

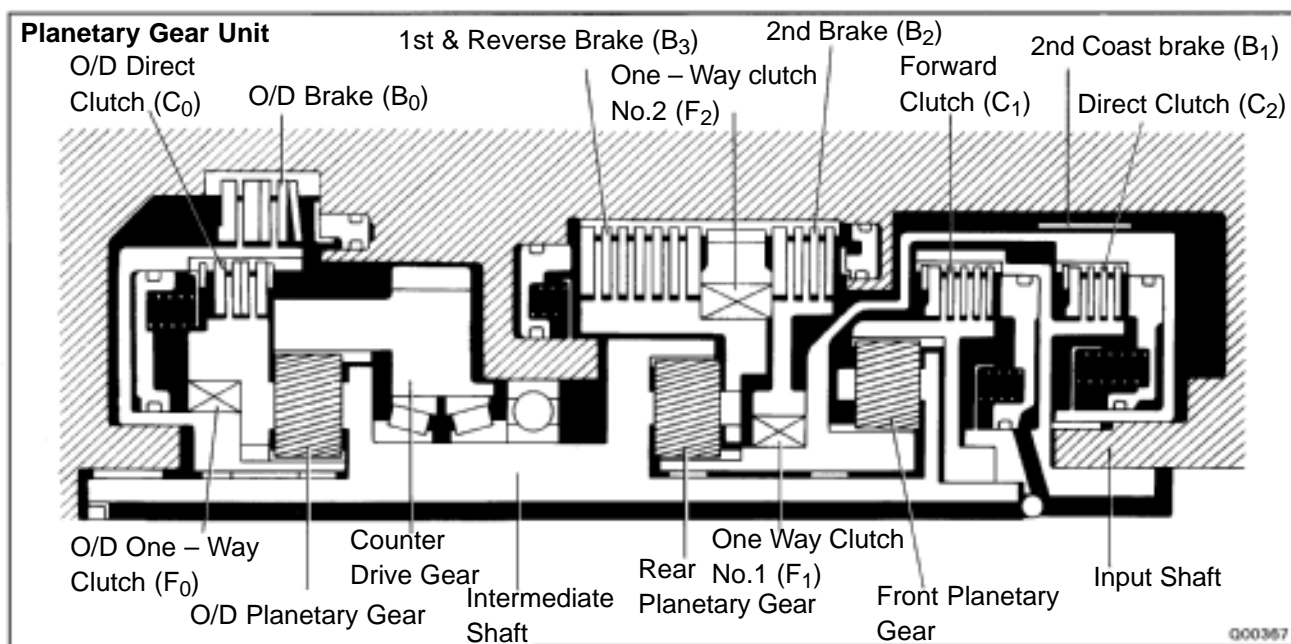
# AUTOMATIC TRANSAXLE SYSTEM

AX034-01

## PRECAUTION

If the vehicle is equipped with a mobile communication system, refer to the precautions in the IN section.

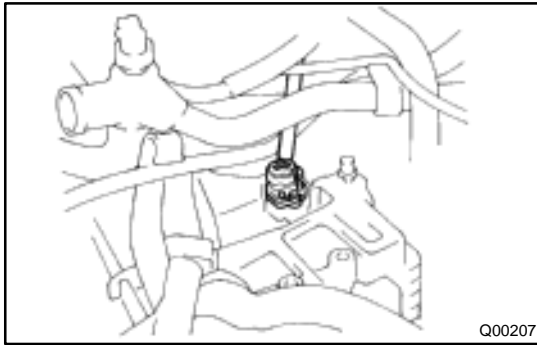
## OPERATION



Shift lever position	Gear position	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	B <sub>0</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>
P	Parking	◆									
R	Reverse	◆		◆				◆			
N	Neutral	◆									
D	1st	◆	◆						◆		◆
	2nd	◆	◆				◆		◆	◆	
	3rd	◆	◆	◆			◆		◆		
	O/D		◆	◆	◆		◆				
2	1st	◆	◆						◆		◆
	2nd	◆	◆			◆	◆		◆	◆	
	*3rd	◆	◆	◆			◆		◆		
L	1st	◆	◆					◆	◆		◆
	*2nd	◆	◆			◆	◆		◆	◆	

◆: Operating

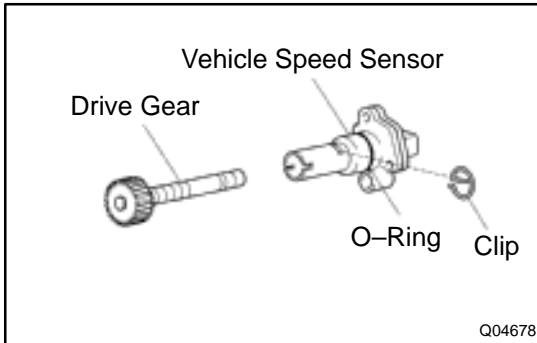
\*: Down-shift only in the 3rd gear for the 2 position and 2nd gear for the L position no up-shift.



## VEHICLE SPEED SENSOR ON-VEHICLE REPAIR

AX036-01

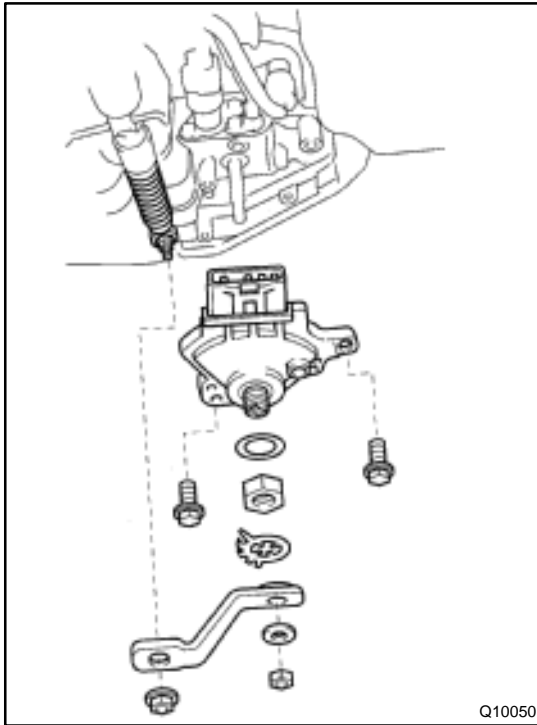
1. REMOVE AIR CLEANER ASSEMBLY
2. DISCONNECT VEHICLE SPEED SENSOR CONNECTOR
3. REMOVE VEHICLE SPEED SENSOR ASSEMBLY
  - (a) Remove the bolt and vehicle speed sensor assembly.



- (b) Remove the clip and speedometer driven gear from vehicle speed sensor.
  - (c) Remove the O-ring from vehicle speed sensor.
4. INSTALL VEHICLE SPEED SENSOR ASSEMBLY
  - (a) Coat a new O-ring with ATF and install it to the vehicle speed sensor.
  - (b) Install the speedometer driven gear to the vehicle speed sensor and clip.
  - (c) Install the vehicle speed sensor assembly and torque the bolts.

**Torque: 16 N·m (160 kgf·cm, 12 ft·lbf)**

5. CONNECT VEHICLE SPEED SENSOR CONNECTOR
6. INSTALL AIR CLEANER ASSEMBLY



## PARK/NEUTRAL POSITION (PNP) SWITCH

AX037-01

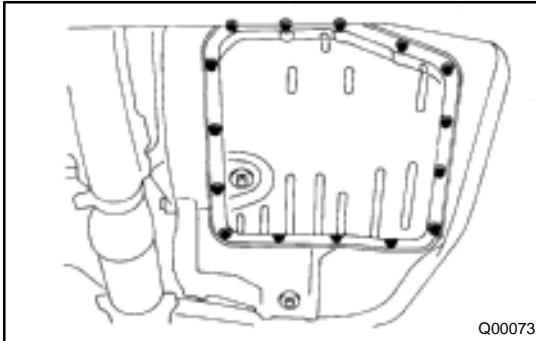
### ON-VEHICLE REPAIR

- 1. REMOVE CONTROL SHAFT LEVER**
  - (a) Remove the nut and control cable.
  - (b) Remove the nut, washer and control shaft lever.
- 2. DISCONNECT PARK/NEUTRAL POSITION SWITCH CONNECTOR**
- 3. REMOVE PARK/NEUTRAL POSITION SWITCH**
  - (a) Pry off the lock washer and remove the nut.
  - (b) Remove the 2 bolts and park/neutral position switch.
- 4. INSTALL PARK/NEUTRAL POSITION SWITCH**
  - (a) Install the park/neutral position switch with 2 bolts.  
**Torque: 5.4 N·m (55 kgf·cm, 48 in.-lbf)**
  - (b) Install a new lock plate and the nut.  
**Torque: 6.9 N·m (70 kgf·cm, 61 in.-lbf)**
  - (c) Bend claws on the lock plate to fix the nut.
  - (d) Adjust the park/neutral position switch.  
(See page [DI-389](#))
- 5. CONNECT PARK/NEUTRAL POSITION SWITCH CONNECTOR**
- 6. INSTALL CONTROL SHAFT LEVER**
  - (a) Install the control shaft lever, washer and nut.  
**Torque: 13 N·m (130 kgf·cm, 9 ft-lbf)**
  - (b) Install the control cable and nut.  
**Torque: 15 N·m (150 kgf·cm, 11 ft-lbf)**

# VALVE BODY ASSEMBLY ON-VEHICLE REPAIR

AX038-01

## 1. DRAIN TRANSAXLE FLUID

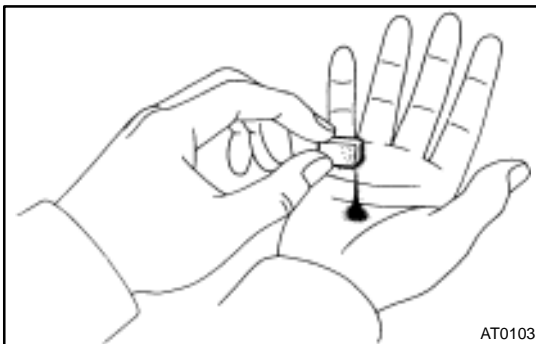


## 2. REMOVE OIL PAN AND GASKET

### NOTICE:

**Some fluid will remain in the oil pan.**

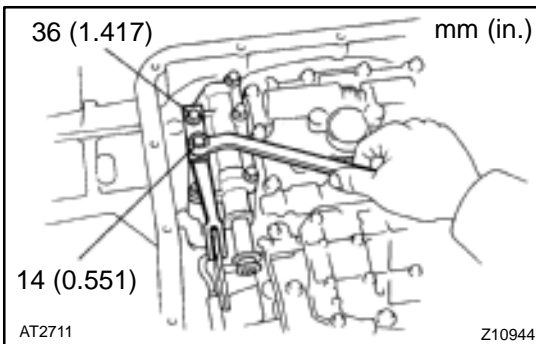
Remove the oil pan bolts, and carefully remove the oil pan assembly. Discard the gasket.



## 3. EXAMINE PARTICLES IN PAN

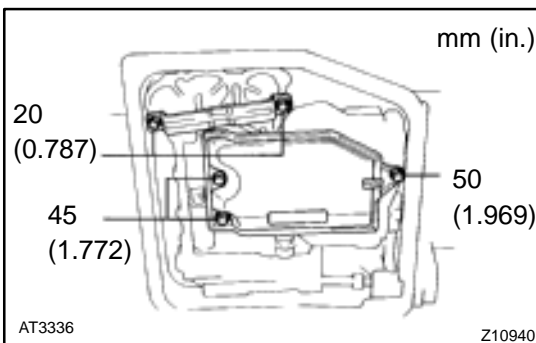
Remove the magnets and use them to collect any steel chips. Look carefully at the chips and particles in the pan and on the magnet to anticipate what type of wear you will find in the trans-axle.

- ◆ Steel (magnetic): bearing, gear and plate wear
- ◆ Brass (non-magnetic): bushing wear



## 4. REMOVE MANUAL VALVE BODY DETENT SPRING AND MANUAL VALVE BODY

- (a) Remove the detent spring on the manual valve body.
- (b) Remove the manual valve body.

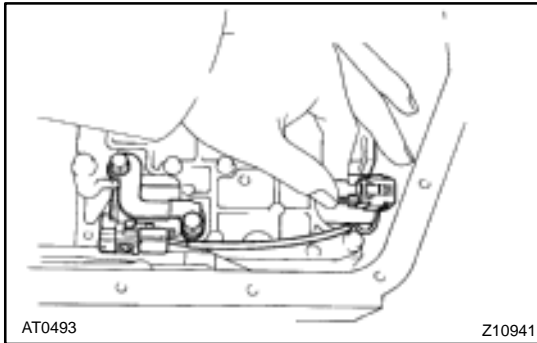


## 5. REMOVE OIL STRAINER AND OIL PIPE BRACKET

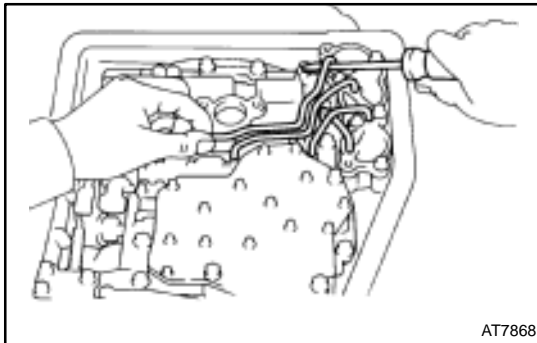
- (a) Remove the 3 bolts and the oil strainer.
- (b) Remove the 2 bolts and oil pipe bracket.

### NOTICE:

**Be careful as oil will come out of the strainer when it is removed.**



## 6. DISCONNECT SOLENOID CONNECTORS

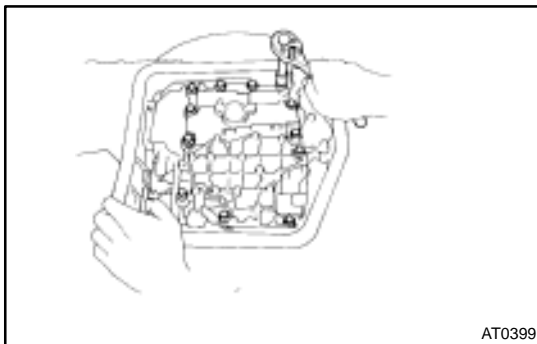


## 7. REMOVE OIL PIPES

Pry up the both pipe ends with a large screwdriver and remove the 4 pipes.

### NOTICE:

Be careful not to bend or damage the pipe.



## 8. REMOVE VALVE BODY

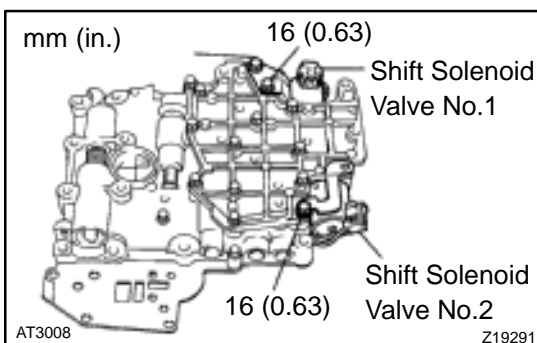
Remove the 12 bolts.



## 9. REMOVE THROTTLE CABLE

- (a) Disconnect the throttle cable.
- (b) Remove the valve body.

## 10. REMOVE 2ND BRAKE APPLY GASKET



## 11. REMOVE SHIFT SOLENOID VALVE NO.1 AND NO.2

- (a) Remove the 2 bolts and shift solenoid valve No.1.
- (b) Remove the bolt and shift solenoid valve No.2.
- (c) Remove the 2 O-rings from the shift solenoid valve No.1 and No.2.

**12. INSTALL SHIFT SOLENOID VALVE NO.1 AND NO.2**

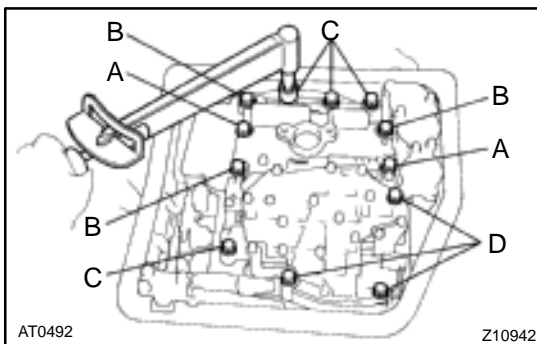
- (a) Coat 2 new O-rings with ATF.
- (b) Install the 2 O-rings to the shift solenoid valve No.1 and No.2.
- (c) Install the shift valve No.1 with the 2 bolts.  
**Torque: 5.4 N·m (55 kgf·cm, 48 in.-lbf)**
- (d) Install the shift valve No.2 with the bolt.  
**Torque: 5.4 N·m (55 kgf·cm, 48 in.-lbf)**

**13. INSTALL NEW 2ND BRAKE APPLY GASKET****14. INSTALL VALVE BODY**

- (a) While holding the cam down by your hand, slip the cable end into the slot.

**NOTICE:**

**Do not entangle the solenoid wire.**



- (b) Install the valve body with the 12 bolts.

**HINT:**

Temporarily install the 12 bolts first, then tighten the 12 bolts.

**Torque: 10 N·m (100 kgf·cm, 7 ft-lbf)**

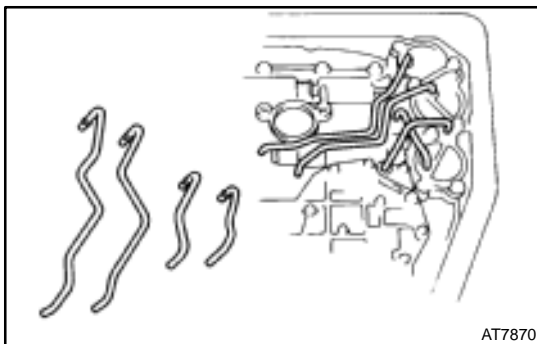
**Bolt length:**

**Bolt A: 20 mm (0.79 in.)**

**Bolt B: 25 mm (0.98 in.)**

**Bolt C: 36 mm (1.42 in.)**

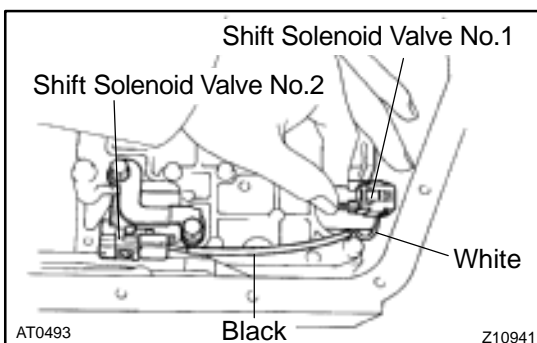
**Bolt D: 50 mm (1.97 in.)**

**15. INSTALL OIL PIPES**

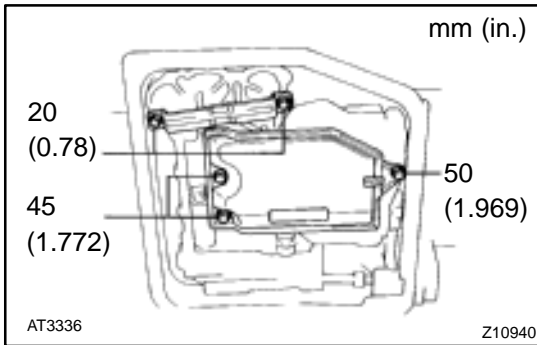
Using a plastic hammer, install the 4 pipes into the positions indicated in the illustration.

**NOTICE:**

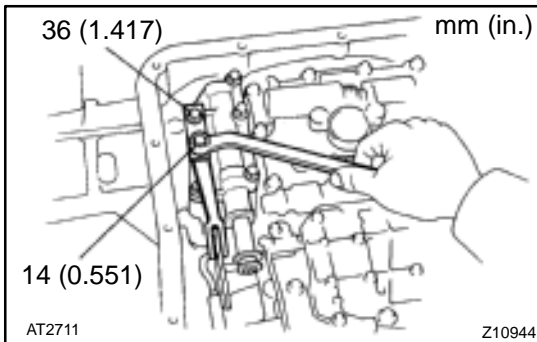
**Be careful not to bend or damage the pipes.**

**16. CONNECT SOLENOID CONNECTORS**

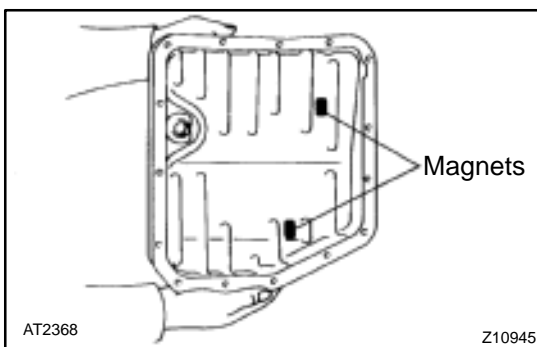
Connect the black wire harness to shift solenoid valve No.2 and white wire harness to shift solenoid valve No.1.

