

TERMS FOR AUTOMATIC TRANSAXLE REPAIR MANUAL

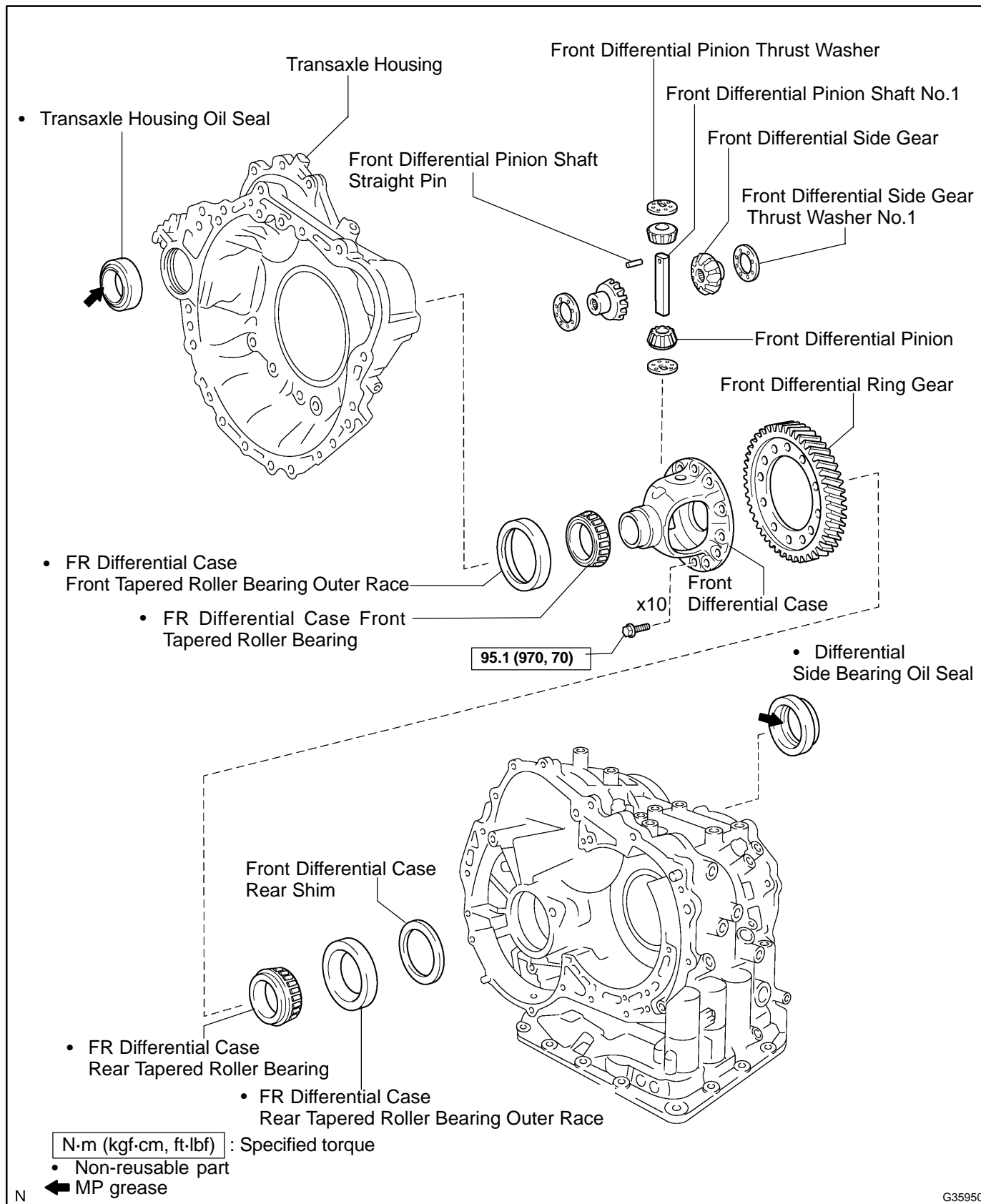
ABBREVIATIONS USED IN MANUAL

0103C-06

Abbreviations	Meaning
ASSY	Assembly
ATF	Automatic Transaxle Fluid
B ₃	U/D Brake
C ₂	Reverse Clutch
C ₃	U/D Clutch
FIPG	Formed In Place Gasket
O/D	Overdrive
SSM	Special Service Materials
SST	Special Service Tools
U/D	Underdrive
w/	With
w/o	Without
1st	First
2nd	Second

FRONT DIFFERENTIAL ASSY (U250E) COMPONENTS

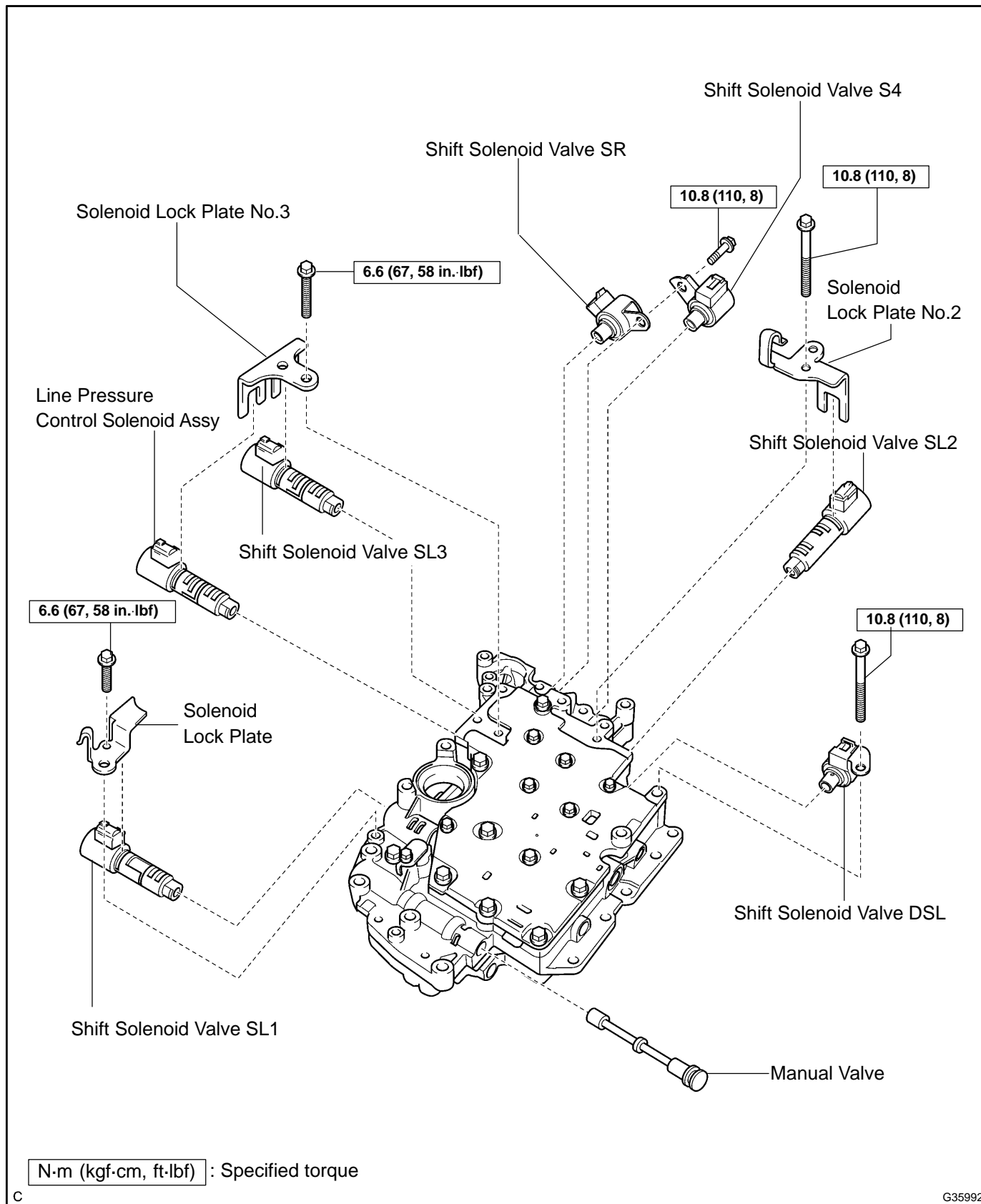
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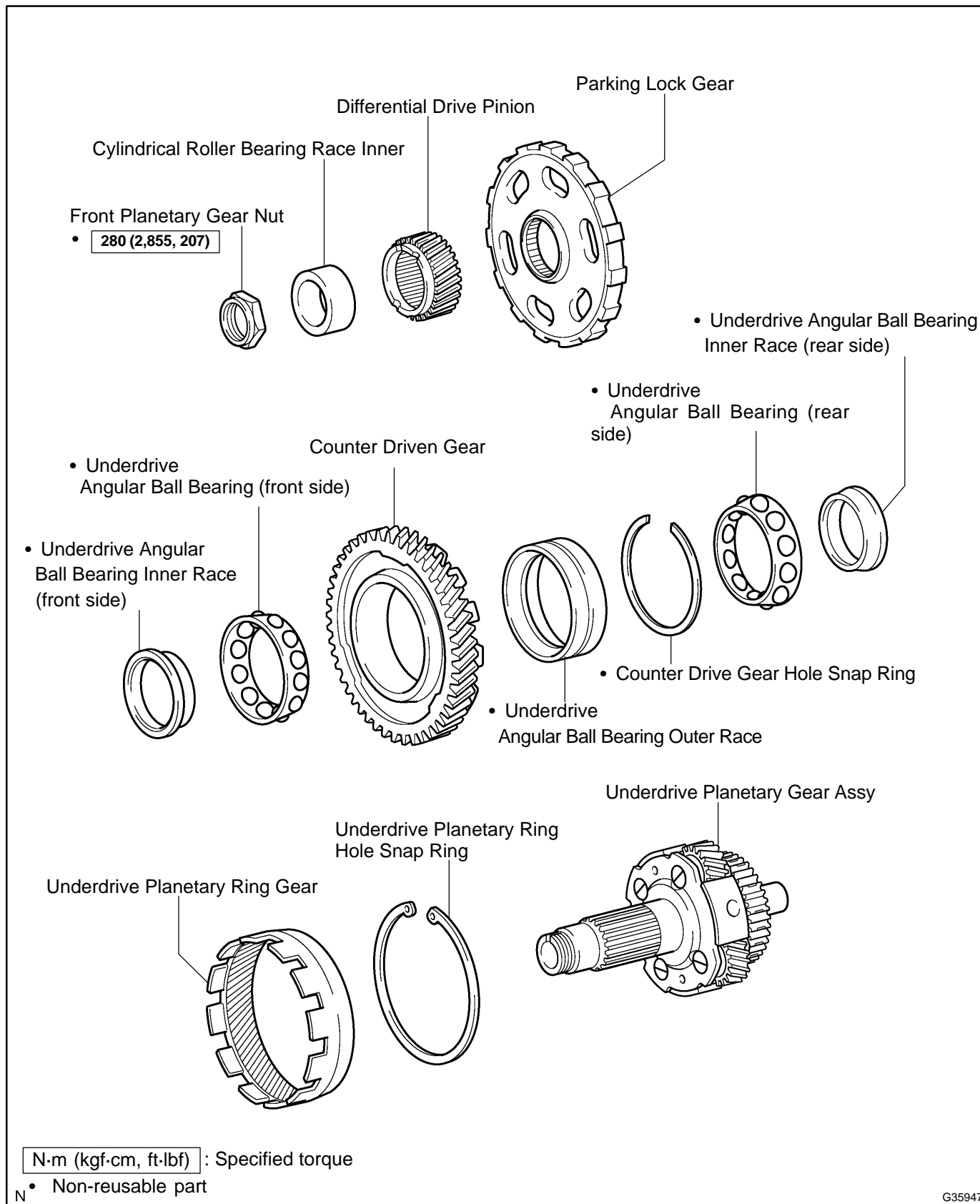
TRANSMISSION VALVE BODY ASSY (U250E) COMPONENTS

