TERMS FOR AUTOMATIC TRANSAXLE REPAIR MANUAL

0103C-04

ABBREVIATIONS USED IN THIS MANUAL

Abbreviations	Meaning
ASSY	Assembly
ATF	Automatic Transmission Fluid
B_2	2nd Brake
C_2	Direct Clutch
C_3	Reverse Clutch
FIPG	Formed In Place Gasket
O/D	Overdrive
SST	Special Service Tools
1ST	First
2ND	Second

CAUTION

This manual does not include all the necessary items about repair and service. This manual is made for the purpose of the use for the persons who have special techniques and certifications. In the cases that non-specialized or uncertified technicians perform repair or service only using this manual or without proper equipment or tool, that may cause severe injury to you or other people around and also cause damage to your customer’s vehicle.

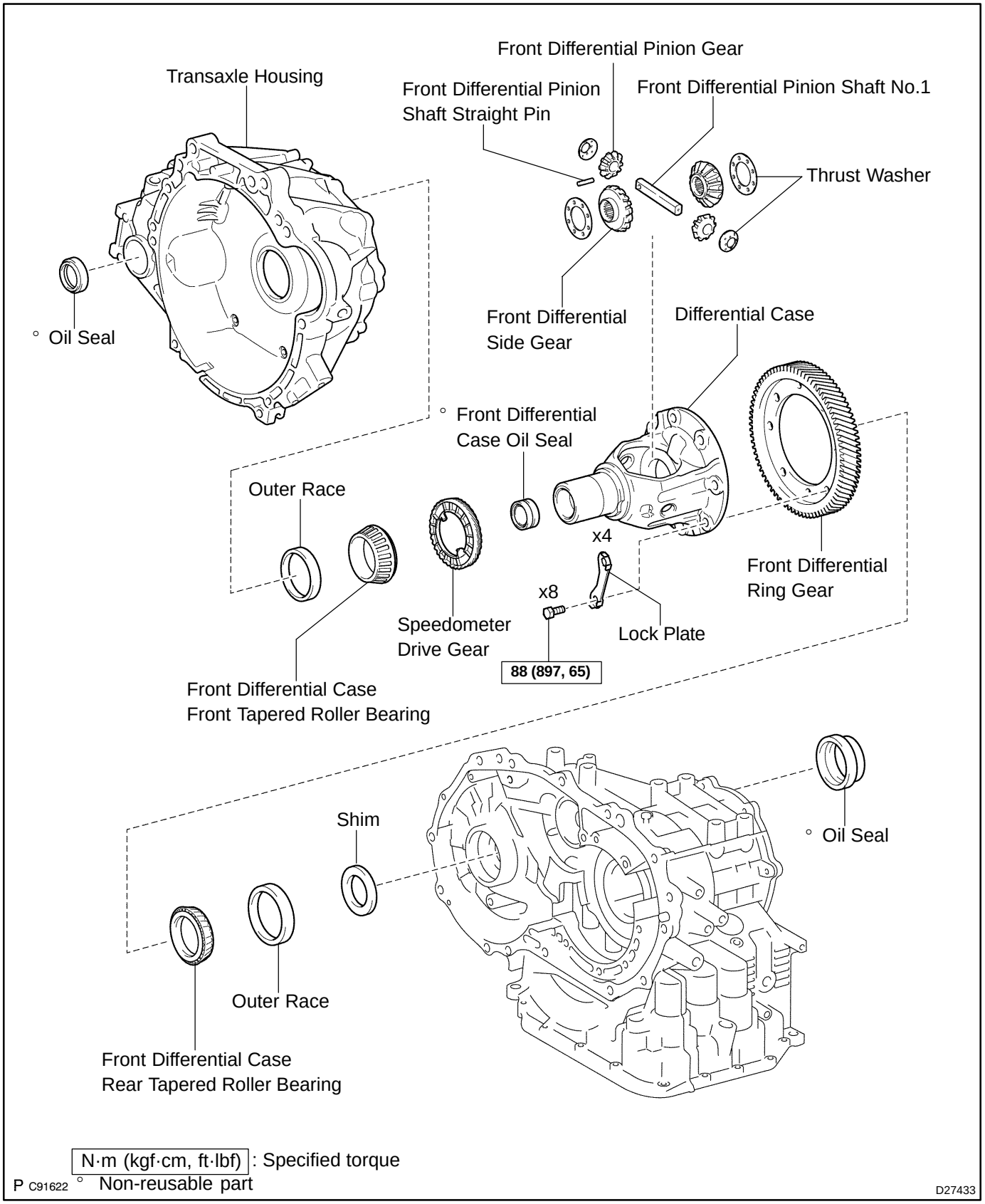
In order to prevent dangerous operation and damages to your customer’s vehicle, be sure to follow the instruction shown below.

- Must read this manual thoroughly. It is especially important to have a good understanding of all the contents written in the PRECAUTION of ”INTRODUCTION” section.
- The service method written in this manual is very effective to perform repair and service. When performing the operations following the procedures using this manual, be sure to use tools specified and recommended. If using non-specified or recommended tools and service method, be sure to confirm safety of the technicians and any possibility of causing personal injury or damage to the customer’s vehicle before starting the operation.
- If part replacement is necessary, must replace the part with the same part number or equivalent part. Do not replace it with inferior quality.
- It is important to note that this manual contains various ”Cautions” and ”Notices” that must be carefully observed in order to reduce the risk of personal injury during service or repair, or the possibility that improper service or repair may damage the vehicle or render it unsafe. It is also important to understand that these ”Cautions” and ”Notices” are not exhaustive, because it is important to warn of all the possible hazardous consequences that might result from failure to follow these instructions.

FRONT DIFFERENTIAL ASSY (U341F)

400MK-01

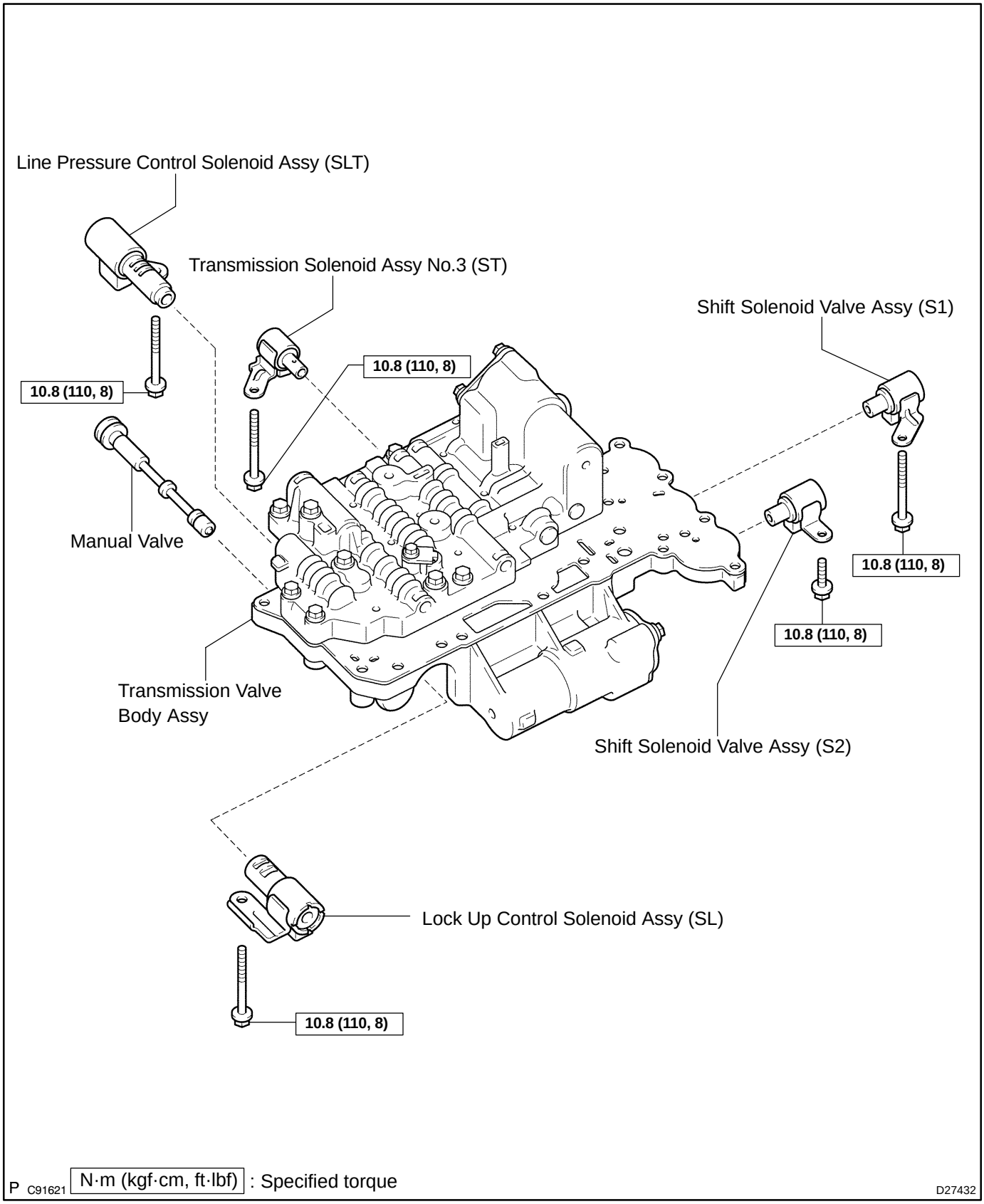
COMPONENTS



TRANSMISSION VALVE BODY ASSY (U341F)

400MJ-01

COMPONENTS



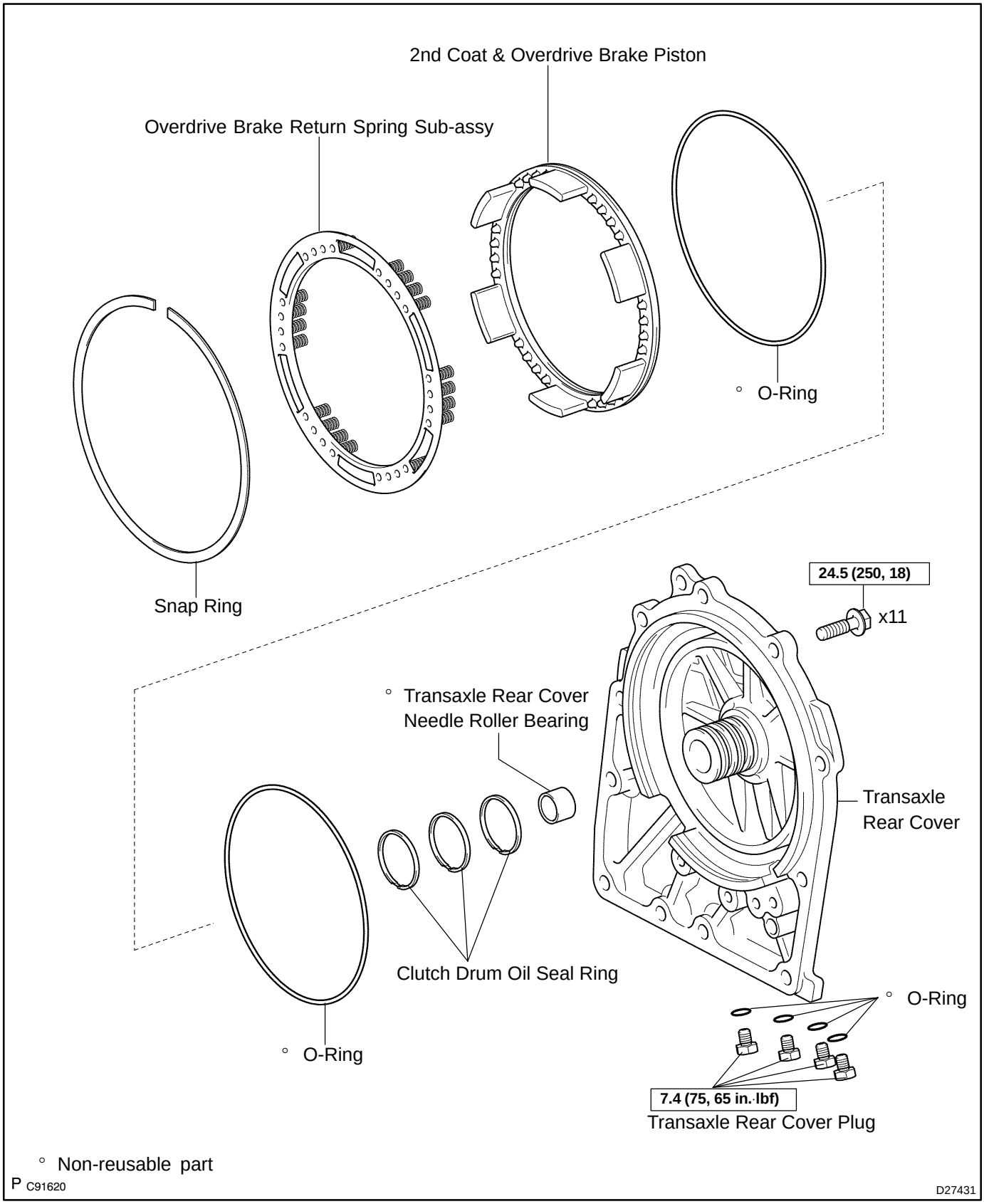
P C91621 N·m (kgf·cm, ft·lbf) : Specified torque

D27432

TRANSAXLE REAR COVER ASSY (U341F)

400MI-01

COMPONENTS



° Non-reusable part

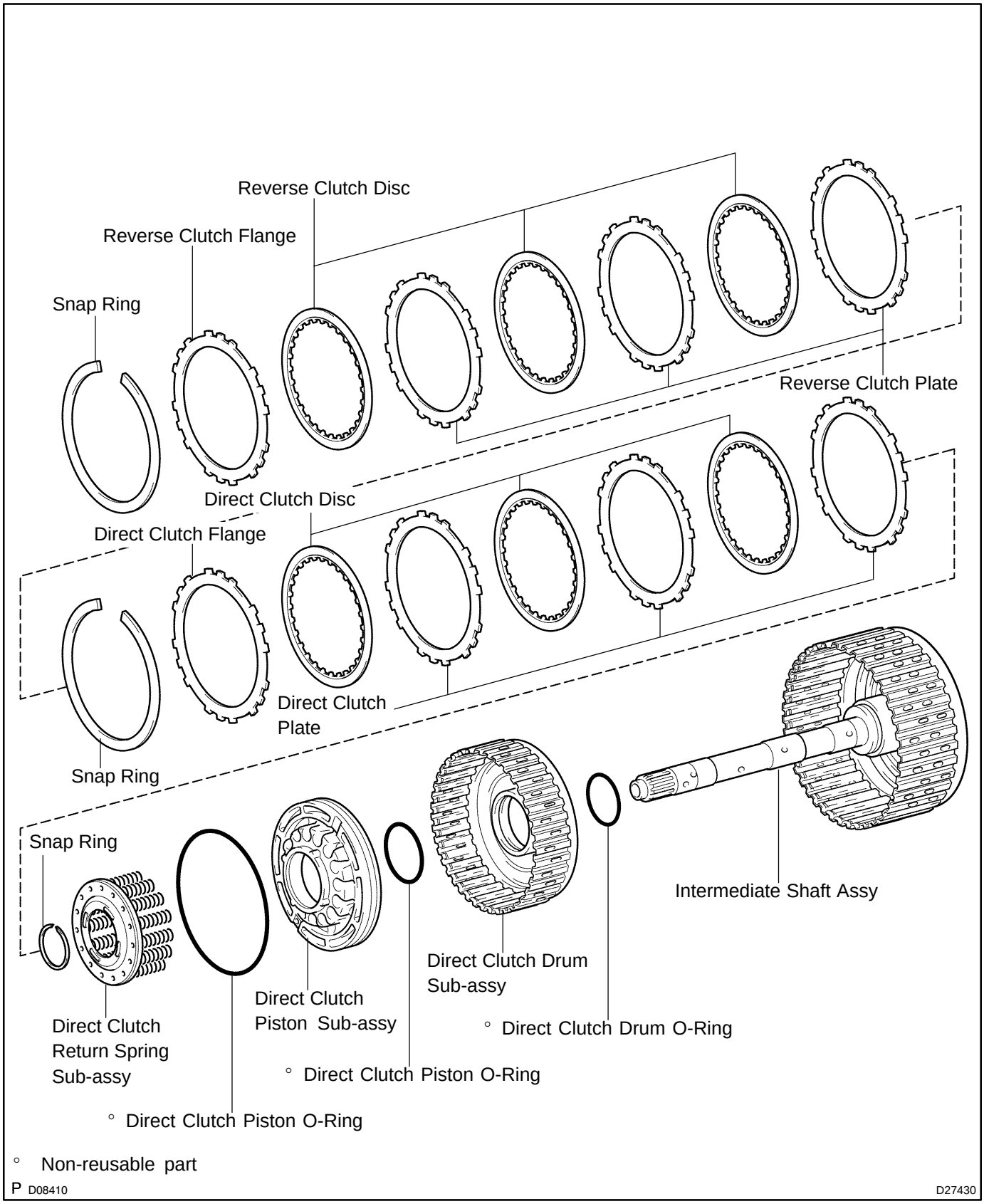
P C91620

D27431

INTERMEDIATE SHAFT ASSY (U341F)

COMPONENTS

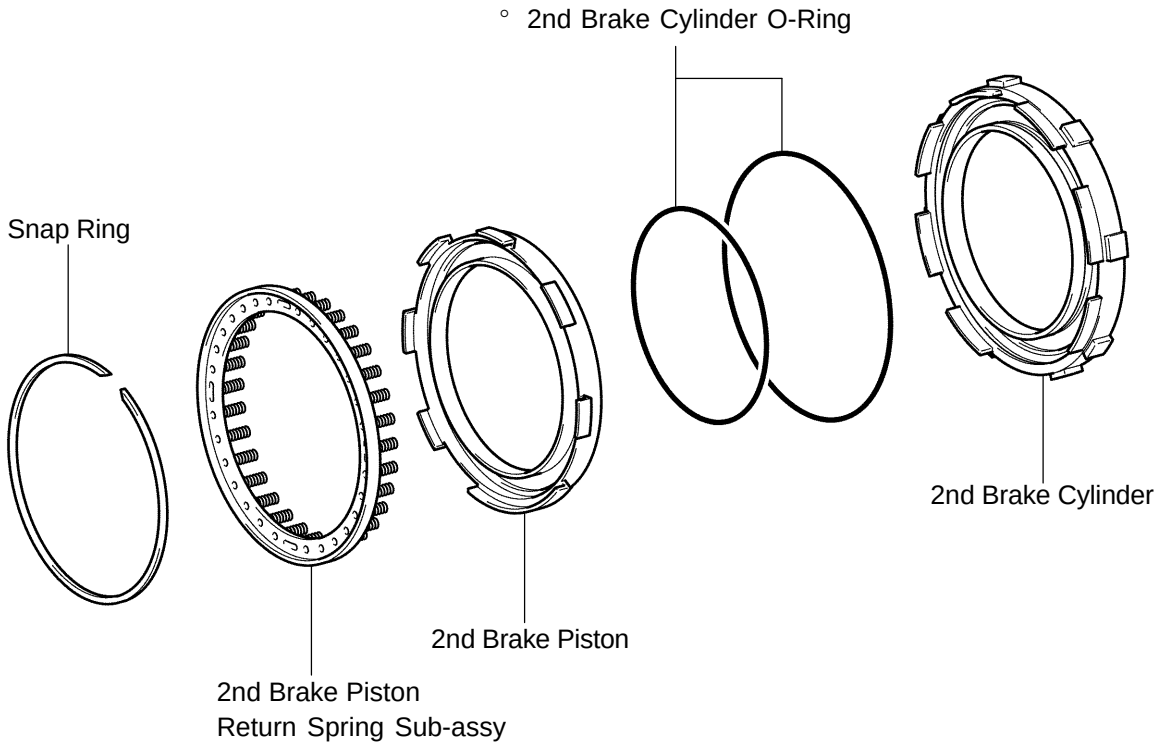
400MH-01



SECOND BRAKE PISTON ASSY (U341F)

400MG-01

COMPONENTS



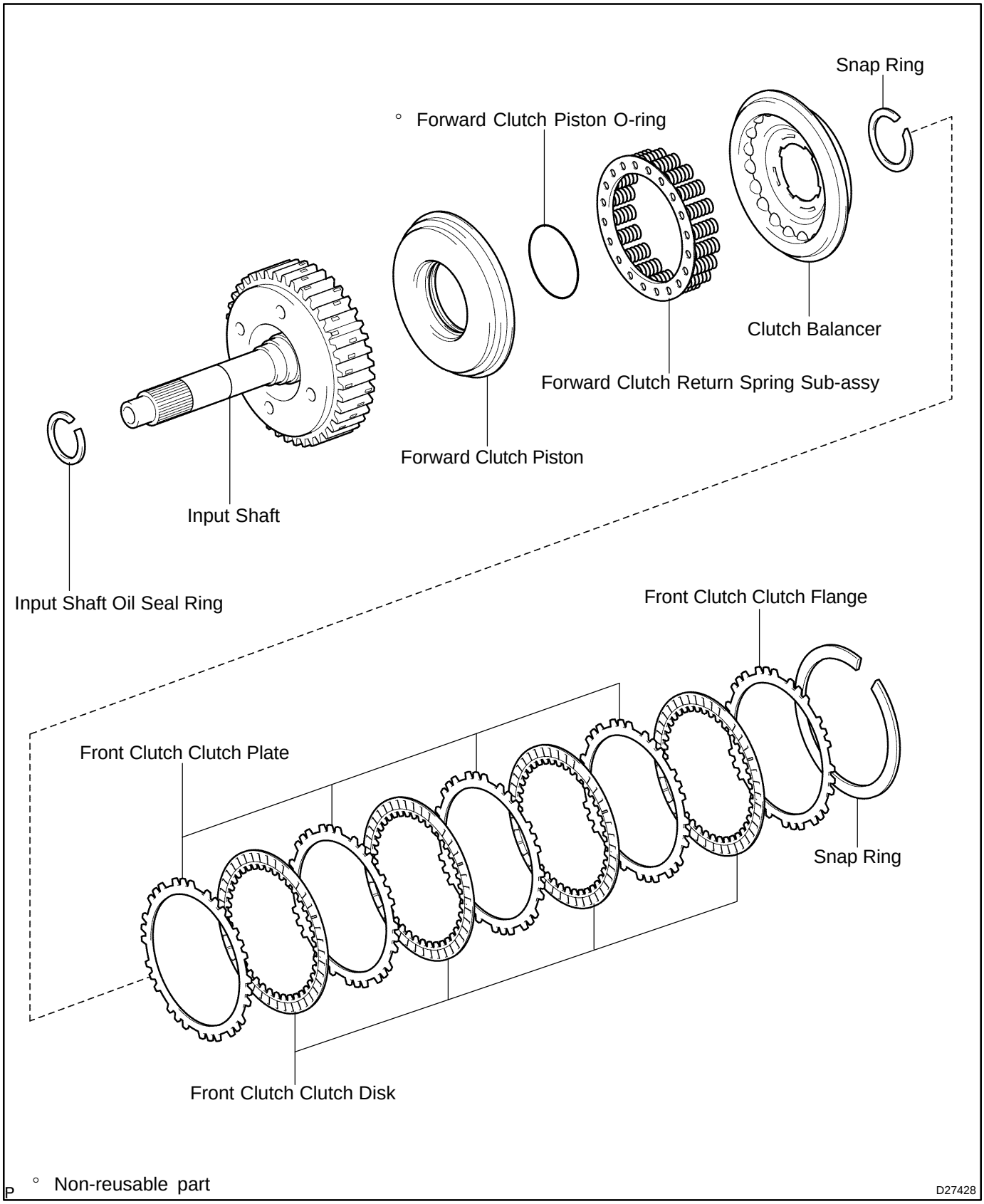
P D08376 ° Non-reusable part

D27429

INPUT SHAFT ASSY (U341F)

COMPONENTS

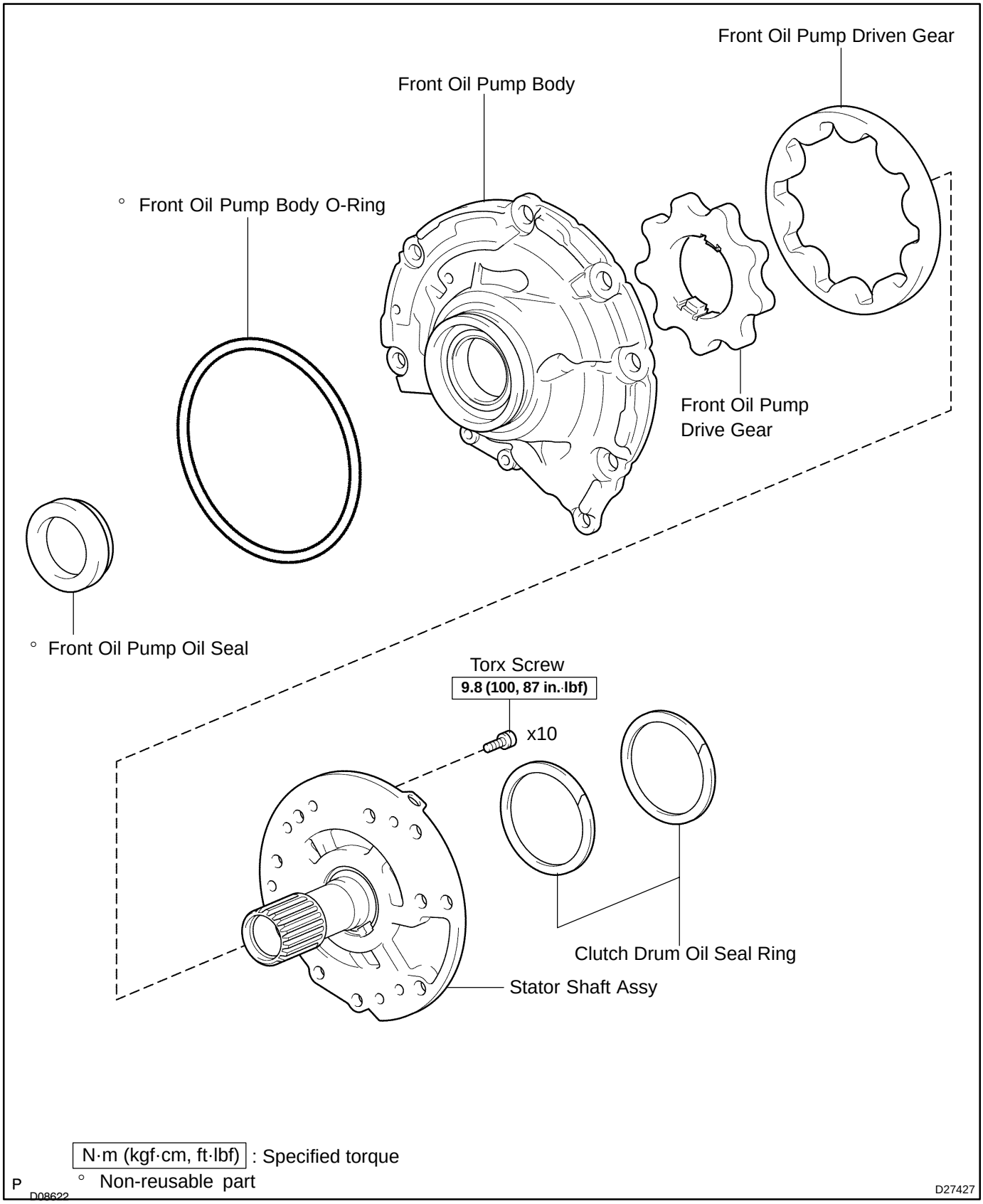
400MF-01



OIL PUMP ASSY (U341F)

COMPONENTS

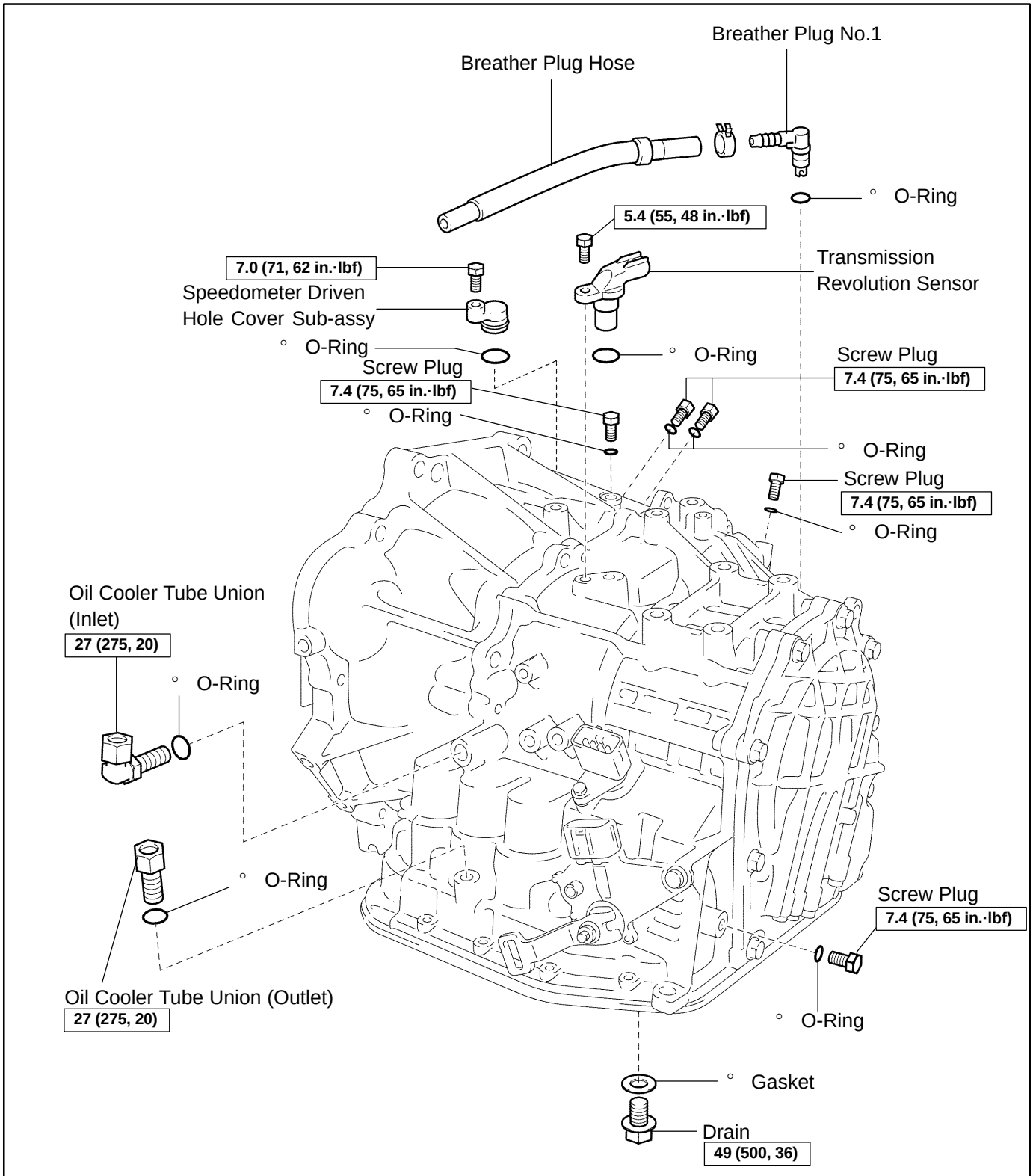
400ME-01

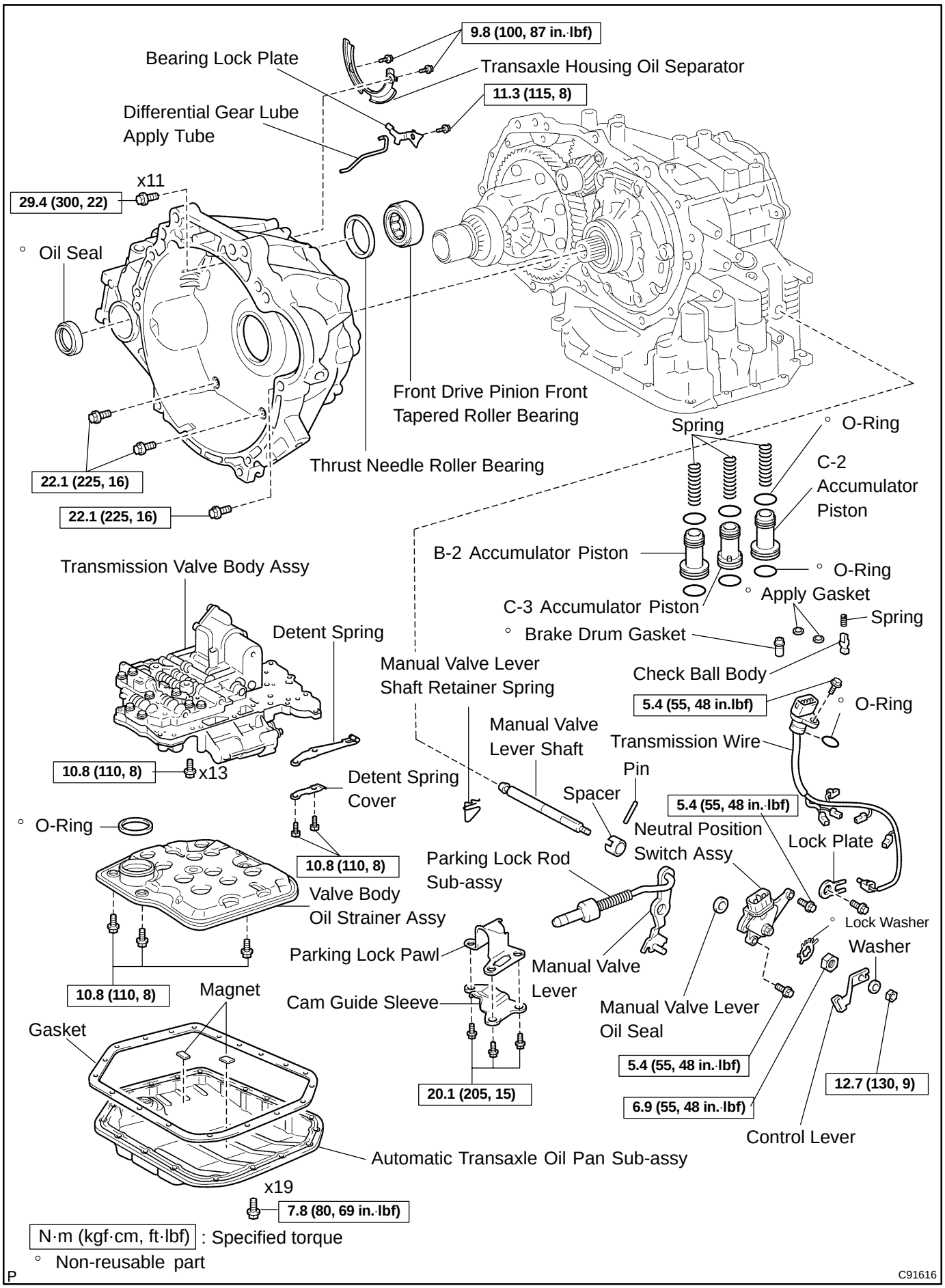


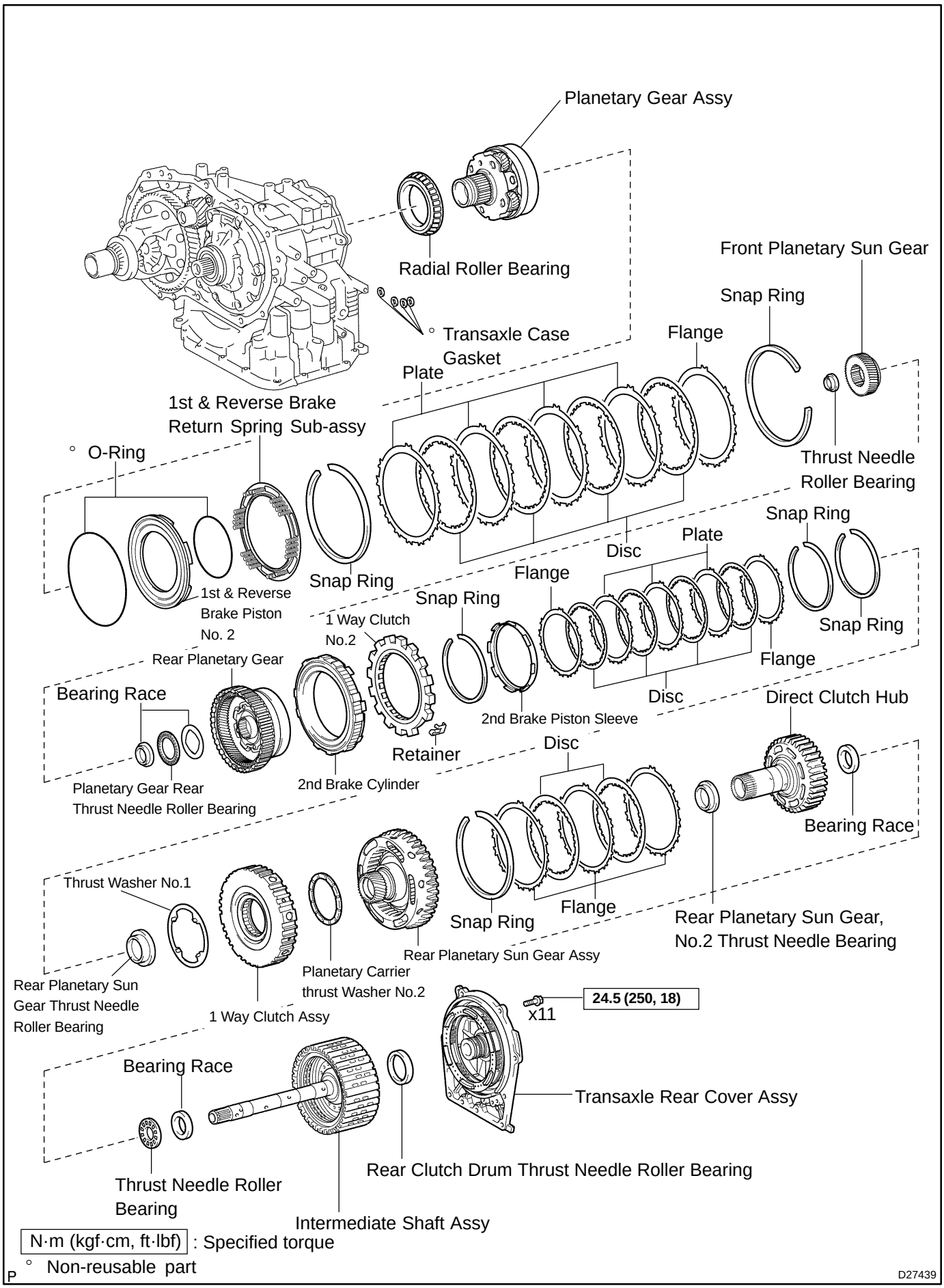
AUTOMATIC TRANSAXLE ASSY (U341F)

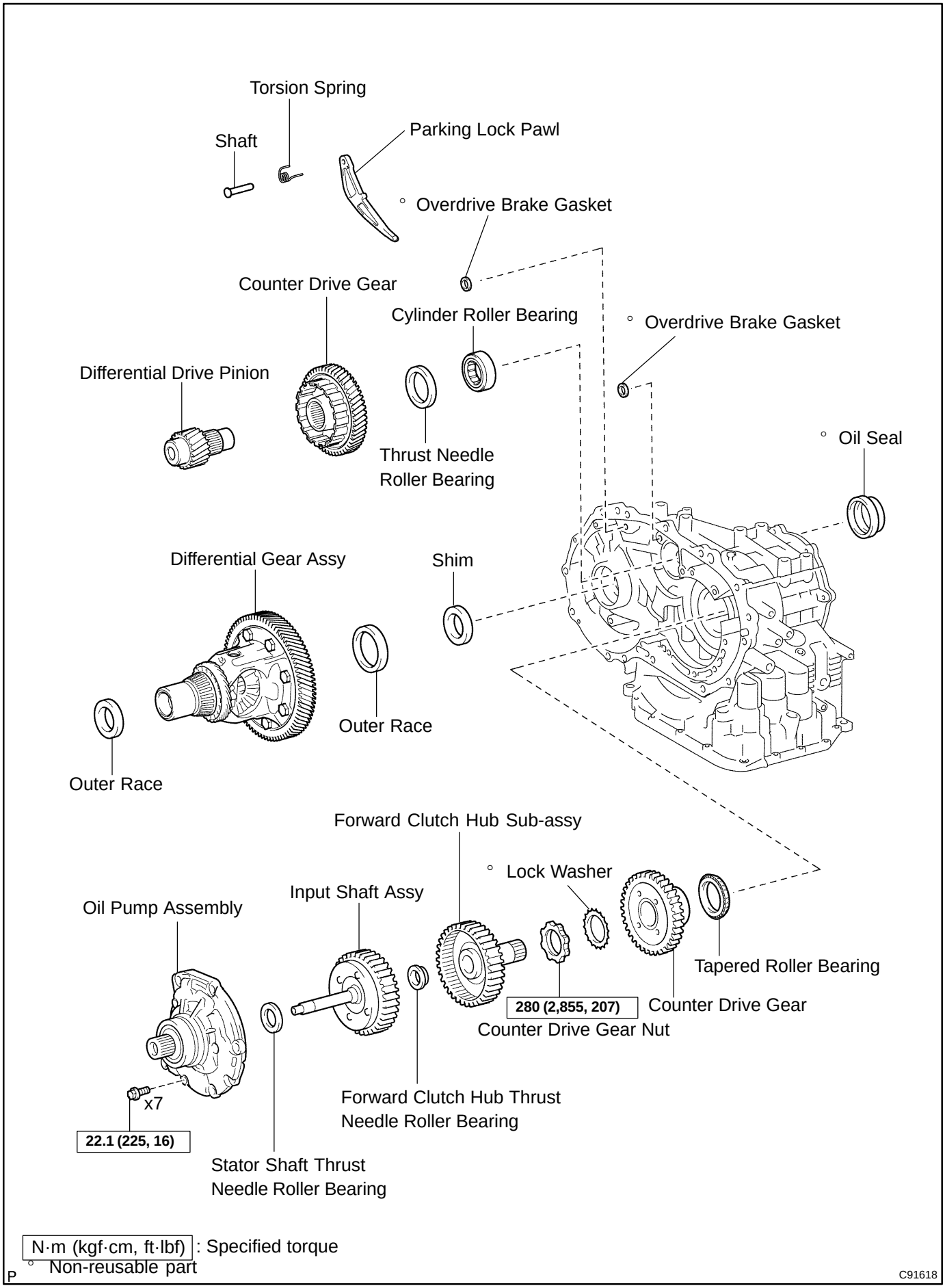
COMPONENTS

400MC-01




9.8 (100, 87 in.·lbf)
Bearing Lock Plate
Transaxle Housing Oil Separator
11.3 (115, 8)
Differential Gear Lube Apply Tube
x11
29.4 (300, 22)
° Oil Seal
Front Drive Pinion Front Tapered Roller Bearing
Thrust Needle Roller Bearing
22.1 (225, 16)
22.1 (225, 16)
Spring
° O-Ring
C-2 Accumulator Piston
B-2 Accumulator Piston
° O-Ring
° Apply Gasket
C-3 Accumulator Piston
° Brake Drum Gasket
Spring
Transmission Valve Body Assy
Detent Spring
Manual Valve Lever Shaft Retainer Spring
Check Ball Body
5.4 (55, 48 in.lbf)
° O-Ring
Manual Valve Lever Shaft
Transmission Wire
Pin
Spacer
Detent Spring Cover
10.8 (110, 8)
x13
5.4 (55, 48 in.·lbf)
° O-Ring
Neutral Position Switch Assy
Lock Plate
Parking Lock Rod Sub-assy
10.8 (110, 8)
Valve Body
Oil Strainer Assy
° Lock Washer
Washer
Parking Lock Pawl
Manual Valve Lever
Magnet
Cam Guide Sleeve
Manual Valve Lever Oil Seal
Gasket
5.4 (55, 48 in.·lbf)
12.7 (130, 9)
20.1 (205, 15)
6.9 (55, 48 in.·lbf)
Control Lever
Automatic Transaxle Oil Pan Sub-assy
x19
7.8 (80, 69 in.·lbf)
N·m (kgf·cm, ft·lbf) : Specified torque
° Non-reusable part
P
C91616


Planetary Gear Assy
Radial Roller Bearing
Front Planetary Sun Gear
Snap Ring
Flange
° Transaxle Case Gasket
Plate
1st & Reverse Brake Return Spring Sub-assy
° O-Ring
Thrust Needle Roller Bearing
Snap Ring
Plate
Disc
Flange
Snap Ring
1st & Reverse Brake Piston No. 2
1 Way Clutch No.2
Snap Ring
Snap Ring
Rear Planetary Gear
Flange
Bearing Race
Disc
Direct Clutch Hub
2nd Brake Piston Sleeve
Retainer
Disc
2nd Brake Cylinder
Planetary Gear Rear Thrust Needle Roller Bearing
Bearing Race
Thrust Washer No.1
Snap Ring
Flange
Rear Planetary Sun Gear, No.2 Thrust Needle Bearing
Rear Planetary Sun Gear Assy
Planetary Carrier thrust Washer No.2
Rear Planetary Sun Gear Thrust Needle Roller Bearing
1 Way Clutch Assy
24.5 (250, 18)
x11
Bearing Race
Transaxle Rear Cover Assy
Rear Clutch Drum Thrust Needle Roller Bearing
Thrust Needle Roller Bearing
Intermediate Shaft Assy
N·m (kgf·cm, ft·lbf) : Specified torque
° Non-reusable part
P
D27439


Torsion Spring
Shaft
Parking Lock Pawl
◦ Overdrive Brake Gasket
Counter Drive Gear
Cylinder Roller Bearing
◦ Overdrive Brake Gasket
Differential Drive Pinion
Thrust Needle
Roller Bearing
◦ Oil Seal
Differential Gear Assy
Shim
Outer Race
Outer Race
Forward Clutch Hub Sub-assy
◦ Lock Washer
Input Shaft Assy
Oil Pump Assembly
Tapered Roller Bearing
280 (2,855, 207)
Counter Drive Gear
Counter Drive Gear Nut
x7
Forward Clutch Hub Thrust
Needle Roller Bearing
22.1 (225, 16)
Stator Shaft Thrust
Needle Roller Bearing
N·m (kgf·cm, ft·lbf) : Specified torque
◦ Non-reusable part
P
C91618

FOREWORD

This repair manual covers Disassembly, Inspection and Assembly procedures for the following Automatic Transaxle:

Automatic Transaxle: U341F

For On-vehicle Servicing (Inspection, Adjustment, Troubleshooting, Removal and installation) of the Automatic transaxle, refer to the repair manual for the applicable model.

All information in this manual is based on the latest product information at the time of publication. However, specifications and procedures are subject to change without notice.

TOYOTA MOTOR CORPORATION

0103D-07

GLOSSARY OF SAE AND TOYOTA TERMS

This glossary lists all SAE-J1930 terms and abbreviations used in this manual in compliance with SAE recommendations, as well as their Toyota equivalents.

