AUTOMATIC TRANSMISSION SYSTEM

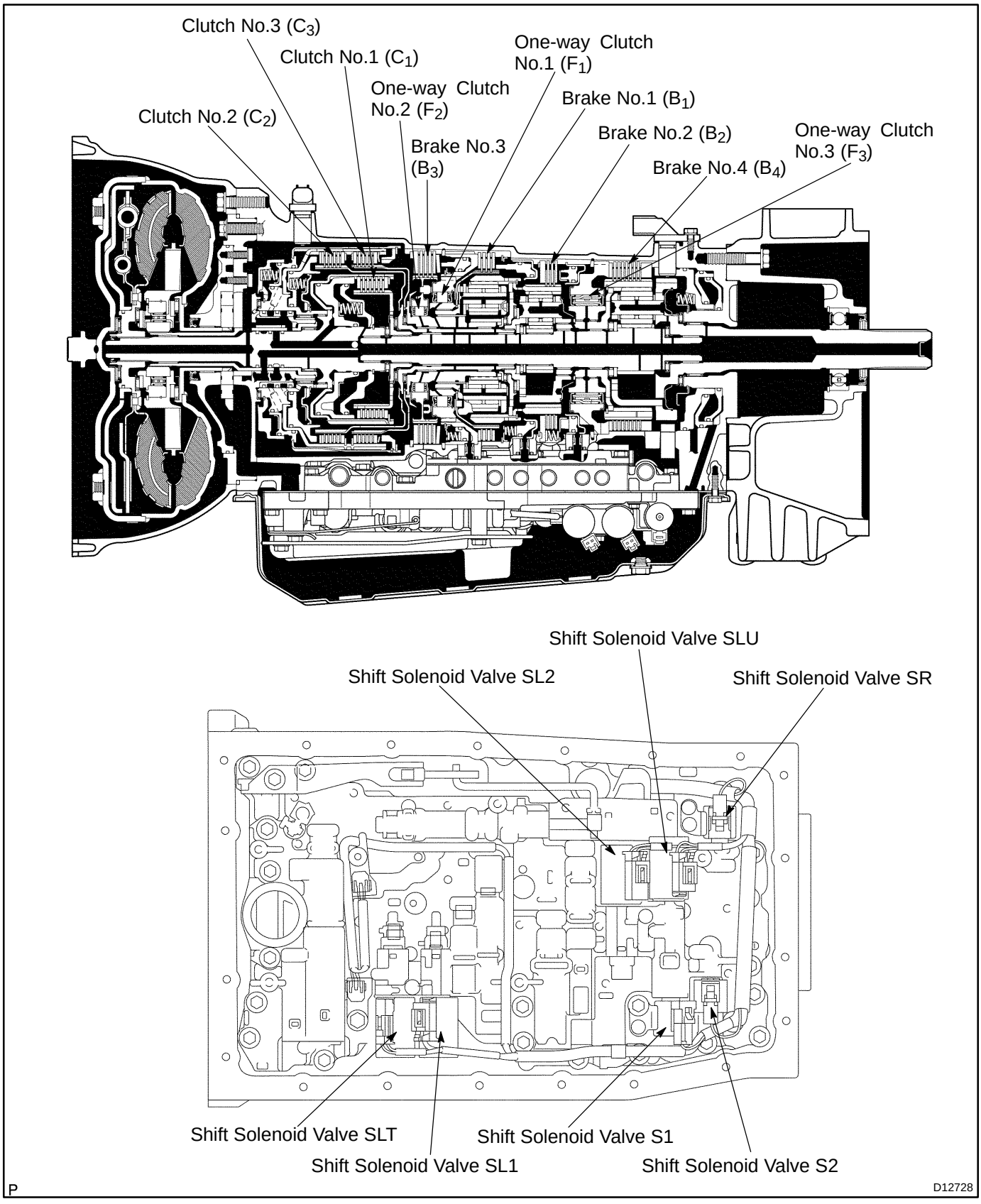
AT07L-02

PRECAUTION

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

AT07M-02

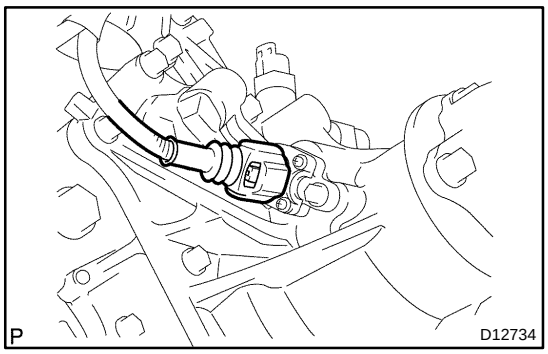
OPERATION



Shift Lever Position	Gear Position	S1	S2	SR	SL1	SL2	SLU	C_1	C_2	C_3	B_1	B_2	B_3	B_4	F_1	F_2	F_3
P	Park	○	x	x	x	○	x	x	x	x	x	x	x	x	x	x	x
R	Reverse	○	x	x	x	○	x	x	x	○	○	x	x	○	○	x	x
N	Neutral	○	x	x	x	○	x	x	x	x	x	x	x	x	x	x	x
D	1st	○	x	x	x	○	x	○	x	x	x	x	x	x	x	x	○
	2nd	○	○	x	x	○	x	○	x	x	x	x	○	x	○	○	x
	3rd	x	○	x	x	○	x	○	x	○	x	x	○	x	○	x	x
	4th	x	x	x	x	○	○	○	○	○	x	x	○	x	x	x	x
	5th	x	x	○	○	x	○	x	○	○	○	x	○	x	x	x	x
4	1st	○	x	x	x	○	x	○	x	x	x	x	x	x	x	x	○
	2nd	○	○	x	x	○	x	○	x	x	x	x	○	x	○	○	x
	3rd	x	○	x	x	○	x	○	x	○	x	x	○	x	○	x	x
	4th	x	x	x	x	○	○	○	○	○	x	x	○	x	x	x	x
3	1st	○	x	x	x	○	x	○	x	x	x	x	x	x	x	x	○
	2nd	○	○	x	x	○	x	○	x	x	x	x	○	x	○	○	x
	3rd	x	○	x	x	x	x	○	x	○	○	x	○	x	○	x	x
2	1st	○	x	x	x	○	x	○	x	x	x	x	x	x	x	x	○
	2nd	○	○	○	x	x	x	○	x	x	x	○	○	x	○	○	x
L	1st	○	x	x	x	x	x	○	x	x	x	x	x	○	x	x	○

○ : Operating

F1, F2, F3 : Operate only when driving

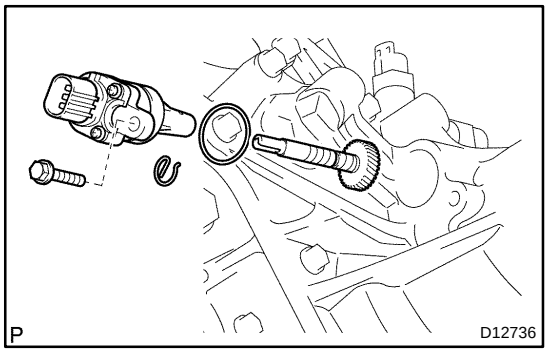


VEHICLE SPEED SENSOR

AT07Y-02

ON-VEHICLE REPAIR

1. DISCONNECT NO. 1 VEHICLE SPEED SENSOR CONNECTOR



2. REMOVE NO. 1 VEHICLE SPEED SENSOR

Remove the bolt and the No. 1 vehicle speed sensor.

3. DISASSEMBLE NO. 1 VEHICLE SPEED SENSOR

(a) Remove the O-ring from the speedometer driven gear assembly.

(b) Remove the clip and the speedometer driven gear from the speedometer driven gear sleeve.

4. ASSEMBLE NO. 1 VEHICLE SPEED SENSOR

(a) Install the speedometer driven gear and the clip to the speedometer driven gear sleeve.

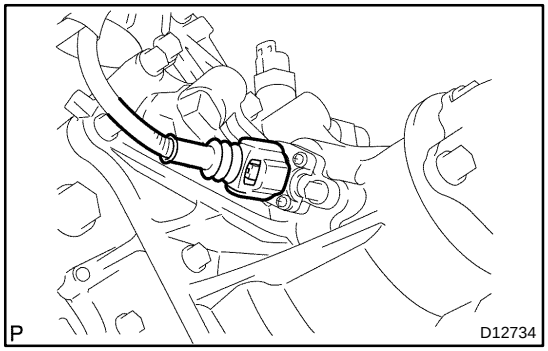
(b) Coat a new O-ring with ATF.

(c) Install the O-ring to the speedometer driven gear assembly.

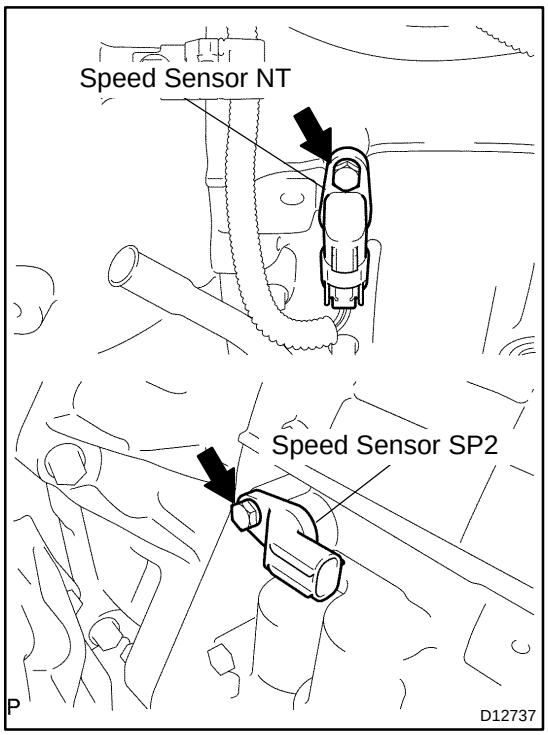
5. INSTALL NO. 1 VEHICLE SPEED SENSOR

Install the No. 1 vehicle speed sensor with the bolt.

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



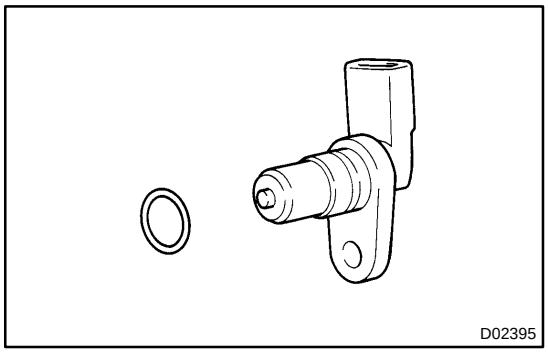
6. CONNECT NO. 1 VEHICLE SPEED SENSOR CONNECTOR



7. DISCONNECT SPEED SENSOR NT AND SP2 CONNECTORS

8. REMOVE SPEED SENSOR NT AND SP2

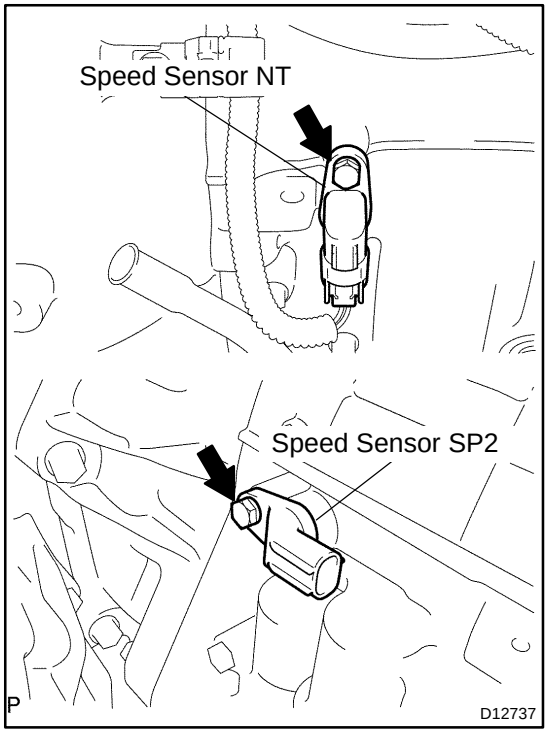
(a) Remove the 2 bolts, speed sensor NT and SP2.



(b) Remove 2 O-rings from the speed sensor NT and SP2.

9. INSTALL SPEED SENSOR NT AND SP2

(a) Coat 2 new O-rings with ATF and install them to the speed sensor NT and SP2.



(b) Install the speed sensor NT and SP2 with 2 bolts.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

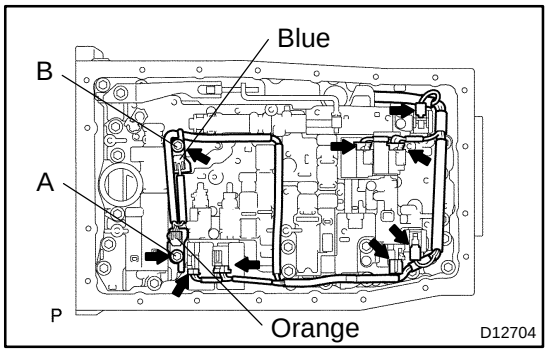
10. CONNECT SPEED SENSOR NT AND SP2 CONNECTORS

ATF TEMPERATURE SENSOR

AT10Z-02

ON-VEHICLE REPAIR

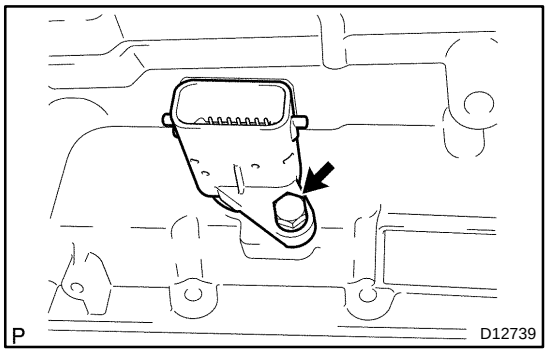
1. **REMOVE ENGINE NO.2 UNDER COVER**
2. **DRAIN ATF**
3. **REMOVE OIL PAN (See page AT-11)**
4. **REMOVE OIL STRAINER (See page AT-11)**



5. **REMOVE ATF TEMPERATURE SENSOR**

(a) Disconnect the 7 solenoid valve connectors.

