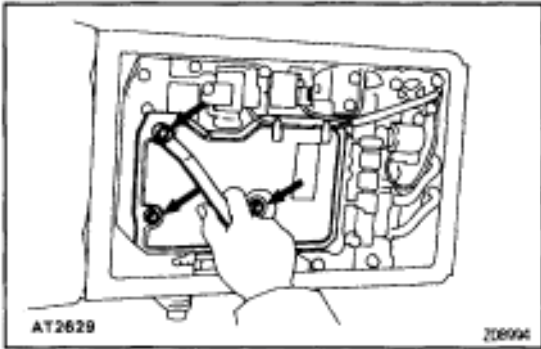


4. WHEN REPLACING 3 SOLENOIDS

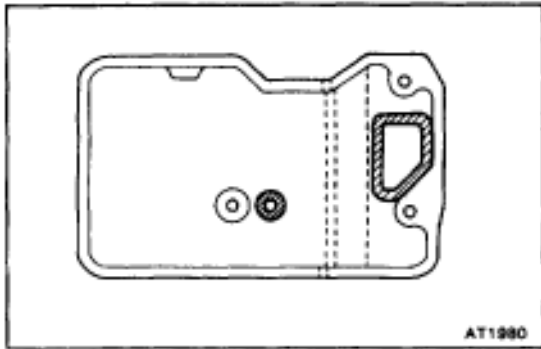
- (a) Disconnect the connectors from the solenoids.
- (b) Remove the solenoid mounting bolts.
Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)
- (c) Remove the solenoids.



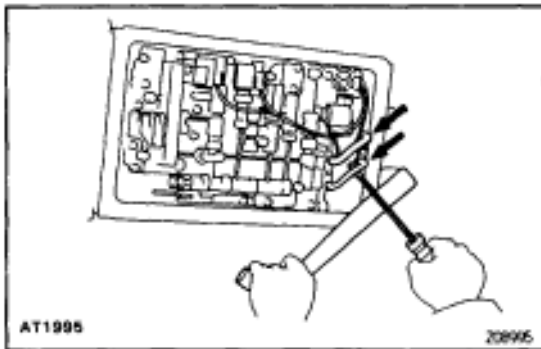
5. REMOVE OIL STRAINER

REMOVAL NOTICE: Be careful as some fluid will come out with the oil strainer.

Remove the 3 bolts, and the oil strainer and gasket.
Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

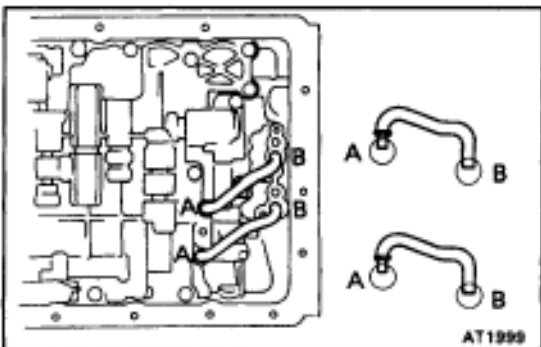


INSTALLATION HINT: If necessary, replace the strainer or case gasket.

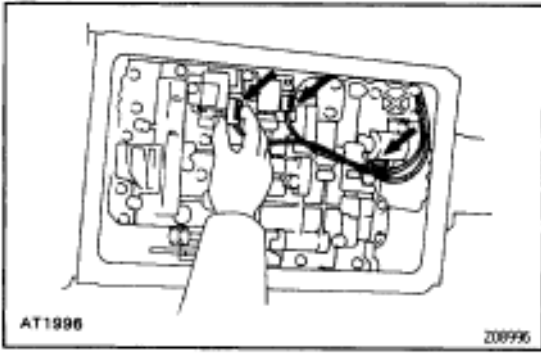


6. REMOVE OIL PIPES

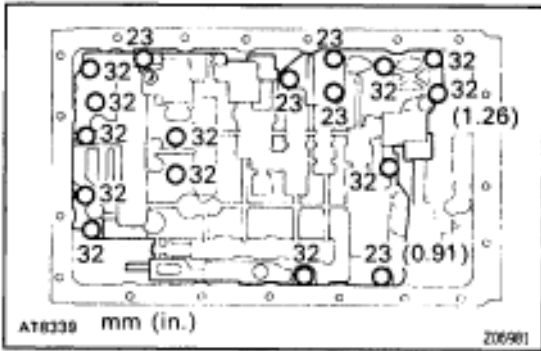
Pry up both pipe ends with a large screwdriver and remove the 2 pipes.



INSTALLATION NOTICE: Make sure that the oil pipes or the magnets do not interfere with the oil pan.



7. DISCONNECT CONNECTORS FROM EACH SOLENOID

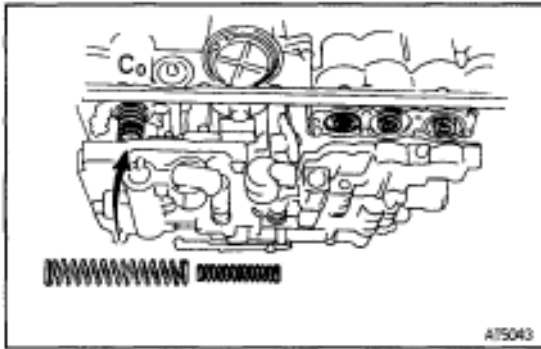


8. REMOVE VALVE BODY

(a) Remove the 17 bolts.

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

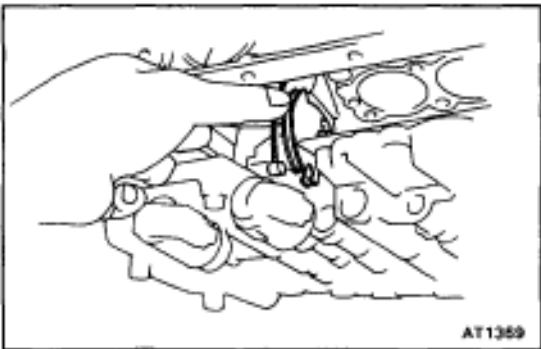
INSTALLATION HINT: Each bolt length is indicated in the illustration.



(b) Remove the 2 C₀ accumulator piston springs.

- **C₀ accumulator piston spring**

Spring	Outer	Inner
Free length	74.6 (2.937)	46.0 (1.811)
Outer diameter	20.9 (0.823)	14.0 (0.551)
Color	Orange	Yellow



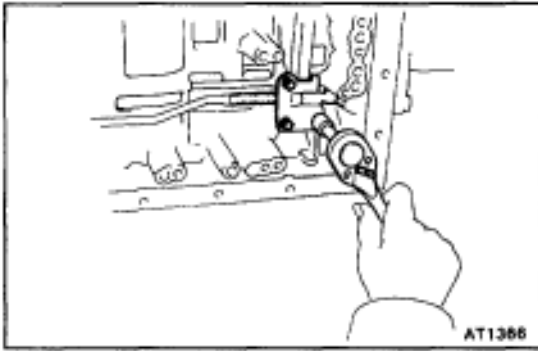
(c) Disconnect the throttle cable from the cam.

(d) Remove the valve body.

REMOVAL HINT: Be careful not to drop the check ball body and spring.

INSTALLATION HINT:

- Install the body together the check ball body and spring.
- Align the groove of the manual valve to the pin of the lever.



PARKING LOCK PAWL REMOVAL

Installation is in the reverse order of removal.