**17. INSTALL OIL STRAINER AND OIL PIPE BRACKET**

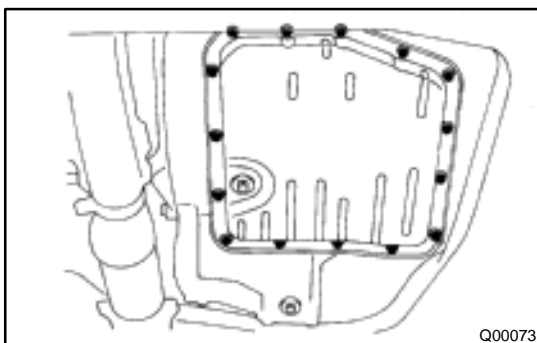
- (a) Install the 2 bolts and oil pipe bracket.  
**Torque: 10 N·m (100 kgf-cm, 7 ft-lbf)**
- (b) Install the 3 bolts and oil strainer.  
**Torque: 10 N·m (100 kgf-cm, 7 ft-lbf)**

**18. INSTALL MANUAL VALVE BODY DETENT SPRING AND MANUAL VALVE BODY**

- (a) Align the manual valve with the pin on the manual shaft lever.
- (b) Lower the manual valve body into place.
- (c) Temporarily install the 4 bolts first. Then, tighten them with a torque wrench.  
**Torque: 10 N·m (100 kgf-cm, 7 ft-lbf)**
- (d) Place the detent spring on the manual valve body and temporarily install the 2 bolts first.  
**Torque: 10 N·m (100 kgf-cm, 7 ft-lbf)**
- (e) Check that the manual valve lever is touching the center of the detent spring tip roller.

**19. INSTALL MAGNETS IN OIL PAN****NOTICE:**

**Make sure that the magnets do not interfere with the oil pipes.**

**20. INSTALL OIL PAN AND GASKET**

Install a new gasket and oil pan with the 15 bolts.

**Torque: 4.9 N·m (50 kgf-cm, 43 in.-lbf)**

**21. FILL FLUID AND CHECK FLUID LEVEL**

(See page [DI-389](#))



## THROTTLE CABLE ON-VEHICLE REPAIR

### 1. DISCONNECT THROTTLE CABLE

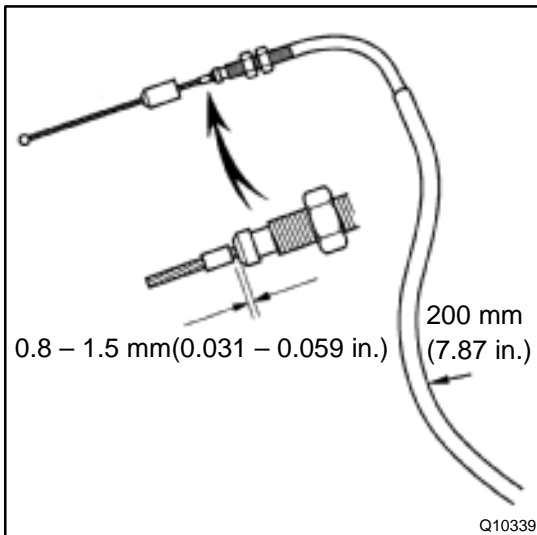
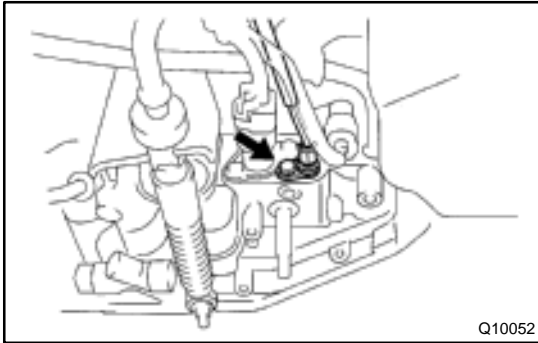
- Disconnect the cable from the throttle linkage.
- Disconnect the cable from the cable clamps in the engine compartment.

### 2. REMOVE PARK/NEUTRAL POSITION SWITCH (See page AX-4)

### 3. REMOVE VALVE BODY (See page AX-5)

### 4. REMOVE THROTTLE CABLE

- Remove the retaining bolt and plate.
- Pull out the cable from the transaxle case.



### 5. IF THROTTLE CABLE IS NEW, STAKE STOPPER OR PAINT MARK ON INNER CABLE

#### HINT:

New cable does not have a staked cable stopper.

- Bend the cable to ensure a radius of about 200 mm (7.87 in.).
- Pull the inner cable lightly until a slight resistance is felt, and hold it there.
- Stake the stopper, 0.8 – 1.5 mm (0.031 – 0.059 in.) from the end of the outer cable.
- Install a new O-ring to the throttle cable.
- Push in the throttle cable and install the retaining bolt.

### 6. INSTALL VALVE BODY (See page AX-5)

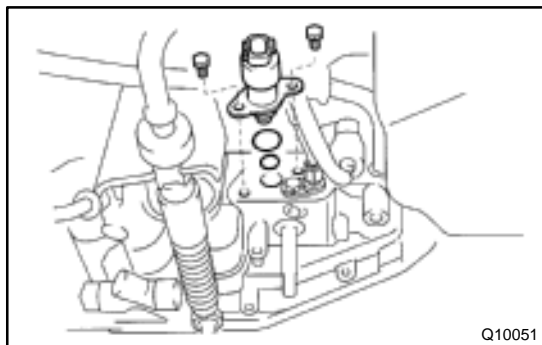
### 7. INSTALL PARK/NEUTRAL POSITION SWITCH (See page AX-4)

### 8. CONNECT THROTTLE CABLE

### 9. FILL FLUID AND CHECK FLUID LEVEL

(See page [DI-389](#))

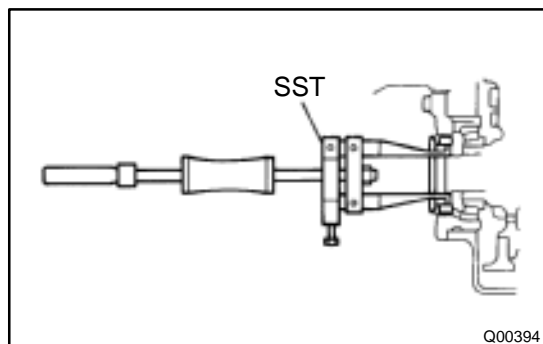
### 10. ADJUST THROTTLE CABLE (See page [DI-389](#))



## SHIFT SOLENOID VALVE SL ON-VEHICLE REPAIR

AX03A-01

1. **REMOVE PARK/NEUTRAL POSITION SWITCH**  
(See page AX-4)
2. **DISCONNECT SHIFT SOLENOID VALVE SL CONNECTOR**
3. **REMOVE SHIFT SOLENOID VALVE SL**
  - (a) Remove the 2 bolts and shift solenoid valve SL.
  - (b) Remove the 2 O-rings from the shift solenoid valve SL.
4. **INSTALL SHIFT SOLENOID VALVE SL**
  - (a) Coat 2 new O-rings with ATF and install them to the shift solenoid valve SL.
  - (b) Install the shift solenoid valve SL and 2 bolts.
5. **CONNECT SHIFT SOLENOID VALVE SL CONNECTOR**
6. **INSTALL PARK/NEUTRAL POSITION SWITCH**  
(See page AX-4)

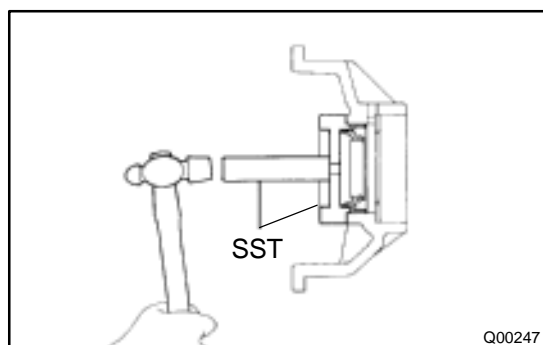


## DIFFERENTIAL OIL SEAL ON-VEHICLE REPAIR

AX03B-01

1. REMOVE LH AND RH DRIVE SHAFTS  
(See page [SA-17](#))
2. REMOVE SIDE GEAR SHAFT OIL SEAL

Using SST, drive out the oil seals on both sides.  
SST 09308-00010

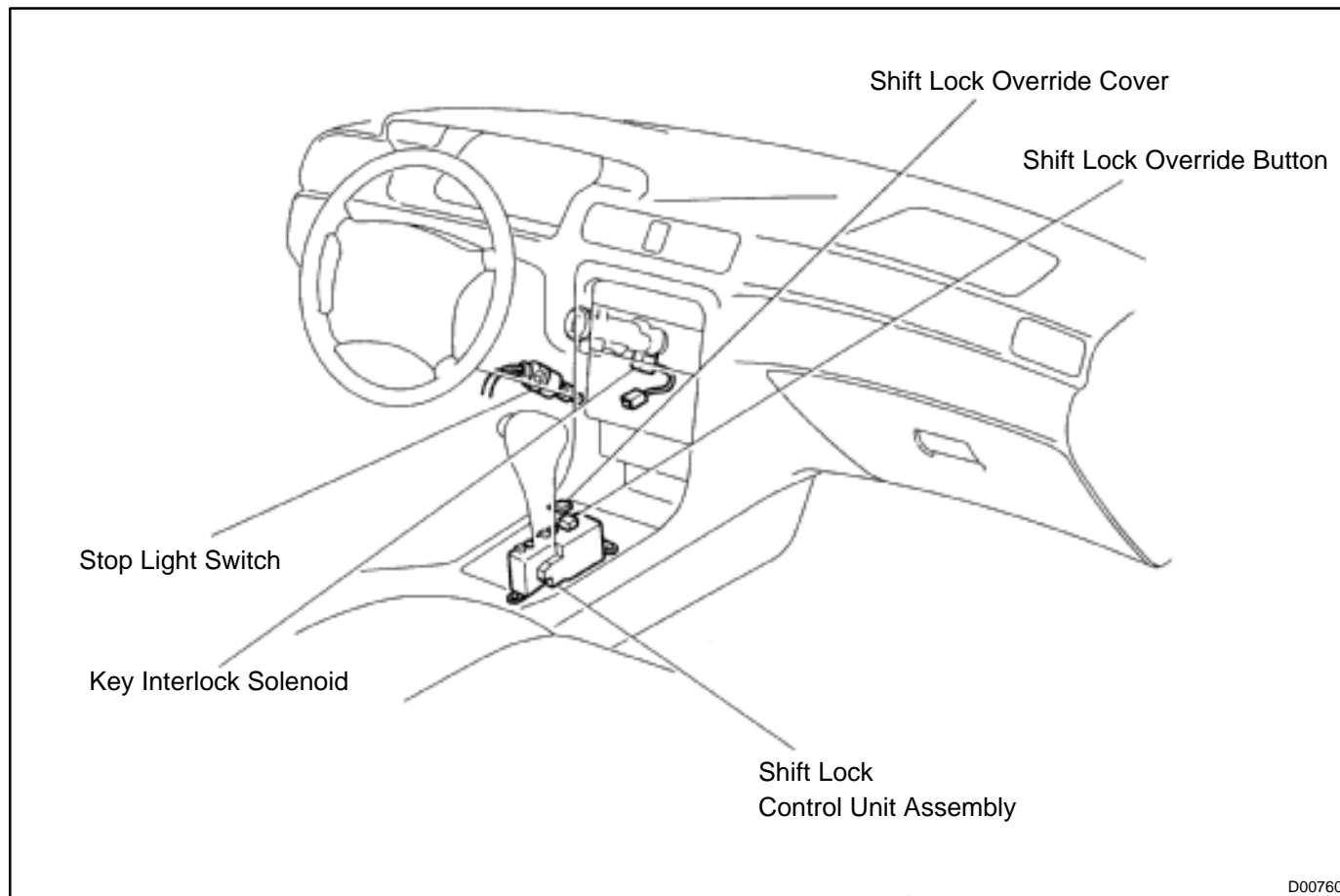


3. INSTALL SIDE GEAR SHAFT OIL SEAL
  - (a) Using SST, drive in a new oil seal.  
SST 09350-32014 (09351-32130, 09351-32150)  
Oil seal depth:  
LH:  $2.7 \pm 0.5$  mm ( $0.106 \pm 0.020$  in.)  
RH:  $0 \pm 0.5$  mm ( $0 \pm 0.020$  in.)
  - (b) Coat the lip of oil seal with MP grease.
4. INSTALL LH AND RH DRIVE SHAFTS  
(See page [SA-24](#))
5. CHECK TRANSAXLE FLUID LEVEL  
(See page [DI-389](#))

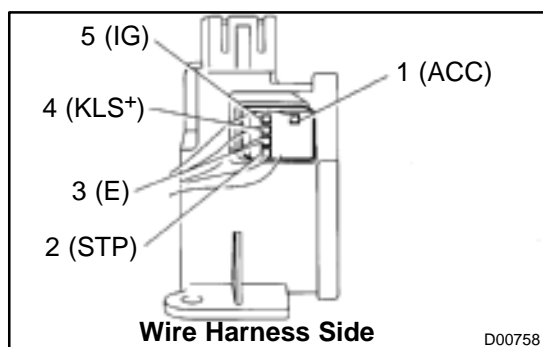
# SHIFT LOCK SYSTEM (TMC Made)

## LOCATION

AX03C-01



D00760



## INSPECTION

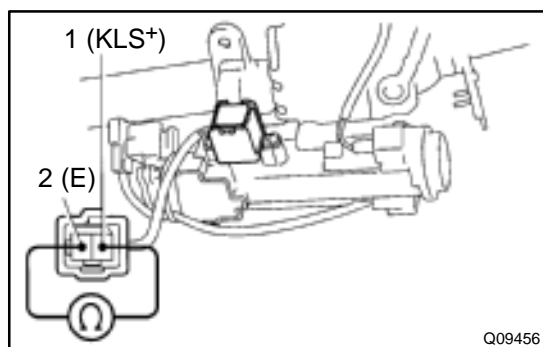
### 1. INSPECT SHIFT LOCK CONTROL UNIT ASSEMBLY

Using a voltmeter, measure the voltage at each terminal.

HINT:

Do not disconnect the shift lock control unit assembly connector.

Terminal	Measuring Condition	Voltage (V)
1 – 3 (ACC – E)	Ignition switch ACC	10 – 14
5 – 3 (IG – E)	Ignition switch ON	10 – 14
2 – 3 (STP – E)	Depressing brake pedal	10 – 14
4 – 3 (KLS+ – E)	(1) Ignition switch ACC and P position	0
	(2) Ignition switch ACC and except P position	7.5 – 11
	(3) Ignition switch ACC and except P position (After approx. 1 second)	6 – 9.5

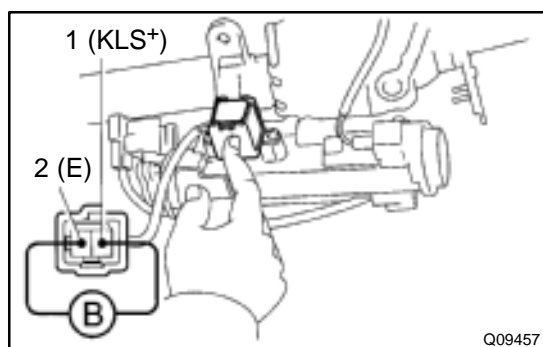


### 2. INSPECT KEY INTERLOCK SOLENOID

- Disconnect the solenoid connector.
- Using an ohmmeter, measure resistance between terminals.

**Standard resistance: 12.5 – 16.5  $\Omega$**

If resistance value is not as specified, replace the solenoid.

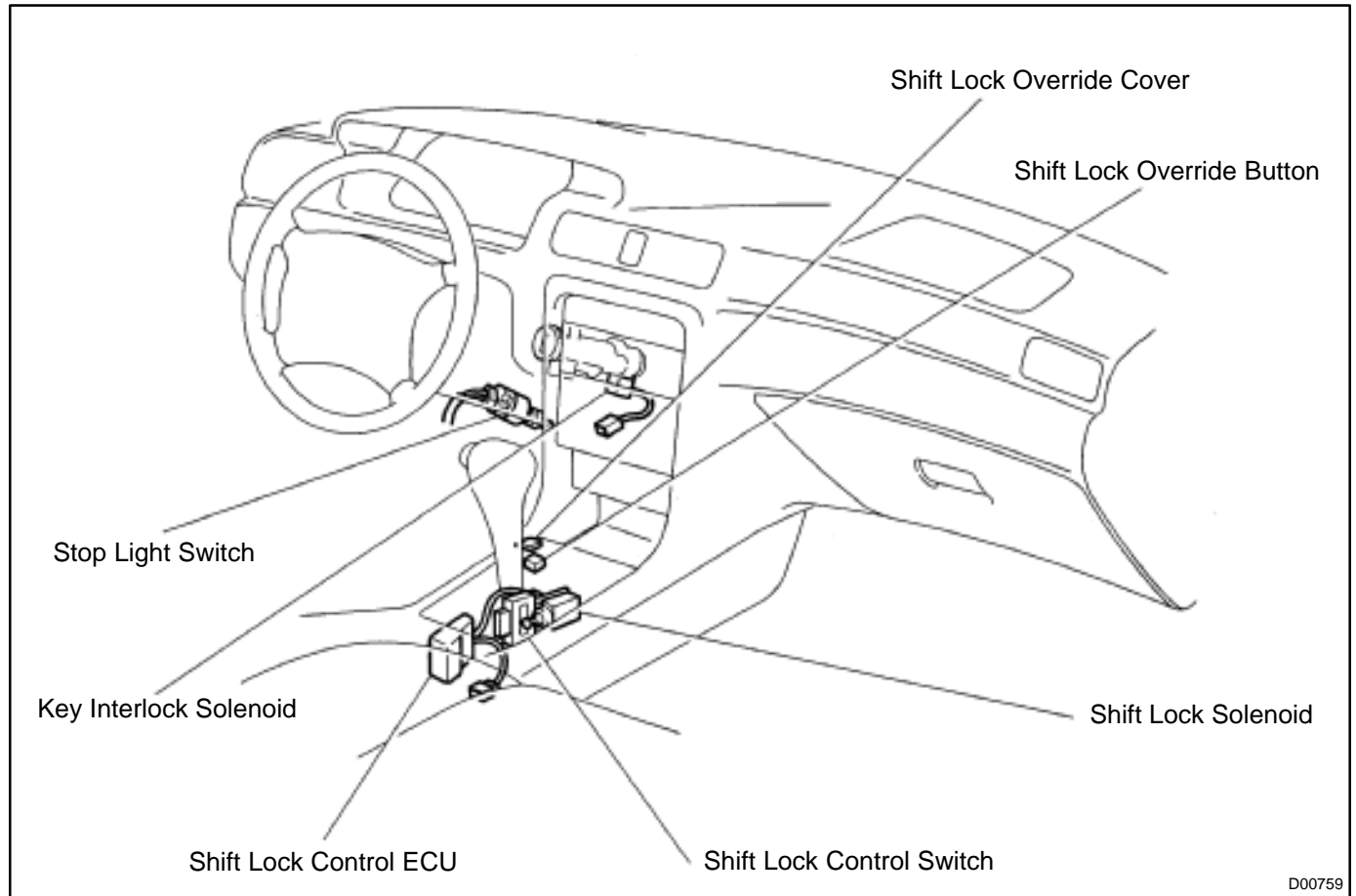


- Apply battery positive voltage between terminals. Check that an operation noise can be heard from the solenoid. If the solenoid does not operate, replace the solenoid.

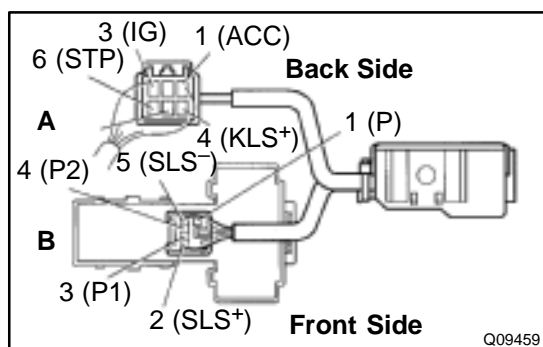
# SHIFT LOCK SYSTEM (TMMK Made)

## LOCATION

AX03E-01



D00759



## INSPECTION

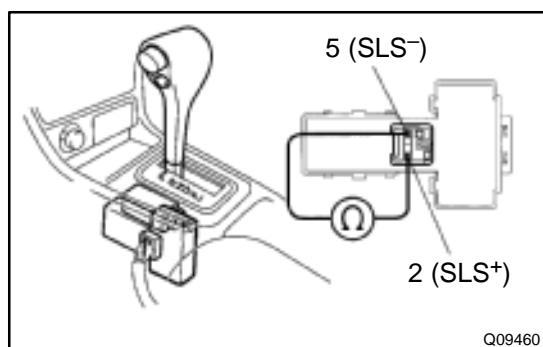
### 1. INSPECT SHIFT LOCK CONTROL ECU

Using a voltmeter, measure voltage at each terminal.

HINT:

Do not disconnect the ECU connector.

Terminal	Measuring Condition	Voltage (V)
A, 1 – A, 5 (ACC – E)	Ignition switch ACC	10 – 14
A, 3 – A, 5 (IG – E)	Ignition switch ON	10 – 14
A, 6 – A, 5 (STP – E)	Depressing brake pedal	10 – 14
A, 4 – A, 5 (KLS+ – E)	(1) Ignition switch ACC and P position	0
	(2) Ignition switch ACC and except P position	7.5 – 11
	(3) Ignition switch ACC and except P position (After approx. 1 second)	6 – 9.5
B, 2 – B, 5 (SLS+ – SLS-)	(1) Ignition switch ON and P position	0
	(2) Depress brake pedal	8 – 13.5
	(3) Except P position	0
B, 3 – B, 1 (P1 – P)	(1) Ignition switch ON, P position and depressing brake pedal	0
	(2) Shift except P position under conditions above	9 – 13.5
B, 4 – B, 1 (P2 – P)	(1) Ignition switch ACC, P position	9 – 13.5
	(2) Shift except P position under conditions above	0

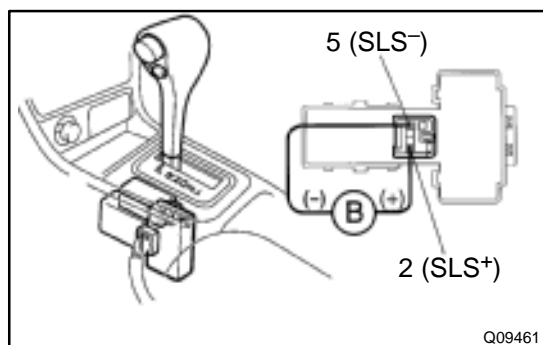


### 2. INSPECT SHIFT LOCK SOLENOID

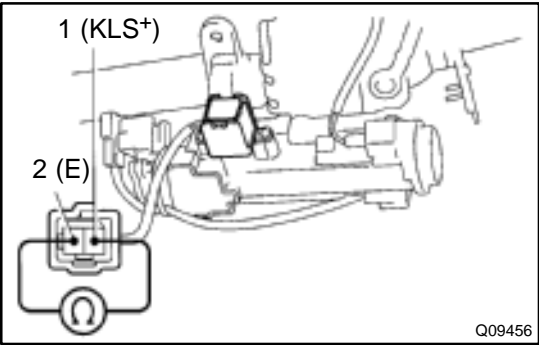
- Disconnect the solenoid connector.
- Using an ohmmeter, measure resistance between terminals.