(b) Remove the 2 bolts and disconnect the 2 ATF temperature sensors.



(c) Disconnect the solenoid connector.

(d) Remove the bolt and the transmission wire harness.

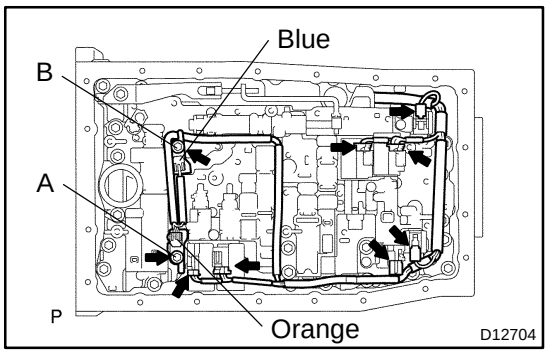
6. **INSTALL ATF TEMPERATURE SENSOR**

(a) Install the transmission wire harness.

(b) Install the bolt.

Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

(c) Connect the solenoid connector.



(d) Connect the 7 solenoid valve connectors.

(e) Connect the 2 ATF temperature sensors with the 2 bolts.

Torque:
A: 11 N·m (112 kgf·cm, 8 ft·lbf)
B: 10 N·m (100 kgf·cm, 7 ft·lbf)
Bolt length:
Bolt A: 36 mm (1.42 in.)
Bolt B: 12 mm (0.47 in.)

Sensor wire harness:

Wire harness	Color
for linear control	Orange
for oil temp warning lamp	Blue

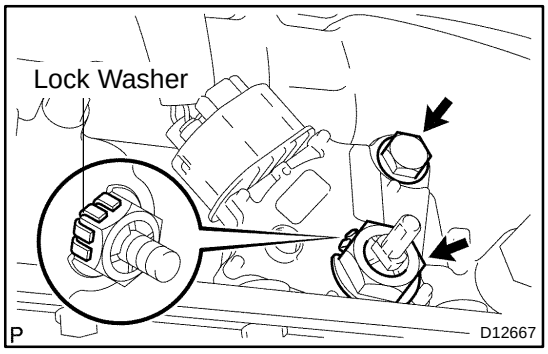
7. **INSTALL OIL STRAINER (See page AT-8)**
8. **INSTALL OIL PAN (See page AT-8)**
9. **FILL ATF AND CHECK ATF LEVEL (See page AT-3-1)**
10. **INSTALL ENGINE NO.2 UNDER COVER**

PARK/NEUTRAL POSITION (PNP) SWITCH

AT110-01

ON-VEHICLE REPAIR

1. **REMOVE ENGINE NO. 2 UNDER COVER**
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 bolt and park/neutral position switch.

4. **INSTALL PARK/NEUTRAL POSITION SWITCH**

(a) Install the park/neutral position switch with the bolt.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

(b) Install a new lock washer and the nut.
Torque: 6.9 N·m (70 kgf·cm, 62 in.·lbf)

(c) Bent the claws on the lock washer to stake the nut.

(d) Adjust the park/neutral position switch
(See page DI-361).

5. **CONNECT PARK/NEUTRAL POSITION SWITCH CONNECTOR**
6. **INSTALL ENGINE NO. 2 UNDER COVER**

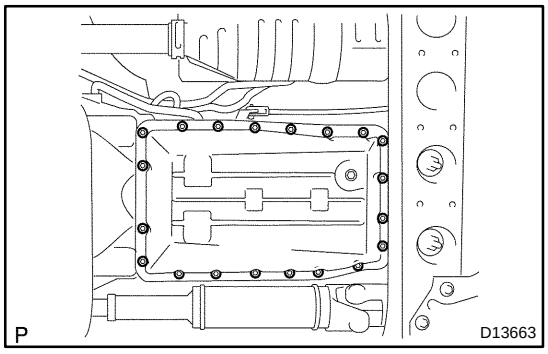
VALVE BODY ASSEMBLY

AT111-02

ON-VEHICLE REPAIR

1. REMOVE ENGINE NO.2 UNDER COVER

2. DRAIN ATF



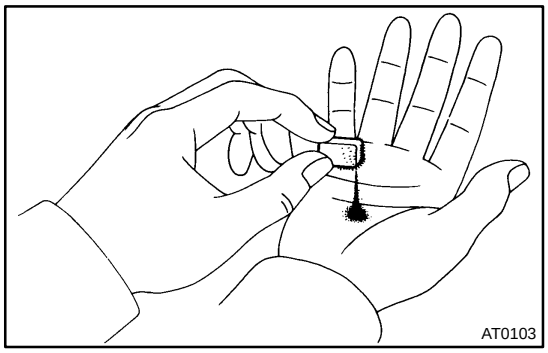
3. REMOVE OIL PAN

NOTICE:

Some fluid will remain in the oil pan.

(a) Remove the 20 bolts.

(b) Remove the oil pan gasket.

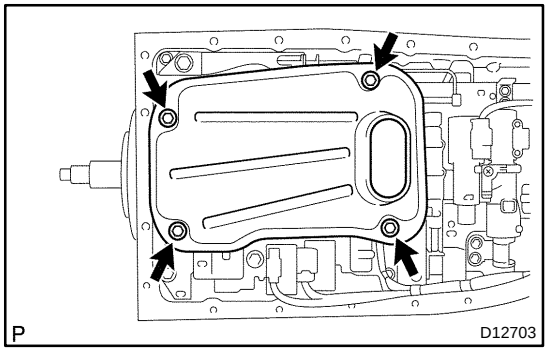


4. EXAMINE PARTICLES IN PAN

Remove the magnets and use them to collect steel particles. Carefully look at the foreign matter and particles in the pan and on the magnets to anticipate the type of wear you will find in the transmission.

Steel (magnetic)...bearing, gear and clutch plate wear

Brass (non-magnetic)...bushing wear

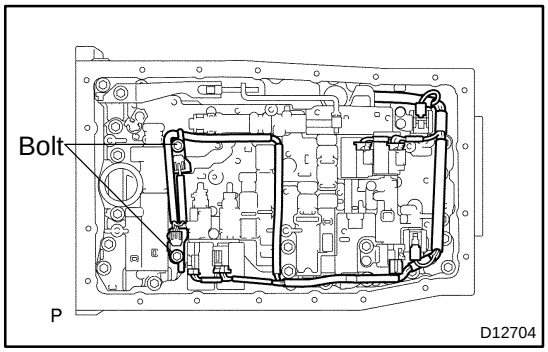


5. REMOVE OIL STRAINER

Remove the 4 bolts, the oil strainer and the O-ring.

NOTICE:

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



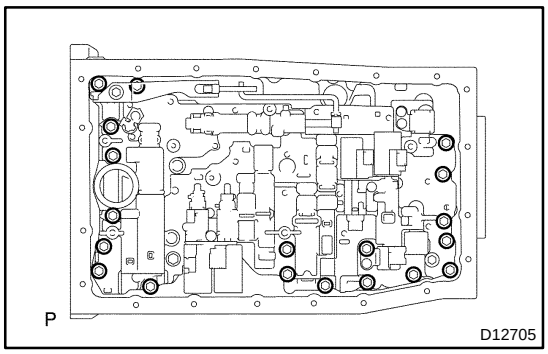
6. DISCONNECT TEMPERATURE SENSOR

(a) Disconnect the 7 solenoid connectors.

(b) Remove 2 bolts and the 2 temperature sensors clamp from the valve body.

(c) Disconnect the 2 temperature sensor from the valve body.

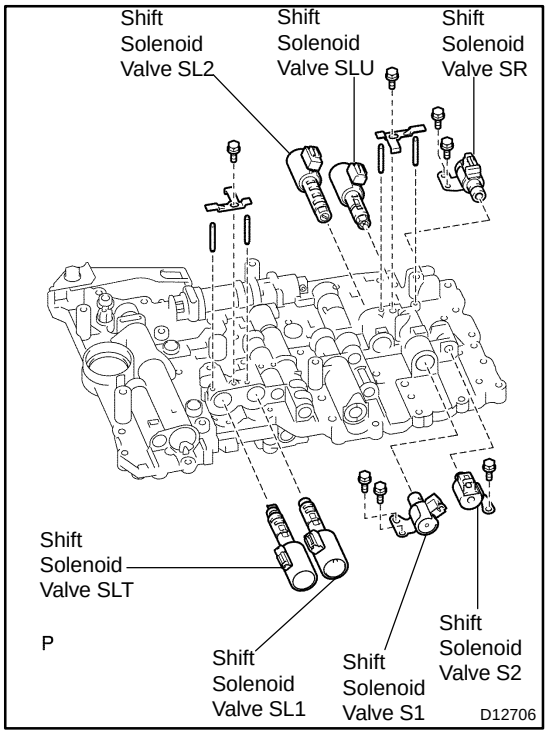
7. DISCONNECT 7 CONNECTORS FROM SHIFT SOLENOID VALVES



8. REMOVE VALVE BODY

(a) Remove the 19 bolts and the valve body.

(b) Remove the 3 drum seal gaskets.



9. REMOVE SOLENOID VALVE

(a) Remove the 2 bolts and the shift solenoid valve SR.

(b) Remove the 3 bolts and the shift solenoid valve S1 and S2.

(c) Remove the 2 bolts, 2 solenoid lock plates and the 4 straight pins.

(d) Remove the shift solenoid SL2 and the shift solenoid valve SLU.

(e) Remove the shift solenoid SL1 and the shift solenoid valve SLT.

(f) Remove the O-ring from the solenoid valve S2.

10. INSTALL SOLENOID VALVE

(a) Install a new O-ring to shift solenoid valve S2.

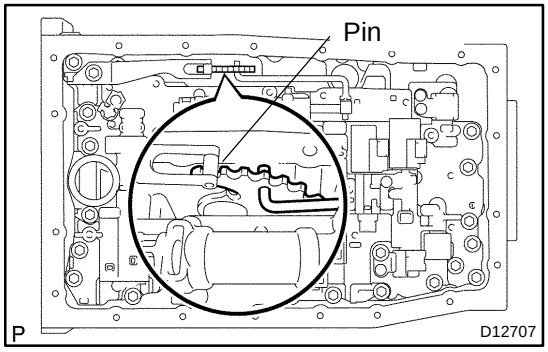
(b) Install the shift solenoid SL1 and the shift solenoid valve SLT.

(c) Install the shift solenoid SL2 and the shift solenoid valve SLU.

(d) Install the 4 straight pins and the 2 solenoid lock plates with the 2 bolts.
Torque:6.4 N·m (65 kgf·cm,57 in·lbf)

(e) Install the shift solenoid valve S1and S2 with the 2 bolts.
Torque:10 N·m (102 kgf·cm,7 ft·lbf)

(f) Install the shift solenoid valve SR with the 2 bolts.
Torque:6.4 N·m (65 kgf·cm,5.7 ft·lbf)

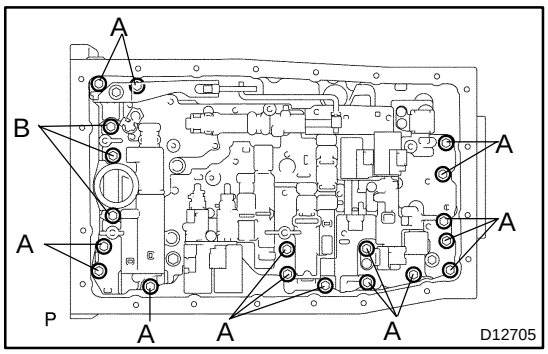


11. INSTALL VALVE BODY

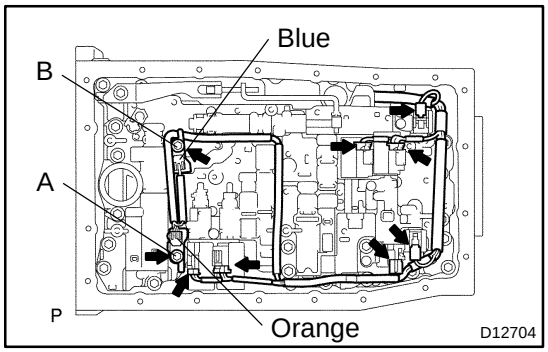
HINT:

Align the groove of the manual valve with the pin of the lever.

(a) Install the 3 new drum seal gaskets to the transmission case.



(b) Install the 19 bolts and the valve body.
Torque:
BoltA.B: 11 N·m (110 kgf·cm, 8 ft·lbf)
Bolt length:
Bolt A: 25 mm (0.98 in.)
Bolt B: 36 mm (1.42 in.)