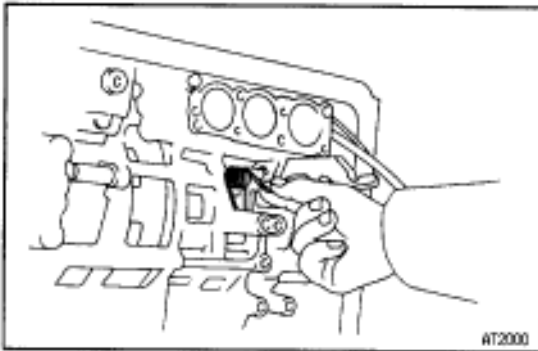
1. REMOVE VALVE BODY (See page AT1-16)
2. REMOVE PARKING LOCK PAWL BRACKET

INSTALLATION HINT:

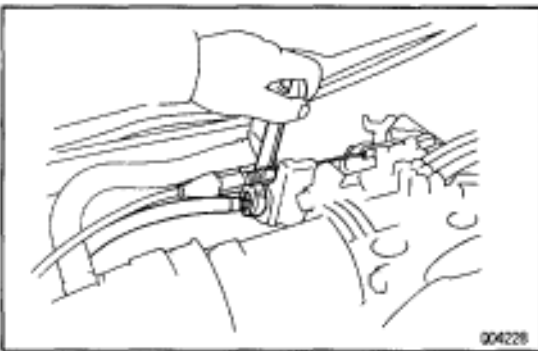
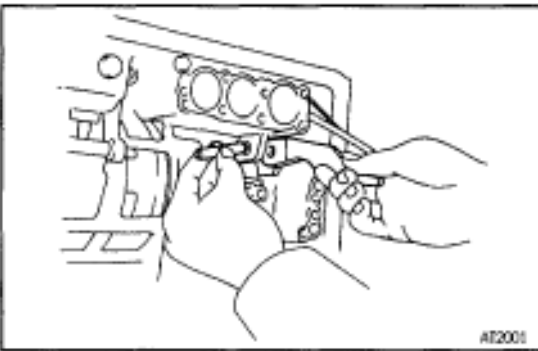
- Push the lock rod fully forward.
- Install the 3 bolts finger tight.
- Check that the parking lock pawl operates smoothly.

Torque: 7.4 N·m (75 kgf·cm, 65 in·lbf)

3. REMOVE SPRING FROM PARKING LOCK PAWL SHAFT



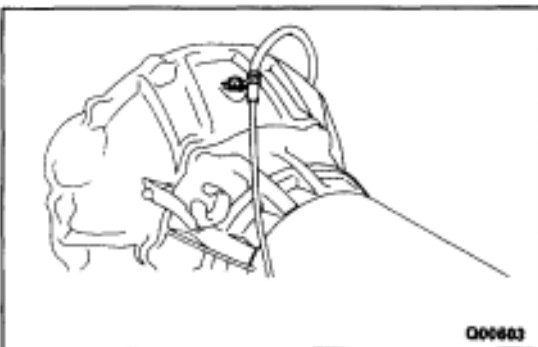
4. REMOVE PARKING LOCK PAWL AND SHAFT



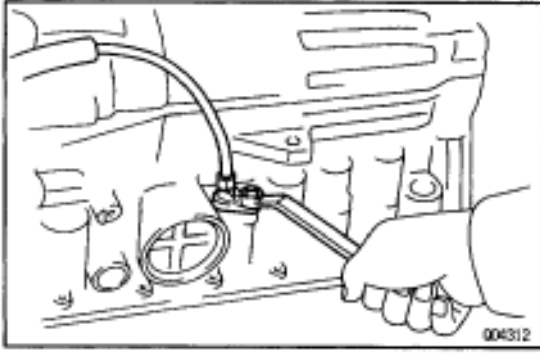
THROTTLE CABLE REPLACEMENT

1. DISCONNECT THROTTLE CABLE

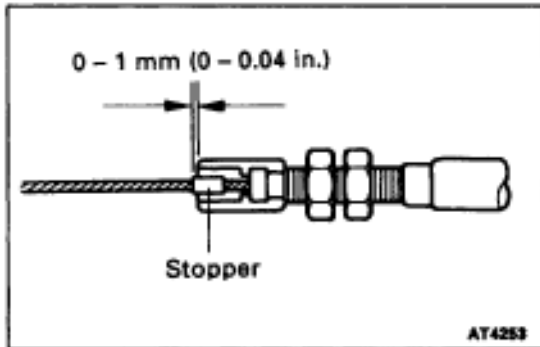
- (a) Disconnect the cable housing from the bracket.
- (b) Disconnect the cable from the throttle linkage.



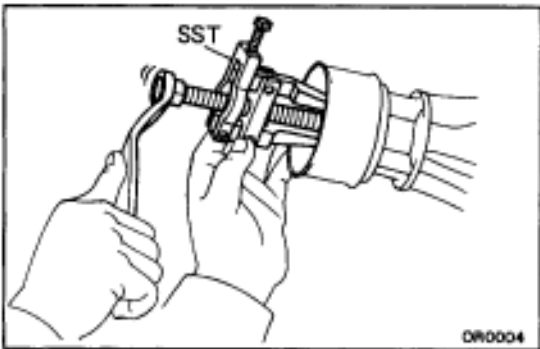
- (c) Disconnect the cable from the torque converter clutch housing.



2. **REMOVE VALVE BODY**
(See page [AT1-16](#))
3. **PUSH THROTTLE CABLE OUT OF TRANSMISSION CASE**
Remove the retaining bolt and pull out the throttle cable.
4. **INSTALL THROTTLE CABLE**
Install the retaining bolt and push in the throttle cable.
5. **INSTALL VALVE BODY**
(See page [AT1-16](#))



6. **IF THROTTLE CABLE IS NEW, STAKE STOPPER ON INNER CABLE**
 - (a) Pull in the slack of the inner cable.
 - (b) Stake the stopper, as shown, 0–1 mm (0–0.04 in.) from the end of outer cable.



OIL SEAL REPLACEMENT

1. **RAISE VEHICLE AND POSITION PAN TO CATCH ANY FLUID THAT MAY DRIP**
2. **REMOVE PROPELLER SHAFT TOGETHER WITH CENTER BEARING**
3. **REMOVE REAR OIL SEAL**
NOTICE: Clean the extension housing before removing the oil seal.

Using SST, remove the oil seal.

SST 09308-10010

4. **INSTALL NEW OIL SEAL**
Using SST and a hammer, drive in a new oil seal as far as it will go.
SST 09325-40010
5. **INSTALL PROPELLER SHAFT**
6. **LOWER VEHICLE AND CHECK FLUID LEVEL**

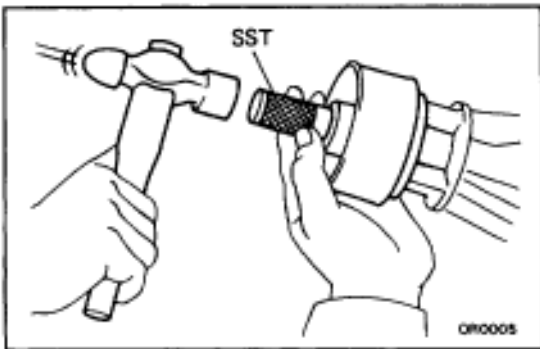
(See page [AT1-42](#))

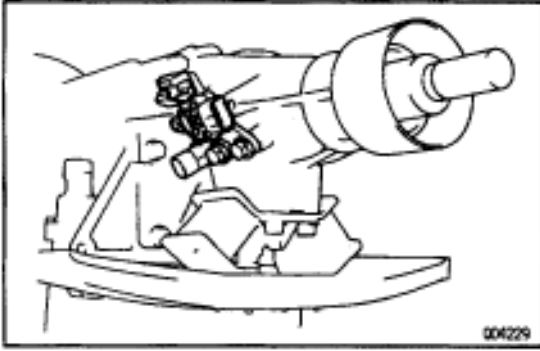
Add fluid as necessary.

NOTICE: Do not overfill.

Fluid type:

ATF DEXRON® II





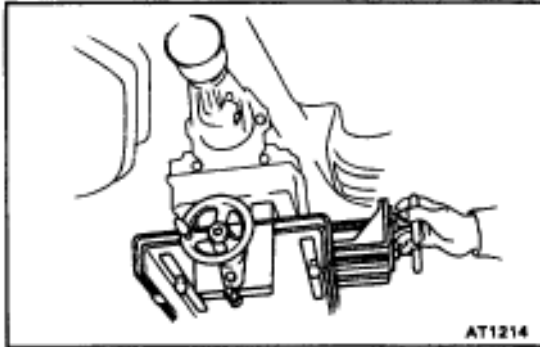
EXTENSION HOUSING REMOVAL

Installation is in the reverse order of removal.