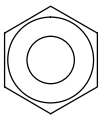
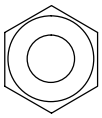
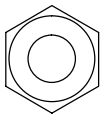
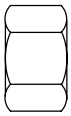
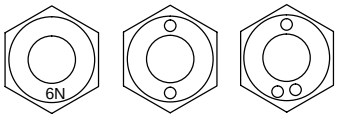
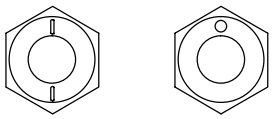
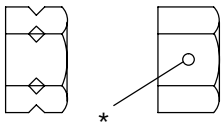
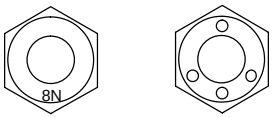
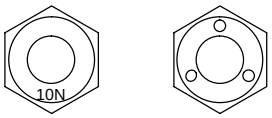
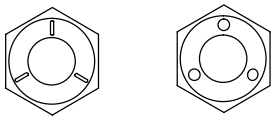
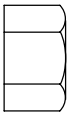
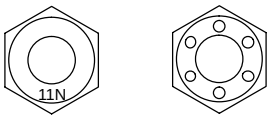
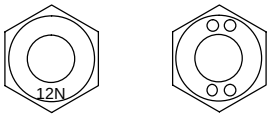
SAE ABBREVIATIONS	SAE TERMS	TOYOTA TERMS ( )--ABBREVIATIONS
A/C	Air Conditioning	Air Conditioner
ACL	Air Cleaner	Air Cleaner
AIR	Secondary Air Injection	Air Injection (AI)
AP	Accelerator Pedal	-
B+	Battery Positive Voltage	+B, Battery Voltage
BARO	Barometric Pressure	-
CAC	Charge Air Cooler	Inter Cooler
CARB	Carburetor	Carburetor
CFI	Continuous Fuel Injection	-
CKP	Crankshaft Position	Crank Angle
CL	Closed Loop	Closed Loop
CMP	Camshaft Position	Cam Angle
CPP	Clutch Pedal Position	-
CTOX	Continuous Trap Oxidizer	-
CTP	Closed Throttle Potion	-
DFI	Direct Fuel Injection (Diesel)	Direct Injection (DI)
DI	Distributor Ignition	-
DLC1 DLC2 DLC3	Data Link Connector 1 Data Link Connector 2 Data Link Connector 3	1: Check Connector 2: Total Diagnosis Communication Link (TDCL) 3: OBD II Diagnostic Connector
DTC	Diagnostic Trouble Code	Diagnostic Code
DTM	Diagnostic Test Mode	-
ECL	Engine Control Level	-
ECM	Engine Control Module	Engine ECU (Electronic Control Unit)
ECT	Engine Control Temperature	Coolant Temperature, Water Temperature (THW)
EEPROM	Electrically Erasable Programmable Read Only Memory	Electrically Erasable Programmable Read Only Memory (EEPROM), Erasable Programmable Read Only Memory (EPROM)
EFE	Early Fuel Evaporation	Cold Mixture Heater (CMH), Heat Control Valve (HCV)
EGR	Exhaust Gas Recirculation	Exhaust Gas Recirculation (EGR)
EI	Electronic Ignition	Distributorless Ignition (DI)
EM	Engine Modification	Engine Modification (EM)
EPROM	Erasable Programmable Read Only Memory	Programmable Read Only Memory (PROM)
EVAP	Evaporative Emission	Evaporative Emission Control (EVAP)
FC	Fan Control	-
FEEPROM	Flash Electrically Erasable Programmable Read Only Memory	-
FEPROM	Flash Erasable Programmable Read Only Memory	-
FF	Flexible Fuel	-
FP	Fuel Pump	Fuel Pump
GEN	Generator	Alternator
GND	Ground	Ground (GND)
HO2S	Heated Oxygen Sensor	Heated Oxygen Sensor (HO2S)
IAC	Idol Air Control	Idol Speed Control (ISC)
IAT	Intake Air Temperature	Intake or Inlet Air Temperature
ICM	Ignition Control Module	-
IFI	Indirect Fuel Injection	Indirect Injection
IFS	Inertia Fuel-Shutoff	-

ISC	Idle Speed Control	-
KS	Knock Sensor	Knock Sensor
MAF	Mass Air Flow	Air Flow Meter
MAP	Manifold Absolute Pressure	Manifold Pressure Intake Vacuum
MC	Mixture Control	Electric Bleed Air Control Valve (EBCV) Mixture Control Valve (MCV) Electric Air Control Valve (EACV)
MDP	Manifold Differential Pressure	-
MFI	Multiport Fuel Injection	Electronic Fuel Injection (EFI)
MIL	Malfunction Indicator Lamp	Check Engine Light
MST	Manifold Surface Temperature	-
MVZ	Manifold Vacuum Zone	-
NVRAM	Non-Volatile Random Access Memory	-
O2S	Oxygen Sensor	Oxygen Sensor, O_2 Sensor ($O_2S_)$
OBD	On-Board Diagnostic	On-Board Diagnostic (OBD)
OC	Oxidation Catalytic Converter	Oxidation Catalyst Converter (OC), CC_0
OP	Open Loop	Open Loop
PAIR	Pulsed Secondary Air Injection	Air Suction (AS)
PCM	Powertrain Control Module	-
PNP	Park/Neutral Position	-
PROM	Programmable Read Only Memory	-
PSP	Power Steering Pressure	-
PTOX	Periodic Trap Oxidizer	Diesel Particulate Filter (DPF) Diesel Particulate Trap (DPT)
RAM	Random Access Memory	Random Access Memory (RAM)
RM	Relay Module	-
ROM	Read Only Memory	Read Only Memory (ROM)
RPM	Engine Speed	Engine Speed
SC	Supercharger	Supercharger
SCB	Supercharger Bypass	-
SFI	Sequential Multiport Fuel Injection	Electronic Fuel Injection (EFI), Sequential Injection
SPL	Smoke Puff Limiter	-
SRI	Service Reminder Indicator	-
SRT	System Readiness Test	-
ST	Scan Tool	-
TB	Throttle Body	Throttle Body
TBI	Throttle Body Fuel Injection	Single Point Injection Central Fuel Injection (Ci)
TC	Turbocharger	Turbocharger
TCC	Torque Converter Clutch	Torque Converter
TCM	Transmission Control Module	Transmission ECU (Electronic Control Unit)
TP	Throttle Position	Throttle Position
TR	Transmission Range	-
TVV	Thermal Vacuum Valve	Bimetallic Vacuum Switching Valve (BVSV) Thermostatic Vacuum Switching Valve (TVSV)
TWC	Three-Way Catalytic Converter	Three-Way Catalytic (TWC) CC_{RO}
TWC+OC	Three-Way + Oxidation Catalytic Converter	$CC_R + CC_O$
VAF	Volume Air Flow	Air Flow Meter
VR	Voltage Regulator	Voltage Regulator
VSS	Vehicle Speed Sensor	Vehicle Speed Sensor (Read Switch Type)
WOT	Wide Open Throttle	Full Throttle

WU-OC	Warm Up Oxidation Catalytic Converter	-
WU-TWC	Warm Up Three-Way Catalytic Converter	Manifold Converter
3GR	Third Gear	-
4GR	Fourth Gear	-

030LF-04

HOW TO DETERMINE NUT STRENGTH

Nut Type			Class
Present Standard Hexagon Nut	Old Standard Hexagon Nut		
	Cold Forging Nut	Cutting Processed Nut	
 No Mark			4N
 No Mark (w/ Washer)	 No Mark (w/ Washer)	 No Mark	5N (4T)
 6N			6N
		 *	7N (5T)
 8N			8N
 10N		 No Mark	10N (7T)
 11N			11N
 12N			12N

*: Nut with 1 or more marks on one side surface of the nut.

B06432

HINT:

Use the nut with the same number of the nut strength classification or the greater than the bolt strength classification number when tightening parts with a bolt and nut.

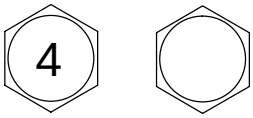
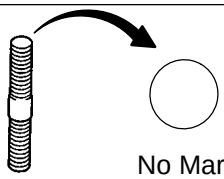
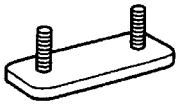
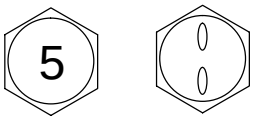
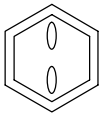
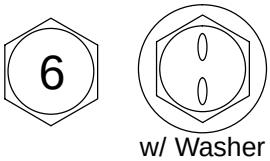
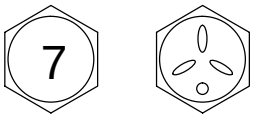
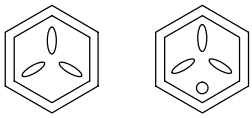
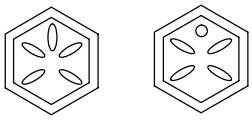
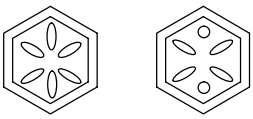
Example: Bolt = 4T

Nut = 4N or more

STANDARD BOLT

HOW TO DETERMINE BOLT STRENGTH

030LD-03

Bolt Type				Class
Hexagon Head Bolt		Stud Bolt	Weld Bolt	
Normal Recess Bolt	Deep Recess Bolt			
 No Mark	 No Mark	 No Mark		4T
				5T
 w/ Washer	 w/ Washer			6T
				7T
				8T
				9T
				10T
				11T

B06431

HOW TO USE THIS AUTOMATIC TRANSAXLE REPAIR MANUAL

0103A-06

GENERAL INFORMATION

1. GENERAL DESCRIPTION

(a) This manual was created in accordance with SAE J2008.

(b) Generally repair operations can be separated in the following 3 main processes:
1. Diagnosis
2. Removing and Installing, Replacing, Disassembling, Installing and Checking, Adjusting
3. Final Inspection

(c) This manual explains" Removing and Installing, Replacing, Disassembling, Instaling and Checking, Adjusting", but" Final inspection" is omitted.

(d) The following essential operations are not written in this manual, however these operations must be done in the practical situation.
(1) Operation with a jack or lift
(2) Cleaning of a removed part if necessary
(3) Visual check

2. INDEX

(a) An alphabetical INDEX is provided as a section on the end of the book to guide you to the item to be repaired.

3. PREPARATION

(a) Use of special service tools (SST) and special service materials (SSM) may be required, depending on the repairing condition. Be sure to use SST and SSM when they are required and follow the working procedure properly. A list of SST and SSM is in the Preparation section in this manual.

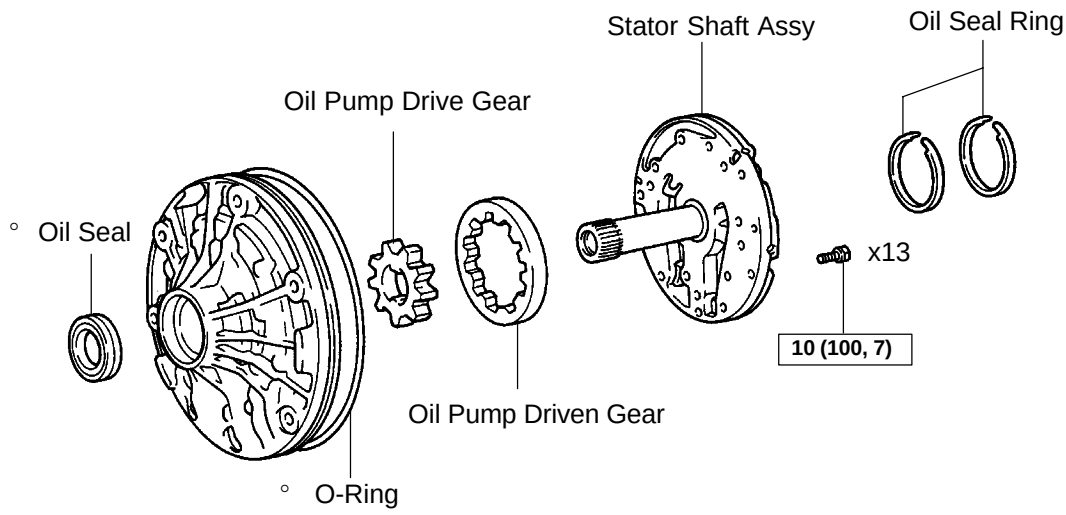
4. REPAIR PROCEDURES

(a) Component drawing is placed as the section or title if necessary.

(b) Illustrations of the parts catalog are placed as the" disassembled parts drawing" so that it enables you to understand the fitting condition of the components.

(c) Non-reusable parts, grease applied parts, precoated parts and torque are specified in the components drawing.

Example:



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

° Non-reusable part

N

D25697

(d) Torque, oil applying position, and non-reusable parts are described as important points in the procedure.

NOTICE:

There are cases where such information can only be indicated by an illustration. In those cases, all the information such as torque, oil, etc. is described in the illustration.

(e) Installing procedure of operation item is performed in the reverse order of the removal, and only the important points are described.

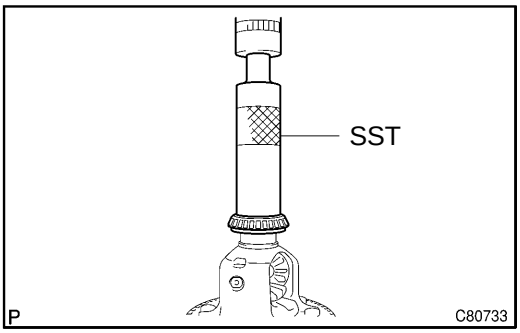
(f) Only items with points are described in the procedure, and the operational portion and content are placed using an illustration. In the explanations, details of the operational method, standard value and notice are placed.

(g) There may be cases where the illustrations of similar models are used. In those cases, the details may be different from the actual vehicle.

(h) The procedures are presented in a step-by-step format:
  (1) The illustration shows what to do and where to do.
  (2) The task heading tells what to do.
  (3) The detailed text tells how to perform the task and gives other information such as specifications and warnings.

  Example:

Illustration: what to do and where



Task heading: what to do

87. INSTALL FR DIFFERENTIAL CASE FRONT TAPERED ROLLER BEARING

(a) Using SST and a press, install the front differential case tapered roller bearing front inner race to the differential case.

SST 09316-60011 (09316-00011)

Detailed text: how to do task

Set part No.

Component part No.

P D27528

HINT:

This format provides an experienced technician with a FAST TRACK to the necessary information. The task heading can be read at a glance when necessary, and the text below provides detailed information. Important specifications and warnings always stand out in bold type.

5. SERVICE SPECIFICATIONS

(a) Specifications are presented in bold type throughout the manual. You never have to leave the procedure to look up your specifications. The specifications are also found in the Service Specifications section for a quick reference.

6. TERMS DEFINITION

CAUTION	Indicate the possibility of injury to you or other people.
NOTICE	Indicate the possibility of damage to the components being repaired.
HINT	Provide additional information to help you perform the repair efficiently.

7. SI UNIT

(a) The UNITS used in this manual are primarily expressed according to the SI UNIT (International System of Unit), and alternately expressed in the metric system and in the English System.

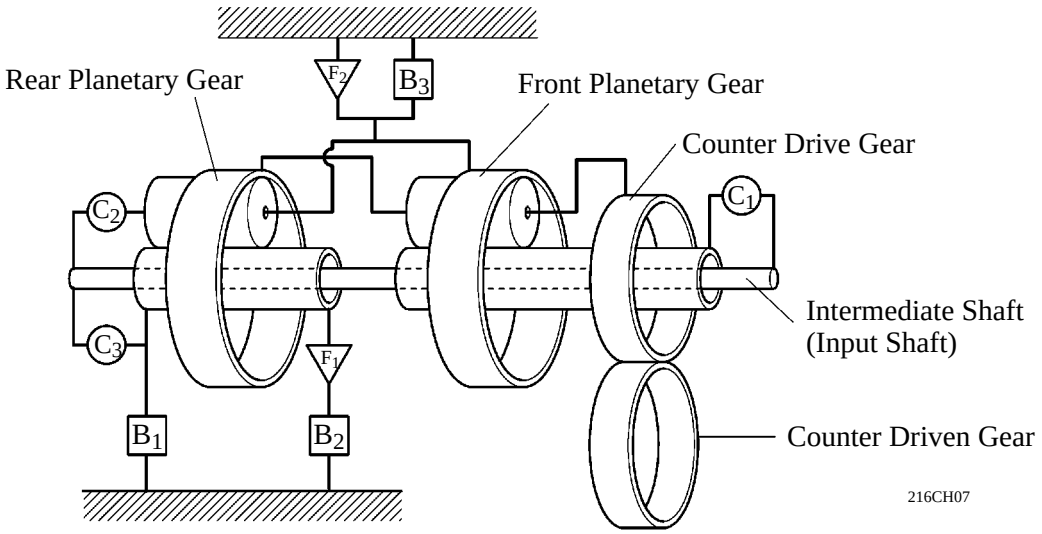
  Example:

  Torque: 30 N·m (310 kgf·cm, 22 ft·lbf)

■PLANETARY GEAR UNIT

1. Construction

- A CR-CR type planetary gear is used in the planetary gear unit, which is located on the input shaft. This planetary gear is a type of the planetary gear unit that joins the front and rear planetary carriers to the front and rear ring gears. As a result, the unit has been made significantly simple and compact.
- A centrifugal fluid pressure canceling mechanism is used in the C_1 clutch, which is applied when shifting from the 3rd to 4th.



2. Function of Component

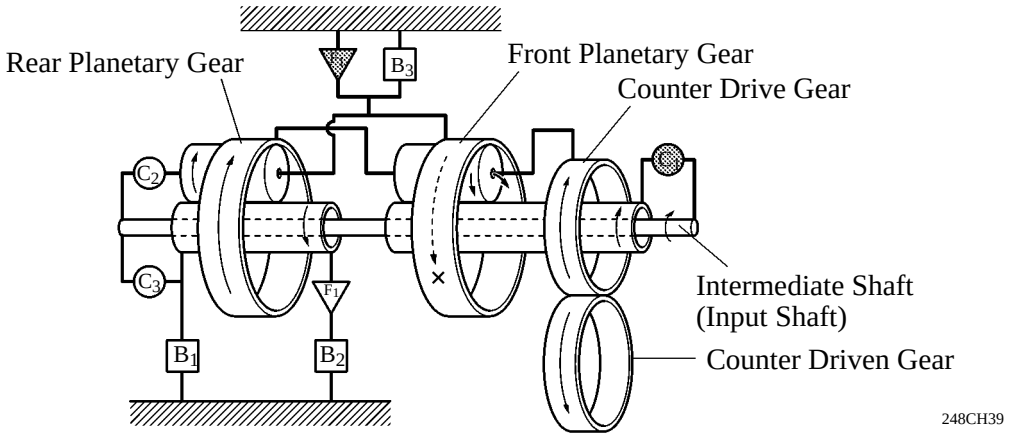
Component		Function
C_1	Forward Clutch	Connects input shaft and front planetary sun gear.
C_2	Direct Clutch	Connects intermediate shaft and rear planetary carrier.
C_3	Reverse Clutch	Connects intermediate shaft and rear planetary sun gear.
B_1	OD & 2nd Brake	Lock the rear planetary sun gear.
B_2	2nd Brake	Prevent rear planetary sun gear from turning counterclockwise.
B_3	1st & Reverse Brake	Lock the front planetary ring gear and rear planetary carrier.
F_1	No. 1 One-Way Clutch	Prevents rear planetary sun gear from turning counterclockwise.
F_2	No. 2 One-Way Clutch	Prevents front planetary ring gear and rear planetary carrier from turning counterclockwise.
Planetary Gears		These gears change the route through which driving force is transmitted, in accordance with the operation of each clutch and brake, in order to increase or reduce the input and output speed.

3. Transaxle Power Flow

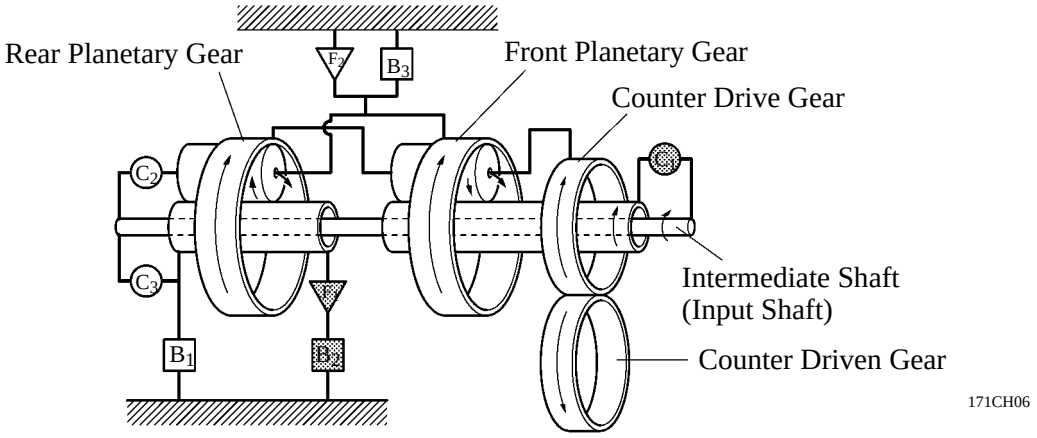
Shift Lever Position	Gear	Solenoid Valve		Clutch			Brake			One-Way Clutch	
		S1	S2	C_1	C_2	C_3	B_1	B_2	B_3	F_1	F_2
P	Park	ON	ON								
R	Reverse	ON	ON			○			○		
N	Neutral	ON	ON								
D	1st	ON	ON	○							○
	2nd	ON	OFF	○				○		○	
	3rd	OFF	OFF	○	○			○			
	4th	OFF	ON		○		○	○			
3	1st	ON	ON	○							○
	2nd	ON	OFF	○				○		○	
	3rd	OFF	OFF	○	○			○			
2	1st	ON	ON	○							○
	2nd	ON	OFF	○			○	○		○	
L	1st	ON	ON	○					○		○

○: Operation

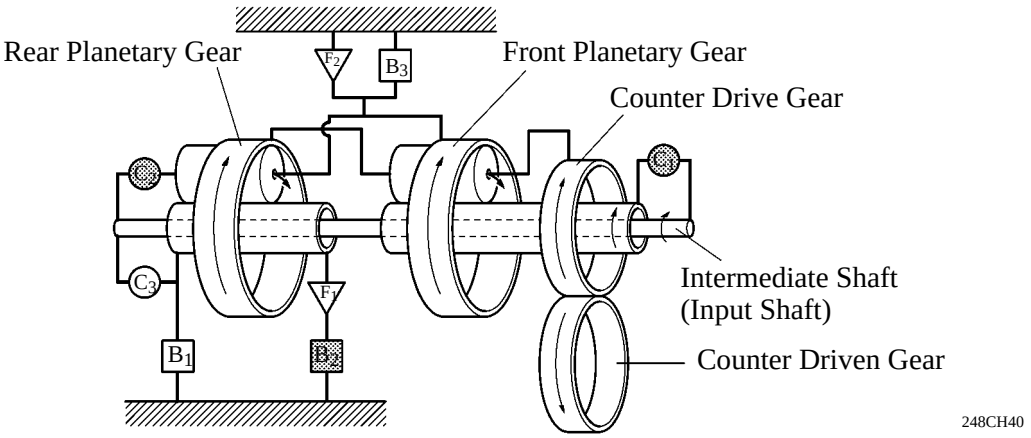
1st Gear (D, 3 or 2 Position)



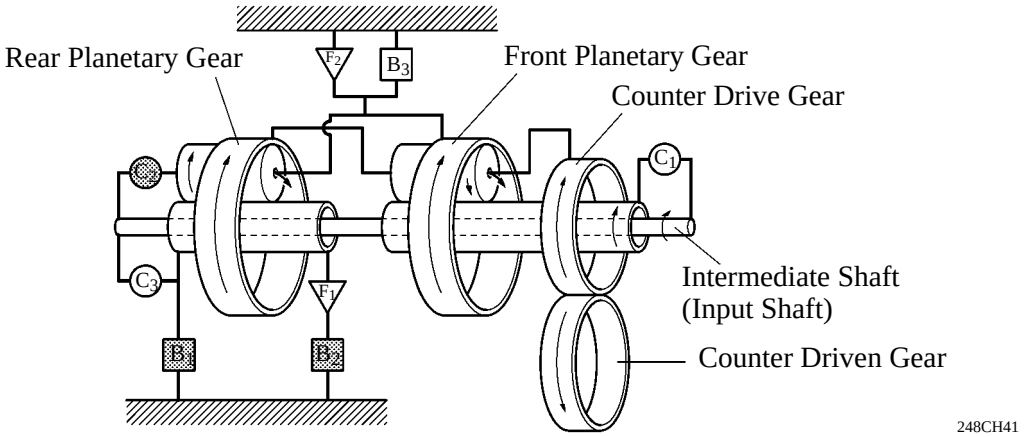
2nd Gear (D or 3 Position)



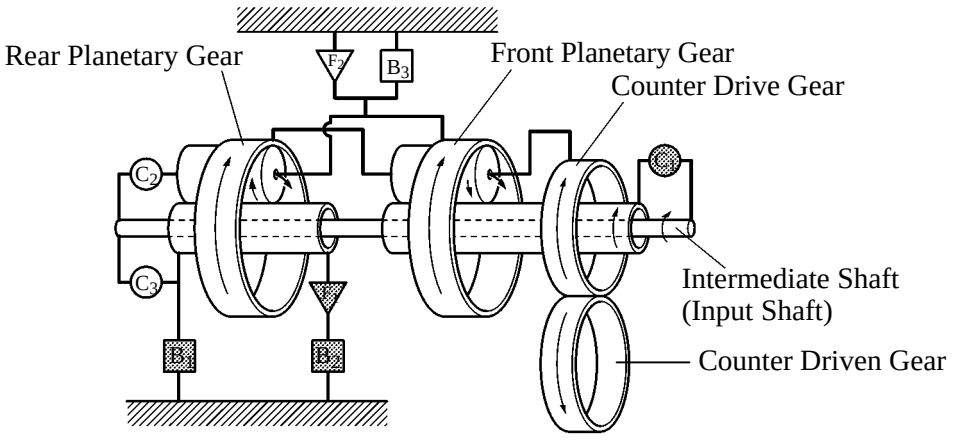
3rd Gear (D or 3 Position)



4th Gear (D Position)

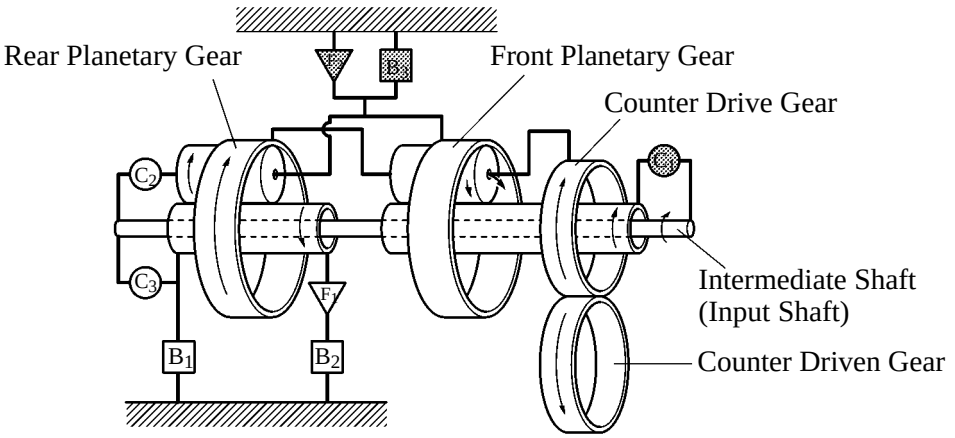


2nd Gear (2 Position)



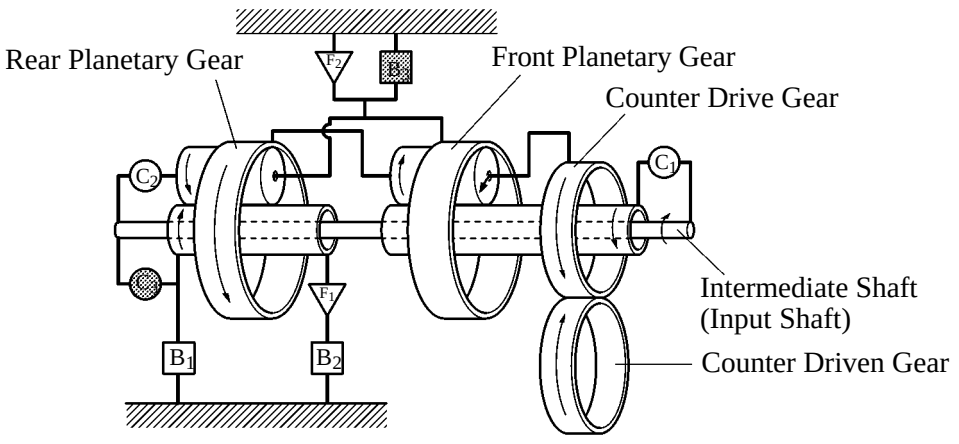
171CH09

1st Gear (L Position)



248CH42

Reverse Gear (R Position)



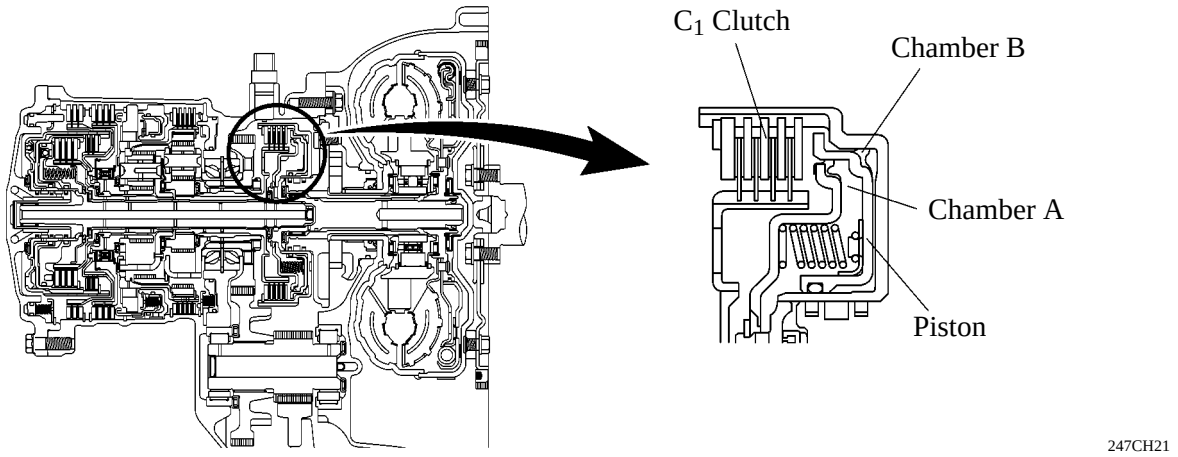
248CH43

4. Centrifugal Fluid Pressure Canceling Mechanism

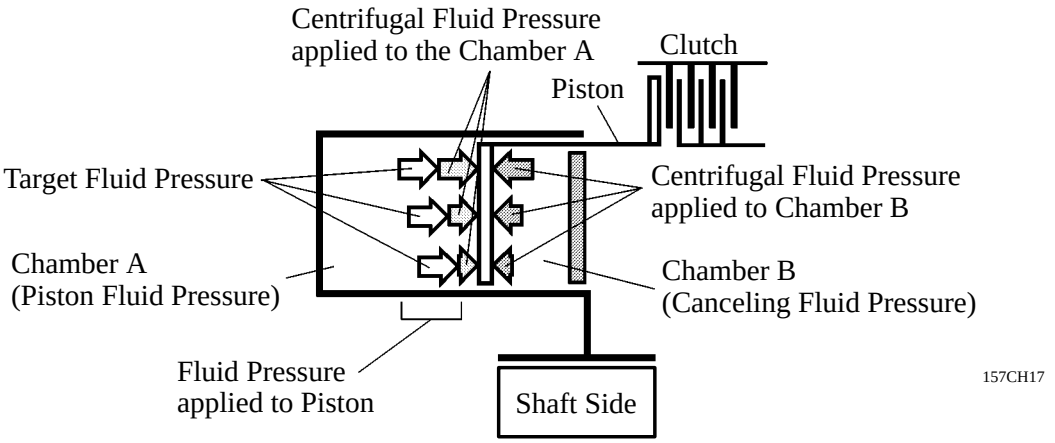
There are two reasons for improving the conventional clutch mechanism:

- To prevent the generation of pressure by the centrifugal force that applied to the fluid in piston fluid pressure chamber (hereafter referred to as “chamber A”) when the clutch is released, a check ball is provided to discharge the fluid. Therefore, before the clutch can be subsequently applied, it took time for the fluid to fill the chamber A.
- During shifting, in addition to the original clutch pressure that is controlled by the valve body, the pressure that acts on the fluid in the chamber A also exerts influence, which is dependent upon revolution fluctuations.

To address these two needs for improvement, a canceling fluid pressure chamber (hereafter referred to as “chamber B”) has been provided opposite chamber A.



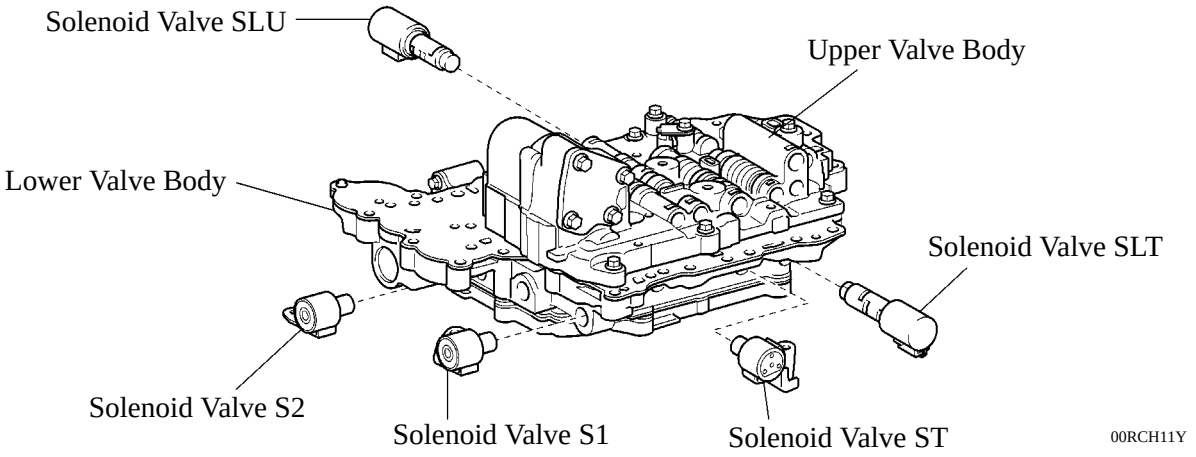
By utilizing the lubrication fluid such as that of the shaft, the same amount of centrifugal force is applied, thus canceling the centrifugal force that is applied to the piston itself. Accordingly, it is not necessary to discharge the fluid through the use of a check ball, and a highly responsive and smooth shifting characteristic has been achieved.



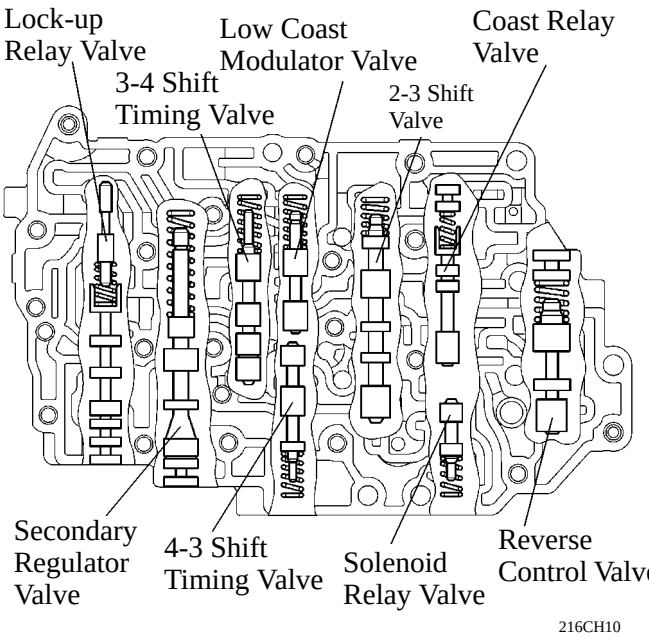
Fluid pressure applied to piston	-	Centrifugal fluid pressure applied to chamber B	=	Target fluid pressure (Original clutch pressure)

■VALVE BODY UNIT

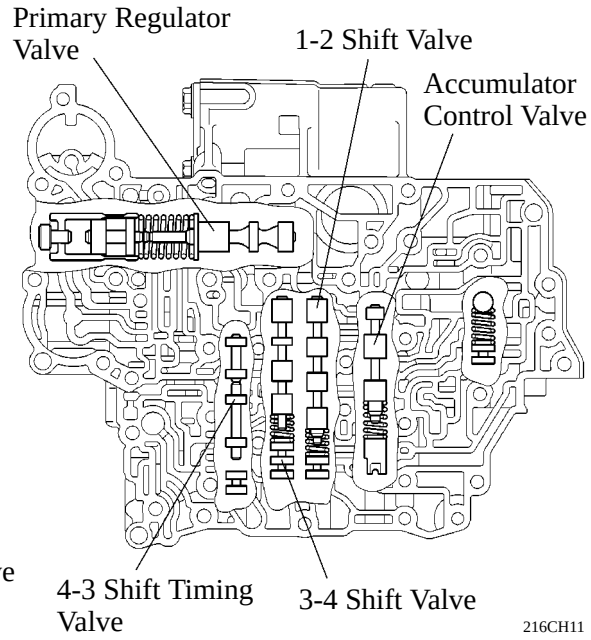
The valve body consists of the upper and lower valve bodies and 5 solenoid valves.
The 5 solenoid valves are installed in the lower valve body for serviceability.



◦ **Upper Valve Body ◀**



◦ **Lower Valve Body ◀**



◦ **Function of Solenoid Valve ◀**

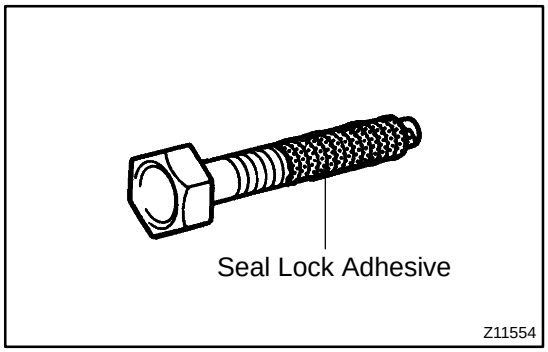
Solenoid Valve	Action	Function
S1	For 2-3 shift valve control	Shifts gears by switching the 2-3 shift valve and controlling the C_2 clutch.
S2	For 1-2 and 3-4 shift valve control	Shifts gears by switching the 1-2 and 3-4 shift valves and controlling 2 clutches (C_1 and C_2) and 2 brakes (B_1 and B_2).
ST	For clutch to clutch pressure control	Switches 3-4 and 4-3 shift valves.
SLU	For clutch engagement pressure control	Controls the lock-up clutch.
SLT	For line pressure control	Controls the line pressure, secondary pressure, and accumulator back pressure.

REPAIR INSTRUCTION FOR AUTOMATIC TRANSAXLE REPAIR MANUAL

0103B-06

PRECAUTION

1. BASIC REPAIR HINT



(a) PRECOATED PARTS

(1) Precoated parts are bolts, nuts, etc. that are coated with a seal lock adhesive at the factory.

(2) If a precoated part is retightened, loosened or caused to move in any way, it must be recoated with the specified adhesive.

(3) When reusing precoated parts, clean off the old adhesive and dry with compressed air. Then apply the specified seal lock adhesive to the bolt, nut or threads.

NOTICE:

Check the torque with the lower limit value of the torque tolerance.

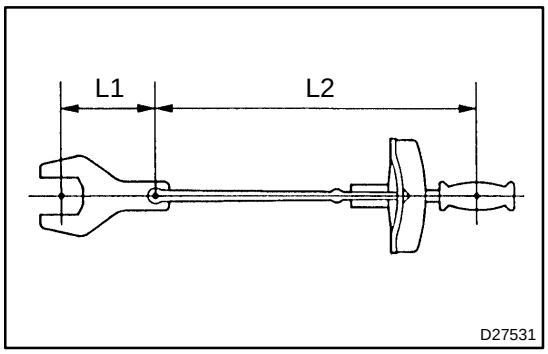
(4) Depending on the seal lock agent to apply, there may be a case where it is necessary to leave it for a specified time until it hardens.

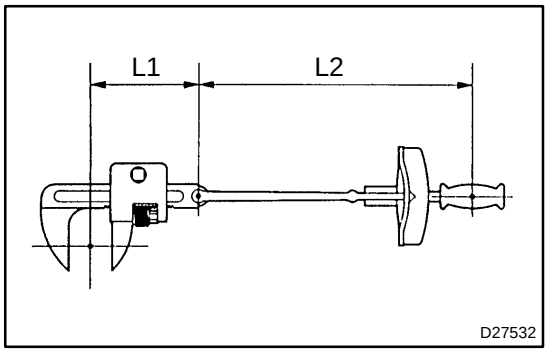
(b) GASKETS

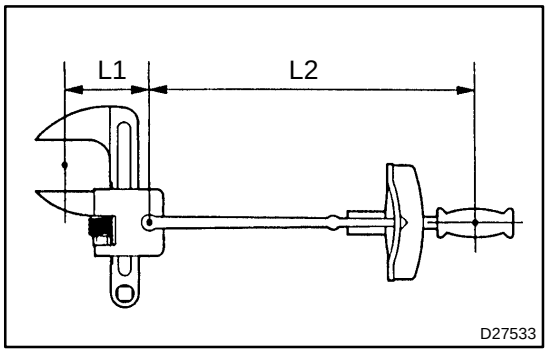
When necessary, use a sealer on gaskets to prevent leaks.

(c) BOLTS, NUTS AND SCREWS

Carefully observe all specifications for bolt tightening torques. Always use a torque wrench.







(d) TORQUE WHEN USING EXTENSION TOOL WITH TORQUE WRENCH

(1) In case of tightening by extending the entire length of the torque wrench combined with SST or tool, if you tighten until the reading of the torque wrench reached the specified torque value, the actual torque becomes excessive.

(2) In this text, only the specified torque is described. In case of using SST or extension tool, find the reading of the torque wrench by the formula.

(3) Formula T'=T x L2 / (L1 + L2)

T'	Reading of torque wrench {N·m (kgf·cm, ft·lbf)}
T	Torque {N·m (kgf·cm, ft·lbf)}
L1	Length of SST or tool (cm)
L2	Length of torque wrench (cm)

AUTOMATIC TRANSMISSION / TRANSAXLE

0305K-08

SERVICE DATA

OIL PUMP		
Body clearance	STD	0.100 - 0.151 mm (0.0039 - 0.0059 in.)
	MAX	0.15 mm (0.0059 in.)
Tip clearance	STD	0.07 - 0.15 mm (0.0028 - 0.0059 in.)
	Max	0.15 mm (0.0059 in.)
Side clearance	STD	0.02 - 0.05 mm (0.0008 - 0.0020 in.)
	Max	0.05 mm (0.0020 in.)
Drive gear thickness	Mark	
	1	9.44 - 9.45 (0.3709 - 0.3713)
	2	9.45 - 9.46 (0.3713 - 0.3717)
	3	9.46 - 9.47 (0.3717 - 0.3721)
	4	9.47 - 9.48 (0.3721 - 0.3725)
	5	9.48 - 9.49 (0.3725 - 0.3729)
Driven gear thickness	Mark	
	1	9.44 - 9.45 (0.3709 - 0.3713)
	2	9.45 - 9.46 (0.3713 - 0.3717)
	3	9.46 - 9.47 (0.3717 - 0.3721)
	4	9.47 - 9.48 (0.3721 - 0.3725)
	5	9.48 - 9.49 (0.3725 - 0.3729)
Pump body bushing inside diameter	STD	38.113 - 38.138 mm (1.50050 - 1.50149 in.)
	Max	38.188 mm (1.50349 in.)
Oil seal in depth		0 ± 0.5 mm (0 ± 0.020 in.)
Stator shaft bushing inside diameter	STD	21.500 - 21.526 mm (0.84646 - 0.84748 in.)
	Max	21.526 mm (0.84748 in.)

FORWARD CLUTCH		
Pack clearance		1.406 - 1.806 mm (0.05535 - 0.07110 in.)
Piston return spring free length		21.69 mm (0.8539 in.)
Flange thickness	Mark	
	-	2.95 - 3.05 mm (0.116 - 0.120 in.)
	1	3.15 - 3.25 mm (0.124 - 0.128 in.)
	2	3.35 - 3.45 mm (0.132 - 0.136 in.)
	3	3.55 - 3.65 mm (0.140 - 0.144 in.)

DIRECT AND REVERSE CLUTCH		
Pack clearance	Direct clutch	0.62 - 1.02 mm (0.0244 - 0.0402 in.)
	Reverse clutch	1.20 - 1.60 mm (0.0472 - 0.0630 in.)
Piston return spring free length (Direct clutch)		32.9 mm (1.2953 in.)
Flange thickness (Direct clutch)	Mark	
	-	2.95 - 3.05 mm (0.116 - 0.120 in.)
	1	3.15 - 3.25 mm (0.124 - 0.128 in.)
	2	3.35 - 3.45 mm (0.132 - 0.136 in.)
	3	3.55 - 3.65 mm (0.140 - 0.144 in.)
Flange thickness (Reverse clutch)	Mark	
	-	2.95 - 3.05 mm (0.116 - 0.120 in.)
	1	3.15 - 3.25 mm (0.124 - 0.128 in.)
	2	3.35 - 3.45 mm (0.132 - 0.136 in.)
	3	3.55 - 3.65 mm (0.140 - 0.144 in.)

1ST AND REVERSE BRAKE		
Pack clearance		0.8 - 1.2 mm (0.032 - 0.047 in.)

Piston return spring free length		13.96 mm (0.5496 in.)
Flange thickness	Mark	
	-	3.4 mm (0.134 in.)
	1	3.6 mm (0.142 in.)
	2	3.8 mm (0.150 in.)
	3	4.0 mm (0.157 in.)

2ND COAST AND OVERDRIVE BRAKE		
Pack clearance (Overdrive brake)		2.09 - 2.49 mm (0.082 - 0.098 in.)
Piston return spring free length (Overdrive brake)		17.88 mm (0.7039 in.)
Flange thickness	Mark	
	4	4.0 mm (0.1575 in.)
	5	4.2 mm (0.1654 in.)
	6	4.4 mm (0.1732 in.)
	7	4.6 mm (0.1811 in.)

2ND BRAKE		
Pack clearance		0.84 - 1.24 mm (0.033 - 0.049 in.)
Piston return spring free length		14.65 mm (0.5768 in.)
Flange thickness	Mark	
	-	3.0 mm (0.118 in.)
	1	3.2 mm (0.126 in.)
	2	3.4 mm (0.134 in.)
	3	3.6 mm (0.142 in.)

MANUAL VALVE LEVER SHAFT	
Manual valve lever shaft oil seal in depth	0 ± 0.5 mm (0 ± 0.020 in.)

INTERMEDIATE SHAFT	
Intermediate shaft clearance	0.204 - 0.966 mm (0.008 - 0.038 in.)

INPUT SHAFT	
End play	0.37 - 1.29 mm (0.0146 - 0.0508 in.)

ACCUMULATOR

Spring	Free length/Outer diameter	Color
B-2	66.90 mm (2.6339 in.) / 15.50 mm (0.6102 in.)	White
C-2	66.90 mm (2.6339 in.) / 17.20 mm (0.6772 in.)	-
C-3	87.30 mm (3.4370 in.) / 18.70 mm (0.7362 in.)	Orange

TRANSAXLE REAR COVER ASSY	
Needle roller bearing clearance	25.2 mm (0.992 in.)

TRANSMISSION VALVE BODY ASSY		
Valve body assy installation bolt length	A	32 mm (1.26 in.)
	B	22 mm (0.87 in.)
	C	55 mm (2.17 in.)
	D	45 mm (1.77 in.)
Detente spring installation bolt length	A	14 m m (0.55 in.)
	B	45 mm (1.77 in.)

COUNTER DRIVE GEAR	
Rotating torque	0.20 - 0.49 N·m (2 - 5 kgf·cm, 2 - 4 in.·lbf)

DIFFERENTIAL	
Differential drive pinion plug clearance	2.5 - 2.6 mm (0.0984 - 0.1023 in.)
Side gear backlash	0.05 - 0.20 mm (0.0020 - 0.0079 in.)