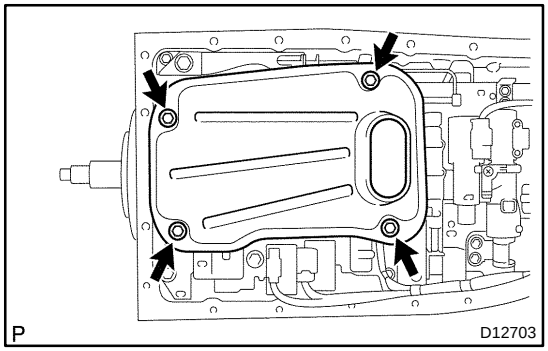
12. CONNECT TEMPERATURE SENSOR

(a) Connect the 2 temperature sensors to the valve body, and install the 2 temperature sensors clamp with the 2 bolts.
Torque:
A: 11 N·m (112 kgf·cm, 8 ft·lbf)
B: 10 N·m (100 kgf·cm, 7 ft·lbf)
Bolt length:
Bolt A: 36 mm (1.42 in.)
Bolt B: 12 mm (0.47 in.)

Sensor wire harness:

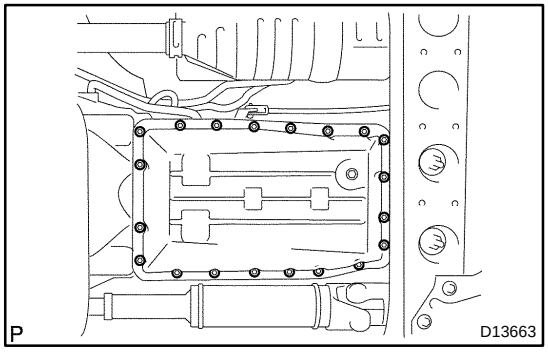
Wire harness	Color
for linear control	Orange
for oil temp warning lamp	Blue

13. CONNECT 7 CONNECTORS TO SHIFT SOLENOID VALVES



14. INSTALL OIL STRAINER

(a) Install a new O-ring.
(b) Install the oil strainer with the 4 bolts.
Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)



15. INSTALL OIL PAN

HINT:
Remove any packing material, and be careful not to spill oil on the contacting surfaces of the transmission case and the oil pan.

(a) Install a new gasket and oil pan.
(b) Install the 20 bolts and oil pan.
Torque: 4.4 N·m (45 kgf·cm, 39 in·lbf)

16. FILL ATF AND CHECK ATF LEVEL

(a) Install a new gasket and a drain plug.
Torque: 20 N·m (204 kgf·cm, 15 ft·lbf)

(b) Remove the refill plug.

(c) Fill new fluid through the refill hole (See page AT-3-1).

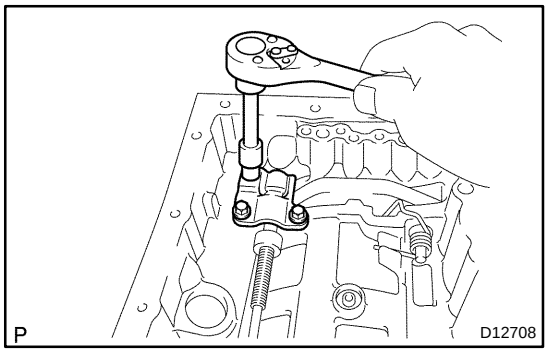
17. INSTALL ENGINE NO.2 UNDER COVER

PARKING LOCK PAWL

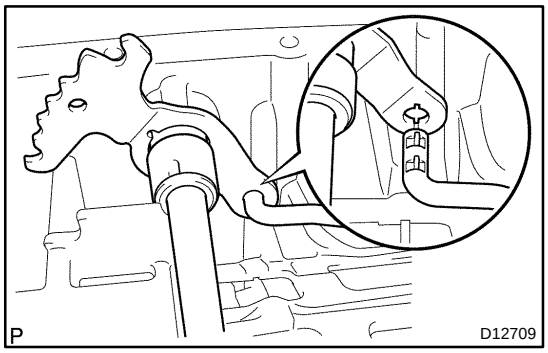
AT112-01

ON-VEHICLE REPAIR

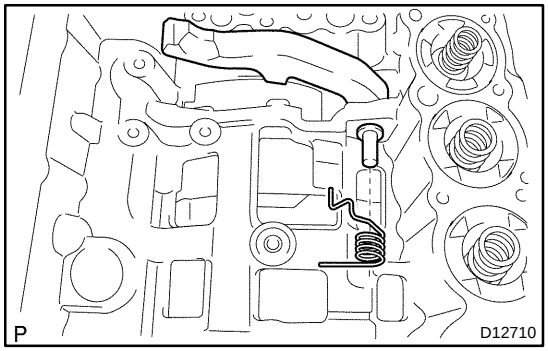
1. **REMOVE VALVE BODY (See page AT-8)**



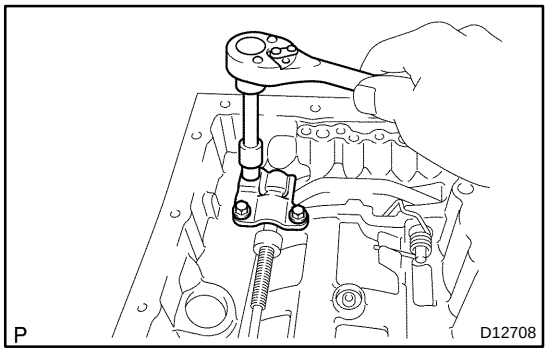
2. **REMOVE PARKING LOCK PAWL BRACKET**



3. **REMOVE PARKING LOCK ROD**



4. **REMOVE SPRING FROM PARKING LOCK PAWL SHAFT**
5. **REMOVE PARKING LOCK PAWL AND SHAFT**
6. **INSTALL PARKING LOCK PAWL AND SHAFT**
7. **INSTALL SPRING TO PARKING LOCK PAWL SHAFT**



8. **INSTALL PARKING LOCK PAWL BRACKET**

HINT:

- Push the lock rod fully forward.
- Check that the parking lock pawl operates smoothly.

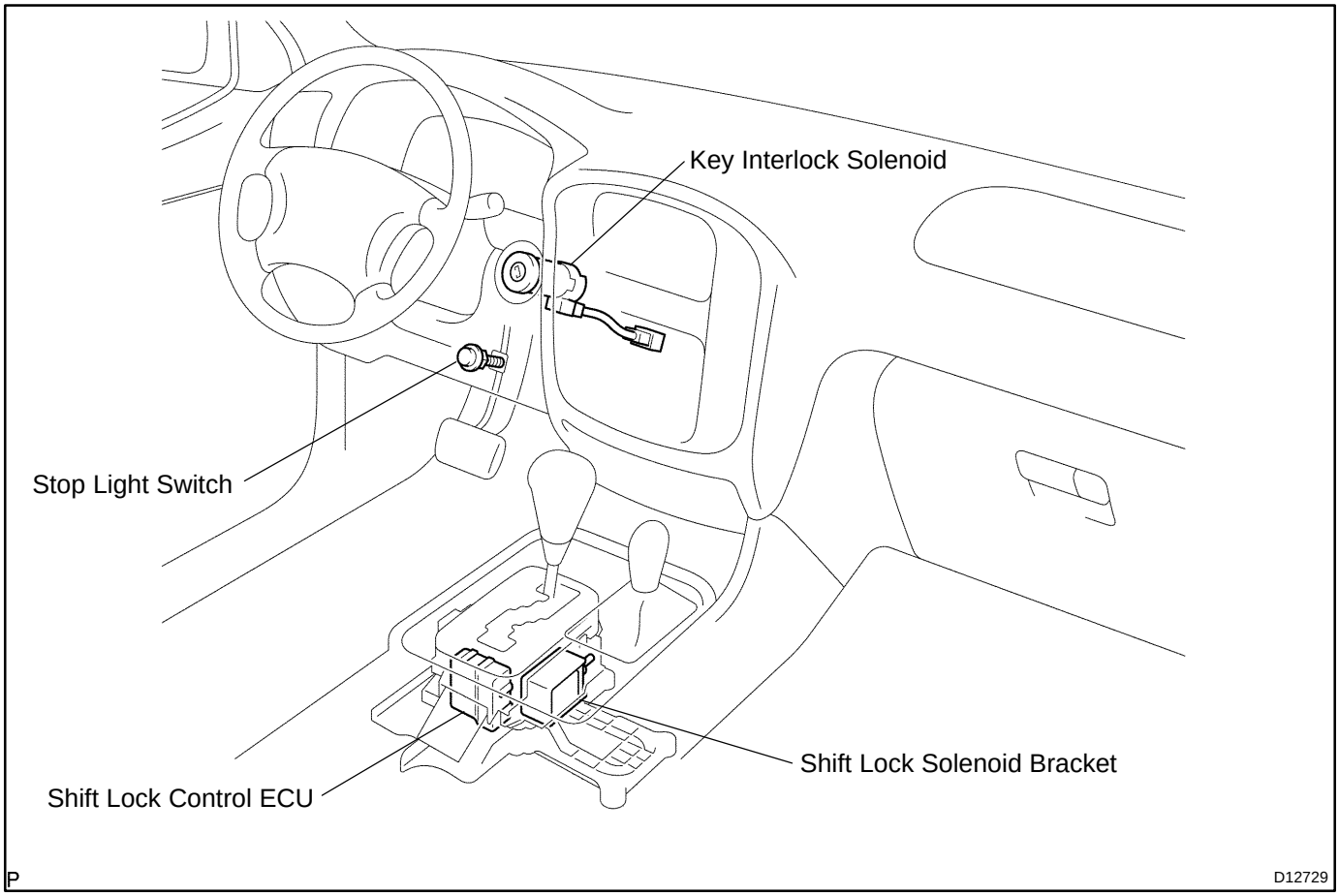
Torque: 7.4 N·m (75 kgf·cm, 65 in.·lbf)

9. **INSTALL VALVE BODY (See page AT-8)**

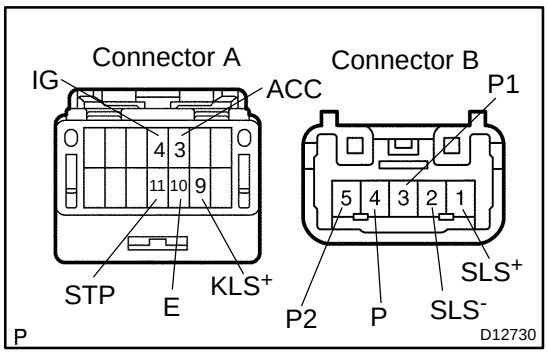
SHIFT LOCK SYSTEM

AT07Q-03

LOCATION



AT07R-03



INSPECTION

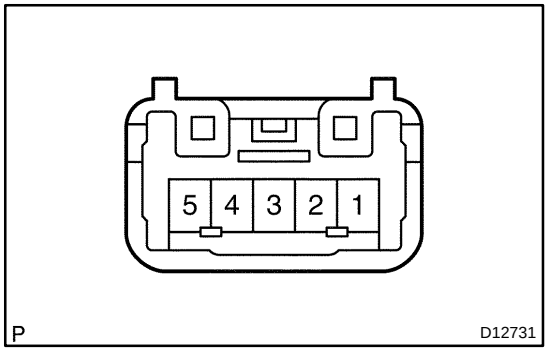
1. INSPECT SHIFT LOCK CONTROL ECU

Using a voltmeter, measure the voltage at each terminal.

HINT:

Do not disconnect the ECU connector.

Terminal	Measuring Condition	Voltage (V)
Connector A		
3 - 10 (ACC - E)	Ignition switch ACC	10 - 14
4 - 10 (IG - E)	Ignition switch ON	10 - 14
10 - 11 (E - STP)	Depress brake pedal	10 - 14
9 - 10 (KLS^+ - E)	(1) Ignition switch ACC and P position (2) Ignition switch ACC and except P position (3) (After approx. 1 second)	0 7.5 - 10.5 6 - 9
Connector B		
1 - 2 (SLS^+ - SLS^-)	(1) Ignition switch ON and P position (2) Depress brake pedal (3) Shift except P position under conditions above	0 8.5 - 13.5 0
3 - 4 (P1 - P)	(1) Ignition switch ON, P position and depress brake pedal (2) Shift except P position under condition above	0 9 - 13.5
4 - 5 (P - P2)	(1) Ignition switch ACC and P position (2) Shift except P position under condition above	9 - 13.5 0



2. INSPECT SHIFT LOCK SOLENOID

(a) Disconnect the solenoid connector.

(b) Using an ohmmeter, measure the resistance between terminal 1 and 2.

Standard resistance: 21 - 27 Ω

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

(c) Apply the battery positive voltage between terminals. Check that the operation noise can be heard from the solenoid.

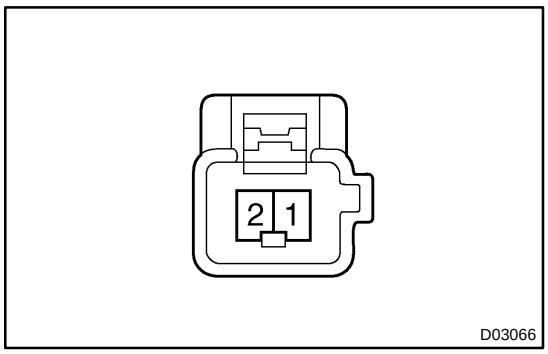
If the solenoid does not operate, replace the solenoid.

3. INSPECT SHIFT LOCK CONTROL SWITCH

Inspect that continuity exists between each terminal.