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UNDERDRIVE PLANETARY GEAR ASSY (U250E) COMPONENTS

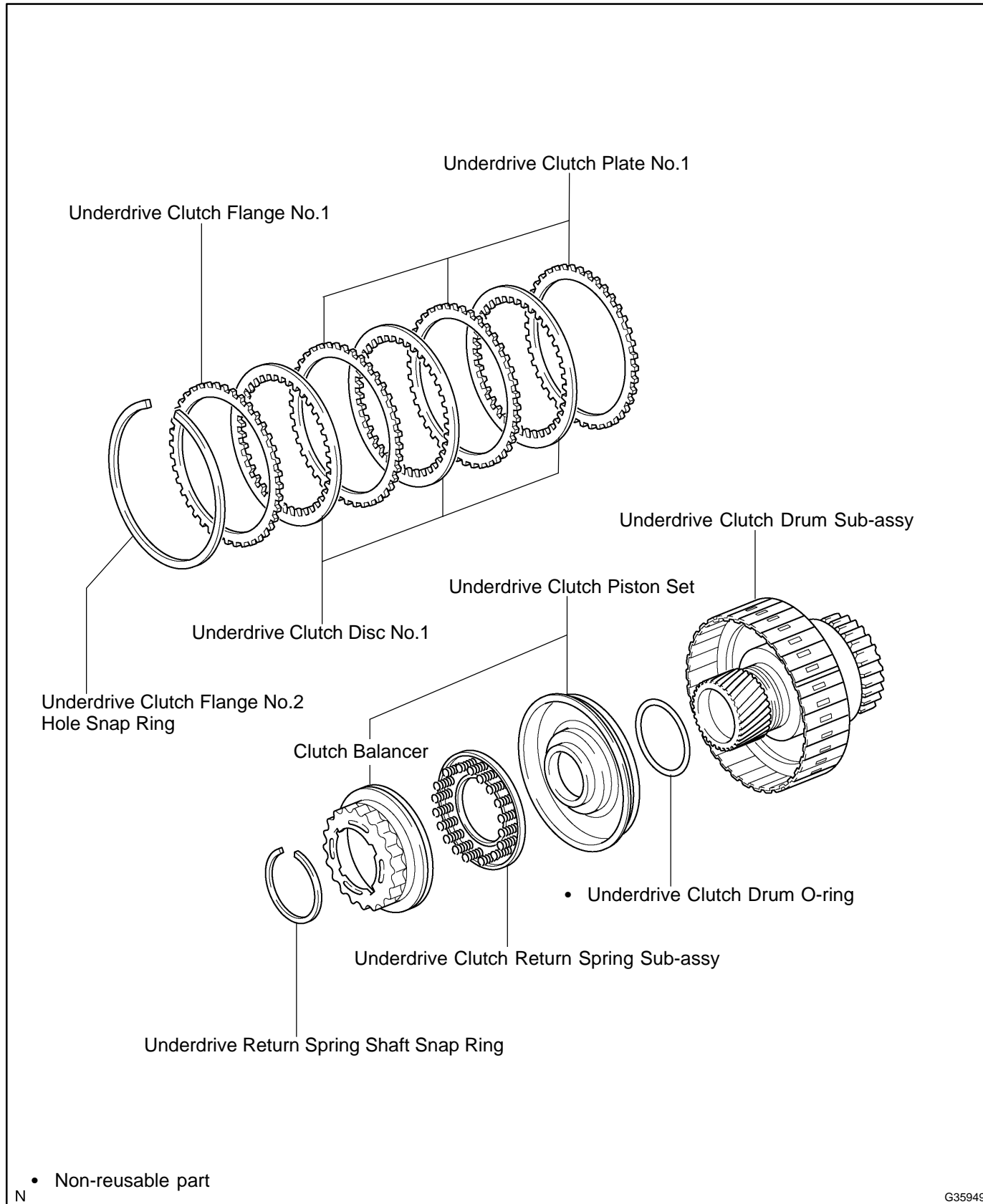
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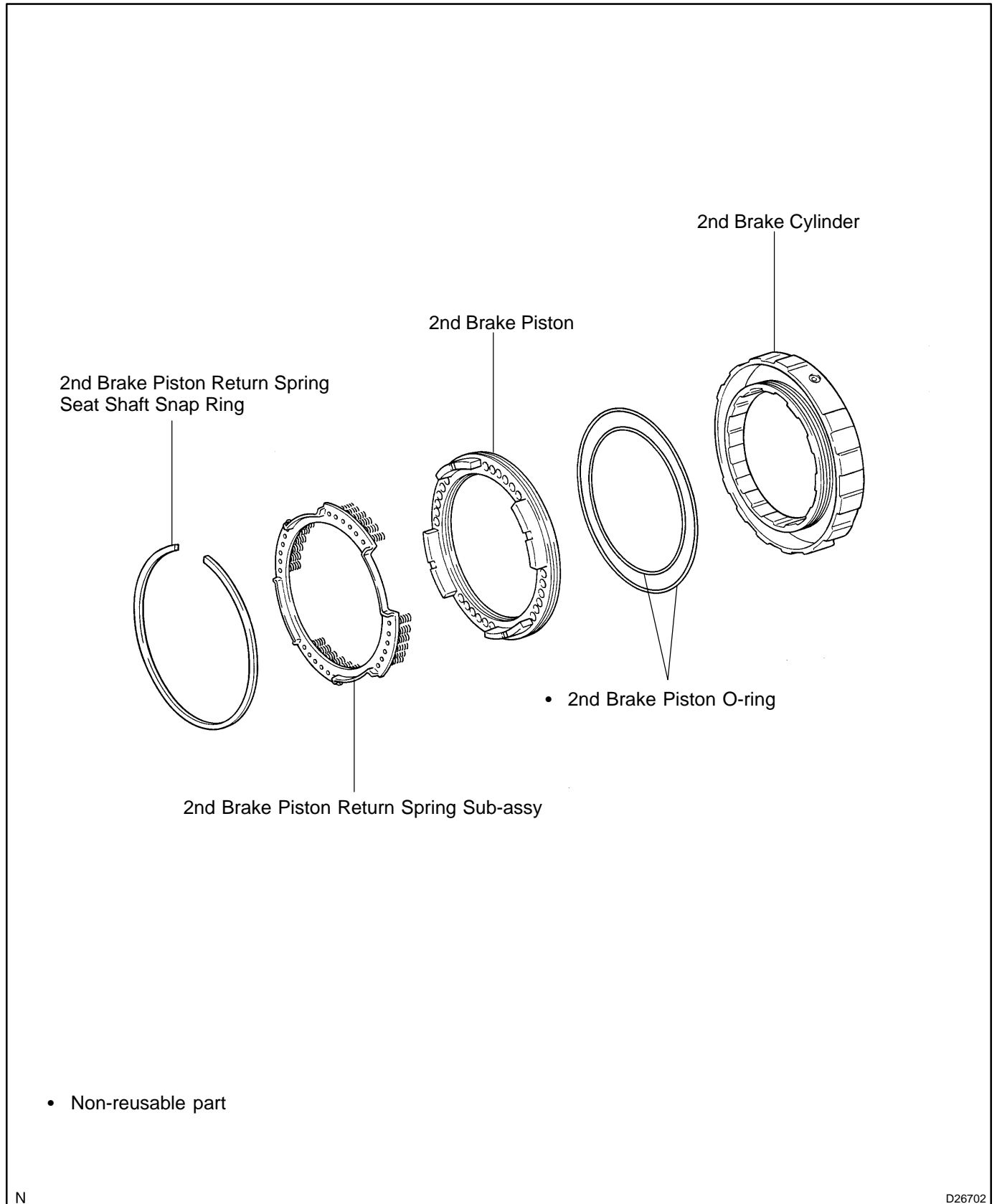
UNDERDRIVE CLUTCH ASSY (U250E) COMPONENTS

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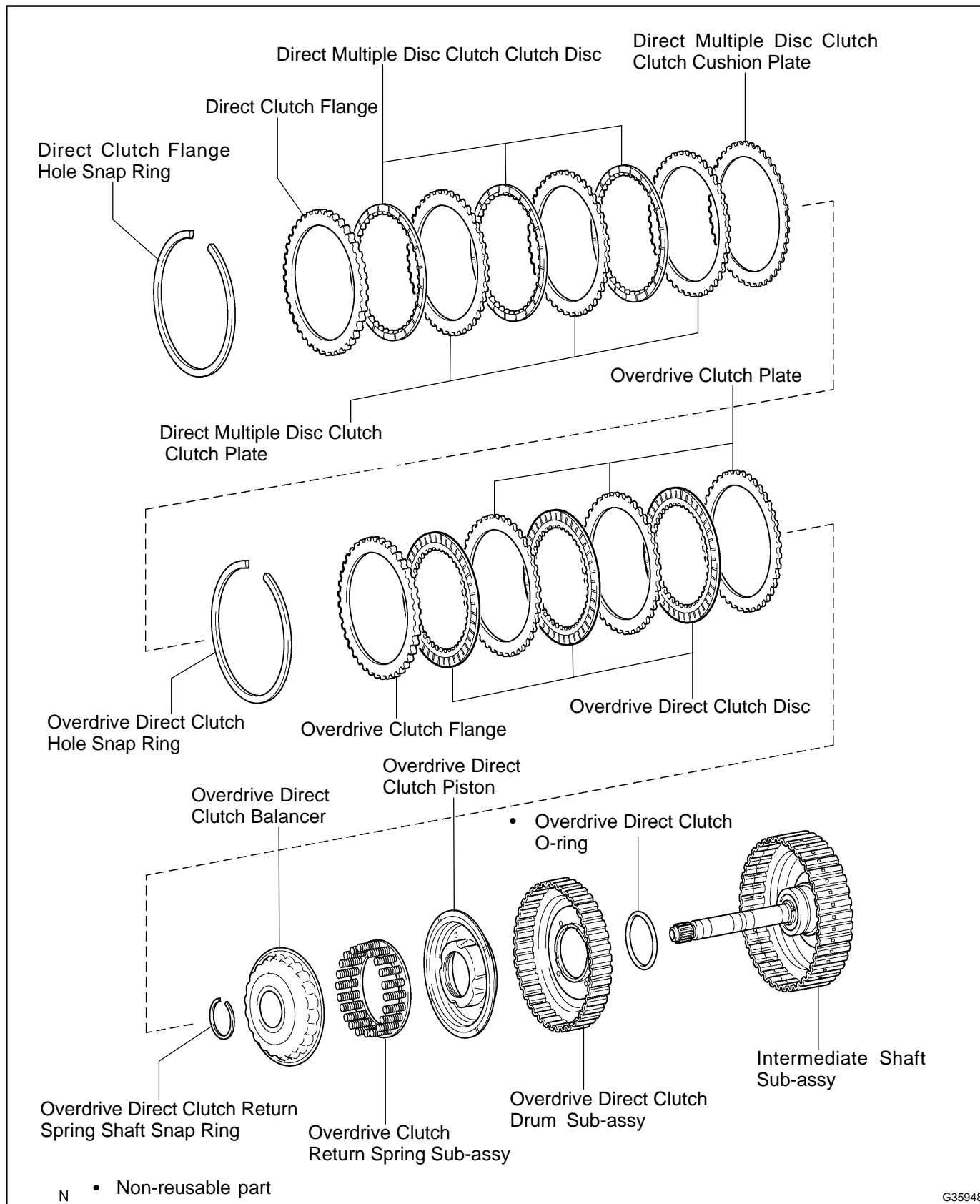
SECOND BRAKE PISTON ASSY (U250E) COMPONENTS