Thrust washer thickness	Mark	
	-	0.95 mm (0.0374 in.)
	-	1.00 mm (0.0394 in.)
	-	1.05 mm (0.0413 in.)
	-	1.10 mm (0.0433 in.)
	-	1.15 mm (0.0453 in.)
	-	1.20 mm (0.0472 in.)
Preload (at starting)		
New bearing		0.98 - 1.57 N·m (10.0 - 16.0 kgf·cm, 8.7 - 13.9 in.·lbf)
Used bearing		0.49 - 0.78 N·m (5.0 - 8.0 kgf·cm, 4.3 - 6.9 in.·lbf)
Shim thickness	Mark	
	01	1.90 mm (0.0748 in.)
	02	1.95 mm (0.0768 in.)
	03	2.00 mm (0.0787 in.)
	04	2.05 mm (0.0807 in.)
	05	2.10 mm (0.0827 in.)
	06	2.15 mm (0.0846 in.)
	07	2.20 mm (0.0866 in.)
	08	2.25 mm (0.0885 in.)
	09	2.30 mm (0.0906 in.)
	10	2.35 mm (0.0925 in.)
	11	2.40 mm (0.0945 in.)
	12	2.45 mm (0.0965 in.)
	13	2.50 mm (0.0984 in.)
	14	2.55 mm (0.1004 in.)
	15	2.60 mm (0.1024 in.)
	16	2.65 mm (0.1043 in.)
	17	2.70 mm (0.1063 in.)
	18	2.75 mm (0.1082 in.)
	19	2.80 mm (0.1102 in.)
Transaxle case side oil seal drive in depth		4.0 ± 0.5 mm (0.158 ± 0.020 in.)
Front transaxle case side oil seal drive in depth		2.7 ± 0.5 mm (0.106 ± 0.020 in.)

030LE-03

SPECIFIED TORQUE FOR STANDARD BOLTS

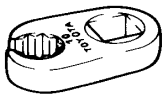
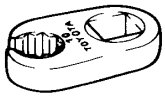
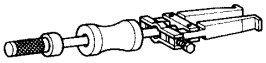
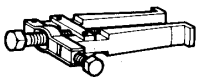
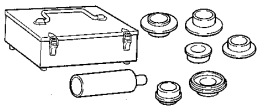
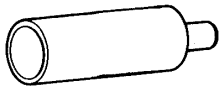
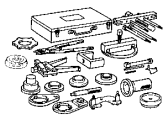
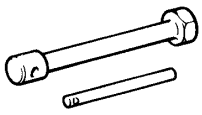
Class	Diameter mm	Pitch mm	Specified torque					
			Hexagon head bolt			Hexagon flange bolt		
			N·m	kgf·cm	ft·lbf	N·m	kgf·cm	ft·lbf
4T	6	1	5	55	48 in.·lbf	6	60	52 in.·lbf
	8	1.25	12.5	130	9	14	145	10
	10	1.25	26	260	19	29	290	21
	12	1.25	47	480	35	53	540	39
	14	1.5	74	760	55	84	850	61
	16	1.5	115	1,150	83	-	-	-
5T	6	1	6.5	65	56 in.·lbf	7.5	75	65 in.·lbf
	8	1.25	15.5	160	12	17.5	175	13
	10	1.25	32	330	24	36	360	26
	12	1.25	59	600	43	65	670	48
	14	1.5	91	930	67	100	1,050	76
	16	1.5	140	1,400	101	-	-	-
6T	6	1	8	80	69 in.·lbf	9	90	78 in.·lbf
	8	1.25	19	195	14	21	210	15
	10	1.25	39	400	29	44	440	32
	12	1.25	71	730	53	80	810	59
	14	1.5	110	1,100	80	125	1,250	90
	16	1.5	170	1,750	127	-	-	-
7T	6	1	10.5	110	8	12	120	9
	8	1.25	25	260	19	28	290	21
	10	1.25	52	530	38	58	590	43
	12	1.25	95	970	70	105	1,050	76
	14	1.5	145	1,500	108	165	1,700	123
	16	1.5	230	2,300	166	-	-	-
8T	8	1.25	29	300	22	33	330	24
	10	1.25	61	620	45	68	690	50
	12	1.25	110	1,100	80	120	1,250	90
9T	8	1.25	34	340	25	37	380	27
	10	1.25	70	710	51	78	790	57
	12	1.25	125	1,300	94	140	1,450	105
10T	8	1.25	38	390	28	42	430	31
	10	1.25	78	800	58	88	890	64
	12	1.25	140	1,450	105	155	1,600	116
11T	8	1.25	42	430	31	47	480	35
	10	1.25	87	890	64	97	990	72
	12	1.25	155	1,600	116	175	1,800	130

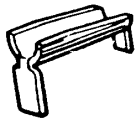
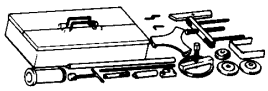
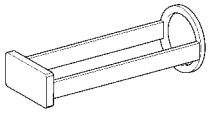
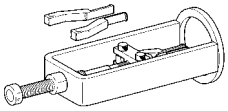
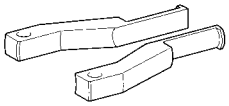
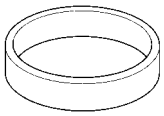
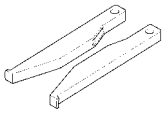
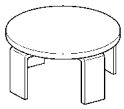
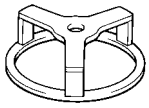
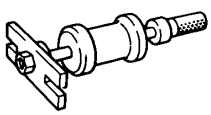
AUTOMATIC TRANSMISSION / TRANS

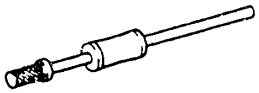
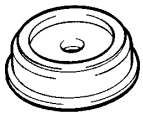
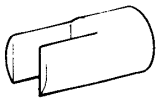
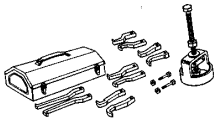
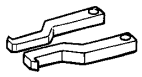
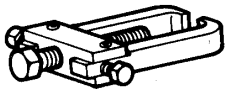
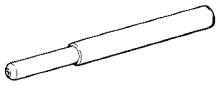
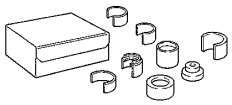
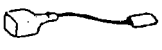
021DC-01

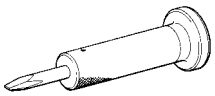
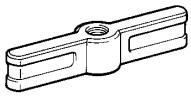
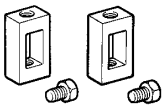
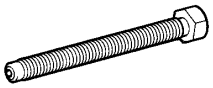
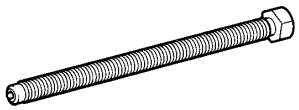
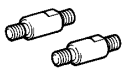
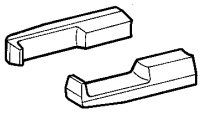
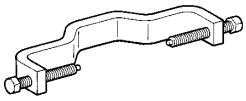
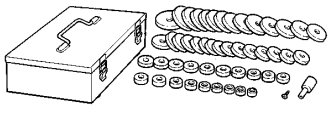
PREPARATION

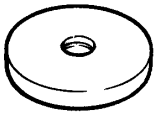
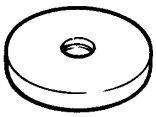
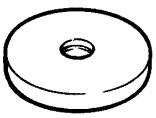
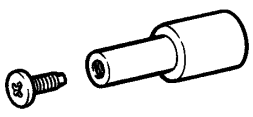
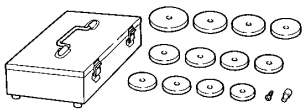
SST

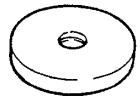
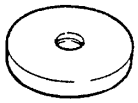
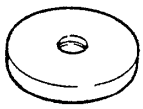
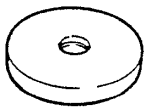
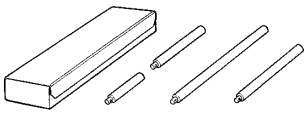
	09023-12700	Union Nut Wrench 17mm	AUTOMATIC TRANSAXLE ASSY(U341F)
	09023-38200	Union Nut Wrench 12mm	AUTOMATIC TRANSAXLE ASSY(U341F)
	09221-25026	Piston Pin Remover & Replacer	AUTOMATIC TRANSAXLE ASSY(U341F)
	(09221-00071)	Guide "A"	AUTOMATIC TRANSAXLE ASSY(U341F)
	09223-15030	Oil Seal & Bearing Replacer	AUTOMATIC TRANSAXLE ASSY(U341F)
	09308-00010	Oil Seal Puller	AUTOMATIC TRANSAXLE ASSY(U341F) OIL PUMP ASSY(U341F) FRONT DIFFERENTIAL ASSY(U341F)
	09308-10010	Oil Seal Puller	AUTOMATIC TRANSAXLE ASSY(U341F)
	09316-6001 1	Transmission & Transfer Bearing Replacer	FRONT DIFFERENTIAL ASSY(U341F)
	(09316-0001 1)	Replacer Pipe	FRONT DIFFERENTIAL ASSY(U341F)
	09320-89010	Transfer Clutch Spring Compressor	INPUT SHAFT ASSY(U341F)
	09350-32014	TOYOTA Automatic Transmission Tool Set	AUTOMATIC TRANSAXLE ASSY(U341F)
	(09351-32010)	One-way Clutch Test Tool	AUTOMATIC TRANSAXLE ASSY(U341F)

	(09351-32020)	Stator Stopper	AUTOMATIC TRANSAXLE ASSY(U341F)
	09350-36010	TOYOTA Automatic Transmission Tool Set	AUTOMATIC TRANSAXLE ASSY(U341F) INTERMEDIATE SHAFT ASSY(U341F)
	(09350-061 10)	No.1 Measure Terminal	AUTOMATIC TRANSAXLE ASSY(U341F) INTERMEDIATE SHAFT ASSY(U341F)
	09387-00020	Direct Clutch Wrench	INTERMEDIATE SHAFT ASSY(U341F)
	09387-00041	Bearing Puller Assembly	TRANSAXLE REAR COVER ASSY(U341F) FRONT DIFFERENTIAL ASSY(U341F)
	(09387-01021)	Claw No.2	TRANSAXLE REAR COVER ASSY(U341F)
	(09387-02010)	Oil Seal Replacer	FRONT DIFFERENTIAL ASSY(U341F)
	(09387-02020)	One-way Clutch Test Tool Set	FRONT DIFFERENTIAL ASSY(U341F)
	09387-00060	Second Brake Wrench	SECOND BRAKE PISTON ASSY(U341F)
	09387-00070	First & Reverse Brake Wrench	AUTOMATIC TRANSAXLE ASSY(U341F) TRANSAXLE REAR COVER ASSY(U341F)
	09387-00120	Counter Drive Gear Nut Wrench	AUTOMATIC TRANSAXLE ASSY(U341F)
	09520-01010	Drive Shaft Remover Attachment	AUTOMATIC TRANSAXLE ASSY(U341F)
	09520-24010	Differential Side Gear Shaft Puller	AUTOMATIC TRANSAXLE ASSY(U341F)

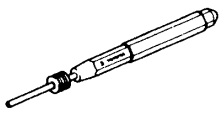
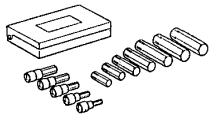
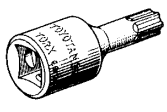
	(09520-32040)	Shocker Set	AUTOMATIC TRANSAXLE ASSY(U341F)
	09527-1701 1	Rear Axle Shaft Bearing Remover	AUTOMATIC TRANSAXLE ASSY(U341F)
	09554-14010	Differential Oil Seal Replacer	AUTOMATIC TRANSAXLE ASSY(U341F)
	09564-3201 1	Differential Preload Adaptor	FRONT DIFFERENTIAL ASSY(U341F)
	09612-65014	Steering Worm Bearing Puller	AUTOMATIC TRANSAXLE ASSY(U341F) FRONT DIFFERENTIAL ASSY(U341F)
	(09612-01010)	Claw "A"	FRONT DIFFERENTIAL ASSY(U341F)
	(09612-01040)	Claw "D"	AUTOMATIC TRANSAXLE ASSY(U341F)
	09628-6201 1	Boll Joint Puller	AUTOMATIC TRANSAXLE ASSY(U341F)
	09670-00010	Front Crossmember Guide Tool	AUTOMATIC TRANSAXLE ASSY(U341F)
	09726-27012	Front Suspension Arm Bushing Remover & Replacer	AUTOMATIC TRANSAXLE ASSY(U341F)
	(09726-02041)	Replacer	AUTOMATIC TRANSAXLE ASSY(U341F)
	09726-40010	Lower Control Shaft Bearing Replacer	FRONT DIFFERENTIAL ASSY(U341F)
	09843-18030	Tacho-pulse Pickup Wire No.2	AUTOMATIC TRANSAXLE ASSY(U341F)

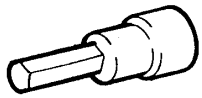
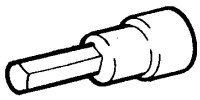
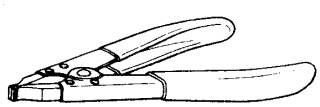
	09843-18040	Diagnosis Check Wire No.2	AUTOMATIC TRANSAXLE ASSY(U341F)
	09930-00010	Drive Shaft Nut Chisel	AUTOMATIC TRANSAXLE ASSY(U341F) FRONT DIFFERENTIAL ASSY(U341F)
	09950-4001 1	Puller B Set	FRONT DIFFERENTIAL ASSY(U341F)
	(09951-04010)	Hanger 150	FRONT DIFFERENTIAL ASSY(U341F)
	(09952-04010)	Slide Arm	FRONT DIFFERENTIAL ASSY(U341F)
	(09953-04020)	Center Bolt 150	FRONT DIFFERENTIAL ASSY(U341F)
	(09953-04030)	Center Bolt 200	FRONT DIFFERENTIAL ASSY(U341F)
	(09954-04010)	Arm 25	FRONT DIFFERENTIAL ASSY(U341F)
	(09955-04061)	Claw No.6	FRONT DIFFERENTIAL ASSY(U341F)
	(09957-04010)	Attachment	FRONT DIFFERENTIAL ASSY(U341F)
	(09958-0401 1)	Holder	FRONT DIFFERENTIAL ASSY(U341F)
	09950-60010	Replacer Set	AUTOMATIC TRANSAXLE ASSY(U341F) OIL PUMP ASSY(U341F) TRANSAXLE REAR COVER ASSY(U341F) FRONT DIFFERENTIAL ASSY(U341F)
	(09951-00190)	Replacer 19	TRANSAXLE REAR COVER ASSY(U341F)

	(09951-00220) Replacer 22	AUTOMATIC TRANSAXLE ASSY(U341F)
	(09951-00320) Replacer 32	AUTOMATIC TRANSAXLE ASSY(U341F)
	(09951-00350) Replacer 35	AUTOMATIC TRANSAXLE ASSY(U341F)
	(09951-00390) Replacer 39	FRONT DIFFERENTIAL ASSY(U341F)
	(09951-00400) Replacer 40	AUTOMATIC TRANSAXLE ASSY(U341F)
	(09951-00430) Replacer 43	FRONT DIFFERENTIAL ASSY(U341F)
	(09951-00480) Replacer 48	AUTOMATIC TRANSAXLE ASSY(U341F)
	(09951-00530) Replacer 53	AUTOMATIC TRANSAXLE ASSY(U341F)
	(09951-00550) Replacer 55	AUTOMATIC TRANSAXLE ASSY(U341F) OIL PUMP ASSY(U341F)
	(09951-00610) Replacer 61	AUTOMATIC TRANSAXLE ASSY(U341F)
	(09951-00650) Replacer 65	AUTOMATIC TRANSAXLE ASSY(U341F) FRONT DIFFERENTIAL ASSY(U341F)
	(09952-06010) Adapter	AUTOMATIC TRANSAXLE ASSY(U341F) TRANSAXLE REAR COVER ASSY(U341F)
	09950-60020 Replacer Set No.2	AUTOMATIC TRANSAXLE ASSY(U341F) FRONT DIFFERENTIAL ASSY(U341F)

	(09951-00720)	Replacer 72	FRONT DIFFERENTIAL ASSY(U341F)
	(09951-00750)	Replacer 75	FRONT DIFFERENTIAL ASSY(U341F)
	(09951-00790)	Replacer 79	FRONT DIFFERENTIAL ASSY(U341F)
	(09951-00890)	Replacer 89	AUTOMATIC TRANSAXLE ASSY(U341F)
	09950-70010	Handle Set	AUTOMATIC TRANSAXLE ASSY(U341F) OIL PUMP ASSY(U341F) SECOND BRAKE PISTON ASSY(U341F) TRANSAXLE REAR COVER ASSY(U341F) FRONT DIFFERENTIAL ASSY(U341F)
	(09951-07100)	Handle 100	AUTOMATIC TRANSAXLE ASSY(U341F) OIL PUMP ASSY(U341F) SECOND BRAKE PISTON ASSY(U341F) TRANSAXLE REAR COVER ASSY(U341F) FRONT DIFFERENTIAL ASSY(U341F)
	(09951-07150)	Handle 150	AUTOMATIC TRANSAXLE ASSY(U341F) FRONT DIFFERENTIAL ASSY(U341F)
	(09951-07200)	Handle 200	FRONT DIFFERENTIAL ASSY(U341F)

Recomended Tools

	09031-00030	Pin Punch	AUTOMATIC TRANSAXLE ASSY(U341F) FRONT DIFFERENTIAL ASSY(U341F)
	09040-0001 1	Hexagon Wrench Set	AUTOMATIC TRANSAXLE ASSY(U341F)
	09042-00010	Torx Socket T30	OIL PUMP ASSY(U341F)

	(09043-20050)	Socket Hexagon Wrench 5	AUTOMATIC TRANSAXLE ASSY(U341F)
	(09043-20100)	Socket Hexagon Wrench 10	AUTOMATIC TRANSAXLE ASSY(U341F)
	09090-04020	Engine Sling Device	AUTOMATIC TRANSAXLE ASSY(U341F)
	09905-00012	Snap Ring No.1 Expander	INPUT SHAFT ASSY(U341F) INTERMEDIATE SHAFT ASSY(U341F)

Equipment

Dial indicator with magnetic base	
Feeler gauge	
Vernier calipers	
Torque wrench	
Plastic hammer	
Straight edge	

Lubricant

Automatic transaxle fluid Dry fill Drain and refill	 6.88 liters (7.3 US qts, 6.1 lmp. qts) 2.1 liters (2.2 US qts, 1.8 lmp. qts)	 ATF TYPE T-IV or equivalent

SSM (Special Service Materials)

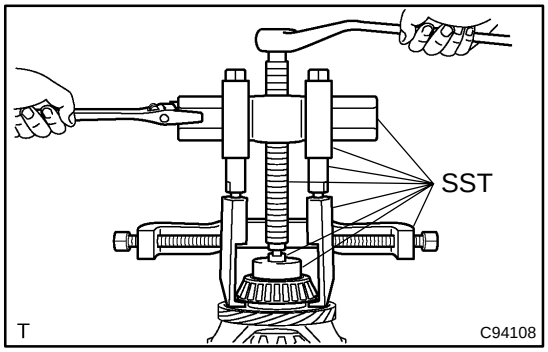
	08826-00090	"Seal Packing 1281," THREE BOND 1281 or equivalent (FIPG)

0305L-08

TORQUE SPECIFICATION

Part Tightened		N·m	kgf·cm	ft·lbf
Parking lock pawl bracket x Transaxle case		20.1	205	15
Counter drive gear nut x Transaxle case		280	2,855	207
Transaxle rear cover assy x Transaxle case		24.5	250	18
Oil pump assy x Transaxle case		22.1	225	16
Bearing lock plate x Transaxle case		11.3	115	8
Transaxle housing oil separator x Transaxle case		9.8	100	87 in.·lbf
Transaxle housing x Transaxle case	Bolt A	29.4	300	22
	Bolt B	22.1	225	16
Transmission wire x Transaxle case		5.4	55	48 in.·lbf
Transmission valve body assy x Transaxle case		10.8	110	8
Valve body oil strainer assy x Transaxle case		10.8	110	8
Automatic transaxle oil pan sub-assy x Transaxle case		7.8	80	69 in.·lbf
Transaxle case No. 1 plug x Transaxle		7.4	75	65 in.·lbf
Oil cooler tube union (Inlet oil cooler union) x Transaxle		27	275	20
Oil cooler tube union (Outlet oil cooler union) x Transaxle		27	275	20
Transmission revolution sensor x Transaxle		5.4	55	48 in.·lbf
Neutral start switch x Nut		6.9	70	61 in.·lbf
Neutral start switch x Transaxle		5.4	55	48 in.·lbf
Neutral start switch x Control shaft lever		13	133	10
Stator shaft assy x Oil pump body		9.8	100	87 in.·lbf
Transaxle rear cover plug x Transaxle rear cover		7.4	75	65 in.·lbf
Speedometer driven hole cover sub-assy x Transaxle case		7.0	71	62 in.·lbf
Shift solenoid valve (S1) x Transmission valve body		10.8	110	8
Shift solenoid valve (S2) x Transmission valve body		10.8	110	8
Lock up control solenoid assy (SL) x Transmission valve body		10.8	110	8
Transmission solenoid assy No.3 (SL) x Transmission valve body		10.8	110	8
Line pressure control solenoid assy (SLT) x Transmission valve body		10.8	110	8
Differential ring gear x Differential case		88	897	65

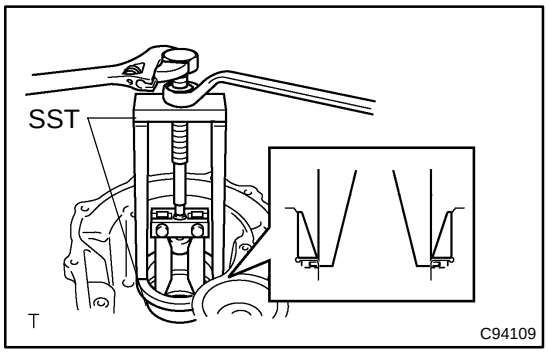
OVERHAUL



1. REMOVE FRONT DIFFERENTIAL CASE FRONT TAPERED ROLLER BEARING

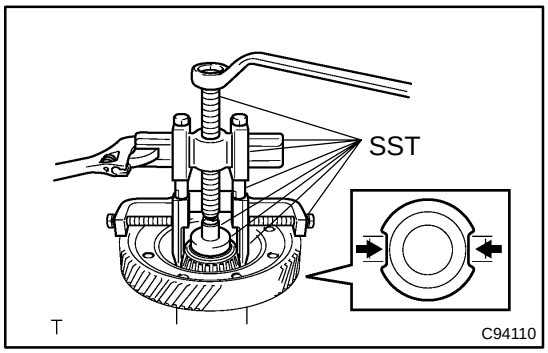
(a) Using SST, remove the front differential case front tapered roller bearing from the differential case.

SST 09950- 40011 (09951- 04010, 09952- 04010, 09953- 04030, 09954- 04010, 09955- 04061, 09957- 04010, 09958- 04011), 09950- 60010 (09951-00390)



(b) Using SST, remove the front differential case front tapered roller bearing outer race from the transaxle housing.

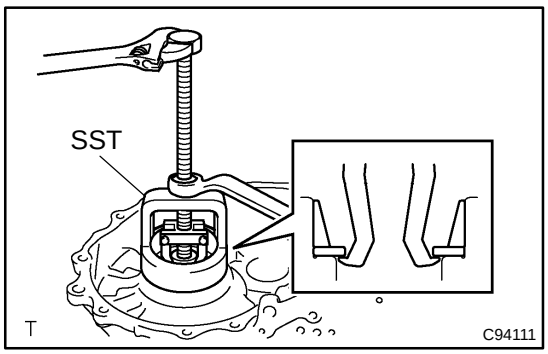
SST 09387-00041 (09387-02010, 09387-02020)



2. REMOVE FRONT DIFFERENTIAL CASE REAR TAPERED ROLLER BEARING

(a) Using SST, remove the front differential case tapered roller bearing from the differential case.

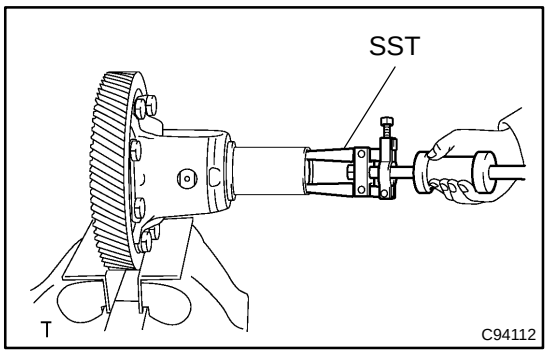
SST 09950- 40011 (09951- 04010, 09952- 04010, 09953- 04020, 09954- 04010, 09955- 04061, 09957- 04010, 09958- 04011), 09950- 60010 (09951-00430)



(b) Using SST, remove the outer race and shim.

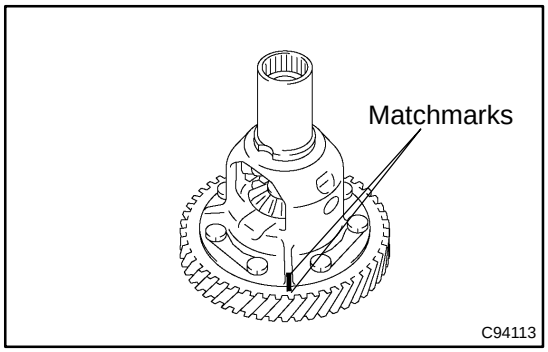
SST 09612-65014 (09612-01010)

3. REMOVE SPEEDOMETER DRIVE (ATM) GEAR



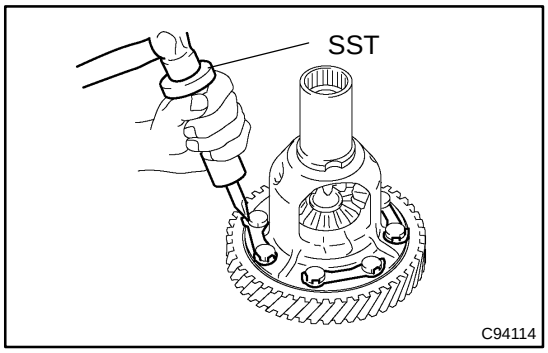
4. REMOVE FRONT DIFFERENTIAL CASE OIL SEAL

(a) Using SST, remove the front differential case oil seal from the front differential assy.
SST 09308-00010

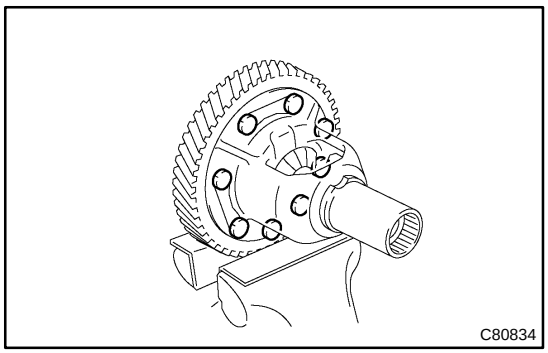


5. REMOVE FRONT DIFFERENTIAL RING GEAR

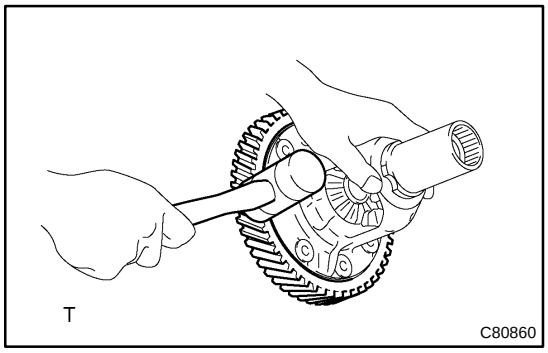
(a) Put matchmarks on the front differential ring gear and differential case.



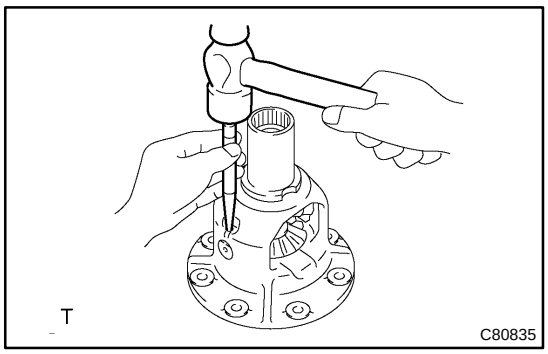
(b) Using SST and a hammer, unstake the front differential ring gear set bolt lock plate.
SST 09930-00010



(c) Remove the 8 bolts and 4 front differential ring gear set bolt lock plates.

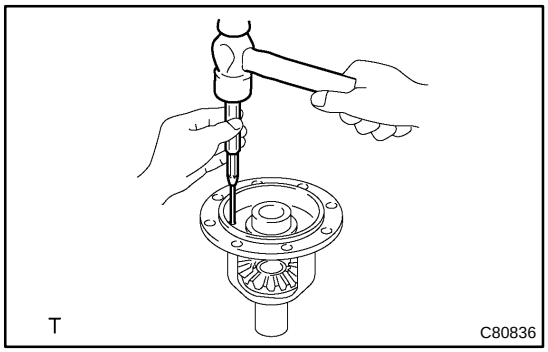


(d) Using a plastic hammer, remove the front differential ring gear from the differential case.

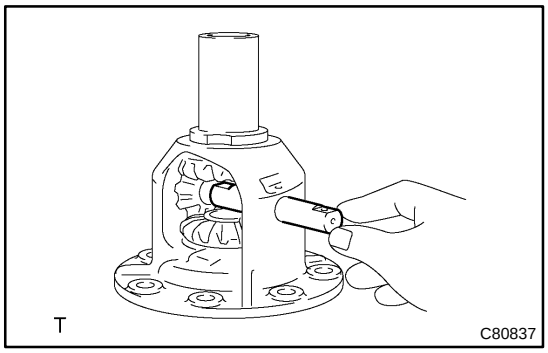


6. REMOVE FRONT DIFFERENTIAL PINION SHAFT STRAIGHT PIN

(a) Using a punch and a hammer, unstake the differential case.

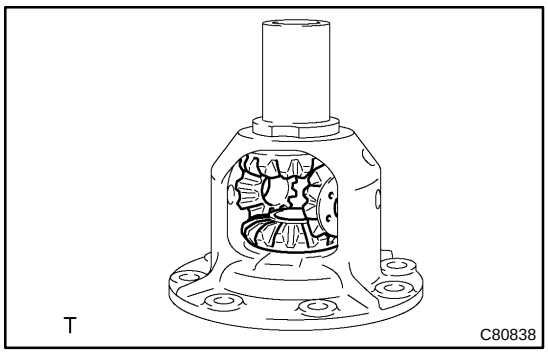


(b) Using a pin punch and a hammer, remove the front differential pinion shaft straight pin.



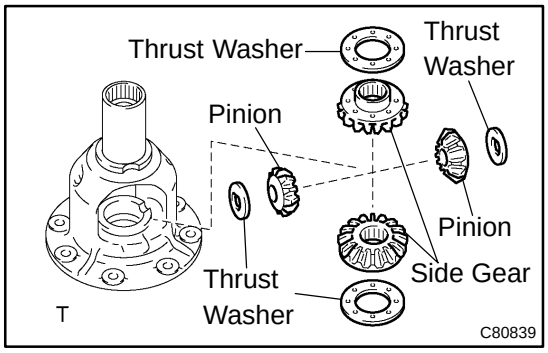
7. REMOVE FRONT DIFFERENTIAL PINION SHAFT NO.1

(a) Remove the front differential pinion shaft No.1 from the front differential case.



8. REMOVE FRONT DIFFERENTIAL SIDE GEAR

(a) Remove the 2 front differential pinion gears, 2 front differential pinion thrust washers, 2 front differential side gears and 2 front differential side gear thrust washers No.1 from the front differential case.

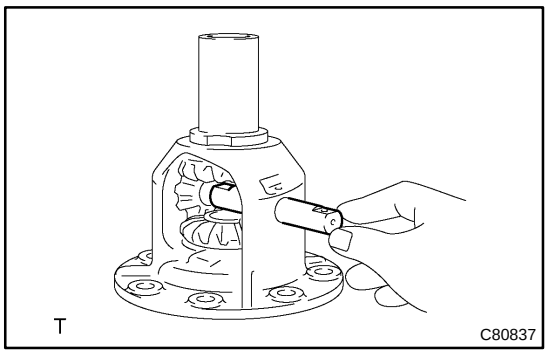


9. INSTALL FRONT DIFFERENTIAL SIDE GEAR

(a) After applying ATF to the 2 front differential side gears, 2 front differential side gear thrust washers No.1, 2 front differential pinion gears and 2 front differential pinion thrust washers, install them to the front differential case.

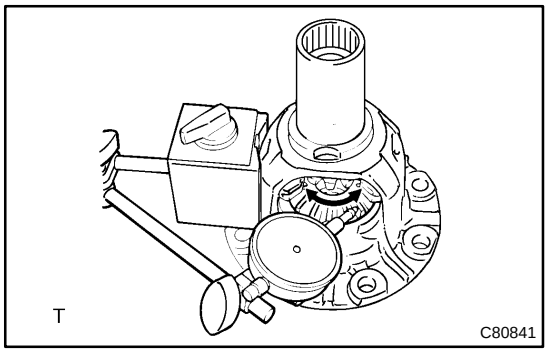
HINT:

At the time of installation, set the alignment of the front differential pinions perpendicular to that of the side gear and rotate them so that their holes will be aligned with the holes in the differential case.



10. INSTALL FRONT DIFFERENTIAL PINION SHAFT NO.1

(a) Install the front differential pinion shaft No.1 so as to align the lock pin holes on the front differential pinion shaft No.1 and differential case.



11. INSPECT BACKLASH

(a) Measure the side gear backlash while holding 1 pinion gear toward the case.

Standard backlash:

0.05 - 0.20 mm (0.0020 - 0.0079 in.)

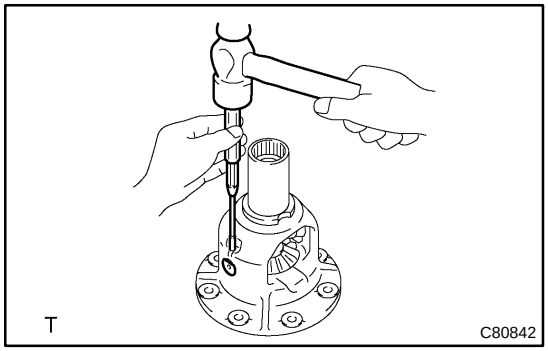
If the backlash is out of specification, install the correct thrust washer to the side gear.

(b) Referring to the table below, select thrust washers which will ensure that the backlash is within for both sides.

Thrust washer thickness: mm (in.)

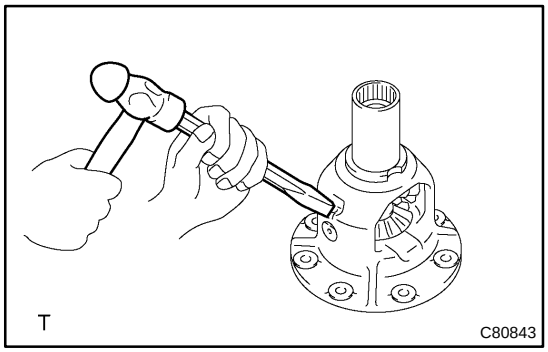
Thickness	Thickness
0.95 (0.0374)	1.10 (0.0433)
1.00 (0.0394)	1.15 (0.0453)
1.05 (0.0413)	1.20 (0.0472)

If the backlash is not within the specification, install a thrust washer of a different thickness.

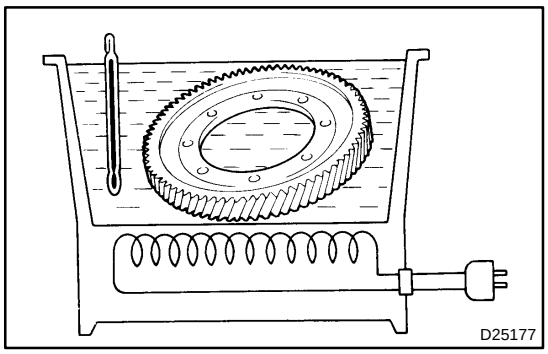


12. INSTALL FRONT DIFFERENTIAL PINION SHAFT STRAIGHT PIN

(a) Using a pin punch and a hammer, install the front differential pinion shaft straight pin.



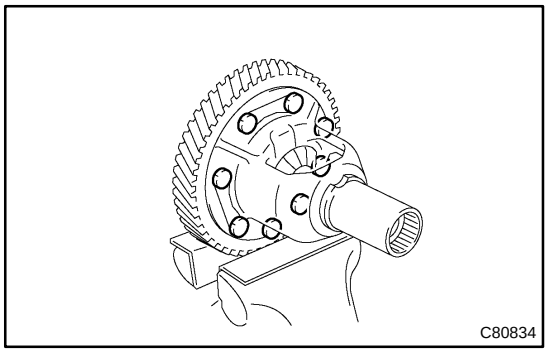
(b) Using a chisel and a hammer, stake the differential case.



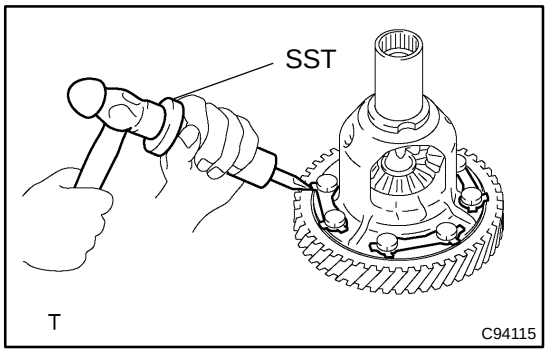
13. INSTALL FRONT DIFFERENTIAL RING GEAR

(a) Using a ATF and heater, heat the front differential ring gear to 90 - 110 °C (194.0 - 230.0 °F).

(b) Clean the contact surface of the front differential case.

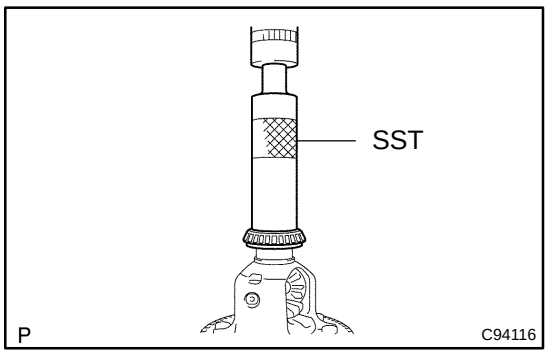


(c) Install the 4 front differential ring gear set bolt lock plates and 8 bolts.
Torque: 88 N·m (897 kgf·cm, 65 ft·lbf)



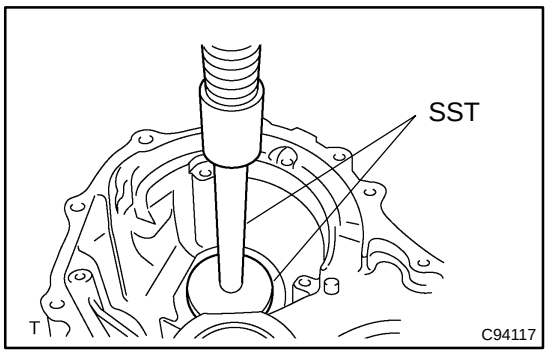
(d) Using SST and a hammer, stake the front differential ring gear set bolt lock plate.
SST 09930-00010

14. INSTALL SPEEDOMETER DRIVE (ATM) GEAR

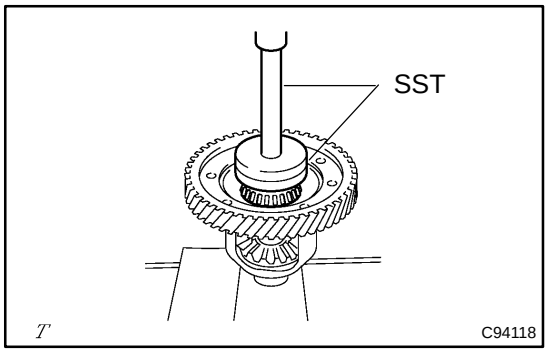


15. INSTALL FRONT DIFFERENTIAL CASE FRONT TAPERED ROLLER BEARING

(a) Using SST and a press, install the front differential case front tapered roller bearing to the differential case.
SST 09316-6001 1 (09316-00011)

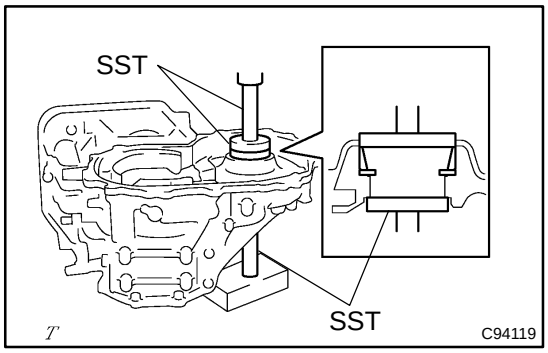


(b) Using SST and a press, install the front differential case front tapered roller bearing to the transaxle housing.
SST 09950- 60020 (09951- 00750), 09950- 70010 (09951-07150)

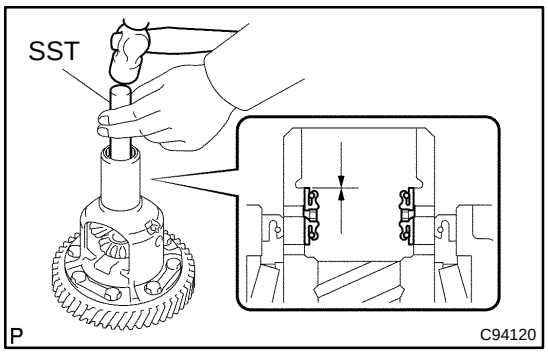


16. INSTALL FRONT DIFFERENTIAL CASE REAR TAPERED ROLLER BEARING

(a) Using SST and a press, install the front differential case tapered roller bearing to the differential case.
SST 09726-40010, 09950-60020 (09951-00790)

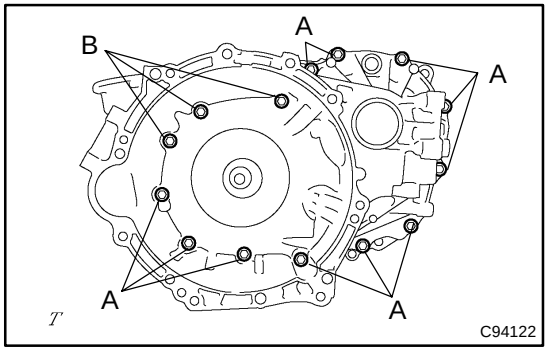


(b) Using SST and a press, install the shim and front differential case tapered roller bearing outer race to the transaxle case.
SST 09950- 60010 (09951- 00650), 09950- 60020 (09951-00720), 09950-70010 (09951-07100, 09951-07200)



17. INSTALL FRONT DIFFERENTIAL CASE OIL SEAL

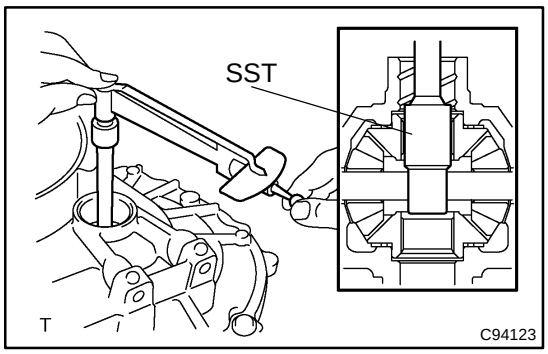
(a) Using SST and a hammer, install a new oil seal to the front differential case.
SST 09950- 60010 (09951- 00390), 09950- 70010 (09951-07200)
Oil seal in depth:
0 ± 0.5 mm (0 ± 0.020 in.)



18. TAPERED POLLER BEARING PRELOAD

(a) Coat the front differential case and bearing with ATF and install them to the transaxle case.

(b) Install the 14 bolts and transaxle housing.
Torque:
Bolt A: 29.4 N·m (300 kgf·cm, 22 ft·lbf)
Bolt B: 221 N·m (225 kgf·cm, 16 ft·lbf)



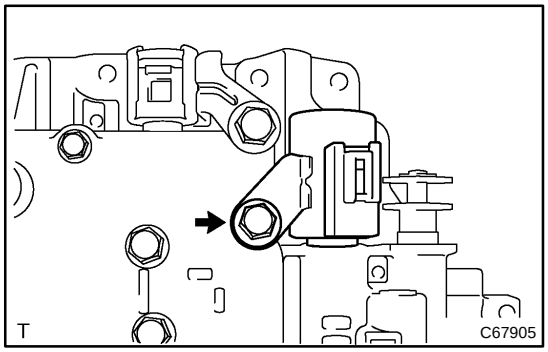
(c) Using SST and small torque wrench, measure the preload of the differential gear.
SST 09564-3201 1
Preload:
New bearing:
0.98 - 1.57 N·m (10.0 - 16.0 kgf·cm, 8.7 - 13.9 in.·lbf)
Used bearing:
0.49 - 0.78 N·m (5.0 - 8.0 kgf·cm, 4.3 - 6.9 in.·lbf)

If the preload is not within the specification, remove the differential from the transaxle case. Re-select the transaxle case side adjusting shim according to the following table.

Adjusting shim thickness: mm (in.)

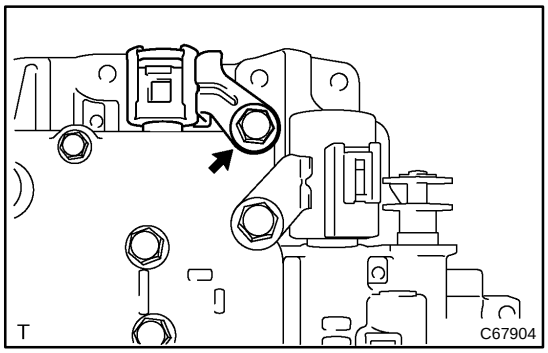
Mark	Thickness	Mark	Thickness
01	1.90 (0.0748)	11	2.40 (0.0945)
02	1.95 (0.0768)	12	2.45 (0.0965)
03	2.00 (0.0787)	13	2.50 (0.0984)
04	2.05 (0.0807)	14	2.55 (0.1004)
05	2.10 (0.0827)	15	2.60 (0.1024)
06	2.15 (0.0846)	16	2.65 (0.1043)
07	2.20 (0.0866)	17	2.70 (0.1063)
08	2.25 (0.0886)	18	2.75 (0.1083)
09	2.30 (0.0906)	19	2.80 (0.1102)
10	2.35 (0.0925)	-	-

OVERHAUL



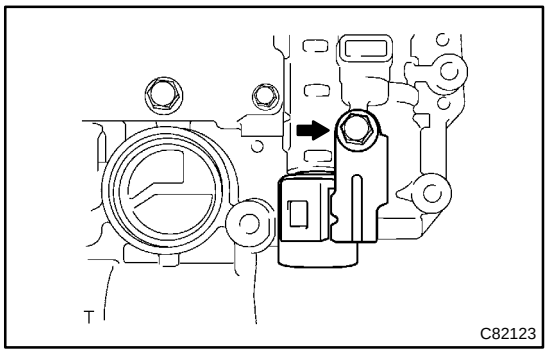
1. REMOVE LINE PRESSURE CONTROL SOLENOID ASSY (SLT)

(a) Remove the bolt, and pull out the line pressure control solenoid assy (SLT) from the transmission valve body assy.



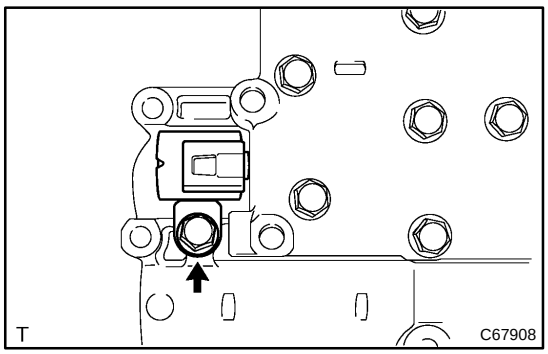
2. REMOVE TRANSMISSION SOLENOID ASSY NO.3 (ST)

(a) Remove the bolt, and pull out the transmission solenoid assy No.3 (ST) from the transmission valve body assy.