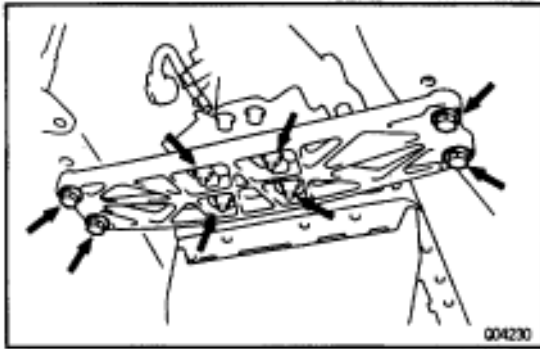
INSTALLATION HINT: After installation, fill A/T fluid and check fluid level. (See page [AT1-42](#))

1. **RAISE VEHICLE AND POSITION PAN TO CATCH ANY FLUID THAT MAY DRIP**
2. **REMOVE PROPELLER SHAFT TOGETHER WITH CENTER BEARING.**
3. **DISCONNECT NO. 1 AND NO. 2 VEHICLE SPEED SENSOR CONNECTORS AND REMOVE SENSORS**
4. **REMOVE SPEEDOMETER DRIVEN GEAR**
5. **JACK UP TRANSMISSION SLIGHTLY**

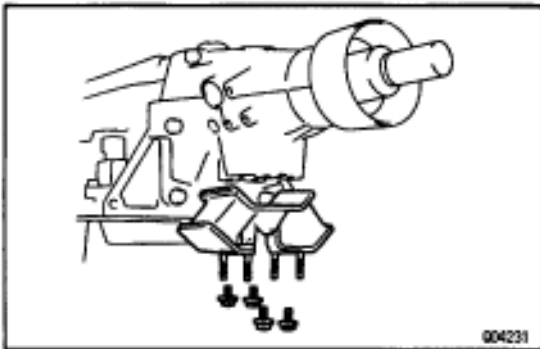
Securely support the transmission on a transmission jack. Lift the transmission slightly to remove weight from the rear support member.



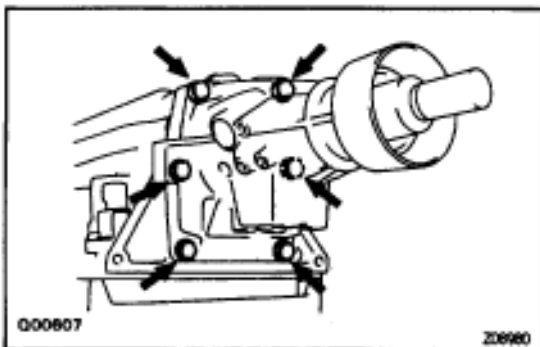
6. **REMOVE REAR SUPPORT MEMBER**
Remove the 4 bolts, nuts and support member.
Torque: 25 N·m (260 kgf·cm, 19 ft·lbf)



7. **REMOVE TRANSMISSION MOUNTING BRACKET**
Remove the 4 bolts and bracket from the transmission.
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

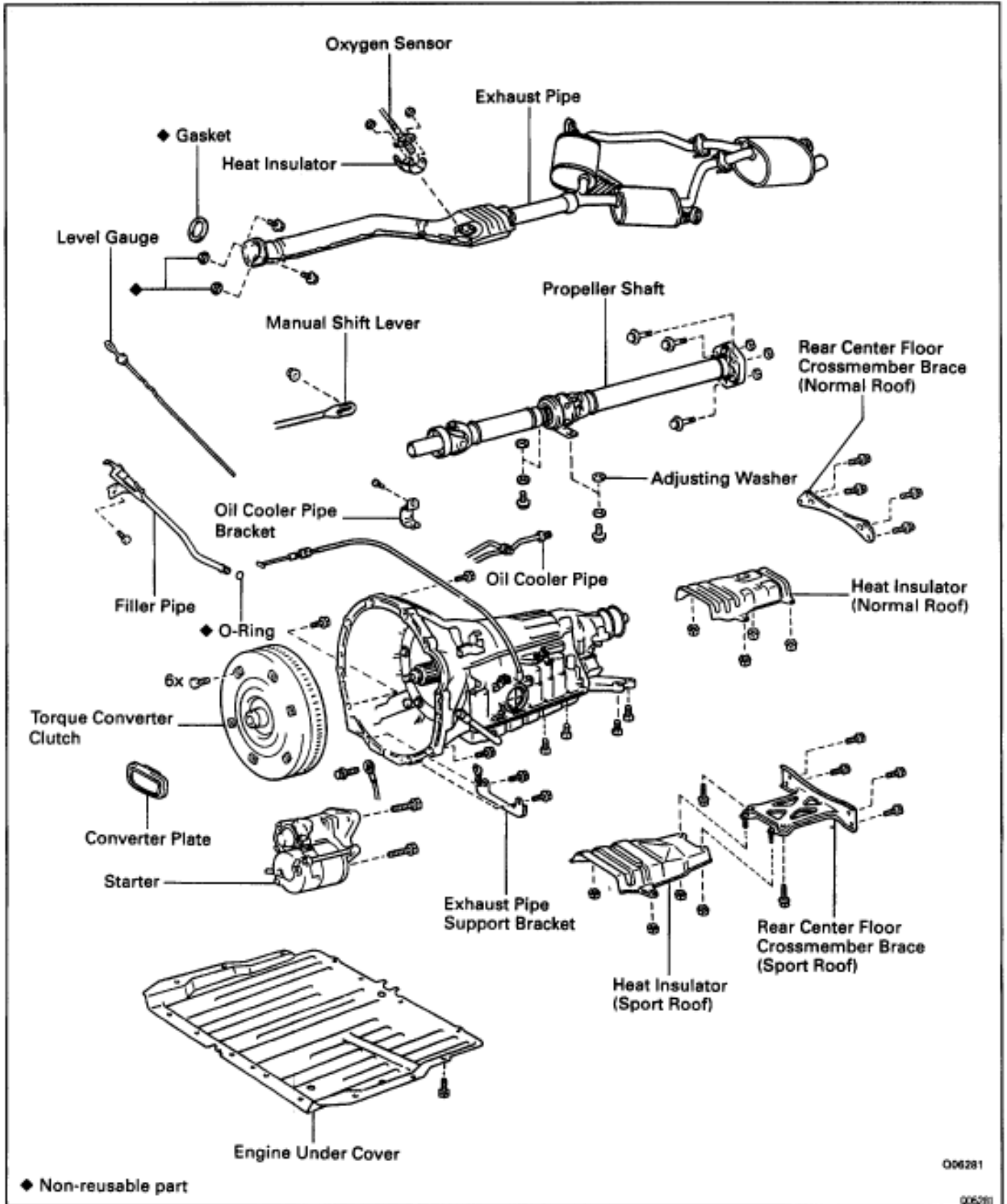


8. **REMOVE EXTENSION HOUSING AND GASKET**
Remove the 6 bolts. If necessary, tap the extension housing with a plastic hammer or block of wood to loosen it.
INSTALLATION HINT: The 2 lower bolts are shorter.
Torque: 36 N·m (370 kgf·cm, 27 ft·lbf)



ASSEMBLY REMOVAL AND INSTALLATION

Remove and install the part, as shown.



TRANSMISSION REMOVAL

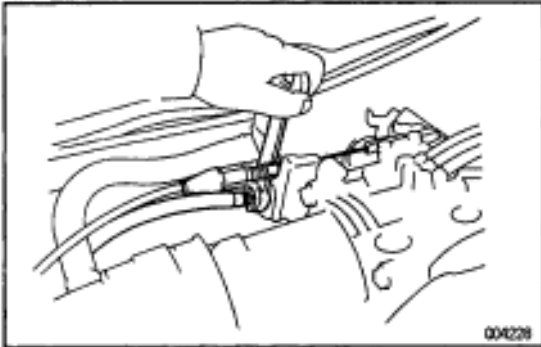
Installation is in the reverse order of removal.

INSTALLATION HINT: After installation, fill A/T fluid and check fluid level. (See page [AT1-42](#))

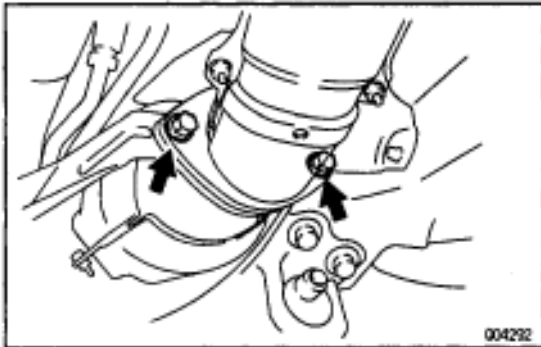
1. **REMOVE A/T FLUID LEVEL GAUGE**
2. **REMOVE FILLER PIPE**
Remove the bolt and pipe.