Shift position	Tester connection	Specified value
P position (Release button is not pushed)	3 - 4 (P - P1)	Continuity
P position (Release button is pushed)	3 - 4 (P - P1) 4 - 5 (P - P2)	Continuity
R, N, D, 2, L position	4 - 5 (P - P2)	Continuity

If continuity is not as specified, replace the switch.



4. INSPECT KEY INTERLOCK SOLENOID

(a) Disconnect the solenoid connector.

(b) Using an ohmmeter, measure the resistance between terminal 1 and 2.

Standard resistance: 12 - 17 Ω

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

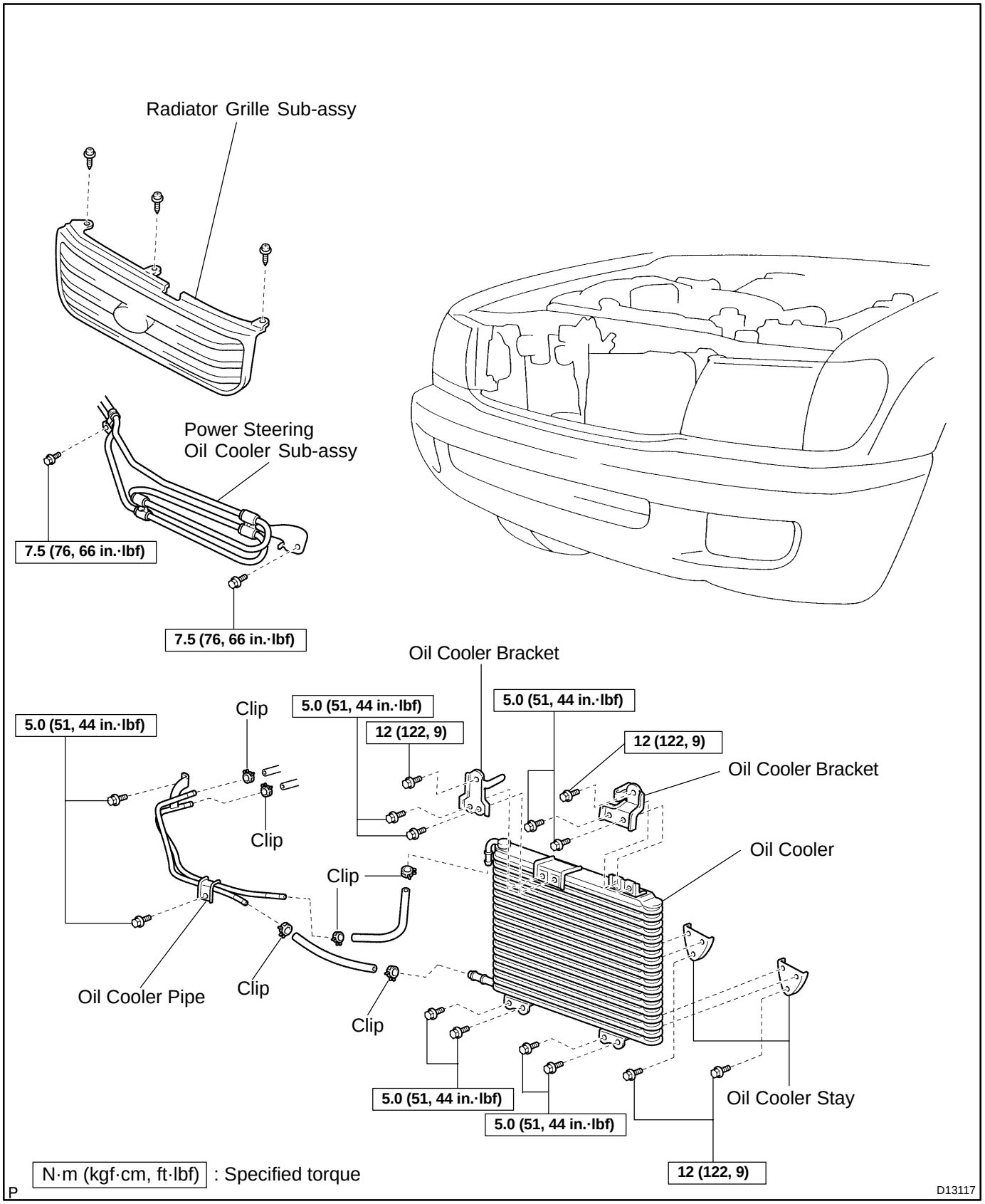
(c) Apply the battery positive voltage between terminals 1 and 2. Check that an operation noise can be heard from the solenoid.

If the solenoid does not operate, replace the solenoid.

AIR COOLED OIL COOLER

COMPONENTS

AT07I-05



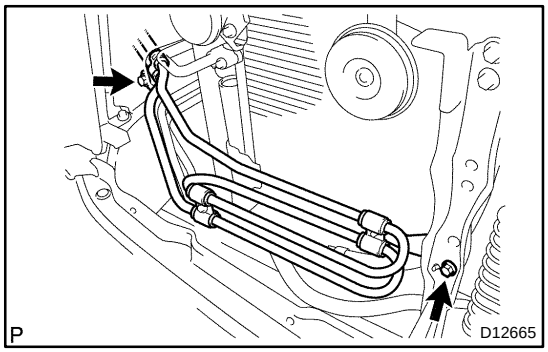
AT113-01

REMOVAL

1. REMOVE RADIATOR GRILLE SUB-ASSY

(a) Remove the 3 screws.

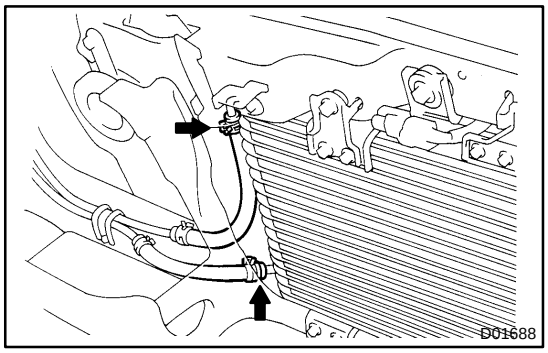
(b) Release the 2 clips and remove the radiator grille sub-assy.



2. SEPARATE POWER STEERING OIL COOLER SUB-ASSY

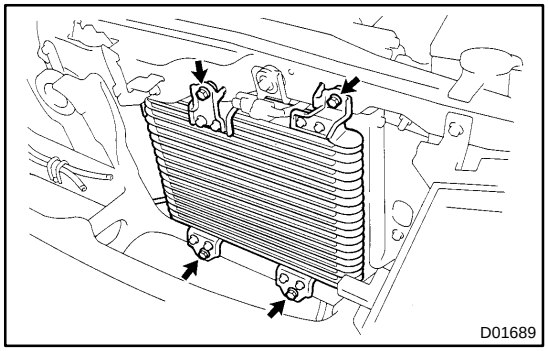
Remove the 2 bolts and separate the power steering oil cooler sub-assy .

Torque: 7.5 N·m (76 kgf·cm, 66 in.·lbf)



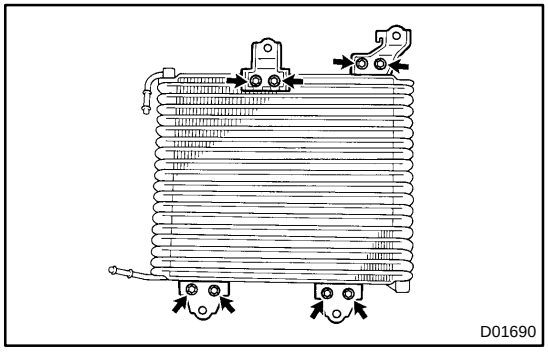
3. REMOVE OIL COOLER

(a) Loosen the 2 clips and disconnect the 2 hoses.



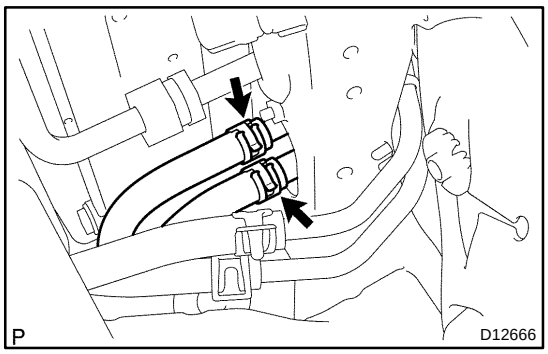
(b) Remove the 4 bolts and oil cooler.

Torque: 12 N·m (117 kgf·cm, 8 ft·lbf)



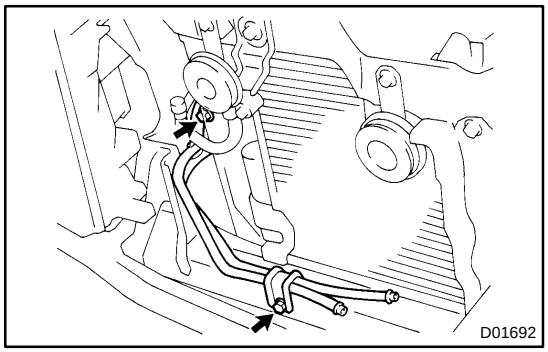
(c) Remove the 8 bolts, the 2 oil cooler brackets and the 2 stays.

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



4. REMOVE OIL COOLER PIPE BRACKET

(a) Loosen the 2 clips and disconnect the 2 hoses.



(b) Remove the 2 bolts and the oil cooler pipe bracket.
Torque: 4.9 N·m (50 kgf·cm, 43 in.·lbf)

(c) Loosen the 2 clips and disconnect the 2 hoses.

AT07K-05

INSTALLATION

Installation is in the reverse order of removal (See page AT-17).

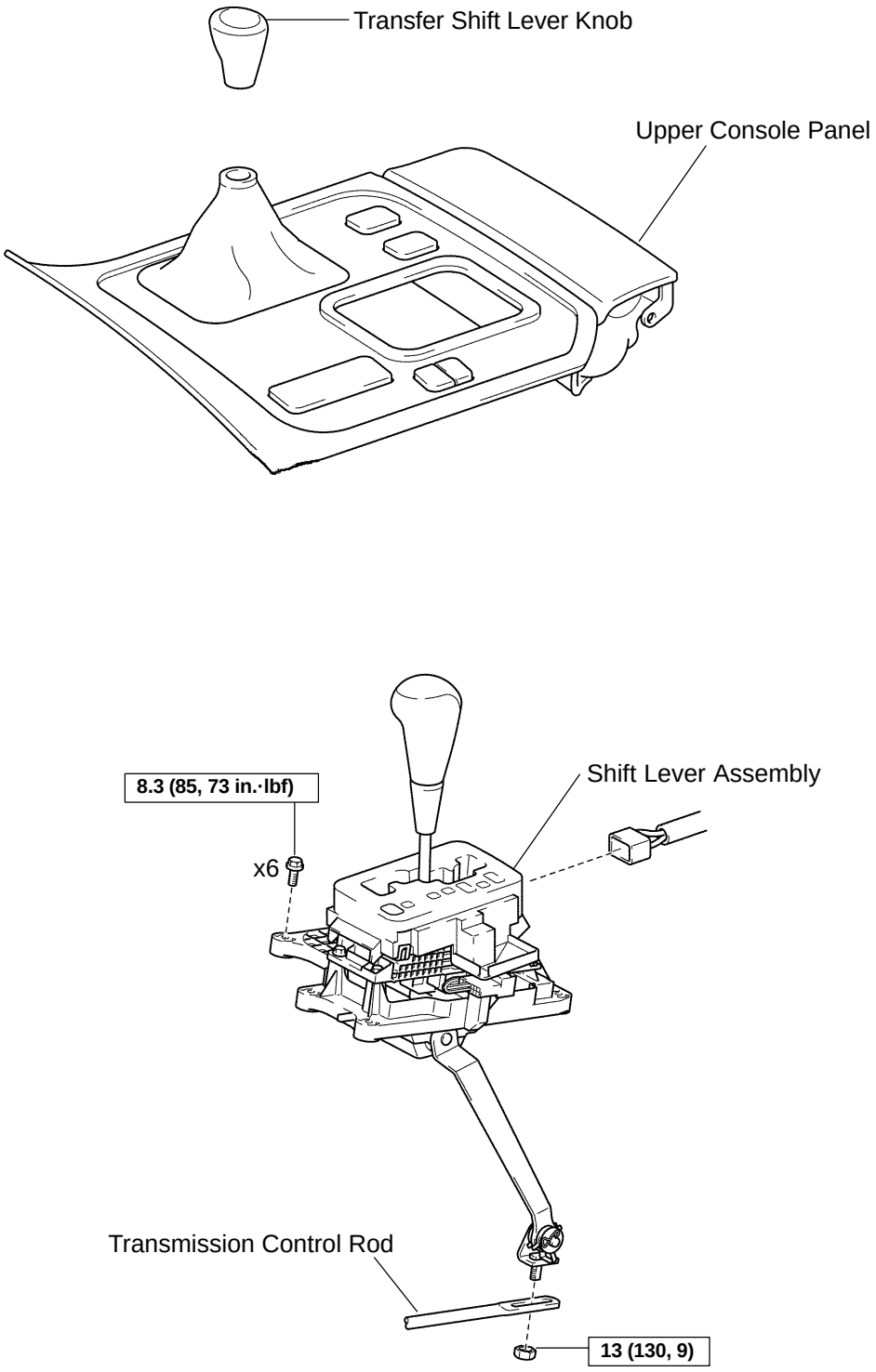
HINT:

After installtion, check fluid level (See page AT-3-1).