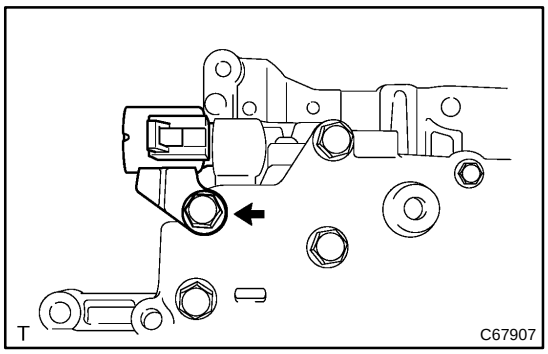
3. REMOVE LOCK UP CONTROL SOLENOID ASSY (SL)

(a) Remove the bolt, and pull out the lock up control solenoid assy (SL) from the transmission valve body assy.



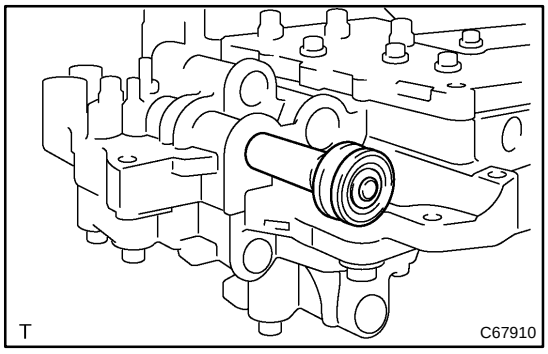
4. REMOVE SHIFT SOLENOID VALVE ASSY (S2)

(a) Remove the bolt, and pull out the shift solenoid valve assy (S2) from the transmission valve body assy.



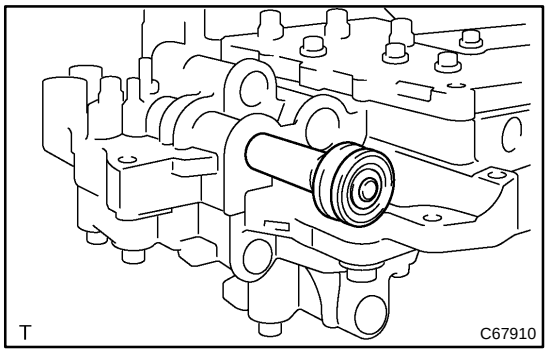
5. REMOVE SHIFT SOLENOID VALVE ASSY (S1)

(a) Remove the bolt, and pull out the shift solenoid valve assy (S1) from the transmission valve body assy.



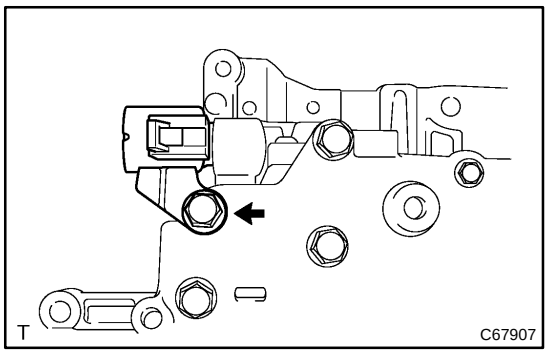
6. REMOVE MANUAL VALVE

(a) Remove the manual valve from the transmission valve body assy.



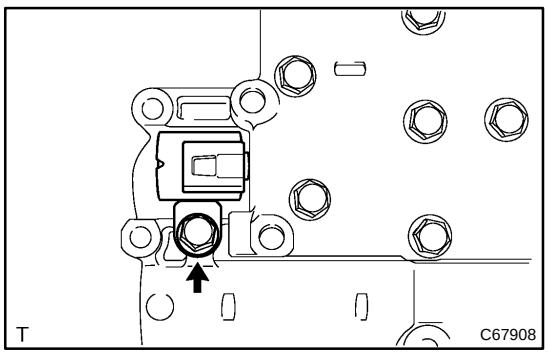
7. INSTALL MANUAL VALVE

(a) Coat the manual valve with ATF and install it to the transmission valve body assy.



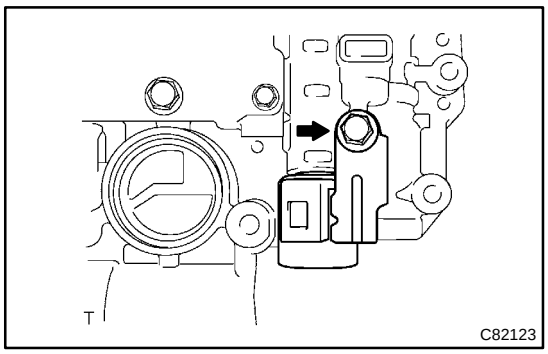
8. INSTALL SHIFT SOLENOID VALVE ASSY (S1)

(a) Install the shift solenoid valve assy (S1) with the bolt to the transmission valve body assy.
Torque: 10.8 N·m (110 kgf·cm, 8 ft·lbf)



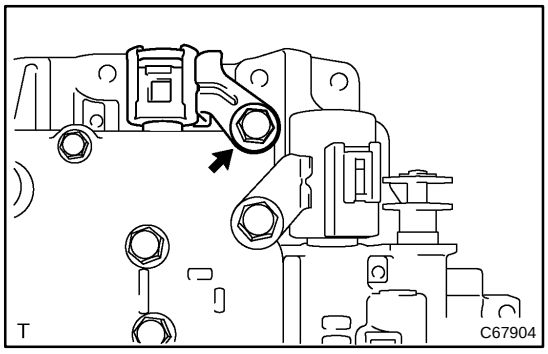
9. INSTALL SHIFT SOLENOID VALVE ASSY (S2)

(a) Install the shift solenoid valve assy (S2) with the bolt to the transmission valve body assy.
Torque: 10.8 N·m (110 kgf·cm, 8 ft·lbf)



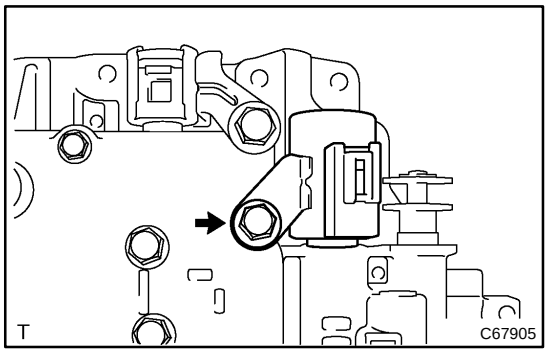
10. INSTALL LOCK UP CONTROL SOLENOID ASSY (SL)

(a) Install the lock up control solenoid assy (SL) with the bolt to the transmission valve body assy.
Torque: 10.8 N·m (110 kgf·cm, 8 ft·lbf)



11. INSTALL TRANSMISSION SOLENOID ASSY NO.3 (ST)

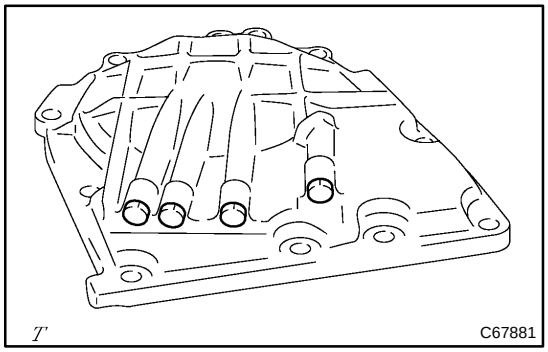
(a) Install the transmission solenoid assy No.3 (ST) with the bolt to the transmission valve body assy.
Torque: 10.8 N·m (110 kgf·cm, 8 ft·lbf)



12. INSTALL LINE PRESSURE CONTROL SOLENOID ASSY (SLT)

(a) Install the line pressure control solenoid assy (SLT) with the bolt to the transmission valve body assy.
Torque: 10.8 N·m (110 kgf·cm, 8 ft·lbf)

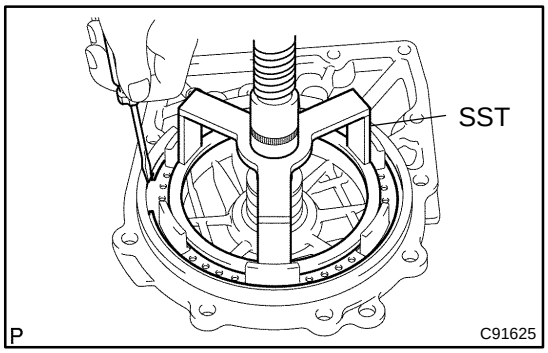
OVERHAUL



1. REMOVE TRANSAXLE REAR COVER PLUG

(a) Remove the 4 transaxle rear cover plugs from the transaxle rear cover.

(b) Using a screwdriver, remove the O-ring from the transaxle rear cover plug.



2. REMOVE OVERDRIVE BRAKE RETURN SPRING SUB-ASSY

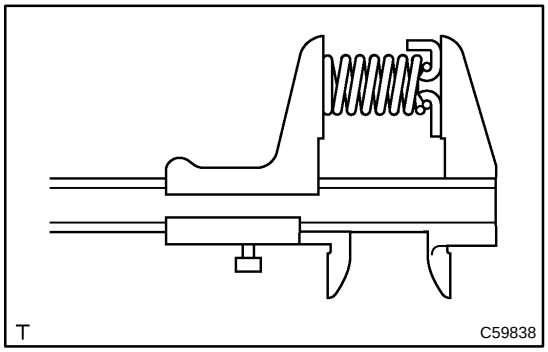
(a) Using SST, a press and a screwdriver, remove the snap ring.

SST 09387-00070

NOTICE:

Stop the press when the overdrive brake piston is lowered 1 - 2 mm (0.039 - 0.078 in.) from the snap ring groove, preventing the overdrive brake piston from being deformed.

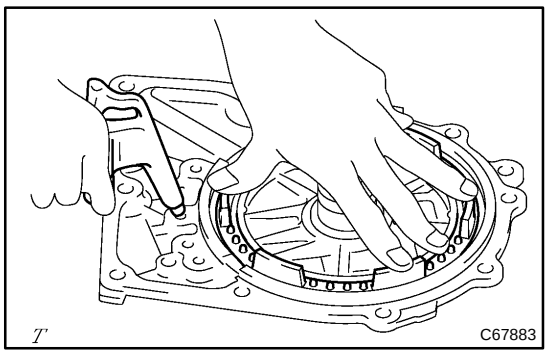
(b) Remove the overdrive brake return spring sub-assy.



3. INSPECT OVERDRIVE BRAKE RETURN SPRING SUB-ASSY

(a) Using a vernier calipers, measure the free length of the spring together with the spring seat.

Standard free length: 17.88mm (0.7039 in.)

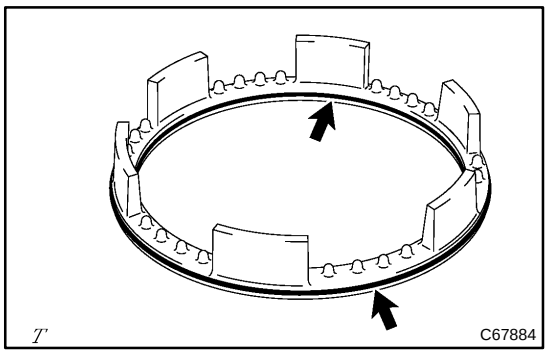


4. REMOVE 2ND COAST & OVERDRIVE BRAKE PISTON

(a) Apply compressed air (392 kPa, 4.0 kgf·cm^2, 57 psi) to the transaxle rear cover to remove the 2nd coast & overdrive brake piston.

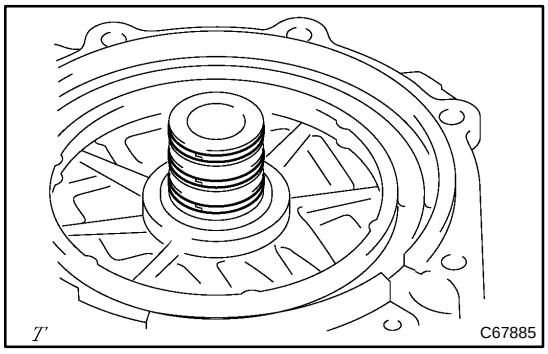
NOTICE:

- **Blowing off the air may cause the piston's jump-out. When removing the piston, holding it with your hand using a waste cloth.**
- **Take care not to splash ATF when air-blowing.**



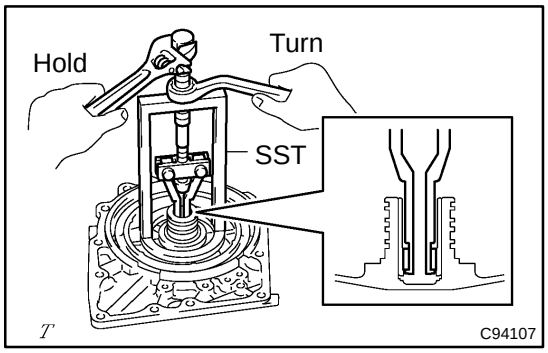
5. REMOVE O-RING

(a) Using a screwdriver, remove the 2 O-rings from the 2nd coast & overdrive brake piston.



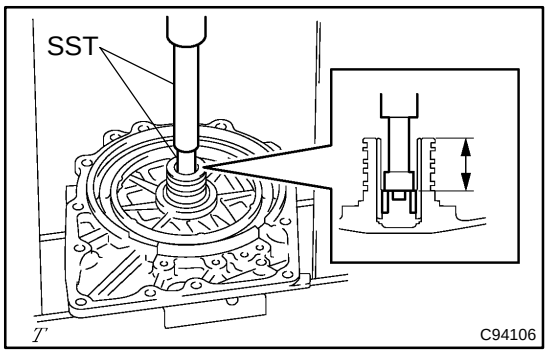
6. REMOVE CLUTCH DRUM OIL SEAL RING

(a) Remove the 3 clutch drum oil seal rings from the transaxle rear cover.



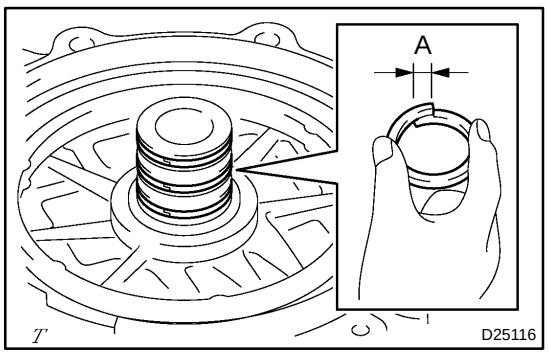
7. REMOVE TRANSAXLE REAR COVER NEEDLE ROLLER BEARING

(a) Using SST, remove the transaxle rear cover needle roller bearing from the transaxle rear cover.
SST 09387-00041 (09387-01021)



8. INSTALL TRANSAXLE REAR COVER NEEDLE ROLLER BEARING

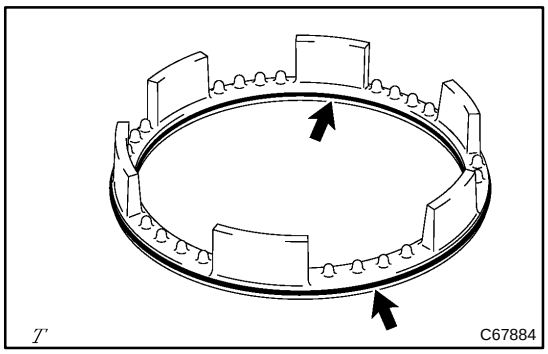
(a) Using SST and a press, install s new transaxle rear cover needle roller bearing to the transaxle rear cover.
SST 09950- 60010 (09951- 00190, 09952- 06010), 09950-70010 (09951-07100)
Standard clearance: 25.2 mm (0.992 in.)



9. INSTALL CLUTCH DRUM OIL SEAL RING

(a) Compress the oil seal ring from both sides to reduce dimension A.
Dimension A: 5.0 mm (0.197 in.)

(b) Coat the oil seal ring with ATF and install it to the transaxle rear cover.

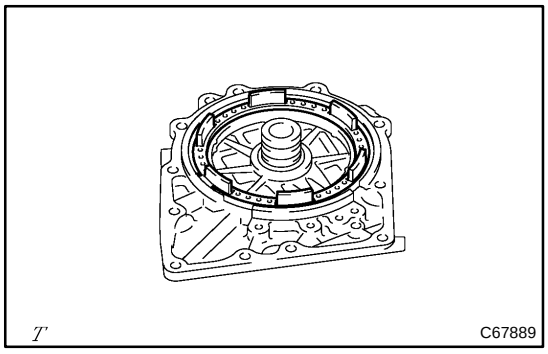


10. INSTALL O-RING

(a) Coat 2 new O-rings with ATF, install them to the 2nd coast & overdrive brake piston.

NOTICE:

Be careful not to damage the oil seal lip.

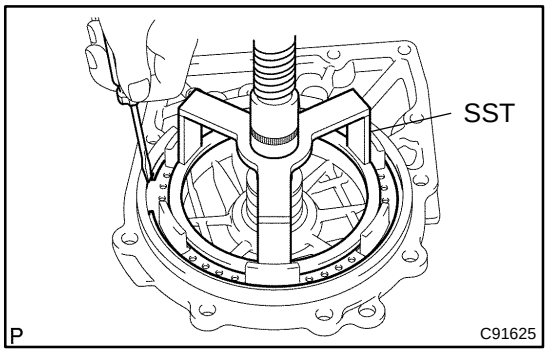


11. INSTALL 2ND COAST & OVERDRIVE BRAKE PISTON

(a) Coat the 2nd coast & overdrive brake piston with ATF, install it to the transaxle rear cover.

NOTICE:

Be careful not to damage the oil seal lip.

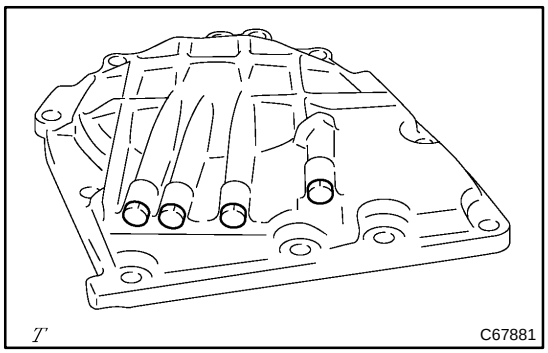


12. INSTALL OVERDRIVE BRAKE RETURN SPRING SUB-ASSY

(a) Using SST and a press, install the overdrive brake return spring sub-assy and snap ring to the transaxle rear cover.
SST 09387-00070

NOTICE:

Stop the press when the overdrive brake piston is lowered 1 - 2 mm (0.039 - 0.078 in.) from the snap ring groove, preventing the overdrive brake piston from deformed.



13. INSTALL TRANSAXLE REAR COVER PLUG

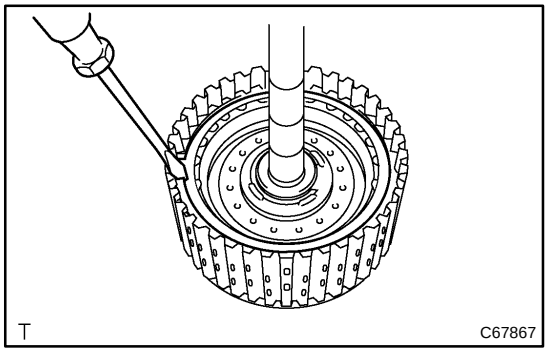
(a) Coat 4 new O-rings with ATF, install them to the 4 screw plugs.

(b) Install the 4 transaxle rear cover plugs to the transaxle rear cover.
Torque: 7.4 N·m (75 kgf·cm, 65 in.·lbf)

NOTICE:

Be careful not to damage the oil seal lip.

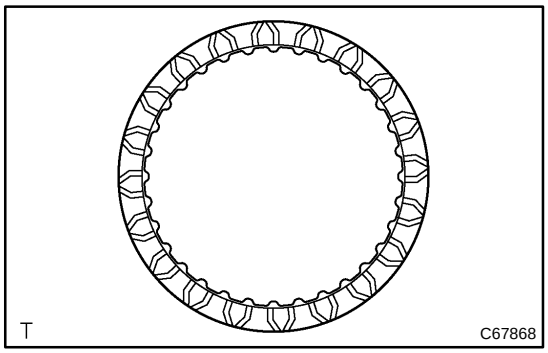
OVERHAUL



1. REMOVE REVERCE CLUTCH DISC

(a) Using a screwdriver, remove the snap ring.

(b) Remove the reverse clutch flange, 3 reverse clutch discs and 3 reverse clutch plates.



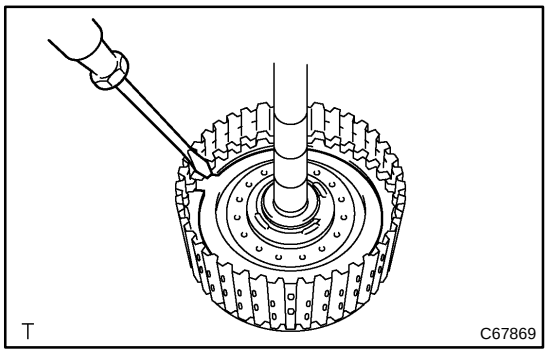
2. INSPECT REVERCE CLUTCH DISC

(a) Check to see if the sliding surface of the disc, plate and flange are worn or burnt.

If necessary, replace them.

HINT:

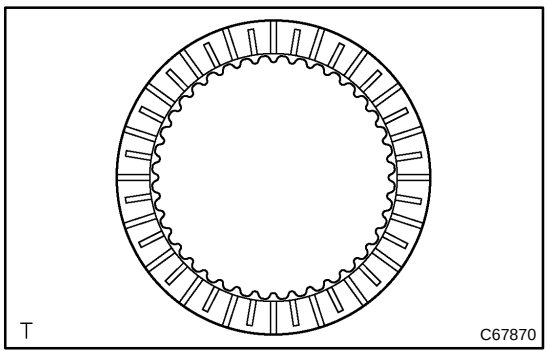
- If the lining of the disc is peeling off or discolored, or even if a part of the printed mark is defaced, replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.



3. REMOVE DIRECT CLUTCH DISC

(a) Using a screwdriver, remove the snap ring.

(b) Remove the 3 direct clutch plates, direct clutch flange and 3 direct clutch discs.



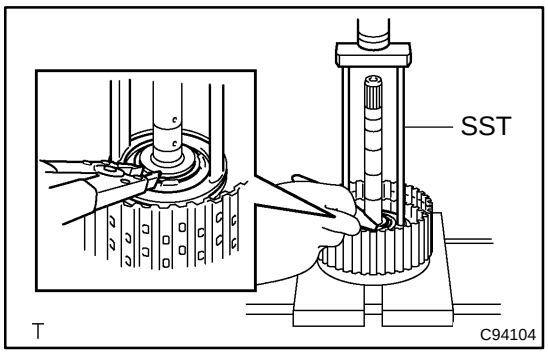
4. INSPECT DIRECT CLUTCH DISC

(a) Check to see if the sliding surface of the disc, plate and flange are worn or burnt.

If necessary, replace them.

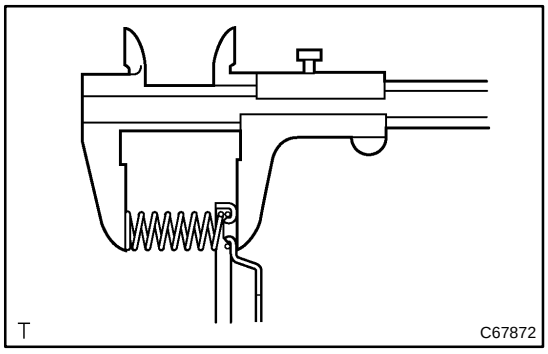
HINT:

- If the lining of the disc is peeling off or discolored, or even if a part of the printed mark is defaced, replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.



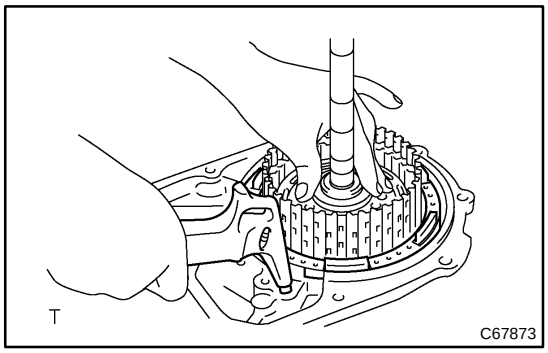
5. REMOVE DIRECT CLUTCH RETURN SPRING SUB-ASSY

(a) Using SST and a press, remove the snap ring and direct clutch return spring sub-assy from the intermediate shaft.
SST 09387-00020



6. INSPECT DIRECT CLUTCH RETURN SPRING SUB-ASSY

(a) Using a vernier calipers, measure the free length of the spring together with the spring seat.
Standard free length: 32.9 mm (1.2953 in.)



7. REMOVE DIRECT CLUTCH PISTON SUB-ASSY

(a) Install the direct and reverse clutch on the transaxle rear cover.

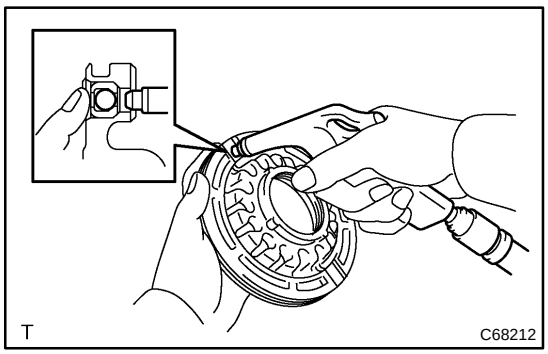
(b) Apply compressed air (392kPa, 4.0 kgf·cm^2, 57 psi) to the transaxle rear cover to remove the direct clutch drum and direct clutch piston sub-assy.

NOTICE:

- **Blowing off the air may cause the piston to jump-out. When removing the piston, hold it with your hand using a waste cloth.**
- **Take care not to splash ATF when air-blowing**

HINT:

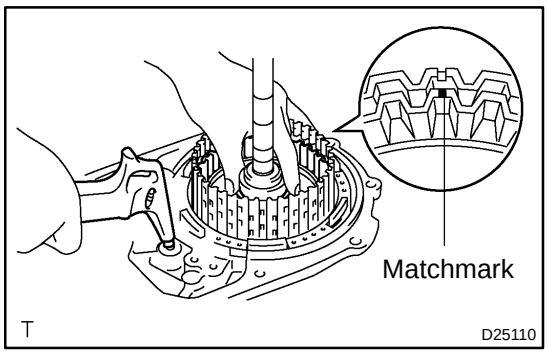
When the piston cannot be removed as it is slanted, either blow the air again with the protruding side pushed or removed the piston using a needle nose pliers with vinyl tape on the tip.



8. INSPECT DIRECT CLUTCH PISTON SUB-ASSY

(a) Shake the direct clutch pin and check that a check ball is not stuck.

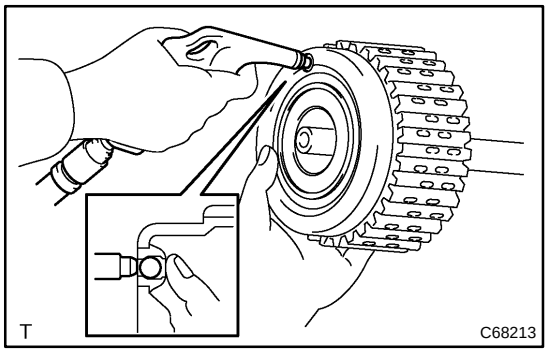
(b) Apply low pressure air to the check ball with compressed air and check for air leak.



9. REMOVE DIRECT CLUTCH DRUM SUB-ASSY

(a) Align a matchmark on the direct clutch drum sub-assy at the same position with the cutout of the intermediate shaft assy.

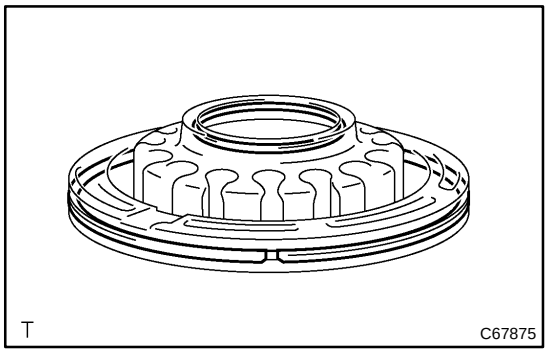
(b) Apply compressed air into the oil hole shown in the illustration and remove the direct clutch drum sub-assy from the intermediate shaft.



10. INSPECT INTERMEDIATE SHAFT SUB-ASSY

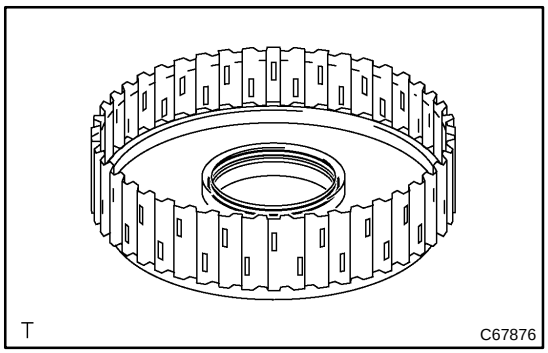
(a) Shake the direct clutch pin and check that a check ball is not stuck.

(b) Apply low pressure air to the check ball with compressed air and check for air leak.



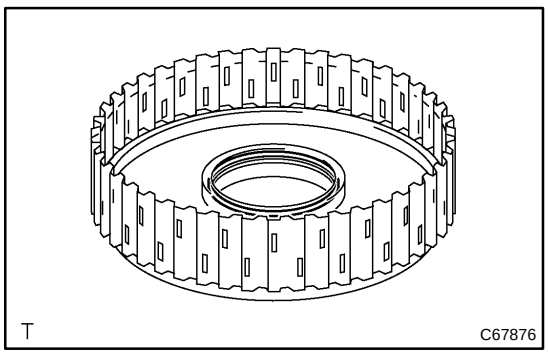
11. REMOVE DIRECT CLUTCH PISTON O-RING

(a) Using a screwdriver, remove the 2 direct clutch piston O-rings.



12. REMOVE DIRECT CLUTCH DRUM O-RING

(a) Using a screwdriver, remove the direct clutch drum O-ring.

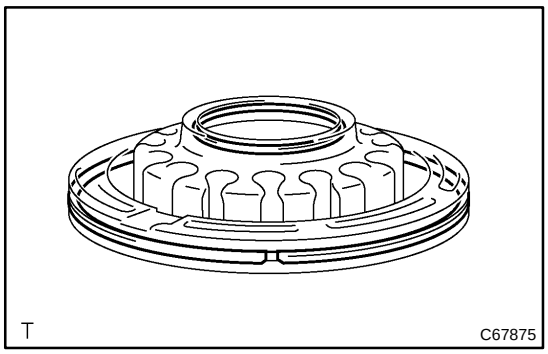


13. INSTALL DIRECT CLUTCH DRUM O-RING

(a) Coat new direct clutch drum O-ring with ATF, install it to the direct clutch drum.

NOTICE:

Be careful not to damage the O-ring.



14. INSTALL DIRECT CLUTCH PISTON O-RING

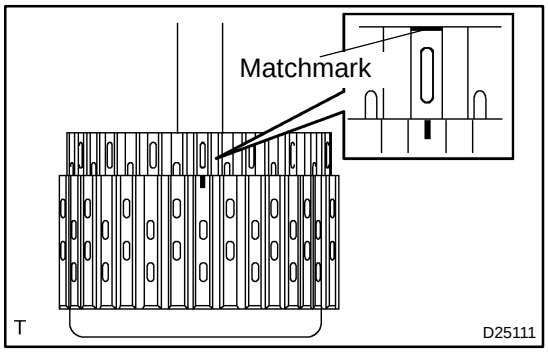
(a) Coat 2 new direct clutch piston O-rings with ATF, install them to the direct clutch piston.

NOTICE:

Be careful not to damage the O-ring.

15. INSTALL DIRECT CLUTCH DRUM SUB-ASSY

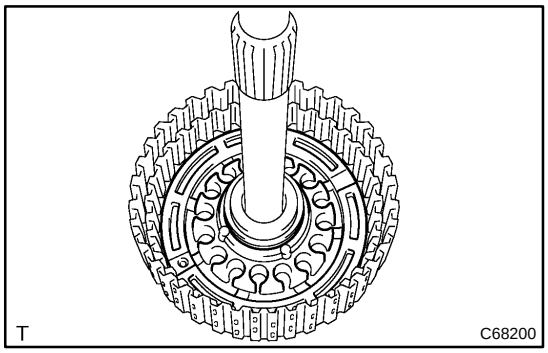
(a) Coat the direct clutch drum sub-assy with ATF.



(b) Aligning the cutout in the intermediate shaft assy with the matchmark on the direct clutch drum, install the direct clutch drum sub-assy to the intermediate shaft assy.

NOTICE:

Be careful not to damage the O-ring and clutch drum's lip.

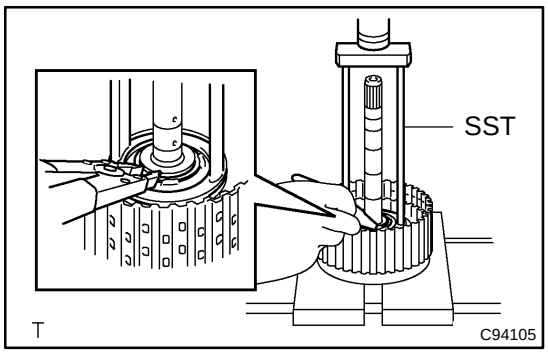


16. INSTALL DIRECT CLUTCH PISTON SUB-ASSY

(a) Coat the direct clutch piston sub-assy with ATF, install it to the intermediate shaft assy.

NOTICE:

Do not damage the O-ring on the direct clutch piston's.



17. INSTALL DIRECT CLUTCH RETURN SPRING SUB-ASSY

(a) Install the direct clutch return spring sub-assy on the direct clutch piston sub-assy.

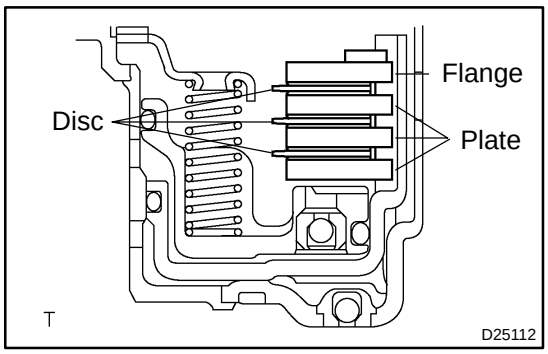
(b) Place SST on the piston return spring and compress the springs with a press.

SST 09387-00020

(c) Using a snap ring expander, install the snap ring in the direct clutch drum.

NOTICE:

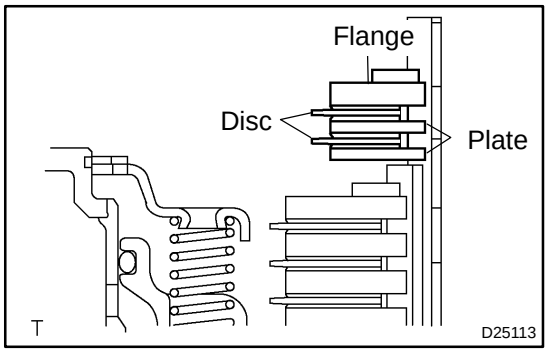
- **Stop the press when the spring sheet is lowered to the place 1 - 2 mm (0.039 - 0.078 in.) from the snap ring groove, preventing the spring sheet from the deforming.**
- **Do not expand the snap ring excessively.**



18. INSTALL DIRECT CLUTCH DISC

(a) Coat the 3 direct clutch plates, 3 direct clutch discs and direct clutch flange with ATF, install them to the intermediate shaft assy.

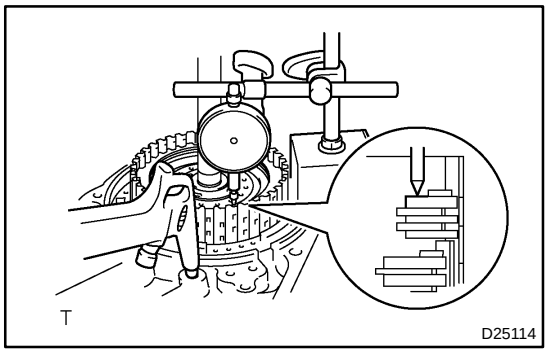
(b) Install the snap ring.



19. INSTALL REVERCE CLUTCH DISC

(a) Install the 3 reverse clutch plates, 3 reverse clutch discs and a reverse clutch flange.

(b) Install the snap ring.



20. INSPECT PACK CLEARANCE OF REVERSE CLUTCH

(a) Install the forward and reverse clutch and thrust needle roller bearing on the transaxle rear cover.

(b) Using a dial indicator, measure the reverse clutch pack clearance while applying and releasing compressed air (392 kPa, 4.0 kgf·cm^2, 57 psi)

Pack clearance:

1.20 - 1.60 mm (0.0472 - 0.0630 in.)

If the pack clearance is less than the limit of pack clearance, parts may have been assembled incorrectly, so check and reassemble again.

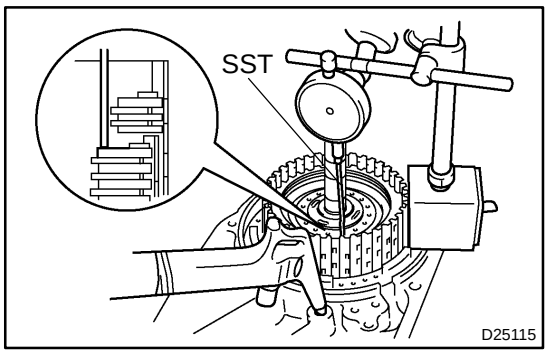
If the pack clearance is not standard value, choose another flange.

HINT:

There are 4 flanges in different thickness.

Flange Thickness: mm (in.)

No.	Thickness	No.	Thickness
-	2.95 - 3.05 (0.116 - 0.120)	2	3.35 - 3.45 (0.132 - 0.136)
1	3.15 - 3.25 (0.124 - 0.128)	3	3.55 - 3.65 (0.140 - 0.144)



21. INSPECT PACK CLEARANCE OF DIRECT CLUTCH

(a) Install the direct and reverse clutch and thrust needle roller bearing on the transaxle rear cover.

(b) Using a dial indicator and measuring terminal (SST), measure the forward clutch pack clearance while applying and releasing compressed air (392 kPa, 4.0 kgf·cm^2, 57 psi)

SST 09350-36010 (09350-06110)

HINT:

The direct and reverse clutch will come out when you apply the compressed air. Therefore, while the check is being performed, press on the input shaft of the direct and reverse clutch using stamping machine or alike so that the pressure is not applied on the direct and reverse clutch.

Pack clearance:

0.62 - 1.02 mm (0.0244 - 0.0402 in.)

If the pack clearance is less than the limit of pack clearance, parts may have been assembled incorrectly, so check and reassemble again.

If the pack clearance is not standard, choose another flange.

HINT:

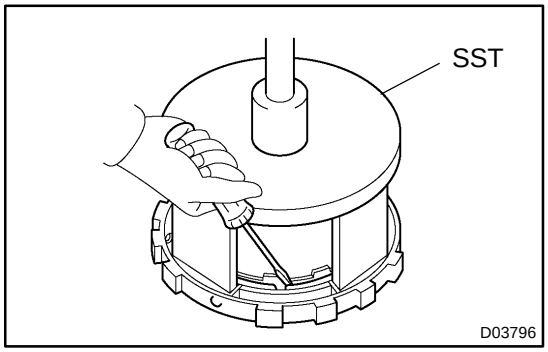
There are 4 flanges in different thickness.

Selected flange thickness: mm (in.)

No.	Thickness	No.	Thickness
-	2.95 - 3.05 (0.116 - 0.120)	2	3.35 - 3.45 (0.132 - 0.136)
1	3.15 - 3.25 (0.124 - 0.128)	3	3.55 - 3.65 (0.140 - 0.144)

400IJ-02

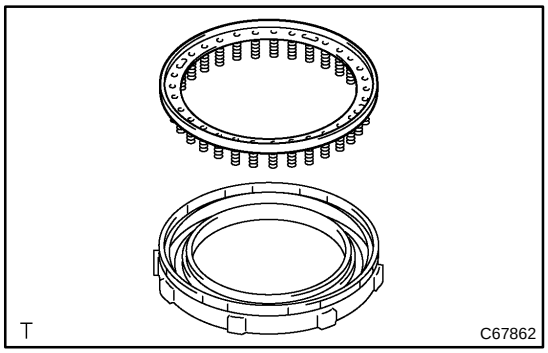
OVERHAUL



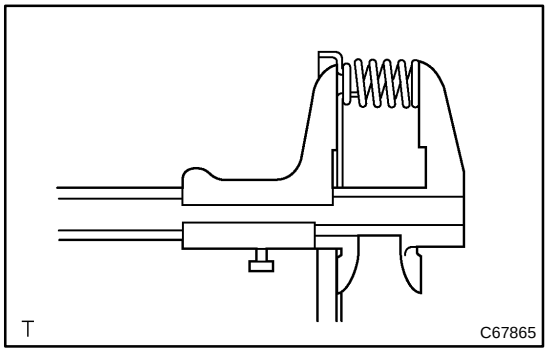
1. REMOVE 2ND BRAKE PISTON RETURN SPRING SUB-ASSY

(a) Place SST on the 2nd brake piston return spring sub-assy and compress.
SST 09387-00060

(b) Using a screwdriver, remove the snap ring.

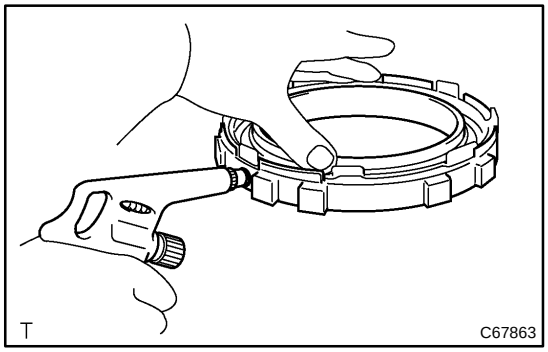


(c) Remove the 2nd brake piston return spring sub-assy from the 2nd brake cylinder.



2. INSPECT 2ND BRAKE PISTON RETURN SPRING SUB-ASSY

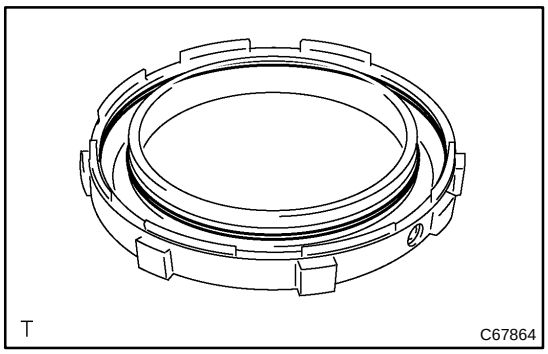
(a) Using vernier calipers, measure the free length of the spring together with the spring seat.
Standard free length: 14.65 mm (0.5768 in.)



3. REMOVE 2ND BRAKE PISTON

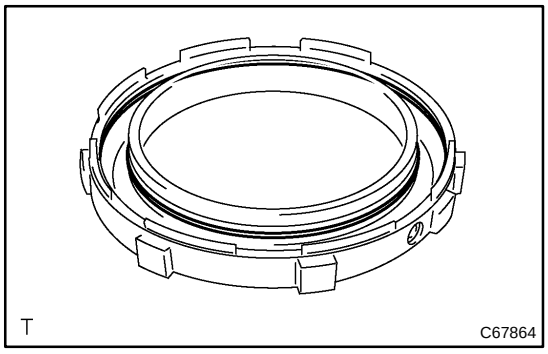
(a) Hold the 2nd brake piston and apply compressed air (392 kPa, 4.0 kgf·cm^2, 57 psi) to the 2nd brake cylinder to remove the 2nd brake piston.

NOTICE:
Take care not to splash ATF when air-blowing.



4. REMOVE 2ND BRAKE CYLINDER O-RING

(a) Using a screwdriver, remove the 2 2nd brake cylinder O-rings from the 2nd brake cylinder.

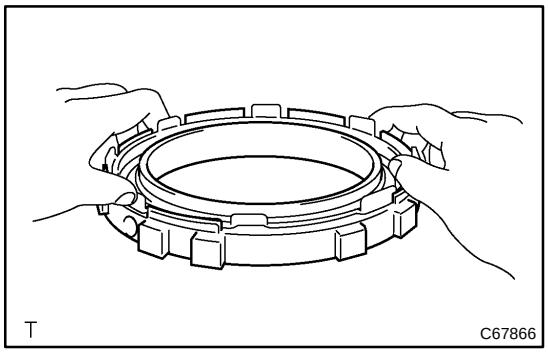


5. INSTALL 2ND BRAKE CYLINDER O-RING

(a) Coat 2 new 2nd brake cylinder O-rings with ATF, install them in the 2nd brake cylinder.

NOTICE:

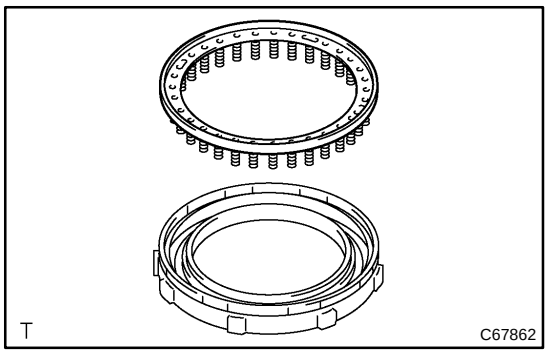
Be careful not to damage the O-ring.



6. INSTALL 2ND BRAKE PISTON

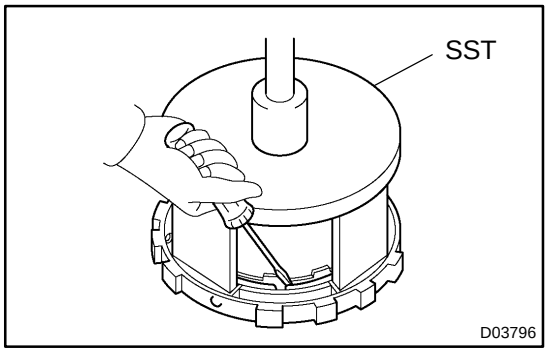
(a) Coat 2 new O-rings with ATF, install them in the 2nd brake piston.

(b) Be careful not to damage the O-rings and press in the 2nd brake piston into the 2nd brake cylinder with a your hands.



7. INSTALL 2ND BRAKE PISTON RETURN SPRING SUB-ASSY

(a) Install the 2nd brake piston return spring sub-assy.



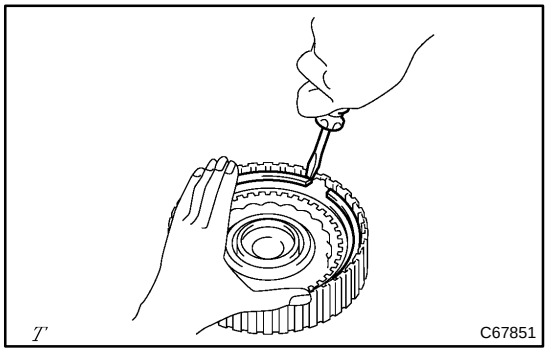
(b) Place SST on the 2nd brake piston return spring, and compress the 2nd brake piston return spring with a press.
SST 09387-00060

(c) Using a screwdriver, install the snap ring.

NOTICE:

Be sure the end gap of the snap ring is not aligned with the piston return spring claw.

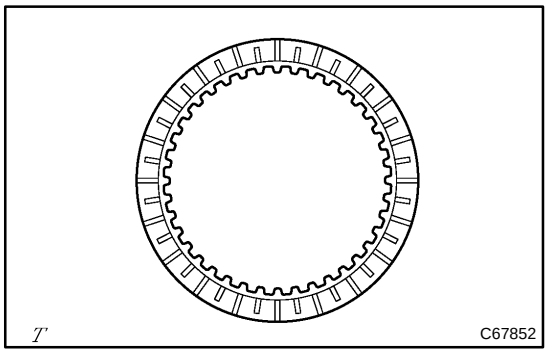
OVERHAUL



1. REMOVE FRONT CLUTCH CLUTCH DISC

(a) Using a screwdriver, remove the snap ring.