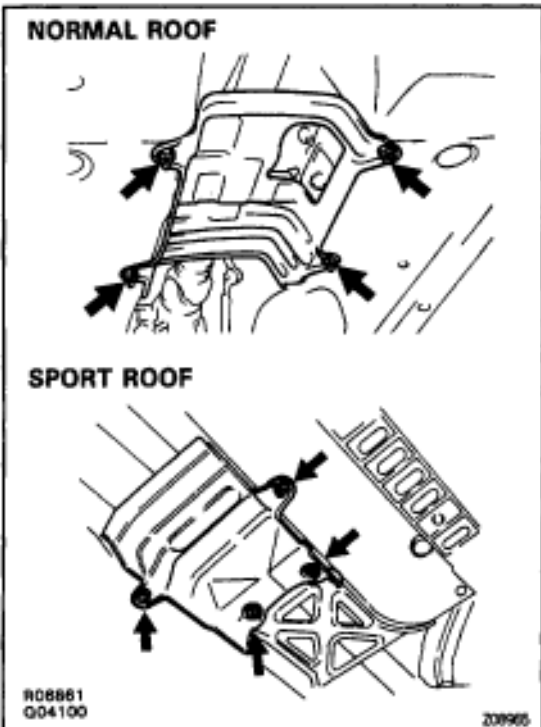
3. **DISCONNECT THROTTLE CABLE**

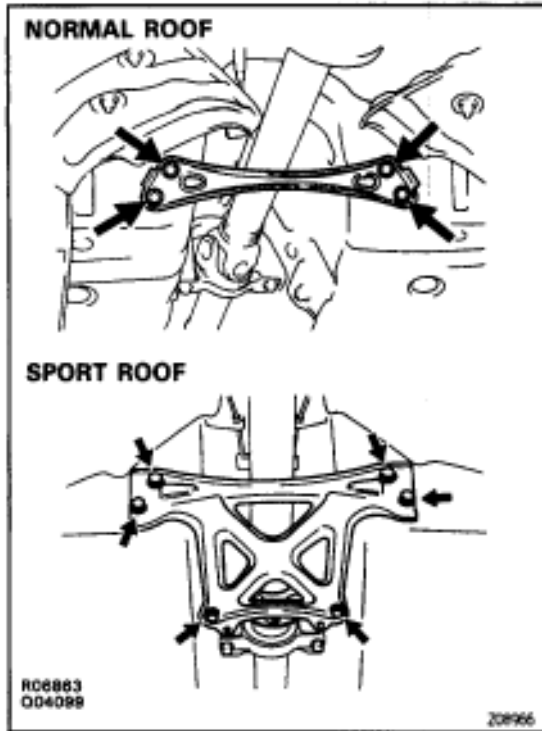


4. **REMOVE EXHAUST PIPE**
(See page [EG-83](#))



5. **REMOVE HEAT INSULATOR**
Remove the 4 nuts and the heat insulator.
Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)





6. REMOVE REAR CENTER FLOOR CROSSMEMBER BRACE

Normal Roof:

Remove the 4 bolts and center floor crossmember brace.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

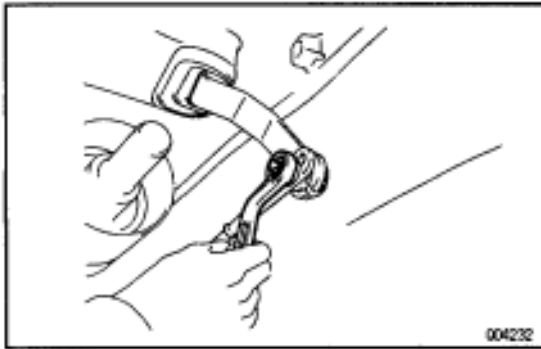
Sport Roof:

Remove the 6 bolts and center floor crossmember brace.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

7. REMOVE PROPELLER SHAFT

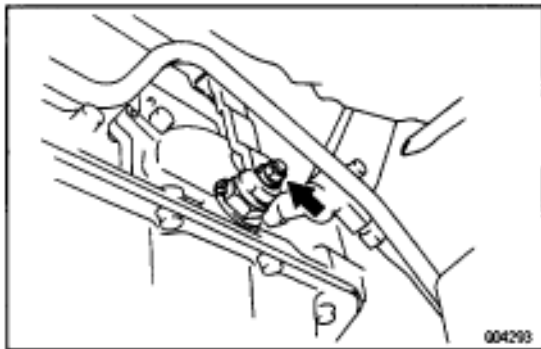
(See page [PR-7](#))



8. REMOVE SHIFT CONTROL ROD

(a) Remove the nut from shift lever.

INSTALLATION HINT: Inspect and adjust the park/ neutral position switch.

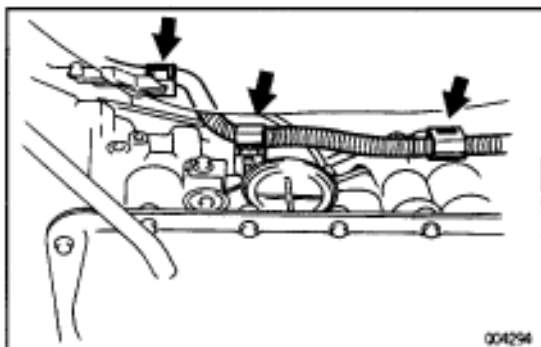


(b) Remove the nut and control rod with the control shaft lever.

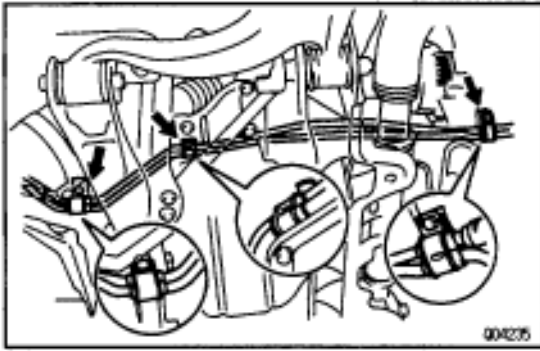
Torque: 16 N·m (160 kgf·cm, 12 ft·lbf)

9. DISCONNECT THESE CONNECTORS

- No.1 vehicle speed sensor connector
- No.2 vehicle speed sensor connector
- Solenoid wire connector
- Sensor cover
- A/T fluid temp. sensor connector
- Park/neutral position switch connector

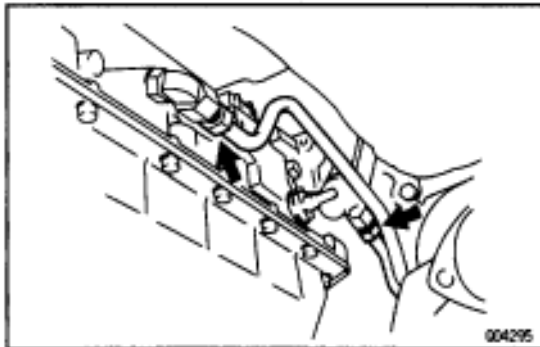


10. DISCONNECT 3 WIRE CLAMPS FROM THE BRACKET ON TRANSMISSION

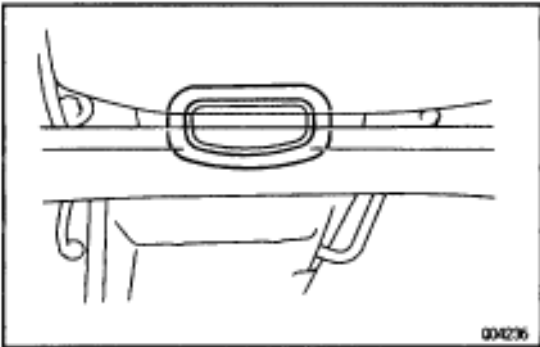


11. DISCONNECT OIL COOLER PIPES

- (a) Remove the 3 bolts and oil cooler pipe clamps.

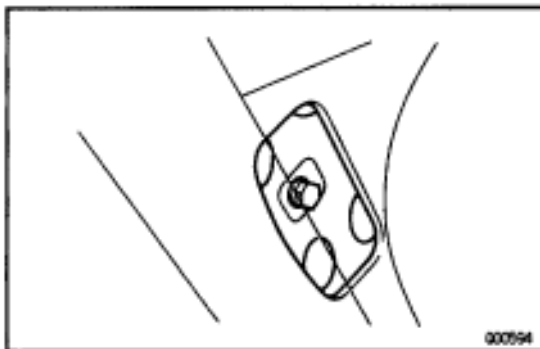


- (b) Disconnect the 2 oil cooler pipes.
Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)

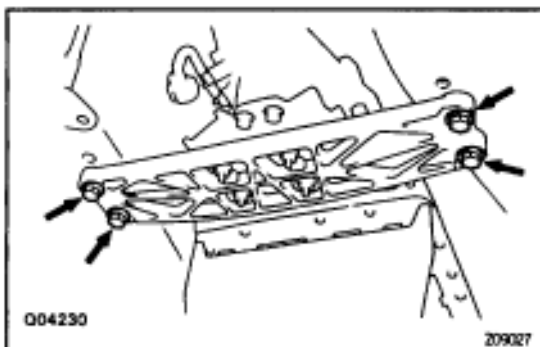


12. REMOVE TORQUE CONVERTER CLUTCH MOUNTING BOLTS

- (a) Remove the engine under cover.
(b) Remove the converter plate.