FLOOR SHIFT ASSEMBLY

AT07S-04

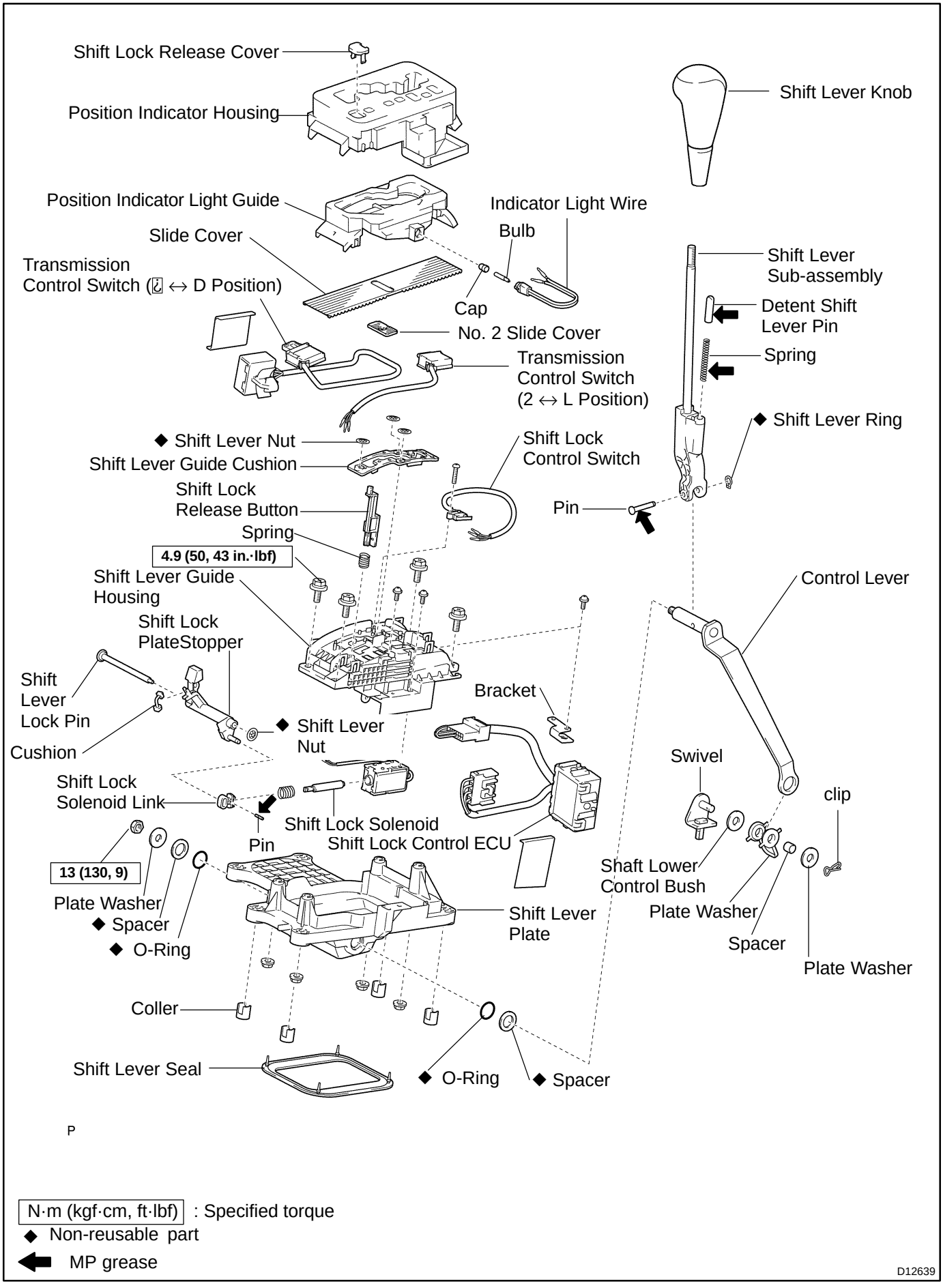
COMPONENTS



N·m (kgf·cm, ft·lbf) : Specified torque

P

D12638

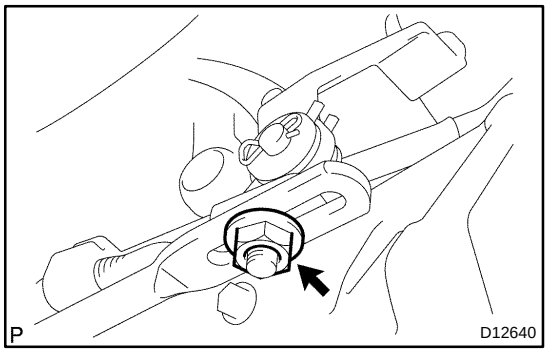

Shift Lock Release Cover
Position Indicator Housing
Shift Lever Knob
Position Indicator Light Guide
Indicator Light Wire
Bulb
Slide Cover
Transmission Control Switch (P ↔ D Position)
Cap
No. 2 Slide Cover
Shift Lever Sub-assembly
Detent Shift Lever Pin
Spring
Transmission Control Switch (2 ↔ L Position)
◆ Shift Lever Ring
◆ Shift Lever Nut
Shift Lever Guide Cushion
Shift Lock Control Switch
Shift Lock Release Button
Pin
Spring
4.9 (50, 43 in.·lbf)
Shift Lever Guide Housing
Control Lever
Shift Lock PlateStopper
Shift Lever Lock Pin
Bracket
◆ Shift Lever Nut
Cushion
Swivel
clip
Shift Lock Solenoid Link
Shift Lock Solenoid
Shift Lock Control ECU
Pin
13 (130, 9)
Shaft Lower Control Bush
Plate Washer
◆ Spacer
Shift Lever Plate
Plate Washer
◆ O-Ring
Spacer
Plate Washer
Coller
Shift Lever Seal
◆ O-Ring
◆ Spacer
P
N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
MP grease
D12639

AT07T-04

REMOVAL

1. REMOVE TRANSFER SHIFT LEVER KNOB

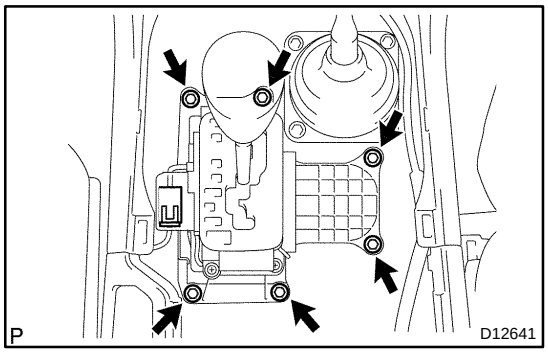
2. REMOVE UPPER CONSOLE PANEL
(See page BO-84)



3. SEPARATE NO. 1 FLOOR SHIFT GEAR SHIFTING ROD

(a) Shift into the N position.

(b) Remove the nut and separate the No. 1 floor shift gear shifting rod from the connecting rod swivel.



4. REMOVE FLOOR SHIFT LEVER ASSEMBLY

(a) Disconnect the connector.

(b) Remove the 6 bolts.
Torque: 8.3 N·m (85 kgf·cm, 73 in.·lbf)

(c) Remove the floor shift lever assembly.

AT114-01

DISASSEMBLY

1. REMOVE SHIFT LEVER KNOB

2. REMOVE POSITION INDICATOR HOUSING

(a) Using a small screwdriver, remove the shift lock release cover from the position indicator housing.

(b) Remove the position indicator housing assembly.

3. REMOVE POSITION INDICATOR LIGHT GUIDE

(a) Disconnect the indicator lamp wire from the position indicator light guide.

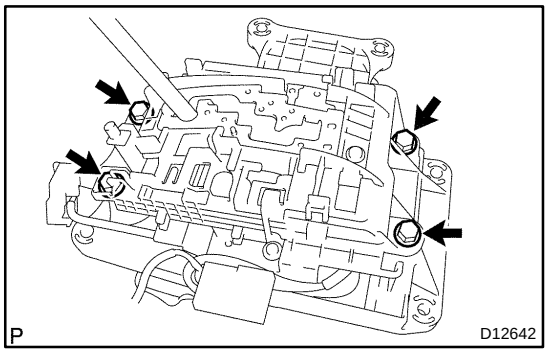
(b) Remove the position indicator light guide.

4. REMOVE SLIDE COVER AND NO. 2 SLIDE COVER

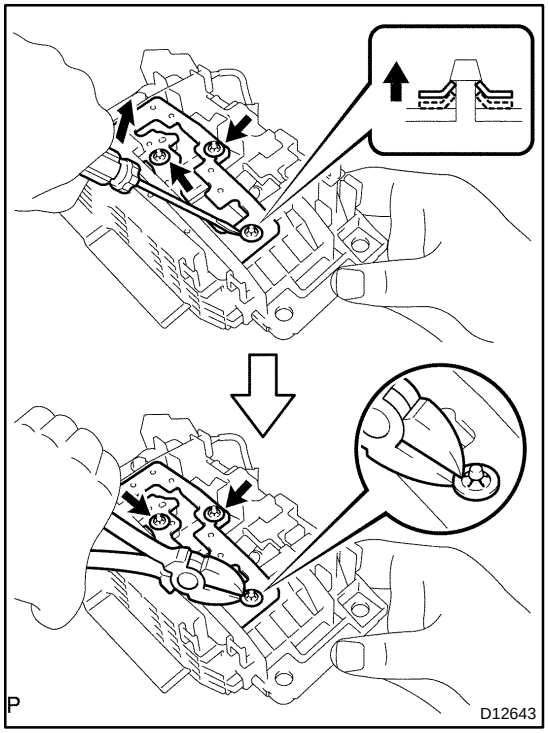
5. REMOVE SHIFT LEVER GUIDE HOUSING

(a) Disconnect the shift lock control ECU connector from the shift lever plate.

(b) Disconnect the 2 transmission control switches and the shift lock control switch from the shift lever guide housing.



(c) Remove the 4 bolts, nuts and the shift lever guide housing assembly.



6. DISASSEMBLE SHIFT LEVER GUIDE HOUSING

(a) Using a screwdriver, pry up the 3 shift lever nuts.

(b) Using nippers, cut the 3 shift lever nuts off then.

HINT:

Remove the shift lever lock pin of the shift lever nut in the same way.

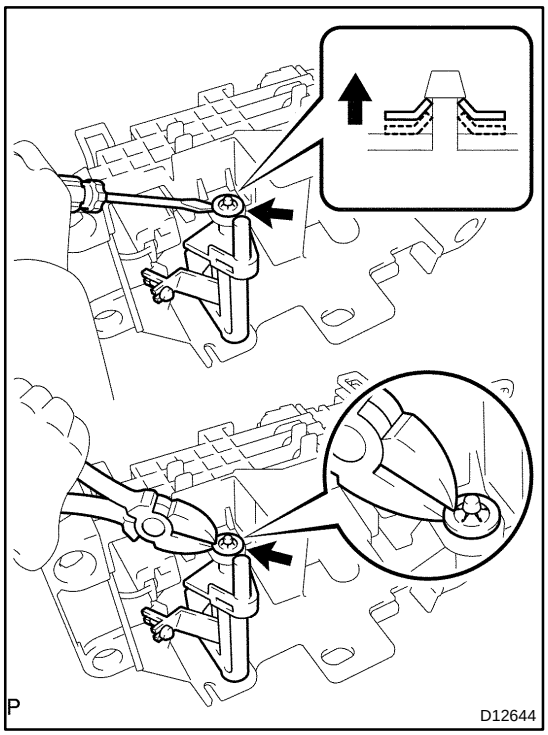
(c) Remove the shift lever guide cushion.

(d) Remove the 3 screws, the shift lock control ECU and the shift lock solenoid.

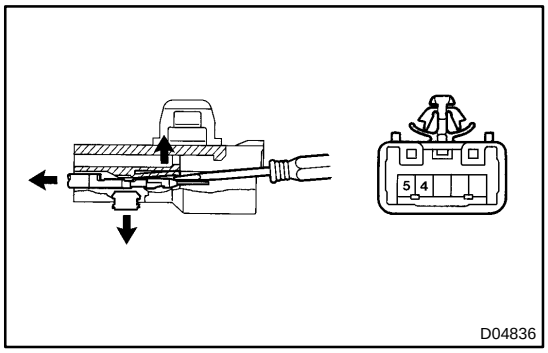
(e) Remove the shift lock control ECU bracket from the shift lock control ECU.

(f) Disconnect the transmission control switch connector from the shift lever guide housing.

(g) Remove the shift lock release button and the spring.



(h) Using a screwdriver, pry up the shift lever nut.
(i) Using nipper, cut the shift lever nut off then.
(j) Remove the shift lever lock pin, the shift lock plate stopper and the cushion.

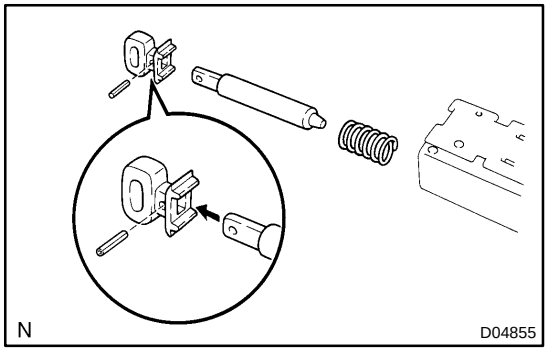


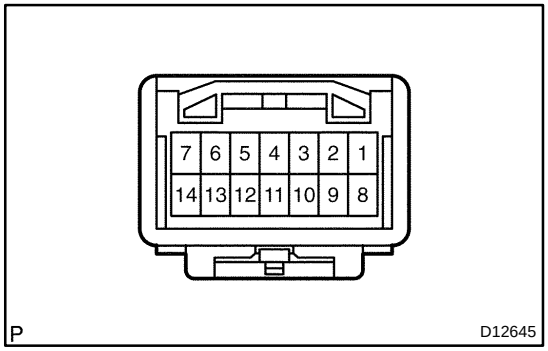
7. DISCONNECT SHIFT LOCK CONTROL ECU, SHIFT LOCK SOLENOID, SHIFT LOCK CONTROL SWITCH AND TRANSMISSION CONTROL SWITCH

(a) Disengage the secondary locking device of the shift lock solenoid.
(b) Release the locking lug of the terminal 4 and 5, and pull the terminals out from the rear.