**Standard resistance: 29 – 35  $\Omega$**

If resistance value is not as specified, replace the solenoid.



- Apply battery positive voltage between terminals. Check that operation noise can be heard from the solenoid.
- If the solenoid does not operate, replace the solenoid.

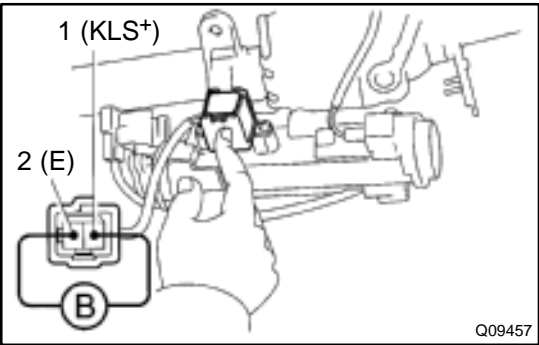


3. INSPECT KEY INTERLOCK SOLENOID

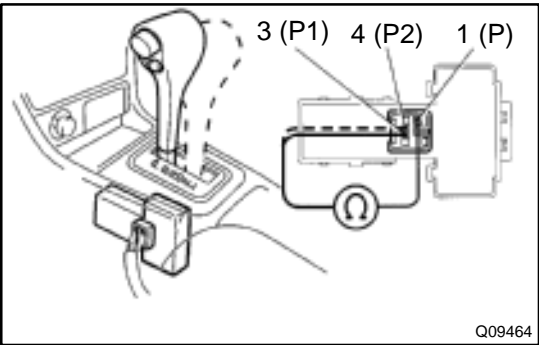
- (a) Disconnect the solenoid connector.
- (b) Using an ohmmeter, measure resistance between terminals.

Standard resistance: 12.5 – 16.5 Ω

If resistance value is not as specified, replace the solenoid.



- (c) Apply battery positive voltage between terminals. Check that an operation noise can be heard from the solenoid.
- If the solenoid does not operate, replace the solenoid.



4. INSPECT SHIFT LOCK CONTROL SWITCH

Inspect that there is continuity between each terminal.

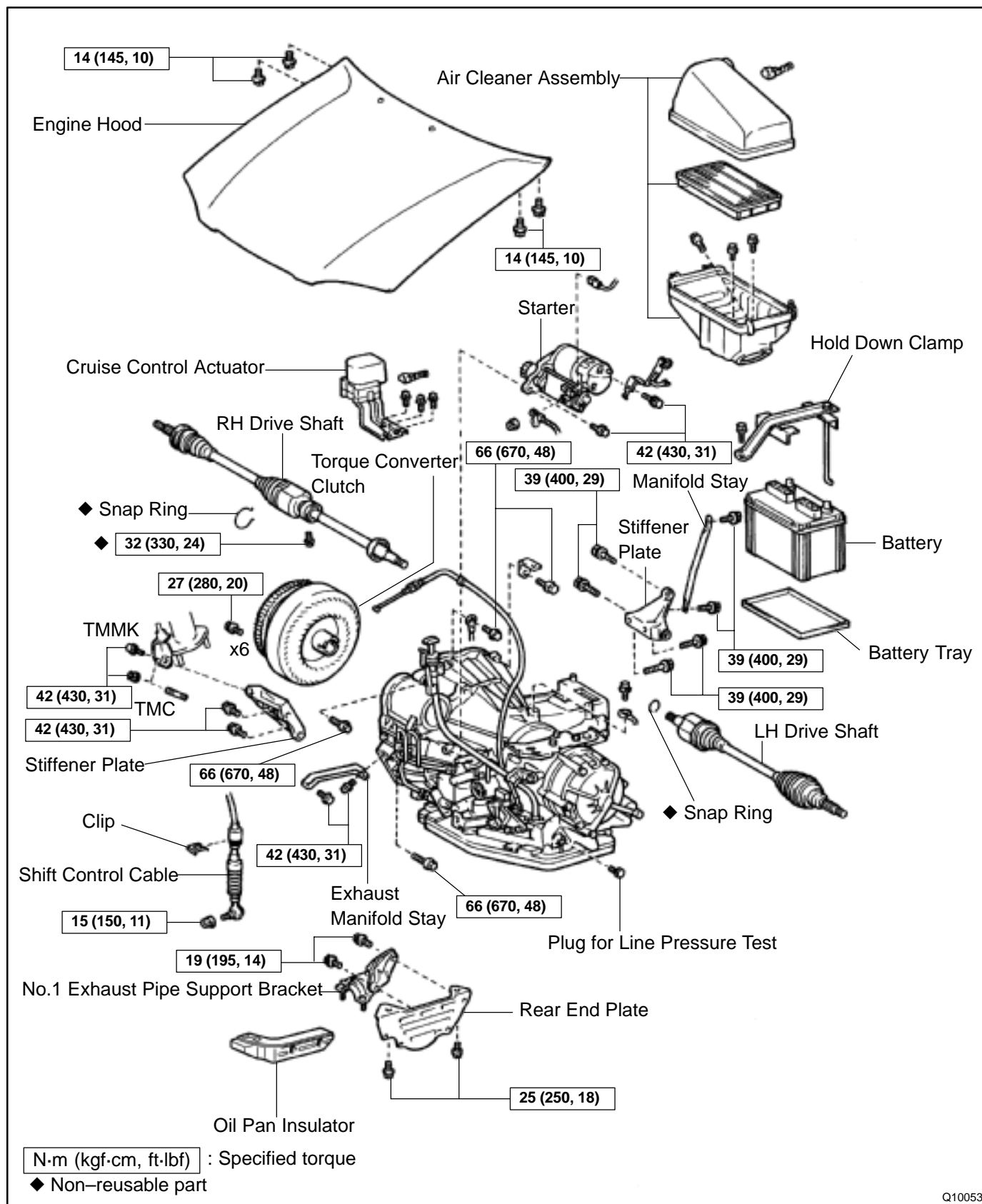
Shift position	Tester connection	Specified value
P position (Release button is not pushed)	1 – 3 (P – P1)	Continuity
P position (Release button is pushed)	1 – 3 (P – P1)	Continuity
	1 – 4 (P – P2)	
R, N, D, 2, L position	1 – 4 (P – P2)	Continuity

If continuity is not as specified, replace the switch.

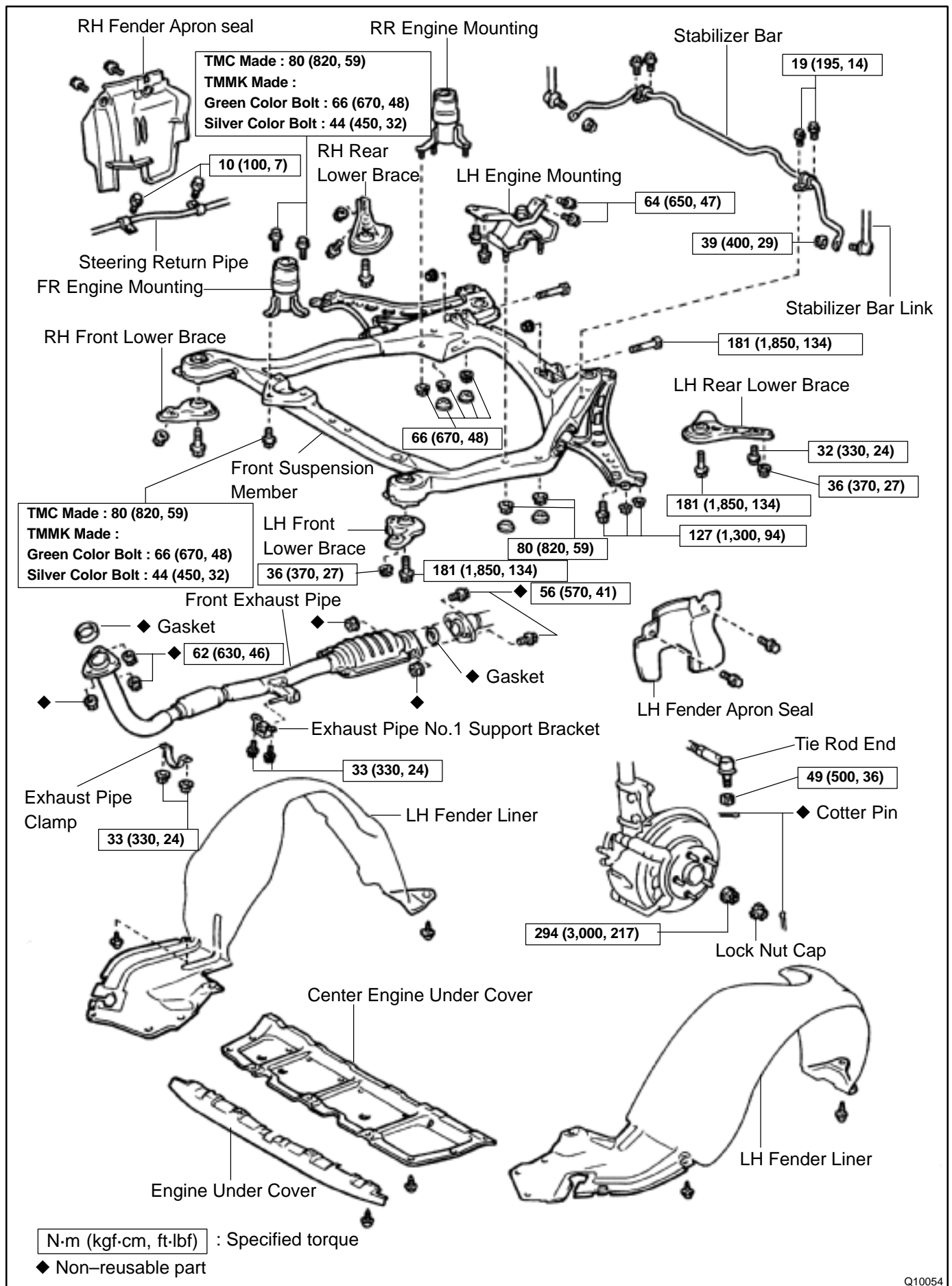


# AUTOMATIC TRANSAXLE UNIT COMPONENTS

AX03G-01

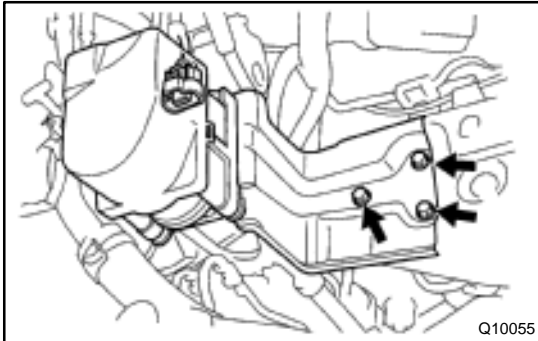


Q10053

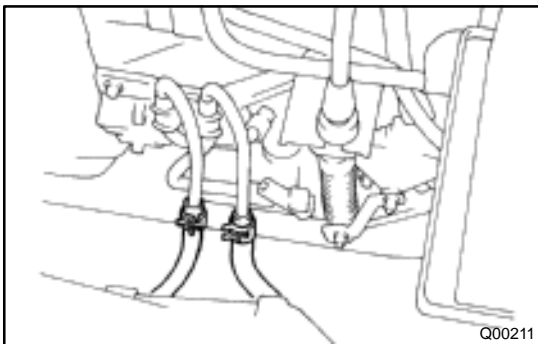


## REMOVAL

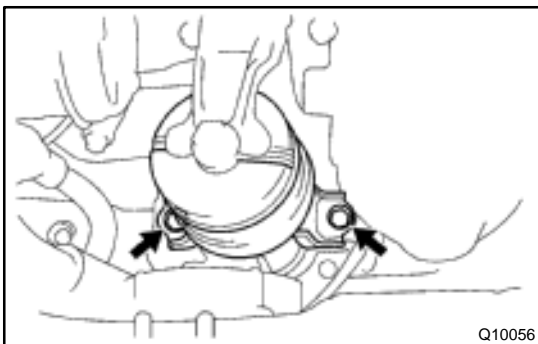
1. REMOVE BATTERY
2. REMOVE AIR CLEANER ASSEMBLY
3. DISCONNECT THROTTLE CABLE



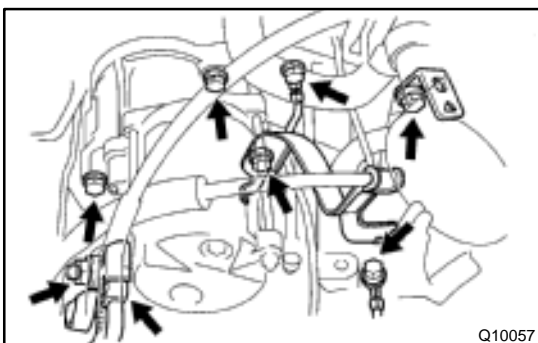
4. **w/ CRUISE CONTROL:**  
**REMOVE CRUISE CONTROL ACTUATOR**
  - (a) Disconnect the connector.
  - (b) Remove the 3 bolts and disconnect cruise control actuator with the bracket.



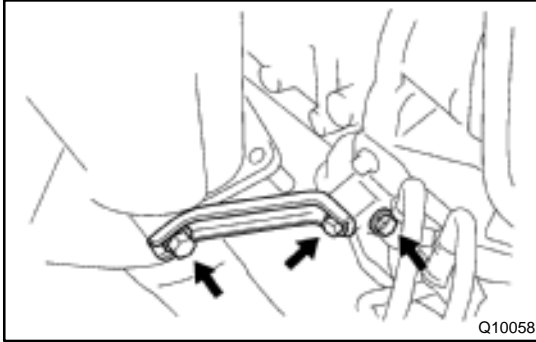
5. DISCONNECT OIL COOLER HOSE
6. DISCONNECT VEHICLE SPEED SENSOR CONNECTOR
7. DISCONNECT PARK/NEUTRAL POSITION SWITCH CONNECTOR
8. DISCONNECT SHIFT SOLENOID VALVE NO.1 AND NO.2 CONNECTOR
9. DISCONNECT SHIFT SOLENOID VALVE SL CONNECTOR



10. REMOVE 2 FRONT SIDE ENGINE MOUNTING BOLTS  
Torque:  
TMC made: 80 N·m (820 kgf·cm, 59 ft·lbf)  
TMMK made:  
Green color bolt: 66 N·m (670 kgf·cm, 48 ft·lbf)  
Silver color bolt: 44 N·m (450 kgf·cm, 32 ft·lbf)



11. DISCONNECT 2 GROUND CABLES
12. REMOVE STARTER
  - (a) Disconnect the connector and remove the nut.
  - (b) Remove the 2 bolts, shift cable clamp and starter.  
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)
13. REMOVE 3 TRANSAXLE-TO-ENGINE BOLTS  
Torque: 66 N·m (670 kgf·cm, 48 ft·lbf)

**14. REMOVE EXHAUST MANIFOLD STAY**

Remove the 2 bolts and exhaust manifold stay.

**Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)**

**15. REMOVE TRANSAXLE-TO-ENGINE BOLT**

**Torque: 66 N·m (670 kgf·cm, 48 ft·lbf)**

**16. REMOVE ENGINE HOOD**

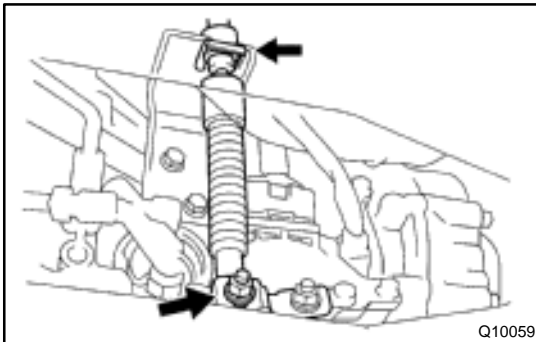
(a) Disconnect the washer pipe.

(b) Remove the 4 bolts and engine hood.

**Torque: 14 N·m (145 kgf·cm, 10 ft·lbf)**

**17. RAISE AND SUPPORT VEHICLE SECURELY****18. REMOVE FRONT WHEELS**

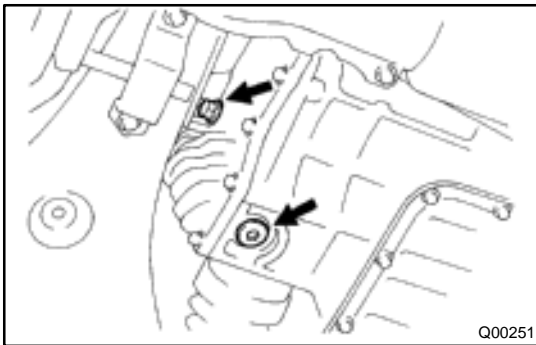
**Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)**

**19. REMOVE ENGINE UNDER COVER AND CENTER ENGINE UNDER COVER****20. DISCONNECT SHIFT CONTROL CABLE**

(a) Remove the nut and disconnect the shift control cable from the park/neutral position switch.

**Torque: 15 N·m (150 kgf·cm, 11 ft·lbf)**

(b) Remove the clip and disconnect the shift control cable from the bracket.

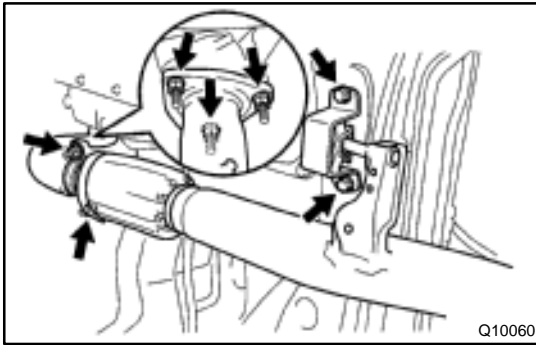
**21. REMOVE DIFFERENTIAL FLUID DRAIN PLUG AND GASKET****HINT:**

At the time of installation, please refer to the following item.

Replace the used gasket with a new gasket.

**22. DRAIN DIFFERENTIAL FLUID****23. REMOVE LH AND RH FENDER APRON SEALS****24. REMOVE LH AND RH DRIVE SHAFTS**

(See page [SA-17](#))



## 25. REMOVE EXHAUST FRONT PIPE

- (a) Remove the 2 nuts and exhaust front pipe clamp.  
**Torque: 33 N·m (330 kgf-cm, 24 ft-lbf)**
- (b) Remove the 2 bolts and exhaust pipe No.1 support bracket.  
**Torque: 33 N·m (330 kgf-cm, 24 ft-lbf)**
- (c) Remove the 3 nuts.  
**Torque: 62 N·m (630 kgf-cm, 46 ft-lbf)**

### HINT:

At the time of installation, please refer to the following item.  
Replace the used nuts with new ones.

- (d) Remove the 2 bolts, nuts and front exhaust pipe.  
**Torque: 56 N·m (570 kgf-cm, 41 ft-lbf)**

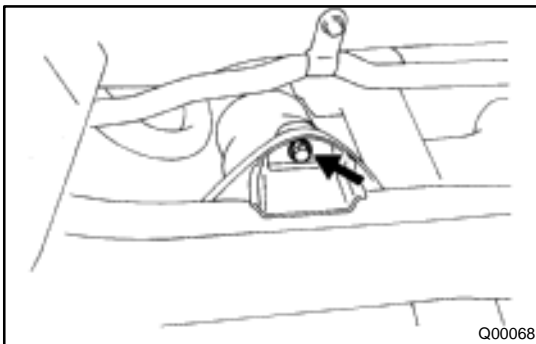
### HINT:

At the time of installation, please refer to the following item.  
Replace the used nuts with new ones.

- (e) Remove the 2 gaskets.

### HINT:

At the time of installation, please refer to the following item.  
Replace the used gaskets with new ones.