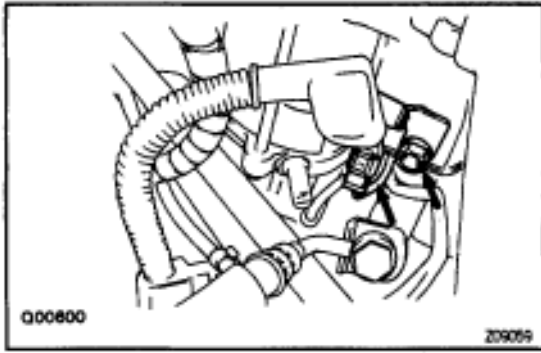
- (c) Turn the crankshaft to gain access to each bolt.
Remove the 6 bolts.
Torque: 33 N·m (340 kgf·cm, 25 ft·lbf)



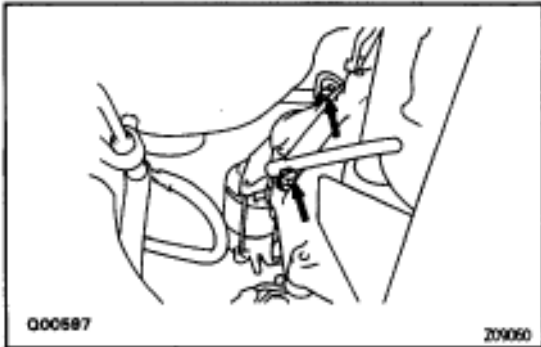
13. JACK UP TRANSMISSION

14. REMOVE REAR MOUNTING

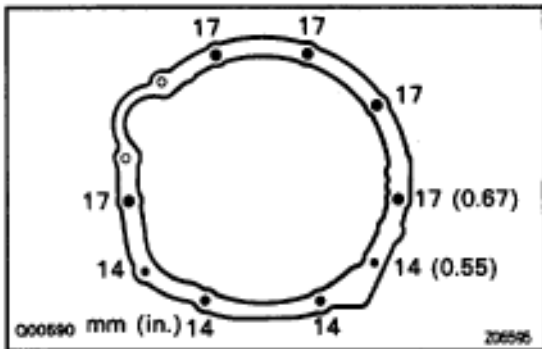
- Remove the 4 bolts and rear mounting.
Torque: 25 N·m (260 kgf·cm, 19 ft·lbf)

**15. REMOVE STARTER**

- (a) Disconnect the connector.
- (b) Remove the nut and cable.



- (c) Remove the 2 bolts and starter.
Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)

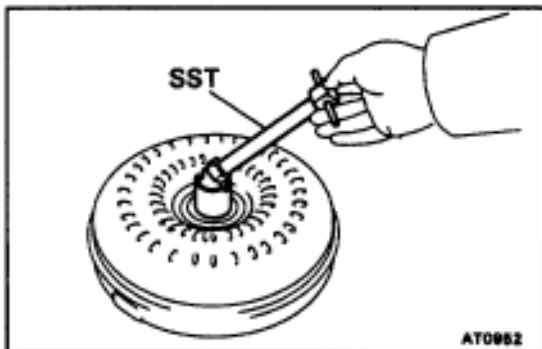
**16. REMOVE TRANSMISSION**

Remove the 9 bolts and transmission.

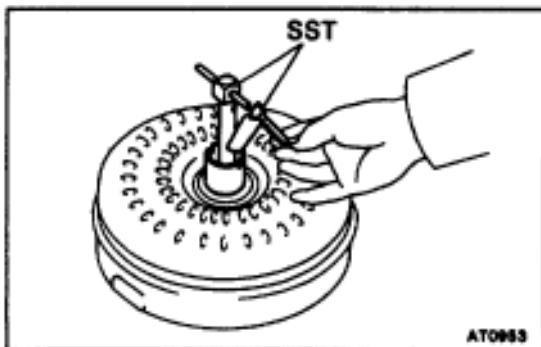
Torque:

14 mm head bolt: 37 N·m (380 kgf·cm, 27 ft·lbf)

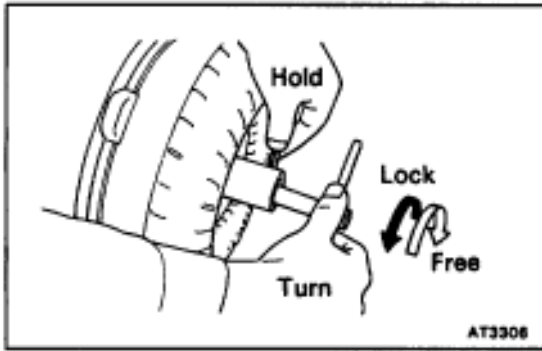
17 mm head bolt: 72 N·m (730 kgf·cm, 53 ft·lbf)

**TORQUE CONVERTER CLUTCH AND DRIVE PLATE INSPECTION****1. INSPECT ONE-WAY CLUTCH**

- (a) Install SST in the inner race of one-way clutch.
SST 09350-30020 (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 09350-30020 (09351-32020)



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

If necessary, clean the converter clutch and retest the clutch. Replace the converter 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 runout exceeds 0.20 mm (0.0079 in.) 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: 74 N·m (750 kgf·cm, 54 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.

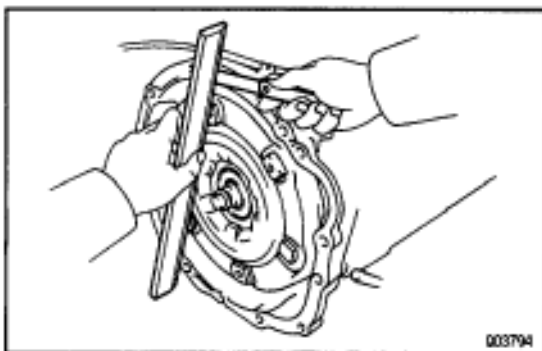
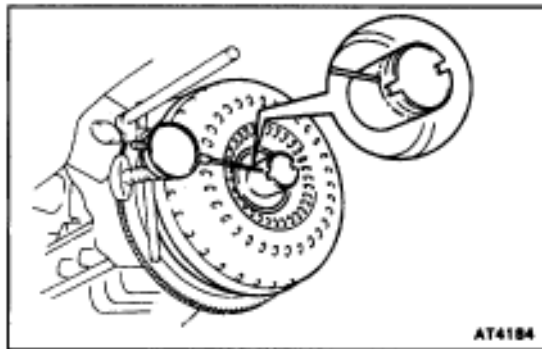
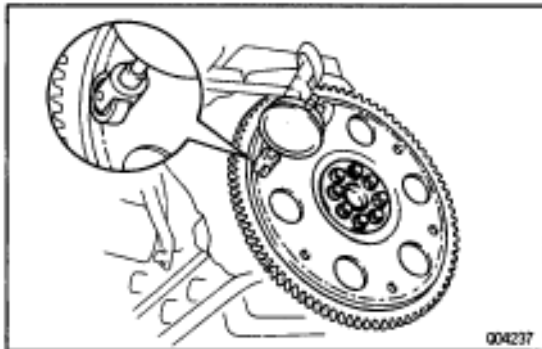
Maximum runout:

0.30 mm (0.0118 in.)

If runout exceeds 0.30 mm (0.0118 in.), try to correct by reorienting the installation of the converter clutch. If excessive runout cannot be corrected, replace the torque converter clutch.

HINT: Mark the position of the converter clutch to ensure correct installation.

- (b) Remove the torque converter clutch.



