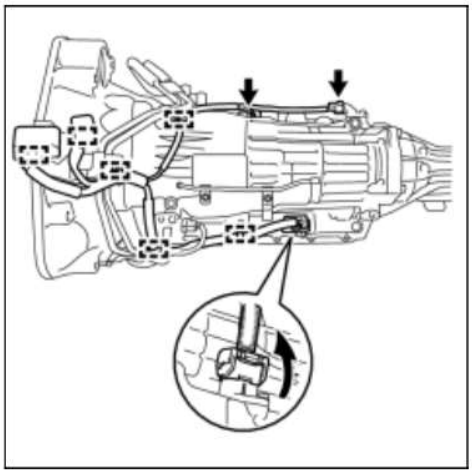
- Make sure to deduct the thickness of the straightedge.
- If the transmission is installed to the engine with the torque converter not sufficiently inserted, the torque converter may be damaged.

2. INSTALL OIL COOLER TUBE

(a) Install the oil cooler tube with the bolt to the automatic transmission assembly.

Torque: 21 N·m (214 kgf·cm, 16ft·lbf)

(b) Connect the 2 water by-pass hoses to the transmission oil cooler with the 4 hose clamps.



3. INSTALL WIRE HARNESS

(a) Install the wire harness to the automatic transmission assembly with engage the 6 wire harness clamps.

(b) Connect the park/neutral position switch connector, transmission wire connector and the transmission revolution sensor connector.

HINT:

Push up the lever until the claw of the transmission wire connector makes a connection sound.

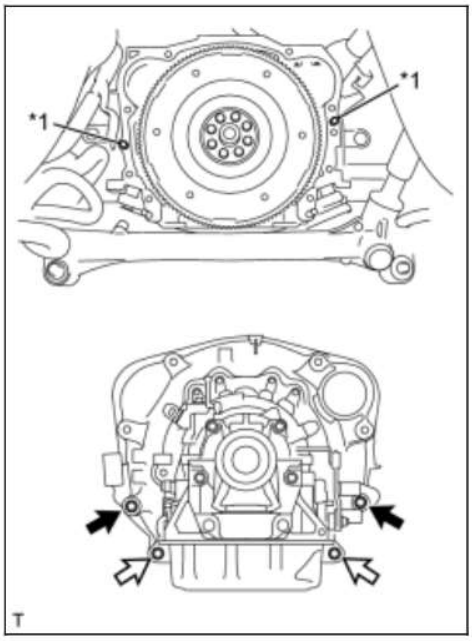
4. INSTALL REAR NO. 1 ENGINE MOUNTING INSULATOR

(a) Install the rear No. 1 engine mounting insulator to the automatic transmission assembly with the 4 bolts.

Torque: 40 N·m (408 kgf·cm, 30ft·lbf)

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5. INSTALL AUTOMATIC TRANSMISSION ASSEMBLY



(a) Confirm that 2 knock pins are on the automatic transmission assembly contact surface of the engine cylinder block before automatic transmission assembly installation.

(b) Keeping the engine assembly and the automatic transmission assembly in a horizontal position, align the knock pins with each hole on the automatic transmission assembly and install the 2 bolts and 2nuts.

Text in Illustration

*1	Knock Pin
➡	Bolt
⇨	Nut

Torque: 50 N·m (510 kgf·cm, 37ft·lbf)

NOTICE:

- Make sure not to pinch or damage any wire harness.
- Make sure the knock pin is fully engaged with the knock pin hole.
- Do not forcibly pry the automatic transmission assembly.
- After installing the automatic transmission assembly, confirm that the torque converter assembly can be rotated by hand.

6. INSTALL REAR NO. 2 ENGINE MOUNTING INSULATOR

(a) Install the rear No. 2 engine mounting insulator to the rear No. 1 engine mounting insulator with 2 washers and 2 nuts.

Torque: 40 N·m (408 kgf·cm, 30ft·lbf)

(b) Install the rear No. 2 engine mounting insulator to the body with the 4 bolts.

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Torque: 65 N·m (663 kgf·cm, 48ft·lbf)

7. INSTALL EXHAUST PIPE BRACKET

(a) Install the exhaust pipe bracket with the 2 bolts.

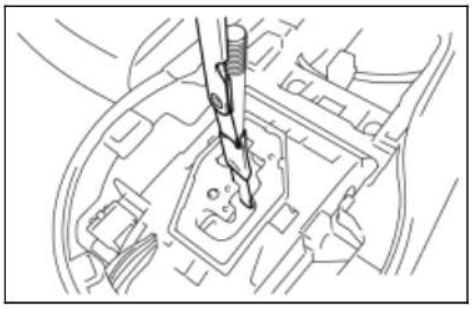
Torque: 21 N·m (214 kgf·cm, 16ft·lbf)

8. INSTALL FLOOR SHIFT GEAR SHIFTING ROD SUB-ASSEMBLY

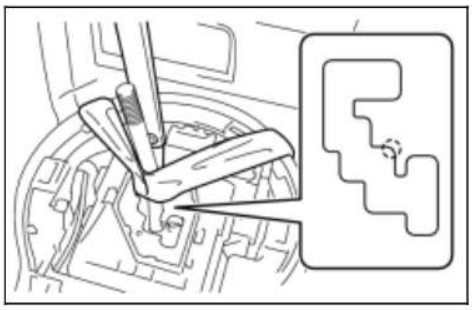
(a) Apply MP grease to the pin.

(b) Install the floor shift gear shifting rod sub-assembly to the transmission control shaft lever RH with the pin and a clip.

(c) While pushing the shift lock release button, move the shift lever to N.



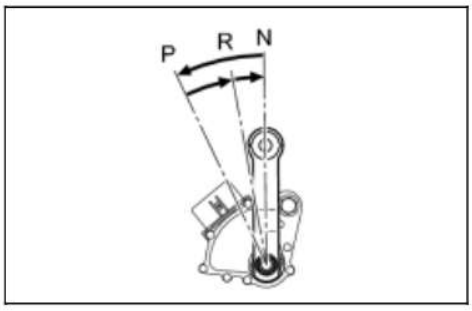
(d) Using tape, hold a 0.3 mm feeler gauge on the floor shift control select lever.



(e) Using tape, attach the floor shift control select lever to the console box assembly.

NOTICE:

Make sure that the feeler gauge is not on the area shown in the illustration.



(f) Turn the transmission control shaft lever RH of the park/neutral position switch assembly counterclockwise until it stops, and turn it clockwise 2 notches to set it to the N position.

(g) Temporarily install the floor shift gear shifting rod sub-assembly with the nut.

(h) Tighten the nut while lightly pushing the lever rearward.

Torque: 18 N·m (184 kgf·cm, 13ft·lbf)

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NOTICE:

Do not push the lever too hard.

9. INSTALL TRANSMISSION REVOLUTION SENSOR (NT) INFO

10. CONNECT OIL COOLER TUBE

(a) Fasten the oil cooler pipe with the oil cooler tube using 2 bolts.

Torque: 21 N·m (214 kgf·cm, 16ft·lbf)

11. INSTALL TRANSMISSION OIL COOLER HOSE

(a) Install the 2 transmission oil cooler hoses to the transmission oil cooler with the 4 hose clamps.

12. INSTALL EXHAUST MANIFOLD

INFO

13. CONNECT AUTOMATIC TRANSMISSION ASSEMBLY

(a) Install the 2 bolts to the automatic transmission assembly.

Torque: 50 N·m (510 kgf·cm, 37ft·lbf)

14. INSTALL DRIVE PLATE AND TORQUE CONVERTER SETTING BOLT

(a) Install the 6 drive plate and torque converter setting bolt.

Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

NOTICE:

- Make sure that the drive plate and torque converter setting bolts do not fall into the clutch housing.
- Make sure not to damage the drive plate and torque converter setting bolts.

15. INSTALL FLYWHEEL HOUSING UNDER COVER

(a) Install the flywheel housing side cover.

16. CONNECT VACUUM TUBE CONNECTOR HOSE

(a) Connect the vacuum tube connector hose with the 2 bolts.

Torque: 18 N·m (184 kgf·cm, 13ft·lbf)

17. CONNECT WIRE HARNESS

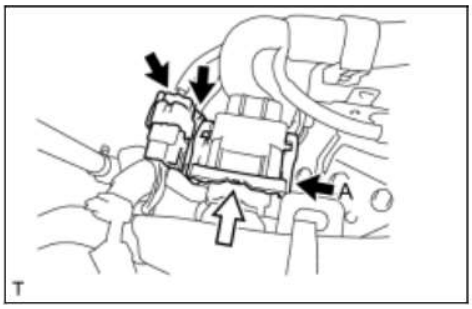
(a) Install the No. 2 engine hanger with the 2 bolts.

Torque: 21 N·m (214 kgf·cm, 16ft·lbf)

(b) Install the wire harness clamp bracket with the bolt.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

(c) Engage the wire harness clamp.



(d) Connect the 3 connectors.

HINT:

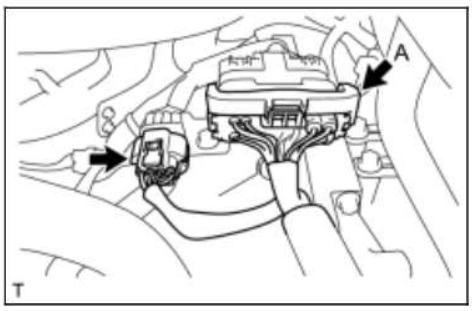
Push down the lever until the claw of the connector (A) makes a connection sound.

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(e) Engage the 4 wire harness clamps.

(f) Install the ground cable to the automatic transmission assembly with the bolt

Torque: 13 N·m (133 kgf·cm, 10ft·lbf)



(g) Connect the 2 connectors.

HINT:

Push down the lever until the claw of the connector (A) makes a connection sound.

18. INSTALL STARTER ASSEMBLY

INFO

19. INSTALL FRONT STABILIZER BAR

INFO

20. INSTALL PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY

INFO

21. INSTALL NO. 2 ENGINE UNDER COVER INFO

22. INSTALL NO. 1 ENGINE UNDER COVER INFO

23. CONNECT BATTERY NEGATIVE TERMINAL INFO

24. ADD ENGINE COOLANT

25. ADD AUTOMATIC TRANSMISSION FLUID

INFO

26. CHECK FOR ENGINE COOLANT LEAKS INFO

27. INSPECT SHIFT LEVER POSITION INFO

28. CHECK FOR EXHAUST GAS LEAKS INFO

29. RESET CHECK RESET MEMORY

INFO

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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NRA03ZX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION ASSEMBLY: REMOVAL (2013 FR-S)		

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL INFO

2. REMOVE NO. 1 ENGINE UNDER COVER INFO

3. REMOVE NO. 2 ENGINE UNDER COVER INFO

4. DRAIN AUTOMATIC TRANSMISSION FLUID INFO

5. REMOVE PROPELLER WITH CENTER BEARING SHAFT ASSEMBLY

INFO

6. REMOVE FRONT STABILIZER BAR

INFO

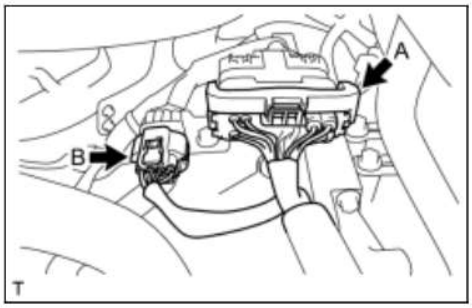
7. REMOVE STARTER ASSEMBLY

INFO

8. DISCONNECT WIRING HARNESS CONNECTOR

HINT:

Fix disconnected harness components with tape to keep them out of the way.

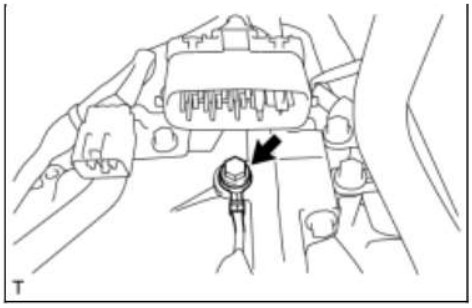


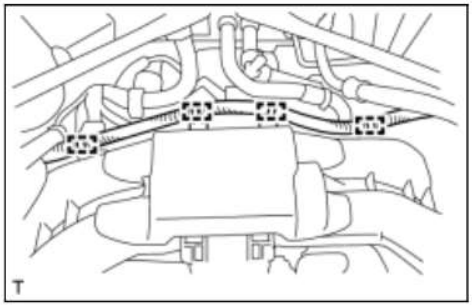
(a) Release the lock of connector (A) and disconnect the connector.

(b) Disconnect the connector (B).

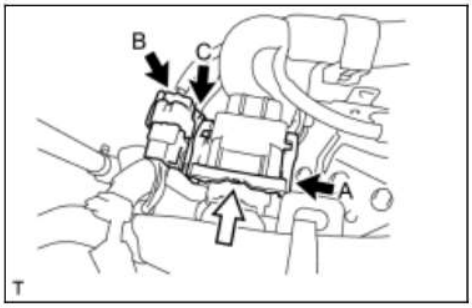
(c) Remove the bolt and disconnect the ground cable.

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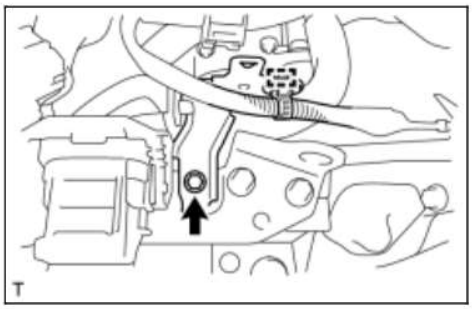


(d) Disengage the 4 wire harness clamps.



(e) Release the lock of connector (A) and disconnect the connector.

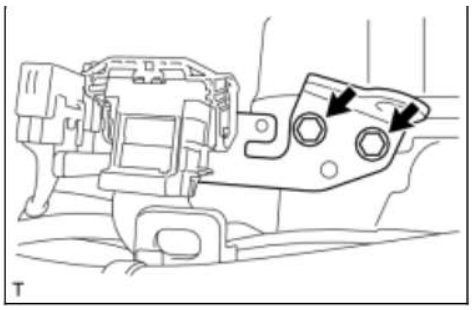
(f) Disconnect the connector (B) and (C).



(g) Disengage the wire harness clamp.

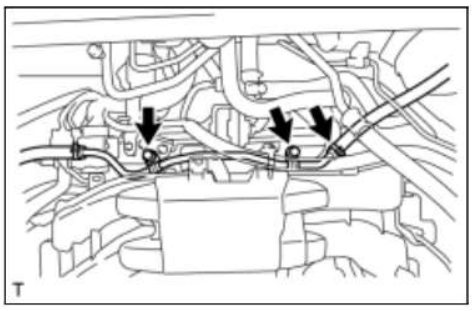
(h) Remove the bolt and the wire harness clamp bracket.

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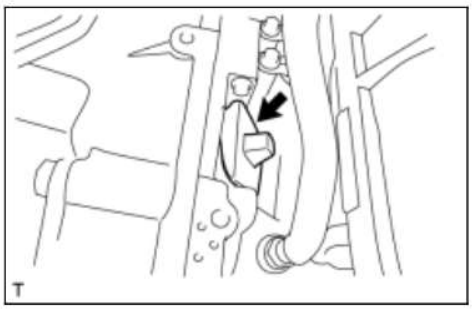
(i) Remove the 2 bolts and the No. 2 engine hanger.

9. DISCONNECT VACUUM TUBE CONNECTOR HOSE



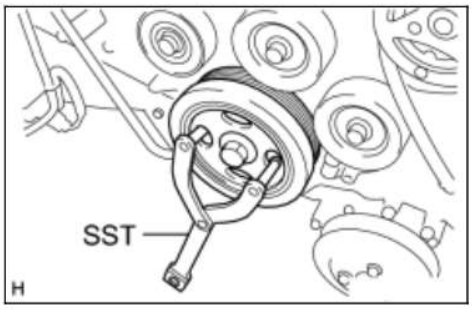
(a) Remove the 2 bolts and the disconnect the union to check valve hose.

10. REMOVE FLYWHEEL HOUSING UNDER COVER



(a) Remove the flywheel housing side cover from the automatic transmission assembly.

11. REMOVE DRIVE PLATE AND TORQUE CONVERTER SETTING BOLT



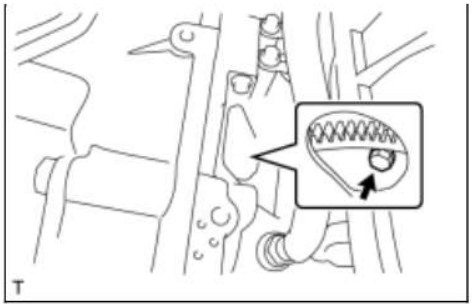
(a) Using SST, hold the crankshaft pulley.

SST: 09960-10010

09962-01000

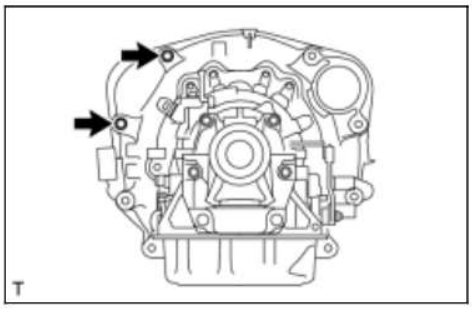
09963-01000

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(b) Remove the 6 drive plate and torque converter setting bolt.

12. DISCONNECT AUTOMATIC TRANSMISSION ASSEMBLY



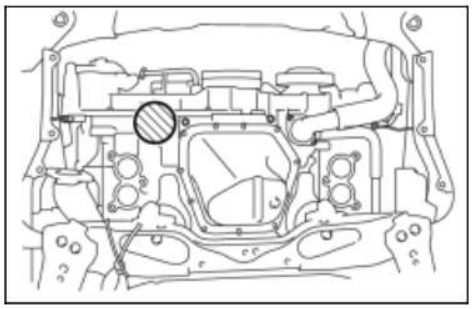
(a) Remove the 2 bolts from the automatic transmission assembly.

13. REMOVE EXHAUST MANIFOLD

INFO

14. SUSPEND ENGINE ASSEMBLY

(a) Support the engine assembly with an engine lifter so that it is stable shown in the illustration.



Text in Illustration

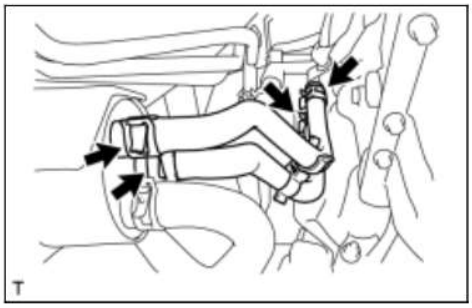
▨	Attachment Placement Positions

NOTICE:

- Set the engine assembly with transmission so that it is horizontal.
- Never attach the attachment and plate lift attachment to the oil pan section of the engine assembly.

15. REMOVE TRANSMISSION OIL COOLER HOSE

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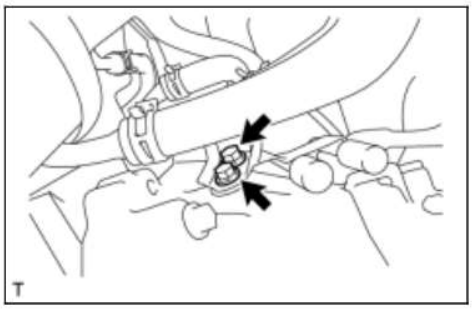


(a) Loosen the 4 hose clamps and remove the 2 transmission oil cooler hoses.

NOTICE:

Use a container to catch any coolant which flows out of the transmission oil cooler hoses.

16. SEPARATE OIL COOLER TUBE

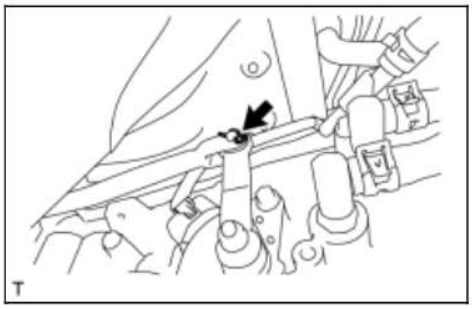


(a) Remove the 2 bolts and separate the oil cooler tube.

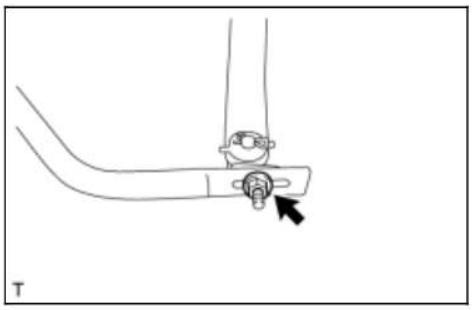
17. REMOVE TRANSMISSION REVOLUTION SENSOR (NT) INFO

18. REMOVE FLOOR SHIFT GEAR SHIFTING ROD SUB-ASSEMBLY

(a) While pushing the shift lock release button, move the shift lever to N.



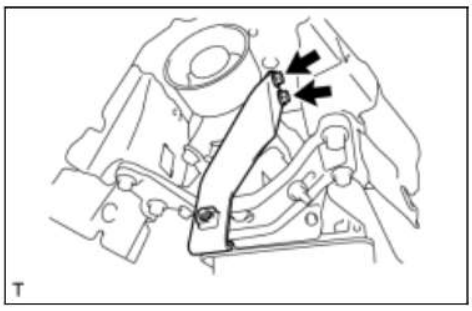
(b) Remove the clip, pin and the floor shift gear shifting rod sub-assembly from the transmission control shaft lever RH.



(c) Remove the nut and disconnect the floor shift gear shifting rod sub-assembly.

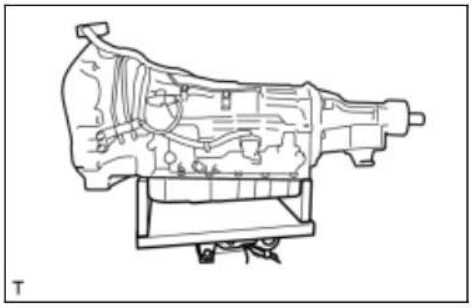
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19. REMOVE EXHAUST PIPE BRACKET



(a) Remove the 2 bolts and the exhaust pipe bracket from the automatic transmission assembly.

20. SUPPORT AUTOMATIC TRANSMISSION ASSEMBLY



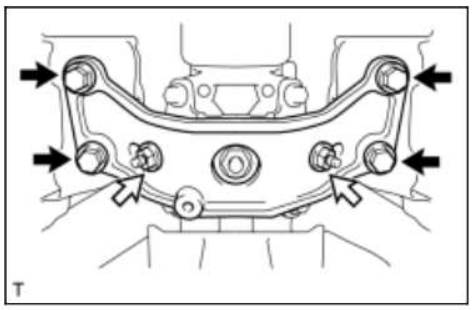
(a) Support the automatic transmission assembly with a high transmission jack.

NOTICE:

To prevent damage to and deformation of the oil pan, never place a jack under the oil pan area of the automatic transmission assembly.

21. REMOVE REAR NO. 2 ENGINE MOUNTING INSULATOR

(a) Remove the 4 bolts, 2 washers and 2 nuts and the rear No. 2 engine mounting insulator from the rear No. 1 engine mounting insulator.

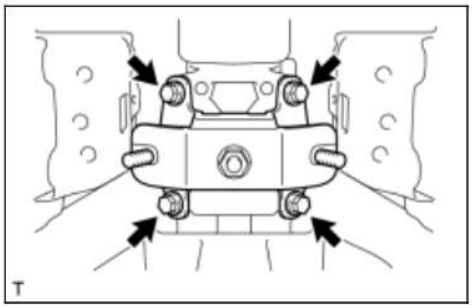


Text in Illustration

➡	Bolt
⇨	Nut

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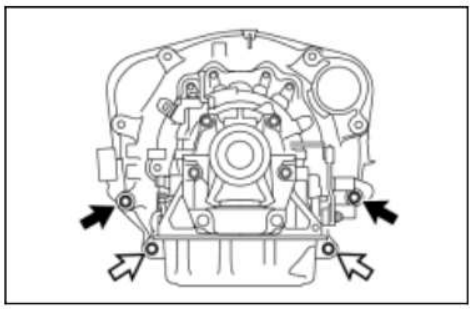
22. REMOVE REAR NO. 1 ENGINE MOUNTING INSULATOR



(a) Remove the 4 bolts and the rear No. 1 engine mounting insulator from the automatic transmission assembly.

23. REMOVE AUTOMATIC TRANSMISSION ASSEMBLY

(a) Remove the 2 bolts and 2 nuts and the automatic transmission assembly from the engine assembly.



Text in Illustration

➡	Bolt
⇨	Nut

NOTICE:

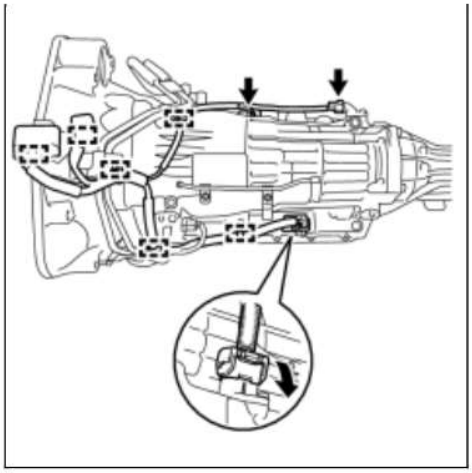
- To prevent damage to the knock pins, do not pry between the automatic transmission assembly and the engine assembly.
- Do not allow the torque converter to fall off.

24. DISCONNECT WIRE HARNESS

(a) Disconnect the park/neutral position switch connector, transmission wire connector and the transmission revolution sensor connector.

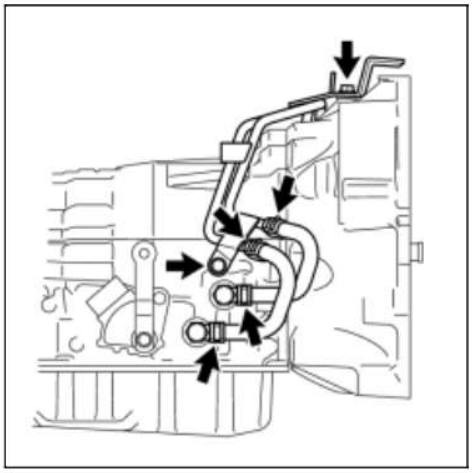
HINT:

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Disengage the claw, press down the lever, and disconnect the transmission wire connector.

(b) Disengage the 6 wire harness clamps and the wire harness from the automatic transmission assembly.



25. REMOVE OIL COOLER TUBE

(a) Loosen the 4 hose clamps and remove the 2 oil cooler hoses.

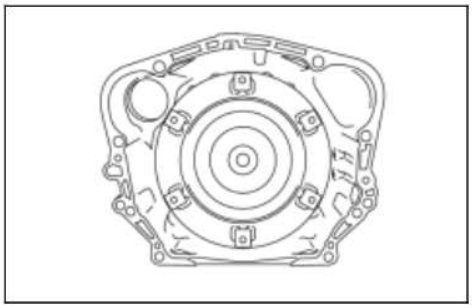
NOTICE:

Use a container to catch any coolant which flows out of the oil cooler hoses.

(b) Remove the 2 bolts and the oil cooler tube from the automatic transmission assembly.

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26. REMOVE TORQUE CONVERTER ASSEMBLY



(a) Remove the torque converter assembly from the automatic transmission assembly.

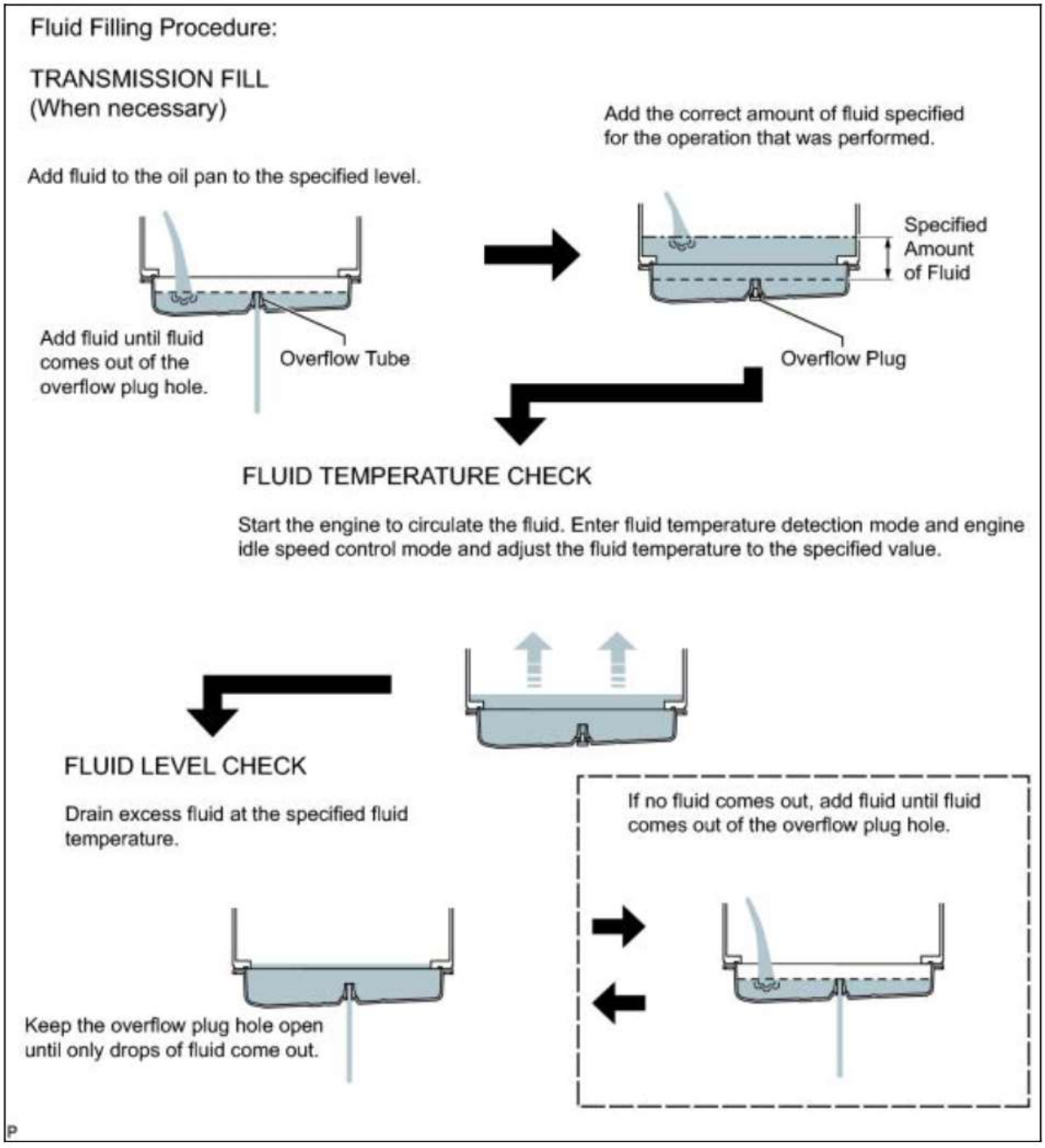
NOTICE:

Remove the torque converter assembly from the input shaft horizontally.

27. INSPECT TORQUE CONVERTER ASSEMBLY INFO

Last Modified: 3-27-2012	6.4 N	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM0000013BU08VX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION FLUID: ADJUSTMENT (2013 FR-S)		

ADJUSTMENT



NOTICE:

- This transmission requires Toyota Genuine ATF WS.
- After servicing the transmission, you must follow the ATF adjustment procedure.
- Maintain the vehicle in a horizontal position while adjusting the fluid level.

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1. BEFORE FILLING TRANSMISSION

- When you have replaced the entire automatic transmission, automatic transmission oil pan, drain plug, transmission valve body and/or torque converter, proceed to the "TRANSMISSION FILL" procedures.
- When you have replaced the automatic transmission extension housing oil seal and/or repaired a fluid leak, proceed to the "FLUID TEMPERATURE CHECK" procedures.

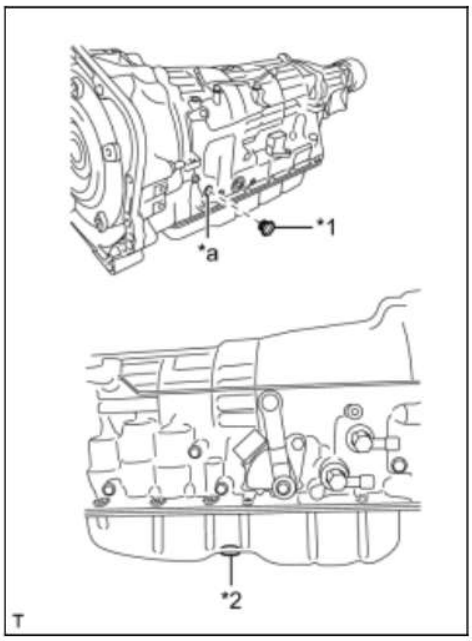
2. FILL TRANSMISSION PAN WITH FLUID

(a) Lift the vehicle.

NOTICE:

Set the vehicle on a lift so that the vehicle is kept level when it is lifted up (make sure that the tilt angle from the front to rear of the vehicle is within +/- 1°).

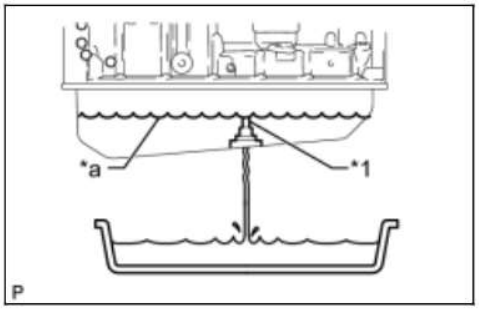
(b) Remove the No. 2 engine under cover INFO .



(c) Remove the refill plug with O-ring, overflow plug and gasket.

Text in Illustration

*1	Refill Plug
*2	Overflow Plug
*a	Refill Hole



(d) Fill the transmission through the refill hole until fluid begins to trickle out of the overflow tube.

Text in Illustration

*1	Overflow Tube
*a	Specified Fluid Level

(e) Wait until the fluid flow slows and only drops come out.

(f) Temporarily install the overflow plug and gasket.

HINT:

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Reuse the old gasket. The overflow plug will be removed again to adjust the fluid level.

(g) Fill the transmission with the amount of fluid listed in the table below.

Reference Capacity:

PERFORMED REPAIR	FILL AMOUNT
Automatic transmission oil pan and drain plug removal/installation	2.0 liters (2.1 US qts, 1.8 Imp. qts)
Transmission valve body removal/installation	3.0 liters (3.2 US qts, 2.6 Imp. qts)
Torque converter removal/installation	4.5 liters (4.8 US qts, 4.0 Imp. qts)

HINT:

If you cannot fill the listed amount of fluid, perform the following:

(1) Temporarily install the refill plug with O-ring.

HINT:

Reuse the old O-ring. The refill plug will be removed again to adjust the fluid level.

(2) Start the engine and idle it.

NOTICE:

Check that electrical systems such as the air conditioning system, audio system and lighting system are off.

(3) Slowly move the shift lever from P to M. Then return the shift lever to P.

HINT:

Slowly move the shift lever to circulate the fluid through each part of the transmission.

(4) Wait for 30 seconds with the engine idling.

(5) Stop the engine.

(6) Remove the refill plug with O-ring.

(7) Fill the transmission with the remaining fluid until the amount in the table has been filled.

(h) Temporarily install the refill plug with O-ring.

HINT:

Reuse the old O-ring. The refill plug will be removed again to adjust the fluid level.

(i) Lower the vehicle.

3. FLUID TEMPERATURE CHECK

NOTICE:

The ATF temperature can be confirmed by using the Techstream.

(a) Turn the ignition switch OFF.

(b) Connect the Techstream to the DLC3.

(c) Turn the ignition switch to ON.

(d) Enter the following menus: Powertrain / ECT / Data List / A/T Oil Temperature 1.

(e) Check the ATF temperature.

NOTICE:

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If the ATF temperature is higher than 43°C (109°F), turn the ignition switch OFF and wait until the fluid temperature drops to below 43°C (109°F).

4. FLUID LEVEL CHECK

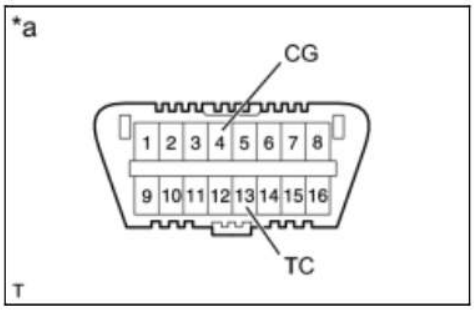
CAUTION:

- It is necessary to change to temperature detection mode in order to idle the vehicle appropriately.
- The ATF temperature must be between 43 and 47°C (109 and 117°F) to accurately check the fluid level.

(a) When using the Techstream:

Enter the following menus: Powertrain / ECT / Active Test / Connect the TC and TE1.

Standard condition:
Indicator lights in the combination meter blink.



(b) When not using the Techstream:

Using SST, connect terminals 13 (TC) and 4 (CG) of the DLC3.

Text in Illustration

*a	Front view of DLC3

SST: 09843-18040

Standard condition:
Indicator lights in the combination meter blink.

(c) Start the engine and idle it.

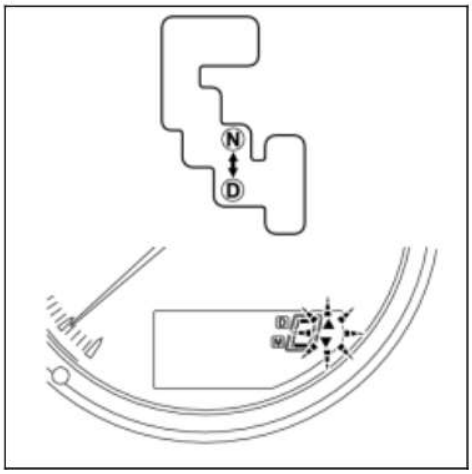
NOTICE:

Check that electrical systems such as the air conditioning system, audio system and lighting system are off.

(d) Slowly move the shift lever from P to M. Then return the shift lever to P.

HINT:

Slowly move the shift lever to circulate the fluid through each part of the transmission.



(e) Move the shift lever to D, and then quickly move it back and forth between N and D (once within 1.5 seconds) for at least 6 seconds. This will activate the fluid temperature detection mode.

Standard condition:
When switching to the oil temperature detecting mode, regardless of the shift position, the indicator lights [▲] and [▼] turn on for 2 seconds, and then go off.

(f) When using the Techstream:

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Return the shift lever to P and terminate the Active Test on the Techstream.

(g) When not using the Techstream:

Return the shift lever to P and disconnect SST from the DLC3.

(h) While watching the state of the indicator lights [▲] and [▼], idle the engine to rise the oil temperature.

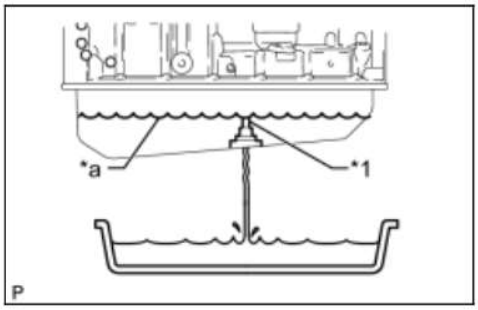
NOTICE:

If only the indicator light [▲] turns on or the indicator lights [▲] and [▼] turn on simultaneously, stop the operation. And then, wait until the fluid temperature is lowered and only the indicator light [▼] turns on in the oil temperature detecting mode.

(i) Allow the engine to idle until the fluid temperature reaches 43 to 47°C (109 to 117°F).

Indicator [D] Indication of ATF Temperature:

BELOW PROPER TEMPERATURE	PROPER TEMPERATURE	HIGHER THAN PROPER TEMPERATURE
Below 43°C (109°F)	43 to 47°C (109 to 117°F)	Higher than 47°C (117°F)
Indicator lights [▼] turns on	Indicator lights [▲] and [▼] turn on	Indicator lights [▲] turns on



(j) Remove the overflow plug and gasket with the engine idling.

Text in Illustration

*1	Overflow Tube
*a	Specified Fluid Level

(k) Wait until the overflow slows to a trickle.

NOTICE:

If the fluid does not overflow, perform the following:

(1) Remove the refill plug with O-ring.

(2) Refill the transmission through the refill hole until fluid begins to trickle out of the overflow tube.

(3) Wait until the overflow slows to a trickle.

(l) Install the overflow plug and a new gasket.

Torque: 20 N·m (204 kgf·cm, 15ft·lbf)

(m) Coat a new O-ring with ATF and install it to the refill plug.

(n) Install the refill plug with O-ring.

Torque: 39 N·m (400 kgf·cm, 29ft·lbf)

(o) Install the No. 2 engine under cover INFO .

(p) Lower the vehicle.

5. COMPLETE

(a) Turn the ignition switch OFF.

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(b) When using the Techstream:

Disconnect the Techstream from the DLC3.

(c) Inspect for automatic transmission fluid leak.



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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000004LXE008X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION FLUID: REPLACEMENT (2013 FR-S)		

REPLACEMENT

1. REPLACE AUTOMATIC TRANSMISSION FLUID

(a) Lift the vehicle. [*1]

NOTICE:

Set the vehicle on a lift so that the vehicle is kept level when it is lifted up (make sure that the tilt angle from the front to rear of the vehicle is within +/- 1°).

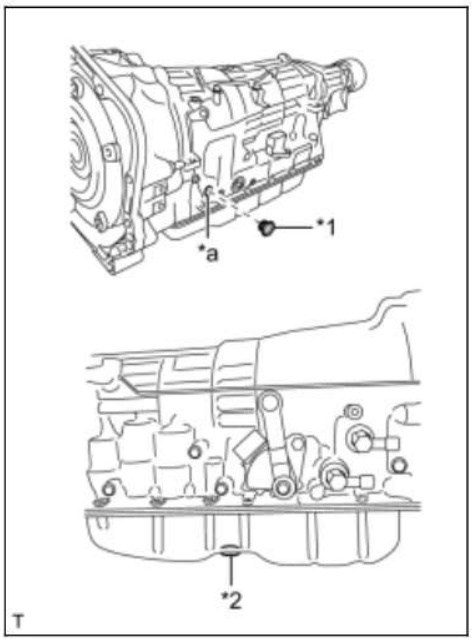
(b) Remove the No. 2 engine under cover INFO .

(c) Remove the drain plug and gasket, and drain the ATF. [*2]

(d) Temporarily install the drain plug and gasket. [*3]

HINT:

Reuse the old gasket. The drain plug will be removed again to adjust the fluid level.



(e) Remove the refill plug with O-ring, overflow plug and gasket. [*4]

Text in Illustration

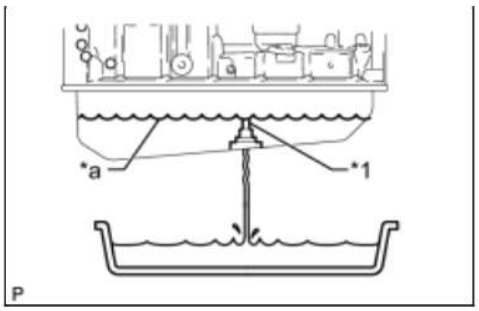
*1	Refill Plug
*2	Overflow Plug
*a	Refill Hole

(f) Add fluid to the refill hole until it flows out of the overflow tube. [*5]

Text in Illustration

*1	Overflow Tube
*a	Specified Fluid Level

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NOTICE:

Use Toyota Genuine ATF WS.

(g) Wait until the fluid flow slows and only drops come out. [*6]

(h) Temporarily install the overflow plug and gasket. [*7]

HINT:

Reuse the old gasket. The overflow plug will be removed again to adjust the fluid level.

(i) Add fluid to the refill hole using the amount of fluid specified for removal and installation of the oil pan. [*8]

HINT:

Specified amount of fluid is 2.0 liters (2.1 US qts, 1.8 Imp. qts).

(j) Temporarily install the refill plug with O-ring. [*9]

HINT:

Reuse the old O-ring. The refill plug will be removed again to adjust the fluid level.

(k) Lower the vehicle. [*10]

(l) Start the engine. [*11]

NOTICE:

Make sure that the A/C switch is off.

(m) Slowly move the shift lever from P to M. Then return the shift lever to P. [*12]

HINT:

Slowly move the shift lever to circulate the fluid through each part of the transmission.

(n) Allow the engine to idle for 30 seconds to warm it up. [*13]

(o) Turn the ignition switch off. [*14]

(p) Repeat steps [*1] to [*14].

(q) Repeat steps [*1] to [*2].

(r) Install the drain plug and a new gasket.

Torque: 20 N·m (204 kgf·cm, 15ft·lbf)

(s) Repeat steps [*4] to [*10].

(t) Adjust the fluid level INFO .

(u) Install the No. 2 engine under cover INFO .

(v) Lower the vehicle.

(w) Operation complete.

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000PKP016X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: B1016: Shift Lock Circuit (2013 FR-S)		

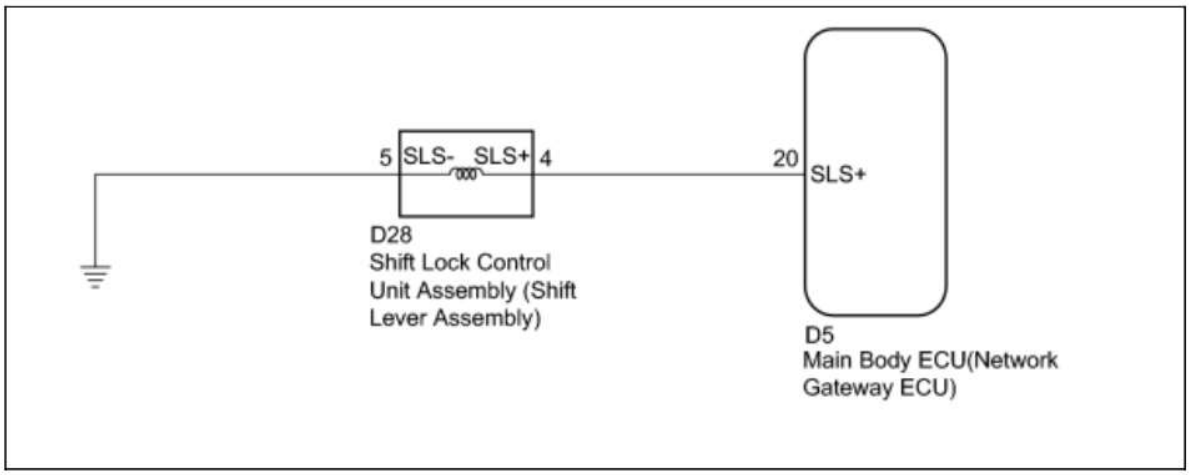
DTC	**B1016**	**Shift Lock Circuit**

DESCRIPTION

When an IGN signal, P switch signal, and STP signal are input into the main body ECU (network gateway ECU), a signal is output to the shift lock control unit assembly.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
B1016	1. Ignition switch is turned to ON 2. Shift lock circuit open, short to B+, or short to ground 3. For 3 seconds or more 4. 1-trip detection logic	• Shift lock control unit assembly • Wire harness or connector • Main body ECU (Network Gateway ECU)

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**INSPECT SHIFT LOCK CONTROL UNIT ASSEMBLY**

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(a) Perform inspection of the shift lock control unit assembly INFO .

NG ▶ **REPLACE SHIFT LOCK CONTROL UNIT ASSEMBLY**

OK ▼

2.	**CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - SHIFT LOCK CONTROL UNIT ASSEMBLY)**

(a) Disconnect the D5 main body ECU (network gateway ECU) connector.

(b) Disconnect the D28 shift lock control unit assembly connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
D5-20(SLS+) - D28-4(SLS+)	Always	Below 1 Ω
D5-20(SLS+) or D28-4(SLS+) - Body ground	Always	10 kΩ or higher

(d) Connect the D5 main body ECU (network gateway ECU) connector.

(e) Connect the D28 shift lock control unit assembly connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

3.	**CHECK HARNESS AND CONNECTOR (SHIFT LOCK CONTROL UNIT ASSEMBLY - BODY GROUND)**

(a) Disconnect the D28 shift lock control unit assembly connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
D28-5(SLS-) - Body ground	Always	Below 1 Ω

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(c) Connect the D28 shift lock control unit assembly connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (SHIFT LOCK CONTROL UNIT ASSEMBLY - BODY GROUND)**

OK ▶ **REPLACE MAIN BODY ECU (NETWORK GATEWAY ECU)**



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Last Modified: 3-27-2012	6.4 D	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W780NLX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: CHECK MODE PROCEDURE (2013 FR-S)		

CHECK MODE PROCEDURE

HINT:

Check mode has a higher sensitivity to malfunctions and can detect malfunction that normal mode cannot detect. Check mode can also detect all the malfunctions that normal mode can detect. In check mode, DTCs are detected with 1-trip detection logic.

1. DTC CHECK (CHECK MODE)

HINT:

Techstream only: Compared to the normal mode, the check mode is more sensitive for detecting malfunctions. Furthermore, the same diagnostic items which are detected in the normal mode can also be detected in the check mode.

(a) Procedure for Check Mode using the Techstream.

(1) Check the initial conditions.

- Battery positive voltage 11 V or more
- Throttle valve fully closed
- Transmission in the P or N position
- A/C switch is off

(2) Turn the ignition switch off.

(3) Connect the Techstream to the DLC3.

(4) Turn the ignition switch ON and turn the Techstream main switch on.

(5) Enter the following menus: Powertrain / ECT / Utility / Check Mode.

NOTICE:

All DTCs and freeze frame data recorded will be erased if: 1) Techstream is used to change the ECM from normal mode to check mode or vice-versa; or 2) during check mode, the ignition switch is turned from the on to on (ACC) or turned OFF.

(6) Start the engine (the MIL goes off after the engine starts).

(7) Perform "MONITOR DRIVE PATTERN" for the ECT test INFO , or simulate the conditions of the malfunction described by the customer.

NOTICE:

Leave the ignition switch ON until you have checked the DTCs, etc.

(8) After simulating malfunction conditions, use the Techstream diagnosis selector to check the DTCs and freeze frame data, etc.

(9) When you use Techstream: Enter the following menus: Powertrain / ECT / Trouble Codes.

(10) After checking the DTC, inspect the applicable circuit.

(11) INFO to confirm the details of the DTCs.

2. DTC CLEAR

(a) Connect the Techstream to the DLC3.

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(b) Turn the ignition switch ON and turn the Techstream main switch on.

(c) When you use Techstream: Enter the following menus: Powertrain / ECT / Trouble Codes / Clear.

HINT:

When operating Techstream to erase the codes, the DTCs and freeze frame data will be erased. (See the Techstream instruction book for operating instructions.)



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Last Modified: 3-27-2012	6.4 U	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W7E0PNX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: DATA LIST / ACTIVE TEST (2013 FR-S)		

DATA LIST / ACTIVE TEST

1. DATA LIST

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTICE:

In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

(a) Warm up the engine.

(b) Turn the ignition switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the ignition switch ON.

(e) Turn the Techstream on.

(f) Enter the following menus: "Powertrain / ECT / Data List" or "Body Electrical / Main Body / Data List".

(g) According to the display on the Techstream, read the "Data List".

"Powertrain / ECT / Data List"

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Vehicle Speed	Vehicle speed / Min.: 0 km/h (0 mph), Max.: 255 km/h (158 mph)	Actual vehicle speed	-
Engine Speed	Engine speed / Min.: 0 rpm, Max.: 16383.75 rpm	550 to 800 rpm: Idling	-
Coolant Temp	Engine coolant temperature / Min.: -40°C (-40°F), Max.: 140°C (284°F)	75 to 100°C (167 to 212°F): After warming up	• If value -40°C (-40°F): sensor circuit open • If value 215°C (419°F): sensor circuit shorted
Engine Run Time	Engine run time / Min.: 0 second, Max.: 65535 seconds	Time after engine start	-
Battery	Battery voltage /	11 to 14 V: Idling	-

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Voltage	Min.: 0, Max.: 65.535 V		
Stop Light Switch	Stop light switch status/ ON or OFF	Brake pedal is • ON: Depressed • OFF: Released	-
A/C signal	A/C signal status / ON or OFF	A/C switch is: ON : OFF	-
#Codes (Include History)	# of Codes / Min.: 0, Max.: 255	-	Number of detected DTCs
MIL ON Run Distance	MIL ON run distance / Min.: 0 km (0 mile), Max.: 65535 km (40723 mile)	Distance after DTC detected	-
Running Time from MIL ON	Running time from MIL ON / Min.: 0 minute, Max.: 65535 minutes	Equivalent to running time after MIL ON	-
Time after DTC Cleared	Time after DTC cleared / Min.: 0 minute, Max.: 65535 minutes	Equivalent to time after DTCs cleared	-
Distance from DTC Cleared	Distance after DTC cleared / Min.: 0 km (0 mile) Max.: 65535 km (40723 mile)	Equivalent to time after DTCs cleared	-
Warmup Cycle Cleared DTC	Warm-up cycle after DTC cleared / Min.: 0, Max.: 255	-	Number of warm-up cycles after DTCs cleared
TC and TE1	TC and TE1 terminals of DLC3 / ON or OFF	-	Active Test support data
Engine Speed from EFI	Engine speed / Min.: 0 rpm, Max.: 16383.75 rpm	550 to 800 rpm: Idling	-
Coolant Temp from EFI	Engine coolant temperature / Min.: -40°C (-40°F), Max.: 215°C (419°F)	80 to 105°C (176 to 221°F): After warming up	• If value -40°C (-40°F): sensor circuit open • If value 140°C (284°F): sensor circuit shorted
Throttle Position from EFI	Throttle sensor position / Min.: 0%, Max.: 100%	• 0%: Accelerator pedal released • 64 to 96%: Accelerator pedal fully	Recognition value for throttle opening angle on TCM

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		depressed	
Accel Position from EFI	Absolute Accelerator Pedal Position / Min.: 0%, Max.: 100%	• 10 to 22%: Accelerator pedal released • 54 to 86%: Accelerator pedal fully depressed	-
Received MIL from ECT	MIL request status/ ON : OFF	MIL request is: ON : OFF	-
Shift Position Sig from ECT	Received Shift Position Signal from ECT 1st,2nd,3rd,4th,5th,6th,7th,8th	Shift lever position is • On D: 1st, 2nd, 3rd, 4th, 5th or 6th • On M: 1st, 2nd, 3rd, 4th, 5th or 6th	-
SPD(NT)	Input shaft speed/ Min.: 0 rpm Max.: 12,750 rpm	Lock-up is • ON (after warming up engine): Input turbine speed (NT) is equal to engine speed • OFF (idling with shift lever on N): Input turbine speed (NT) is nearly equal to engine speed	Data is displayed in increments of 50 rpm
SPD(SP2)	Output shaft speed/ Min.: 0 km/h (0 mph) Max.: 255 km/h (158 mph)	Vehicle stopped: 0 km/h (0 mph) (output shaft speed is equal to vehicle speed)	-
Shift SW Status (P Range)	PNP switch status/ ON or OFF	Shift lever is: • On P: ON • Not on P: OFF	When shift lever position displayed on the Techstream differs from actual position, adjustment of PNP switch or shift cable may be incorrect
		Shift lever is:	When shift lever position

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Shift SW Status (R Range)	PNP switch status/ ON or OFF	• On R: ON • Not on R: OFF	displayed on the Techstream differs from actual position, adjustment of PNP switch or shift cable may be incorrect
Shift SW Status (N Range)	PNP switch status/ ON or OFF	Shift lever is: • On N: ON • Not on N: OFF	When shift lever position displayed on the Techstream differs from actual position, adjustment of PNP switch or shift cable may be incorrect
Sport Shift Up SW	Sport shift up switch status/ ON or OFF	• Continuously shift to "+" (upshift): ON • Release "+" (up-shift): OFF	-
Sport Shift Down SW	Sport shift down switch status/ ON or OFF	• Continuously shift to "-" (down-shift): ON • Release "-" (down-shift): OFF	-
Sports Mode Selection SW	Sport mode select switch status/ ON or OFF	Shift lever position is: • M, "+" and "-": ON • Not on M, "+" and "-": OFF	-
Snow Switch Status	Pattern switch (ECT SNOW) status/ ON or OFF	Ignition switch is: Pushed: OFF ↓ Pattern switch (ECT SNOW) is: Pushed: ON ↓ Pattern switch (ECT SNOW) is: Pushed: OFF	-
Shift SW Status (D Range)	PNP switch status/ ON or OFF	Shift lever is: • On D or M: ON • Not on D or M: OFF	When shift lever position displayed on the Techstream differs from actual position, adjustment of PNP switch or shift cable may be incorrect
		• After stall test: 50 to	

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A/T Oil Temperature 1	ATF temperature sensor No. 1 value/ Min.: -40°C (-40°F) Max.: 215°C (419°F)	100°C (122 to 212°F) • Equal to ambient temperature while engine is cold	If value is -40°C (-40°F) or 215°C (419°F), ATF temperature sensor No. 1 circuit is opened or short circuited
Lock Up	Lock Up Status/ ON or OFF	Lock-up is • Operating: ON • Not operating: OFF	-
SL Solenoid Status	Shift solenoid SL status/ ON or OFF	Shift solenoid SL is • Operating: ON • Not operating: OFF	-
Shift Status	TCM gear shift command/ 1st, 2nd, 3rd, 4th, 5th or 6th	Shift lever position is • On D: 1st, 2nd, 3rd, 4th, 5th or 6th • On M: 1st, 2nd, 3rd, 4th, 5th or 6th	-
MT Down Shift Indication	Shift indicator lamp down shift status/ ON or OFF	Shift indicator lamp is: ON : OFF	-
MT Up Shift Indication	Shift indicator lamp up shift status/ ON or OFF	Shift indicator lamp is: ON : OFF	-
Snow or 2nd Mode	Pattern select switch (SNOW) status/ ON or OFF	Ignition switch is: ON : OFF ↓ Pattern select switch is: Pushed : ON ↓ Pattern select switch is: Released : OFF	-

"Powertrain / ECT / Data List"

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE

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Stop Light Switch	Stop light switch status/ ON or OFF	Brake pedal is • ON: Depressed • OFF: Released	-
Shift P Signal	PNP switch status/ ON or OFF	Shift lever is: • On P: ON • Not on P: OFF	When shift lever position displayed on the Techstream differs from actual position, adjustment of PNP switch or shift cable may be incorrect
IG Power Supply Voltage	IG Power Supply Voltage / Min.: 0, Max.: 21.4 V	11 to 14 V: Idling	-
Shift Lock Solenoid	Shift Lock Control Unit Assembly status/ ON or OFF	Shift Lock Control Unit Assembly is • Operating: ON • Not operating: OFF	-

2. ACTIVE TEST

HINT:

Using Techstream to perform Active Test allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Test early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Test.

(a) Warm up the engine.

(b) Turn the ignition switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the ignition switch on position.

(e) Turn the Techstream on.

(f) Enter the following menus: "Powertrain / ECT / Active Test" or "Body Electrical / Main Body / Active Test".

(g) According to the display on the Techstream, perform the "Active Test".

"Powertrain / ECT / Active Test"

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Activate the Solenoid (SLU)	Operate the shift solenoid SLU	ON or OFF	[Vehicle Condition] • Engine stopped • Shift lever P or N

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			position
Activate the Solenoid (S1)	Operate the shift solenoid S1	ON or OFF	[Vehicle Condition] • Engine stopped • Shift lever P or N position
Activate the Solenoid (S2)	Operate the shift solenoid S2	ON or OFF	[Vehicle Condition] • Engine stopped • Shift lever P or N position
Activate the Solenoid (S3)	Operate the shift solenoid S3	ON or OFF	[Vehicle Condition] • Engine stopped • Shift lever P or N position
Activate the Solenoid (S4)	Operate the shift solenoid S4	ON or OFF	[Vehicle Condition] • Engine stopped • Shift lever P or N position
Activate the Lock Up	Control shift solenoid SLU to set automatic transmission to lock-up condition	ON or OFF	Possible to check shift solenoid valve SLU operation [Vehicle Condition] • Throttle valve opening angle: Less than 35% • Vehicle speed: 50 km/h (30 mph) or more
Control the Shift Position	Operate shift solenoid valve and set each shift position by yourself	• Press "→" button: Shift up • Press "←" button: Shift down	Possible to check operation of shift solenoid valves [Vehicle Condition] 50 km/h (30 mph) or less
Activate the Solenoid (SR)	Operate the shift solenoid SR	ON or OFF	[Vehicle Condition] • Engine stopped • Shift lever P or N position
Activate the Solenoid (SL1)	Operate the shift solenoid SL1	ON or OFF	[Vehicle Condition] • Engine stopped • Shift lever P or N position

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Activate the Solenoid (SL2)	Operate the shift solenoid SL2	ON or OFF	[Vehicle Condition] • Engine stopped • Shift lever P or N position
Connect the TC and TE1	Connects and disconnects TC and TE1. (transitions into the fluid temperature detection mode)	ON or OFF	The MIL will not blink when "Connect the TC and TE1 / ON" is selected.

"Body Electrical / Main Body / Active Test"

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
Shift Lock	Operate the shift lock	ON or OFF	-

* : "Activate the Solenoid (SLT)" in the Active Test is performed to check the line pressure changes by connecting the SST to the automatic transmission, which is used in the HYDRAULIC TEST INFO as well.

HINT:

The pressure values in Active Test and HYDRAULIC TEST are different from each other.



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Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W7I0MMX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: DEFINITION OF TERMS (2013 FR-S)		

DEFINITION OF TERMS

TERM	DEFINITION
Monitor description	Description of what the TCM monitors and how it detects malfunctions (monitoring purpose and its details).
Related DTCs	Diagnostic code
Typical enabling condition	Preconditions that allow the TCM to detect malfunctions. With all preconditions satisfied, the TCM sets the DTC when the monitored value(s) exceeds the malfunction threshold(s).
Sequence of operation	The priority order that is applied to monitoring, if multiple sensors and components are used to detect the malfunction. While another sensor is being monitored, the next sensor or component will not be monitored until the previous monitoring has concluded.
Required sensor/components	The sensors and components that are used by the TCM to detect malfunctions.
Frequency of operation	The number of times that the TCM checks for malfunctions per driving cycle. "Once per driving cycle" means that the TCM detects malfunction only one time during a single driving cycle. "Continuous" means that the TCM detects malfunction every time when enabling condition is met.
Duration	The minimum time that the TCM must sense a continuous deviation in the monitored value(s) before setting a DTC. This timing begins after the "typical enabling conditions" are met.
Malfunction thresholds	Beyond this value, the TCM will conclude that there is a malfunction and set a DTC.
MIL operation	MIL illumination timing after a defect is detected. "Immediately" means that the TCM illuminates MIL the instant the TCM determines that there is a malfunction. "2 driving cycle" means that the TCM illuminates MIL if the same malfunction is detected again in the 2nd driving cycle.
Component operating range	Normal operation range of sensors and solenoids under normal driving conditions. Use these ranges as a reference. They cannot be used to judge if a sensor or solenoid is defective or not.

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Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W760ROX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: DIAGNOSIS SYSTEM (2013 FR-S)		

DIAGNOSIS SYSTEM

1. DESCRIPTION

When troubleshooting OBD II (On-Board Diagnostics) vehicles, an OBD II scan tool (complying with SAE J1987) must be connected to the DLC3 (Data Link Connector 3) of the vehicle. Various data in the vehicle TCM (Transmission Control Module) can be then read.

OBD II regulations require that the vehicle on-board computer illuminate the MIL (Malfunction Indicator Lamp) on the instrument panel when the computer detects a malfunction in:



a. The emission control system components.
b. The powertrain control components (which affect vehicle emissions).
c. The computer itself.

In addition, the applicable DTCs prescribed by SAE J2012 are recorded in the TCM memory. If the malfunction does not recur in 3 consecutive trips, the MIL turns off automatically but the DTCs remain recorded in the TCM memory.

To check for DTCs, connect the Techstream to the DLC3. The Techstream displays DTCs, freeze frame data, and a variety of the engine data. The DTCs and freeze frame data can be cleared with the Techstream. In order to enhance OBD function on vehicles and develop the off-board diagnosis system, Controller Area Network (CAN) communication is used in this system. CAN is a network which uses a pair of data transmission lines spanning multiple computers and sensors. It allows for high speed communications between the systems and simplification of the wire harness connections.

2. NORMAL MODE AND CHECK MODE

The diagnosis system operates in normal mode during normal vehicle use. In normal mode, 2 trip detection logic is used to ensure accurate detection of malfunctions. Check mode is also available as an option for technicians. In check mode, 1 trip detection logic is used for duplicating malfunction symptoms and increasing the system's ability to detect malfunctions, including intermittent problems (the Techstream only).

3. 2 TRIP DETECTION LOGIC

When a malfunction is first detected, the malfunction is temporarily stored in the TCM memory (1st trip). If the same malfunction is detected during the subsequent driving cycle, the MIL is illuminated (2nd trip).

4. FREEZE FRAME DATA

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The ECM records vehicle and driving condition information as freeze frame data the moment a DTC is stored. When troubleshooting, freeze frame data can be helpful in determining whether the vehicle was running or stopped, whether the engine was warmed up or not, whether the air fuel ratio was lean or rich, as well as other data recorded at the time of a malfunction.

5. DLC3 (Data Link Connector 3)

(a) Check the DLC3 INFO .

6. BATTERY VOLTAGE

Standard Voltage:
11 to 14 V

If voltage is below 11 V, replace or recharge the battery before proceeding to the next step.

7. MIL (Malfunction Indicator Lamp)

(a) The MIL illuminates when the ignition switch is first turned on (the engine is not running).

(b) The MIL should turn off when the engine is started. If the MIL remains illuminated, the diagnosis system has detected a malfunction or abnormality in the system.

HINT:

If the MIL does not illuminate when the ignition switch is first turned on, check the MIL circuit INFO .



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Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W710L1X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: DIAGNOSTIC TROUBLE CODE CHART (2013 FR-S)		

DIAGNOSTIC TROUBLE CODE CHART

AUTOMATIC TRANSMISSION SYSTEM

DTC CODE	DETECTION ITEM	MIL	MEMORY	SEE PAGE
B1016	Shift Lock Circuit	Comes on	DTC stored	INFO
P0601	Internal Control Module Memory Check Sum Error	Comes on	DTC stored	INFO
P062F	Internal Control Module EEPROM Error	Comes on	DTC stored	INFO
P0707	Transmission Range Sensor "A" Circuit Low	Comes on	DTC stored	INFO
P0708	Transmission Range Sensor "A" Circuit High	Comes on	DTC stored	INFO
P0711	Transmission Fluid Temperature Sensor "A" Performance	Comes on	DTC stored	INFO
P0712	Transmission Fluid Temperature Sensor "A" Circuit Low Input	Comes on	DTC stored	INFO
P0713	Transmission Fluid Temperature Sensor "A" Circuit High Input	Comes on	DTC stored	INFO
P0717	Turbine Speed Sensor Circuit No Signal	Comes on	DTC stored	INFO
P0722	Output Speed Sensor Circuit No Signal	Comes on	DTC stored	INFO
P0729	Gear 6 Incorrect Ratio	Comes on	DTC stored	INFO
P0751	Shift Solenoid "A" Performance (Shift Solenoid Valve S1)	Comes on	DTC stored	INFO
P0752	Shift Solenoid "A" Stuck ON (S1 Solenoid)	Comes on	DTC stored	INFO
P0757	Shift Solenoid "B" Stuck ON (S2 Solenoid)	Comes on	DTC stored	INFO
P0756	Shift Solenoid "B" Performance (Shift Solenoid Valve S2)	Comes on	DTC stored	INFO
P0761	Shift Solenoid "C" Performance (Shift Solenoid Valve S3)	Comes on	DTC stored	INFO
P0762	Shift Solenoid "C" Stuck ON (S3 Solenoid)	Comes on	DTC stored	INFO

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P0766	Shift Solenoid "D" Performance (Shift Solenoid Valve S4)	Comes on	DTC stored	INFO
P0776	Pressure Control Solenoid "B" Performance (Shift Solenoid Valve SL2)	Comes on	DTC stored	INFO
P0781	1-2 Shift (1-2 Shift Valve)	Comes on	DTC stored	INFO
P0882	TCM Power Input Signal Low	Does not come on	DTC stored	INFO
P0894	Transmission Component Slipping	Comes on	DTC stored	INFO
P0961	Pressure Control Solenoid "A" Performance (SL1 Solenoid)	Comes on	DTC stored	INFO
P0962	Pressure Control Solenoid "A" Circuit Low (SL1 Solenoid)	Comes on	DTC stored	INFO
P0963	Pressure Control Solenoid "A" Circuit High (SL1 Solenoid)	Comes on	DTC stored	INFO
P0965	Pressure Control Solenoid "B" Performance (SL2 Solenoid)	Comes on	DTC stored	INFO
P0966	Pressure Control Solenoid "B" Control Circuit Low (Shift Solenoid Valve DS2)	Comes on	DTC stored	INFO
P0967	Pressure Control Solenoid "B" Control Circuit High (Shift Solenoid Valve DS2)	Comes on	DTC stored	INFO
P0973	Shift Solenoid "A" Control Circuit Low (Shift Solenoid Valve S1)	Comes on	DTC stored	INFO
P0974	Shift Solenoid "A" Control Circuit High (Shift Solenoid Valve S1)	Comes on	DTC stored	INFO
P0976	Shift Solenoid "B" Control Circuit Low (Shift Solenoid Valve S2)	Comes on	DTC stored	INFO
P0977	Shift Solenoid "B" Control Circuit High (Shift Solenoid Valve S2)	Comes on	DTC stored	INFO
P0979	Shift Solenoid "C" Control Circuit Low (Shift Solenoid Valve S3)	Comes on	DTC stored	INFO
P0980	Shift Solenoid "C" Control Circuit High (Shift Solenoid Valve S3)	Comes on	DTC stored	INFO
P0982	Shift Solenoid "D" Control Circuit Low (Shift Solenoid Valve S4)	Comes on	DTC stored	INFO
P0983	Shift Solenoid "D" Control Circuit High (Shift Solenoid Valve S4)	Comes on	DTC stored	INFO
P0985	Shift Solenoid "E" Control Circuit Low (Shift Solenoid Valve SR)	Comes on	DTC stored	INFO
P0986	Shift Solenoid "E" Control Circuit High (Shift Solenoid Valve SR)	Comes on	DTC stored	INFO
P160A	Internal Control Module Random Access Memory (RAM) Error	Comes on	DTC stored	INFO

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P1817	Manual Mode Switch Circuit Malfunction	Does not come on	DTC stored	INFO
P2714	Pressure Control Solenoid "D" Performance (Shift Solenoid Valve SLT)	Comes on	DTC stored	INFO
P2719	Pressure Control Solenoid "D" Circuit Performance (SLT Solenoid)	Comes on	DTC stored	INFO
P2720	Pressure Control Solenoid "D" Control Circuit Low	Comes on	DTC stored	INFO
P2721	Pressure Control Solenoid "D" Control Circuit High	Comes on	DTC stored	INFO
P2757	Torque Converter Clutch Pressure Control Solenoid Performance (Shift Solenoid Valve SLU)	Comes on	DTC stored	INFO
P2758	Torque Converter Pressure Control Solenoid Circuit Stuck ON / Performance (SLU / DSU Solenoid)	Comes on	DTC stored	INFO
P2762	Torque Converter Pressure Control Solenoid Circuit Performance (SLU / DSU Solenoid)	Comes on	DTC stored	INFO
P2763	Torque Converter Clutch Pressure Control Solenoid Control Circuit High (Shift Solenoid Valve DSU)	Comes on	DTC stored	INFO
P2764	Torque Converter Clutch Pressure Control Solenoid Control Circuit Low (Shift Solenoid Valve DSU)	Comes on	DTC stored	INFO
U0073	Control Module Communication Bus OFF	Comes on	DTC stored	INFO
U0100	Lost Communication with ECM / PCM "A"	Comes on	DTC stored	INFO
U0122	Lost Communication with Vehicle Dynamics Control Module	Comes on	DTC stored	INFO
U0140	Lost Communication with Body Control Module	Does not come on	DTC stored	INFO
U0155	Lost Communication with Instrument Panel Cluster Control Module (Combination Meter)	Does not come on	DTC stored	INFO
U0401	Invalid Data Received from ECM/PCM "A"	Comes on	DTC stored	INFO
U0416	Invalid Data Received from Vehicle Dynamics Control Module	Comes on	DTC stored	INFO
U0422	Invalid Data Received from Body Control Module	Does not come on	DTC stored	INFO
U0423	Invalid Data Received from Instrument Panel Cluster Control Module	Comes on	DTC stored	INFO



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Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W770REX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: DTC CHECK / CLEAR (2013 FR-S)		

DTC CHECK / CLEAR

NOTICE:

When the diagnosis system is changed from normal mode to check mode or vice versa, all DTCs and freeze frame data recorded in normal mode are cleared. Before changing modes, always check and make a note of DTCs and freeze frame data.

HINT:

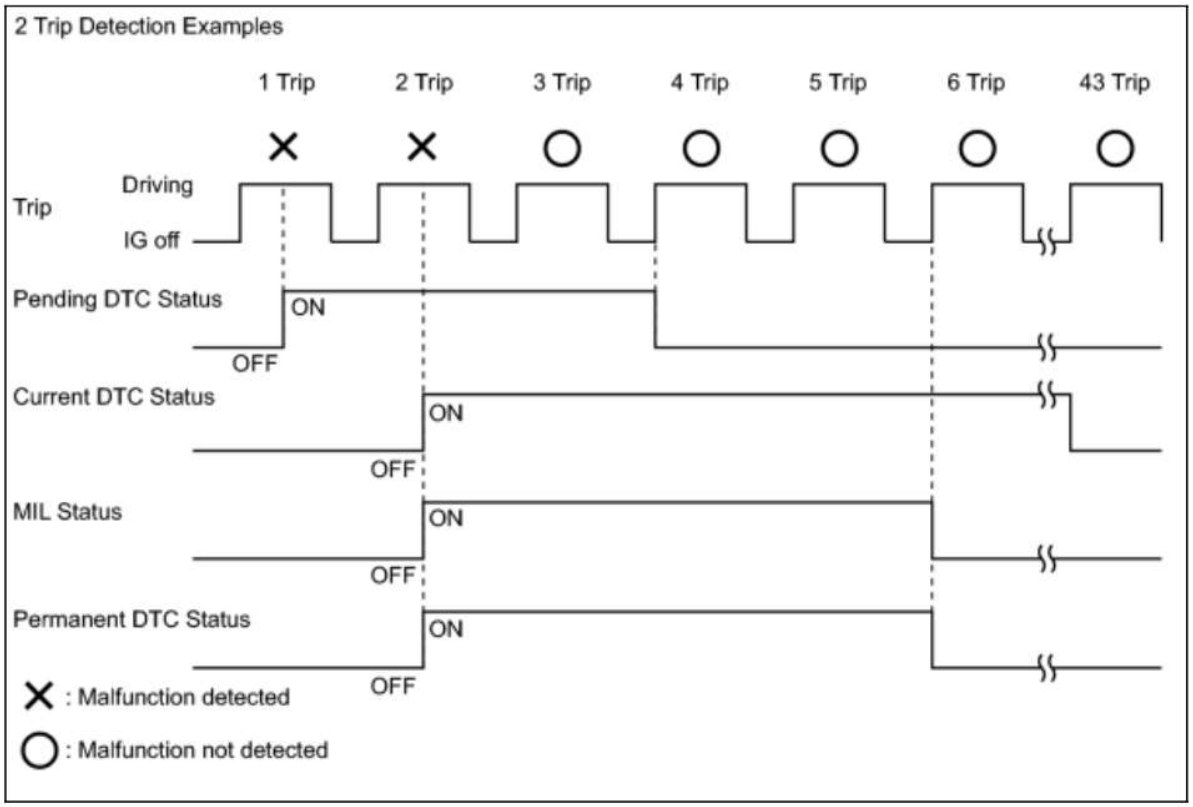
- DTCs which are stored in the ECM can be displayed on the Techstream. The Techstream can display the current, pending and permanent DTCs.
- If a malfunction is detected during the current driving cycle, current and permanent DTCs are stored.
- Some DTCs are not stored if the ECM does not detect the same malfunction again during a second consecutive driving cycle. However, such malfunctions, detected on only one occasion, are stored as pending DTCs.
- Current and pending DTCs can be cleared by using the Techstream. However, permanent DTCs cannot be cleared using either of these two methods.
- After clearing current DTCs using the Techstream, permanent DTCs can be cleared when the system is determined to be normal for the relevant DTCs and then the universal trip is performed.

2 Trip Detection Examples

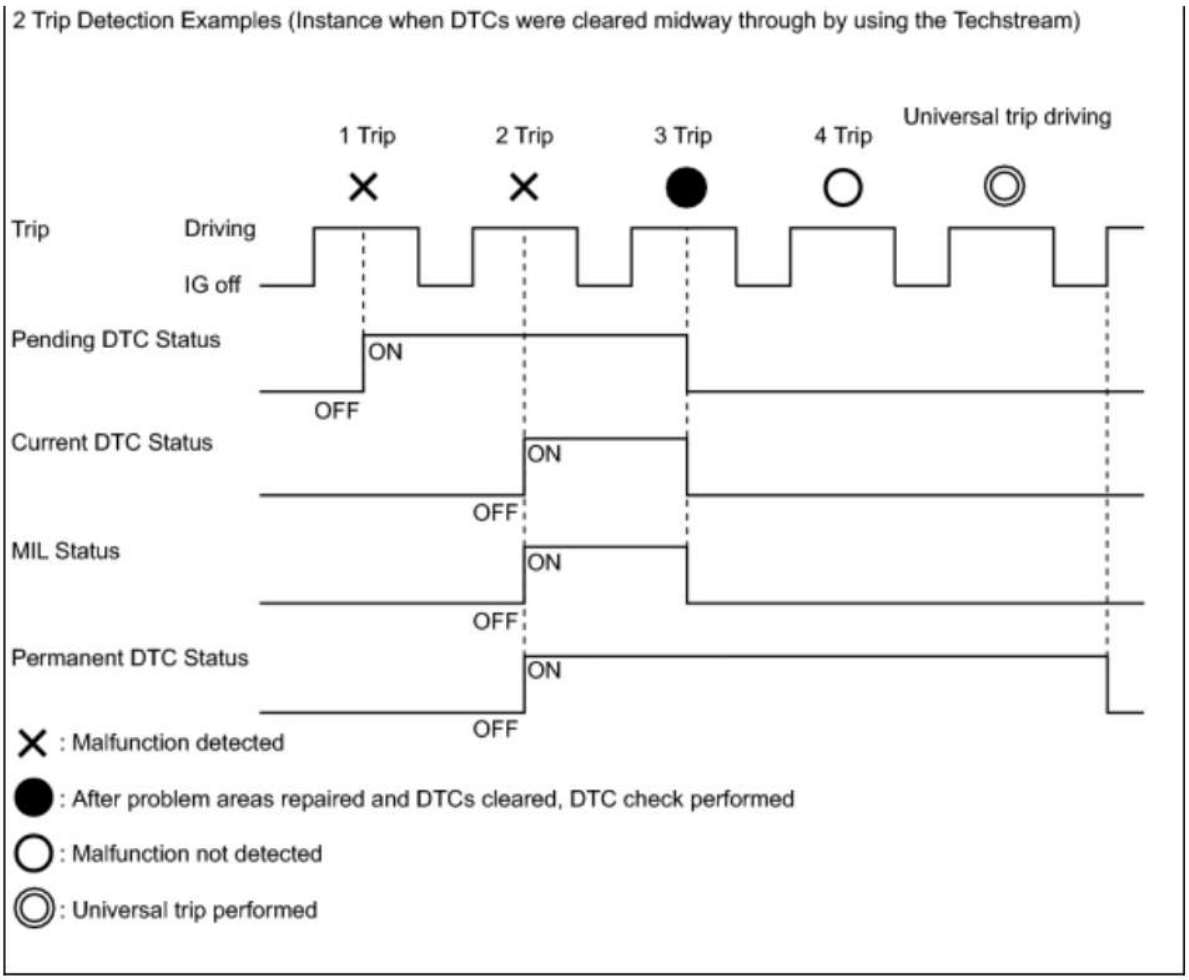
Pending DTC	Store condition	Malfunction detected
	Clear condition	System determined to be normal or DTCs cleared using Techstream or Cable disconnected from negative battery terminal
Current DTC	Store condition	Malfunction detected (2nd trip)
	Clear condition	No malfunctions in 40 driving cycles or DTCs cleared using Techstream
Permanent DTC	Store condition	Malfunction detected (2nd trip)
	Clear condition	One trip is confirmed with no abnormality after no malfunction is detected in 3 consecutive driving cycles or After DTCs cleared using Techstream, malfunction not detected when universal trip driving performed
MIL	ON	Malfunction detected (2nd trip)
	OFF	One trip is confirmed with no abnormality after no malfunction is detected in 3 consecutive driving cycles or

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		DTCs cleared using Techstream



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1. CHECK DTC

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch ON.

(c) Turn the Techstream on.

(d) Enter the following menus: Powertrain / ECT / Trouble Codes.

(e) Check the DTC(s) and freeze frame data, and then write them down.

(f) Check the details of the DTC(s) INFO .

2. CLEAR DTC (Pending and Current DTC)

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch ON.

(c) Turn the Techstream on.

(d) Enter the following menus: Powertrain / ECT / Trouble Codes.

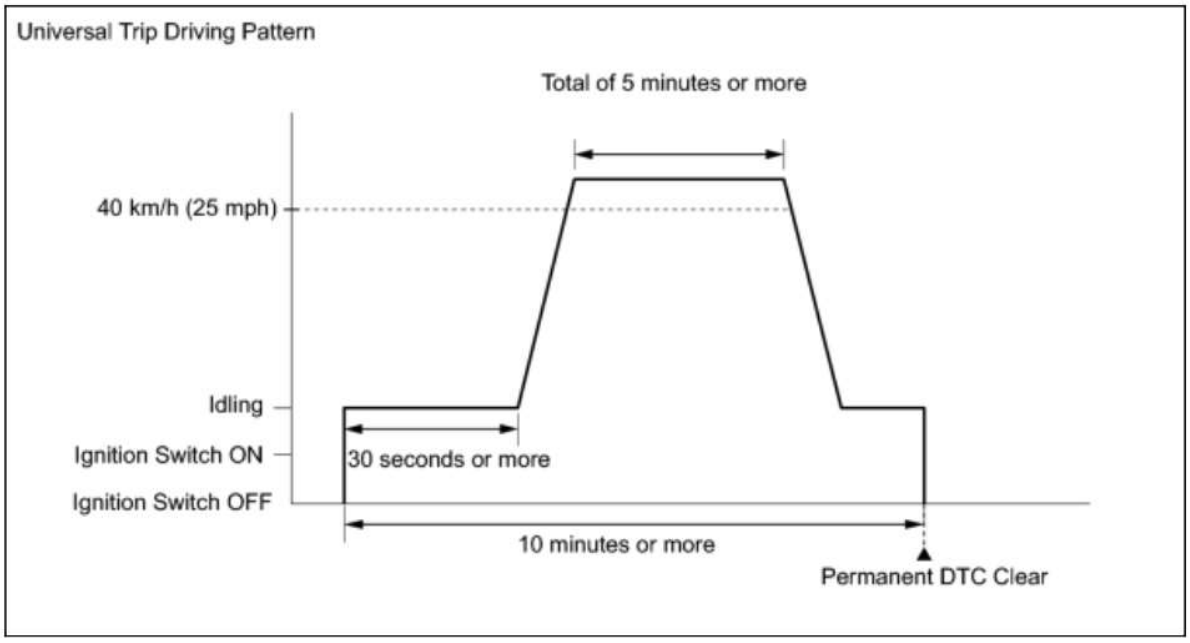
(e) Clear the DTCs.

3. CLEAR PERMANENT DTC

HINT:

Even if the following procedure is not performed, permanent DTCs are cleared if no malfunction are detected during 3 consecutive driving cycles.

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(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch ON.

(c) Turn the Techstream on.

(d) Enter the following menus: Powertrain / ECT / Trouble Codes.

(e) Check if permanent DTCs are stored.

HINT:

If permanent DTCs are not output, it is not necessary to continue this procedure.

(f) Clear DTCs.

(g) Perform the universal trip.

1. Idle the engine for 30 seconds or more.
2. Drive the vehicle at 40 km/h (25 mph) or more for a total of 5 minutes or more.

HINT:

- It is possible to complete the drive pattern even if the vehicle decelerates to less than 40 km/h (25 mph) during the driving cycle provided that the vehicle is driven at 40 km/h (25 mph) or more for a total of 5 minutes.
- When accelerating through the gears, make sure the vehicle is driven so all gears are used in order and no gears are skipped.

3. Allow 10 minutes or more to elapse from the time the engine is started.

(h) Turn the ignition switch off.

(i) Wait 15 seconds.

(j) Turn the ignition switch ON.

(k) Enter the following menus: Powertrain / ECT / Trouble Codes.

(l) Check that the permanent DTCs have been cleared.

HINT:

- If the permanent DTCs have not been cleared, perform the universal trip again.
- The permanent DTCs are cleared when the universal trip is completed.

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Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000O8L0MHX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: FAIL-SAFE CHART (2013 FR-S)		

FAIL-SAFE CHART

1. FAIL-SAFE CHART

This function minimizes the loss of the ECT functions when any malfunction occurs in each sensor or solenoid.

MALFUNCTION PART	FUNCTION
DTC P0717: Input Speed Sensor NT	During an input speed sensor malfunction, shift control is effected through the output speed sensor signal SP2. During an input speed sensor malfunction, up-shift to the 5th and 6th, AI-SHIFT *1 and flex lock-up clutch control are prohibited.
DTC P0722: Output Speed Sensor SP2	During an output speed sensor malfunction, shift control is effected through the input speed sensor signal NT. During an output speed sensor malfunction, up-shift to the 5th and 6th, AI-SHIFT *1 and flex lock-up clutch control are prohibited.
DTC P0711, P0712, P0713: ATF Temperature Sensor	During an ATF temperature sensor malfunction, up-shift to the 5th and 6th and flex lock-up clutch control are prohibited.
Shift Solenoid Valve S1, S2, S3, S4 and SR	The current to the failed solenoid valve is cut off and control is effected by operating the other solenoid valves. Shift control is effected depending on the failed solenoid as described in the table on the next page.
DTC P0776, P0961, P0962, P0963, P0965, P0966, P0967: Shift Solenoid Valve SL1 and SL2	During a solenoid valve SL1 or SL2 malfunction, up-shift to the 5th and 6th and flex lock-up clutch control are prohibited.
DTC P2757, P2758, P2762, P2763, P2764: Shift Solenoid Valve SLU	During a solenoid valve SLU malfunction, the current to the solenoid valve is stopped. This stops lock-up control and flex lock-up control, fuel economy decreases.
DTC P2714, P2719, P2720, P2721: Shift Solenoid Valve SLT	During a solenoid valve SLT malfunction, the current to the solenoid valve is stopped. This stops line pressure optimal control, the shift shock increases. However, shifting is effected through normal clutch pressure control.

*: AI (Artificial Intelligence) -SHIFT control

In addition to the switching of the shift pattern through the pattern select switch, the AI-SHIFT control enables the ECM to estimate the road conditions and the driver's intention in order to automatically select

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the optimal shift pattern. As a result, a comfortable ride has been realized.

(a) Fail-safe operation for electronically malfunctioning shift solenoid valve (S1, S2, S3, S4 and SR):

HINT:

Fail-safe operation in the event of an electric system malfunction.

Fail safe function:

If either of the shift solenoid valve circuits has an open or short failure, the ECM turns the other shift solenoid "ON" and "OFF" in order to shift into the gear positions shown in the table below.

In case of a short circuit, the ECM stops sending current to the short circuited solenoid.

Even if staring the engine again in the fail-safe mode, the gear position remains in the same position.

Operating Condition of Shift Solenoid Valves

SHIFT LEVER POSITION OR SHIFT RANGE	GEAR POSITION	SHIFT SOLENOID VALVE							
		S1	S2	S3	S4	SR	SL1	SL2	SLU
P	Park	Off	On	On	On	On	Off	On	Off
R*	Reverse	Off	On	On	On	On	On	On	Off
N	Neutral	Off	On	On	On	On	On	On	Off
D, M6	1st	Off	On	On	Off	On	Off	On	Off
	2nd	On	On	On	On	On	Off	Off	On
	3rd	On	Off	On	Off	On	Off	Off	On
	4th*	On	Off	Off	Off	On	Off	On	On
	5th*	On	Off	Off	On	Off	On	Off	On
	6th*	On	On	Off	On	Off	On	Off	On
M5	1st	Off	On	On	Off	On	Off	On	Off
	2nd	On	On	On	On	On	Off	Off	On
	3rd	On	Off	On	Off	On	Off	Off	On
	4th*	On	Off	Off	Off	On	Off	On	On
	5th*	On	Off	Off	On	Off	On	Off	On
M4	1st	Off	On	On	Off	On	Off	On	Off
	2nd	On	On	On	On	On	Off	Off	On
	3rd	On	Off	On	Off	On	Off	Off	On
	4th*	On	Off	Off	Off	On	Off	On	On
M3	1st	Off	On	On	Off	On	Off	On	Off
	2nd	On	On	On	On	On	Off	Off	Off
	3rd*	On	Off	On	Off	On	Off	Off	Off
M2	1st	Off	On	On	Off	On	Off	On	On
	2nd*	On	On	On	On	On	Off	Off	Off
M1	1st*	Off	On	On	Off	On	Off	Off	Off

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HINT:

***: Engine braking occurs**

(b) Fail-safe operation for mechanically malfunction:

HINT:

Fail-safe operation in the event of a mechanical system malfunction.

Fail safe function:

The ECM controls the gear position as shown in the table below when malfunctions occur.

Fail-safe chart for mechanical malfunction:

DTC	CONDITION	GEAR *1					
-	Normal	1st	2nd	3rd	4th	5th	6th
P0751	Shift solenoid valve S1: Stuck OFF malfunction	1st *2	2nd	↑	3rd	3rd	3rd
P0762	Shift solenoid S3: Stuck ON malfunction	1st	2nd	↑	3rd	3rd	3rd
P0766	Shift solenoid valve S4, Shift solenoid valve SL2 or Valve body (Brake control valve): Malfunction	1st	2nd	↑	3rd	3rd	3rd
P0781	Valve body (1-2 shift valve): Malfunction	1st *2	2nd	↑	3rd	3rd	3rd
P0729	Valve body (Sequence valve): Malfunction	1st	2nd	↑	4th	5th	5th

HINT:

- *1: Actual gear shift (gear position) under fail-safe operation
- *2: Under engine braking, downshifting to 1st or 2nd gear is prohibited.

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Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W6Z0TVX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: HOW TO PROCEED WITH TROUBLESHOOTING (2013 FR-S)		

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- The TCM of this system is connected to the CAN and multiplex communication system. Therefore, before starting troubleshooting, make sure to check that there is no trouble in the CAN and multiplex communication systems.
- *: Use Techstream.

1.	**VEHICLE BROUGHT TO WORKSHOP**

NEXT

2.	**CUSTOMER PROBLEM ANALYSIS**

NEXT

3.	**INSPECT BATTERY VOLTAGE**

Standard voltage:
11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding.

NEXT

4.	**CONNECT TECHSTREAM TO DLC3***

NEXT

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5.	**CHECK AND CLEAR DTCS AND FREEZE FRAME DATA***

(a) Refer to the DTC CHECK/CLEAR INFO .

NEXT

6.	**VISUAL INSPECTION**

NEXT

7.	**SETTING CHECK MODE DIAGNOSIS***

(a) Refer to the CHECK MODE PROCEDURE INFO .

NEXT

8.	**PROBLEM SYMPTOM CONFIRMATION**

(a) Refer to the ROAD TEST INFO .

Result:

RESULT	PROCEED TO
Symptom does not occur	A
Symptom occurs	B

B ▶ **GO TO STEP 10**

A

9.	**SYMPTOM SIMULATION**

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(a) Refer to the ELECTRONIC CIRCUIT INSPECTION PROCEDURE INFO .

NEXT

10.	**DTC CHECK***

(a) Refer to the DTC CHECK / CLEAR INFO .

Result:

RESULT	PROCEED TO
DTC is not output	A
DTC is output	B

B ▶ **GO TO STEP 18**

A

11.	**BASIC INSPECTION**

(a) Refer to the PARK/NEUTRAL POSITION SWITCH INFO .

(b) Refer to the SHIFT LEVER ASSEMBLY INFO .

NG ▶ **GO TO STEP 21**

OK

12.	**MECHANICAL SYSTEM TEST**

(a) Refer to the MECHANICAL SYSTEM TEST INFO .

NG ▶ **GO TO STEP 17**

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OK

13.	**HYDRAULIC TEST**

(a) Refer to the HYDRAULIC TEST INFO .

NG ▶ **GO TO STEP 17**

OK

14.	**MANUAL SHIFTING TEST**

(a) Refer to the MANUAL SHIFTING TEST INFO .

NG ▶ **GO TO STEP 16**

OK

15.	**PROBLEM SYMPTOMS TABLE CHAPTER 1**

(a) Refer to the PROBLEM SYMPTOMS TABLE INFO .

NG ▶ **GO TO STEP 19**

OK

16.	**PROBLEM SYMPTOMS TABLE CHAPTER 2**

(a) Refer to the PROBLEM SYMPTOMS TABLE INFO .

NEXT

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17.	PART INSPECTION

NEXT ▶ GO TO STEP 21

18.	DTC CHART

(a) Refer to the DIAGNOSTIC TROUBLE CODE CHART INFO .

NEXT ▼

19.	CIRCUIT INSPECTION

NEXT ▼

20.	IDENTIFICATION OF PROBLEM

NEXT ▼

21.	REPAIR OR REPLACE

NEXT ▼

22.	CONFIRMATION TEST

NEXT ▶ END

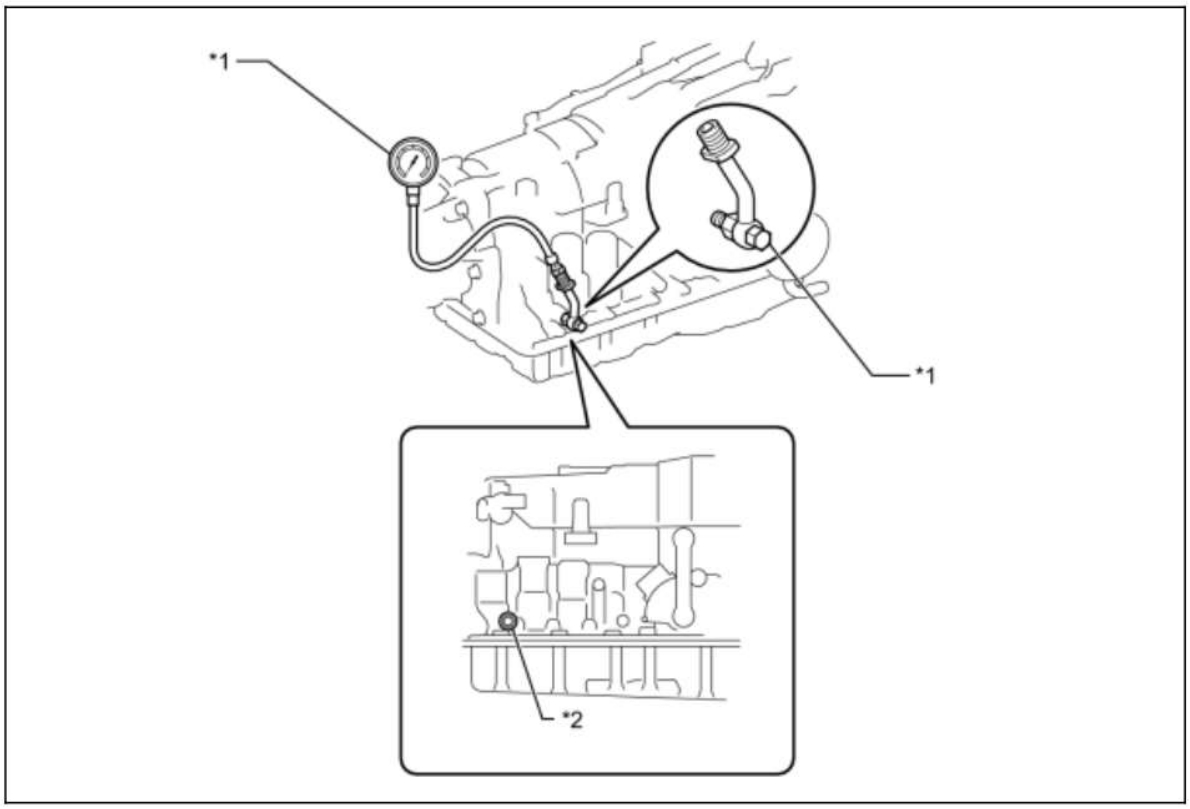
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Last Modified: 3-27-2012	6.4 D	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W7B0MWX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: HYDRAULIC TEST (2013 FR-S)		

HYDRAULIC TEST

1. PERFORM HYDRAULIC TEST

(a) Measure the line pressure.



Text in Illustration

*1	SST	*2	Test Plug

NOTICE:

- Perform the test at the normal operating ATF (Automatic Transmission Fluid) temperature: 60 to 90°C (140 to 194°F)
- The line pressure test should always be carried out in pairs. One technician should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is performing the test.
- Be careful to prevent SST hose from interfering with the exhaust pipe.
- This Check must be conducted after checking and adjusting engine.
- Perform under condition that A/C is OFF.
- When conducting stall test, do not continue more than 5 seconds.

(1) Warm up the ATF (Automatic Transmission Fluid).

(2) Lift the vehicle up.

(3) Remove the test plug on the transmission case center right side and connect SST.

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SST: 09992-00095

09992-00231

09992-00271

(4) Lower the vehicle.

(5) Fully apply the parking brake and check the 4 wheels.

(6) Start the engine and check idling speed.

(7) Keep your left foot pressing firmly on the brake pedal and shift into D position.

(8) Measure the line pressure when the engine is idling.

(9) Depress the accelerator pedal all the way down. Quickly read the highest line pressure when engine speed reaches stall speed.

(10) In the same manner, do the test in R position.

Specified line pressure:

CONDITION	D POSITION KPA (KGF / CM ^{2} , PSI)	R POSITION KPA (KGF / CM ^{2} , PSI)
Idling	350 to 430 kPa (3.6 to 4.4 kgf/cm ^{2} , 51 to 62 psi)	760 to 950 kPa (7.7 to 9.7 kgf/cm ^{2} , 110 to 138 psi)
Stall test	1200 to 1380 kPa (12.5 to 14.0 kgf/cm ^{2} , 174 to 200 psi)	1410 to 1630 kPa (14.4 to 16.6 kgf/cm ^{2} , 204 to 236 psi)

Evaluation:

PROBLEM	POSSIBLE CAUSE
If the measured values at all position are higher	• Shift solenoid valve SLT defective • Regulator valve defective
If the measured values at all position are lower	• Shift solenoid valve SLT defective • Regulator valve defective • Oil pump defective
If pressure is low in the D position only	• D position circuit fluid leak • Clutch No.1 (C_1) defective
If pressure is low in the R position only	• R position circuit fluid leak • Clutch No.3 (C_3) defective • Brake No.4 (B_4) defective

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Last Modified: 3-27-2012	6.4 D	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W7F0KYX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: INITIALIZATION (2013 FR-S)		

INITIALIZATION

1. RESET MEMORY

NOTICE:

- Perform the RESET MEMORY (AT initialization) when replacing the automatic transmission assembly, valve body, engine assembly or TCM.
- The RESET MEMORY can be performed only with the Techstream.

HINT:

The TCM memorizes the condition that the ECT controls the automatic transmission assembly and engine assembly according to those characteristics. Therefore, when the automatic transmission assembly, valve body, transmission wire, engine assembly, or TCM has been replaced, it is necessary to reset the memory so that the TCM can memorize the new information.

Reset procedure is as follows.

(a) Turn the ignition switch off.

(b) Connect the Techstream to the DLC3.

(c) Turn the ignition switch to ON position.

(d) Turn the Techstream main switch on.

(e) Enter the following menu: Powertrain / ECT / Utility / Reset Memory. Then, press "Next".

(f) Perform the reset memory procedure from the main menu.

CAUTION:

After performing the RESET MEMORY, be sure to perform the ROAD TEST INFO **described earlier.**

HINT:

The TCM is learned by performing the ROAD TEST.



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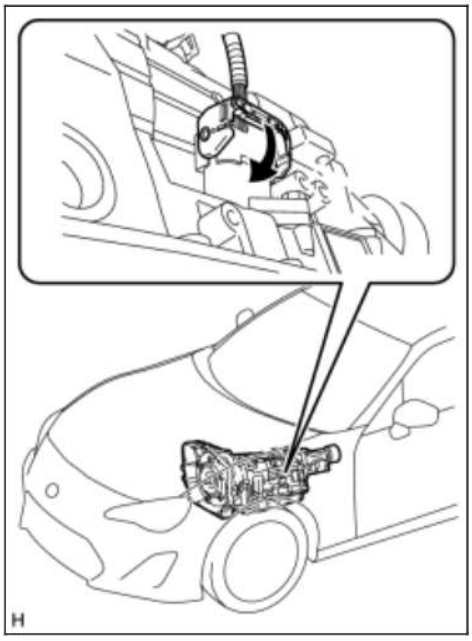
Last Modified: 3-27-2012	6.4 D	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W7C0Q5X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: MANUAL SHIFTING TEST (2013 FR-S)		

MANUAL SHIFTING TEST

1. PERFORM MANUAL SHIFTING TEST

HINT:

- With this test, it can be determined whether the trouble occurs in the electrical circuit or is a mechanical problem in the transmission.
- If any abnormalities are found in the following test, the problem is in the transmission itself.



(a) Disconnect the connector of the transmission wire.

(b) Drive with the transmission wire disconnected.

Shifting the shift lever to the D position to check whether the shifting condition changes the table below.

SHIFT POSITION	SHIFTING CONDITION
D	No Shift (Not Change)

HINT:

When driving with the transmission wire disconnected, the gear position will be as follows:

- When the shift lever is in the D position, the gear is held in the 4th position.
- When the shift lever is in the R or the P position, the gear is also in the R or the P position respectively.

(c) Connect the connector of the transmission wire.

(d) Clear the DTC INFO .

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Last Modified: 3-27-2012	6.4 D	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W7A0NMX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: MECHANICAL SYSTEM TESTS (2013 FR-S)		

MECHANICAL SYSTEM TESTS

1. PERFORM MECHANICAL SYSTEM TESTS

(a) Measure the stall speed.

The object of this test is to check the overall performance of the transmission and engine by measuring the stall speeds in the D position.

NOTICE:

- Driving test should be done on a paved road (a nonskid road).
- Perform the test at the normal operating ATF (Automatic Transmission Fluid) temperature 60 to 90°C (140 to 194°F).
- Do not continuously run this test for longer than 5 seconds.
- To ensure safety, do this test in a wide, clear level area which provides good traction.
- The stall test should always be carried out in pairs. One technician should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is doing the test.
- Be sure to perform a road teat after inspecting and adjusting the engine.

(1) Check the 4 wheels.

(2) Connect the Techstream to the DLC3.

(3) Fully apply the parking brake.

(4) Keep your left foot pressed firmly on the brake pedal.

(5) Start the engine.

(6) Shift into the D position. Press all the way down on the accelerator pedal with your right foot.

(7) Quickly read the stall speed at this time.

Stall speed:
2350 +- 250 rpm

Evaluation:

PROBLEM	POSSIBLE CAUSE
(a) Stall engine speed is low in D position	• Engine power output may be insufficient • Stator one-way clutch not operating properly **HINT:** **If the value is less than the specified value by 600 rpm or more, the torque converter could be faulty.**
(b) Stall engine speed is high in D position	• Line pressure is too low • Clutch No. 1 (C_1) slipping • One-way clutch No. 3 (F_3) not operating properly • One-way clutch No .4 (F_4) not operating properly • Improper fluid level

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(b) Measure the time lag.

(1) When the shift lever is shifted while the engine is idling, there will be a certain time lapse or lag before the shock can be felt. This is used for checking the condition of the clutch, and brake.

NOTICE:

- Be sure to perform a road teat after inspecting and adjusting the engine.
- Fully apply the parking brake and chock the 4 wheels.
- Perform the test at the normal operating ATF (Automatic Transmission Fluid) temperature: 60 to 90°C (140 to 194°F).
- Be sure to allow 1 minute interval between tests.
- Perform the test three times, and measure the time lags. Calculate the average value of the three time lags.

(2) Connect the Techstream to the DLC3.

(3) Fully apply the parking brake.

(4) Start and warm up the engine and check idle speed.

Idle speed:
approx. 700 rpm (In N position and A/C OFF)

(5) Shift the lever from N to D position. Using a stop watch, measure the time from when the lever is shifted until the shock is felt.

Time lag:
N → D less than 1.2 seconds

(6) In the same way, measure the time lag for N → R.

Time lag:
N → R less than 1.5 seconds

Evaluation (If N → D or N → R time lag is longer than the specified):

PROBLEM	POSSIBLE CAUSE
N → D time lag is longer	• Line pressure is too low • Clutch No.1 (C_1) worn • One-way clutch No. 3 (F_3) not operating properly • One-way clutch No. 4 (F_4) not operating properly
N → R time lag is longer	• Line pressure is too low • Clutch No. 3 (C_3) worn • Brake No. 4 (B_4) worn • One-way clutch No. 1 (F_1) not operating properly

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Last Modified: 3-27-2012	6.4 D	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W7K0MRX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: MONITOR DRIVE PATTERN (2013 FR-S)		

MONITOR DRIVE PATTERN

1. MONITOR DRIVE PATTERN FOR ECT TEST

(a) Perform this drive pattern as one method to simulate the detection conditions of the ECT malfunctions. (The DTCs may not be detected due the actual driving conditions. And some codes may not be detected through this drive pattern.)

HINT:

Preparation for driving

- Warm up the engine sufficiently. (Engine coolant temperature is 60°C (140°F) or higher)

Notice in driving

- Drive the vehicle through all gears.