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DIRECT CLUTCH ASSY (U250E) COMPONENTS

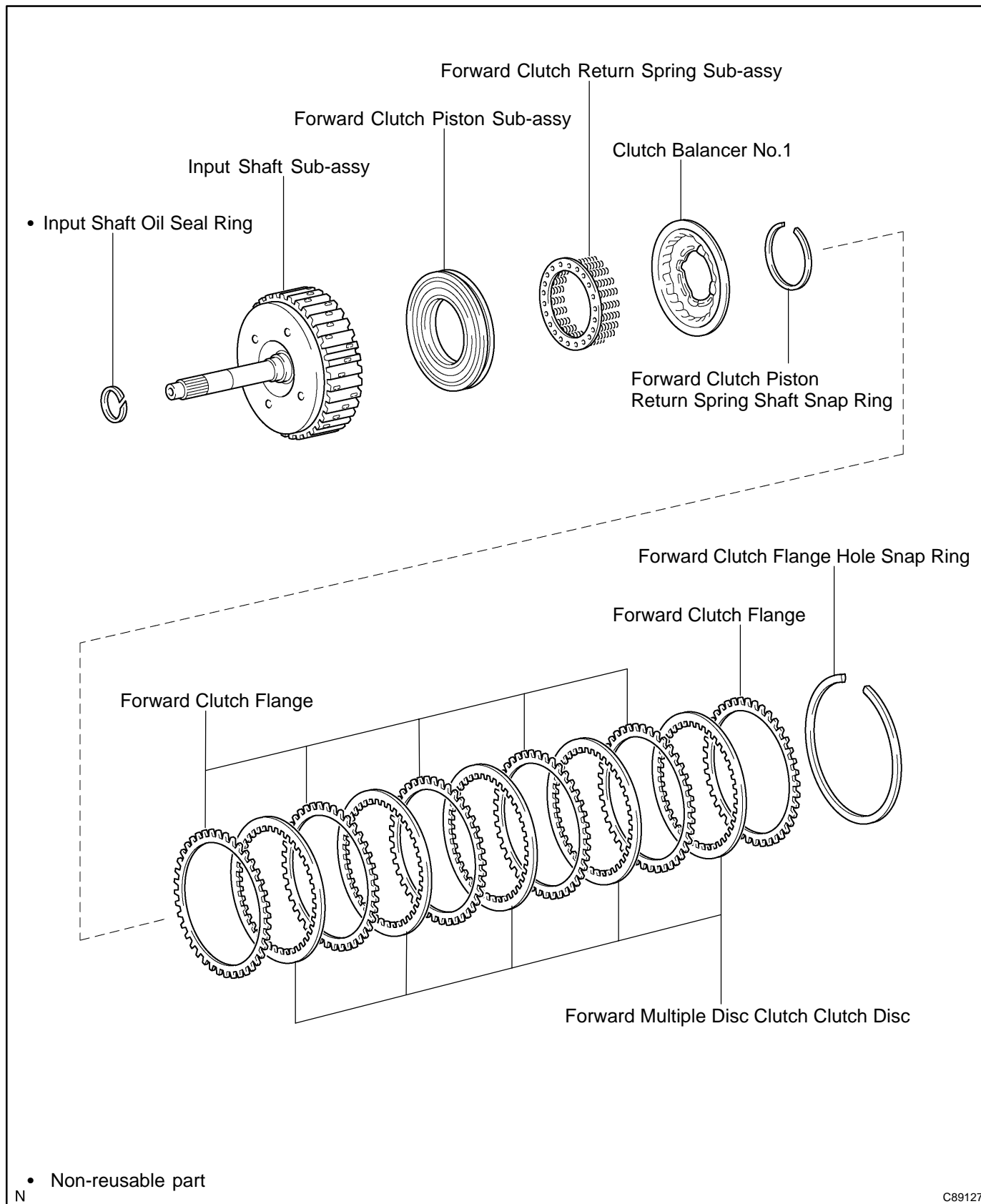
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FORWARD CLUTCH ASSY (U250E) COMPONENTS

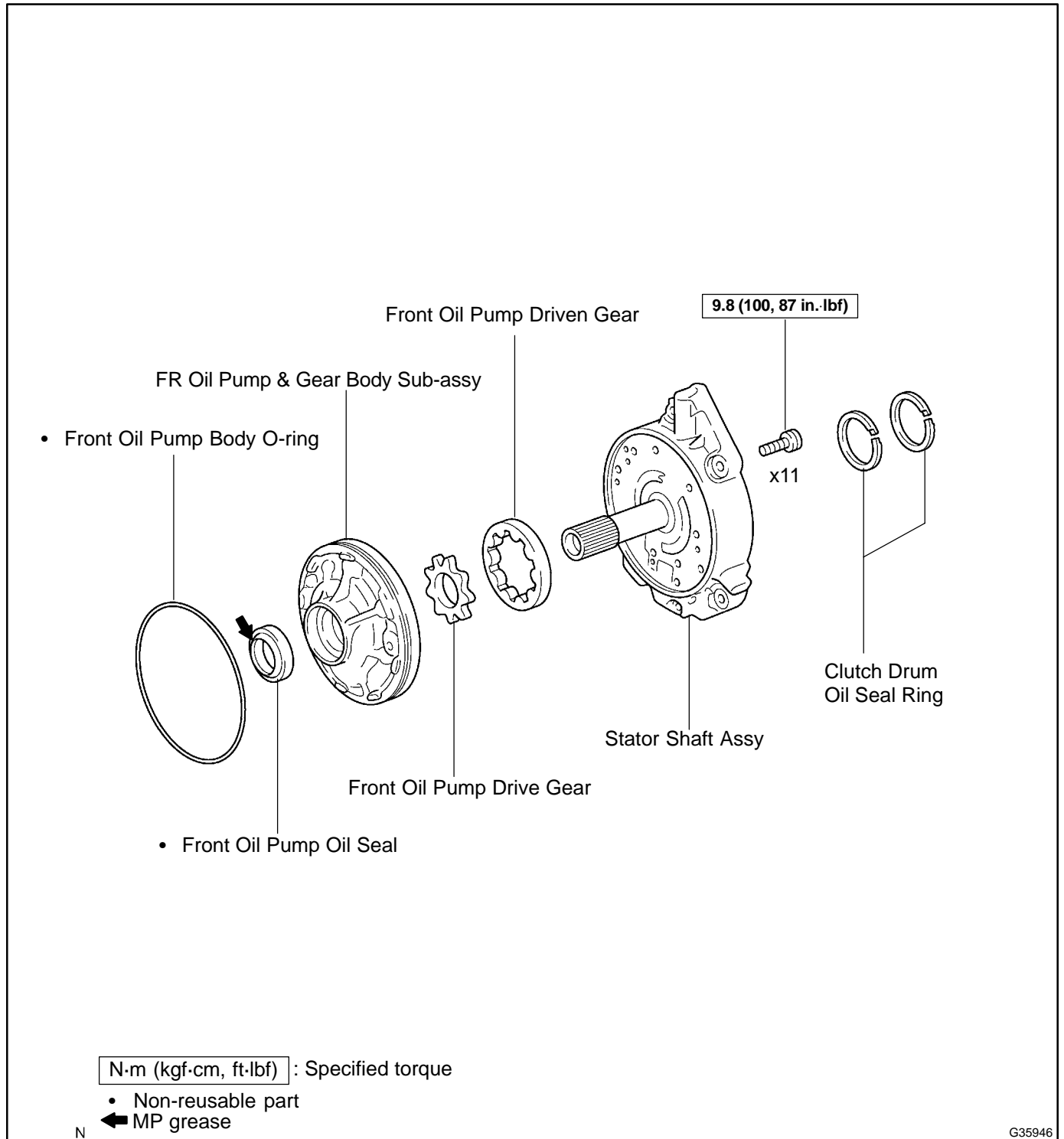
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OIL PUMP ASSY (U250E) COMPONENTS