## 26. REMOVE FRONT SIDE ENGINE MOUNTING INSULATOR BOLT

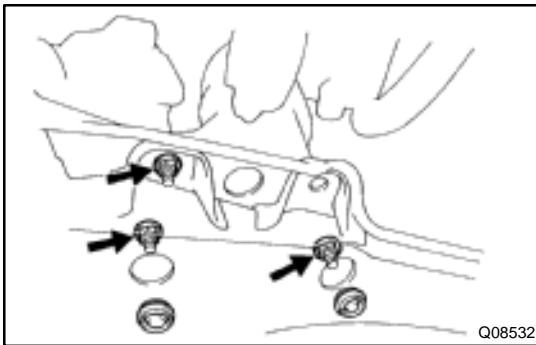
### Torque:

**TMC made: 80 N·m (820 kgf-cm, 59 ft-lbf)**

### TMMK made:

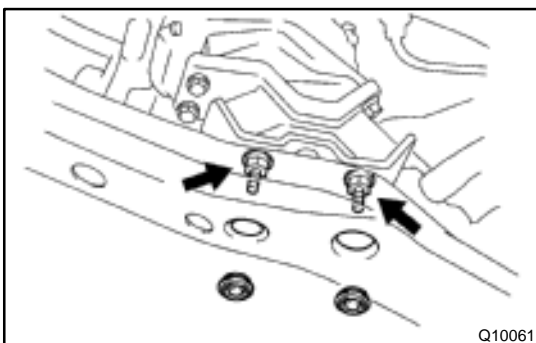
**Green color bolt: 66 N·m (670 kgf-cm, 48 ft-lbf)**

**Silver color bolt: 44 N·m (450 kgf-cm, 32 ft-lbf)**



## 27. REMOVE REAR SIDE ENGINE MOUNTING NUT

- (a) Remove the 2 grommets.
- (b) Remove the 3 nuts.  
**Torque: 66 N·m (670 kgf-cm, 48 ft-lbf)**



## 28. REMOVE LEFT SIDE TRANSAXLE MOUNTING NUT

- (a) Remove the 2 grommets.
- (b) Remove the 2 nuts.  
**Torque: 80 N·m (820 kgf-cm, 59 ft-lbf)**

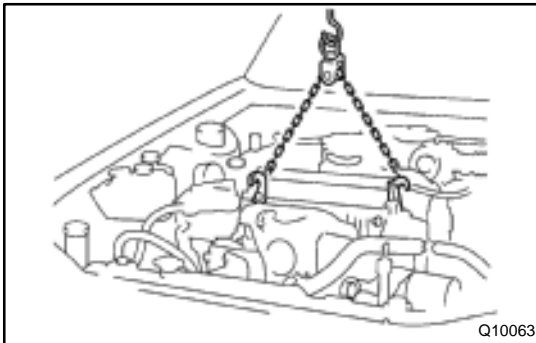
**29. REMOVE STEERING GEAR HOUSING**

- (a) Remove the 4 bolts, LH and RH stabilizer bar brackets and bushings.

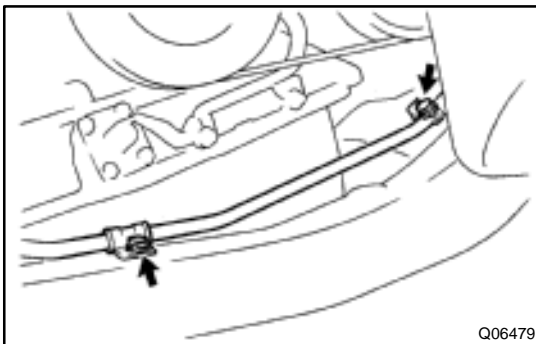
**Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)**

- (b) Remove the front stabilizer bar. (See page [SA-48](#))  
(c) Remove the 2 steering gear housing mounting bolts and nuts.

**Torque: 181 N·m (1,850 kgf·cm, 134 ft·lbf)**

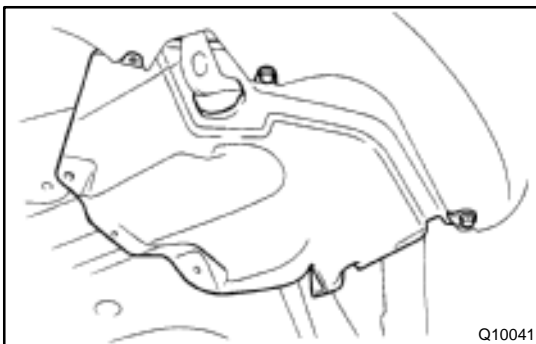
**30. TIE STEERING GEAR HOUSING TO REAR ENGINE MOUNTING BRACKET BY CORD OR EQUIVALENT****31. ATTACH ENGINE SLING DEVICE TO ENGINE HANGERS****CAUTION:**

Do not attempt to hang the engine by hooking the chain to any other part.

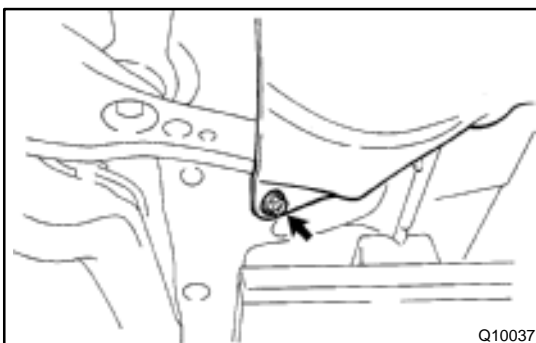
**32. REMOVE FRONT FRAME ASSEMBLY**

- (a) Remove the 2 bolts and steering return pipe mounting brackets.

**Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)**



- (b) Remove the screws and turn over the front side of the LH and RH fender liners.



- (c) Remove the screws and turn over the rear side of LH and RH fender liners.



- (d) Remove the 6 bolts and 4 nuts.

**Torque:**

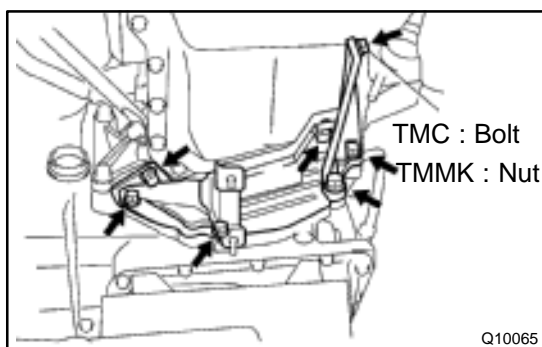
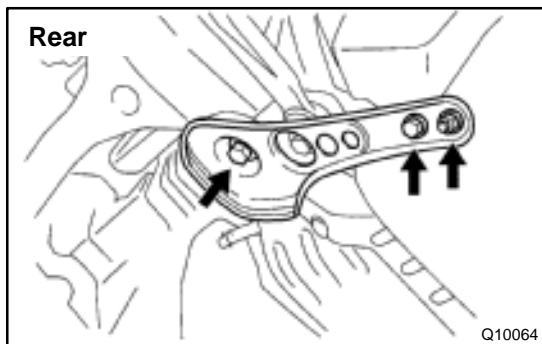
**19 mm head bolt: 181 N·m (1,850 kgf·cm, 134 ft·lbf)**

**14 mm head bolt: 32 N·m (330 kgf·cm, 24 ft·lbf)**

**Nut: 36 N·m (370 kgf·cm, 27 ft·lbf)**

- (e) Remove the front frame assembly.

### 33. SUPPORT TRANSAXLE WITH A TRANSMISSION JACK



### 34. REMOVE FRONT SIDE STIFFENER PLATE

TMMK made:

Remove the nut, 2 bolts and stiffener plate.

**Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)**

TMC made:

Remove the 3 bolts and stiffener plate.

**Torque: 42 N·m (430 kgf·cm, 31 ft·lbf)**

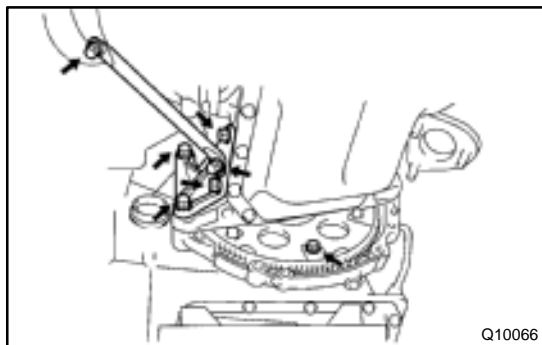
### 35. REMOVE REAR END PLATE

- (a) Remove the 2 bolts and No.1 exhaust pipe support bracket.

**Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)**

- (b) Remove the 2 bolts and rear end plate with oil pan insulator.

**Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)**

**36. REMOVE TORQUE CONVERTER CLUTCH MOUNTING BOLT**

Turn the crankshaft to gain access to each bolt, remove the 6 bolts with holding the crankshaft pulley set bolt by a wrench.

**Torque: 27 N·m (280 kgf-cm, 20 ft-lbf)**

HINT:

At the time of installation, please refer to the following item.  
First the install black colored bolt and then the 5 other bolts.

**37. REMOVE REAR SIDE STIFFENER PLATE**

(a) Remove the 2 bolts and manifold stay.

**Torque: 39 N·m (400 kgf-cm, 29 ft-lbf)**

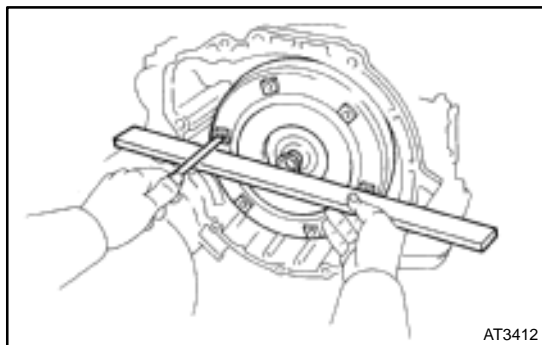
(b) Remove the 4 bolts and stiffener plate.

**Torque: 39 N·m (400 kgf-cm, 29 ft-lbf)**

**38. REMOVE TRANSAXLE ASSEMBLY**

Separate the transaxle and engine, and lower the transaxle.





## INSTALLATION

### 1. CHECK TORQUE CONVERTER CLUTCH INSTALLATION

Using a scale and a straight edge, measure to the distance from the installed surface to the transaxle housing.

**Correct distance: 13.0 mm (0.512 in.) or more**

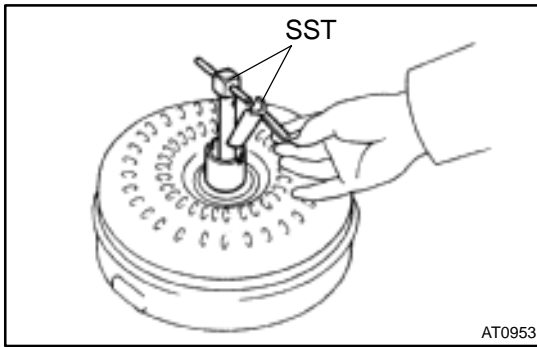
### 2. TRANSAXLE INSTALLATION

Installation is in the reverse order of removal (See page AX-19).

#### HINT:

After installation, check and inspect items as follows.

- ◆ Fluid level (See page DI-389)
- ◆ Front wheel alignment (See page SA-4)
- ◆ Road test of the vehicle
- ◆ Engine hood (See page BO-10)

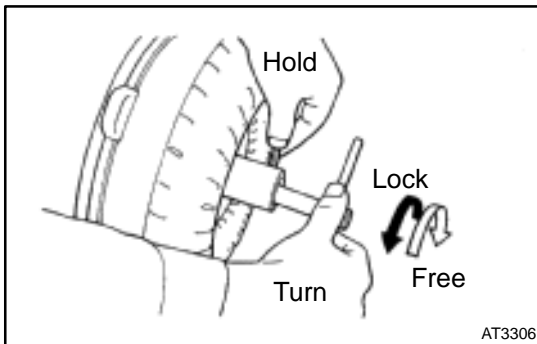


## TORQUE CONVERTER CLUTCH AND DRIVE PLATE INSPECTION

AX03J-01

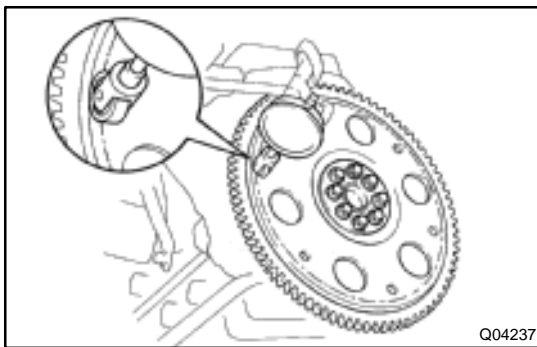
### 1. INSPECT ONE-WAY CLUTCH

- (a) Install SST into the inner race of the one-way clutch.  
SST 09350-32014 (09351-32010)
- (b) Install SST so that it fits in the notch of the converter hub and outer race of the one-way clutch.  
SST 09350-32014 (09351-32020)



- (c) With the torque converter clutch standing on its side, the clutch locks when turned counterclockwise, and rotates freely and smoothly clockwise.

If necessary, clean the converter and retest the clutch. Replace the converter clutch if the clutch still fails the test.



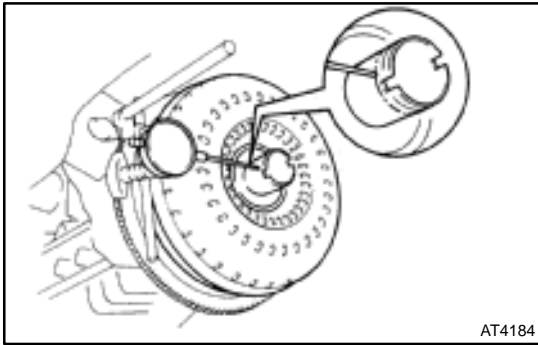
### 2. MEASURE DRIVE PLATE RUNOUT AND INSPECT RING GEAR

Set up a dial indicator and measure the drive plate runout.

**Maximum runout: 0.20 mm (0.0079 in.)**

If the runout is not within the specification or if the ring gear is damaged, replace the drive plate. If installing a new drive plate, note the orientation of spacers and tighten the bolts.

**Torque: 83 N·m (850 kgf-cm, 61 ft-lbf)**



### 3. MEASURE TORQUE CONVERTER CLUTCH SLEEVE RUNOUT

- (a) Temporarily mount the torque converter clutch to the drive plate.

Set up a dial indicator and measure the torque converter clutch sleeve runout.

**Maximum runout: 0.30 mm (0.0118 in.)**

If the runout is not within the specification, try to correct by reorienting the installation of the torque converter clutch. If excessive runout cannot be corrected, replace the torque converter clutch.

**HINT:**

Mark the position of the torque converter clutch to ensure the correct installation.

- (b) Remove the torque converter clutch.

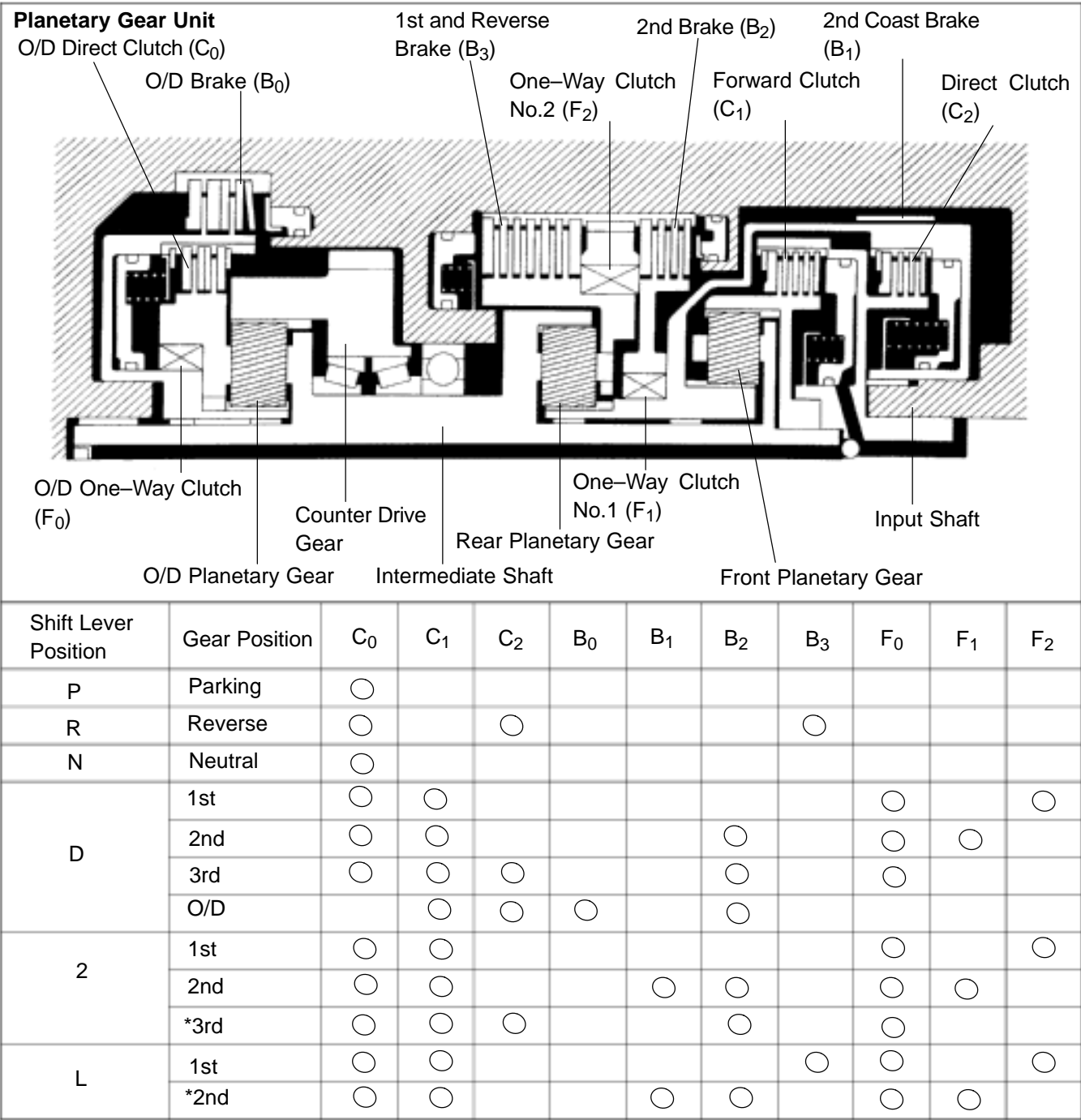
# AUTOMATIC TRANSAXLE SYSTEM

AX03L-01

## PRECAUTION

If the vehicle is equipped with a mobile communication system, refer to the precautions in the IN section.

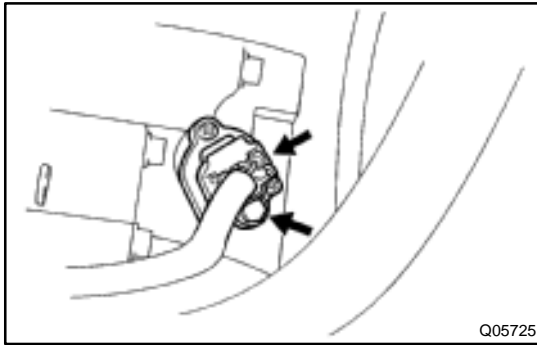
OPERATION



\*Down-shift only – no up-shift

○ : Operating

D01018

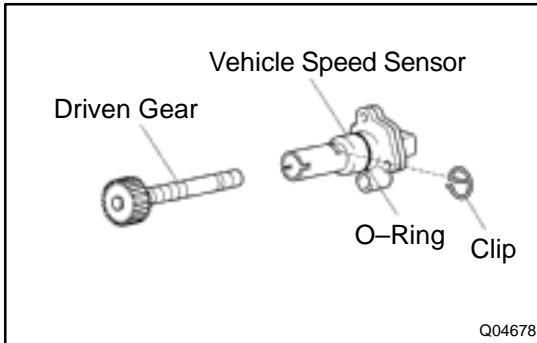


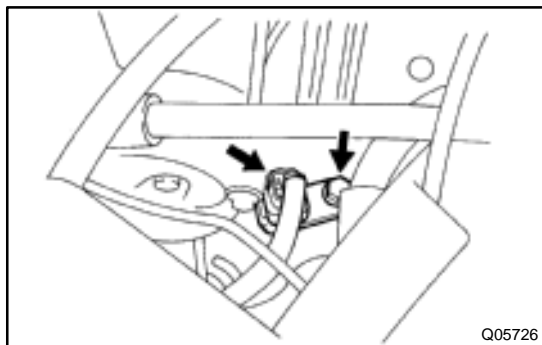
## VEHICLE SPEED SENSOR ON-VEHICLE REPAIR

AX03N-01

1. REMOVE AIR CLEANER ASSEMBLY
2. DISCONNECT VEHICLE SPEED SENSOR CONNECTOR
3. REMOVE VEHICLE SPEED SENSOR ASSEMBLY
  - (a) Remove the bolt and vehicle speed sensor assembly.
  - (b) Remove the clip and driven gear from the vehicle speed sensor.
  - (c) Remove the O-ring from the vehicle speed sensor.
4. INSTALL VEHICLE SPEED SENSOR ASSEMBLY
  - (a) Coat a new O-ring with ATF and install it to the vehicle speed sensor.
  - (b) Install the driven gear to the vehicle speed sensor and clip.
  - (c) Install the vehicle speed sensor assembly with the bolt.
 

**Torque: 4.9 N·m (50 kgf·cm, 43 in.-lbf)**
5. CONNECT VEHICLE SPEED SENSOR CONNECTOR
6. INSTALL AIR CLEANER ASSEMBLY





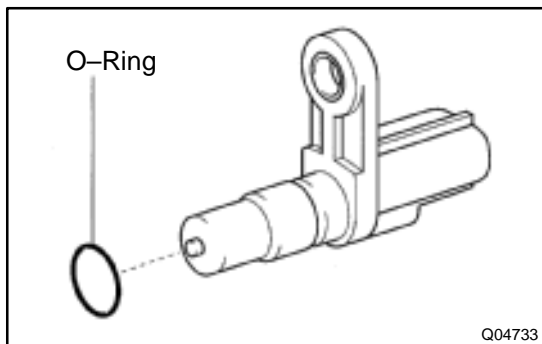
## DIRECT CLUTCH SPEED SENSOR ON-VEHICLE REPAIR

AX030-01

### 1. DISCONNECT DIRECT CLUTCH SPEED SENSOR CONNECTOR

### 2. REMOVE DIRECT CLUTCH SPEED SENSOR

- (a) Remove the bolt and direct clutch speed sensor.



- (b) Remove the O-ring from direct clutch speed sensor.