(b) Remove the front clutch clutch flange, 4 front clutch clutch discs and 4 front clutch clutch plates.



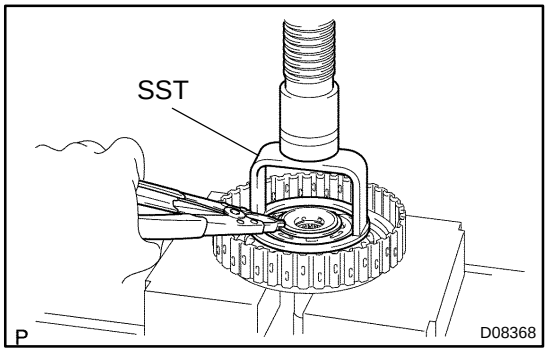
2. INSPECT FRONT CLUTCH CLUTCH DISC

(a) Check to see if the sliding surface of the front clutch clutch disc, front clutch clutch plate and front clutch clutch flange are worn or burnt.

If necessary, replace them.

HINT:

- If the lining of the disc is peeling off or discolored, or even if a part of the printed number is defaced, replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.



3. REMOVE FORWARD CLUTCH RETURN SPRING SUB-ASSY

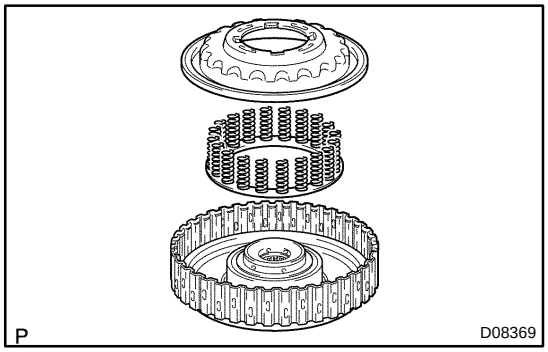
(a) Using SST on the clutch balancer, and compress the forward clutch return spring sub-assy with a press.

SST 09320-89010

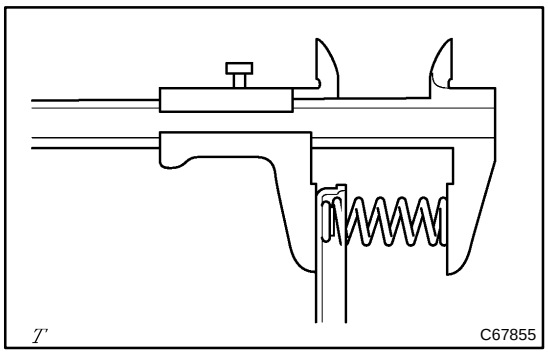
NOTICE:

Do not compress the return spring excessively.

(b) Using a snap ring expander, remove the snap ring.

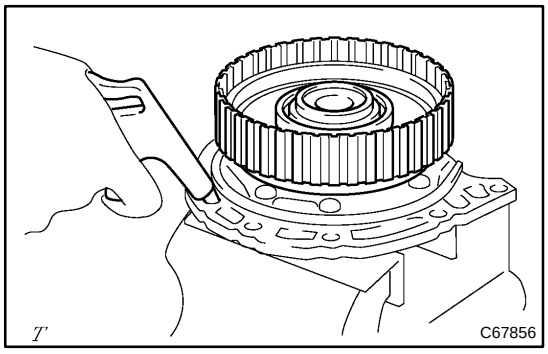


(c) Remove the clutch balancer and forward clutch return spring sub-assy.



4. INSPECT FORWARD CLUTCH RETURN SPRING SUB-ASSY

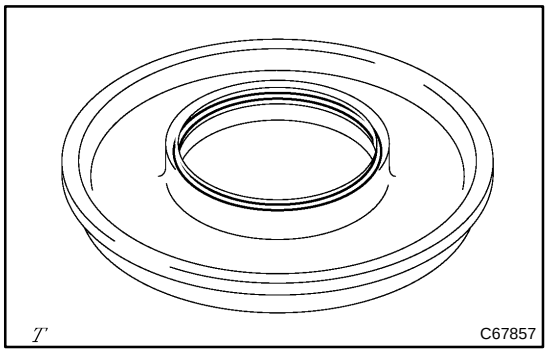
(a) Using a vernier calipers, measure the free length of the spring together with the spring seat.
Standard free length: 21.69 mm (0.8539 in.)



5. REMOVE FORWARD CLUTCH PISTON

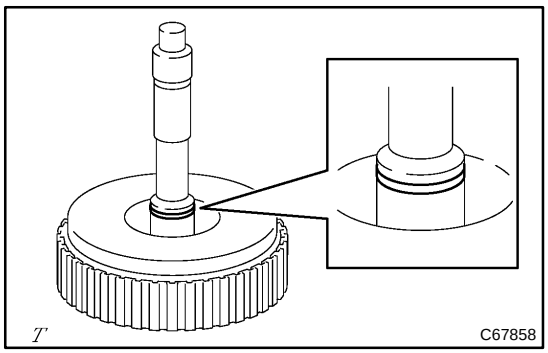
(a) Place the input shaft onto the oil pump.
(b) Holding the forward clutch piston with your hand, apply compressed air (392 kPa, 4.0 kgf·cm^2, 57 psi) to the oil pump to remove the forward clutch piston.

HINT:
When the piston can not be removed as it is slanted, either blow the air again with the protruding side pushed or remove the piston using the needle nose plier with vinyl tape on the tip.



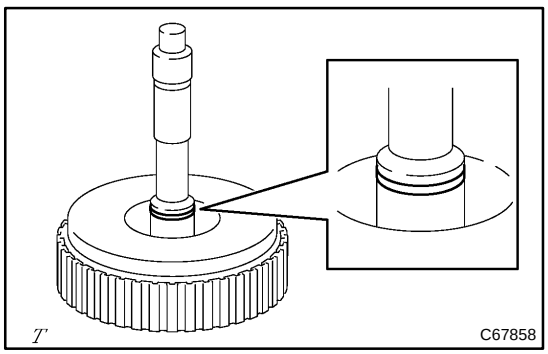
6. REMOVE FORWARD CLUTCH PISTON O-RING

(a) Using a screwdriver, remove the forward clutch piston O-ring.



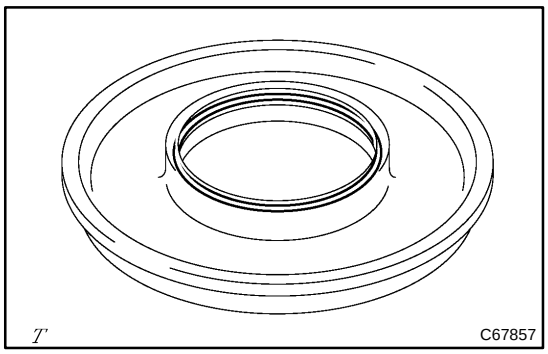
7. REMOVE INPUT SHAFT OIL SEAL RING

(a) Using a screwdriver, remove the input shaft oil seal ring from the input shaft.



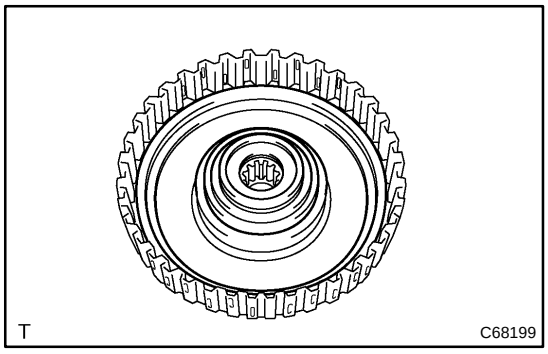
8. INSTALL INPUT SHAFT OIL SEAL RING

(a) Coat a new input shaft oil seal ring with ATF, install it to the input shaft.



9. INSTALL FORWARD CLUTCH PISTON O-RING

(a) Coat a new forward clutch piston O-ring with ATF, install it to the forward clutch piston.

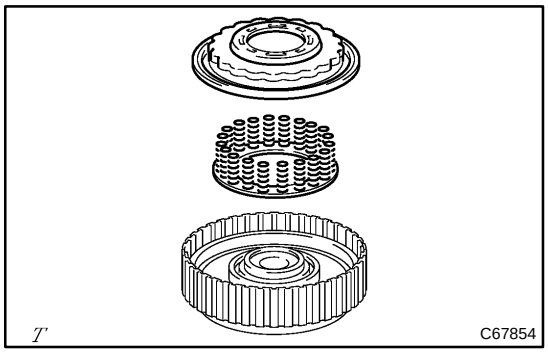


10. INSTALL FORWARD CLUTCH PISTON

(a) Install the forward clutch piston to the input shaft.

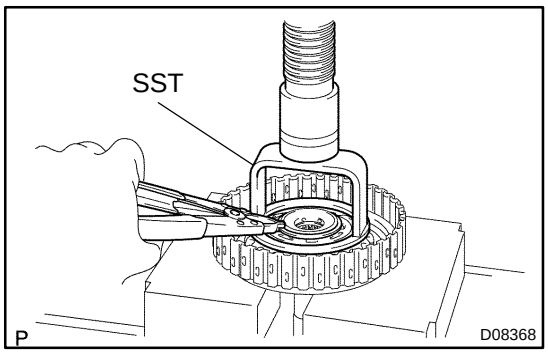
NOTICE:

Be careful not to damage the O-ring.

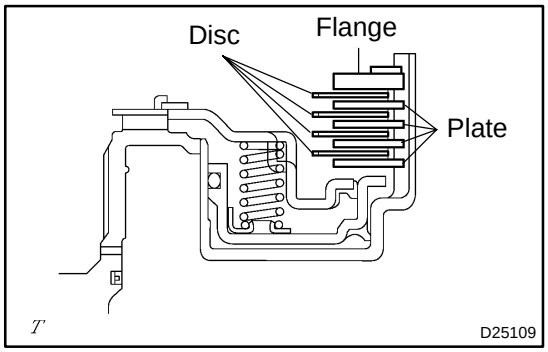


11. INSTALL FORWARD CLUTCH RETURN SPRING SUB-ASSY

(a) Install the clutch balancer and forward clutch return spring sub-assy to the input shaft.



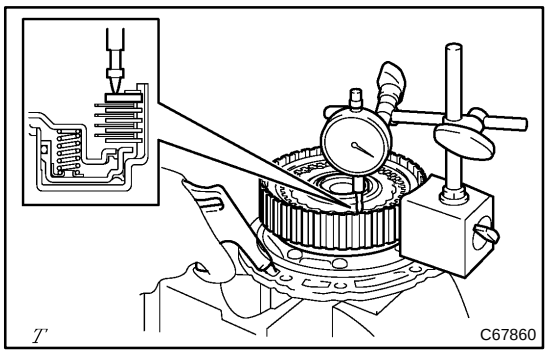
(b) Using SST, a press and a snap ring expander, install the snap ring to the forward clutch return spring.
SST 09320-89010



12. INSTALL FRONT CLUTCH CLUTCH DISC

(a) Install the 4 front clutch clutch plates, 4 front clutch clutch discs and front clutch clutch flange.

(b) Using a screwdriver, install the snap ring.



13. INSPECT PACK CLEARANCE OF FORWARD CLUTCH

(a) Using a dial indicator, measure the pack clearance while applying and releasing compressed air (392 kPa, 4.0 kgf·cm^2, 57 psi).

Pack clearance:

1.406 - 1.806 mm (0.05535 - 0.07110 in.)

If the piston stroke is less than the limit, parts may have been assembled incorrectly, check and reassemble again.

If the clearance is non-standard, select another flange.

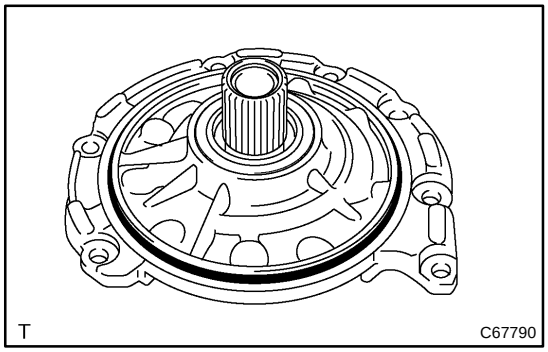
HINT:

There are 4 different flanges in thickness.

Flange thickness: mm (in.)

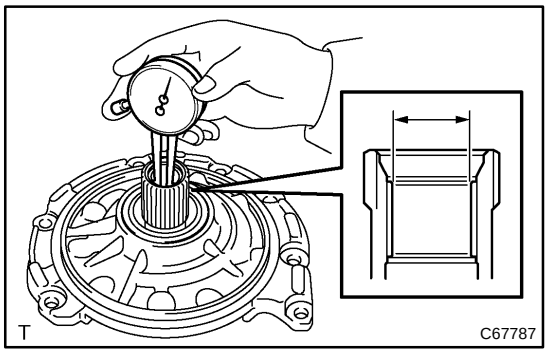
No.	Thickness	No.	Thickness
-	2.95 - 3.05 (0.116 - 0.120)	2	3.35 - 3.45 (0.132 - 0.136)
1	3.15 - 3.25 (0.124 - 0.128)	3	3.55 - 3.65 (0.140 - 0.144)

OVERHAUL



1. REMOVE FRONT OIL PUMP BODY O-RING

(a) Remove the front oil pump body O-ring from the oil pump.

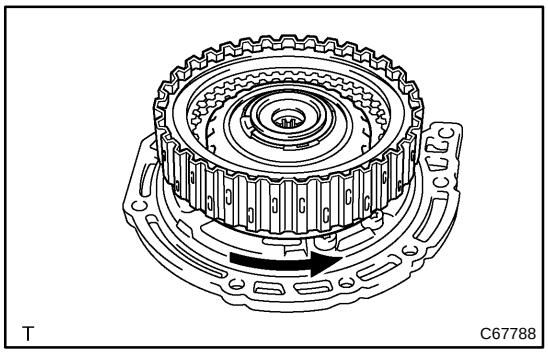


2. INSPECT STATOR SHAFT ASSY

(a) Using a dial indicator, measure the inside diameter of the stator shaft bushings.

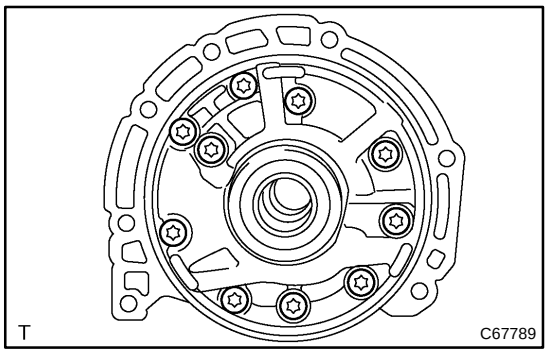
Standard inside diameter:
21.500 - 21.526 mm (0.84646 - 0.84748 in.)
Maximum inside diameter: 21.526 mm (0.84748 in.)

If the inside diameter is greater than the maximum, replace the stator shaft.



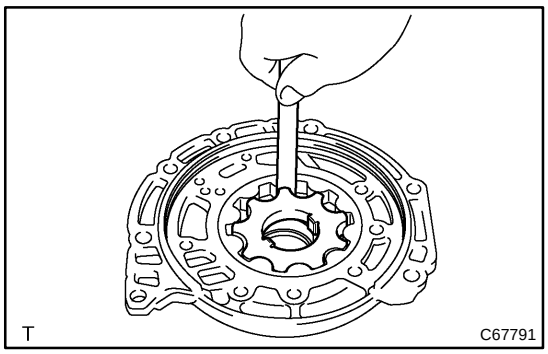
(b) Install the input shaft assy to the stator shaft assy, check that the input shaft assy turns smoothly.

NOTICE:
Replace the stator shaft assy with new one if rough movement or unusual noise is identified. When replacing, inspect the input shaft's contact surface with the bearing and if any damage or discolor is found, replace the input shaft with new one.



3. REMOVE STATOR SHAFT ASSY

(a) Using a torx socket wrench (T30), remove the 10 torx screws and stator shaft assy.

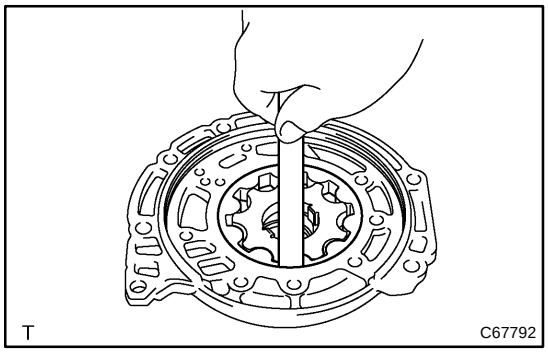


4. INSPECT CLEARANCE OF OIL PUMP ASSEMBLY

(a) Measure the tip clearance between the driven gear teeth and drive gear teeth.

Standard tip clearance:
0.07 - 0.15 mm (0.0028 - 0.0059 in.)
Maximum tip clearance: 0.15 mm (0.0059 in.)

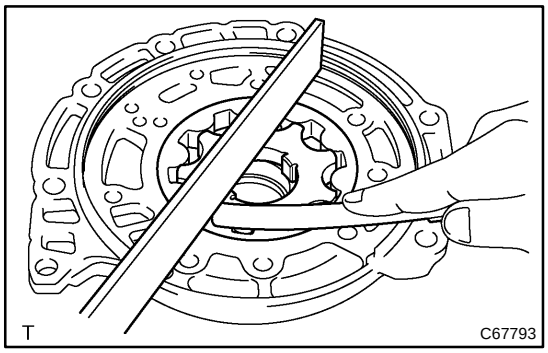
If the tip clearance is greater than the maximum, replace the oil pump body sub-assy.



(b) Push the driven gear to one side of the body. Using a feeler gauge, measure the clearance.

Standard body clearance:
0.100 - 0.151 mm (0.0039 - 0.0059 in.)
Maximum body clearance: 0.15 mm (0.0059 in.)

If the body clearance is greater than the maximum, replace the oil pump body sub-assy.



(c) Using a steel straight edge and feeler gauge, measure the side clearance of both gears.

Standard side clearance:
0.02 - 0.05 mm (0.0008 - 0.0020 in.)
Maximum side clearance: 0.05 mm (0.0020 in.)

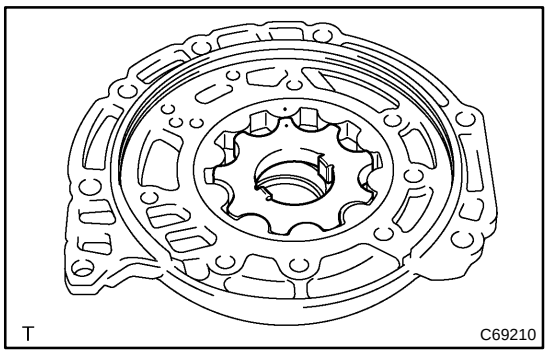
If the side clearance is greater than the maximum, replace the drive gear, driven gear or pump body.

Drive gear thickness: mm (in.)

No.	Thickness
1	9.44 - 9.45 (0.3709 - 0.3713)
2	9.45 - 9.46 (0.3713 - 0.3717)
3	9.46 - 9.47 (0.3717 - 0.3721)
4	9.47 - 9.48 (0.3721 - 0.3725)
5	9.48 - 9.49 (0.3725 - 0.3729)

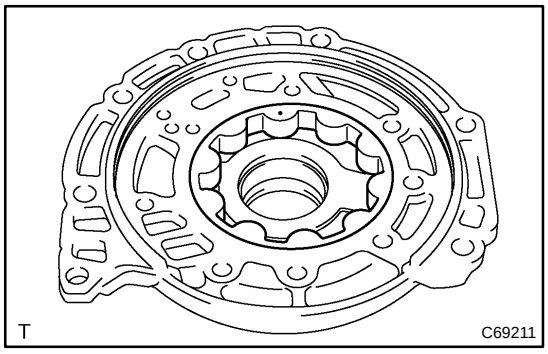
Driven gear thickness: mm (in.)

No.	Thickness
1	9.44 - 9.45 (0.3709 - 0.3713)
2	9.45 - 9.46 (0.3713 - 0.3717)
3	9.46 - 9.47 (0.3717 - 0.3721)
4	9.47 - 9.48 (0.3721 - 0.3725)
5	9.48 - 9.49 (0.3725 - 0.3729)



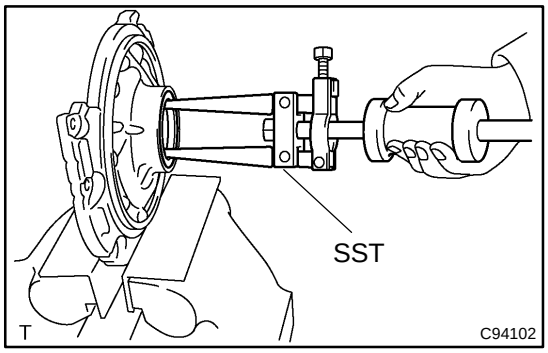
5. REMOVE FRONT OIL PUMP DRIVE GEAR

(a) Remove the front oil pump drive gear from the oil pump body.



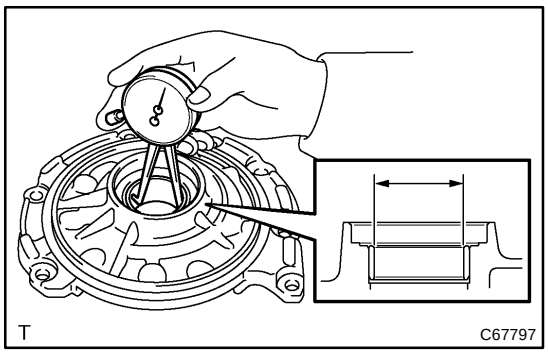
6. REMOVE FRONT OIL PUMP DRIVEN GEAR

(a) Remove the front oil pump driven gear from the oil pump body.



7. REMOVE FRONT OIL PUMP OIL SEAL

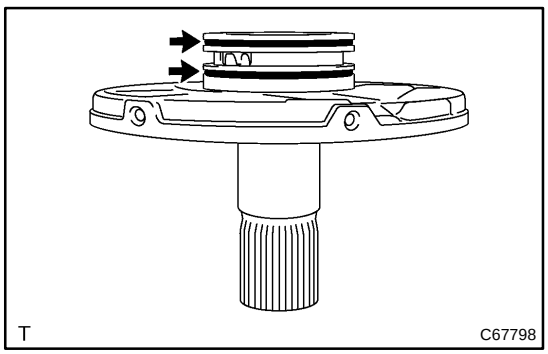
(a) Using SST, remove the front oil pump oil seal from the oil pump body.
SST 09308-00010



8. INSPECT FRONT OIL PUMP BODY SUB-ASSY

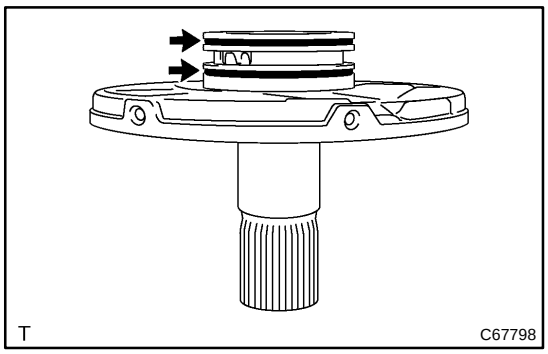
(a) Using a dial indicator, measure the inside diameter of the oil pump body bushing.
Standard inside diameter:
38.113 - 38.138 mm (1.50050 - 1.50149 in.)
Maximum inside diameter: 38.188 mm (1.50349 in.)

If the inside diameter is greater than the maximum, replace the oil pump body sub-assy.



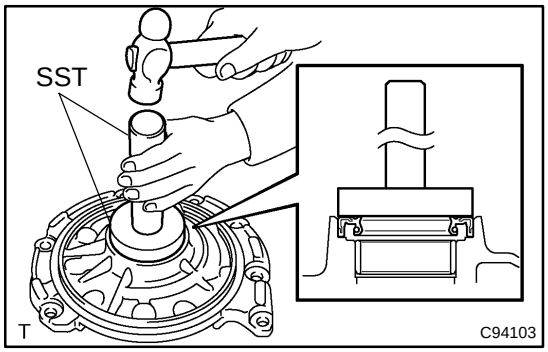
9. REMOVE CLUTCH DRUM OIL SEAL RING

(a) Using a screwdriver, remove the 2 clutch drum oil seal rings from the stator shaft assy.



10. INSTALL CLUTCH DRUM OIL SEAL RING

(a) Install the 2 clutch drum oil seal rings to the stator shaft assy.

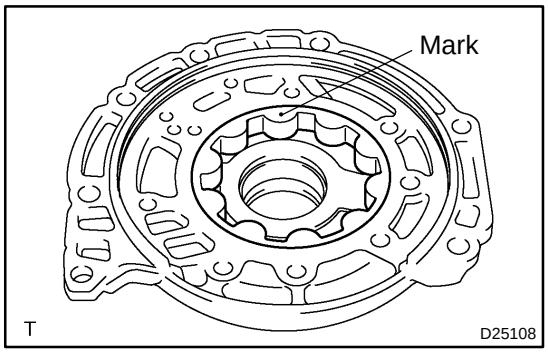


11. INSTALL FRONT OIL PUMP OIL SEAL

(a) Using SST, install the front oil pump oil seal to the oil pump body.

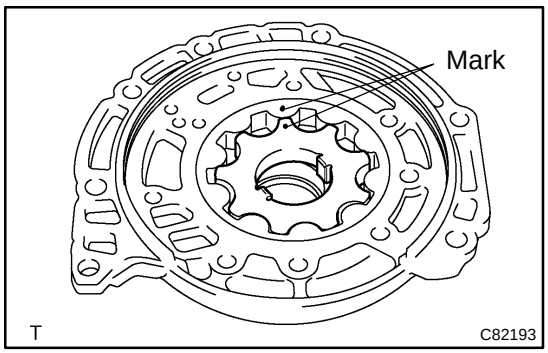
SST 09950- 60010 (09951- 00550), 09950- 70010 (09951-07100)

Oil seal in depth:
0 ± 0.5 mm (0 ± 0.020 in.)



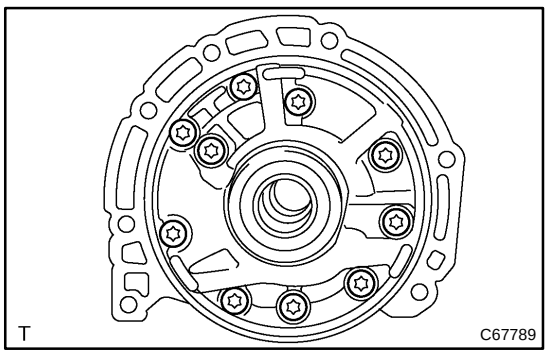
12. INSTALL FRONT OIL PUMP DRIVEN GEAR

(a) Apply ATF to the front oil pump driven gear and install it to the oil pump body with the marked side facing upward.



13. INSTALL FRONT OIL PUMP DRIVE GEAR

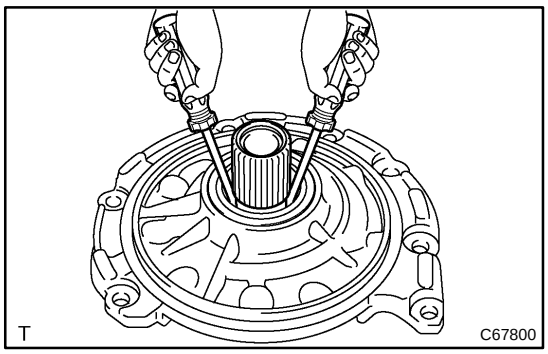
(a) Apply ATF to the front oil pump drive gear and install it to the oil pump body with the marked side facing upward.



14. INSTALL STATOR SHAFT ASSY

(a) Using a torx socket wrench (T30), install the stator shaft assy with the 10 torx screws.

Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

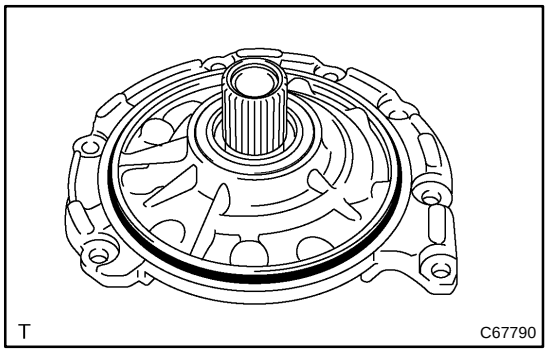


15. INSPECT OIL PUMP ASSEMBLY

(a) Turn the drive gear with 2 screwdrivers and make sure that it rotates smoothly.

NOTICE:

Be careful not to damage the oil seal lip.



16. INSTALL FRONT OIL PUMP BODY O-RING

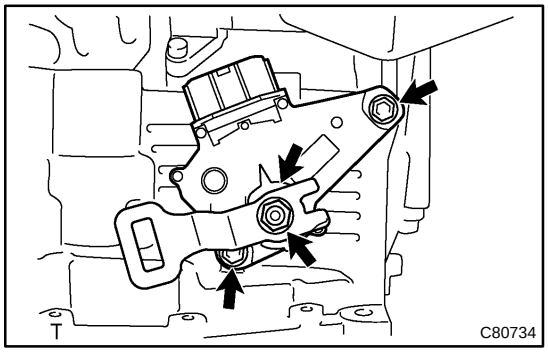
(a) Apply ATF to a new front oil pump body O-ring and install it to the oil pump assy.

OVERHAUL

1. REMOVE SPEEDOMETER DRIVEN HOLE (ATM) COVER SUB-ASSY

(a) Remove the bolt and speedometer driven hole cover sub-assy.

(b) Using a screwdriver, remove the O-ring from the speedometer driven hole cover sub-assy.

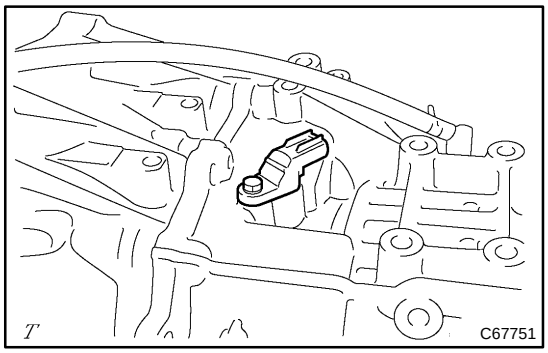


2. REMOVE PARK/NEUTRAL POSITION SWITCH ASSY

(a) Remove the nut, washer and control lever.

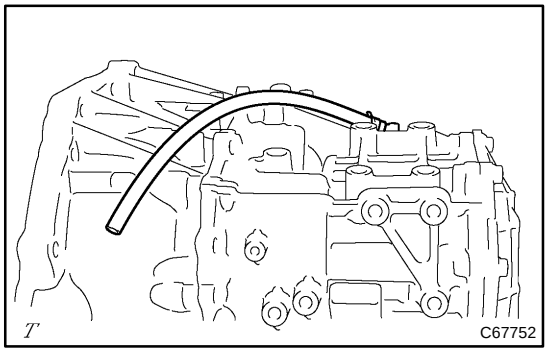
(b) Using a screwdriver, unstake the lock nut and remove the lock washer and lock nut.

(c) Remove the 2 bolts and pull out the park/neutral position switch assy.



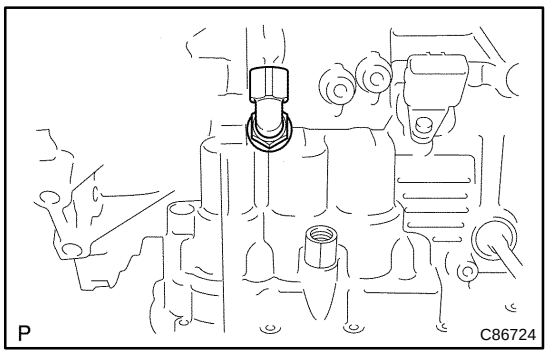
3. REMOVE TRANSMISSION REVOLUTION SENSOR

(a) Remove the bolt and transaxle revolution sensor and O-ring.



4. REMOVE BREATHER PLUG HOSE

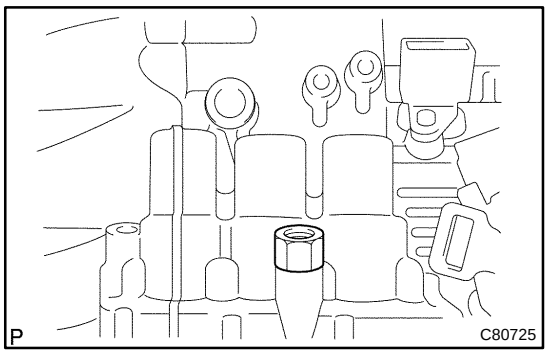
(a) Remove the breather plug hose from the breather plug.



5. REMOVE OIL COOLER TUBE UNION (INLET OIL COOLER UNION)

(a) Remove the oil cooler tube union.

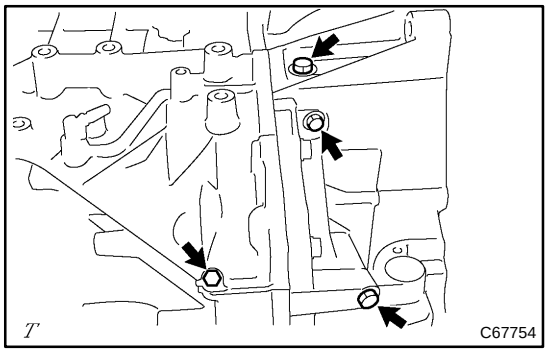
(b) Remove the O-ring from the oil cooler tube union.



6. REMOVE OIL COOLER TUBE UNION (OUTLET OIL COOLER UNION)

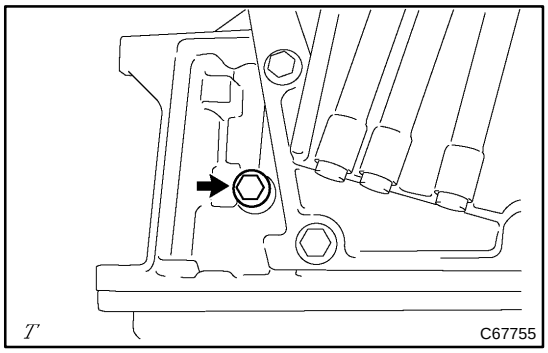
(a) Remove the oil cooler tube union.

(b) Remove the O-ring from the oil cooler tube union.



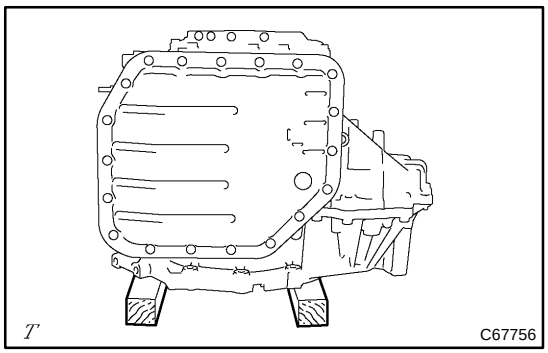
7. REMOVE TRANSAXLE CASE NO.1 PLUG

(a) Remove the 4 transaxle case No.1 plugs from the transaxle housing and transaxle case.

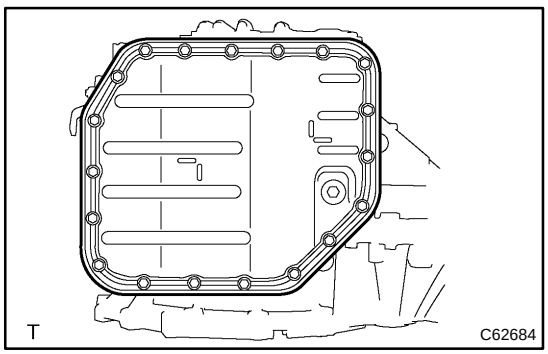


(b) Remove the transaxle case No.1 plug from the transaxle case.

(c) Remove the 5 O-rings from the transaxle cases.



8. FIX AUTOMATIC TRANSAXLE ASSY



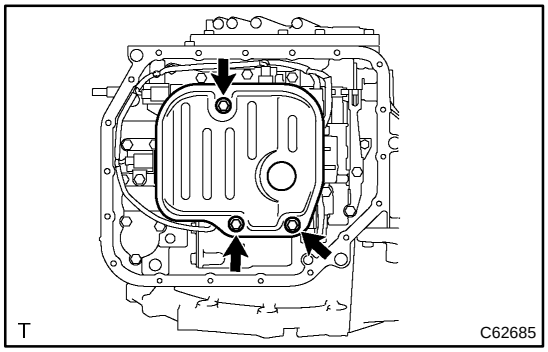
9. REMOVE AUTOMATIC TRANSAXLE OIL PAN SUB-ASSY

(a) Remove the drain plug and gasket from the oil pan.

(b) Remove the 19 bolts.

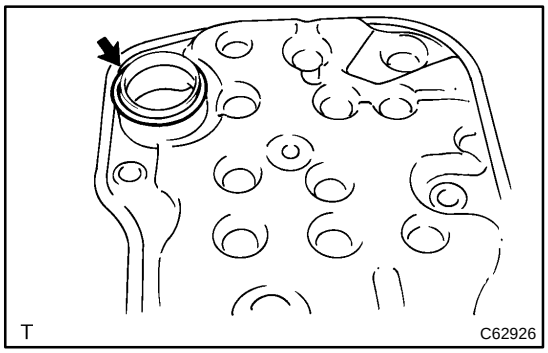
(c) Remove the oil pan and 2 magnets.

10. REMOVE AUTOMATIC TRANSAXLE OIL PAN GASKET

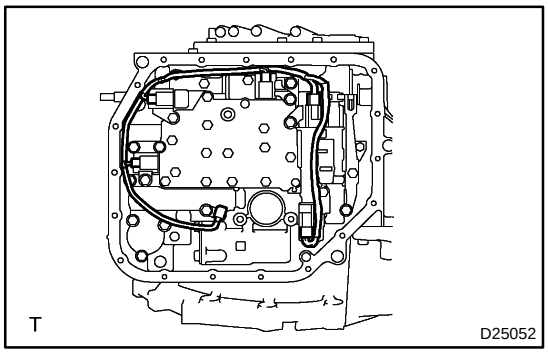


11. REMOVE VALVE BODY OIL STRAINER ASSY

(a) Remove the 3 bolts and valve body oil strainer assy and oil strainer.



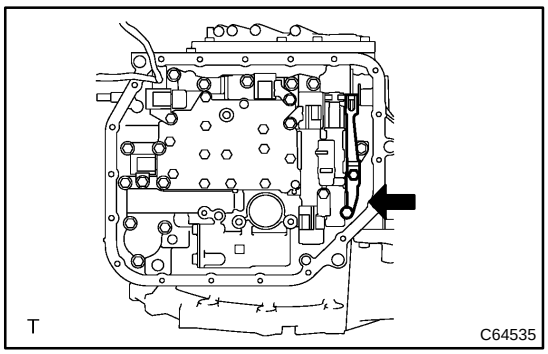
(b) Remove the O-ring from the valve body oil strainer assy.



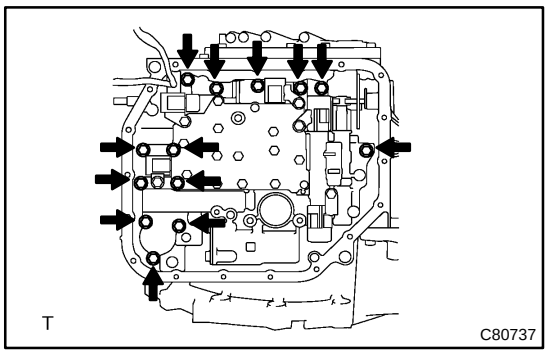
12. REMOVE TRANSMISSION VALVE BODY ASSY

(a) Disconnect the 5 solenoid connectors.

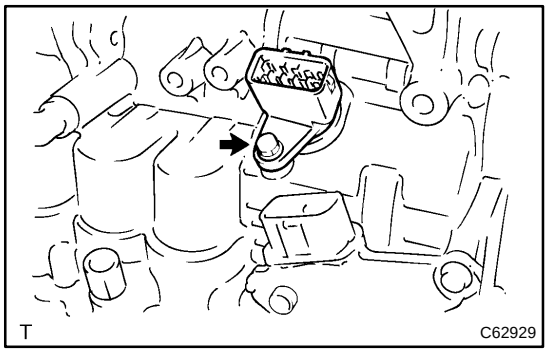
(b) Remove the bolt, lock plate and ATF temperature sensor.



(c) Remove the 2 bolts, detent spring cover and detent spring.

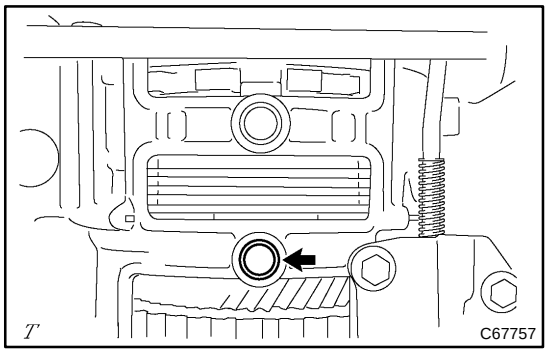


(d) Remove the 13 bolts and transmission valve body assy.

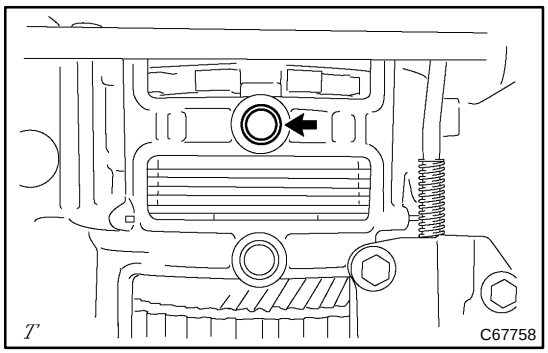


13. REMOVE TRANSMISSION WIRE

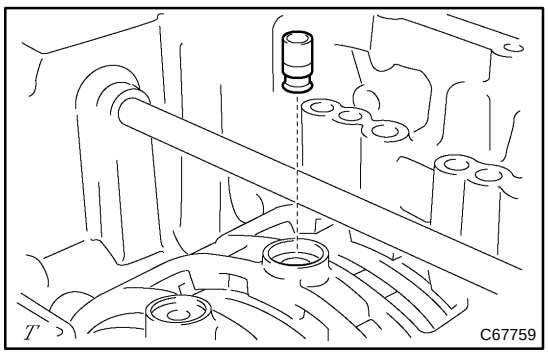
(a) Remove the bolt and transmission wire from the transaxle case with O-ring.



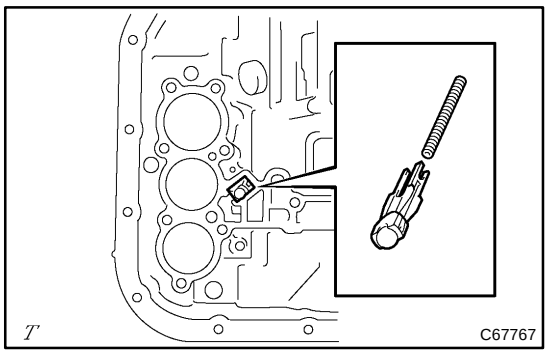
14. REMOVE TRANSAXLE CASE 2ND BRAKE GASKET



15. REMOVE TRANSAXLE CASE GASKET

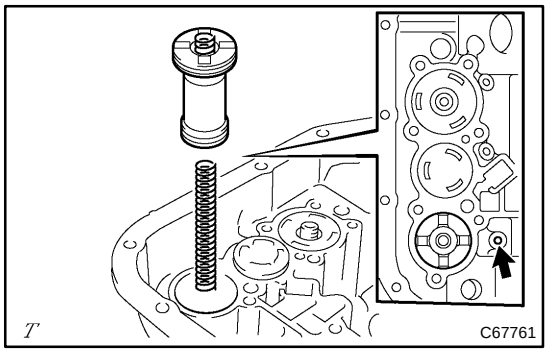


16. REMOVE BRAKE DRUM GASKET



17. REMOVE CHECK BALL BODY

(a) Remove the check ball body and spring from the transaxle case.

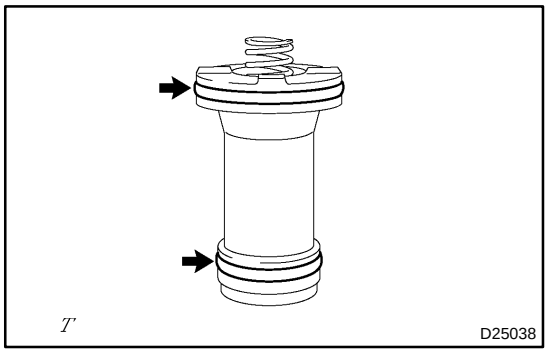


18. REMOVE B-2 ACCUMULATOR PISTON

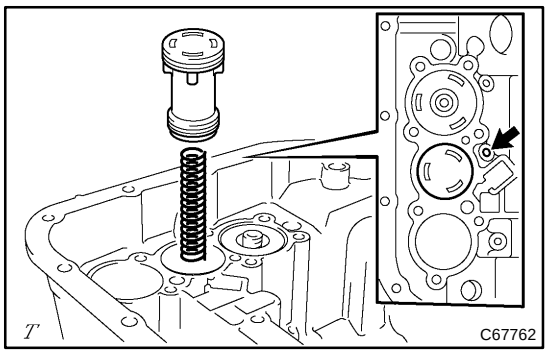
(a) Apply compressed air (392 kPa, 4.0 kgf·cm^2, 57 psi) to the oil hole and remove the B-2 accumulator piston and spring. Remove the spring.

NOTICE:

- **Blowing off the air may cause the piston to jump-out. When removing the piston, hold it with your hand using a waste cloth.**
- **Take care not to splash ATF when air-blowing.**



(b) Remove the 2 O-rings from the B-2 accumulator piston.

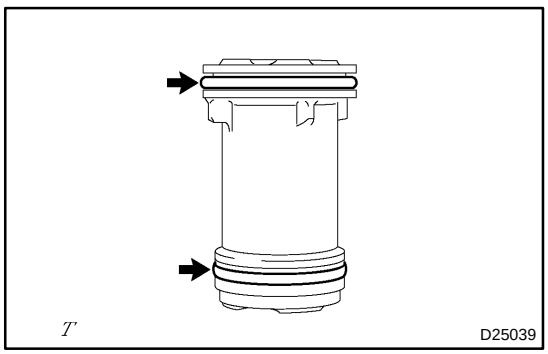


19. REMOVE C-3 ACCUMULATOR PISTON

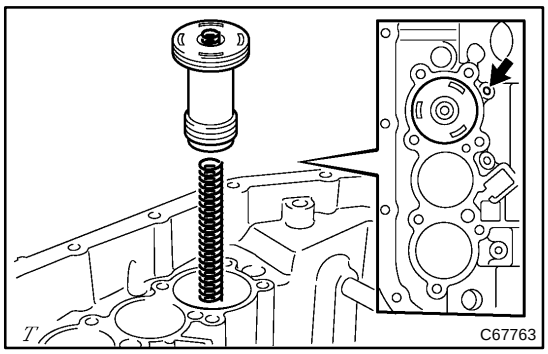
(a) Apply compressed air (392 kPa, 4.0 kgf·cm^2, 57 psi) to the oil hole and remove the C-3 accumulator piston and spring. Remove the spring.

NOTICE:

- **Blowing off the air may cause the piston jump-out. When removing the piston, hold it with your hand using a waste cloth.**
- **Take care not to splash ATF when air-blowing.**



(b) Remove the 2 O-rings from the C-3 accumulator piston.