TORQUE CONVERTER CLUTCH INSTALLATION

1. INSTALL TORQUE CONVERTER CLUTCH TRANSMISSION

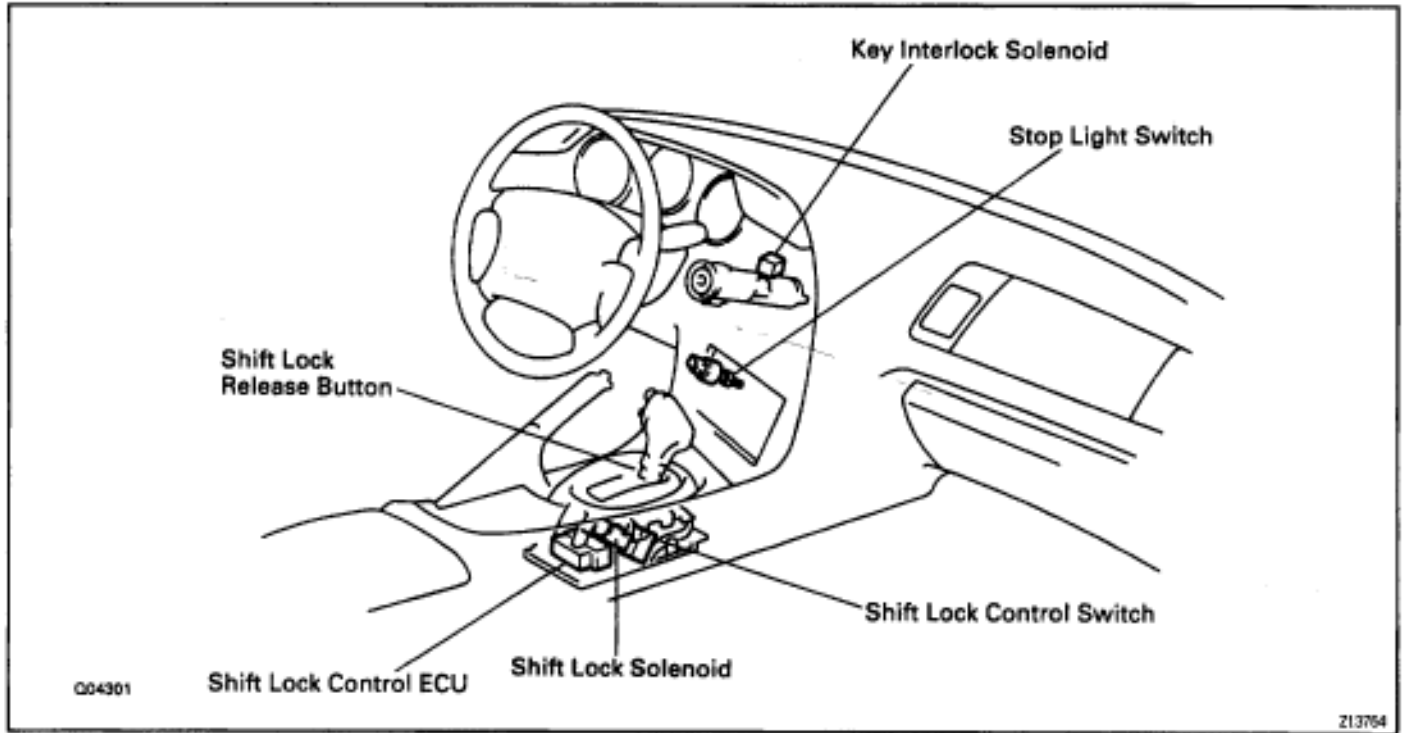
2. CHECK TORQUE CONVERTER CLUTCH INSTALLATION

Using feeler gauge and a straight edge, measure between the installed surface of the transmission and the straight edge.

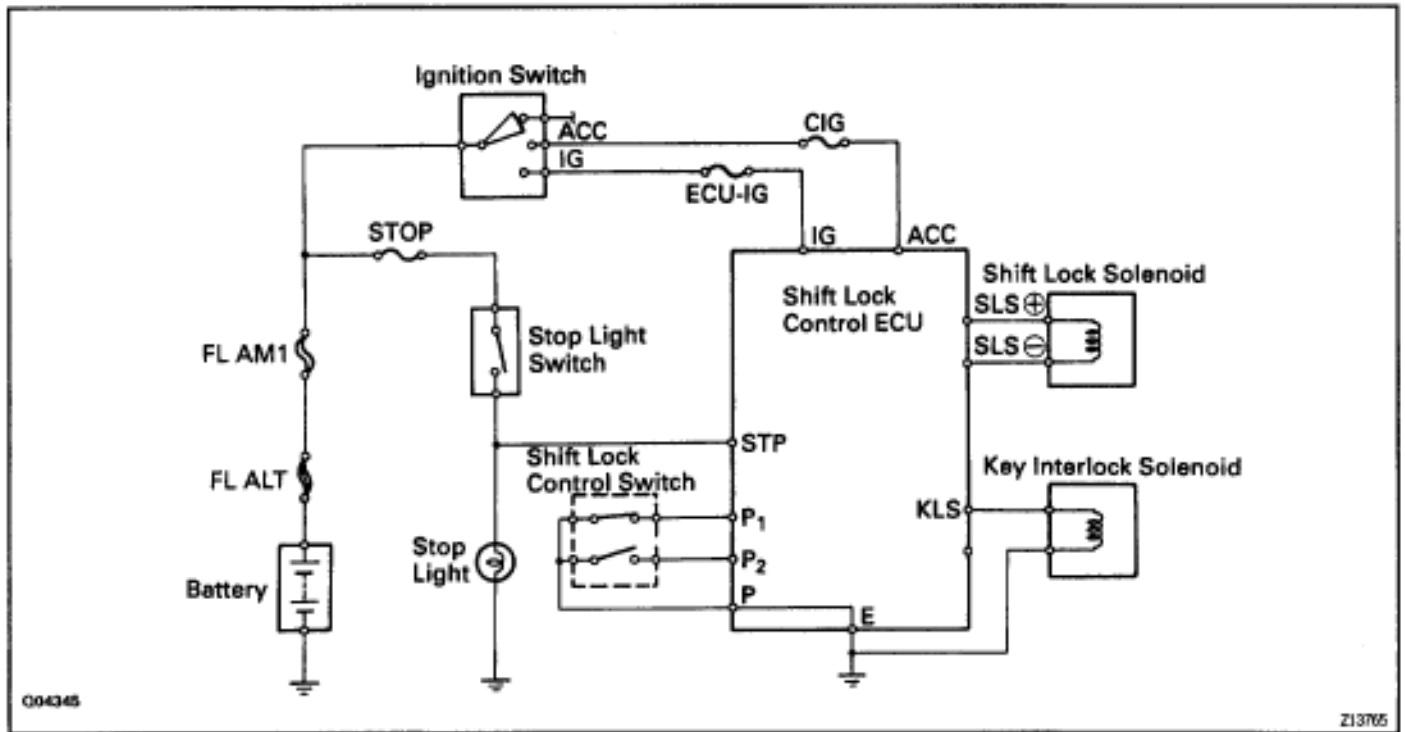
Clearance:

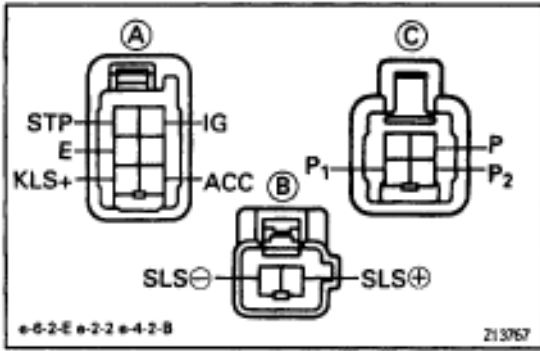
Less than 0.1 mm (0.004 in.)

SHIFT LOCK SYSTEM COMPONENT PARTS LOCATION



WIRING DIAGRAM



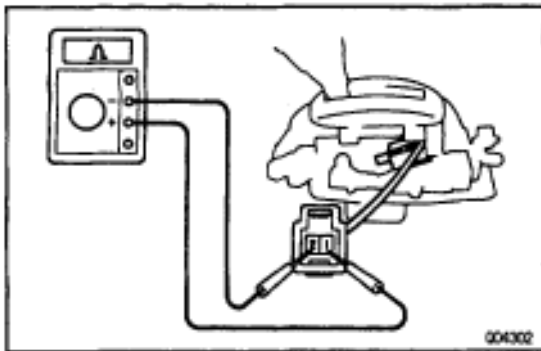


ELECTRONIC CONTROL COMPONENTS INSPECTION

1. INSPECT SHIFT LOCK CONTROL ECU

Using a voltmeter, measure the voltage at each terminal.