  Stop → 1st → 2nd → 3rd → 4th → 5th → 6th → 6th (lock-up ON).
- Perform engine brake test in the M position.

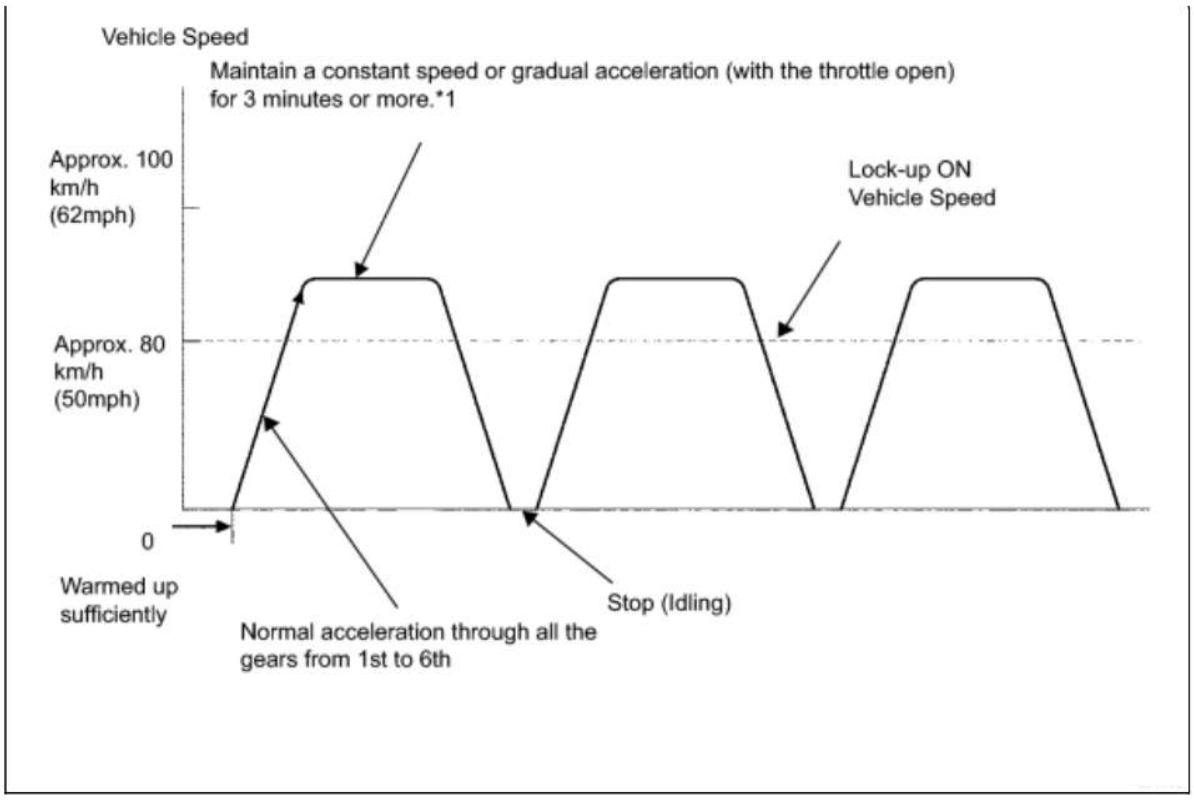
  While driving in the 6(M) position and 6th gear lock-up, shift into the "-" position and down-shift from 6th to 5th, 5th to 4th, 4th to 3rd, 3rd to 2nd, 2nd to 1st.

  Check that the engine brake performs properly whenever down-shift takes place.
- Repeat the above driving pattern three times or more.

NOTICE:

- The monitor status can be checked using Techstream. When using Techstream, monitor status can be found in the "Powertrain / ECT / Data List".
- In the event that the drive pattern must be interrupted (possibly due to traffic conditions or other factors), the drive pattern can be resumed and, in most cases, the monitor can be completed.
- Perform this drive pattern on a level road as much as possible and strictly observe the posted speed limits and traffic laws while driving.

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HINT:

***1: Drive at such a speed in the uppermost gear, to engage lock-up. The vehicle can be driven at a speed lower than that in the above diagram under the lock-up condition.**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000003Q3G03PX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P062F: Internal Control Module EEPROM Error (2013 FR-S)		

DTC	**P062F**	**Internal Control Module EEPROM Error**

DESCRIPTION

When the ignition switch is turned from off to ON, the TCM calculates the integrated values within the TCM, and if these do not match the values stored within the TCM, the DTC is stored.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P062F	1. Ignition switch is turned to ON 2. TCM internal error 3. - 4. 1-trip detection logic	TCM

MONITOR DESCRIPTION

The TCM monitors its internal operation. If the internal operation is malfunctioning, the TCM illuminates the MIL and sets a DTC.

MONITOR STRATEGY

Related DTCs	P062F: Non Volatile Memory (EEPROM)
Required sensors/Components	TCM
Frequency of operation	Once per driving cycle
Duration	1 time
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

Monitor runs whenever following DTCs not present	None
Ignition switch changed from OFF to ON	Yes

TYPICAL MALFUNCTION THRESHOLDS

Calculated sum value of EEPROM	Not (Sum value stored in EEPROM)

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INSPECTION PROCEDURE

NOTICE:

- Perform the universal trip to clear permanent DTCs INFO .
- There is a possibility that the DTC P062F is issued from the ECUs of the TCM. Use Techstream to conduct a health check to confirm which ECU the DTC is issued from and then inspect the related system.

PROCEDURE

1.	**REPLACE TCM**

(a) Replace the TCM INFO .

NEXT ▶ PERFORM THE RESET MEMORY

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000XP108MX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P160A: Internal Control Module Random Access Memory (RAM) Error (2013 FR-S)		

DTC	**P160A**	**Internal Control Module Random Access Memory (RAM) Error**

DESCRIPTION

This compares values calculated by the TCM with the data recorded after calculations when the ignition switch is turned to ON, and if these do not match, then the DTC is stored, and the power is cut to all solenoids (fixed to 4th).

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P160A	1. Ignition switch is turned to ON 2. TCM internal malfunction. When the information recorded inside the TCM differs from that in the same trip while the ignition switch is ON. 3. - 4. 1-trip detection logic	TCM

MONITOR DESCRIPTION

The TCM monitors its internal operation. If the internal operation is malfunctioning, the TCM illuminates the MIL and sets a DTC.

MONITOR STRATEGY

Related DTCs	P160A: Random Access Memory (RAM)
Required sensors/Components	TCM
Frequency of operation	Once per driving cycle
Duration	1 time
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

Ignition switch	OFF to ON

TYPICAL MALFUNCTION THRESHOLDS

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The value that is written to a RAM is different from the value that is read.	Yes

INSPECTION PROCEDURE

NOTICE:

- Perform the universal trip to clear permanent DTCs INFO .
- There is a possibility that the DTC P062F is issued from the ECUs of the TCM. Use Techstream to conduct a health check to confirm which ECU the DTC is issued from and then inspect the related system.

PROCEDURE

1.	**REPLACE TCM**

(a) Replace the TCM INFO .

NEXT PERFORM THE RESET MEMORY

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W8E08YX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0601: Internal Control Module Memory Check Sum Error (2013 FR-S)		

DTC	**P0601**	**Internal Control Module Memory Check Sum Error**

DESCRIPTION

This compares values calculated by the TCM with the data stored within the TCM when the ignition switch is turned to ON, and if these do not match 2 times in series, then prohibits learning. If this continues further, power is cut to all solenoids (fixed to 4th).

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0601	1. Ignition switch is turned to ON 2. TCM internal malfunction 3. - 4. 1-trip detection logic	TCM

MONITOR DESCRIPTION

The TCM monitors its internal operation. If the internal operation is malfunctioning, the TCM illuminates the MIL and sets a DTC.

MONITOR STRATEGY

Related DTCs	P0601: Flash ROM
Required sensors/Components	TCM
Frequency of operation	Turning ignition switch ON or off, or clearing DTC requested
Duration	2 times
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

One of the following conditions is met: Condition (A) or (B)

Condition (A)

Monitor runs whenever following DTCs not present	None
Ignition switch changed from OFF to ON	Yes

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Condition (B)

Monitor runs whenever following DTCs not present	None
Clear DTC request from diagnostic tool was received	Yes

TYPICAL MALFUNCTION THRESHOLDS

Calculated sum data of Flash ROM	Not (Check sum data of Flash ROM)

INSPECTION PROCEDURE

NOTICE:

- Perform the universal trip to clear permanent DTCs INFO .
- There is a possibility that the DTC P062F is issued from the ECUs of the ECM and TCM. Use Techstream to conduct a health check to confirm which ECU the DTC is issued from and then inspect the related system.

PROCEDURE

1.	**REPLACE TCM**

(a) Replace the TCM INFO .

NEXT PERFORM THE RESET MEMORY

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W840V6X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0707,P0708: Transmission Range Sensor "A" Circuit Low (2013 FR-S)		

DTC	**P0707**	**Transmission Range Sensor "A" Circuit Low**

DTC	**P0708**	**Transmission Range Sensor "A" Circuit High**

DESCRIPTION

A signal from the park/neutral position switch assembly input into the TCM detects the shift position. The engine can only be started when the shift lever is in P or N.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0707	1. The output speed sensor SP2 is normal, not learning control prohibited status, and the vehicle speed is 30 km/h or more Not learning control prohibited status 2. All contacts for shift position P, R, N, and D are off 3. Continues for 30 sec. 4. 2-trip detection logic	• Open or short in park/neutral position switch circuit • Park/neutral position switch • TCM
P0708	1. Not learning control prohibited status 2. 2 or more shift positions are detected at the same time 3. Continues for 10 sec. 4. 1-trip detection logic	• Open or short in park/neutral position switch circuit • Park/neutral position switch • TCM

MONITOR DESCRIPTION

These DTCs indicate a problem with the park/neutral position switch and the wire harness in the park/neutral position switch circuit.

The park/neutral position switch detects the shift lever position and sends a signal to the TCM.

For security, the park/neutral position switch detects the shift lever position so that engine can be started only when the shift lever is in the P or N position.

The park/neutral position switch sends a signal to the TCM according to the shift position (P, R, N, D, or M). The TCM determines that there is a problem with the switch or related parts if it receives more than 1

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position signal simultaneously. The TCM will turn on the MIL and store the DTC.

MONITOR STRATEGY

Related DTCs	P0707: Range switch (Open/GND Short) P0708: Range switch (Battery Short)
Required sensors/Components	Park/neutral position switch
Frequency of operation	Continuous
Duration	P0707: 2 sec. x 15 times P0708: 2 sec. x 5 times
MIL operation	P0707: 2 driving cycles P0708: Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

P0707: Range switch (Open/GND Short)

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Vehicle speed sensor (P0722)	No failure

P0708: Range switch (Battery Short)

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active

TYPICAL MALFUNCTION THRESHOLDS

P0707: Range switch (Open/GND Short)

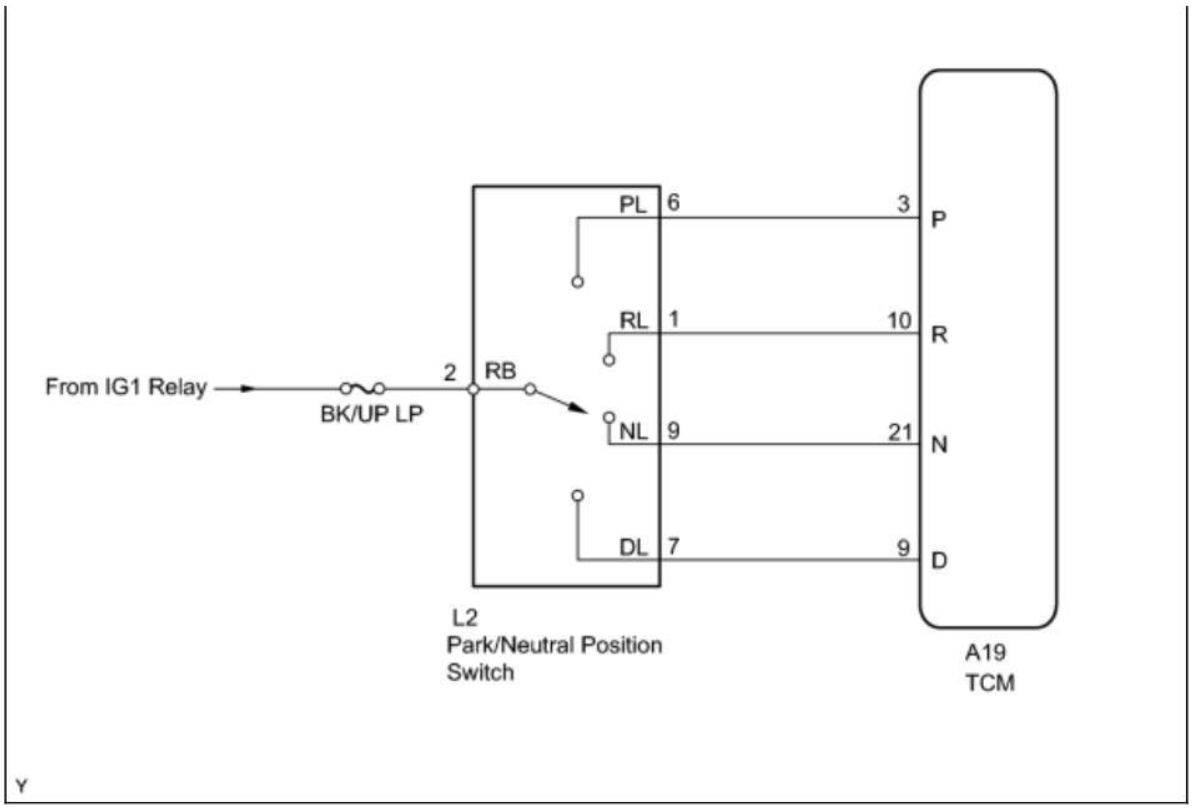
The number of range switch signal input	0
Vehicle speed	18.6 mph or more

P0708: Range switch (Battery Short)

The number of range switch signal input	2 or more

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO **.**

1. DATA LIST

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTICE:

In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

(a) Warm up the engine.

(b) Turn the ignition switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the ignition switch on position.

(e) Turn the Techstream on.

(f) Enter the following menus: Powertrain / ECT / Data List.

(g) According to the display on the Techstream, read the "Data List".

ITEM	MEASUREMENT ITEM/ RANGE (DISPLAY)	NORMAL CONDITION	DIAGNOSTIC NOTE

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Shift SW Status (R Range)	PNP switch status/ ON or OFF	Shift lever position is; R: ON Except R: OFF	When shift lever position displayed on the Techstream differs from actual position, adjustment of PNP switch or shift cable may be incorrect
Shift SW Status (P Range)	PNP switch status/ ON or OFF	Shift lever position is; P: ON Except P: OFF	↑
Shift SW Status (N Range)	PNP switch status/ ON or OFF	Shift lever position is; N: ON Except N: OFF	↑
Shift SW Status (D Range)	PNP switch status/ ON or OFF	Shift lever position is; D and M: ON Except D and M: OFF	↑
Sports Mode Selection SW	Sport mode select switch status/ ON or OFF	Shift lever position is; M, "+" and "-": ON Except M, "+" and "-": OFF	-

NOTICE:

Inspect the fuses circuits related to this system before performing the following inspection procedure.

PROCEDURE

1.	**INSPECT PARK/NEUTRAL POSITION SWITCH ASSEMBLY**

(a) Disconnect the A19 TCM connector.

(b) Measure resistance according to the value(s) in the table below when the shift lever is moved to each position.

Standard resistance:

TESTER CONNECTION	SHIFT POSITION	SPECIFIED CONDITION
A19-3(P) - L2-2(RB)	P	Below 1 Ω
	Except P	10 kΩ or higher
A19-10(R) - L2-2(RB)	R	Below 1 Ω
	Except R	10 kΩ or higher

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A19-21(N) - L2-2(RB)	N	Below 1 Ω
	Except N	10 kΩ or higher
A19-9(D) - L2-2(RB)	D	Below 1 Ω
	Except D	10 kΩ or higher

(c) Connect the A19 TCM connector.

NG ▶ **CHECK HARNESS AND CONNECTOR (PARK/NEUTRAL POSITION SWITCH - TCM)**

OK ▼

2.	**CHECK PARK / NEUTRAL POSITION SWITCH**

(a) Disconnect the L2 park/neutral position switch connector.

(b) Turn the ignition switch on.

(c) Measure the voltage according to the value(s) in the table below.

Standard voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
L2-2(RB) - Body ground	Ignition Switch ON	11 to 14 V

(d) Connect the L2 park/neutral position switch connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

3.	**REPLACE TCM**

(a) Replace the TCM INFO .

NEXT ▶ **PERFORM THE RESET MEMORY**

4.	**CHECK HARNESS AND CONNECTOR (PARK/NEUTRAL POSITION SWITCH - TCM)**

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(a) Disconnect the A19 TCM connector.

(b) Disconnect the L2 park/neutral position switch connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	SHIFT POSITION	SPECIFIED CONDITION
A19-3(P) - L2-6(PL)	Always	Below 1 Ω
A19-10(R) - L2-1(RL)	Always	Below 1 Ω
A19-21(N) - L2-9(NL)	Always	Below 1 Ω
A19-9(D) - L2-7(DL)	Always	Below 1 Ω
A19-3(P) - Body ground()	Always	10 kΩ or higher
A19-10(R) - Body ground	Always	10 kΩ or higher
A19-21(N) - Body ground	Always	10 kΩ or higher
A19-9(D) - Body ground	Always	10 kΩ or higher

(d) Measure the voltage according to the value(s) in the table below.

Standard voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A19-3(P) - Body ground	Ignition Switch ON	Below 1 V
A19-10(R) - Body ground	Ignition Switch ON	Below 1 V
A19-21(N) - Body ground	Ignition Switch ON	Below 1 V
A19-9(D) - Body ground	Ignition Switch ON	Below 1 V

(e) Connect the TCM connector.

(f) Connect the L2 park/neutral position switch connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▶ **REPLACE PARK/NEUTRAL POSITION SWITCH ASSEMBLY**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W7Z0K0X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0711: Transmission Fluid Temperature Sensor "A" Performance (2013 FR-S)		

DTC	**P0711**	**Transmission Fluid Temperature Sensor "A" Performance**

DESCRIPTION

The oil temperature sensor within the valve body detects the oil temperature within the transmission hydraulic control circuit, and inputs into the TCM a signal corresponding to the oil temperature.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0711	1. Detects that the park/neutral position switch assembly is normal, the shift position sensor is in D, the ATF temperature with ignition switch ON is less than 20°C (68°F) , the present ATF temperature is less than 20°C (68°F) , and the vehicle speed is 40 km/h or more 2. If any of the following conditions are met: a. While diagnostic conditions are satisfied, the variation in oil temperature sensor input voltage is 0.05V or less after the ignition switch is turned to on b. While diagnostic conditions are satisfied, the variation in oil temperature sensor input voltage is 0.05V or less 3. Continues for 600 sec. 4. 2-trip detection logic	• Transmission wire (ATF temperature sensor) • Harness and connector

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MONITOR DESCRIPTION

This DTC indicates that there is a problem with output from the automatic transmission fluid (ATF) temperature sensor and that the sensor itself is defective. The ATF temperature sensor converts the ATF temperature to an electrical resistance value. Based on the resistance, the TCM determines the ATF temperature and detects an opens or shorts in the ATF temperature circuit or a fault of the ATF temperature sensor.

After running the vehicle for a certain period, the ATF temperature should increase. If the ATF temperature is below 20°C (68°F) after running the vehicle for a certain period, the TCM interprets this as a fault, and turns on the MIL.

MONITOR STRATEGY

Related DTCs	P0711: ATF Temperature Sensor (Stuck)

Required sensors/Components	ATF temperature sensor
Frequency of operation	Continuous
Duration	10 min.
MIL operation	2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

ALL:

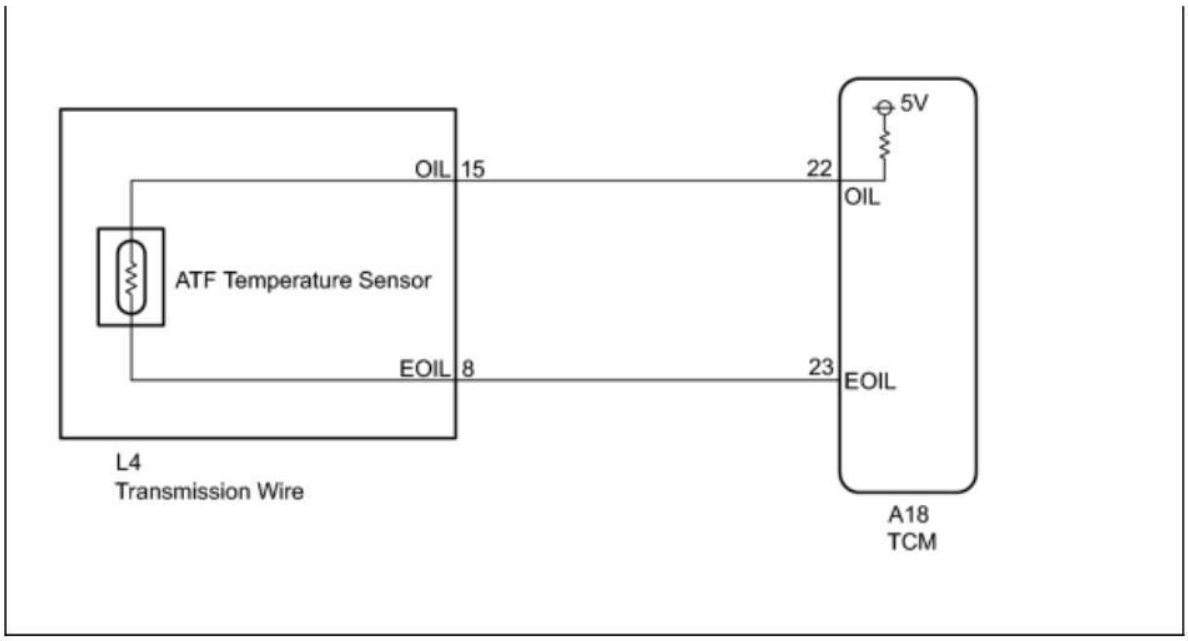
Battery voltage	10.2 V or more
Engine speed	400 rpm or more
CAN BUS OFF (U0073)	No failure
ECM NO ID (U0100)	No failure
Above condition satisfied for	2 sec. or more
ATF temperature sensor output voltage	0.049 V or more and 4.932 V or less
Range switch (P0707,P0708)	No failure
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Range position	D (If range position changes to P, R or N, timer is held.)
Transmission oil temperature	20°C (68°F) or less
Vehicle speed (If the vehicle speed condition is once satisfied, it is effective while satisfying the malfunction criteria.)	24.9 mph or more

TYPICAL MALFUNCTION THRESHOLDS

Absolute change of output voltage	0.049 V or less

WIRING DIAGRAM

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INSPECTION PROCEDURE

1. DATA LIST

NOTICE:

- Perform the universal trip to clear permanent DTCs INFO .
- In the table below, the value listed under "Normal Condition" are reference values.

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

(a) Warm up the engine.

(b) Turn the ignition switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the ignition switch on position.

(e) Turn the Techstream on.

(f) Enter the following menus: Powertrain / ECT / Data List.

(g) According to the display on the Techstream, read the "Data List".

ITEM	MEASUREMENT ITEM/ RANGE (DISPLAY)	NORMAL CONDITION
A/T Oil Temperature 1	ATF Temp. Sensor Value/ min.: -40°C (-40°F) max.: 215°C (419°F)	• After Stall Test; Approx. 80°C (176°F) • Equal to ambient temperature when cold soak

HINT:

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When DTC P0712 is output and Techstream output is -40°C (-40°F), there is a short circuit.

When DTC P0713 is output and Techstream output is 171°C (340°F), there is an open circuit.

TEMPERATURE DISPLAYED	MALFUNCTION
171°C (340°F)	Open circuit
-40°C (-40°F) or more	Short circuit

PROCEDURE

1.	**CHECK OTHER DTCS OUTPUT (IN ADDITION TO DTC P0711)**

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch on position and push the Techstream main switch ON.

(c) When you use Techstream:

Enter the following menus: Powertrain / ECT / Trouble Codes.

(d) Read the DTCs using the Techstream.

Result:

DISPLAY (DTC OUTPUT)	PROCEED TO
Only "P0711" is output	A
"P0711" and other DTCs	B

HINT:

If any other codes besides "P0711" are output, perform troubleshooting for those DTCs first.

B ▶ **GO TO DTC CHART**

A

▼

2.	**CHECK TRANSMISSION FLUID LEVEL**

OK:

Automatic transmission fluid level is correct.

NG ▶ **ADD FLUID**

OK ▶ **REPLACE TRANSMISSION WIRE**

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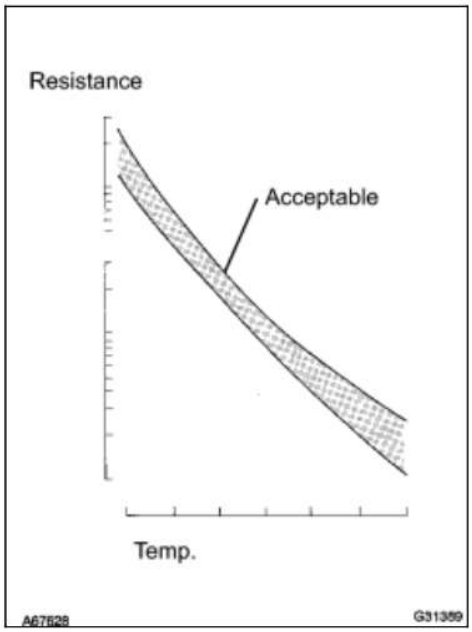
Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W850LRX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0712,P0713: Transmission Fluid Temperature Sensor "A" Circuit Low Input (2013 FR-S)		

DTC	**P0712**	**Transmission Fluid Temperature Sensor "A" Circuit Low Input**

DTC	**P0713**	**Transmission Fluid Temperature Sensor "A" Circuit High Input**

DESCRIPTION

The oil temperature sensor within the valve body detects the oil temperature within the transmission hydraulic control circuit, and inputs into the TCM a signal corresponding to the oil temperature.



DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0712	1. Not learning control prohibited status 2. The oil temperature sensor input voltage is 0.05 V or less 3. Detects a malfunction that continues for 10 seconds 6 times consecutively 4. 1-trip detection logic	• Transmission wire (ATF temperature sensor) • Harness and connector • TCM
	1. Park/neutral position switch assembly is normal,	

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P0713	and shift lever is in D or R for 1 min. or more Not learning control prohibited status 2. The oil temperature sensor input voltage is 4.94 V or more 3. Detects a malfunction that continues for 1 second 12 times consecutively 4. 1-trip detection logic	• Transmission wire (ATF temperature sensor) • Harness and connector • TCM

MONITOR DESCRIPTION

These DTCs indicate an open or short in the automatic transmission fluid (ATF) temperature sensor circuit. The automatic transmission fluid (ATF) temperature sensor converts ATF temperature to an electrical resistance value. Based on the resistance, the TCM determines the ATF temperature, and the TCM detects an open or short in the ATF temperature circuit. If the resistance value of the ATF temperature is less than 0.049 V or more than 4.932 V , the TCM interprets this as a fault in the ATF sensor or wiring. The TCM will turn on the MIL and store the DTC.

MONITOR STRATEGY

Related DTCs	P0712: ATF Temperature Sensor (GND Short) P0713: ATF Temperature Sensor (Battery Short/Open)
Required sensors/Components	ATF temperature sensor
Frequency of operation	Continuous
Duration	P0712: 10 sec. x 6 times P0713: 1 sec. x 12 times
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

P0712: ATF temperature sensor (GND Short)

Battery voltage	10.2 V or more
Engine speed	400 rpm or more
CAN BUS OFF (U0073)	No failure
ECM NO ID (U0100)	No failure
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active

P0713: ATF temperature sensor (Battery Short/Open)

Battery voltage	10.2 V or more
Engine speed	400 rpm or more
CAN BUS OFF (U0073)	No failure
ECM NO ID (U0100)	No failure
Above condition satisfied for	2 sec. or more

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Fail-safe mode (Solenoids power supply is shut down.)	Not active

The following conditions are satisfied.

After ignition switch ON, above condition satisfied for	1 min. or more
Range position	D or R
Range switch (P0707,P0708)	No failure

TYPICAL MALFUNCTION THRESHOLDS

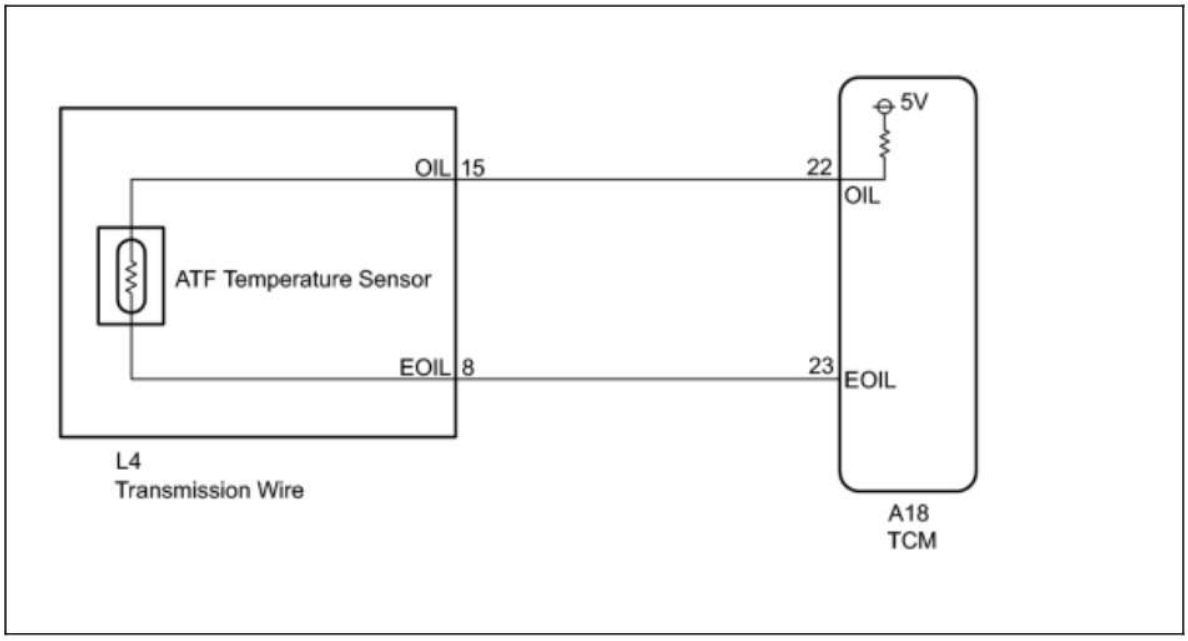
P0712: Range check (Low resistance)

Output voltage	0.049 V or less

P0713: Range check (High resistance)

Output voltage	4.932 V or more

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

1. DATA LIST

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed.

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Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTICE:

In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

(a) Warm up the engine.

(b) Turn the ignition switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the ignition switch on position.

(e) Turn the Techstream on.

(f) Enter the following menus: Powertrain / ECT / Data List.

(g) According to the display on the Techstream, read the "Data List".

ITEM	MEASUREMENT ITEM/ RANGE (DISPLAY)	NORMAL CONDITION
A/T Oil Temperature 1	ATF Temp. Sensor Value/ min.: -40°C (-40°F) max.: 215°C (419°F)	• After Stall Test; Approx. 80°C (176°F) • Equal to ambient temperature when cold soak

HINT:

When DTC P0712 is output and Techstream output is -40°C (-40°F) or more, there is a short circuit.

When DTC P0713 is output and Techstream output is 171°C (340°F), there is an open circuit.

TEMPERATURE DISPLAYED	MALFUNCTION
171°C (340°F)	Open circuit
-40°C (-40°F) or more	Short circuit

PROCEDURE

1.	**INSPECT TRANSMISSION WIRE (ATF TEMPERATURE SENSOR)**

(a) Disconnect the A18 TCM connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-22(OIL) - A18-23(EOIL)	Always	79 Ω to 156 kΩ

(c) Connect the A18 TCM connector.

NG ▶ **CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)**

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OK

2.	**REPLACE TCM**

(a) Replace the TCM INFO .

NEXT **PERFORM THE RESET MEMORY**

3.	**CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)**

(a) Disconnect the A18 TCM connector.

(b) Disconnect the L4 transmission wire connector.

(c) Measure the voltage according to the value(s) in the table below.

Standard voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L4-8(EOIL) - Body ground	Ignition switch on	Below 1 V
L4-15(OIL) - Body ground	Ignition switch on	Below 1 V

(d) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-22(OIL) - L4-15(OIL)	Always	Below 1 Ω
A18-23(EOIL) - L4-8(EOIL)	Always	Below 1 Ω
L4-8(EOIL) - Body ground	Always	10 kΩ or higher
L4-15(OIL) - Body ground	Always	10 kΩ or higher

(e) Connect the A18 TCM connector.

(f) Connect the L4 transmission wire connector.

NG **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK **REPAIR OR REPLACE TRANSMISSION WIRE**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W7Y08RX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0717: Turbine Speed Sensor Circuit No Signal (2013 FR-S)		

DTC	**P0717**	**Turbine Speed Sensor Circuit No Signal**

DESCRIPTION

The input speed sensor NT inputs signal into the TCM as a signal of the input axis revolutions.

The TCM carries out shift timing control based upon signals from the input speed sensor NT and the output speed sensor SP2.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0717	1. The shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2, SLT), output speed sensor SP2 and shift position sensor are normal. While the vehicle is driven with shift lever in D, when the input speed sensor NT revolutions calculated from the shift solenoid valve SP2 are 550 rpm or more. (2.5 seconds or more have elapsed after moving the shift lever to D. However, if there is a malfunction with the oil temperature sensor, or the oil temperature is 20°C (68°F) or less, then 10 seconds or more after moving the shift lever to D) 2. While the shift solenoid valve SP2 outputs 12 pulses, the input speed sensor NT does not detect even 1 pulse. 3. Detected 500 times consecutively. 4. 1-trip detection logic	• Input speed sensor NT • TCM • Harness and connector

MONITOR DESCRIPTION

This DTC indicates that pulse is not output from the input speed sensor NT or is output only little. The input speed sensor NT terminal of the TCM detects the revolving signal from input speed sensor NT (input RPM). The TCM outputs a gearshift signal comparing the input speed sensor NT with the output speed sensor SP2.

While the vehicle is operating in the shift position of D, the output shaft revolution is 550rpm or more * , the TCM detects the trouble, illuminates the MIL and stores the DTC.

*: The engine speed is 400 rpm or more.

MONITOR STRATEGY

Related DTCs	P0717: Turbine Shaft Speed Sensor
Required sensors/Components	Speed sensor (NT)

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Frequency of operation	Continuous
Duration	500 count
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

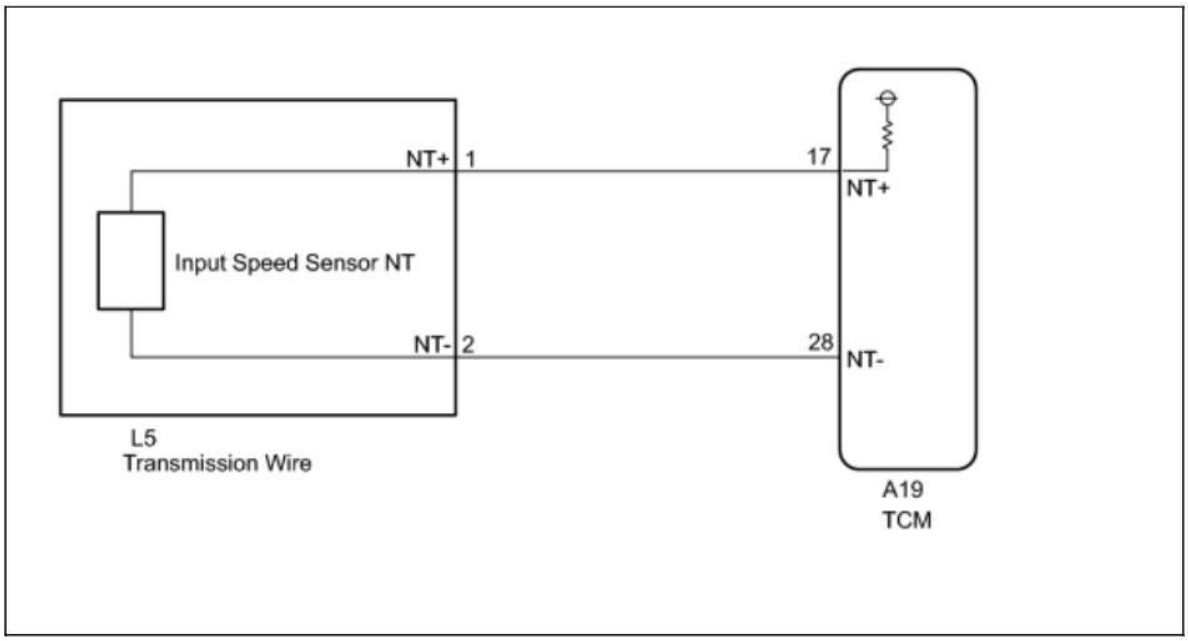
Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Engine speed	400 rpm or more
CAN BUS OFF (U0073)	No failure
ECM NO ID (U0100)	No failure
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Vehicle speed sensor (P0722)	No failure
Range switch (P0707,P0708)	No failure
Range position	D
Turbine shaft speed calculated from vehicle speed.	550 rpm or more
Transmission is not in the shift control.	Yes
Transmission is not in the gear shift control.	Yes
Transmission is not in the diagnostic service control.	Yes
Linear solenoid 1 (P0961,P0962,P0963)	No failure
Linear solenoid 2 (P0965,P0966,P0967)	No failure
Line pressure linear solenoid (P2720,P2721,P2719)	No failure
Shift solenoid 1 (P0973,P0974)	No failure
Shift solenoid 2 (P0976,P0977)	No failure
Shift solenoid 3 (P0979,P0980)	No failure
Shift solenoid 4 (P0982,P0983)	No failure
SR solenoid (P0985,P0986)	No failure
Engine torque signal	No failure
Elapsed time after selecting D range.	10 sec. or more (at ATF temperature is 20°C (68°F) or less, or ATF temperature sensor is failure)
	2.5 sec. or more (at ATF temperature is 20°C (68°F) or more, and ATF temperature sensor is no failure)

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TYPICAL MALFUNCTION THRESHOLDS

Turbine shaft speed sensor pulse while detecting vehicle speed sensor signal 12 pulse.	0 pulse

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

1. DATA LIST

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTICE:

In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

(a) Warm up the engine.

(b) Turn the ignition switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the ignition switch on position.

(e) Turn the Techstream on.

(f) Enter the following menus: Powertrain / ECT / Data List.

(g) According to the display on the Techstream, read the "Data List".

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ITEM	MEASUREMENT ITEM/ RANGE (DISPLAY)	NORMAL CONDITION
SPD (NT)	Input shaft speed/ Min.: 0 rpm Max.: 12,750 rpm	**HINT:** **Lock-up is** • ON (after warming up engine): Input turbine speed (NT) is equal to engine speed • OFF (idling with shift lever on N): Input turbine speed (NT) is nearly equal to engine speed

HINT:

- SPD (NT) is always 0 while driving:

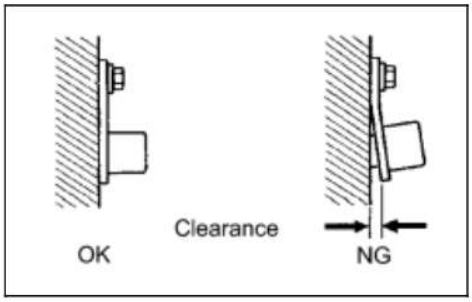
  Open or short in the sensor or circuit.
- SPD (NT) is always more than 0 and less than 300 rpm while driving the vehicle at 50 km/h (31 mph) or more:

  Sensor trouble, improper installation, or intermittent connection trouble of the circuit.

PROCEDURE

1.	**INSPECT SPEED SENSOR INSTALLATION**

INFO



(a) Check the input speed sensor NT installation.

OK:
The installation bolt is tightened properly and there is no clearance between the sensor and transmission case.

NG ▶ **SECURELY INSTALL SPEED SENSOR OR REPLACE SPEED SENSOR**

OK ▼

2.	**INSPECT INPUT SPEED SENSOR NT**

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(a) Disconnect the L5 speed sensor connector.

(b) Perform inspection of the input speed sensor NT. INFO

(c) Connect the L5 speed sensor connector.

NG ▶ **REPLACE SPEED SENSOR (NT)**

OK ▼

3.	CHECK HARNESS AND CONNECTOR (SPEED SENSOR - TCM)

(a) Disconnect the A19 TCM connector.

(b) Disconnect the L5 speed sensor connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L5-1(NT+) - A19-17(NT+)	Always	Below 1 Ω
L5-2(NT-) - A19-28(NT-)	Always	Below 1 Ω
L5-1(NT+) - Body ground	Always	10 kΩ or higher
L5-2(NT-) - Body ground	Always	10 kΩ or higher

(d) Connect the A19 TCM connector.

(e) Connect the L5 speed sensor connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

4.	REPLACE TCM

(a) Replace the TCM INFO .

PERFORM THE RESET MEMORY

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NEXT



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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W880OGX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0722: Output Speed Sensor Circuit No Signal (2013 FR-S)		

DTC	**P0722**	**Output Speed Sensor Circuit No Signal**

DESCRIPTION

The output speed sensor SP2 inputs signal into the TCM as a signal of the output axis revolutions.

The TCM carries out shift timing control based upon signals from the output speed sensor SP2 and the input speed sensor NT.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0722	1. The shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2, SLT), input speed sensor NT and shift position sensor are normal With the shift lever is in D, driving in 1st gear 6 km/h or more, in 2nd gear 9 km/h or more, in 3rd gear 13 km/h or more, in 4th gear 18 km/h or more, in 5th gear 25 km/h or more, and in 6th gear, 30 km/h or more. (2.5 seconds or more have elapsed after moving the shift lever to D. However, if there is a malfunction with the oil temperature sensor, or the oil temperature is 20°C (68°F) or less, then 10 seconds or more after moving the shift lever to D) 2. While the input speed sensor NT outputs 12 pulses, the output speed sensor SP2 does not detect even 1 pulse. 3. Detected 500 times consecutively. 4. 1-trip detection logic	• Open or short in output speed sensor SP2 circuit • Output speed sensor SP2 • TCM • Harness and connector

MONITOR DESCRIPTION

This DTC indicates that pulse is not output from the input speed sensor NT or is output only little. The input speed sensor NT terminal of the TCM detects the revolving signal from input speed sensor NT. The TCM outputs a gearshift signal comparing the input speed sensor NT with the output speed sensor SP2.

While the vehicle is operating in the shift position of D, the output shaft revolution is 300 rpm or more *, the TCM detects the trouble, illuminates the MIL and stores the DTC.

*: The engine speed is 400 rpm or more.

MONITOR STRATEGY

Related DTCs	P0722: Vehicle Speed Sensor

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Required sensors/Components	Speed sensor (SP2)
Frequency of operation	Continuous
Duration	500 count
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

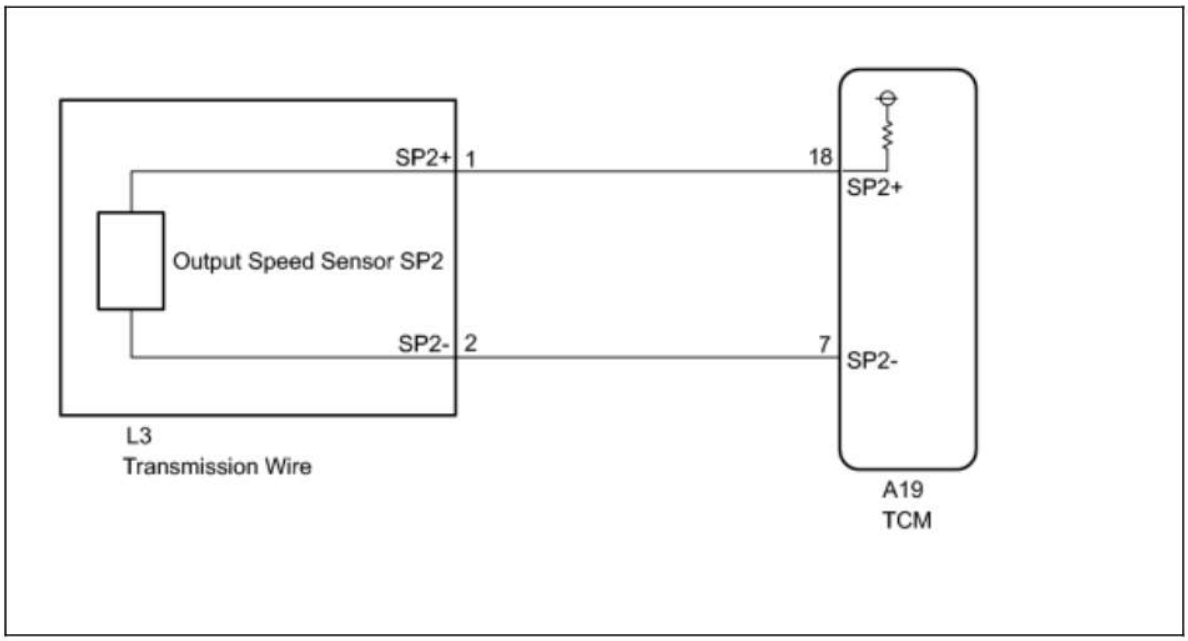
Battery voltage	10.2 V or more
Engine speed	400 rpm or more
CAN BUS OFF (U0073)	No failure
ECM NO ID (U0100)	No failure
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Turbine shaft speed sensor (P0717)	No failure
Transmission output speed calculated from turbine shaft speed.	300 rpm or more
Range switch (P0707,P0708)	No failure
Range position	D
Transmission is not in the shift control.	No
Transmission is not in the gear shift control.	No
Transmission is not in the diagnostic service control.	No
Linear solenoid 1 (P0961,P0962,P0963)	No failure
Linear solenoid 2 (P0965,P0966,P0967)	No failure
Line pressure linear solenoid (P2719,P2720,P2721)	No failure
Shift solenoid 1 (P0973,P0974)	No failure
Shift solenoid 2 (P0976,P0977)	No failure
Shift solenoid 3 (P0979,P0980)	No failure
Shift solenoid 4 (P0982,P0983)	No failure
SR solenoid (P0985,P0986)	No failure
Engine torque signal	No failure
Elapsed time after selecting D range.	10 sec. or more (at ATF temperature is 20°C (68°F) or less, or ATF temperature sensor is failure)
	2.5 sec. or more (at ATF temperature is 20°C (68°F) or more, and ATF temperature sensor is no failure)

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TYPICAL MALFUNCTION THRESHOLDS

Vehicle speed sensor pulse while detecting turbine shaft speed sensor signal 12 pulse.	0 pulse

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO **.**

1. DATA LIST

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTICE:

In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

(a) Warm up the engine.

(b) Turn the ignition switch OFF.

(c) Connect the Techstream to the DLC3.

(d) Turn the ignition switch to ON position.

(e) Turn the Techstream on.

(f) Enter the following menus: Powertrain / ECT / Data List.

(g) According to the display on the Techstream, read the "Data List".

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ITEM	MEASUREMENT ITEM/ RANGE (DISPLAY)	NORMAL CONDITION
SPD (SP2)	Output shaft speed/ Min.: 0 km/h (0 mph) Max.: 255 km/h (158 mph)	**HINT:** **Vehicle stopped: 0 km/h (0 mph) (output shaft speed is equal to vehicle speed)**

HINT:

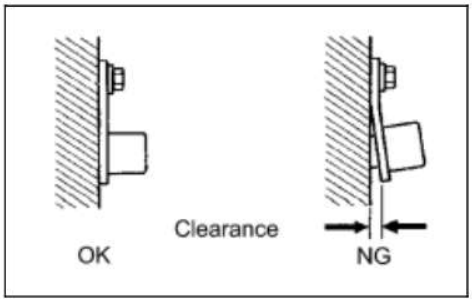
- SPD (SP2) is always 0 while driving:

  Open or short in the sensor or circuit.
- SPD (SP2) is always more than 0 and less than 300 rpm while driving the vehicle at 50 km/h (31 mph) or more:

  Sensor trouble, improper installation, or intermittent connection trouble of the circuit.

PROCEDURE

1.	**INSPECT SPEED SENSOR INSTALLATION**



(a) Check the output speed sensor SP2 installation.

OK:

The installation bolt is tightened properly and there is no clearance between the sensor and transmission case.

NG ▶ **SECURELY INSTALL SPEED SENSOR OR REPLACE SPEED SENSOR**

OK ▼

2.	**INSPECT OUTPUT SPEED SENSOR SP2**

(a) Disconnect the speed sensor connector.

(b) Perform inspection of the output speed sensor SP2 INFO .

(c) Connect the speed sensor connector.

REPLACE OUTPUT SPEED SENSOR SP2

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NG ▶

OK ▼

3.	CHECK HARNESS AND CONNECTOR (OUTPUT SPEED SENSOR SP2 - TCM)

(a) Disconnect the A19 TCM connector.

(b) Disconnect the L3 output speed sensor SP2 connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L3-1(SP2+) - A19-18(SP2+)	Always	Below 1 Ω
L3-2(SP2-) - A19-7(SP2-)	Always	Below 1 Ω
A19-18(SP2+) - Body ground	Always	10 kΩ or higher
A19-7(SP2-) - Body ground	Always	10 kΩ or higher

(d) Connect the A19 TCM connector.

(e) Connect the L3 output speed sensor SP2 connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▼

4.	REPLACE TCM

(a) Replace the TCM INFO .

NEXT ▶ PERFORM THE RESET MEMORY

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W8I05FX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0729: Gear 6 Incorrect Ratio (2013 FR-S)		

DTC	**P0729**	**Gear 6 Incorrect Ratio**

SYSTEM DESCRIPTION

The TCM uses signals from the output speed sensor SP2 and input speed sensor NT to detect the actual gear position (1st, 2nd, 3rd, 4th, 5th or 6th gear). Then the TCM compares the actual gear with the shift schedule in the TCM memory to detect mechanical problems of the shift solenoid valves, valve body or automatic transmission (clutch, brake or gear, etc.).

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0729	1. While driving with the shift lever in D, the ATF temperature 20°C (68°F) or more, and coolant temperature 40°C (104°F) or more. (However, abnormalities with the shift solenoid valve S1, S2, S3, S4, SR, SL1, SL2, SLT), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature sensor, air flow sensor, electronically control throttle, and accelerator pedal sensor are not detected) 2. If any of the following conditions are met: a. When the TCM commands shifting to 5th, the actual gear position is also switched to 5th. b. When the TCM commands 6th gear, the actual position is switched to 4th. 3. - 4. 1-trip detection logic	• Transmission valve body assy • Shift solenoid valve SLT

HINT:

- Gear positions in the event of a solenoid valve mechanical problem:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
Actual gear position under malfunction	↑	↑	↑	↑	↑	4th

- Gear position during fail-safe operation:

  If any malfunction is detected, the TCM changes into the fail-safe mode to shift into the gear positions as shown in the table below.

Gear position under normal conditions	1st	2nd	3rd	4th	5th	6th

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Actual gear position under fail-safe mode	↑	↑	↑	4th	5th	5th

MONITOR DESCRIPTION

The TCM commands gear shifts by turning the shift solenoid valves "ON/OFF" and switching oil pressure to the valves in the valve body.

The DTC indicates that the sequence valve is locked in the direction the spring stretches and that shifting to the 6th gear is impossible.

MONITOR STRATEGY

Related DTCs	P0729: 6th Error
Required sensors/Components	Sequence valve
Frequency of operation	Continuous
Duration	1 count
MIL operation	2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

The following items are common to all conditions below.

Battery voltage	10.5 V or more
Engine speed	400 rpm or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Above condition satisfied for	2 sec. or more
Turbine shaft speed sensor(P0717)	No failure
Vehicle speed sensor(P0722)	No failure
Shift solenoid 1 (P0973,P0974)	No failure
Shift solenoid 2 (P0976,P0977)	No failure
Shift solenoid 3 (P0979,P0980)	No failure
Shift solenoid 4 (P0982,P0983)	No failure
SR solenoid (P0985,P0986)	No failure
Linear solenoid 1 (P0961,P0962,P0963)	No failure
Linear solenoid 2 (P0965,P0966,P0967)	No failure
Line pressure linear solenoid (P2720, P2721,P2719)	No failure
ATF temperature sensor (P0711,P0712,P0713)	No failure
Range switch (P0707,P0708)	No failure
CAN BUS OFF(U0073)	No failure
ECM NO ID(U0100)	No failure
Engine coolant temperature sensor	No failure

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Engine torque signal	No failure
Throttle position sensor	No failure
Accelerator pedal position sensor	No failure
Range position	D
Elapsed time after selecting D range	4 sec. or more
Engine coolant temperature	40°C(104°F) or more
ATF temperature	20°C(68°F) or more

TYPICAL MALFUNCTION THRESHOLDS

Compare target gear instructed from TCM and gear ratio calculated from turbine shaft speed and vehicle speed.

Both of the following condition are met: Condition (A) and (B)

Condition (A)

Shift position	D position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	5th

Condition (B)

Shift position	D position
Target gear position.	6th
Gear ratio calculated from turbine shaft speed and vehicle speed.	4th

Both of the following condition are met: Condition (C) and (D)

Condition (C)

Shift position	M position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	5th

Condition (D)

Shift position	M position
Target gear position.	6th
Gear ratio calculated from turbine shaft speed and vehicle speed.	4th

INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

PROCEDURE

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1.	CHECK OTHER DTCS OUTPUT (IN ADDITION TO DTC P0729)

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch on position and push the Techstream main switch ON.

(c) Read the DTCs using the Techstream INFO .

Result:

DISPLAY (DTC OUTPUT)	PROCEED TO
Only "P0729 and P2714" are output	A
"P0729 and P0714" and other DTCs	B

B ▶ **GO TO DTC CHART**

A ▼

2.	CHECK THE GEAR POSITION

(a) Drive the vehicle with shift lever in the M.

(b) Check the shift position.

TCM gearshift	1st	2nd	3rd	4th	5th	6th
Actual gear position under malfunction	↑	↑	↑	↑	↑	4th

HINT:

- Perform the test at the normal operating ATF (Automatic Transmission Fluid) temperature: 60 to 90°C (140 to 194°F)
- Perform under condition that A/C is OFF.

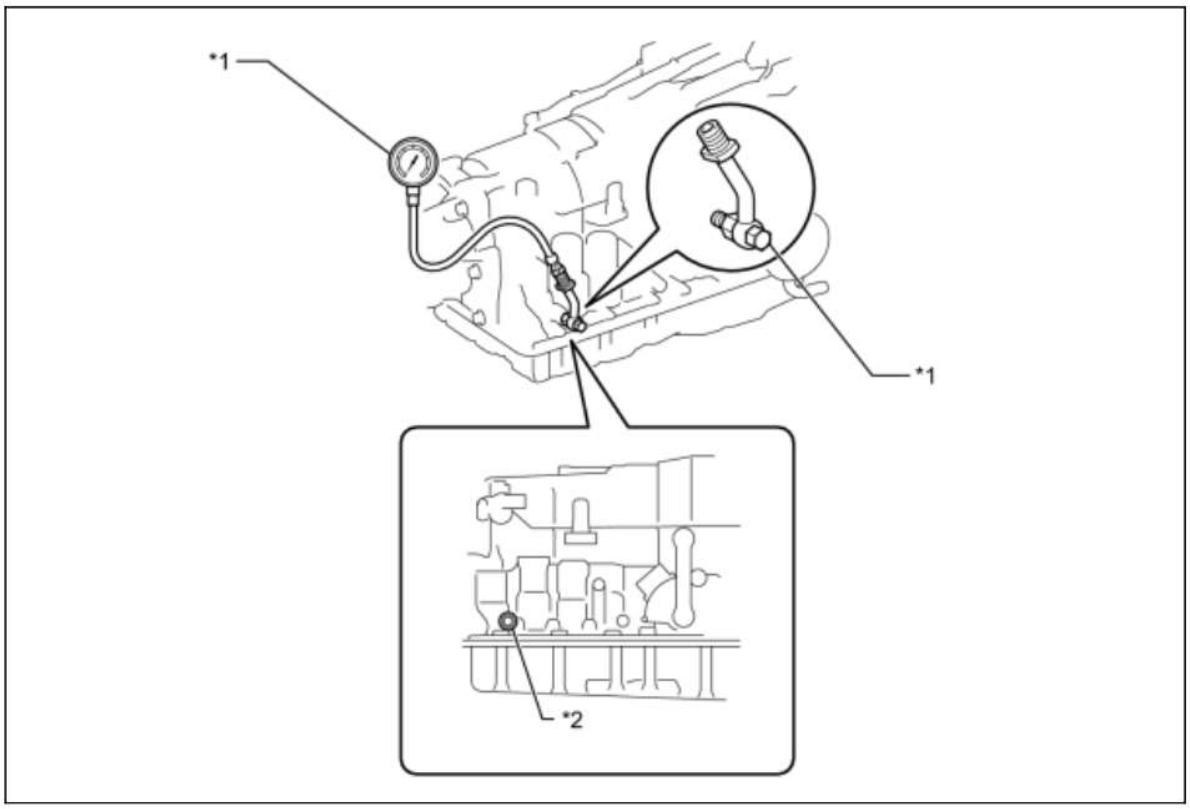
OK:
Gear position changes.

NG ▶ **REPLACE TRANSMISSION VALVE BODY ASSEMBLY**

OK ▼

3.	HYDRAULIC TEST

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Text in Illustration

*1	SST	*2	Test Plug

NOTICE:

- Perform the test at the normal operating ATF (Automatic Transmission Fluid) temperature: 60 to 90°C (140 to 194°F)
- The line pressure test should always be carried out in pairs. One technician should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is performing the test.
- Be careful to prevent SST hose from interfering with the exhaust pipe.
- This Check must be conducted after checking and adjusting engine.
- Perform under condition that A/C is OFF.
- When conducting stall test, do not continue more than 5 seconds.

(a) Warm up the ATF (Automatic Transmission Fluid).

(b) Lift the vehicle up.

(c) Remove the test plug on the transmission case center right side and connect SST.

SST: 09992-00095

09992-00231

09992-00271

(d) Lower the vehicle.

(e) Fully apply the parking brake and check the 4 wheels.

(f) Start the engine and check idling speed.

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(g) Keep your left foot pressing firmly on the brake pedal and shift into D position.

(h) Measure the line pressure when the engine is idling.

(i) Depress the accelerator pedal all the way down. Quickly read the highest line pressure when engine speed reaches stall speed.

(j) In the same manner, do the test in R position.

Specified line pressure:

CONDITION	D POSITION KPA (KGF / CM ^{2} , PSI)	R POSITION KPA (KGF / CM ^{2} , PSI)
Idling	350 to 430 kPa (3.6 to 4.4 kgf/cm ^{2} , 51 to 62 psi)	760 to 950 kPa (7.7 to 9.7 kgf/cm ^{2} , 110 to 138 psi)
Stall test	1200 to 1380 kPa (12.5 to 14.0 kgf/cm ^{2} , 174 to 200 psi)	1410 to 1630 kPa (14.4 to 16.6 kgf/cm ^{2} , 204 to 236 psi)

NG ▶ **REPLACE SHIFT SOLENOID VALVE SLT**

OK ▼

4.	CLEAR THE DTC AND RUNNING TEST

(a) Clear the DTC, and check DTC again after conducting the "MONITOR DRIVE PATTERN FOR ECT TEST" INFO .

OK:
No DTC code

NG ▶ **REPLACE TRANSMISSION VALVE BODY ASSEMBLY**

OK ▶ **END**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W8J0ADX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0751,P0752: Shift Solenoid "A" Performance (Shift Solenoid Valve S1) (2013 FR-S)		

DTC	**P0751**	**Shift Solenoid "A" Performance (Shift Solenoid Valve S1)**

DTC	**P0752**	**Shift Solenoid "A" Stuck ON (S1 Solenoid)**

SYSTEM DESCRIPTION

The TCM carries out detection of the gear position based upon signals from the input speed sensor NT and the output speed sensor SP2. Subsequently, if the gear position as detected by the TCM is different to the commanded gear position, then a related solenoid valve, valve body, or automatic transmission mechanical problem is detected.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0751	1. While driving with the shift lever in D, the ATF temperature 20°C (68°F) or more, and coolant temperature 40°C (104°F) or more. (However, abnormalities with the shift solenoid valve S1, S2, S3, S4, SR, SL1, SL2, SLT), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature sensor, air flow sensor, electronically control throttle, and accelerator pedal sensor are not detected) 2. The following conditions are met: a. When the TCM commands shifting to 5th, the actual gear position is also switched to 5th. b. When the TCM commands shifting to 6th gear, the engine overruns (in neutral) 3. - 4. 2-trip detection logic	• Shift solenoid valve S1 • Harness or connector • Transmission wire • TCM
P0752	1. While driving with the shift lever in D, the ATF temperature 20°C (68°F) or more, and coolant temperature 40°C (104°F) or more. (However, abnormalities with the shift solenoid valve S1, S2, S3, S4, SR, SL1, SL2, SLT), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature sensor, air flow sensor, electronically control throttle, and accelerator pedal sensor are not detected) 2. The following conditions are met: a. - During driving with the shaft lever in D, when	• Shift solenoid valve S1 • Harness or connector • Transmission

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	the TCM commands shifting to 1st gear, the actual gear position is shifted to 2nd. b. - When the TCM commands shifting to 5th gear, the actual gear position is also shifted to 5th 3. - 4. 2-trip detection logic	wire • TCM

HINT:

- Gear positions in the event of a solenoid valve mechanical problem:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
*1: Actual gear position under S1 stuck ON malfunction	2nd	2nd	↑	↑	↑	↑
*2: Actual gear position under S1 stuck OFF malfunction	1st	2nd	↑	↑	↑	N*

N*: Neutral

- Gear position during fail-safe operation:

If any malfunction is detected, the TCM changes into the fail-safe mode to shift into the gear positions as shown in the table below.

Gear position under normal conditions	1st	2nd	3rd	4th	5th	6th
*1: Actual gear position under fail safe mode when S1 stuck ON malfunction	2nd	2nd	↑	↑	↑	↑
*2: Actual gear position under fail safe mode when S1 stuck OFF malfunction	1st *3	2nd *3	↑	3rd	3rd	3rd

*3: Under engine braking downshifting to 1st or 2nd gear is prohibited.

MONITOR DESCRIPTION

This DTC indicates "stuck ON malfunction" or "stuck OFF malfunction" of the shift solenoid valve S1.

The TCM commands gear shifts by turning the shift solenoid valves "ON/OFF". When the gear position commanded by the TCM and the actual gear position are not the same, the TCM illuminates the MIL and stores the DTC.

MONITOR STRATEGY

Related DTCs	P0751: Shift Solenoid 1 (OFF Stuck) P0752: Shift Solenoid 1 (ON Stuck)
Required sensors/Components	Shift solenoid valve S1
Frequency of operation	Continuous
Duration	1 count
MIL operation	2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

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The following items are common to all conditions below.

Battery voltage	10.5 V or more
Engine speed	400 rpm or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Turbine shaft speed sensor (P0717)	No failure
Vehicle speed sensor (P0722)	No failure
Shift solenoid 1 (P0973,P0974)	No failure
Shift solenoid 2 (P0976,P0977)	No failure
Shift solenoid 3 (P0979,P0980)	No failure
Shift solenoid 4 (P0982,P0983)	No failure
SR solenoid (P0985,P0986)	No failure
Linear solenoid 1 (P0961,P0962,P0963)	No failure
Linear solenoid 2 (P0965,P0966,P0967)	No failure
Line pressure linear solenoid (P2720,P2721,P2719)	No failure
ATF temperature sensor (P0711,P0712,P0713)	No failure
Range switch (P0707,P0708)	No failure
CAN BUS OFF (U0073)	No failure
ECM NO ID (U0100)	No failure
Engine coolant temperature sensor	No failure
Engine torque signal	No failure
Throttle position sensor	No failure
Accelerator pedal position sensor	No failure
Range position	D
Elapsed time after selecting D range	4 sec. or more
Engine coolant temperature	40°C (104°F) or more
ATF temperature	20°C (68°F) or more

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TYPICAL MALFUNCTION THRESHOLDS

P0751: Shift solenoid 1 (OFF Stuck)

Compare target gear instructed from TCM and gear ratio calculated from turbine shaft speed and vehicle speed.

Both of the following condition are met: Condition (A) and (B)

Condition (A)

Shift position	D position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	5th

Condition (B)

Shift position	D position
Target gear position.	6th
Gear ratio calculated from turbine shaft speed and vehicle speed.	Neutral

Both of the following condition are met: Condition (C) and (D)
Condition (C)

Shift position	M position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	5th

Condition (D)

Shift position	M position
Target gear position.	6th
Gear ratio calculated from turbine shaft speed and vehicle speed.	Neutral

P0752: Shift solenoid 1 (ON Stuck)

Compare target gear instructed from TCM and gear ratio calculated from turbine shaft speed and vehicle speed.

Both of the following condition are met: Condition (A) and (B)
Condition (A)

Shift position	D position
Target gear position.	1st
Gear ratio calculated from turbine shaft speed and vehicle speed.	2nd

Condition (B)

Shift position	D position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	5th

Both of the following condition are met: Condition (C) and (D)
Condition (C)

Shift position	M position
Target gear position.	1st
Gear ratio calculated from turbine shaft speed and vehicle speed.	2nd

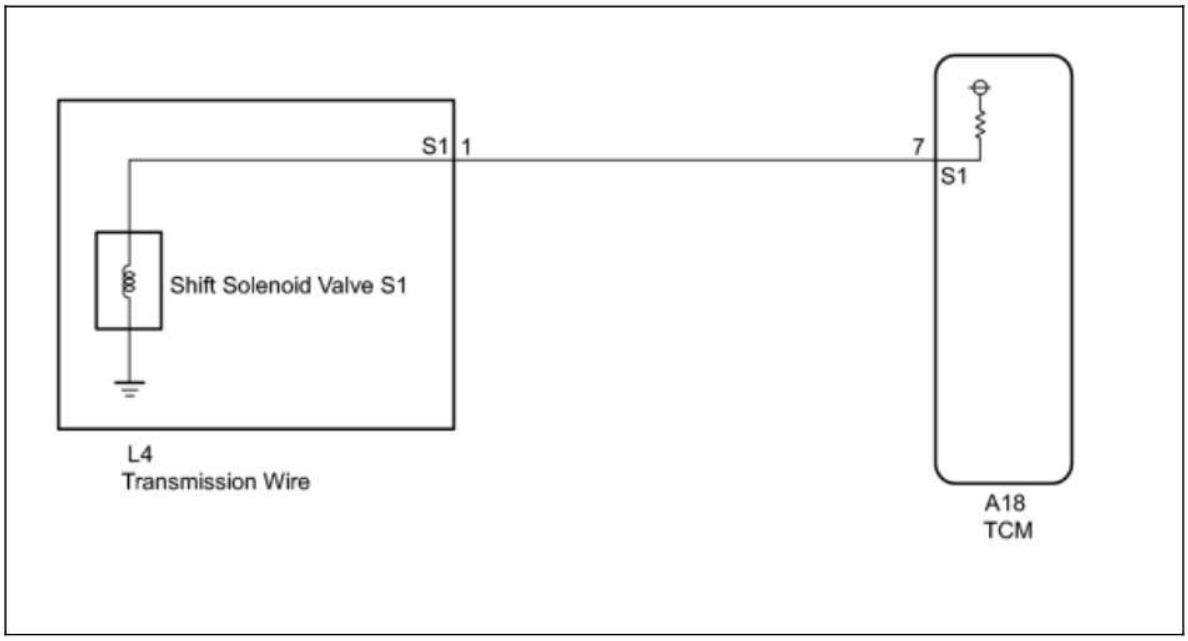
Condition (D)

Shift position	M position

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Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	5th

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

1. CHECK THE SHIFT POSITION

(a) Drive the vehicle with shift lever in the M.

(b) Check the shift position.

HINT:

- The shift solenoid valve S1 is turned on/off normally when the shift lever is in the D position:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
Shift solenoid valve S1	OFF	ON	ON	ON	ON	ON

PROCEDURE

1.	**CHECK OTHER DTCS OUTPUT**

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch on position and push the Techstream main switch ON.

(c) Read the DTCs using the Techstream INFO .

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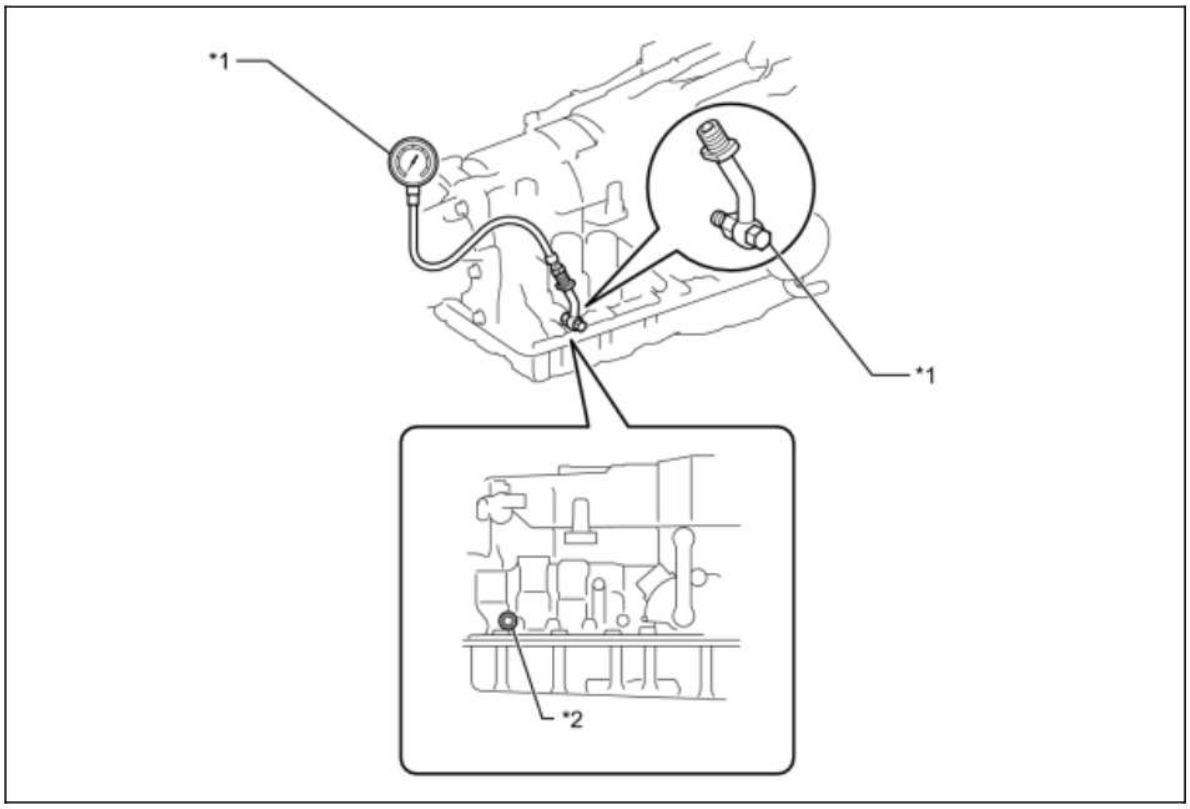
Result:

DISPLAY (DTC OUTPUT)	PROCEED TO
"P0751 and P2714" or "P0752 and P0767" are output	A
"P0751 and P2714" or "P0752 and P0767" and other DTCs	B

B ▶ GO TO DTC CHART

A ▼

2.	**HYDRAULIC TEST**



Text in Illustration

*1	SST	*2	Test Plug

NOTICE:

- Perform the test at the normal operating ATF (Automatic Transmission Fluid) temperature: 60 to 90°C (140 to 194°F)
- The line pressure test should always be carried out in pairs. One technician should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is performing the test.
- Be careful to prevent SST hose from interfering with the exhaust pipe.

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- This Check must be conducted after checking and adjusting engine.
- Perform under condition that A/C is OFF.
- When conducting stall test, do not continue more than 5 seconds.

(a) Warm up the ATF (Automatic Transmission Fluid).

(b) Lift the vehicle up.

(c) Remove the test plug on the transmission case center right side and connect SST.

SST: 09992-00095

09992-00231

09992-00271

(d) Lower the vehicle.

(e) Fully apply the parking brake and check the 4 wheels.

(f) Start the engine and check idling speed.

(g) Keep your left foot pressing firmly on the brake pedal and shift into D position.

(h) Measure the line pressure when the engine is idling.

(i) Depress the accelerator pedal all the way down. Quickly read the highest line pressure when engine speed reaches stall speed.

(j) In the same manner, do the test in R position.

Specified line pressure:

CONDITION	D POSITION KPA (KGF / CM ^{2} , PSI)	R POSITION KPA (KGF / CM ^{2} , PSI)
Idling	350 to 430 kPa (3.6 to 4.4 kgf/cm ^{2} , 51 to 62 psi)	760 to 950 kPa (7.7 to 9.7 kgf/cm ^{2} , 110 to 138 psi)
Stall test	1200 to 1380 kPa (12.5 to 14.0 kgf/cm ^{2} , 174 to 200 psi)	1410 to 1630 kPa (14.4 to 16.6 kgf/cm ^{2} , 204 to 236 psi)

NG ▶ **REPLACE SHIFT SOLENOID VALVE SLT**

OK ▼

3.	**INSPECT SHIFT SOLENOID VALVE S1**

(a) Remove the shift solenoid valve S1 INFO .

(b) Perform inspection of the shift solenoid valve S1 INFO .

NG ▶ **REPLACE SHIFT SOLENOID VALVE S1**

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OK

4.	**INSPECT TRANSMISSION VALVE BODY ASSEMBLY**

(a) Perform inspection of the transmission valve body assembly INFO .

OK:

There are no foreign objects on each valve.

NG ▶ **REPLACE TRANSMISSION VALVE BODY ASSEMBLY**

OK ▶ **REPLACE AUTOMATIC TRANSMISSION ASSEMBLY**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W800A5X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0756,P0757: Shift Solenoid "B" Performance (Shift Solenoid Valve S2) (2013 FR-S)		

DTC	**P0756**	**Shift Solenoid "B" Performance (Shift Solenoid Valve S2)**

DTC	**P0757**	**Shift Solenoid "B" Stuck ON (S2 Solenoid)**

SYSTEM DESCRIPTION

The TCM carries out detection of the gear position based upon signals from the input speed sensor NT and the output speed sensor SP2. Subsequently, if the gear position as detected by the TCM is different to the commanded gear position, then a related solenoid valve, valve body, or automatic transmission mechanical problem is detected.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0756	1. While driving with the shift lever in D, the ATF temperature 20°C (68°F) or more, and coolant temperature 40°C (104°F) or more. (However, abnormalities with the shift solenoid valve S1, S2, S3, S4, SR, SL1, SL2, SLT), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature sensor, air flow sensor, electronically control throttle, and accelerator pedal sensor are not detected) 2. The following conditions are met: a. When the TCM commands shifting to 1st, the actual gear position is shifted to 3rd. b. When the TCM commands shifting to 6th, the actual gear position is shifted to 5th. 3. - 4. 2-trip detection logic	• Shift solenoid valve S2 • Transmission wire • Harness and connector • TCM
P0757	1. While driving with the shift lever in D, the ATF temperature 20°C (68°F) or more, and coolant temperature 40°C (104°F) or more. (However, abnormalities with the shift solenoid valve S1, S2, S3, S4, SR, SL1, SL2, SLT), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature sensor, air flow sensor, electronically control throttle, and accelerator pedal sensor are not detected) 2. The following conditions are met: a. When the TCM commands shifting to 5th, the	• Shift solenoid valve S2 • Transmission wire • Harness and

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	actual gear position is shifted to 6th. b. When the TCM commands shifting to 6th, the actual gear position is shifted to 6th. 3. - 4. 2-trip detection logic	connector • TCM

HINT:

- Gear positions in the event of a solenoid valve mechanical problem:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
*1: Actual gear position under S2 stuck ON malfunction	↑	↑	2nd	↑	6th	↑
*2: Actual gear position under S2 stuck OFF malfunction	3rd	3rd	3rd	↑	5th	5th

MONITOR DESCRIPTION

This DTC indicates "stuck ON malfunction" or "stuck OFF malfunction" of the shift solenoid valve S2.

The TCM commands gear shifts by turning the shift solenoid valves "ON/OFF". When the gear position commanded by the TCM and the actual gear position are not the same, the TCM illuminates the MIL and stores the DTC.

MONITOR STRATEGY

Related DTCs	P0756: Shift Solenoid 2 (OFF Stuck) P0757: Shift Solenoid 2 (ON Stuck)
Required sensors/Components	Shift solenoid valve S2
Frequency of operation	Continuous
Duration	1 count
MIL operation	2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

The following items are common to all conditions below.

Battery voltage	10.5 V or more
Engine speed	400 rpm or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Turbine shaft speed sensor(P0717)	No failure
Vehicle speed sensor(P0722)	No failure
Shift solenoid 1 (P0973,P0974)	No failure
Shift solenoid 2 (P0976,P0977)	No failure
Shift solenoid 3 (P0979,P0980)	No failure
Shift solenoid 4 (P0982,P0983)	No failure

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SR solenoid (P0985,P0986)	No failure
Linear solenoid 1 (P0961,P0962,P0963)	No failure
Linear solenoid 2 (P0965,P0966,P0967)	No failure
Line pressure linear solenoid (P2720,P2721,P2719)	No failure
ATF temperature sensor (P0711,P0712,P0713)	No failure
Range switch (P0707,P0708)	No failure
CAN BUS OFF (U0073)	No failure
ECM NO ID (U0100)	No failure
ECM Communication Counter (U0401)	No failure
Engine coolant temperature sensor	No failure
Engine torque signal	No failure
Throttle position sensor	No failure
Accelerator pedal position sensor	No failure
Range position	D
Elapsed time after selecting D range	4 sec. or more
Engine coolant temperature	40°C (104°F) or more
ATF temperature	20°C (68°F) or more

TYPICAL MALFUNCTION THRESHOLDS

P0756: Shift solenoid 2 (OFF Stuck)

Compare target gear instructed from TCM and gear ratio calculated from turbine shaft speed and vehicle speed.

Both of the following condition are met: Condition (A) and (B)

Condition (A)

Shift position	D position
Target gear position.	1st
Gear ratio calculated from turbine shaft speed and vehicle speed.	3rd

Condition (B)

Shift position	D position
Target gear position.	6th
Gear ratio calculated from turbine shaft speed and vehicle speed.	5th

Both of the following condition are met: Condition (C) and (D)

Condition (C)

Shift position	M position
Target gear position.	1st

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Gear ratio calculated from turbine shaft speed and vehicle speed.	3rd

Condition (D)

Shift position	M position
Target gear position.	6th
Gear ratio calculated from turbine shaft speed and vehicle speed.	5th

P0757: Shift solenoid 2 (ON Stuck)

Compare target gear instructed from TCM and gear ratio calculated from turbine shaft speed and vehicle speed.

Both of the following condition are met: Condition (A) and (B)

Condition (A)

Shift position	D position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	6th

Condition (B)

Shift position	D position
Target gear position.	6th
Gear ratio calculated from turbine shaft speed and vehicle speed.	6th

Both of the following condition are met: Condition (C) and (D)

Condition (C)

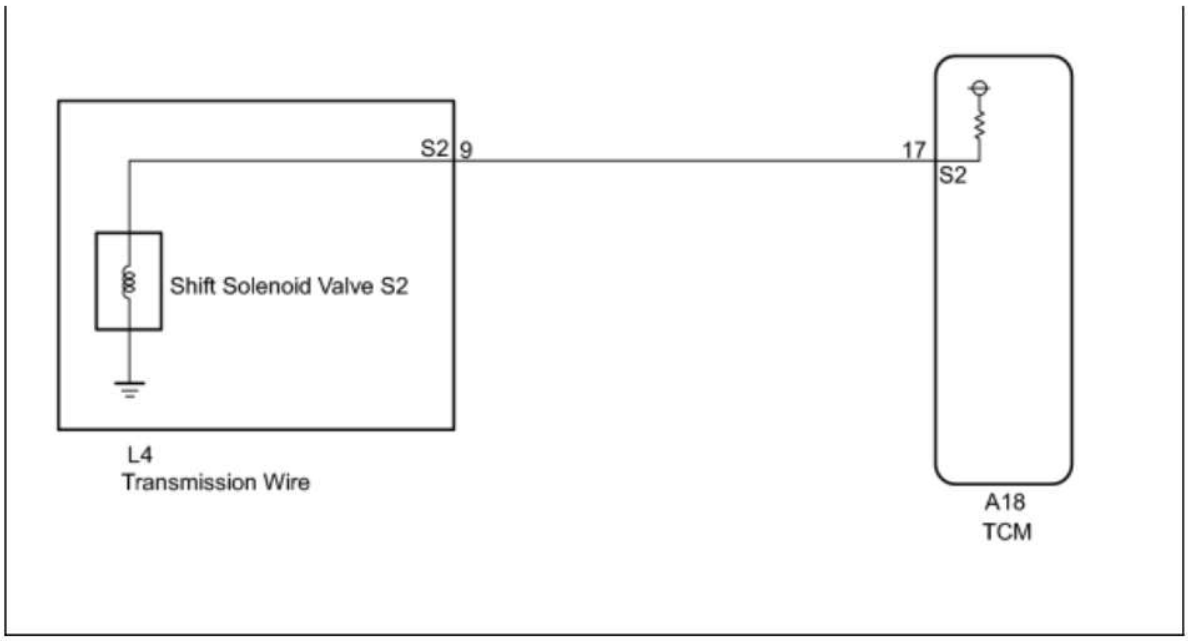
Shift position	M position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	6th

Condition (D)

Shift position	M position
Target gear position.	6th
Gear ratio calculated from turbine shaft speed and vehicle speed.	6th

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

1. CHECK THE SHIFT POSITION

(a) Drive the vehicle with shift lever in the M.

(b) Check the shift position.

HINT:

- The shift solenoid valve S2 is turned on/off normally when the shift lever is in the D position:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
Shift solenoid valve S2	ON	ON	OFF	OFF	OFF	ON

PROCEDURE

1.	CHECK OTHER DTCS OUTPUT

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON and push the Techstream main switch ON.

(c) Read the DTCs using the Techstream INFO .

Result:

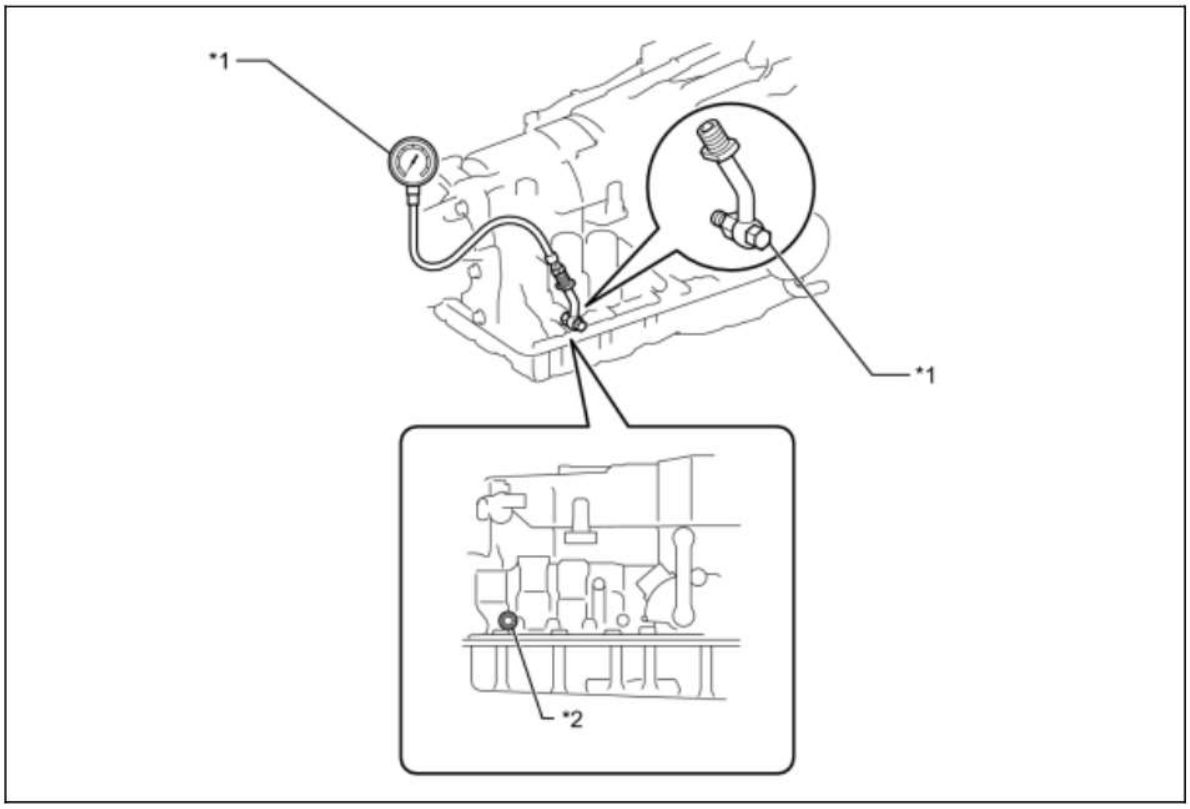
DISPLAY (DTC OUTPUT)	PROCEED TO
Only "P0756 and P2714" or "P0757" is output	A
"P0756 and P2714" or "P0757" and other DTCs	B

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B ▶ GO TO DTC CHART

A ▼

2.	HYDRAULIC TEST



Text in Illustration

*1	SST	*2	Test Plug

NOTICE:

- Perform the test at the normal operating ATF (Automatic Transmission Fluid) temperature: 60 to 90°C (140 to 194°F)
- The line pressure test should always be carried out in pairs. One technician should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is performing the test.
- Be careful to prevent SST hose from interfering with the exhaust pipe.
- This Check must be conducted after checking and adjusting engine.
- Perform under condition that A/C is OFF.
- When conducting stall test, do not continue more than 5 seconds.

(a) Warm up the ATF (Automatic Transmission Fluid).

(b) Lift the vehicle up.

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(c) Remove the test plug on the transmission case center right side and connect SST.

SST: 09992-00095

09992-00231

09992-00271

(d) Lower the vehicle.

(e) Fully apply the parking brake and check the 4 wheels.

(f) Start the engine and check idling speed.

(g) Keep your left foot pressing firmly on the brake pedal and shift into D position.

(h) Measure the line pressure when the engine is idling.

(i) Depress the accelerator pedal all the way down. Quickly read the highest line pressure when engine speed reaches stall speed.

(j) In the same manner, do the test in R position.

Specified line pressure:

CONDITION	D POSITION KPA (KGF / CM ^{2} , PSI)	R POSITION KPA (KGF / CM ^{2} , PSI)
Idling	350 to 430 kPa (3.6 to 4.4 kgf/cm ^{2} , 51 to 62 psi)	760 to 950 kPa (7.7 to 9.7 kgf/cm ^{2} , 110 to 138 psi)
Stall test	1200 to 1380 kPa (12.5 to 14.0 kgf/cm ^{2} , 174 to 200 psi)	1410 to 1630 kPa (14.4 to 16.6 kgf/cm ^{2} , 204 to 236 psi)

NG ▶ **REPLACE SHIFT SOLENOID VALVE SLT**

OK ▼

3.	**INSPECT SHIFT SOLENOID VALVE S2**

(a) Remove the shift solenoid valve S2.

(b) Perform inspection of the shift solenoid valve S2 INFO .

NG ▶ **REPLACE SHIFT SOLENOID VALVE S2**

OK ▼

4.	**INSPECT TRANSMISSION VALVE BODY ASSEMBLY**

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(a) Perform inspection of the transmission valve body assembly INFO .

OK:
There are no foreign objects on each valve.

NG ▶ **REPAIR OR REPLACE TRANSMISSION VALVE BODY ASSEMBLY**

OK ▶ **REPAIR OR REPLACE AUTOMATIC TRANSMISSION ASSEMBLY**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W8105FX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0761,P0762,P0781: Shift Solenoid "C" Performance (Shift Solenoid Valve S3) (2013 FR-S)		

DTC	**P0761**	**Shift Solenoid "C" Performance (Shift Solenoid Valve S3)**

DTC	**P0762**	**Shift Solenoid "C" Stuck ON (S3 Solenoid)**

DTC	**P0781**	**1-2 Shift (1-2 Shift Valve)**

SYSTEM DESCRIPTION

The TCM carries out detection of the gear position based upon signals from the input speed sensor NT and the output speed sensor SP2. Subsequently, if the gear position as detected by the TCM is different to the commanded gear position, then a related solenoid valve, valve body, or automatic transmission mechanical problem is detected.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0761	1. While driving with the shift lever in D, the ATF temperature 20°C (68°F) or more, and coolant temperature 40°C (104°F) or more. (However, abnormalities with the shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2, SLT), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature sensor, air flow sensor, electronically control throttle, and accelerator pedal sensor are not detected) 2. If any of the following conditions are met: a. The following conditions are all met: i. When the TCM commands shifting to 1st, the actual gear position is also switched to 3rd. ii. When the TCM commands shifting to 6th, the actual gear position is also switched to 6th. b. The following conditions are all met: i. When the TCM commands shifting to 2nd, the actual gear position is shifted to 6th. ii. When the TCM commands shifting to 3rd, the actual gear position is shifted	• Shift solenoid valve S3 remains open • Transmission wire • Harness and connector • TCM

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	to 4th. 3. - 4. 2-trip detection logic	
P0762	1. While driving with the shift lever in D, the ATF temperature 20°C (68°F) or more, and coolant temperature 40°C (104°F) or more. (However, abnormalities with the shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2, SLT), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature sensor, air flow sensor, electronically control throttle, and accelerator pedal sensor are not detected) 2. The following conditions are met: a. When the TCM commands shifting to 4th, the actual gear position is also switched to 3rd. b. When the TCM commands shifting to 5th, the actual gear position is shifted to N. 3. - 4. 2-trip detection logic	• Shift solenoid valve S3 remains open • Transmission wire • Harness and connector • TCM
P0781	1. While driving with the shift lever in D, the ATF temperature 20°C (68°F) or more, and coolant temperature 40°C (104°F) or more. (However, abnormalities with the shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2, SLT), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature sensor, air flow sensor, electronically control throttle, and accelerator pedal sensor are not detected) 2. The following conditions are met: a. When the TCM commands shifting to 4th, the actual gear position is also switched to 3rd. b. When the TCM commands shifting to 5th, the actual gear position is shifted to N. 3. - 4. 2-trip detection logic	• Shift solenoid valve S3 remains open • Transmission wire • Harness and connector • TCM

HINT:

- Gear positions in the event of a solenoid valve mechanical problem:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
*1: Actual gear position under S3 stuck ON malfunction	↑	↑	↑	3rd	N*	N*
*2: Actual gear position under S3 stuck OFF malfunction	3rd	6th	4th	4th	5th	6th

N*: Neutral

- Gear position during fail-safe operation:

If any malfunction is detected, the TCM changes into the fail-safe mode to shift into the gear positions as shown in the table below.

Gear position under normal conditions	1st	2nd	3rd	4th	5th	6th

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*1: Actual gear position under fail safe mode when S3 stuck ON malfunction	↑	↑	↑	3rd	3rd	3rd
*2: Actual gear position under fail safe mode when S3 stuck OFF malfunction	3rd	6th	4th	4th	5th	6th

MONITOR DESCRIPTION

This DTC indicates "stuck ON malfunction" or "stuck OFF malfunction" of the shift solenoid valve S3.

The TCM commands gear shifts by turning the shift solenoid valves "ON/OFF". When the gear position commanded by the TCM and the actual gear position are not same, the TCM illuminates the MIL and stores the DTC.

MONITOR STRATEGY

Related DTCs	P0761: Shift solenoid 3 (OFF Stuck) P0762: Shift solenoid 3 (ON Stuck) P0781: 1-2 Shift Valve (Shrinking of Spring)
Required sensors/Components	Shift solenoid valve S3
Frequency of operation	Continuous
Duration	1 count
MIL operation	2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

Battery voltage	10.5 V or more
Engine speed	400 rpm or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Turbine shaft speed sensor(P0717)	No failure
Vehicle speed sensor(P0722)	No failure
Shift solenoid 1 (P0973,P0974)	No failure
Shift solenoid 2 (P0976,P0977)	No failure
Shift solenoid 3 (P0979,P0980)	No failure
Shift solenoid 4 (P0982,P0983)	No failure
SR solenoid (P0985,P0986)	No failure
Linear solenoid 1 (P0961,P0962,P0963)	No failure
Linear solenoid 2 (P0965,P0966,P0967)	No failure
Line pressure linear solenoid (P2720,P2721,P2719)	No failure
ATF temperature sensor (P0711,P0712,P0713)	No failure
Range switch (P0707,P0708)	No failure
CAN BUS OFF (U0073)	No failure
ECM NO ID (U0100)	No failure

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Engine coolant temperature sensor	No failure
Engine torque signal	No failure
Throttle position sensor	No failure
Accelerator pedal position sensor	No failure
Range position	D
Elapsed time after selecting D range	4 sec. or more
Engine coolant temperature	40°C (104°F) or more
ATF temperature	20°C (68°F) or more

TYPICAL MALFUNCTION THRESHOLDS

P0761: Shift solenoid 3 (OFF Stuck)

Compare target gear instructed from TCM and gear ratio calculated from turbine shaft speed and vehicle speed.

Both of the following condition are met: Condition (A) and (B)

Condition (A)

Shift position	D position
Target gear position.	1st
Gear ratio calculated from turbine shaft speed and vehicle speed.	3rd

Condition (B)

Shift position	D position
Target gear position.	6th
Gear ratio calculated from turbine shaft speed and vehicle speed.	6th

Both of the following condition are met: Condition (C) and (D)

Condition (C)

Shift position	D position
Target gear position.	2nd
Gear ratio calculated from turbine shaft speed and vehicle speed.	6th

Condition (D)

Shift position	D position
Target gear position.	3rd
Gear ratio calculated from turbine shaft speed and vehicle speed.	4th

Both of the following condition are met: Condition (E) and (F)

Condition (E)

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Shift position	M position
Target gear position.	2nd
Gear ratio calculated from turbine shaft speed and vehicle speed.	6th

Condition (F)

Shift position	M position
Target gear position.	3rd
Gear ratio calculated from turbine shaft speed and vehicle speed.	4th

P0762: Shift solenoid 3 (ON Stuck)

Compare target gear instructed from TCM and gear ratio calculated from turbine shaft speed and vehicle speed.

Both of the following condition are met: Condition (A) and (B)

Condition (A)

Shift position	D position
Target gear position.	4th
Gear ratio calculated from turbine shaft speed and vehicle speed.	3rd

Condition (B)

Shift position	D position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	Neutral

Both of the following condition are met: Condition (C) and (D)

Condition (C)

Shift position	M position
Target gear position.	4th
Gear ratio calculated from turbine shaft speed and vehicle speed.	3rd

Condition (D)

Shift position	M position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	Neutral

P0781: 1-2 Shift Valve (Shrinking of Spring)

Compare target gear instructed from TCM and gear ratio calculated from turbine shaft speed and vehicle speed.

Both of the following condition are met: Condition (A) and (B)

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Condition (A)

Shift position	D position
Target gear position.	4th
Gear ratio calculated from turbine shaft speed and vehicle speed.	3rd

Condition (B)

Shift position	D position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	Neutral

Both of the following condition are met: Condition (C) and (D)

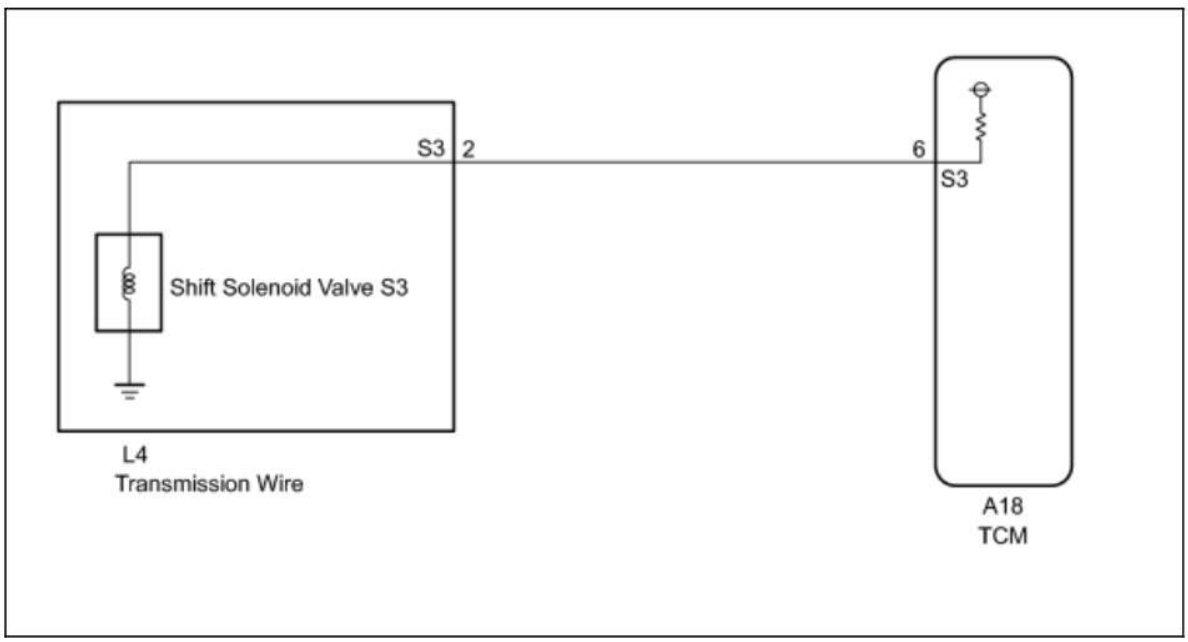
Condition (C)

Shift position	M position
Target gear position.	4th
Gear ratio calculated from turbine shaft speed and vehicle speed.	3rd

Condition (D)

Shift position	M position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	Neutral

WIRING DIAGRAM



INSPECTION PROCEDURE

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NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

1. CHECK THE SHIFT POSITION

(a) Drive the vehicle with shift lever in the M.

(b) Check the shift position.

HINT:

- The shift solenoid valve S3 is turned on/off normally when the shift lever is in the D position:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
Shift solenoid valve S3	ON	ON	ON	OFF	OFF	OFF

PROCEDURE

1.	CHECK OTHER DTCS OUTPUT

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON and push the Techstream main switch ON.

(c) Read the DTCs using the Techstream INFO .

Result:

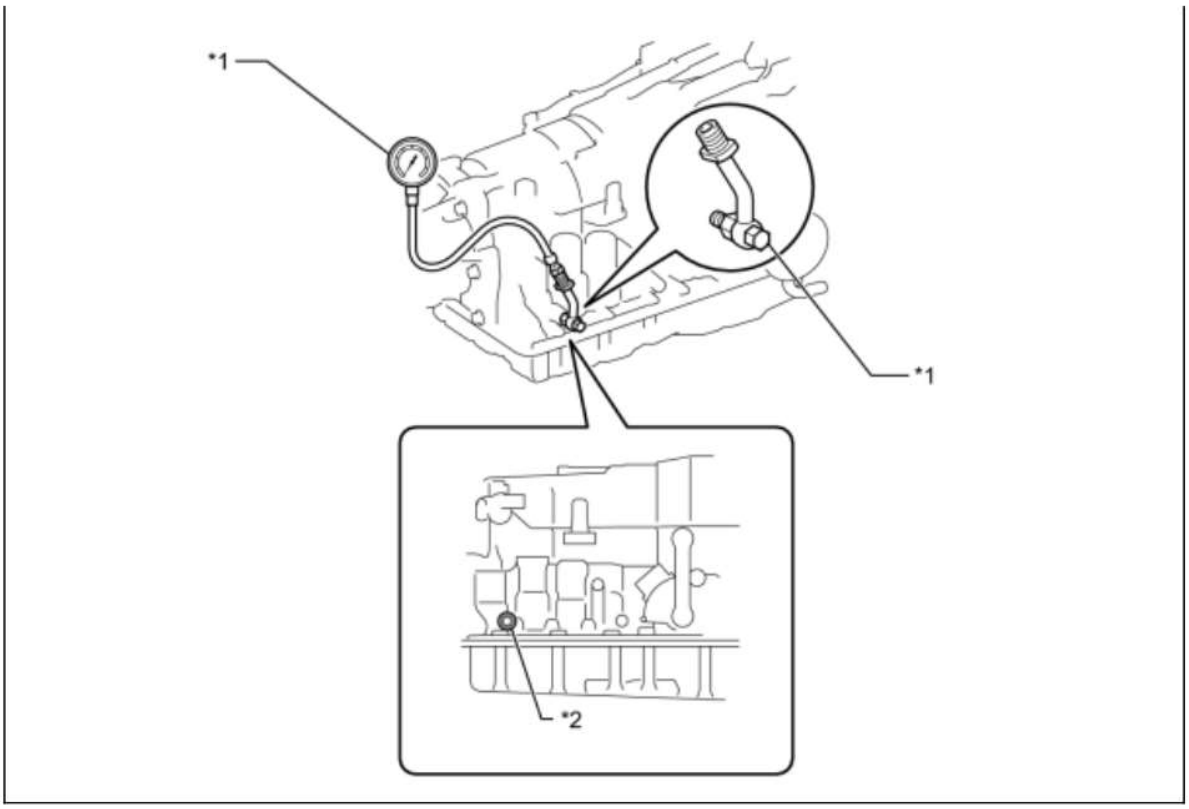
DISPLAY (DTC OUTPUT)	PROCEED TO
Only "P0761" or "P0762, P0781 and P2714" are output	A
"P0761" or "P0762, P0781 and P2714" and other DTCs	B

B ▶ GO TO DTC CHART

A ▼

2.	HYDRAULIC TEST

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Text in Illustration

*1	SST	*2	Test Plug

NOTICE:

- Perform the test at the normal operating ATF (Automatic Transmission Fluid) temperature: 60 to 90°C (140 to 194°F)
- The line pressure test should always be carried out in pairs. One technician should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is performing the test.
- Be careful to prevent SST hose from interfering with the exhaust pipe.
- This Check must be conducted after checking and adjusting engine.
- Perform under condition that A/C is OFF.
- When conducting stall test, do not continue more than 5 seconds.

(a) Warm up the ATF (Automatic Transmission Fluid).

(b) Lift the vehicle up.

(c) Remove the test plug on the transmission case center right side and connect SST.

SST: 09992-00095

09992-00231

09992-00271

(d) Lower the vehicle.

(e) Fully apply the parking brake and check the 4 wheels.

(f) Start the engine and check idling speed.

(g) Keep your left foot pressing firmly on the brake pedal and shift into D position.

(h) Measure the line pressure when the engine is idling.

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(i) Depress the accelerator pedal all the way down. Quickly read the highest line pressure when engine speed reaches stall speed.

(j) In the same manner, do the test in R position.

Specified line pressure:

CONDITION	D POSITION KPA (KGF / CM ^{2} , PSI)	R POSITION KPA (KGF / CM ^{2} , PSI)
Idling	350 to 430 kPa (3.6 to 4.4 kgf/cm ^{2} , 51 to 62 psi)	760 to 950 kPa (7.7 to 9.7 kgf/cm ^{2} , 110 to 138 psi)
Stall test	1200 to 1380 kPa (12.5 to 14.0 kgf/cm ^{2} , 174 to 200 psi)	1410 to 1630 kPa (14.4 to 16.6 kgf/cm ^{2} , 204 to 236 psi)

NG ▶ **REPLACE SHIFT SOLENOID VALVE SLT**

OK ▼

3.	**INSPECT SHIFT SOLENOID VALVE S3**

(a) Remove the shift solenoid valve S3.

(b) Perform inspection of the shift solenoid valve S3 INFO .

NG ▶ **REPLACE SHIFT SOLENOID VALVE S3**

OK ▼

4.	**INSPECT TRANSMISSION VALVE BODY ASSEMBLY**

(a) Perform inspection of the transmission valve body assembly INFO .

OK:

There are no foreign objects on each valve.

NG ▶ **REPAIR OR REPLACE TRANSMISSION VALVE BODY ASSEMBLY**

OK ▶ **REPAIR OR REPLACE AUTOMATIC TRANSMISSION ASSEMBLY**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W8209XX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0766,P0767,P0776: Shift Solenoid "D" Performance (Shift Solenoid Valve S4) (2013 FR-S)		

DTC	**P0766**	**Shift Solenoid "D" Performance (Shift Solenoid Valve S4)**

DTC	**P0767**	**Shift Solenoid "D" Stuck ON (S4 Solenoid)**

DTC	**P0776**	**Pressure Control Solenoid "B" Performance (Shift Solenoid Valve SL2)**

DESCRIPTION

The TCM carries out detection of the gear position based upon signals from the input speed sensor NT and the output speed sensor SP2. Subsequently, if the gear position as detected by the TCM is different to the commanded gear position, then a related solenoid valve, valve body, or automatic transmission mechanical problem is detected.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0766	1. While driving with the shift lever in D, the ATF temperature 20°C (68 °F) or more, and coolant temperature 40°C (104°F) or more. (However, abnormalities with the shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2, SLT), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature sensor, air flow sensor, electronically control throttle, and accelerator pedal sensor are not detected) 2. The following conditions are met: a. When the TCM commands shifting to 5th, the actual gear position is switched to 4th. b. When the TCM commands shifting to 6th, the actual gear position is shifted to 4th. 3. - 4. 2-trip detection logic	• Shift solenoid valve S4 • Shift solenoid valve SL2 • Transmission wire • Harness and connector • TCM
	1. While driving with the shift lever in D, the ATF temperature 20°C (68 °F) or more, and coolant temperature 40°C (104°F) or more. (However, abnormalities with the shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2, SLT), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature sensor,	• Shift solenoid valve S4 • Shift

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P0767	air flow sensor, electronically control throttle, and accelerator pedal sensor are not detected) 2. The following conditions are met: a. When the TCM commands shifting to 1st, the actual gear position is switched to 2nd. b. When the TCM commands shifting to 5th, the actual gear position is also shifted to 5th. 3. - 4. 2-trip detection logic	solenoid valve SL2 • Transmission wire • Harness and connector • TCM
P0776	1. While driving with the shift lever in D, the ATF temperature 20°C (68 °F) or more, and coolant temperature 40°C (104°F) or more. (However, abnormalities with the shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2, SLT), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature sensor, air flow sensor, electronically control throttle, and accelerator pedal sensor are not detected) 2. The following conditions are met: a. When the TCM commands shifting to 5th, the actual gear position is switched to 4th. b. When the TCM commands shifting to 6th, the actual gear position is shifted to 4th. 3. - 4. 2-trip detection logic	• Shift solenoid valve S4 • Shift solenoid valve SL2 • Transmission wire • Harness and connector • TCM

HINT:

- Gear positions in the event of a solenoid valve mechanical problem:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
*: Actual gear position under malfunction	1st	2nd	3rd	4th	4th	4th

- Gear positions in the event of a shift solenoid valve S4 ON stuck with M position:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
*: Actual gear position under malfunction	2nd	2nd	3rd	4th	5th	6th

- Gear position during fail-safe operation:

  If any malfunction is detected, the TCM changes into the fail-safe mode to shift into the gear positions as shown in the table below.