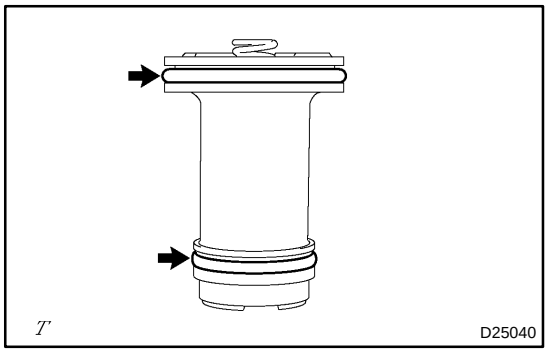


20. REMOVE C-2 ACCUMULATOR PISTON

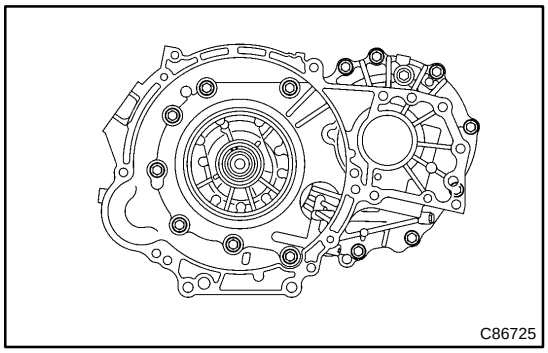
(a) Apply compressed air (392 kPa, 4.0 kgf·cm^2, 57 psi) to the oil hole and remove the C-2 accumulator piston and spring. Remove the spring.

NOTICE:

- **Blowing off the air may cause the piston jump-out. When removing the piston, hold it with your hand using a waste cloth.**
- **Take care not to splash ATF when air-blowing.**



(b) Remove the 2 O-rings from the C-2 accumulator piston.



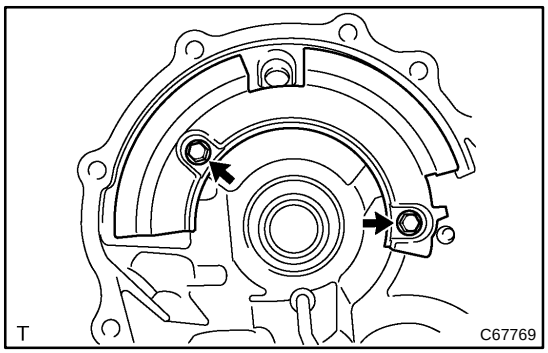
21. REMOVE TRANSAXLE HOUSING

(a) Remove the 14 bolts.

(b) Tap on the circumference of the transaxle housing with a plastic hammer to remove the transaxle housing from the transaxle case.

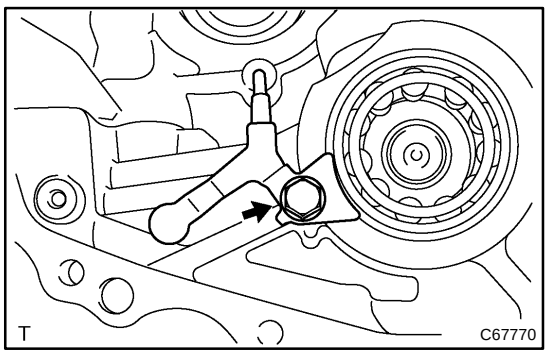
NOTICE:

Differential gear assembly may be accidentally removed when the transaxle housing is removed.



22. REMOVE TRANSAXLE HOUSING OIL SEPARATOR

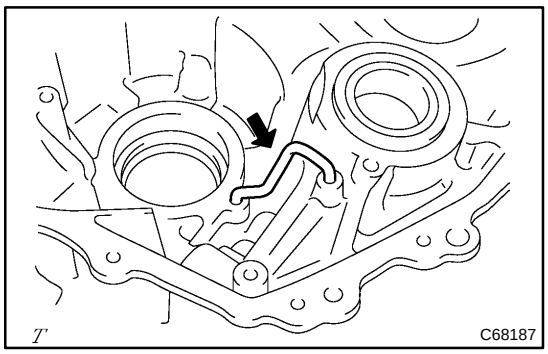
(a) Remove the 2 bolts and transaxle housing oil separator from the transaxle housing.



23. REMOVE BEARING LOCK PLATE

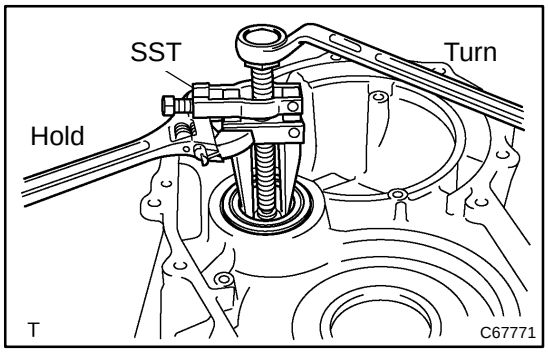
(a) Remove the bolt.

(b) Remove the bearing lock plate.



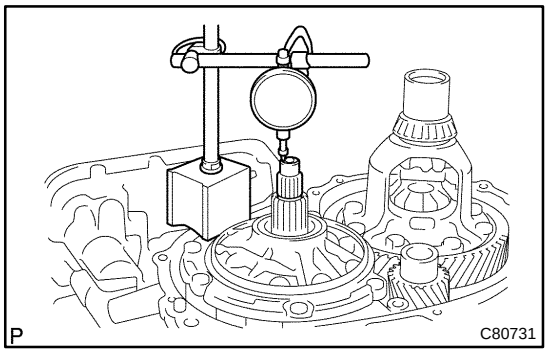
24. REMOVE DIFFERENTIAL GEAR LUBE APPLY TUBE

(a) Remove the differential gear lube apply tube from the transaxle housing.



25. REMOVE FRONT DRIVE PINION FRONT TAPERED ROLLER BEARING

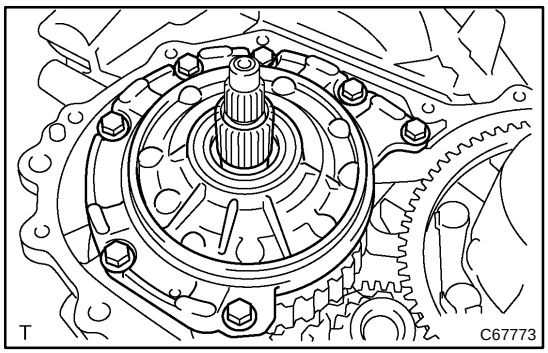
(a) Using SST, remove the front drive pinion front tapered roller bearing from the transaxle housing.
SST 09308-10010



26. INSPECT INPUT SHAFT ENDPLAY

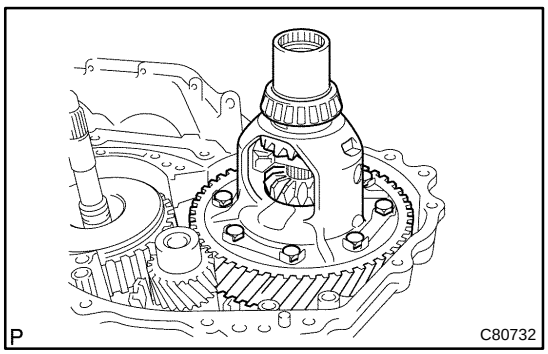
(a) Measure the end play in the axial direction.
End play: 0.37 - 1.29 mm (0.0146 - 0.0508 in.)

If the end play is not as specified, select and replace the thrust needle roller bearing.



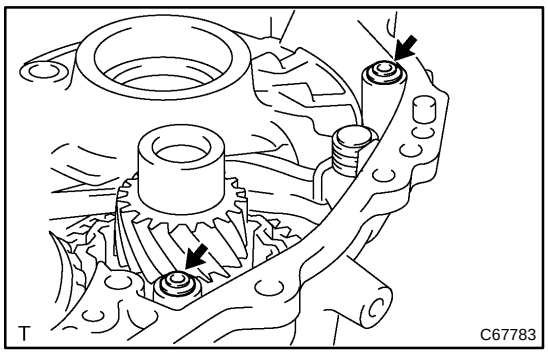
27. REMOVE OIL PUMP ASSEMBLY

(a) Remove the 7 bolts and oil pump assembly.



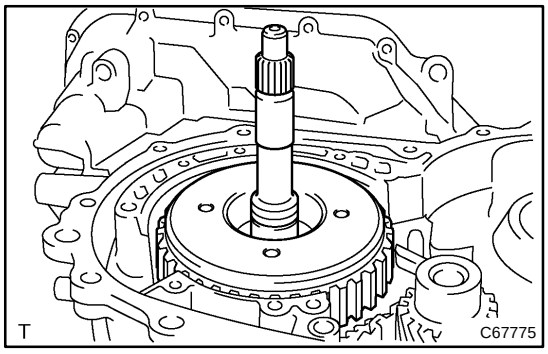
28. REMOVE DIFFERENTIAL GEAR ASSEMBLY

(a) Remove the differential gear assembly from the transaxle case.



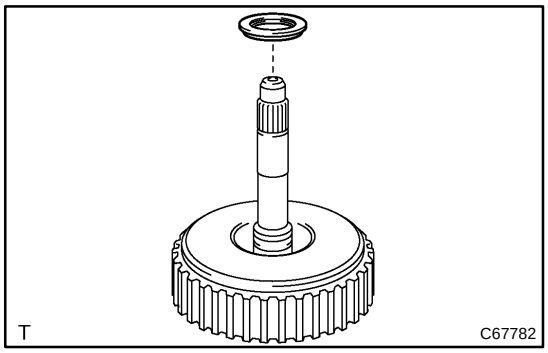
29. REMOVE OVERDRIVE BRAKE GASKET

(a) Using a screwdriver, remove the 2 overdrive brake gaskets from the transaxle case.



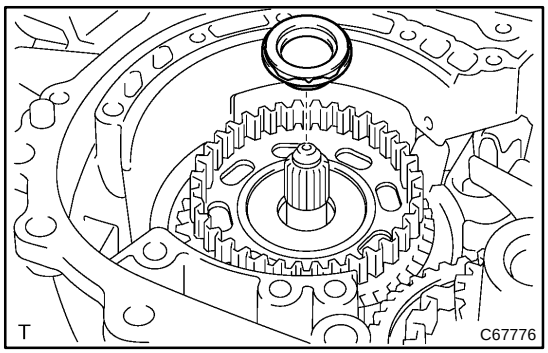
30. REMOVE INPUT SHAFT ASSY

(a) Remove the input shaft assy from the transaxle case.



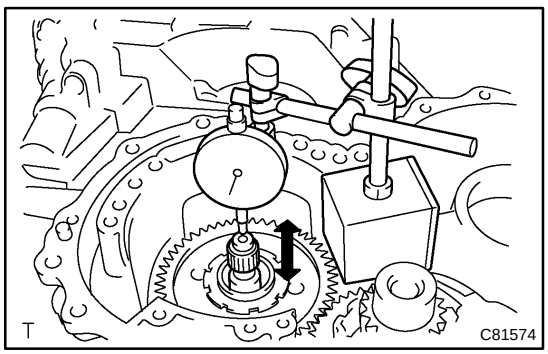
31. REMOVE STATOR SHAFT THRUST NEEDLE ROLLER BEARING

(a) Remove the stator shaft thrust needle roller bearing from the input shaft assy.



32. REMOVE FORWARD CLUTCH HUB THRUST NEEDLE ROLLER BEARING

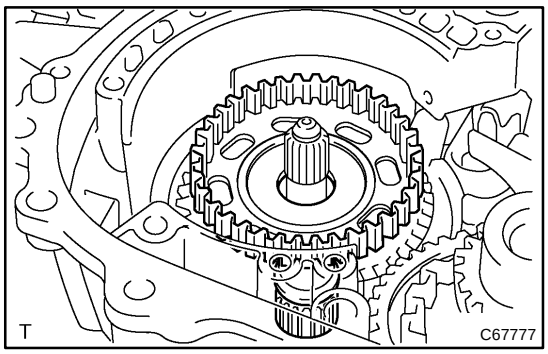
(a) Remove the forward clutch hub thrust needle roller bearing from the forward clutch hub.



33. INSPECT INTERMEDIATE SHAFT ASSY

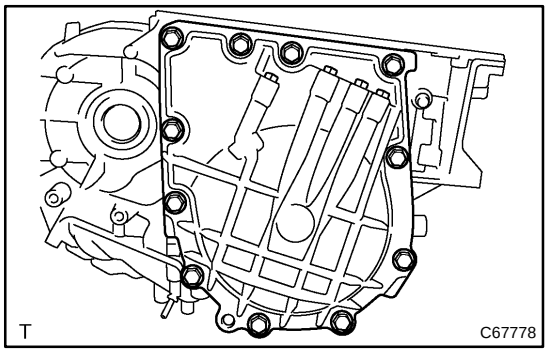
(a) Using a dial indicator, measure the rickety of intermediate shaft.

Standard clearance:
0.204 - 0.966 mm (0.008 - 0.038 in.)



34. REMOVE FORWARD CLUTCH HUB SUB-ASSY

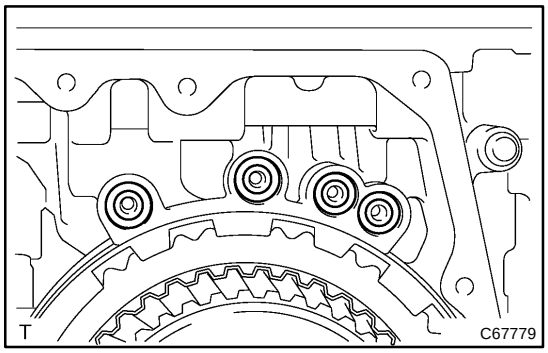
(a) Remove the forward clutch hub sub-assy from the transaxle case.



35. REMOVE TRANSAXLE REAR COVER ASSY

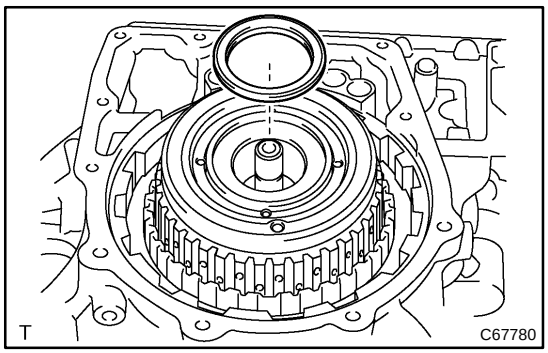
(a) Remove the 11 bolts.

(b) Tap on the circumference of the transaxle rear cover assy with a plastic hammer to remove the transaxle rear cover assy from the transaxle case.



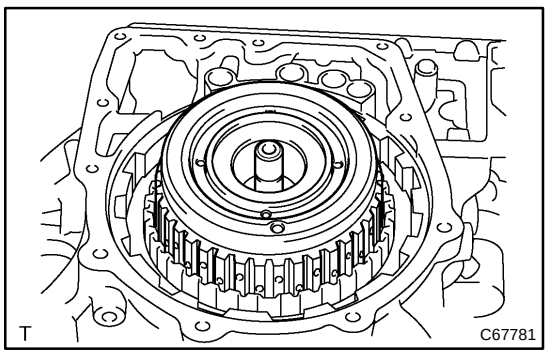
36. REMOVE TRANSAXLE CASE GASKET

(a) Remove the 4 transaxle case gaskets.



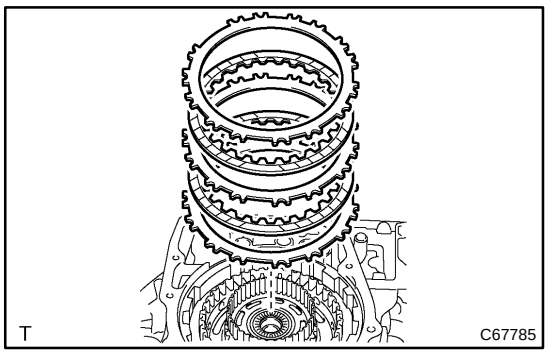
37. REMOVE REAR CLUTCH DRUM THRUST NEEDLE ROLLER BEARING

(a) Using a magnetic hand, remove the rear clutch drum thrust needle roller bearing.



38. REMOVE INTERMEDIATE SHAFT ASSY

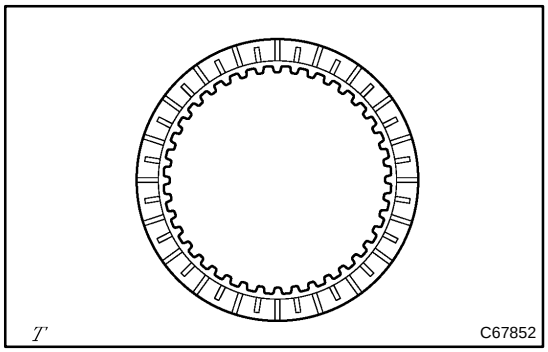
(a) Remove the intermediate shaft assy from the transaxle case.



39. REMOVE 2ND COAST & OVERDRIVE BRAKE DISC

(a) Remove the 2nd coast & overdrive brake flange, 2 2nd coast & overdrive brake discs and 2 2nd coast & overdrive brake flanges No.2 from the transaxle.

(b) Using a screwdriver, remove the snap ring.

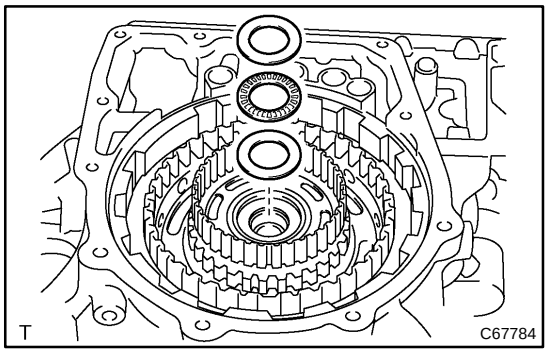


40. INSPECT 2ND COAST & OVERDRIVE BRAKE DISC

(a) Check to see if the sliding surface of the disc, plate and flange are worn or burnt.
If necessary, replace them.

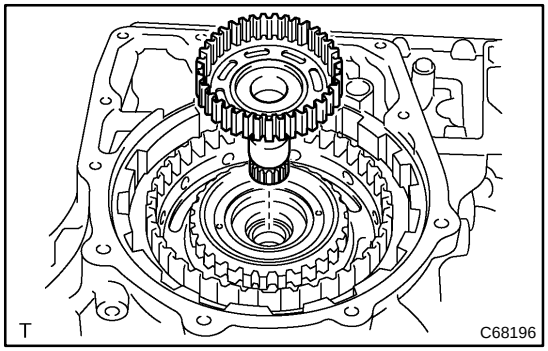
HINT:

- If the lining of he disc is peeling off or discolored, or even if a part of the printed number is defaced, replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.



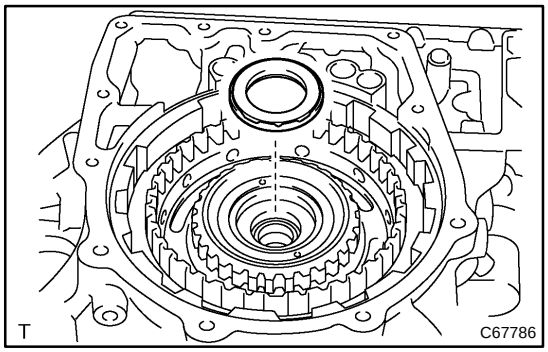
41. REMOVE THRUST NEEDLE ROLLER BEARING

(a) Using a magnetic finger, remove the C-2 hub thrust bearing race, thrust needle roller bearing and thrust bearing race from the direct clutch hub.



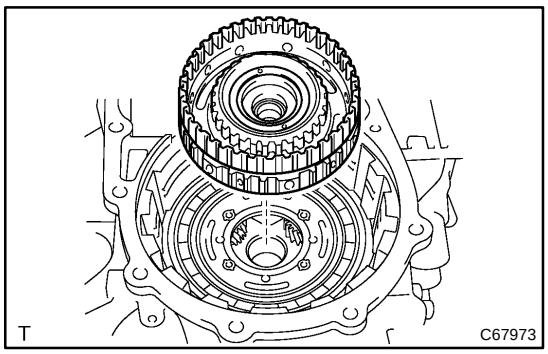
42. REMOVE DIRECT CLUTCH HUB

(a) Remove the direct clutch hub from the transaxle case.



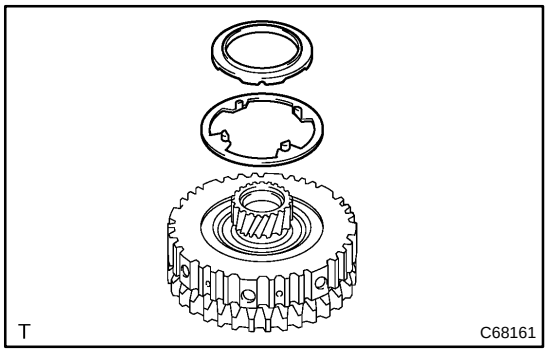
43. REMOVE REAR PLANETARY SUN GEAR, NO.2 THRUST NEEDLE BEARING

(a) Using a magnet finger, remove the rear planetary sun gear No.2 thrust needle bearing from the rear planetary sun gear assy.



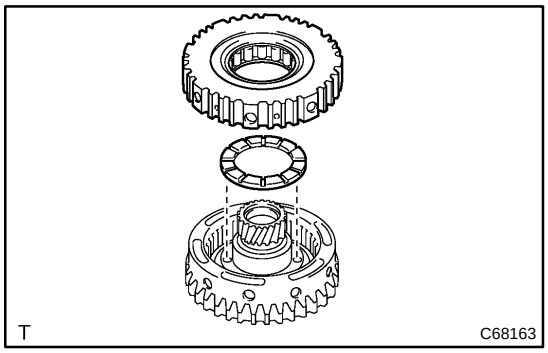
44. REMOVE REAR PLANETARY SUN GEAR ASSY

(a) Remove the rear planetary sun gear assy with 1 way clutch assy and planetary carrier thrust washer No.2 from the transaxle case.



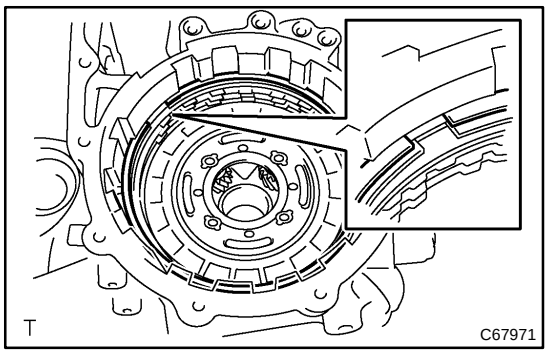
45. REMOVE REAR PLANERARY SUN GEAR THRUST NEEDLE ROLLER BEARING

(a) Remove the rear planetary sun gear thrust needle roller bearing and thrust washer No.1 from the rear planetary sun gear.



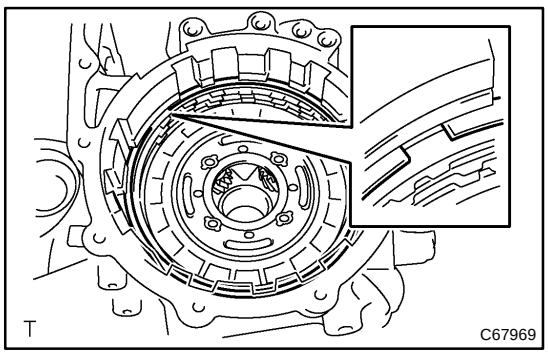
46. REMOVE 1 WAY CLUTCH ASSY

(a) Remove the 1 way clutch assy and planetary carrier thrust washer No.2 from the rear planetary sun gear.



47. REMOVE 2ND COAST & OVERDRIVE BRAKE FLANGE HOLE SNAP RING

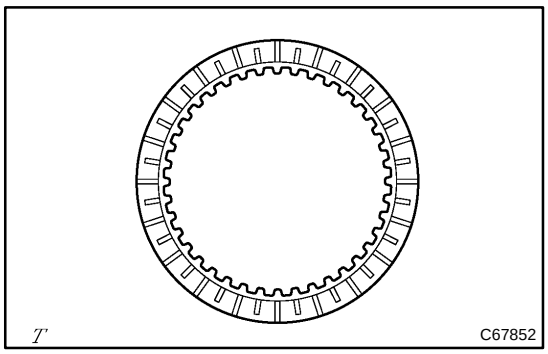
(a) Using a screwdriver, remove the 2nd coast & overdrive brake flange hole snap ring from the transaxle case.



48. REMOVE 2ND BRAKE BRAKE DISC

(a) Using a screwdriver, remove the snap ring.

(b) Remove the 2 flanges, 4 discs and 3 plates from the transaxle.

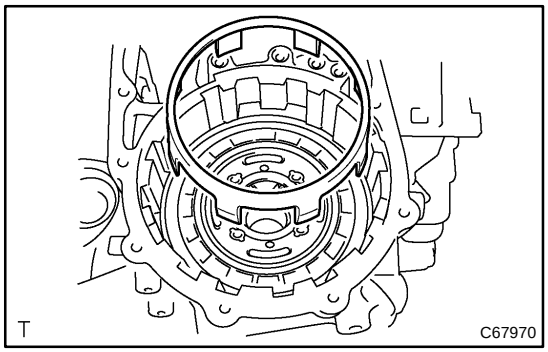


49. INSPECT 2ND BRAKE BRAKE DISC

(a) Check to see if the sliding surface of the disc, plate and flange are worn or burnt.
If necessary, replace them.

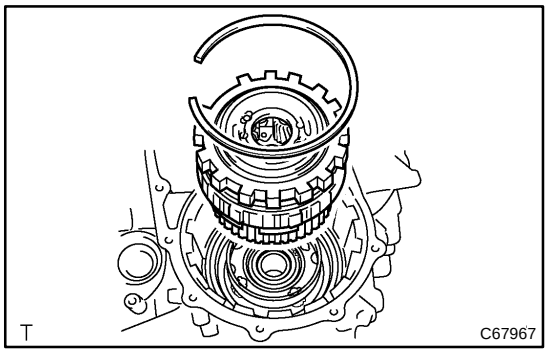
HINT:

- If the lining of the disc is peeling off or discolored or even if a part of the printed mark is defaced, replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.



50. REMOVE 2ND BRAKE PISTON SLEEVE

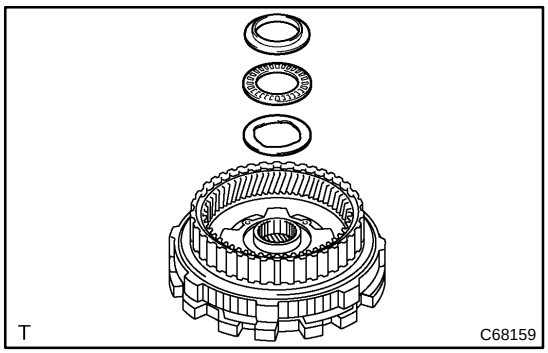
(a) Remove the 2nd brake piston sleeve from the transaxle case.



51. REMOVE REAR PLANETARY GEAR ASSY

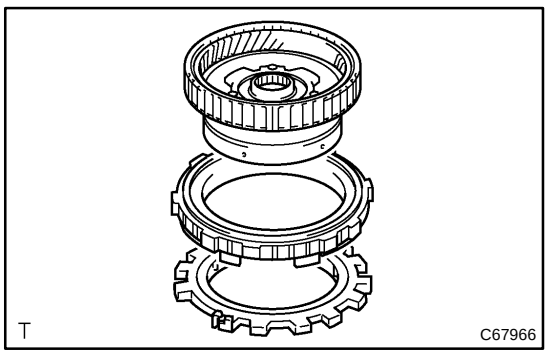
(a) Using a screwdriver, remove the snap ring.

(b) Remove the rear planetary gear assy from the transaxle case.



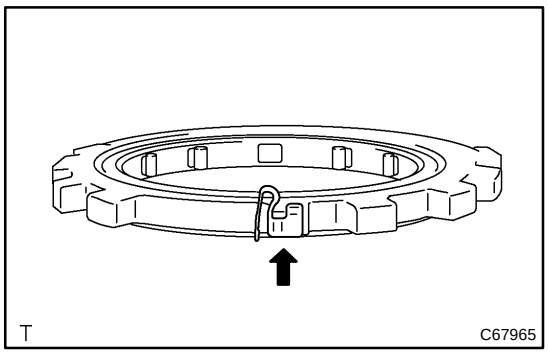
52. REMOVE PLANETARY GEAR REAR THRUST NEEDLE ROLLER BEARING

(a) Remove the planetary gear rear thrust needle roller bearing and 2 bearing races from the rear planetary gear assy.



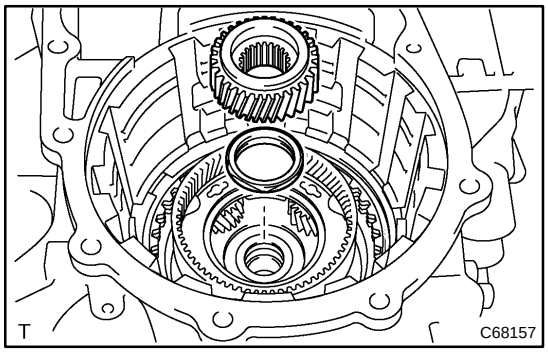
53. REMOVE 1 WAY CLUTCH NO.2

(a) Remove the 2nd brake cylinder assy and 1 way clutch No.2 from the rear planetary gear assy.



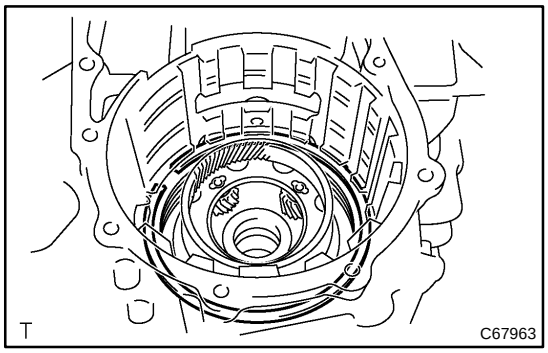
54. REMOVE OUTER RACE RETAINER

(a) Remove the retainer from the 1 way clutch No.2.



55. REMOVE FR PLANETARY SUN GEAR

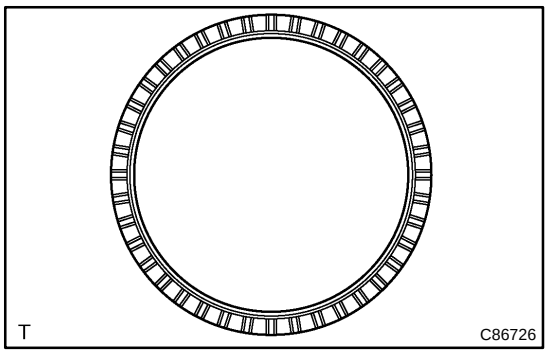
(a) Remove the front planetary sun gear and thrust needle roller bearing from the transaxle case.



56. REMOVE 1ST & REVERSE BRAKE DISC

(a) Using a screwdriver, remove the snap ring.

(b) Remove the 1st & reverse brake flange, 4 1st & reverse brake discs and 4 1st & reverse brake plates from the transaxle case.



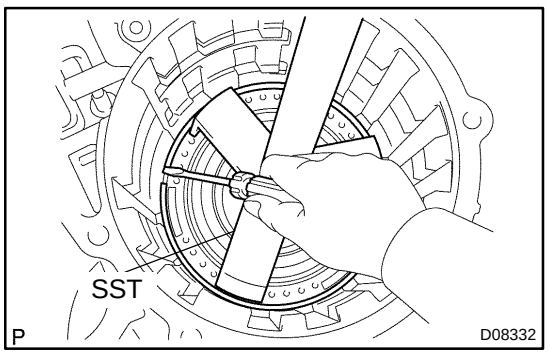
57. INSPECT 1ST & REVERSE BRAKE DISC

(a) Check to see if the sliding surface of the disc, plate and flange are worn or burnt.

If necessary, replace them.

HINT:

- If the lining of the disc is peeling off or discolored, or even if a part of the printed mark is defaced, replace all discs.
- Before assembling new discs, soak in ATF for at least 15 minutes.

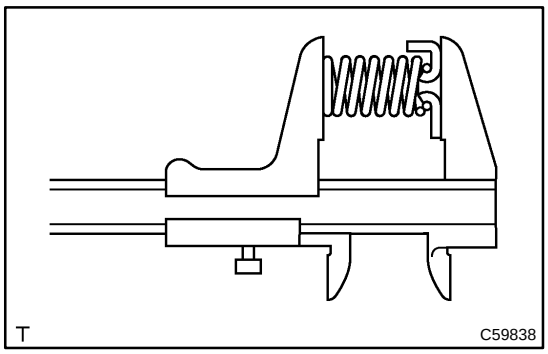


58. REMOVE 1ST & REVERSE BRAKE RETURN SPRING SUB-ASSY

(a) Using SST, a press and a screwdriver, remove the snap ring.

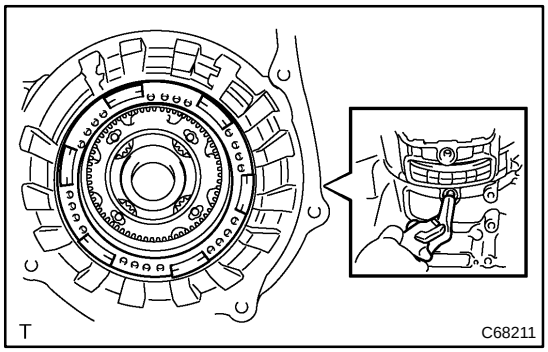
SST 09387-00070

(b) Remove the 1st & reverse brake return spring sub-assy.



59. INSPECT 1ST & REVERSE BRAKE RETURN SPRING SUB-ASSY

(a) Using a vernier calipers, measure the free length of the spring together with the spring seat.
Standard free length: 13.96 mm (0.5496 in.)

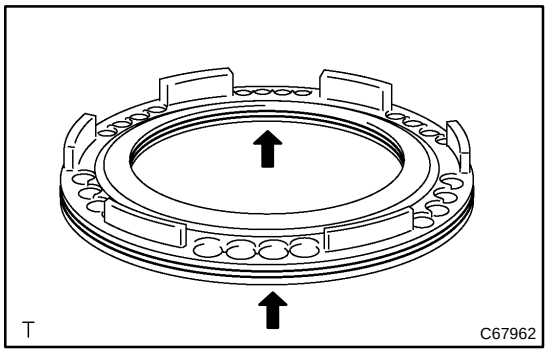


60. REMOVE 1ST & REVERSE BRAKE PISTON NO.2

(a) Apply compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi) to the transaxle case to remove the 1st & reverse brake piston No.2.

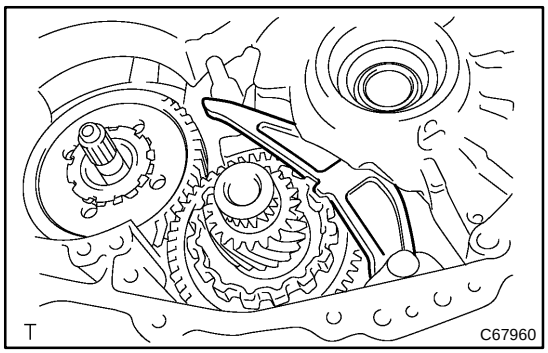
NOTICE:

- **Blowing off the air may cause the piston's jump-out. When removing the piston, hold it with your hand using a waste cloth.**
- **Take care not to splash ATF when air-blowing.**



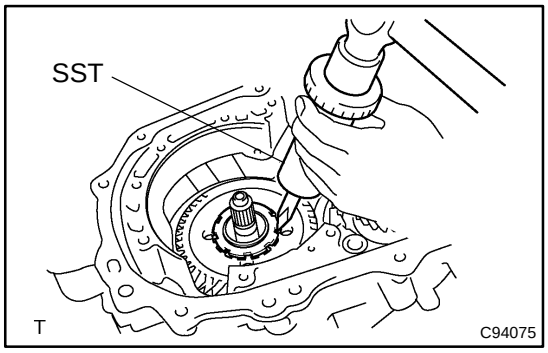
61. REMOVE 1ST & REVERSE BRAKE PISTON NO.2 O-RING

(a) Remove the 2 O-rings from the1st & reverse brake piston No.2.

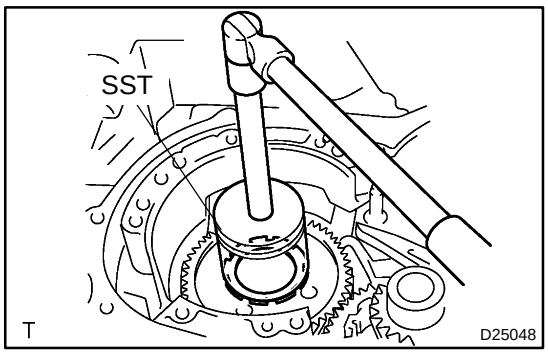


62. REMOVE COUNTER DRIVE GEAR NUT

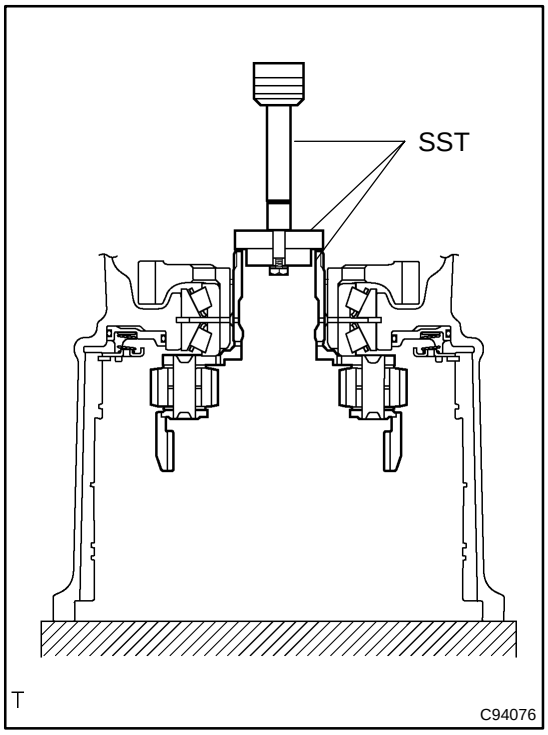
(a) Fix the counter driven gear with the parking lock pawl.



(b) Using SST and a hammer, unstake the lock washer.
SST 09930-00010

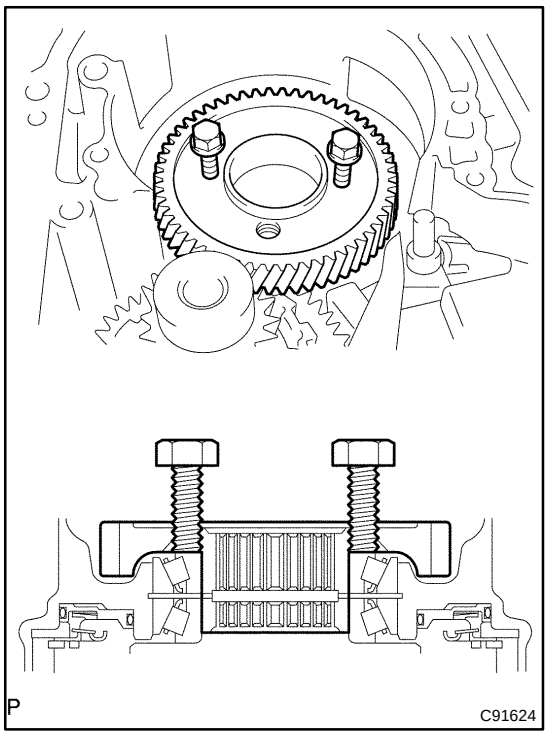


(c) Using SST, remove the counter drive gear nut and lock washer.
SST 09387-00120



63. REMOVE PLANETARY GEAR ASSY

(a) Using SST and a press, remove the planetary gear assy from the transaxle case.
SST 09950- 60010 (09951- 00400, 09951- 00320, 09952-06010), 09950-70010 (09951-07100)

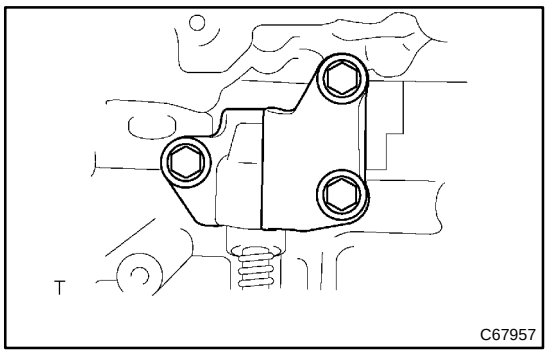


64. REMOVE COUNTER DRIVE GEAR

(a) Install the 2 bolts to the counter drive gear.
Bolt (M6):
L = 40 - 80 mm (1.57 - 3.15 in.)
Pitch = 1.0 mm (0.039 in.)

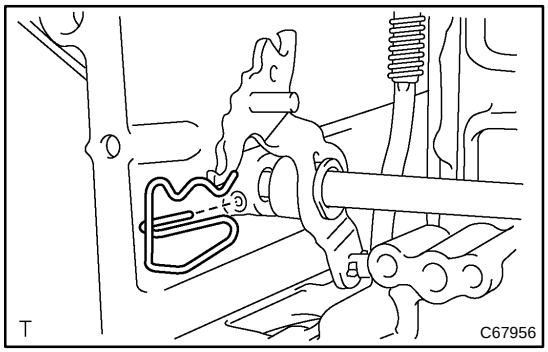
(b) Rotate 2 bolts in order and remove the counter drive gear and front planetary sun gear.

(c) Remove 2 radial ball bearings from the counter drive gear and front planetary sun gear.



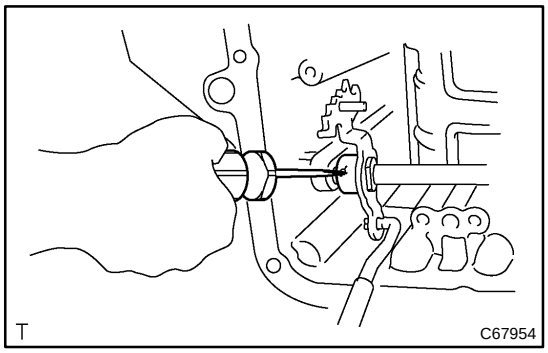
65. REMOVE PARKING LOCK PAWL BRACKET

(a) Remove the 3 bolts, cam guide sleeve and parking lock pawl bracket.



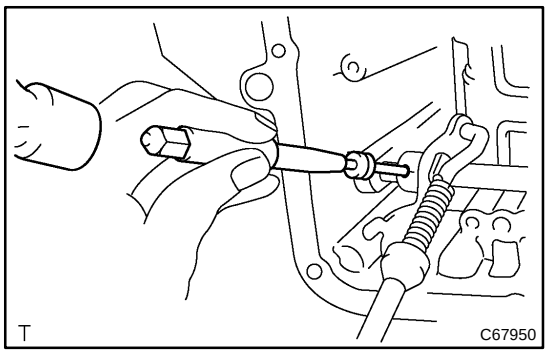
66. REMOVE MANUAL VALVE LEVER SHAFT RETAINER SPRING

(a) Remove the manual valve lever shaft retainer spring.



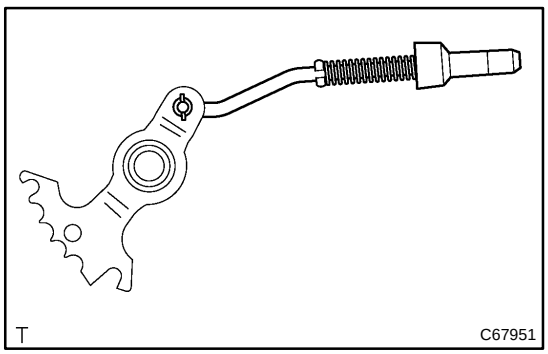
67. REMOVE MANUAL VALVE LEVER SUB-ASSY

(a) Using a screwdriver, unstake and remove the spacer.



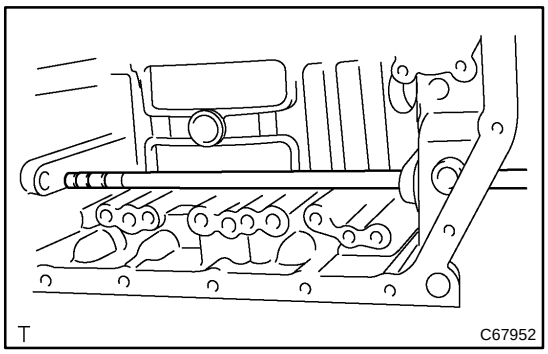
(b) Using a pin punch and hammer, drive out the pin.

(c) Remove the manual valve lever shaft and manual valve lever sub-assy.



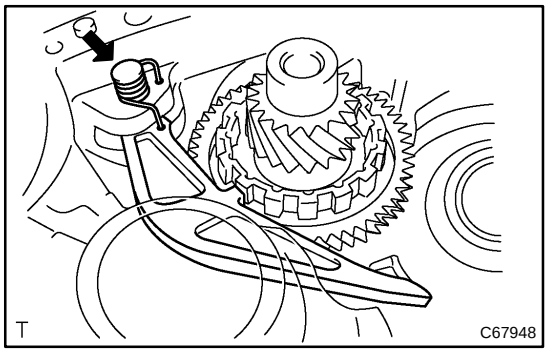
68. REMOVE PARKING LOCK ROD SUB-ASSY

(a) Remove the parking lock rod sub-assy from the manual valve lever.



69. REMOVE MANUAL VALVE LEVER SHAFT

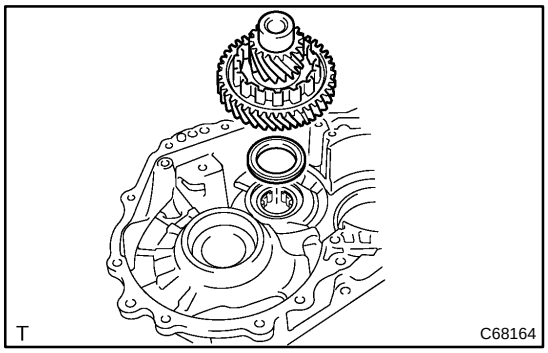
(a) Remove the manual valve lever shaft from the transaxle case.



70. REMOVE PARKING LOCK PAWL

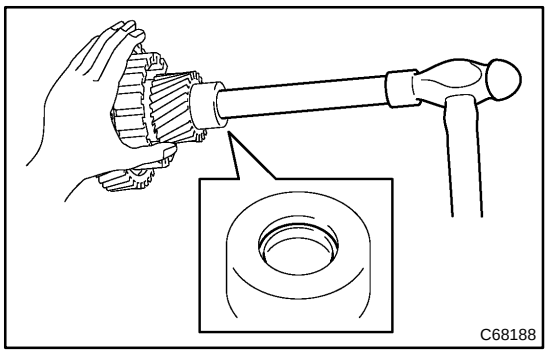
(a) Using a screwdriver, remove the parking lock pawl shaft.

(b) Remove the parking lock pawl torsion spring and parking lock pawl.

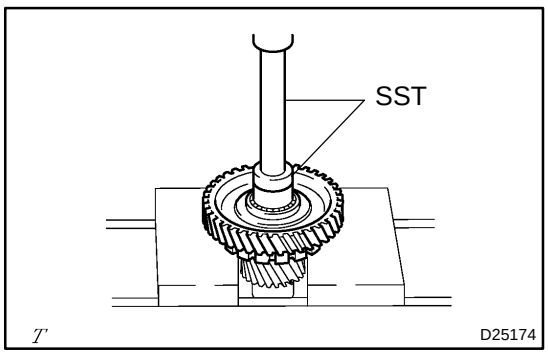


71. REMOVE DIFFERENTIAL DRIVE PINION PLUG

(a) Remove the counter driven gear, front drive pinion LH thrust needle roller bearing from the transaxle case.



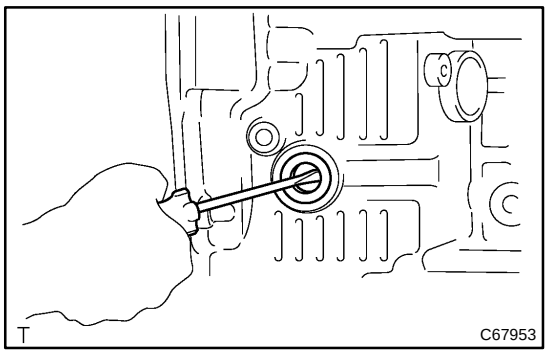
(b) Using a brass bar and a hammer, remove the differential drive pinion plug.