HINT:
Remove the transmission control switch in the same way.

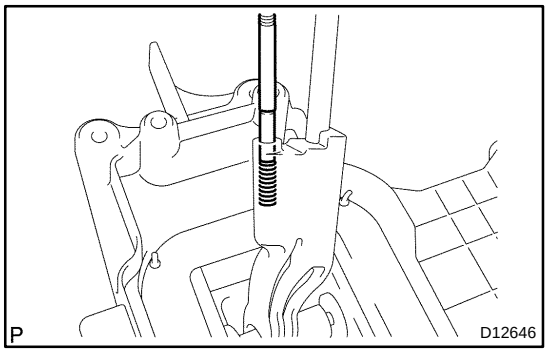
(c) Remove the shift lock solenoid.
(d) Using 2 mm dia. steel wire, remove the pin and the shift lock solenoid link from the shift lock solenoid plunger.





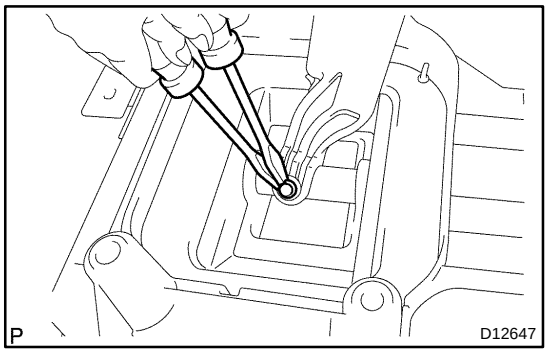
(e) Disengage the secondary locking device of the shift lock control ECU.
(f) Release the locking lag of the terminal 1, 2 and 8 pull the terminals out from the rear.
(g) Remove the transmission control switch. (D↔ 4)
(h) Release the locking lag of the terminal 5, 6 and 12 and pull the terminals out from the rear.
(i) Remove the transmission control switch. (2↔L)
(j) Release the locking lag of the terminal 7 and 14 and pull the terminals out from the rear.

(k) Remove the indicator lamp wire.

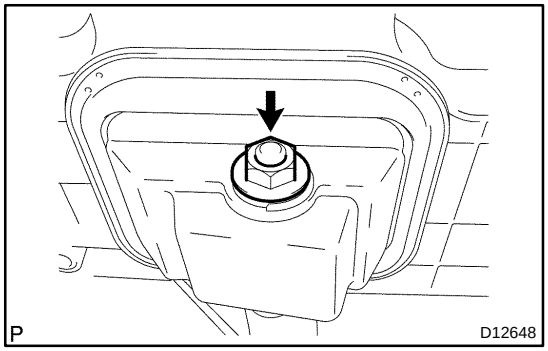


8. REMOVE SHIFT LEVER SUB-ASSEMBLY

(a) Using a magnetic finger, remove the detent shift lever pin and the spring.

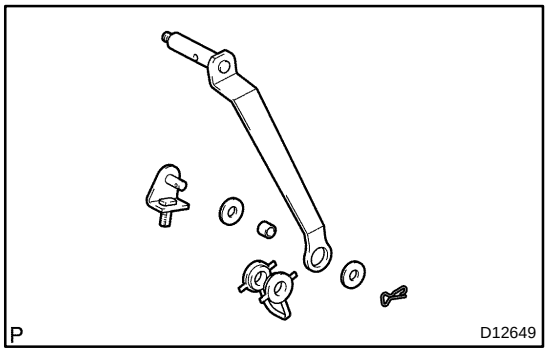


(b) Using 2 screwdrivers, remove the shift lever ring.
(c) Remove the pin and shift lever sub-assembly.



9. DISASSEMBLE SHIFT LEVER PLATE

(a) Remove the nut, the control lever, the plate washer, the 2 spacers and the 2 O-rings.



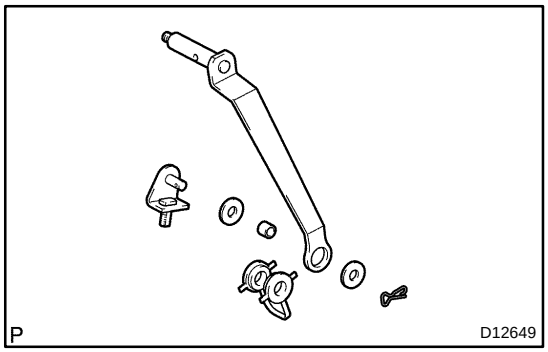
(b) Using pliers, remove the clip.
(c) Remove the swivel, the 2 plate washers, the shaft lower control bush and the spacer.
(d) Remove the shift lever seal.
(e) Remove the 4 collars.
(f) Remove the 2 spring nuts.

AT115-01

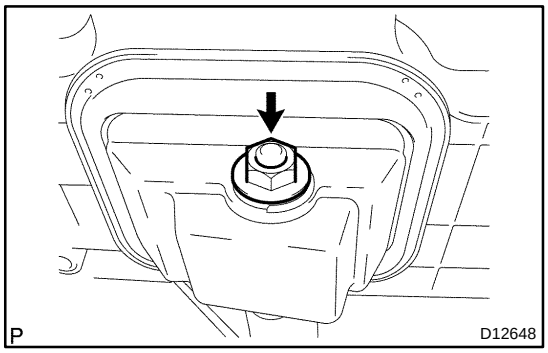
REASSEMBLY

1. REASSEMBLE SHIFT LEVER PLATE

(a) Install the 2 spring nuts.
(b) Install the 4 collars.
(c) Install the shift lever seal.



(d) Install the shaft lower control bush, the spacer, the 2 plate washers and the swivel.
(e) Using pliers, install the clip.

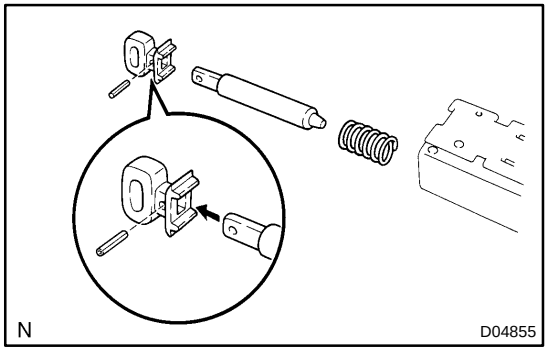


(f) Apply MP grease to 2 new O-rings.
(g) Install the 2 O-rings, 2 new spacers, the plate washer, the control lever and the nut.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

2. INSTALL SHIFT LEVER SUB-ASSEMBLY

(a) Apply MP grease to the pin.
(b) Install the shift lever sub-assembly and pin.
(c) Install the shift lever ring.
(d) Apply MP grease to the detent shift lever pin and the spring.
(e) Install the detent shift lever pin and spring.



3. REASSEMBLE SHIFT LOCK SOLENOID

(a) Apply MP grease to the shift lock solenoid link.
(b) Install the shift lock solenoid link and the pin to the shift lock solenoid plunger.
(c) Install the shift lock solenoid link with shift lock solenoid plunger and the spring to the shift lock solenoid.

4. CONNECT SHIFT LOCK CONTROL ECU, SHIFT LOCK SOLENOID, SHIFT LOCK CONTROL SWITCH, INDICATOR LAMP WIRE AND 2 TRANSMISSION CONTROL SWITCH

5. REASSEMBLE SHIFT LEVER GUIDE HOUSING

(a) Apply MP grease to the shift lever lock pin.

(b) Install the shift lever lock pin, the shift lock plate stopper and the cushion to the shift lever guide housing.

(c) Install a new shift lever nut to the shift lever lock pin by knocking them lightly via the 10 mm seated nut.

HINT:

Install the shift lever guide cushion of the shift lever nut in the same way.

(d) Apply MP grease to the shift lock release button.

(e) Install the spring and the shift lock release button.

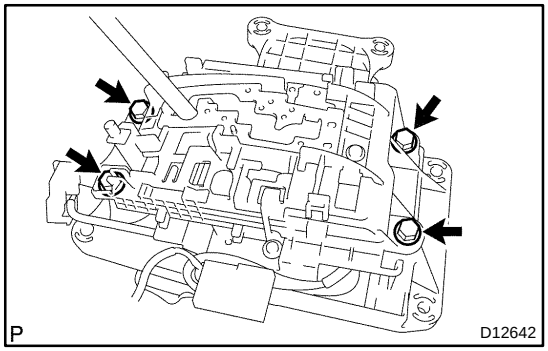
(f) Connect the transmission control switch connector to the shift lever guide housing.

(g) Install the shift lock control ECU bracket to the shift lock control ECU.

(h) Install the shift lock control ECU and the shift lock solenoid with the 3 screws to the shift lever guide housing.

(i) Install the shift lever guide cushion with 3 new shift lever nuts.

6. INSTALL SHIFT LEVER GUIDE HOUSING



(a) Install the shift lever guide housing assembly with the 4 bolts and nuts to the shift lever plate.

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

(b) Install the 2 transmission control switches and the shift lock control switch to the shift lever guide housing.

(c) Connect the shift lock control ECU connector to the shift lever plate.

7. INSTALL SLIDE COVER AND NO. 2 SLIDE COVER

8. INSTALL POSITION INDICATOR LIGHT GUIDE

(a) Install the position indicator light guide.

(b) Connect the indicator lamp wire to the position indicator light guide.

9. INSTALL POSITION INDICATOR HOUSING

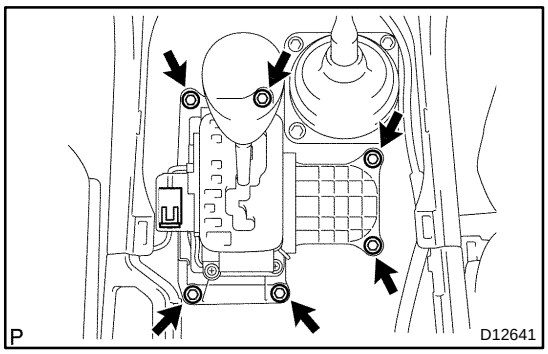
(a) Install the position indicator housing.

(b) Install the shift lock release cover to the position indicator housing.

10. INSTALL SHIFT LEVER KNOB

AT116-01

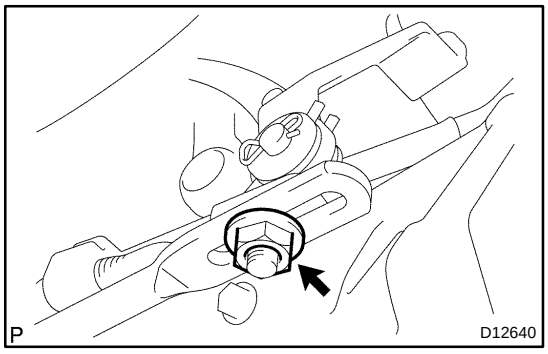
INSTALLATION



1. INSTALL FLOOR SHIFT LEVER ASSEMBLY

(a) Install the floor shift lever assembly with the 6 bolts.
Torque: 8.3 N·m (85 kgf·cm, 73 in.·lbf)

(b) Connect the connector to the floor shift lever assembly.



2. INSTALL No.1 FLOOR SHIFT GEAR SHIFTING ROD

(a) Shift into the N position.