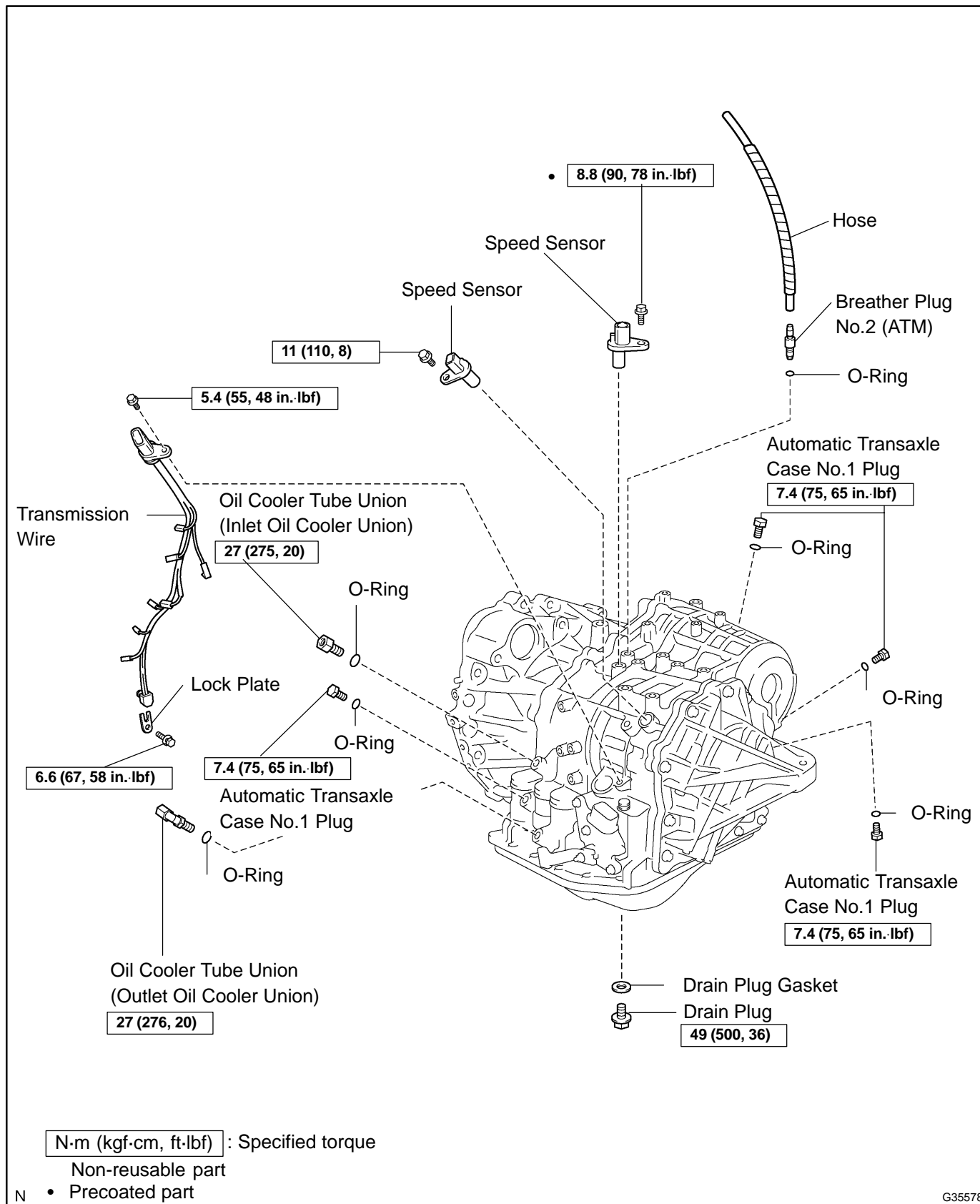
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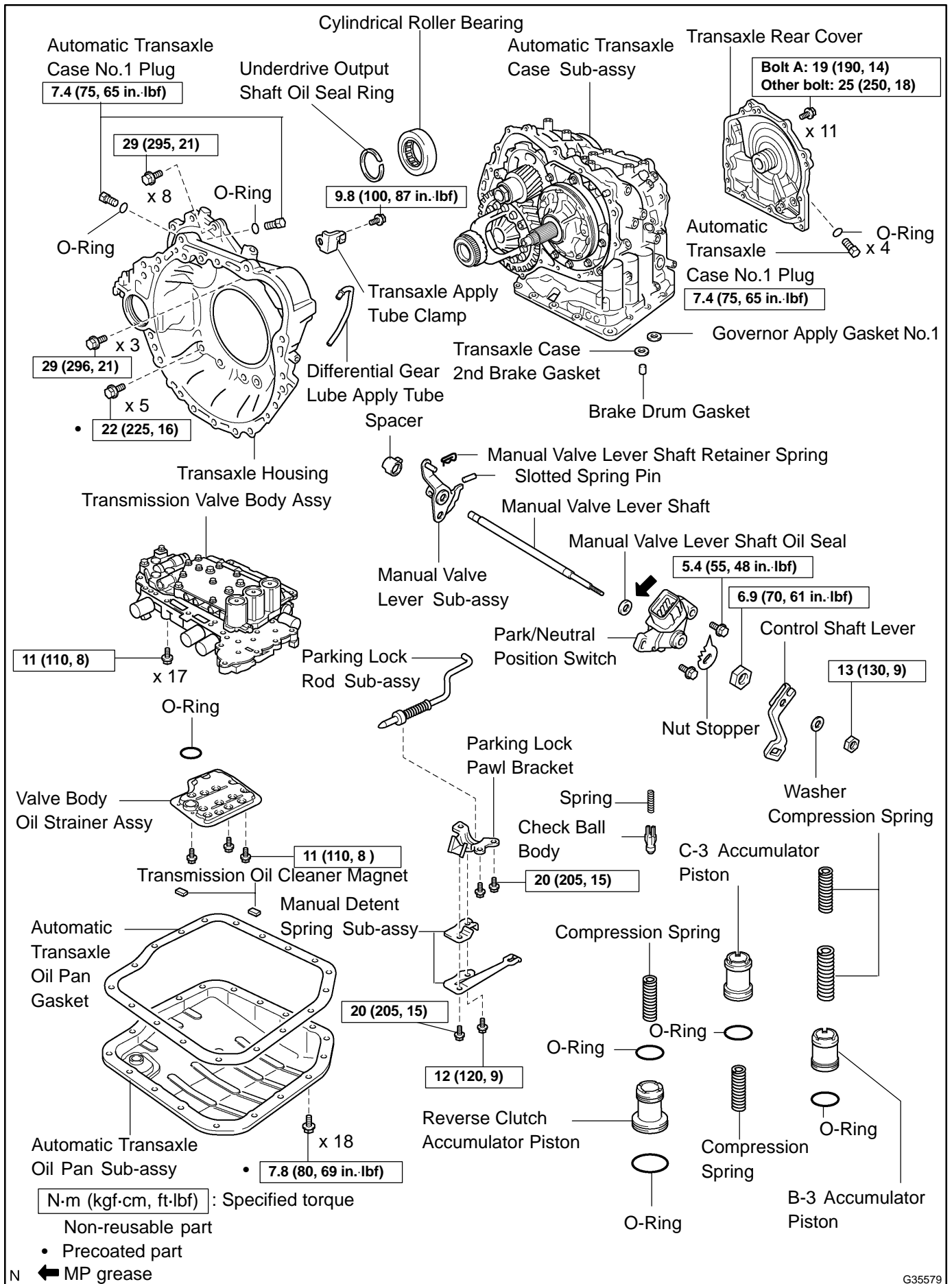


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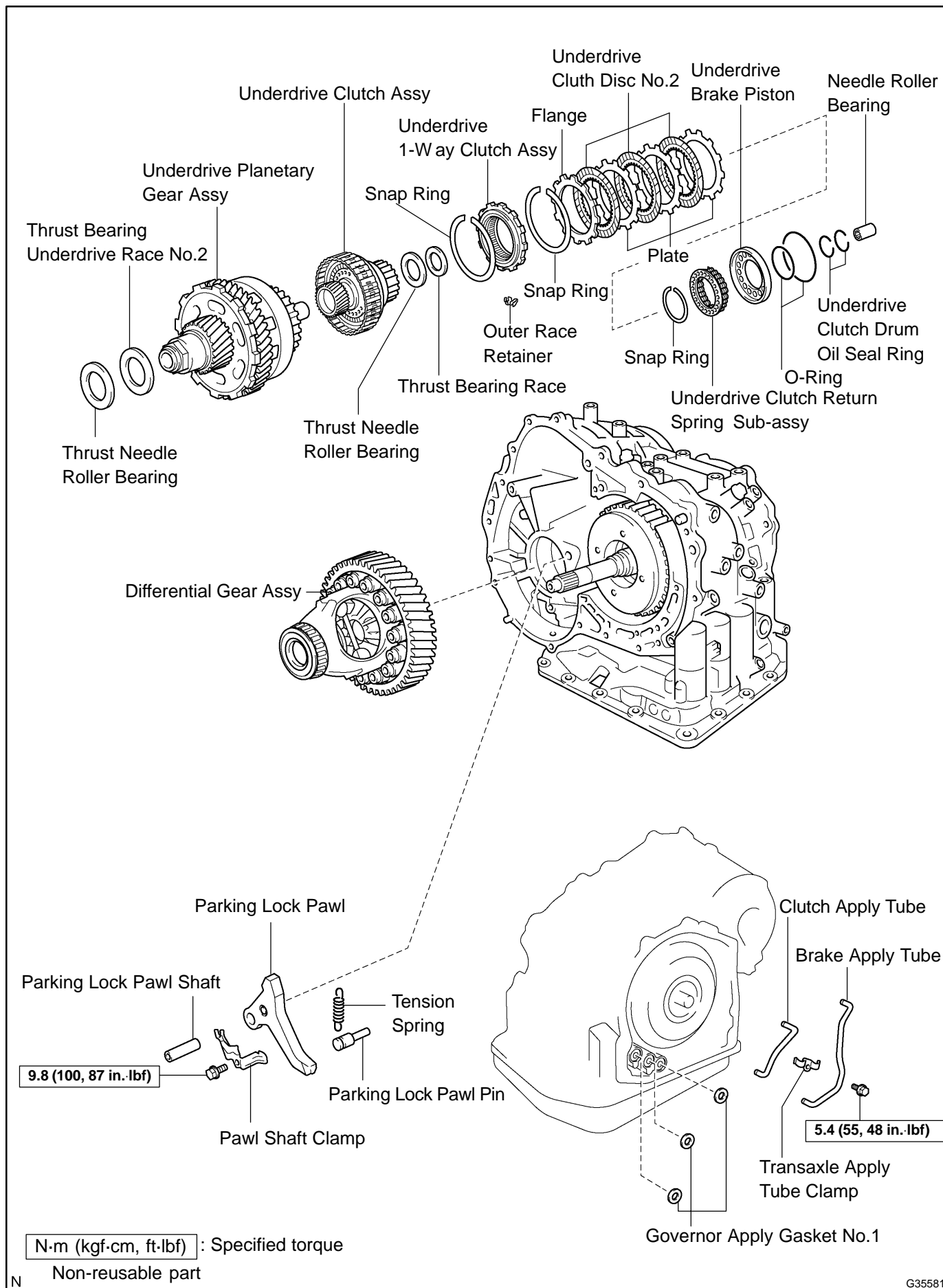
AUTOMATIC TRANSAXLE ASSY (U250E) COMPONENTS

401FI-02





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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.

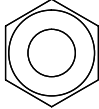
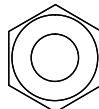
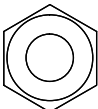


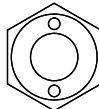
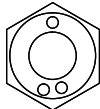
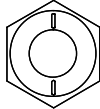
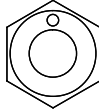
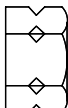
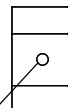
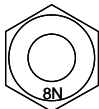
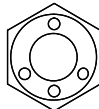

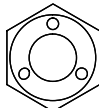
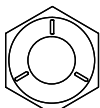
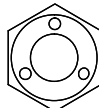
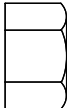
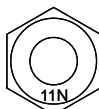
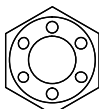
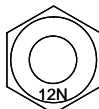
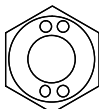
SAE ABBREVIATIONS	SAE TERMS	TOYOTA TERMS ()--ABBREVIATIONS
A/C	Air Conditioning	Air Conditioner
ACL	Air Cleaner	Air Cleaner
AIR	Secondary Air Injection	Air Injection (AI)
AP	Accelerator Pedal	-
B+	Battery Positive Voltage	+B, Battery Voltage
BARO	Barometric Pressure	-
CAC	Charge Air Cooler	Inter cooler
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	Data Link Connector 1	1: Check Connector
DLC2	Data Link Connector 2	2: Total Diagnosis Communication Link (TDCL)
DLC3	Data Link Connector 3	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	Idle Air Control	Idle 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 ₂ S)
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 (Reed 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	-



HOW TO DETERMINE NUT STRENGTH

Present Standard Hexagon Nut	Nut Type		Class
	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
	 	  *	7N (5T)
 			8N
 	 	 No Mark	10N (7T)
 			11N
 			12N

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

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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











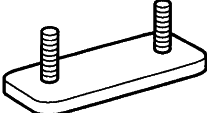

Nut = 4N or more

U250E A/T REPAIR MANUAL (RM1123U)

STANDARD BOLT FOR AUTOMATIC TRANSAXLE REPAIR MANUAL

032HS-01

HOW TO DETERMINE BOLT STRENGTH

	Mark	Class		Mark	Class	
Hexagon head bolt	 <p>Bolt head No. 4</p>	4- 5- 6- 7- 8- 9- 10- 11-	4T 5T 6T 7T 8T 9T 10T 11T	Hexagon flange bolt w/ washer hexagon bolt	 <p>4 Protruding lines</p>	9T
		Hexagon flange bolt w/ washer hexagon bolt	 <p>5 Protruding lines</p>	10T		
		Hexagon flange bolt w/ washer hexagon bolt	 <p>6 Protruding lines</p>	11T		
Hexagon flange bolt w/ washer hexagon bolt	 <p>No mark</p>	4T	Stud bolt	 <p>No mark</p>	4T	
Hexagon head bolt	 <p>2 Protruding lines</p>	5T	Stud bolt	 <p>Grooved</p>	6T	
Hexagon flange bolt w/ washer hexagon bolt	 <p>2 Protruding lines</p>	6T				
Hexagon head bolt	 <p>3 Protruding lines</p>	7T	Welded bolt		4T	
Hexagon head bolt	 <p>4 Protruding lines</p>	8T				

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HOW TO USE THIS AUTOMATIC TRANSAXLE REPAIR MANUAL

0103A-09

GENERAL INFORMATION

1. GENERAL DESCRIPTION

- (a) This manual is made in accordance with SAE J2008.
- (b) Generally repair operations can be separated in the following 3 main processes:
 1. Diagnosis
 2. Removal and Installation, Replacement, Disassembly, Installation and Check, and Adjustment
 3. Final Inspection
- (c) This manual explains "Removal and Installation, Replacement, Disassembly, Installation and Check, and Adjustment", 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 when necessary
 - (3) Visual check

2. INDEX

- (a) An alphabetical INDEX section is provided at the end of the book as a reference to help find the item to be repaired.