72. REMOVE COUNTER DRIVEN GEAR

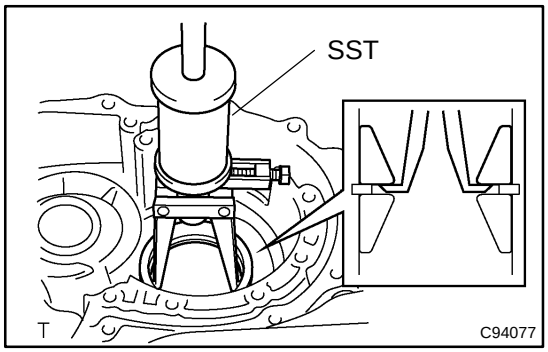
(a) Using SST and a press, remove the counter driven gear from the differential drive pinion.

SST 09950- 60010 (09951- 00350), 09950- 70010 (09951-07150)



73. REMOVE MANUAL VALVE LEVER SHAFT OIL SEAL

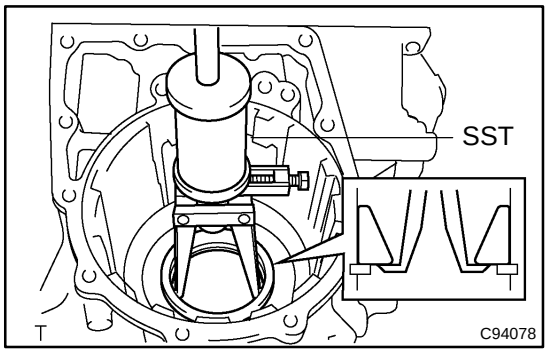
(a) Using a screwdriver, remove the manual valve lever shaft oil seal.



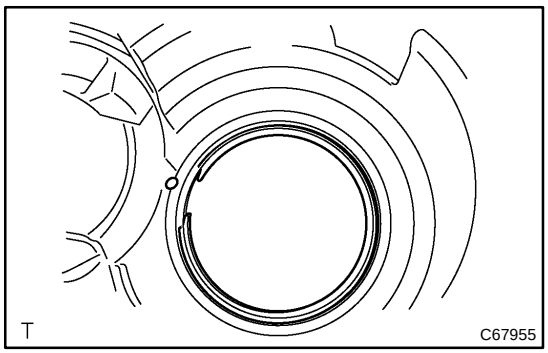
74. REMOVE COUNTER DRIVE GEAR BEARING

(a) Remove the 2 counter drive gear bearing inner races RH the transaxle case.

(b) Using SST, remove the counter drive gear bearing LH outer race from the transaxle case
SST 09308-00010



(c) Using SST, remove the counter drive gear bearing rear outer race from the transaxle case.
SST 09308-00010

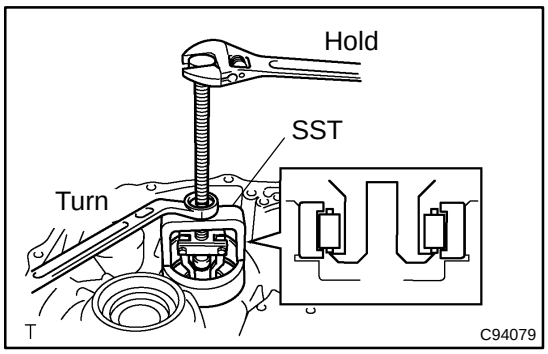


75. REMOVE COUNTER DRIVE GEAR HOLE SNAP RING

(a) Using a screwdriver, remove the counter drive gear hole snap ring from the transaxle case.

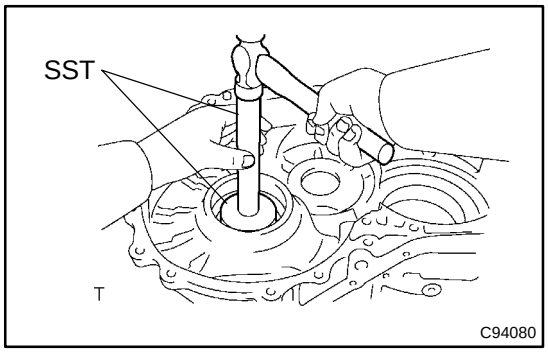
76. REMOVE BREATHER PLUG NO.1 (ATM)

(a) Using a screwdriver, remove the breather plug No.1.



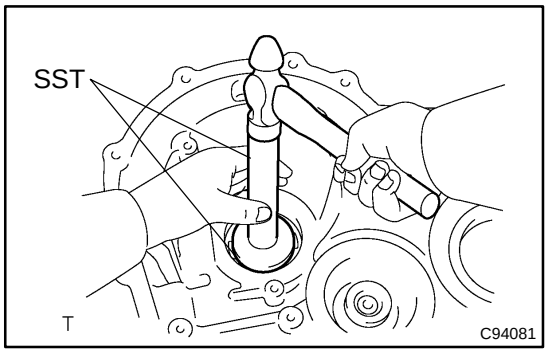
77. REMOVE FRONT DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using SST, remove front drive pinion rear tapered roller bearing from the transaxle case.
SST 09612-65014 (09612-01040)



78. REMOVE FRONT TRANSAXLE CASE OIL SEAL

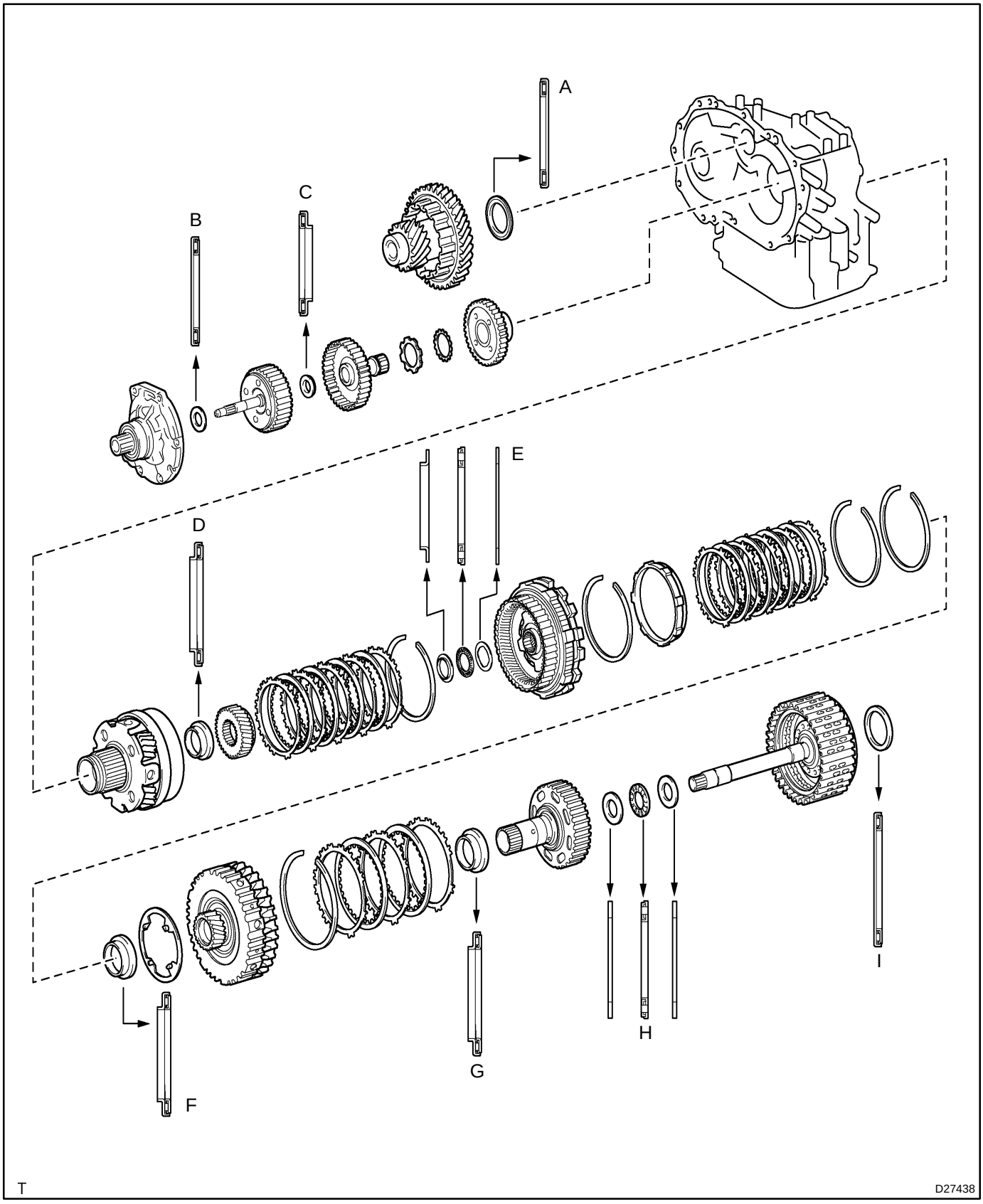
(a) Using SST and a hammer, remove the front transaxle case oil seal from the transaxle case.
SST 09950- 60010 (09951- 00550), 09950- 70010 (09951-07100)



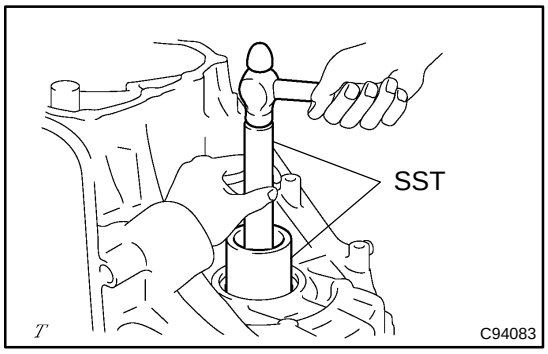
79. REMOVE TRANSAXLE CASE OIL SEAL

(a) Using SST and a hammer, remove the transaxle case oil seal from the transaxle housing.
SST 09950- 60010 (09951- 00530), 09950- 70010 (09951-07100)

80. BEARING POSITION



Mark	Front Race Diameter Inside / Outside mm (in.)	Thrust Bearing Diameter Inside / Outside mm (in.)	Rear Race Diameter Inside / Outside mm (in.)
A	-	45.1 (1.7756) / 65.1 (2.5630)	-
B	-	26 (1.0236) / 43.4 (1.7087)	-
C	-	21 (0.8268) / 34.85 (1.3721)	-
D	-	32.0 (1.260) / 48.0 (1.890)	-
E	36.75 (1.447) / 49.95 (1.967)	33.9 (1.335) / 52.0 (2.047)	- / 51.7 (2.035)
F	-	43.45 (1.7101) / 58.5 (2.3031)	-
G	-	29.4 (1.1574) / 44.4 (1.7480)	-
H	23.5 (0.9252) / 37.3 (1.4685)	22.5 (0.8858) / 37.3 (1.4685)	20.3 (0.7992) / 33.8 (1.3307)
I	-	43.45 (1.7101) / 61.2 (2.4094) or 43.45 (1.7101) / 61.74 (2.4307)	-



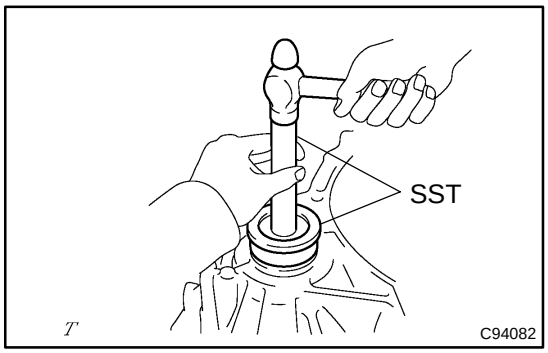
81. INSTALL TRANSAXLE CASE OIL SEAL

(a) Using SST and a hammer, drive in a new transaxle case oil seal.

Oil seal in depth:

2.7 ± 0.5 mm (0.106 ± 0.020 in.)

SST 09726- 27012 (09726- 02041), 09950- 70010 (09951-07150)



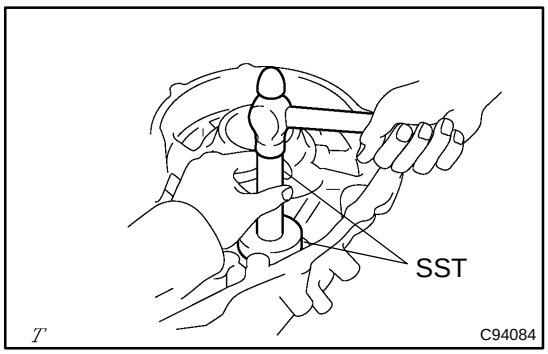
82. INSTALL FRONT TRANSAXLE CASE OIL SEAL

(a) Using SST and a hammer, drive in a new front transaxle case oil seal.

Oil seal in depth:

4.0 ± 0.5 mm (0.158 ± 0.020 in.)

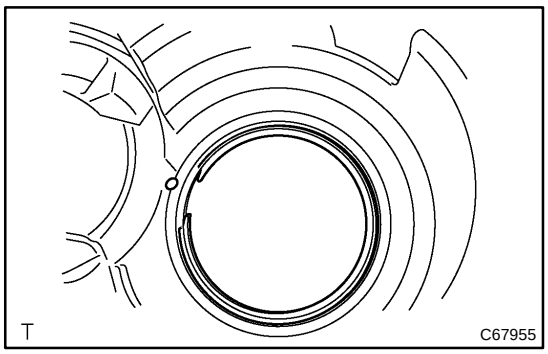
SST 09554-14010, 09950-70010 (09951-07100)



83. INSTALL FRONT DRIVE PINION REAR TAPERED ROLLER BEARING

(a) Using SST and a hammer, install the front drive pinion rear tapered roller bearing into the transaxle case.

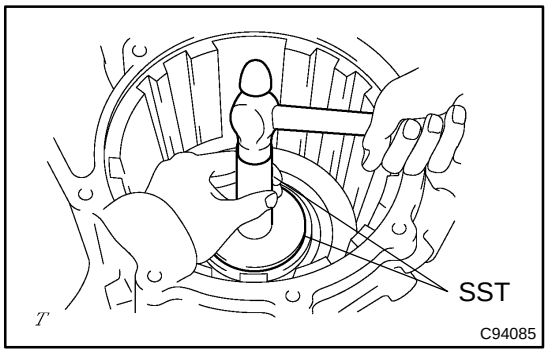
SST 09950- 60010 (09951- 00610), 09950- 70010 (09951-07150)



84. INSTALL COUNTER DRIVE GEAR HOLE SNAP RING

(a) Using a screwdriver, install the counter drive gear hole snap ring to the transaxle case.

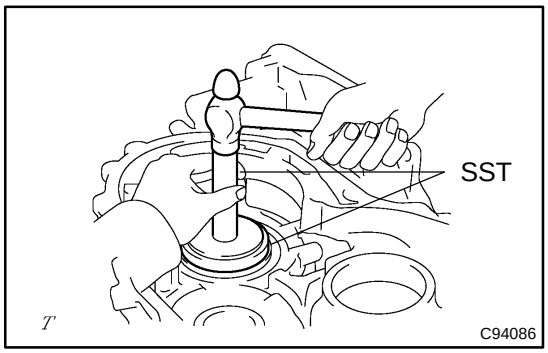
85. INSTALL BREATHER PLUG NO.1 (ATM)



86. INSTALL COUNTER DRIVE GEAR BEARING

(a) Using SST and a hammer, install the counter drive gear bearing LH outer race to the transaxle case.

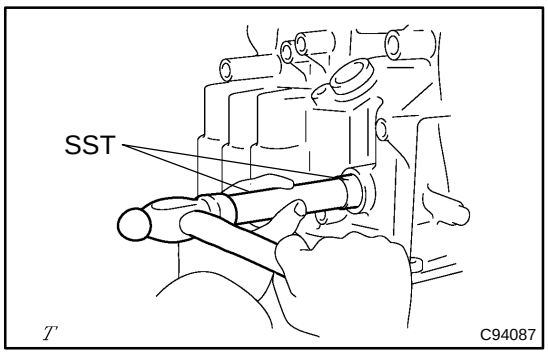
SST 09950- 60020 (09951- 00890), 09950- 70010 (09951-07150)



(b) Using SST and a hammer, install the counter drive gear bearing RH outer race to the transaxle case.

SST 09950- 60020 (09951- 00890), 09950- 70010 (09951-07150)

(c) Install the counter drive gear bearing to the transaxle case.

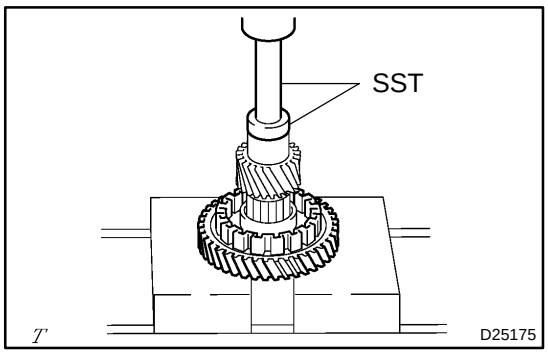


87. INSTALL MANUAL VALVE LEVER SHAFT OIL SEAL

(a) Using SST and a hammer, install the new manual valve lever shaft oil seal.

SST 09950- 60010 (09951- 00220), 09950- 70010 (09951-07100)

Oil seal in depth:
0 ± 0.5 mm (0 ± 0.020 in.)

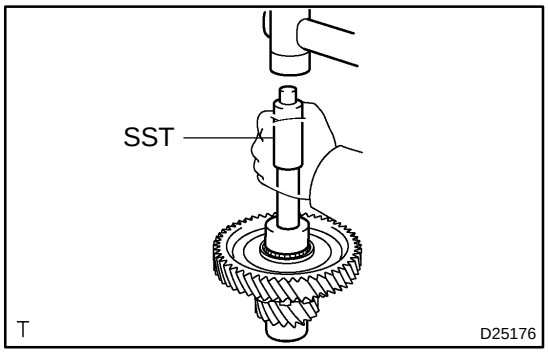


88. INSTALL COUNTER DRIVEN GEAR

(a) Using SST and a press, install the counter driven gear to the differential drive pinion.
SST 09950- 60010 (09951- 00350), 09950- 70010 (09951-07150)

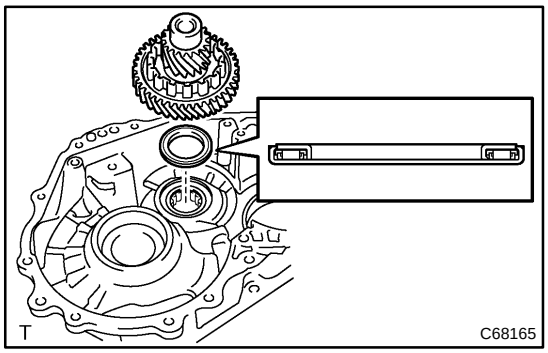
NOTICE:
When replacing the counter driven gear, replace the counter drive gear in the transaxle case, too.

HINT:
The differential drive pinion shall be press-fit until it comes to contact with the counter driven gear.

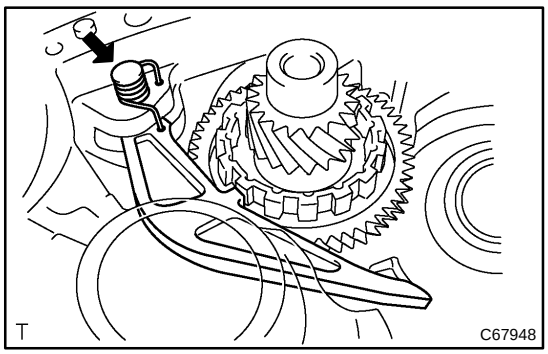


89. INSTALL DIFFERENTIAL DRIVE PINION PLUG

(a) Using SST and a plastic hammer, install a new differential drive pinion plug to the differential drive pinion
SST 09221-25026 (09221-00071)
Standard clearance:
2.5 - 2.6 mm (0.0984 - 0.1023 in.)



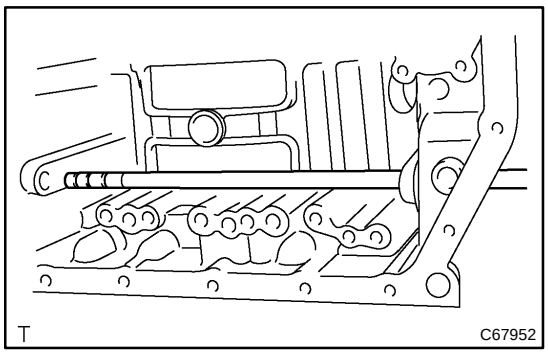
(b) Install the counter driven gear and drive pinion thrust bearing to the transaxle case.



90. INSTALL PARKING LOCK PAWL

(a) Coat the parking lock pawl shaft with ATF.
(b) Install the parking lock pawl, parking lock pawl torsion spring and parking lock pawl shaft to the transaxle case.

HINT:
Check that the parking lock pawl can move smoothly.

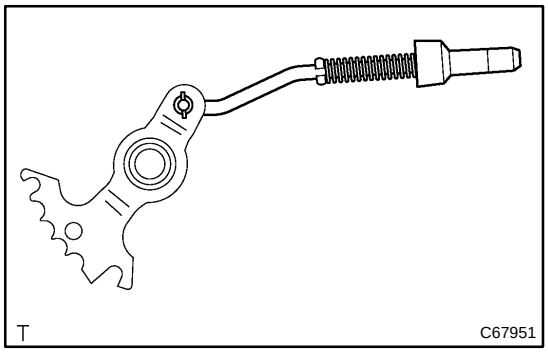


91. INSTALL MANUAL VALVE LEVER SHAFT

(a) Install the manual valve lever shaft to the transaxle case.

NOTICE:

Be careful not to damage the oil seal lip.



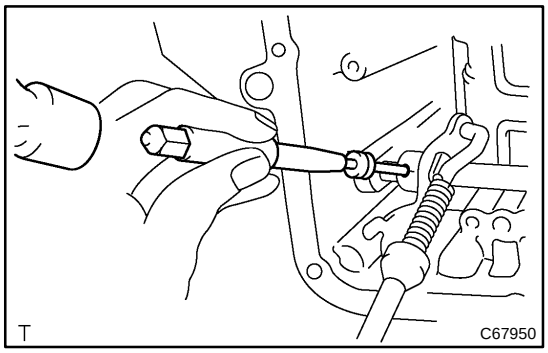
92. INSTALL PARKING LOCK ROD SUB-ASSY

(a) Install parking lock rod sub-assy to the manual valve lever.

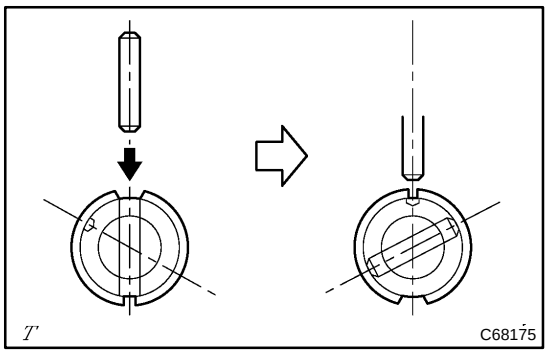
93. INSTALL MANUAL VALVE LEVER SUB-ASSY

(a) Coat the manual valve lever sub-assy with ATF.

(b) Install the manual valve lever and a new manual valve lever spacer to the manual valve lever shaft.



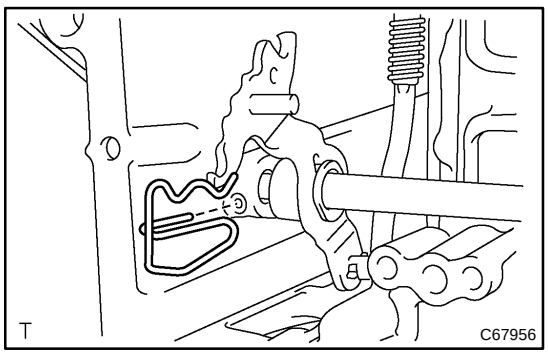
(c) Using a pin punch and hammer, drive in the pin.



(d) Turn the spacer and manual valve lever shaft to align the small hole for locating the staking position in the spacer with the staking position mark on the manual valve lever shaft.

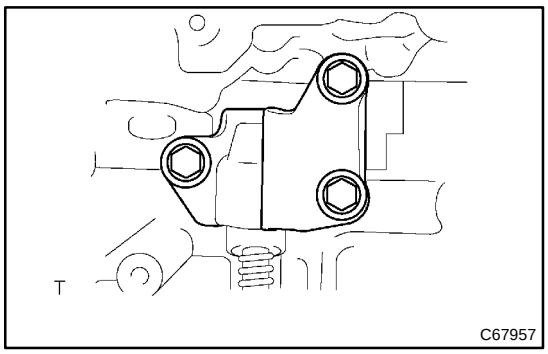
(e) Using a pin punch, stake the spacer through the small hole.

(f) Check that the spacer does not turn.



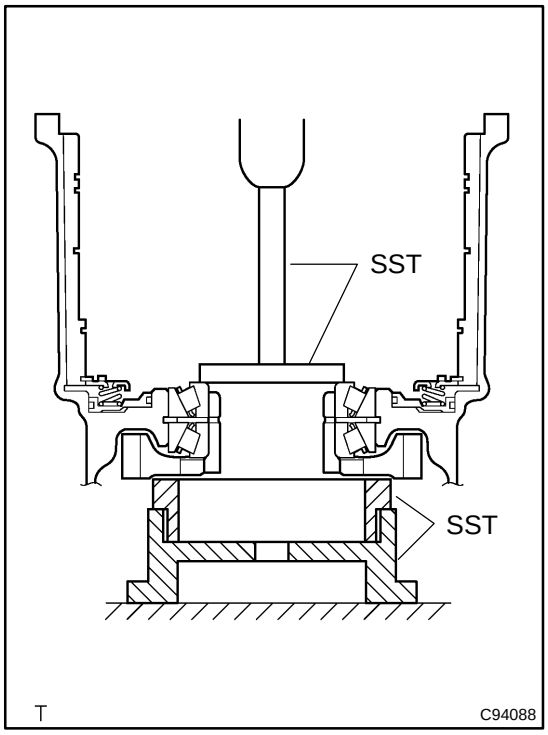
94. INSTALL MANUAL VALVE LEVER SHAFT RETAINER SPRING

(a) Install the manual valve lever shaft retainer spring.



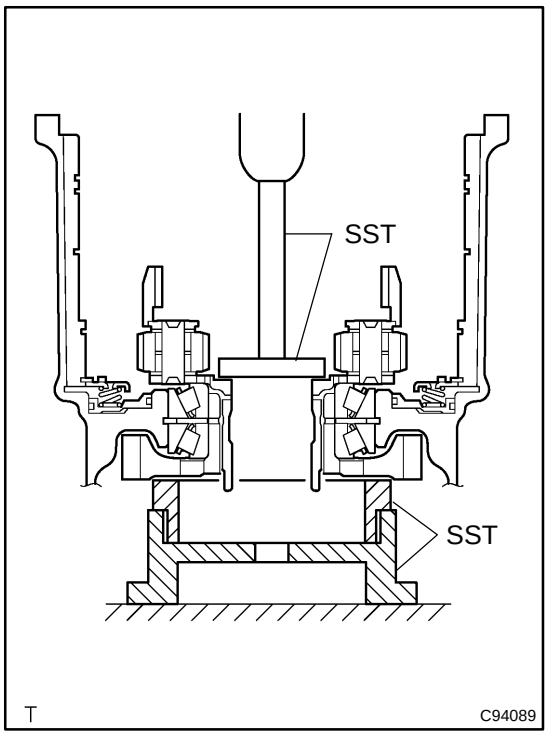
95. INSTALL PARKING LOCK PAWL BRACKET

(a) Install the cam guide sleeve, parking lock pawl bracket with the 3 bolts.
Torque: 20.1 N·m (205 kgf·cm, 15 ft·lbf)



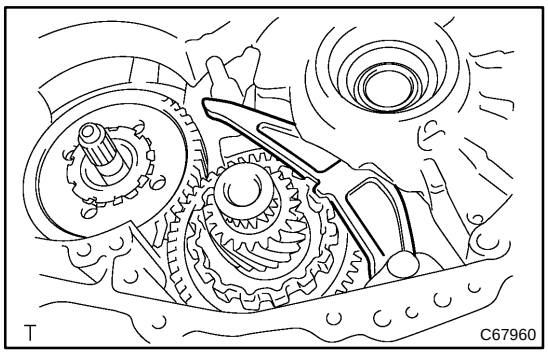
96. INSTALL COUNTER DRIVE GEAR

(a) Using SST and a press, install the counter drive gear to the transaxle case.
SST 09223-15030, 09527-17011, 09950-60010 (09951-00650), 09950-70010 (09951-07150)



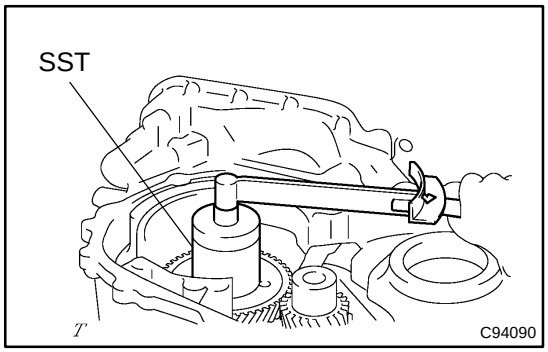
97. INSTALL PLANETARY GEAR ASSY

(a) Using SST and a press, install the planetary gear assy to the transaxle case.
SST 09950-60010 (09951-00480), 09223-15030, 09527-1701 1, 09950-70010 (09951-07150)

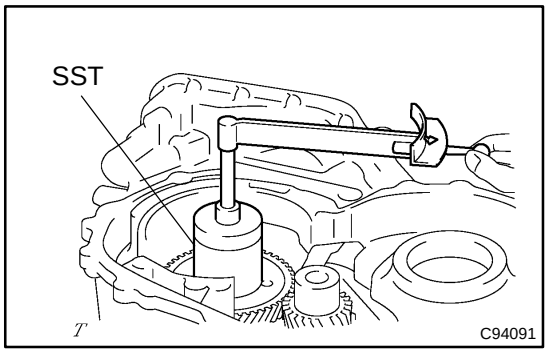


98. INSTALL COUNTER DRIVE GEAR NUT

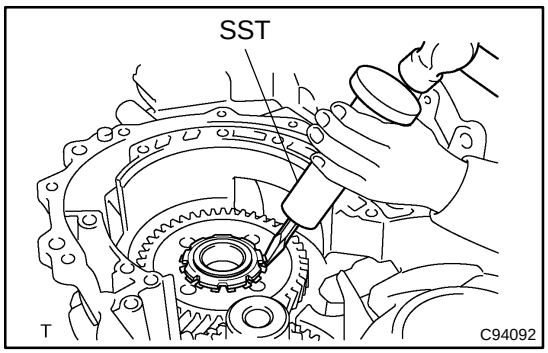
(a) Fix the counter driven gear with the parking lock pawl.



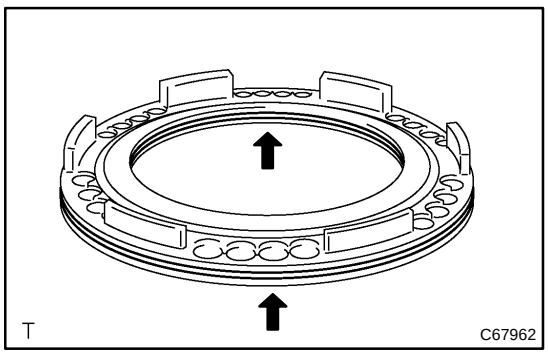
(b) Using SST, install a new lock washer and nut.
SST 09387-00120
Torque: 280 N·m (2,855 kgf·cm, 207 ft·lbf)



(c) Using SST and a small torque wrench, while turning to counter drive gear 60 turn per minute and measure the rotating torque.
SST 09387-00120
Rotating torque:
0.20 - 0.49 N·m (2 - 5 kgf·cm, 2 - 4 in.·lbf)

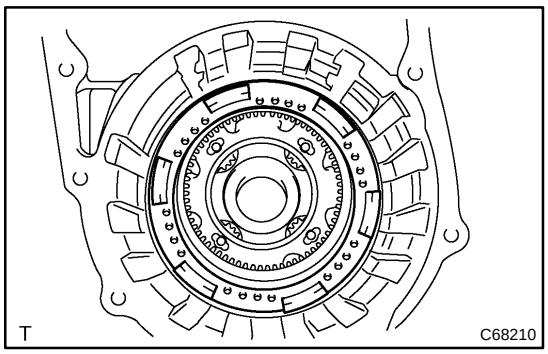


(d) Using SST and a hammer, stake the lock nut washer.
SST 09930-00010



99. INSTALL 1ST & REVERSE BRAKE PISTON NO.2 O-RING

(a) Install the 2 new O-rings to the 1st & reverse brake piston No.2.

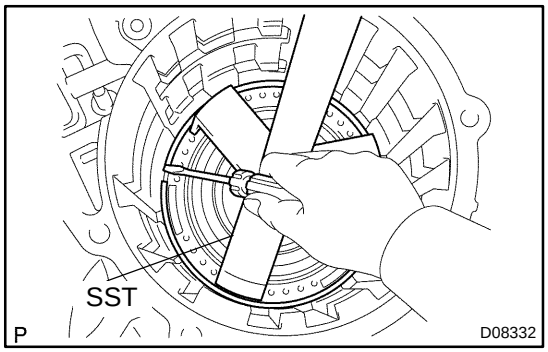


100. INSTALL 1ST & REVERSE BRAKE PISTON NO.2

(a) Install the 1st & reverse brake piston to the transaxle case.

NOTICE:

Be careful not to damage the oil seal lip.

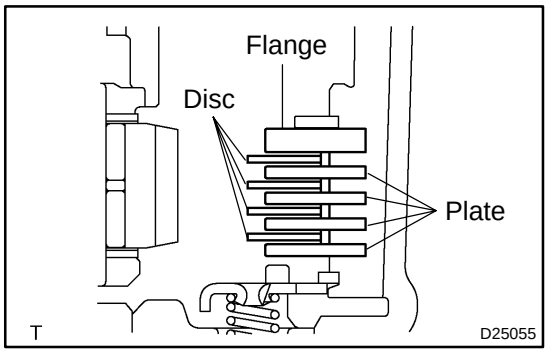


101. INSTALL 1ST & REVERSE BRAKE RETURN SPRING SUB-ASSY

(a) Install the 1st & reverse brake return spring sub-assy to the transaxle case.

(b) Using SST, a press and a screwdriver, install the snap ring.

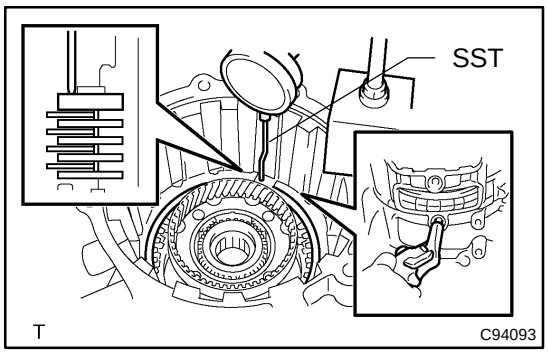
SST 09387-00070



102. INSTALL 1ST & REVERSE BRAKE DISC

(a) Install the 4 1st & reverse brake plates, 4 1st & reverse brake discs and 1st & reverse brake flange to the transaxle case.

(b) Using a screwdriver, install the snap ring.



103. INSPECT PACK CLEARANCE OF FIRST & REVERSE BRAKE

(a) Using SST and a dial indicator, measure the dimension "A" in the illustration while pressing the disc and plate from the rear side.

SST 09350-36010 (09350-06110)

Pack clearance: 0.8 - 1.2 mm (0.032 - 0.047 in.)

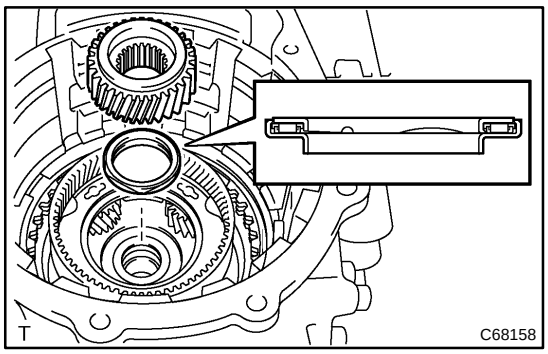
HINT:

Pack clearance = Dimension A - Flange thickness - Snap ring thickness

Select flange thickness: mm (in.)

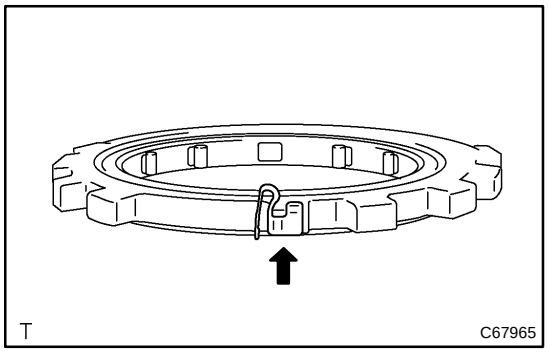
Mark	Thickness	Mark	Thickness
-	3.4 (0.134)	2	3.8 (0.150)
1	3.6 (0.142)	3	4.0 (0.157)

(b) Check that the 1st & reverse brake piston moves when applying compressed air (392 kPa, 4.0 kgf/cm^2, 57 psi) to the oil hole.



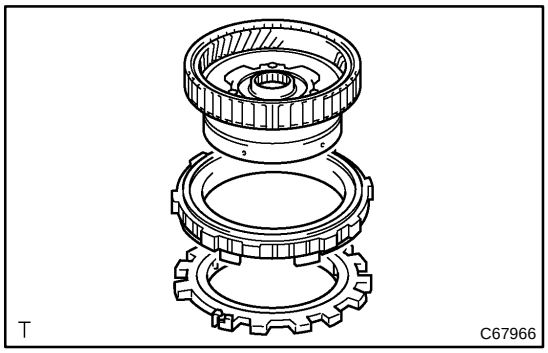
104. INSTALL FR PLANETARY SUN GEAR

(a) Install the front planetary sun gear and thrust needle roller bearing to the planetary gear assy.



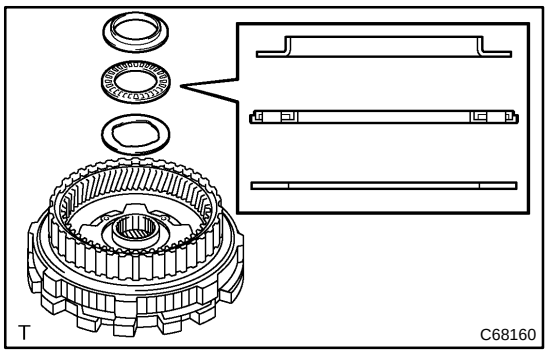
105. INSTALL OUTER RACE RETAINER

(a) Install outer race retainer to the 1 way clutch No.2.



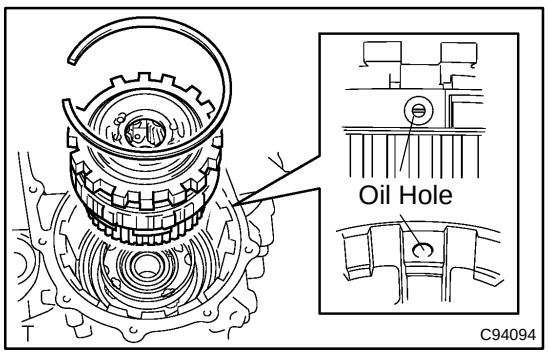
106. INSTALL 1 WAY CLUTCH NO.2

(a) Install the 1 way clutch No.2 and 2nd brake cylinder assy to the rear planetary gear assy.



107. INSTALL PLANETARY GEAR REAR THRUST NEEDLE ROLLER BEARING

(a) Install the thrust bearing race No.2, planetary gear rear thrust needle roller bearing and a thrust bearing race No.1 to the rear planetary gear assy.



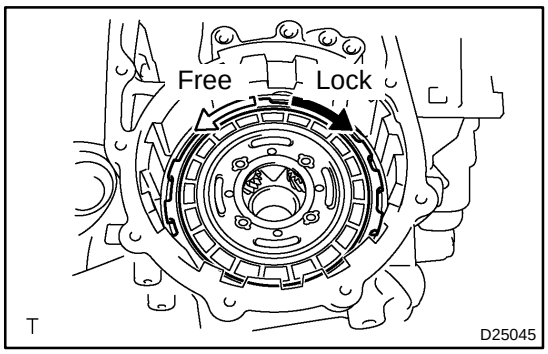
108. INSTALL REAR PLANETARY GEAR ASSY

(a) Install the rear planetary gear assy to the transaxle case to the transaxle case.

NOTICE:

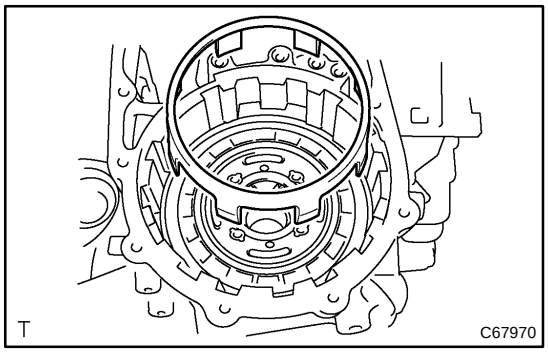
Align the oil hole of the 2nd brake piston assy with that of the transaxle case, and install them.

(b) Using a screwdriver, install the snap ring.



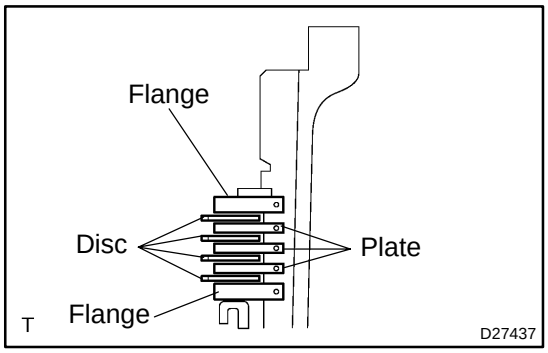
109. INSPECT 1 WAY CLUTCH NO.2

(a) Check that the rear planetary gear assy turns freely counterclockwise and locks clockwise.



110. INSTALL 2ND BRAKE PISTON SLEEVE

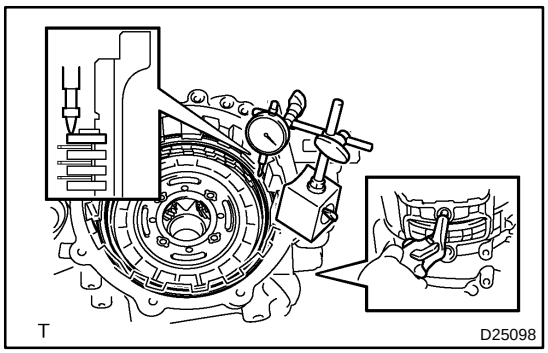
(a) Install the 2nd brake piston sleeve to the transaxle case.



111. INSTALL 2ND BRAKE BRAKE DISC

(a) Install the 4 2nd brake brake discs, 3 2nd brake brake plates and 2 2nd brake brake flanges to the transaxle case.

(b) Using a screwdriver, install the snap ring to the transaxle case.



112. INSPECT PACK CLEARANCE OF SECOND BRAKE

(a) Using a dial indicator, measure the 2nd brake pack clearance while applying and releasing compressed air (392 - 785 kPa, 4 - 8 kgf·cm^2, 57 - 114 psi).

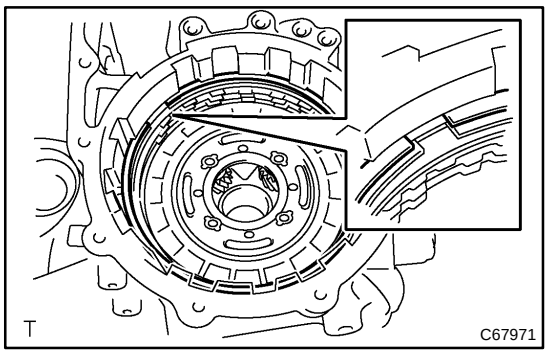
Pack clearance: 0.84 - 1.24 mm (0.033 - 0.049 in.)

HINT:

Pack clearance = Dimension A - Selected flange thickness - Snap ring thickness.

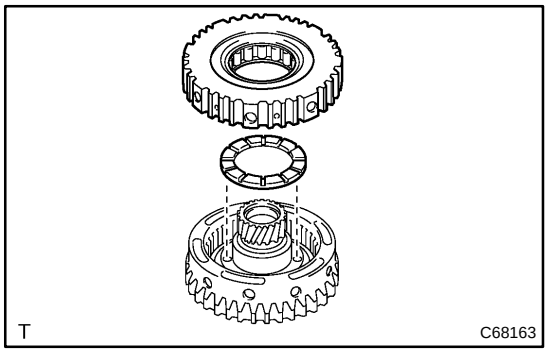
Selected flange thickness: mm (in.)

Mark	Thickness	Mark	Thickness
-	3.0 (0.118)	2	3.4 (0.134)
1	3.2 (0.126)	3	3.6 (0.142)



113. INSTALL 2ND COAST & OVERDRIVE BRAKE FLANGE HOLE SNAP RING

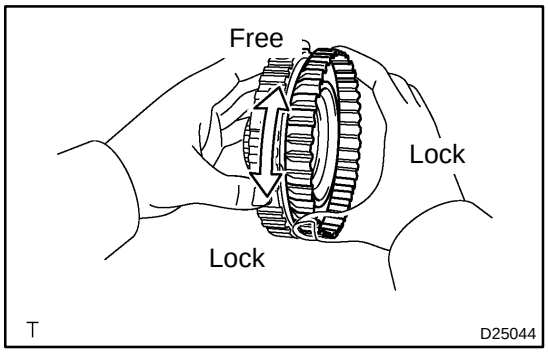
(a) Using a screwdriver, install the 2nd coast & overdrive brake flange hole snap ring to the transaxle case.



114. INSTALL 1 WAY CLUTCH ASSY

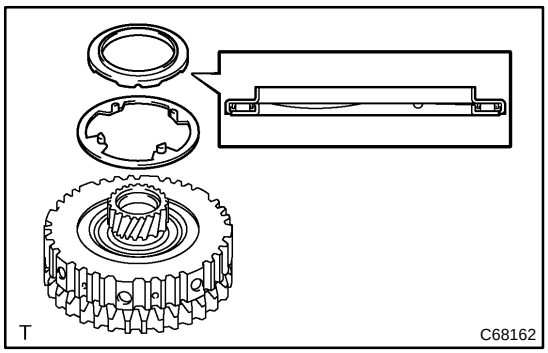
(a) Install the thrust washer No.2 to the rear planetary sun gear assy.

(b) Install the 1 way clutch assy to the rear planetary sun gear assy.



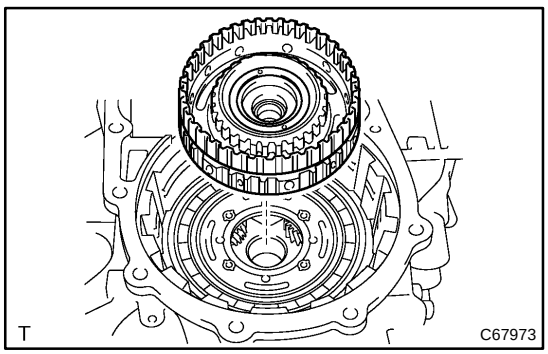
115. INSPECT 1 WAY CLUTCH ASSY

(a) Hold the rear planetary sun gear and turn the 1 way clutch assy. The 1 way clutch assy should turn freely clockwise and should lock counterclockwise.