### 3. INSTALL DIRECT CLUTCH SPEED SENSOR

- (a) Coat a new O-ring with ATF and install it to the direct clutch speed sensor.

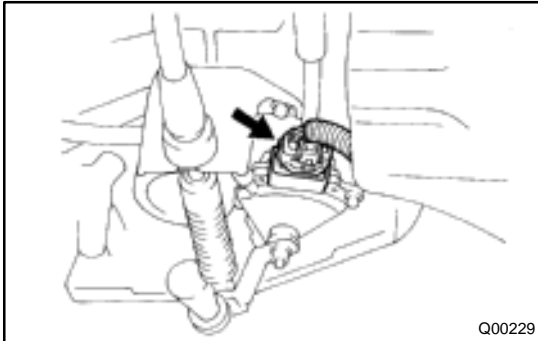
- (b) Install the direct clutch speed sensor with the bolt.

**Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)**

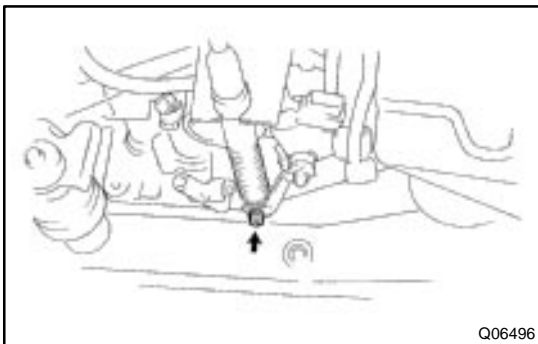
# PARK/NEUTRAL POSITION (PNP) SWITCH

## ON-VEHICLE REPAIR

AX03P-01

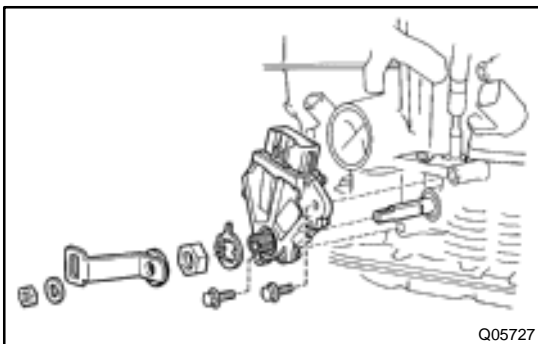


### 1. DISCONNECT PARK/NEUTRAL POSITION SWITCH CONNECTOR

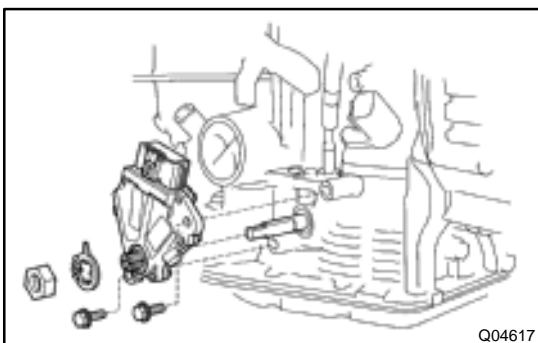


### 2. REMOVE PARK/NEUTRAL POSITION SWITCH

- (a) Remove the clip from the shift control cable.
- (b) Remove the nut and control cable.



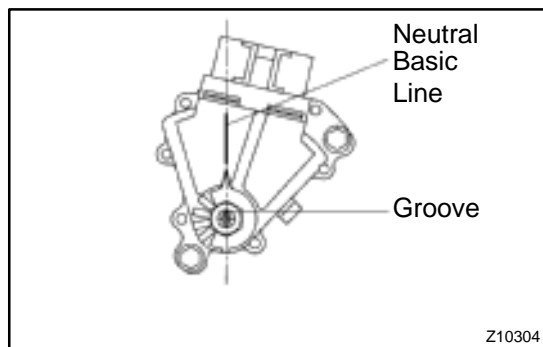
- (c) Remove the nut, washer and transaxle control shaft lever.
- (d) Using a screwdriver, pry off the lock plate.
- (e) Remove the nut and lock plate.
- (f) Remove the 2 bolts and pull out the park/neutral position switch.



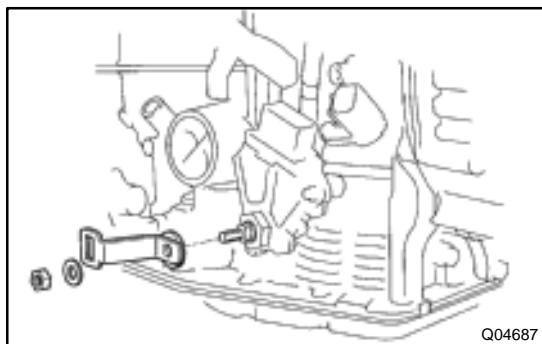
### 3. INSTALL AND ADJUST PARK/NEUTRAL POSITION SWITCH

- (a) Temporarily install the park/neutral position switch with the 2 bolts.
- (b) Install a new lock plate and nut.  
**Torque: 6.9 N·m (70 kgf-cm, 61 in.-lbf)**
- (c) Stake the nut with the lock plate.



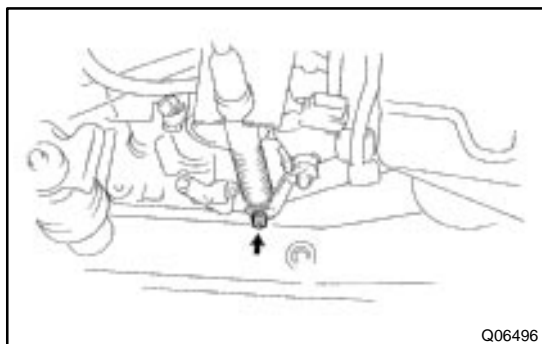


- (d) Adjust the park/neutral position switch.  
(See page [DI-438](#))



- (e) Install the transaxle control shaft lever and washer.  
(f) Install and torque the nut.

**Torque: 15 N·m (150 kgf-cm, 11 ft-lbf)**



- (g) Install the control cable and nut.

**Torque: 15 N·m (150 kgf-cm, 11 ft-lbf)**

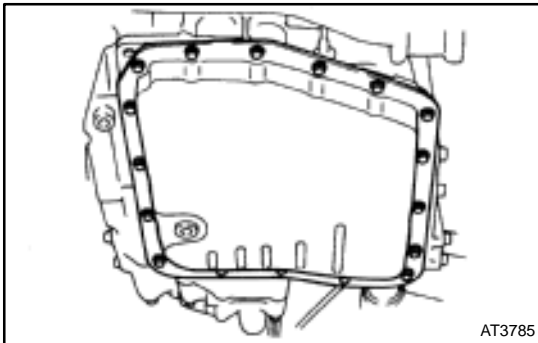
- (h) Install the clip to the shift control cable.

**4. CONNECT PARK/NEUTRAL POSITION SWITCH CONNECTOR**

**5. TEST DRIVE VEHICLE**

# VALVE BODY ASSEMBLY ON-VEHICLE REPAIR

AX03Q-02



## 1. DRAIN ATF

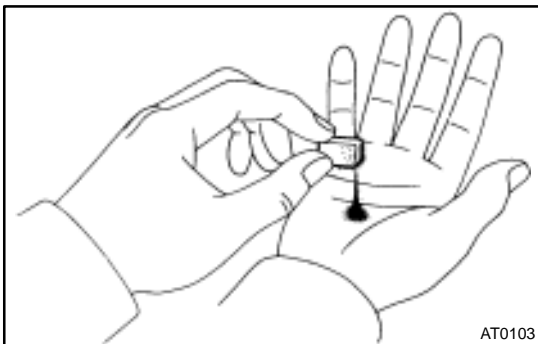
Using a hexagon wrench, remove the drain plug and fluid into the suitable container.

## 2. REMOVE OIL PAN AND GASKET

### NOTICE:

**Some fluid will remain in the oil pan.**

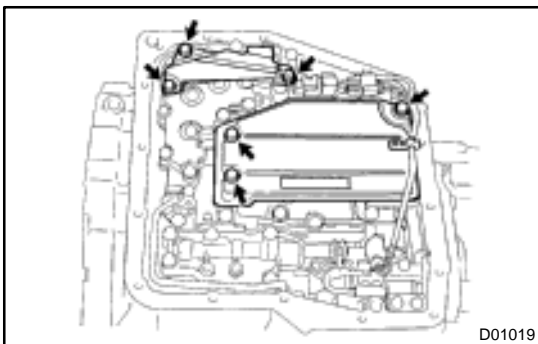
Remove oil pan bolts, and carefully remove the pan assembly. Discard the gasket.



## 3. EXAMINE PARTICLES IN PAN

Remove the magnets and use them to collect any steel chips. Look at the chips and particles in the pan and magnet carefully to anticipate what type of wear you will find in the transaxle.

- ◆ Steel (magnetic): bearing, gear and plate wear
- ◆ Brass (non-magnetic): bushing wear



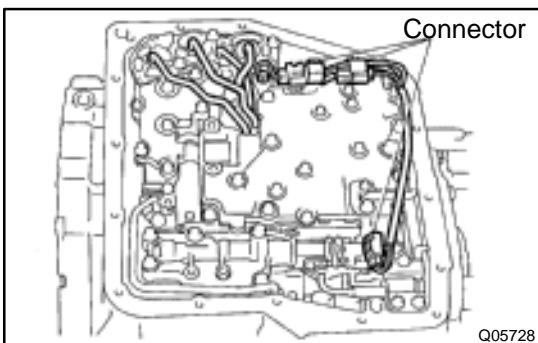
## 4. REMOVE OIL STRAINER AND APPLY PIPE BRACKET

(a) Remove the 3 bolts and oil strainer.

### NOTICE:

**Be careful as oil will come out of the strainer when it is removed.**

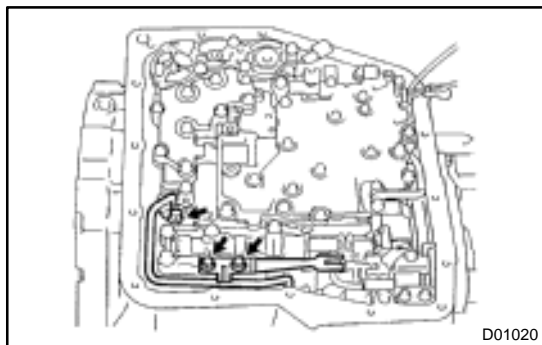
(b) Remove the 3 bolts and apply pipe bracket.



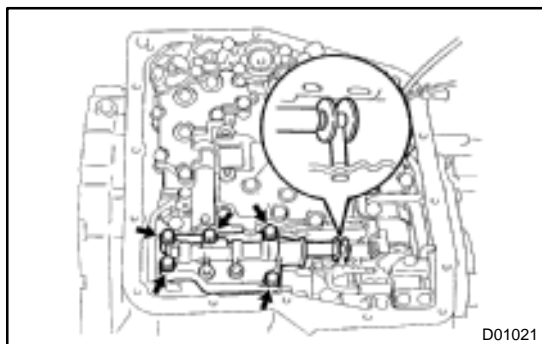
## 5. REMOVE OIL PIPES

Pry up both pipe ends with a large screwdriver and remove the 5 pipes.

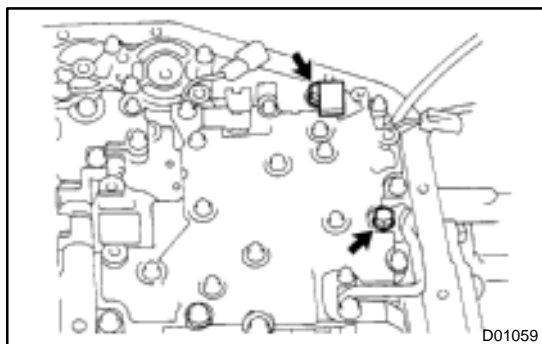
## 6. DISCONNECT SOLENOID CONNECTORS

**7. REMOVE DETENT SPRING AND OIL PIPE**

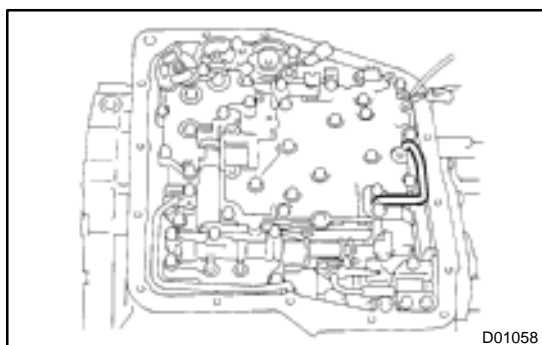
- (a) Remove the 2 bolts and detent spring.
- (b) Remove the bolt.
- (c) Pry up the pipe with a screwdriver and remove the pipe.

**8. REMOVE MANUAL VALVE BODY**

Remove the 5 bolts and manual valve body.

**9. REMOVE CONNECTOR CLAMP AND PIPE RETAINER**

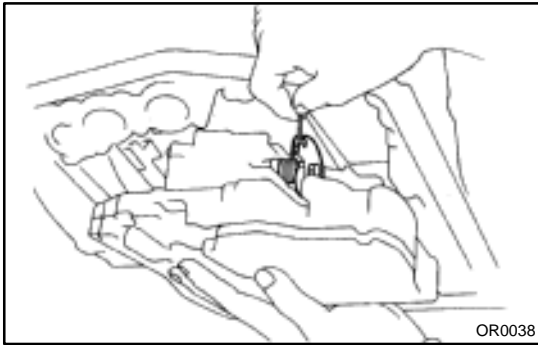
Remove the 2 bolts, connector clamp and pipe retainer.

**10. REMOVE B<sub>3</sub> APPLY PIPE**

Pry up the pipe with a screwdriver and remove the pipe.

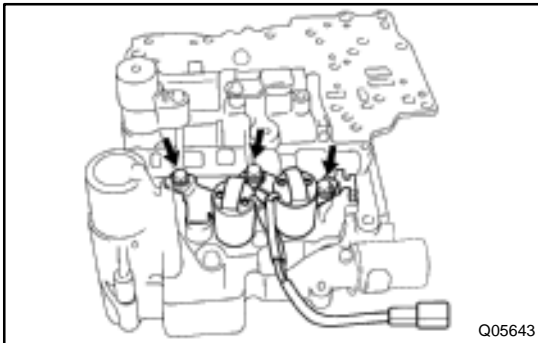
**11. REMOVE VALVE BODY**

- (a) Remove the 9 bolts.



- (b) Disconnect the throttle cable from the cam and remove the valve body.

## 12. REMOVE 2ND BRAKE APPLY GASKET



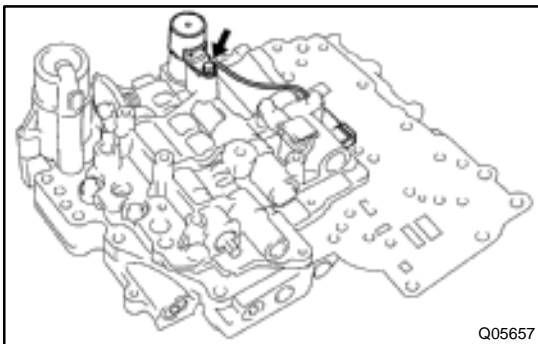
## 13. REMOVE SOLENOID VALVES

- (a) Remove the 3 bolts, shift solenoid valve No.1 and No.2 with the retainer.

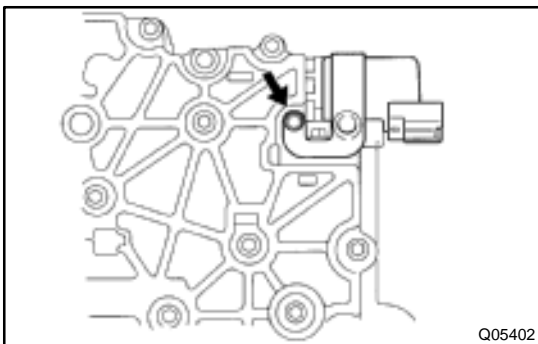
### NOTICE:

**When removing solenoid, do not use a screwdriver, etc. to pry up the solenoid.**

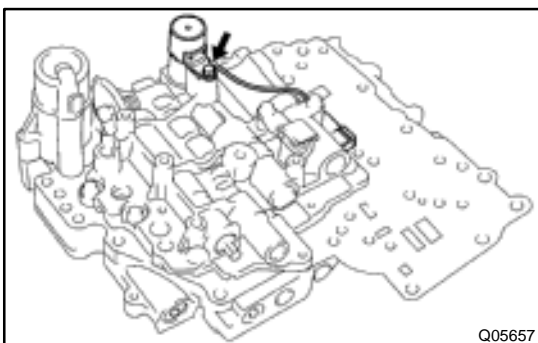
- (b) Remove the O-rings from the shift solenoid valve No.1 and No.2.



- (c) Remove the bolt and shift solenoid valve SL.  
(d) Remove the O-ring from the shift solenoid valve SL.



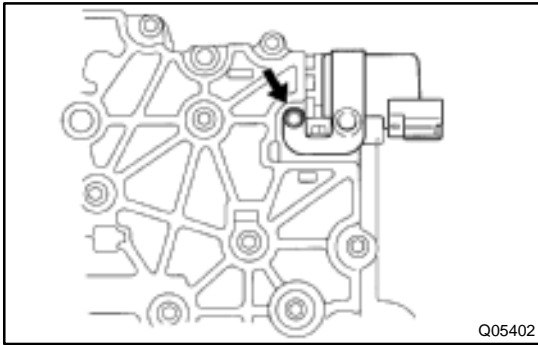
- (e) Remove the bolt and shift solenoid valve SLN.  
(f) Remove the O-ring from the shift solenoid valve SLN.



## 14. INSTALL SOLENOID VALVES

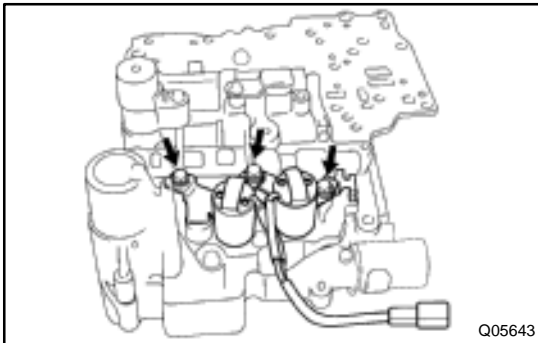
- (a) Coat the 2 new O-rings with ATF and install it to the shift solenoid valve SL.  
(b) Install the shift solenoid valve SL.  
(c) Install and torque the bolt.

**Torque: 6.6 N·m (67 kgf·cm, 58 in.-lbf)**



- (d) Coat the 2 new O-rings with ATF and install it to the shift solenoid valve SLN.
- (e) Install the shift solenoid valve SLN.
- (f) Install and torque the bolt.

**Torque: 6.6 N·m (67 kgf-cm, 58 in.-lbf)**



- (g) Coat the 2 new O-rings with ATF and install it to the shift solenoid valve No.1 and No.2.
- (h) Install the No.1 and No.2 solenoids.
- (i) Install and torque the 3 bolts.

**Torque: 6.6 N·m (67 kgf-cm, 58 in.-lbf)**

#### 15. PLACE NEW 2ND BRAKE APPLY GASKET

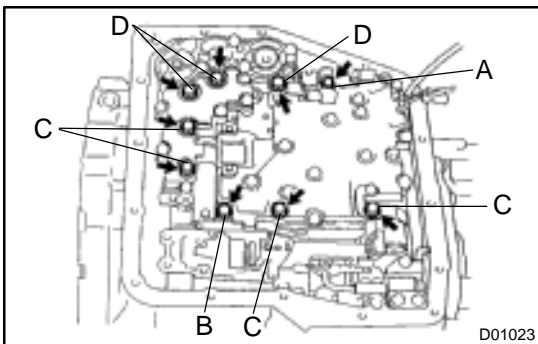


#### 16. INSTALL VALVE BODY TO TRANSAXLE CASE

- (a) While holding the cam down with your hand, slip the cable end into the slot.
- (b) Lower the valve body into place.

#### NOTICE:

**Be careful not to entangle the solenoid wire.**



- (c) Install and tighten the 9 bolts.

#### HINT:

Hand tighten the 9 bolts first, then torque with a torque wrench.