Gear position under normal conditions	1st	2nd	3rd	4th	5th	6th
*: Actual gear position under fail-safe mode	1st	2nd	3rd	3rd	3rd	3rd

MONITOR DESCRIPTION

This DTC indicates "stuck OFF malfunction" of the shift solenoid valve S4, "stuck ON malfunction" of the shift solenoid valve SL2, or brake control valve malfunction. The TCM commands gear shifts by turning the shift solenoid valves "ON/OFF". When the gear position commanded by the TCM and the actual gear

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position are not same, the TCM illuminates the MIL and stores the DTC.

MONITOR STRATEGY

Related DTCs	P0766: Shift Solenoid 4 (OFF Stuck) P0767: Shift Solenoid 4 (ON Stuck) P0776: Linear Solenoid 2 (ON Stuck)
Required sensors/Components	Shift solenoid valve S4, Shift solenoid valve SL2
Frequency of operation	Continuous
Duration	1 count
MIL operation	2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

The following items are common to all conditions below.

Battery voltage	10.5 V or more
Engine speed	400 rpm or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Turbine shaft speed sensor(P0717)	No failure
Vehicle speed sensor(P0722)	No failure
Shift solenoid 1 (P0973,P0974)	No failure
Shift solenoid 2 (P0976,P0977)	No failure
Shift solenoid 3 (P0979,P0980)	No failure
Shift solenoid 4 (P0982,P0983)	No failure
SR solenoid (P0985,P0986)	No failure
Linear solenoid 1 (P0961,P0962,P0963)	No failure
Linear solenoid 2 (P0965,P0966,P0967)	No failure
Line pressure linear solenoid (P2720,P2721,P2719)	No failure
ATF temperature sensor (P0711,P0712,P0713)	No failure
Range switch (P0707,P0708)	No failure
CAN BUS OFF (U0073)	No failure
ECM NO ID (U0100)	No failure
ECM Communication Counter (U0401)	No failure
Engine coolant temperature sensor	No failure
Engine torque signal	No failure
Throttle position sensor	No failure
Accelerator pedal position sensor	No failure
Range position	D
Elapsed time after selecting D range	4 sec. or more

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Engine coolant temperature	40°C (104°F) or more
ATF temperature	20°C (68°F) or more

TYPICAL MALFUNCTION THRESHOLDS

P0766: Shift Solenoid 4 (OFF Stuck)

Compare target gear instructed from TCM and gear ratio calculated from turbine shaft speed and vehicle speed.

Both of the following condition are met: Condition (A) and (B)

Condition (A)

Shift position	D position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	4th

Condition (B)

Shift position	D position
Target gear position.	6th
Gear ratio calculated from turbine shaft speed and vehicle speed.	4th

Both of the following condition are met: Condition (C) and (D)

Condition (C)

Shift position	M position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	4th

Condition (D)

Shift position	M position
Target gear position.	6th
Gear ratio calculated from turbine shaft speed and vehicle speed.	4th

P0767: Shift Solenoid 4 (ON Stuck)

Compare target gear instructed from TCM and gear ratio calculated from turbine shaft speed and vehicle speed.

Both of the following condition are met: Condition (A) and (B)

Condition (A)

Shift position	M position
Target gear position.	1st
Gear ratio calculated from turbine shaft speed and vehicle speed.	2nd

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Condition (B)

Shift position	M position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	5th

P0776: Linear Solenoid 2 (ON Stuck)

Compare target gear instructed from TCM and gear ratio calculated from turbine shaft speed and vehicle speed.

Both of the following condition are met: Condition (A) and (B)

Condition (A)

Shift position	D position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	4th

Condition (B)

Shift position	D position
Target gear position.	6th
Gear ratio calculated from turbine shaft speed and vehicle speed.	4th

Both of the following condition are met: Condition (C) and (D)

Condition (C)

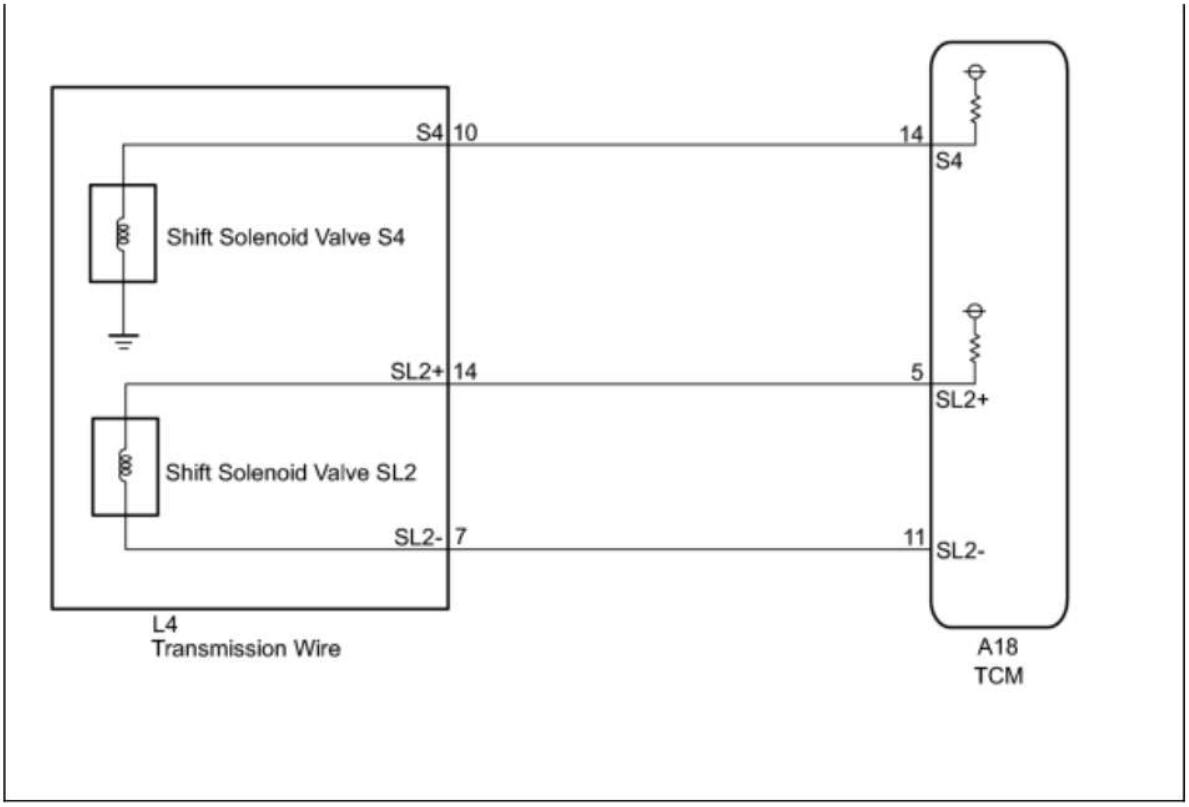
Shift position	M position
Target gear position.	5th
Gear ratio calculated from turbine shaft speed and vehicle speed.	4th

Condition (D)

Shift position	M position
Target gear position.	6th
Gear ratio calculated from turbine shaft speed and vehicle speed.	4th

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

1. ACTIVE TEST

(a) Drive the vehicle with shift lever in the M.

(b) Check the shift position.

HINT:

- The shift solenoid valve S4 and SL2 are turned on/off normally when the shift lever is in the D position:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
Shift solenoid valve S4	OFF	ON	OFF	OFF	ON	ON
Shift solenoid valve SL2	ON	ON	ON	ON	OFF	OFF

PROCEDURE

1.	**CHECK OTHER DTCS OUTPUT**

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON and push the Techstream main switch ON.

(c) Read the DTCs using the Techstream INFO .

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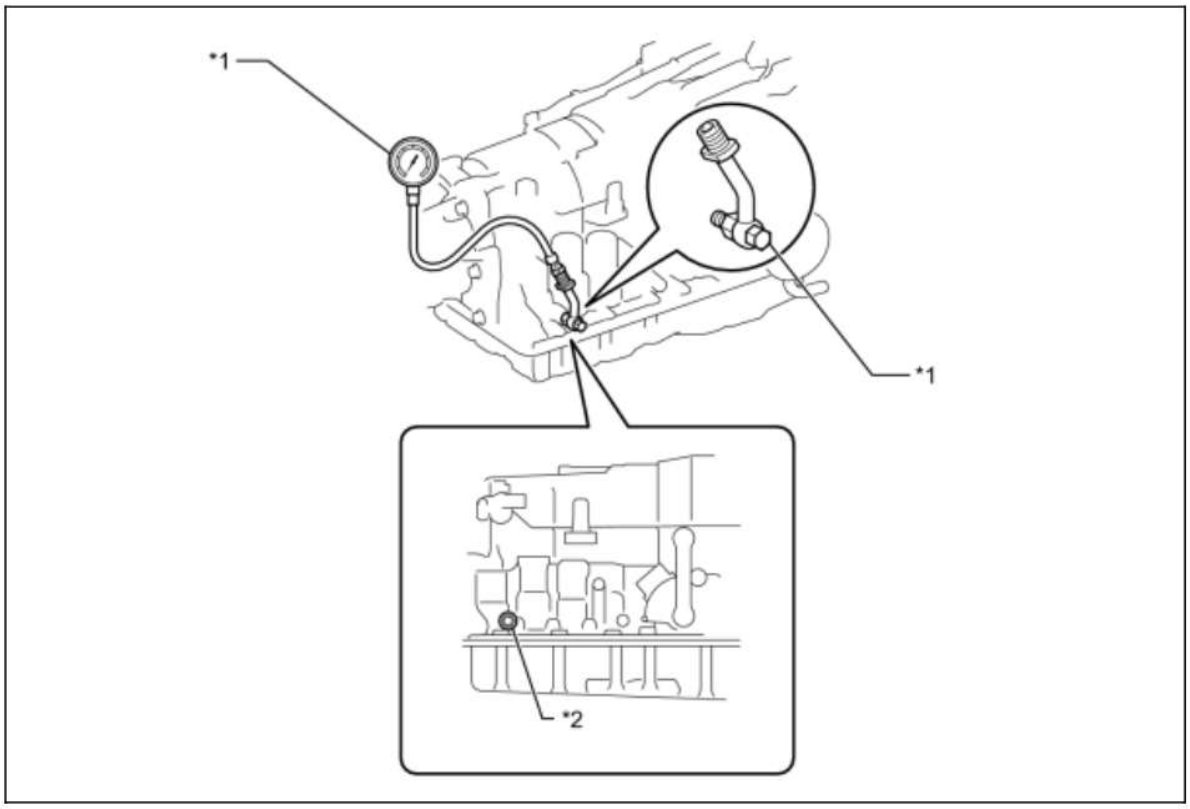
Result:

DISPLAY (DTC OUTPUT)	PROCEED TO
Only "P0766, P0776 and P2714" or "P0752 and P0767" is output	A
"P0766, P0776 and P2714" or "P0752 and P0767" and other DTCs are output	B

B ▶ GO TO DTC CHART

A ▼

2.	HYDRAULIC TEST



Text in Illustration

*1	SST	*2	Test Plug

NOTICE:

- Perform the test at the normal operating ATF (Automatic Transmission Fluid) temperature: 60 to 90°C (140 to 194°F)
- The line pressure test should always be carried out in pairs. One technician should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is performing the test.
- Be careful to prevent SST hose from interfering with the exhaust pipe.

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- This Check must be conducted after checking and adjusting engine.
- Perform under condition that A/C is OFF.
- When conducting stall test, do not continue more than 5 seconds.

(a) Warm up the ATF (Automatic Transmission Fluid).

(b) Lift the vehicle up.

(c) Remove the test plug on the transmission case center right side and connect SST.

SST: 09992-00095

09992-00231

09992-00271

(d) Lower the vehicle.

(e) Fully apply the parking brake and check the 4 wheels.

(f) Start the engine and check idling speed.

(g) Keep your left foot pressing firmly on the brake pedal and shift into D position.

(h) Measure the line pressure when the engine is idling.

(i) Depress the accelerator pedal all the way down. Quickly read the highest line pressure when engine speed reaches stall speed.

(j) In the same manner, do the test in R position.

Specified line pressure:

CONDITION	D POSITION KPA (KGF / CM ^{2} , PSI)	R POSITION KPA (KGF / CM ^{2} , PSI)
Idling	350 to 430 kPa (3.6 to 4.4 kgf/cm ^{2} , 51 to 62 psi)	760 to 950 kPa (7.7 to 9.7 kgf/cm ^{2} , 110 to 138 psi)
Stall test	1200 to 1380 kPa (12.5 to 14.0 kgf/cm ^{2} , 174 to 200 psi)	1410 to 1630 kPa (14.4 to 16.6 kgf/cm ^{2} , 204 to 236 psi)

NG ▶ **REPLACE SHIFT SOLENOID VALVE SLT**

OK ▼

3.	**INSPECT SHIFT SOLENOID VALVE S4**

(a) Remove the shift solenoid valve S4 INFO .

(b) Perform inspection of the shift solenoid valve S4 INFO .

NG ▶ **REPLACE SHIFT SOLENOID VALVE S4**

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OK

4.	**INSPECT SHIFT SOLENOID VALVE SL2**

(a) Remove the shift solenoid valve S4 INFO .

(b) Perform inspection of the shift solenoid valve S4 INFO .

NG ▶ **REPLACE SHIFT SOLENOID VALVE SL2**

OK

5.	**INSPECT TRANSMISSION VALVE BODY ASSEMBLY**

(a) Check the transmission valve body assembly INFO .

OK:
There are no foreign objects on each valve.

NG ▶ **REPAIR OR REPLACE TRANSMISSION VALVE BODY ASSEMBLY**

OK ▶ **REPAIR OR REPLACE AUTOMATIC TRANSMISSION ASSEMBLY**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000T8P0ZSX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0882: TCM Power Input Signal Low (2013 FR-S)		

DTC	**P0882**	**TCM Power Input Signal Low**

DESCRIPTION

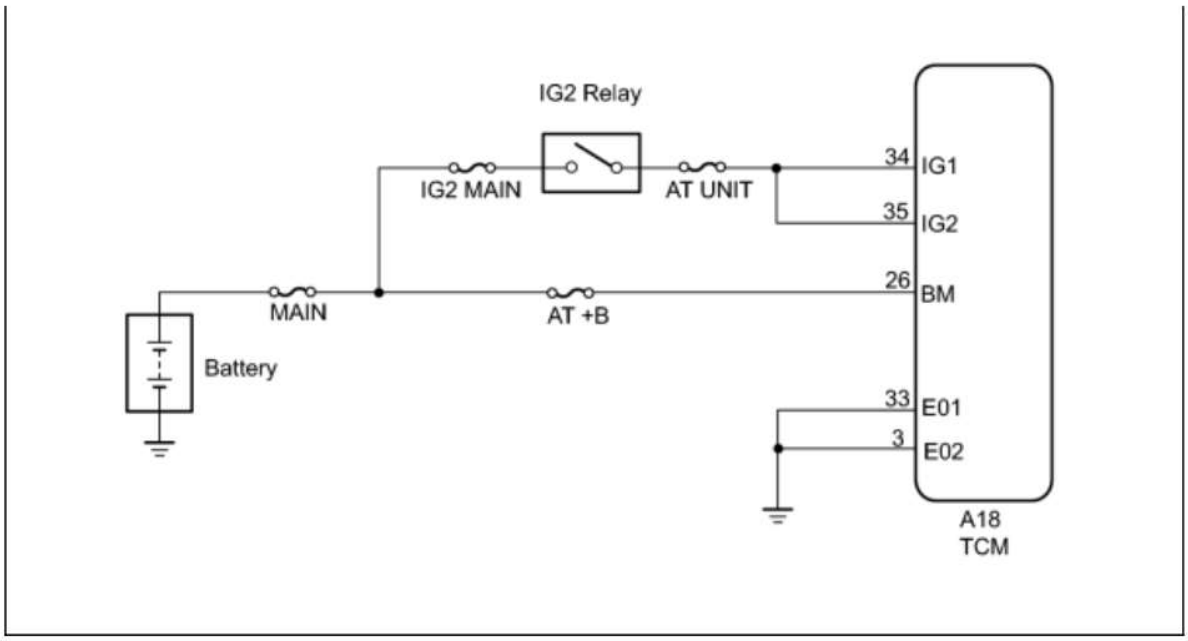
TCM detects a reduction in power supply voltage, and depending on status, implements the following fail-safe.

- Learning control prohibition (when detection conditions 1 or 2 are met)
- Slip control, lock-up control, manual mode, shift paddle operation prohibition, torque up prohibition, and prohibition on shifting to 5th or 6th. If this continues further, power is cut to all solenoids (fixed to 4th).

DTC CODE	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0882	1. The engine speed and input speed sensor NT are 400 rpm or more, and the CAN communication and input speed NT are normal 2. Ignition voltage is 9.0 V or less 3. Continues for 20 sec. 4. 1-trip detection logic	• IG circuit • Harness and connector • TCM

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

Inspect the fuses circuits related to this system before performing the following inspection procedure.

PROCEDURE

1.	**CHECK TCM (POWER SOURCE, GROUND)**

(a) Disconnect the A18 TCM connector.

(b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-34(IG1) - Body ground	Ignition switch ON	11 to 14 V
A18-35(IG2) - Body ground	Ignition switch ON	11 to 14 V

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-3(E02) - Body ground	Always	Below 1 Ω
A18-33(E01) - Body ground	Always	Below 1 Ω

(d) Connect the A18 TCM connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (TCM - BATTERY, BODY GROUND)**

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OK

2.	**REPLACE TCM**

(a) Replace the TCM INFO .

NEXT **PERFORM THE RESET MEMORY**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W830HBX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0894,P2714: Transmission Component Slipping (2013 FR-S)		

DTC	**P0894**	**Transmission Component Slipping**

DTC	**P2714**	**Pressure Control Solenoid "D" Performance (Shift Solenoid Valve SLT)**

DESCRIPTION

The shift solenoid valve SLT is controlled by the duty ratio as determined in advance by the transmission control computer, based upon signals from the accelerator position sensor, input speed sensor NT and output speed sensor SP2. In this way, the line pressure is adjusted to match the throttle valve opening angle and engine output. The TCM uses the revolution signals from the input speed sensor NT and output speed sensor SP2 to detect clutch and other slipping.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0894	1. While driving with the shift lever in D, the ATF temperature 10°C or more, and coolant temperature 40°C or more. (However, abnormalities with the shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2, SLT), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature sensor, air flow sensor, electronically control throttle, and accelerator pedal sensor are not detected) 2. The C1 clutch total heating power is the predetermined value or more. 3. - 4. 2-trip detection logic	• Shift solenoid valve SLT • Valve body assembly • Torque converter clutch assembly • Automatic transmission
P2714	1. While driving with the shift lever in D, the ATF temperature 10°C or more, and coolant temperature 40°C or more. (However, abnormalities with the shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2, SLT), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature sensor, air flow sensor, electronically control throttle, and accelerator pedal sensor are not detected) 2. The following conditions are met: a. The C1 clutch total heating power is the predetermined value or more. b. The C2 clutch total heating power is the	• Shift solenoid valve S1, S2, S3, S4, SLT • Valve body assembly • Torque converter clutch assembly

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	predetermined value or more. 3. - 4. 2-trip detection logic	• Automatic transmission

MONITOR DESCRIPTION

The TCM calculates the amount of heat absorbed by the friction material based on the difference in revolution (clutch slippage) between the turbine and output shaft. The TCM illuminates the MIL and outputs this DTC when the amount of heat absorption exceeds the specified value.

NOTICE:

If you continue driving under these conditions, the clutch will burn out and the vehicle will no longer be drivable.

MONITOR STRATEGY

Related DTCs	P0894: Line Pressure Linear Solenoid (AT Slip) P2714: Line Pressure Linear Solenoid (ON Stuck)
Required sensors/Components	Shift solenoid valve SLT
Frequency of operation	Continuous
Duration	1 count
MIL operation	2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

The following items are common to all conditions below.

Battery voltage	10.5 V or more
Engine speed	400 rpm or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Turbine shaft speed sensor(P0717)	No failure
Vehicle speed sensor(P0722)	No failure
Shift solenoid 1 (P0973,P0974)	No failure
Shift solenoid 2 (P0976,P0977)	No failure
Shift solenoid 3 (P0979,P0980)	No failure
Shift solenoid 4 (P0982,P0983)	No failure
SR solenoid (P0985,P0986)	No failure
Linear solenoid 1 (P0961,P0962,P0963)	No failure
Linear solenoid 2 (P0965,P0966,P0967)	No failure
Line pressure linear solenoid (P2720,P2721,P2719)	No failure
ATF temperature sensor (P0711,P0712,P0713)	No failure
Range switch (P0707,P0708)	No failure
CAN BUS OFF (U0073)	No failure

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ECM NO ID (U0100)	No failure
ECM Communication Counter (U0401)	No failure
Engine coolant temperature sensor	No failure
Engine torque signal	No failure
Throttle position sensor	No failure
Accelerator pedal position sensor	No failure
Range position	D
Elapsed time after selecting D range	4 sec. or more
Engine coolant temperature	40°C (104°F) or more

TYPICAL MALFUNCTION THRESHOLDS

[P0894: AT slip]

When either condition below is met: ON malfunction (A) or (B)

AT slip (A)

Summation of C1 clutch heat generations	Specified value

AT slip (B)

Summation of C2 clutch heat generations	Specified value
Actual gear for SLT fail judgement	Not determined

[P2714: ON malfunction]

One of the following conditions is met: ON malfunction (A), (B), (C), (D), (E), (F), (G) (H) or (I)

ON malfunction (A)

Summation of C1 clutch heat generations	Specified value

ON malfunction (B)

6th Error	Detected

ON malfunction (C)

Shift Solenoid 1 (OFF Stuck)	Detected

ON malfunction (D)

Shift Solenoid 2 (OFF Stuck)	Detected

ON malfunction (E)

Shift Solenoid 3 (ON Stuck)	Detected

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ON malfunction (F)

Shift Solenoid 4 (OFF Stuck)	Detected

ON malfunction (G)

1-2 Shift Valve (Shrinking of Spring)	Detected

ON malfunction (H)

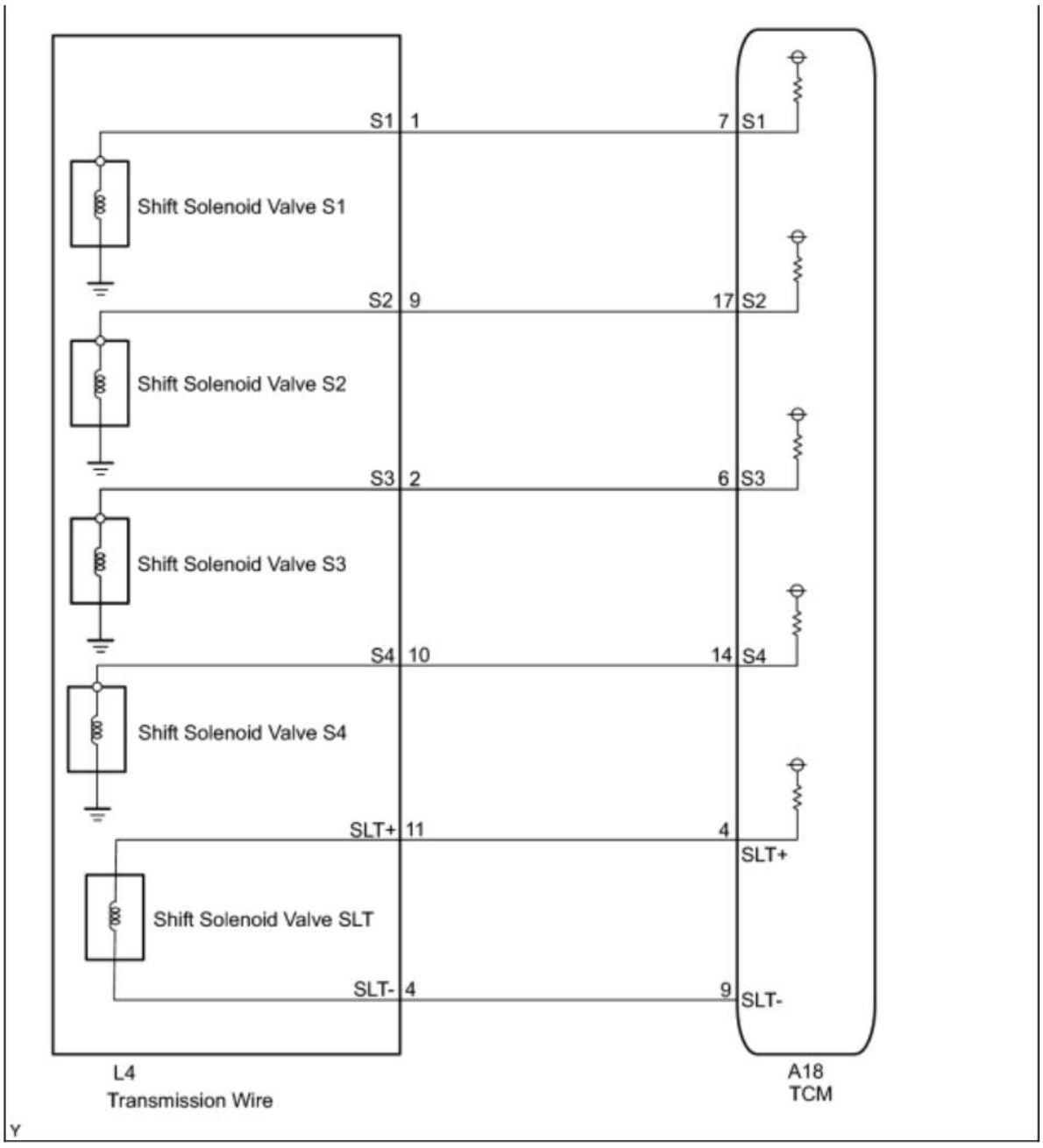
Line Pressure Linear Solenoid (AT Slip)	Detected

ON malfunction (I)

Linear Solenoid 2 (ON Stuck)	Detected

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

PROCEDURE

1.	**CHECK OTHER DTC OUTPUT (IN ADDITION TO DTC P0894 AND P2714)**

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON and push the Techstream main switch ON.

(c) Read the DTCs using the Techstream INFO .

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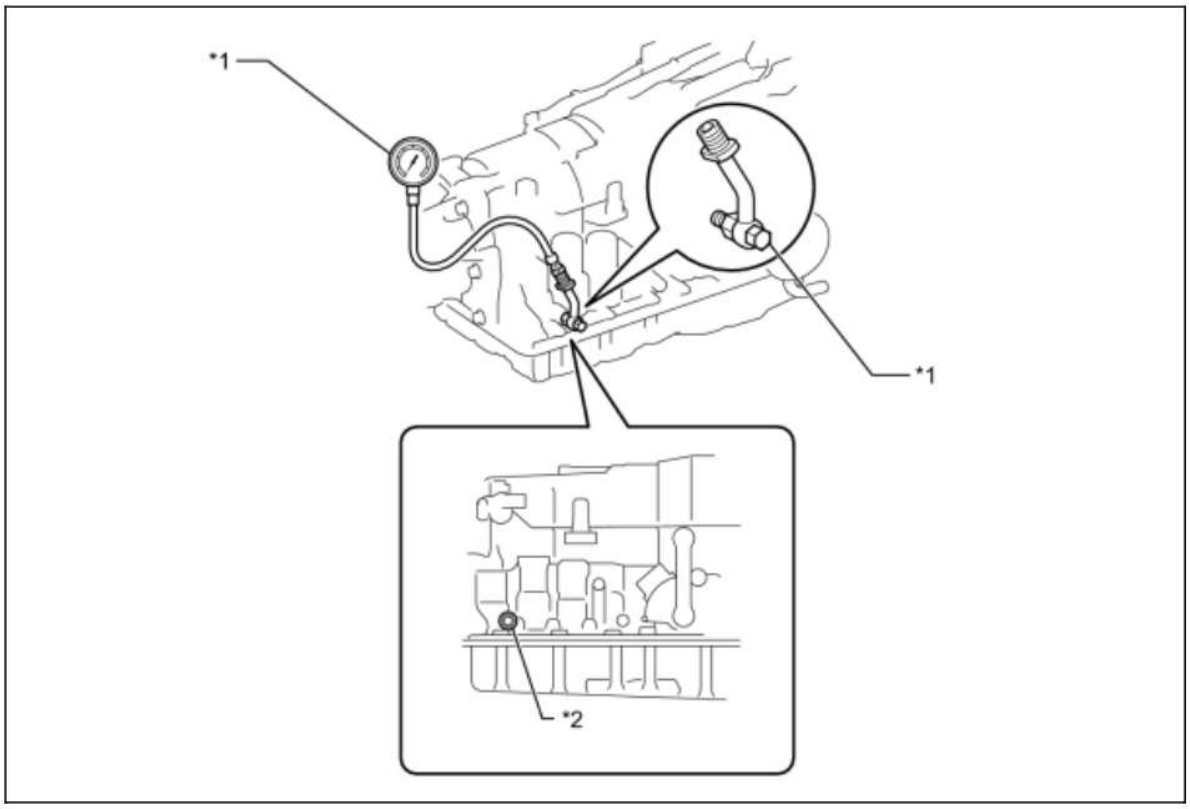
Result:

DISPLAY (DTC OUTPUT)	PROCEED TO
Only "P0894 and P2714" or "P0894" is output	A
"P0894 and P2714" or "P0894" and other DTCs are output	B

B ▶ GO TO DTC CHART

A ▼

2.	**HYDRAULIC TEST**



Text in Illustration

*1	SST	*2	Test Plug

NOTICE:

- Perform the test at the normal operating ATF (Automatic Transmission Fluid) temperature: 60 to 90°C (140 to 194°F)
- The line pressure test should always be carried out in pairs. One technician should observe the conditions of wheels or wheel stoppers outside the vehicle while the other is performing the test.
- Be careful to prevent SST hose from interfering with the exhaust pipe.

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- This Check must be conducted after checking and adjusting engine.
- Perform under condition that A/C is OFF.
- When conducting stall test, do not continue more than 5 seconds.

(a) Warm up the ATF (Automatic Transmission Fluid).

(b) Lift the vehicle up.

(c) Remove the test plug on the transmission case center right side and connect SST.

SST: 09992-00095

09992-00231

09992-00271

(d) Lower the vehicle.

(e) Fully apply the parking brake and check the 4 wheels.

(f) Start the engine and check idling speed.

(g) Keep your left foot pressing firmly on the brake pedal and shift into D position.

(h) Measure the line pressure when the engine is idling.

(i) Depress the accelerator pedal all the way down. Quickly read the highest line pressure when engine speed reaches stall speed.

(j) In the same manner, do the test in R position.

Specified line pressure:

CONDITION	D POSITION KPA (KGF / CM ^{2} , PSI)	R POSITION KPA (KGF / CM ^{2} , PSI)
Idling	350 to 430 kPa (3.6 to 4.4 kgf/cm ^{2} , 51 to 62 psi)	760 to 950 kPa (7.7 to 9.7 kgf/cm ^{2} , 110 to 138 psi)
Stall test	1200 to 1380 kPa (12.5 to 14.0 kgf/cm ^{2} , 174 to 200 psi)	1410 to 1630 kPa (14.4 to 16.6 kgf/cm ^{2} , 204 to 236 psi)

NG ▶ **INSPECT SHIFT SOLENOID VALVE SLT**

OK ▼

3.	CHECK THE GEAR POSITION

(a) Drive the vehicle with shift lever in the M.

(b) Check the shift position.

HINT:

- Perform the test at the normal operating ATF (Automatic Transmission Fluid) temperature: 60 to 90°C (140 to 194°F)

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- Perform under condition that A/C is OFF.

  OK:

  Gear position changes.

TCM GEAR SHIFT COMMAND			1ST	2ND	3RD	4TH	5TH	6TH	PROCEED TO
Actual gear position under malfunction	Shift solenoid S1	Stuck ON	2nd	2nd	3rd	4th	5th	6th	A
		Stuck OFF	1st	2nd	3rd	4th	5th	N*2	
	Shift solenoid S2	Stuck ON	1st	2nd	2nd	4th	6th	6th	B
		Stuck OFF	3rd	3rd	3rd	4th	5th	5th	
	Shift solenoid S3	Stuck ON	1st	2nd	3rd	3rd	N*1	N*1	C
		Stuck OFF	3rd	6th	4th	4th	5th	6th	
	Shift solenoid S4	Stuck ON*2	1st	2nd	3rd	4th	5th	6th	D
		Stuck OFF	1st	2nd	3rd	4th	4th	4th	E
Normal			1st	2nd	3rd	4th	5th	6th	D

HINT:

- *1: Neutral
- *2: When shift solenoid S4 is stuck ON, gear shifting is normal.

B ▶ **INSPECT SHIFT SOLENOID VALVE S2**

C ▶ **INSPECT SHIFT SOLENOID VALVE S3**

D ▶ **INSPECT SHIFT SOLENOID VALVE SLT**

E ▶ **INSPECT SHIFT SOLENOID VALVE S4**

A ▼

4.	INSPECT SHIFT SOLENOID VALVE S1

(a) Remove the shift solenoid valve S1 INFO .

(b) Perform inspection of the shift solenoid valve S1 INFO .

NG ▶ **REPLACE SHIFT SOLENOID VALVE S1**

OK ▶ **Go to step 9**

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5.	INSPECT SHIFT SOLENOID VALVE S2

(a) Remove the shift solenoid valve S2 INFO .

(b) Perform inspection of the shift solenoid valve S2 INFO .

NG ▶ REPLACE SHIFT SOLENOID VALVE S2

OK ▶ Go to step 9

6.	INSPECT SHIFT SOLENOID VALVE S3

(a) Remove the shift solenoid valve S3 INFO .

(b) Perform inspection of the shift solenoid valve S3 INFO .

NG ▶ REPLACE SHIFT SOLENOID VALVE S3

OK ▶ Go to step 9

7.	INSPECT SHIFT SOLENOID VALVE S4

(a) Remove the shift solenoid valve S4 INFO .

(b) Perform inspection of the shift solenoid valve S4 INFO .

NG ▶ REPLACE SHIFT SOLENOID VALVE S4

OK ▶ Go to step 9

8.	INSPECT SHIFT SOLENOID VALVE SLT

(a) Remove the shift solenoid valve SLT INFO .

(b) Perform inspection of the shift solenoid valve SLT INFO .

NG ▶ REPLACE SHIFT SOLENOID VALVE SLT

OK

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9.	INSPECT TRANSMISSION VALVE BODY ASSEMBLY

(a) Check the transmission valve body assembly INFO .

OK:

There are no foreign objects on each valve.

NG ▶ REPAIR OR REPLACE TRANSMISSION VALVE BODY ASSEMBLY

OK

10.	INSPECT TORQUE CONVERTER CLUTCH ASSEMBLY

(a) Check the torque converter clutch assembly INFO .

OK:

The torque converter clutch operates normally.

NG ▶ REPLACE TORQUE CONVERTER CLUTCH ASSEMBLY

OK ▶ REPAIR OR REPLACE AUTOMATIC TRANSMISSION ASSEMBLY

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W8F0E7X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0961-P0963: Pressure Control Solenoid "A" Performance (SL1 Solenoid) (2013 FR-S)		

DTC	**P0961**	**Pressure Control Solenoid "A" Performance (SL1 Solenoid)**

DTC	**P0962**	**Pressure Control Solenoid "A" Circuit Low (SL1 Solenoid)**

DTC	**P0963**	**Pressure Control Solenoid "A" Circuit High (SL1 Solenoid)**

DESCRIPTION

Based upon a signal from the TCM, the combination of shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2) changes the gear position from 1st to 6th. As a fail-safe function if the solenoid valve system is open or shorted, the TCM cuts power to all solenoids, leaving just the mechanical hydraulic circuit, requiring manual shifting.

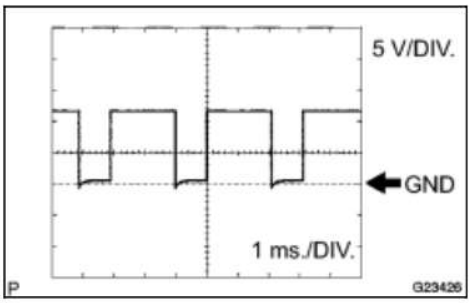
DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0961	1. Not learning control prohibited status Not open or short in the shift solenoid valve SL1 circuit 2. The difference between the shift solenoid valve SL1 operational feedback current is 12 A or more in total. 3. Detects "2.Malfunction Status" 2 times consecutively. 4. 1-trip detection logic	• Shift solenoid valve SL1 • Transmission wire • Harness and connector • TCM
P0962	1. Not learning control prohibited status 1 second or more has elapsed after turning shift solenoid valve SL1 off. 2. The shift solenoid valve SL1 operational feedback voltage is 0.018 V or less. 3. Detects malfunction that continues for 100 ms or more 5 times consecutively. 4. 1-trip detection logic	• Shift solenoid valve SL1 • Transmission wire • Harness and connector • TCM
	1. Not learning control prohibited status 1 second or more has elapsed after turning shift solenoid valve SL1 on. 2. The shift solenoid valve SL1 operational feedback voltage is	• Shift solenoid valve SL1 • Transmission

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P0963	0.257 V or more. 3. Detects malfunction that continues for 100 ms or more 5 times consecutively. 4. 1-trip detection logic	wire • Harness and connector • TCM

Reference (Using an oscilloscope):

Check the waveform between the terminals SL1+ and SL1- of the TCM connector



Standard:
Refer to the illustration.

Terminal	SL1+ - SL1-
Tool setting	5 V/DIV., 1 ms./DIV.
Vehicle condition	5th or 6th gear

MONITOR DESCRIPTION

This DTC indicates an open or short in the shift solenoid valve SL1 circuit. The TCM commands gearshift by turning the shift solenoid valves "ON/OFF". When there is an open or short circuit in any shift solenoid valve circuit, the TCM detects the problem and illuminates the MIL and stores the DTC.

MONITOR STRATEGY

Related DTCs	P0961: Linear Solenoid 1 (Feedback Stuck) P0962: Linear Solenoid 1 (GND Short/Open) P0963: Linear Solenoid 1 (Battery Short)
Required sensors/Components	Shift solenoid valve SL1
Frequency of operation	Continuous
Duration	P0961: 2 count P0962: 0.1 sec. x 5 times P0963: 0.1 sec. x 5 times
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

P0961: Linear Solenoid 1 (Feedback Stuck)

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Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Linear solenoid 1 (P0962,P0963)	No failure
Check the feedback terminal voltage	0.257 V or less
Battery voltage	10.5 V or more
Above condition (Battery voltage) satisfied for	0.5 sec. or more

P0962: Linear Solenoid 1 (GND Short/Open)

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Linear solenoid 1 (P0961)	No failure

P0963: Linear Solenoid 1 (Battery Short)

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Linear solenoid 1 (P0961)	No failure

TYPICAL MALFUNCTION THRESHOLDS

P0961: Linear Solenoid 1 (Feedback Stuck)

The accumulation of difference between target current and feedback current (Sum_ie).	12 A or more
Sum_ie is cleared when at least one of the following conditions is satisfied. 1. Enable conditions are not satisfied. 2. Difference between target current and feedback current (ie) is between -50 mA and 50 mA. 3. Plus and minus of ie is turned over.	

P0962: Linear Solenoid 1 (GND Short/Open)

Check the feedback terminal voltage.	0.018 V or less
Elapsed time after recovering from Battery Short.	1 sec. or more

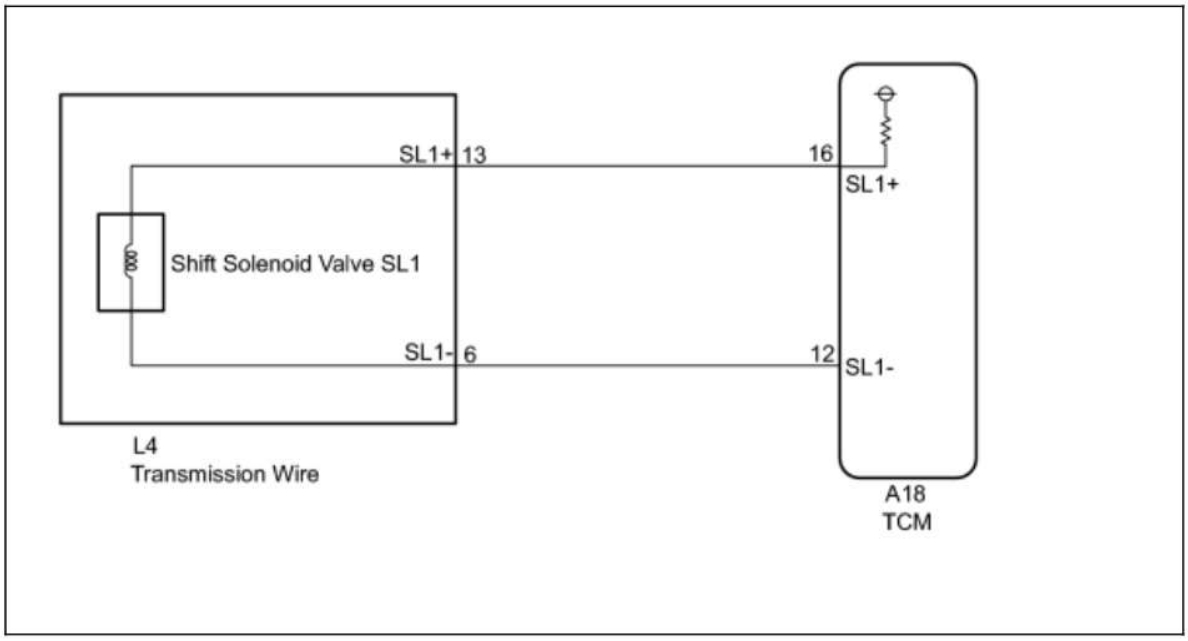
P0963: Linear Solenoid 1 (Battery Short)

Check the feedback terminal voltage.	0.257 V or more

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Elapsed time after recovering from GND short/open.	1 sec. or more

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

HINT:

- The shift solenoid valve SL1 is turned on/off normally when the shift lever is in the D position:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
Shift solenoid valve SL1	OFF	OFF	OFF	OFF	ON	ON

PROCEDURE

1.	**INSPECT TRANSMISSION WIRE (SL1)**

(a) Disconnect the L4 transmission wire connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L4-13(SL1+) - L4-6(SL1-)	20°C(68°F)	5.0 to 5.6 Ω
L4-13(SL1+) - Body ground	Always	10 kΩ or higher
L4-6(SL1-) - Body ground	Always	10 kΩ or higher

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(c) Connect the L4 transmission wire connector.

NG ▶ INSPECT SHIFT SOLENOID VALVE SL1

OK ▼

2.	CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)

(a) Disconnect the A18 TCM connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-16(SL1+) - A18-12(SL1-)	20°C(68°F)	5.0 to 5.6 Ω
A18-16(SL1+) - Body ground	Always	10 kΩ or higher
A18-12(SL1-) - Body ground	Always	10 kΩ or higher

(c) Connect the A18 TCM connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▼

3.	REPLACE TCM

(a) Replace the TCM INFO .

NEXT ▶ PERFORM THE RESET MEMORY

4.	INSPECT SHIFT SOLENOID VALVE SL1

(a) Remove the shift solenoid valve SL1 INFO .

(b) Perform inspection of the shift solenoid valve SL1 INFO .

NG ▶ REPLACE SHIFT SOLENOID VALVE SL1

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OK ▶ REPAIR OR REPLACE TRANSMISSION WIRE



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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W8G0D9X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0965-P0967: Pressure Control Solenoid "B" Performance (SL2 Solenoid) (2013 FR-S)		

DTC	**P0965**	**Pressure Control Solenoid "B" Performance (SL2 Solenoid)**

DTC	**P0966**	**Pressure Control Solenoid "B" Control Circuit Low (Shift Solenoid Valve DS2)**

DTC	**P0967**	**Pressure Control Solenoid "B" Control Circuit High (Shift Solenoid Valve DS2)**

DESCRIPTION

Based upon a signal from the TCM, the combination of shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2) changes the gear position from 1st to 6th. As a fail-safe function if the c.

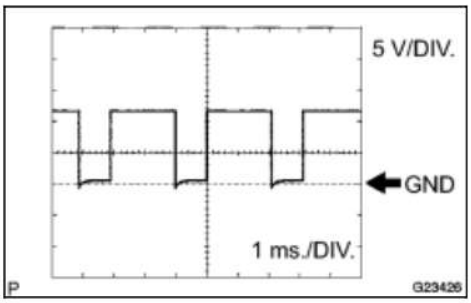
DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0965	1. Not learning control prohibited status 2. The difference between the shift solenoid valve SL2 operational specified current and operational feedback current is 12 A or more in total. 3. Detects "2.Malfunction Status" 2 times consecutively. 4. 1-trip detection logic	• Shift solenoid valve SL2 • Transmission wire • Harness and connector • TCM
P0966	1. Not learning control prohibited status 1 second or more has elapsed after turning shift solenoid valve SL2 off 2. The shift solenoid valve SL1 operational feedback voltage is 0.018 V or less. 3. Detects malfunction that continues for 100 ms or more 5 times consecutively. 4. 1-trip detection logic	• Shift solenoid valve SL2 • Transmission wire • Harness and connector • TCM
	1. Not learning control prohibited status 1 second or more has elapsed after turning shift solenoid valve SL2 on 2. The shift solenoid valve SL1 operational feedback voltage is	• Shift solenoid valve SL2 • Transmission

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P0967	0.257 V or more. 3. Detects malfunction that continues for 100 ms or more 5 times consecutively. 4. 1-trip detection logic	wire • Harness and connector • TCM

Reference (Using an oscilloscope):

Check the waveform between the terminals SL2+ and SL2- of the TCM connector



Standard:
Refer to the illustration.

Terminal	SL2+ - SL2-
Tool setting	5 V/DIV., 1 ms./DIV.
Vehicle condition	Engine idle speed

MONITOR DESCRIPTION

This DTC indicates an open or short in the shift solenoid valve SL2 circuit. The TCM commands gear shifts by turning the shift solenoid valves "ON/OFF". When there is an open or short circuit in any shift solenoid valve circuit, the TCM detects the problem and illuminates the MIL and stores the DTC.

MONITOR STRATEGY

Related DTCs	P0965: Linear Solenoid 2 (Feedback Stuck) P0966: Linear Solenoid 2 (GND Short/Open) P0967: Linear Solenoid 2 (Battery Short)
Required sensors/Components	Shift solenoid valve SL2
Frequency of operation	Continuous
Duration	P0965: 2 count P0966: 0.1 sec. x 5 times P0967: 0.1 sec. x 5 times
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

P0965: Linear Solenoid 2 (Feedback Stuck)

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Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Linear solenoid 2 (P0965,P0966)	No failure
Check the feedback terminal voltage	0.257 V or less
Battery voltage	10.5 V or more
Above condition (Battery voltage) satisfied for	0.5 sec. or more

P0966: Linear Solenoid 2 (GND Short/Open)

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Linear solenoid 2 (P0965)	No failure

P0967: Linear Solenoid 2 (Battery Short)

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Linear solenoid 2 (P0965)	No failure

TYPICAL MALFUNCTION THRESHOLDS

P0965: Linear Solenoid 2 (Feedback Stuck)

The accumulation of difference between target current and feedback current (Sum_ie).	12 A or more
Sum_ie is renewed every 25msec. Sum_ie is cleared when at least one of the following conditions is satisfied. 1. Enable conditions are not satisfied. 2. Difference between target current and feedback current (ie) is between -50 mA and 50 mA. 3. Plus and minus of ie is turned over.	

P0966: Linear Solenoid 2 (GND Short/Open)

Voltage of the feedback terminal	0.018 V or less
Elapsed time after recovering from Battery Short.	1 sec. or more

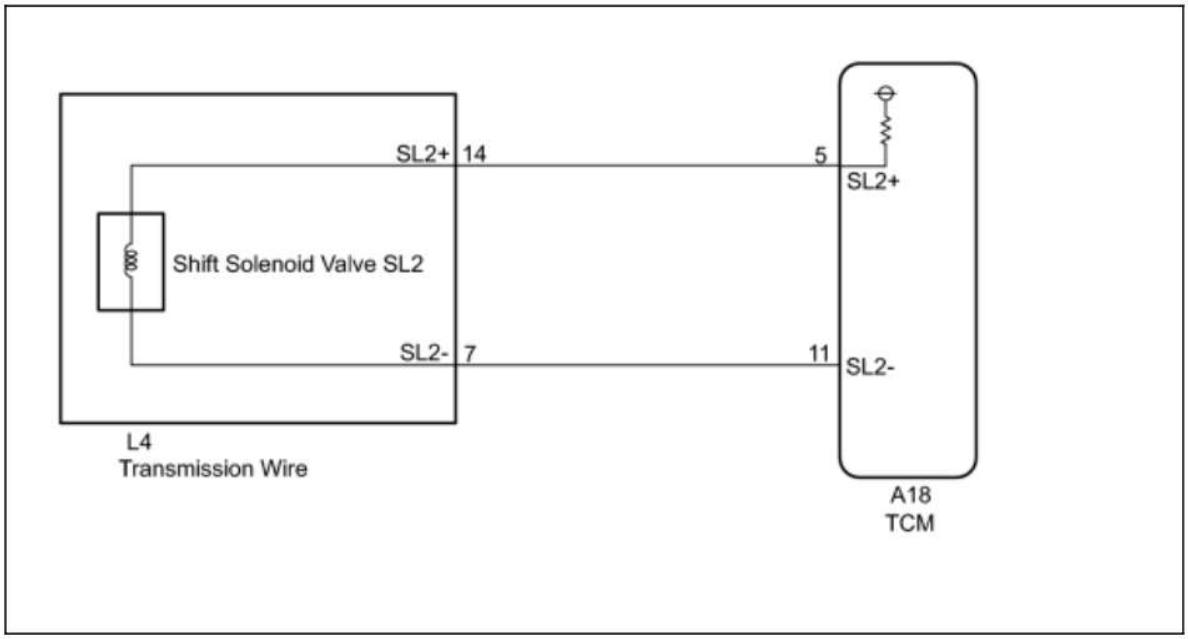
P0967: Linear Solenoid 2 (Battery Short)

Voltage of the feedback terminal	0.257 V or more

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Elapsed time after recovering from GND short/open.	1 sec. or more

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

HINT:

- The shift solenoid valve SL2 is turned on/off normally when the shift lever is in the D position:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
Shift solenoid valve SL2	ON	OFF	OFF	ON	OFF	OFF

PROCEDURE

1.	**INSPECT TRANSMISSION WIRE (SL2)**

(a) Disconnect the L4 transmission wire connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L4-14(SL2+) - L4-7(SL2-)	20°C(68°F)	5.0 to 5.6 Ω
L4-14(SL2+) - Body ground	Always	10 kΩ or higher
L4-7(SL2-) - Body ground	Always	10 kΩ or higher

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(c) Connect the L4 transmission wire connector.

NG ▶ INSPECT SHIFT SOLENOID SL2

OK ▼

2.	CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)

(a) Disconnect the TCM connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-5(SL2+) - A18-11(SL2-)	20°C(68°F)	5.0 to 5.6 Ω
A18-5(SL2+) - Body ground	Always	10 kΩ or higher
A18-11(SL2-) - Body ground	Always	10 kΩ or higher

(c) Connect the TCM connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▼

3.	REPLACE TCM

(a) Replace the TCM INFO .

NEXT ▶ THE RESET MEMORY

4.	INSPECT SHIFT SOLENOID SL2

(a) Remove the shift solenoid valve SL2 INFO .

(b) Perform inspection of the shift solenoid valve SL2 INFO .

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NG ▶ REPLACE SHIFT SOLENOID SL2

OK ▶ REPAIR OR REPLACE TRANSMISSION WIRE



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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W860B0X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0973,P0974: Shift Solenoid "A" Control Circuit Low (Shift Solenoid Valve S1) (2013 FR-S)		

DTC	**P0973**	**Shift Solenoid "A" Control Circuit Low (Shift Solenoid Valve S1)**

DTC	**P0974**	**Shift Solenoid "A" Control Circuit High (Shift Solenoid Valve S1)**

DESCRIPTION

Based upon a signal from the TCM, the combination of shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2) changes the gear position from 1st to 6th. As a fail-safe function if the solenoid valve system is open or shorted, the TCM cuts power to all solenoids, leaving just the mechanical hydraulic circuit, requiring manual shifting.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0973	1. Not learning control prohibited status 2. During shift solenoid valve S1 on signal is output, the TCM S1 output monitor value is "off". 3. Continues for 500ms or more. 4. 1-trip detection logic	• Shift solenoid valve S1 • Transmission wire • Harness and connector • TCM
P0974	1. Not learning control prohibited status 2. During shift solenoid valve S1 off signal is output, the TCM S1 output monitor value is "on". 3. Continues for 500ms or more. 4. 1-trip detection logic	• Shift solenoid valve S1 • Transmission wire • Harness and connector • TCM

MONITOR DESCRIPTION

These DTCs indicate an open or short in the shift solenoid valve S1 circuit. When there is an open or short circuit in any shift solenoid valve circuit, the TCM detects the problem and illuminates the MIL and stores the DTC.

MONITOR STRATEGY

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Related DTCs	P0973: Shift Solenoid 1 (GND Short) P0974: Shift Solenoid 1 (Open/Battery Short)
Required sensors/Components	Shift solenoid valve S1
Frequency of operation	Continuous
Duration	0.5 sec.
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active

TYPICAL MALFUNCTION THRESHOLDS

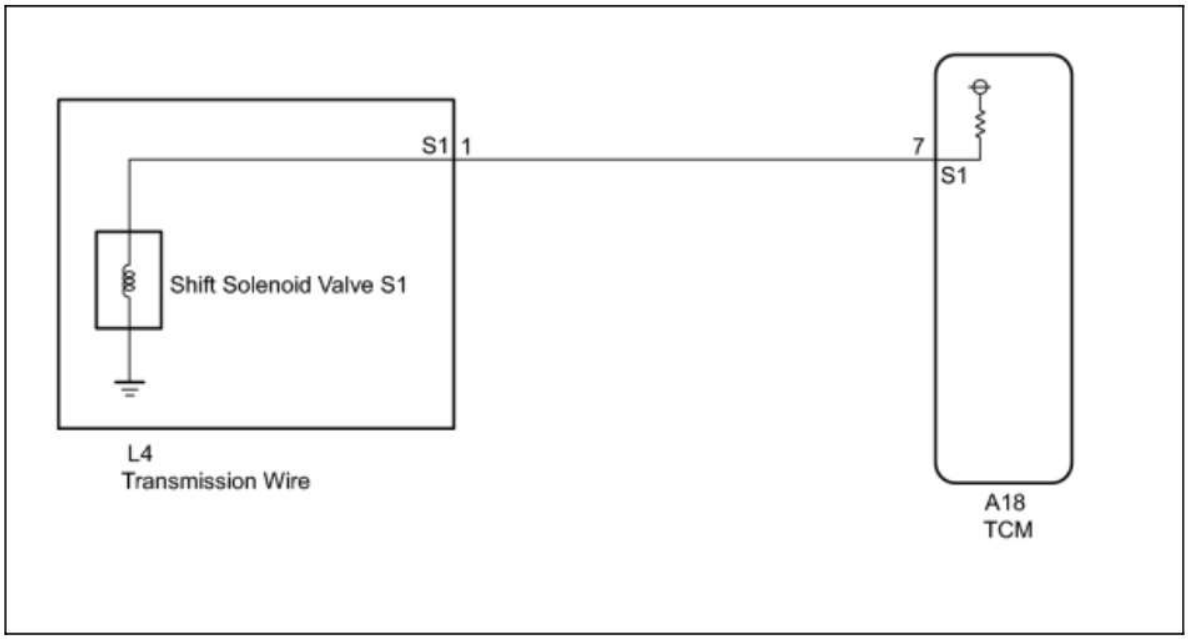
P0973: Shift Solenoid 1 (GND Short)

Status of output monitor when TCM outputs ON signal	OFF

P0974: Shift Solenoid 1 (Open/Battery Short)

Status of output monitor when TCM outputs OFF signal	ON

WIRING DIAGRAM



INSPECTION PROCEDURE

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NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

HINT:

The shift solenoid valve S1 is turned on/off normally when the shift lever is in the D position:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
Shift solenoid valve S1	OFF	ON	ON	ON	ON	ON

PROCEDURE

1.	**INSPECT TRANSMISSION WIRE (S1)**

(a) Disconnect the A18 TCM connector.

(b) Measure the voltage according to the value(s) in the table below.

Standard voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-7(S1) - Body ground	Ignition switch ON	Below 1 V

(c) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-7(S1) - Body ground	20°C(68°F)	11 to 15 Ω

(d) Connect the A18 TCM connector.

NG ▶ **CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)**

OK ▼

2.	**REPLACE TCM**

(a) Replace the TCM INFO .

NEXT ▶ **PERFORM THE RESET MEMORY**

3.	**CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)**

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(a) Disconnect the A18 TCM connector.

(b) Disconnect the L4 transmission wire connector.

(c) Measure the voltage according to the value(s) in the table below.

Standard voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L4-1(S1) - Body ground	Ignition switch ON	Below 1 V

(d) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L4-1(S1) - A18-7(S1)	Always	Below 1 Ω
L4-1(S1) and A18-7(S1) - Body ground	Always	10 kΩ or higher

(e) Connect the A18 TCM connector.

(f) Connect the L4 transmission wire connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

4.	**INSPECT SHIFT SOLENOID VALVE S1**

(a) Remove the shift solenoid valve S1 INFO .

(b) Perform inspection of the shift solenoid valve S1 INFO .

NG ▶ **REPLACE SHIFT SOLENOID VALVE S1**

OK ▶ **REPAIR OR REPLACE TRANSMISSION WIRE**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W870ASX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0976,P0977: Shift Solenoid "B" Control Circuit Low (Shift Solenoid Valve S2) (2013 FR-S)		

DTC	**P0976**	**Shift Solenoid "B" Control Circuit Low (Shift Solenoid Valve S2)**

DTC	**P0977**	**Shift Solenoid "B" Control Circuit High (Shift Solenoid Valve S2)**

DESCRIPTION

Based upon a signal from the TCM, the combination of shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2) changes the gear position from 1st to 6th. As a fail-safe function if the solenoid valve system is open or shorted, the TCM cuts power to all solenoids, leaving just the mechanical hydraulic circuit, requiring manual shifting.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0976	1. Not learning control prohibited status 2. During shift solenoid valve S2 on signal is output, the TCM's S2 output monitor value is "off". 3. Continues for 500ms or more. 4. 1-trip detection logic	• Shift solenoid valve S2 • Transmission wire • Harness and connector • TCM
P0977	1. Not learning control prohibited status 2. During shift solenoid valve S2 off signal is output, the TCM's S2 output monitor value is "on". 3. Continues for 500ms or more. 4. 1-trip detection logic	• Shift solenoid valve S2 • Transmission wire • Harness and connector • TCM

MONITOR DESCRIPTION

These DTCs indicate an open or short in the shift solenoid valve S2 circuit. When there is an open or short circuit in any shift solenoid valve circuit, the TCM detects the problem and illuminates the MIL and stores the DTC.

MONITOR STRATEGY

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Related DTCs	P0976: Shift Solenoid2 (GND Short) P0977: Shift Solenoid2 (Open/Battery Short)
Required sensors/Components	Shift solenoid valve S2
Frequency of operation	Continuous
Duration	0.5 sec.
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active

TYPICAL MALFUNCTION THRESHOLDS

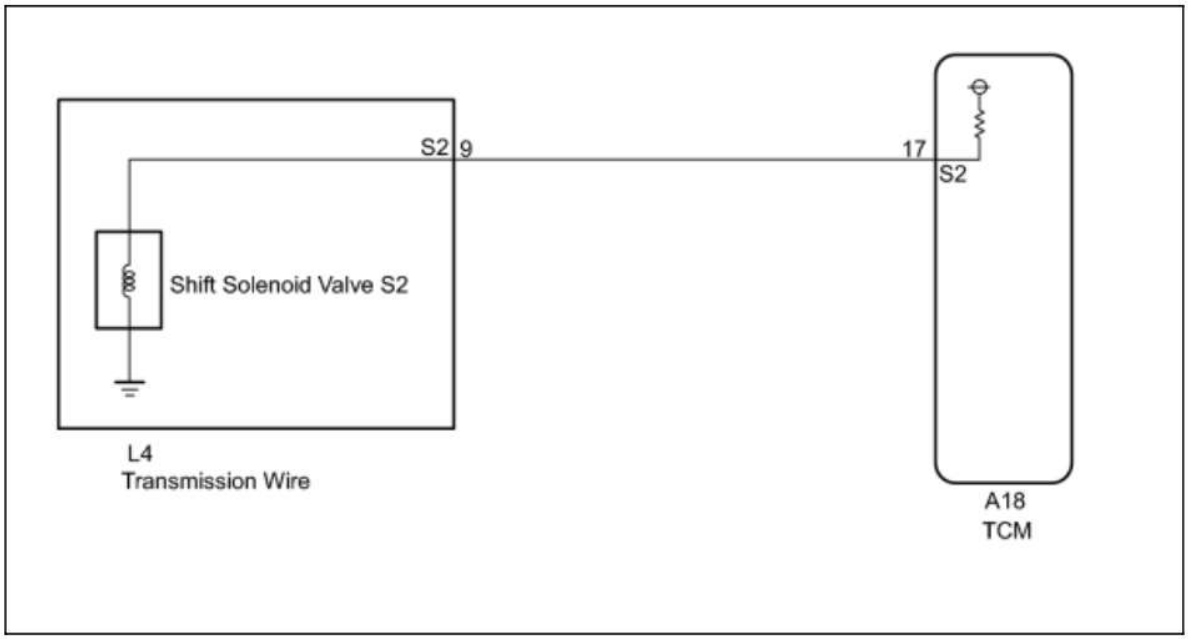
P0976: Shift Solenoid2 (GND Short)

Status of output monitor when TCM outputs ON signal	OFF

P0977: Shift Solenoid2 (Open/Battery Short)

Status of output monitor when TCM outputs OFF signal	ON

WIRING DIAGRAM



INSPECTION PROCEDURE

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NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

HINT:

- The shift solenoid valve S2 is turned on/off normally when the shift lever is in the D position:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
Shift solenoid valve S2	ON	ON	OFF	OFF	OFF	ON

PROCEDURE

1.	**INSPECT TRANSMISSION WIRE (S2)**

(a) Disconnect the A18 TCM connector.

(b) Measure the voltage according to the value(s) in the table below.

Standard voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-17(S2) - Body ground	Ignition switch ON	Below 1 V

(c) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-17(S2) - Body ground	20°C(68°F)	11 to 15 Ω

(d) Connect the A18 TCM connector.

NG ▶ **CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)**

OK ▼

2.	**REPLACE TCM**

(a) Replace the TCM INFO .

NEXT ▶ **PERFORM THE RESET MEMORY**

3.	**CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)**

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(a) Disconnect the A18 TCM connector.

(b) Disconnect the L4 transmission wire connector.

(c) Measure the voltage according to the value(s) in the table below.

Standard voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L4-9(S2) - Body ground	Ignition switch ON	Below 1 V

(d) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L4-9(S2) - A18-17(S2)	Always	Below 1 Ω
L4-9(S2) and A18-17(S2) - Body ground	Always	10 kΩ or higher

(e) Connect the A18 TCM connector.

(f) Connect the L4 transmission wire connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

4.	**INSPECT SHIFT SOLENOID VALVE S2**

(a) Remove the shift solenoid valve S2 INFO .

(b) Perform inspection of the shift solenoid valve S2 INFO .

NG ▶ **REPLACE SHIFT SOLENOID VALVE S2**

OK ▶ **REPAIR OR REPLACE TRANSMISSION WIRE**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W8B05BX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0979,P0980: Shift Solenoid "C" Control Circuit Low (Shift Solenoid Valve S3) (2013 FR-S)		

DTC	**P0979**	**Shift Solenoid "C" Control Circuit Low (Shift Solenoid Valve S3)**

DTC	**P0980**	**Shift Solenoid "C" Control Circuit High (Shift Solenoid Valve S3)**

DESCRIPTION

Based upon a signal from the TCM, the combination of shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2) changes the gear position from 1st to 6th. As a fail-safe function if the solenoid valve system is open or shorted, the TCM cuts power to all solenoids, leaving just the mechanical hydraulic circuit, requiring manual shifting.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0979	1. Not learning control prohibited status 2. During shift solenoid valve S3 on signal is output, the TCM's S3 output monitor value is "off". 3. Continues for 500ms or more. 4. 1-trip detection logic	• Shift solenoid valve S3 • Transmission wire • Harness and connector • TCM
P0980	1. Not learning control prohibited status 2. During shift solenoid valve S3 off signal is output, the TCM's S3 output monitor value is "on". 3. Continues for 500ms or more. 4. 1-trip detection logic	• Open in shift solenoid valve S3 circuit • Shift solenoid valve S3 • TCM

MONITOR DESCRIPTION

These DTCs indicate an open or short in the shift solenoid valve S3 circuit. When there is an open or short circuit in any shift solenoid valve circuit, the TCM detects the problem and illuminates the MIL and stores the DTC.

MONITOR STRATEGY

Related DTCs	P0979: Shift Solenoid 3 (GND Short) P0980: Shift Solenoid 3 (OPEN/Battery Short)

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Required sensors/Components	Shift solenoid valve S3
Frequency of operation	Continuous
Duration	0.5 sec.
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active

TYPICAL MALFUNCTION THRESHOLDS

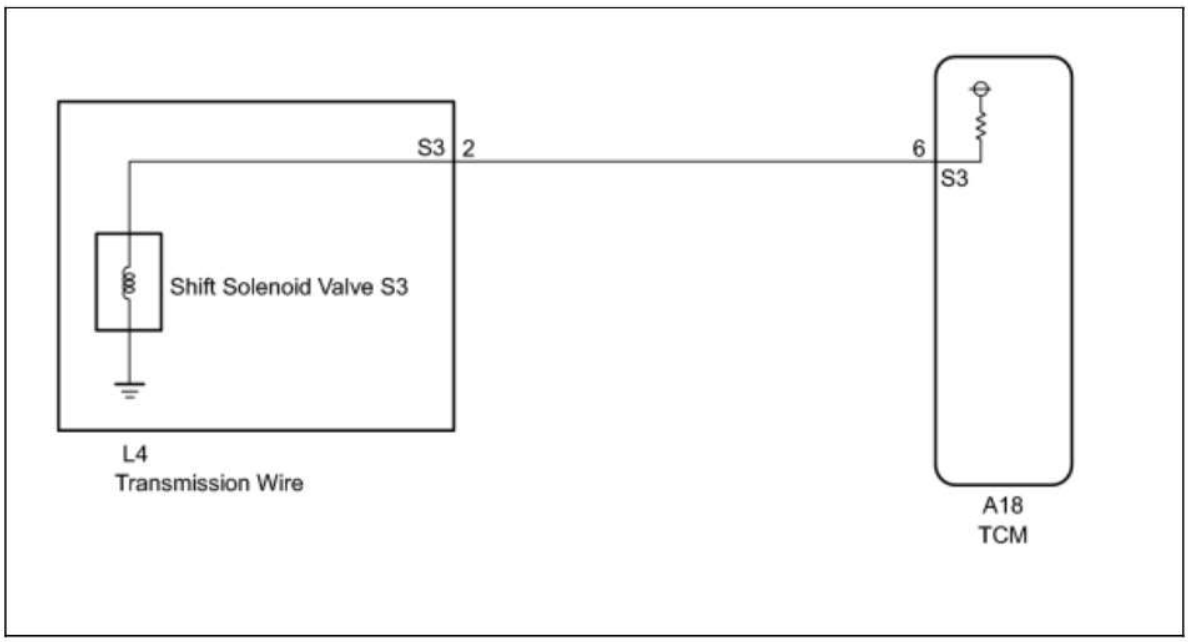
P0979: Shift Solenoid 3 (GND Short)

Status of output monitor when TCM outputs ON signal	OFF

P0980: Shift Solenoid 3 (OPEN/Battery Short)

Status of output monitor when TCM outputs OFF signal	ON

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

HINT:

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- The shift solenoid valve S3 is turned on/off normally when the shift lever is in the D position:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
Shift solenoid valve S3	ON	ON	ON	OFF	OFF	OFF

PROCEDURE

1.	INSPECT TRANSMISSION WIRE (S3)

(a) Disconnect the A18 TCM connector.

(b) Measure the voltage according to the value(s) in the table below.

Standard voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-6(S3) - Body ground	Ignition switch ON	Below 1 V

(c) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-6(S3) - Body ground	20°C(68°F)	11 to 15 Ω

(d) Connect the A18 TCM connector.

NG ▶ **CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)**

OK ▼

2.	REPLACE TCM

(a) Replace the TCM INFO .

NEXT ▶ **PERFORM THE RESET MEMORY**

3.	CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)

(a) Disconnect the A18 TCM connector.

(b) Disconnect the L4 transmission wire connector.

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(c) Measure the voltage according to the value(s) in the table below.

Standard voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L4-2(S3) - Body ground	Ignition switch ON	Below 1 V

(d) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L4-2(S3) - A18-6(S3)	Always	Below 1 Ω
L4-2(S3) or A18-6(S3) - Body ground	Always	10 kΩ or higher

(e) Connect the A18 TCM connector.

(f) Connect the L4 transmission wire connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

4.	**INSPECT SHIFT SOLENOID VALVE S3**

(a) Remove the shift solenoid valve S3 INFO .

(b) Perform inspection of the shift solenoid valve S3 INFO .

NG ▶ **REPLACE SHIFT SOLENOID VALVE S3**

OK ▶ **REPAIR OR REPLACE TRANSMISSION WIRE**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W8C06ZX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P0982,P0983: Shift Solenoid "D" Control Circuit Low (Shift Solenoid Valve S4) (2013 FR-S)		

DTC	**P0982**	**Shift Solenoid "D" Control Circuit Low (Shift Solenoid Valve S4)**

DTC	**P0983**	**Shift Solenoid "D" Control Circuit High (Shift Solenoid Valve S4)**

DESCRIPTION

Based upon a signal from the TCM, the combination of shift solenoid valve (S1, S2, S3, S4, SR, SL1, SL2) changes the gear position from 1st to 6th. As a fail-safe function if the solenoid valve system is open or shorted, the TCM cuts power to all solenoids, leaving just the mechanical hydraulic circuit, requiring manual shifting.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P0982	1. Not learning control prohibited status 2. During shift solenoid valve S4 on signal is output, the TCM's S4 output monitor value is "off". 3. Continues for 500ms or more. 4. 1-trip detection logic	• Shift solenoid valve S4 • Transmission wire • Harness and connector • TCM
P0983	1. Not learning control prohibited status 2. During shift solenoid valve S4 off signal is output, the TCM's S4 output monitor value is "on". 3. Continues for 500ms or more. 4. 1-trip detection logic	• Shift solenoid valve S4 • Transmission wire • Harness and connector • TCM

MONITOR DESCRIPTION

These DTCs indicate an open or short in the shift solenoid valve S4 circuit. When there is an open or short circuit in any shift solenoid valve circuit, the TCM detects the problem and illuminates the MIL and stores the DTC.

MONITOR STRATEGY

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Related DTCs	P0982: Shift Solenoid 4 (GND Short) P0983: Shift Solenoid 4 (Open/Battery Short)
Required sensors/Components	Shift solenoid valve S4
Frequency of operation	Continuous
Duration	0.5 sec.
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active

TYPICAL MALFUNCTION THRESHOLDS

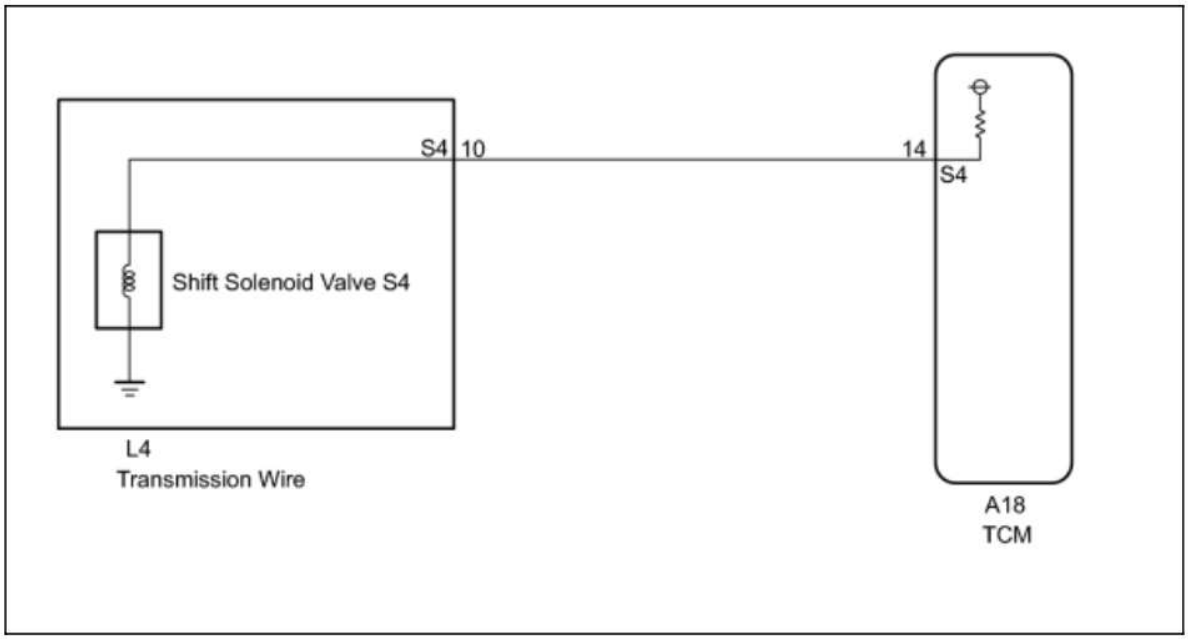
P0982: Shift Solenoid 4 (GND Short)

Status of output monitor when TCM outputs ON signal	OFF

P0983: Shift Solenoid 4 (Open/Battery Short)

Status of output monitor when TCM outputs OFF signal	ON

WIRING DIAGRAM



INSPECTION PROCEDURE

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NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

HINT:

- The shift solenoid valve S4 is turned on/off normally when the shift lever is in the D position:

TCM command gearshift	1st	2nd	3rd	4th	5th	6th
Shift solenoid valve S4	OFF	ON	OFF	OFF	ON	ON

PROCEDURE

1.	**INSPECT TRANSMISSION WIRE (S4)**

(a) Disconnect the A18 TCM connector.

(b) Measure the voltage according to the value(s) in the table below.

Standard voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-14(S4) - Body ground	Ignition switch ON	Below 1 V

(c) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-14(S4) - Body ground	20°C(68°F)	11 to 15 Ω

(d) Connect the A18 TCM connector.

NG ▶ **CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)**

OK ▼

2.	**REPLACE TCM**

(a) Replace the TCM INFO .

NEXT ▶ **PERFORM THE RESET MEMORY**

3.	**CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)**

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(a) Disconnect the A18 TCM connector.

(b) Disconnect the L4 transmission wire connector.

(c) Measure the voltage according to the value(s) in the table below.

Standard voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L4-10(S4) - Body ground	Ignition switch ON	Below 1 V

(d) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L4-10(S4) - A18-14(S4)	Always	Below 1 Ω
L4-10(S4) and A18-14(S4) - Body ground	Always	10 kΩ or higher

(e) Connect the A18 TCM connector.

(f) Connect the L4 transmission wire connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

4.	**INSPECT SHIFT SOLENOID VALVE S4**

(a) Remove the shift solenoid valve S4 INFO .

(b) Perform inspection of the shift solenoid valve S4 INFO .

NG ▶ **REPLACE SHIFT SOLENOID VALVE S4**

OK ▶ **REPAIR OR REPLACE TRANSMISSION WIRE**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000TA0125X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P1817: Manual Mode Switch Circuit Malfunction (2013 FR-S)		

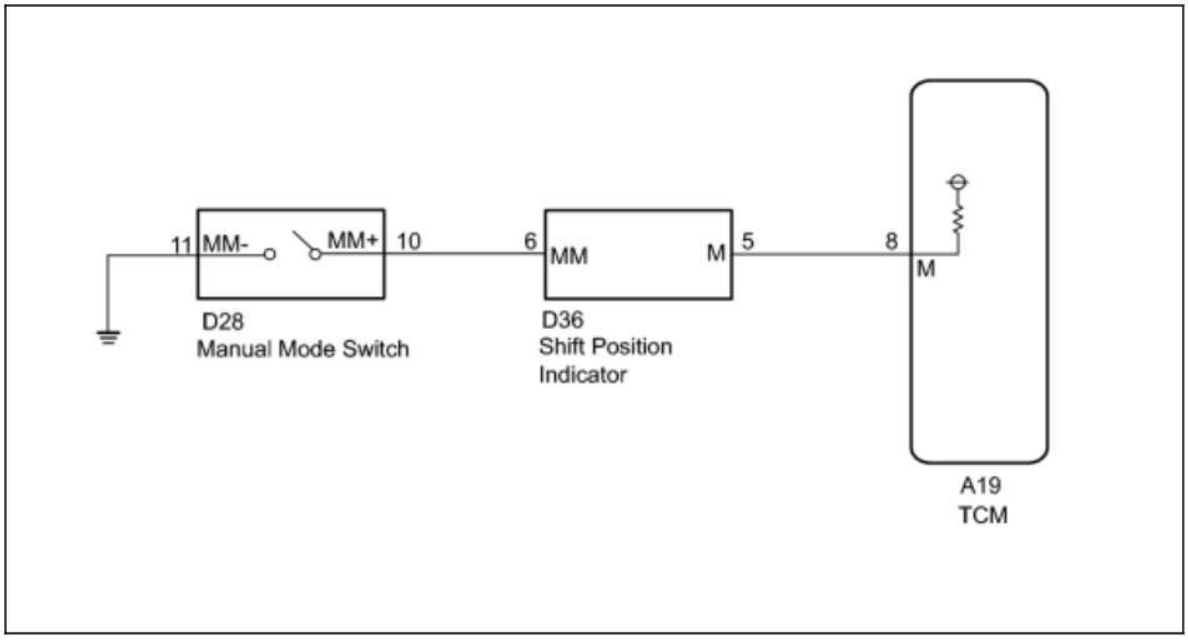
DTC	**P1817**	**Manual Mode Switch Circuit Malfunction**

DESCRIPTION

A signal from the manual mode switch assembly input into the TCM detects the M position.

DTC CODE	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P1817	1. Shift position sensor is normal, and not in learning control prohibited status. 2. The shift lever is in P, N, or R, and the M switch is on. 3. Continues for 2 sec. 4. 1-trip detection logic	• Manual mode switch • Harness and connector • TCM

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

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1.	CHECK MANUAL MODE SWITCH

(a) Disconnect the A19 TCM connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	SHIFT POSITION	SPECIFIED CONDITION
A19-8(M) - Body ground	M	Below 1 Ω
A19-8(M) - Body ground	Except M	10 kΩ or higher

(c) Connect the A19 TCM connector.

NG ▶ **CHECK HARNESS AND CONNECTOR (MANUAL MODE SWITCH - SHIFT POSITION INDICATOR)**

OK ▼

2.	REPLACE TCM

(a) Replace the TCM INFO .

NEXT ▶ **PERFORM THE RESET MEMORY**

3.	CHECK HARNESS AND CONNECTOR (MANUAL MODE SWITCH - SHIFT POSITION INDICATOR)

(a) Disconnect the D36 shift position indicator connector.

(b) Disconnect the D28 manual mode switch connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
D36-6(MM) - D28-10(MM+)	Always	Below 1 Ω
D36-6(MM) - Body ground	Always	10 kΩ or higher
D28-10(MM+) - Body ground	Always	10 kΩ or higher

(d) Connect the D36 shift position indicator connector.

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(e) Connect the D28 manual mode switch connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

4.	**INSPECT MANUAL MODE SWITCH**

(a) Disconnect the D28 manual mode switch connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	SHIFT POSITION	SPECIFIED CONDITION
D28-10(MM+) - D28-11(MM-)	M	Below 1 Ω
	Except M	10 kΩ or higher

(c) Disconnect the D28 manual mode switch connector.

NG ▶ **REPLACE MANUAL MODE SWITCH**

OK ▼

5.	**CHECK HARNESS AND CONNECTOR (TCM - SHIFT POSITION INDICATOR)**

(a) Disconnect the A19 TCM connector.

(b) Disconnect the D36 shift position indicator connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
D36-5(M) - A19-8(M)	Always	Below 1 Ω
D36-5(M) - Body ground	Always	10 kΩ or higher
A19-8(M) - Body ground	Always	10 kΩ or higher

(d) Connect the A19 TCM connector.

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(e) Connect the D36 shift position indicator connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▶ **REPLACE SHIFT POSITION INDICATOR**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W8A0GAX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P2719,P2720,P2721: Pressure Control Solenoid "D" Circuit Performance (SLT Solenoid) (2013 FR-S)		

DTC	**P2719**	**Pressure Control Solenoid "D" Circuit Performance (SLT Solenoid)**

DTC	**P2720**	**Pressure Control Solenoid "D" Control Circuit Low**

DTC	**P2721**	**Pressure Control Solenoid "D" Control Circuit High**

DESCRIPTION

The shift solenoid valve SLT is controlled by the duty ratio as determined in advance by the transmission control computer, based upon signals from the accelerator position sensor, input speed sensor NT and output speed sensor SP2. In this way, the line pressure is adjusted to match the throttle valve opening angle and engine output. The TCM uses the revolution signals from the input speed sensor NT and output speed sensor SP2 to detect clutch and other slipping.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P2719	1. Not learning control prohibited status 2. The difference between the shift solenoid valve SLT operational specified current and operational feedback current is 12 A or more in total. 3. Detects "2.Malfunction Status" 2 times consecutively. 4. 1-trip detection logic	• Shift solenoid valve SLT • Transmission wire • Harness and connector • TCM
P2720	1. Not learning control prohibited status 2. 1 second or more has elapsed after turning shift solenoid valve SLT off. The shift solenoid valve SLT operational feedback voltage is 0.018 V or less. 3. Detects malfunction that continues for 100 ms or more 5 times consecutively. 4. 1-trip detection logic	• Shift solenoid valve SLT • Transmission wire • Harness and connector • TCM
	1. Not learning control prohibited status 2. 1 second or more has elapsed after turning shift solenoid valve SLT on.	• Shift solenoid valve SLT

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P2721	The shift solenoid valve SLT operational feedback voltage is 0.257 V or more. 3. Detects malfunction that continues for 100 ms or more 5 times consecutively. 4. 1-trip detection logic	• Transmission wire • Harness and connector • TCM

MONITOR DESCRIPTION

When an open or short in the shift solenoid valve SLT circuit is detected, the TCM interprets this as a fault. The TCM will turn on the MIL and store the DTC.

MONITOR STRATEGY

Related DTCs	P2719: Line Pressure Linear Solenoid (Feedback Stuck) P2720: Line Pressure Linear Solenoid (GND Short/Open) P2721: Line Pressure Linear Solenoid (Battery Short)
Required sensors/Components	Shift solenoid valve SLT
Frequency of operation	Continuous
Duration	P2719: 2 count P2720: 0.1 sec. x 5 times P2721: 0.1 sec. x 5 times
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

P2719: Line Pressure Linear Solenoid (Feedback Stuck)

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Line pressure linear solenoid(P2720,P2721)	No failure
Check the feedback terminal voltage	0.257 V or less
Battery voltage	10.5 V or more
Above condition (Battery voltage) is satisfied for	0.5 sec. or more

P2720: Line Pressure Linear Solenoid (GND Short/Open)

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Line pressure linear solenoid(P2719)	No failure

P2721: Line Pressure Linear Solenoid (Battery Short)

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Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Line pressure linear solenoid(P2719)	No failure

TYPICAL MALFUNCTION THRESHOLDS

P2719: Line Pressure Linear Solenoid (Feedback Stuck)

The accumulation of difference between target current and feedback current (Sum_ie).	12 A or more
Sum_ie is renewed every 25msec. Sum_ie is cleared when at least one of the following conditions is satisfied. 1. Enable conditions are not satisfied. 2. Difference between target current and feedback current (ie) is between -50 mA and 50 mA. 3. Plus and minus of ie is turned over.	

P2720: Line Pressure Linear Solenoid (GND Short/Open)

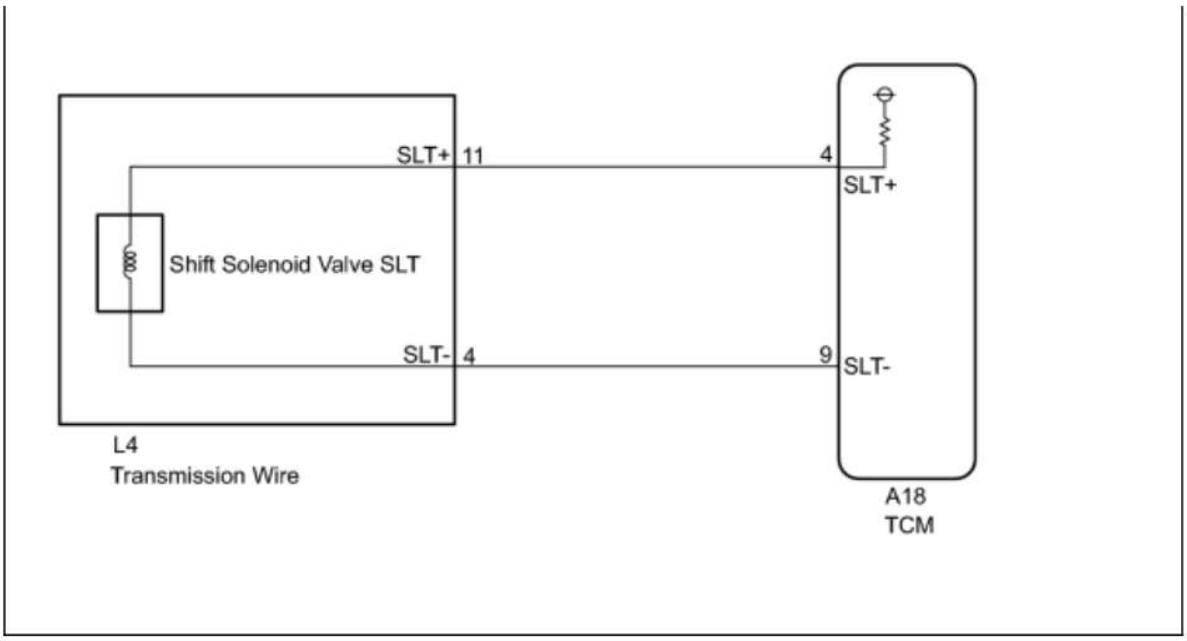
Check the feedback terminal voltage.	0.018 V or less
Elapsed time after recovering from Battery Short.	1 sec. or more

P2721: Line Pressure Linear Solenoid (Battery Short)

Check the feedback terminal voltage.	0.257 V or more
Elapsed time after recovering from Battery Short.	1 sec. or more

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

PROCEDURE

1.	**CHECK HARNESS AND CONNECTOR**

(a) Disconnect the A18 TCM connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-4(SLT+) - A18-9(SLT-)	20°C(68°F)	5.0 to 5.6 Ω

(c) Disconnect the A18 TCM connector.

NG ▶ **CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)**

OK ▼

2.	**REPLACE TCM**

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(a) Replace the TCM INFO .

NEXT ▶ PERFORM THE RESET MEMORY

3.	CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)

(a) Disconnect the A18 TCM connector.

(b) Disconnect the L4 transmission wire connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-4(SLT+) - L4-11(SLT+)	Always	Below 1 Ω
A18-9(SLT-) - L4-4(SLT-)	Always	Below 1 Ω

(d) Measure the voltage according to the value(s) in the table below.

Standard voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-4(SLT+) - Body ground	Ignition switch ON	Below 1 V
A18-9(SLT-) - Body ground	Ignition switch ON	Below 1 V

(e) Connect the A18 TCM connector.

(f) Connect the L4 transmission wire connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▼

4.	INSPECT SHIFT SOLENOID VALVE SLT

(a) Remove the shift solenoid valve SLT INFO .

(b) Perform inspection of the shift solenoid valve SLT INFO .

NG ▶ REPLACE SHIFT SOLENOID VALVE SLT

OK ▶ REPAIR OR REPLACE TRANSMISSION WIRE

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W8D0DAX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P2757,P2758: Torque Converter Clutch Pressure Control Solenoid Performance (Shift Solenoid Valve SLU) (2013 FR-S)		

DTC	**P2757**	**Torque Converter Clutch Pressure Control Solenoid Performance (Shift Solenoid Valve SLU)**

DTC	**P2758**	**Torque Converter Pressure Control Solenoid Circuit Stuck ON / Performance (SLU / DSU Solenoid)**

SYSTEM DESCRIPTION

The shift solenoid valve SLT is controlled by the duty ratio as determined in advance by the transmission control computer, based upon signals from the accelerator position sensor, input speed sensor NT and output speed sensor SP2. In this way, the line pressure is adjusted to match the throttle valve opening angle and engine output. The TCM uses the revolution signals from the input speed sensor NT and output speed sensor SP2 to detect clutch and other slipping.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P2757	1. The following conditions are met: a. Not learning control prohibited status b. 4 seconds or more have elapsed after moving the shift lever to D. c. Coolant temperature is 40°C (104°F) or more. d. ATF temperature is 20°C (68 °F) or more. e. 4th or higher gears f. Abnormalities with the shift solenoid valve (S1, S2, S3, S4, SR, SLT, SLU), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature, electronically control throttle and accelerator pedal sensor are not detected. 2. The following conditions are met: a. The shift solenoid SLU hydraulic command value is more than the specified value for 3 seconds or more. b. The engine speed is 70 rpm or more faster than the turbine revolutions. c. 4th or higher gear d. The throttle valve opening angle is the specified angle or more.	• Transmission wire • Shift solenoid valve SLU • Torque converter clutch • TCM

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	e. Vehicle speed is 22 km/h or more. 3. All conditions in (b) have passed for 2 seconds or more. 4. 2-trip detection logic	
P2758	1. The following conditions are met: a. Not learning control prohibited status b. 4 seconds or more have elapsed after moving the shift lever to D. c. Coolant temperature is 40°C (104°F) or more. d. ATF temperature is 20°C (68 °F) or more. e. 4th or higher gears f. Abnormalities with the shift solenoid valve (S1, S2, S3, S4, SR, SLT, SLU), input speed sensor NT, output speed sensor SP2, park/neutral position switch, CAN bus, ECM communication, coolant temperature, electronically control throttle and accelerator pedal sensor are not detected. 2. The following conditions are met: a. The shift solenoid SLU hydraulic command value is less than the specified value for 3 seconds or more. b. The difference between the engine speed and the turbine speed is 35 rpm or less. c. 4th or higher gear d. The throttle valve opening angle is the specified angle or more. e. Vehicle speed is 22 km/h or more. 3. All conditions in "2. Malfunction status" have passed for 2 seconds or more. 4. 2-trip detection logic	• Transmission wire • Shift solenoid valve SLU • Torque converter clutch • TCM

MONITOR DESCRIPTION

Torque converter lock-up is controlled by the TCM based on the input speed sensor NT, output speed sensor SP2, engine rpm, engine load, engine temperature, vehicle speed, transmission temperature, and gear selection. The TCM determines the lock-up status of the torque converter by comparing the engine rpm (NE) to the input turbine rpm (NT). The TCM calculates the actual transmission gear by comparing input turbine rpm (NT) to output shaft rpm (SP2). When conditions are appropriate, the TCM requests "lock-up" by applying control voltage to the shift solenoid SLU. When the SLU is turned on, it applies pressure to the lock-up relay valve and locks the torque converter clutch.

If the TCM detects no lock-up after lock-up has been requested or if it detects lock-up when it is not requested, the TCM interprets this as a fault in the shift solenoid valve SLU or lock-up system performance.

The TCM will turn on the MIL and store the DTC.

MONITOR STRATEGY

Related DTCs	P2757: Lock up Control Solenoid (OFF Stuck) P2758: Lock up Control Solenoid (ON Stuck)

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Required sensors/Components	Shift solenoid valve SLU
Frequency of operation	Continuous
Duration	P2757: 2 sec. P2758: 1.8 sec., 2count (After 1 count, detect failure again after vehicle speed is less than 10km/h (6mph).)
MIL operation	2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

The following items are common to all conditions below.

Battery voltage	10.5 V or more
Engine speed	400 rpm or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Turbine shaft speed sensor (P0717)	No failure
Vehicle speed sensor (P0722)	No failure
Shift solenoid 1 (P0973,P0974)	No failure
Shift solenoid 2 (P0976,P0977)	No failure
Shift solenoid 3 (P0979,P0980)	No failure
Shift solenoid 4 (P0982,P0983)	No failure
SR solenoid (P0985,P0986)	No failure
Linear solenoid 1 (P0962,P0963,P0961)	No failure
Linear solenoid 2 (P0966,P0967,P0965)	No failure
Line pressure linear solenoid (P2720,P2721,P2719)	No failure
Lock up control solenoid (P2762,P2763,P2764)	No failure
Range switch (P0707,P0708)	No failure
ATF temperature sensor (P0711,P0712,P0713)	No failure
CAN BUS OFF (U0073)	No failure
ECM NO ID (U0100)	No failure
ECM Communication Counter (U0401)	No failure
Engine coolant temperature sensor	No failure
Engine torque signal	No failure
Throttle position sensor	No failure
Accelerator pedal position sensor	No failure
Range position	D
Elapsed time after selecting D range	4 sec. or more
Engine coolant temperature	40°C (104°F) or more

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Target gear position	4th, 5th or 6th
ATF temperature	20°C (68°F) or more

TYPICAL MALFUNCTION THRESHOLDS

P2757: Lock up Control Solenoid (OFF Stuck)

Lock up control solenoid instruction value	513 kPa or more
Above condition is satisfied for	3 sec. or more
Engine speed - Turbine shaft speed	70 rpm or more
Gear ratio calculated from turbine shaft speed and vehicle speed.	4th, 5th or 6th
Throttle position	See MAP A
Vehicle speed	13.7 mph or more

MAP A

Turbine shaft speed (rpm)	1200	1500	3500	5100	5200
Throttle (%)	12.9	13.4	26	39.6	100

P2758: Lock up Control Solenoid (ON Stuck)

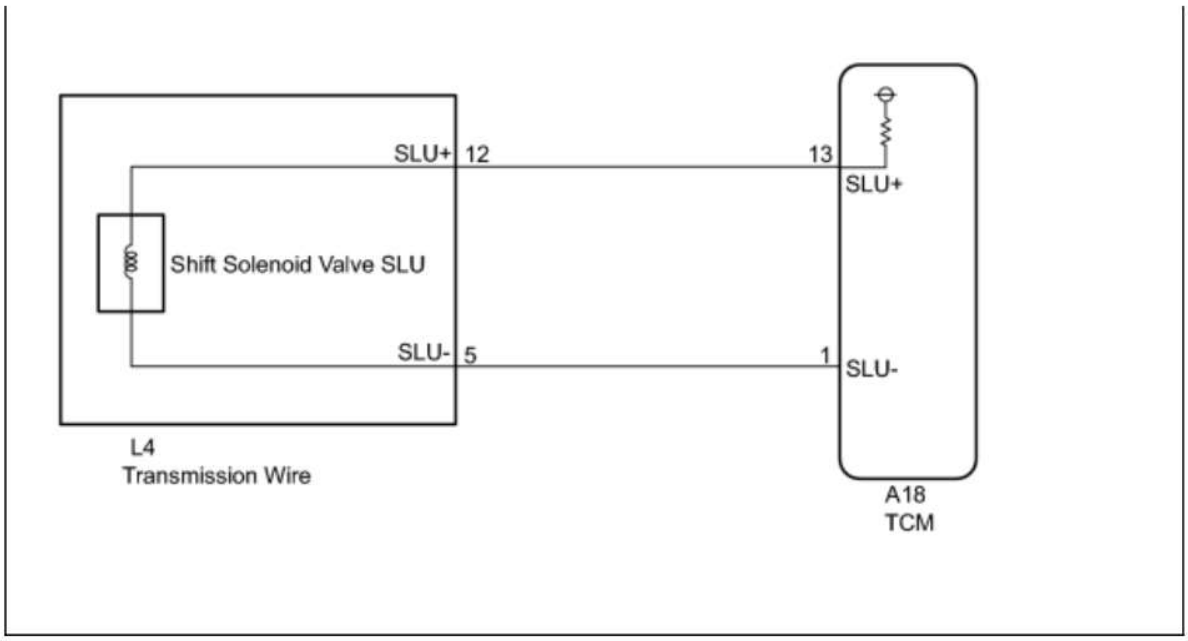
Lock up control solenoid instruction value	4 kPa or less
Above condition is satisfied for	3 sec. or more
Engine speed - Turbine shaft speed	35 rpm or less
Gear ratio calculated from turbine shaft speed and vehicle speed.	4th, 5th or 6th
Throttle position	See MAP B
Vehicle speed	13.7 mph or more

MAP B

Turbine shaft speed (rpm)	1200	1500	2000	5800	5900
Throttle (%)	8.1	8.2	10	40	100

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

1. ACTIVE TEST

HINT:

Using the Techstream to perform Active Test allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Test early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Test.

(a) Warm up the engine.

(b) Turn the ignition switch off.

(c) Connect the Techstream to the DLC3.

(d) Turn the ignition switch to ON.

(e) Turn the Techstream on.

(f) Enter the following menus: Powertrain / ECT / Data List.

(g) According to the display on the Techstream, perform the "Active Test".

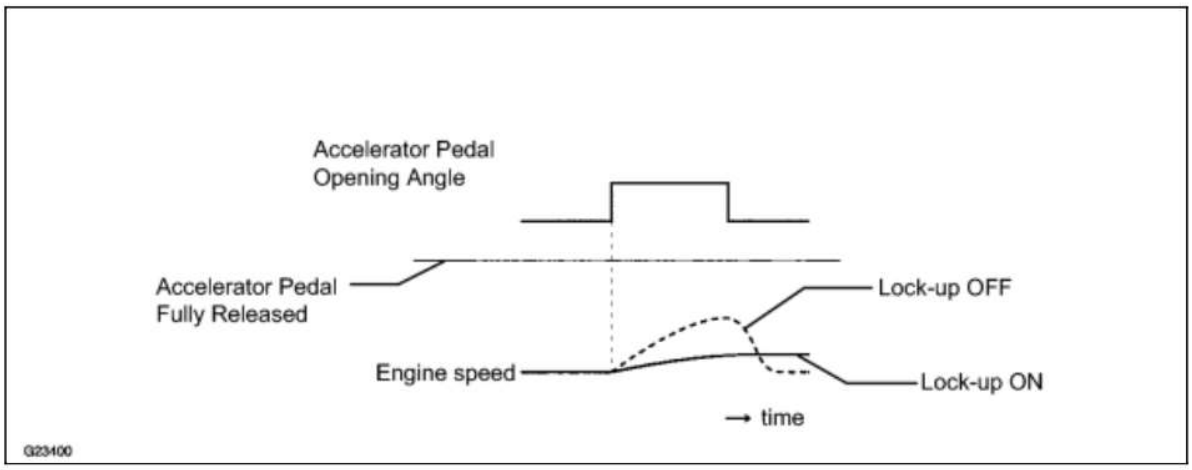
ITEM	TEST DETAILS	DIAGNOSTIC NOTE
Activate the Lock Up	[Test Details] Control the shift solenoid SLU to set the automatic transmission to the lock-up condition. [Vehicle Condition] • Throttle valve opening angle: Less than 35 % • Vehicle Speed: 50 km/h (30 mph) or more	Possible to check the SLU operation.

HINT:

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- This test can be conducted when the vehicle speed is 50 km/h (30 mph) or more.
- This test can be conducted with the 5th or 6th gear.

(h) Lightly depress the accelerator pedal and check that the engine speed does not change abruptly.



HINT:

- When changing the accelerator pedal opening angle while driving, if the engine speed does not change, lock-up is on.
- Slowly release, but not fully, the accelerator pedal in order to decelerate. (Fully releasing the pedal will close the throttle valve and lock-up may be turned off automatically.)

PROCEDURE

1.	**CHECK OTHER DTCS OUTPUT**

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON and push the Techstream main switch ON.

(c) Read the DTCs using the Techstream INFO .

Result:

DISPLAY (DTC OUTPUT)	PROCEED TO
Only "P2757" or "P2758" is output	A
"P2757" or "P2758" and other DTCs	B

B ▶ **GO TO DTC CHART**

A ▼

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2.	INSPECT SHIFT SOLENOID VALVE SLU

(a) Remove the shift solenoid valve SLU INFO .

(b) Perform inspection of the shift solenoid valve SLU INFO .

NG ▶ REPLACE SHIFT SOLENOID VALVE SLU

OK ▼

3.	INSPECT TRANSMISSION VALVE BODY ASSEMBLY

(a) Perform inspection of the transmission valve body assembly INFO .

OK:

There are no foreign objects on each valve.

NG ▶ REPAIR OR REPLACE TRANSMISSION VALVE BODY ASSEMBLY

OK ▼

4.	INSPECT TORQUE CONVERTER ASSEMBLY

(a) Check the torque converter assembly INFO .

OK:

The torque converter clutch operates normally.

NG ▶ REPLACE TORQUE CONVERTER ASSEMBLY

OK ▶ REPAIR OR REPLACE AUTOMATIC TRANSMISSION ASSEMBLY

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W890E5X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P2762-P2764: Torque Converter Pressure Control Solenoid Circuit Performance (SLU / DSU Solenoid) (2013 FR-S)		

DTC	**P2762**	**Torque Converter Pressure Control Solenoid Circuit Performance (SLU / DSU Solenoid)**

DTC	**P2763**	**Torque Converter Clutch Pressure Control Solenoid Control Circuit High (Shift Solenoid Valve DSU)**

DTC	**P2764**	**Torque Converter Clutch Pressure Control Solenoid Control Circuit Low (Shift Solenoid Valve DSU)**

DESCRIPTION

The shift solenoid valve SLU is controlled by the duty ratio as determined in advance by the TCM. In this way, it carries out lock-up and flex lock-up control.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
P2762	1. Not learning control prohibited status. Not open or short in the shift solenoid valve SLU/DSU circuit. 2. The difference between the shift solenoid valve SLU operational specified current and operational feedback current is 12 A or more in total. 3. Detects "2.Malfunction Status" 5 times consecutively. 4. 1-trip detection logic	• Shift solenoid valve SLU • Transmission wire • Harness and connector • TCM
P2763	1. Not learning control prohibited status Not malfunction with the shift solenoid valve SLU/DSU circuit performance. 2. 1 second or more has elapsed after turning shift solenoid valve SLU off. The shift solenoid valve SLU operational feedback voltage is 0.018 V or less. 3. Detects malfunction that continues for 100 ms or more 5 times consecutively. 4. 1-trip detection logic	• Shift solenoid valve SLU • Transmission wire • Harness and connector • TCM

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P2764	1. Not learning control prohibited status Not malfunction with the shift solenoid valve SLU/DSU circuit performance. 2. 1 second or more has elapsed after turning shift solenoid valve SLU on. The shift solenoid valve SLU operational feedback voltage is 0.257 V or more. 3. Detects malfunction that continues for 100 ms or more 5 times consecutively. 4. 1-trip detection logic	• Shift solenoid valve SLU • Transmission wire • Harness and connector • TCM

MONITOR DESCRIPTION

When an open or short in a shift solenoid valve SLU circuit is detected, the TCM determines there is a malfunction. The TCM will turn on the MIL and store this DTC.

MONITOR STRATEGY

Related DTCs	P2762: Lock up Control Solenoid (Feedback Stuck) P2763: Lock up Control Solenoid (Battery Short) P2764: Lock up Control Solenoid (GND Short/Open)
Required sensors/Components	Shift solenoid valve SLU
Frequency of operation	Continuous
Duration	P2762: 2 count P2763: 0.1 sec. x 5 times P2764: 0.1 sec. x 5 times
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

P2762: Lock up Control Solenoid (Feedback Stuck)

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Lock up control solenoid (P2764,P2763)	No failure
Check the feedback terminal voltage	0.257 V or less
Battery voltage	10.5 V or more
Above condition (Battery voltage) is satisfied for	0.5 sec. or more

P2763: Lock up Control Solenoid (Battery Short)

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more

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Fail-safe mode (Solenoids power supply is shut down.)	Not active
Lock up control solenoid (P2762)	No failure

P2764: Lock up Control Solenoid (GND Short/Open)

Battery voltage	10.2 V or more
Above condition satisfied for	2 sec. or more
Fail-safe mode (Solenoids power supply is shut down.)	Not active
Lock up control solenoid (P2762)	No failure

TYPICAL MALFUNCTION THRESHOLDS

P2762: Lock up Control Solenoid (Feedback Stuck)

The accumulation of difference between target current and feedback current (Sum_ie).	12 A or more
Sum_ie is renewed every 25msec. Sum_ie is cleared when at least one of the following conditions is satisfied. 1. Enable conditions are not satisfied. 2. Difference between target current and feedback current (ie) is between -50 mA and 50 mA. 3. Plus and minus of ie is turned over.	