Connector	Terminal	Measuring condition		Voltage (V)
A	ACC - E	IG SW ACC		10 - 14
	IG - E	IG SW ON		10 - 14
	STP - E	Depress brake pedal		10 - 14
	KLS - E	(1)	IG SW ACC and P position	Below 1
(2)		R, N, D, 2, L position	7.5 - 11	
(3)		R, N, D, 2, L position (after 1 second)	6 - 9.5	
B	SLS (-) - SLS (+)	(1)	IG SW ON and P position	Below 1
		(2)	Depress brake pedal	8 - 13.5
		(3)	Depress brake pedal (after 20 seconds)	6 - 8.5
		(4)	R, N, D, 2, L position	Below 1
C	P ₁ - P	(1)	IG SW ON, P position and depress brake pedal	Below 1
		(2)	R, N, D, 2, L position	9 - 13.5
	P ₂ - P	(1)	IG SW ACC and P position	9 - 13.5
		(2)	R, N, D, 2, L position	Below 1



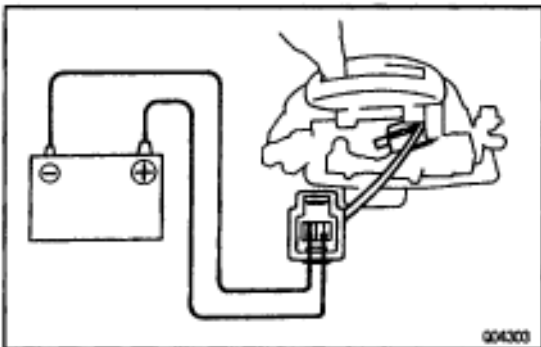
2. INSPECT SHIFT LOCK SOLENOID

- (a) Disconnect the solenoid connector.
- (b) Using an ohmmeter, measure the resistance between terminals 1 and 2.

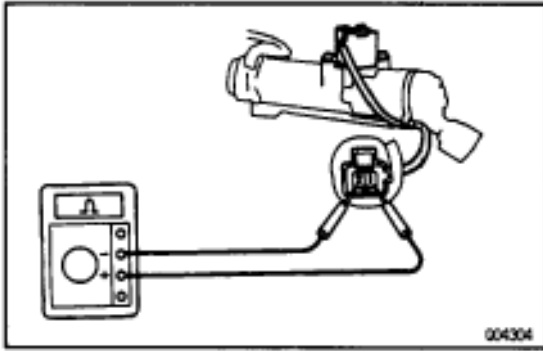
Standard resistance:

20-28 Ω

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



- (c) Apply battery positive voltage between terminals 1 and 2. At this time, confirm that the solenoid operates. If the solenoid does not operate, replace the solenoid.



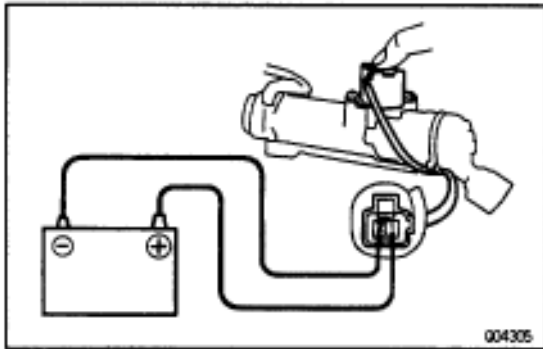
3. INSPECT KEY INTERLOCK SOLENOID

- (a) Disconnect the solenoid connector.
- (b) Using an ohmmeter, measure the resistance between terminals 1 and 2.

Standard resistance:

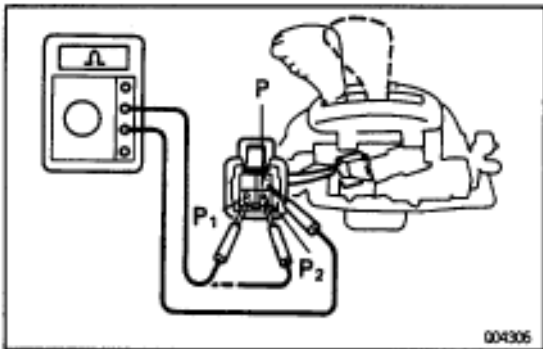
12-17 Ω

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



- (c) Touch the solenoid with your finger and check that solenoid operation can be felt when battery positive voltage is applied intermittently to the terminals 1 and 2.

If the solenoid does not operate, replace the solenoid.



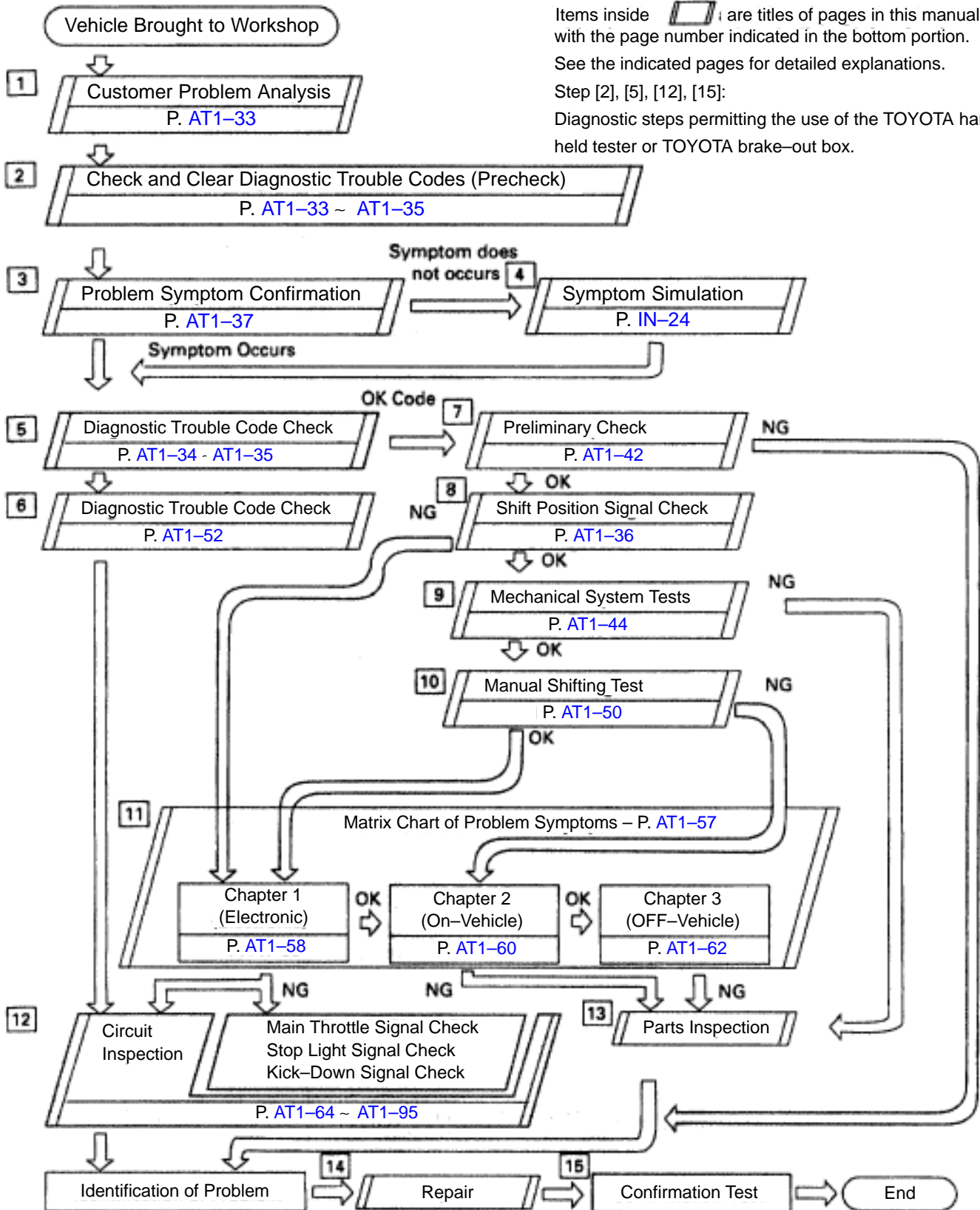
4. INSPECT SHIFT LOCK CONTROL SWITCH

Inspect that there is continuity between each terminal.