(b) Connect the No.1 floor shift gear shifting rod and the connecting rod swivel with the nut.
Torque: 13 N·m (130 kgf·cm, 9 ft.·lbf)

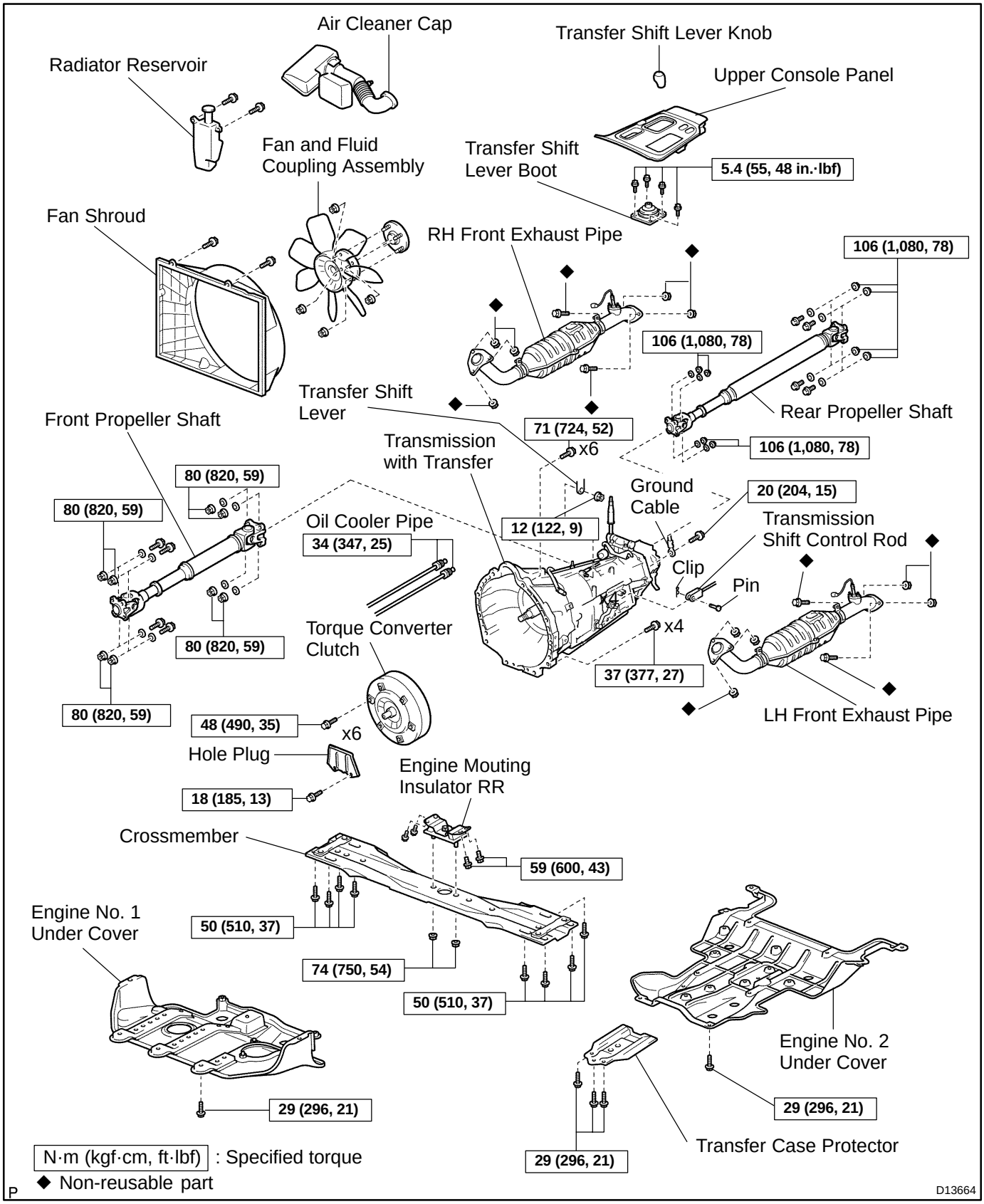
3. INSTALL UPPER CONSOL PANNEL
(See Page BO-84)

4. INSTALL TRANSFER SHIFT LEVER KNOB

AUTOMATIC TRANSMISSION UNIT

AT080-04

COMPONENTS

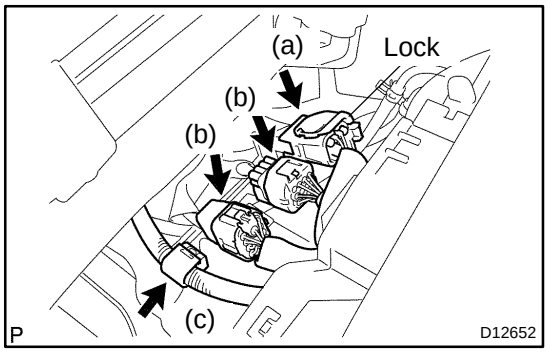


AT12V-01

REMOVAL

1. REMOVE BATTERY

2. REMOVE AIR CLEANER CAP DRIVE BELT, FAN AND FLUID COUPLING ASSEMBLY, FAN SHROUD AND RADIATOR RESERVOIR
(See page CO-17)



3. DISCONNECT CONNECTORS

(a) Release the lock and disconnect the transmission wire connector.

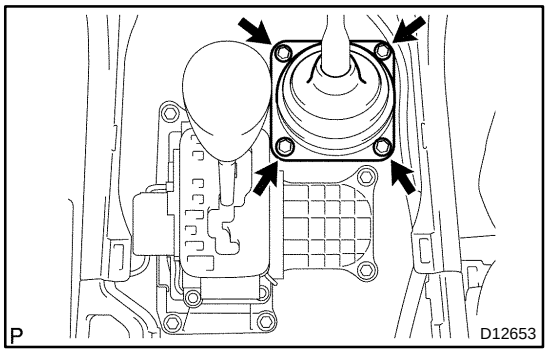
(b) Disconnect the 2 transmission wire connectors.

(c) Separate the connector clamp.

4. REMOVE TRANSFER SHIFT LEVER BOOT

(a) Remove the transfer shift lever knob.

(b) Remove upper console panel (See page BO-84).

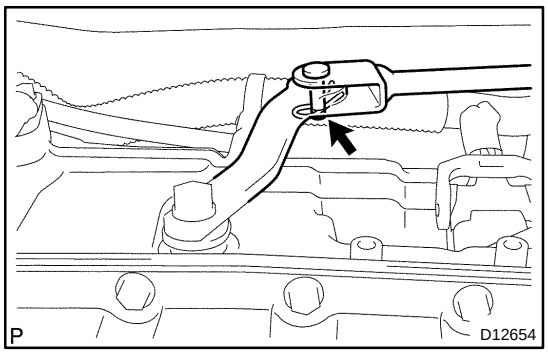


(c) Remove the 4 bolts and the transfer shift lever boot.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

5. REMOVE ENGINE NO. 1 AND NO. 2 UNDER COVERS

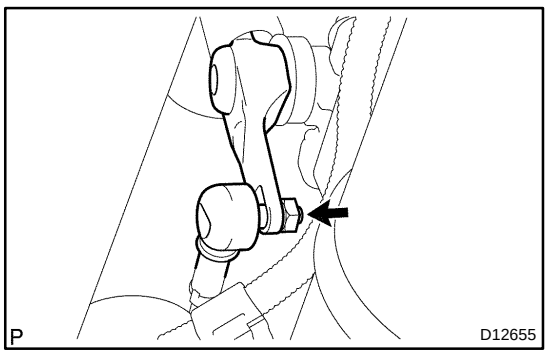
6. REMOVE LH AND RH FRONT EXHAUST PIPES
(See page EM-1 15)

7. REMOVE FRONT AND REAR PROPELLER SHAFTS
(See page PR-4)



8. SEPARATE TRANSMISSION SHIFT CONTROL ROD

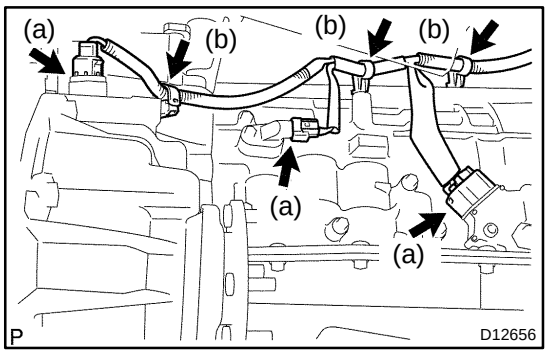
Remove the clip and pin and separate the shift control rod.



9. SEPARATE TRANSFER SHIFT LEVER

Remove the nut and separate the transfer shift lever rod assembly.

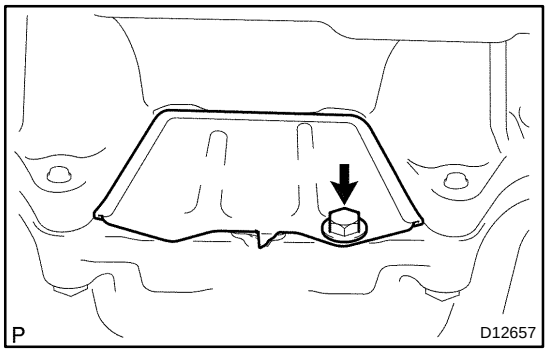
Torque: 12 N·m (122 kgf·cm, 9 ft·lbf)



10. SEPARATE WIRE HARNESS

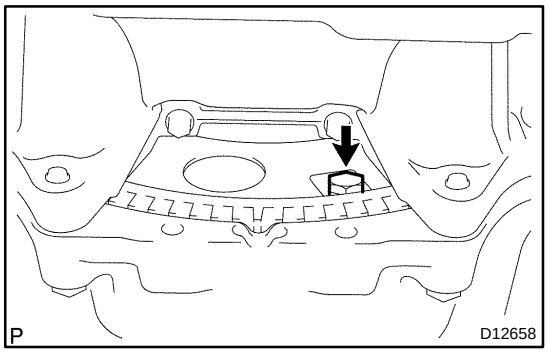
(a) Disconnect 3 connectors.

(b) Remove the 3 clamps from the transmission unit and separate the transmission wire.



11. REMOVE TORQUE CONVERTER CLUTCH MOUNTING BOLT

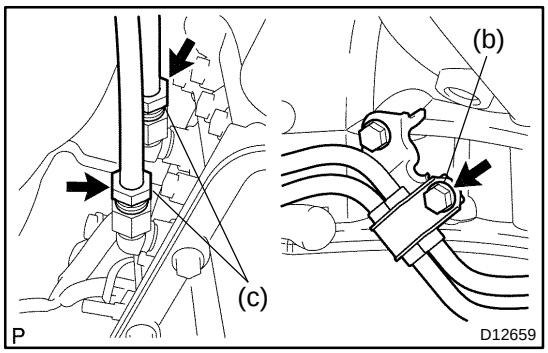
(a) Remove the bolt and the hole plug.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)



(b) Turn the crankshaft to gain access to each bolt.

(c) Hold the crankshaft pulley nut with a wrench, and remove the 6 bolts.
Torque: 48 N·m (490 kgf·cm, 35 ft·lbf)

HINT:
At the time of installation, first install the green colored bolt. And then install the other 5 bolts.

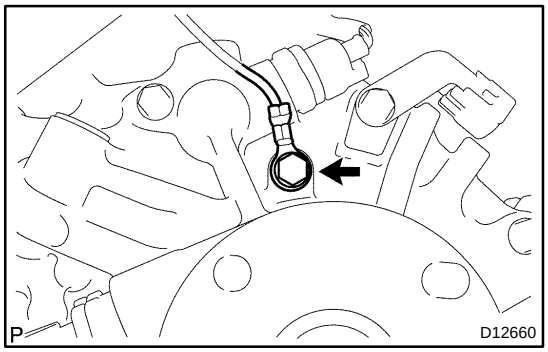


12. DISCONNECT OIL COOLER PIPES

(a) Loosen the 2 union nuts.

(b) Remove the bolt and the clamp.
Torque: 12 N·m (122 kgf·cm, 9 ft·lbf)

(c) Remove the 2 union nuts and disconnect the 2 oil cooler pipes.
Torque: 34 N·m (347 kgf·cm, 25 ft·lbf)

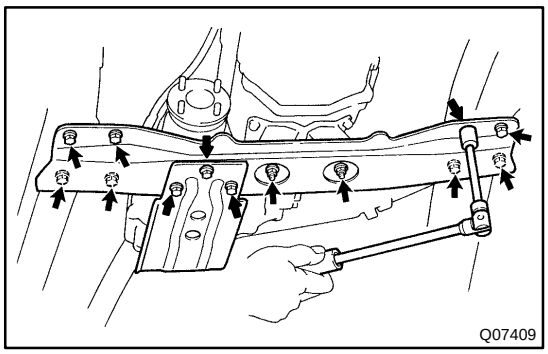


13. SEPARATE GROUND CABLE

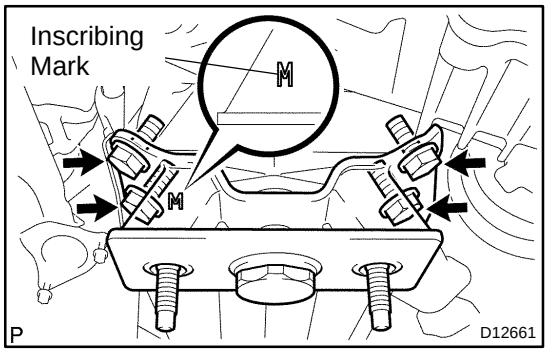
Remove the bolt and separate the ground cable.
Torque: 20 N·m (204 kgf·cm, 15 ft·lbf)

14. REMOVE CROSSMEMBER AND TRANSTER CASE PROTECTOR

(a) Support the transmission with a jack.

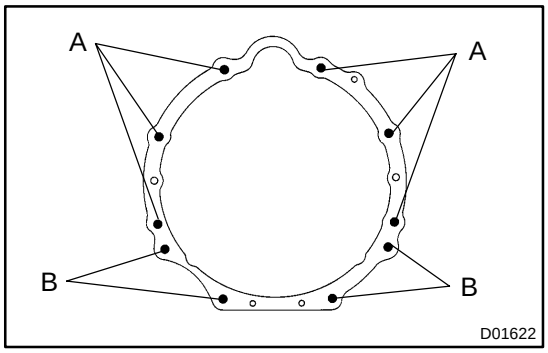


(b) Remove the 3 bolts and the transter case protector.
Torque: 29 N·m (296 kgf·cm, 21 ft·lbf)
(c) Remove the 8 bolts, the 2 nuts and the crossmember.
Torque:
Bolt: 50 N·m (510 kgf·cm, 37 ft·lbf)
Nut: 74 N·m (750 kgf·cm, 54 ft·lbf)

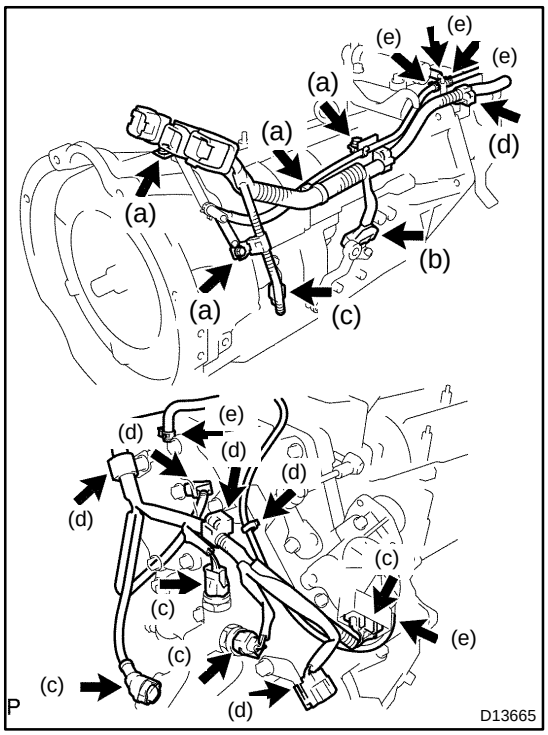


15. REMOVE ENGINE MOUNTING INSULATOR RR
Remove the 4 bolts and the engine mounting insulator RR.
Torque: 59 N·m (600 kgf·cm, 43 ft·lbf)
HINT:
At the time of installation, install the insulator rear with the inscribing mark facing backward.