P2763: Lock up Control Solenoid (Battery Short)

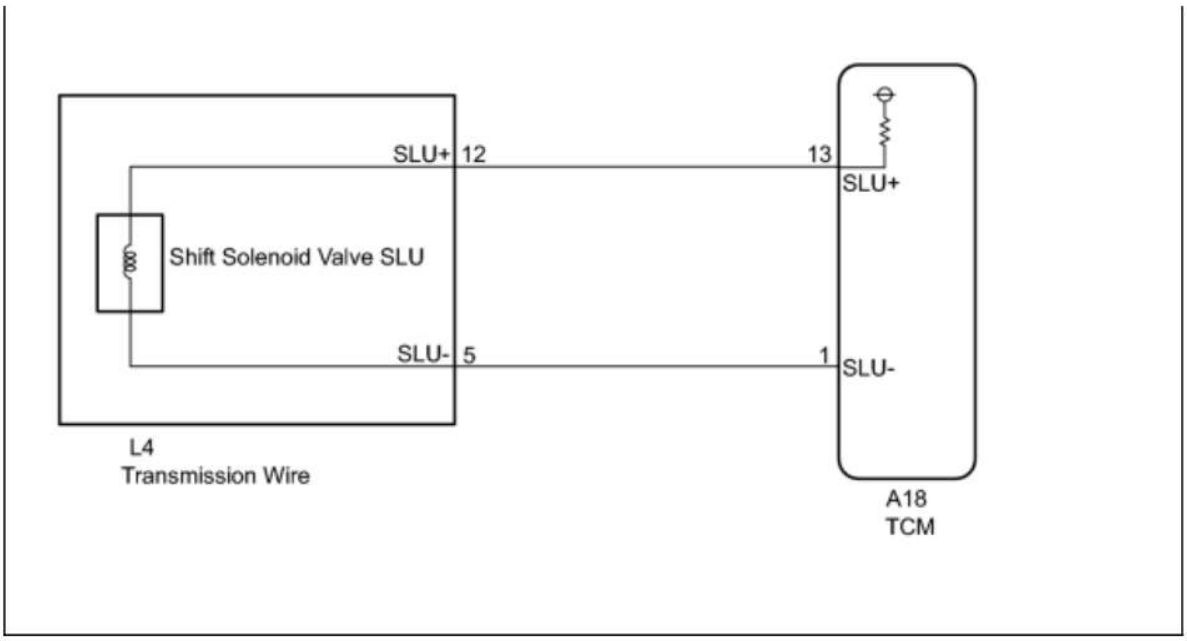
Check the feedback terminal voltage.	0.257 V or more
Elapsed time after recovering from GND short/open.	1 sec. or more

P2764: Lock up Control Solenoid (GND Short/Open)

Check the feedback terminal voltage.	0.018 V or less
Elapsed time after recovering from Battery Short.	1 sec. or more

WIRING DIAGRAM

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INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

PROCEDURE

1.	**INSPECT TRANSMISSION WIRE (SLU)**

(a) Disconnect the L4 transmission wire connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
L4-12(SLU+) - L4-5(SLU-)	20°C(68°F)	5.0 to 5.6 Ω
L4-12(SLU+) - Body ground	Always	10 kΩ or higher
L4-5(SLU-) - Body ground	Always	10 kΩ or higher

(c) Connect the L4 transmission wire connector.

NG ▶ **INSPECT SHIFT SOLENOID VALVE SLU**

OK
▼

2.	**CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)**

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(a) Disconnect the A18 TCM connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-13(SLU+) - A18-1(SLU-)	20°C(68°F)	5.0 to 5.6 Ω
A18-13(SLU+) - Body ground	Always	10 kΩ or higher
A18-1(SLU-) - Body ground	Always	10 kΩ or higher

(c) Connect the A18 TCM connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

3.	**REPLACE TCM**

(a) Replace the TCM INFO .

NEXT ▶ **PERFORM THE RESET MEMORY**

4.	**INSPECT SHIFT SOLENOID VALVE SLU**

(a) Remove the shift solenoid valve SLU INFO .

(b) Perform inspection of the shift solenoid valve SLU INFO .

NG ▶ **REPLACE SHIFT SOLENOID VALVE SLU**

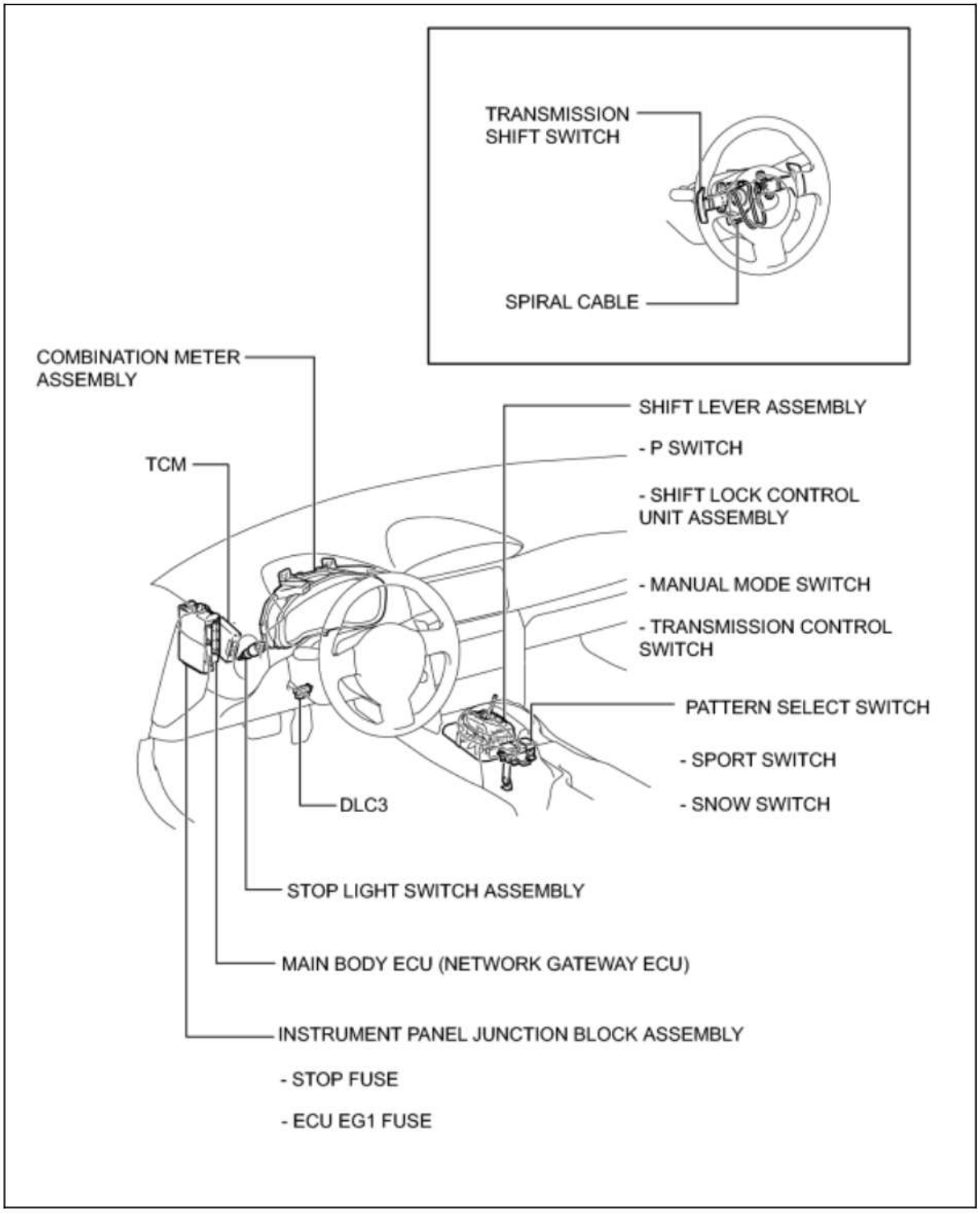
OK ▶ **REPAIR OR REPLACE TRANSMISSION WIRE**

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Last Modified: 3-27-2012	6.4 R	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W720GZX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: PARTS LOCATION (2013 FR-S)		

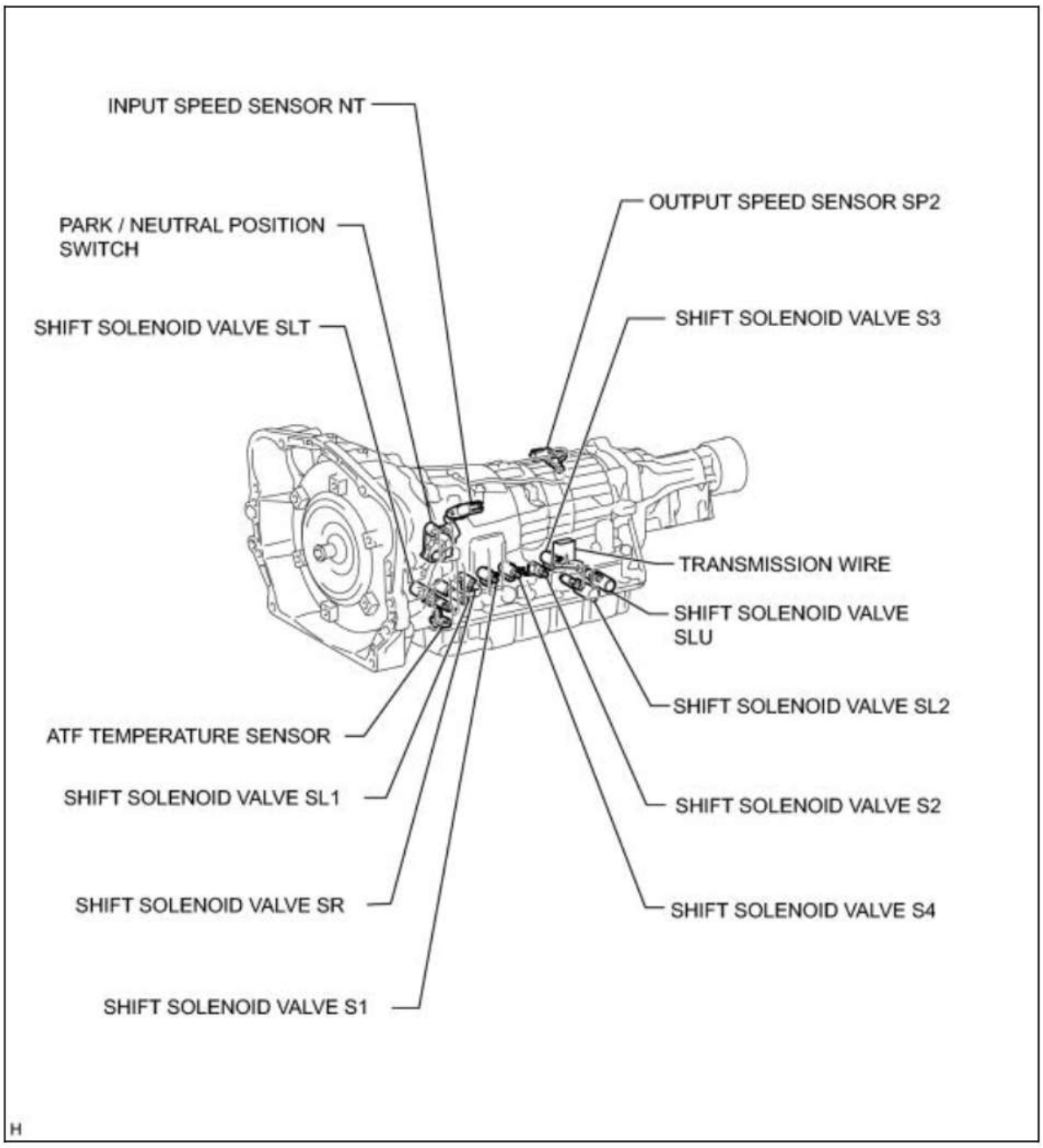
PARTS LOCATION

ILLUSTRATION



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ILLUSTRATION



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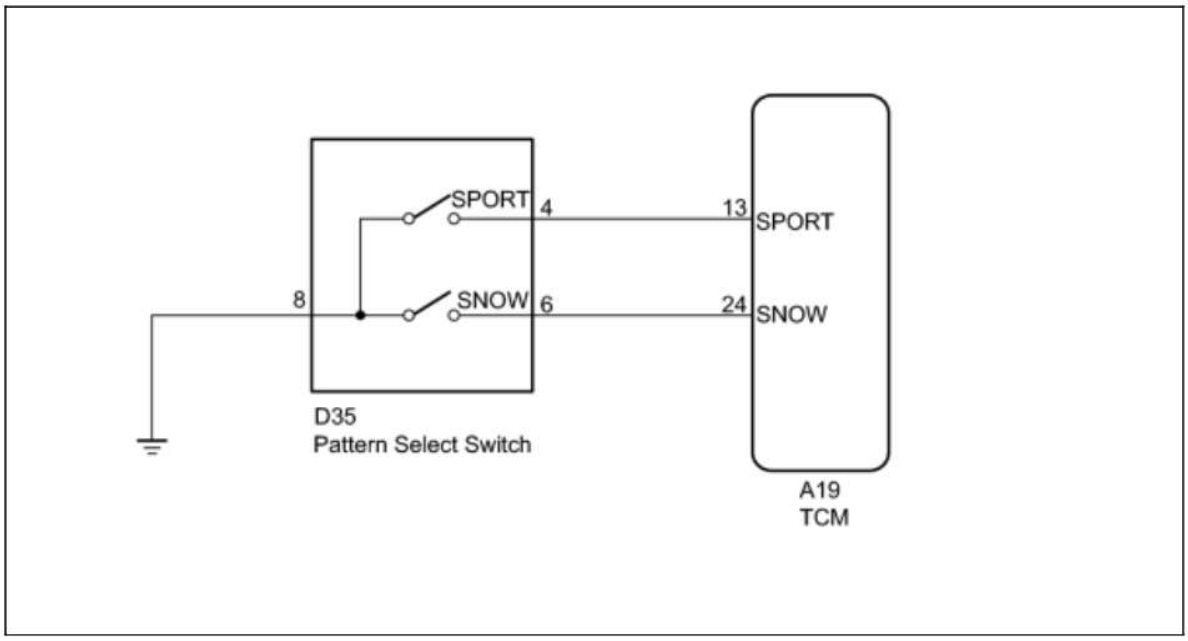
Last Modified: 3-27-2012	6.4 J	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000YTG04NX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: Pattern Select Switch Circuit (2013 FR-S)		

Pattern Select Switch Circuit

DESCRIPTION

A signal from the pattern select switch assembly input into the TCM enables switching of the mode.

WIRING DIAGRAM



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HINT:

(*) Pattern Select Switch (ECT SNOW Switch)

When the ECT SNOW switch is pushed, the switch contact is made and the ECT SNOW mode is selected.

To cancel the ECT SNOW mode, push the ECT SNOW switch once again.

The ECT SNOW mode is automatically cancelled out when the ignition switch is turned "off".

INSPECTION PROCEDURE

PROCEDURE

1.	**READ VALUE USING TECHSTREAM**

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(c) Read the value displayed on the Techstream.

OK

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Sport Switch Status	Pattern switch (ECT SPORT) status/ ON or OFF	Ignition switch is: ON: off ↓ Pattern switch (ECT SPORT) is: Pushed: ON ↓ Pattern switch (ECT SPORT) is: Pushed: OFF	-

NG ▶ **INSPECT PATTERN SELECT SWITCH ASSEMBLY**

OK ▼

2.	**READ VALUE USING TECHSTREAM**

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(c) Read the value displayed on the Techstream.

OK

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Snow Switch Status	Pattern switch (ECT SNOW) status/ ON or OFF	Ignition switch is: ON: off ↓ Pattern switch (ECT SNOW) is: Pushed: ON ↓ Pattern switch (ECT SNOW) is: Pushed: OFF	-

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NG ▶ **INSPECT PATTERN SELECT SWITCH ASSEMBLY**

OK ▶ **GO TO PROBLEM SYMPTOMS TABLE**

3.	**INSPECT PATTERN SELECT SWITCH ASSEMBLY**

(a) Perform inspection of the pattern select switch INFO .

NG ▶ **REPLACE PATTERN SELECT SWITCH ASSEMBLY**

OK ▼

4.	**CHECK HARNESS AND CONNECTOR (PATTERN SELECT SWITCH ASSEMBLY - TCM - BODY GROUND)**

(a) Disconnect the TCM connector.

(b) Disconnect the pattern select switch assembly connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A19-13(SPORT) - D35-4(SPORT)	Always	Below 1 Ω
D35-8 - Body ground	Always	Below 1 Ω
A19-3(SPORT) - Body ground	Always	10 kΩ or higher

(d) Connect the TCM connector.

(e) Connect the pattern select switch assembly connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

5.	**REPLACE TCM**

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(a) Replace the TCM INFO .

NEXT ▶ PERFORM THE RESET MEMORY

6.	INSPECT PATTERN SELECT SWITCH ASSEMBLY

(a) Perform inspection of the pattern select switch INFO .

NG ▶ REPLACE PATTERN SELECT SWITCH ASSEMBLY

OK ▼

7.	CHECK HARNESS AND CONNECTOR (PATTERN SELECT SWITCH - TCM - BODY GROUND)

(a) Disconnect the TCM connector.

(b) Disconnect the pattern select switch assembly connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
A19-24(SNOW) - D35-6	Always	Below 1 Ω
D35-8 - Body ground	Always	Below 1 Ω
A19-24(SNOW) - Body ground	Always	10 kΩ or higher

(d) Connect the TCM connector.

(e) Connect the pattern select switch assembly connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▼

8.	REPLACE TCM

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(a) Replace the TCM INFO .

NEXT PERFORM THE RESET MEMORY

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Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000O7H0C0X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: PRECAUTION (2013 FR-S)		

PRECAUTION

NOTICE:

Perform the RESET MEMORY (AT initialization) when replacing the automatic transmission assembly, engine assembly, valve body assembly or TCM INFO **.**

HINT:

RESET MEMORY can not be completed by only disconnecting the battery cable.

1. REMOVAL AND INSTALLATION PROCEDURE PRECAUTIONS

(a) The automatic transmission is composed of highly precision-finished parts which need careful inspection before reassembly. Even a small nick could cause fluid leakage or affect the performance. The instructions here are organized so that you work on only one component group at a time. This will help avoid confusion caused by similar-looking parts of different sub-assemblies being on your workbench at the same time. The component groups are inspected and repaired from the converter housing side. Complete the inspection, repair and reassembly before proceeding to the next component group as much as possible. If a defect is found in a certain component group during reassembly, inspect and repair this group immediately. If a component group cannot be assembled because some parts are being ordered, be sure to keep all parts of the group in a separate container while proceeding with disassembly, inspection, repair and reassembly of other component groups. Recommended: Toyota Genuine ATF WS

(b) All disassembled parts should be washed clean and any fluid passages and holes should be blown through with compressed air.

(c) Dry all parts with compressed air. Never use a shop rag or a piece of cloth to dry them.

(d) When using compressed air, always aim away from yourself to prevent accidentally spraying ATF or kerosene in your face.

(e) Only recommended automatic transmission fluid or kerosene should be used for cleaning.

(f) After cleaning, the parts should be arranged in the correct order for efficient inspection, repair, and reassembly.

(g) When disassembling a valve body, be sure to match each valve together with the corresponding spring.

(h) New discs for the brakes and clutches that are to be used for replacement must be soaked in ATF for at least 15 minutes before reassembly.

(i) All oil seal rings, clutch discs, clutch plates, rotating parts, and sliding surfaces should be coated with ATF prior to reassembly.

(j) All gaskets and rubber O-rings should be replaced with new ones.

(k) Do not apply adhesive cements to gaskets and similar parts.

(l) Make sure that the ends of a snap ring are not aligned with one of the cutouts and are installed in the groove correctly.

(m) When replacing a worn bushing, the sub-assembly containing the bushing must also be replaced.

(n) Check thrust bearings and races for wear or damage. Replace them as necessary.

(o) When working with FIPG material, you must observe the following:

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- Using a razor blade and a gasket scraper, remove all the old packing (FIPG) material from the gasket surface.
- Thoroughly clean all components to remove any loose material.
- Clean both sealing surfaces with a non-residue solvent.
- Parts must be reassembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.



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Last Modified: 3-27-2012	6.4 T	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W730S7X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: PROBLEM SYMPTOMS TABLE (2013 FR-S)		

PROBLEM SYMPTOMS TABLE

HINT:

If a normal code is displayed during the diagnostic trouble code check although the trouble still occurs, check the electrical circuits for each symptom in the order given in the charts on the following pages and proceed to the page given for troubleshooting.

The Matrix Chart is divided into 2 chapters.

Chapter 1:

Refer to the table below when the trouble cause is considered to be electrical.

If the instruction "Proceed to next circuit inspection shown on matrix chart" is given in the flow chart of each circuit, proceed to the circuit with the next highest number in the table to continue the check.

If the trouble still occurs even though there are no abnormalities in any of the other circuits, check and replace the TCM.

1. Chapter 1: Electronic Circuit Matrix Chart

SYMPTOM	SUSPECTED AREA	SEE PAGE
No up-shift (1st -> 2nd)	1. Shift solenoid valve S1 circuit *1	INFO
	2. TCM	INFO
No up-shift (2nd -> 3rd)	1. Shift solenoid valve S2 circuit *1	INFO
	2. TCM	INFO
No up-shift (3rd -> 4th)	1. Shift solenoid valve S3 circuit *1	INFO
	2. Engine coolant temperature sensor circuit *1	INFO
	3. TCM	INFO
No up-shift (4th -> 5th)	1. Shift solenoid valve S4 circuit *1	INFO
	2. Shift solenoid valve SR circuit *1	INFO
	3. Shift solenoid valve SL) circuit *1	INFO
	4. Shift solenoid valve SL2 circuit *1	INFO
	2. Engine coolant temperature sensor circuit *1	INFO
	5. TCM	INFO
	1. Park/neutral position switch circuit *1	INFO
	2. Engine coolant temperature sensor	INFO

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No up-shift (5th -> 6th)	circuit *1	
	3. Shift solenoid valve S2 circuit *1	INFO
	4. TCM	INFO
No down-shift (6th -> 5th)	1. Park/neutral position switch circuit *1	INFO
	2. Shift solenoid valve S2 circuit *1	INFO
	3. TCM	INFO
No down-shift (5th -> 4th)	1. Shift solenoid valve S4 circuit *1	INFO
	2. Shift solenoid valve SR circuit *1	INFO
	3. Shift solenoid valve SL1 circuit *1	INFO
	4. Shift solenoid valve SL2 circuit *1	INFO
	5. TCM	INFO
No down-shift (4th -> 3rd)	1. Shift solenoid valve S3 circuit *1	INFO
	2. TCM	INFO
No down-shift (3rd -> 2nd)	1. Shift solenoid valve S2 circuit *1	INFO
	2. TCM	INFO
No down-shift (2nd -> 1st)	1. Shift solenoid valve S1 circuit *1	INFO
	2. TCM	INFO
No lock-up or No lock-up off	1. Shift solenoid valve SLU circuit *1	INFO
	2. Engine coolant temperature sensor circuit *1	INFO
	3. Stop light switch circuit *1	INFO
	4. Input speed sensor NT circuit *1	INFO
	5. TCM	INFO
Shift point too high or too low	1. Shift solenoid valve SLT circuit *1	INFO
	2. Input speed sensor NT circuit *1	INFO
	3. Output speed sensor SP2 circuit *1	INFO
	4. Throttle position sensor circuit *1	INFO
	5. Pattern select SPORT switch circuit	INFO
	6. ATF temperature sensor circuit *1	INFO
	7. TCM	INFO
	8. Park/Neutral position switch	INFO
Up-shift to 6th while engine is cold	1. Engine coolant temperature sensor circuit *1	INFO
	2. TCM	INFO
	1. Transmission control switch circuit	INFO

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No gear change by shifting into "+" or "-" while the shifting lever	2. Shift paddle switch circuit	INFO
	3. TCM	INFO
Harsh engagement (N -> D)	1. Shift solenoid valve SLT circuit *1	INFO
	3. TCM	INFO
Harsh engagement (Lock-up)	1. Input speed sensor NT circuit *1	INFO
	2. Output speed sensor SP2 circuit *1	INFO
	3. Shift solenoid valve SLU circuit *1	INFO
	4. TCM	INFO
Harsh engagement (Any driving position)	1. Throttle position sensor circuit *1	INFO
	2. Shift solenoid valve SL1 circuit *1	INFO
	3. Shift solenoid valve SL2 circuit *1	INFO
	4. Shift solenoid valve SLU circuit *1	INFO
	5. Shift solenoid valve SLT circuit *1	INFO
	6. Input speed sensor NT circuit *1	INFO
	7. TCM	INFO
Poor acceleration	1. Shift solenoid valve SLT circuit *1	INFO
	2. Pattern select (SNOW) switch circuit	INFO
	3. TCM	INFO
ECT SNOW does not operate	1. Shift solenoid valve SLT circuit *1	INFO
	2. Pattern select (SNOW) switch circuit	INFO
	3. TCM	INFO
ECT SPORT does not operate	1. Shift solenoid valve SLT circuit *1	INFO
	2. Pattern select (SPORT) switch circuit	INFO
	3. TCM	INFO
Harsh engagement (1st -> 2nd -> 3rd -> 4th -> 5th)	Shift solenoid valve SR circuit *1	INFO
Slip or shudder (5th -> 6th and 6th -> 5th)	Shift solenoid valve SR circuit *1	INFO
	Shift solenoid valve SLT circuit *1	INFO

HINT:

***1: When the circuit is detective, a DTC may be output.**

2. Chapter 2: On-Vehicle Repair and Off-Vehicle Repair

SYMPTOM	SUSPECTED AREA	SEE PAGE
	1. Transmission control rod	INFO
	2. Manual valve	INFO

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Vehicle does not move in any forward position and reverse positions	3. Parking lock pawl	INFO
	4. Rear planetary gear unit	INFO
	5. Torque converter clutch	INFO
Vehicle does not move in R position	1. Valve body assembly	INFO
	2. Brake No. 4 (B4)	INFO
No up-shift (1st -> 2nd)	1. Valve body assembly	INFO
	2. Brake No. 3 (B3)	INFO
	3. One-way clutch No. 1 (F1)	INFO
	4. One-way clutch No. 2 (F2)	INFO
No up-shift (2nd -> 3rd)	1. Valve body assembly	INFO
	2. Clutch No. 3 (C3)	INFO
No up-shift (3rd -> 4th)	1. Valve body assembly	INFO
	2. Clutch No. 2 (C2)	INFO
No up-shift (4th -> 5th)	1. Valve body assembly	INFO
	2. Brake No. 1 (B1)	INFO
No up-shift (5th -> 6th)	1. Valve body assembly	INFO
	2. Brake No. 2 (B2)	INFO
No down-shift (6th -> 5th)	Valve body assembly	INFO
No down-shift (5th -> 4th)	Valve body assembly	INFO
No down-shift (4th -> 3rd)	Valve body assembly	INFO
No down-shift (3rd -> 2nd)	Valve body assembly	INFO
No down-shift (2nd -> 1st)	Valve body assembly	INFO
No lock-up or No lock-up off	1. Valve body assembly	INFO
	2. Torque converter clutch	INFO
Harsh engagement (N -> D)	1. Valve body assembly	INFO
	2. C1 accumulator	INFO
	3. Clutch No. 1 (C1)	INFO
	4. One-way clutch No. 3 (F3)	INFO
	5. One-way clutch No. 4 (F4)	INFO
Harsh engagement (Lock-up)	1. Valve body assembly	INFO
	2. Torque converter clutch	INFO
	1. Valve body assembly	INFO

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Harsh engagement (N -> R)	2. C3 accumulator	INFO
	3. Clutch No. 3 (C3)	INFO
	4. Brake No. 4 (B4)	INFO
	5. One-way clutch No. 1 (F1)	INFO
Harsh engagement (1st -> 2nd -> 3rd -> 4th -> 5th -> 6th)	Valve body assembly	INFO
Harsh engagement (1st -> 2nd)	1. Valve body assembly	INFO
	2. B3 accumulator	INFO
	3. Brake No. 3 (B3)	INFO
	4. One-way clutch No. 1 (F1)	INFO
	5. One-way clutch No. 2 (F2)	INFO
Harsh engagement (2nd -> 3rd)	1. Valve body assembly	INFO
	2. C3 accumulator	INFO
	3. Clutch No. 3 (C3)	INFO
Harsh engagement (3rd -> 4th)	1. Valve body assembly	INFO
	2. C2 accumulator	INFO
	3. Clutch No. 2 (C2)	INFO
Harsh engagement (4th -> 5th)	1. Valve body assembly	INFO
	2. B1 accumulator	INFO
	3. Brake No. 1 (B1)	INFO
Harsh engagement (5th -> 6th)	1. Valve body assembly	INFO
	2. B2 accumulator	INFO
	3. Brake No. 2 (B2)	INFO
Harsh engagement (6th -> 5th)	1. Valve body assembly	INFO
	2. C3 accumulator	INFO
	3. Clutch No. 3 (C3)	INFO
Slip or shudder (Forward and reverse: After warm-up)	1. Valve body assembly	INFO
	2. Oil strainer	INFO
	3. One-way clutch No. 1 (F1)	INFO
	4. Clutch No. 3 (C3)	INFO
	5. Torque converter clutch	INFO
Slip or shudder (Particular position: Just after engine starts)	Torque converter clutch	INFO
	1. Brake No. 4 (B4)	INFO

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Slip or shudder (R position)	2. One-way clutch No. 1 (F1)	INFO
	3. Clutch No. 3 (C3)	INFO
Slip or shudder (1st)	1. Clutch No. 1 (C1)	INFO
	2. One-way clutch No. 3 (F3)	INFO
	3. One-way clutch No. 4 (F4)	INFO
Slip or shudder (2nd)	1. Clutch No. 1 (C1)	INFO
	2. Brake No. 3 (B3)	INFO
	3. One-way clutch No. 1 (F1)	INFO
	4. One-way clutch No. 2 (F2)	INFO
	5. One-way clutch No. 4 (F4)	INFO
Slip or shudder (3rd)	1. Clutch No. 1 (C1)	INFO
	2. Clutch No. 3 (C3)	INFO
	3. One-way clutch No. 1 (F1)	INFO
	4. One-way clutch No. 4 (F4)	INFO
Slip or shudder (4th)	1. Clutch No. 1 (C1)	INFO
	2. Clutch No. 2 (C2)	INFO
	3. One-way clutch No. 4 (F4)	INFO
Slip or shudder (5th)	1. Clutch No. 2 (C2)	INFO
	2. Clutch No. 3 (C3)	INFO
	3. Brake No. 1 (B1)	INFO
Slip or shudder (6th)	1. Clutch No. 2 (C2)	INFO
	2. Brake No. 2 (B2)	INFO
No engine braking (1st +- 4th: S position)	Clutch No. 4 (C4)	INFO
No engine braking (1st: 1 position)	1. Valve body assembly	INFO
	2. Brake No. 4 (B4)	INFO
No engine braking (2nd: 2 position)	1. Valve body assembly	INFO
	2. Brake No. 2 (B2)	INFO
No engine braking (3rd: 3 position)	1. Valve body assembly	INFO
	2. Brake No. 1 (B1)	INFO
No engine braking (4th: 4 position)	Valve body assembly	

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		INFO
No kick-down	Valve body assembly	INFO
Shift point too high or too low	Valve body assembly	INFO
Poor acceleration (All positions)	1. Valve body assembly	INFO
	2. Torque converter clutch	INFO
Poor acceleration (6th)	1. Brake No. 2 (B2)	INFO
	2. Clutch No. 2 (C2)	INFO
	3. Front planetary gear unit	INFO
Engine stalls when starting off or stopping	1. Valve body assembly	INFO
	2. Torque converter clutch	INFO



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Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W790M5X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: ROAD TEST (2013 FR-S)		

ROAD TEST

1. PROBLEM SYMPTOM CONFIRMATION

(a) Based on the result of the customer problem analysis, try to reproduce the symptoms. If the problem is that the transaxle does not shift up, shift down, or the shift point is too high or too low, conduct the following road test referring to the automatic shift schedule and simulate the problem symptoms.

2. ROAD TEST

(a) Perform a road test.

CAUTION:

Check for safety before performing any tests.

NOTICE:

- Be sure to inspect and adjust the engine before performing these tests.
- Perform the road test with the engine coolant temperature between 60 and 90°C (140 and 194°F) and the ATF temperature between 40 and 110°C (104 and 230°F).
- Perform these tests with the air conditioning and cruise control off.

INSPECTION	PROCEDURE
Transmission Control Switch Test	With the vehicle stationary and the shift lever in D, move the shift lever to M and return it to D. Check that the meter display changes from D to the appropriate M position and then back again.
M Position Test	With the vehicle stationary and the shift lever in M, move the shift lever to "+" and "-". Check that the meter display changes between M position properly.
D Position Shift Test	While driving the vehicle normally, check that the transmission shifts up and down through each gear properly.
Lock-up Function	While driving on a level surface at a constant speed in the lock-up range (50 km/h (30 mph) or more) with the shift lever in D, lightly depress the accelerator pedal and check that the engine speed does not change abruptly.
P Position Test	Stop the vehicle on an incline (approximately 5° or more). Then move the shift lever to P and release the parking brake. Check that the parking lock pawl holds the vehicle in place.
Abnormal Noise and Vibration	Check for abnormal noise and vibration while driving the vehicle forward and backward, and during shift operations.
Fluid Leakage	After performing all other road test inspections, check for fluid leakage.

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Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000001SM002VX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: Shift Paddle Switch Circuit (2013 FR-S)		

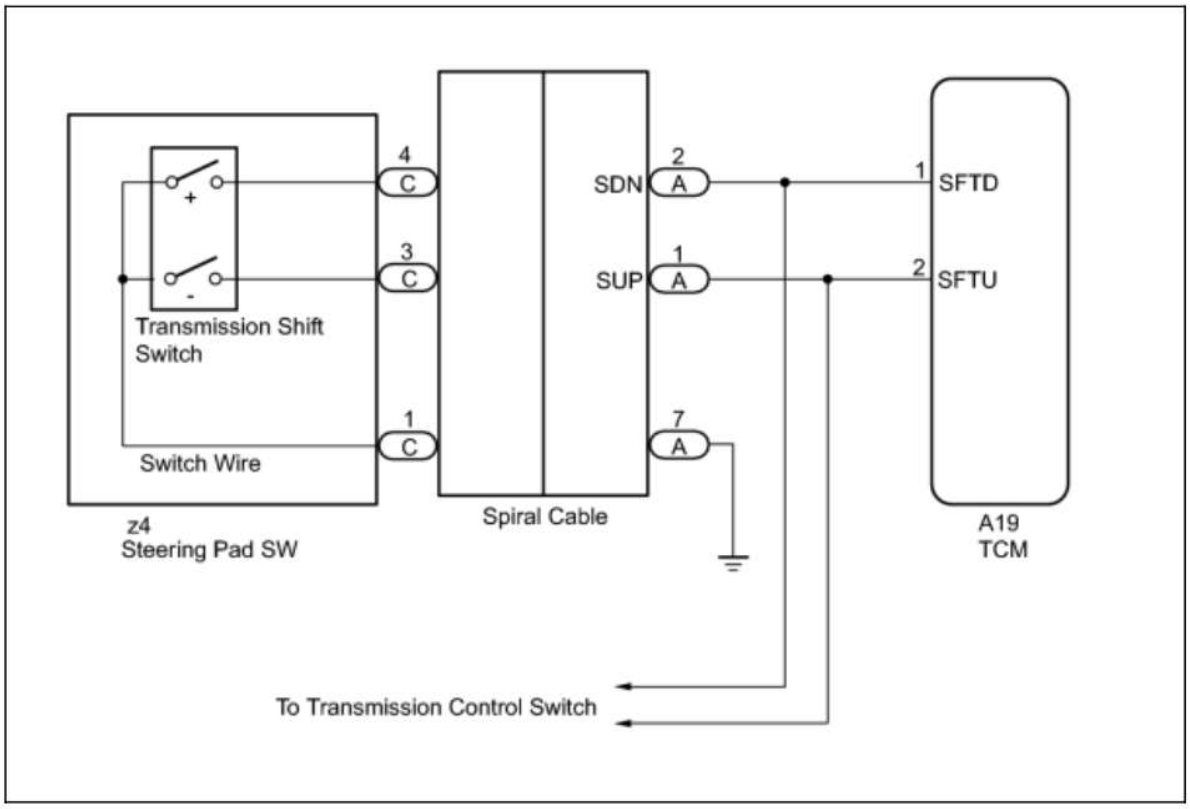
Shift Paddle Switch Circuit

DESCRIPTION

When the shift lever is in M, it is possible to change into any gear using the steering assembly transmission shift switch.

Additionally, when the vehicle is being driving with the shift lever in D, operating the steering assembly transmission shift switch changes to selection of gears with the shift lever in D, enabling shifting to any gear.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**READ VALUE USING TECHSTREAM**

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(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(c) Read the value displayed on the Techstream.

OK

TESTER DISPLAY	CONDITION	STANDARD
Sport Shift Up SW	Continuously shift to "+" (upshift): ON Release "+" (up-shift): OFF	-
Sport Shift Down SW	Continuously shift to "-" (down-shift): ON Release "-" (down-shift): OFF	-

NG ▶ **CHECK HARNESS AND CONNECTOR (TRANSMISSION SHIFT SWITCH - TCM)**

OK ▶ **CHECK INTERMITTENT PROBLEMS**

2.	**CHECK HARNESS AND CONNECTOR (TRANSMISSION SHIFT SWITCH - TCM)**

(a) Disconnect the TCM connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A19-1(SFTD) - Body ground	Pull continuously "+" (Up shift)	Below 1 Ω
	Release "+" or "-"	10 kΩ or higher
A19-2(SFTU) - Body ground	Pull continuously "-" (Down shift)	Below 1 Ω
	Release "+" or "-"	10 kΩ or higher

(c) Connect the TCM connector.

NG ▶ **CHECK HARNESS AND CONNECTOR (SPIRAL CABLE - BODY GROUND)**

OK ▼

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3.	REPLACE TCM

(a) Replace the TCM INFO .

NEXT ▶ PERFORM THE RESET MEMORY

4.	CHECK HARNESS AND CONNECTOR (SPIRAL CABLE - BODY GROUND)

(a) Disconnect the spiral cable connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A-7 - Body ground	Always	Below 1 Ω

(c) Connect the spiral cable connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▼

5.	CHECK HARNESS AND CONNECTOR (SPIRAL CABLE - TCM)

(a) Disconnect the TCM connector.

(b) Disconnect the spiral cable connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A19-1(SFTD) - A-2	Always	Below 1 Ω
A19-2(SFTU) - A-1	Always	Below 1 Ω
A19-1(SFTD) or A-2 - Body ground	Always	10 kΩ or higher
A19-2(SFTU) or A-1 - Body ground	Always	10 kΩ or higher

(d) Connect the TCM connector.

(e) Connect the spiral cable connector.

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NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

6.	**CHECK TRANSMISSION SHIFT SWITCH (TRANSMISSION SHIFT SWITCH - SPIRAL CABLE)**

(a) Disconnect the spiral cable connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
C-4 - C-1	Pull continuously "+" (Up shift)	Below 1 Ω
	Release "+" or "-"	10 kΩ or higher
C-3 - C-1	Pull continuously "-" (Down shift)	Below 1 Ω
	Release "+" or "-"	10 kΩ or higher

(c) Connect the spiral cable connector.

NG ▶ **INSPECT TRANSMISSION SHIFT SWITCH ASSEMBLY**

OK ▶ **INSPECT SPIRAL CABLE SUB-ASSEMBLY**

7.	**INSPECT TRANSMISSION SHIFT SWITCH ASSEMBLY**

(a) Inspect the transmission shift switch assembly INFO .

NG ▶ **REPLACE TRANSMISSION SHIFT SWITCH ASSEMBLY**

OK ▶ **REPLACE SWITCH NO.1 WIRE**

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Last Modified: 3-27-2012	6.4 D	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W750LZX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: SYSTEM DESCRIPTION (2013 FR-S)		

SYSTEM DESCRIPTION

1. SYSTEM DESCRIPTION

(a) The ECT (Electronic controlled automatic transmission) is an automatic transmission that electronically controls shift timing using the TCM. The TCM detects electrical signals that indicate engine and driving conditions, and controls the shift point, based on driver habits and road conditions. As a result, fuel efficiency and power transmission performance are improved.

Shift shock has been reduced by controlling the engine and transmission simultaneously.

In addition, the ECT has features such as follows:

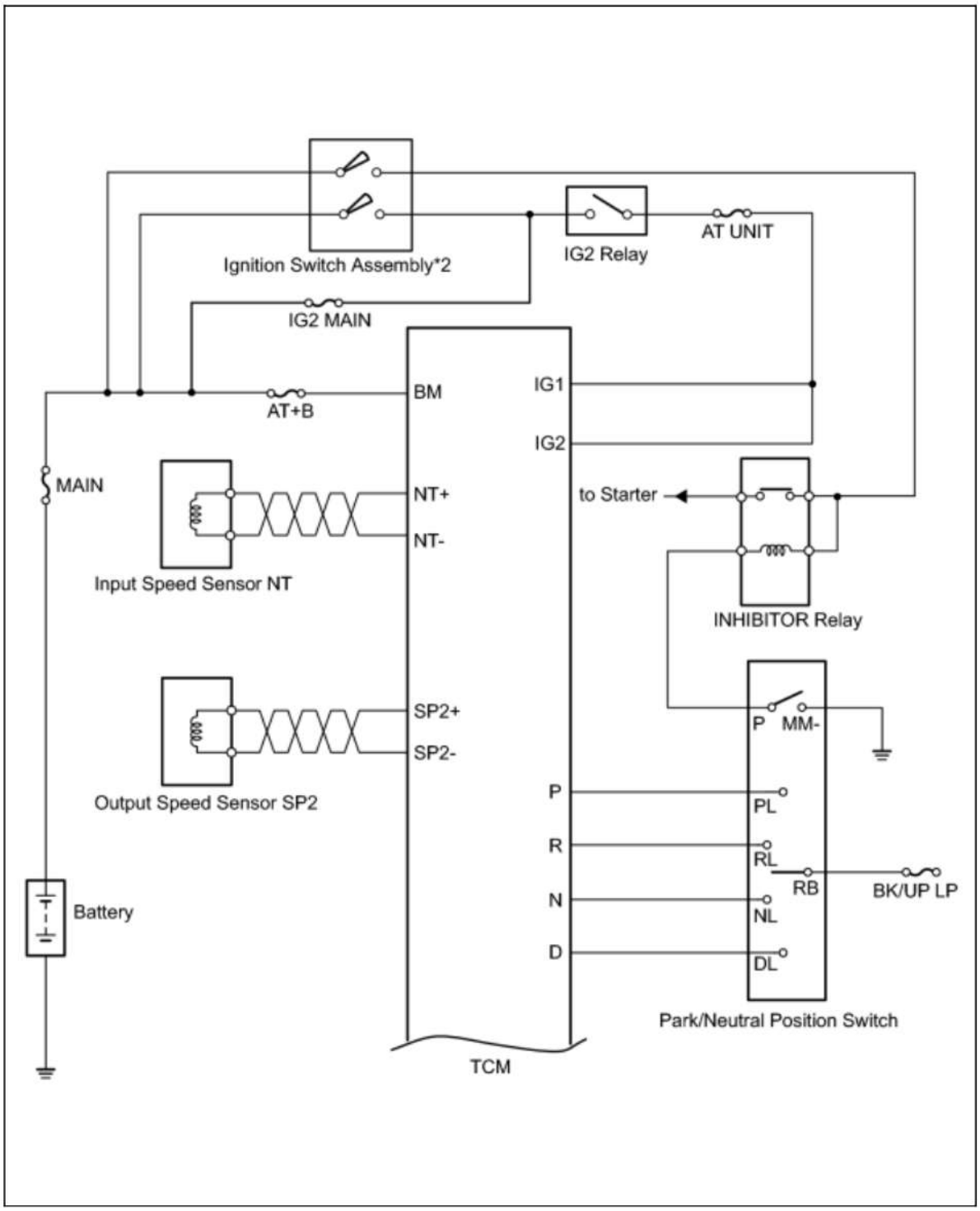
- Diagnostic function.
- Fail-safe function when a malfunction occurs.

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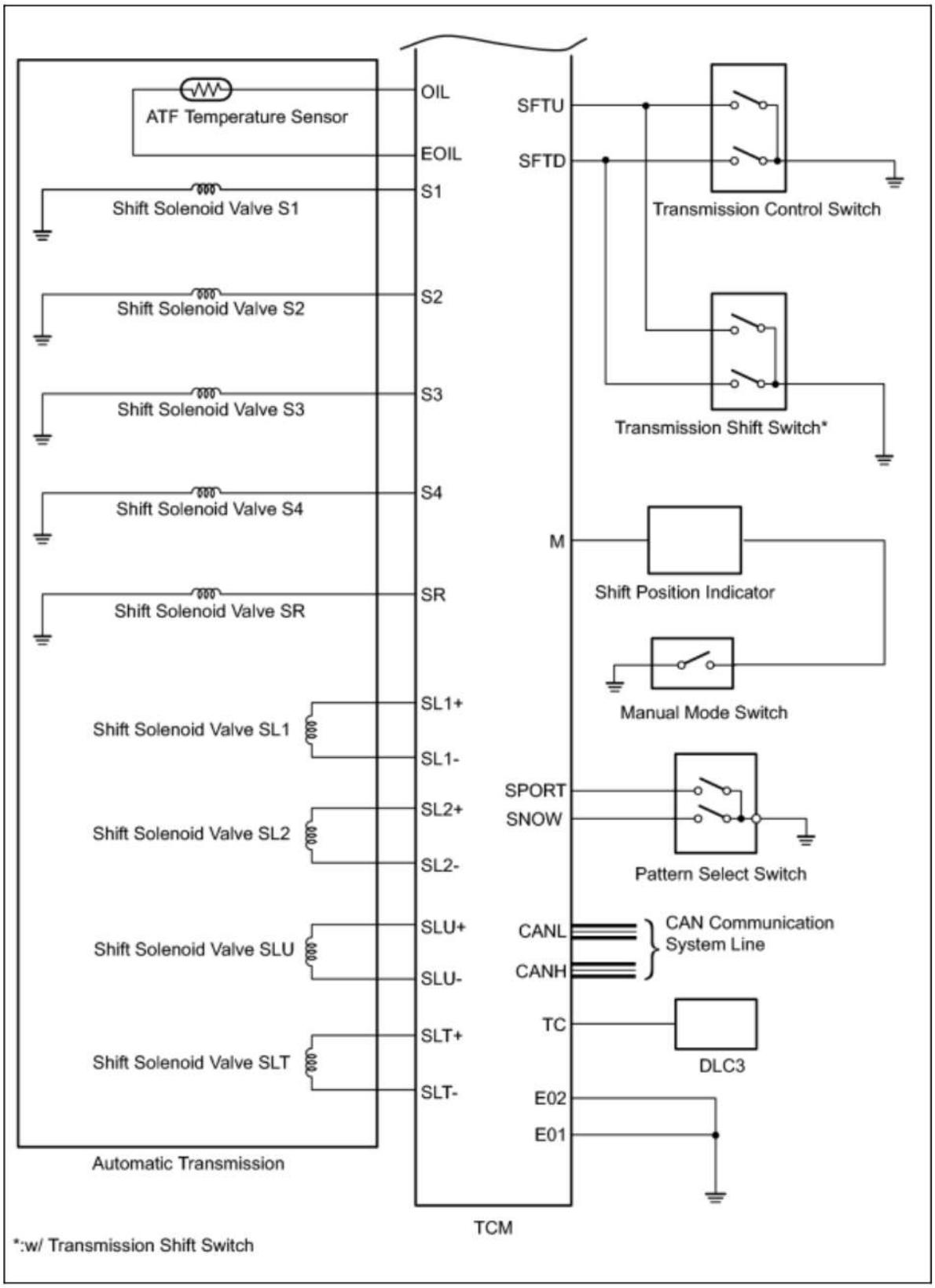
Last Modified: 3-27-2012	6.4 U	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W7D0GUX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: SYSTEM DIAGRAM (2013 FR-S)		

SYSTEM DIAGRAM

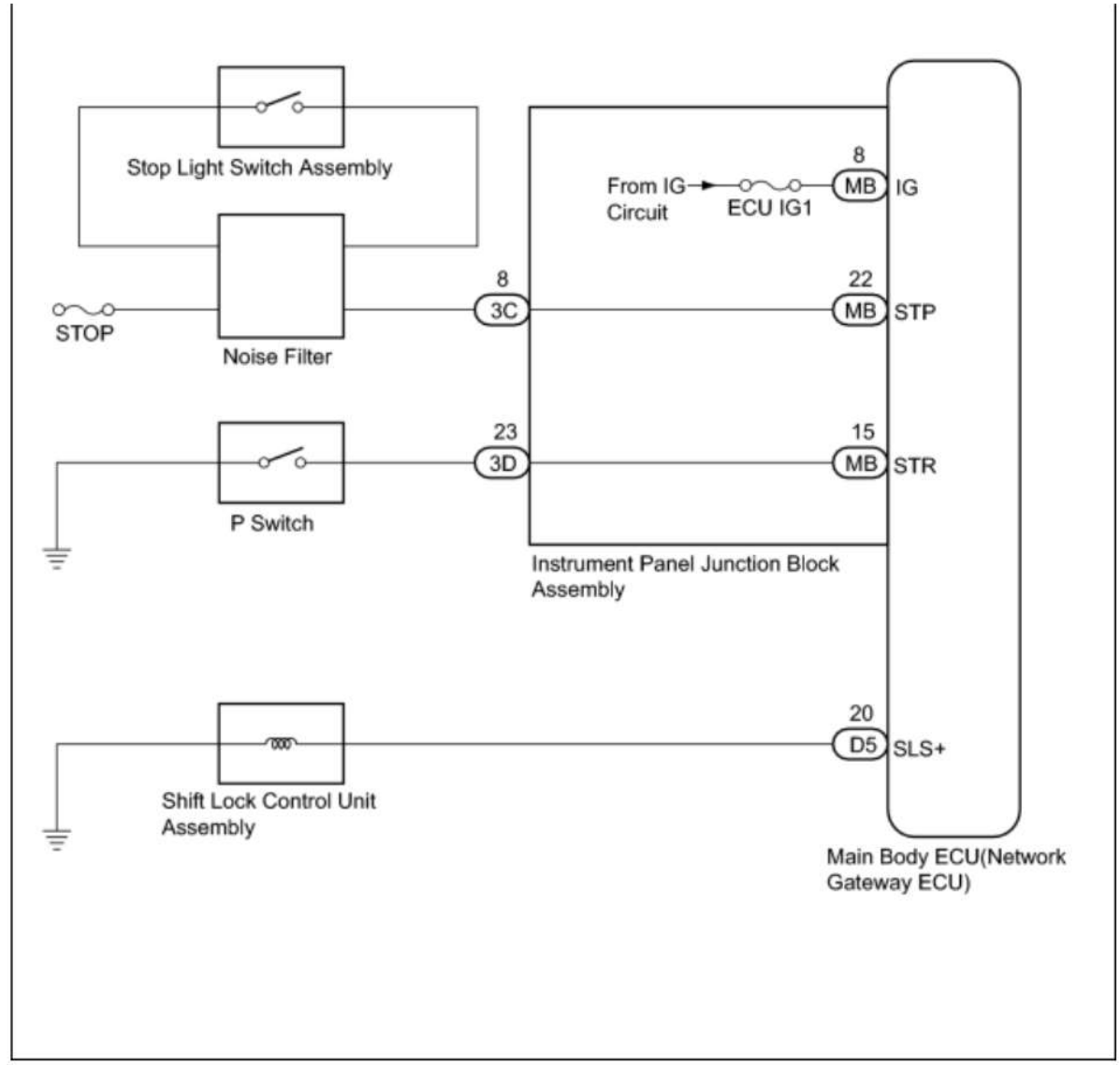
The configuration of the electronic control system in the A960E automatic transmission is as shown in the following chart.



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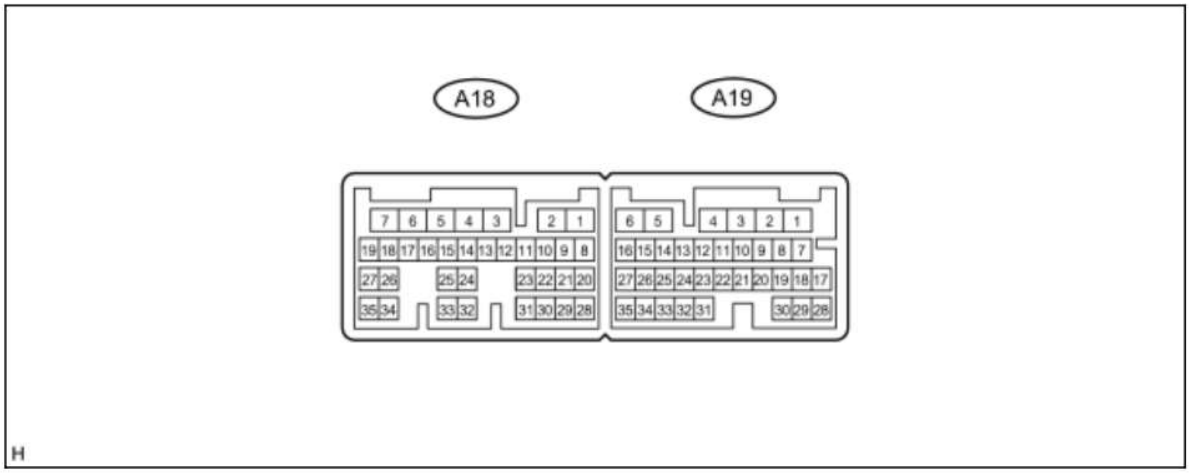


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Last Modified: 3-27-2012	6.4 U	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000W740IDX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: TERMINALS OF ECU (2013 FR-S)		

TERMINALS OF ECU

1. TCM



HINT:

Each TCM terminal's standard voltage is shown in the table below.

In the table, first follow the information under "Condition". Look under "Symbols (Terminal No.)" for the terminals to inspected. The standard voltage between the terminals is shown under "Specific Condition".

Use the illustration above as a reference for the TCM terminals.

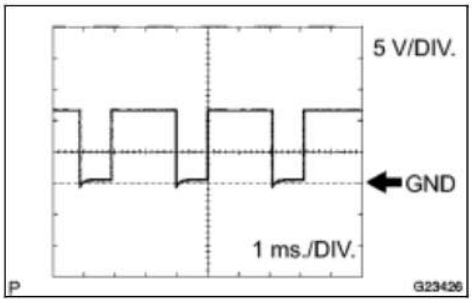
TERMINALS NO. (SYMBOLS)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
A19-9(D) - A18-33(E01)	BR - B-Y	D shift position switch signal	Ignition switch ON and shift lever in D and M	11 to 14 V
			Ignition switch ON and shift lever except in D and M	Below 1 V
A19-10(R) - A18-33(E01)	V - B-Y	R shift position switch signal	Ignition switch ON and shift lever in R	11 to 14 V
			Ignition switch ON and shift lever except in R	Below 1 V
A19-1(SFTD) - A18-33(E01)	BE - B-Y	Down shift switch signal	Ignition switch ON and shift lever in "-" (Down shift)	Below 1 V
A19-2(SFTU) - A18-33(E02)	SB - B-Y	Up shift switch signal	Ignition switch ON and shift lever in "+" (Up shift)	Below 1 V
A19-8(M) - A18-33(E01)	O-B - B-Y	M shift position switch signal	Ignition switch ON and shift lever in M	11 to 14 V
			Ignition switch ON and shift lever except in M	Below 1 V

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A19-3(P) - A18-33(E01)	BR - B-Y	Park position switch signal	Ignition switch ON and shift lever in P	11 to 14 V
			Ignition switch ON and shift lever except in P	Below 1 V
A19-21(N) - A18-33(E01)	B-G - B-Y	Neutral position switch signal	Ignition switch ON and shift lever in N	11 to 14 V
			Ignition switch ON and shift lever except in N	Below 1 V
A18-13(SLU+) - A18-1(SLU-)	LG - LG-Y	SLU solenoid signal	2nd, 3rd, 4th, 5th or 6th gear (each gear lock-up, M position)	Pulse generation (See waveform 2)
A18-15(SR) - A18-33(E01)	R-B - B-Y	SR solenoid signal	1st, 2nd, 3rd or 4th gear	11 to 14 V
			5th or 6th gear	Below 1 V
A18-14(S4) - A18-33(E01)	L-W - B-Y	S4 solenoid signal	2nd, 5th or 6th gear	11 to 14 V
			1st, 3rd or 4th gear	Below 1 V
A18-6(S3) - A18-33(E01)	L-Y - B-Y	S3 solenoid signal	1st, 2nd or 3rd gear	11 to 14 V
			4th, 5th or 6th gear	Below 1 V
A18-17(S2) - A18-33(E01)	L-O - B-Y	S2 solenoid signal	1st, 2nd or 6th gear	11 to 14 V
			3rd, 4th or 5th gear	Below 1 V
A18-7(S1) - A18-33(E01)	Y - B-Y	S1 solenoid signal	1st gear	Below 1 V
			Except 1st gear	11 to 14 V
A18-5(SL2+) - A18-11(SL2-)	BR-A - BR-B	SL2 solenoid signal	Engine idle speed	Pulse generation (See waveform 3)
A18-16(SL1+) - A18-12(SL1-)	BR - BR-Y	SL1 solenoid signal	5th or 6th gear	Pulse generation (See waveform 4)
A19-18(SP2+) - A19-7(SP2-)	B - W	Output speed sensor SP2 signal	Vehicle speed 20 km/h (12 mph)	Pulse generation (See waveform 6)
A19-17(NT+) - A19-28(NT-)	G - L	Input speed sensor NT signal	Engine idle speed (P or N position)	Pulse generation (See waveform 5)
A18-4(SLT+) - A18-9(SLT-)	L-R - R-W	SLT solenoid signal	Engine idle speed	Pulse generation (See waveform 1)
A18-22(OIL) - A18-23(EOIL)	R - G-B	ATF temperature sensor signal	ATF temperature: 115°C (239°F) or more	Below 1 V
A18-33(E01) -	B-Y - Body	Ground	Always	Below 1 Ω

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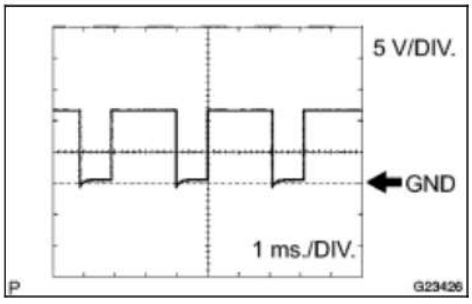
Body ground	ground			
A18-3(E02) - Body ground	B-Y - Body ground	Ground	Always	Below 1 Ω
A18-29(CANH) - A18-33(E01)	B-W - B-Y	CAN communication line	Ignition switch ON	Pulse generation (See waveform 7)
A18-28(CANL) - A18-33(E01)	L - B-Y	CAN communication line	Ignition switch ON	Pulse generation (See waveform 8)
A18-34(IG1) - A18-33(E01)	P - B-Y	Starter signal	Ignition switch ON	11 to 14 V
A18-35(IG2) - A18-33(E01)	P - B-Y	Starter signal	Ignition switch ON	11 to 14 V
A18-26(BM) - A18-33(E01)	Y-R - B-Y	Battery	Always	11 to 14 V
A19-13(SPORT) - Body ground	L - B-Y	SPORT switch signal	Ignition switch ON and pattern select switch pressed continuously (SPORT)	11 to 14 V
			Ignition switch ON and pattern select switch released (SPORT)	Below 1 V
A19-24(SNOW) - Body ground	W-R - B-Y	SNOW switch signal	Ignition switch ON and pattern select switch pressed continuously (SNOW)	11 to 14 V
			Ignition switch ON and pattern select switch released (SNOW)	Below 1 V



(a) Waveform 1

Reference:

Terminal	A18-4(SLT) - A18-9(SLT-)
Tool setting	5 V/DIV., 1 ms./DIV.
Vehicle condition	Engine idle speed

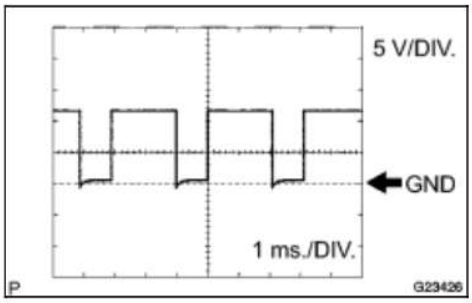


(b) Waveform 2

Reference:

Terminal	A18-13(SLU+) - A18-1(SLU-)
Tool setting	5 V/DIV., 1 ms./DIV.
Vehicle condition	2nd, 3rd, 4th, 5th or 6th gear (each gear lock-up, M position)

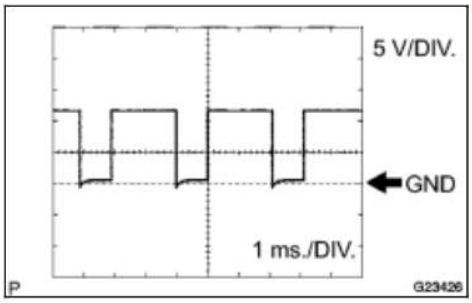
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(c) Waveform 3

Reference:

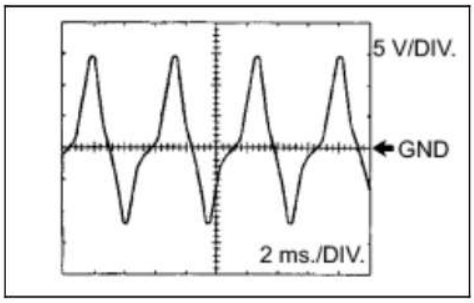
Terminal	A18-5(SL2+) - A18-11(SL2-)
Tool setting	5 V/DIV., 1 ms./DIV.
Vehicle condition	Engine idle speed



(d) Waveform 4

Reference:

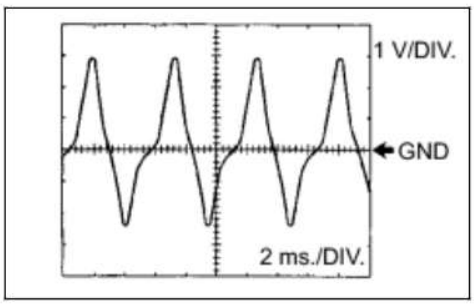
Terminal	A18-16(SL1+) - A18-12(SL1-)
Tool setting	5 V/DIV., 1 ms./DIV.
Vehicle condition	5th or 6th gear



(e) Waveform 5

Reference:

Terminal	A19-17(NT+) - A19-28(NT-)
Tool setting	5 V/DIV., 2 ms./DIV.
Vehicle condition	Engine idle speed (P or N position)



(f) Waveform 6

Reference:

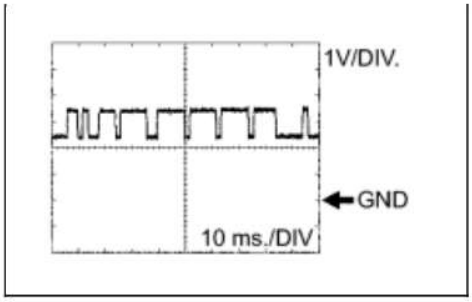
Terminal	A19-18(SP2+) - A19-7(SP2-)
Tool setting	1 V/DIV., 2 ms./DIV.
Vehicle condition	Vehicle speed 20 km/h (12 mph)

(g) Waveform 7

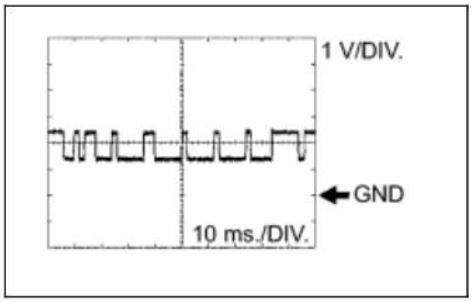
Reference:

Terminal	A18-29(CANH) - A18-33(E01)
Tool setting	1V/DIV., 10 ms./DIV.

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Vehicle condition	Ignition switch ON



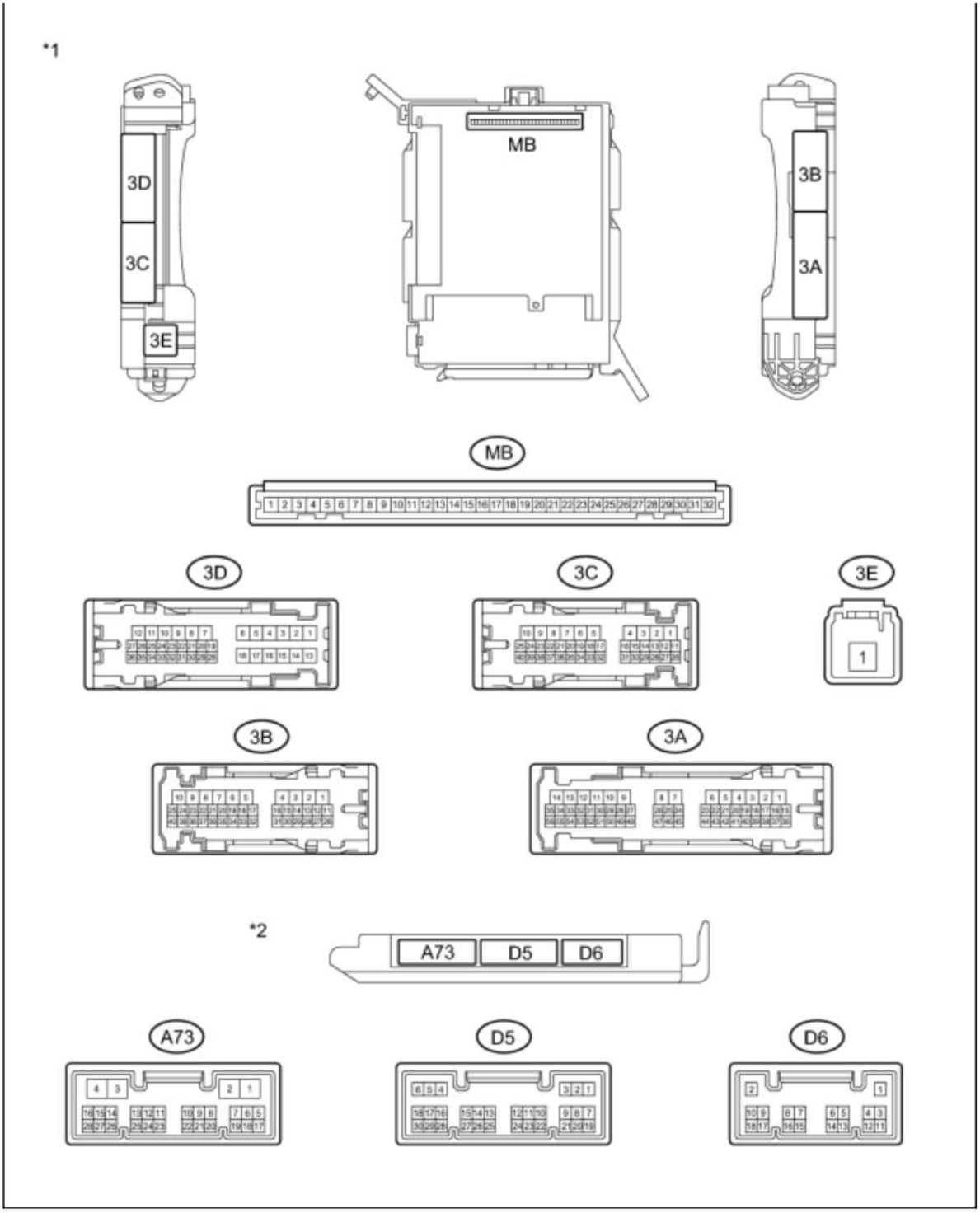
(h) Waveform 8

Reference:

Terminal	A18-28(CANL) - A18-33(E01)
Tool setting	1V/DIV., 10 ms./DIV.
Vehicle condition	Ignition switch ON

2. Main Body ECU RH (Cowl Side Junction Block RH)

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*1	Instrument Panel Junction Block Assembly	*2	Main Body ECU (Network Gateway ECU)

HINT:

Each ECU terminal's standard voltage is shown in the table below.

In the table, first follow the information under "Condition". Look under "Symbols (Terminal No.)" for the terminals to inspected. The standard voltage between the terminals is shown under "Specific Condition".

Use the illustration above as a reference for the ECU terminals.

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TERMINALS NO. (SYMBOLS)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
D5-20(SLS+) - Body ground	R	Shift lock control unit assembly signal	Ignition switch ON, Shift lever P position, and Stop light switch ON	11 to 14 V
			Ignition switch ON, Shift lever P position, and Stop light switch OFF	Below 1 V
3C-8 - Body ground	R	Stop light switch signal	Stop light switch ON	11 to 14 V
			Stop light switch OFF	Below 1 V
3D-23 - Body ground	WL	Park position switch signal	Shift lever except P position	11 to 14 V
			Shift lever P position	Below 1 V

HINT:

***1: Voltage is input intermittently as this is an intermittent circuit. (Voltage varies between a peak of 7.5 to 14 V and a low of 0 to1.5 V.)**



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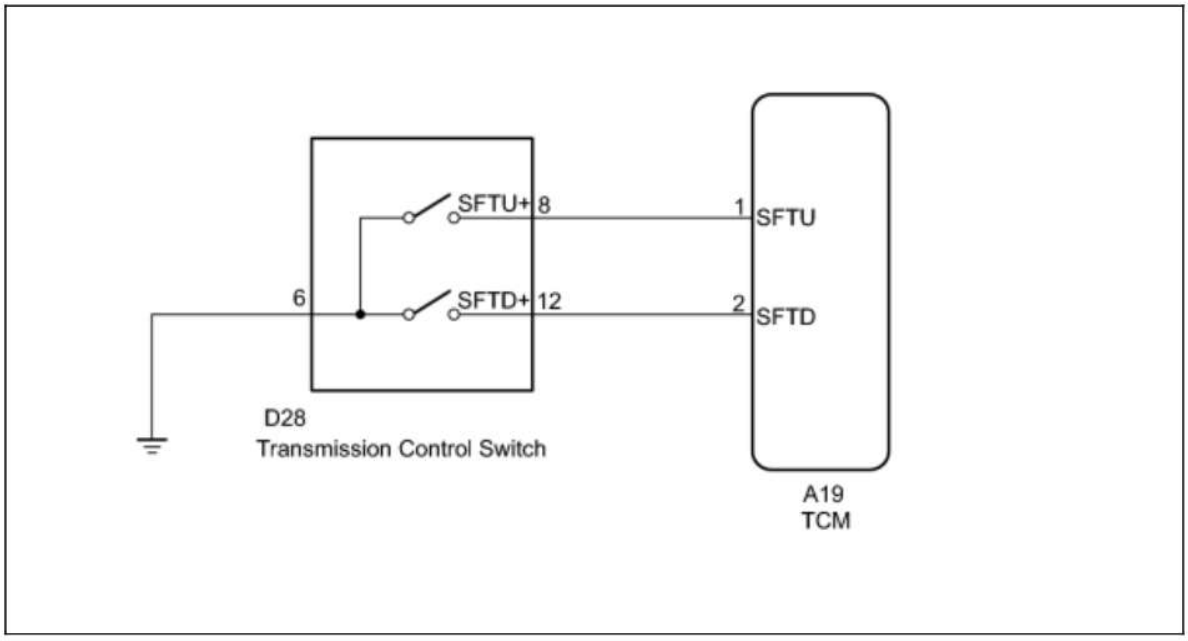
Last Modified: 3-27-2012	6.4 J	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000WP10COX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: Transmission Control Switch Circuit (2013 FR-S)		

Transmission Control Switch Circuit

DESCRIPTION

When the shift lever is in M, it is possible to change into any gear using the floor shift lever assembly sequential gate.

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	**INSPECT TRANSMISSION CONTROL SWITCH**

(a) Disconnect the D28 transmission control switch connector.

(b) Perform inspection of the transmission control switch INFO .

NG ▶ **REPLACE TRANSMISSION CONTROL SWITCH**

OK

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2.	CHECK HARNESS AND CONNECTOR (TRANSMISSION CONTROL SWITCH - TCM)

(a) Disconnect the A19 TCM connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

TESTER CONNECTION	SHIFT POSITION	SPECIFIED CONDITION
A19-1(SFTU) - Body ground	Press continuously "+" (Up shift)	Below 1 Ω
	M	10 kΩ or higher
A19-2(SFTD) - Body ground	Press continuously "-" (Down shift)	Below 1 Ω
	M	10 kΩ or higher

(c) Connect the A19 TCM connector.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

3.	REPLACE TCM

(a) Replace the TCM INFO .

NEXT ▶ **PERFORM THE RESET MEMORY**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM0000057Y4000X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: U0073,U0401,U0416,U0422,U0423: Control Module Communication Bus OFF (2013 FR-S)		

DTC	**U0073**	**Control Module Communication Bus OFF**

DTC	**U0401**	**Invalid Data Received from ECM/PCM "A"**

DTC	**U0416**	**Invalid Data Received from Vehicle Dynamics Control Module**

DTC	**U0422**	**Invalid Data Received from Body Control Module**

DTC	**U0423**	**Invalid Data Received from Instrument Panel Cluster Control Module**

DESCRIPTION

HINT:

- Problems on the CAN bus (communication line) can be detected from the DLC3 connector (Except when the DLC3 branch line is open).
- By using the Techstream, it is possible to check CAN communication DTC.
- The DLC3 is connected to the CAN communication line, but the CAN communication is unable to detect problems on the DLC3 branch line.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
U0073	1. Ignition voltage is 9 V or more, and this condition continues for 1 second or more. 2. Data reception and transmission are not possible 3. 500 ms 4. 1-trip detection logic	CAN communication system
U0401	1. CAN bus is normal. 2. Reception of malfunction signal from the ECM. 3. 50 times 4. 1-trip detection logic	CAN communication system
	1. CAN bus is normal. 2. Reception of malfunction signal from the skid control ECU	

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U0416	(brake actuator assembly). 3. 40 times 4. 1-trip detection logic	CAN communication system
U0422	1. CAN bus is normal. 2. Reception of malfunction signal from the main body ECU (network gateway ECU). 3. 40 times 4. 1-trip detection logic	CAN communication system
U0423	1. CAN bus is normal. 2. Reception of malfunction signal from the combination meter assembly. 3. 40 times 4. 1-trip detection logic	CAN communication system

MONITOR STRATEGY

Related DTCs	U0073: CAN Bus Off U0401: TCM Communication Counter U0416: VSC Communication Counter
Required Sensors/Components	U0073: TCM U0401: TCM U0406: Skid Control ECU
Frequency of Operation	Continuous
Duration	1 count
MIL Operation	Immediately
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

U0073: CAN Bus Off

Battery voltage	9.0 V or more
Above condition satisfied for	1 sec. or more

U0401: TCM Communication Counter

Battery voltage	9.0 V or more
Above condition satisfied for	1 sec. or more
CAN BUS OFF(U0073)	No failure

U0416: VSC Communication Counter

Battery voltage	9.0 V or more
Above condition satisfied for	1 sec. or more

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CAN BUS OFF(U0073)	No failure

TYPICAL MALFUNCTION THRESHOLDS

U0073: CAN Bus Off

The CAN controller performs confirmation of bus by 50 msec. period and becomes bus off consecutively.	1 count or more

U0401: TCM Communication Counter

Communication counter is not count up (Check communication counter value by 10ms period)	50 count

U0416: VSC Communication Counter

Communication counter is not count up (Check communication counter value by 10ms period)	40 count

INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

PROCEDURE

1.	**CHECK DTC OUTPUT**

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON and push the Techstream main switch ON.

(c) Read the DTCs using the Techstream INFO .

NEXT ▶ **GO TO CAN COMMUNICATION SYSTEM**

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Last Modified: 3-27-2012	6.4 C	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000001RRQ05JX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: U0100,U0122,U0140,U0155: Lost Communication with ECM / PCM "A" (2013 FR-S)		

DTC	**U0100**	**Lost Communication with ECM / PCM "A"**

DTC	**U0122**	**Lost Communication with Vehicle Dynamics Control Module**

DTC	**U0140**	**Lost Communication with Body Control Module**

DTC	**U0155**	**Lost Communication with Instrument Panel Cluster Control Module (Combination Meter)**

DESCRIPTION

The TCM receives and transmits signals from each ECU using CAN communication.

HINT:

- Problems on the CAN bus (communication line) can be detected from the DLC3 connector (Except when the DLC3 branch line is open).
- By using the Techstream, it is possible to check CAN communication DTC.
- The DLC3 is connected to the CAN communication line, but the CAN communication is unable to detect problems on the DLC3 branch line.

DTC NO.	DTC DETECTION CONDITION 1. DIAGNOSIS CONDITION 2. MALFUNCTION STATUS 3. MALFUNCTION TIME 4. OTHER	TROUBLE AREA
U0100	1. CAN bus is normal. 2. Signal from the ECM is interrupted. 3. 500 ms, 800 ms, 2000 ms (differs depending on ID) 4. 1-trip detection logic	CAN communication system
U0122	1. CAN bus is normal. 2. Signal from the skid control ECU (brake actuator assembly) is interrupted. 3. 800 ms 4. 1-trip detection logic	CAN communication system
U0140	1. CAN bus is normal. 2. Signal from the main body ECU (network gateway ECU) is interrupted.	CAN communication

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	3. 800 ms, 20000 ms (differs depending on ID) 4. 1-trip detection logic	system
U0155	1. CAN bus is normal. 2. Signal from combination meter assembly is interrupted. 3. 2000 ms 4. 1-trip detection logic	CAN communication system

MONITOR STRATEGY

Related DTCs	U0100: Lost Communication with TCM U0122: Lost Communication with VSC
Required Sensors/Components	U0100: TCM U0122: Skid Control ECU
Frequency of Operation	Continuous
Duration	1 count
MIL Operation	Immediately
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

Battery voltage	9.0 V or more
Above condition satisfied for	1 sec. or more
CAN BUS OFF(U0073)	No failure

TYPICAL MALFUNCTION THRESHOLDS

U0100: Lost Communication with TCM

Frame ID	Lost communication with TCM

U0122: Lost Communication with VSC

Frame ID	Lost communication with VSC

INSPECTION PROCEDURE

NOTICE:

Perform the universal trip to clear permanent DTCs INFO .

PROCEDURE

1.	**CHECK OTHER DTC OUTPUT**

(a) Connect the Techstream to the DLC3.

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(b) Turn the ignition switch to ON and push the Techstream main switch ON.

(c) Read the DTCs using the Techstream INFO .

Result:

DISPLAY (DTC OUTPUT)	PROCEED TO
U0100, U0122, U0140 or U0155	A
U0100, U0122, U0140 or U0155 and P160A	B

B ▶ **GO TO P160A**

A ▼

2.	**CHECK DTC OUTPUT**

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON and push the Techstream main switch ON.

(c) Read the DTCs using the Techstream INFO .

NEXT ▶ **GO TO CAN COMMUNICATION SYSTEM**

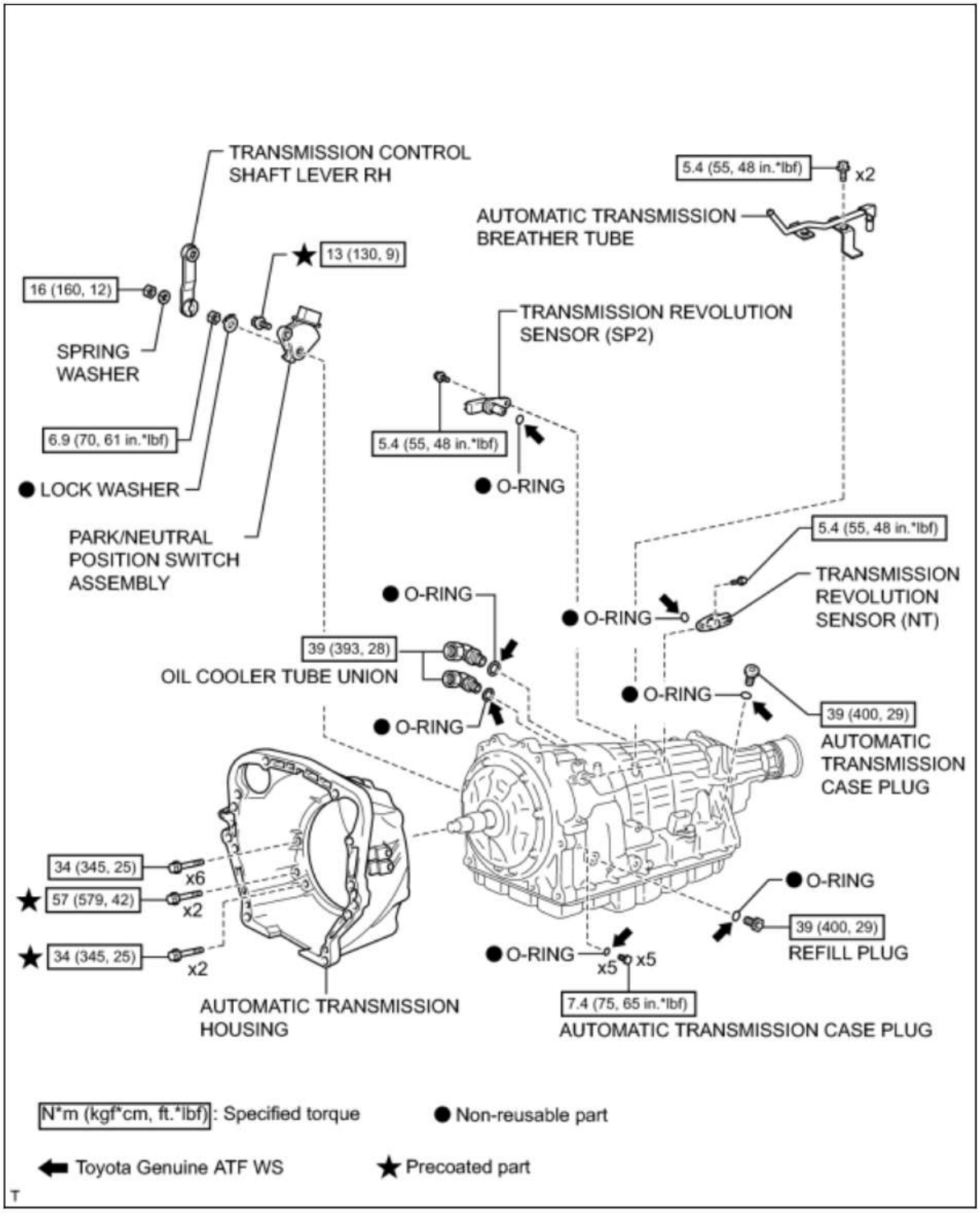


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Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000O9X031X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION UNIT: COMPONENTS (2013 FR-S)		

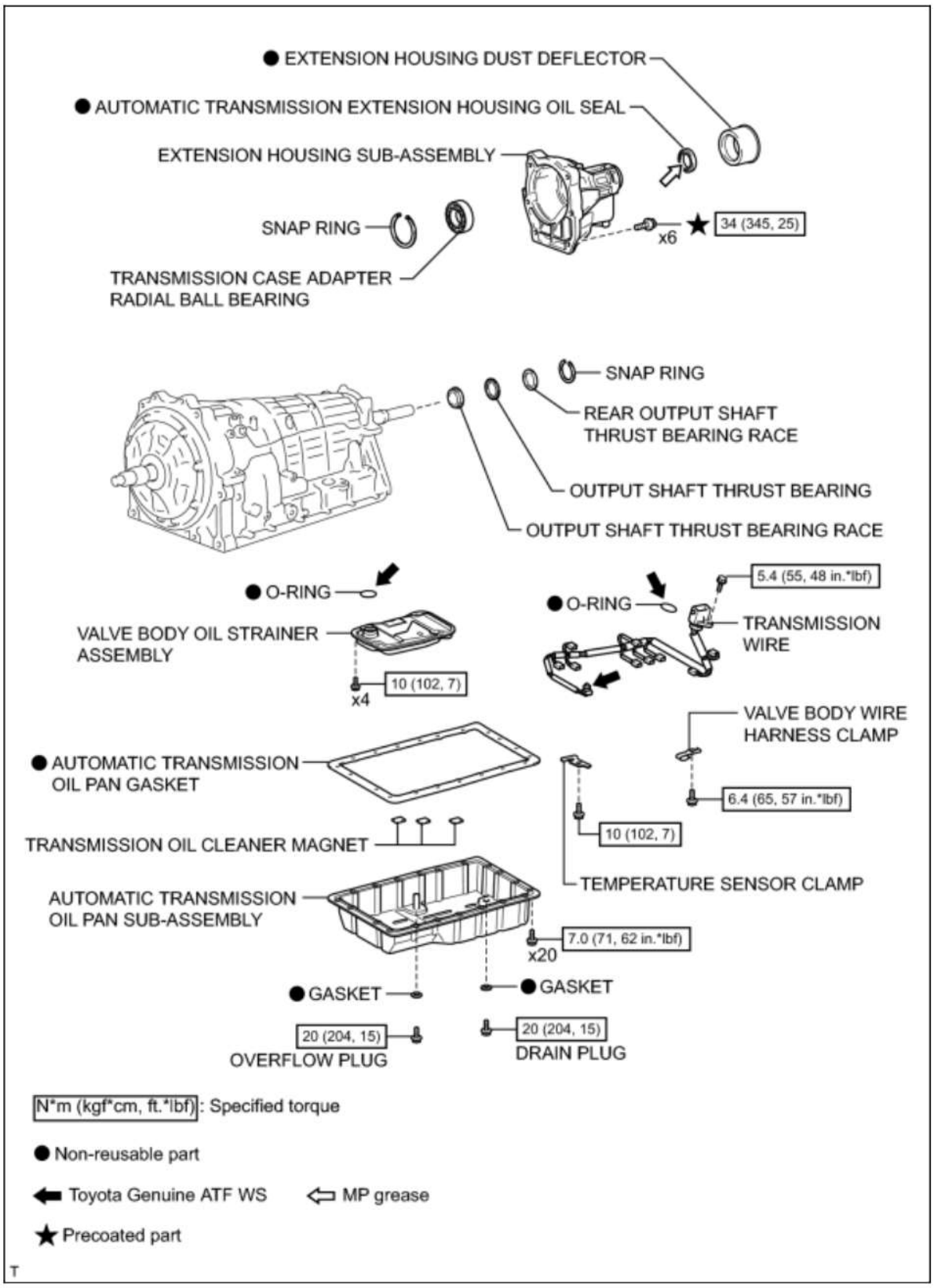
COMPONENTS

ILLUSTRATION



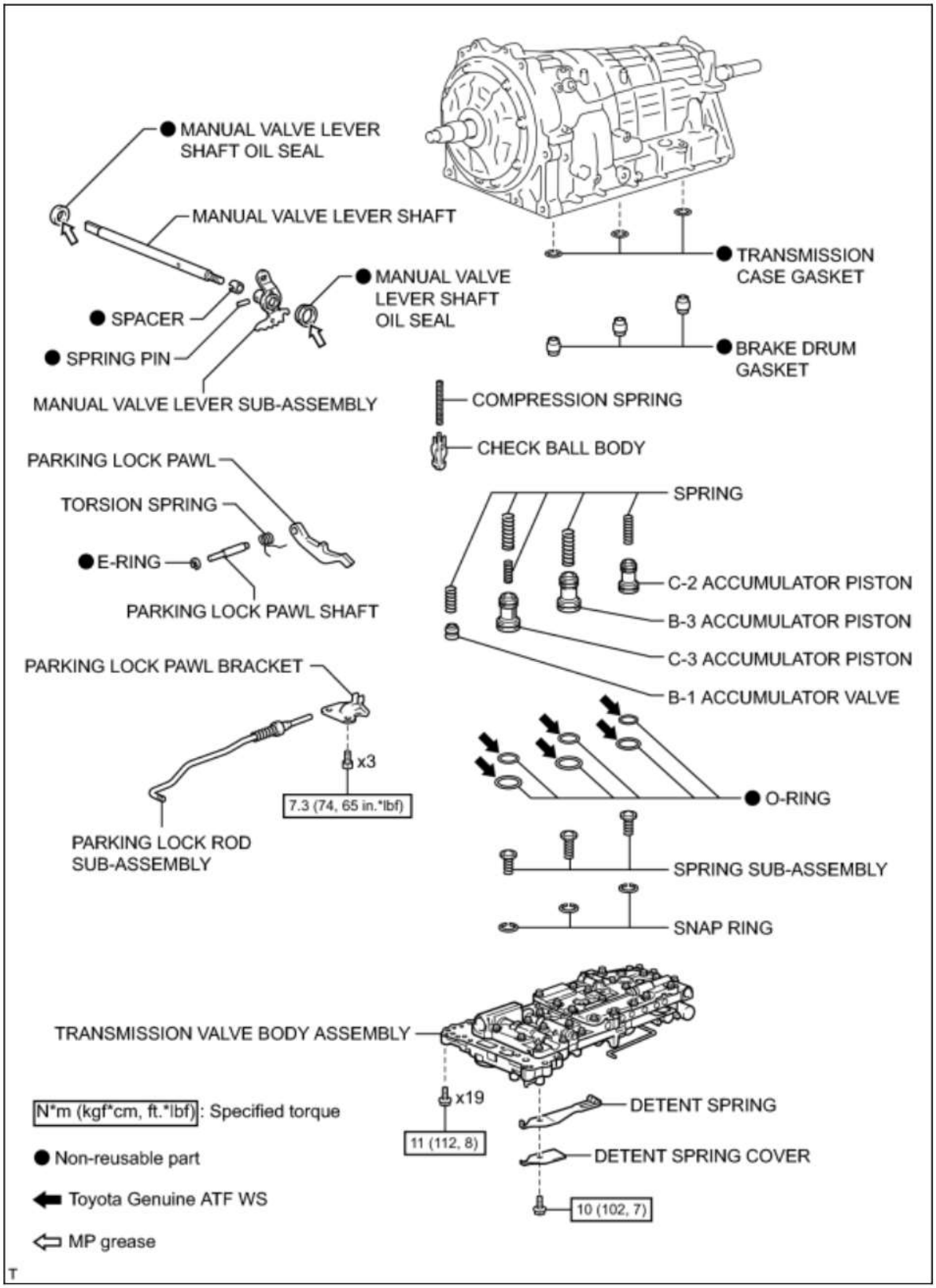
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ILLUSTRATION



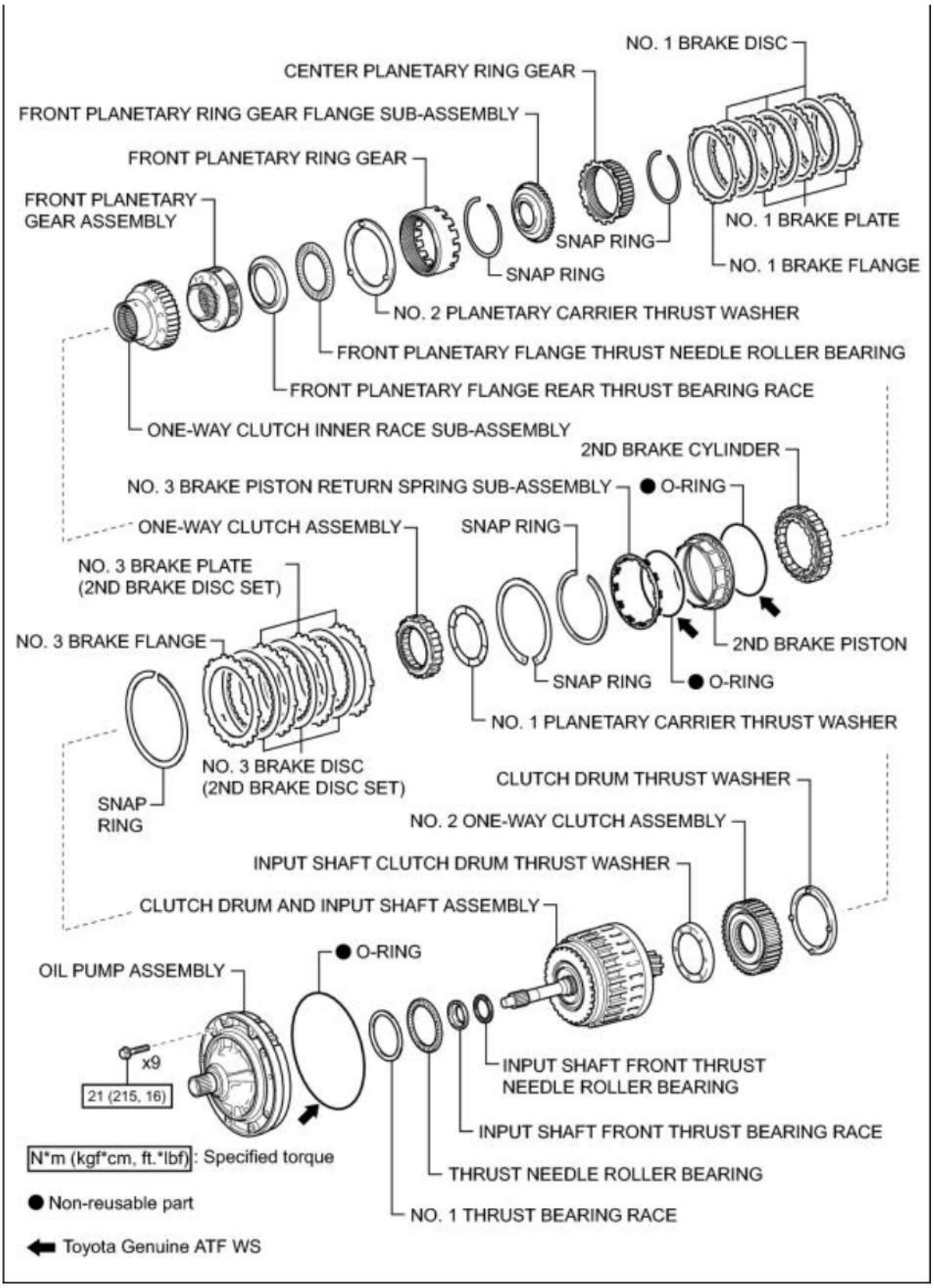
ILLUSTRATION

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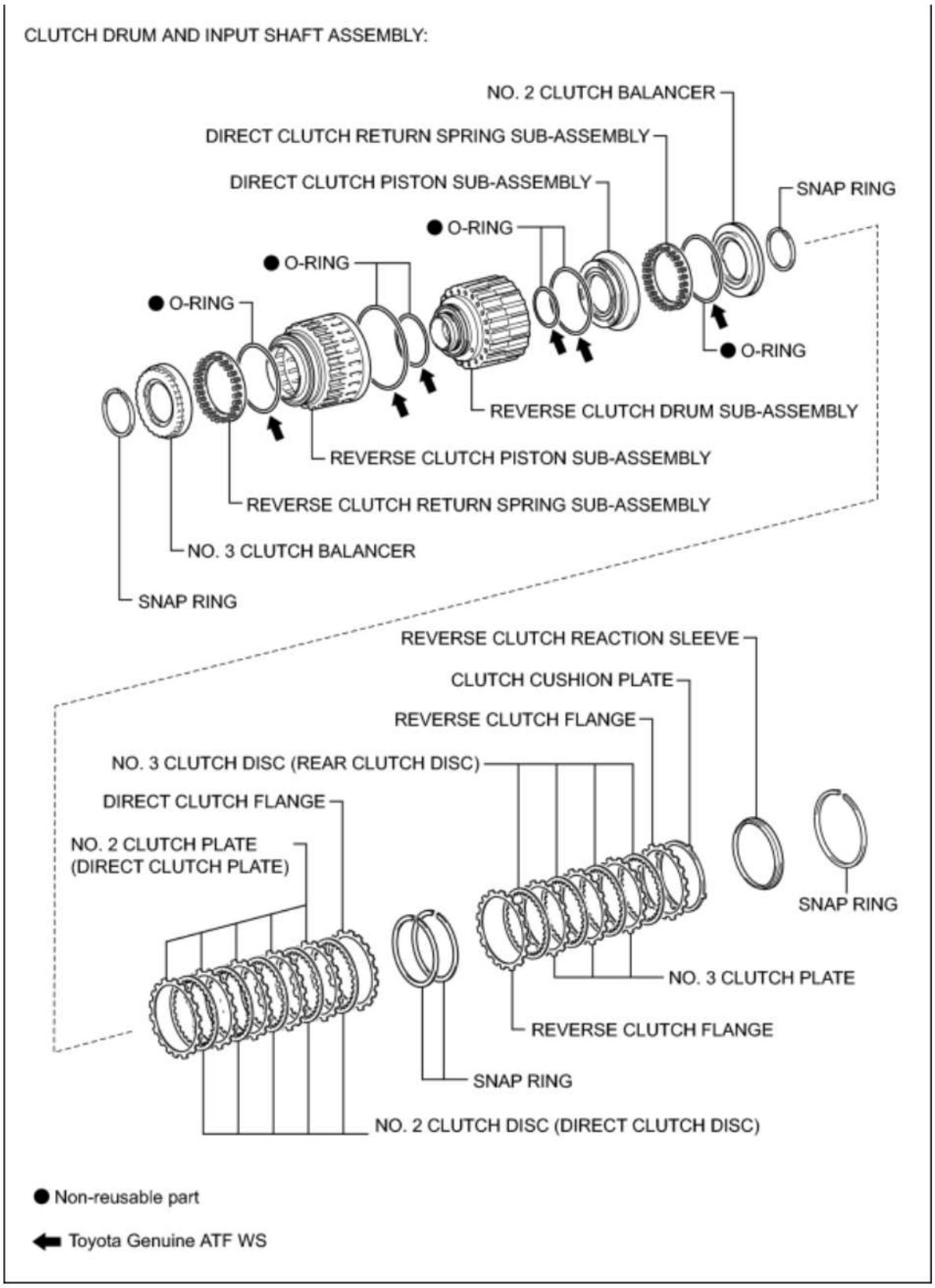
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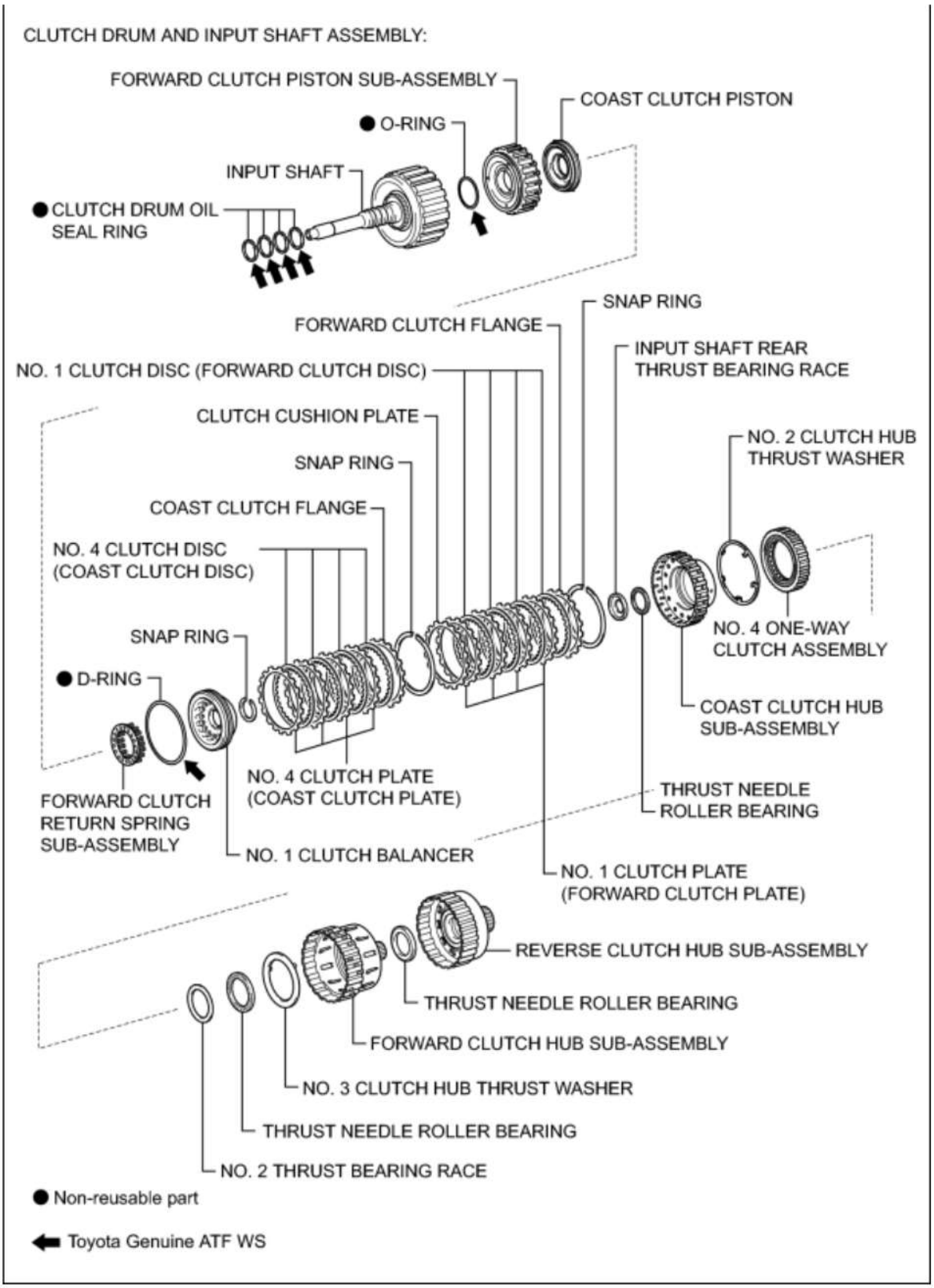
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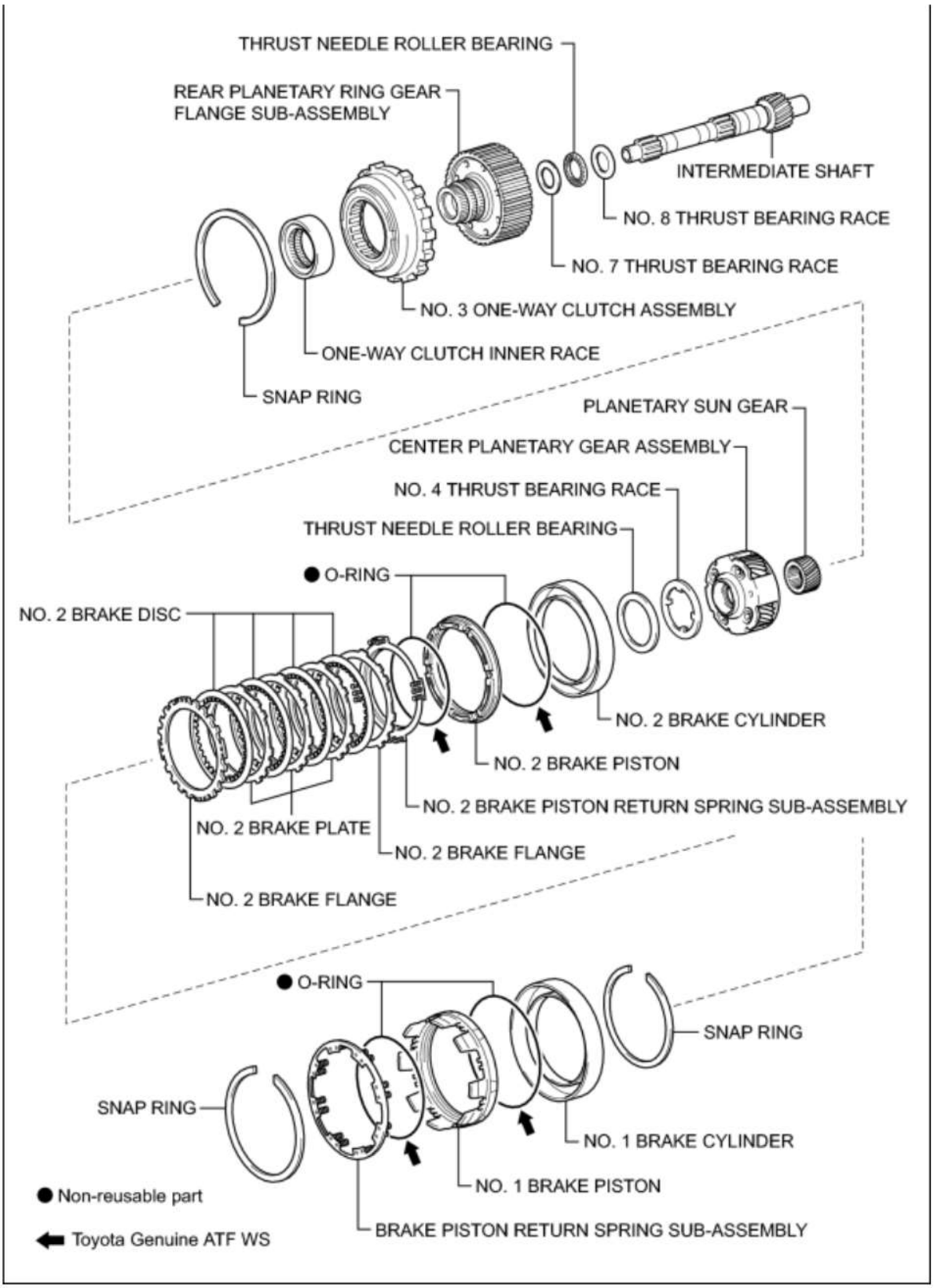
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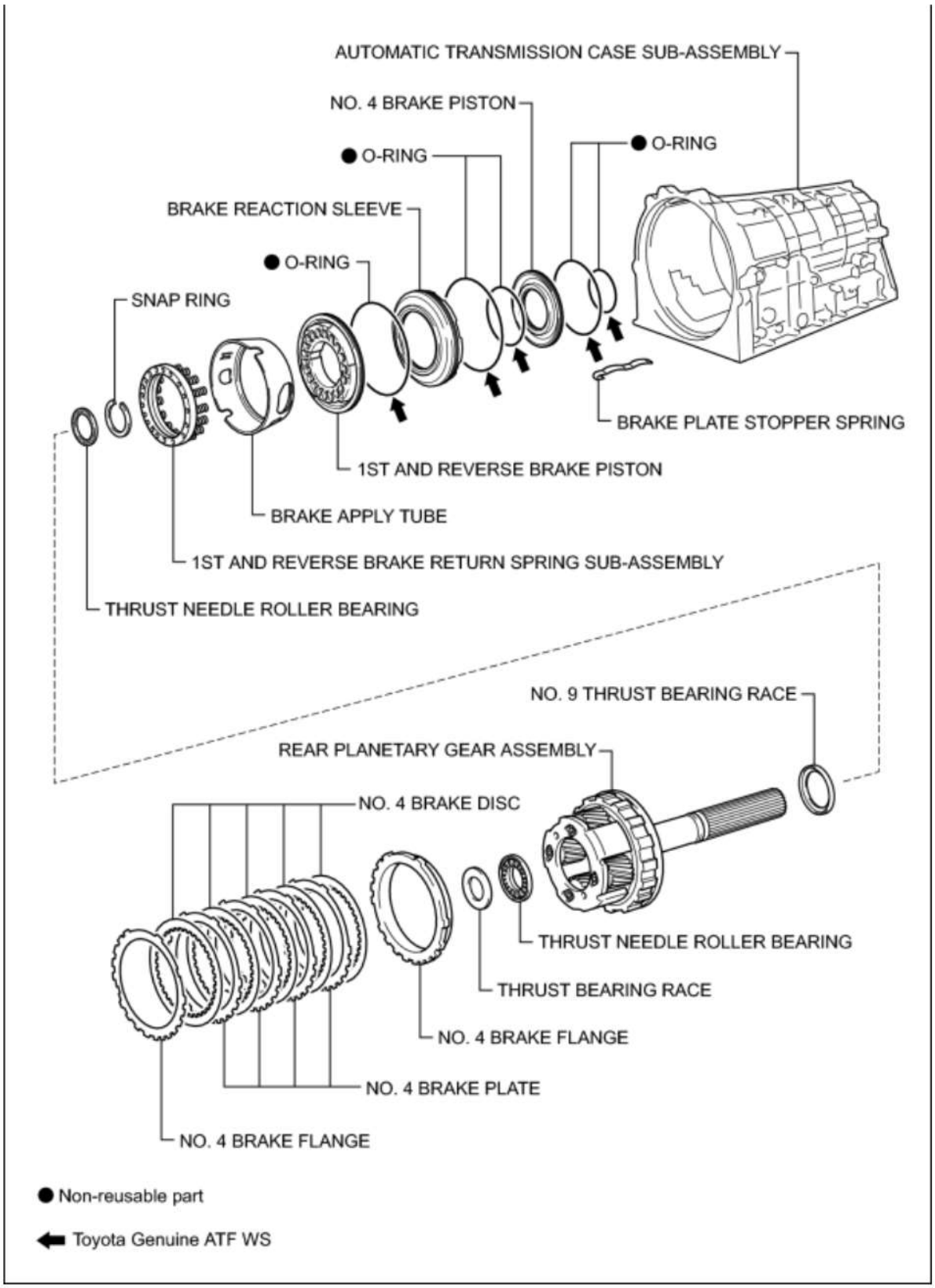
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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000O9Z03PX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION UNIT: DISASSEMBLY (2013 FR-S)		

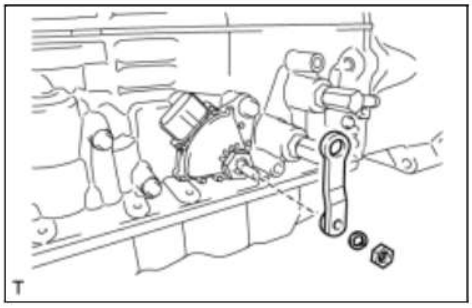
DISASSEMBLY

1. REMOVE REFILL PLUG

(a) Remove the refill plug.