Shift position	Tester condition to terminal number	Specified value
P position (Release button is not pushed)	P-P ₁	Continuity
R, N, D, 2, L position	P-P ₂	Continuity

TROUBLESHOOTING

HOW TO PROCEED WITH TROUBLESHOOTING

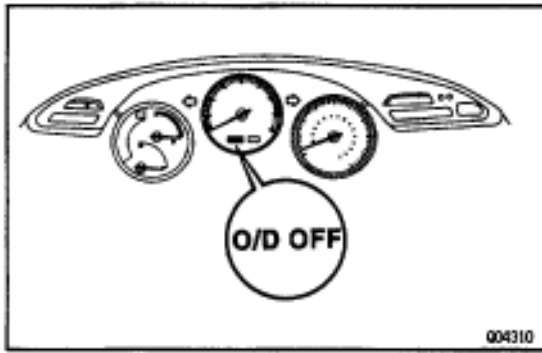


Items inside are titles of pages in this manual, with the page number indicated in the bottom portion.

See the indicated pages for detailed explanations.

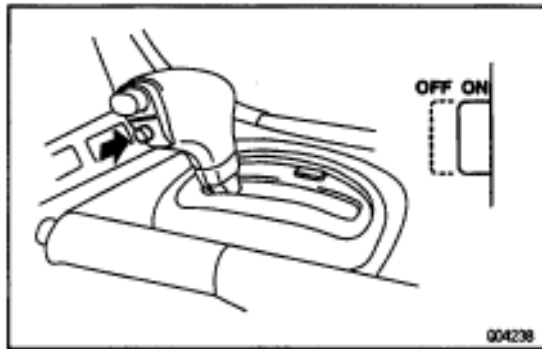
Step [2], [5], [12], [15]:

Diagnostic steps permitting the use of the TOYOTA hand-held tester or TOYOTA brake-out box.



DIAGNOSIS SYSTEM

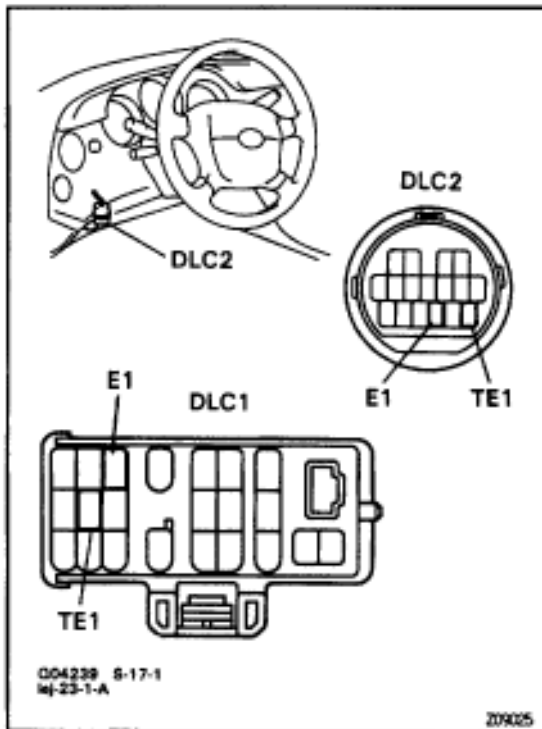
The Electronically Controlled Transmission has built-in self-diagnostic functions. If a malfunction occurs in the system, the ECM stores the diagnostic trouble code in memory and the O/D OFF (Overdrive OFF) indicator light blinks to inform the driver. The diagnostic trouble code stored in memory can be read out by the following procedure.



O/D OFF INDICATOR LIGHT INSPECTION

1. Turn the ignition switch ON.
2. Check if the O/D OFF indicator light lights up when the O/D main switch is pushed out to OFF and goes off when the O/D main switch is pushed in to ON.

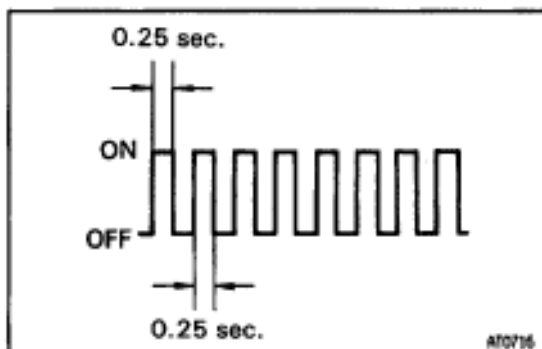
HINT: If the O/D OFF indicator light does not light up or stay on all the time, carry out the check for "O/D OFF Indicator Light Circuit" on page [AT1-88](#).



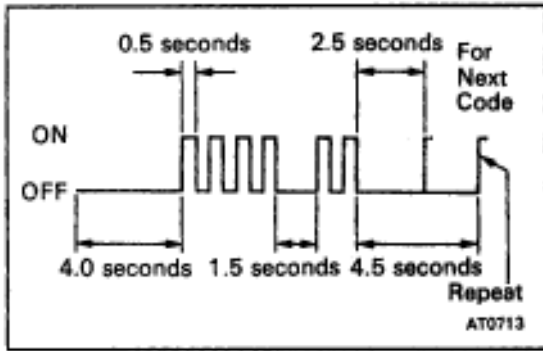
DIAGNOSTIC TROUBLE CODE CHECK

1. Turn the ignition switch ON, but do not start the engine.
2. Push in the O/D main switch to ON.
HINT: Warning and diagnostic trouble codes can be read only when the O/D main switch is ON. If it is OFF, the O/D OFF indicator light up will light continuously and will not blink.
3. Using SST, connect terminals TE1 and E1 of the DLC 1 or DLC2.

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4. Read the diagnostic trouble code indicated by the number of times the O/D OFF indicator light blinks.
HINT: If the system is operating normally, the light will blink 2 times per second.



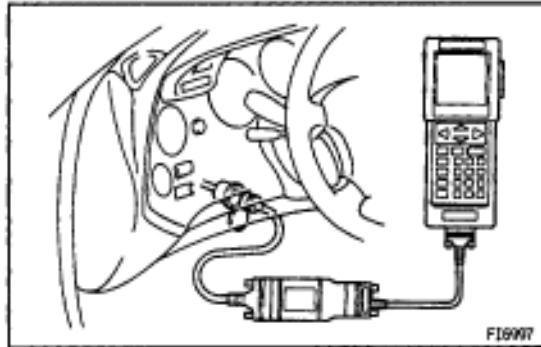
The trouble code is indicated, as shown in the illustration at left (Diagnostic trouble code "42" is shown as an example).

HINT: When 2 or more trouble codes are stored in memory, the lower-numbered code is displayed first. If no diagnostic trouble code is output, or if a diagnostic trouble code is output even though no diagnostic trouble code output operation is performed, check the TE 1 terminal circuit on page [AT1-93](#).

DIAGNOSTIC TROUBLE CODE CHECK BY USING TOYOTA HAND-HELD TESTER

1. Hook up the TOYOTA hand-held tester to the DLC2.
2. Read the diagnostic trouble codes by following the prompts on the tester screen.

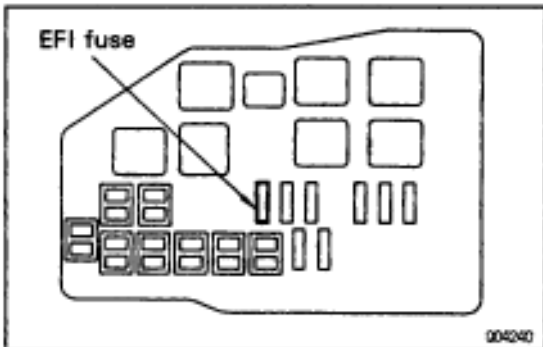
Please refer to the TOYOTA hand-held tester operator's manual for further details.



CANCELING DIAGNOSTIC TROUBLE CODE

After repair of the trouble area, the diagnostic trouble code retained in the ECM memory must be canceled out by removing the EFI fuse for 10 seconds or more, with the ignition switch OFF.

Check that the normal code is output after connecting the fuse.



ECM TERMINALS STANDARD VALUE

ECM TERMINAL VALUES

MEASUREMENT BY USING TOYOTA BREAK-OUT BOX AND TOYOTA HAND-HELD TESTER

1. Hook up the TOYOTA break-out-box and TOYOTA hand-held tester to the vehicle.
2. Read the ECM input/output values by following the prompts on the tester screen.

HINT: TOYOTA hand-held tester has a "Snapshot" function. This records the measured values and is effective in the diagnosis of intermittent problems.

Please refer to the TOYOTA hand-held tester / TOYOTA break-out box operator's manual for further details.