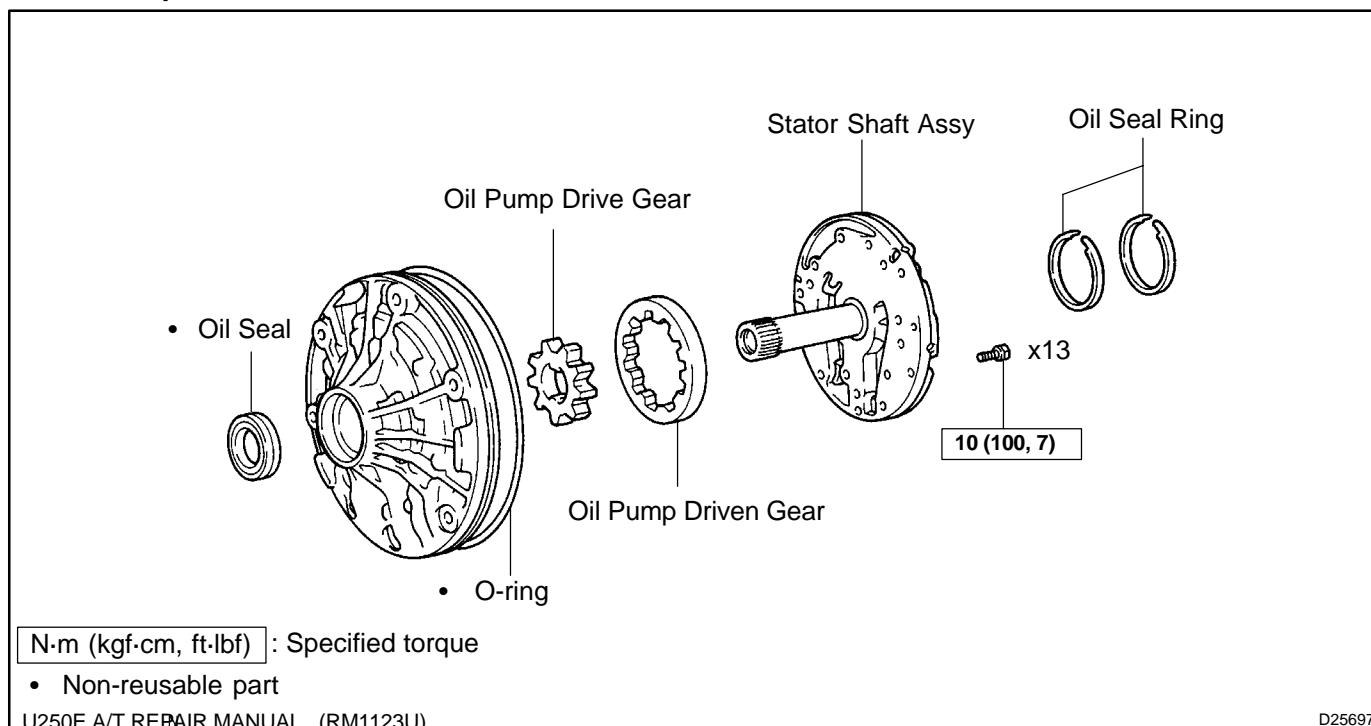
3. PREPARATION

- (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 of this manual.

4. REPAIR PROCEDURES

- (a) A component illustration is placed under the title where 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 tightening torque are specified in the component illustrations.

Example:



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

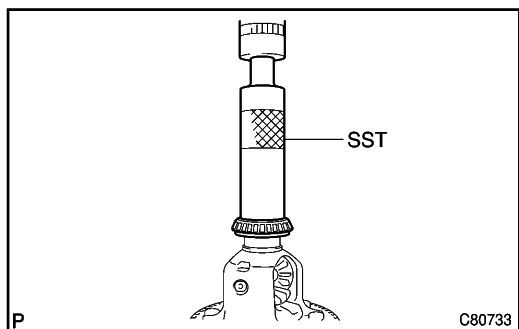
NOTICE:

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

- (e) The installation procedures are the reverse order of the removal procedures. However, only installation procedures requiring additional information are included.
- (f) Only items with key points are described in the text. What to do and other details are placed in illustrations next to the text. Both the text and illustrations are accompanied by standard values and notices.
- (g) Illustrations of similar vehicle models are sometimes used. In these cases, specific 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)

Set part No.

Component part No.

*Detailed text:
how to do task*

P

D26831

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. The specifications are also found in the Service Specifications section for quick reference.

6. TERMS DEFINITION

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

7. SI UNIT

- (a) The UNITS given 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)



AUTOMATIC TRANSMISSION / TRANSAXLE

03117-03

SERVICE DATA

Oil pump		
Body clearance	STD	0.10 to 0.17 mm (0.0039 to 0.0067 in.)
	Max.	0.17 mm (0.0067 in.)
Tip clearance	STD	0.07 to 0.15 mm (0.0028 to 0.0059 in.)
	Max.	0.15 mm (0.0059 in.)
Side clearance	STD	0.02 to 0.05 mm (0.0008 to 0.0020 in.)
	Max.	0.05 mm (0.0020 in.)
Drive gear thickness	Mark	
	A	11.690 to 11.699 mm (0.4602 to 0.4606 in.)
	B	11.700 to 11.709 mm (0.4606 to 0.4610 in.)
	C	11.710 to 11.720 mm (0.4610 to 0.4614 in.)
	D	11.721 to 11.730 mm (0.4615 to 0.4618 in.)
	E	11.731 to 11.740 mm (0.4619 to 0.4622 in.)
Driven gear thickness	Mark	
	A	11.690 to 11.699 mm (0.4602 to 0.4606 in.)
	B	11.700 to 11.709 mm (0.4606 to 0.4610 in.)
	C	11.710 to 11.720 mm (0.4610 to 0.4614 in.)
	D	11.721 to 11.730 mm (0.4615 to 0.4618 in.)
	E	11.731 to 11.740 mm (0.4619 to 0.4622 in.)
Pump body bushing inside diameter	STD	38.113 to 38.138 mm (1.50050 to 1.50149 in.)
	Max.	38.188 mm (1.50346 in.)
Stator shaft bushing inside diameter	STD	21.500 to 21.526 mm (0.84646 to 0.84748 in.)
	Max.	21.57 mm (0.8492 in.)
Multiple disc clutch clutch hub		
Inside diameter	STD	23.025 to 23.046 mm (0.9065 to 0.9073 in.)
	Max.	23.09 mm (0.9091 in.)
Over direct clutch drum sub-assy		
Inside diameter	STD	23.025 to 23.046 mm (0.9065 to 0.9073 in.)
	Max.	23.09 mm (0.9091 in.)
Forward clutch		
Pack clearance		0.85 to 1.25 mm (0.0335 to 0.0492 in.)
Return spring free length		26.74 mm (1.0528 in.)
Flange thickness	Mark	
	0	2.85 mm (0.1122 in.)
	1	3.00 mm (0.1181 in.)
	2	3.15 mm (0.1240 in.)
	3	3.30 mm (0.1299 in.)
	4	3.45 mm (0.1358 in.)
	5	3.60 mm (0.1417 in.)
	6	3.75 mm (0.1476 in.)
Reverse clutch		
Pack clearance:		0.60 to 0.82 mm (0.02362 to 0.03228 in.)
Flange thickness	Mark	
	0	2.9 mm (0.114 in.)
	1	3.0 mm (0.118 in.)
	2	3.1 mm (0.122 in.)
	3	3.2 mm (0.126 in.)
	4	3.3 mm (0.130 in.)
	5	3.4 mm (0.134 in.)
	6	3.5 mm (0.138 in.)
7	3.6 mm (0.142 in.)	

SERVICE SPECIFICATIONS - AUTOMATIC TRANSMISSION / TRANSAXLE

Direct clutch & O/D clutch		
Pack clearance		0.52 mm (0.02047 in.)
Return spring free length		25.91 mm (1.0201 in.)
Flange thickness	Mark	
	0	2.5 mm (0.098 in.)
	1	2.6 mm (0.102 in.)
	2	2.7 mm (0.106 in.)
	3	2.8 mm (0.110 in.)
	4	2.9 mm (0.114 in.)
	5	3.0 mm (0.118 in.)
	6	3.1 mm (0.122 in.)
2nd brake		
Pack clearance		0.53 to 0.91 mm (0.0209 to 0.0358 in.)
Return spring free length		16.61 mm (0.6539 in.)
Flange thickness	Mark	
	0	2.9 mm (0.114 in.)
	1	3.0 mm (0.118 in.)
	2	3.1 mm (0.122 in.)
	3	3.2 mm (0.126 in.)
	4	3.3 mm (0.130 in.)
	5	3.4 mm (0.134 in.)
	6	3.5 mm (0.138 in.)
	7	3.6 mm (0.142 in.)
	8	3.7 mm (0.146 in.)
2nd brake piston		
Inside diameter		More than 167 mm (6.57in.)
U/D clutch		
Pack clearance		1.42 to 1.71 mm (0.0559 to 0.0673 in.)
U/D clutch drum bushing inside diameter	STD	32.56 to 32.58 mm (1.2818 to 1.2826 in.)
	Max.	32.68 mm (1.2846 in.)
Return spring free length		17.14 mm (0.6752 in.)
Flange thickness	Mark	
	K	2.9 mm (0.114 in.)
	A	3.0 mm (0.118 in.)
	G	3.1 mm (0.122 in.)
	B	3.2 mm (0.126 in.)
	H	3.3 mm (0.130 in.)
	C	3.4 mm (0.134 in.)
	J	3.5 mm (0.138 in.)
U/D clutch No.2		
Pack clearance		1.645 to 2.20 mm (0.0648 to 0.0866 in.)
Return spring free length		13.24 mm (0.5213 in.)
Flange thickness	Mark	
	Y	2.8 mm (0.110 in.)
	A	3.0 mm (0.118 in.)
	B	3.2 mm (0.126 in.)
	C	3.4 mm (0.134 in.)
	D	3.6 mm (0.142 in.)

1st & reverse brake			
Pack clearance	0.745 to 1.21 mm (0.0293 to 0.0476in.)		
Return spring free length	17.63 mm (0.6941 in.)		
Flange thickness	Mark		
	1	1.8 mm (0.071 in.)	
	2	1.9 mm (0.075 in.)	
	3	2.0 mm (0.079 in.)	
	4	2.1 mm (0.083 in.)	
	5	2.2 mm (0.087 in.)	
	6	2.3 mm (0.091 in.)	
	7	2.4 mm (0.094 in.)	
	8	2.5 mm (0.098 in.)	
U/D planetary gear			
Preload (at 60 rpm)	0.28 to 0.89 N·m (2.9 to 9.1 kgf·cm, 2.478 to 7.877 in.-lbf)		
Front planetary gear			
Turning torque (at 60 rpm)	0.19 to 0.4 N·m (1.9 to 4.1 kgf·cm, 1.7 to 3.5 in.-lbf)		
Input shaft			
End play	0.262 to 1.249 mm (0.0103 to 0.0492 in.)		
Direct clutch to transaxle rear cover			
End play	0.199 to 0.970 mm (0.0078 to 0.0382 in.)		
U/D planetary gear assy to U/D cylindrical roller bearing			
End play	0.198 to 0.693 mm (0.00780 to 0.02728 in.)		
Race thickness	Less than 7.339 mm (0.2890in.) 7.339 mm (0.2890in.) or more	3.5 mm (0.138in.) 3.8 mm (0.150in.)	
Transaxle rear cover			
Bearing press fit depth	20.55 to 21.25 mm (0.8091 to 0.8366 in.)		
Transmission valve body			
Valve body installation bolt length	A B C	25 mm (0.984 in.) 57 mm (2.244 in.) 41 mm (1.614 in.)	
Accumulator			
Spring	Free length/Outer diameter	Color	
B-3	Inner	62.00 (2.4409) / 15.50 (0.610)	Purple
	Outer	74.23 (2.9224) / 21.70 (0.854)	Purple
Reverse clutch	60.96 (2.3999) / 14.10 (0.555)	Yellow	
C-3	72.20 (2.8425) / 19.0 (0.748)	Colorless	
Manual valve lever shaft oil seal			
Oil seal drive depth	-0.5 to 0.5 mm (-0.0197 to 0.0197 in.)		
Front differential			
Backlash	0.05 to 0.20 mm (0.0020 to 0.0079 in.)		
Thrust washer thickness	Mark		
	1	1.000 mm (0.0394 in.)	
	2	1.100 mm (0.0433 in.)	
	3	1.200 mm (0.0472 in.)	
	4	1.300 mm (0.0512 in.)	