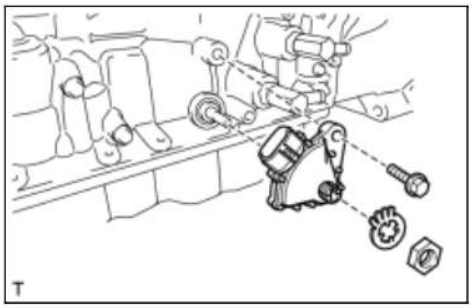
(b) Remove the O-ring from the refill plug.

2. REMOVE TRANSMISSION CONTROL SHAFT LEVER RH



(a) Remove the nut, spring washer and the transmission control shaft lever RH from the park/neutral position switch assembly.

3. REMOVE PARK/NEUTRAL POSITION SWITCH ASSEMBLY



(a) Using a screwdriver, bend the tabs of the lock washer.

(b) Remove the nut and the lock washer.

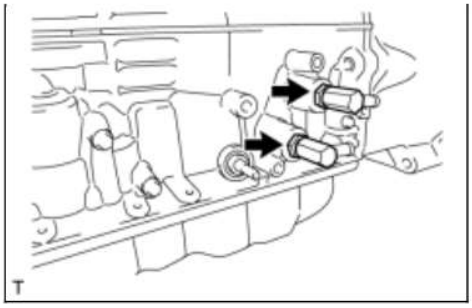
(c) Remove the bolt and the park/neutral position switch assembly from the automatic transmission case sub-assembly.

HINT:

Make sure that the manual valve lever shaft has not been rotated prior to installing the park/neutral position switch assembly as the detent spring may become detached from the manual valve lever shaft.

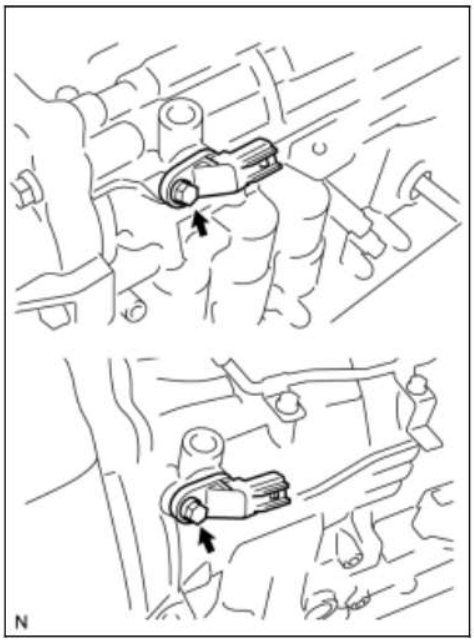
4. REMOVE OIL COOLER TUBE UNION

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(a) Remove the 2 oil cooler tube union from the automatic transmission case sub-assembly.

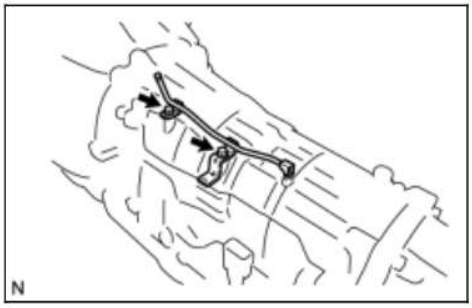
5. REMOVE TRANSMISSION REVOLUTION SENSOR



(a) Remove the 2 bolts and the 2 transmission revolution sensors from the automatic transmission case sub-assembly.

(b) Remove the 2 O-rings from the 2 transmission revolution sensors.

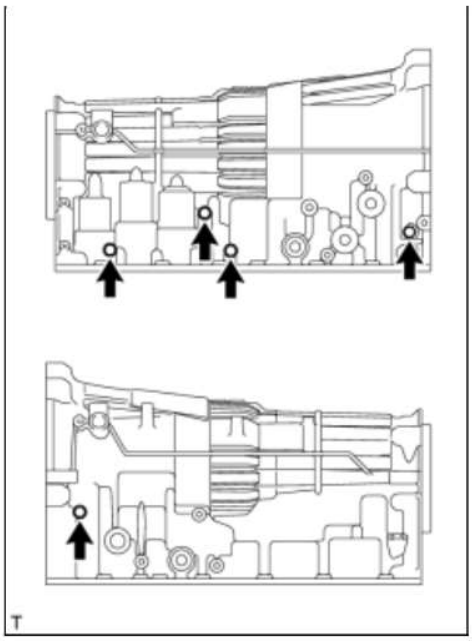
6. REMOVE AUTOMATIC TRANSMISSION BREATHER TUBE



(a) Remove the 2 bolts and the automatic transmission breather tube from the automatic transmission case sub-assembly.

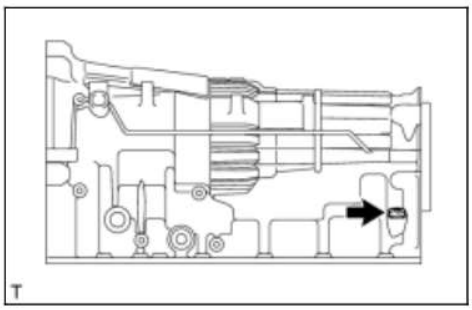
7. REMOVE AUTOMATIC TRANSMISSION CASE PLUG

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(a) Remove the 5 automatic transmission case plugs from the automatic transmission case sub-assembly.

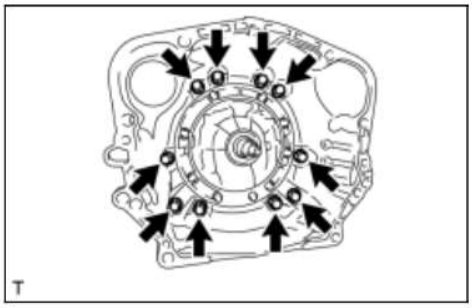
(b) Remove the 5 O-rings from the 5 automatic transmission case plugs.



(c) Using "TORX" socket wrench T55, remove the automatic transmission case plug from the automatic transmission case sub-assembly.

(d) Remove the O-ring from the automatic transmission case plug.

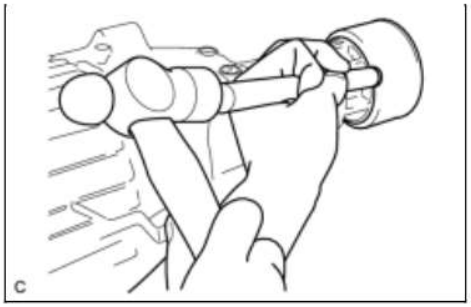
8. REMOVE AUTOMATIC TRANSMISSION HOUSING



(a) Remove the 10 bolts and the automatic transmission housing from the automatic transmission case sub-assembly.

9. REMOVE EXTENSION HOUSING DUST DEFLECTOR

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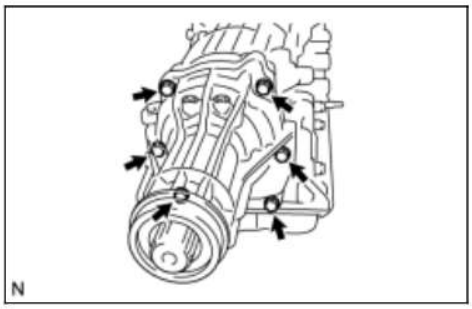


(a) Using a brass bar and a hammer, tap out the extension housing dust deflector from the extension housing sub-assembly.

NOTICE:

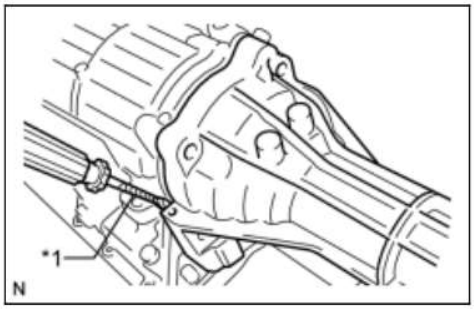
Be careful not to damage the extension housing sub-assembly.

10. REMOVE EXTENSION HOUSING SUB-ASSEMBLY



(a) Remove the 6 bolts.

(b) Using a screwdriver, remove the extension housing sub-assembly from the automatic transmission case sub-assembly.



Text in Illustration

*1	Protective Tape

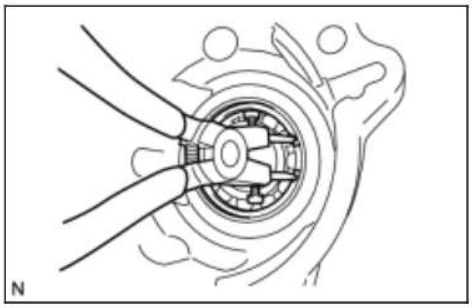
NOTICE:

Do not pry the surface where the extension housing sub-assembly contacts the automatic transmission case sub-assembly.

HINT:

Tape the screwdriver tip before use.

11. REMOVE TRANSMISSION CASE ADAPTER RADIAL BALL BEARING

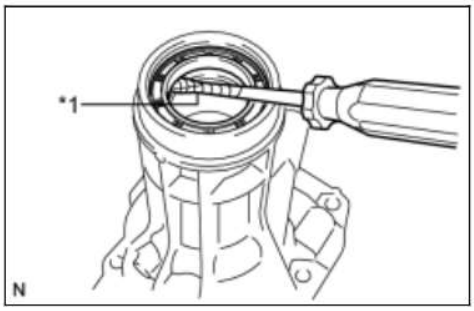


(a) Using snap ring pliers, remove the snap ring from the extension housing sub-assembly.

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(b) Remove the transmission case adapter radial ball bearing from the extension housing sub-assembly.

12. REMOVE AUTOMATIC TRANSMISSION EXTENSION HOUSING OIL SEAL



(a) Using a screwdriver, pry out the automatic transmission extension housing oil seal from the extension housing sub-assembly.

Text in Illustration

*1	Protective Tape

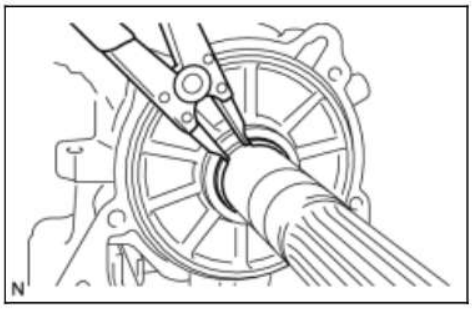
NOTICE:

Be careful not to damage the extension housing sub-assembly.

HINT:

Tape the screwdriver tip before use.

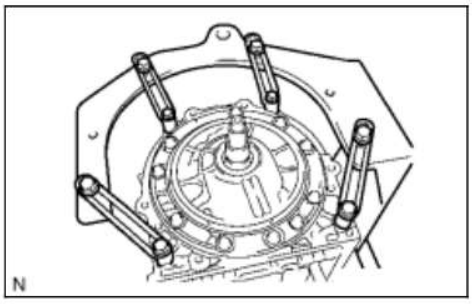
13. REMOVE OUTPUT SHAFT THRUST BEARING



(a) Using a snap ring expander, remove the snap ring from the output shaft of the rear planetary gear assembly.

(b) Remove the rear output shaft thrust bearing race, output shaft thrust bearing and the output shaft thrust bearing race.

14. SECURE AUTOMATIC TRANSMISSION CASE SUB-ASSEMBLY



(a) Install the automatic transmission case sub-assembly to an overhaul attachment.

15. REMOVE AUTOMATIC TRANSMISSION OIL PAN SUB-ASSEMBLY

NOTICE:

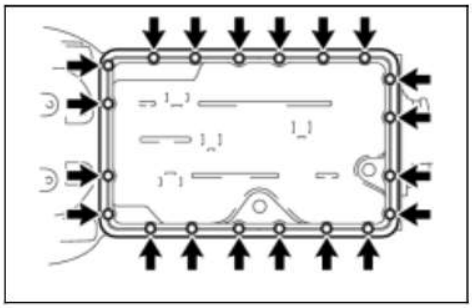
Do not turn the transmission over as this will contaminate the valve body with foreign matter

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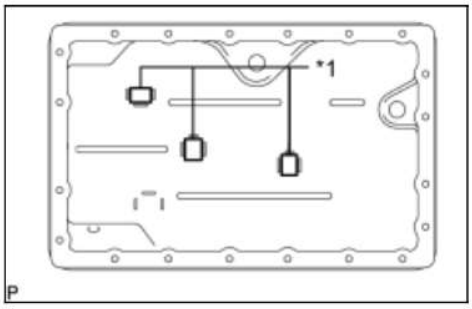
located at the bottom of the oil pan.

(a) Using a socket hexagon wrench 5 mm, remove the overflow plug and gasket.

(b) Remove the drain plug and gasket.



(c) Remove the 20 bolts, automatic transmission oil pan sub-assembly and the automatic transmission oil pan gasket.



(d) Remove the 3 transmission oil cleaner magnets from the automatic transmission oil pan sub-assembly.

Text in Illustration

*1	Transmission Oil Cleaner Magnet

(e) Examine the particles in the automatic transmission oil pan sub-assembly.

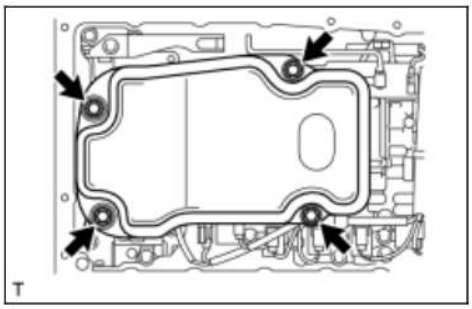
(1) Collect any steel chips with the removed transmission oil cleaner magnets. Carefully inspect the foreign matter and particles in the automatic transmission oil pan sub-assembly and on the transmission oil cleaner magnets to anticipate the type of wear you will find in the automatic transmission assembly.

Steel (magnetic): bearing, gear and clutch plate wear

Brass (non-magnetic): bush wear

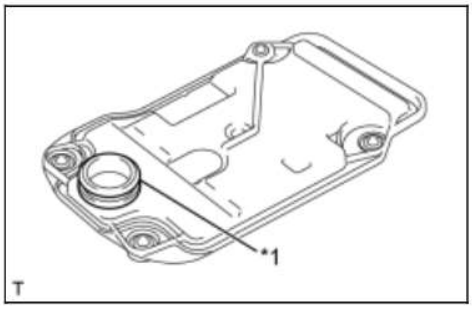
16. REMOVE VALVE BODY OIL STRAINER ASSEMBLY

(a) Turn over the automatic transmission case sub-assembly.



(b) Remove the 4 bolts and the valve body oil strainer assembly from the transmission valve body assembly.

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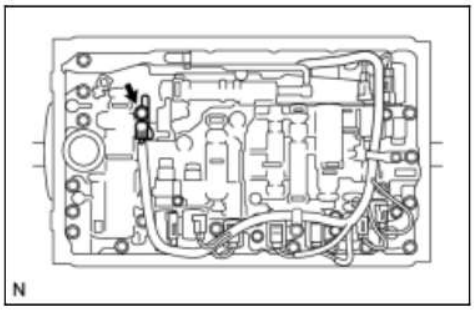


(c) Remove the O-ring from the valve body oil strainer assembly.

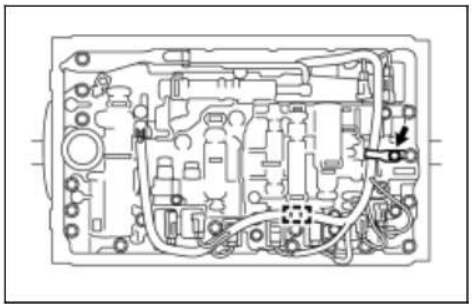
Text in Illustration

*1	O-ring

17. REMOVE TRANSMISSION WIRE

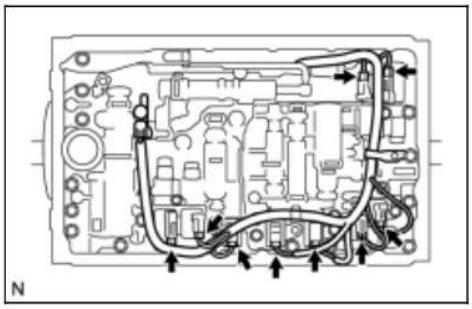


(a) Remove the bolt and the temperature sensor clamp, and separate the ATF temperature sensor.



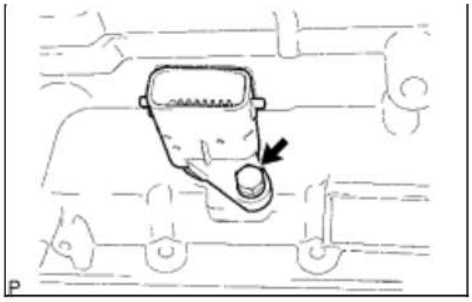
(b) Remove the bolt and the valve body wire harness clamp.

(c) Disengage the wire harness clamp.

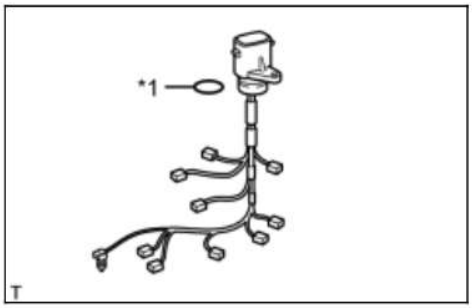


(d) Disconnect the 9 solenoid valve connectors.

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(e) Remove the bolt and pull out the transmission wire.

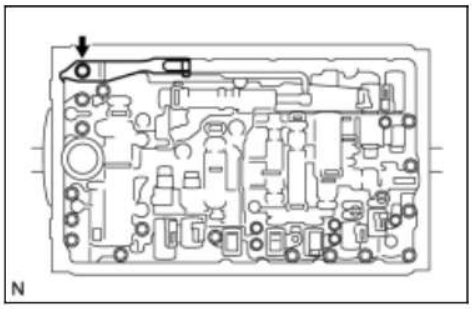


(f) Remove the O-ring from the transmission wire.

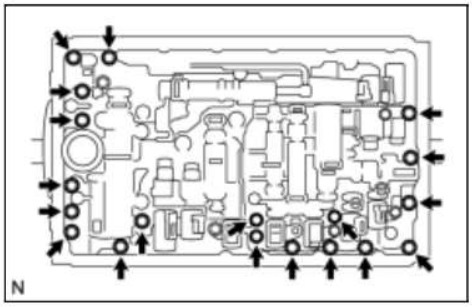
Text in Illustration

*1	O-ring

18. REMOVE TRANSMISSION VALVE BODY ASSEMBLY



(a) Remove the bolt, detent spring cover and the detent spring from the transmission valve body assembly.

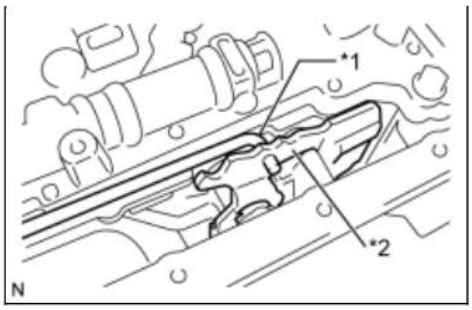


(b) Remove the 19 bolts and the transmission valve body assembly from the automatic transmission case sub-assembly.

(c) Disconnect the manual valve connecting rod sub-assembly from the manual valve lever sub-assembly.

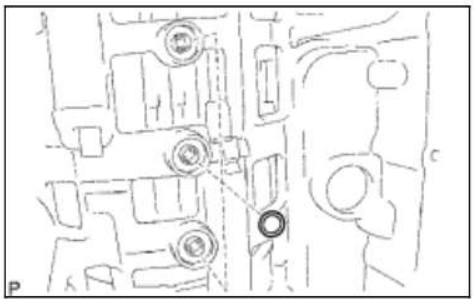
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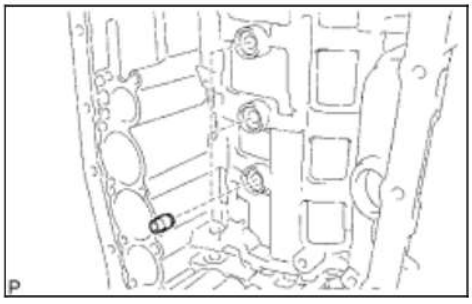
*1	Manual Valve Connecting Rod Sub-assembly
*2	Manual Valve Lever Sub-assembly

19. REMOVE TRANSMISSION CASE GASKET



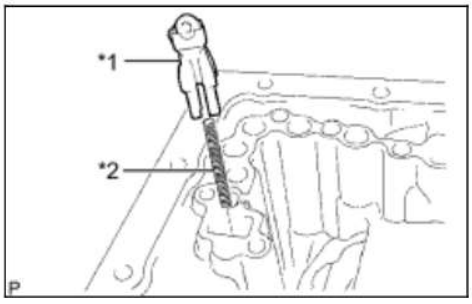
(a) Remove the 3 transmission case gaskets from the automatic transmission case sub-assembly.

20. REMOVE BRAKE DRUM GASKET



(a) Remove the 3 brake drum gaskets from the automatic transmission case sub-assembly.

21. REMOVE CHECK BALL BODY



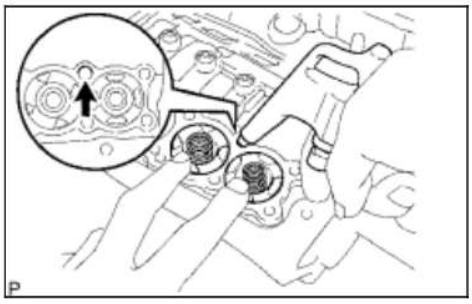
(a) Remove the check ball body and the compression spring from the automatic transmission case sub-assembly.

Text in Illustration

*1	Check Ball Body
*2	Compression Spring

22. REMOVE C-2 ACCUMULATOR PISTON

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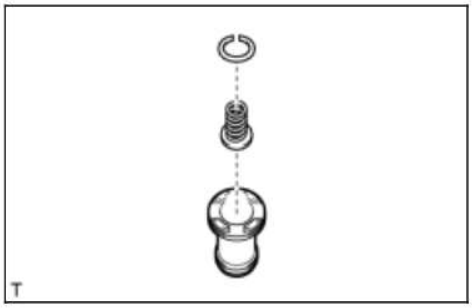


(a) While blowing compressed air into the oil hole, remove the C-2 accumulator piston and the spring from the automatic transmission case sub-assembly.

NOTICE:

Take care as the C-3 and B-3 accumulator pistons may jump out.

(b) Remove the 2 O-rings from the C-2 accumulator piston.



(c) Using a screwdriver, remove the snap ring and the spring sub-assembly from the C-2 accumulator piston.

NOTICE:

Be careful not to damage the C-2 accumulator piston.

HINT:

Tape the screwdriver tip before use.

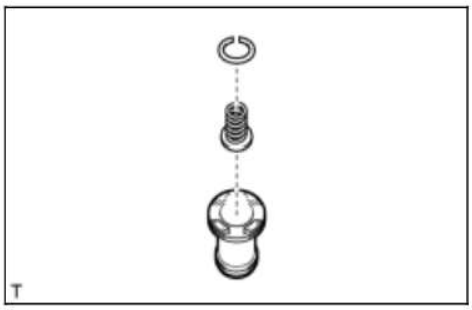
23. REMOVE B-3 ACCUMULATOR PISTON

(a) While blowing compressed air into the oil hole, remove the B-3 accumulator piston and the spring from the automatic transmission case sub-assembly.

NOTICE:

Take care as the C-3 accumulator piston may jump out.

(b) Remove the 2 O-rings from the B-3 accumulator piston.



(c) Using a screwdriver, remove the snap ring and the spring sub-assembly from the B-3 accumulator piston.

NOTICE:

Be careful not to damage the B-3 accumulator piston.

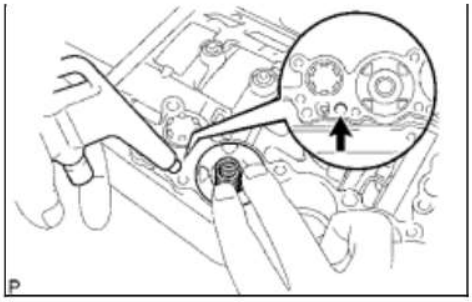
HINT:

Tape the screwdriver tip before use.

24. REMOVE C-3 ACCUMULATOR PISTON

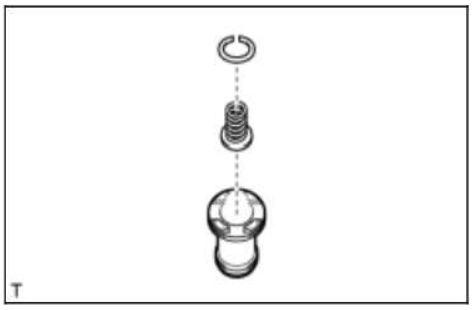
(a) While blowing compressed air into the oil hole, remove

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the C-3 accumulator piston and the 2 springs from the automatic transmission case sub-assembly.

(b) Remove the 2 O-rings from the C-3 accumulator piston.



(c) Using a screwdriver, remove the snap ring and the spring sub-assembly from the C-3 accumulator piston.

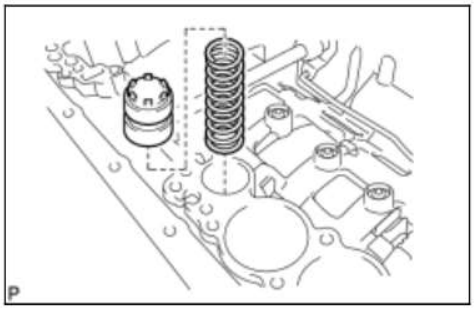
NOTICE:

Be careful not to damage the C-3 accumulator piston.

HINT:

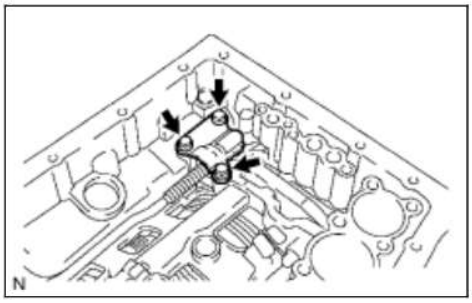
Tape the screwdriver tip before use.

25. REMOVE B-1 ACCUMULATOR VALVE



(a) Remove the B-1 accumulator valve and the spring from the automatic transmission case sub-assembly.

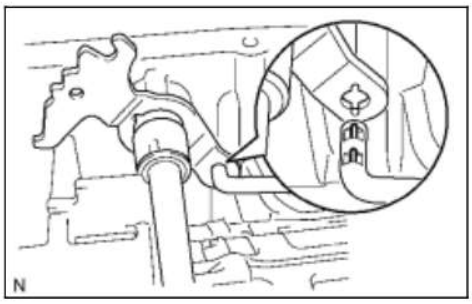
26. REMOVE PARKING LOCK PAWL BRACKET



(a) Remove the 3 bolts and the parking lock pawl bracket from the automatic transmission case sub-assembly.

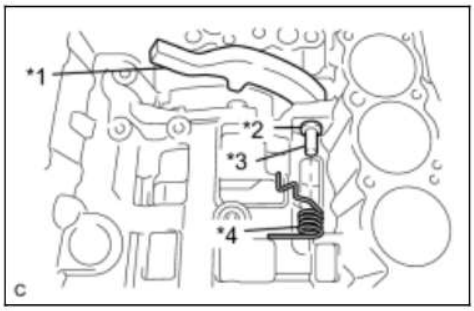
27. REMOVE PARKING LOCK ROD SUB-ASSEMBLY

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(a) Remove the parking lock rod sub-assembly from the manual valve lever sub-assembly.

28. REMOVE PARKING LOCK PAWL SHAFT



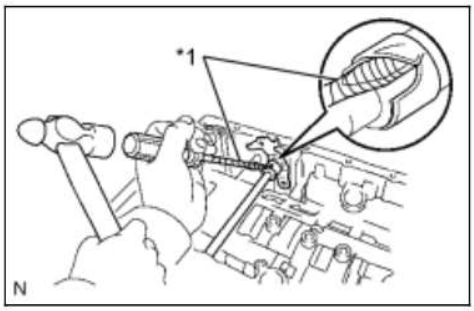
(a) Pull out the parking lock pawl shaft from the front side, and remove the parking lock pawl and the torsion spring.

Text in Illustration

*1	Parking Lock Pawl
*2	E-ring
*3	Parking Lock Pawl Shaft
*4	Torsion Spring

(b) Remove the E-ring from the parking lock pawl shaft.

29. REMOVE MANUAL VALVE LEVER SUB-ASSEMBLY



(a) Using a screwdriver and a hammer, cut off the spacer and remove it from the manual valve lever shaft.

Text in Illustration

*1	Protective Tape

NOTICE:

Be careful not to damage the manual valve lever shaft.

HINT:

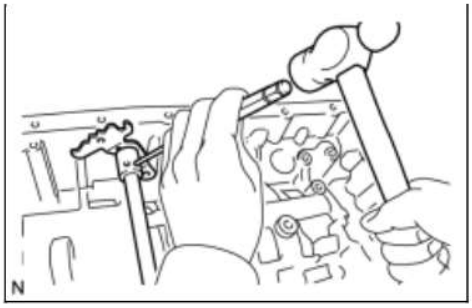
Tape the screwdriver tip before use.

(b) Using a pin punch 3 mm and a hammer, drive out the spring pin.

HINT:

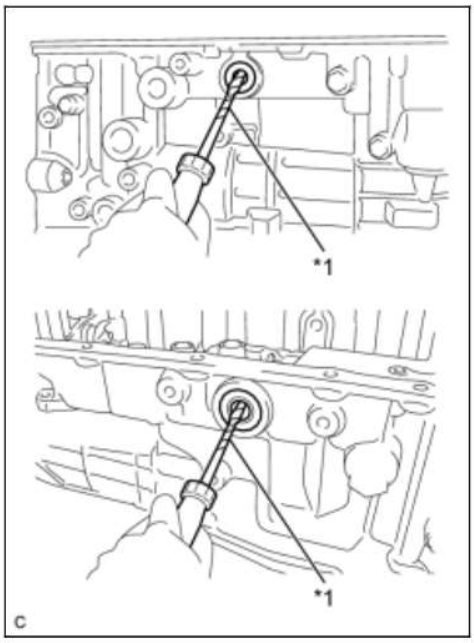
Slowly drive out the spring pin so that it does not fall into the automatic transmission case sub-assembly.

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(c) Pull the manual valve lever shaft out through the case and remove the manual valve lever sub-assembly.

30. REMOVE MANUAL VALVE LEVER SHAFT OIL SEAL



(a) Using a screwdriver, pry out the 2 manual valve lever shaft oil seals from the automatic transmission case sub-assembly.

Text in Illustration

*1	Protective Tape

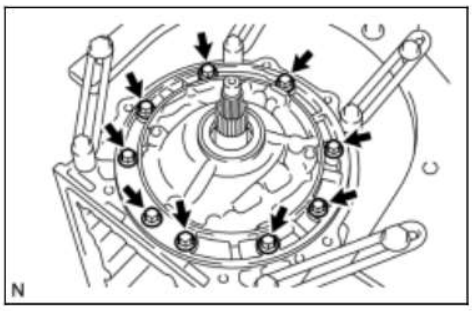
NOTICE:

Be careful not to damage the automatic transmission case sub-assembly.

HINT:

Tape the screwdriver tip before use.

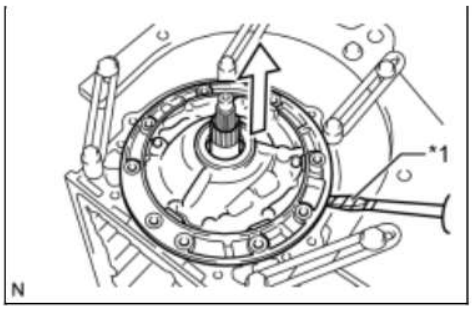
31. REMOVE OIL PUMP ASSEMBLY



(a) Remove the 9 bolts.

(b) Using a screwdriver, pull out the oil pump assembly from the automatic transmission case sub-assembly.

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Text in Illustration

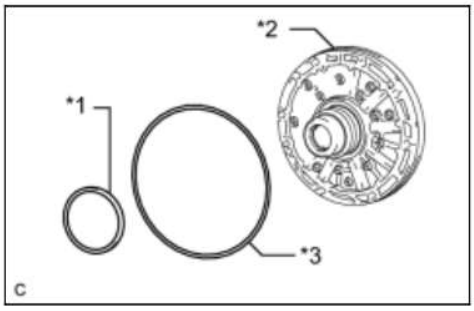
*1	Protective Tape

NOTICE:

Be careful not to damage the oil pump assembly or automatic transmission case sub-assembly.

HINT:

Tape the screwdriver tip before use.



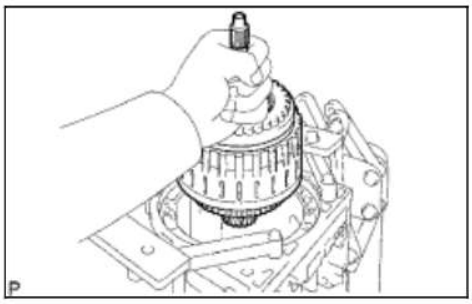
(c) Remove the No. 1 thrust bearing race from the oil pump assembly.

Text in Illustration

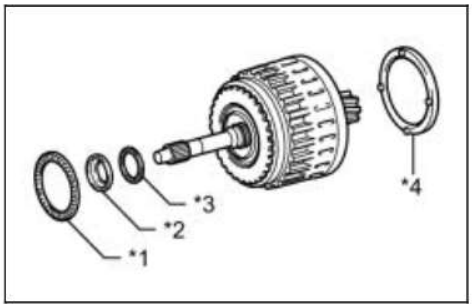
*1	No. 1 Thrust Bearing Race
*2	Oil Pump Assembly
*3	O-ring

(d) Remove the O-ring from the oil pump assembly.

32. REMOVE CLUTCH DRUM AND INPUT SHAFT ASSEMBLY



(a) Remove the clutch drum and input shaft assembly from the automatic transmission case sub-assembly.



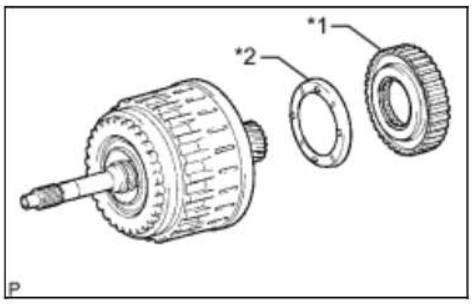
(b) Remove the clutch drum thrust washer, thrust needle roller bearing, input shaft front thrust bearing race and the input shaft front thrust needle roller bearing from the clutch drum and input shaft assembly.

Text in Illustration

*1	Thrust Needle Roller Bearing
*2	Input Shaft Front Thrust Bearing Race
*3	Input Shaft Front Thrust Needle Roller Bearing
*4	Clutch Drum Thrust Washer

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33. REMOVE NO. 2 ONE-WAY CLUTCH ASSEMBLY

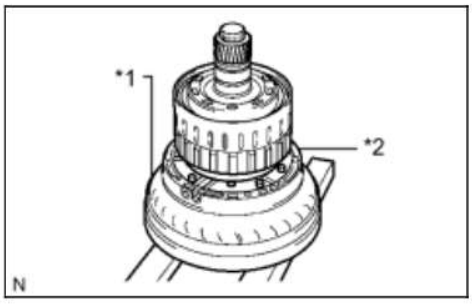


(a) Remove the No. 2 one-way clutch assembly and the input shaft clutch drum thrust washer from the clutch drum and input shaft assembly.

Text in Illustration

*1	No. 2 One-way Clutch Assembly
*2	Input Shaft Clutch Drum Thrust Washer

34. SUPPORT CLUTCH DRUM AND INPUT SHAFT ASSEMBLY

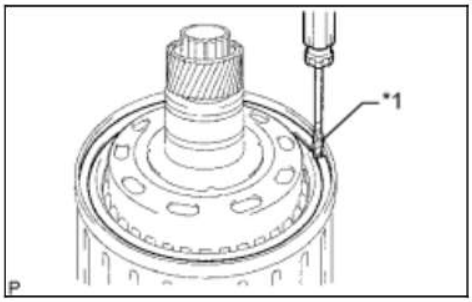


(a) Place the oil pump assembly onto the torque converter assembly, and then place the clutch drum and input shaft assembly onto the oil pump assembly.

Text in Illustration

*1	Torque Converter Assembly
*2	Oil Pump Assembly

35. REMOVE REVERSE CLUTCH HUB SUB-ASSEMBLY



(a) Using a screwdriver, remove the snap ring from the reverse clutch piston sub-assembly.

Text in Illustration

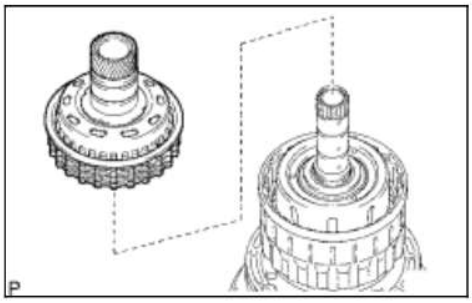
*1	Protective Tape

NOTICE:

Be careful not to damage the reverse clutch piston sub-assembly.

HINT:

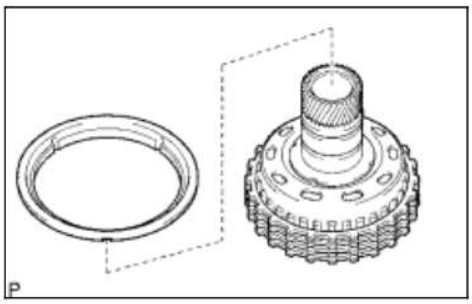
Tape the screwdriver tip before use.



(b) Remove the reverse clutch hub sub-assembly from the reverse clutch drum sub-assembly.

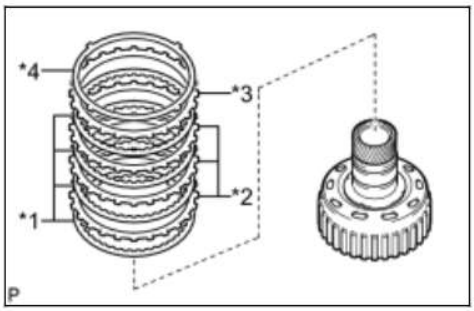
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36. REMOVE REVERSE CLUTCH REACTION SLEEVE



(a) Remove the reverse clutch reaction sleeve from the reverse clutch hub sub-assembly.

37. REMOVE NO. 3 CLUTCH DISC (REAR CLUTCH DISC)

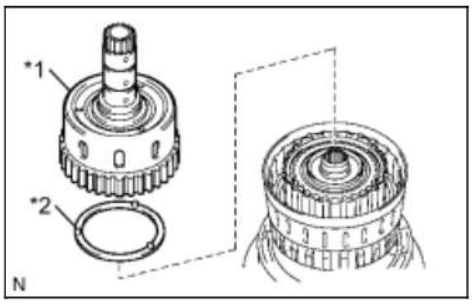


(a) Remove the clutch cushion plate, reverse clutch flange, 4 No. 3 clutch discs and the 3 No. 3 clutch plates from the reverse clutch hub sub-assembly.

Text in Illustration

*1	No. 3 Clutch Disc
*2	No. 3 Clutch Plate
*3	Reverse Clutch Flange
*4	Clutch Cushion Plate

38. REMOVE FORWARD CLUTCH HUB SUB-ASSEMBLY



(a) Remove the forward clutch hub sub-assembly and the No. 3 clutch hub thrust washer from the reverse clutch drum sub-assembly.

Text in Illustration

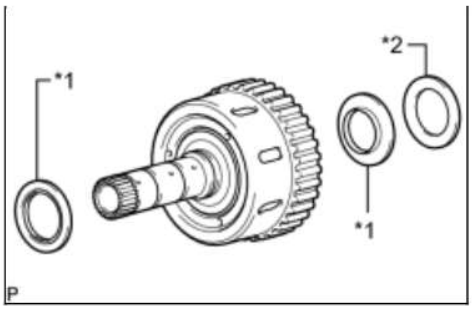
*1	Forward Clutch Hub Sub-assembly
*2	No. 3 Clutch Hub Thrust Washer

(b) Remove the 2 thrust needle roller bearings and the No. 2 thrust bearing race from the forward clutch hub sub-assembly.

Text in Illustration

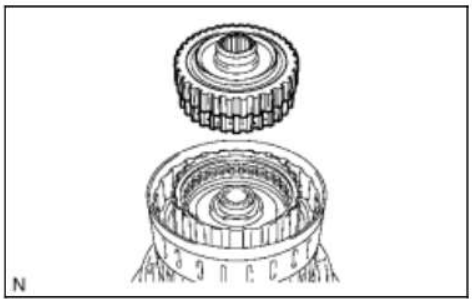
*1	Thrust Needle Roller Bearing

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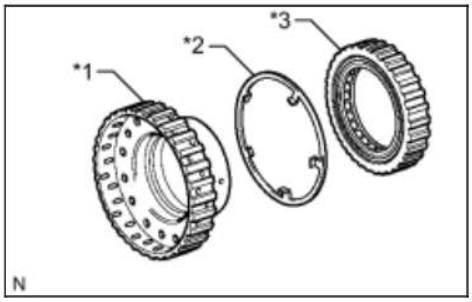
*2	No. 2 Thrust Bearing Race

39. REMOVE COAST CLUTCH HUB SUB-ASSEMBLY



(a) Remove the coast clutch hub sub-assembly from the reverse clutch drum sub-assembly.

40. REMOVE NO. 4 ONE-WAY CLUTCH ASSEMBLY



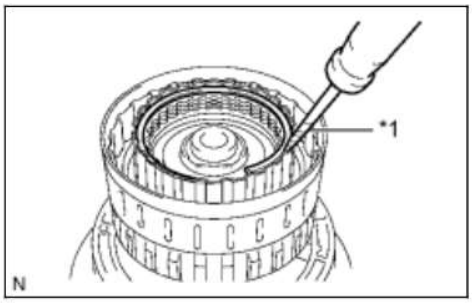
(a) Remove the No. 4 one-way clutch assembly and the No. 2 clutch hub thrust washer from the coast clutch hub sub-assembly.

Text in Illustration

*1	Coast Clutch Hub Sub-assembly
*2	No. 2 Clutch Hub Thrust Washer
*3	No. 4 One-way Clutch Assembly

41. REMOVE NO. 1 CLUTCH DISC (FORWARD CLUTCH DISC)

(a) Using a screwdriver, remove the snap ring.



Text in Illustration

*1	Protective Tape

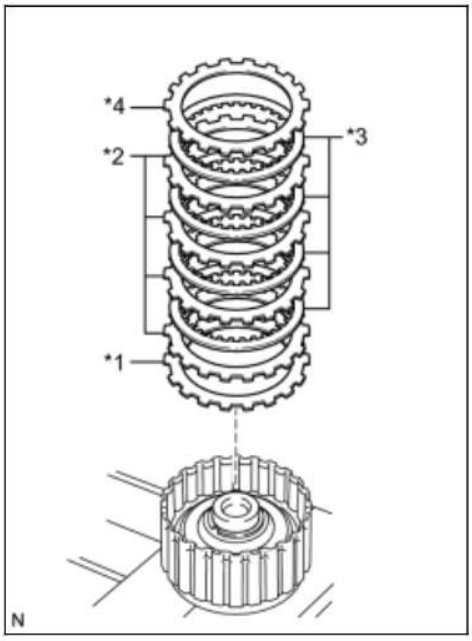
NOTICE:

Be careful not to damage the input shaft.

HINT:

Tape the screwdriver tip before use.

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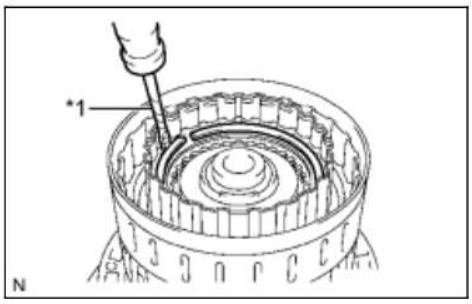
(b) Remove the forward clutch flange, 4 No. 1 clutch discs, 4 No. 1 clutch plates and the clutch cushion plate from the input shaft.

Text in Illustration

*1	Clutch Cushion Plate
*2	No. 1 Clutch Plate
*3	No. 1 Clutch Disc
*4	Forward Clutch Flange

42. REMOVE NO. 4 CLUTCH DISC (COAST CLUTCH DISC)

(a) Using a screwdriver, remove the snap ring.



Text in Illustration

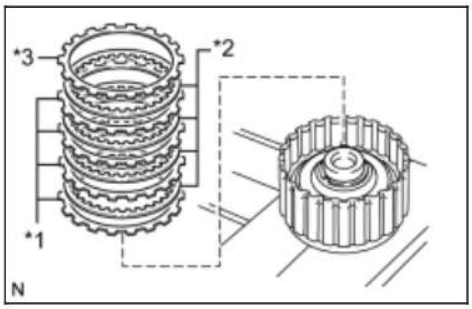
*1	Protective Tape

NOTICE:

Be careful not to damage the forward clutch piston sub-assembly.

HINT:

Tape the screwdriver tip before use.



(b) Remove the coast clutch flange, 4 No. 4 clutch discs and the 4 No. 4 clutch plates from the forward clutch piston sub-assembly.

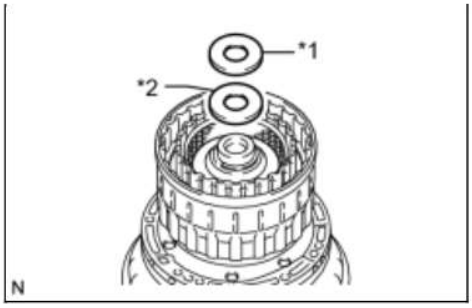
Text in Illustration

*1	No. 4 Clutch Plate
*2	No. 4 Clutch Disc
*3	Coast Clutch Flange

43. REMOVE INPUT SHAFT

(a) Remove the thrust needle roller bearing and the input

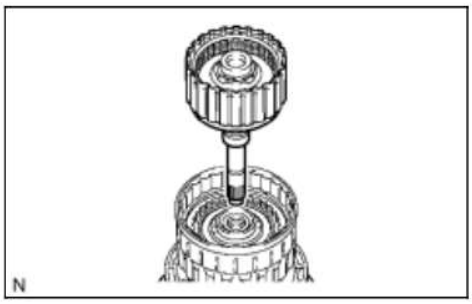
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shaft rear thrust bearing race from the input shaft.

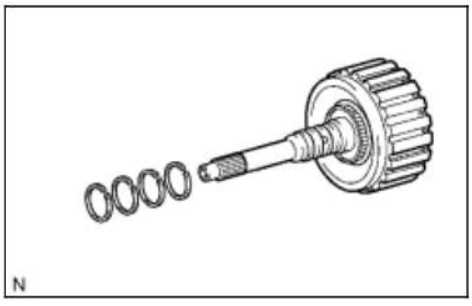
Text in Illustration

*1	Thrust Needle Roller Bearing
*2	Input Shaft Rear Thrust Bearing Race



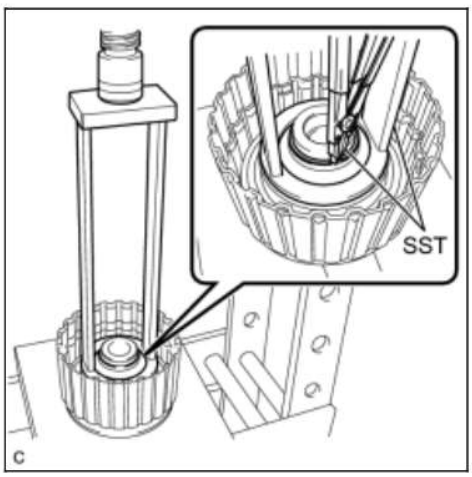
(b) Remove the input shaft from the reverse clutch drum sub-assembly.

44. REMOVE CLUTCH DRUM OIL SEAL RING



(a) Remove the 4 clutch drum oil seal rings from the input shaft.

45. REMOVE NO. 1 CLUTCH BALANCER



(a) Place SST on the No. 1 clutch balancer, and compress the forward clutch return spring sub-assembly with a press.

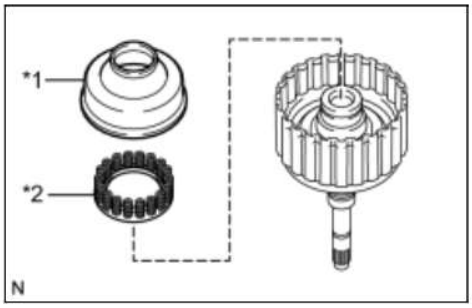
SST: 09387-00110

cardiagn.com

(b) Using SST, remove the snap ring.

SST: 09350-30020

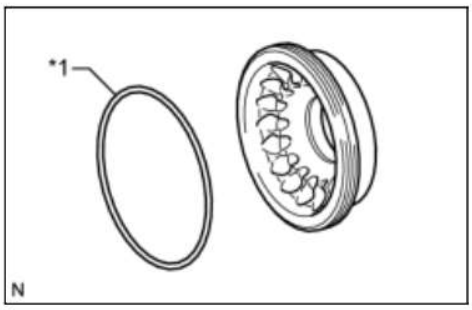
09350-07070



(c) Remove the No. 1 clutch balancer and the forward clutch return spring sub-assembly from the input shaft.

Text in Illustration

*1	No. 1 Clutch Balancer
*2	Forward Clutch Return Spring Sub-assembly

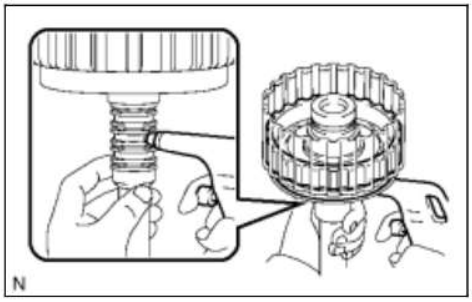


(d) Remove the D-ring from the No. 1 clutch balancer.

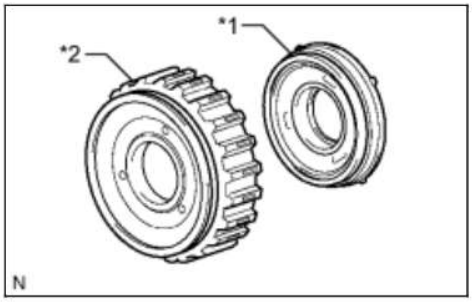
Text in Illustration

*1	D-ring

46. REMOVE FORWARD CLUTCH PISTON SUB-ASSEMBLY



(a) Hold the forward clutch piston sub-assembly and apply compressed air (392 kPa, 4.0 kgf/cm 2 , 57 psi) to the input shaft to remove the forward clutch piston sub-assembly.

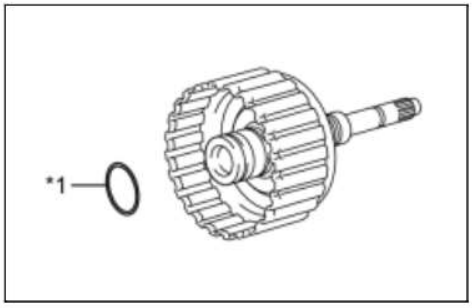


(b) Remove the coast clutch piston from the forward clutch piston sub-assembly.

Text in Illustration

*1	Coast Clutch Piston
*2	Forward Clutch Piston Sub-assembly

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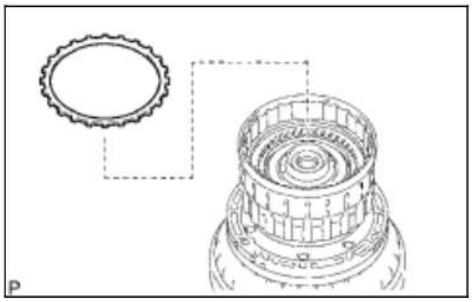


(c) Remove the O-ring from the input shaft.

Text in Illustration

*1	O-ring

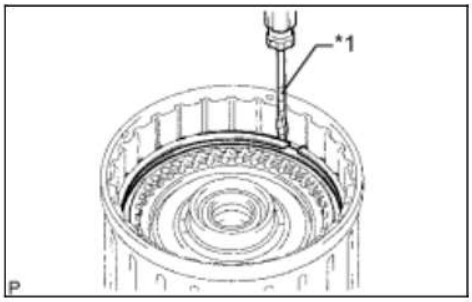
47. REMOVE REVERSE CLUTCH FLANGE



(a) Remove the reverse clutch flange from the reverse clutch drum sub-assembly.

48. REMOVE NO. 2 CLUTCH DISC (DIRECT CLUTCH DISC)

(a) Using a screwdriver, remove the 2 snap rings from the reverse clutch drum sub-assembly.



Text in Illustration

*1	Protective Tape

NOTICE:

Be careful not to damage the reverse clutch drum sub-assembly.

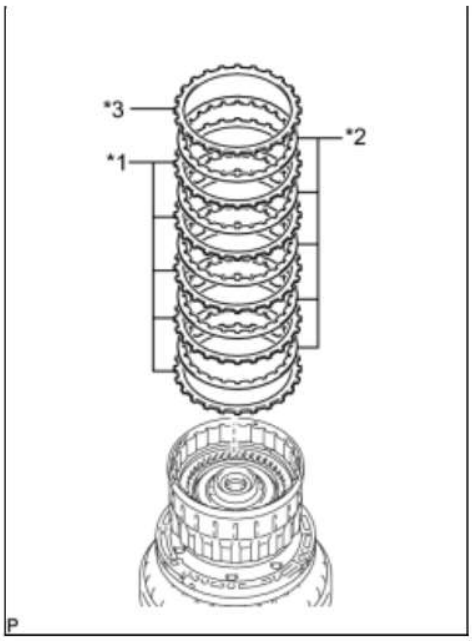
HINT:

Tape the screwdriver tip before use.

(b) Remove the direct clutch flange, 5 No. 2 clutch discs and the 5 No. 2 clutch plates from the reverse clutch drum sub-assembly.

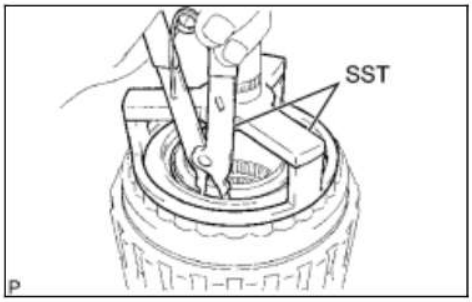
Text in Illustration

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*1	No. 2 Clutch Plate
*2	No. 2 Clutch Disc
*3	Direct Clutch Flange

49. REMOVE NO. 3 CLUTCH BALANCER



(a) Place SST on the No. 3 clutch balancer, and compress the reverse clutch return spring sub-assembly with a press.

SST: 09387-00070

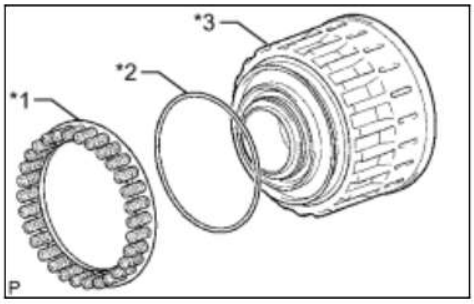
(b) Using SST, remove the snap ring.

SST: 09350-30020

09350-07070

(c) Remove the No. 3 clutch balancer.

50. REMOVE REVERSE CLUTCH RETURN SPRING SUB-ASSEMBLY



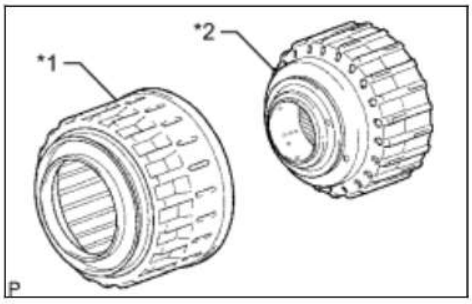
(a) Remove the reverse clutch return spring sub-assembly and O-ring from the reverse clutch piston sub-assembly.

Text in Illustration

*1	Reverse Clutch Return Spring Sub-assembly
*2	O-ring
*3	Reverse Clutch Piston Sub-assembly

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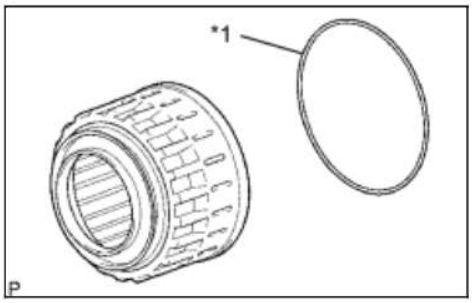
51. REMOVE REVERSE CLUTCH PISTON SUB-ASSEMBLY



(a) Remove the reverse clutch piston sub-assembly from the reverse clutch drum sub-assembly.

Text in Illustration

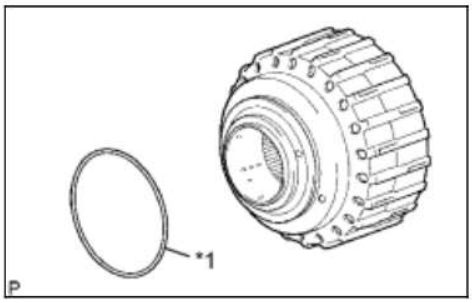
*1	Reverse Clutch Piston Sub-assembly
*2	Reverse Clutch Drum Sub-assembly



(b) Remove the O-ring from the reverse clutch piston sub-assembly.

Text in Illustration

*1	O-ring



(c) Remove the O-ring from the reverse clutch drum sub-assembly.

Text in Illustration

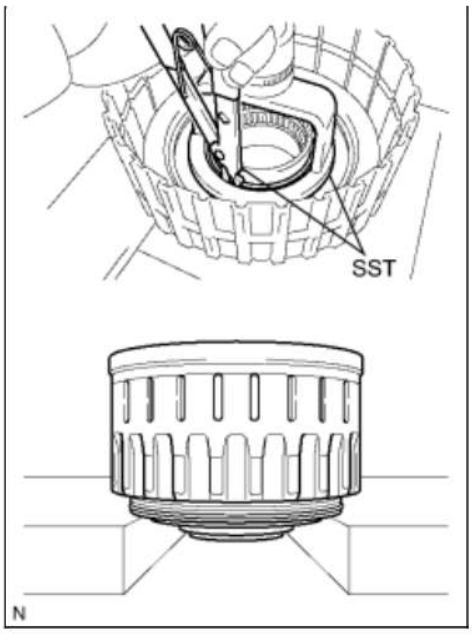
*1	O-ring

52. REMOVE DIRECT CLUTCH PISTON SUB-ASSEMBLY

(a) Place SST on the No. 2 clutch balancer, and compress the direct clutch return spring sub-assembly with a press.

SST: 09320-89010

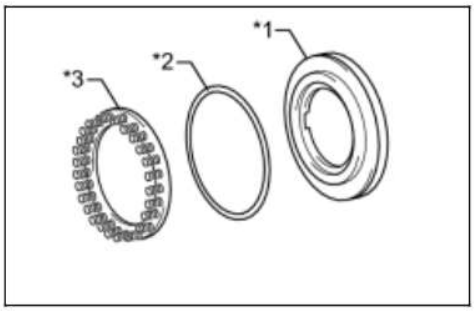
cardiagn.com



(b) Using SST, remove the snap ring.

SST: 09350-30020

09350-07070

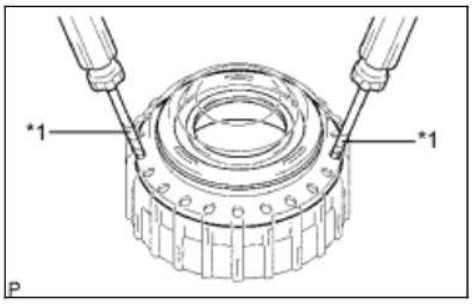


(c) Remove the No. 2 clutch balancer and the direct clutch return spring sub-assembly.

Text in Illustration

*1	No. 2 Clutch Balancer
*2	O-ring
*3	Direct Clutch Return Spring Sub-assembly

(d) Remove the O-ring from the No. 2 clutch balancer.



(e) Using 2 screwdrivers, remove the direct clutch piston sub-assembly from the reverse clutch drum sub-assembly.

Text in Illustration

*1	Protective Tape

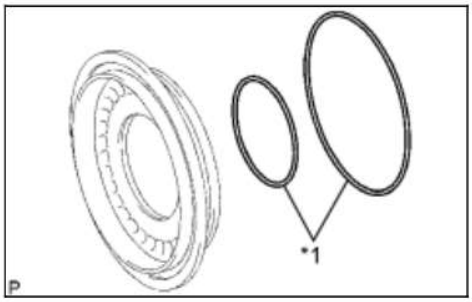
NOTICE:

Be careful not to damage the direct clutch piston sub-assembly.

HINT:

Tape the screwdriver tip before use.

cardiagn.com

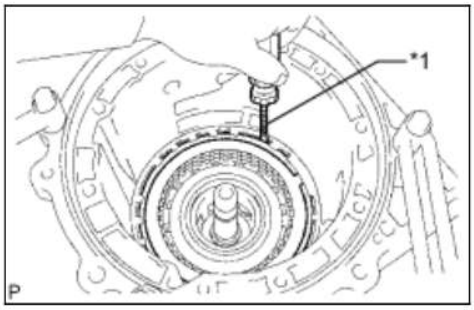


(f) Remove the 2 O-rings from the direct clutch piston sub-assembly.

Text in Illustration

*1	O-ring

53. REMOVE NO. 3 BRAKE DISC (2ND BRAKE DISC SET)



(a) Using a screwdriver, remove the snap ring from the automatic transmission case sub-assembly.

Text in Illustration

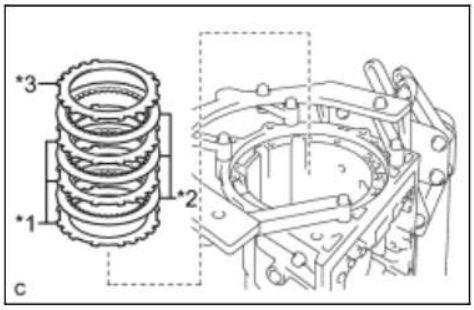
*1	Protective Tape

NOTICE:

Be careful not to damage the automatic transmission case sub-assembly.

HINT:

Tape the screwdriver tip before use.

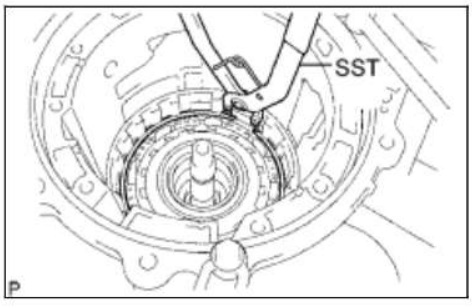


(b) Remove the No. 3 brake flange, 3 No. 3 brake discs and the 3 No. 3 brake plates from the automatic transmission case sub-assembly.

Text in Illustration

*1	No. 3 Brake Plate
*2	No. 3 Brake Disc
*3	No. 3 Brake Flange

54. REMOVE 2ND BRAKE CYLINDER

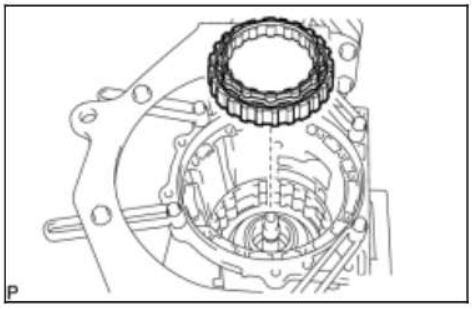


(a) Using SST, remove the snap ring from the automatic transmission case sub-assembly.

SST: 09350-30020

09350-07060

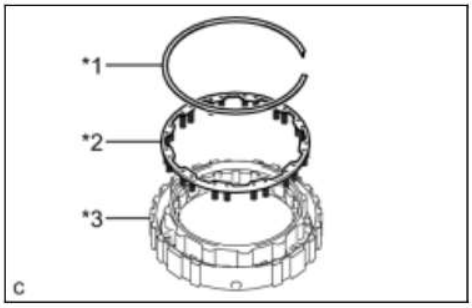
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(b) Remove the 2nd brake cylinder from the automatic transmission case sub-assembly.

55. REMOVE 2ND BRAKE PISTON

(a) Using a screwdriver, remove the snap ring and the No. 3 brake piston return spring sub-assembly from the 2nd brake cylinder.



Text in Illustration

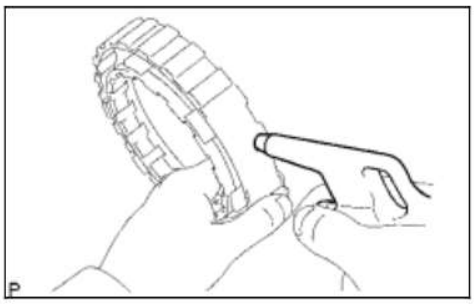
*1	Snap Ring
*2	No. 3 Brake Piston Return Spring Sub-assembly
*3	2nd Brake Cylinder

NOTICE:

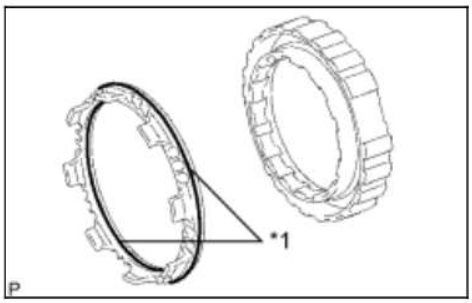
Be careful not to damage the 2nd brake cylinder.

HINT:

Tape the screwdriver tip before use.



(b) Hold the 2nd brake piston and apply compressed air (392 kPa, 4.0 kgf/cm 2 , 57 psi) to the 2nd brake cylinder to remove the 2nd brake piston.



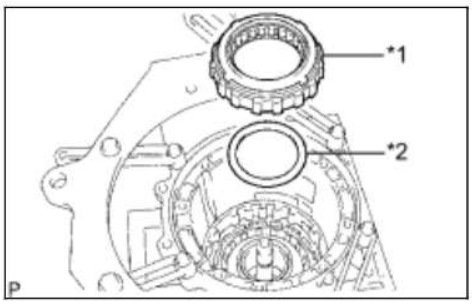
(c) Remove the 2 O-rings from the 2nd brake piston.

Text in Illustration

*1	O-ring

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56. REMOVE ONE-WAY CLUTCH ASSEMBLY

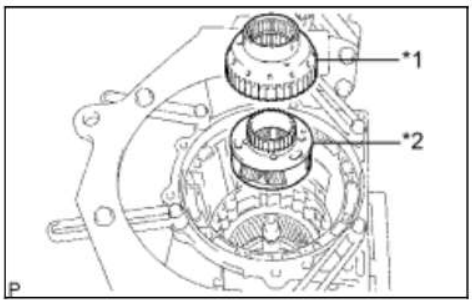


(a) Remove the one-way clutch assembly and the No. 1 planetary carrier thrust washer from the automatic transmission case sub-assembly.

Text in Illustration

*1	One-way Clutch Assembly
*2	No. 1 Planetary Carrier Thrust Washer

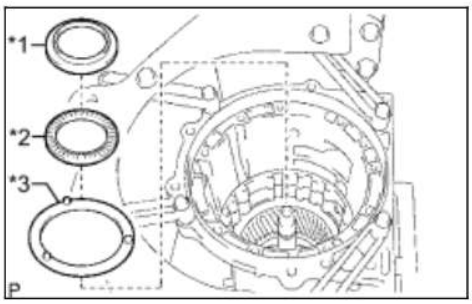
57. REMOVE FRONT PLANETARY GEAR ASSEMBLY



(a) Remove the front planetary gear assembly and the one-way clutch inner race sub-assembly from the automatic transmission case sub-assembly.

Text in Illustration

*1	One-way Clutch Inner Race Sub-assembly
*2	Front Planetary Gear Assembly



(b) Remove the front planetary flange rear thrust bearing race, front planetary flange thrust needle roller bearing and the No. 2 planetary carrier thrust washer from the automatic transmission case sub-assembly.

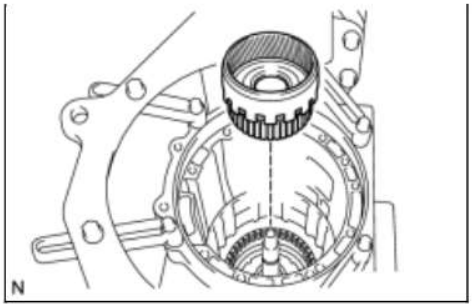
Text in Illustration

*1	Front Planetary Flange Rear Thrust Bearing Race
*2	Front Planetary Flange Thrust Needle Roller Bearing
*3	No. 2 Planetary Carrier Thrust Washer

58. REMOVE FRONT PLANETARY RING GEAR

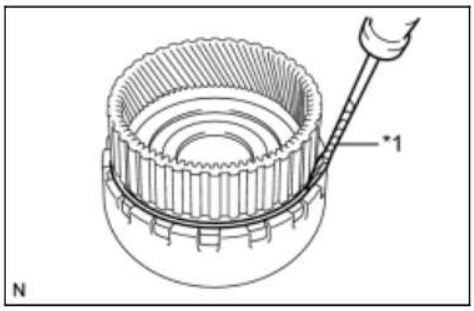
(a) Remove the front planetary ring gear from the automatic transmission case sub-assembly.

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59. REMOVE CENTER PLANETARY RING GEAR

(a) Using a screwdriver, remove the snap ring.



Text in Illustration

*1	Protective Tape

NOTICE:

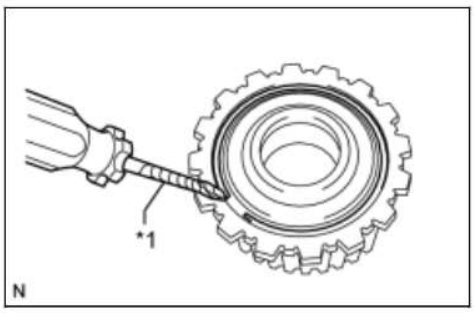
Be careful not to damage the front planetary ring gear.

HINT:

Tape the screwdriver tip before use.

(b) Remove the center planetary ring gear from the front planetary ring gear.

(c) Using a screwdriver, remove the snap ring.



Text in Illustration

*1	Protective Tape

NOTICE:

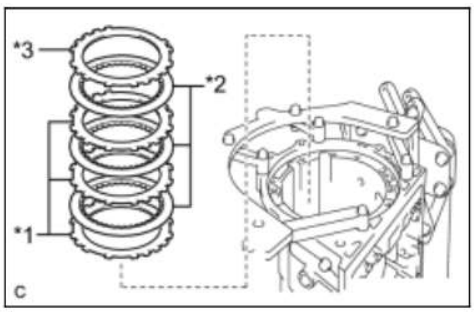
Be careful not to damage the center planetary ring gear.

HINT:

Tape the screwdriver tip before use.

(d) Remove the front planetary ring gear flange sub-assembly from the center planetary ring gear.

60. REMOVE NO. 1 BRAKE DISC



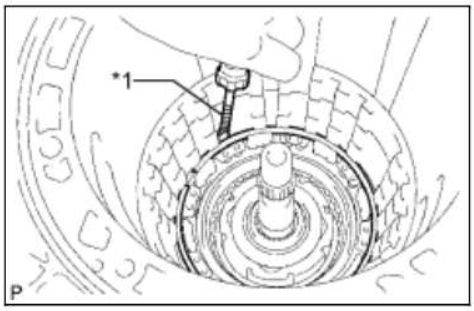
(a) Remove the No. 1 brake flange, 3 No. 1 brake discs and the 3 No. 1 brake plates from the automatic transmission case sub-assembly.

Text in Illustration

*1	No. 1 Brake Plate
*2	No. 1 Brake Disc
*3	No. 1 Brake Flange

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61. REMOVE BRAKE PISTON RETURN SPRING SUB-ASSEMBLY



(a) Using a screwdriver, remove the snap ring from the automatic transmission case sub-assembly.

Text in Illustration

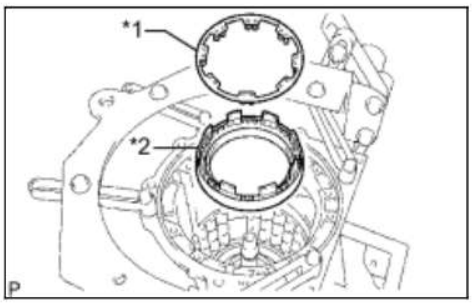
*1	Protective Tape

NOTICE:

Be careful not to damage the automatic transmission case sub-assembly.

HINT:

Tape the screwdriver tip before use.

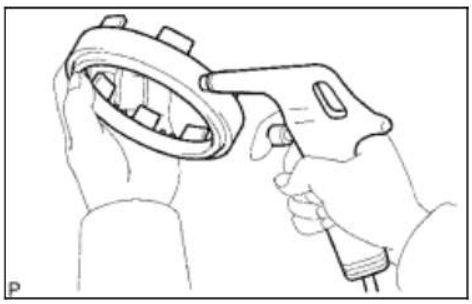


(b) Remove the brake piston return spring sub-assembly and the No. 1 brake cylinder from the automatic transmission case sub-assembly.

Text in Illustration

*1	Brake Piston Return Spring Sub-assembly
*2	No. 1 Brake Cylinder

62. REMOVE NO. 1 BRAKE PISTON



(a) Hold the No. 1 brake piston and apply compressed air (392 kPa, 4.0 kgf/cm 2 , 57 psi) to the No. 1 brake cylinder to remove the No. 1 brake piston.

HINT:

If the piston does not pop out with compressed air, lift the piston out with needle-nose pliers.

(b) Remove the 2 O-rings from the No. 1 brake piston.

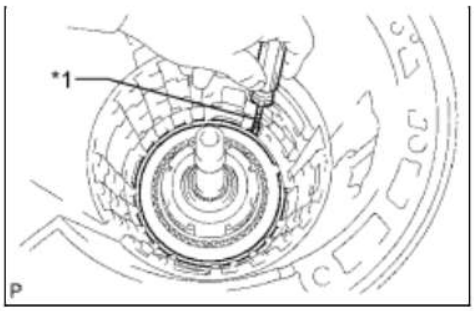
63. REMOVE NO. 2 BRAKE DISC

(a) Using a screwdriver, remove the snap ring from the automatic transmission case sub-assembly.

Text in Illustration

*1	Protective Tape

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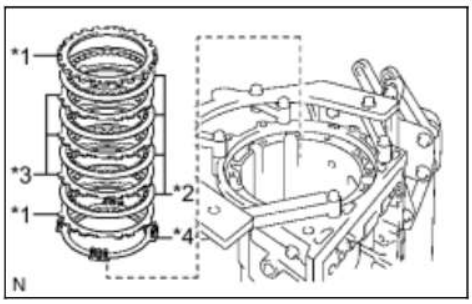
NOTICE:

Be careful not to damage the automatic transmission case sub-assembly.

HINT:

Tape the screwdriver tip before use.

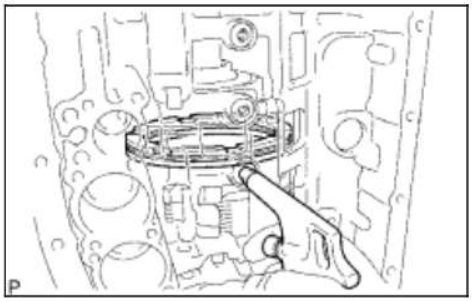
(b) Remove the 2 No. 2 brake flanges, 4 No. 2 brake discs, 3 No. 2 brake plates and the No. 2 brake piston return spring sub-assembly from the automatic transmission case sub-assembly.



Text in Illustration

*1	No. 2 Brake Flange
*2	No. 2 Brake Disc
*3	No. 2 Brake Plate
*4	No. 2 Brake Piston Return Spring Sub-assembly

64. REMOVE NO. 2 BRAKE PISTON



(a) Hold the No. 2 brake piston and apply compressed air (392 kPa, 4.0 kgf/cm 2 , 57 psi) to the transmission case to remove the No. 2 brake piston and the No. 2 brake cylinder.

HINT:

If the piston does not pop out with compressed air, lift the piston out with needle-nose pliers.

(b) Remove the No. 2 brake piston from the No. 2 brake cylinder.

(c) Remove the 2 O-rings from the No. 2 brake piston.

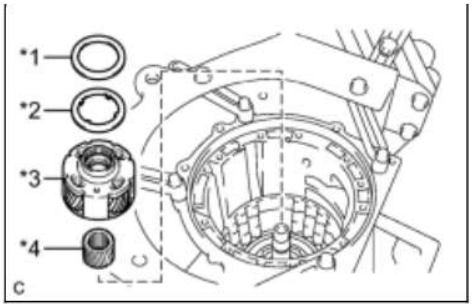
65. REMOVE CENTER PLANETARY GEAR ASSEMBLY

(a) Remove the center planetary gear assembly, planetary sun gear, thrust needle roller bearing and the No. 4 thrust bearing race from the automatic transmission case sub-assembly.

Text in Illustration

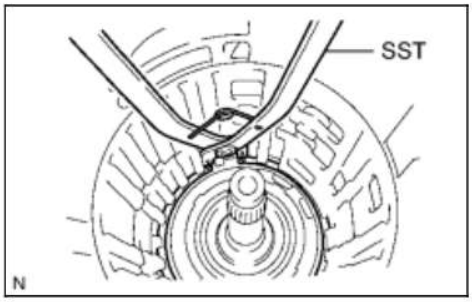
*1	Thrust Needle Roller Bearing

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*2	No. 4 Thrust Bearing Race
*3	Center Planetary Gear Assembly
*4	Planetary Sun Gear

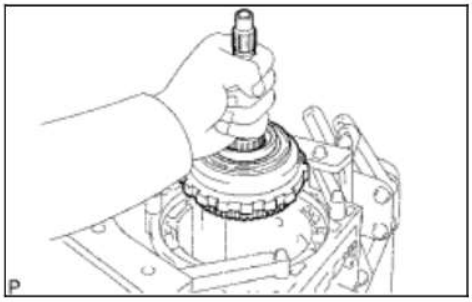
66. REMOVE INTERMEDIATE SHAFT



(a) Using SST, remove the snap ring from the automatic transmission case sub-assembly.

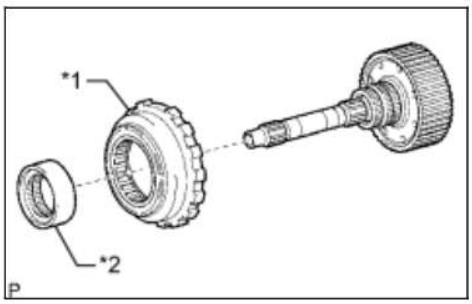
SST: 09350-30020

09350-07060



(b) Remove the intermediate shaft together with the No. 3 one-way clutch assembly from the automatic transmission case sub-assembly.

67. REMOVE NO. 3 ONE-WAY CLUTCH ASSEMBLY



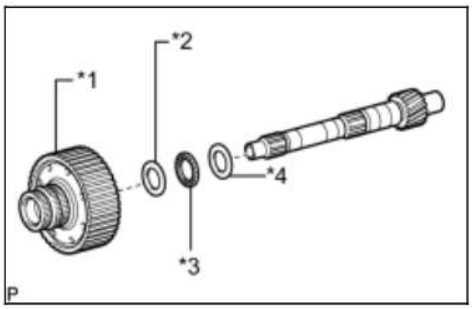
(a) Remove the No. 3 one-way clutch assembly and the one-way clutch inner race from the intermediate shaft.

Text in Illustration

*1	No. 3 One-way Clutch Assembly
*2	One-way Clutch Inner Race

68. REMOVE REAR PLANETARY RING GEAR FLANGE SUB-ASSEMBLY

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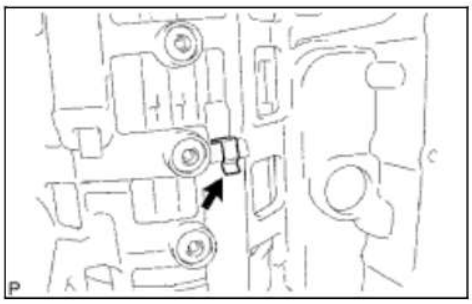


(a) Remove the rear planetary ring gear flange sub-assembly, No. 7 thrust bearing race, thrust needle roller bearing and the No. 8 thrust bearing race from the intermediate shaft.

Text in Illustration

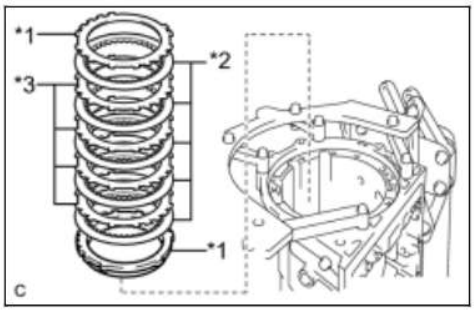
*1	Rear Planetary Ring Gear Flange Sub-assembly
*2	No. 7 Thrust Bearing Race
*3	Thrust Needle Roller Bearing
*4	No. 8 Thrust Bearing Race

69. REMOVE BRAKE PLATE STOPPER SPRING



(a) Remove the brake plate stopper spring from the automatic transmission case sub-assembly.

70. REMOVE NO. 4 BRAKE DISC

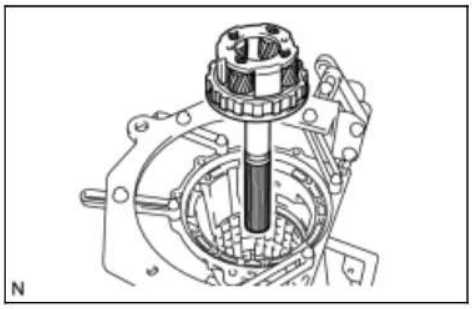


(a) Remove the 2 No. 4 brake flanges, 5 No. 4 brake discs and the 4 No. 4 brake plates from the automatic transmission case sub-assembly.

Text in Illustration

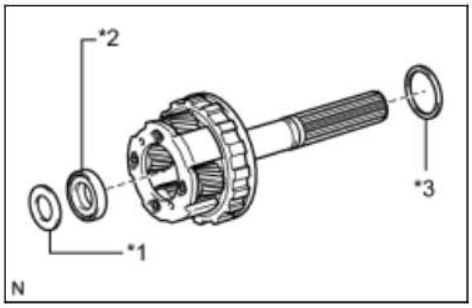
*1	No. 4 Brake Flange
*2	No. 4 Brake Disc
*3	No. 4 Brake Plate

71. REMOVE REAR PLANETARY GEAR ASSEMBLY



(a) Remove the rear planetary gear assembly from the automatic transmission case sub-assembly.

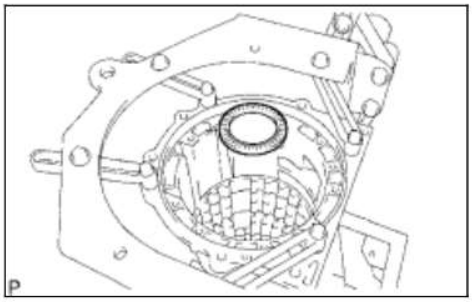
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(b) Remove the thrust bearing race, thrust needle roller bearing and the No. 9 thrust bearing race from the rear planetary gear assembly.

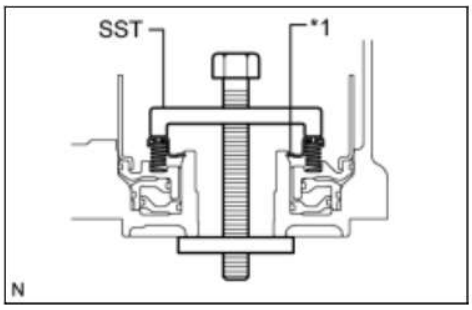
Text in Illustration

*1	Thrust Bearing Race
*2	Thrust Needle Roller Bearing
*3	No. 9 Thrust Bearing Race



(c) Remove the thrust needle roller bearing from the automatic transmission case sub-assembly.

72. REMOVE 1ST AND REVERSE BRAKE RETURN SPRING SUB-ASSEMBLY



(a) Place SST on the 1st and reverse brake return spring sub-assembly and compress the 1st and reverse brake return spring sub-assembly.

Text in Illustration

*1	Snap Ring

SST: 09350-30020

09350-07050

(b) Using SST, remove the snap ring and the 1st and reverse brake return spring sub-assembly.

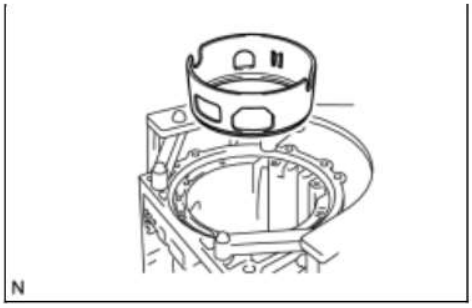
SST: 09350-30020

09350-07070

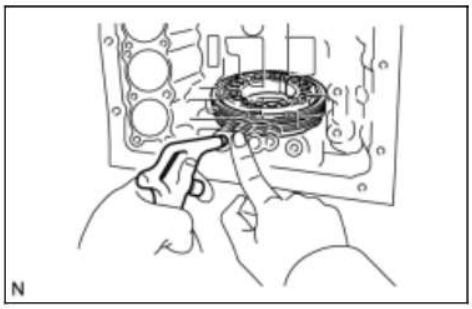
73. REMOVE BRAKE APPLY TUBE

(a) Remove the brake apply tube from the automatic transmission case sub-assembly.

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74. REMOVE 1ST AND REVERSE BRAKE PISTON



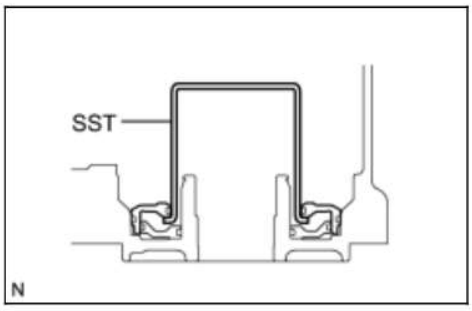
(a) Hold the 1st and reverse brake piston and apply compressed air (392 kPa, 4.0 kgf/cm 2 , 57 psi) to the transmission case to remove the 1st and reverse brake piston.

HINT:

If the piston does not pop out with compressed air, lift the piston out with needle-nose pliers.

(b) Remove the O-ring from the 1st and reverse brake piston.

75. REMOVE BRAKE REACTION SLEEVE



(a) Using SST, remove the brake reaction sleeve from the automatic transmission case sub-assembly.

SST: 09350-30020

09350-07080

(b) Remove the 2 O-rings from the brake reaction sleeve.

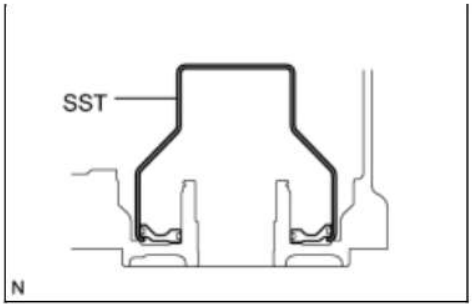
76. REMOVE NO. 4 BRAKE PISTON

(a) Using SST, remove the No. 4 brake piston from the automatic transmission case sub-assembly.

SST: 09350-30020

09350-07090

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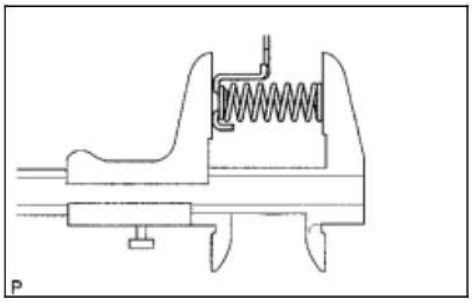
(b) Remove the 2 O-rings from the No. 4 brake piston.

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Last Modified: 3-27-2012	6.4 G	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000O9W03YX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION UNIT: INSPECTION (2013 FR-S)		

INSPECTION

1. INSPECT 1ST AND REVERSE BRAKE RETURN SPRING SUB-ASSEMBLY

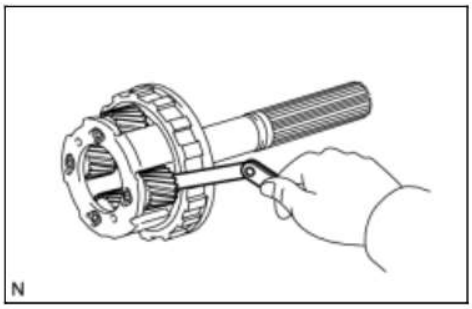


(a) Using a vernier caliper, measure the free length of the spring together with the spring seat.

Standard free length:
23.74 mm (0.935 in.)

If the free length is shorter than the standard free length, replace the 1st and reverse brake return spring sub-assembly.

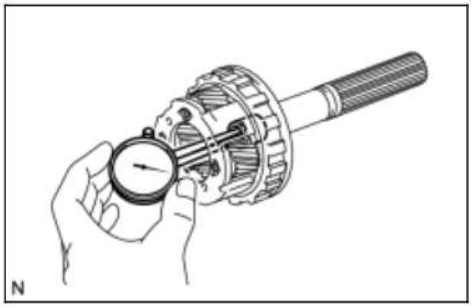
2. INSPECT REAR PLANETARY GEAR ASSEMBLY



(a) Using a feeler gauge, measure the rear planetary gear pinion thrust clearance.

Standard clearance:
0.2 to 0.6 mm (0.00788 to 0.0236 in.)

If the clearance is more than the standard clearance, replace the rear planetary gear assembly.



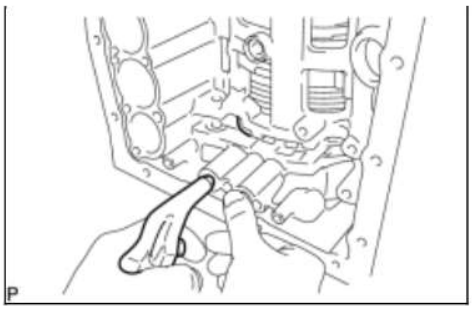
(b) Using a caliper gauge, measure the inside diameter of the rear planetary gear bushing.

Standard inside diameter:
18.025 mm (0.710 in.)

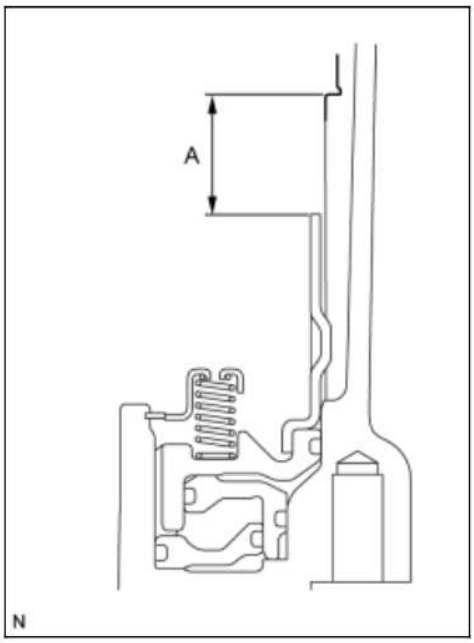
If the inside diameter is more than the standard inside diameter, replace the rear planetary gear assembly.

3. INSPECT PACK CLEARANCE OF NO. 4 BRAKE

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(a) Make sure that the 1st and reverse brake piston moves smoothly when applying and releasing compressed air (392 kPa, 4.0 kgf/cm 2 , 57 psi).



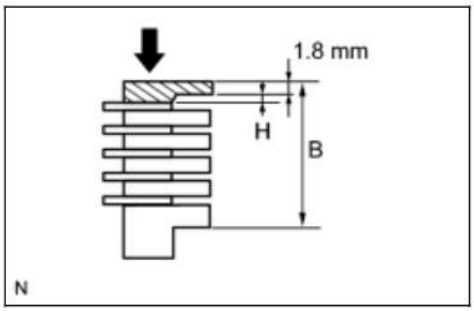
(b) Using a vernier caliper, measure the level difference (dimension A) between the upper surface of the brake apply tube and the contact surface of the No. 4 brake flange at both ends across the 1st and reverse brake piston diameter, and calculate the average.

NOTICE:

The 1st and reverse brake piston must be securely installed to the end face of the transmission case.

HINT:

Dimension A = 23.32 to 24.18 mm (0.919 to 0.951 in.)



(c) Using a vernier caliper, and while applying compression of 4.9 N (0.5 kgf, 1.1 lbf) or less, measure the thickness (dimension B) of the 2 No. 4 brake flanges, 4 No. 4 brake plates and the 5 No. 4 brake discs altogether at both ends across a diameter, and calculate the average.

HINT:

Dimension B = 23.64 to 26.00 mm (0.931 to 1.023 in.)

Pack clearance = Dimension A - Dimension B - 0.18 mm (0.00709 in.) + 1.8 mm (0.0709 in.)

Pack clearance:
0.5 to 0.8 mm (0.0197 to 0.0314 in.)

(d) If the pack clearance is outside the standard range, select and install a No. 4 brake flange that brings the pack clearance to be within the standard range.

HINT:

There are 8 types of No. 4 brake flanges that can be used to adjust the pack clearance. Select the one

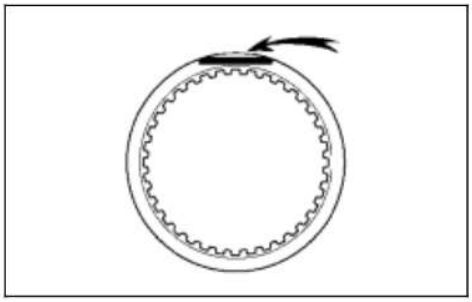
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with the most appropriate thickness.

Thickness H:

PART NO.	MARK	THICKNESS H
SU003-03786	0	0 mm (0 in.)
SU003-03787	2	0.2 mm (0.00787 in.)
SU003-03788	4	0.4 mm (0.0157 in.)
SU003-03789	6	0.6 mm (0.0236 in.)
SU003-03790	8	0.8 mm (0.0315 in.)
SU003-03791	10	1.0 mm (0.0394 in.)
SU003-03792	12	1.2 mm (0.0472 in.)
SU003-03793	14	1.4 mm (0.0551 in.)

4. INSPECT NO. 4 BRAKE DISC



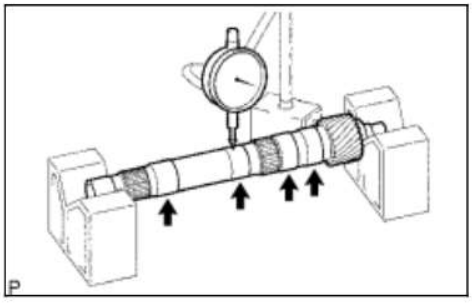
(a) Check whether the sliding surfaces of the discs, plates and the flanges are worn or burnt.

If necessary, replace them.

NOTICE:

- If the linings of the discs are peeled off or discolored, or if any part of the printed numbers is damaged, replace all the discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.

5. INSPECT INTERMEDIATE SHAFT



(a) Using a dial indicator, check the intermediate shaft runout.

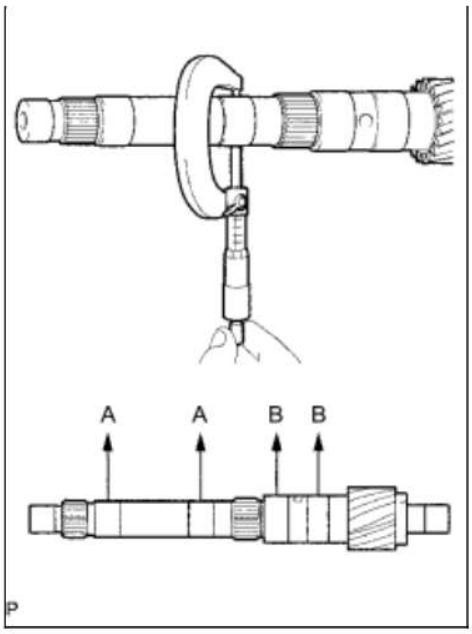
Standard runout:
0.03 mm (0.00118 in.)

If the runout is more than the standard, replace the intermediate shaft with a new one.

(b) Using a micrometer, check the outer diameter of the intermediate shaft at each point shown in the illustration.

Standard diameter:

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A

22.962 to 22.975 mm (0.9041 to 0.9045 in.)

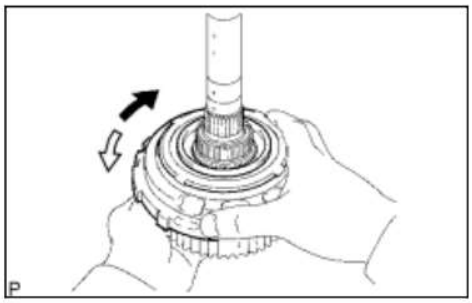
B

27.759 to 27.775 mm (1.0929 to 1.0935 in.)

If the outer diameter is less than the standard, replace the intermediate shaft with a new one.

6. INSPECT NO. 3 ONE-WAY CLUTCH ASSEMBLY

(a) Hold the rear planetary ring gear flange sub-assembly and turn the No. 3 one-way clutch assembly.



Text in Illustration

➡	Lock
⇨	Free

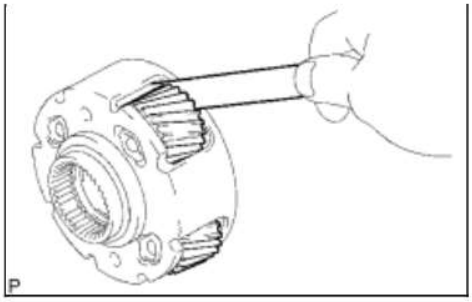
(b) Check that the No. 3 one-way clutch assembly turns freely when turned counterclockwise and locks when turned clockwise.

If there is a problem with the No. 3 one-way clutch assembly, replace it.

7. INSPECT CENTER PLANETARY GEAR ASSEMBLY

(a) Using a feeler gauge, measure the center planetary gear

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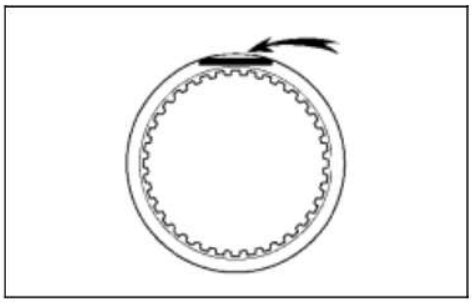


pinion thrust clearance.

Standard clearance:
0.12 to 0.68 mm (0.00473 to 0.0267 in.)

If the clearance is more than the standard clearance, replace the center planetary gear assembly.

8. INSPECT NO. 2 BRAKE DISC



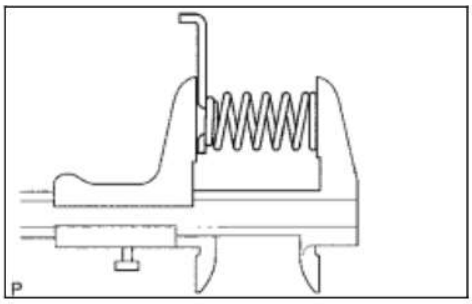
(a) Check whether the sliding surfaces of the discs, plates and the flanges are worn or burnt.

If necessary, replace them.

NOTICE:

- If the linings of the discs are peeled off or discolored, or if any part of the printed numbers is damaged, replace all the discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.

9. INSPECT NO. 2 BRAKE PISTON RETURN SPRING SUB-ASSEMBLY

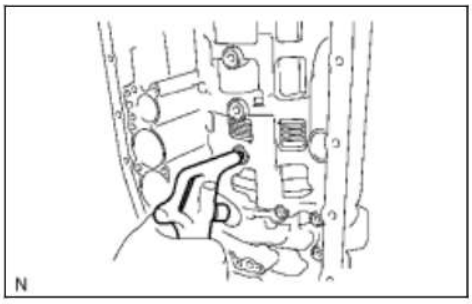


(a) Using a vernier caliper, measure the free length of the spring together with the spring seat.

Standard free length:
22.66 mm (0.892 in.)

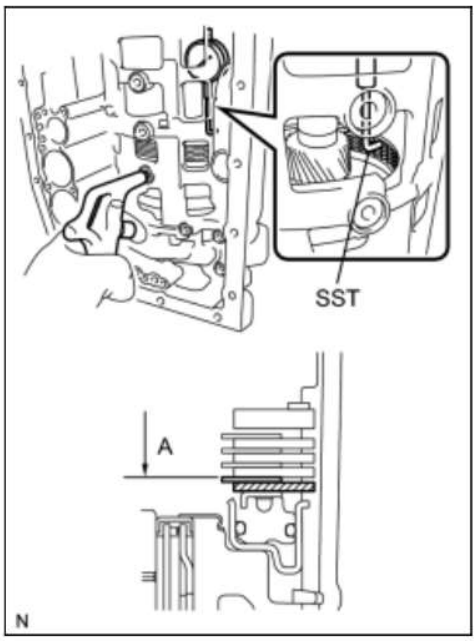
If the free length is shorter than the standard free length, replace the No. 2 brake piston return spring sub-assembly.

10. INSPECT PISTON STROKE OF NO. 2 BRAKE PISTON



(a) Make sure that the No. 2 brake piston moves smoothly when applying and releasing compressed air (392 kPa, 4.0 kgf/cm 2 , 57 psi).

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(b) Using SST and a dial indicator, measure the moving distance (distance A) of the No. 2 brake disc at both ends across a diameter while blowing air (392 kPa, 4.0 kgf/cm 2 , 57 psi) into the oil hole as shown in the illustration, and calculate the average.

SST: 09350-30020

09350-06120

Piston stroke:

0.6 to 0.9 mm (0.0237 to 0.0354 in.)

(c) If the piston stroke is outside the standard range, select and install a No. 2 brake flange that brings the piston stroke within the standard range.

HINT:

There are 8 types of No. 2 brake flanges that can be used to adjust the piston stroke. Select one with the most appropriate thickness.