#### Bolt length:

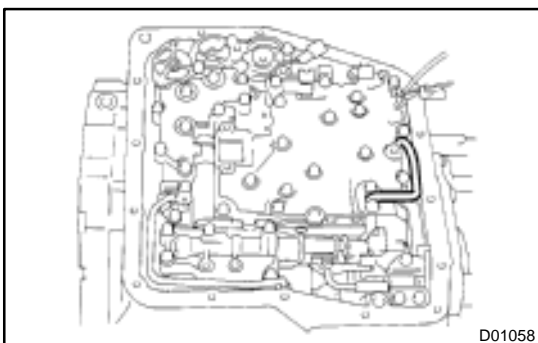
**Bolt A: 30 mm (1.181 in.)**

**Bolt B: 43 mm (1.693 in.)**

**Bolt C: 48 mm (1.890 in.)**

**Bolt D: 52 mm (2.047 in.)**

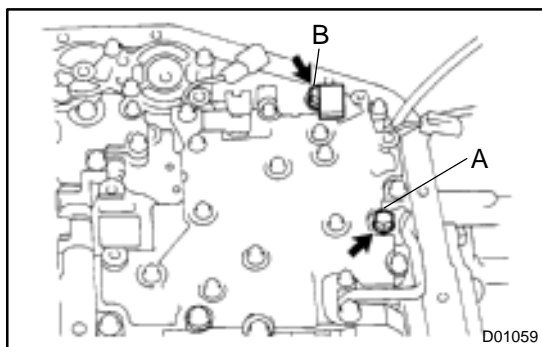
**Torque: 11 N·m (110 kgf-cm, 8 ft-lbf)**



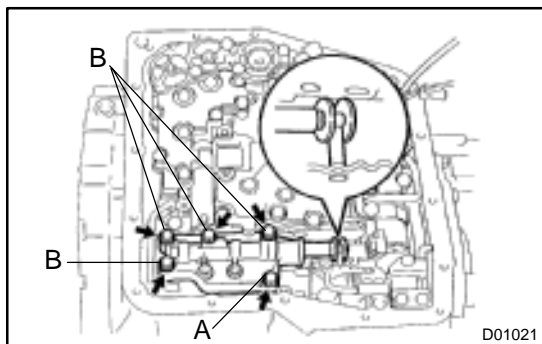
#### 17. INSTALL B<sub>3</sub> APPLY PIPE

#### NOTICE:

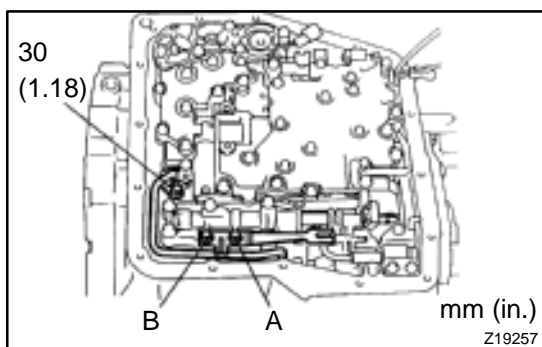
**Be careful not to bend or damage the pipe.**

**18. INSTALL CONNECTOR CLAMP AND PIPE RETAINER**

- (a) Install the connector clamp and pipe retainer.
- (b) Install and torque the 2 bolts.

**Bolt length:****Bolt A: 48 mm (1.890 in.)****Bolt B: 39 mm (1.535 in.)****Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)****19. INSTALL MANUAL VALVE BODY**

- (a) Align the manual valve with the pin on the manual shaft lever.
- (b) Lower the manual valve body into place.
- (c) Hand tighten the 5 bolts first. Then, tighten them with a torque wrench.

**Bolt length:****Bolt A: 22 mm (0.866 in.)****Bolt B: 37 mm (1.457 in.)****Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)****20. INSTALL DETENT SPRING AND OIL PIPE**

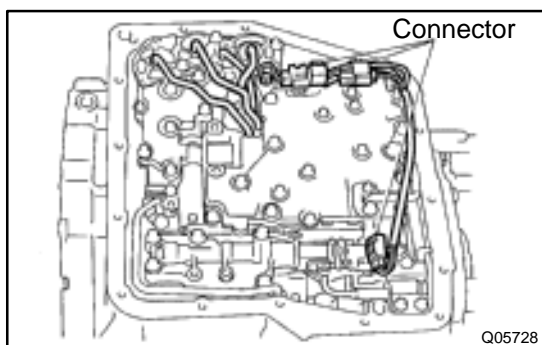
- (a) Place the detent springs on the manual valve body and hand tighten the 2 bolts first. Then, tighten them with a torque wrench.

**Bolt length:****Bolt A: 14 mm (0.551 in.)****Bolt B: 37 mm (1.457 in.)****Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)**

- (b) Check that the manual valve lever is touching the center of the detent spring tip roller.
- (c) Using a plastic hammer, install the pipe into the position.

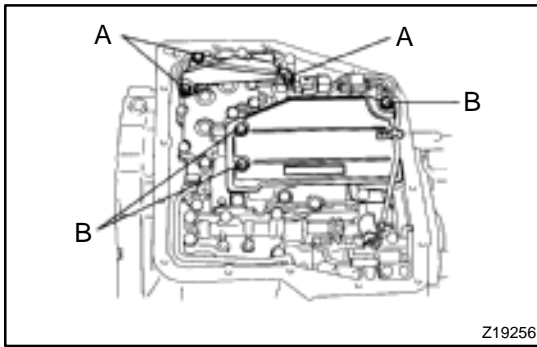
**NOTICE:****Be careful not to bend or damage the pipe.**

- (d) Install and torque the bolt.

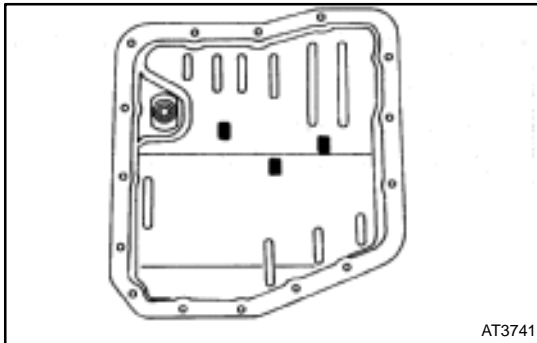
**Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)****21. CONNECT SOLENOID CONNECTORS****22. INSTALL OIL PIPES**

Using a plastic hammer, install the pipes into the positions.

**NOTICE:****Be careful not to bend or damage the pipes.**

**23. INSTALL OIL STRAINER AND APPLY PIPE BRACKET**

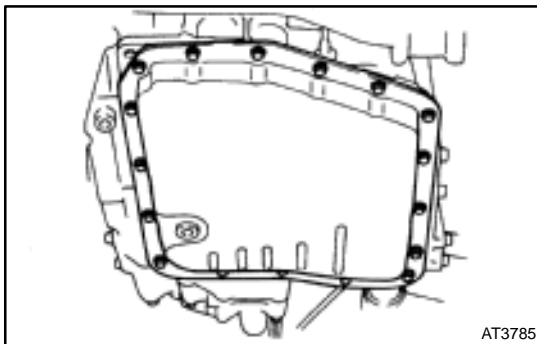
- (a) Install the oil strainer and apply pipe bracket.
- (b) Install and torque the 6 bolts.

**Bolt length:****Bolt A: 22 mm (0.866 in.)****Bolt B: 53 mm (2.087 in.)****Torque:****Bolt A: 10 N·m (100 kgf·cm, 7 ft·lbf)****Bolt B: 11 N·m (110 kgf·cm, 8 ft·lbf)****24. INSTALL MAGNETS IN PLACE**

Install the 3 magnets in the indentations of the oil pan, as shown in the illustration.

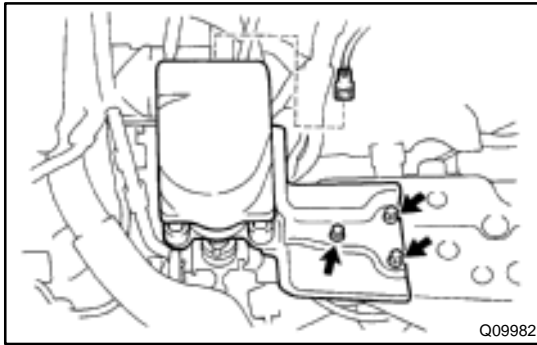
**NOTICE:**

**Make sure that the magnet does not interfere with the oil pipes.**

**25. INSTALL OIL PAN AND GASKET**

- (a) Install the oil pan and a new gasket.
- (b) Install and torque the 17 new bolts.

**Torque: 7.8 N·m (80 kgf·cm, 69 in·lbf)****26. INSTALL AND TORQUE DRAIN PLUG****Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)****27. FILL ATF AND CHECK FLUID LEVEL****(See page [DI-438](#))**

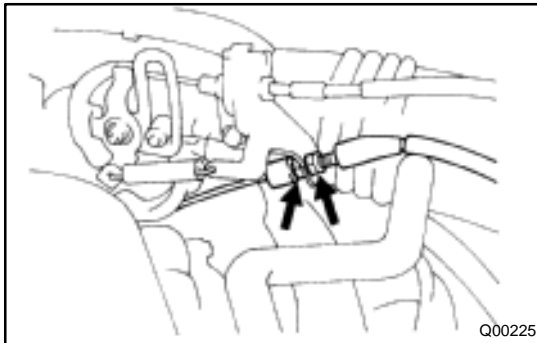


## THROTTLE CABLE ON-VEHICLE REPAIR

AX03R-01

1. REMOVE BATTERY
2. w/ Cruise Control:  
REMOVE CRUISE CONTROL ACTUATOR

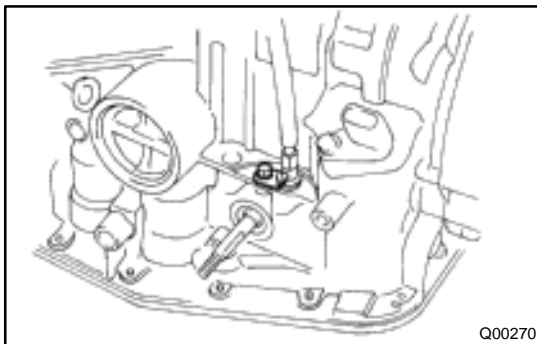
Remove the 3 bolts and cruise control actuator.



3. DISCONNECT THROTTLE CABLE FROM ENGINE

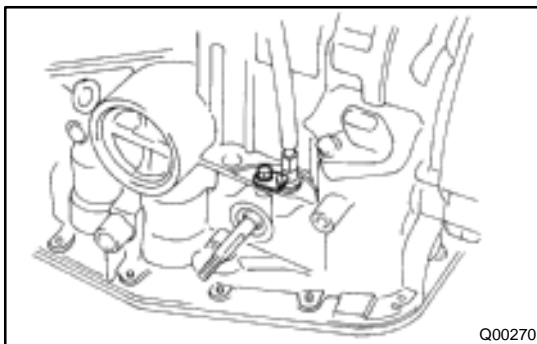
Disconnect the cable from the throttle linkage.

4. REMOVE PARK/NEUTRAL POSITION SWITCH  
(See page AX-5)
5. REMOVE VALVE BODY  
(See page AX-7)



6. REMOVE THROTTLE CABLE

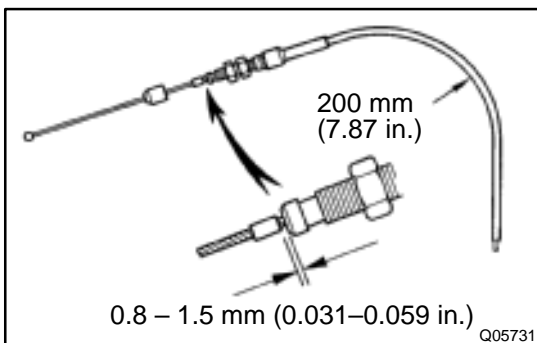
- (a) Remove the bolt and retaining plate.
- (b) Pull out the cable from the transaxle case.



7. INSTALL THROTTLE CABLE INTO TRANSAXLE CASE

- (a) Make sure to push it in all the way.
- (b) Install the retaining plate and bolt.
- (c) Install and torque the bolt.  
**Torque: 5.4 N·m (55 kgf·cm, 48 in.-lbf)**

8. INSTALL VALVE BODY  
(See page AX-7)



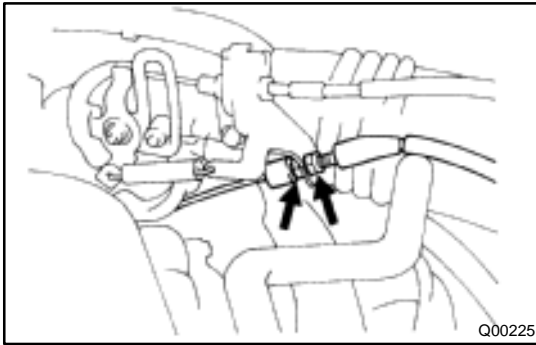
9. IF THROTTLE CABLE IS NEW, STAKE STOPPER OR PAINT MARK ON INNER CABLE

HINT:

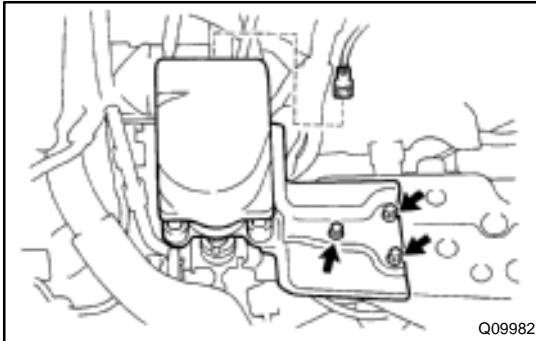
New cables do not have a staked cable stopper.

- (a) Bend the cable so there is a radius of about 200 mm (7.87 in.).
- (b) Pull the inner cable lightly until slight resistance is felt, and hold it there.
- (c) Stake the stopper, 0.8-1.5 mm (0.031-0.059 in.) from the end of outer cable.

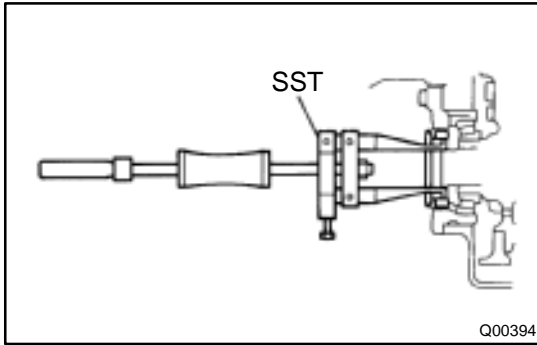




10. **CONNECT THROTTLE CABLE TO ENGINE**  
Torque: 15 N·m (150 kgf-cm, 11 ft-lbf)
11. **ADJUST THROTTLE CABLE**  
(See page [DI-438](#))
12. **INSTALL PARK/NEUTRAL POSITION SWITCH**  
(See page AX-5)



13. **w/ Cruise Control:**  
**INSTALL CRUISE CONTROL ACTUATOR**  
Install the cruise control actuator with the 3 bolts.  
Torque: 13 N·m (130 kgf-cm, 9 ft-lbf)
14. **INSTALL BATTERY**
15. **TEST DRIVE VEHICLE**



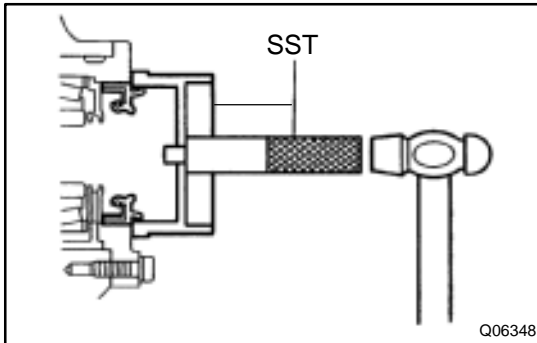
## DIFFERENTIAL OIL SEAL ON-VEHICLE REPAIR

AX03S-01

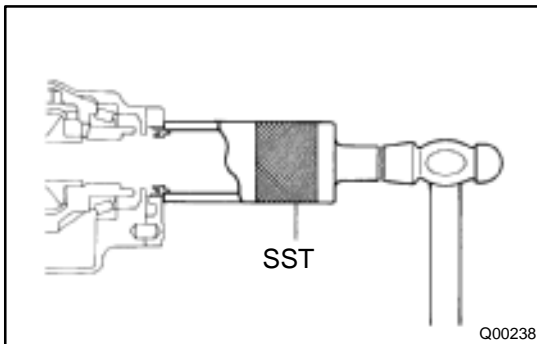
1. REMOVE FRONT DRIVE SHAFT  
(See page [SA-25](#))
2. REMOVE SIDE GEAR SHAFT OIL SEAL

Using SST, pull out the oil seal.

SST 09308-00010



3. INSTALL LEFT SIDE GEAR SHAFT OIL SEAL
  - (a) Using SST and a hammer, drive in a new oil seal.  
SST 09223-15020, 09351-32014 (09351-32130)  
**Oil seal depth:  $0 \pm 0.5$  mm ( $0 \pm 0.02$  in.)**
  - (b) Coat the lip of the oil seal with MP grease.

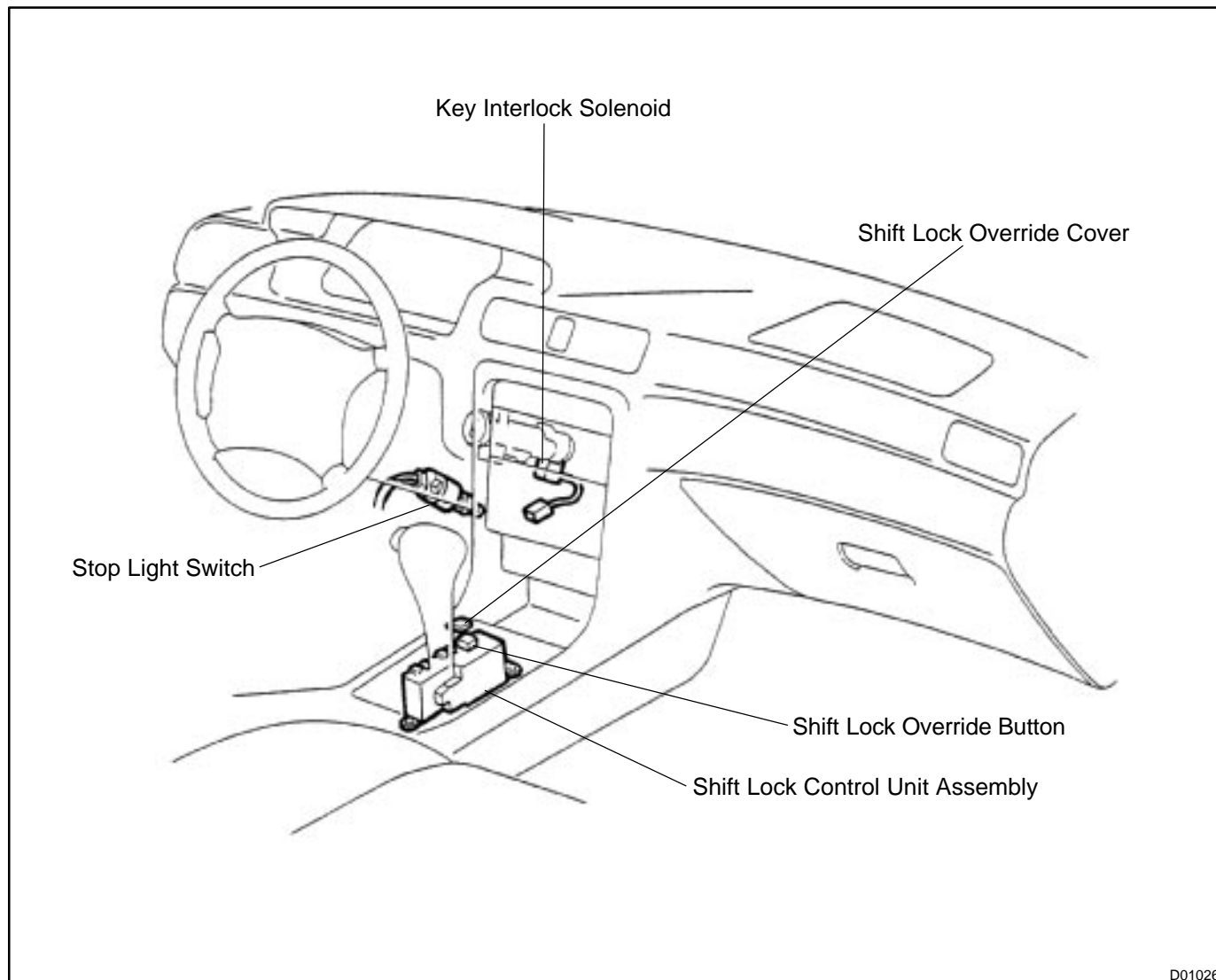


4. INSTALL RIGHT SIDE GEAR SHAFT OIL SEAL
  - (a) Using SST, drive in a new oil seal.  
SST 09316-60010 (09316-00010)  
**Oil seal depth:  $0 \pm 0.5$  mm ( $0 \pm 0.02$  in.)**
  - (b) Coat the lip of the oil seal with MP grease.
5. INSTALL FRONT DRIVE SHAFT  
(See page [SA-25](#))
6. CHECK TRANSAXLE FLUID LEVEL  
(See page [DI-438](#))

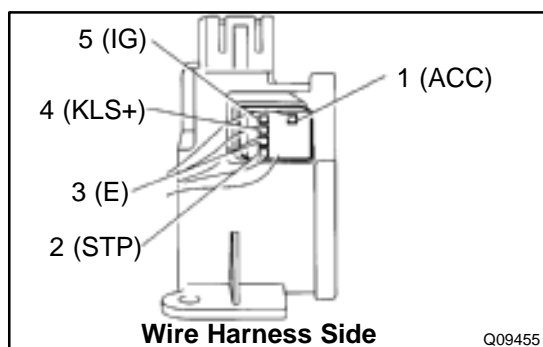
# SHIFT LOCK SYSTEM (TMC Made)

## LOCATION

AX03T-01



D01026



## INSPECTION

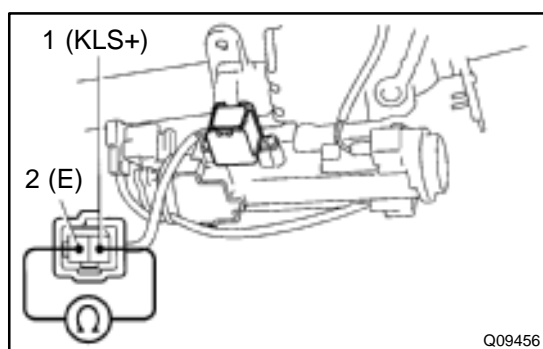
### 1. INSPECT SHIFT LOCK CONTROL UNIT ASSEMBLY

Using a voltmeter, measure the voltage at each terminal.

HINT:

Do not disconnect the shift lock control unit assembly connector.