SERVICE SPECIFICATIONS - AUTOMATIC TRANSMISSION / TRANSAXLE

Preload (at 60 rpm)	New bearing Used bearing	0.20 to 1.0 N·m (2.0 to 10.2 kgf·cm, 1.8 to 8.9 in.·lbf) 0.10 to 0.35 N·m (1.0 to 3.6 kgf·cm, 0.9 to 3.1 in.·lbf)
Flange thickness	Mark	
	0	1.90 mm (0.0748 in.)
	1	1.95 mm (0.0768 in.)
	2	2.00 mm (0.0787 in.)
	3	2.05 mm (0.0807 in.)
	4	2.10 mm (0.0827 in.)
	5	2.15 mm (0.0846 in.)
	6	2.20 mm (0.0866 in.)
	7	2.25 mm (0.0886 in.)
	8	2.30 mm (0.0906 in.)
	9	2.35 mm (0.0925 in.)
	A	2.40 mm (0.0945 in.)
	B	2.45 mm (0.0965 in.)
	C	2.50 mm (0.0984 in.)
	D	2.55 mm (0.1004 in.)
	E	2.60 mm (0.1024 in.)
	F	2.65 mm (0.1043 in.)
	G	2.70 mm (0.1063 in.)
	H	2.75 mm (0.1083 in.)
	J	2.80 mm (0.1102 in.)

SPECIFIED TORQUE FOR STANDARD BOLTS





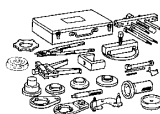

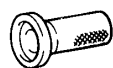
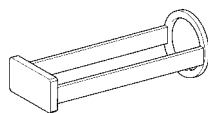
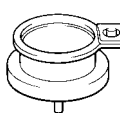
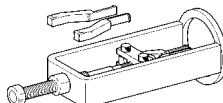
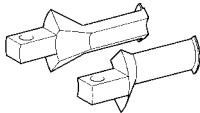
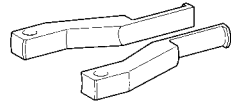
Class	Diameter mm	Pitch mm	Specified torque					
			Hexagon head bolt			Hexagon flange bolt		
			N-m	kgf-cm	ft.-lbf	N-m	kgf-cm	ft.-lbf
4T	6	1	5	55	48 in.-lbf	6	60	52 in.-lbf
	8	1.25	12.5	130	9	14	145	10
	10	1.25	26	260	19	29	290	21
	12	1.25	47	480	35	53	540	39
	14	1.5	74	760	55	84	850	61
	16	1.5	115	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

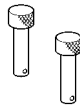
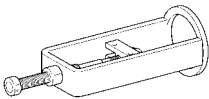
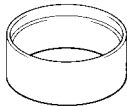
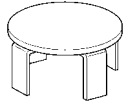
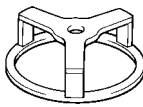
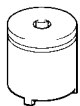
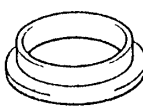
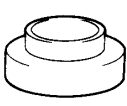
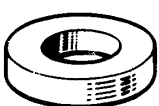




AUTOMATIC TRANSMISSION / TRANS

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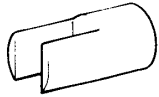
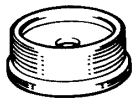
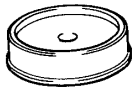
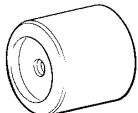




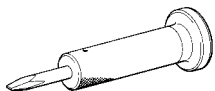


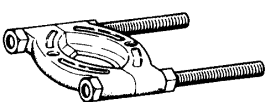
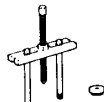
PREPARATION

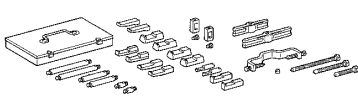
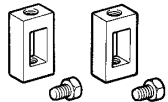
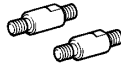
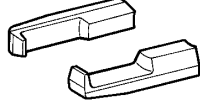

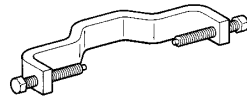
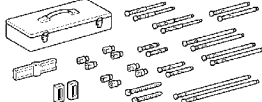
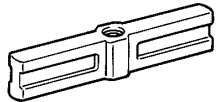
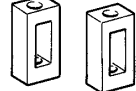
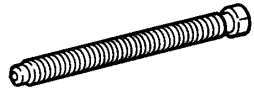
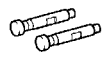
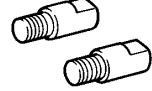
SST

	09223-15030	Oil Seal & Bearing Replacer	AUTOMATIC ASSY(U250E)	TRANSAXLE
	09308-00010	Oil Seal Puller	AUTOMATIC ASSY(U250E) OIL PUMP ASSY(U250E) FRONT DIFFERENTIAL ASSY(U250E)	TRANSAXLE
	09316-12010	Transfer Bearing Replacer	AUTOMATIC ASSY(U250E)	TRANSAXLE
	09316-2001 1	Transfer Bearing Replacer	UNDERDRIVE PLANETARY GEAR ASSY(U250E)	
	09350-32014	TOYOTA Automatic Transmission Tool Set	OIL PUMP ASSY(U250E) UNDERDRIVE CLUTCH ASSY(U250E)	
	(09351-32070)	No.2 Piston Spring Compressor	UNDERDRIVE CLUTCH ASSY(U250E)	
	(09351-32140)	Oil Seal Replacer	OIL PUMP ASSY(U250E)	
	09387-00020	Direct Clutch Wrench	AUTOMATIC ASSY(U250E) FORWARD CLUTCH ASSY(U250E) DIRECT CLUTCH ASSY(U250E)	TRANSAXLE
	09387-00030	Counter Drive Gear Holding Tool	AUTOMATIC ASSY(U250E)	TRANSAXLE
	09387-00041	Bearing Puller Assembly	AUTOMATIC ASSY(U250E)	TRANSAXLE
	(09387-01010)	Claw No.1	AUTOMATIC ASSY(U250E)	TRANSAXLE
	(09387-01021)	Claw No.2	AUTOMATIC ASSY(U250E)	TRANSAXLE

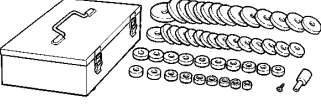









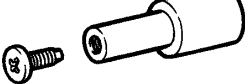
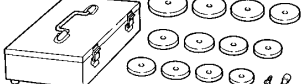

	(09387-01030) Pin	AUTOMATIC ASSY(U250E)	TRANSAXLE
	(09387-01040) Bearing Puller Body	AUTOMATIC ASSY(U250E)	TRANSAXLE
	09387-00050 Under Drive Gear Puller	UNDERDRIVE PLANETARY GEAR ASSY(U250E)	
	09387-00060 Second Brake Wrench	SECOND BRAKE PISTON ASSY(U250E)	
	09387-00070 First & Reverse Brake Wrench	AUTOMATIC ASSY(U250E)	TRANSAXLE
	09387-00080 Counter Drive Gear Nut Wrench	AUTOMATIC ASSY(U250E)	TRANSAXLE
	09495-65040 Axle Hub Oil Seal Replacer	UNDERDRIVE PLANETARY GEAR ASSY(U250E)	
	09502-24010 Bearing Replacer	AUTOMATIC ASSY(U250E)	TRANSAXLE
	09515-21010 Rear Axle Shaft Bearing Replacer	UNDERDRIVE PLANETARY GEAR ASSY(U250E)	
	09523-36010 Rear Axle Hub Guide Tool	AUTOMATIC ASSY(U250E)	TRANSAXLE
	09527-1701 1 Rear Axle Shaft Bearing Remover	AUTOMATIC ASSY(U250E)	TRANSAXLE
	09550-60010 Differential Side Bearing Replacer	FRONT ASSY(U250E)	DIFFERENTIAL
	(09951-00480) Replacer 48	FRONT ASSY(U250E)	DIFFERENTIAL

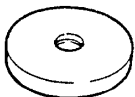




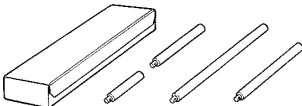



PREPARATION - AUTOMATIC TRANSMISSION / TRANS

	09564-3201 1	Differential Preload Adaptor	FRONT ASSY(U250E)	DIFFERENTIAL
	09608-10010	Steering Knuckle Oil Seal Replacer	FRONT ASSY(U250E)	DIFFERENTIAL
	09608-32010	Steering Knuckle Oil Seal Replacer	FRONT ASSY(U250E)	DIFFERENTIAL
	09649-17010	Steering Knuckle Tool	AUTOMATIC ASSY(U250E)	TRANSAXLE
	09710-04081	Base	FRONT ASSY(U250E)	DIFFERENTIAL
	09726-36010	Lower Control Arm Bushing Replacer	FRONT ASSY(U250E)	DIFFERENTIAL
	09726-40010	Lower Control Shaft Bearing Replacer	UNDERDRIVE PLANETARY GEAR ASSY(U250E)	
	09820-00031	Alternator Rotor Rear Bearing Replacer	AUTOMATIC ASSY(U250E)	TRANSAXLE
	09930-00010	Drive Shaft Nut Chisel	UNDERDRIVE PLANETARY GEAR ASSY(U250E)	
	(09931-00010)	Handle	UNDERDRIVE PLANETARY GEAR ASSY(U250E)	
	(09931-00020)	Nut Chisel	UNDERDRIVE PLANETARY GEAR ASSY(U250E)	
	09950-00020	Bearing Remover	AUTOMATIC ASSY(U250E) UNDERDRIVE PLANETARY GEAR ASSY(U250E) FRONT ASSY(U250E)	TRANSAXLE DIFFERENTIAL
	09950-00030	Bearing Remover Attachment	AUTOMATIC ASSY(U250E) UNDERDRIVE PLANETARY GEAR ASSY(U250E) FRONT ASSY(U250E)	TRANSAXLE DIFFERENTIAL

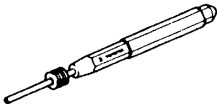
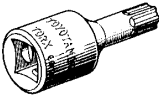
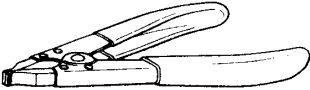
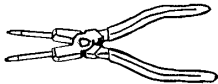