Flange Thickness:

PART NO.	MARK	THICKNESS
SU003-03771	0	2.0 mm (0.0787 in.)
SU003-03772	1	2.1 mm (0.0827 in.)
SU003-03773	2	2.2 mm (0.0866 in.)
SU003-03774	3	2.3 mm (0.0906 in.)
SU003-03775	4	2.4 mm (0.0945 in.)
SU003-03776	5	2.5 mm (0.0984 in.)
SU003-03777	6	2.6 mm (0.102 in.)
SU003-03778	7	2.7 mm (0.106 in.)

11. INSPECT BRAKE PISTON RETURN SPRING SUB-ASSEMBLY

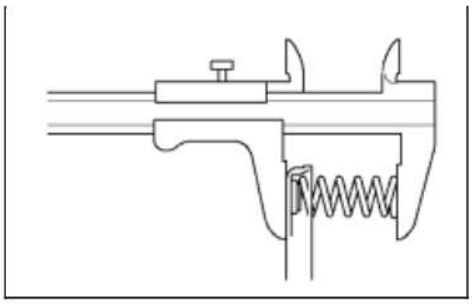
(a) Using a vernier caliper, measure the free length of the spring together with the spring seat.

Standard free length:

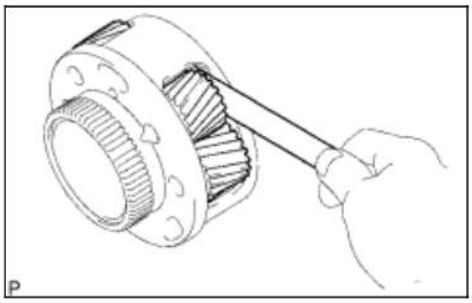
17.05 mm (0.671 in.)

If the free length is shorter than the standard free length, replace the brake piston return spring sub-assembly.

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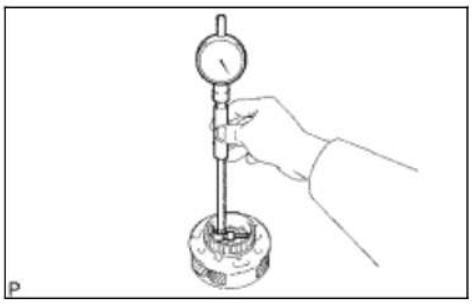
12. INSPECT FRONT PLANETARY GEAR ASSEMBLY



(a) Using a feeler gauge, measure the front planetary gear pinion thrust clearance.

Standard clearance:
0.20 to 0.60 mm (0.00788 to 0.0236 in.)

If the clearance is more than the standard clearance, replace the front planetary gear assembly.



(b) Using a cylinder gauge, measure the inside diameter of the front planetary gear bushing.

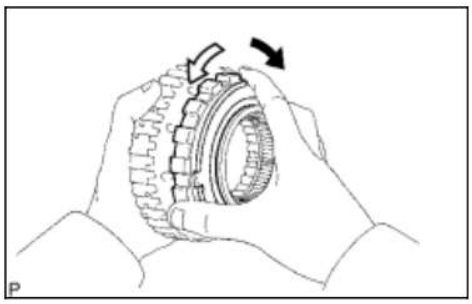
Standard inside diameter:
48.78 mm (1.92 in.)

If the inside diameter is more than the standard inside diameter, replace the front planetary gear assembly.

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13. INSPECT ONE-WAY CLUTCH ASSEMBLY

(a) Install the one-way clutch assembly to the one-way clutch inner race sub-assembly.



Text in Illustration

	Lock

➡	
⇨	Free

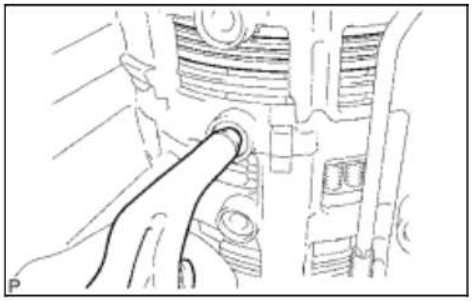
(b) Hold the one-way clutch inner race sub-assembly and turn the one-way clutch assembly.

(c) Check that the one-way clutch assembly turns freely when turned counterclockwise and locks when turned clockwise.

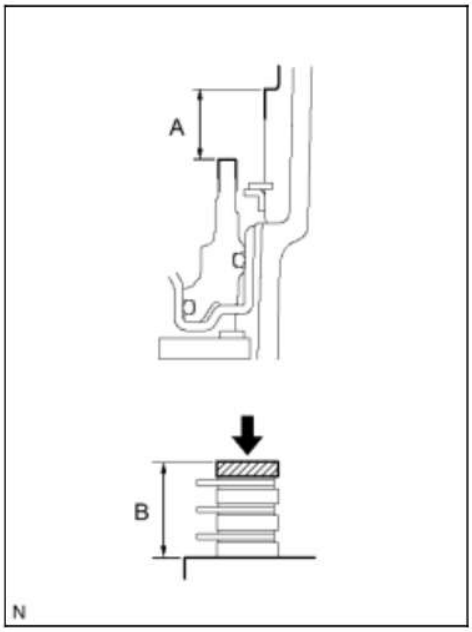
If there is a problem with the one-way clutch assembly, replace it.

(d) Remove the one-way clutch assembly from the one-way clutch inner race sub-assembly.

14. INSPECT PISTON STROKE OF NO. 1 BRAKE PISTON



(a) Make sure that the No. 1 brake piston moves smoothly when applying and releasing compressed air (392 kPa, 4.0 kgf/cm 2 , 57 psi).



(b) Using a vernier caliper, and while applying compression of 4.9 N (0.5 kgf, 1.1 lbf) or less, measure the level difference (dimension A) between the upper surface of the No. 1 brake piston and the contact surface of the No. 1 brake flange at both ends across the No. 1 brake piston diameter.

(c) Using a vernier caliper, measure the thickness (dimension B) of the No. 1 brake flange, 3 No. 1 brake plates and the 3 No. 1 brake discs altogether at both ends across a diameter, and calculate the average.

HINT:

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Dimension A = 15.27 to 15.92 mm (0.602 to 0.626 in.)

Dimension B = 14.50 to 15.54 mm (0.571 to 0.611 in.)

Piston stroke = Dimension A - Dimension B

Piston stroke:
0.42 to 0.72 mm (0.0166 to 0.0283 in.)

(d) If the piston stroke is outside the standard range, parts may have been assembled incorrectly, so check and reassemble them again.

(e) If the piston stroke is still outside the standard range, select another No. 1 brake flange that brings the piston stroke within the standard range.

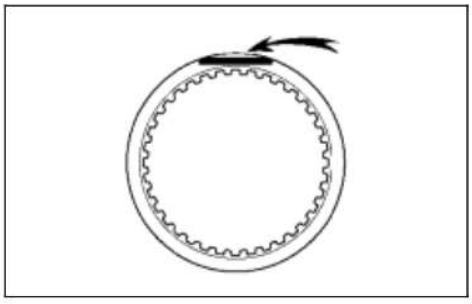
HINT:

There are 4 types of No. 1 brake flanges that can be used to adjust the piston stroke. Select one with the most appropriate thickness.

Flange Thickness:

PART NO.	MARK	THICKNESS
SU003-03765	0	2.0 mm (0.0787 in.)
SU003-03766	1	2.2 mm (0.0866 in.)
SU003-03767	2	2.4 mm (0.0945 in.)
SU003-03768	3	2.6 mm (0.102 in.)

15. INSPECT NO. 1 BRAKE DISC



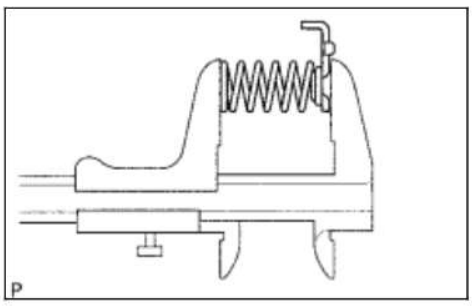
(a) Check whether the sliding surfaces of the discs, plates and the flange are worn or burnt.

If necessary, replace them.

NOTICE:

- If the linings of the discs are peeled off or discolored, or if any part of the groove is damaged, replace all the discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.

16. INSPECT NO. 3 BRAKE PISTON RETURN SPRING SUB-ASSEMBLY



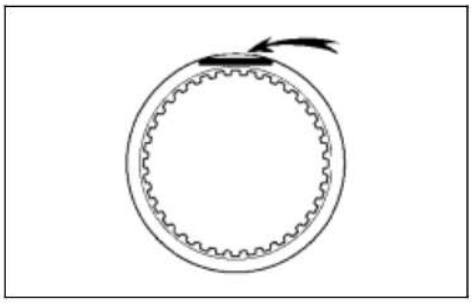
(a) Using a vernier caliper, measure the free length of the spring together with the spring seat.

Standard free length:
15.72 mm (0.619 in.)

If the free length is shorter than the standard free length, replace the No. 3 brake piston return spring sub-assembly.

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17. INSPECT NO. 3 BRAKE DISC (2ND BRAKE DISC SET)



(a) Check whether the sliding surfaces of the discs, plates and the flange are worn or burnt.

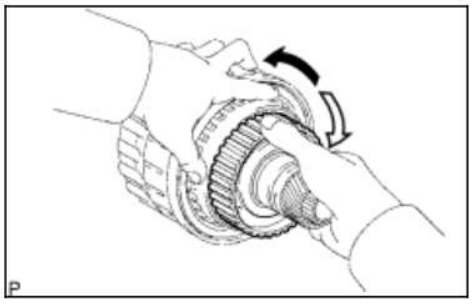
If necessary, replace them.

NOTICE:

- If the linings of the discs are peeled off or discolored, or if any part of the printed numbers is damaged, replace all the discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.

18. INSPECT NO. 2 ONE-WAY CLUTCH ASSEMBLY

(a) Hold the reverse clutch hub sub-assembly and turn the No. 2 one-way clutch assembly.



Text in Illustration

➡	Lock
⇨	Free

(b) Check that the No. 2 one-way clutch assembly turns freely when turned clockwise and locks when turned counterclockwise.

If there is a problem with the No. 2 one-way clutch assembly, replace it.

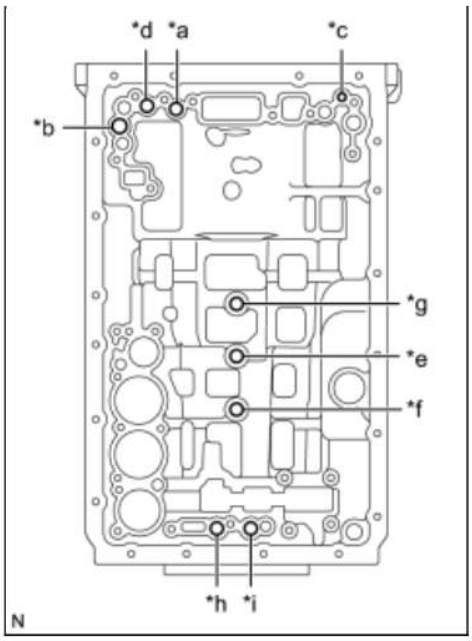
19. INSPECT INDIVIDUAL PISTON OPERATION

(a) Check the operating sound while applying compressed air into the oil holes indicated in the illustration.

Text in Illustration

*a	No. 1 Clutch
*b	No. 2 Clutch
*c	No. 3 Clutch
*d	No. 4 Clutch

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*e	No. 1 Brake
*f	No. 2 Brake
*g	No. 3 Brake
*h	No. 4 Brake (In)
*i	No. 4 Brake (Out)

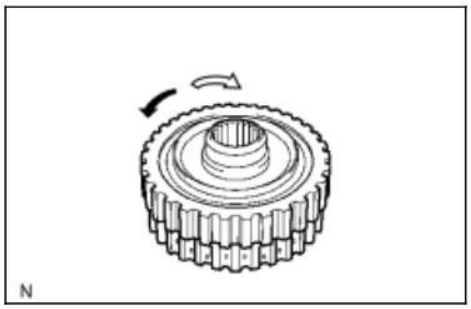
HINT:

When inspecting the direct clutch, check the operating sound with the C3 accumulator piston hole closed.

If there is no sound, disassemble the parts and check the installation condition of the parts.

20. INSPECT NO. 4 ONE-WAY CLUTCH ASSEMBLY

(a) Hold the coast clutch hub sub-assembly and turn the No. 4 one-way clutch assembly.



Text in Illustration

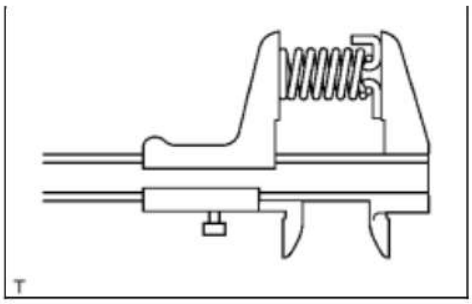
➡	Lock
⇨	Free

(b) Check that the No. 4 one-way clutch assembly turns freely when turned clockwise and locks when turned counterclockwise.

If there is a problem with the No. 4 one-way clutch assembly, replace it.

21. INSPECT DIRECT CLUTCH RETURN SPRING SUB-ASSEMBLY

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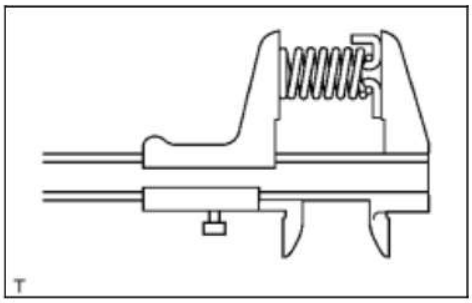


(a) Using a vernier caliper, measure the free length of the spring together with the spring seat.

Standard free length:
20.02 mm (0.788 in.)

If the free length is shorter than the standard free length, replace the direct clutch return spring sub-assembly.

22. INSPECT REVERSE CLUTCH RETURN SPRING SUB-ASSEMBLY

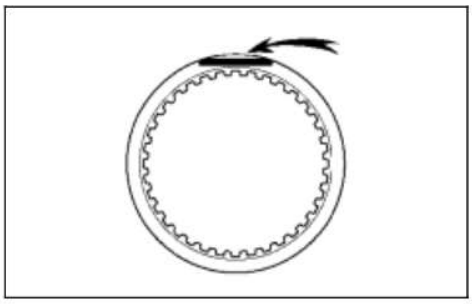


(a) Using a vernier caliper, measure the free length of the spring together with the spring seat.

Standard free length:
21.03 mm (0.828 in.)

If the free length is shorter than the standard free length, replace the reverse clutch return spring sub-assembly.

23. INSPECT NO. 2 CLUTCH DISC (DIRECT CLUTCH DISC)



(a) Check whether the sliding surfaces of the discs, plates and the flange are worn or burnt.

If necessary, replace them.

NOTICE:

- If the linings of the discs are peeled off or discolored, or even a part of the printed numbers is damaged, replace all the discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.

24. INSPECT PACK CLEARANCE OF NO. 2 CLUTCH

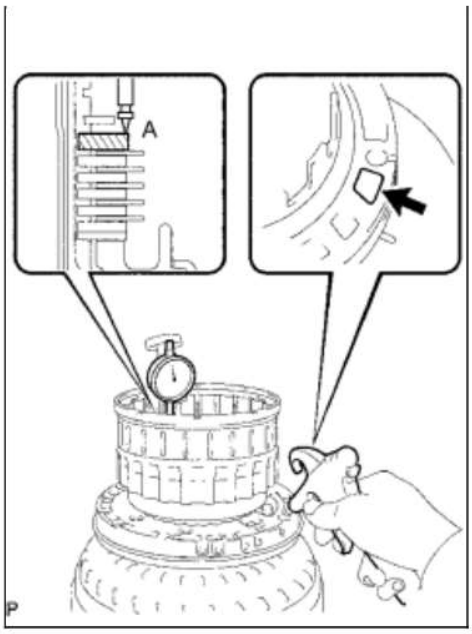
(a) Using a dial indicator, measure the moving distance (distance A) of the direct clutch flange at both ends across a diameter while blowing air (392 kPa, 4.0 kgf/cm 2 , 57 psi) into the oil hole as shown in the illustration, and calculate the average.

HINT:

Flange moving distance A = 0.24 to 1.12 mm (0.00944 to 0.0440 in.)

Pack clearance = Flange moving distance A - 0.03 mm (0.00118 in.)

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Pack clearance:
0.5 to 0.8 mm (0.0197 to 0.0314 in.)

NOTICE:

When measuring the moving distance, install a standard flange {thickness: 3.4 mm (0.134 in.)} to the position indicated by the shaded area in the illustration.

(b) If the pack clearance is outside the standard range, select and install a direct clutch flange that brings the pack clearance within the standard range.

HINT:

There are 9 types of direct clutch flanges that can be used to adjust the pack clearance. Select the one with the most appropriate thickness.

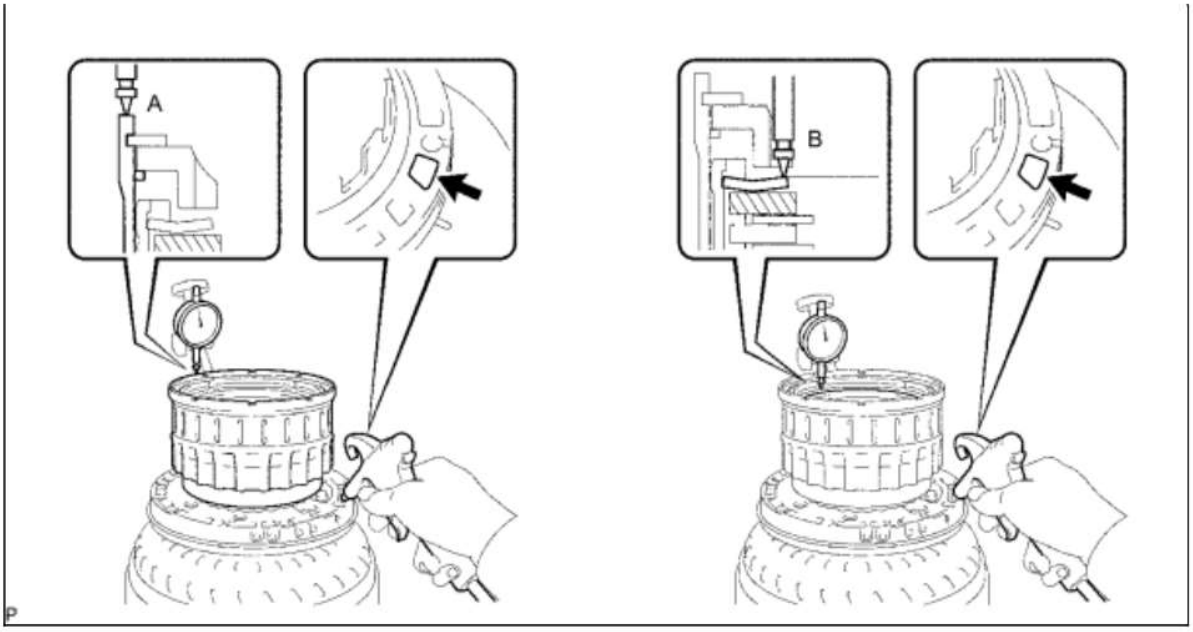
Flange Thickness:

PART NO.	MARK	THICKNESS
SU003-03756	0	3.0 mm (0.118 in.)
SU003-03757	1	3.1 mm (0.122 in.)
SU003-03758	2	3.2 mm (0.126 in.)
SU003-03759	3	3.3 mm (0.130 in.)
SU003-03760	4	3.4 mm (0.134 in.)
SU003-03761	5	3.5 mm (0.138 in.)
SU003-03762	6	3.6 mm (0.142 in.)
SU003-03763	7	3.7 mm (0.146 in.)
SU003-03764	8	3.8 mm (0.150 in.)

25. INSPECT PACK CLEARANCE OF NO. 3 CLUTCH

(a) Using a dial indicator, measure the reverse clutch piston stroke (distance A) and the moving distance (distance B) of the reverse clutch flange at both ends across a diameter while blowing air (392 kPa, 4.0 kgf/cm ^{2} , 57 psi) into the oil hole as shown in the illustration, and calculate the average.

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HINT:

Piston stroke A = 1.62 to 2.68 mm (0.0638 to 0.105 in.)

Flange moving distance B = 1.22 to 1.67 mm (0.0481 to 0.0657 in.)

Pack clearance = Piston stroke A - Flange moving distance B - 0.02 mm (0.000787 in.)

Pack clearance:
0.4 to 0.7 mm (0.0158 to 0.0275 in.)

NOTICE:

When measuring the moving distance, install a standard flange {thickness: 2.8 mm (0.110 in.)} to the position indicated by the shaded area in the illustration.

(b) If the pack clearance is outside the standard range, select and install a reverse clutch flange that brings the pack clearance within the standard range.

HINT:

There are 12 types of reverse clutch flanges that can be used to adjust the pack clearance. Select the one with the most appropriate thickness.

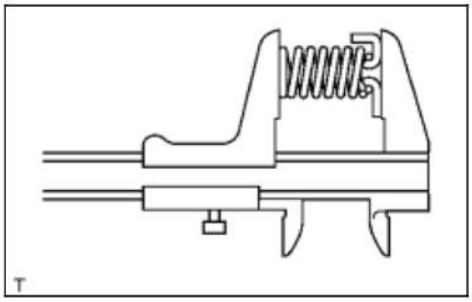
Flange Thickness:

PART NO.	MARK	THICKNESS
SU003-03725	0	2.4 mm (0.0945 in.)
SU003-03726	1	2.5 mm (0.0984 in.)
SU003-03727	2	2.6 mm (0.102 in.)
SU003-03728	3	2.7 mm (0.106 in.)
SU003-03729	4	2.8 mm (0.110 in.)
SU003-03730	5	2.9 mm (0.114 in.)
SU003-03731	6	3.0 mm (0.118 in.)
SU003-03732	7	3.1 mm (0.122 in.)

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SU003-03733	8	3.2 mm (0.126 in.)
SU003-03734	9	3.3 mm (0.130 in.)
SU003-03735	A	3.4 mm (0.134 in.)
SU003-03736	B	3.5 mm (0.138 in.)

26. INSPECT FORWARD CLUTCH RETURN SPRING SUB-ASSEMBLY

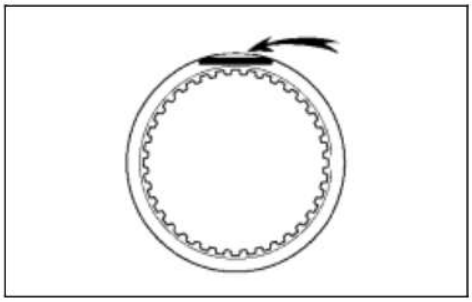


(a) Using a vernier caliper, measure the free length of the spring together with the spring seat.

Standard free length:
26.29 mm (1.04 in.)

If the free length is shorter than the standard free length, replace the forward clutch return spring sub-assembly.

27. INSPECT NO. 4 CLUTCH DISC (COAST CLUTCH DISC)



(a) Check whether the sliding surfaces of the discs, plates and the flange are worn or burnt.

If necessary, replace them.

NOTICE:

- If the linings of the discs are peeled off or discolored, or even a part of the printed numbers is damaged, replace all the discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.

28. INSPECT PACK CLEARANCE OF NO. 1 CLUTCH

(a) Using a dial indicator, measure the moving distance (distance A) of the forward clutch flange at both ends across a diameter while blowing air (196 kPa, 2.0 kgf/cm 2 , 28 psi) into the oil hole as shown in the illustration, and calculate the average.

HINT:

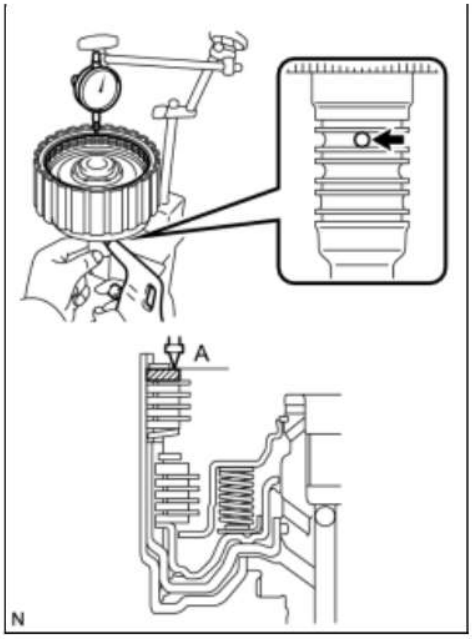
Flange moving distance A = 0.14 to 0.17 mm (0.00552 to 0.00669 in.)

Pack clearance = Flange moving distance A - 0.01 mm (0.000394 in.)

Pack clearance:
0.56 to 0.86 mm (0.0221 to 0.0338 in.)

NOTICE:

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When measuring the moving distance, install a standard flange {thickness: 3.5 mm (0.138 in.)} to the position indicated by the shaded area in the illustration.

(b) If the pack clearance is outside the standard range, select and install a forward clutch flange that brings the pack clearance within the standard range.

HINT:

There are 10 types of forward clutch flanges that can be used to adjust the pack clearance. Select the one with the most appropriate thickness.

Flange Thickness:

PART NO.	MARK	THICKNESS
SU003-03712	0	3.0 mm (0.118 in.)
SU003-03713	1	3.1 mm (0.122 in.)
SU003-03714	2	3.2 mm (0.126 in.)
SU003-03715	3	3.3 mm (0.130 in.)
SU003-03716	4	3.4 mm (0.134 in.)
SU003-03717	5	3.5 mm (0.138 in.)
SU003-03718	6	3.6 mm (0.142 in.)
SU003-03719	7	3.7 mm (0.146 in.)
SU003-03720	8	3.8 mm (0.150 in.)
SU003-03721	9	3.9 mm (0.154 in.)

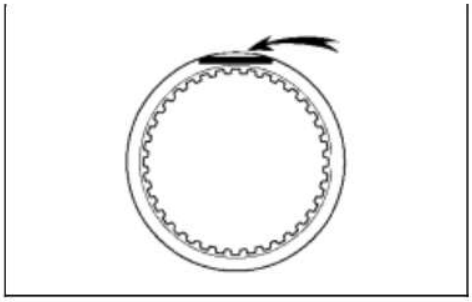
29. INSPECT NO. 1 CLUTCH DISC (FORWARD CLUTCH DISC)

(a) Check whether the sliding surfaces of the discs, plates and the flange are worn or burnt.

If necessary, replace them.

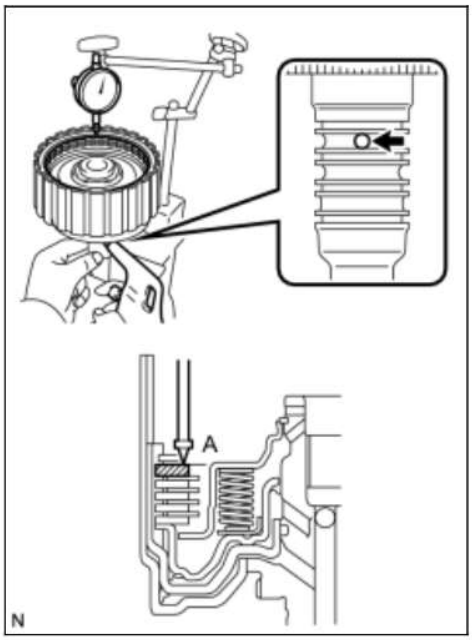
NOTICE:

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- If the linings of the discs are peeled off or discolored, or even a part of the printed numbers is damaged, replace all the discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.

30. INSPECT PACK CLEARANCE OF NO. 4 CLUTCH



(a) Using a dial indicator, measure the moving distance (distance A) of the coast clutch flange at both ends across a diameter while blowing air (196 kPa, 2.0 kgf/cm 2 , 28 psi) into the oil hole as shown in the illustration, and calculate the average.

HINT:

Flange moving distance A = 0.02 to 1.01 mm (0.000787 to 0.0397 in.)

Pack clearance = Flange moving distance A - 0.01 mm (0.000394 in.)

Pack clearance:
0.4 to 0.7 mm (0.0158 to 0.0275 in.)

NOTICE:

When measuring the moving distance, install a standard flange {thickness: 3.5 mm (0.138 in.)} to the position indicated by the shaded area in the illustration.

(b) If the pack clearance is outside the standard range, select and install a coast clutch flange that brings the pack clearance within the standard range.

HINT:

There are 10 types of coast clutch flanges that can be used to adjust the pack clearance. Select the one with the most appropriate thickness.

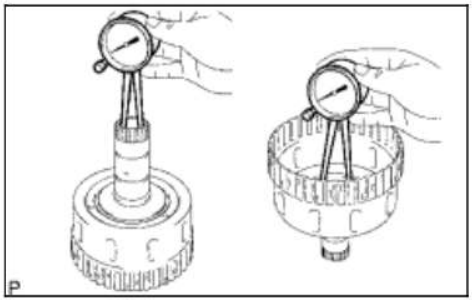
Flange Thickness:

PART NO.	MARK	THICKNESS
SU003-03746	0	3.0 mm (0.118 in.)
SU003-03747	1	3.1 mm (0.122 in.)
SU003-03748	2	3.2 mm (0.126 in.)
SU003-03749	3	3.3 mm (0.130 in.)
SU003-03750	4	3.4 mm (0.134 in.)
SU003-03751	5	3.5 mm (0.138 in.)

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SU003-03752	6	3.6 mm (0.142 in.)
SU003-03753	7	3.7 mm (0.146 in.)
SU003-03754	8	3.8 mm (0.150 in.)
SU003-03755	9	3.9 mm (0.154 in.)

31. INSPECT FORWARD CLUTCH HUB SUB-ASSEMBLY

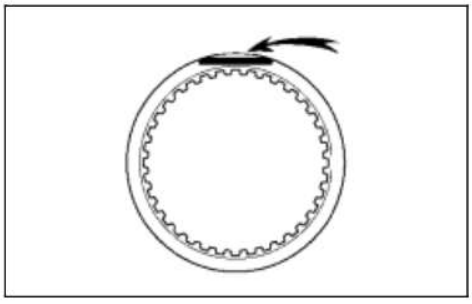


(a) Using a caliper gauge, measure the inside diameter of the forward clutch hub bushing.

Standard inside diameter:
23.037 to 23.062 mm (0.9070 to 0.9079 in.)

If the inside diameter is more than the standard inside diameter, replace the forward clutch hub sub-assembly.

32. INSPECT NO. 3 CLUTCH DISC (REAR CLUTCH DISC)



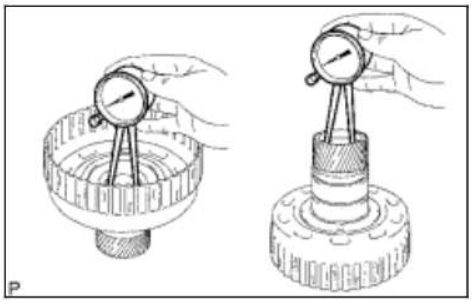
(a) Check whether the sliding surfaces of the discs, plates and the flange are worn or burnt.

If necessary, replace them.

NOTICE:

- If the linings of the discs are peeled off or discolored, or even a part of the printed numbers is damaged, replace all the discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.

33. INSPECT REVERSE CLUTCH HUB SUB-ASSEMBLY



(a) Using a caliper gauge, measure the inside diameter of the reverse clutch hub bushing.

Standard inside diameter:
33.312 to 33.337 mm (1.3115 to 1.3124 in.)

If the inside diameter is more than the standard inside diameter, replace the reverse clutch hub sub-assembly.

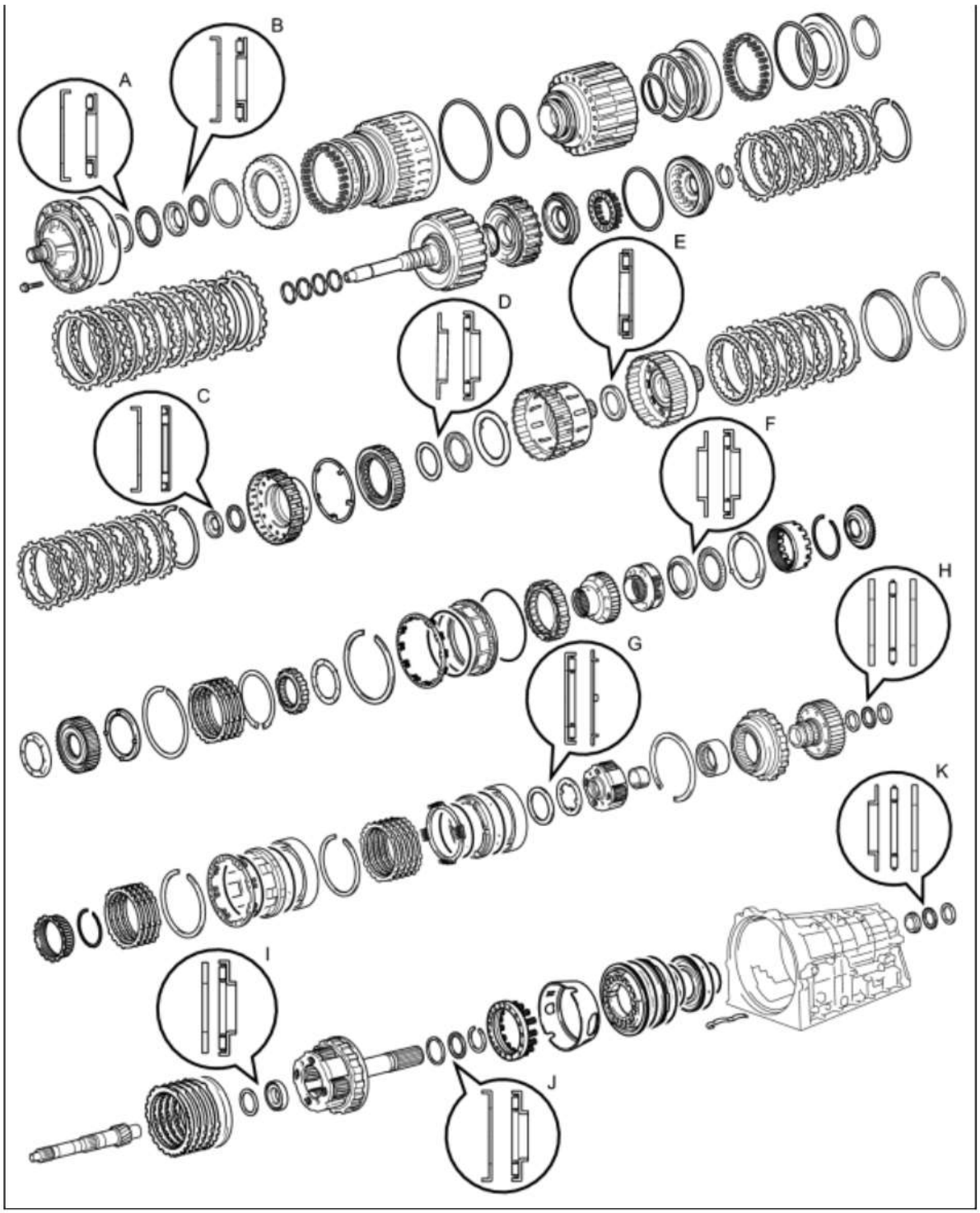
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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000OA003RX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION UNIT: REASSEMBLY (2013 FR-S)		

REASSEMBLY

1. BEARING POSITION

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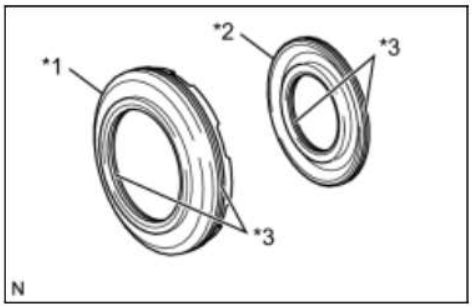


MARK	FRONT RACE DIAMETER INSIDE / OUTSIDE	THRUST BEARING DIAMETER INSIDE / OUTSIDE	REAR RACE DIAMETER INSIDE / OUTSIDE
A	74.2 mm (2.921 in.) / 87.7 mm (3.453 in.)	71.9 mm (2.831 in.) / 85.6 mm (3.370 in.)	-
B	37.0 mm (1.457 in.) / 51.2 mm (2.016 in.)	33.5 mm (1.319 in.) / 48.0 mm (1.890 in.)	-
C	20.0 mm (0.787 in.) / 35.6 mm (1.402 in.)	20.0 mm (0.787 in.) / 41.0 mm (1.614 in.)	-

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D	31.0 mm (1.220 in.) / 48.0 mm (1.890 in.)	33.3 mm (1.311 in.) / 51.2 mm (2.016 in.)	-
E	-	42.5 mm (1.673 in.) / 61.2 mm (2.409 in.)	-
F	34.9 mm (1.374 in.) / 50.8 mm (1.999 in.)	38.6 mm (1.520 in.) / 53.1 mm (2.091 in.)	-
G	-	58.5 mm (2.303 in.) / 73.5 mm (2.894 in.)	55.2 mm (2.173 in.) / 71.2 mm (2.803 in.)
H	29.6 mm (1.165 in.) / 44.9 mm (1.768 in.)	27.8 mm (1.095 in.) / 43.8 mm (1.726 in.)	27.8 mm (1.095 in.) / 43.7 mm (1.721 in.)
I	19.0 mm (0.748 in.) / 35.0 mm (1.378 in.)	20.8 mm (0.819 in.) / 38.5 mm (1.516 in.)	-
J	43.3 mm (1.705 in.) / 56.7 mm (2.232 in.)	40.6 mm (1.598 in.) / 58.0 mm (2.284 in.)	-
K	37.0 mm (1.457 in.) / 51.2 mm (2.016 in.)	36.1 mm (1.421 in.) / 52.5 mm (2.067 in.)	36.1 mm (1.421 in.) / 51.0 mm (2.007 in.)

2. INSTALL NO. 4 BRAKE PISTON



(a) Coat 2 new O-ring with ATF, and install them to the brake reaction sleeve.

Text in Illustration

*1	Brake Reaction Sleeve
*2	No. 4 Brake Piston
*3	O-ring

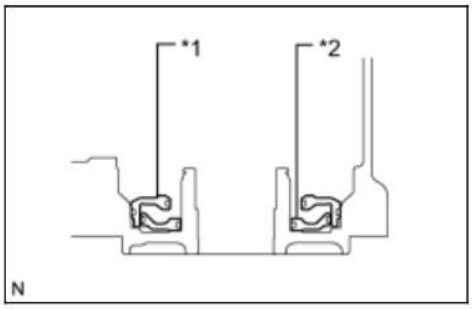
(b) Coat 2 new O-rings with ATF, and install them to the No. 4 brake piston.

(c) Install the No. 4 brake piston to the brake reaction sleeve.

NOTICE:

Be careful not to damage the O-rings.

3. INSTALL BRAKE REACTION SLEEVE



(a) With the No. 4 brake piston underneath (the rear side), install the brake reaction sleeve and the No. 4 brake piston to the automatic transmission case sub-assembly.

Text in Illustration

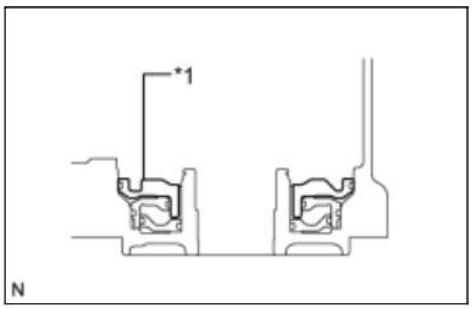
*1	Brake Reaction Sleeve
*2	No. 4 Brake Piston

NOTICE:

Be careful not to damage the O-rings.

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4. INSTALL 1ST AND REVERSE BRAKE PISTON



(a) Coat a new O-rings with ATF, and install it to the 1st and reverse brake piston.

Text in Illustration

*1	1st and Reverse Brake Piston

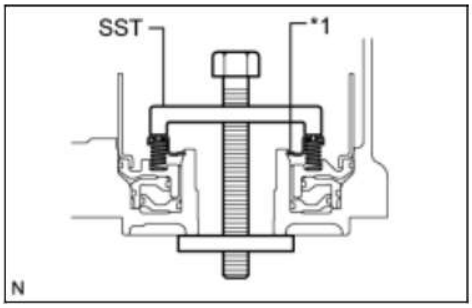
(b) With the spring seat of the 1st and reverse brake piston facing upwards (the front side), place the 1st and reverse brake piston in the automatic transmission case sub-assembly.

NOTICE:

Be careful not to damage the O-ring.

5. INSTALL 1ST AND REVERSE BRAKE RETURN SPRING SUB-ASSEMBLY

(a) Place the 1st and reverse brake return spring sub-assembly onto the 1st and reverse brake piston.



(b) Place SST on the 1st and reverse brake return spring sub-assembly, and compress the 1st and reverse brake return spring sub-assembly.

Text in Illustration

*1	Snap Ring

SST: 09350-30020

09350-07050

(c) Using SST, install the snap ring.

SST: 09350-30020

09350-07070

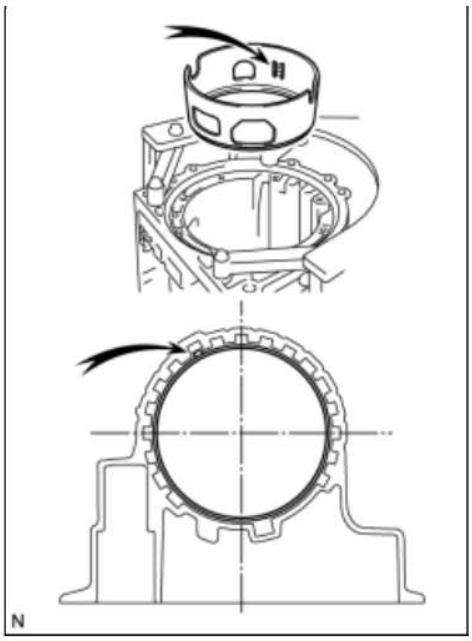
6. INSTALL BRAKE APPLY TUBE

(a) Install the brake apply tube with its protruding part fitting into the groove of the automatic transmission case sub-assembly as shown in the illustration.

NOTICE:

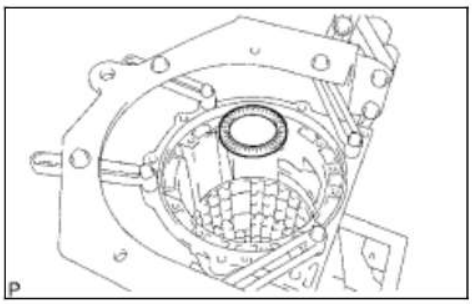
Engage the 1st and reverse brake piston claw with the

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protrusion of the brake apply tube.

7. INSTALL REAR PLANETARY GEAR ASSEMBLY



(a) Install the thrust needle roller bearing to the automatic transmission case sub-assembly.

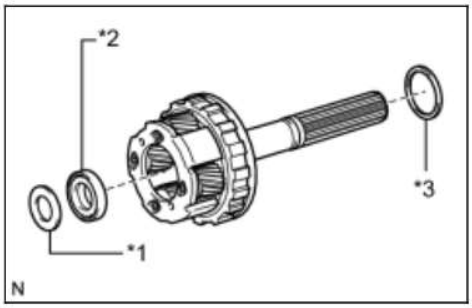
Bearing Diameter

ITEM	INSIDE	OUTSIDE
Thrust needle roller bearing	40.6 mm (1.598 in.)	58.0 mm (2.284 in.)

(b) Install the thrust needle roller bearing to the rear planetary gear assembly.

Text in Illustration

*1	Thrust Bearing Race
*2	Thrust Needle Roller Bearing
*3	No. 9 Thrust Bearing Race



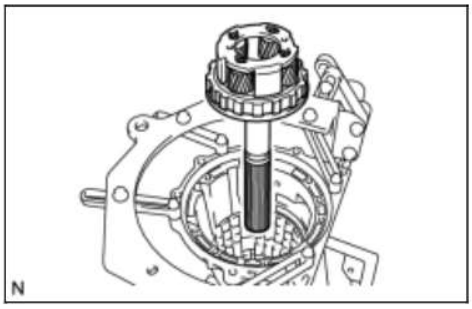
Bearing and Race Diameter

ITEM	INSIDE	OUTSIDE
Thrust needle roller bearing	20.8 mm (0.819 in.)	38.5 mm (1.516 in.)
Thrust bearing race	19.0 mm (0.748 in.)	35.0 mm (1.378 in.)
No. 9 thrust bearing	43.3 mm (1.705	56.7 mm (2.232

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race	in.)	in.)

(c) Coat the No. 9 thrust bearing race and the thrust bearing race with petroleum jelly, and install them onto the rear planetary gear assembly.

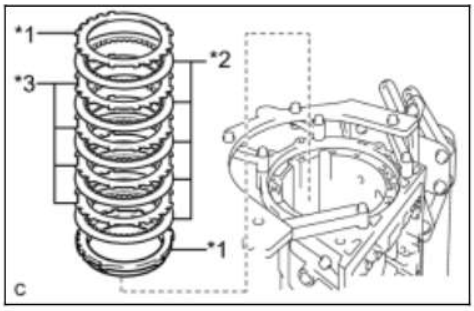


(d) Install the rear planetary gear assembly to the automatic transmission case sub-assembly.

8. INSPECT PACK CLEARANCE OF NO. 4 BRAKE INFO

9. INSTALL NO. 4 BRAKE DISC

(a) Install the 2 No. 4 brake flanges, 5 No. 4 brake discs and the 4 No. 4 brake plates to the automatic transmission case sub-assembly.



Text in Illustration

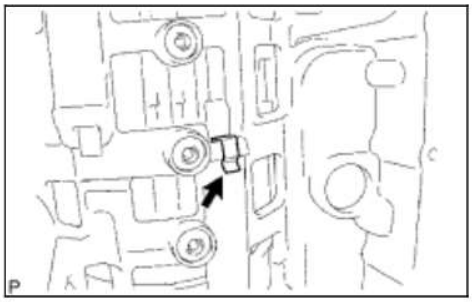
*1	No. 4 Brake Flange
*2	No. 4 Brake Disc
*3	No. 4 Brake Plate

Installation order:
*1 - *2 - *3 - *2 - *3 - *2 - *3 - *2 - *3 - *2 - *1

NOTICE:

Make sure that the discs, plates and the flanges are installed in the correct order.

10. INSTALL BRAKE PLATE STOPPER SPRING

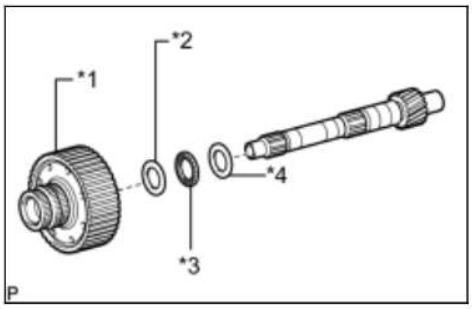


(a) Install the brake plate stopper spring to the automatic transmission case sub-assembly.

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11. INSTALL REAR PLANETARY RING GEAR FLANGE SUB-ASSEMBLY

(a) Install the No. 8 thrust bearing race, thrust needle roller bearing, No. 7 thrust bearing race and the rear planetary ring gear flange sub-assembly to the intermediate shaft.



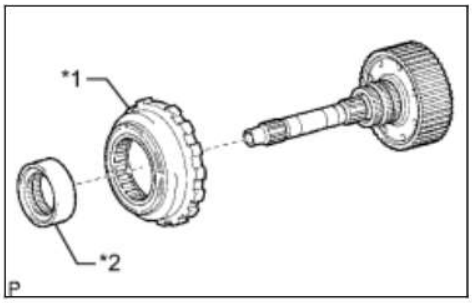
Text in Illustration

*1	Rear Planetary Ring Gear Flange Sub-assembly
*2	No. 7 Thrust Bearing Race
*3	Thrust Needle Roller Bearing
*4	No. 8 Thrust Bearing Race

Bearing and Race Diameter

ITEM	INSIDE	OUTSIDE
No. 7 thrust bearing race	29.6 mm (1.165 in.)	44.9 mm (1.768 in.)
Thrust needle roller bearing	27.8 mm (1.095 in.)	43.8 mm (1.726 in.)
No. 8 thrust bearing race	27.8 mm (1.095 in.)	43.7 mm (1.721 in.)

12. INSTALL NO. 3 ONE-WAY CLUTCH ASSEMBLY

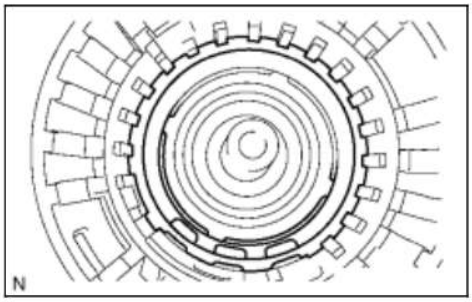


(a) Install the No. 3 one-way clutch assembly and the one-way clutch inner race to the intermediate shaft.

Text in Illustration

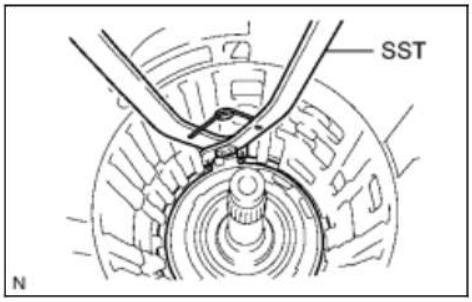
*1	No. 3 One-way Clutch Assembly
*2	One-way Clutch Inner Race

13. INSTALL INTERMEDIATE SHAFT



(a) Install the intermediate shaft together with the No. 3 one-way clutch assembly to the automatic transmission case sub-assembly.

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(b) Using SST, install the snap ring to the automatic transmission case sub-assembly.

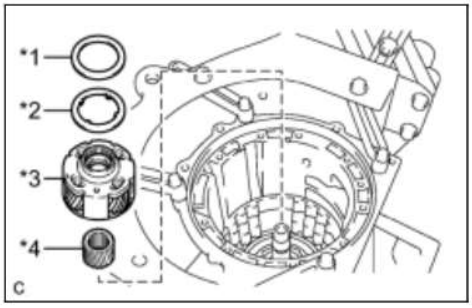
SST: 09350-30020

09350-07060

14. INSTALL CENTER PLANETARY GEAR ASSEMBLY

(a) Install the center planetary gear assembly and the planetary sun gear to the automatic transmission case sub-assembly.

Text in Illustration



*1	Thrust Needle Roller Bearing
*2	No. 4 Thrust Bearing Race
*3	Center Planetary Gear Assembly
*4	Planetary Sun Gear

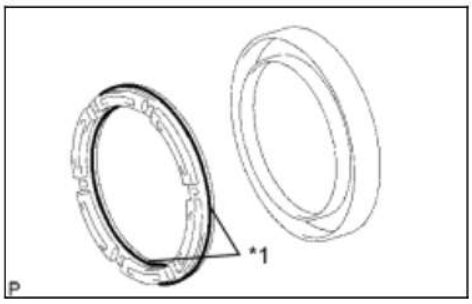
Bearing and Race Diameter

ITEM	INSIDE	OUTSIDE
Thrust needle roller bearing	58.5 mm (2.303 in.)	73.5 mm (2.894 in.)
No. 4 thrust bearing race	55.2 mm (2.173 in.)	71.2 mm (2.803 in.)

(b) Coat the No. 4 thrust bearing race with petroleum jelly, and install it onto the center planetary gear assembly.

(c) Install the thrust needle roller bearing to the center planetary gear assembly.

15. INSTALL NO. 2 BRAKE PISTON



(a) Coat 2 new O-rings with ATF, and install them to the No. 2 brake piston.

Text in Illustration

*1	O-ring

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(b) Press the No. 2 brake piston into the No. 2 brake cylinder.

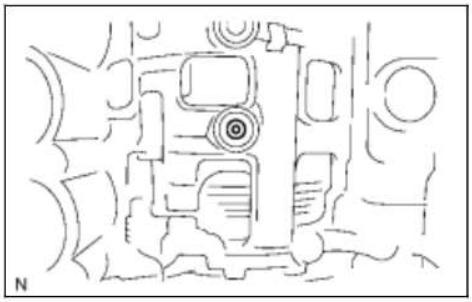
NOTICE:

Be careful not to damage the O-rings.

(c) Install the No. 2 brake piston to the automatic transmission case sub-assembly.

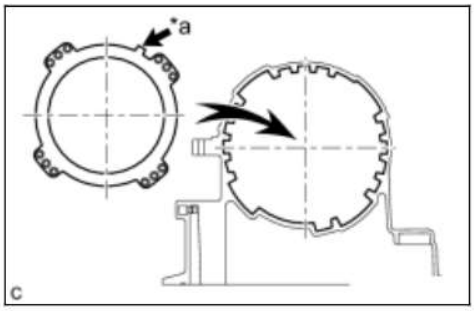
HINT:

Install the No. 2 brake cylinder so that the projection protrudes from the upside of the automatic transmission case sub-assembly.



(d) Check that the oil pressure apply hole of the No. 2 brake cylinder aligns with the oil pressure apply hole of the automatic transmission case sub-assembly.

16. INSTALL NO. 2 BRAKE DISC



(a) Install the No. 2 brake piston return spring sub-assembly to the automatic transmission case sub-assembly as shown in the illustration.

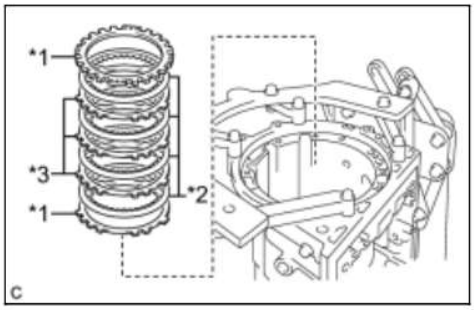
Text in Illustration

*a	Identification shape

NOTICE:

Make sure that the identification shape of the No. 2 brake piston return spring sub-assembly faces the upper right side as shown in the illustration.

(b) Install the 2 No. 2 brake flanges, 4 No. 2 brake discs and the 3 No. 2 brake plates to the automatic transmission case sub-assembly.



Text in Illustration

*1	No. 2 Brake Flange
*2	No. 2 Brake Disc
*3	No. 2 Brake Plate

Installation order:

*1 - *2 - *3 - *2 - *3 - *2 - *3 - *2 - *1

NOTICE:

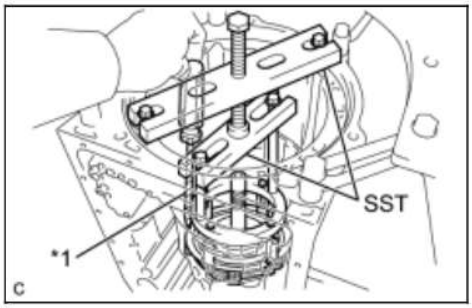
Make sure that the discs, plates and the flanges are installed in the correct order.

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(c) Using SST and a screwdriver, compress the No. 2 brake piston return spring sub-assembly and install the snap ring to the automatic transmission case sub-assembly.

Text in Illustration

*1	Protective Tape



SST: 09350-30020

09350-07020

SST: 09380-60010

09381-06030
09381-06050
09381-06080
09381-06090
09381-06100
09381-06110

NOTICE:

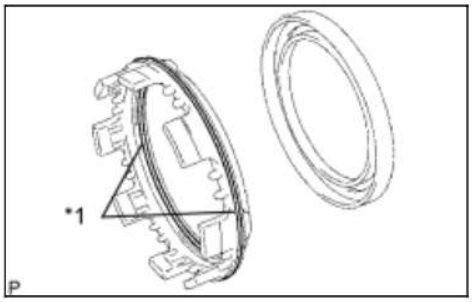
Be careful not to damage the automatic transmission case sub-assembly.

HINT:

Tape the screwdriver tip before use.

17. INSPECT PISTON STROKE OF NO. 2 BRAKE PISTON INFO

18. INSTALL NO. 1 BRAKE PISTON



(a) Coat 2 new O-rings with ATF, and install them to the No. 1 brake piston.

Text in Illustration

*1	O-ring

(b) Press the No. 1 brake piston into the No. 1 brake cylinder.

NOTICE:

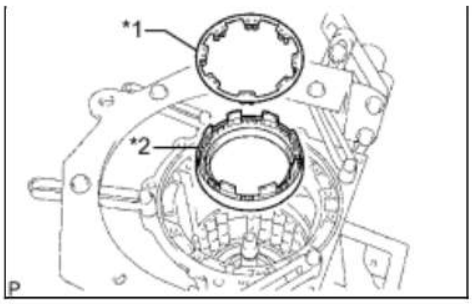
Be careful not to damage the O-rings.

19. INSTALL BRAKE PISTON RETURN SPRING SUB-ASSEMBLY

(a) Install the brake piston return spring sub-assembly and the No. 1 brake cylinder to the automatic transmission case sub-assembly.

Text in Illustration

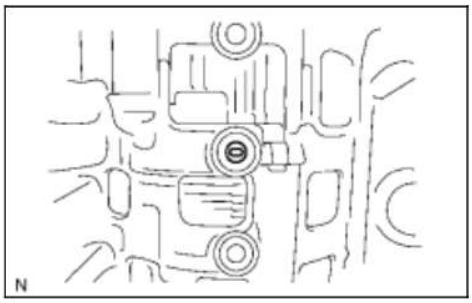
cardiagn.com



*1	Brake Piston Return Spring Sub-assembly
*2	No. 1 Brake Cylinder

HINT:

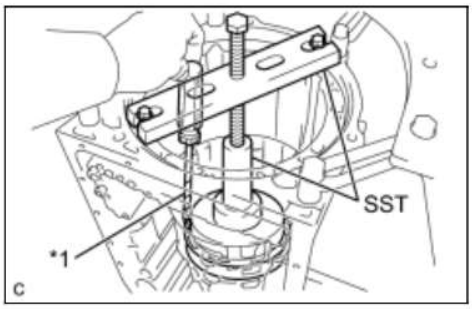
Install the No. 1 brake cylinder so that the projection protrudes from the upside of the automatic transmission case sub-assembly.



(b) Check that the oil pressure apply hole of the No. 1 brake cylinder aligns with the oil pressure apply hole of the automatic transmission case sub-assembly.

(c) Using SST and a screwdriver, compress the brake piston return spring sub-assembly and install the snap ring to the automatic transmission case sub-assembly.

Text in Illustration



*1	Protective Tape

SST: 09350-30020

09350-07020

SST: 09351-40010

09351-04010

09351-04020

NOTICE:

Be careful not to damage the automatic transmission case sub-assembly.

HINT:

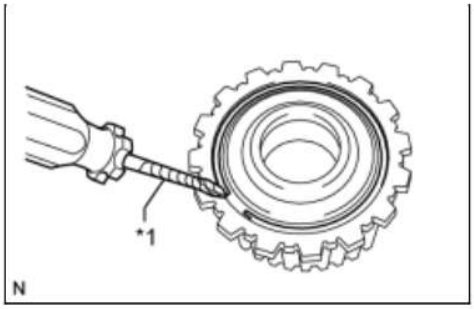
Tape the screwdriver tip before use.

20. INSTALL CENTER PLANETARY RING GEAR

(a) Install the front planetary ring gear flange sub-assembly to the center planetary ring gear.

Text in Illustration

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*1	Protective Tape

(b) Using a screwdriver, install the snap ring.

NOTICE:

Be careful not to damage the center planetary ring gear.

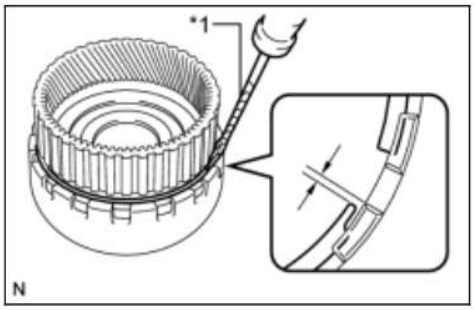
HINT:

Tape the screwdriver tip before use.

(c) Install the center planetary ring gear to the front planetary ring gear.

(d) Using a screwdriver, install the snap ring.

Text in Illustration



*1	Protective Tape

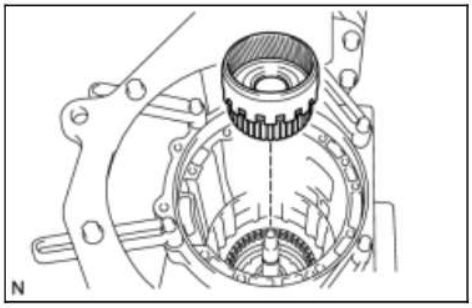
NOTICE:

- Be careful not to damage the front planetary ring gear.
- Install the snap ring to the front planetary ring gear so that both ends of the snap ring come to the center of a protrusion on the front planetary ring gear.

HINT:

Tape the screwdriver tip before use.

21. INSTALL FRONT PLANETARY RING GEAR



(a) Install the front planetary ring gear to the automatic transmission case sub-assembly.

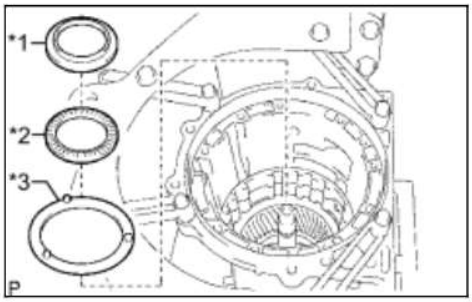
22. INSTALL FRONT PLANETARY GEAR ASSEMBLY

(a) Install the No. 2 planetary carrier thrust washer and the

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front planetary flange thrust needle roller bearing.

Text in Illustration

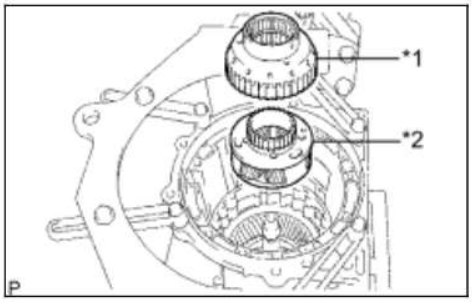


*1	Front Planetary Flange Rear Thrust Bearing Race
*2	Front Planetary Flange Thrust Needle Roller Bearing
*3	No. 2 Planetary Carrier Thrust Washer

Bearing and Race Diameter

ITEM	INSIDE	OUTSIDE
Front planetary flange thrust needle roller bearing	38.6 mm (1.520 in.)	53.1 mm (2.091 in.)
Front planetary flange rear thrust bearing race	34.9 mm (1.374 in.)	50.8 mm (1.999 in.)

(b) Coat the front planetary flange rear thrust bearing race with petroleum jelly, and install it onto the front planetary ring gear.



(c) Install the front planetary gear assembly and the one-way clutch inner race sub-assembly to the automatic transmission case sub-assembly.

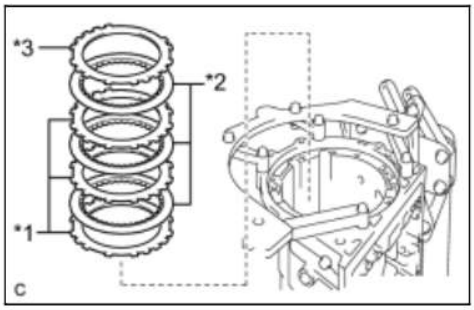
Text in Illustration

*1	One-way Clutch Inner Race Sub-assembly
*2	Front Planetary Gear Assembly

23. INSPECT PISTON STROKE OF NO. 1 BRAKE PISTON INFO

24. INSTALL NO. 1 BRAKE DISC

(a) Install the No. 1 brake flange, 3 No. 1 brake discs and the 3 No. 1 brake plates to the automatic transmission case sub-assembly.



Text in Illustration

*1	No. 1 Brake Plate
*2	No. 1 Brake Disc
*3	No. 1 Brake Flange

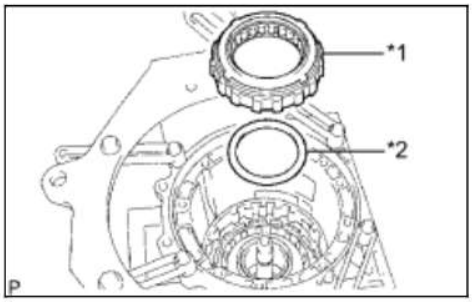
Installation order:
*1 - *2 - *1 - *2 - *1 - *2 - *3

NOTICE:

Make sure that the discs, plates and the flange are installed in the correct order.

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25. INSTALL ONE-WAY CLUTCH ASSEMBLY

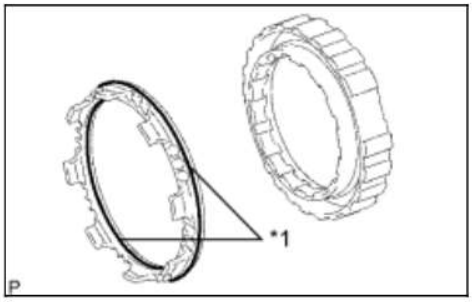


(a) Install the No. 1 planetary carrier thrust washer and the one-way clutch assembly to the automatic transmission case sub-assembly.

Text in Illustration

*1	One-way Clutch Assembly
*2	No. 1 Planetary Carrier Thrust Washer

26. INSTALL 2ND BRAKE PISTON



(a) Coat 2 new O-rings with ATF, and install them to the 2nd brake piston.

Text in Illustration

*1	O-ring

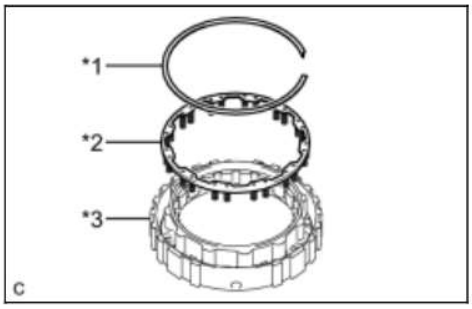
(b) Press the 2nd brake piston into the 2nd brake cylinder.

NOTICE:

Be careful not to damage the O-rings.

(c) Using a screwdriver, install the No. 3 brake piston return spring sub-assembly to the 2nd brake cylinder with the snap ring.

Text in Illustration



*1	Snap Ring
*2	No. 3 Brake Piston Return Spring Sub-assembly
*3	2nd Brake Cylinder

NOTICE:

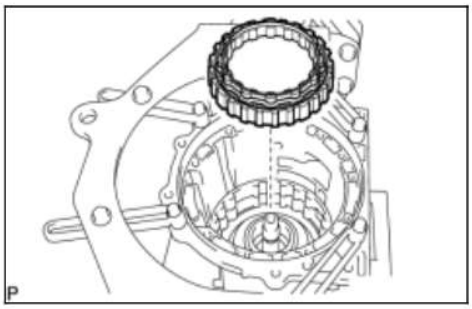
- Be sure that the end gap of the snap ring is not aligned with the spring retainer claw.
- Be careful not to damage the 2nd brake cylinder.

HINT:

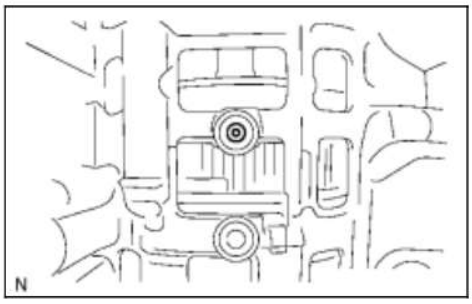
Tape the screwdriver tip before use.

27. INSTALL 2ND BRAKE CYLINDER

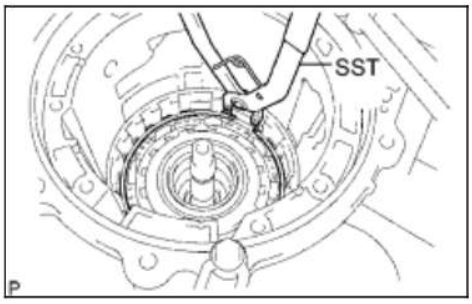
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(a) Install the 2nd brake cylinder to the automatic transmission case sub-assembly.



(b) Check that the oil pressure apply hole of the 2nd brake cylinder aligns with the oil pressure apply hole of the automatic transmission case sub-assembly.



(c) Using SST, install the snap ring to the automatic transmission case sub-assembly.

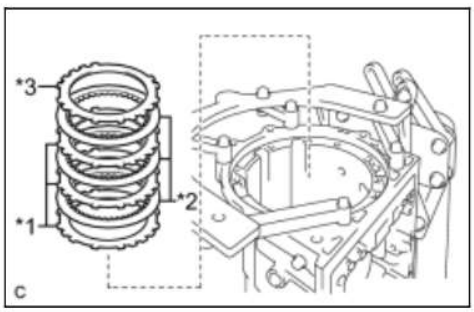
SST: 09350-30020

09350-07060

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28. INSTALL NO. 3 BRAKE DISC (2ND BRAKE DISC SET)

(a) Install the No. 3 brake flange, 3 No. 3 brake discs and the 3 No. 3 brake plates to the automatic transmission case sub-assembly.



Text in Illustration

*1	No. 3 Brake Plate
*2	No. 3 Brake Disc
*3	No. 3 Brake Flange

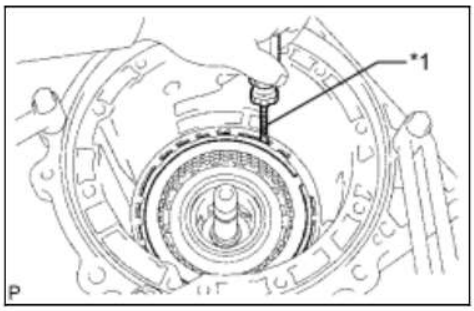
Installation order:

*1 - *2 - *1 - *2 - *1 - *2 - *3

NOTICE:

Make sure that the discs, plates and the flange are installed in the correct order.

(b) Using a screwdriver, install the snap ring to the automatic transmission case sub-assembly.



Text in Illustration

*1	Protective Tape

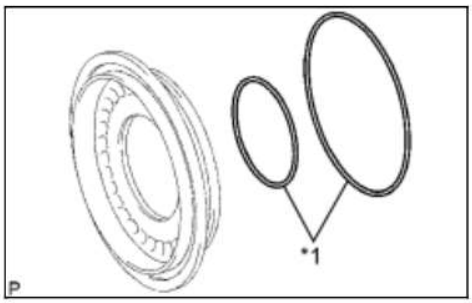
NOTICE:

Be careful not to damage the automatic transmission case sub-assembly.

HINT:

Tape the screwdriver tip before use.

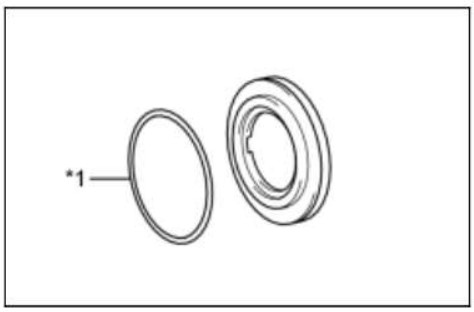
29. INSTALL DIRECT CLUTCH PISTON SUB-ASSEMBLY



(a) Coat 2 new O-rings with ATF, and install them to the direct clutch piston sub-assembly.

Text in Illustration

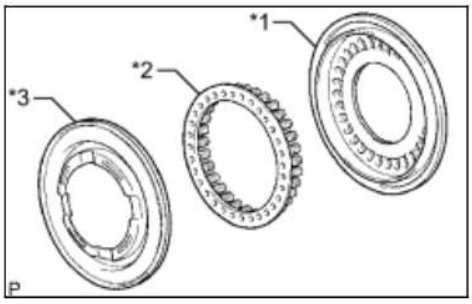
*1	O-ring



(b) Coat a new O-ring with ATF, and install it to the No. 2 clutch balancer.

Text in Illustration

*1	O-ring



(c) Install the No. 2 clutch balancer and the direct clutch return spring sub-assembly to the direct clutch piston sub-assembly.

Text in Illustration

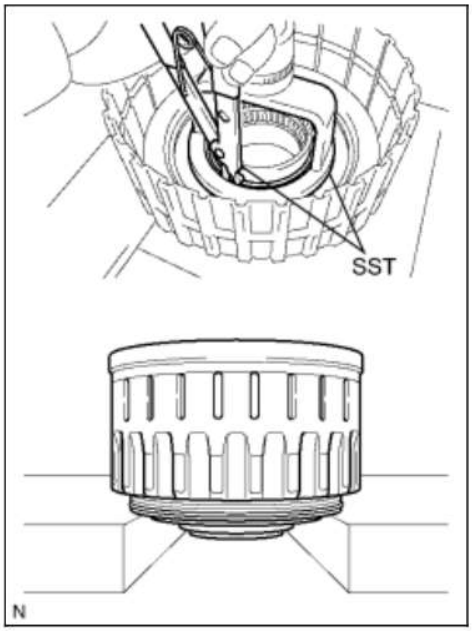
*1	Direct Clutch Piston Sub-assembly
*2	Direct Clutch Return Spring Sub-assembly
*3	No. 2 Clutch Balancer

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(d) Press the direct clutch piston sub-assembly into the reverse clutch drum sub-assembly by hands.

NOTICE:

Be careful not to damage the O-rings.



(e) Place SST on the No. 2 clutch balancer, and compress the direct clutch return spring sub-assembly with a press.

SST: 09320-89010

NOTICE:

Stop pressing when the spring sheet is lowered to the place 1 to 2 mm (0.0394 to 0.0787 in.) from the snap ring groove to prevent the spring sheet from being deformed.

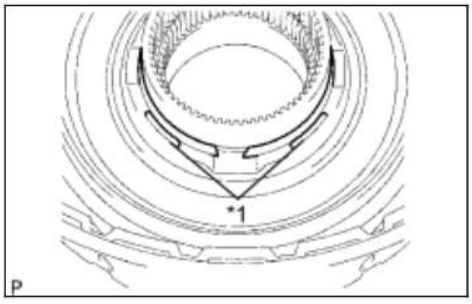
(f) Using SST, install the snap ring.

SST: 09350-30020

09350-07070

NOTICE:

- Be sure that the end gap of the snap ring is not aligned with the spring retainer claw.
- Do not expand the snap ring excessively.



(g) Set the end gap of the snap ring in the No. 2 clutch balancer as shown in the illustration.

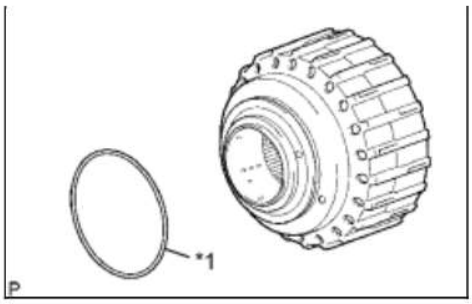
Text in Illustration

*1	Stopper

30. INSTALL REVERSE CLUTCH PISTON SUB-ASSEMBLY

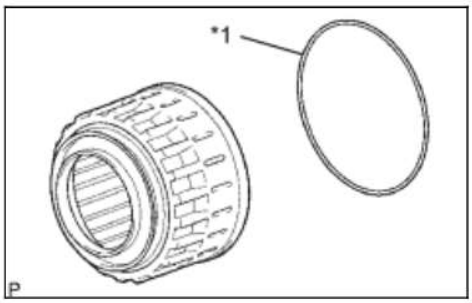
(a) Coat a new O-ring with ATF, and install it to the reverse clutch drum sub-assembly.

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Text in Illustration

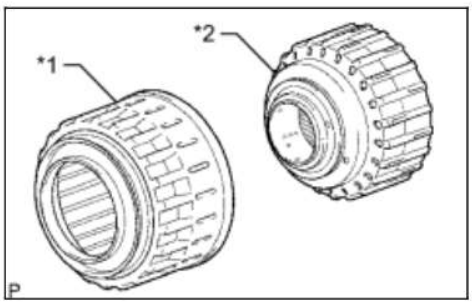
*1	O-ring



(b) Coat a new O-ring with ATF, and install it to the reverse clutch piston sub-assembly.

Text in Illustration

*1	O-ring



(c) Press the reverse clutch drum sub-assembly into the reverse clutch piston sub-assembly with both hands.

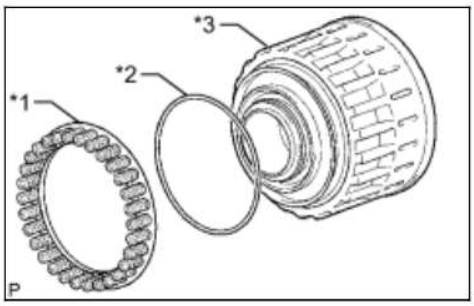
Text in Illustration

*1	Reverse Clutch Piston Sub-assembly
*2	Reverse Clutch Drum Sub-assembly

NOTICE:

Be careful not to damage the O-rings.

31. INSTALL REVERSE CLUTCH RETURN SPRING SUB-ASSEMBLY



(a) Coat a new O-ring with ATF, and install it to the reverse clutch piston sub-assembly.

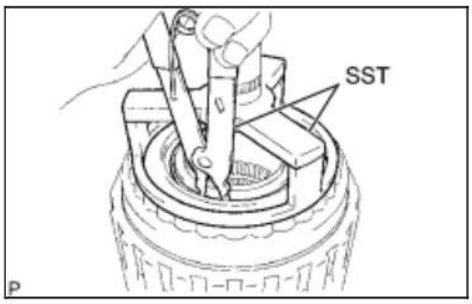
Text in Illustration

*1	Reverse Clutch Return Spring Sub-assembly
*2	O-ring
*3	Reverse Clutch Piston Sub-assembly

(b) Install the reverse clutch return spring sub-assembly to the reverse clutch piston sub-assembly.

32. INSTALL NO. 3 CLUTCH BALANCER

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(a) Install the No. 3 clutch balancer to the reverse clutch return spring sub-assembly.

(b) Place SST on the No. 3 clutch balancer, and compress the reverse clutch return spring sub-assembly with a press.

SST: 09387-00070

NOTICE:

Stop pressing when the spring sheet is lowered to the place 1 to 2 mm (0.0394 to 0.0787 in.) from the snap ring groove to prevent the spring sheet from being deformed.

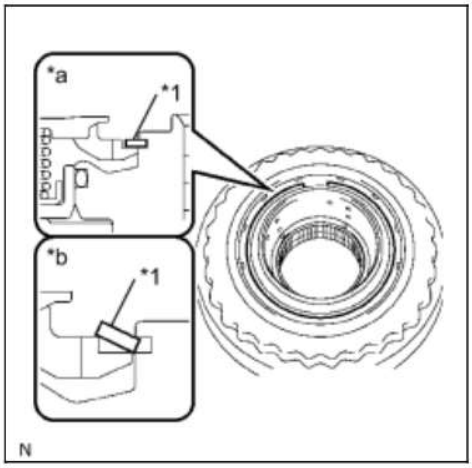
(c) Using SST, install the snap ring.

SST: 09350-30020

09350-07070

NOTICE:

- Be sure that the end gap of the snap ring is not aligned with the spring retainer claw.
- Do not expand the snap ring excessively.



(d) Set the end gap of the snap ring in the No. 3 clutch balancer as shown in the illustration.

Text in Illustration

*1	Snap Ring
*a	Correct
*b	Incorrect

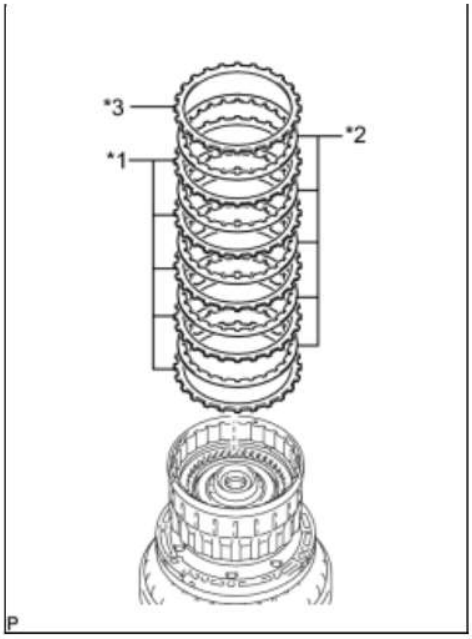
33. INSTALL NO. 2 CLUTCH DISC (DIRECT CLUTCH DISC)

(a) Install the direct clutch flange, 5 No. 2 clutch discs and the 5 No. 2 clutch plates to the reverse clutch drum sub-assembly.

Text in Illustration

*1	No. 2 Clutch Plate

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*2	No. 2 Clutch Disc
*3	Direct Clutch Flange

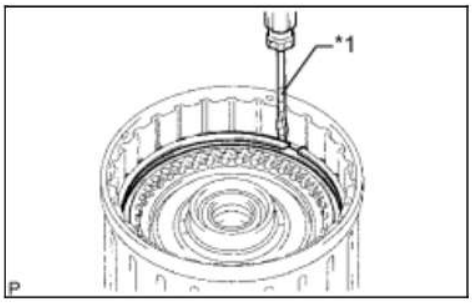
Installation order:

*1 - *2 - *1 - *2 - *1 - *2 - *1 - *2 - *1 - *2 - *3

NOTICE:

Make sure that the discs, plates and the flange are installed in the correct order.

(b) Using a screwdriver, install the 2 snap rings to the reverse clutch drum sub-assembly.



Text in Illustration

*1	Protective Tape

NOTICE:

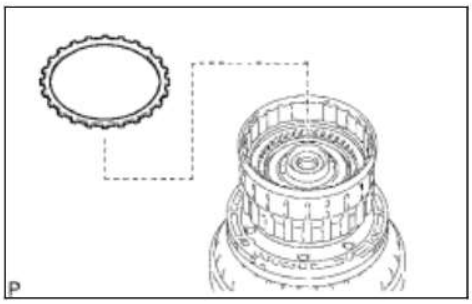
Be careful not to damage the reverse clutch drum sub-assembly.

HINT:

Tape the screwdriver tip before use.

34. INSPECT PACK CLEARANCE OF NO. 2 CLUTCH INFO

35. INSTALL REVERSE CLUTCH FLANGE

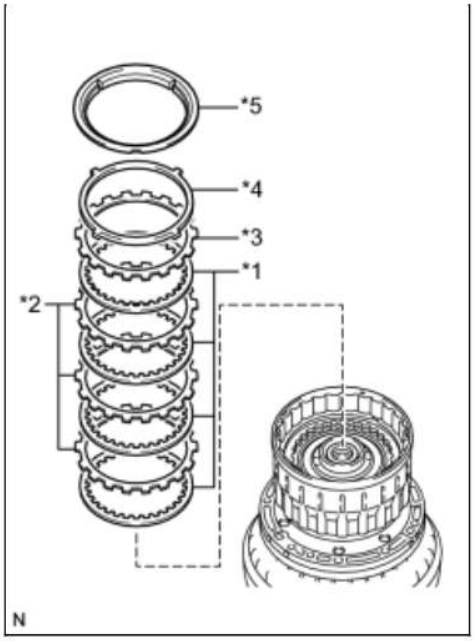


(a) Install the reverse clutch flange to the reverse clutch drum sub-assembly.

36. INSTALL REVERSE CLUTCH REACTION SLEEVE

(a) Install the clutch cushion plate, reverse clutch flange, 4

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No. 3 clutch discs, 3 No. 3 clutch plates and the reverse clutch reaction sleeve to the reverse clutch drum sub-assembly.

Text in Illustration

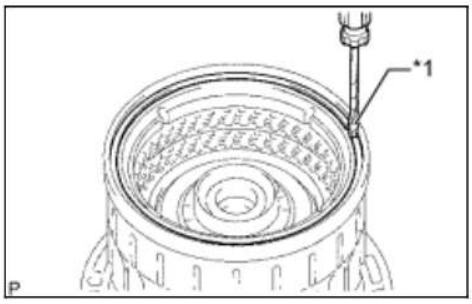
*1	No. 3 Clutch Disc
*2	No. 3 Clutch Plate
*3	Reverse Clutch Flange
*4	Clutch Cushion Plate
*5	Reverse Clutch Reaction Sleeve

Installation order:
*1 - *2 - *1 - *2 - *1 - *2 - *1 - *3 - *4 - *5

NOTICE:

Make sure that the discs, plates, flange, sleeve and the cushion plate are installed in the correct order.

(b) Using a screwdriver, install the snap ring to the reverse clutch piston sub-assembly.



Text in Illustration

*1	Protective Tape

NOTICE:

Be careful not to damage the reverse clutch piston sub-assembly.

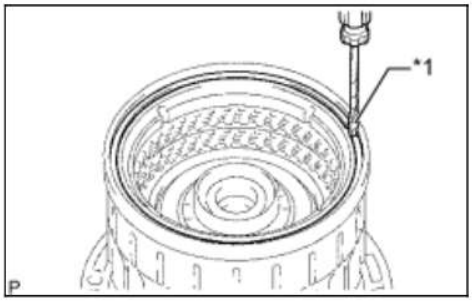
HINT:

Tape the screwdriver tip before use.

37. INSPECT PACK CLEARANCE OF NO. 3 CLUTCH INFO

38. REMOVE REVERSE CLUTCH REACTION SLEEVE

(a) Using a screwdriver, remove the snap ring from the reverse clutch piston sub-assembly.



Text in Illustration

*1	Protective Tape

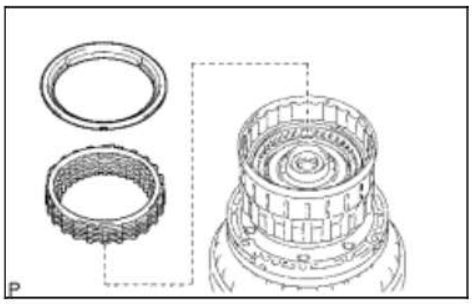
NOTICE:

Be careful not to damage the reverse clutch piston sub-assembly.

HINT:

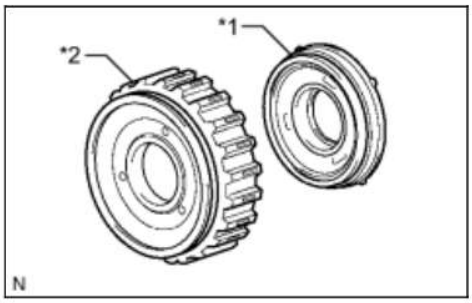
Tape the screwdriver tip before use.

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(b) Remove the reverse clutch reaction sleeve, clutch cushion plate, reverse clutch flange, 4 No. 3 clutch discs and the 3 No. 3 clutch plates from the reverse clutch drum sub-assembly.

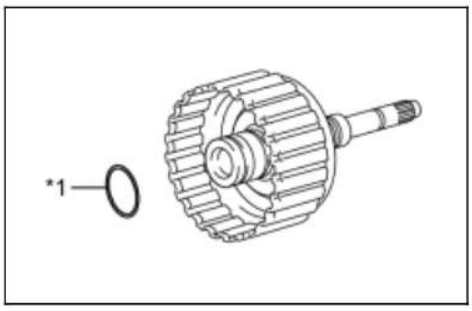
39. INSTALL FORWARD CLUTCH PISTON SUB-ASSEMBLY



(a) Install the coast clutch piston to the forward clutch piston sub-assembly.

Text in Illustration

*1	Coast Clutch Piston
*2	Forward Clutch Piston Sub-assembly



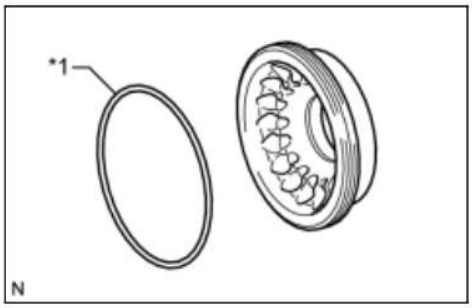
(b) Coat a new O-ring with ATF, and install it to the input shaft.

Text in Illustration

*1	O-ring

(c) Install the forward clutch piston sub-assembly to the input shaft.

40. INSTALL NO. 1 CLUTCH BALANCER

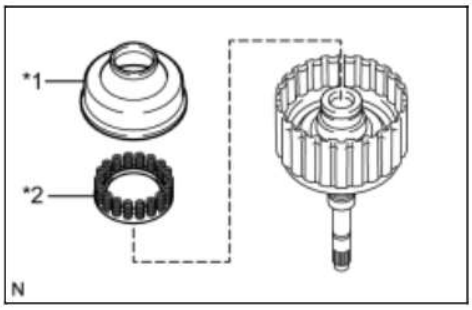


(a) Coat a new D-ring with ATF, and install it to the No. 1 clutch balancer.

Text in Illustration

*2	D-ring

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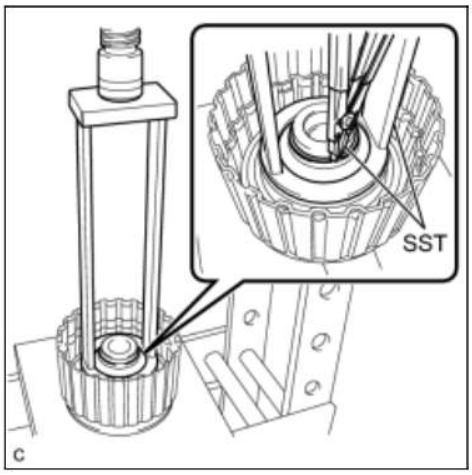
(b) Install the No. 1 clutch balancer and the forward clutch return spring sub-assembly to the input shaft.

Text in Illustration

*1	No. 1 Clutch Balancer
*2	Forward Clutch Return Spring Sub-assembly

NOTICE:

Be careful not to damage the D-ring.



(c) Place SST on the No. 1 clutch balancer, and compress the forward clutch return spring sub-assembly with a press.

SST: 09387-00110

NOTICE:

Stop pressing when the spring sheet is lowered to the place 1 to 2 mm (0.0394 to 0.0787 in.) from the snap ring groove to prevent the spring sheet from being deformed.

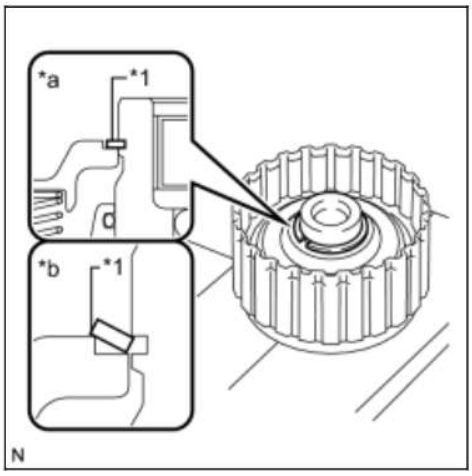
(d) Using SST, Install the snap ring.

SST: 09350-30020

09350-07070

NOTICE:

- Be sure that the end gap of the snap ring is not aligned with the spring retainer claw.
- Do not expand the snap ring excessively.



(e) Set the end gap of the snap ring in the No. 1 clutch balancer as shown in the illustration.

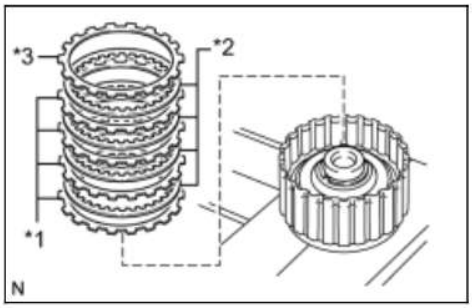
Text in Illustration

*1	Snap Ring
*a	Correct
*b	Incorrect

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41. INSTALL NO. 4 CLUTCH DISC (COAST CLUTCH DISC)

(a) Install the coast clutch flange, 4 No. 4 clutch discs and the 4 No. 4 clutch plates to the forward clutch piston sub-assembly.



Text in Illustration

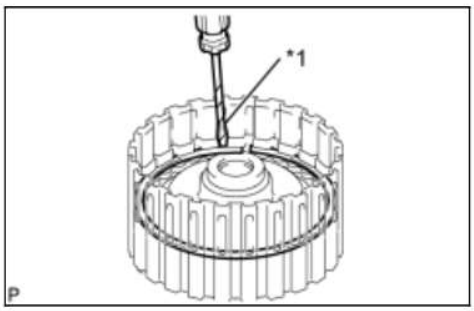
*1	No. 4 Clutch Plate
*2	No. 4 Clutch Disc
*3	Coast Clutch Flange

Installation order:
*1 - *2 - *1 - *2 - *1 - *2 - *1 - *2 - *3

NOTICE:

Make sure that the discs, plates and the flange are installed in the correct order.

(b) Using a screwdriver, install the snap ring.



Text in Illustration

*1	Protective Tape

NOTICE:

Be careful not to damage the forward clutch piston sub-assembly.

HINT:

Tape the screwdriver tip before use.

42. INSPECT PACK CLEARANCE OF NO. 4 CLUTCH INFO

43. INSTALL NO. 1 CLUTCH DISC (FORWARD CLUTCH DISC)

(a) Install the forward clutch flange, 4 No. 1 clutch discs, 4 No. 1 clutch plates and the clutch cushion plate to the input shaft.

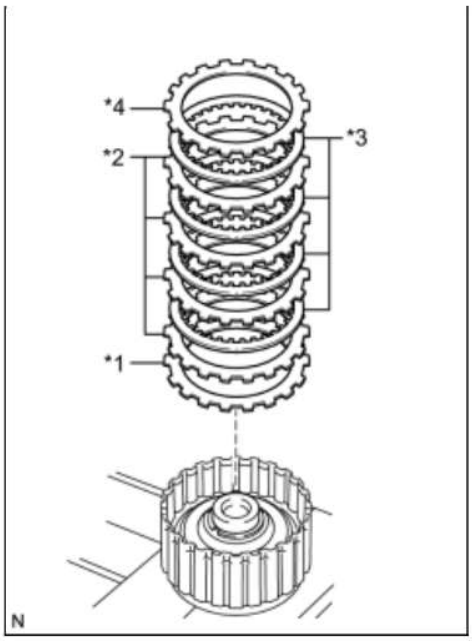
Text in Illustration

*1	Clutch Cushion Plate
*2	No. 1 Clutch Plate
*3	No. 1 Clutch Disc
*4	Forward Clutch Flange

Installation order:
*1 - *2 - *3 - *2 - *3 - *2 - *3 - *2 - *3 - *4

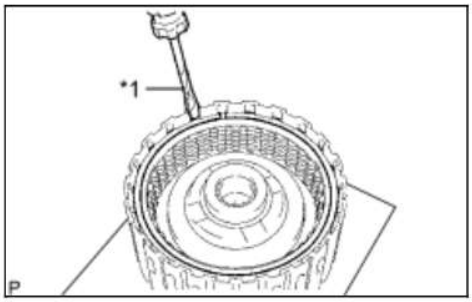
NOTICE:

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Make sure that the discs, plates, flange and the cushion plate are installed in the correct order.

(b) Using a screwdriver, install the snap ring.



Text in Illustration

*1	Protective Tape

NOTICE:

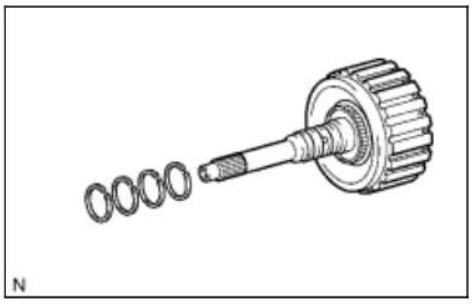
Be careful not to damage the input shaft.

HINT:

Tape the screwdriver tip before use.

44. INSPECT PACK CLEARANCE OF NO. 1 CLUTCH INFO

45. INSTALL CLUTCH DRUM OIL SEAL RING



(a) Coat 4 new clutch drum oil seal rings with ATF.

(b) Squeeze the ends of the 4 clutch drum oil seal rings together, and install them to the input shaft groove.

NOTICE:

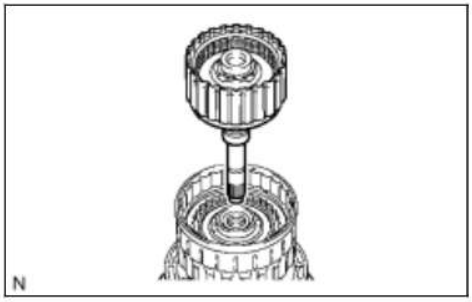
Do not expand the ring ends excessively.

HINT:

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After installing the clutch drum oil seal rings, check that they rotate smoothly.

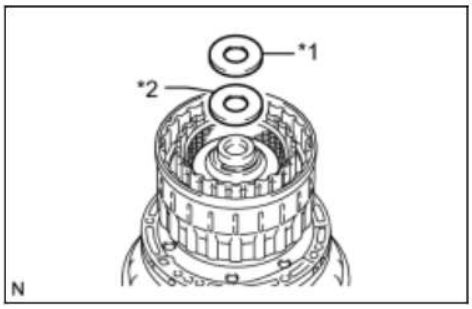
46. INSTALL INPUT SHAFT



(a) Install the input shaft to the reverse clutch drum sub-assembly.

(b) Install the input shaft rear thrust bearing race and the thrust needle roller bearing to the input shaft.

Text in Illationstration

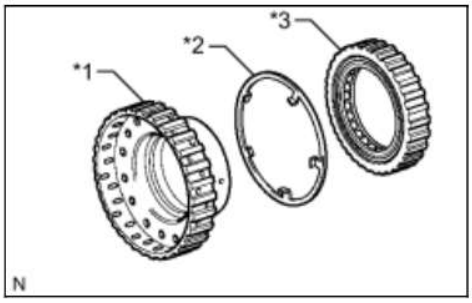


*1	Thrust Needle Roller Bearing
*2	Input Shaft Rear Thrust Bearing Race

Bearing and Race Diameter

ITEM	INSIDE	OUTSIDE
Thrust needle roller bearing	20.0 mm (0.787 in.)	41.0 mm (1.614 in.)
Input shaft rear thrust bearing race	20.0 mm (0.787 in.)	35.6 mm (1.402 in.)

47. INSTALL NO. 4 ONE-WAY CLUTCH ASSEMBLY



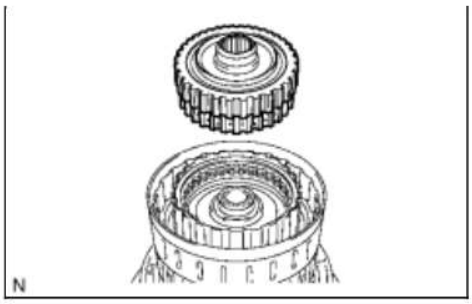
(a) Install the No. 2 clutch hub thrust washer and the No. 4 one-way clutch assembly to the coast clutch hub sub-assembly.

Text in Illustration

*1	Coast Clutch Hub Sub-assembly
*2	No. 2 Clutch Hub Thrust Washer
*3	No. 4 One-way Clutch Assembly

48. INSTALL COAST CLUTCH HUB SUB-ASSEMBLY

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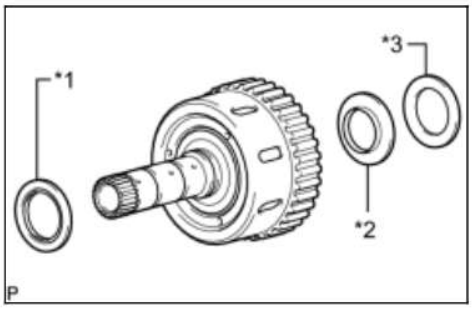


(a) Install the coast clutch hub sub-assembly to the reverse clutch drum sub-assembly.

49. INSTALL FORWARD CLUTCH HUB SUB-ASSEMBLY

(a) Install the 2 thrust needle roller bearings and the No. 2 thrust bearing race to the forward clutch hub sub-assembly.

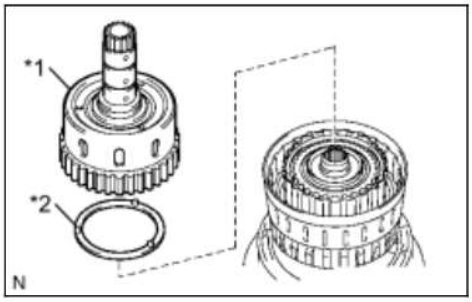
Text in Illustration



*1	Thrust Needle Roller Bearing A
*2	Thrust Needle Roller Bearing B
*3	No. 2 Thrust Bearing Race

Bearing and Race Diameter

ITEM	INSIDE	OUTSIDE
Thrust needle roller bearing A	42.5 mm (1.673 in.)	61.2 mm (2.409 in.)
Thrust needle roller bearing B	33.3 mm (1.311 in.)	51.2 mm (2.016 in.)
No. 2 thrust bearing race	31.0 mm (1.220 in.)	48.0 mm (1.890 in.)



(b) Install the No. 3 clutch hub thrust washer and the forward clutch hub sub-assembly to the reverse clutch drum sub-assembly.

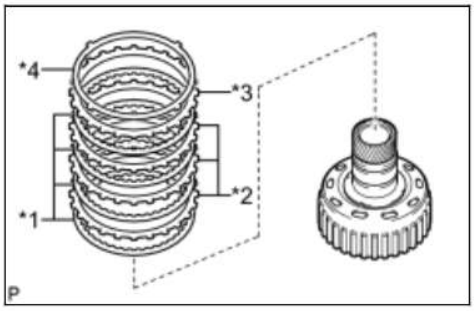
Text in Illustration

*1	Forward Clutch Hub Sub-Assembly
*2	No. 3 Clutch Hub Thrust Washer

50. INSTALL NO. 3 CLUTCH DISC (REAR CLUTCH DISC)

(a) Install the clutch cushion plate, reverse clutch flange, 4 No. 3 clutch discs and the 3 No. 3 clutch plates to the reverse clutch hub sub-assembly.

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Text in Illustration

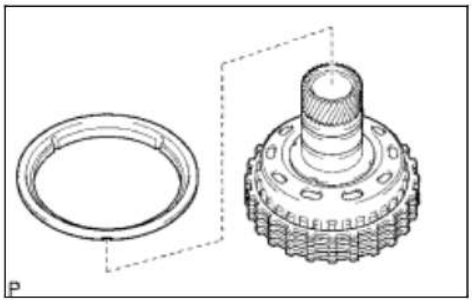
*1	No. 3 Clutch Disc
*2	No. 3 Clutch Plate
*3	Reverse Clutch Flange
*4	Clutch Cushion Plate

Installation order:
*1 - *2 - *1 - *2 - *1 - *2 - *1 - *3 - *4

NOTICE:

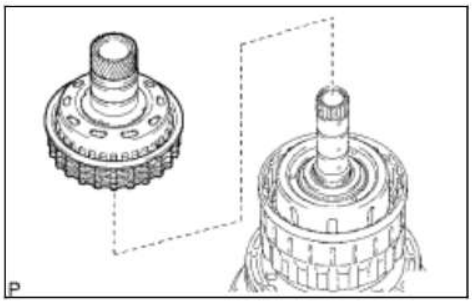
Make sure that the discs, plates, flange and the cushion plate are installed in the correct order.

51. INSTALL REVERSE CLUTCH REACTION SLEEVE



(a) Install the reverse clutch reaction sleeve to the reverse clutch hub sub-assembly.

52. INSTALL REVERSE CLUTCH HUB SUB-ASSEMBLY



(a) Install the reverse clutch hub sub-assembly to the reverse clutch drum sub-assembly.

(b) Using a screwdriver, install the snap ring to the reverse clutch piston sub-assembly.

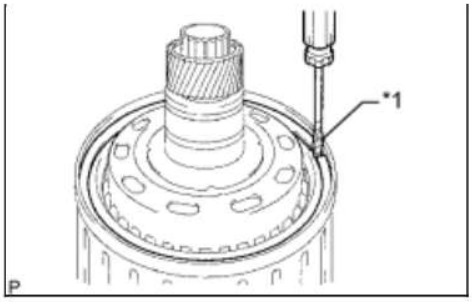
Text in Illustration

*1	Protective Tape

NOTICE:

Be careful not to damage the reverse clutch piston sub-assembly.

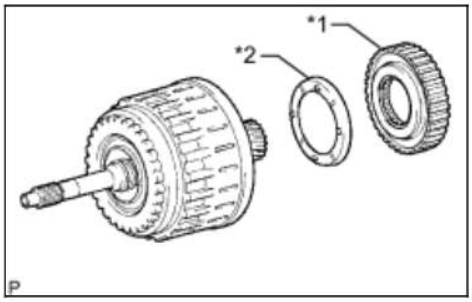
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HINT:

Tape the screwdriver tip before use.

53. INSTALL NO. 2 ONE-WAY CLUTCH ASSEMBLY



(a) Install the input shaft clutch drum thrust washer and the No. 2 one-way clutch assembly to the clutch drum and input shaft assembly.

Text in Illustration

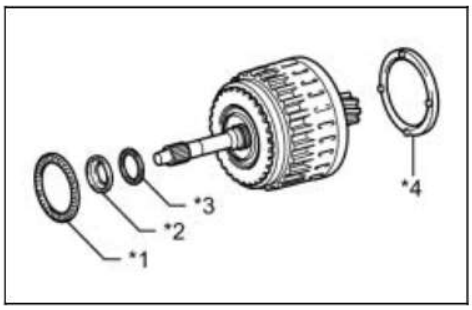
*1	No. 2 One-way Clutch Assembly
*2	Input Shaft Clutch Drum Thrust Washer

54. INSTALL CLUTCH DRUM AND INPUT SHAFT ASSEMBLY

(a) Install the input shaft front thrust needle roller bearing and the thrust needle roller bearing to the clutch drum and input shaft assembly.

Text in Illustration

*1	Thrust Needle Roller Bearing
*2	Input Shaft Front Thrust Bearing Race
*3	Input Shaft Front Thrust Needle Roller Bearing
*4	Clutch Drum Thrust Washer



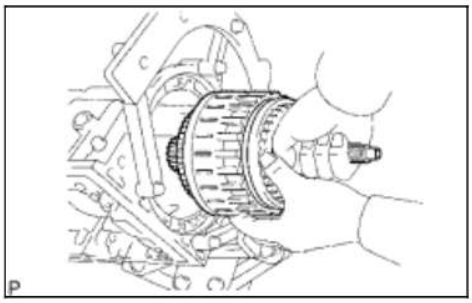
Bearing and Race Diameter

ITEM	INSIDE	OUTSIDE
Thrust needle roller bearing	71.9 mm (2.831 in.)	85.6 mm (3.370 in.)
Input shaft front thrust bearing race	37.0 mm (1.457 in.)	51.2 mm (2.016 in.)
Input shaft front thrust needle roller bearing	33.5 mm (1.319 in.)	48.0 mm (1.890 in.)

(b) Coat the input shaft front thrust bearing race and the clutch drum thrust washer with petroleum

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jelly, and install them onto the clutch drum and input shaft assembly.