16. REMOVE TRANSMISSION
(a) Lower the rear end of the transmission unit.
(b) Remove the transmission wire clamp bolt.

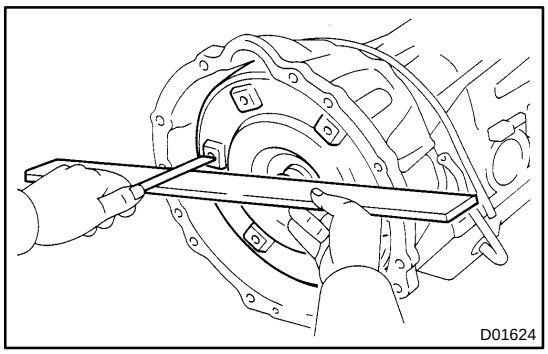


(c) Remove the 10 bolts and the transmission unit.
Torque:
Bolt A: 71 N·m (724 kgf·cm, 52 ft·lbf)
Bolt B: 37 N·m (377 kgf·cm, 27 ft·lbf)



17. REMOVE WIRE HARNESS AND HOSE
(a) Remove the 4 bolts.
Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)
(b) Release the lock and disconnect the connector.
(c) Disconnect the 5 connectors.
(d) Separate the 6 connector clamps.
(e) Disconnect the 5 hoses and remove the wire harness and the hose.

AT082-06



INSTALLATION

1. CHECK TORQUE CONVERTER CLUTCH INSTALLATION

Using calipers and a straight edge, measure the distance from the installed surface of the transmission housing to the installed surface of the torque converter clutch.

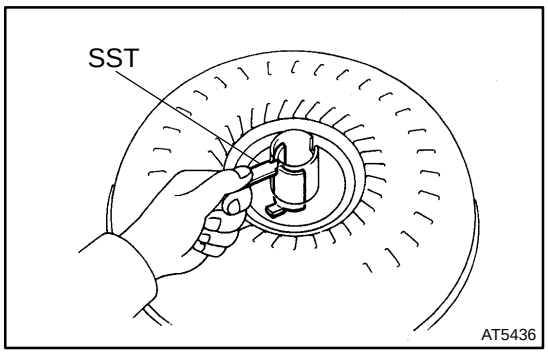
Correct distance: More than 17.1 mm (0.673 in.)

2. TRANSMISSION INSTALLATION

Installation is in the reverse order of removal (See page AT-33).

HINT:

- Transmission control rod and the park/neutral position switch (See page DI-361)
- ATF level (See page AT-3-1)
- Conduct the road test of the vehicle (See page DI-361)



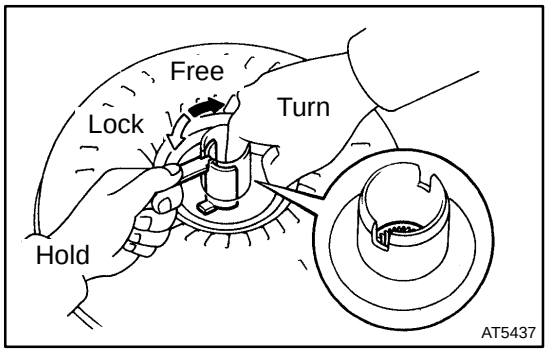
TORQUE CONVERTER CLUTCH AND DRIVE PLATE

AT07X-03

INSPECTION

1. INSPECT ONE-WAY CLUTCH

(a) 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)

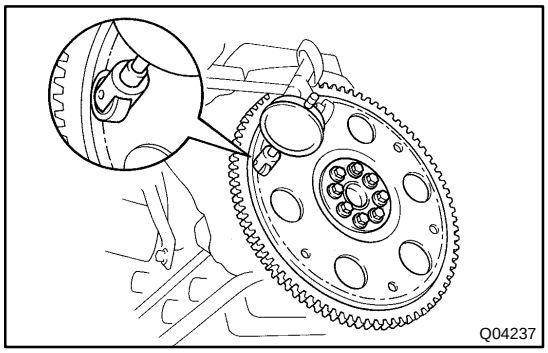


(b) Press on the serrations of stator with a finger and rotate it.

(c) Check if it rotates smoothly when turned clockwise and locks up when turned counterclockwise.

If necessary, clean the converter clutch and retest the one-way clutch.

Replace the converter clutch if the clutch still fails in the test.



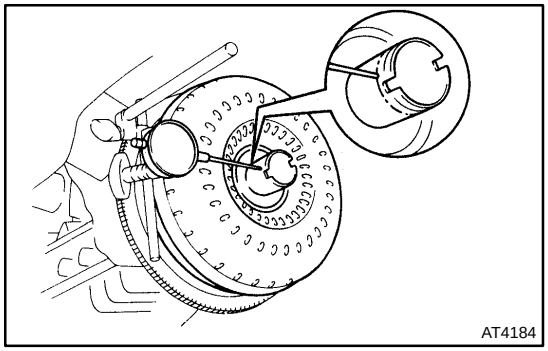
2. MEASURE DRIVE PLATE RUNOUT AND INSPECT RING GEAR

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

Maximum runout: 0.20 mm (0.0079 in.)

If runout 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 the spacers and tighten the bolts.

Torque:
1st: 49 N·m (500 kgf·cm, 36 ft·lbf)
2nd: Turn extra 90°



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 runout is not within the specification, correct it by reorienting the installation of the torque converter clutch.

If excessive runout cannot be corrected, replace the torque converter clutch.

(b) Remove the torque converter clutch.

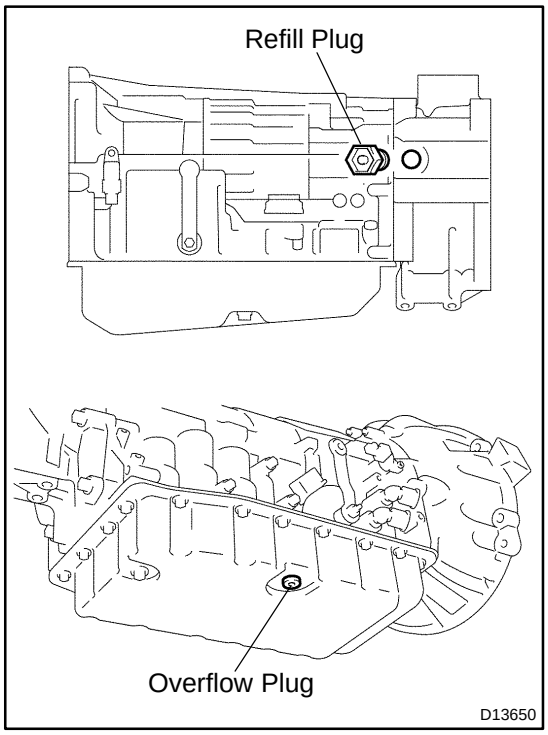
AUTOMATIC TRANSMISSION FLUID

AT147-03

OPERATION

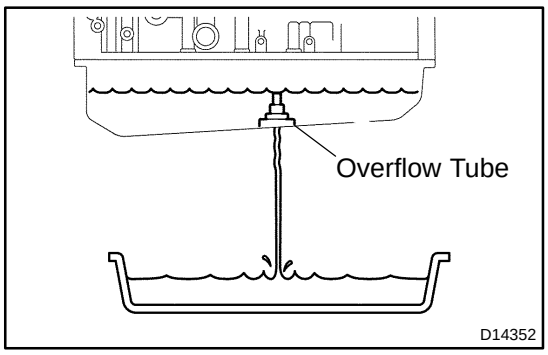
1. BEFORE TRANSMISSION FILL

- This transmission requires Toyota Genuine ATF WS.
- It is necessary to refill the transmission with the correct amount of fluid.
- The vehicle must remain level while adjusting the transmission fluid level.
- On vehicles equipped with active suspension, turn the suspension control switch OFF if it is necessary to jack up the vehicle with the engine running.



2. TRANSMISSION PAN FILL

(a) Remove the refill plug and overflow plug.



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

(c) Reinstall the overflow plug.

3. TRANSMISSION FILL

(a) Fill the transmission with the correct amount of fluid as listed in the table below.

(b) Reinstall the refill plug to avoid fluid splash.

Repair	Fill Amount
Transmission pan and drain plug removal	1.3 liters (1.37 US qts, 1.14 Imp. qts)
Transmission valve body removal	3.9 liters (4.12 US qts, 3.43 Imp. qts)
Torque converter removal	5.3 liters (5.60 US qts, 4.66 Imp. qts)
Entire transmission assembly	5.3 liters (5.60 US qts, 4.66 Imp. qts)

HINT:

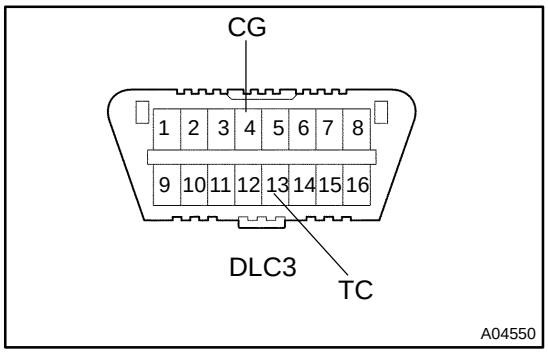
If you cannot add the listed amount of fluid, do the following:

(1) Install the refill plug.
(2) Allow the engine to idle with air conditioning OFF.
(3) Move the shift lever through entire gear range to circulate fluid.
(4) Wait for 30 seconds with the engine idling.
(5) Stop the engine.
(6) Remove the refill plug and add fluid.
(7) Reinstall the refill plug.

4. FLUID CIRCULATION

(a) Allow the engine to idle with the air conditioning OFF.

(b) Move the shift lever through entire gear range to circulate fluid.



5. FLUID TEMPERATURE CHECK

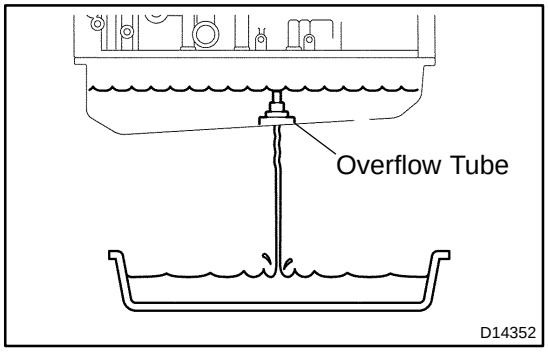
NOTICE:

The fluid temperature should be less than 30°C (86°F) before beginning the fluid temperature check.

(a) With hand-held tester

(1) Connect the hand-held tester to the DLC3.
(2) Select the tester menus: OBD/MOBD, ENGINE, DATA LIST and A/T.
(3) Check A/T OIL TEMP.
(4) Allow the engine to idle until the fluid temperature reaches 46°C (115°F).

(b) Without hand-held tester (Using A/T OIL TEMP indicator)
(1) Connect terminals between CG (4) and TC (13) of the DLC3 using SST (09843-18040).
(2) Move the shift lever back and forth between N and D at 1.5 seconds interval for six seconds.
(3) The D shift indicator on the combination meter comes on for two seconds. This indicates that the fluid temperature check mode has been started.
(4) The D shift indicator comes on again when the fluid temperature reaches 46°C (115°F) and blinks when it exceeds 56°C (130°F).
(5) Allow the engine to idle until the fluid temperature reaches 46°C (115°F).



6. FLUID LEVEL CHECK

NOTICE:

The fluid temperature must be between 46°C (115°F) and 56°C (130°F) to check the fluid level.

(a) Remove the overflow plug with the engine idling.
(b) Check that the fluid comes out of the overflow tube.
- If fluid does not come out, proceed to step 7.
- If fluid comes out, wait until the overflow slows to a trickle and proceed to step 8.

7. TRANSMISSION REFILL

(a) Install the overflow plug.
(b) Stop the engine.
(c) Remove the refill plug.
(d) Add 0.4 liters (0.42 US qts, 0.35 lmp. qts) of fluid.
(e) Allow the engine to idle and wait for 10 seconds.
(f) Proceed to step 6.

8. COMPLETE

(a) Install the overflow plug with a new gasket.
(b) Stop the engine.
(c) Install the refill plug with a new gasket.

Torque:

20 N·m (205 kgf·cm, 15 ft·lbf) for overflow plug
39 N·m (400 kgf·cm, 29 ft·lbf) for refill plug