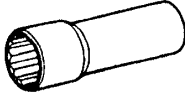
	<p>09950-4001 1 Puller B Set</p>	<p>AUTOMATIC ASSY(U250E) UNDERDRIVE PLANETARY GEAR ASSY(U250E) FRONT DIFFERENTIAL ASSY(U250E)</p>
	<p>(09952-04010) Slide Arm</p>	<p>AUTOMATIC ASSY(U250E) TRANSAXLE</p>
	<p>(09954-04010) Arm 25</p>	<p>AUTOMATIC ASSY(U250E) TRANSAXLE</p>
	<p>(09955-04061) Claw No. 6</p>	<p>AUTOMATIC ASSY(U250E) TRANSAXLE FRONT DIFFERENTIAL ASSY(U250E)</p>
	<p>(09957-04010) Attachment</p>	<p>AUTOMATIC ASSY(U250E) TRANSAXLE UNDERDRIVE PLANETARY GEAR ASSY(U250E) FRONT DIFFERENTIAL ASSY(U250E)</p>
	<p>(09958-0401 1) Holder</p>	<p>FRONT DIFFERENTIAL ASSY(U250E)</p>
	<p>09950-50013 Puller C Set</p>	<p>AUTOMATIC ASSY(U250E) TRANSAXLE FRONT DIFFERENTIAL ASSY(U250E)</p>
	<p>(09951-05010) Hanger 150</p>	<p>AUTOMATIC ASSY(U250E) TRANSAXLE FRONT DIFFERENTIAL ASSY(U250E)</p>
	<p>(09952-05010) Slide Arm</p>	<p>FRONT DIFFERENTIAL ASSY(U250E)</p>
	<p>(09953-05020) Center Bolt 150</p>	<p>AUTOMATIC ASSY(U250E) TRANSAXLE FRONT DIFFERENTIAL ASSY(U250E)</p>
	<p>(09954-05021) Claw No. 2</p>	<p>FRONT DIFFERENTIAL ASSY(U250E)</p>
	<p>(09955-05010) Adapter No.1</p>	<p>FRONT DIFFERENTIAL ASSY(U250E)</p>

PREPARATION - AUTOMATIC TRANSMISSION / TRANS

	<p>09950-60010 Replacer Set</p>	<p>AUTOMATIC ASSY(U250E) UNDERDRIVE PLANETARY GEAR ASSY(U250E) FRONT DIFFERENTIAL ASSY(U250E)</p> <p>TRANSAXLE</p>
	<p>(09951-00230) Replacer 23</p>	<p>AUTOMATIC ASSY(U250E)</p> <p>TRANSAXLE</p>
	<p>(09951-00260) Replacer 26</p>	<p>UNDERDRIVE PLANETARY GEAR ASSY(U250E)</p>
	<p>(09951-00320) Replacer 32</p>	<p>AUTOMATIC ASSY(U250E) UNDERDRIVE PLANETARY GEAR ASSY(U250E)</p> <p>TRANSAXLE</p>
	<p>(09951-00360) Replacer 36</p>	<p>AUTOMATIC ASSY(U250E)</p> <p>TRANSAXLE</p>
	<p>(09951-00450) Replacer 45</p>	<p>AUTOMATIC ASSY(U250E)</p> <p>TRANSAXLE</p>
	<p>(09951-00480) Replacer 48</p>	<p>FRONT ASSY(U250E)</p> <p>DIFFERENTIAL</p>
	<p>(09951-00500) Replacer 50</p>	<p>AUTOMATIC ASSY(U250E)</p> <p>TRANSAXLE</p>
	<p>(09951-00590) Replacer 59</p>	<p>AUTOMATIC ASSY(U250E)</p> <p>TRANSAXLE</p>
	<p>(09951-00630) Replacer 63</p>	<p>FRONT ASSY(U250E)</p> <p>DIFFERENTIAL</p>
	<p>(09952-06010) Adapter</p>	<p>AUTOMATIC ASSY(U250E)</p> <p>TRANSAXLE</p>
	<p>09950-60020 Replacer Set No. 2</p>	<p>AUTOMATIC ASSY(U250E) UNDERDRIVE PLANETARY GEAR ASSY(U250E) FRONT DIFFERENTIAL ASSY(U250E)</p> <p>TRANSAXLE</p>
	<p>(09951-00720) Replacer 72</p>	<p>AUTOMATIC ASSY(U250E)</p> <p>TRANSAXLE</p>

	(09951-00750) Replacer 75	FRONT ASSY(U250E)	DIFFERENTIAL
	(09951-00780) Replacer 78	AUTOMATIC ASSY(U250E)	TRANSAXLE
	(09951-00790) Replacer 79	FRONT ASSY(U250E)	DIFFERENTIAL
	(09951-00810) Replacer 81	AUTOMATIC ASSY(U250E)	TRANSAXLE
	(09951-00890) Replacer 89	UNDERDRIVE PLANETARY GEAR ASSY(U250E)	
	09950-70010 Handle Set	AUTOMATIC ASSY(U250E) UNDERDRIVE PLANETARY GEAR ASSY(U250E) FRONT ASSY(U250E)	TRANSAXLE PLANETARY GEAR DIFFERENTIAL
	(09951-07100) Handle 100	AUTOMATIC ASSY(U250E) UNDERDRIVE PLANETARY GEAR ASSY(U250E) FRONT ASSY(U250E)	TRANSAXLE PLANETARY GEAR DIFFERENTIAL
	(09951-07150) Handle 150	AUTOMATIC ASSY(U250E) FRONT ASSY(U250E)	TRANSAXLE DIFFERENTIAL
	(09951-07200) Handle 200	AUTOMATIC ASSY(U250E) FRONT ASSY(U250E)	TRANSAXLE DIFFERENTIAL

Recommended Tools

	09031-00030	Pin Punch	AUTOMATIC ASSY(U250E)	TRANSAXLE
	09042-00010	Torx Socket T30	OIL PUMP ASSY(U250E)	
	09905-00012	Snap Ring No. 1 Expander	AUTOMATIC ASSY(U250E)	TRANSAXLE
	09905-00013	Snap Ring Pliers	FORWARD CLUTCH ASSY(U250E) DIRECT CLUTCH ASSY(U250E)	
	(09904-00090)	Claw Set	UNDERDRIVE PLANETARY GEAR ASSY(U250E)	
	09924-1241 1	Deep Socket Wrench 41	UNDERDRIVE PLANETARY GEAR ASSY(U250E)	

Equipment

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

Lubricant

item		
U250E Automatic transaxle fluid Dry fill Drain and refill	8.0 liter (8.5 USqts, 7.0 Imp.qts) 3.5 liter (3.7 USqts, 3.1 Imp.qts)	ATF type T-IV

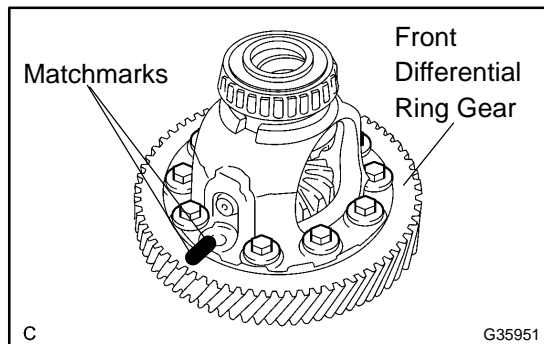
SSM (Special Service Materials)

08826-00090	Seal Packing 1281, THREE BOND 1281 or equivalent (FIPG)	
08833-00080	Adhesive 1344 THREE BOND 1344 LOCTITE 242 or equivalent	

TORQUE SPECIFICATION

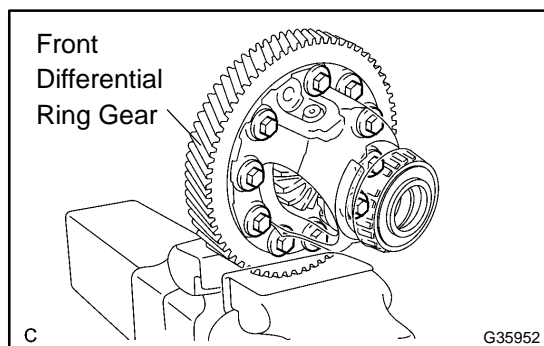
Part Tightened	N-m	kgf·cm	ft·lbf
Differential gear lube apply tube x Transaxle housing	9.8	100	87 in.·lbf
Front planetary gear lock nut	185-350	1886-3569	136-258
Brake apply tube clamp x Transaxle case	5.4	55	48 in.·lbf
Transaxle case No. 1 plug x Transaxle rear cover	7.4	75	65 in.·lbf
Transaxle case No.1 plug x Transaxle housing	7.4	75	65 in.·lbf
Transaxle case No.1 plug x Transaxle case	7.4	75	65 in.·lbf
Transaxle rear cover x Transaxle case	Bolt A	19	190
	Other bolt	25	250
Pawl shaft clamp x Transaxle case	9.8	100	87 in.·lbf
Oil pump assy x Transaxle case	22	225	16
Transaxle housing x Transaxle case	Bolt A	22	225
	Bolt B	29	296
	Bolt C	29	296
Parking lock pawl bracket x Transaxle case	20	205	15
Manual detent spring x Transaxle case	Bolt A	20	205
	Bolt B	12	120
Transmission wire x Transaxle housing	5.4	55	48 in.·lbf
Transmission valve body x Transaxle case	11	110	8
ATF temperature sensor clamp x Transmission valve body	6.6	67	58 in.·lbf
Valve body oil strainer assy x Transmission valve body	11	110	8
Automatic transaxle oil pan sub-assy x Transaxle case	7.8	80	69 in.·lbf
Drain plug x Automatic transaxle oil pan sub-assy	49	500	36
Speed sensor x Transaxle case	Bolt A	8.8	90
	Bolt B	11	115
Oil cooler tube union x Transaxle case	27	276	20
Park/neutral start switch x nut	6.9	70	61 in.·lbf
Park/neutral start switch x Bolt	5.4	55	48 in.·lbf
Park/neutral start switch x Control shaft lever	13	130	9
Oil pump body x Stator shaft assy	9.8	100	87 in.·lbf
Line pressure control solenoid assy x Transmission valve body assy	6.6	67	58 in.·lbf
Shift solenoid valve SL1x Transmission valve body assy	6.6	67	58 in.·lbf
Shift solenoid valve SL2x Transmission valve body assy	10.8	110	8
Shift solenoid valve SL3x Transmission valve body assy	6.6	67	58 in.·lbf
Shift solenoid valve S4x Transmission valve body assy	10.8	110	8
Shift solenoid valve DSL x Transmission valve body assy	10.8	110	8
Front differential case x Front differential ring gear	95.1	970	70
Front planetary gear nut	280	2855	207

OVERHAUL

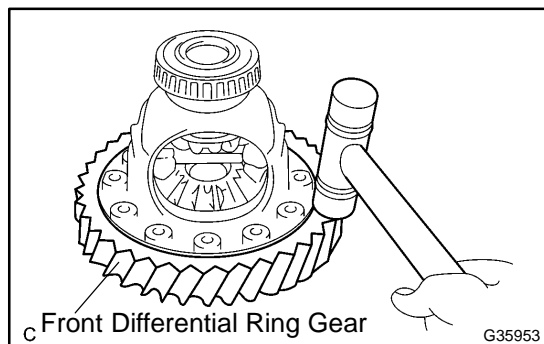


1. REMOVE FRONT DIFFERENTIAL RING GEAR

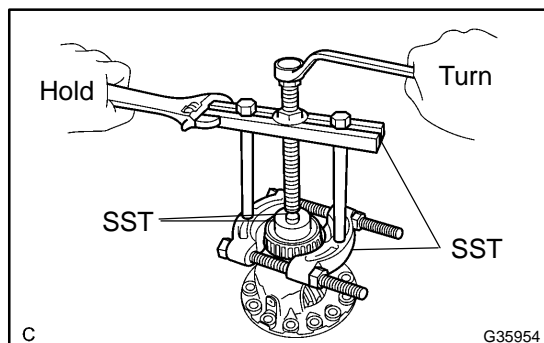
- (a) Put the matchmarks on the front differential ring gear and differential case.



- (b) Remove the 10 bolts.