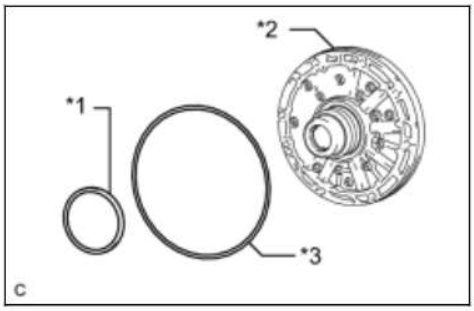


(c) Install the clutch drum and input shaft assembly to the automatic transmission case sub-assembly.

55. INSTALL OIL PUMP ASSEMBLY

(a) Install the No. 1 thrust bearing race to the oil pump assembly.

Text in Illustration



*1	No. 1 Thrust Bearing Race
*2	Oil Pump Assembly
*3	O-ring

Race Diameter

ITEM	INSIDE	OUTSIDE
No. 1 thrust bearing race	74.2 mm (2.921 in.)	87.7 mm (3.453 in.)

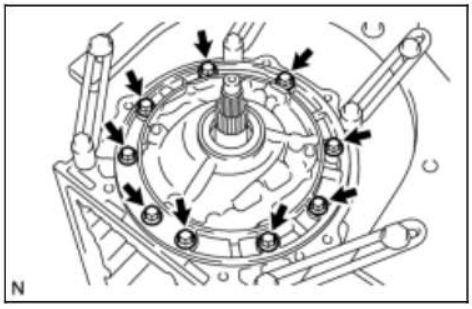
(b) Coat a new O-ring with ATF, and install it to the oil pump assembly.

(c) Place the oil pump assembly through the input shaft, and align the bolt holes of the oil pump assembly with the automatic transmission case sub-assembly.

NOTICE:

Be careful not to damage the O-ring.

(d) Hold the input shaft, and lightly press the oil pump assembly to slide the clutch drum oil seal rings into the clutch drum and input shaft assembly.



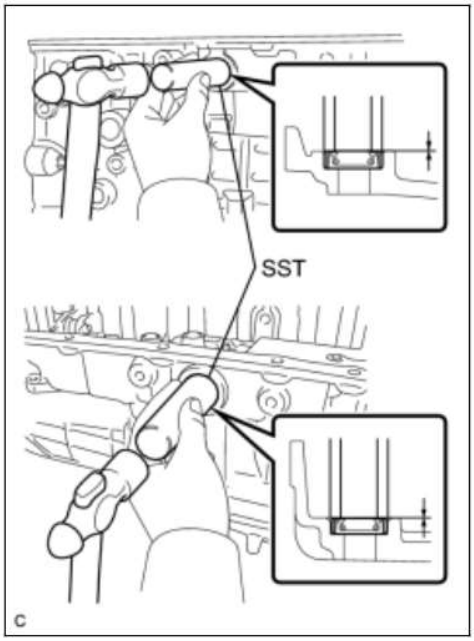
(e) Install the 9 bolts.

Torque: 21 N·m (215 kgf·cm, 16ft·lbf)

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56. INSPECT INDIVIDUAL PISTON OPERATION INFO

57. INSTALL MANUAL VALVE LEVER SHAFT OIL SEAL



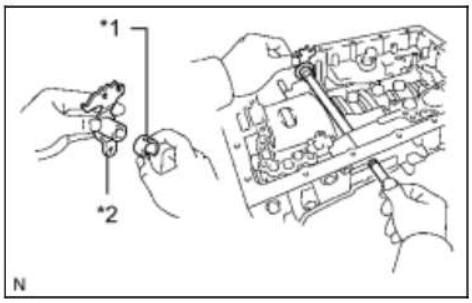
(a) Using SST and a hammer, drive in 2 new manual valve lever shaft oil seals to the automatic transmission case sub-assembly.

SST: 09350-30020

09350-07110

(b) Coat the manual valve lever shaft oil seal lips with MP grease.

58. INSTALL MANUAL VALVE LEVER SUB-ASSEMBLY

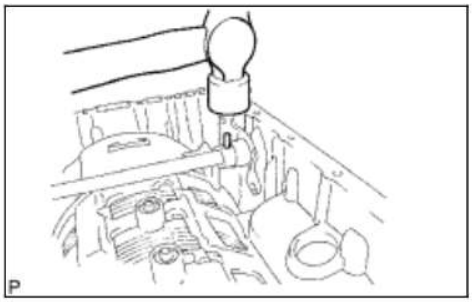


(a) Install a new spacer to the manual valve lever sub-assembly.

Text in Illustration

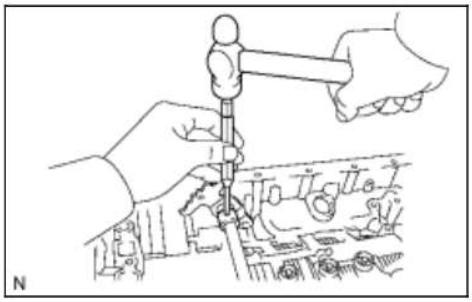
*1	Spacer
*2	Manual Valve Lever Sub-assembly

(b) Install the manual valve lever shaft to the automatic transmission case sub-assembly through the manual valve lever sub-assembly.



(c) Using a hammer, drive in a new spring pin.

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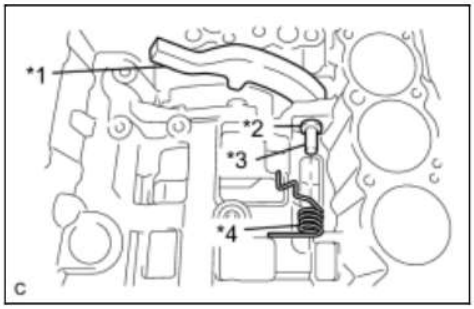


(d) Align the manual valve lever indentation with the spacer hole, and stake them together with a punch.

(e) Make sure that the shaft rotates smoothly.

59. INSTALL PARKING LOCK PAWL SHAFT

(a) Install a new E-ring to the parking lock pawl shaft.

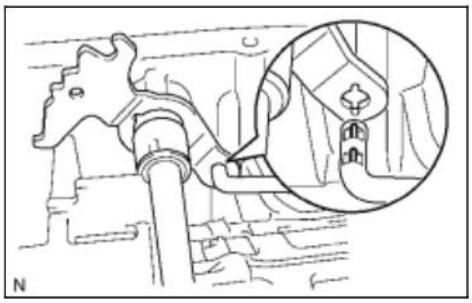


(b) Install the parking lock pawl, parking lock pawl shaft and the torsion spring to the automatic transmission case sub-assembly.

Text in Illustration

*1	Parking Lock Pawl
*2	E-ring
*3	Parking Lock Pawl Shaft
*4	Torsion Spring

60. INSTALL PARKING LOCK ROD SUB-ASSEMBLY

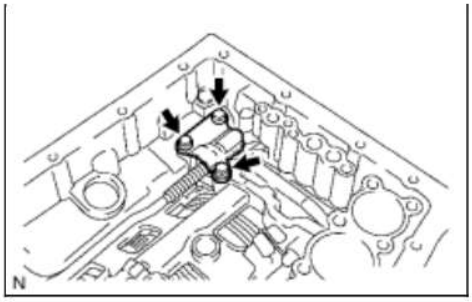


(a) Install the parking lock rod sub-assembly to the manual valve lever sub-assembly.

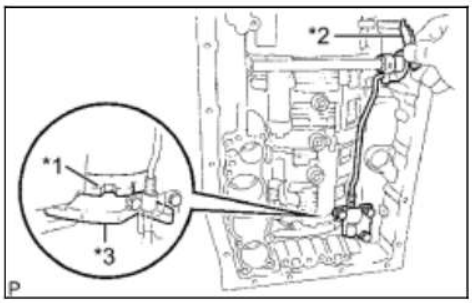
61. INSTALL PARKING LOCK PAWL BRACKET

(a) Install the parking lock pawl bracket to the automatic transmission case sub-assembly with the 3 bolts.

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Torque: 7.3 N·m (74 kgf·cm, 65in·lbf)

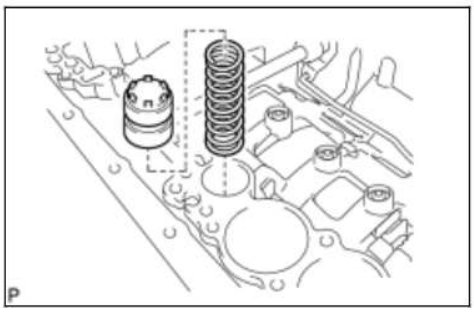


(b) Shift the manual valve lever sub-assembly to the P position, and confirm that the rear planetary gear is correctly locked by the parking lock pawl.

Text in Illustration

*1	Rear Planetary Gear
*2	Manual Valve Lever Sub-assembly
*3	Parking Lock Pawl

62. INSTALL B-1 ACCUMULATOR VALVE



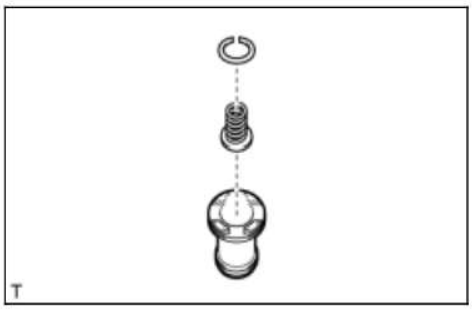
(a) Install the spring and the B-1 accumulator valve to the hole.

B-1 Accumulator Spring

FREE LENGTH	OUTER DIAMETER	COLOR
46.36 mm (1.825 in.)	17.1 mm (0.673 in.)	Natural

63. INSTALL C-3 ACCUMULATOR PISTON

(a) Using a screwdriver, install the spring sub-assembly to the C-3 accumulator piston with the snap ring.



C-3 Accumulator Spring Sub-assembly

FREE LENGTH	COIL OUTER DIAMETER	COLOR
23.0 mm (0.906 in.)	14.0 mm (0.551 in.)	Pink

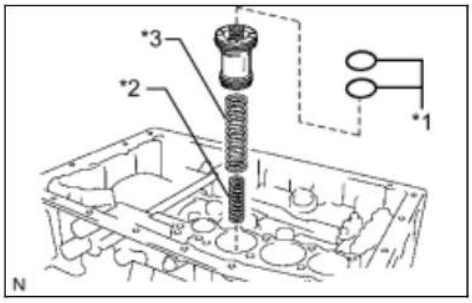
NOTICE:

Be careful not to damage the C-3 accumulator piston.

HINT:

Tape the screwdriver tip before use.

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(b) Coat 2 new O-rings with ATF, and install them to the C-3 accumulator piston.

Text in Illustration

*1	O-ring
*2	Inner Spring
*3	Outer Spring

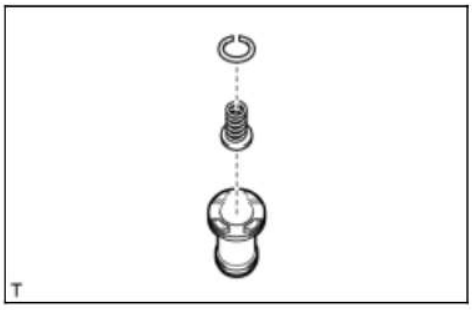
(c) Install the 2 springs and the C-3 accumulator piston to the hole.

C-3 Accumulator Spring

SPRING	FREE LENGTH	OUTER DIAMETER	COLOR
Inner	44.0 mm (1.732 in.)	14.0 mm (0.551 in.)	Yellow
Outer	76.65 mm (3.018 in.)	20.1 mm (0.791 in.)	White

64. INSTALL B-3 ACCUMULATOR PISTON

(a) Using a screwdriver, install the spring sub-assembly to the B-3 accumulator piston with the snap ring.



B-3 Accumulator Spring Sub-assembly

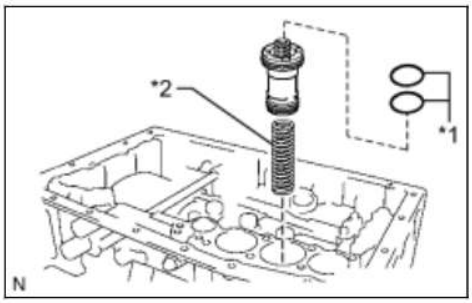
FREE LENGTH	COIL OUTER DIAMETER	COLOR
30.0 mm (1.181 in.)	16.2 mm (0.638 in.)	White

NOTICE:

Be careful not to damage the B-3 accumulator piston.

HINT:

Tape the screwdriver tip before use.



(b) Coat 2 new O-rings with ATF, and install them to the B-3 accumulator piston.

Text in Illustration

*1	O-ring
*2	Spring

(c) Install the spring and the B-3 accumulator piston to the hole.

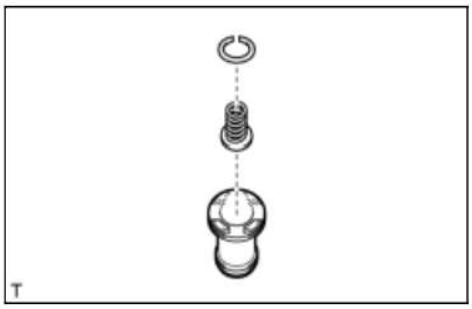
B-3 Accumulator Spring

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FREE LENGTH	OUTER DIAMETER	COLOR
64.50 mm (2.539 in.)	19.5 mm (0.768 in.)	Orange

65. INSTALL C-2 ACCUMULATOR PISTON

(a) Using a screwdriver, install the spring sub-assembly to the C-2 accumulator piston with the snap ring.



C-2 Accumulator Spring Sub-assembly

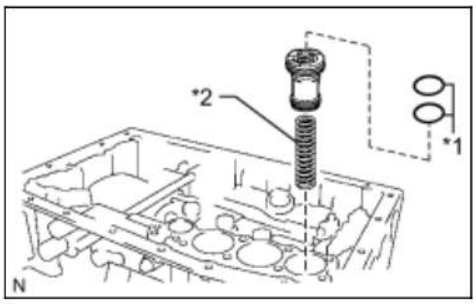
FREE LENGTH	COIL OUTER DIAMETER	COLOR
18.50 mm (0.728 in.)	14.0 mm (0.551 in.)	Green

NOTICE:

Be careful not to damage the C-2 accumulator piston.

HINT:

Tape the screwdriver tip before use.



(b) Coat 2 new O-rings with ATF, and install them to the C-2 accumulator piston.

Text in Illustration

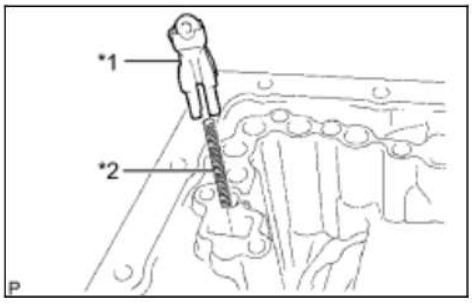
*1	O-ring
*2	Spring

(c) Install the spring and the C-2 accumulator piston to the hole.

C-2 Accumulator Spring

FREE LENGTH	OUTER DIAMETER	COLOR
65.07 mm (2.562 in.)	16.2 mm (0.638 in.)	Pink

66. INSTALL CHECK BALL BODY



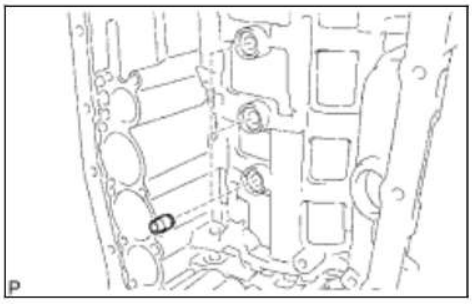
(a) Install the check ball body and the compression spring to the automatic transmission case sub-assembly.

Text in Illustration

*1	Check Ball Body
*2	Compression Spring

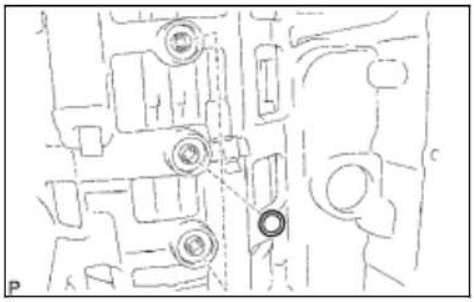
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67. INSTALL BRAKE DRUM GASKET



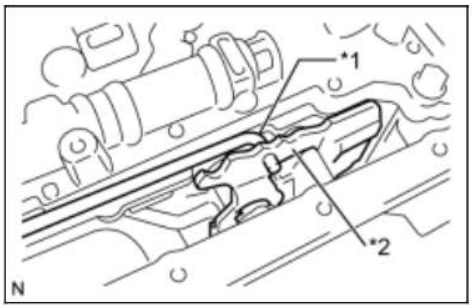
(a) Install 3 new brake drum gaskets to the automatic transmission case sub-assembly.

68. INSTALL TRANSMISSION CASE GASKET



(a) Install 3 new transmission case gaskets to the automatic transmission case sub-assembly.

69. INSTALL TRANSMISSION VALVE BODY ASSEMBLY



(a) Connect the manual valve connecting rod sub-assembly to the manual valve lever sub-assembly.

Text in Illustration

*1	Manual Valve Connecting Rod Sub-assembly
*2	Manual Valve Lever Sub-assembly

(b) Install the transmission valve body assembly to the automatic transmission case sub-assembly with the 19 bolts.

Torque: 11 N·m (112 kgf·cm, 8ft·lbf)

HINT:

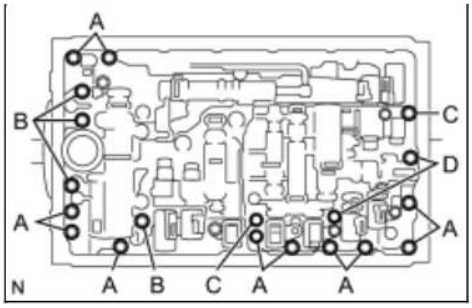
Each bolt length is indicated below.

Bolt length:

Bolt A

25 mm (0.984 in.)

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Bolt B

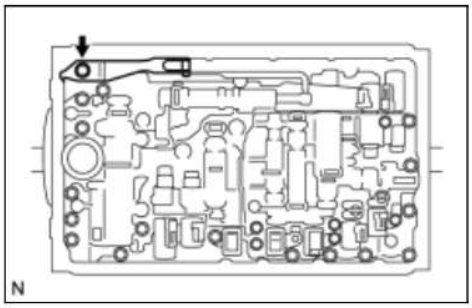
36 mm (1.42 in.)

Bolt C

45 mm (1.77 in.)

Bolt D

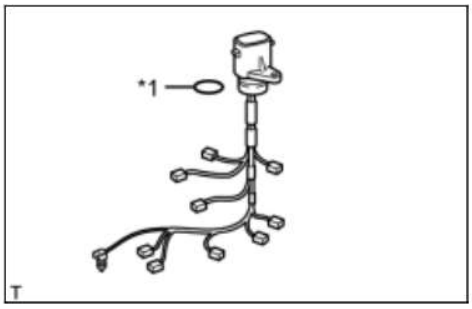
50 mm (1.97 in.)



(c) Install the detent spring and the detent spring cover to the transmission valve body assembly with the bolt.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

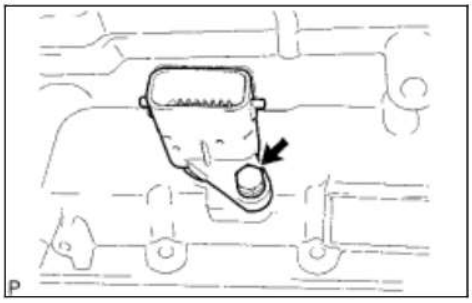
70. INSTALL TRANSMISSION WIRE



(a) Coat a new O-ring with ATF, and install it to the transmission wire.

Text in Illustration

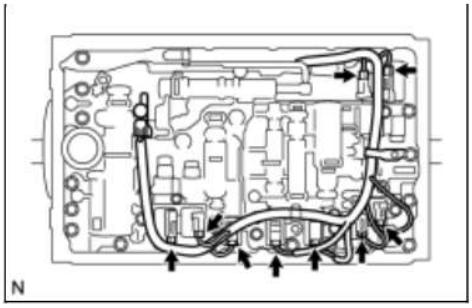
*1	O-ring



(b) Install the transmission wire with the bolt.

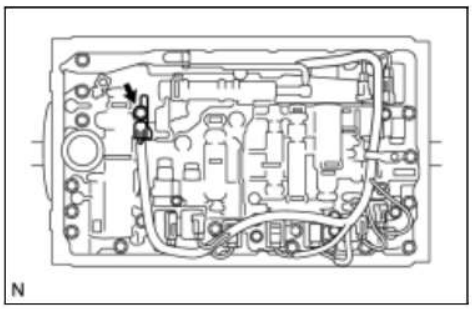
Torque: 5.4 N·m (55 kgf·cm, 48in·lbf)

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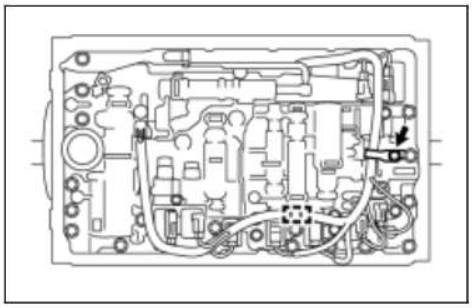
(c) Connect the 9 solenoid valve connectors.

(d) Coat the ATF temperature sensor O-ring with ATF.



(e) Install the ATF temperature sensor and the temperature sensor clamp with the bolt.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

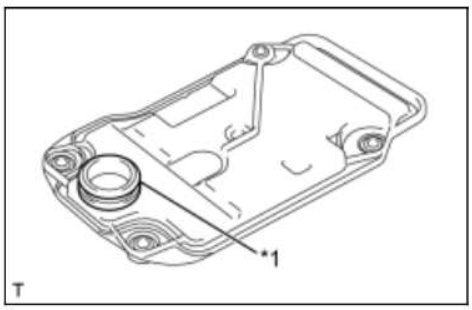


(f) Install the valve body wire harness clamp with the 2 bolt.

Torque: 6.4 N·m (65 kgf·cm, 57in·lbf)

(g) Engage the wire harness clamp.

71. INSTALL VALVE BODY OIL STRAINER ASSEMBLY

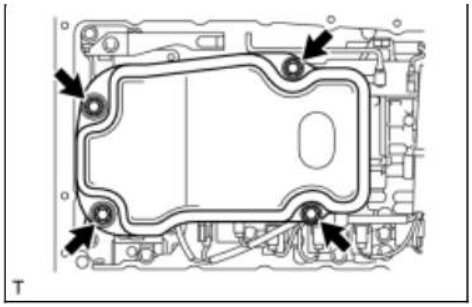


(a) Coat a new O-ring with ATF, and install it to the valve body oil strainer assembly.

Text in Illustration

*1	O-ring

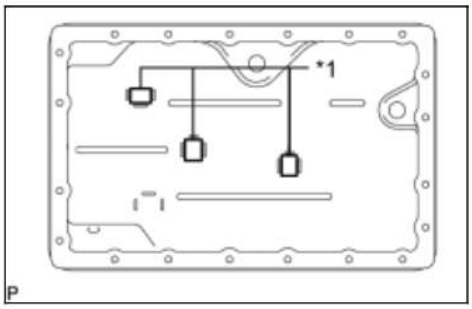
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(b) Install the valve body oil strainer assembly to the transmission valve body assembly with the 4 bolts.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

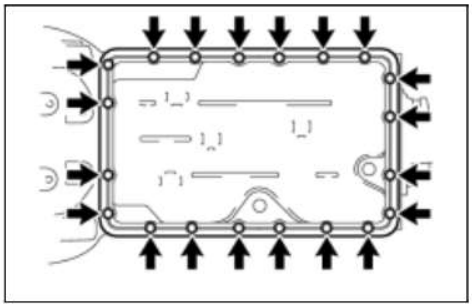
72. INSTALL AUTOMATIC TRANSMISSION OIL PAN SUB-ASSEMBLY



(a) Install the 3 transmission oil cleaner magnets to the automatic transmission oil pan sub-assembly.

Text in Illustration

*1	Transmission Oil Cleaner Magnet



(b) Install a new automatic transmission oil pan gasket and the automatic transmission oil pan sub-assembly with the 20 bolts.

Torque: 7.0 N·m (71 kgf·cm, 62in·lbf)

(c) Install the drain plug and a new gasket.

Torque: 20 N·m (204 kgf·cm, 15ft·lbf)

(d) Using a socket hexagon wrench 5 mm, install the overflow plug and a new gasket.

Torque: 20 N·m (204 kgf·cm, 15ft·lbf)

73. INSTALL OUTPUT SHAFT THRUST BEARING

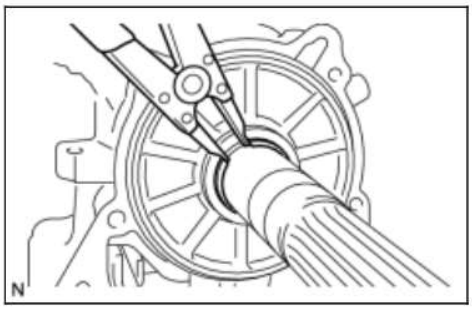
(a) Install the output shaft thrust bearing race, output shaft thrust bearing and the rear output shaft thrust bearing race to the output shaft of the rear planetary gear assembly.

Bearing and Race Diameter

ITEM	INSIDE	OUTSIDE
Output shaft thrust bearing race	37.0 mm (1.457 in.)	51.2 mm (2.016 in.)
Output shaft thrust bearing	36.1 mm (1.421 in.)	52.5 mm (2.067 in.)

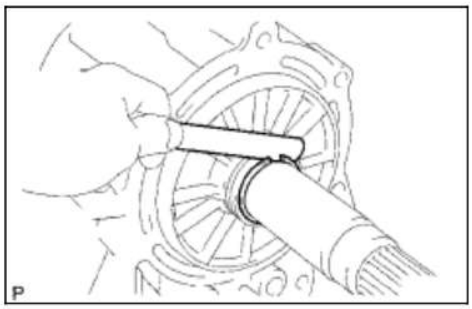
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Rear output shaft thrust bearing race	36.1 mm (1.421 in.)	51.0 mm (2.007 in.)



(b) Using a snap ring expander, install the snap ring.

(c) Using a feeler gauge, measure the clearance between the snap ring and the rear output shaft thrust bearing race.



Standard clearance:
0.02 to 0.12 mm (0.000787 to 0.00472 in.)

If the clearance is outside the standard range, select another rear output shaft thrust bearing race that brings the clearance within the standard range.

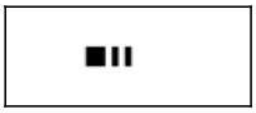
HINT:

There are 12 different thicknesses for the rear output shaft thrust bearing race.

Race Thickness

PART NO.	MARK	THICKNESS
SU003-03819	I	3.80 mm (0.150 in.)
SU003-03820	II	3.85 mm (0.152 in.)
SU003-03821	III	3.90 mm (0.154 in.)

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SU003-03822		3.95 mm (0.156 in.)
SU003-03823		4.00 mm (0.157 in.)
SU003-03824		4.05 mm (0.159 in.)
SU003-03825		4.10 mm (0.161 in.)
SU003-03826		4.15 mm (0.163 in.)
SU003-03827		4.20 mm (0.165 in.)
SU003-03828		4.25 mm (0.167 in.)
SU003-03829		4.30 mm (0.169 in.)
SU003-0383		4.35 mm (0.171 in.)

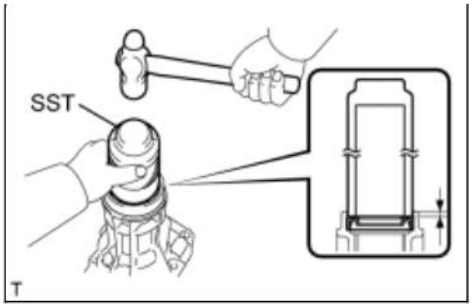
74. INSTALL AUTOMATIC TRANSMISSION EXTENSION HOUSING OIL SEAL

(a) Using SST and a hammer, drive in the automatic transmission extension housing oil seal to the extension housing sub-assembly.

SST: 09309-37010

Drive in depth:

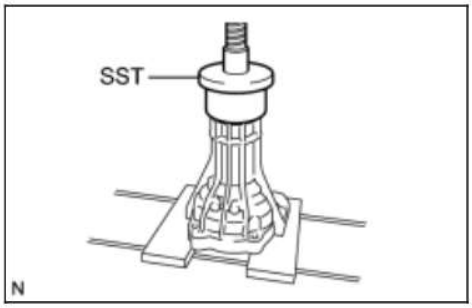
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5.4 to 5.8 mm (0.213 to 0.228 in.)

(b) Coat the lip of a new automatic transmission extension housing oil seal with MP grease.

75. INSTALL EXTENSION HOUSING DUST DEFLECTOR

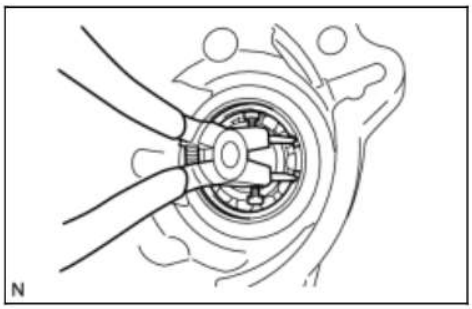


(a) Using SST and a press, install a new extension housing dust deflector to the extension housing sub-assembly.

SST: 09950-60020

09951-01030

76. INSTALL TRANSMISSION CASE ADAPTER RADIAL BALL BEARING



(a) Install the transmission case adapter radial ball bearing to the extension housing sub-assembly.

(b) Using snap ring pliers, install the snap ring to the extension housing sub-assembly.

77. INSTALL EXTENSION HOUSING SUB-ASSEMBLY

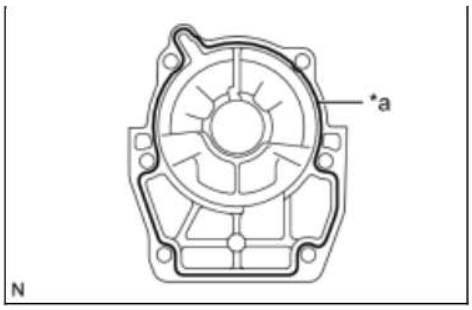
(a) Clean and degrease the threads of the 6 bolts and the contact surfaces of the case and the housing with non-residue solvent.

(b) Apply seal packing to the extension housing sub-assembly as shown in the illustration.

Text in Illustration

*a	Seal Packing (Seal Diameter: 1.2 mm (0.0472 in.))

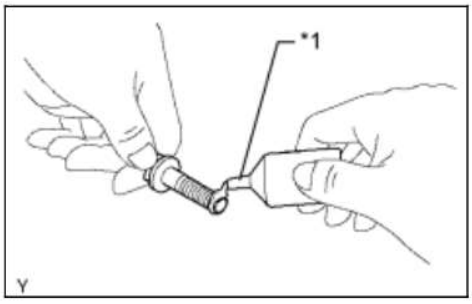
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Seal packing:
Toyota Genuine Seal Packing 1281, Three Bond 1281 or equivalent

NOTICE:

Assemble the extension housing sub-assembly within 10 minutes after the seal packing application.



(c) Apply adhesive to 2 or 3 threads on the end of the 6 bolts.

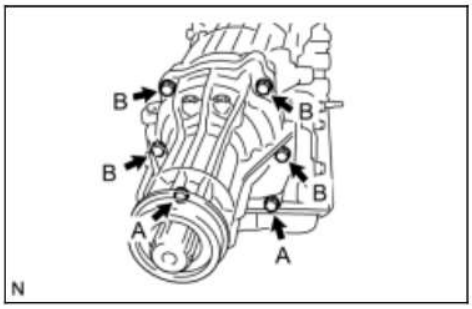
Text in Illustration

*1	Adhesive

Adhesive:
Toyota Genuine Adhesive 1344, Three Bond 1344 or equivalent

(d) Install the extension housing sub-assembly to the automatic transmission case sub-assembly with the 6 bolts.

Torque: 34 N·m (345 kgf·cm, 25ft·lbf)



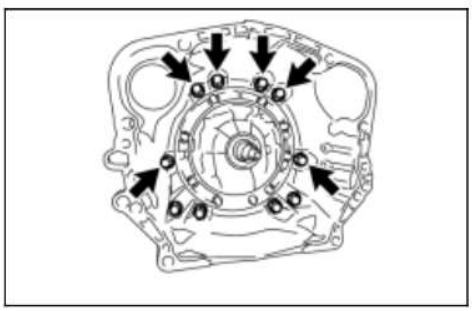
HINT:

Each bolt length is indicated below.

Bolt length:
for Bolt A
35 mm (1.378 in.)
for Bolt B
45 mm (1.772 in.)

78. INSTALL AUTOMATIC TRANSMISSION HOUSING

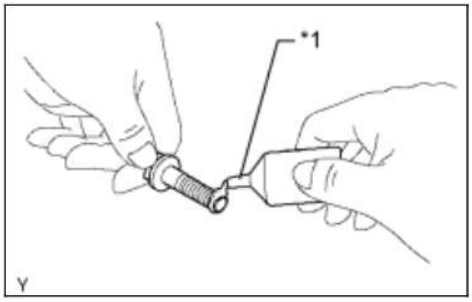
(a) Clean and degrease the bolts and the bolt holes with non-residue solvent.



(b) Install the automatic transmission housing to the automatic transmission case sub-assembly with the 6 bolts.

Torque: 34 N·m (345 kgf·cm, 25ft·lbf)

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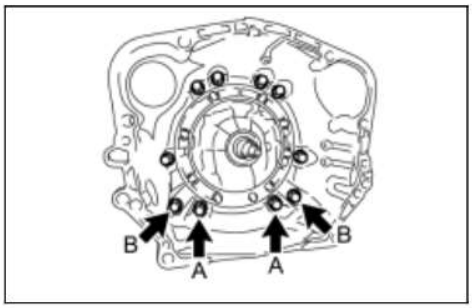


(c) Apply adhesive to 2 or 3 threads on the end of the 4 bolts.

Text in Illustration

*1	Adhesive

Adhesive:
Toyota Genuine Adhesive 1344, Three Bond 1344 or equivalent

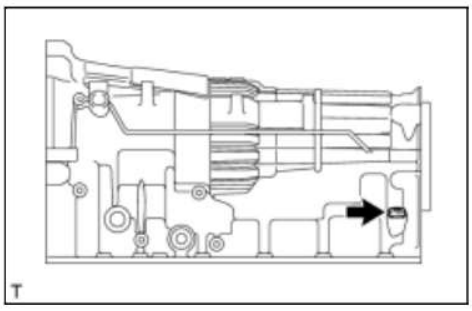


(d) Install the automatic transmission housing to the automatic transmission case sub-assembly with the 4 bolts.

Bolt A (M10 bolt) - Torque: 34 N·m (345 kgf·cm, 25ft·lbf)

Bolt B (M12 bolt) - Torque: 57 N·m (579 kgf·cm, 42ft·lbf)

79. INSTALL AUTOMATIC TRANSMISSION CASE PLUG

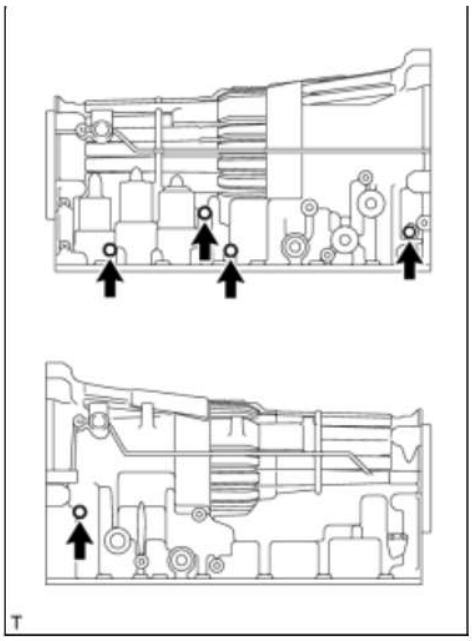


(a) Coat a new O-ring with ATF, and install it to the automatic transmission case plug.

(b) Using "TORX" socket wrench T55, install the automatic transmission case plug to the automatic transmission case sub-assembly.

Torque: 39 N·m (400 kgf·cm, 29ft·lbf)

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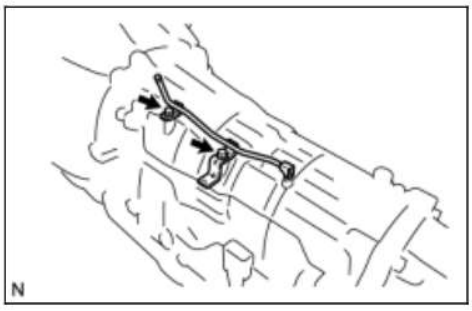


(c) Coat 5 new O-ring with ATF, and install it to the 5 automatic transmission case plug.

(d) Install the 5 automatic transmission case plugs to the automatic transmission case sub-assembly.

Torque: 7.4 N·m (75 kgf·cm, 65in·lbf)

80. INSTALL AUTOMATIC TRANSMISSION BREATHER TUBE



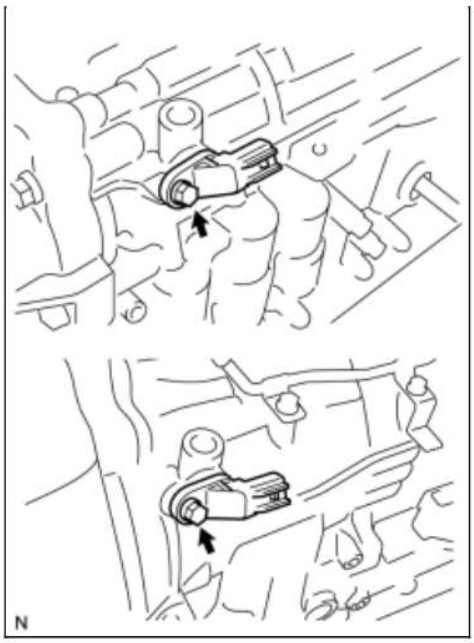
(a) Install the automatic transmission breather tube to the automatic transmission case sub-assembly with the 2 bolts.

Torque: 5.4 N·m (55 kgf·cm, 48in·lbf)

81. INSTALL TRANSMISSION REVOLUTION SENSOR

(a) Coat 2 new O-rings with ATF, and install them to the 2 transmission revolution sensors.

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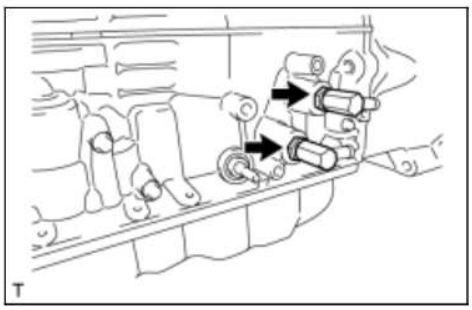


(b) Install the 2 transmission revolution sensors to the automatic transmission case sub-assembly with the 2 bolts.

Torque: 5.4 N·m (55 kgf·cm, 48in·lbf)

82. INSTALL OIL COOLER TUBE UNION

(a) Coat 2 new O-rings with ATF, and install the 2 oil cooler tube unions.

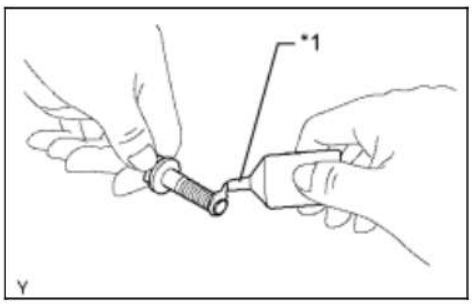


(b) Install the 2 oil cooler tube unions to the automatic transmission case sub-assembly.

Torque: 39 N·m (393 kgf·cm, 28ft·lbf)

83. INSTALL PARK/NEUTRAL POSITION SWITCH ASSEMBLY

(a) Clean the bolt and the bolt hole.



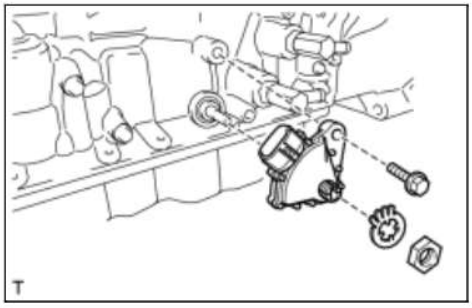
(b) Apply adhesive to 2 or 3 threads on the end of the bolt.

Text in Illustration

*1	Adhesive

Adhesive:
Toyota Genuine Adhesive 1344, Three Bond 1344 or equivalent

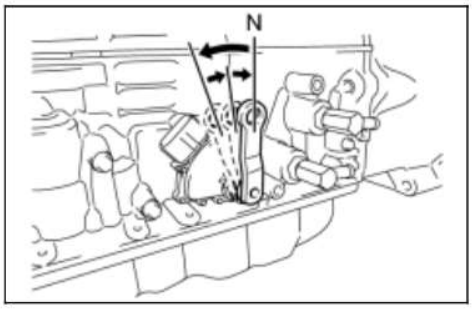
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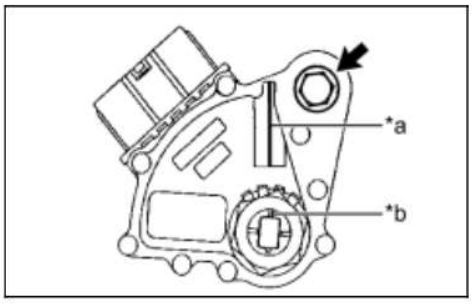
(c) Temporarily install the park/neutral position switch assembly to the automatic transmission case sub-assembly with the bolt.

(d) Install a new lock washer and the nut.

Torque: 6.9 N·m (70 kgf·cm, 61in·lbf)



(e) Turn the transmission control shaft lever RH counterclockwise until it stops, and turn it clockwise 2 notches to set it to the N position.

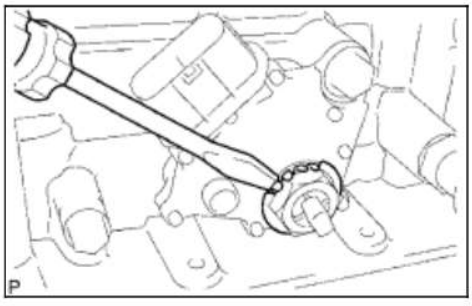


(f) Align the neutral basic line with the groove as shown in the illustration, and tighten the bolt.

Text in Illustration

*a	Neutral Basic Line
*b	Groove

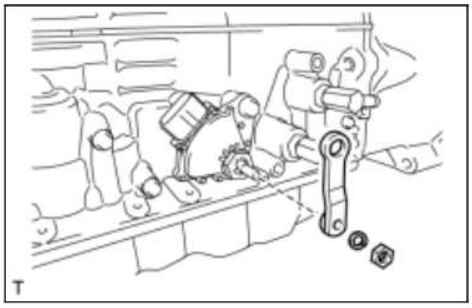
Torque: 13 N·m (130 kgf·cm, 9ft·lbf)



(g) Using a screwdriver, bend the tabs of the lock washer.

84. INSTALL TRANSMISSION CONTROL SHAFT LEVER RH

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(a) Install the transmission control shaft lever RH to the park/ neutral position switch assembly with the spring washer and nut.

Torque: 16 N·m (160 kgf·cm, 12ft·lbf)

85. INSTALL REFILL PLUG

(a) Coat a new O-ring with ATF, and install it to the refill plug.

(b) Install the refill plug.

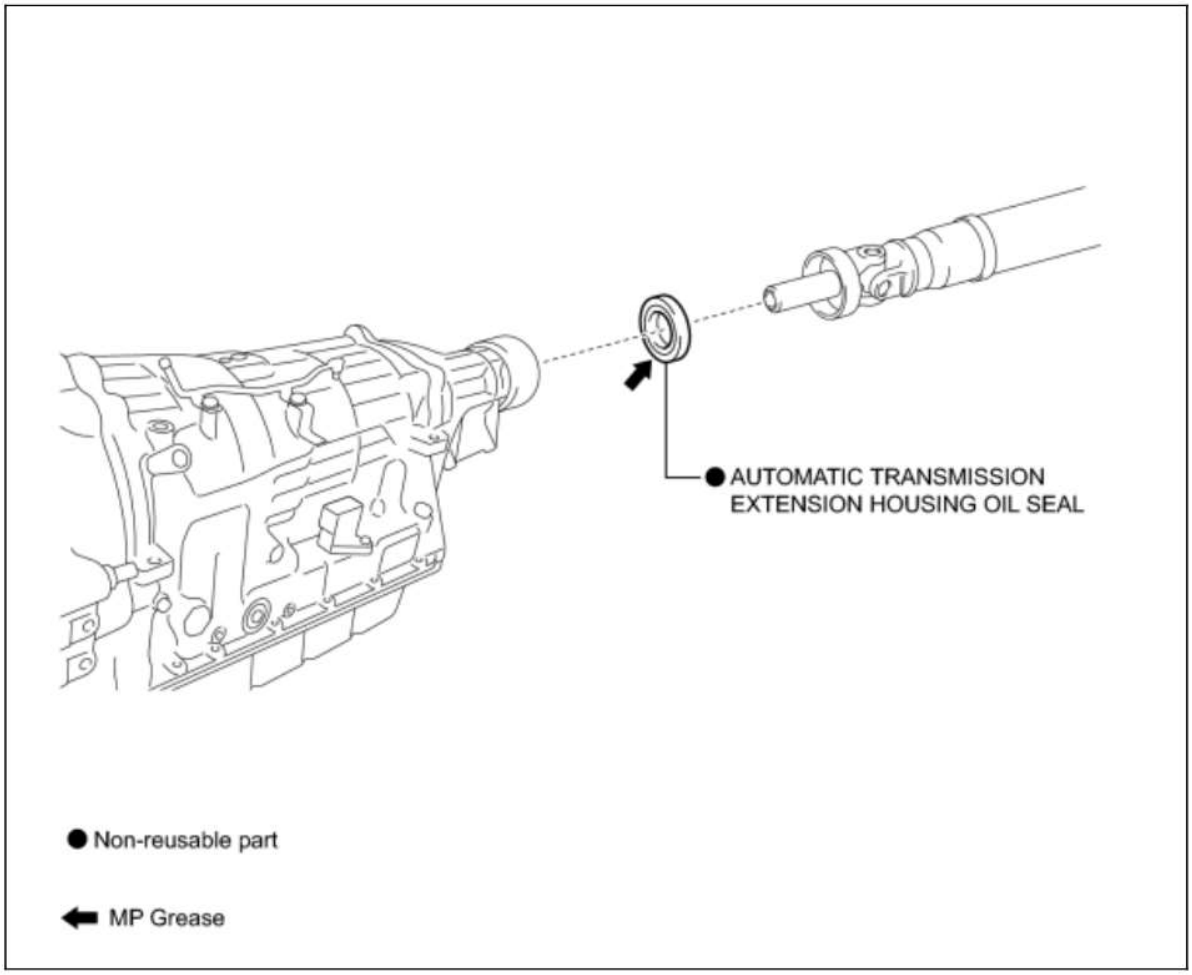
Torque: 39 N·m (400 kgf·cm, 29ft·lbf)

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Last Modified: 3-27-2012	6.4 K	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NRX01LX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: EXTENSION HOUSING REAR OIL SEAL: COMPONENTS (2013 FR-S)		

COMPONENTS

ILLUSTRATION



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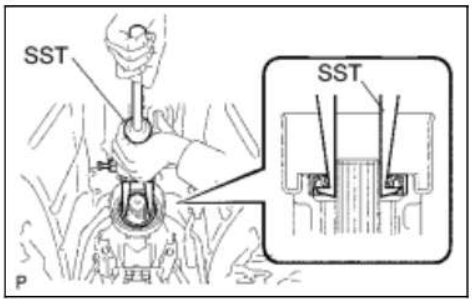
Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NRY01VX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: EXTENSION HOUSING REAR OIL SEAL: REPLACEMENT (2013 FR-S)		

REPLACEMENT

1. REMOVE PROPELLER SHAFT WITH CENTER BEARING ASSEMBLY

INFO

2. REMOVE AUTOMATIC TRANSMISSION EXTENSION HOUSING OIL SEAL

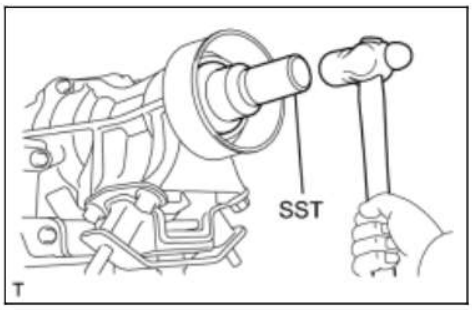


(a) Using SST, remove the automatic transmission extension housing oil seal.

SST: 09308-00010

3. INSTALL AUTOMATIC TRANSMISSION EXTENSION HOUSING OIL SEAL

(a) Coat the lip of a new automatic transmission extension housing oil seal with MP grease.



(b) Using SST and a hammer, tap in the automatic transmission extension housing oil seal.

SST: 09325-40010

Standard depth:

5.4 to 5.8 mm (0.213 to 0.228 in.)

NOTICE:

- Keep the lip free of foreign matter.
- Do not tap the oil seal at an angle.

4. INSTALL PROPELLER SHAFT WITH CENTER BEARING ASSEMBLY

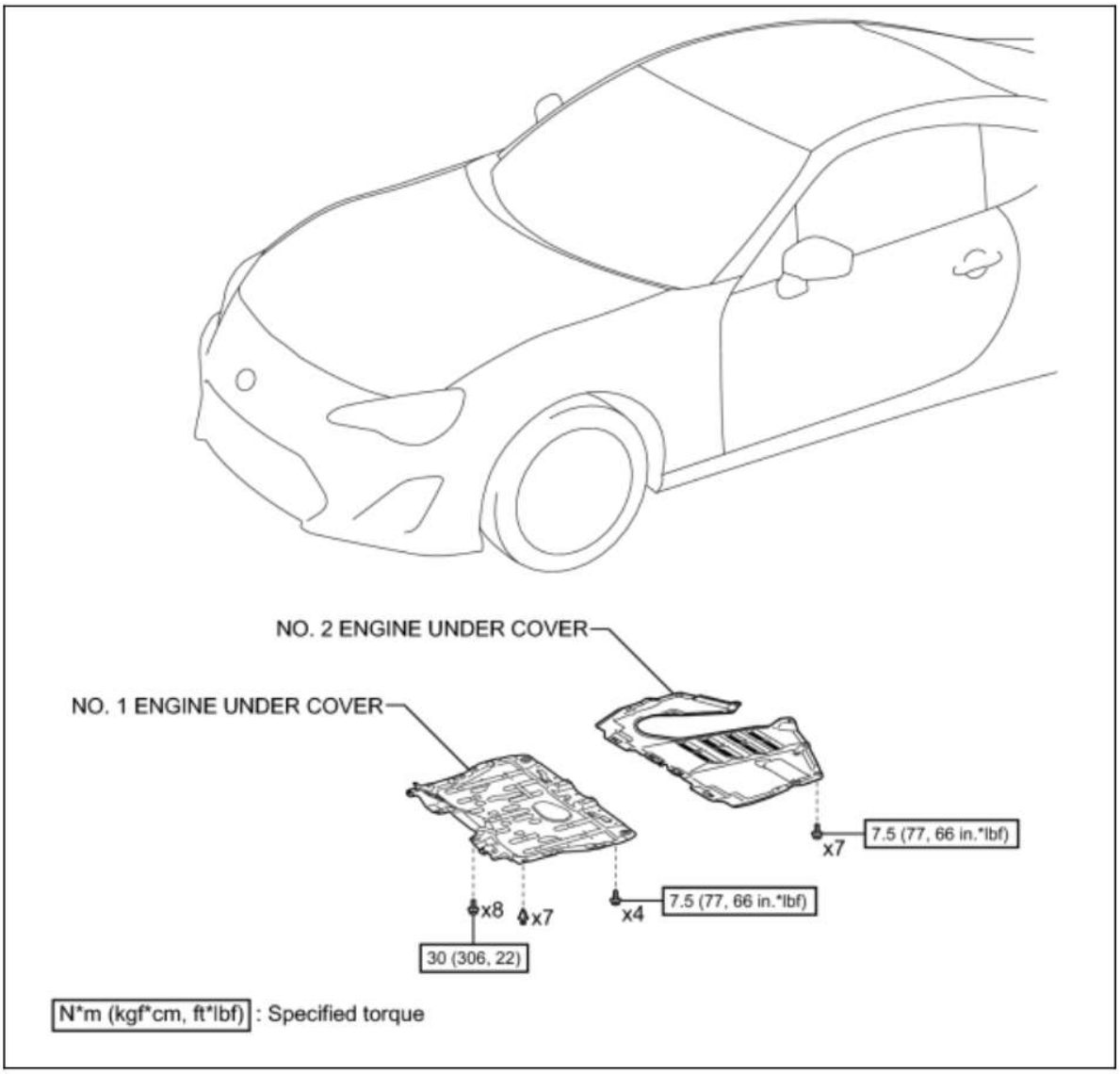
INFO

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Last Modified: 3-27-2012	6.4 K	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NOE01SX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: OIL COOLER: COMPONENTS (2013 FR-S)		

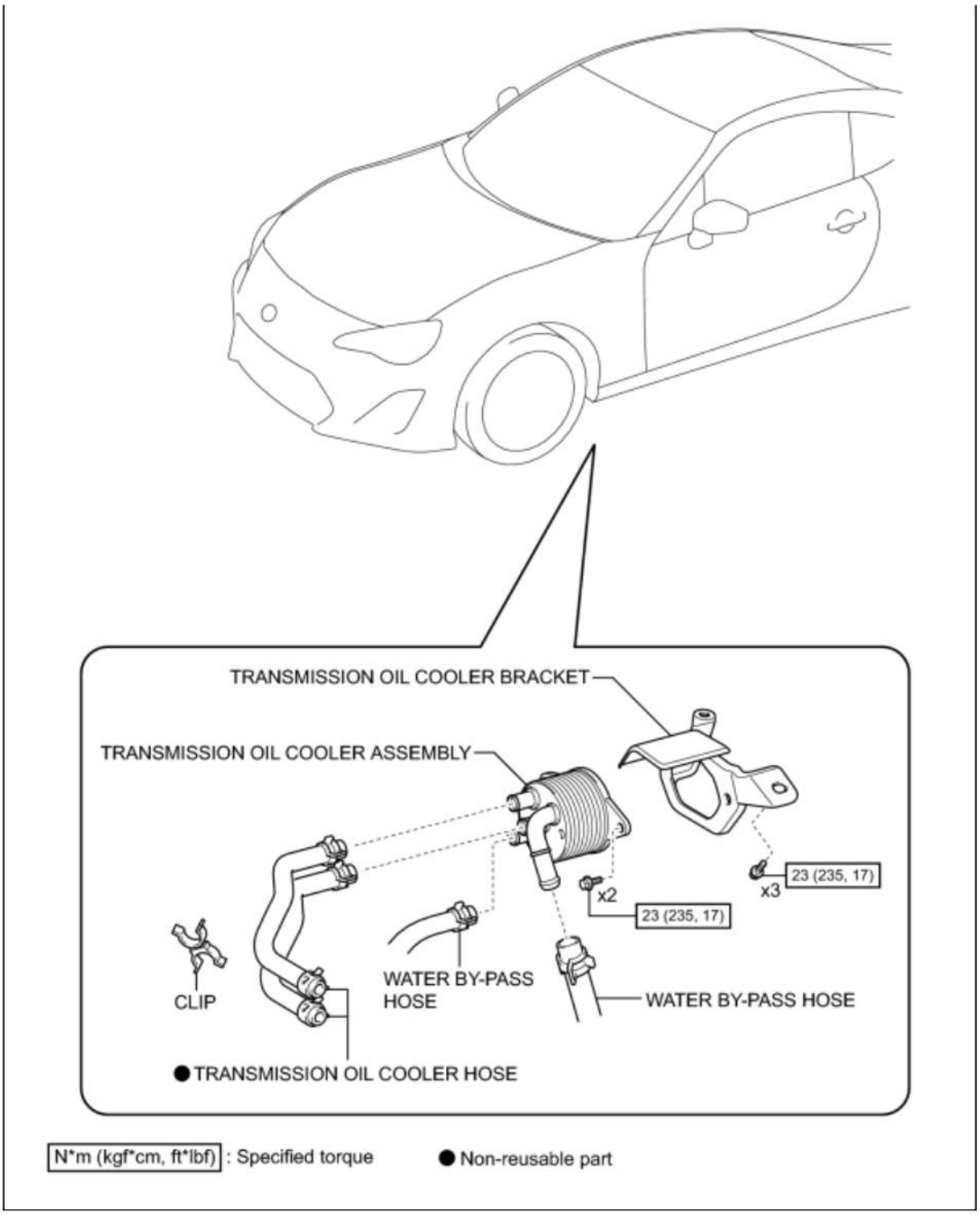
COMPONENTS

ILLUSTRATION



ILLUSTRATION

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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NOC026X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: OIL COOLER: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL TRANSMISSION OIL COOLER ASSEMBLY

(a) Install the transmission oil cooler to the transmission oil cooler bracket with the 2 bolts.

Torque: 23 N·m (235 kgf·cm, 17ft·lbf)

(b) Connect the 2 new oil cooler hoses to the transmission oil cooler with the 2 hose clamps.

(c) Install the transmission oil cooler with the 3 bolts.

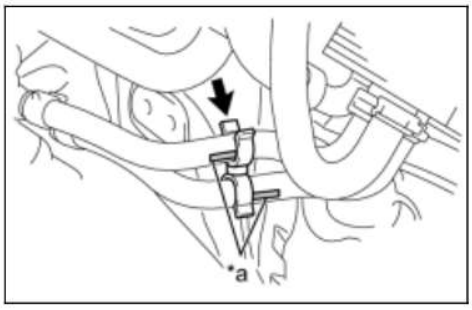
Torque: 23 N·m (235 kgf·cm, 17ft·lbf)

2. CONNECT WATER BY-PASS HOSE

(a) Connect the 2 water by-pass hoses to the transmission oil cooler with the 2 hose clamps.

3. CONNECT TRANSMISSION OIL COOLER HOSE

(a) Connect the 2 oil cooler hoses with the 2 hose clamps.



(b) Install the clip as shown in the illustration.

Text in Illustration

*a	Paint Mark

4. ADD ENGINE COOLANT INFO

5. ADD AUTOMATIC TRANSMISSION FLUID

INFO

6. INSPECT FOR ENGINE COOLANT LEAK INFO

7. INSPECT FOR AUTOMATIC TRANSMISSION FLUID LEAK

8. INSTALL NO. 2 ENGINE UNDER COVER INFO

9. INSTALL NO. 1 ENGINE UNDER COVER INFO

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Last Modified: 3-27-2012	6.4 G	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000VVP010X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: PARK / NEUTRAL POSITION SWITCH: ON-VEHICLE INSPECTION (2013 FR-S)		

ON-VEHICLE INSPECTION

1. INSPECT PARK/NEUTRAL POSITION SWITCH ASSEMBLY

(a) Apply the parking brake and turn the ignition switch to ON.

(b) Depress the brake pedal and check that the engine starts when the shift lever is in N or P, but does not start when the shift lever is in other positions.

(c) Check that the back-up light illuminates and the reverse warning buzzer sounds only when the shift lever is in R.

If a malfunction failure is found, check the park/neutral position switch assembly for continuity.



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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NOF026X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: OIL COOLER: REMOVAL (2013 FR-S)		

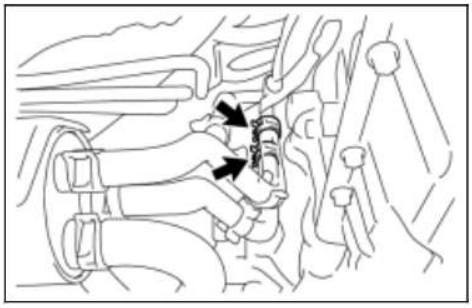
REMOVAL

1. REMOVE NO. 1 ENGINE UNDER COVER INFO

2. REMOVE NO. 2 ENGINE UNDER COVER INFO

3. DRAIN ENGINE COOLANT INFO

4. DISCONNECT TRANSMISSION OIL COOLER HOSE

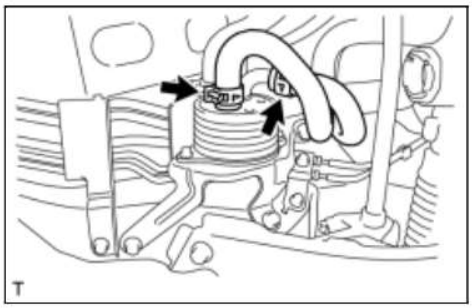


(a) Loosen the 2 hose clamps and disconnect the 2 oil cooler hoses from the transmission oil cooler.

NOTICE:

Use a container to catch any coolant which flows out of the oil cooler hoses.

5. DISCONNECT WATER BY-PASS HOSE



(a) Loosen the 2 hose clamps and disconnect the 2 water by-pass hoses.

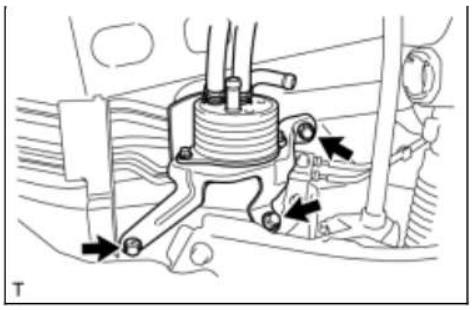
NOTICE:

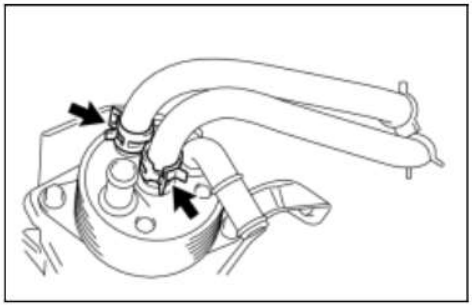
Use a container to catch any coolant which flows out of the water by-pass hoses.

6. REMOVE TRANSMISSION OIL COOLER ASSEMBLY

(a) Remove the 3 bolts and the transmission oil cooler.

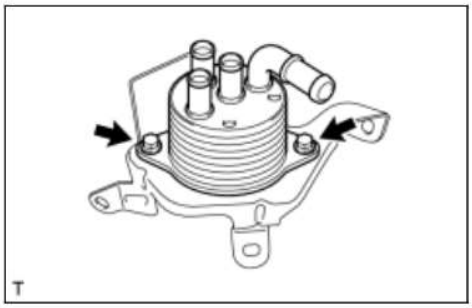
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(b) Loosen the 2 hose clamps and remove the 2 oil cooler hoses from the transmission oil cooler.

(c) Remove the clip from the oil cooler hoses.



(d) Remove the 2 bolts and the transmission oil cooler from the transmission oil cooler bracket.

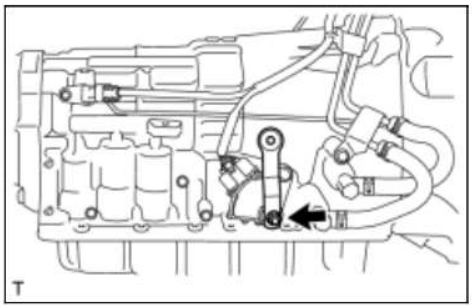
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Last Modified: 3-27-2012	6.4 N	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NOB01OX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: PARK / NEUTRAL POSITION SWITCH: ADJUSTMENT (2013 FR-S)		

ADJUSTMENT

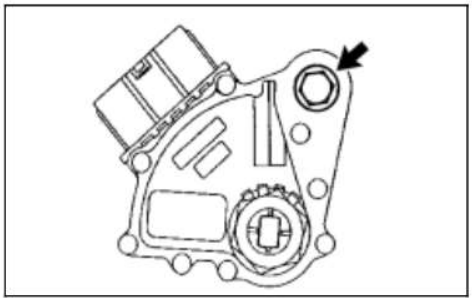
1. DISCONNECT TRANSMISSION CONTROL SHAFT LEVER RH

(a) While pushing the shift lock release button, move the shift lever to N.



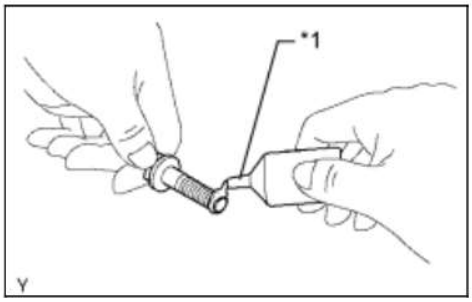
(b) Remove the nut and spring washer, and disconnect the transmission control shaft lever RH.

2. ADJUST PARK/NEUTRAL POSITION SWITCH ASSEMBLY



(a) Remove the bolt of the park/neutral position switch assembly.

(b) Clean the bolt and the bolt hole.



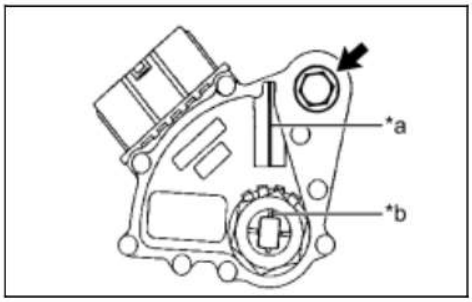
(c) Apply adhesive to 2 or 3 threads on the end of the bolt.

Text in Illustration

*1	Adhesive

Adhesive:
Toyota Genuine Adhesive 1344, Three Bond 1344 or equivalent

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(d) Align the neutral basic line with the groove as shown in the illustration.

Text in Illustration

*a	Neutral Basic Line
*b	Groove

(e) Hold the park/neutral position switch assembly in position and install the bolt.

Torque: 13 N·m (130 kgf·cm, 9ft·lbf)

3. CONNECT TRANSMISSION CONTROL SHAFT LEVER RH

(a) Connect the transmission control shaft lever RH with the spring washer and nut.

Torque: 16 N·m (160 kgf·cm, 12ft·lbf)

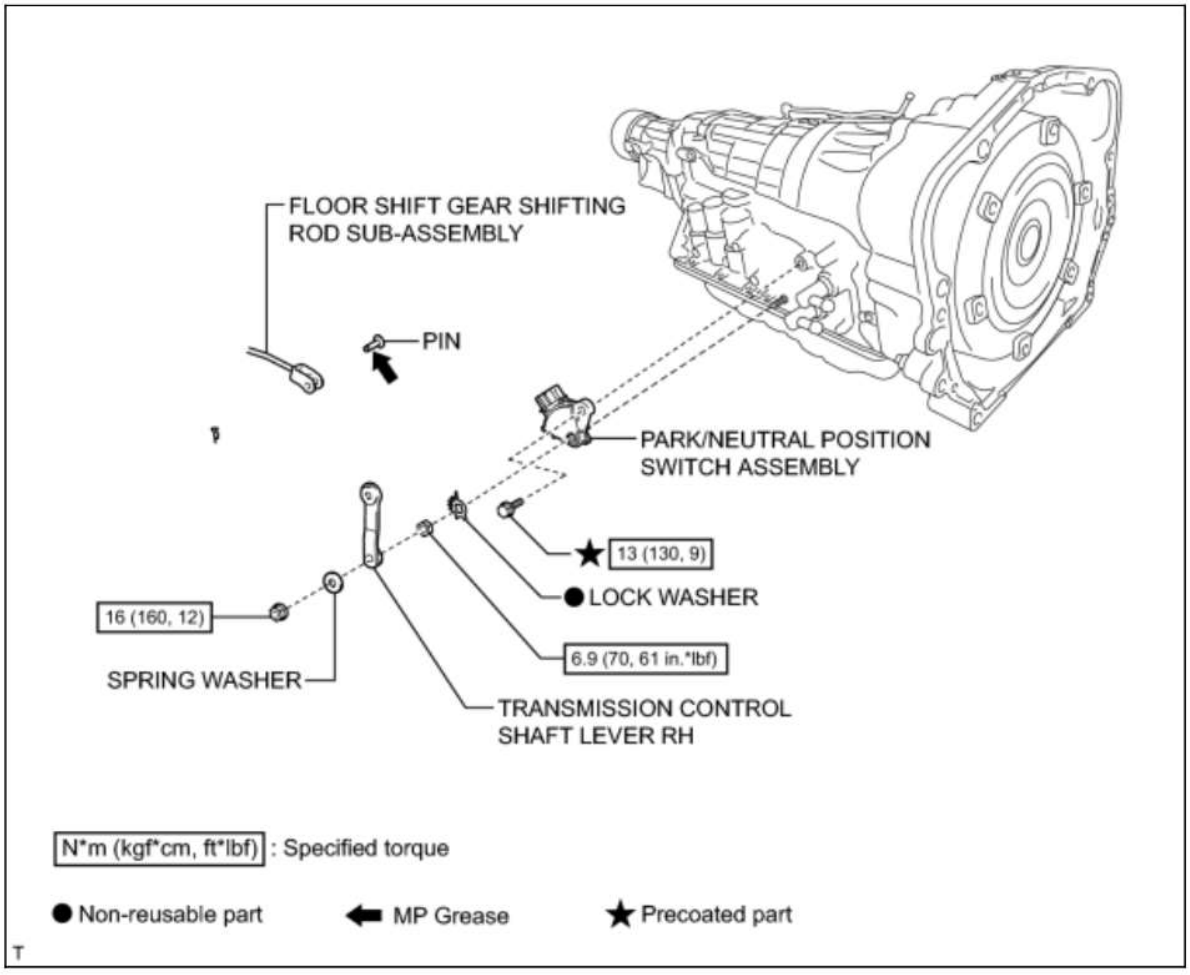
4. INSPECT PARK/NEUTRAL POSITION SWITCH ASSEMBLY INFO

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Last Modified: 3-27-2012	6.4 K	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NOE01RX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: PARK / NEUTRAL POSITION SWITCH: COMPONENTS (2013 FR-S)		

COMPONENTS

ILLUSTRATION



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Last Modified: 3-27-2012	6.4 G	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NOD01OX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: PARK / NEUTRAL POSITION SWITCH: INSPECTION (2013 FR-S)		

INSPECTION

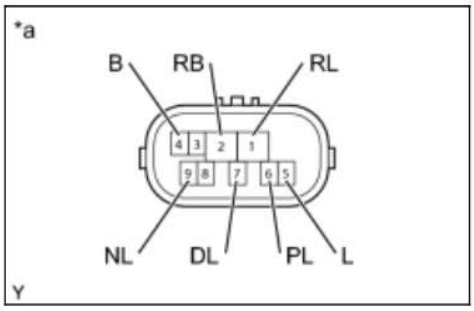
1. INSPECT PARK/NEUTRAL POSITION SWITCH ASSEMBLY

(a) Measure the resistance according to the value(s) in the table below.

Text in Illustration

*a	Component without harness connected (Park/Neutral Position Switch Assembly)

Standard Resistance:



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2 (RB) - 6 (PL) 4 (B) - 5 (L)	Shift lever in P	Below 1 Ω
	Shift lever not in P	10 kΩ or higher
2 (RB) - 1 (RL)	Shift lever in R	Below 1 Ω
	Shift lever not in R	10 kΩ or higher
2 (RB) - 9 (NL) 4 (B) - 5 (L)	Shift lever in N	Below 1 Ω
	Shift lever not in N	10 kΩ or higher
2 (RB) - 7 (DL)	Shift lever in D, M, "+" or "-"	Below 1 Ω
	Shift lever not in D, M, "+" or "-"	10 kΩ or higher

If the result is not as specified, replace the park/neutral position switch assembly.

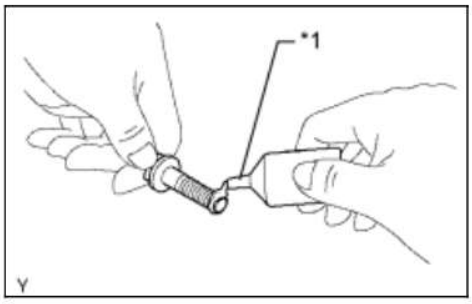
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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NOC025X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: PARK / NEUTRAL POSITION SWITCH: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL PARK/NEUTRAL POSITION SWITCH ASSEMBLY

(a) Clean the bolt and the bolt hole.



(b) Apply adhesive to 2 or 3 threads on the end of the bolt.

Text in Illustration

*1	Adhesive

Adhesive:
Toyota Genuine Adhesive 1344, Three Bond 1344 or equivalent

(c) Temporarily install the park/neutral position switch assembly with the bolt.

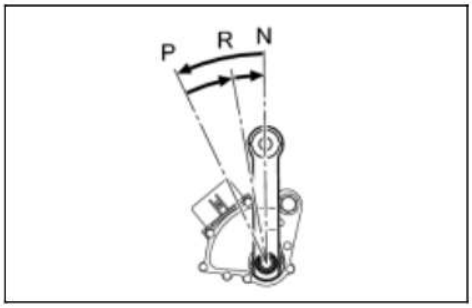
HINT:

Tighten the bolt to the specified torque when adjusting the park/neutral position switch assembly.

(d) Install a new lock washer and the nut to the park/neutral position switch assembly.

Torque: 6.9 N·m (70 kgf·cm, 61in·lbf)

(e) Temporarily install the transmission control shaft lever RH.



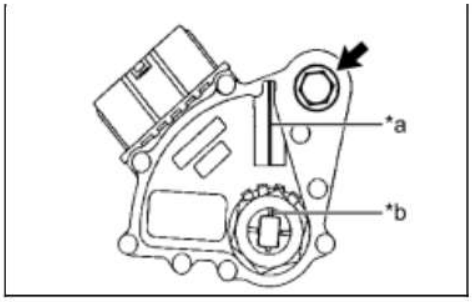
(f) Turn the transmission control shaft lever RH counterclockwise until it stops, and turn it clockwise 2 notches to set it to the N position.

(g) Remove the transmission control shaft lever RH.

(h) Align the neutral basic line with the groove as shown in the illustration, and tighten the bolt.

Text in Illustration

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*a	Neutral Basic Line
*b	Groove

Torque: 13 N·m (130 kgf·cm, 9ft·lbf)

(i) Using a screwdriver, bend the tabs of the lock washer.

(j) Connect the park/neutral position switch connector.

2. INSTALL TRANSMISSION CONTROL SHAFT LEVER RH

(a) Install the transmission control shaft lever RH with the spring washer and nut.

Torque: 16 N·m (160 kgf·cm, 12ft·lbf)

3. CONNECT FLOOR SHIFT GEAR SHIFTING ROD SUB-ASSEMBLY

(a) Apply MP grease to the pin.

(b) Install the floor shift gear shifting rod sub-assembly to the transmission control shaft lever RH with the spacer, pin and clip.

HINT:

Install the pin from the right side of the vehicle.

4. INSTALL FRONT EXHAUST PIPE ASSEMBLY

INFO

5. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL INFO

6. INSPECT SHIFT LEVER POSITION INFO

7. INSPECT PARK/NEUTRAL POSITION SWITCH ASSEMBLY INFO

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Last Modified: 3-27-2012	6.4 G	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000VVP010X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: PARK / NEUTRAL POSITION SWITCH: ON-VEHICLE INSPECTION (2013 FR-S)		

ON-VEHICLE INSPECTION

1. INSPECT PARK/NEUTRAL POSITION SWITCH ASSEMBLY

(a) Apply the parking brake and turn the ignition switch to ON.

(b) Depress the brake pedal and check that the engine starts when the shift lever is in N or P, but does not start when the shift lever is in other positions.

(c) Check that the back-up light illuminates and the reverse warning buzzer sounds only when the shift lever is in R.

If a malfunction failure is found, check the park/neutral position switch assembly for continuity.



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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NOF025X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: PARK / NEUTRAL POSITION SWITCH: REMOVAL (2013 FR-S)		

REMOVAL

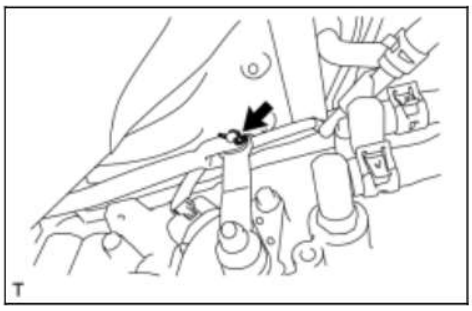
1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

INFO

2. REMOVE FRONT EXHAUST PIPE ASSEMBLY

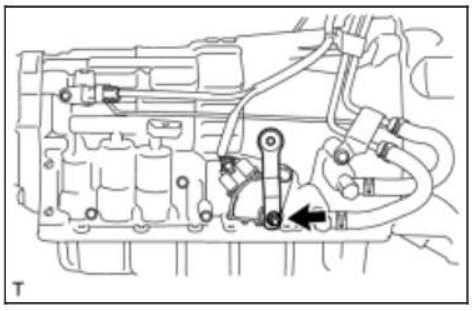
INFO

3. DISCONNECT FLOOR SHIFT GEAR SHIFTING ROD SUB-ASSEMBLY



(a) Remove the clip and pin the floor shift gear shifting rod sub-assembly from the transmission control shaft lever RH.

4. REMOVE TRANSMISSION CONTROL SHAFT LEVER RH



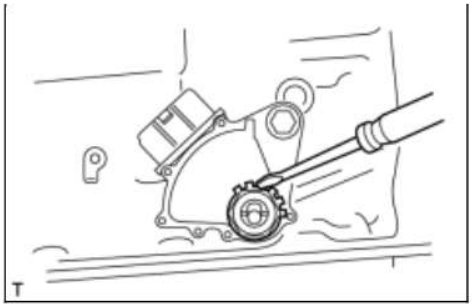
(a) Remove the nut, spring washer and the transmission control shaft lever RH.

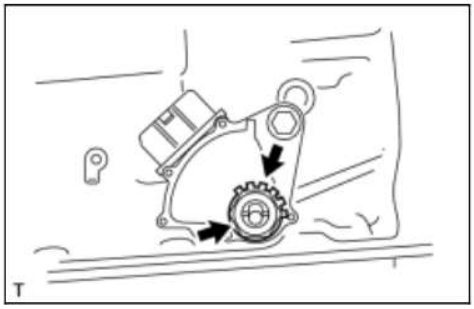
5. REMOVE PARK/NEUTRAL POSITION SWITCH ASSEMBLY

(a) Disconnect the park/neutral position switch connector.

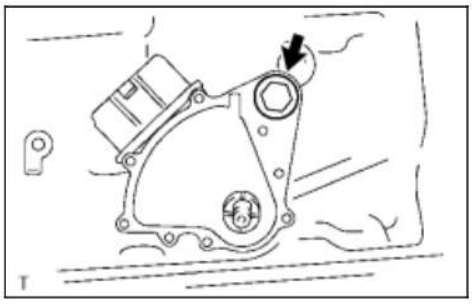
(b) Using a screwdriver, bend the tabs of the lock washer.

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(c) Remove the nut and the lock washer from the park/neutral position switch assembly.



(d) Remove the bolt and the park/neutral position switch assembly.

HINT:

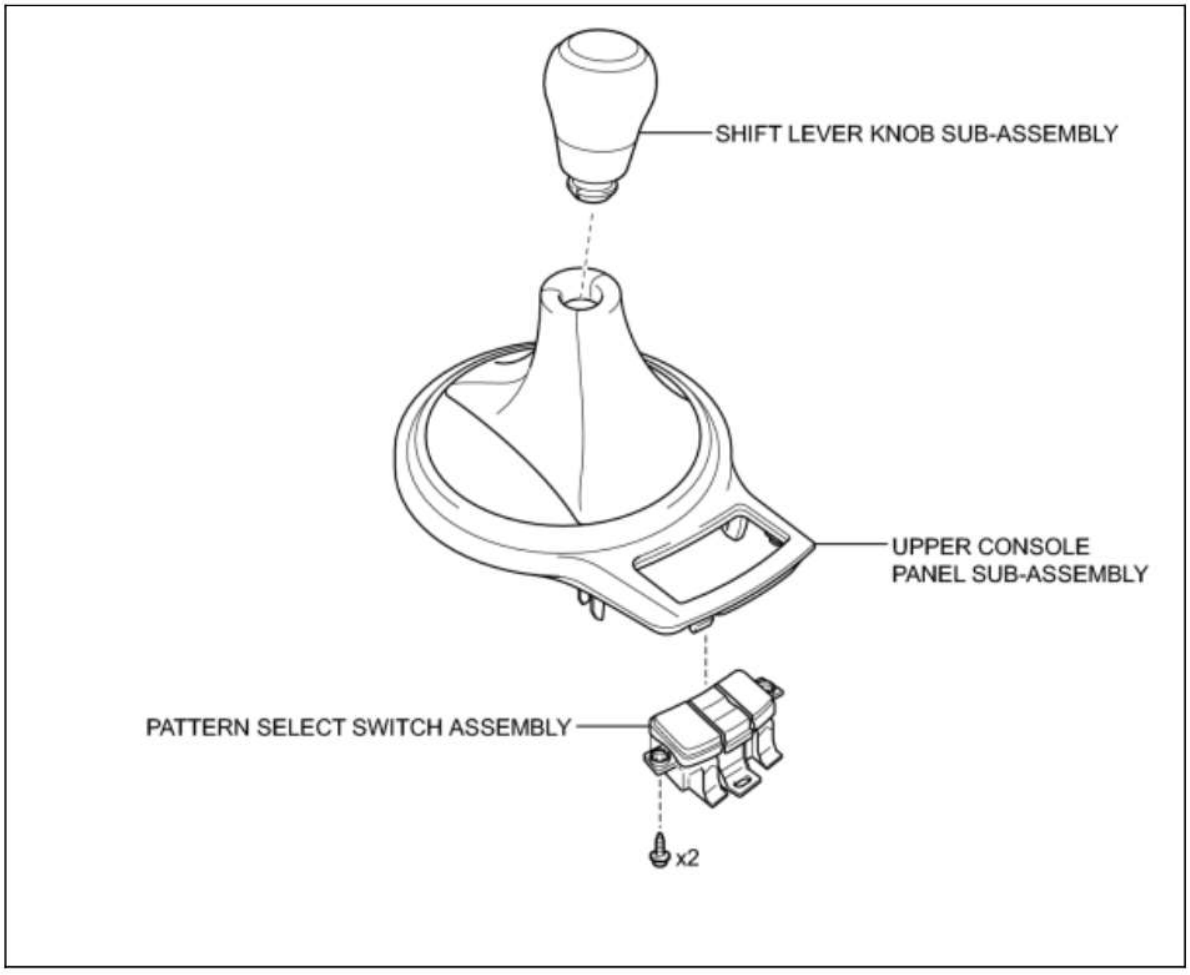
Make sure that the manual valve lever shaft has not been rotated prior to installing the park/neutral position switch assembly as the detent spring may become detached from the manual valve lever shaft.

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Last Modified: 3-27-2012	6.4 K	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000001T8Q01VX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: PATTERN SELECT SWITCH: COMPONENTS (2013 FR-S)		

COMPONENTS

ILLUSTRATION



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Last Modified: 3-27-2012	6.4 G	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NS8026X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: PATTERN SELECT SWITCH: INSPECTION (2013 FR-S)		

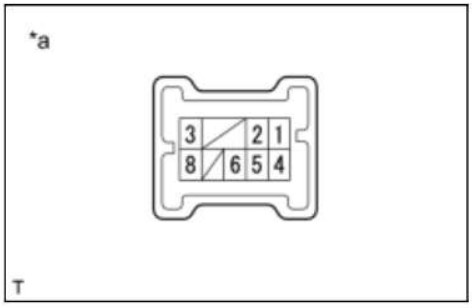
INSPECTION

1. INSPECT PATTERN SELECT SWITCH ASSEMBLY

(a) Measure the resistance according to the value(s) in the table below.

Text in Illustration

*a	Component without harness connected (Pattern Select Switch Assembly)



Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
6 - 8	Pattern select (SNOW) switch on	Below 1 Ω
	Pattern select (SNOW) switch off	10 kΩ or higher
4 - 8	Pattern select (SPORT) switch on	Below 1 Ω
	Pattern select (SPORT) switch off	10 kΩ or higher

If the result is not as specified, replace the pattern select switch assembly.

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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000001T8P02DX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: PATTERN SELECT SWITCH: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL PATTERN SELECT SWITCH ASSEMBLY

(a) Install the pattern select switch assembly with the 2 screws.

2. INSTALL UPPER CONSOLE PANEL SUB-ASSEMBLY INFO

3. INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY INFO

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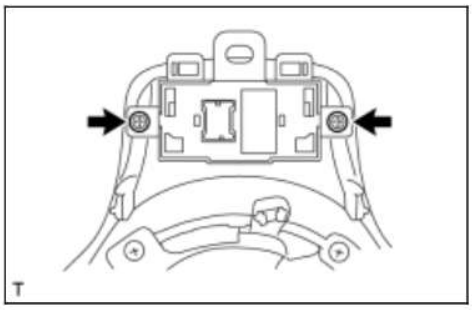
Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000001T8R02EX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: PATTERN SELECT SWITCH: REMOVAL (2013 FR-S)		

REMOVAL

1. REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY INFO

2. REMOVE UPPER CONSOLE PANEL SUB-ASSEMBLY INFO

3. REMOVE PATTERN SELECT SWITCH ASSEMBLY



(a) Remove the 2 screws and the pattern select switch assembly.

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Last Modified: 3-27-2012	6.4 N	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000O9O02LX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SHIFT LEVER: ADJUSTMENT (2013 FR-S)		

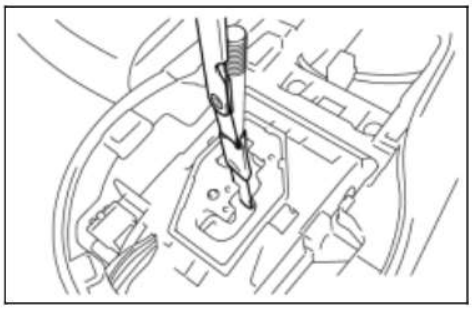
ADJUSTMENT

1. REMOVE FRONT EXHAUST PIPE ASSEMBLY

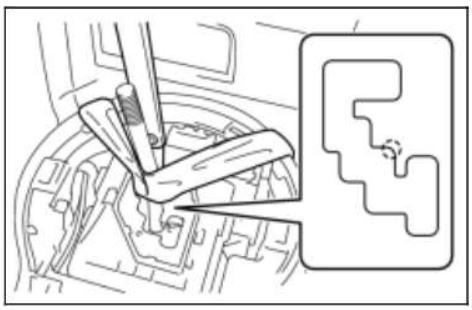
INFO

2. ADJUST SHIFT LEVER POSITION

(a) While pushing the shift lock release button, move the shift lever to N.



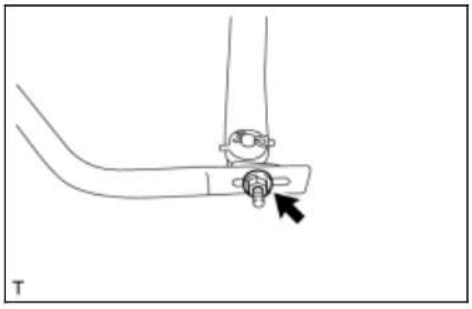
(b) Using tape, hold a 0.3 mm feeler gauge on the floor shift control select lever.



(c) Using tape, attach the floor shift control select lever to the console box assembly.

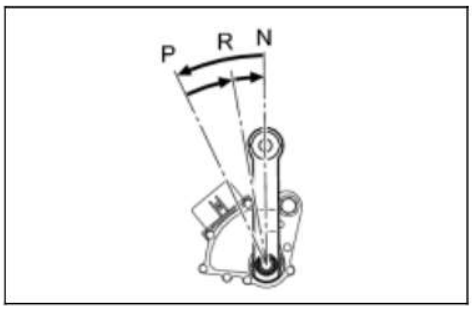
NOTICE:

Make sure that the feeler gauge is not on the area shown in the illustration.

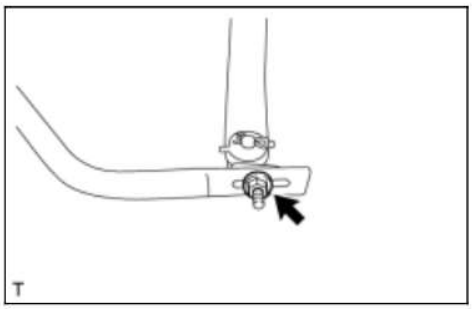


(d) Remove the nut and disconnect the floor shift gear shifting rod sub-assembly.

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(e) Turn the transmission control shaft lever RH of the park/neutral position switch assembly counterclockwise until it stops, and turn it clockwise 2 notches to set it to the N position.



(f) Temporarily install the floor shift gear shifting rod sub-assembly with the nut.

(g) Tighten the nut while lightly pushing the lever rearward.

Torque: 18 N·m (184 kgf·cm, 13ft·lbf)

NOTICE:

Do not push the lever too hard.

3. INSTALL FRONT EXHAUST PIPE ASSEMBLY

INFO

4. INSPECT SHIFT LEVER POSITION INFO

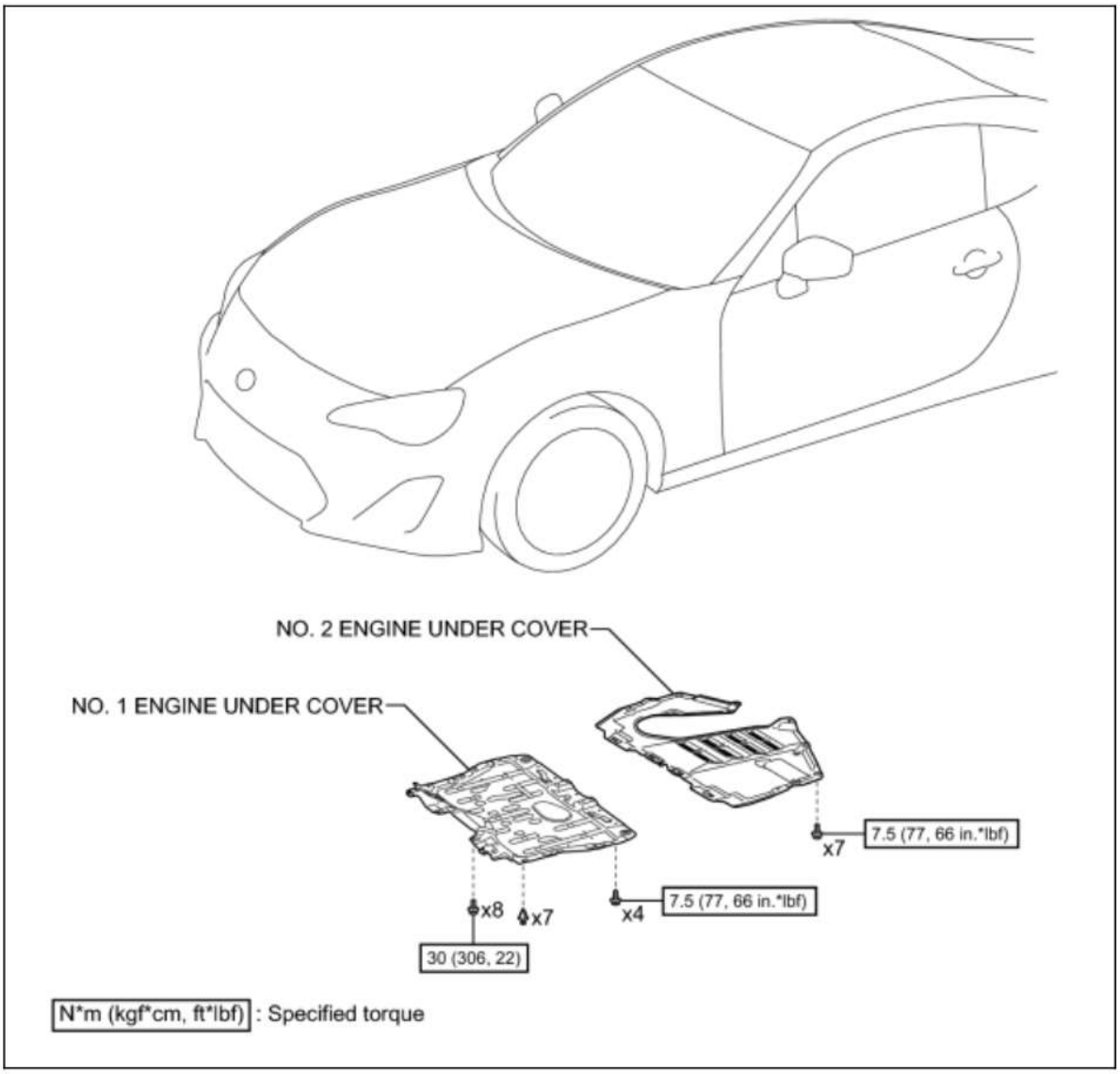
5. INSPECT FOR EXHAUST GAS LEAK

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Last Modified: 3-27-2012	6.4 K	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NS3018X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SHIFT LEVER: COMPONENTS (2013 FR-S)		

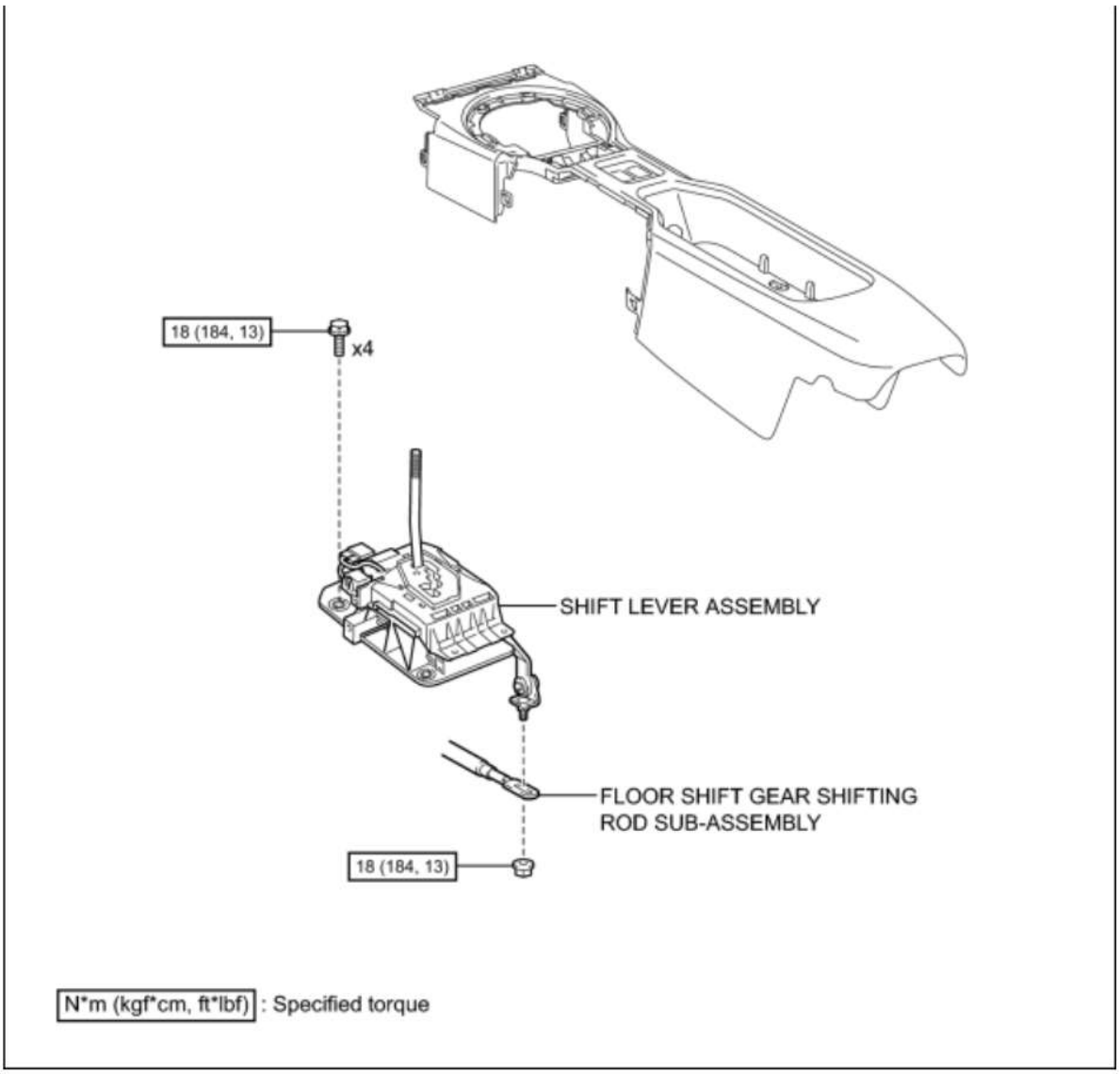
COMPONENTS

ILLUSTRATION



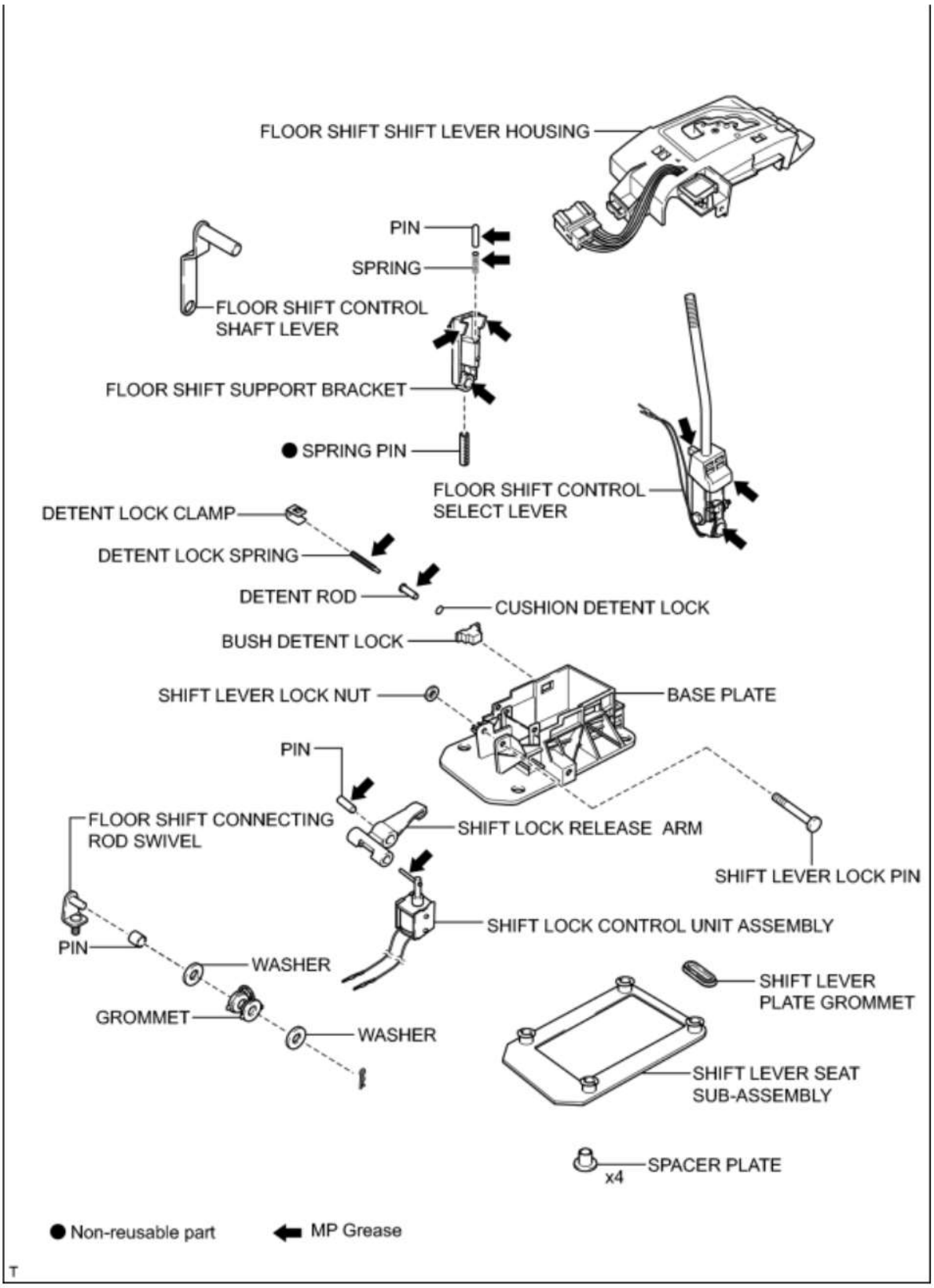
ILLUSTRATION

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ILLUSTRATION

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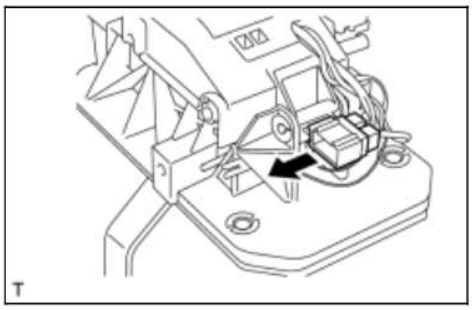


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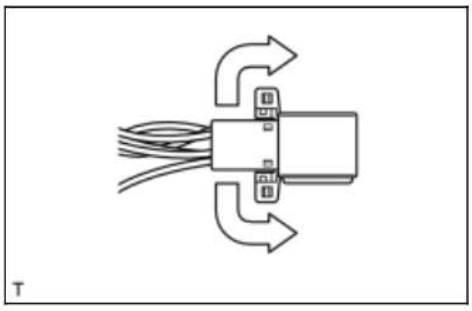
Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM00000191W01CX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SHIFT LEVER: DISASSEMBLY (2013 FR-S)		

DISASSEMBLY

1. REMOVE FLOOR SHIFT SHIFT LEVER HOUSING



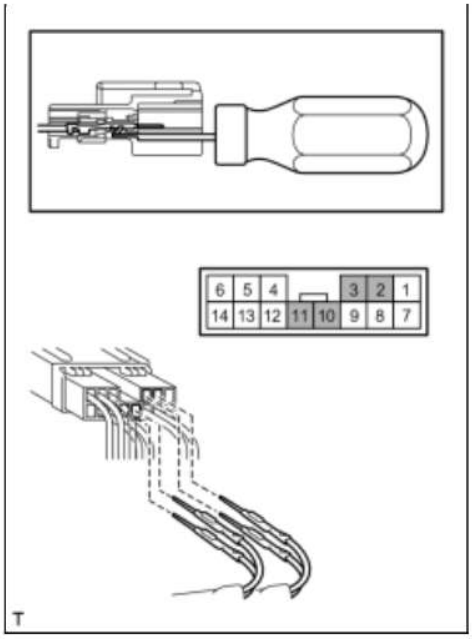
(a) Using a screw driver, disengage the claw and disconnect the connector.

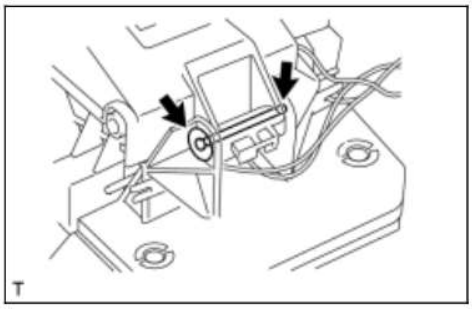


(b) Using a thin-bladed screwdriver, lift up the terminal retainer of the transmission control switch connector to release the lock.

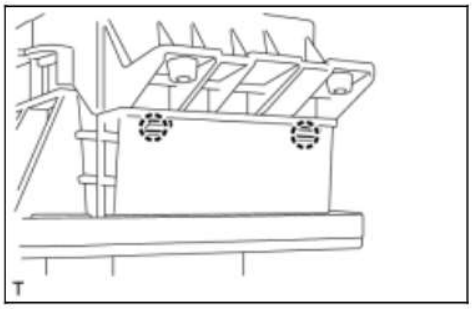
(c) Using a thin-bladed screwdriver, pull out terminals 2, 3, 10 and 11 of the transmission control switch connector.

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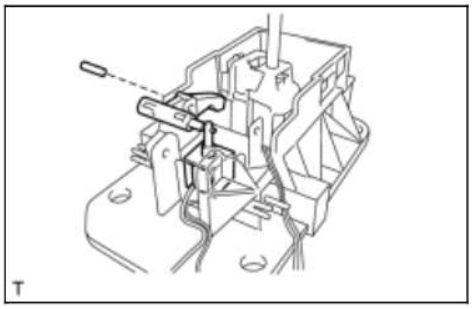




(d) Remove the shift lever lock nut and shift lever lock pin.



(e) Disengage the 2 claws and remove the floor shift shift lever housing from the base plate.

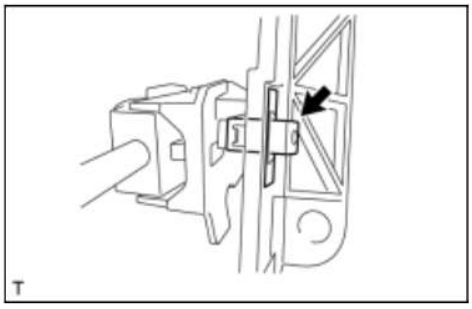


2. REMOVE SHIFT LOCK CONTROL UNIT ASSEMBLY

(a) Remove the pin then remove the shift lock release arm and shift lock control unit assembly.

(b) Remove the shift lock release arm from the shift lock control unit assembly.

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3. REMOVE DETENT ROD

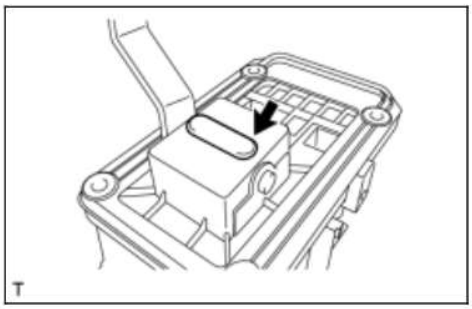
(a) Remove the detent lock clamp.

(b) Remove the detent lock spring and detent lock rod.

(c) Remove the cushion detent lock from the detent lock rod.