Terminal	Measuring Condition	Voltage (V)
1 – 3 (ACC – E)	Ignition switch ACC	10 – 14
5 – 3 (IG – E)	Ignition switch ON	10 – 14
2 – 3 (STP – E)	Depressing brake pedal	10 – 14
4 – 3 (KLS+ – E)	(1) Ignition switch ACC and P position	0
	(2) Ignition switch ACC and except P position	7.5 – 11
	(3) Ignition switch ACC and except P position (After approx. 1 second)	6 – 9.5

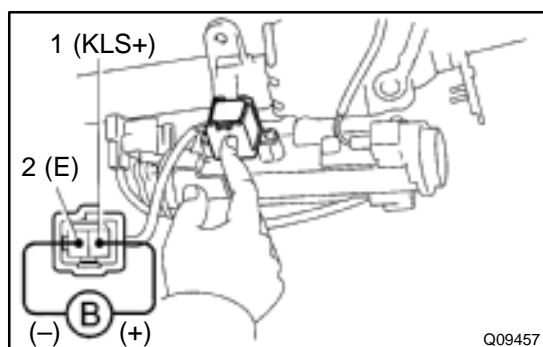


### 2. INSPECT KEY INTERLOCK SOLENOID

- Disconnect the solenoid connector.
- Using an ohmmeter, measure resistance between terminals.

**Standard resistance: 12.5 – 16.5  $\Omega$**

If resistance value is not as specified, replace the solenoid.

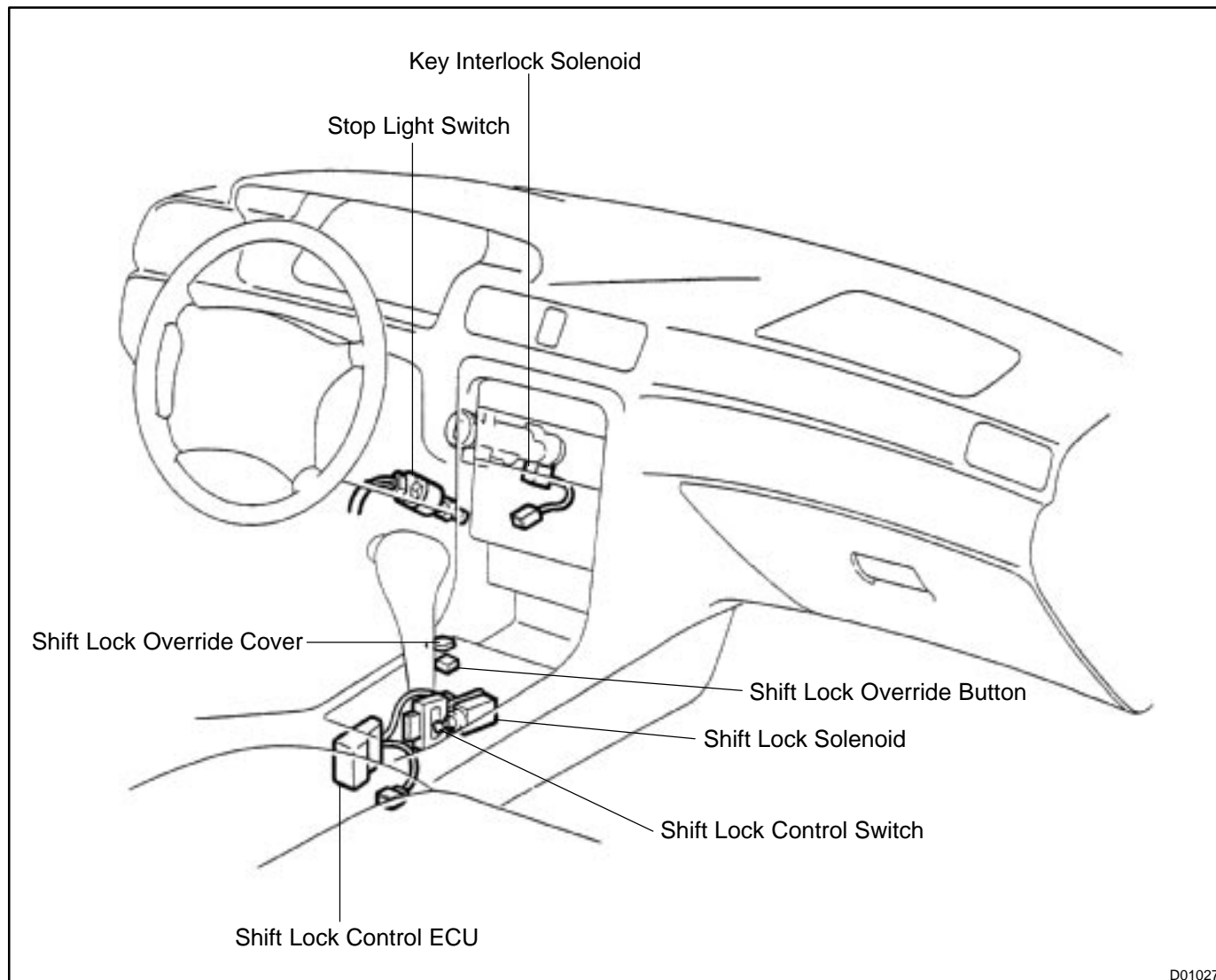


- Apply battery positive voltage between terminals. Check that an operation noise can be heard from the solenoid. If the solenoid does not operate, replace the solenoid.

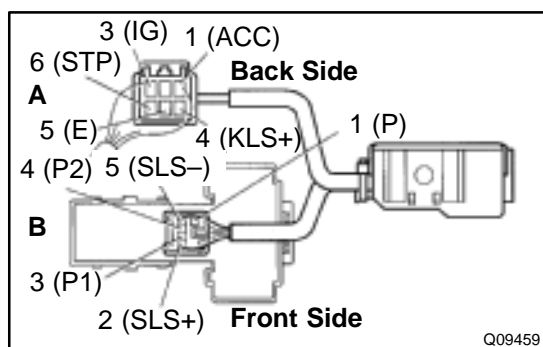
## SHIFT LOCK SYSTEM (TMMK Made)

### LOCATION

AX03V-01



D01027



## INSPECTION

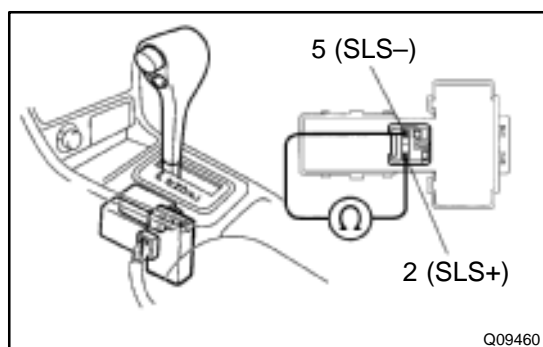
### 1. INSPECT SHIFT LOCK CONTROL ECU

Using a voltmeter, measure voltage at each terminal.

HINT:

Do not disconnect the ECU connector.

Terminal	Measuring Condition	Voltage (V)
A, 1 – A, 5 (ACC – E)	Ignition switch ACC	10 – 14
A, 3 – A, 5 (IG – E)	Ignition switch ON	10 – 14
A, 6 – A, 5 (STP – E)	Depressing brake pedal	10 – 14
A, 4 – A, 5 (KLS <sup>+</sup> – E)	(1) Ignition switch ACC and P position	0
	(2) Ignition switch ACC and except P position	7.5 – 11
	(3) Ignition switch ACC and except P position (After approx. 1 second)	6 – 9.5
B, 2 – B, 5 (SLS <sup>+</sup> – SLS <sup>-</sup> )	(1) Ignition switch ON and P position	0
	(2) Depress brake pedal	8 – 13.5
	(3) Except P position	0
B, 3 – B, 1 (P1 – P)	(1) Ignition switch ON, P position and depress brake pedal	0
	(2) Shift except P position under conditions above	9 – 13.5
B, 4 – B, 1 (P2 – P)	(1) Ignition switch ACC, P position	9 – 13.5
	(2) Shift except P position under conditions above	0

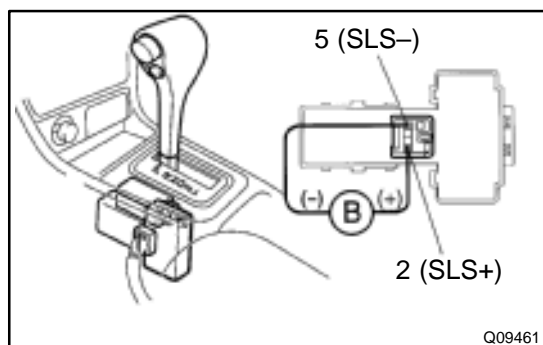


### 2. INSPECT SHIFT LOCK SOLENOID

- Disconnect the solenoid connector.
- Using an ohmmeter, measure resistance between terminals.

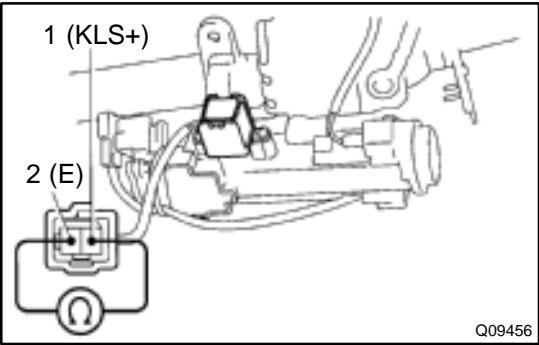
**Standard resistance: 29 – 35  $\Omega$**

If resistance value is not as specified, replace the solenoid.



- Apply battery positive voltage between terminals. Check that operation.

If the solenoid does not operate, replace the solenoid. Noise can be heard from the solenoid.

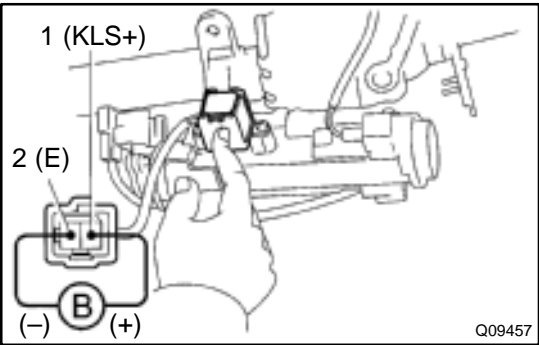


3. INSPECT KEY INTERLOCK SOLENOID

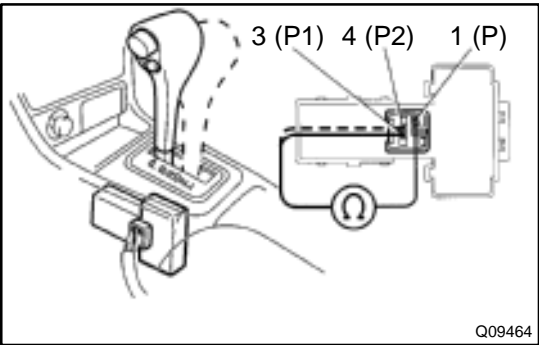
- (a) Disconnect the solenoid connector.
- (b) Using an ohmmeter, measure resistance between terminals.

Standard resistance: 12.5 – 16.5 Ω

If resistance value is not as specified, replace the solenoid.



- (c) Apply battery positive voltage between terminals. Check that an operation noise can be heard from the solenoid. If the solenoid does not operate, replace the solenoid.



4. INSPECT SHIFT LOCK CONTROL SWITCH

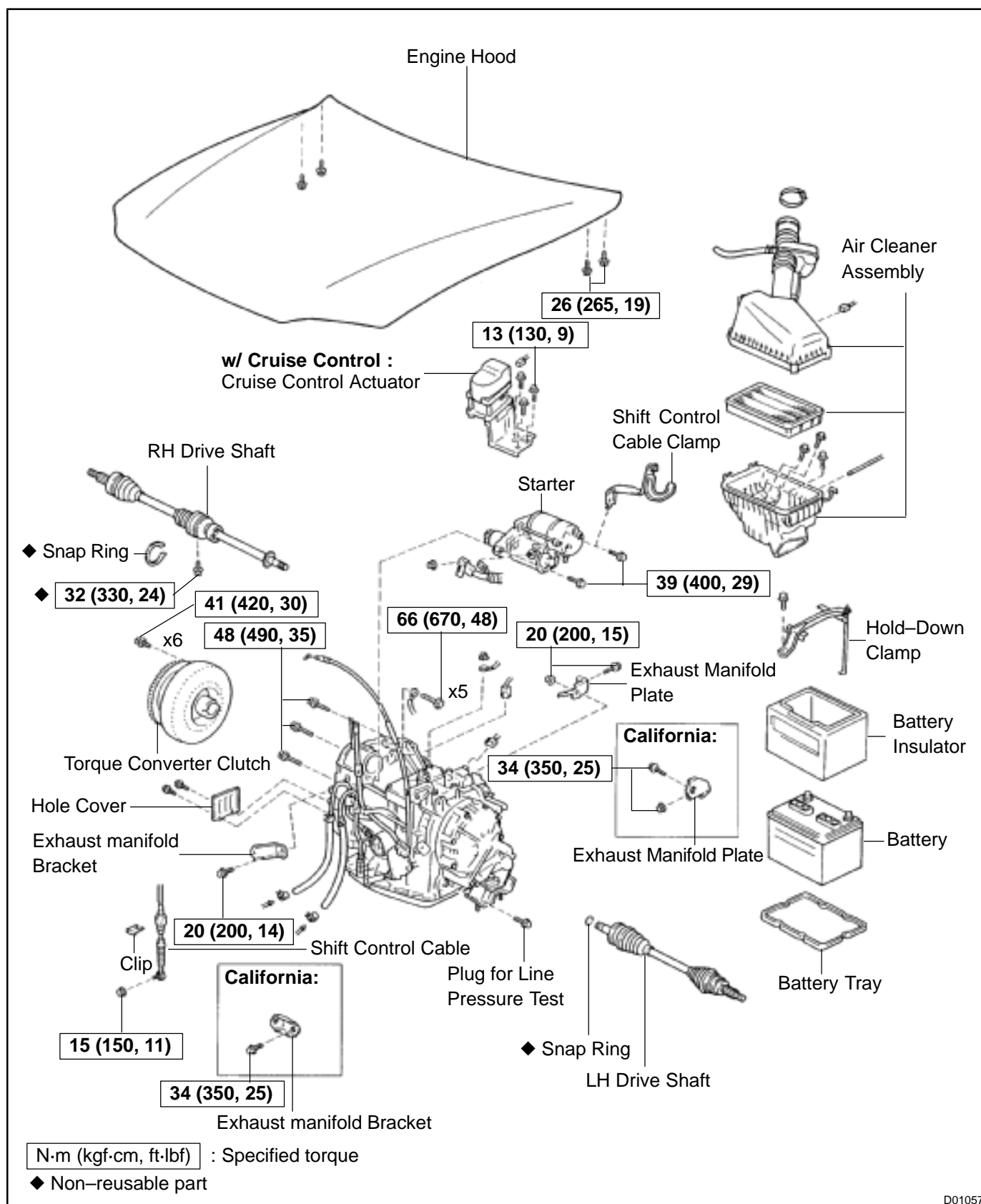
Inspect that there is continuity between at each terminal.

Shift position	Tester connection	Specified value
P position (Release button is not pushed)	1 – 3 (P – P1)	Continuity
P position (Release button is pushed)	1 – 3 (P – P1) 1 – 4 (P – P2)	Continuity
R, N, D, 2, L position	1 – 4 (P – P2)	Continuity

If continuity is not as specified, replace the switch.

# AUTOMATIC TRANSAXLE UNIT COMPONENTS

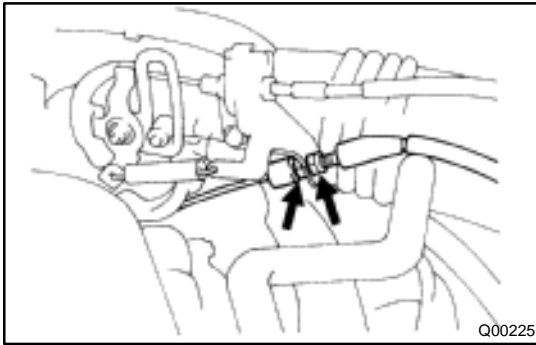
AX03X-01



D01057



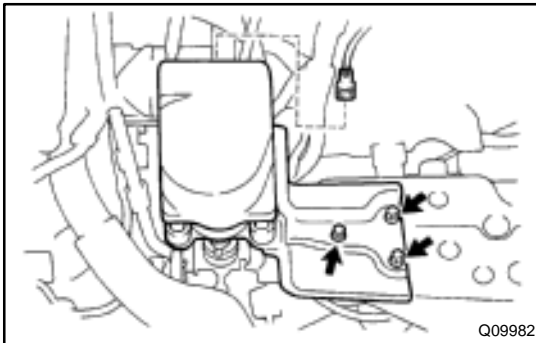




## REMOVAL

1. REMOVE BATTERY
2. REMOVE AIR CLEANER ASSEMBLY
3. REMOVE THROTTLE CABLE FROM THROTTLE BODY

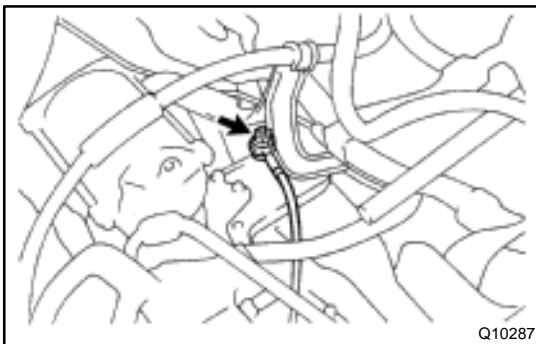
Torque: 15 N·m (150 kgf-cm, 11 ft-lbf)



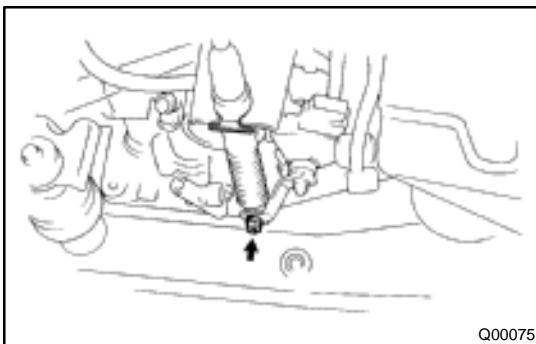
4. w/ Cruise Control:  
REMOVE CRUISE CONTROL ACTUATOR

- (a) Disconnect the connector.
- (b) Remove the 3 bolts and disconnect cruise control actuator with the bracket.

Torque: 13 N·m (130 kgf-cm, 9 ft-lbf)



5. DISCONNECT GROUND CABLE
6. DISCONNECT VEHICLE SPEED SENSOR CONNECTOR
7. DISCONNECT DIRECT CLUTCH SPEED SENSOR CONNECTOR
8. DISCONNECT PARK/NEUTRAL POSITION SWITCH CONNECTOR
9. DISCONNECT SOLENOID CONNECTOR

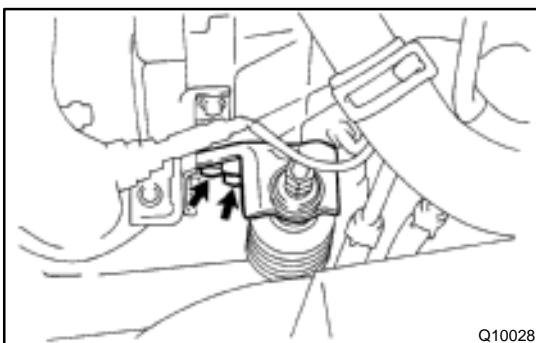


10. DISCONNECT SHIFT CONTROL CABLE

- (a) Remove the nut and disconnect the shift control cable from the park/neutral position switch.

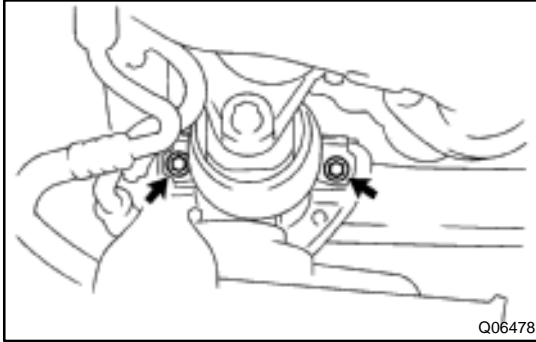
Torque: 15 N·m (150 kgf-cm, 11 ft-lbf)

- (b) Remove the clip and disconnect the shift control cable.



11. REMOVE 2 ENGINE MOUNTING ABSORBER BOLTS

Torque: 48 N·m (490 kgf-cm, 35 ft-lbf)

**12. REMOVE 2 FRONT SIDE ENGINE MOUNTING BOLTS**

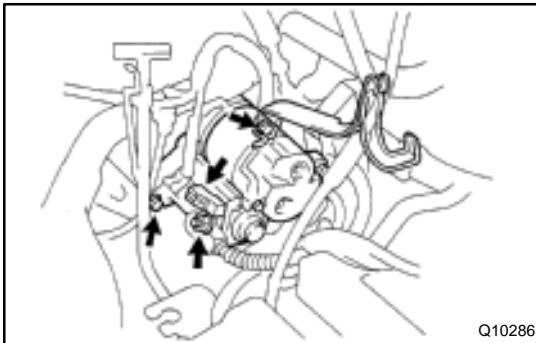
Torque:

TMC Made: 80 N·m (820 kgf·cm, 59 ft·lbf)

TMMK Made:

Green color bolt: 66 N·m (670 kgf·cm, 48 ft·lbf)

Silver color bolt: 44 N·m (440 kgf·cm, 32 ft·lbf)

**13. REMOVE STARTER AND A/T SHIFT CABLE CLAMP**

(a) Disconnect the connector and remove the nut.

(b) Remove the 2 bolts, starter and A/T shift cable clamp.