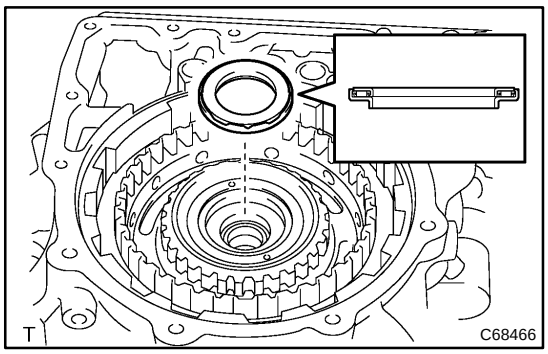
116. INSTALL REAR PLANERARY SUN GEAR THRUST NEEDLE ROLLER BEARING

(a) Install the rear planetary sun gear thrust needle roller bearing and thrust washer No.1 to the rear planetary sun gear.



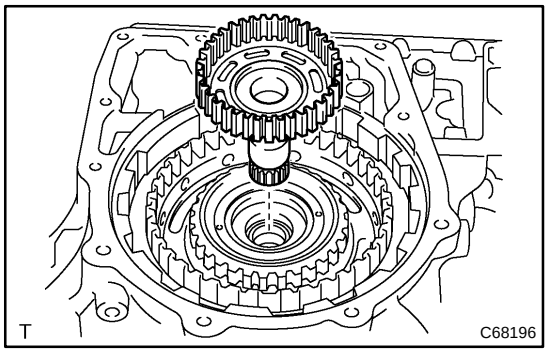
117. INSTALL REAR PLANETARY SUN GEAR ASSY

(a) Install the rear planetary sun gear assy.



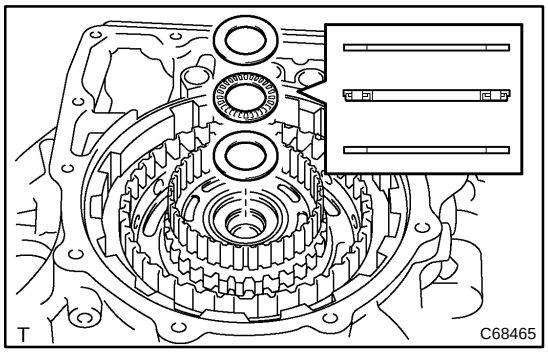
118. INSTALL REAR PLANETARY SUN GEAR, NO.2 THRUST NEEDLE BEARING

(a) Install the rear planetary sun gear No.2 thrust needle bearing to the rear planetary sun gear.



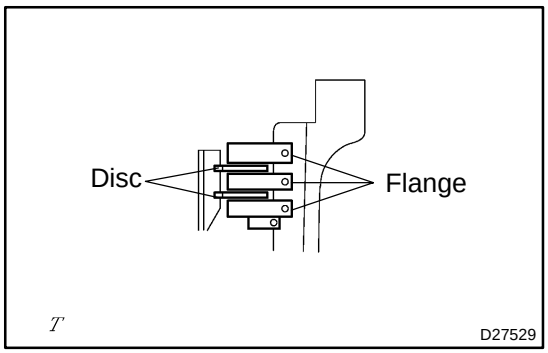
119. INSTALL DIRECT CLUTCH HUB

(a) Install the direct clutch hub.



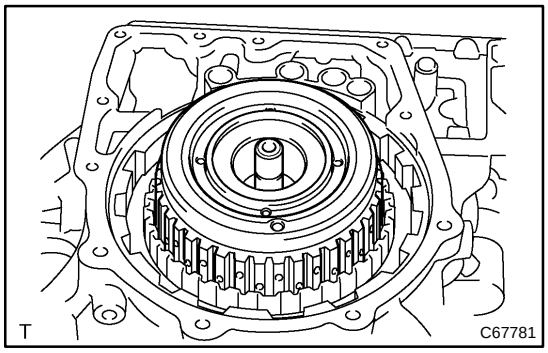
120. INSTALL THRUST NEEDLE ROLLER BEARING

(a) Install the thrust bearing race No.3, thrust needle roller bearing and a C-2 hub thrust bearing race to the direct clutch hub.



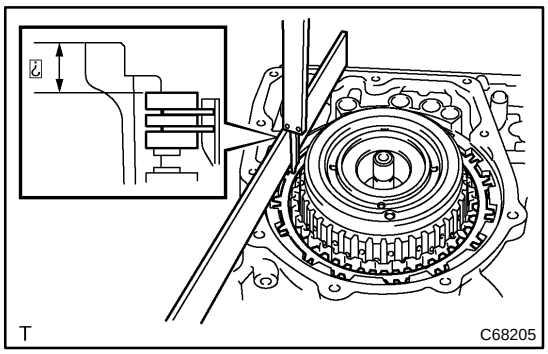
121. INSTALL 2ND COAST & OVERDRIVE BRAKE DISC

(a) Install the 2 2nd coast & overdrive brake flanges No.2, 2 2nd coast & overdrive brake discs and 2nd coast & overdrive brake flange to the transaxle case.



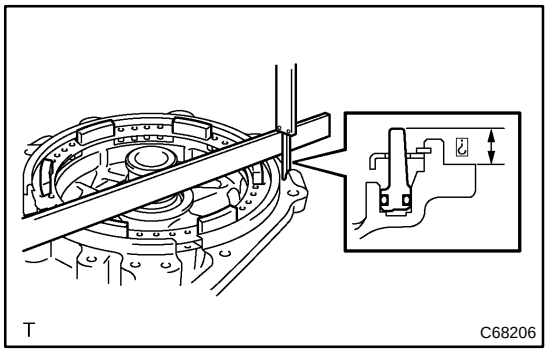
122. INSTALL INTERMEDIATE SHAFT ASSY

(a) Install the intermediate shaft assy to the transaxle case.



123. INSPECT PACK CLEARANCE OF SECOND COAST & OVER DRIVE BRAKE

(a) As shown in the illustration, place a straight edge on the transaxle case and measure the distance between the 2nd coast & overdrive brake flange and straight edge using vernier calipers. (Dimension A)



(b) As shown in the illustration, place a straight edge on the overdrive brake piston and measure the distance between the transaxle rear cover and straight edge using vernier calipers. (Dimension B)

Calculate the piston stroke value using the following formula. Select a flange which satisfies the piston stroke value and install it.

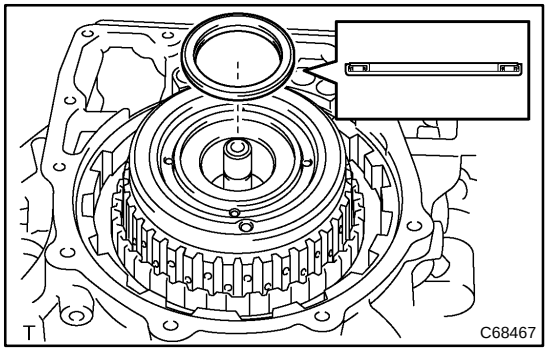
Pack clearance: 2.09 - 2.49 mm (0.082 - 0.098 in.)

HINT:

Pack clearance = Dimension ”A” - Dimension ”B” - Selected flange thickness.

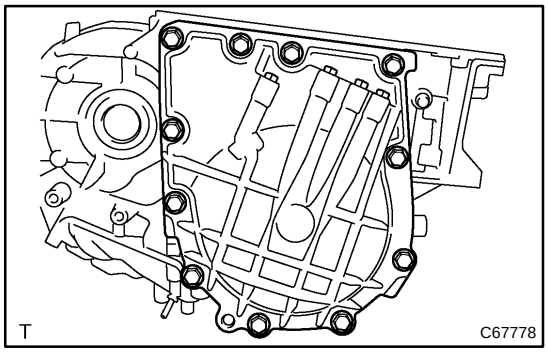
Selected flange thickness: mm (in.)

Mark	Thickness	Mark	Thickness
4	4.0 (0.1575)	6	4.4 (0.1732)
5	4.2 (0.1654)	7	4.6 (0.1811)



124. INSTALL REAR CLUTCH DRUM THRUST NEEDLE ROLLER BEARING

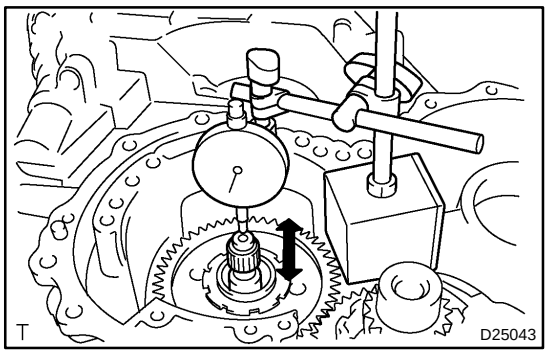
(a) Install the rear clutch drum thrust needle roller bearing to the intermediate shaft.



125. INSPECT INTERMEDIATE SHAFT ASSY

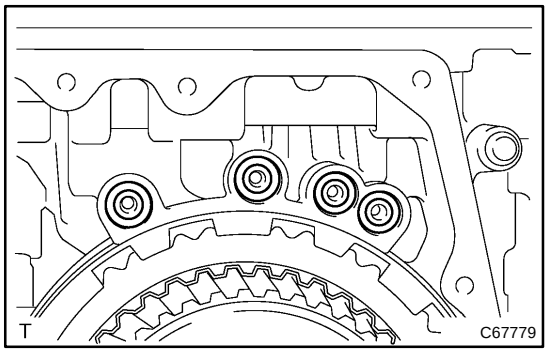
(a) Install the transaxle rear cover and 11 bolts.

Torque: 24.5 N·m (250 kgf·cm, 18 ft·lbf)



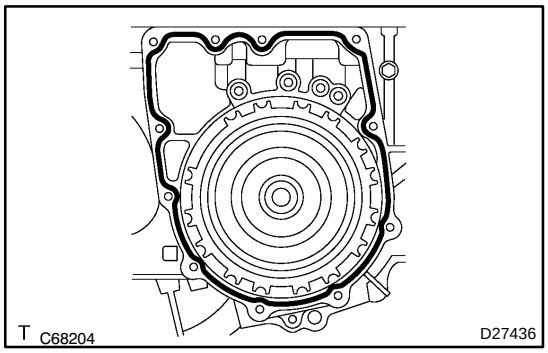
(b) Using a dial indicator, measure the rickety of intermediate shaft.
Standard clearance:
0.204 - 0.966 mm (0.008 - 0.038 in.)

(c) Remove the 11 bolts and transaxle rear cover.



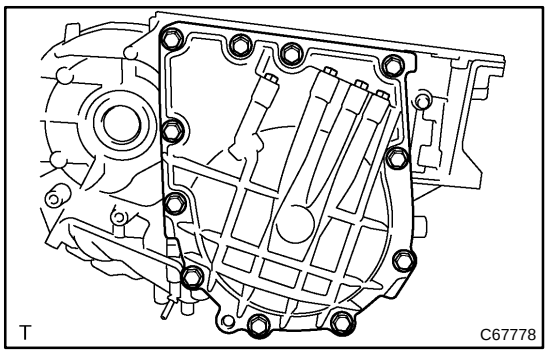
126. INSTALL TRANSAXLE CASE GASKET

(a) Install the 4 new transaxle gaskets to the transaxle case.

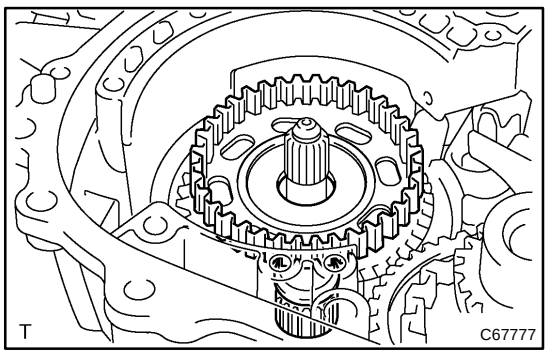


127. INSTALL TRANSAXLE REAR COVER ASSY

(a) Apply FIPG to the transaxle case.
FIPG:
Part NO. 08826-00090, THREE BOND 1281 or equivalent

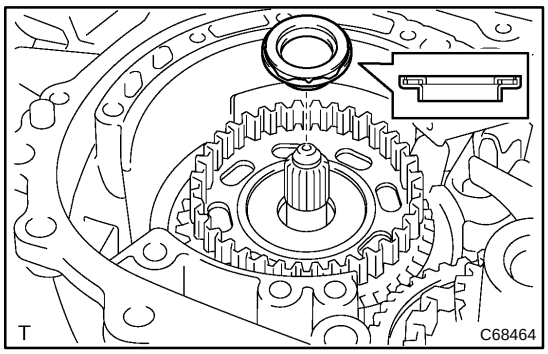


(b) Install the transaxle rear cover assy and 11 bolts.
Torque: 24.5 N·m (250 kgf·cm, 18 ft·lbf)



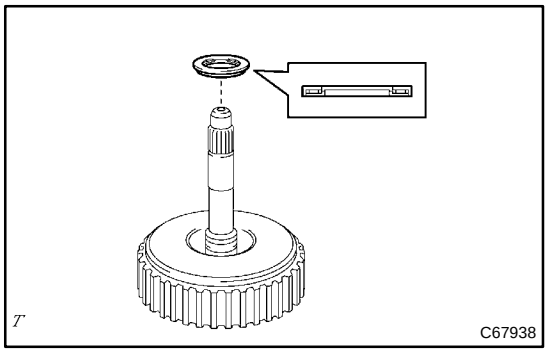
128. INSTALL FORWARD CLUTCH HUB SUB-ASSY

(a) Install the forward clutch hub sub-assy to the transaxle case.



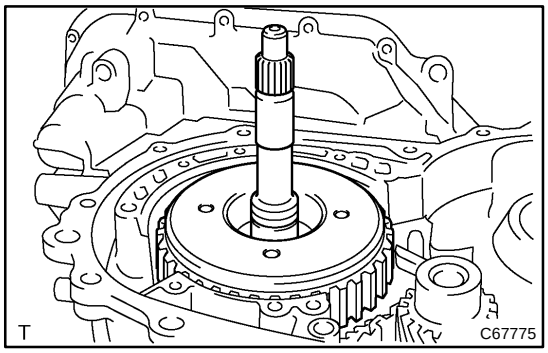
129. INSTALL FORWARD CLUTCH HUB THRUST NEEDLE ROLLER BEARING

(a) Install the forward clutch hub thrust needle roller bearing to the forward clutch hub.



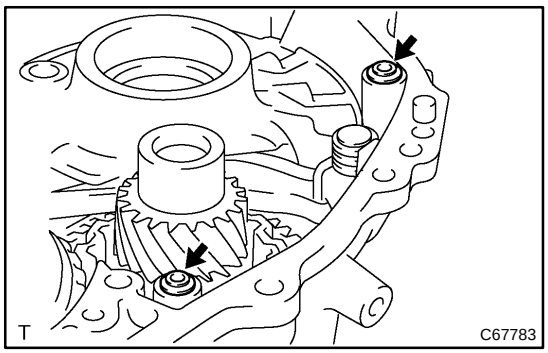
130. INSTALL STATOR SHAFT THRUST NEEDLE ROLLER BEARING

(a) Install the stator shaft thrust needle roller bearing to the input shaft assy.



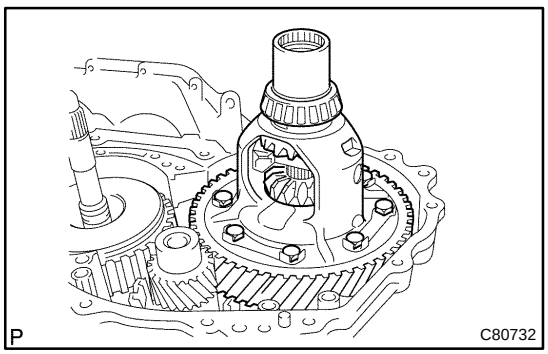
131. INSTALL INPUT SHAFT ASSY

(a) Install the input shaft assy to the transaxle case.



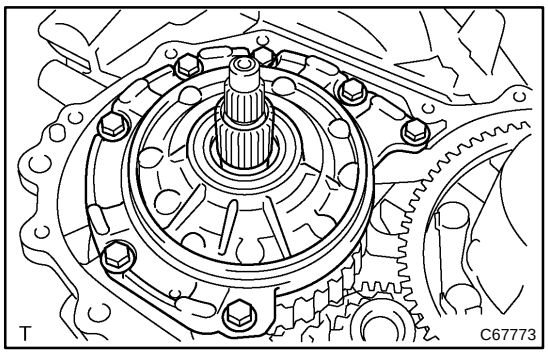
132. INSTALL OVERDRIVE BRAKE GASKET

(a) Install the 2 new overdrive brake gaskets to the transaxle case.



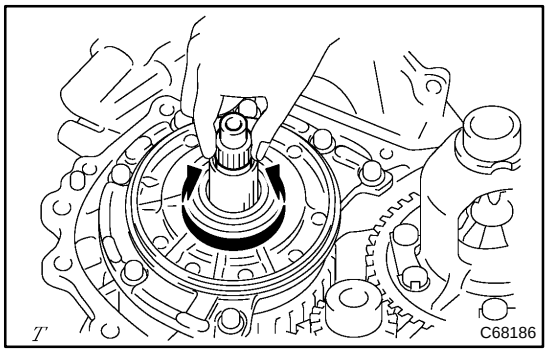
133. INSTALL DIFFERENTIAL GEAR ASSEMBLY

(a) Install the differential gear assembly to the transaxle case.



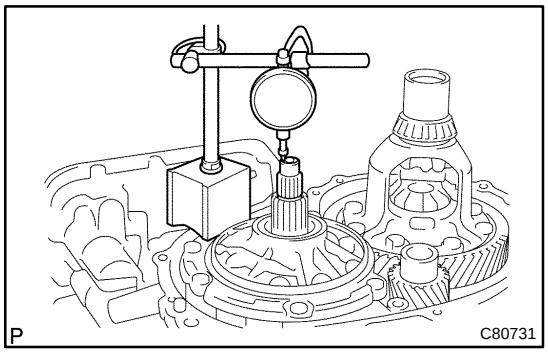
134. INSTALL OIL PUMP ASSEMBLY

(a) Install the 7 bolts and oil pump assembly.
Torque: 22.1 N·m (225 kgf·cm, 16 ft·lbf)



135. INSPECT INPUT SHAFT ASSY

(a) Make sure that the input shaft assy turns smoothly.



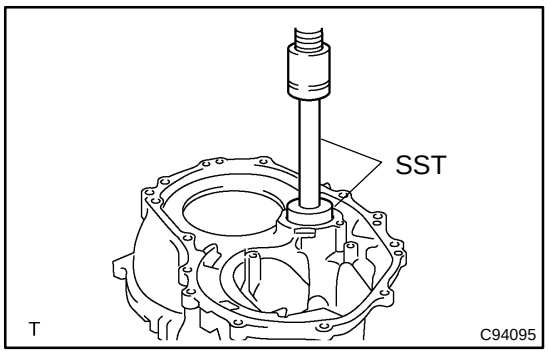
136. INSPECT INPUT SHAFT ENDPLAY

(a) Measure the end play in axial direction.
End play: 0.37 - 1.29 mm (0.0146 - 0.0508 in.)

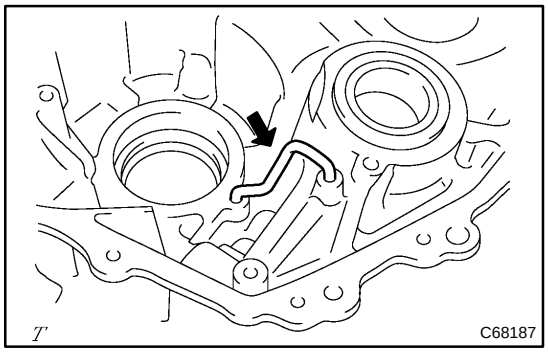
If the end play is not as specified, select and replace the thrust needle roller bearing.

137. INSTALL FRONT DRIVE PINION FRONT TAPERED ROLLER BEARING

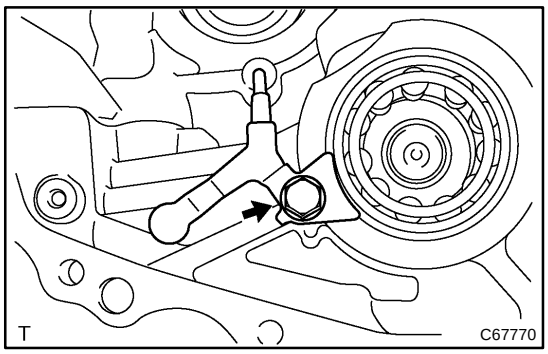
(a) Install the front drive pinion front tapered roller bearing to the transaxle housing.



(b) Using SST and a press, install the cylindrical roller bearing to the transaxle housing.
SST 09950- 60010 (09951- 00650), 09950- 70010 (09951-07150)

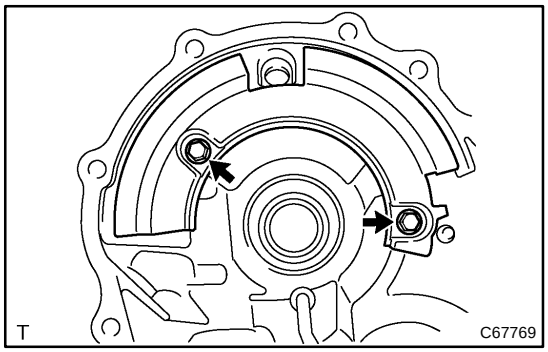


138. INSTALL DIFFERENTIAL GEAR LUBE APPLY TUBE



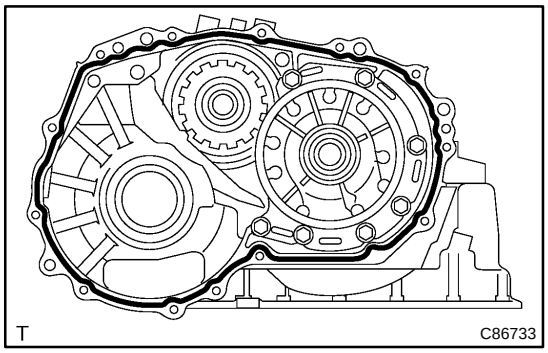
139. INSTALL BEARING LOCK PLATE

(a) Install the bearing lock plate with the bolt to the transaxle housing.
Torque: 11.3 N·m (115 kgf·cm, 8 ft·lbf)



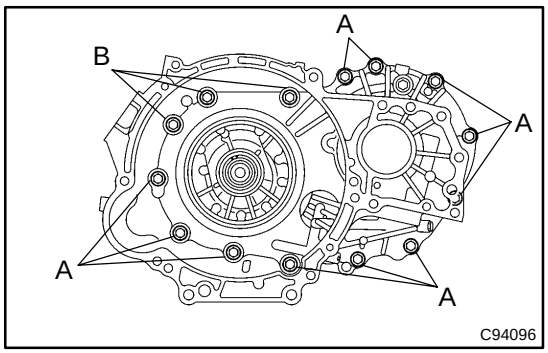
140. INSTALL TRANSAXLE HOUSING OIL SEPARATOR

(a) Install the transaxle housing oil separator with the 2 bolts to the transaxle housing.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

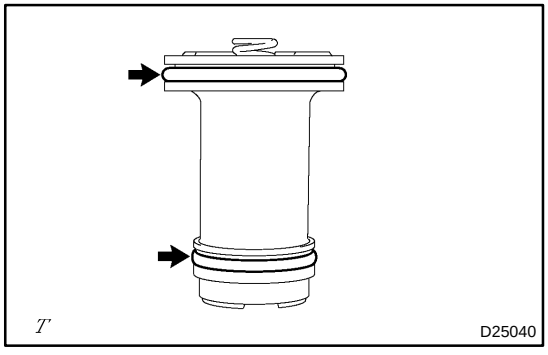


141. INSTALL TRANSAXLE HOUSING

(a) Apply FIPG to the transaxle case.
FIPG:
Part No.08826-00090, THREE BOND 1281 or equivalent



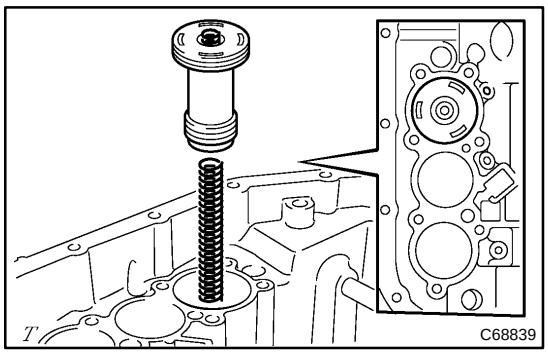
(b) Install the 14 bolts and transaxle housing with the 14 bolts.
Torque:
Bolt A: 29.4 N·m (300 kgf·cm, 22 ft·lbf)
Bolt B: 22.1 N·m (225 kgf·cm, 16 ft·lbf)



142. INSTALL C-2 ACCUMULATOR PISTON

(a) Coat the 2 new O-rings with ATF and install them to the C-2 accumulator piston.

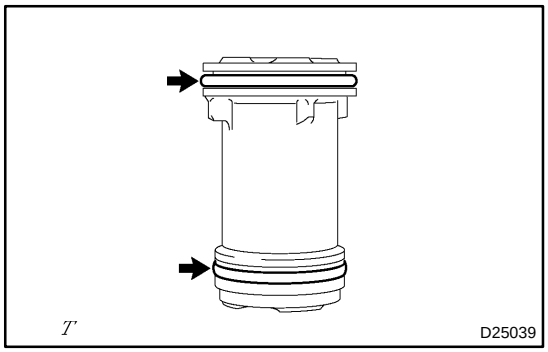
NOTICE:
Be careful not to damage the O-ring.



(b) Install the spring and C-2 accumulator piston.

Accumulator spring:

Spring	Free length/ Outer diameter mm (in.)	Color
C-2	66.90 (2.6339)/ 17.20 (0.6772)	-

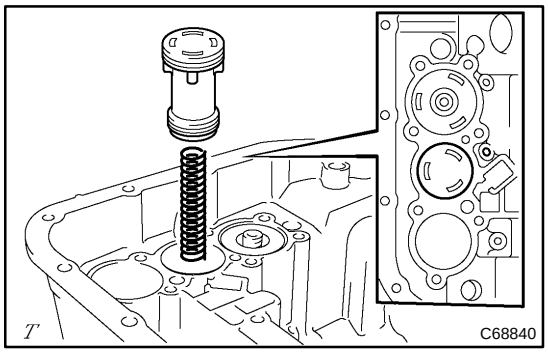


143. INSTALL C-3 ACCUMULATOR PISTON

(a) Coat the 2 new O-rings with ATF and install them to the C-3 accumulator piston.

NOTICE:

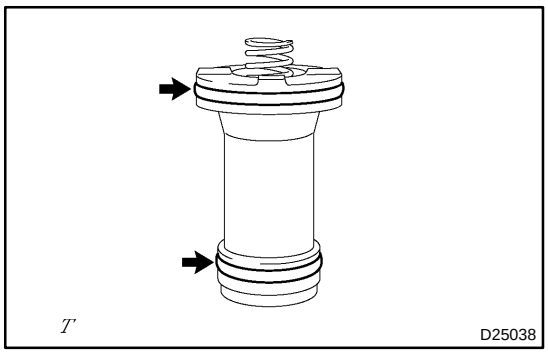
Be careful not to damage the O-ring.



(b) Install the spring and C-3 accumulator piston.

Accumulator spring:

Spring	Free length/ Outer diameter mm (in.)	Color
C-3	87.30 (3.4370)/ 18.70 (0.7362)	ORANGE

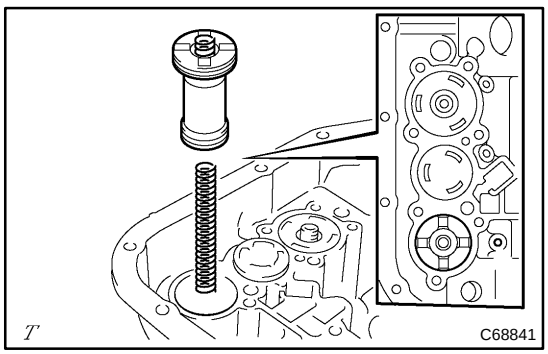


144. INSTALL B-2 ACCUMULATOR PISTON

(a) Coat the 2 new O-rings with ATF and install them to the B-2 accumulator piston.

NOTICE:

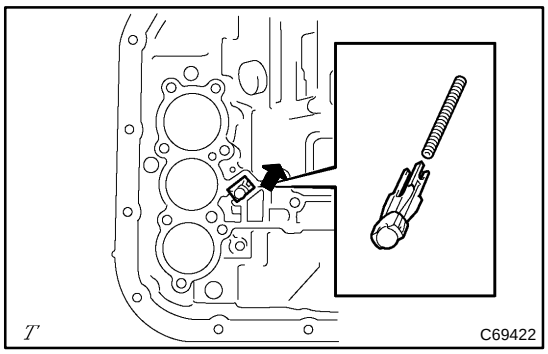
Be careful not to damage the O-ring.



(b) Install the spring and B-2 accumulator piston.

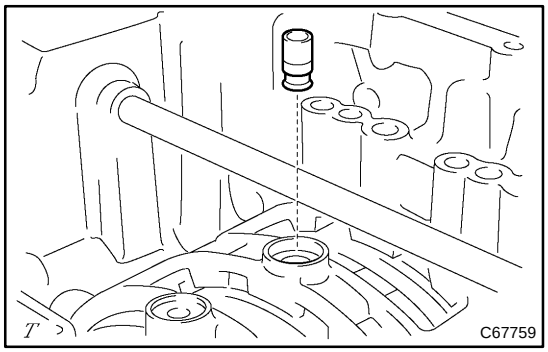
Accumulator spring:

Spring	Free length/ Outer diameter mm (in.)	Color
B-2	66.90 (2.6339)/ 15.50 (0.6102)	WHITE



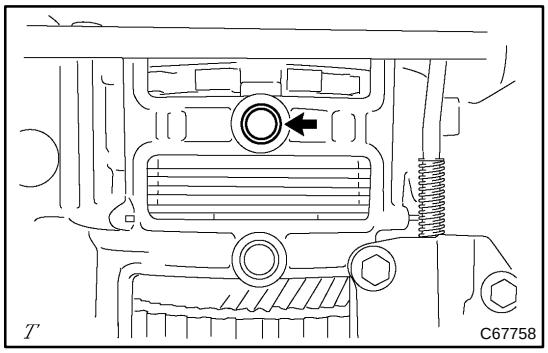
145. INSTALL CHECK BALL BODY

(a) Install the spring and check ball body.



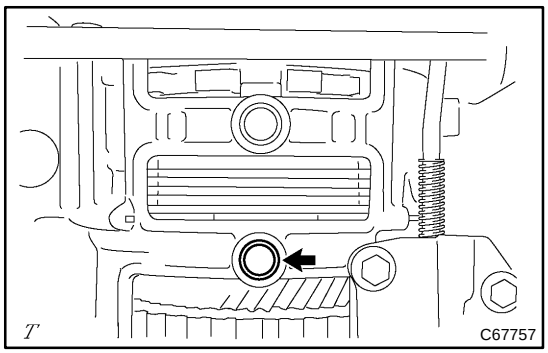
146. INSTALL BRAKE DRUM GASKET

(a) Install a new brake drum gasket.



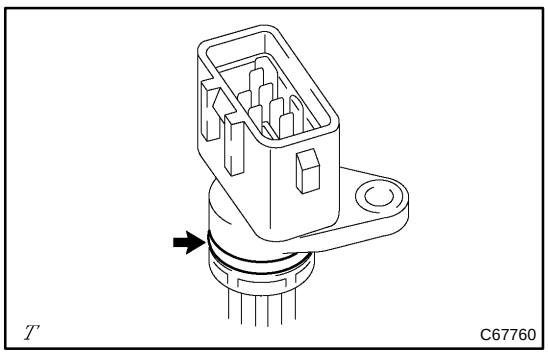
147. INSTALL TRANSAXLE CASE GASKET

(a) Install a new transaxle case gasket.



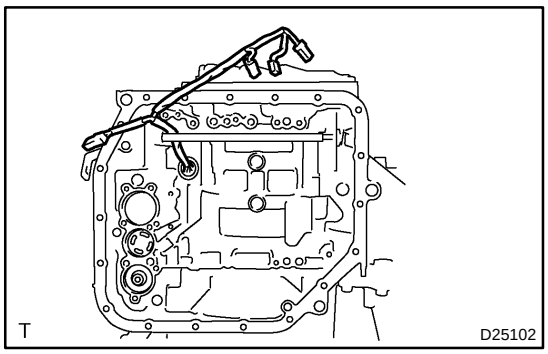
148. INSTALL TRANSAXLE CASE 2ND BRAKE GASKET

(a) Install a new transaxle case 2nd brake gasket.

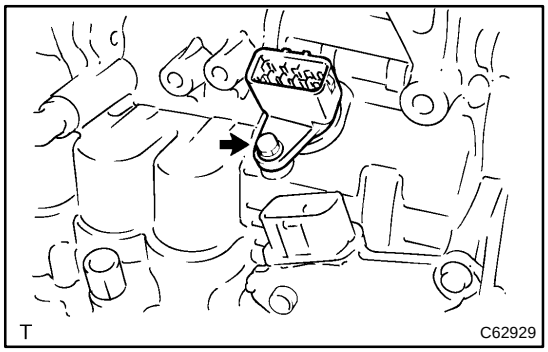


149. INSTALL TRANSMISSION WIRE

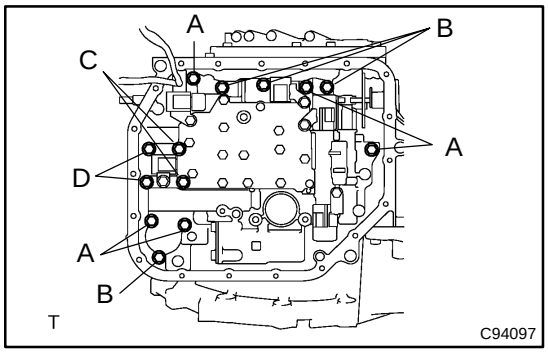
(a) Coat a new O-ring with ATF, install it to the transmission wire.



(b) Pierce the transmission wire to the transaxle.

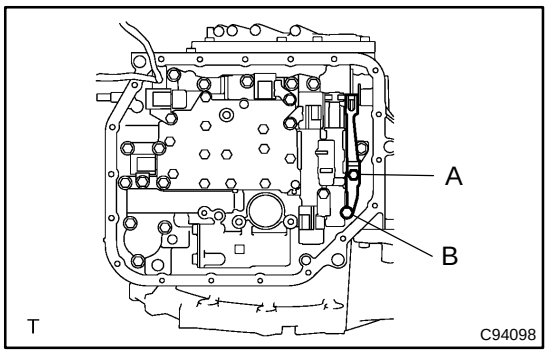


(c) Install the transmission wire with the bolt.
Torque: 5.4 N·m (55 kgf·cm, 48 ft·lbf)



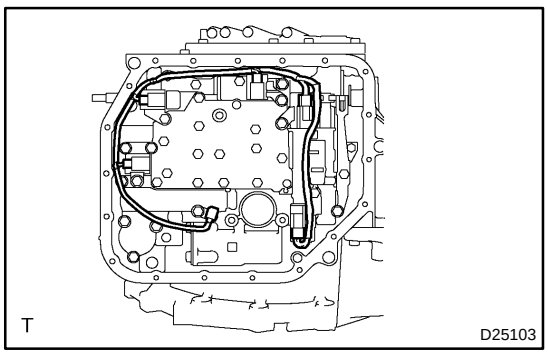
150. INSTALL TRANSMISSION VALVE BODY ASSY

(a) Install the transmission valve body assy and 13 bolts.
Torque: 10.8 N·m (110 kgf·cm, 8 ft·lbf)
Bolt length:
Bolt A: 32 mm (1.26 in.)
Bolt B: 22 mm (0.87 in.)
Bolt C: 55 mm (2.17 in.)
Bolt D: 45 mm (1.77 in.)



(b) Install the detent spring and detent spring cover with the 2 bolts.
Torque: 10.8 N·m (110 kgf·cm, 8 ft·lbf)
Bolt length:
Bolt A: 14 mm (0.55 in.)
Bolt B: 45 mm (1.77 in.)

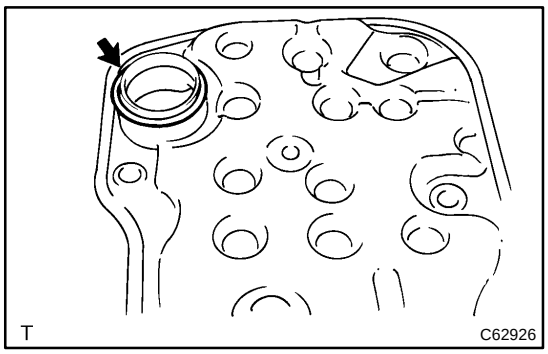
(c) Check that the manual valve lever comes to contact with the center of the detent spring tip roller.



(d) Connect the 5 solenoid connectors.

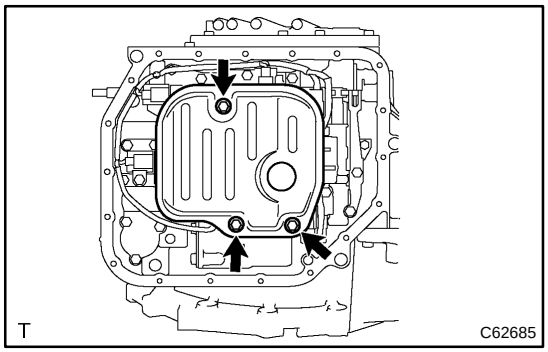
(e) Coat a new O-ring with ATF, install it to the ATF temperature sensor.

(f) Install the ATF temperature sensor and lock plate with the bolt.
Torque: 10.8 N·m (110 kgf·cm, 8 ft·lbf)



151. INSTALL VALVE BODY OIL STRAINER ASSY

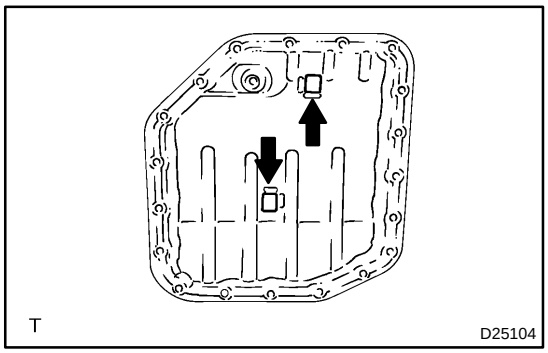
(a) Coat a new O-ring with ATF, install it to the valve body oil strainer assy.



(b) Install the valve body oil strainer assy with the 3 bolts.
Torque: 10.8 N·m (110 kgf·cm, 8 ft·lbf)

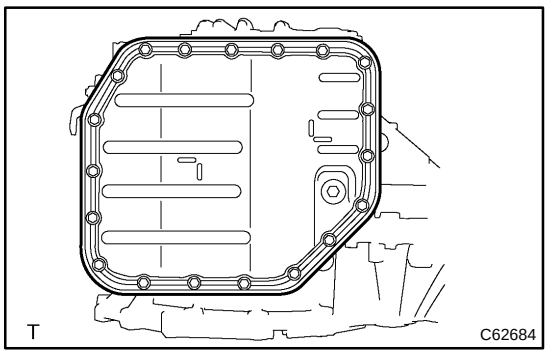
152. INSTALL AUTOMATIC TRANSAXLE OIL PAN GASKET

(a) Install a new automatic transaxle oil pan gasket to the automatic transaxle oil pan sub-assy.

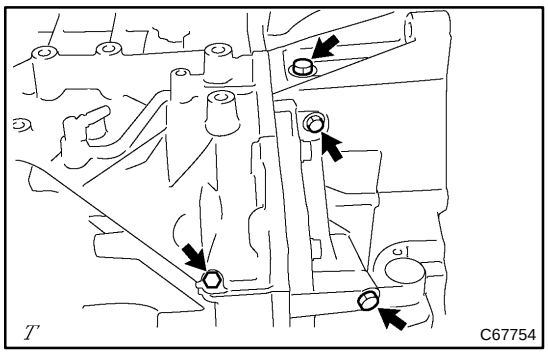


153. INSTALL AUTOMATIC TRANSAXLE OIL PAN SUB-ASSY

(a) Install the 2 magnets in the oil pan.



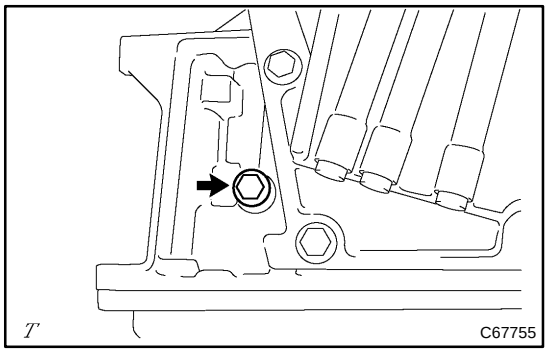
(b) Install the automatic transaxle oil pan sub-assy and 19 bolts.
Torque: 7.8 N·m (80 kgf·cm, 69 in.·lbf)



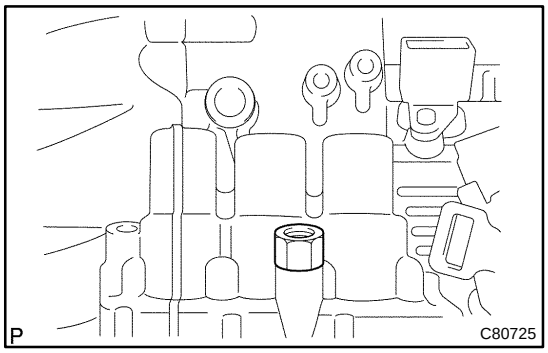
154. INSTALL TRANSAXLE CASE NO.1 PLUG

(a) Coat 5 new O-rings with ATF, install them to the 5 screw plugs.

(b) Install the 4 screw plugs.
Torque: 7.4 N·m (75 kgf·cm, 65 in.·lbf)



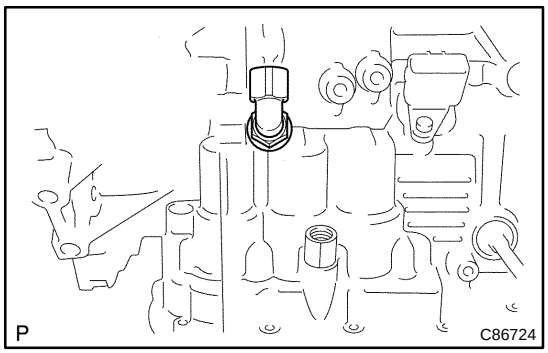
(c) Install the screw plug.
Torque: 7.4 N·m (75 kgf·cm, 65 in.·lbf)



155. INSTALL OIL COOLER TUBE UNION (OUTLET OIL COOLER UNION)

(a) Coat a new O-ring with ATF, install it to the union.

(b) Install the oil cooler tube union.
Torque: 27 N·m (275 kgf·cm, 20 ft·lbf)

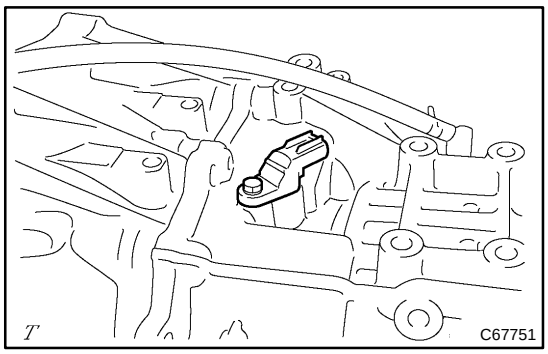


156. INSTALL OIL COOLER TUBE UNION (INLET OIL COOLER UNION)

(a) Coat a new O-ring with ATF, install it to the elbow.

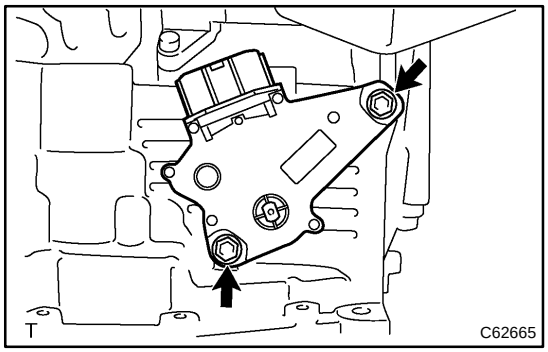
(b) Install the oil cooler tube union.
Torque: 27 N·m (275 kgf·cm, 20 ft·lbf)

157. INSTALL BREATHER PLUG HOSE



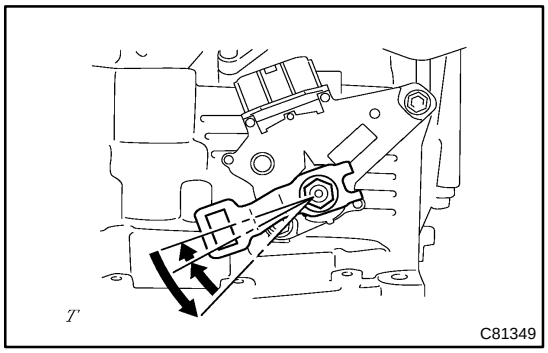
158. INSTALL TRANSMISSION REVOLUTION SENSOR

(a) Install the bolt and transmission revolution sensor.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)

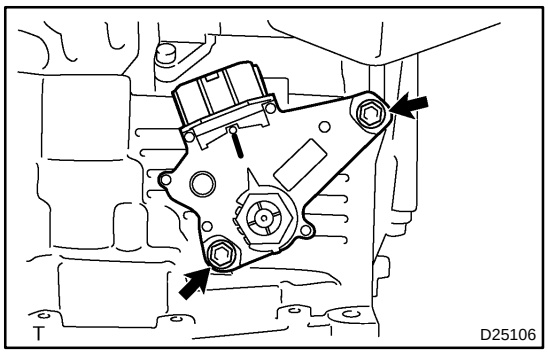


159. INSTALL PARK/NEUTRAL POSITION SWITCH ASSY

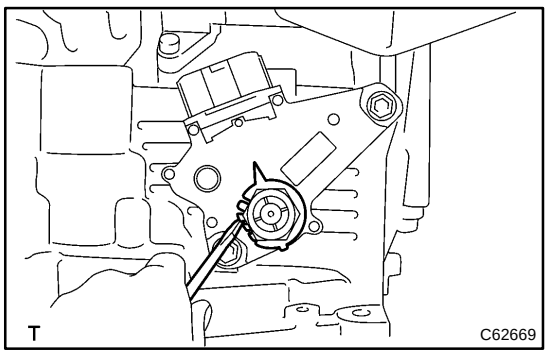
(a) Install the park/neutral position switch onto the manual valve lever shaft and temporarily install the 2 adjusting bolts.
(b) Install a new lock washer and nuts.
Torque: 6.9 N·m (70 kgf·cm, 61 in.·lbf)
(c) Temporarily install the control lever.



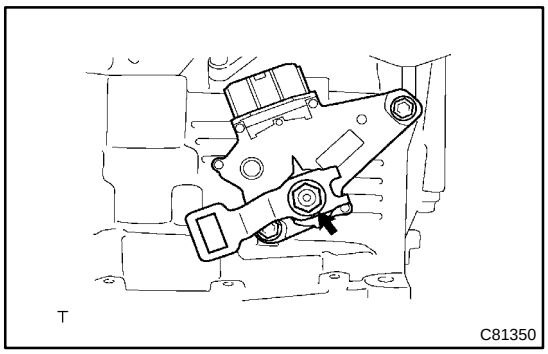
(d) Turn the lever counterclockwise until it stops, then turn it clockwise 2 notches.
(e) Remove the control lever.



(f) Align the groove with neutral basic line.
(g) Tighten the 2 bolts.
Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)



(h) Using a screwdriver, stake the nut with the lock washer.



(i) Install the control lever with the washer and nut.
Torque: 13 N·m (133 kgf·cm, 10 ft·lbf)

160. INSTALL SPEEDOMETER DRIVEN HOLE (ATM) COVER SUB-ASSY

(a) Coat a new O-ring with ATF, install it to the forward clutch piston.

(b) Install speedometer driven hole cover sub-assy with the bolt to the transaxle case.
Torque: 7.0 N·m (71 kgf·cm, 62 in.·lbf)