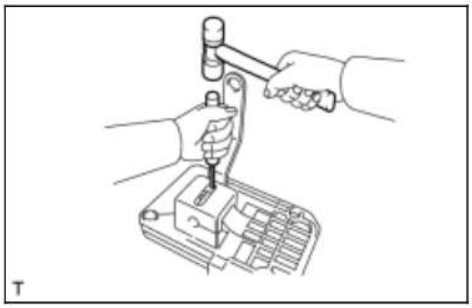
(d) Remove the bush detent lock.

4. REMOVE SHIFT LEVER PLATE GROMMET

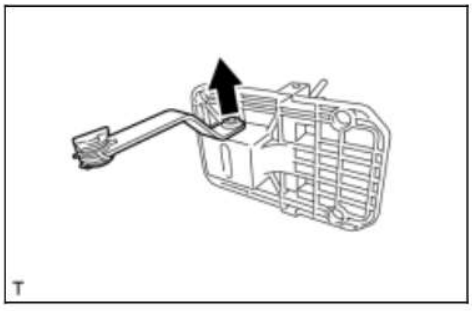


(a) Remove the shift lever plate grommet from the base plate.

5. REMOVE FLOOR SHIFT CONTROL SHAFT LEVER



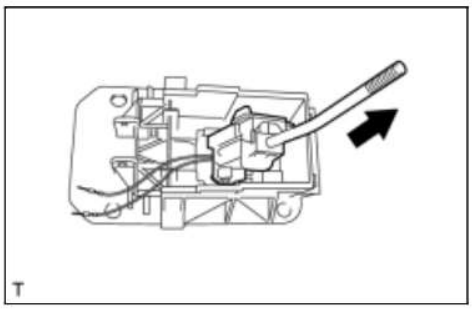
(a) Using a pin punch (3 mm (0.118 in.)) and a hammer, drive out the spring pin.



(b) Remove the floor shift control shaft lever from the base plate.

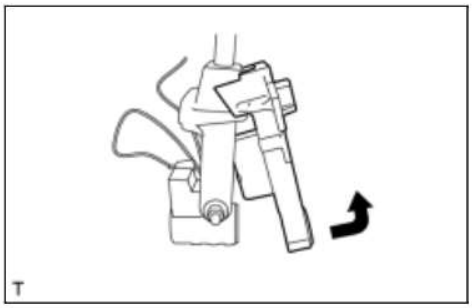
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6. REMOVE FLOOR SHIFT CONTROL SELECT LEVER

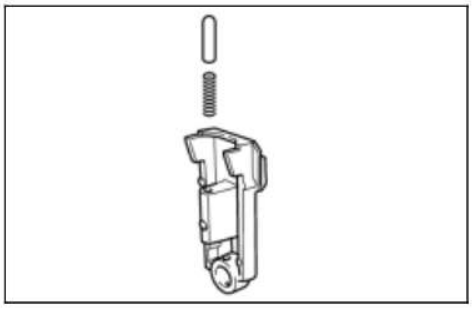


(a) Remove the floor shift support bracket and the floor shift control shaft lever from the base plate.

7. REMOVE FLOOR SHIFT SUPPORT BRACKET

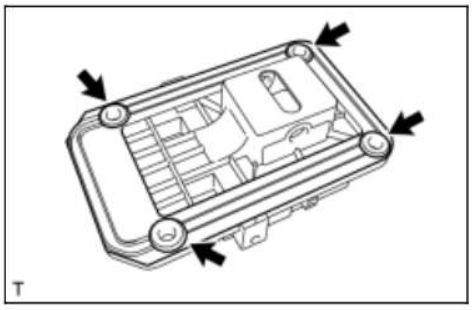


(a) Remove the floor shift support bracket from the floor shift control shaft lever.



(b) Remove the pin and the spring from the floor shift support bracket.

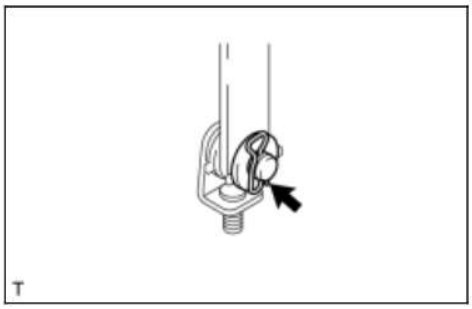
8. REMOVE SHIFT LEVER SEAT SUB-ASSEMBLY



(a) Remove the 4 spacer plates and shift lever seat sub-assembly from the base plate.

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9. REMOVE FLOOR SHIFT CONNECTING ROD SWIVEL



(a) Remove the clip, 2 washers, grommet, pin and floor shift connecting rod swivel from the select lever.

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Last Modified: 3-27-2012	6.4 G	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NRZ01KX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SHIFT LEVER: INSPECTION (2013 FR-S)		

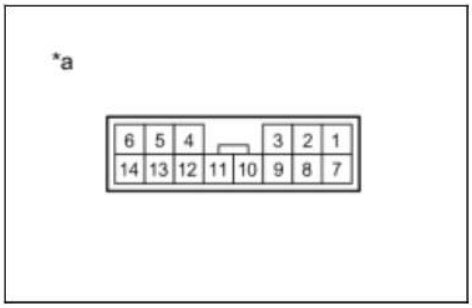
INSPECTION

1. INSPECT TRANSMISSION CONTROL SWITCH (SHIFT LEVER ASSEMBLY)

(a) Measure the resistance according to the value(s) in the table below.

Text in Illustration

*a	Component without harness connected (Transmission Control Switch (Shift Lever Assembly))



Standard Resistance:

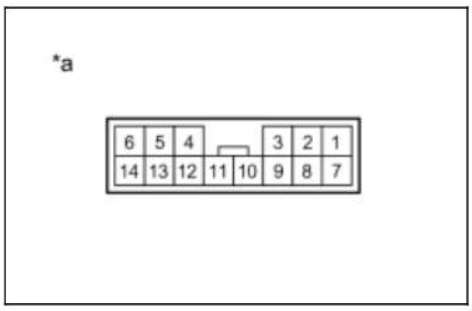
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 3	Shift lever not in P	Below 1 Ω
2 - 3	Shift lever in P	
8 - 9	Shift lever in M Shift lever held in "+" (Up shift)	
10 - 11	Shift lever in M	
12 - 13	Shift lever in M Shift lever held in "-" (Down shift)	
1 - 3	Shift lever in P	10 kΩ or higher
2 - 3	Shift lever not in P	
8 - 9	Shift lever in M Shift lever not in "+"	
10 - 11	Shift lever not in M	
12 - 13	Shift lever in M Shift lever not in "-"	

If the result is not as specified, replace the transmission control switch.

2. INSPECT SHIFT LOCK CONTROL UNIT ASSEMBLY (SHIFT LEVER ASSEMBLY)

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(a) Measure the resistance according to the value(s) in the table below.



Text in Illustration

*a	Component without harness connected (Shift Lock Control Unit Assembly)

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
4 - 5	20°C (68°F)	27.6 to 30.5 Ω

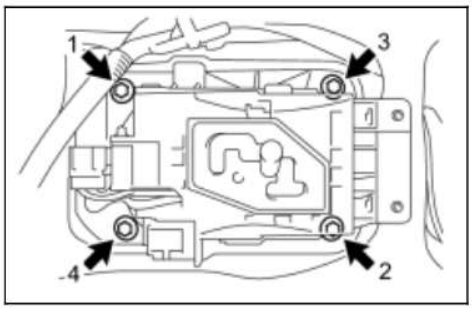
If the result is not as specified, replace the shift lock control unit assembly.

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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NS1033X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SHIFT LEVER: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL SHIFT LEVER ASSEMBLY



(a) Install and tighten the 4 bolts in the sequence shown in the illustration.

Torque: 18 N·m (184 kgf·cm, 13ft·lbf)

(b) Engage the wire harness clamp.

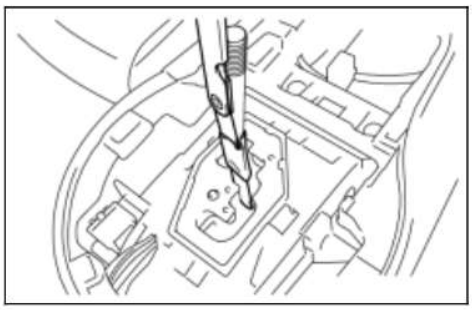
(c) Connect the 2 connectors.

2. INSTALL CONSOLE BOX ASSEMBLY

INFO

3. CONNECT FLOOR SHIFT GEAR SHIFTING ROD SUB-ASSEMBLY

(a) While pushing the shift lock release button, move the shift lever to N.



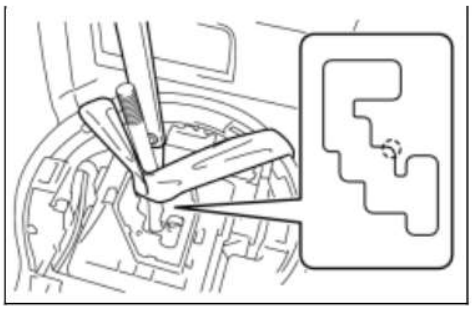
(b) Using tape, hold a 0.3 mm feeler gauge on the floor shift control select lever.

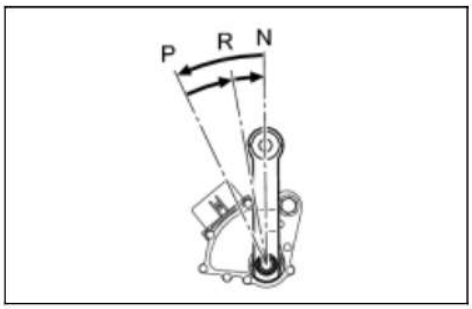
(c) Using tape, attach the floor shift control select lever to the console box assembly.

NOTICE:

Make sure that the feeler gauge is not on the area shown in the illustration.

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(d) Turn the transmission control shaft lever RH of the park/neutral position switch assembly counterclockwise until it stops, and turn it clockwise 2 notches to set it to the N position.

(e) Temporarily install the floor shift gear shifting rod sub-assembly with the nut.

(f) Tighten the nut while lightly pushing the lever rearward.

Torque: 18 N·m (184 kgf·cm, 13ft·lbf)

NOTICE:

Do not push the lever too hard.

4. INSPECT SHIFT LEVER POSITION INFO

5. INSTALL NO. 2 ENGINE UNDER COVER INFO

6. INSTALL NO. 1 ENGINE UNDER COVER INFO

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Last Modified: 3-27-2012	6.4 G	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000OA902RX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SHIFT LEVER: ON-VEHICLE INSPECTION (2013 FR-S)		

ON-VEHICLE INSPECTION

1. INSPECT SHIFT LEVER POSITION

(a) When moving the shift lever from P to R with the ignition switch to ON and the brake pedal depressed, make sure that it moves smoothly and correctly into position.

(b) Check that the shift lever does not stop when moving the shift lever from R to P, and check that the shift lever does not stick when moving the shift lever from D to M.

(c) Start the engine and make sure that the vehicle moves forward after moving the shift lever from N to D and moves rearward after moving the shift lever to R.

If the operation cannot be performed as specified, inspect the park/neutral position switch assembly and check the shift lock control unit assembly installation condition.

2. INSPECT SHIFT LOCK OPERATION

(a) Move the shift lever to P.

(b) Turn the ignition switch off.

(c) Check that the shift lever cannot be moved from P.

(d) Turn the ignition switch to ON, depress the brake pedal and check that the shift lever can be moved to other positions.

If the operation cannot be performed as specified, inspect the shift lock control unit assembly.

3. INSPECT SHIFT LOCK RELEASE BUTTON OPERATION

(a) When operating the shift lever with the shift lock release button pressed, check that the lever can be moved to any position.

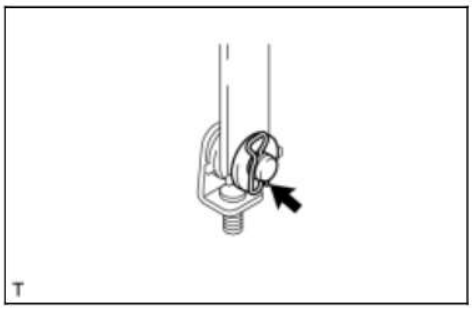
If the operation cannot be performed as specified, check the shift lock control unit assembly.

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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM00000191X01CX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SHIFT LEVER: REASSEMBLY (2013 FR-S)		

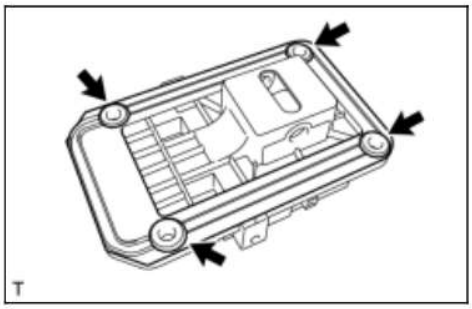
REASSEMBLY

1. INSTALL FLOOR SHIFT CONNECTING ROD SWIVEL



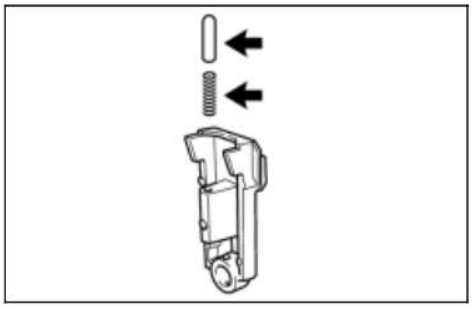
(a) Install the 2 washers, grommet, pin and floor shift connecting rod swivel to the select lever with the clip.

2. INSTALL SHIFT LEVER SEAT SUB-ASSEMBLY



(a) Install the shift lever seat sub-assembly and the 4 spacer plates to the base plate.

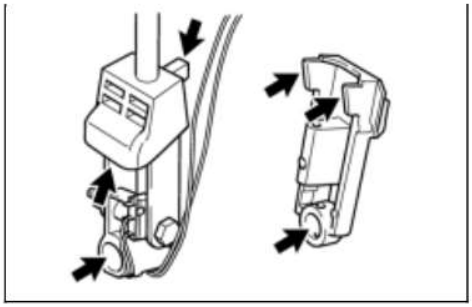
3. INSTALL FLOOR SHIFT SUPPORT BRACKET



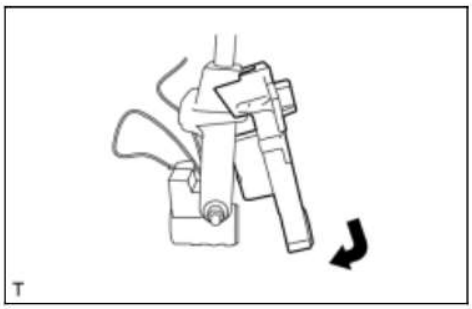
(a) Apply MP grease to the spring and pin.

(b) Install the spring and pin to the floor shift support bracket.

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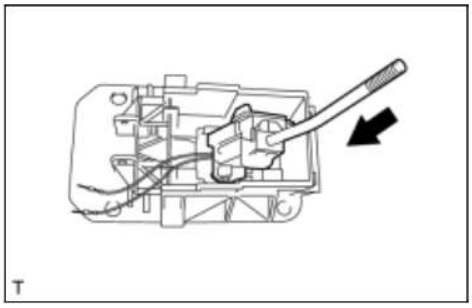


(c) Apply MP grease to the floor shift control shaft lever and floor shift support bracket.



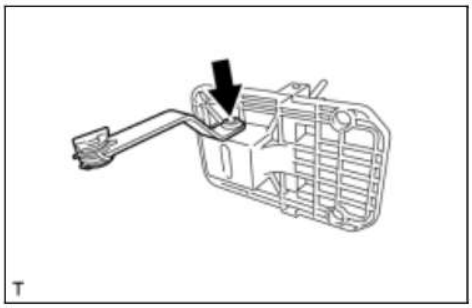
(d) Install the floor shift support bracket to the floor shift control shaft lever.

4. INSTALL FLOOR SHIFT CONTROL SELECT LEVER



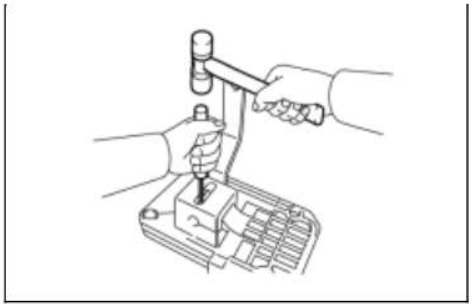
(a) Install the floor shift support bracket and floor shift control shaft lever to the base plate.

5. INSTALL FLOOR SHIFT CONTROL SHAFT LEVER



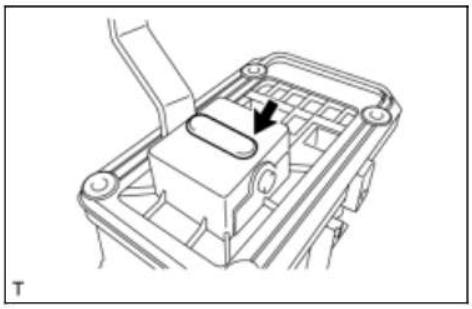
(a) Install the floor shift control shaft lever to the base plate.

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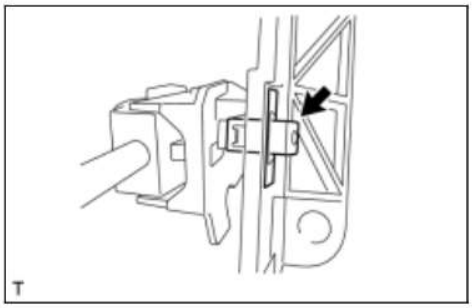


(b) Using a pin punch (3 mm (0.118 in.)) and a hammer, install a new spring pin.

6. INSTALL SHIFT LEVER PLATE GROMMET



(a) Install the shift lever plate grommet to the base plate.



7. INSTALL DETENT ROD

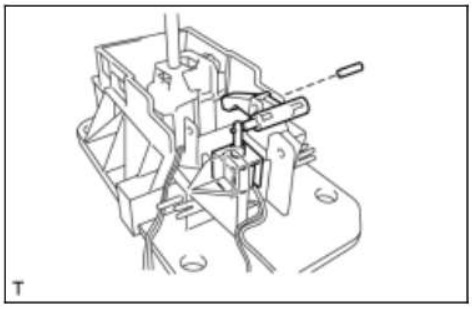
(a) Install the bush detent lock.

(b) Install the cushion detent lock to the detent lock rod.

(c) Apply MP grease to the detent lock spring and detent lock rod.

(d) Install the detent lock rod and detent lock spring.

(e) Install the detent lock clamp.



8. INSTALL SHIFT LOCK CONTROL UNIT ASSEMBLY

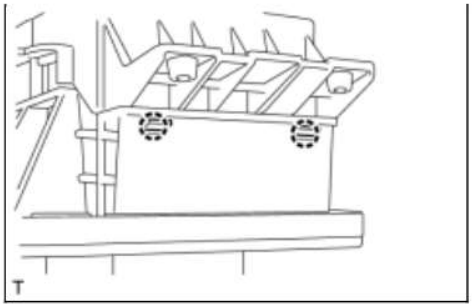
(a) Apply MP grease to the pin.

(b) Install the shift lock release arm to the shift lock control unit assembly.

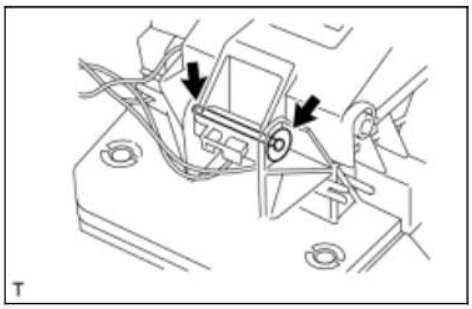
(c) Install the shift lock control unit assembly to the base plate.

9. INSTALL FLOOR SHIFT SHIFT LEVER HOUSING

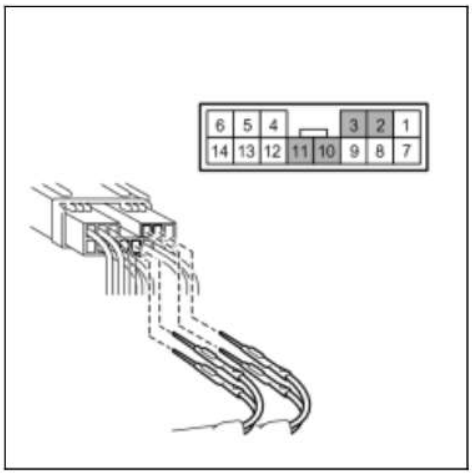
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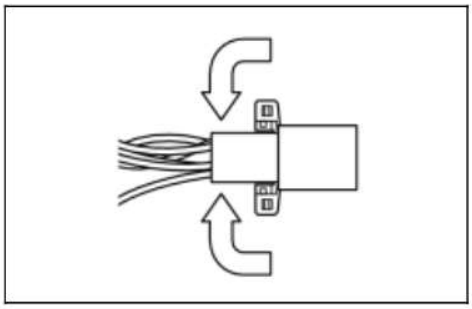
(a) Engage the 2 claws and install the floor shift shift lever housing to the base plate.



(b) Install the shift lever lock nut and shift lever lock pin.

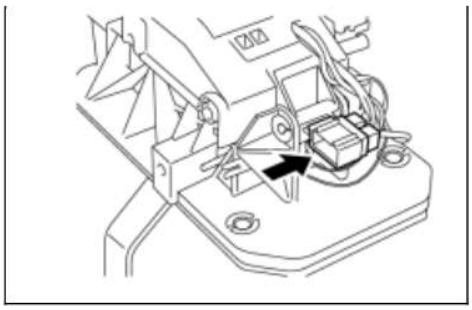


(c) Install the terminals 2, 3, 10 and 11 of the transmission control switch connector.



(d) Lock the harness connector terminals.

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(e) Engage the claw and install the connector.

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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NS4033X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SHIFT LEVER: REMOVAL (2013 FR-S)		

REMOVAL

1. REMOVE CONSOLE BOX ASSEMBLY

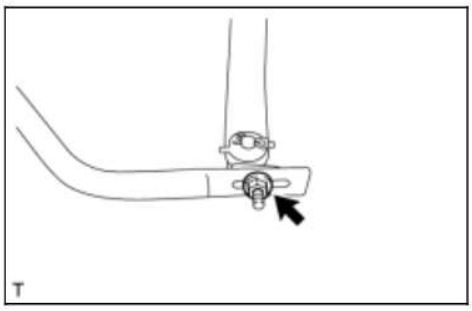
INFO

2. REMOVE NO. 1 ENGINE UNDER COVER INFO

3. REMOVE NO. 2 ENGINE UNDER COVER INFO

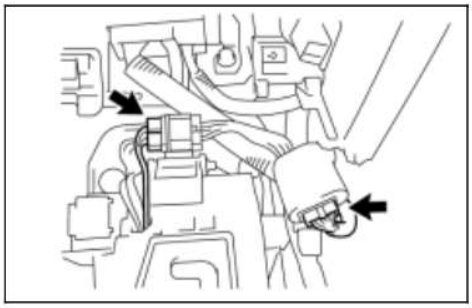
4. DISCONNECT FLOOR SHIFT GEAR SHIFTING ROD SUB-ASSEMBLY

(a) While pushing the shift lock release button, move the shift lever to N.



(b) Remove the nut and disconnect the floor shift gear shifting rod sub-assembly.

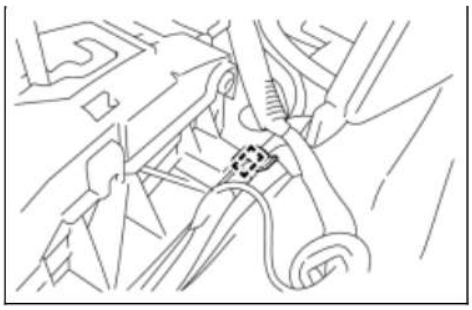
5. REMOVE SHIFT LEVER ASSEMBLY

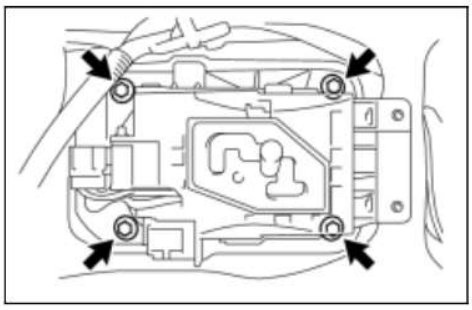


(a) Disconnect the 2 connectors.

(b) Disengage the wire harness clamp.

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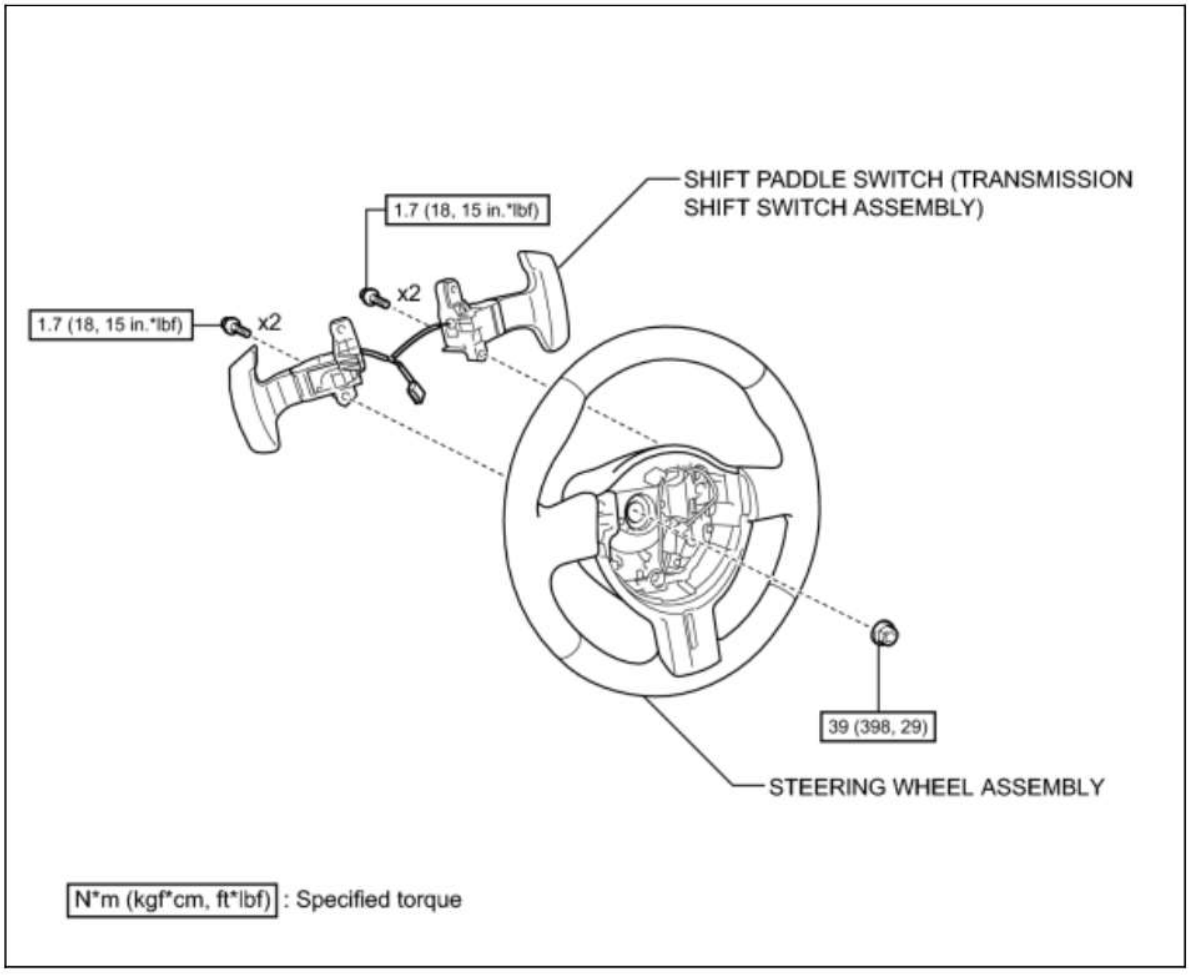
(c) Remove the 4 bolts and the shift lever assembly.

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Last Modified: 3-27-2012	6.4 K	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000001MAJ02VX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SHIFT PADDLE SWITCH: COMPONENTS (2013 FR-S)		

COMPONENTS

ILLUSTRATION



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Last Modified: 3-27-2012	6.4 G	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000001MA803DX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SHIFT PADDLE SWITCH: INSPECTION (2013 FR-S)		

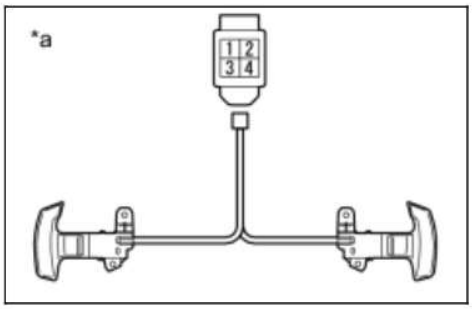
INSPECTION

1. INSPECT SHIFT PADDLE SWITCH (TRANSMISSION SHIFT SWITCH ASSEMBLY)

(a) Measure the resistance according to the value(s) in the table below.

Text in Illustration

*a	Component without harness connected (Shift Paddle Switch (transmission shift switch assembly))



Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1 - 3	Pull continuously "+" (Up shift)	Below 1 Ω
	Release "+"	10 Ω or higher
1 - 4	Pull continuously "-" (Down shift)	Below 1 Ω
	Release "-"	10 Ω or higher

If the resistance value are not as specified, replace the shift paddle switch (transmission shift switch assembly).

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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000001MA7045X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SHIFT PADDLE SWITCH: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL SHIFT PADDLE SWITCH (TRANSMISSION SHIFT SWITCH ASSEMBLY)

(a) Install the shift paddle switch (transmission shift switch assembly) with 4 screws.

Torque: 1.7 N·m (18 kgf·cm, 15in·lbf)

(b) Engage the clamp.

2. INSTALL STEERING WHEEL ASSEMBLY INFO

3. INSTALL STEERING PAD

INFO

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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000001MA9043X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SHIFT PADDLE SWITCH: REMOVAL (2013 FR-S)		

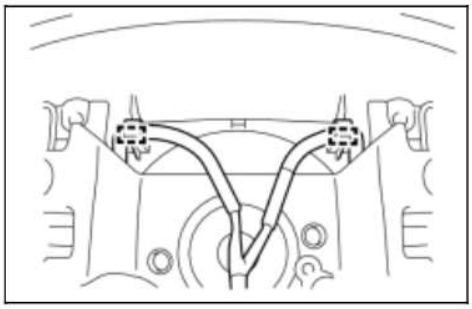
REMOVAL

1. REMOVE STEERING PAD

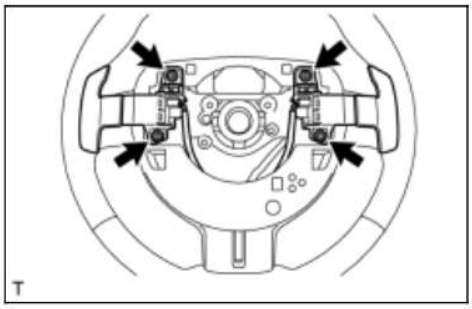
INFO

2. REMOVE STEERING WHEEL ASSEMBLY INFO

3. REMOVE SHIFT PADDLE SWITCH (TRANSMISSION SHIFT SWITCH ASSEMBLY)



(a) Detach the clamp.



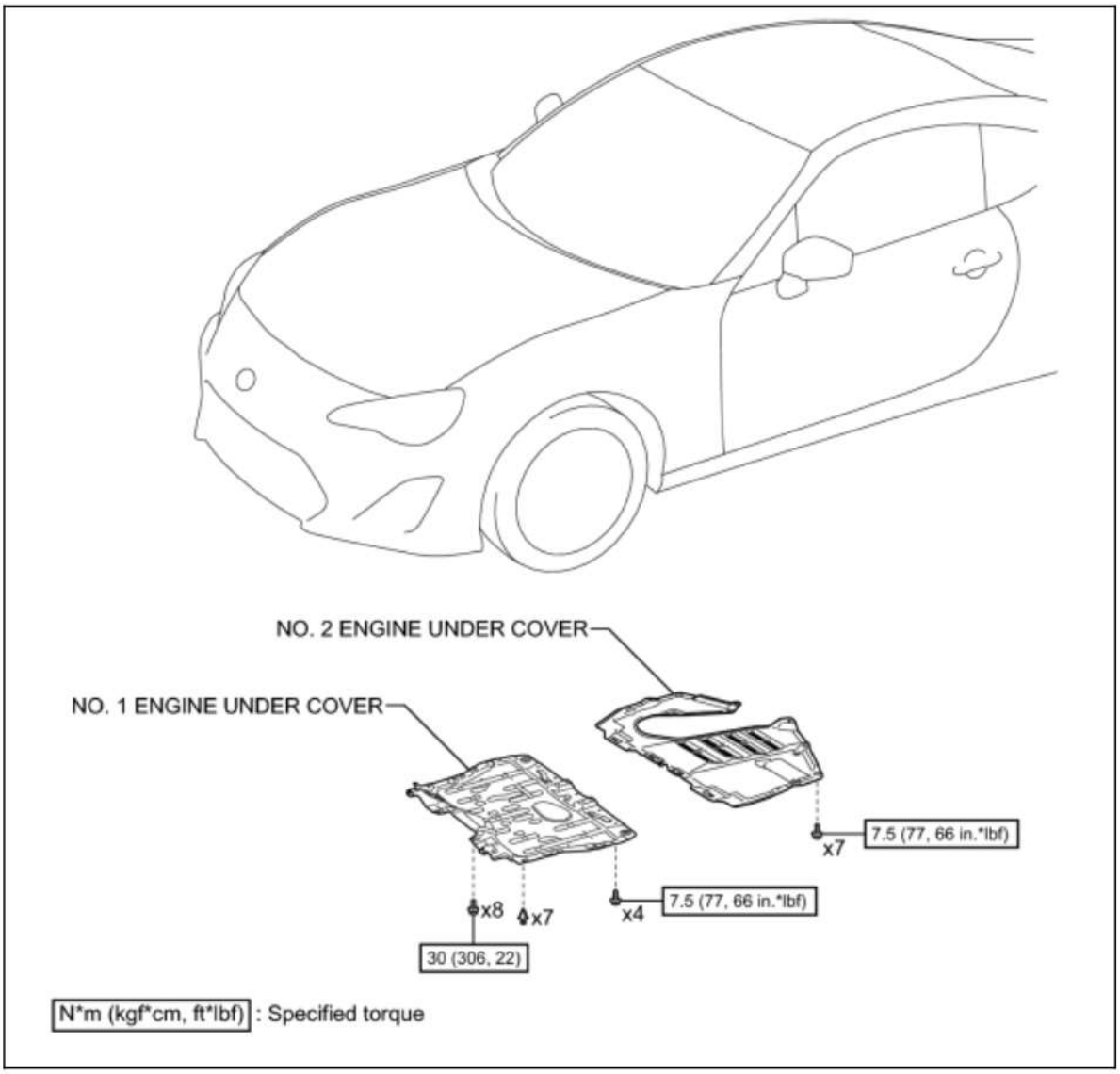
(b) Remove the 4 screws and remove the shift paddle switch (transmission shift switch assembly).

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Last Modified: 3-27-2012	6.4 K	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NR6022X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SPEED SENSOR: COMPONENTS (2013 FR-S)		

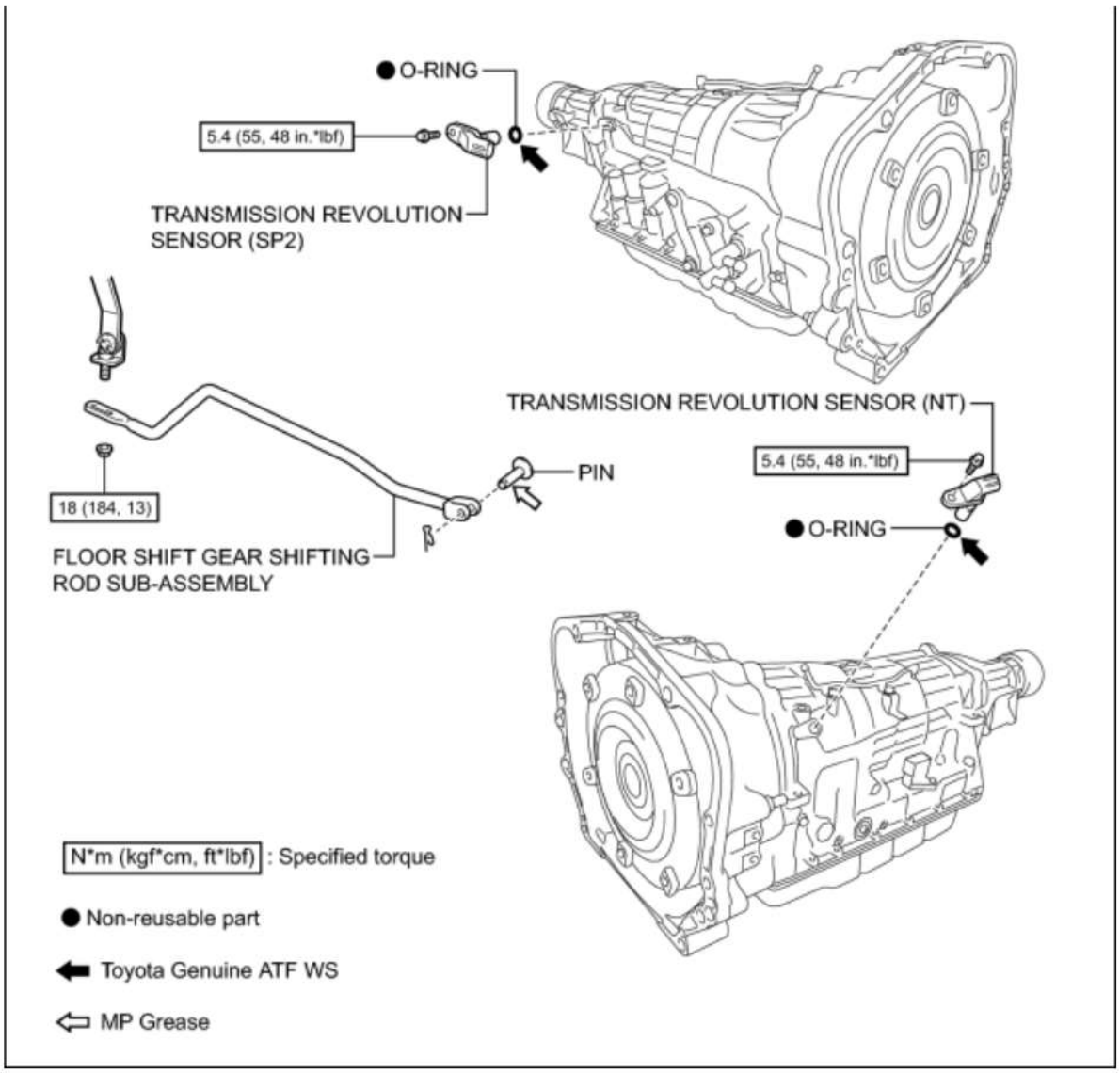
COMPONENTS

ILLUSTRATION



ILLUSTRATION

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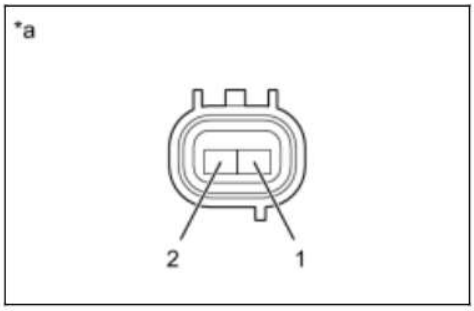
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Last Modified: 3-27-2012	6.4 G	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NR503MX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SPEED SENSOR: INSPECTION (2013 FR-S)		

INSPECTION

1. INSPECT TRANSMISSION REVOLUTION SENSOR (NT)

(a) Measure the resistance according to the value(s) in the table below.



Text in Illustration

*a	Component without harness connected (Transmission Revolution Sensor (NT))

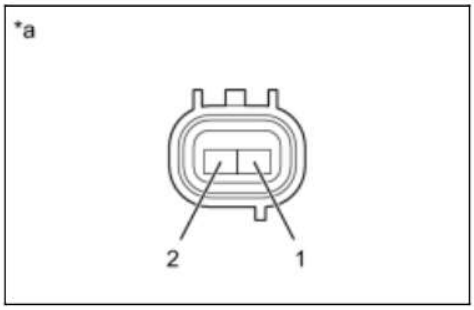
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	560 to 680 Ω

If the result is not as specified, replace the transmission revolution sensor (NT).

2. INSPECT TRANSMISSION REVOLUTION SENSOR (SP2)

(a) Measure the resistance according to the value(s) in the table below.



Text in Illustration

*a	Component without harness connected (Transmission Revolution Sensor (SP2))

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	560 to 680 Ω

If the result is not as specified, replace the transmission revolution sensor (SP2).

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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NR4024X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SPEED SENSOR: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL TRANSMISSION REVOLUTION SENSOR (SP2)

(a) Coat a new O-ring with ATF and install it to the transmission revolution sensor (SP2).

(b) Install the transmission revolution sensor (SP2) with the bolt.

Torque: 5.4 N·m (55 kgf·cm, 48in·lbf)

(c) Connect the transmission revolution sensor connector.

2. INSTALL FLOOR SHIFT GEAR SHIFTING ROD SUB-ASSEMBLY INFO

3. INSTALL FRONT EXHAUST PIPE ASSEMBLY

INFO

4. INSTALL TRANSMISSION REVOLUTION SENSOR (NT)

(a) Coat a new O-ring with ATF and install it to the transmission revolution sensor (NT).

(b) Install the transmission revolution sensor (NT) with the bolt.

Torque: 5.4 N·m (55 kgf·cm, 48in·lbf)

(c) Connect the transmission revolution sensor connector.

5. INSTALL NO. 2 ENGINE UNDER COVER INFO

6. INSTALL NO. 1 ENGINE UNDER COVER INFO

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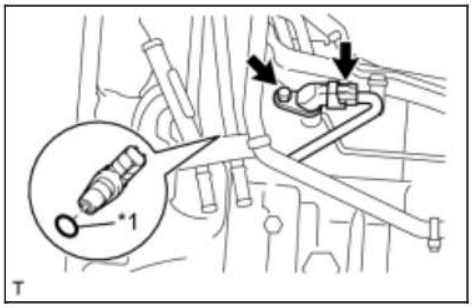
Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NR7024X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SPEED SENSOR: REMOVAL (2013 FR-S)		

REMOVAL

1. REMOVE NO. 1 ENGINE UNDER COVER INFO

2. REMOVE NO. 2 ENGINE UNDER COVER INFO

3. REMOVE TRANSMISSION REVOLUTION SENSOR (NT)



(a) Disconnect the transmission revolution sensor connector.

Text in Illustration

*1	O-ring

(b) Remove the bolt and the transmission revolution sensor (NT).

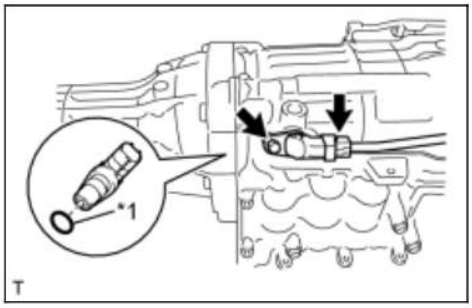
(c) Remove the O-ring from the transmission revolution sensor (NT).

4. REMOVE FRONT EXHAUST PIPE ASSEMBLY

INFO

5. REMOVE FLOOR SHIFT GEAR SHIFTING ROD SUB-ASSEMBLY INFO

6. REMOVE TRANSMISSION REVOLUTION SENSOR (SP2)



(a) Disconnect the transmission revolution sensor connector.

Text in Illustration

*1	O-ring

(b) Remove the bolt and the transmission revolution sensor (SP2).

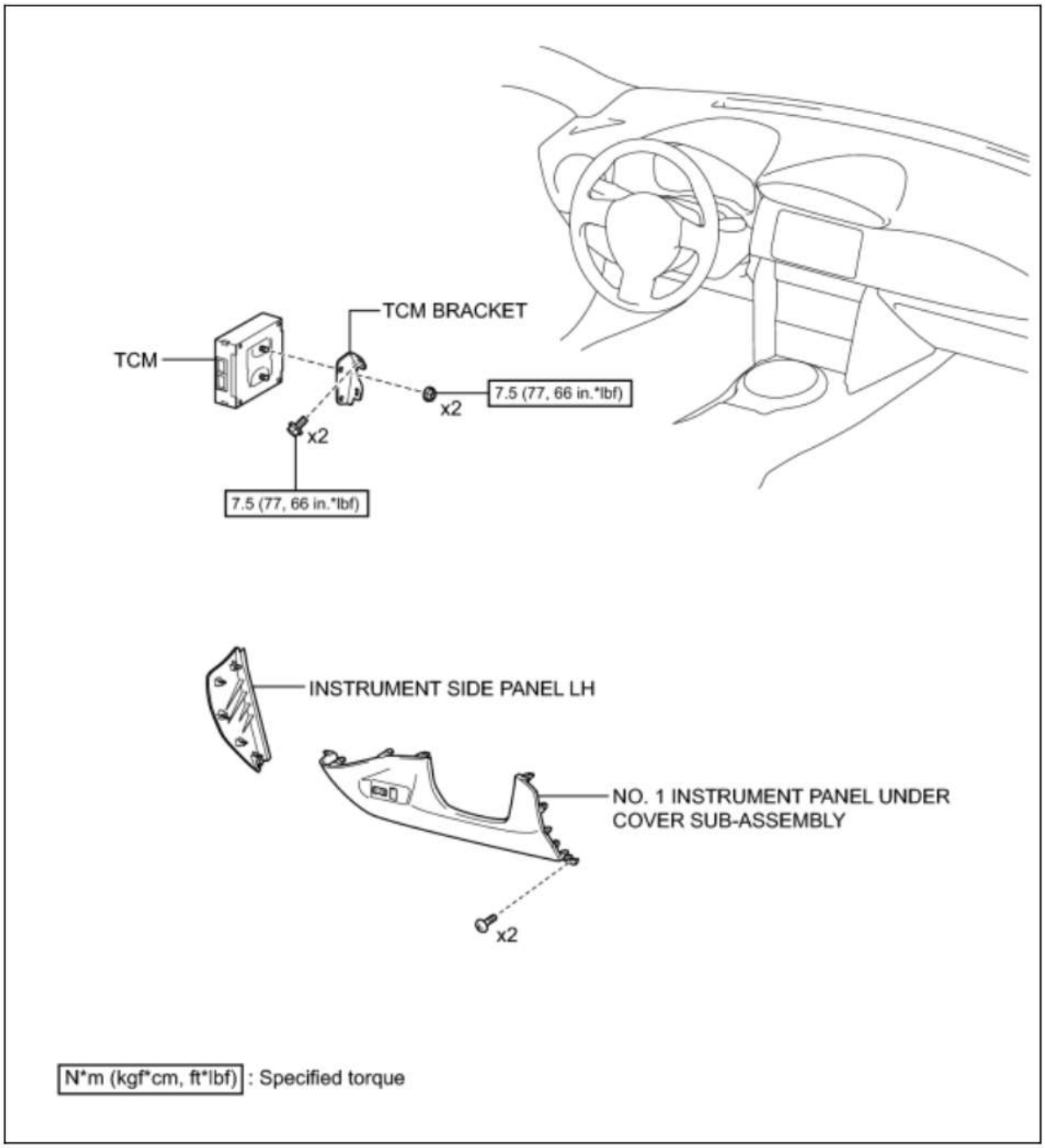
(c) Remove the O-ring from the transmission revolution sensor (SP2).

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Last Modified: 3-27-2012	6.4 K	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000002ZA300BX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: TCM: COMPONENTS (2013 FR-S)		

COMPONENTS

ILLUSTRATION



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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000002ZA2009X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: TCM: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL TCM

(a) Install the TCM bracket to the TCM with the 2 nuts.

Torque: 7.5 N·m (77 kgf·cm, 66in·lbf)

(b) Install the 2 bolts and the TCM.

Torque: 7.5 N·m (77 kgf·cm, 66in·lbf)

(c) Connect the 2 connectors.

2. INSTALL NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY INFO

3. INSTALL INSTRUMENT SIDE PANEL LH INFO

4. RESET CHECK RESET MEMORY

INFO

HINT:

When the automatic transmission assembly, transmission valve body assembly, and TCM are replaced, the TCM learning value must be cleared.

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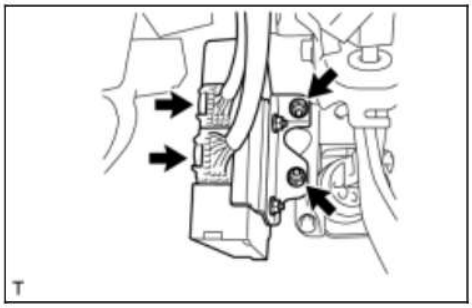
Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000002ZA4009X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: TCM: REMOVAL (2013 FR-S)		

REMOVAL

1. REMOVE INSTRUMENT SIDE PANEL LH INFO

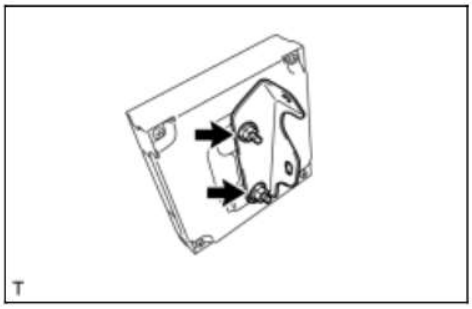
2. REMOVE NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY INFO

3. REMOVE TCM



(a) Disconnect the 2 connectors.

(b) Remove the 2 bolts and the TCM.



(c) Remove the 2 nuts and the TCM bracket.

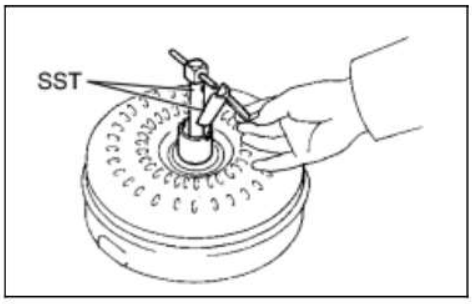
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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NS9020X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: TORQUE CONVERTER AND DRIVE PLATE: INSPECTION (2013 FR-S)		

INSPECTION

1. INSPECT TORQUE CONVERTER ASSEMBLY

(a) Inspect the one-way clutch.



(1) Install SST into the inner race of the one-way clutch.

SST: 09350-32014

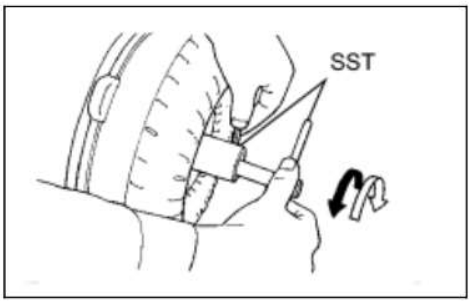
09351-32010

(2) Set SST so that it fits in the notch of the torque converter hub and the outer race of the one-way clutch.

SST: 09350-32014

09351-32020

(3) With the torque converter assembly standing on its side, check that the clutch locks when SST is turned counterclockwise and rotates freely and smoothly when SST is turned clockwise.



Text in Illustration

➡	Lock
⇨	Free

If the results are not as specified, clean the torque converter assembly and recheck the one-way clutch.

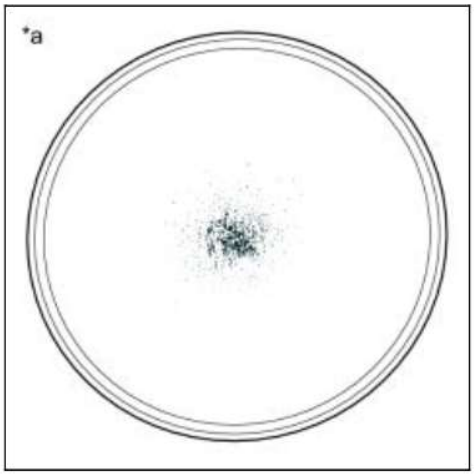
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If the results still are not as specified even after cleaning the torque converter assembly, replace the torque converter assembly.

(b) Determine the condition of the torque converter assembly.

Text in Illustration

*a	Sample showing maximum allowable amount of powder in ATF



(1) Check that the following conditions are met:

- During the stall test or when the shift lever is in N, metallic sounds are not emitted from the torque converter assembly.
- The one-way clutch turns in one direction and locks in the other direction.
- The amount of powder in the ATF is not more than the sample shown in the illustration.

If the results are not as specified, replace the torque converter assembly.

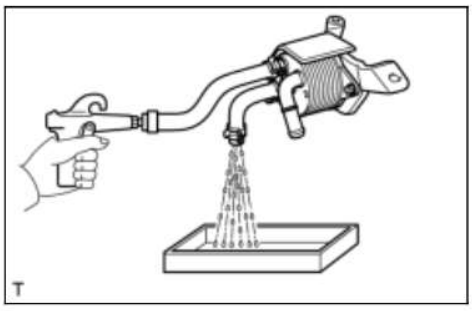
HINT:

The sample illustration shows approximately 0.025 liters (0.026 US qts, 0.022 Imp. qts) of ATF taken from a removed torque converter assembly.

(c) Replace the ATF in the torque converter assembly.

(1) If the ATF is discolored and/or has a foul odor, stir the ATF in the torque converter assembly thoroughly and drain the ATF with the torque converter assembly facing upward.

(d) Clean and check the transmission oil cooler.



(1) If the torque converter assembly is inspected or the ATF is replaced, clean the transmission oil cooler.

HINT:

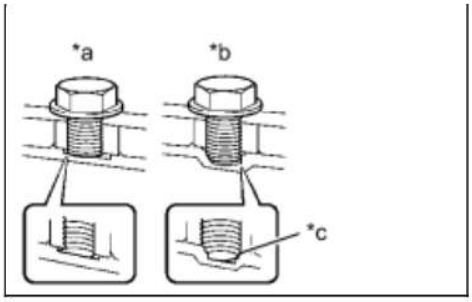
- Apply compressed air at 196 kPa (2.0 kgf/cm ^{2} , 28 psi) into the inlet hose.
- If a large amount of powder is found in the ATF, add new ATF using a bucket pump and clean the transmission oil cooler and oil pipe line again.

(2) If the ATF is cloudy, inspect the transmission oil cooler.

(e) Prevent deformation of the torque converter assembly and damage to the oil pump gear.

Text in Illustration

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*a	Correct
*b	Incorrect
*c	Bottom is damaged

(1) When any marks due to interference are found on the end of a bolt for the torque converter assembly and on the bottom of the bolt hole, replace the bolt and torque converter assembly.

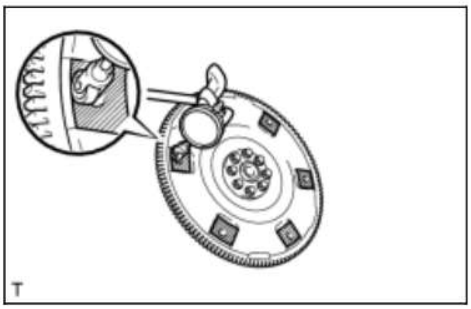
(2) Make sure all of the bolts are the same length.

(3) Make sure no spring washers are missing.

2. INSPECT DRIVE PLATE

(a) Check the drive plate for damage.

(b) Set up a dial indicator and measure the runout of the 6 portions around the torque converter contact surfaces.



Text in Illustration

▨	Measuring Point

Maximum runout:
0.30 mm (0.0118 in.)

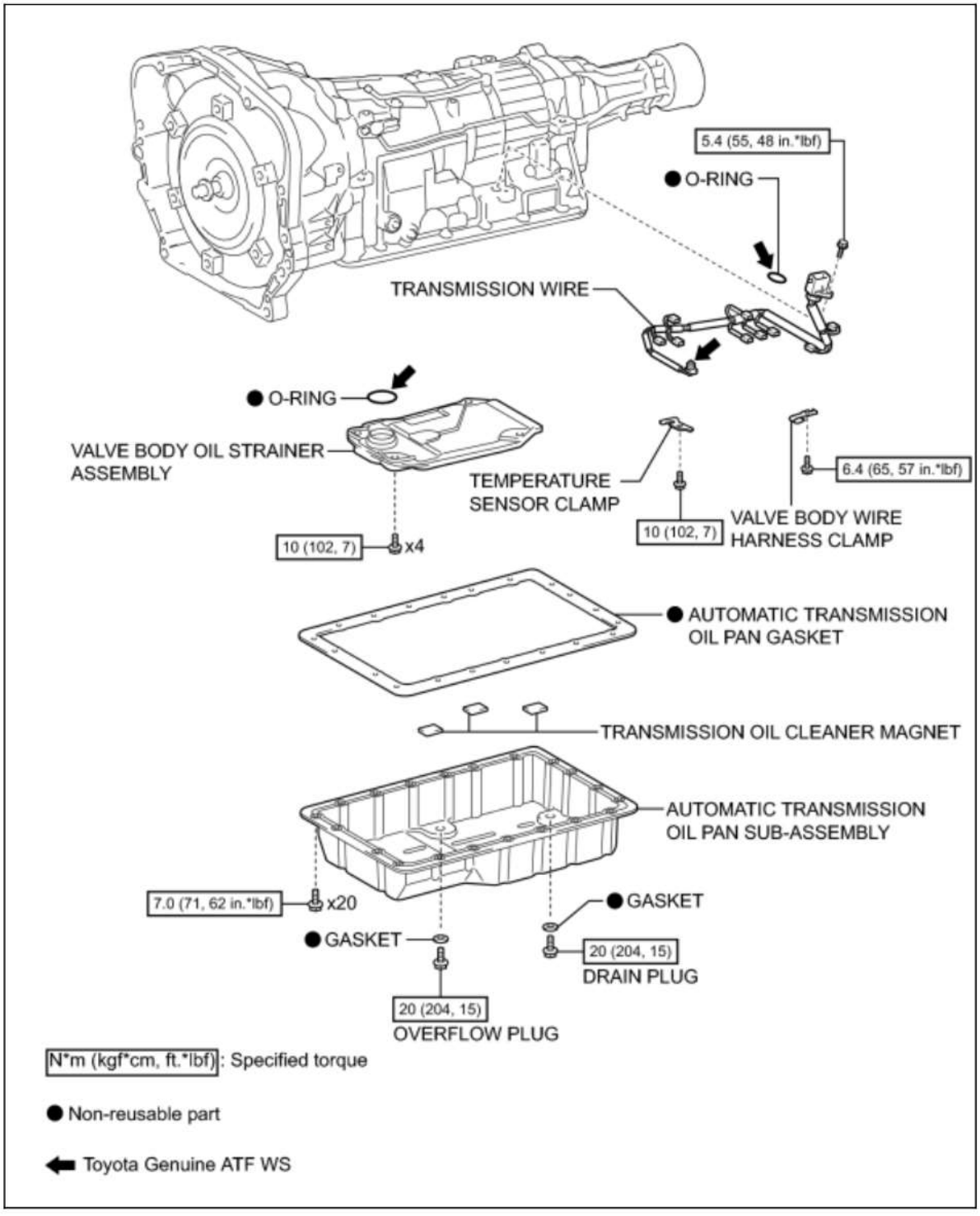
If the runout is more than the maximum, or the drive plate is damaged, replace the drive plate INFO .

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Last Modified: 3-27-2012	6.4 K	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NRG014X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: TRANSMISSION WIRE: COMPONENTS (2013 FR-S)		

COMPONENTS

ILLUSTRATION



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Last Modified: 3-27-2012	6.4 G	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NRF014X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: TRANSMISSION WIRE: INSPECTION (2013 FR-S)		

INSPECTION

1. INSPECT ATF TEMPERATURE SENSOR (TRANSMISSION WIRE)

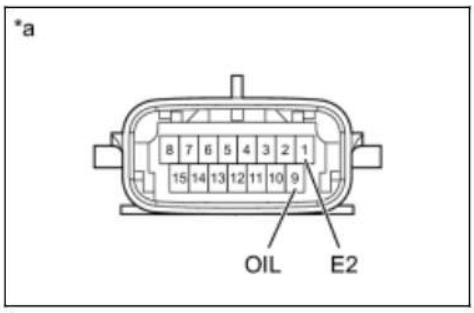
(a) Measure the resistance according to the value(s) in the table below.

Text in Illustration

*a	Component without harness connected (ATF Temperature Sensor (Transmission Wire))

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 (E2) - 9 (OIL)	Always	79 Ω to 156 kΩ
1 (E2) - Body ground	Always	10 kΩ or higher
9 (OIL) - Body ground	Always	10 kΩ or higher



HINT:

If the resistance is out of the specified range at any of the ATF temperatures shown in the table below, the driveability of the vehicle may decrease.

Standard Resistance:

ATF TEMPERATURE	SPECIFIED CONDITION
10°C (50°F)	5 to 8 kΩ
25°C (77°F)	2.5 to 4.5 kΩ
110°C (230°F)	0.22 to 0.28 kΩ

If the result is not as specified, replace the ATF temperature sensor (transmission wire).

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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NRE01GX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: TRANSMISSION WIRE: INSTALLATION (2013 FR-S)		

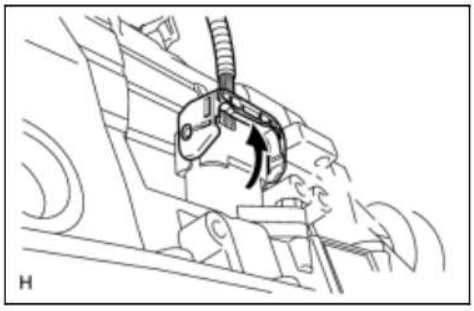
INSTALLATION

1. INSTALL TRANSMISSION WIRE

(a) Coat a new O-ring with ATF and install it to the transmission wire.

(b) Install the transmission wire with the bolt.

Torque: 5.4 N·m (55 kgf·cm, 48in·lbf)



(c) Connect the transmission wire connector.

HINT:

Push up the lever until the claw of the transmission wire connector makes a connection sound.

2. CONNECT TRANSMISSION WIRE

(a) Connect the 9 solenoid valve connectors.

(b) Coat the ATF temperature sensor O-ring with ATF.

(c) Install the ATF temperature sensor and the temperature sensor clamp with the bolt.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

(d) Engage the wire harness clamp.

(e) Install the valve body wire harness clamp with the bolt.

Torque: 6.4 N·m (65 kgf·cm, 57in·lbf)

3. INSTALL VALVE BODY OIL STRAINER ASSEMBLY

(a) Coat a new O-ring with ATF and install it to the valve body oil strainer assembly.

(b) Install the valve body oil strainer assembly with the 4 bolts.

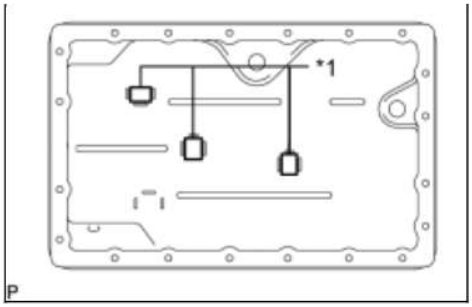
Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

4. INSTALL TRANSMISSION OIL CLEANER MAGNET

(a) Install the 3 transmission oil cleaner magnets to the automatic transmission oil pan sub-assembly as shown in the illustration.

Text in Illustration

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*1	Transmission Oil Cleaner Magnet

5. INSTALL AUTOMATIC TRANSMISSION OIL PAN SUB-ASSEMBLY

(a) Install a new automatic transmission oil pan gasket and the automatic transmission oil pan sub-assembly with the 20 bolts.

Torque: 7.0 N·m (71 kgf·cm, 62in·lbf)

NOTICE:

Remove the gasket and be careful not to spill oil on the contacting surfaces of the transmission case and oil pan.

6. INSTALL AUTOMATIC TRANSMISSION ASSEMBLY

INFO

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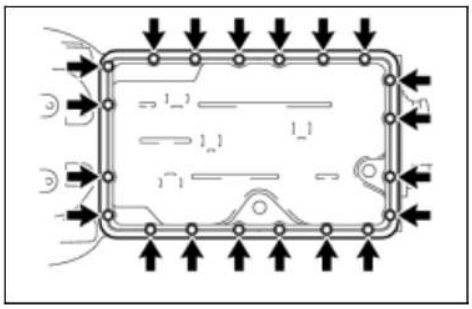
Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NRH01GX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: TRANSMISSION WIRE: REMOVAL (2013 FR-S)		

REMOVAL

1. REMOVE AUTOMATIC TRANSMISSION ASSEMBLY

INFO

2. REMOVE AUTOMATIC TRANSMISSION OIL PAN SUB-ASSEMBLY

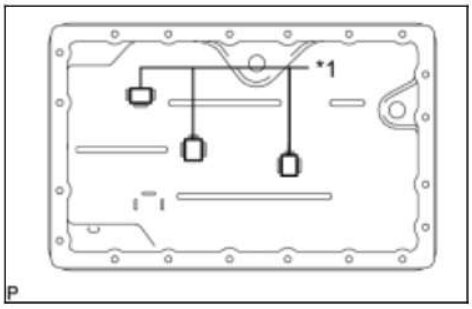


(a) Remove the 20 bolts, automatic transmission oil pan sub-assembly and the automatic transmission oil pan gasket.

NOTICE:

Some fluid will remain in the automatic transmission oil pan sub-assembly. Remove all the bolts and carefully remove the automatic transmission oil pan sub-assembly.

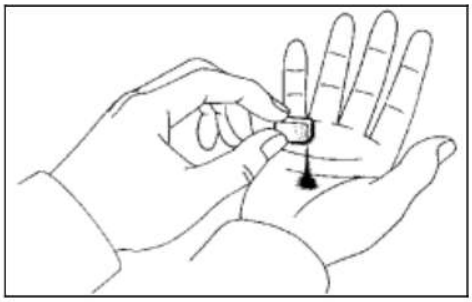
3. REMOVE TRANSMISSION OIL CLEANER MAGNET



(a) Remove the 3 transmission oil cleaner magnets from the automatic transmission oil pan sub-assembly.

Text in Illustration

*1	Transmission Oil Cleaner Magnet



(b) Examine the particles in the automatic transmission oil pan sub-assembly.

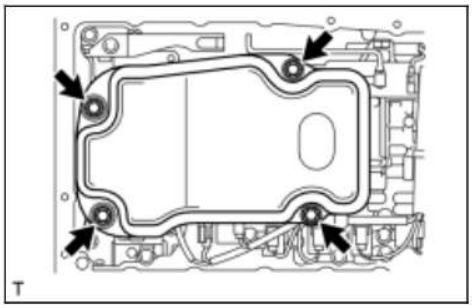
(1) Collect any steel chips with the removed transmission oil cleaner magnets. Carefully inspect the foreign matter and particles in the automatic transmission oil pan sub-assembly and on the transmission oil cleaner magnets to anticipate the type of wear you will find in the automatic transmission assembly.

Steel (magnetic): bearing, gear and clutch plate wear

Brass (non-magnetic): bush wear

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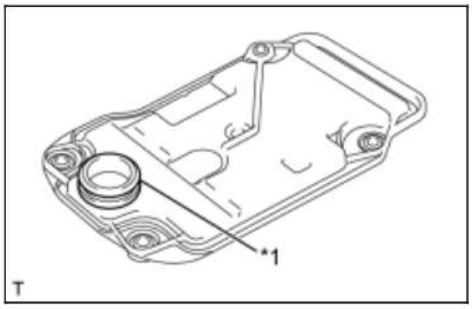
4. REMOVE VALVE BODY OIL STRAINER ASSEMBLY



(a) Remove the 4 bolts and the valve body oil strainer assembly.

NOTICE:

Be careful as some fluid will come out of the valve body oil strainer assembly.

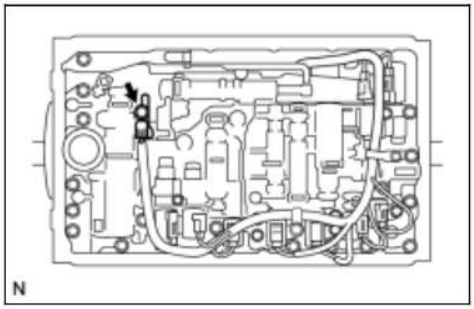


(b) Remove the O-ring from the valve body oil strainer assembly.

Text in Illustration

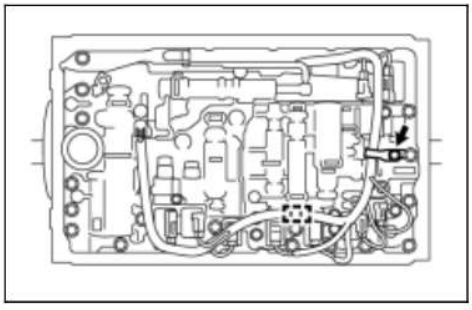
*1	O-ring

5. DISCONNECT TRANSMISSION WIRE



(a) Remove the bolt and the temperature sensor clamp.

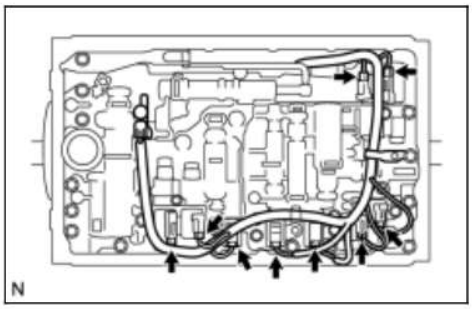
(b) Separate the ATF temperature sensor.



(c) Remove the bolt and the valve body wire harness clamp.

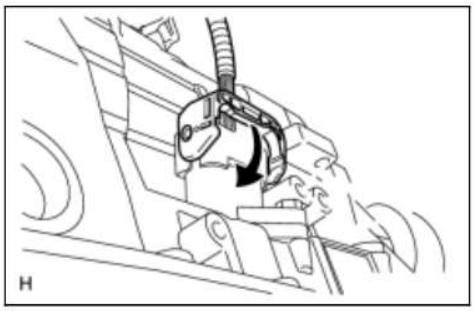
(d) Disengage the wire harness clamp.

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(e) Disconnect the 9 solenoid valve connectors.

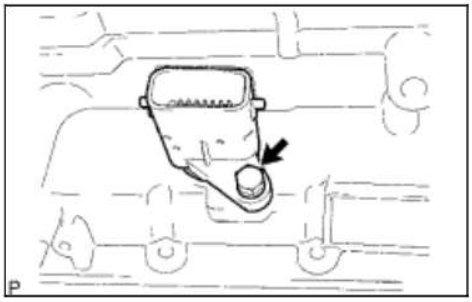
6. REMOVE TRANSMISSION WIRE



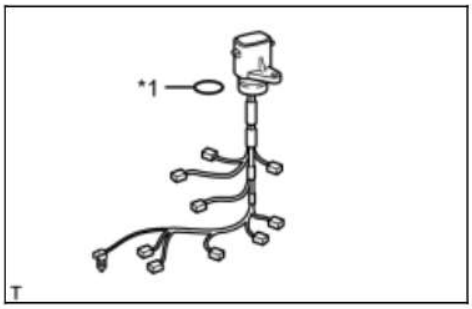
(a) Disconnect the transmission wire connector.

HINT:

Disengage the claw, press down the lever, and disconnect the transmission wire connector.



(b) Remove the bolt and pull out the transmission wire.



(c) Remove the O-ring from the transmission wire.

Text in Illustration

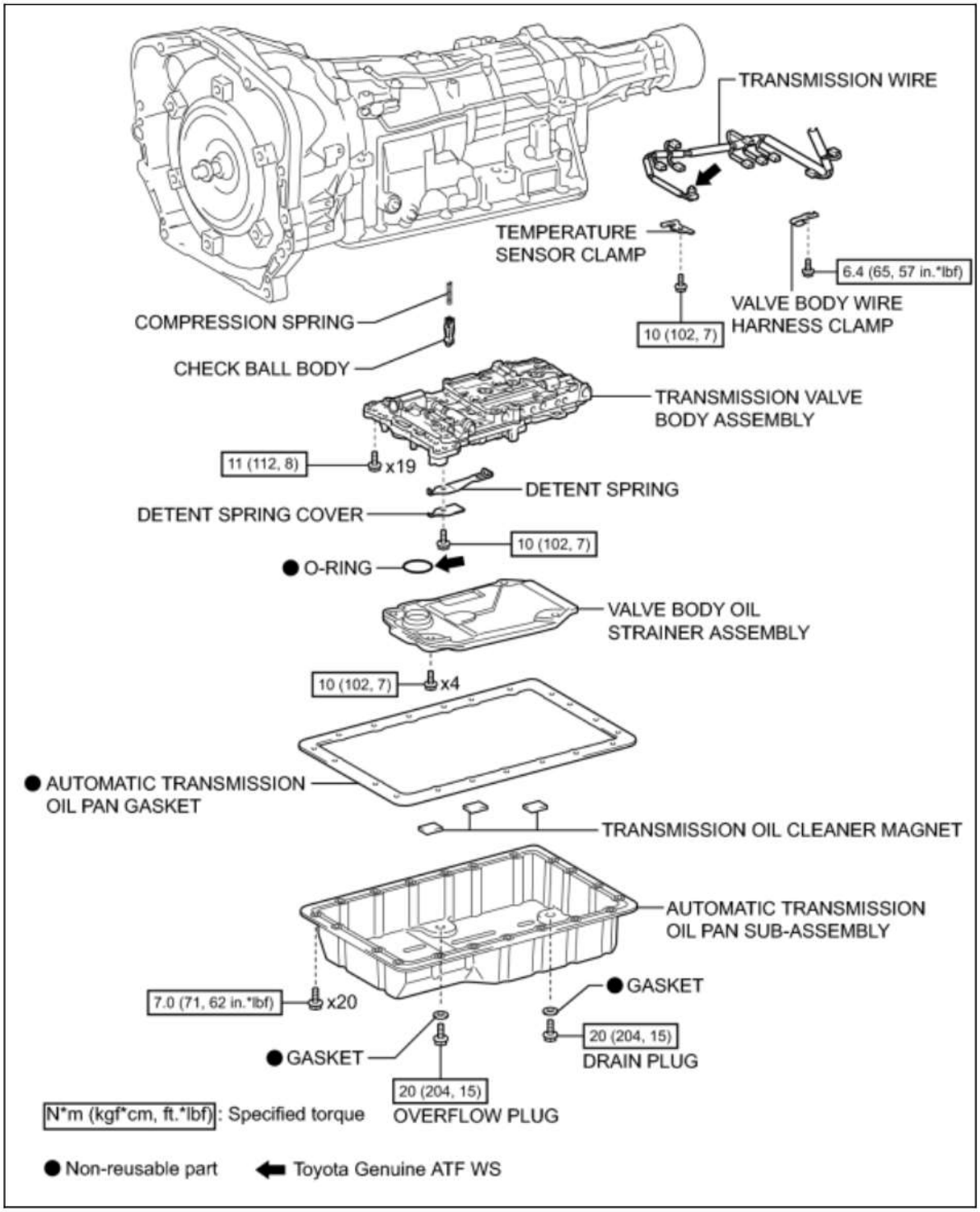
*1	O-ring

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Last Modified: 3-27-2012	6.4 K	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NRN028X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: VALVE BODY ASSEMBLY: COMPONENTS (2013 FR-S)		

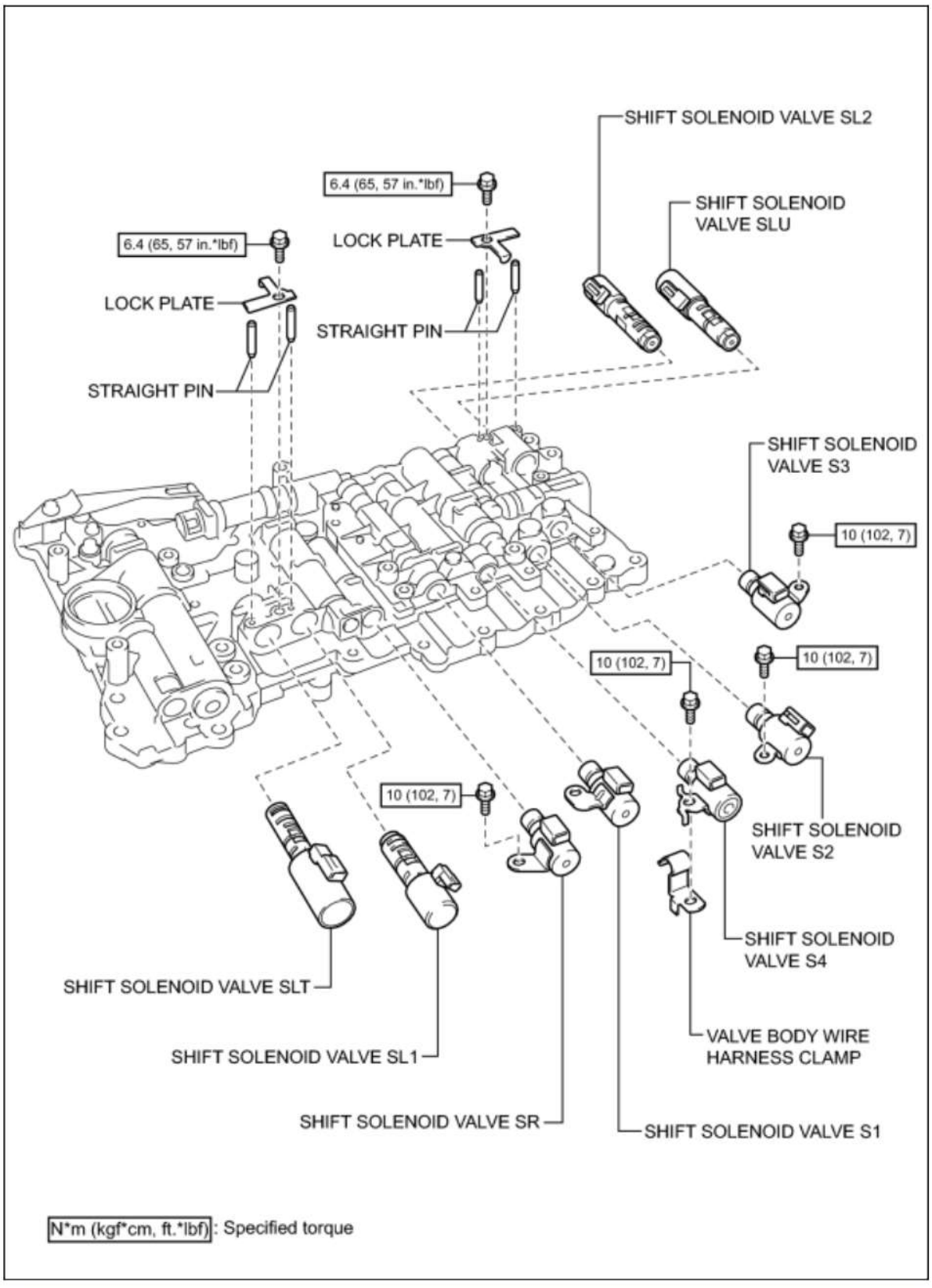
COMPONENTS

ILLUSTRATION



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ILLUSTRATION

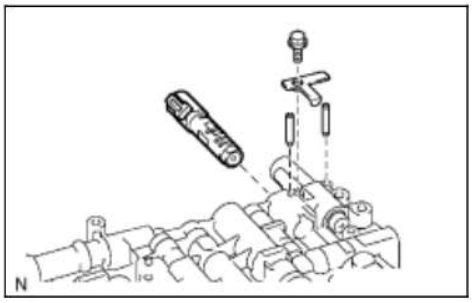


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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000O9L05YX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: VALVE BODY ASSEMBLY: DISASSEMBLY (2013 FR-S)		

DISASSEMBLY

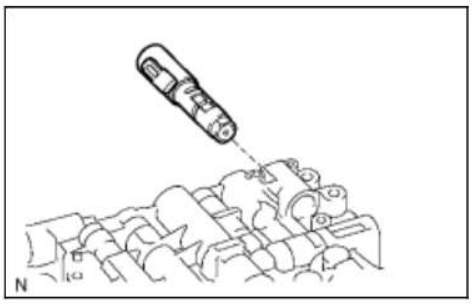
1. REMOVE SHIFT SOLENOID VALVE SL2



(a) Remove the bolt, lock plate and 2 straight pins.

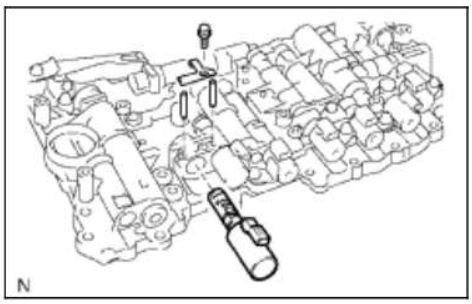
(b) Remove the shift solenoid valve SL2.

2. REMOVE SHIFT SOLENOID VALVE SLU



(a) Remove the shift solenoid valve SLU.

3. REMOVE SHIFT SOLENOID VALVE SLT

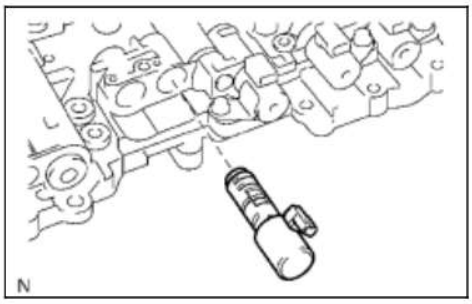


(a) Remove the bolt, lock plate and 2 straight pins.

(b) Remove the shift solenoid valve SLT.

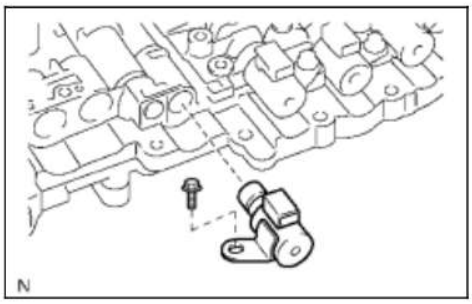
4. REMOVE SHIFT SOLENOID VALVE SL1

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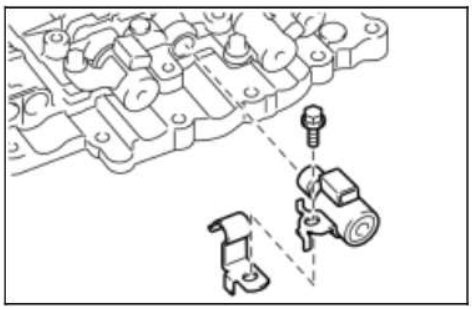
(a) Remove the shift solenoid valve SL1.

5. REMOVE SHIFT SOLENOID VALVE SR



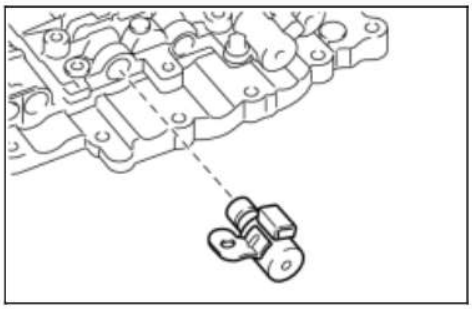
(a) Remove the bolt and the shift solenoid valve SR.

6. REMOVE SHIFT SOLENOID VALVE S4



(a) Remove the bolt, valve body wire harness clamp and the shift solenoid valve S4.

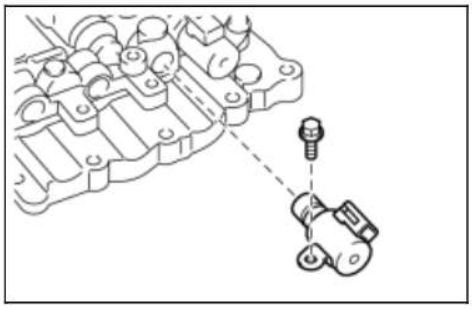
7. REMOVE SHIFT SOLENOID VALVE S1



(a) Remove the shift solenoid valve S1.

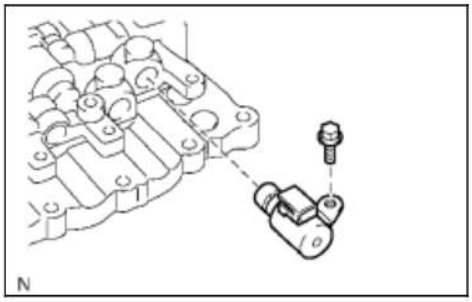
8. REMOVE SHIFT SOLENOID VALVE S2

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(a) Remove the bolt and the shift solenoid valve S2.

9. REMOVE SHIFT SOLENOID VALVE S3



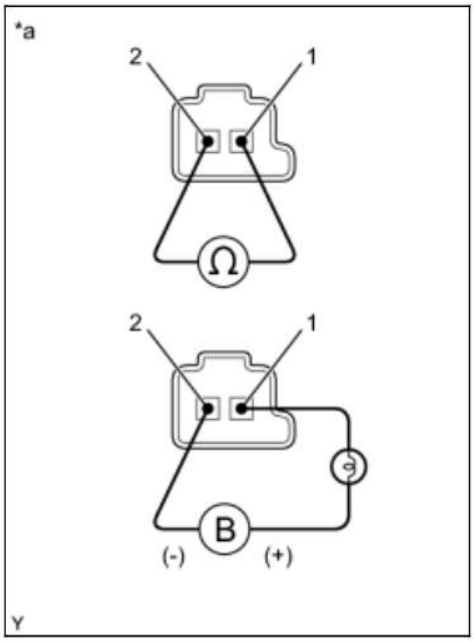
(a) Remove the bolt and the shift solenoid valve S3.

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Last Modified: 3-27-2012	6.4 G	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000ODH04LX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: VALVE BODY ASSEMBLY: INSPECTION (2013 FR-S)		

INSPECTION

1. INSPECT SHIFT SOLENOID VALVE SL1 AND SL2



(a) Measure the resistance according to the value(s) in the table below.

Text in Illustration

*a	Component without harness connected (Shift Solenoid Valve SL1 and SL2)

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	5.0 to 5.6 Ω

(b) Connect the positive (+) lead with a 21 W bulb to terminal 1 and the negative (-) lead to terminal 2 of the shift solenoid valve connector, then check the movement of the valve.

OK:

The solenoid makes an operating sound.

If the result is not as specified, replace the shift solenoid valve.

2. INSPECT SHIFT SOLENOID VALVE S1

(a) Measure the resistance according to the value(s) in the table below.

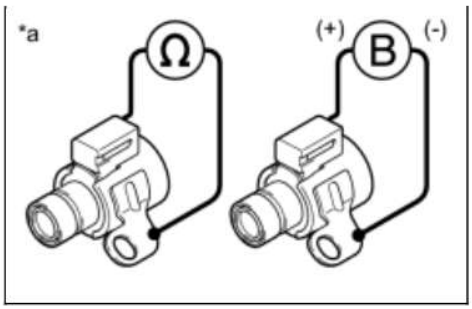
Text in Illustration

*a	Component without harness connected (Shift Solenoid Valve S1)

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION

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Shift solenoid valve S1 connector terminal - Shift solenoid valve S1 body	20°C (68°F)	11 to 15 Ω

(b) Connect the positive (+) lead to the terminal of the shift solenoid valve S1 connector, and the negative (-) lead to the shift solenoid valve S1 body.

OK:

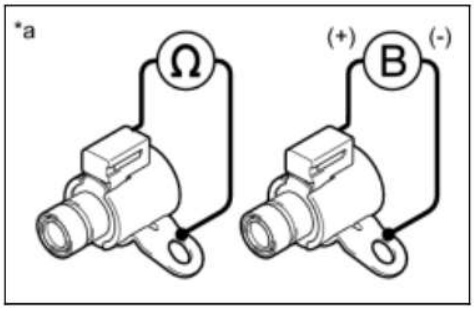
The solenoid makes an operating sound.

If the result is not as specified, replace the shift solenoid valve S1.

3. INSPECT SHIFT SOLENOID VALVE S2

(a) Measure the resistance according to the value(s) in the table below.

Text in Illustration



*a	Component without harness connected (Shift Solenoid Valve S2)

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
Shift solenoid valve S2 connector terminal - Shift solenoid valve S2 body	20°C (68°F)	11 to 15 Ω

(b) Connect the positive (+) lead to the terminal of the shift solenoid valve S2 connector, and the negative (-) lead to the shift solenoid valve S2 body.

OK:

The solenoid makes an operating sound.

If the result is not as specified, replace the shift solenoid valve S2.

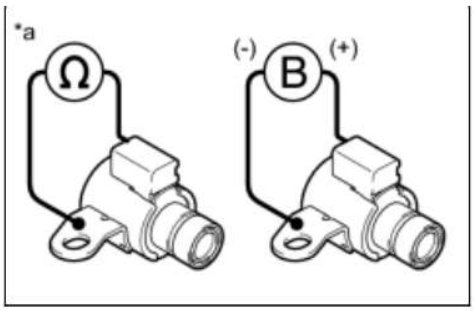
4. INSPECT SHIFT SOLENOID VALVE S3

(a) Measure the resistance according to the value(s) in the table below.

Text in Illustration

	Component without harness connected

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*a	(Shift Solenoid Valve S3)

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
Shift solenoid valve S3 connector terminal - Shift solenoid valve S3 body	20°C (68°F)	11 to 15 Ω

(b) Connect the positive (+) lead to the terminal of the shift solenoid valve S3 connector, and the negative (-) lead to the shift solenoid valve S3 body.

OK:

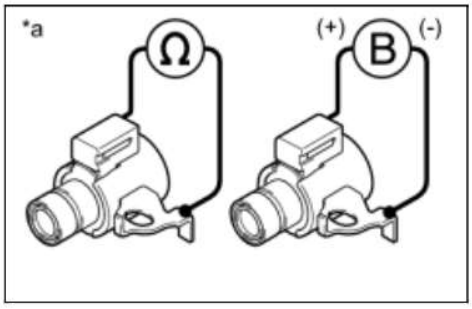
The solenoid makes an operating sound.

If the result is not as specified, replace the shift solenoid valve S3.

5. INSPECT SHIFT SOLENOID VALVE S4

(a) Measure the resistance according to the value(s) in the table below.

Text in Illustration



*a	Component without harness connected (Shift Solenoid Valve S4)

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
Shift solenoid valve S4 connector terminal - Shift solenoid valve S4 body	20°C (68°F)	11 to 15 Ω

(b) Connect the positive (+) lead to the terminal of the shift solenoid valve S4 connector, and the negative (-) lead to the shift solenoid valve S4 body.

OK:

The solenoid makes an operating sound.

If the result is not as specified, replace the shift solenoid valve S4.

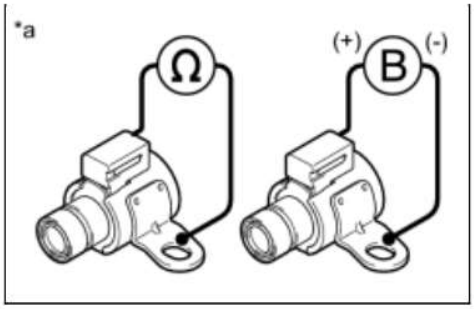
6. INSPECT SHIFT SOLENOID VALVE SR

(a) Measure the resistance according to the value(s) in the table below.

Text in Illustration

	Component without harness connected

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*a	(Shift Solenoid Valve SR)

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
Shift solenoid valve SR connector terminal - Shift solenoid valve SR body	20°C (68°F)	11 to 15 Ω

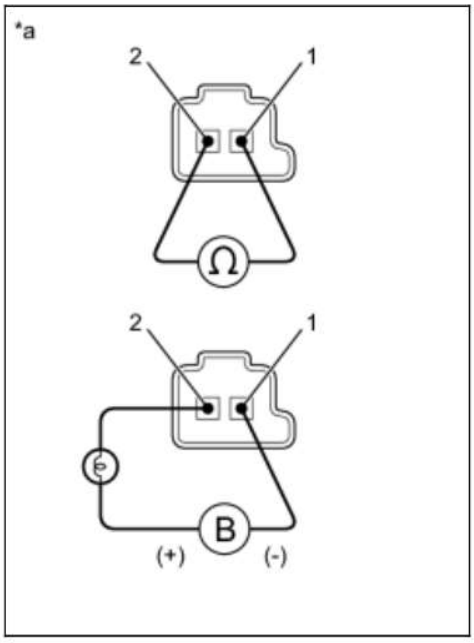
(b) Connect the positive (+) lead to the terminal of the shift solenoid valve SR connector, and the negative (-) lead to the shift solenoid valve SR body.

OK:

The solenoid makes an operating sound.

If the result is not as specified, replace the shift solenoid valve SR.

7. INSPECT SHIFT SOLENOID VALVE SLT



(a) Measure the resistance according to the value(s) in the table below.

Text in Illustration

*a	Component without harness connected (Shift Solenoid Valve SLT)

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	5.0 to 5.6 Ω

(b) Connect the positive (+) lead with a 21 W bulb to terminal 2 and the negative (-) lead to terminal 1 of the shift solenoid valve SLT connector, then check the movement of the valve.

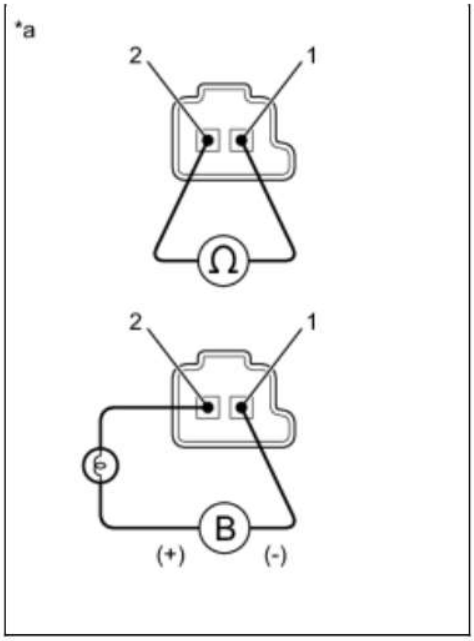
OK:

The solenoid makes an operating sound.

If the result is not as specified, replace the shift solenoid valve SLT.

8. INSPECT SHIFT SOLENOID VALVE SLU

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(a) Measure the resistance according to the value(s) in the table below.

Text in Illustration

*a	Component without harness connected (Shift Solenoid Valve SLU)

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	5.0 to 5.6 Ω

(b) Connect the positive (+) lead with a 21 W bulb to terminal 2 and the negative (-) lead to terminal 1 of the shift solenoid valve SLU connector, then check the movement of the valve.

OK:

The solenoid makes an operating sound.

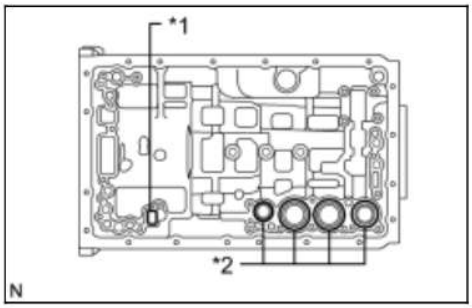
If the result is not as specified, replace the shift solenoid valve SLU.

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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NRM020X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: VALVE BODY ASSEMBLY: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL TRANSMISSION VALVE BODY ASSEMBLY



(a) Install the check ball body and the compression spring.

Text in Illustration

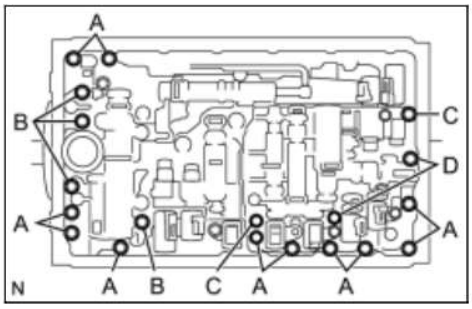
*1	Check Ball Body and Compression Spring
*2	Accumulator Piston

(b) Check the accumulator pistons, check ball body and the compression spring shown in the illustration.

(c) Connect the manual valve connecting rod sub-assembly to the manual valve lever sub-assembly.

(d) Install the transmission valve body assembly with the 19 bolts.

Torque: 11 N·m (112 kgf·cm, 8ft·lbf)



Bolt Length

BOLT	BOLT LENGTH
A	25 mm (0.984 in.)
B	36 mm (1.42 in.)
C	45 mm (1.77 in.)
D	50 mm (1.97 in.)

(e) Install the detent spring and the detent spring cover with the bolt.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

2. CONNECT TRANSMISSION WIRE INFO

3. INSTALL VALVE BODY OIL STRAINER ASSEMBLY INFO

4. INSTALL TRANSMISSION OIL CLEANER MAGNET INFO

5. INSTALL AUTOMATIC TRANSMISSION OIL PAN SUB-ASSEMBLY

6. INSTALL FRONT EXHAUST PIPE ASSEMBLY

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INFO

7. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL INFO

8. ADD AUTOMATIC TRANSMISSION FLUID LEVEL

INFO

9. INSPECT AUTOMATIC TRANSMISSION FLUID LEVEL

10. RESET CHECK RESET MEMORY

INFO

11. INSPECT EXHAUST GAS LEAK INFO

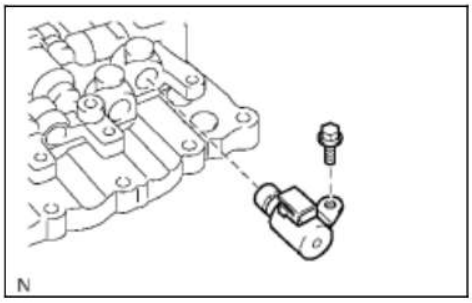


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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000O9M05YX
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: VALVE BODY ASSEMBLY: REASSEMBLY (2013 FR-S)		

REASSEMBLY

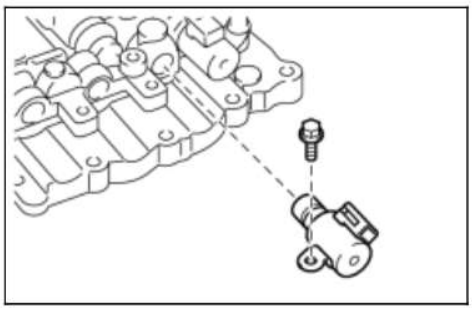
1. INSTALL SHIFT SOLENOID VALVE S3



(a) Install the shift solenoid valve S3 with the bolt.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

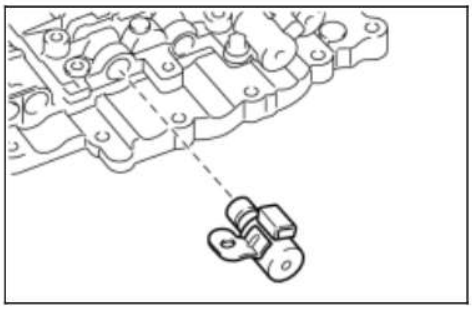
2. INSTALL SHIFT SOLENOID VALVE S2



(a) Install the shift solenoid valve S2 with the bolt.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

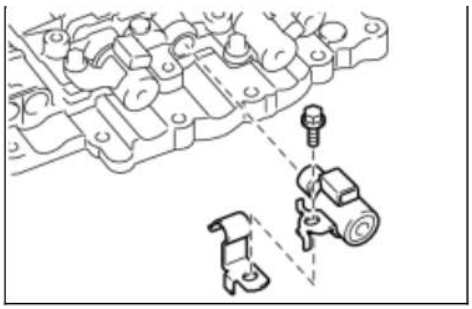
3. INSTALL SHIFT SOLENOID VALVE S1



(a) Install the shift solenoid valve S1.

4. INSTALL SHIFT SOLENOID VALVE S4

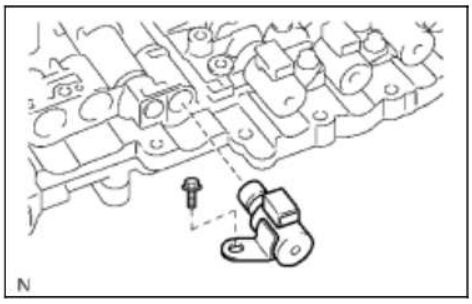
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(a) Install the valve body wire harness clamp, shift solenoid valve S4 with the bolt.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

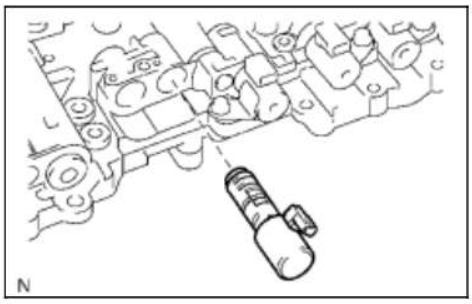
5. INSTALL SHIFT SOLENOID VALVE SR



(a) Install the shift solenoid valve SR with the bolt.

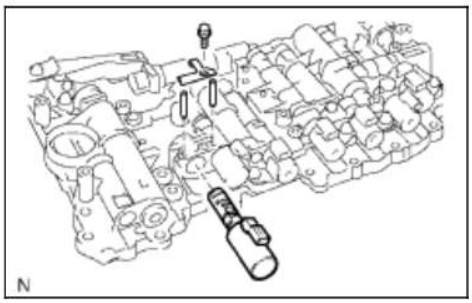
Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

6. INSTALL SHIFT SOLENOID VALVE SL1



(a) Install the shift solenoid valve SL1.

7. INSTALL SHIFT SOLENOID VALVE SLT



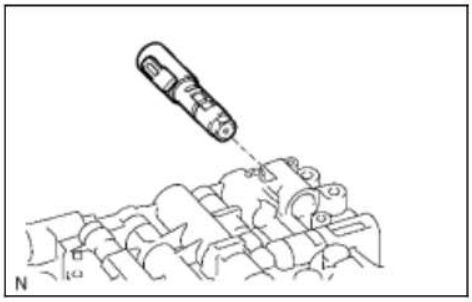
(a) Install the shift solenoid valve SLT.

(b) Install the 2 straight pins and lock plate with the bolt.

Torque: 6.4 N·m (65 kgf·cm, 57in·lbf)

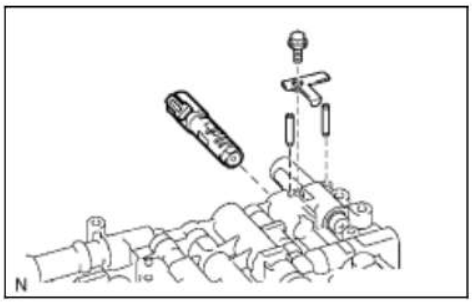
8. INSTALL SHIFT SOLENOID VALVE SLU

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(a) Install the shift solenoid valve SLU.

9. INSTALL SHIFT SOLENOID VALVE SL2



(a) Install the shift solenoid valve SL2.

(b) Install the 2 straight pins and lock plate with the bolt.

Torque: 6.4 N·m (65 kgf·cm, 57in·lbf)

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Last Modified: 3-27-2012	6.4 A	**From:** 201203
Model Year: 2013	**Model:** FR-S	**Doc ID:** RM000000NRO020X
Title: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: VALVE BODY ASSEMBLY: REMOVAL (2013 FR-S)		

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL INFO

2. REMOVE FRONT EXHAUST PIPE ASSEMBLY

INFO

3. DRAIN AUTOMATIC TRANSMISSION FLUID

(a) Remove the drain plug and gasket, and drain the ATF.

(b) Install the drain plug and a new gasket.

Torque: 20 N·m (204 kgf·cm, 15ft·lbf)

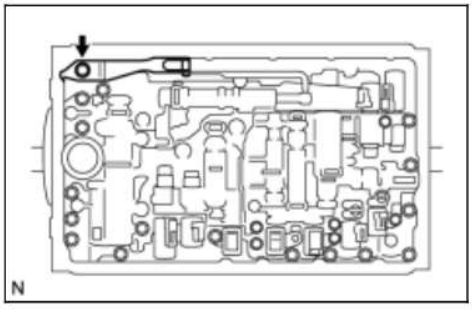
4. REMOVE AUTOMATIC TRANSMISSION OIL PAN SUB-ASSEMBLY INFO

5. REMOVE TRANSMISSION OIL CLEANER MAGNET INFO

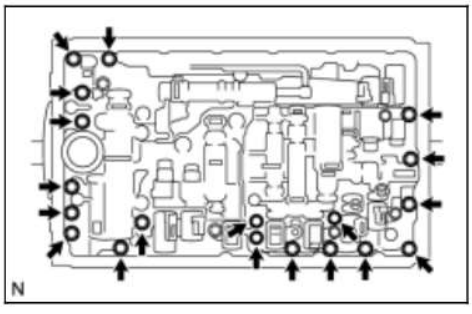
6. REMOVE VALVE BODY OIL STRAINER ASSEMBLY INFO

7. DISCONNECT TRANSMISSION WIRE INFO

8. REMOVE TRANSMISSION VALVE BODY ASSEMBLY

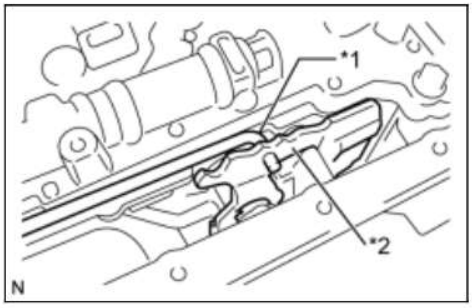


(a) Remove the bolt, detent spring cover and the detent spring.



(b) Remove the 19 bolts and the transmission valve body assembly.

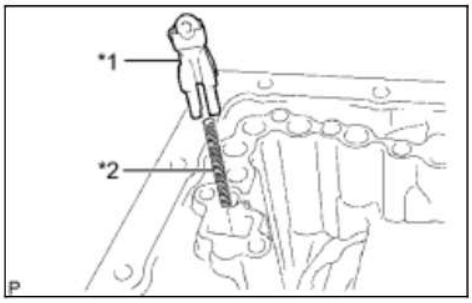
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(c) Disconnect the manual valve connecting rod sub-assembly from the manual valve lever sub-assembly.

Text in Illustration

*1	Manual Valve Connecting Rod Sub-assembly
*2	Manual Valve Lever Sub-assembly



(d) Remove the check ball body and the compression spring.

Text in Illustration

*1	Check Ball Body
*2	Compression Spring

NOTICE:

Do not drop the check ball body and compression spring.

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