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

**14. REMOVE EXHAUST MANIFOLD BRACKET MOUNTING BOLT**

Torque:

Except California: 20 N·m (200 kgf·cm, 15 ft·lbf)

California: 34 N·m (350 kgf·cm, 25 ft·lbf)

**15. REMOVE 5 TRANSAXLE-TO-ENGINE BOLTS AND DISCONNECT GROUND TERMINAL**

Torque: 66 N·m (670 kgf·cm, 48 ft·lbf)

**16. REMOVE ENGINE HOOD**

(a) Disconnect the washer pipe.

(b) Remove the 4 bolts and engine hood.

Torque: 26 N·m (265 kgf·cm, 19 ft·lbf)

**17. RAISE AND SUPPORT VEHICLE SECURELY****18. REMOVE FRONT WHEELS**

Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

**19. REMOVE DIFFERENTIAL FLUID DRAIN PLUG AND GASKET**

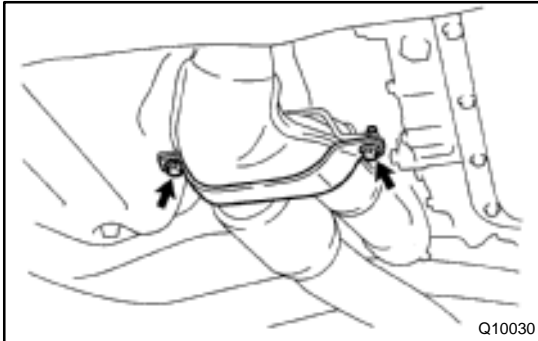
HINT:

At the time of installation, please refer to the following item.

Replace the used gasket with a new gasket.

**20. DRAIN DIFFERENTIAL FLUID****21. REMOVE LH AND RH ENGINE SIDE COVERS****22. REMOVE LH AND RH FRONT DRIVE SHAFTS**(See page [SA-25](#))

## 23. REMOVE ENGINE UNDER FRONT COVER AND NO.4 CENTER ENGINE UNDER COVER



## 24. REMOVE EXHAUST FRONT PIPE

- (a) Remove the 2 bolts and exhaust front pipe support stay.  
**Torque: 33 N·m (330 kgf-cm, 24 ft-lbf)**

- (b) Remove the 4 nuts.

**Torque: 62 N·m (630 kgf-cm, 46 ft-lbf)**

### HINT:

At the time of installation, please refer to the following item.  
Replace the used nuts with new once.

- (c) Remove the 2 bolts and nuts.

**Torque: 56 N·m (570 kgf-cm, 41 ft-lbf)**

### HINT:

At the time of installation, please refer to the following item.  
Replace the used nuts with new once.

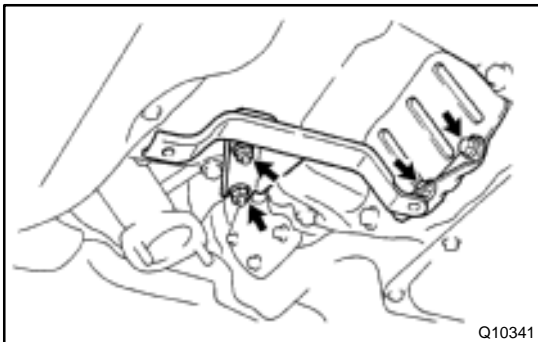
- (d) Remove the 2 exhaust front pipe clamp bolts and exhaust front pipe.

**Torque: 33 N·m (330 kgf-cm, 24 ft-lbf)**

- (e) Remove the 3 gaskets.

### HINT:

At the time of installation, please refer to the following item.  
Replace the used gaskets with new once.



- (f) Remove the 2 nuts, 2 bolts, exhaust front pipe support bracket and hole cover.

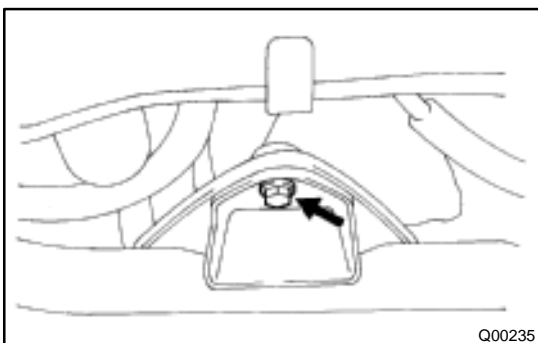
### Torque:

**Exhaust front pipe support bracket mounting nut:**

**21 N·m (210 kgf-cm, 15 ft-lbf)**

**Hole plug mounting bolt:**

**20 N·m (200 kgf-cm, 15 ft-lbf)**



## 25. REMOVE FRONT SIDE ENGINE MOUNTING INSULATOR BOLT

### Torque:

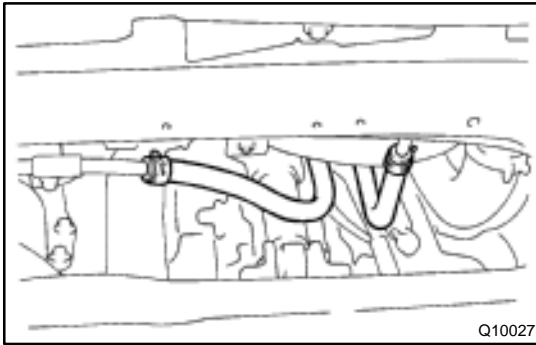
**TMC Made:**

**80 N·m (820 kgf-cm, 59 ft-lbf)**

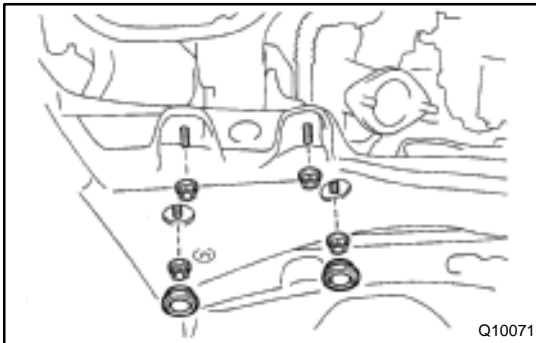
**TMMK Made:**

**Green color bolt: 66 N·m (670 kgf-cm, 48 ft-lbf)**

**Silver color bolt: 44 N·m (440 kgf-cm, 32 ft-lbf)**



## 26. DISCONNECT 2 OIL COOLER HOSES



## 27. REMOVE REAR SIDE ENGINE MOUNTING NUT

- (a) Remove the 2 grommets.
- (b) Remove the 4 nuts.

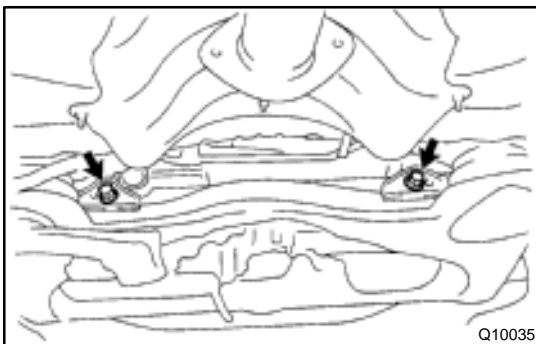
**Torque: 80 N·m (820 kgf-cm, 59 ft-lbf)**



## 28. REMOVE LEFT SIDE TRANSAXLE MOUNTING NUT

- (a) Remove the 2 grommets.
- (b) Remove the 2 nuts.

**Torque: 80 N·m (820 kgf-cm, 59 ft-lbf)**



## 29. REMOVE STEERING GEAR HOUSING

- (a) Remove the 4 bolts, LH and RH stabilizer bar brackets and bushings.

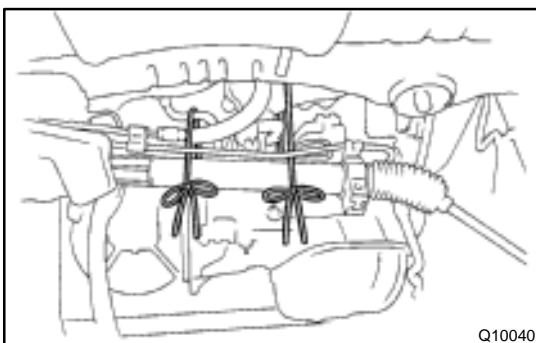
**Torque: 19 N·m (195 kgf-cm, 14 ft-lbf)**

- (b) Remove the front stabilizer bar.

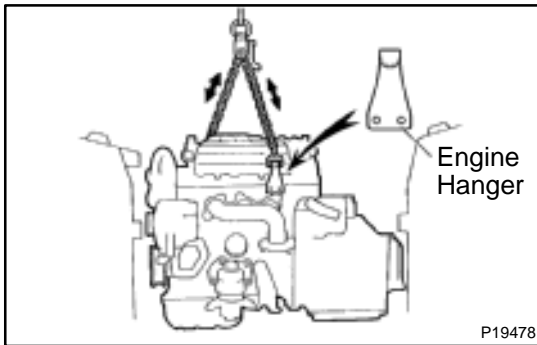
(See page [SA-47](#))

- (c) Remove the 2 steering gear housing mounting bolts and nuts.

**Torque: 181 N·m (1,850 kgf-cm, 134 ft-lbf)**



## 30. SUPPORT STEERING GEAR HOUSING, AS SHOWN



### 31. ATTACH ENGINE SLING DEVICE TO ENGINE HANGERS

- (a) Install the No.2 engine hanger in the correct direction.

**Part No.:**

**No.2 engine hanger: 12282-20020**

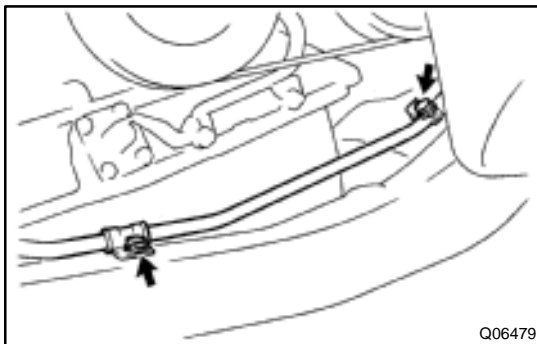
**Bolt: 91642-80825**

**Torque: 20 N·m (200 kgf-cm, 14 ft-lbf)**

- (b) Attach the engine chain hoist to the engine hangers.

#### **CAUTION:**

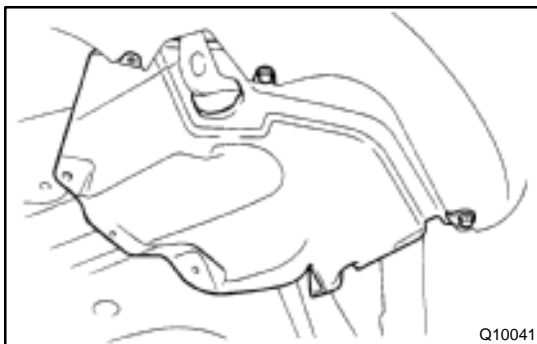
**Do not attempt to hang the engine by hooking the chain to any other part.**



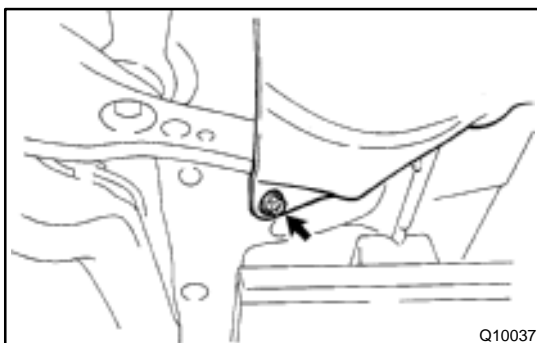
### 32. REMOVE FRONT FRAME ASSEMBLY

- (a) Remove the 2 bolts and PS reservoir pipe mounting brackets.

**Torque: 10 N·m (100 kgf-cm, 7 ft-lbf)**



- (b) Remove the 4 screws and turn over the front side of the LH and RH fender liners.



- (c) Remove the 2 screws and turn over the rear side of LH and RH fender liners.



- (d) Remove the 6 bolts and 4 nuts.

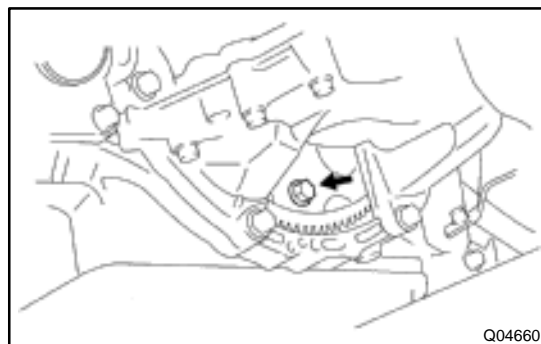
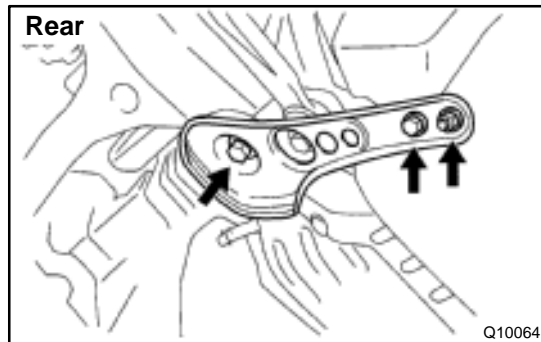
**Torque:**

**19 mm head bolt: 181 N·m (1,850 kgf·cm, 134 ft·lbf)**

**14 mm head bolt: 32 N·m (330 kgf·cm, 24 ft·lbf)**

**Nut: 36 N·m (370 kgf·cm, 27 ft·lbf)**

- (e) Remove the front frame assembly.



**33. SUPPORT TRANSAXLE WITH A TRANSMISSION JACK**

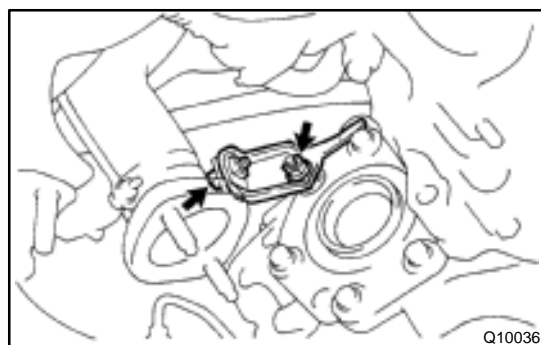
**34. REMOVE TORQUE CONVERTER CLUTCH MOUNTING BOLTS**

Turn the crankshaft to gain access to each bolt, remove the 6 bolts with holding the crankshaft pulley bolt by a wrench.

**Torque: 41 N·m (420 kgf·cm, 30 ft·lbf)**

**HINT:**

At the time of installation, please refer to the following item.  
First install black colored bolt and then the 5 other bolts.



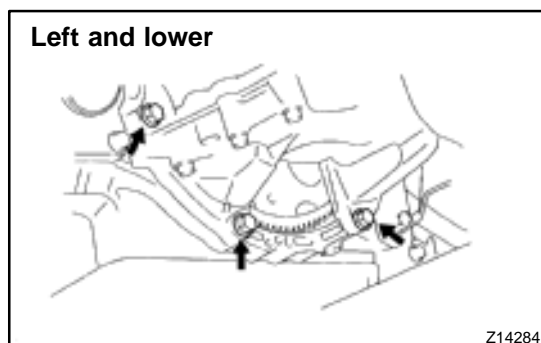
**35. REMOVE EXHAUST MANIFOLD PLATE**

- (a) Remove the bolt, nut and exhaust manifold plate.

**Torque:**

**Except California: 20 N·m (200 kgf·cm, 15 ft·lbf)**

**California: 34 N·m (350 kgf·cm, 25 ft·lbf)**

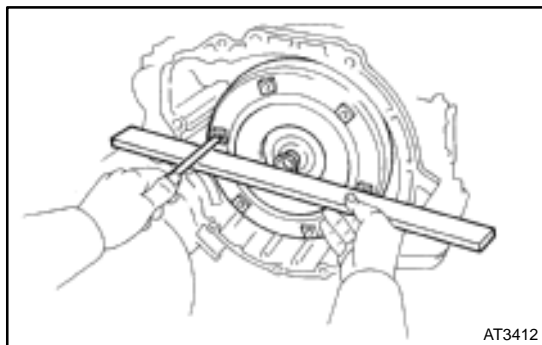


**36. REMOVE 3 LOWER TRANSAXLE-TO-ENGINE BOLTS**

**Torque: 46 N·m (470 kgf·cm, 34 ft·lbf)**

**37. REMOVE TRANSAXLE ASSEMBLY**

Separate the transaxle and engine, and lower the transaxle.



## INSTALLATION

### 1. CHECK TORQUE CONVERTER CLUTCH INSTALLATION

Using a scale and a straight edge, measure from the installed surface to the transaxle housing.

**Correct distance: 13.7 mm (0.539 in.) or more**

### 2. TRANSAXLE INSTALLATION

Installation is in the reverse order of removal.

(See page AX-23)

HINT:

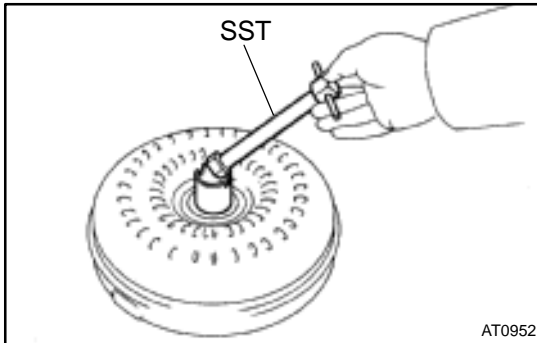
After installation, check and inspect items as follows.

- ◆ Fluid level. (See page [DI-438](#))
- ◆ Front wheel alignment. (See page [SA-4](#))
- ◆ Do the road test. (See page [DI-438](#))
- ◆ Hood. (See page [BO-10](#))



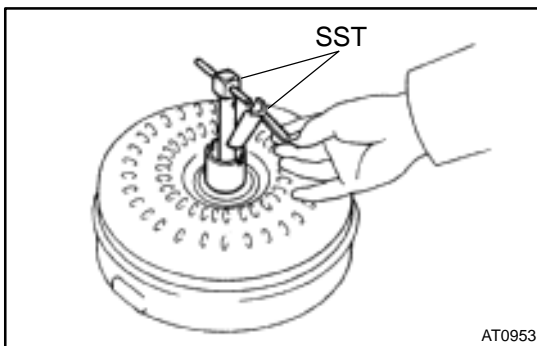
# TORQUE CONVERTER CLUTCH AND DRIVE PLATE INSPECTION

AX040-01

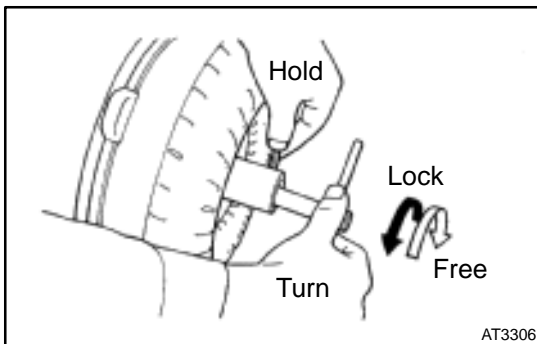


## 1. INSPECT ONE-WAY CLUTCH

- (a) Install SST into the inner race of the one-way clutch.  
SST 09350-32014 (09351-32020)

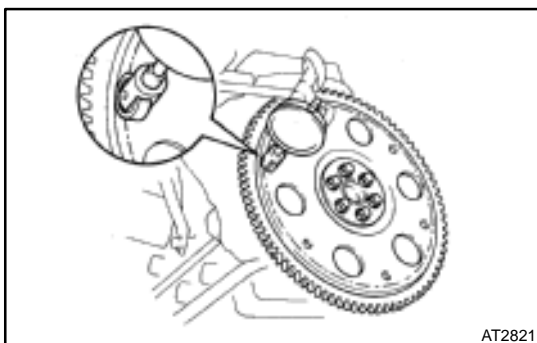


- (b) Install SST so that it fits in the notch of the converter hub and outer race of the one-way clutch.  
SST 09350-32014 (09351-32010)



- (c) With the torque converter clutch standing on its side, the clutch locks when turned counterclockwise, and rotates freely and smoothly clockwise.

If necessary, clean the converter and retest the clutch.  
Replace the converter if the clutch still fails the test.



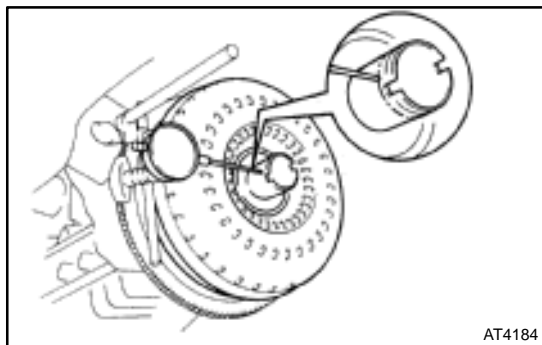
## 2. MEASURE DRIVE PLATE RUNOUT AND INSPECT RING GEAR

- (a) Set up a dial indicator, and measure the drive plate runout.  
(b) Check the damage of the ring gear.

**Maximum runout: 0.20 mm (0.0079 in.)**

If the runout is not within specification or ring gear is damaged, replace the drive plate.

**Torque: 83 N·m (850 kgf·cm, 61 ft·lbf)**



### 3. MEASURE TORQUE CONVERTER CLUTCH SLEEVE RUNOUT

- (a) Temporarily mount the torque converter clutch to the drive plate. Set up a dial indicator and measure the torque converter clutch sleeve runout.

**Maximum runout: 0.30 mm (0.0118 in.)**

If the runout is not within the specification, try to correct by reorienting the installation of the converter.

HINT:

Mark the position of the converter to ensure the correct installation.

- (b) Remove the torque converter clutch.