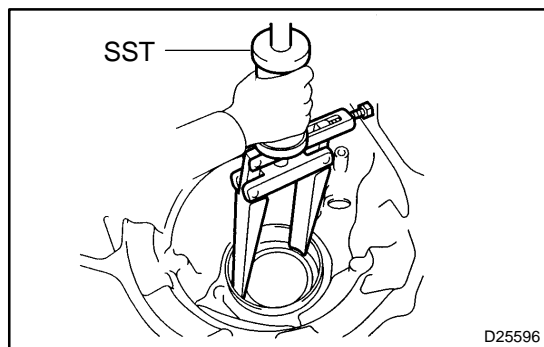
- (c) Using a plastic hammer, tap on the front differential ring gear to remove it from the case.



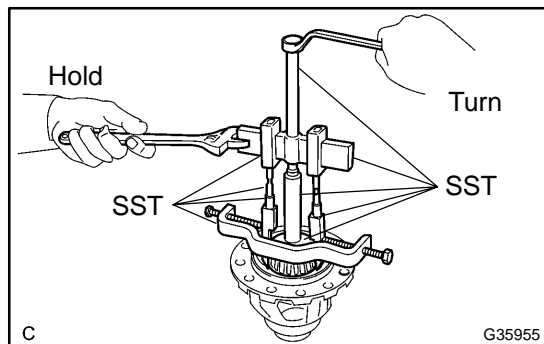
2. REMOVE FR DIFFERENTIAL CASE FRONT TAPERED ROLLER BEARING

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

SST 09950-00020, 09950-00030, 09950-60010
(09951-00480), 09950-40011 (09957-04010)

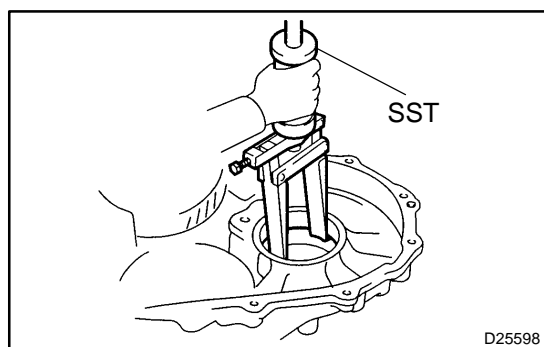


- (b) Using SST, remove the front differential case front tapered roller bearing outer race.
SST 09308-00010

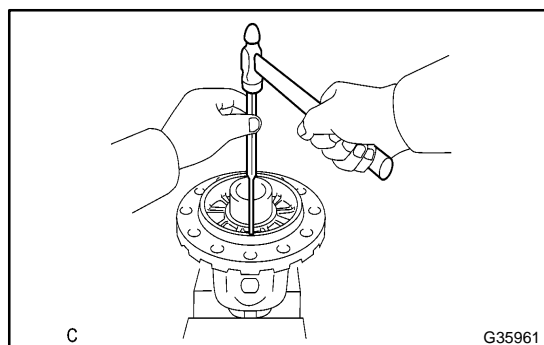


3. REMOVE FR DIFFERENTIAL CASE REAR TAPERED ROLLER BEARING

- (a) Using SST, remove the front differential case rear tapered roller bearing from the differential case.
SST 09950-00020, 09950-00030, 09950-40011 (09955-04061, 09957-04010, 09958-04011), 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021, 09955-05010), 09950-60010 (09951-00480), 09950-70010 (09951-07100)

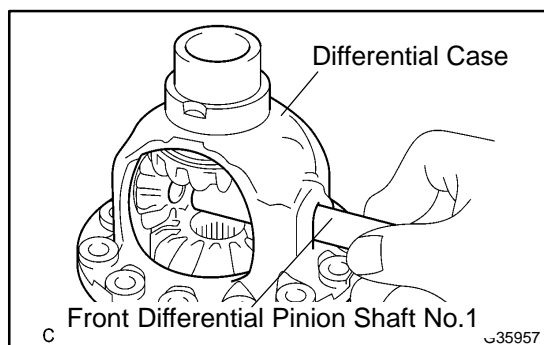


- (b) Using SST, remove the front differential case rear tapered roller bearing outer race.
SST 09308-00010
- (c) Remove the front differential case rear shim.



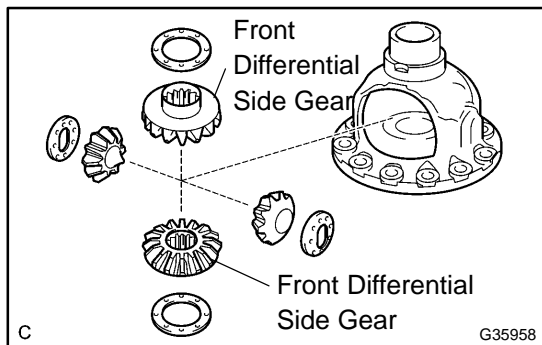
4. REMOVE FRONT DIFFERENTIAL PINION SHAFT STRAIGHT PIN

- (a) Using a pin punch and hammer, remove the straight pin.
NOTICE:
Before removing the straight pin, unstake it with a pin punch.



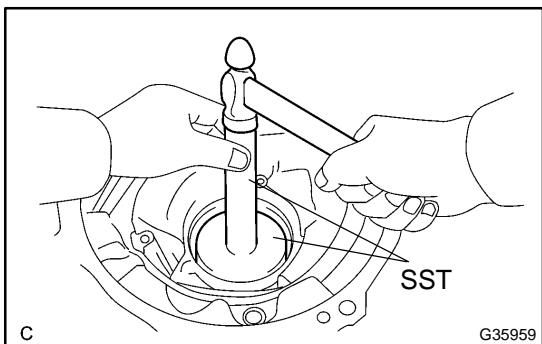
5. REMOVE FRONT DIFFERENTIAL PINION SHAFT NO.1

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



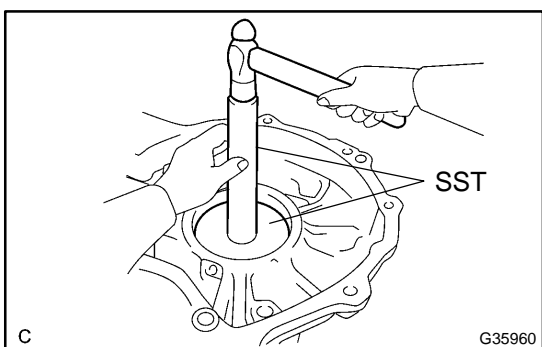
6. REMOVE FRONT DIFFERENTIAL SIDE GEAR

- (a) Remove the 2 front differential pinions, 2 pinion thrust washers, 2 front differential side gears and 2 side gear thrust washers from the differential case.



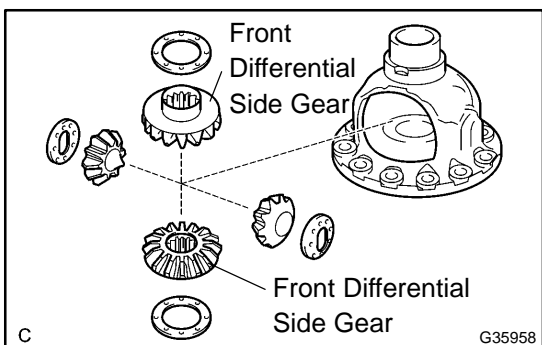
7. REMOVE TRANSAXLE HOUSING OIL SEAL

- (a) Using SST, remove the oil seal.
SST 09950-70010 (09951-07200), 09950-60010 (09951-00630)



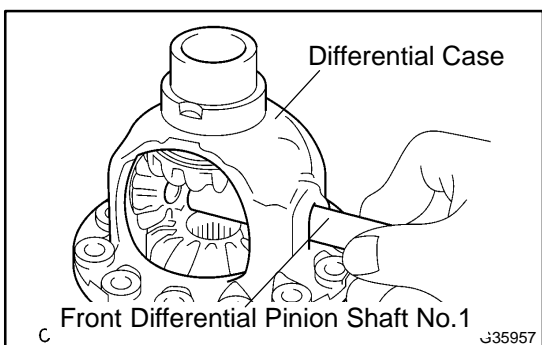
8. REMOVE DIFFERENTIAL SIDE BEARING RETAINER OIL SEAL

- (a) Using SST, remove the oil seal.
SST 09950-70010 (09951-07100), 09608-10010



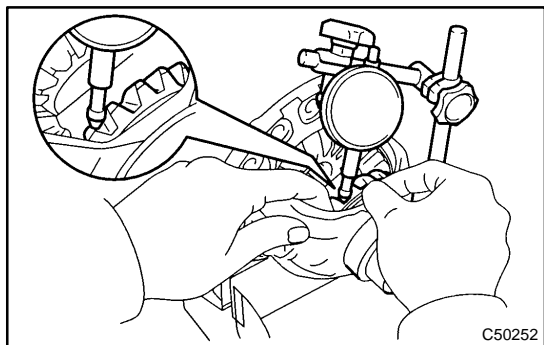
9. INSTALL FRONT DIFFERENTIAL SIDE GEAR

- (a) Coat the 2 front differential side gears, 2 side gear thrust washers, 2 front differential pinions and 2 pinion thrust washers with ATF and install them to the differential case.



10. INSTALL FRONT DIFFERENTIAL PINION SHAFT NO.1

- (a) Coat the front differential pinion shaft No.1 with ATF, and install it to the differential case.



11. INSPECT BACKLASH

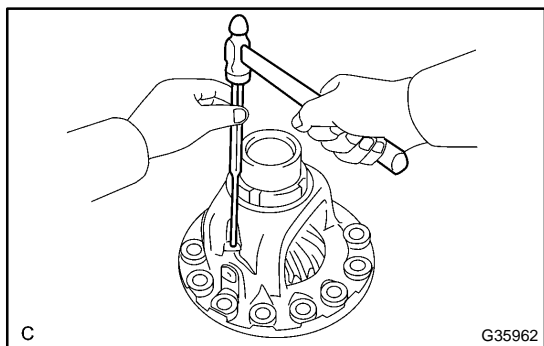
- (a) Using a dial indicator, inspect the backlash of the side gear.

Standard backlash:

0.05 to 0.20 mm (0.0020 to 0.0079 in.)

Thrust washer thickness

Mark	Thickness
1	1.000 mm (0.0394 in.)
2	1.100 mm (0.0433 in.)
3	1.200 mm (0.0472 in.)
4	1.300 mm (0.0512 in.)

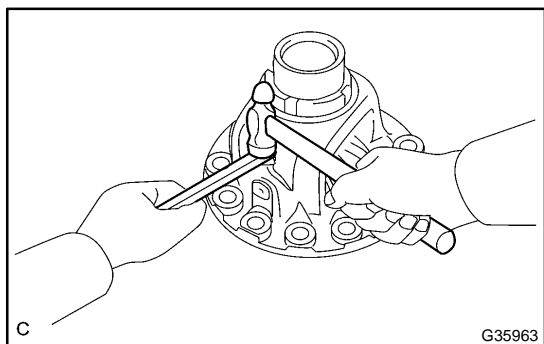


12. INSTALL FRONT DIFFERENTIAL PINION SHAFT STRAIGHT PIN

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

NOTICE:

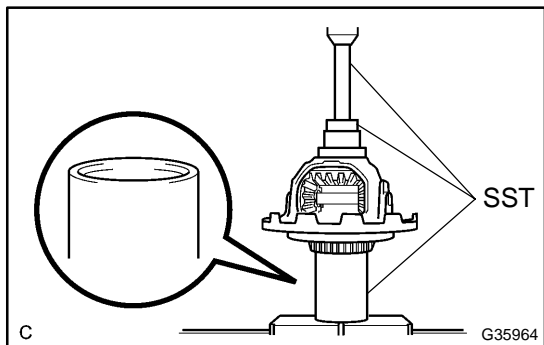
Align the holes, and install the pinion shaft straight pin.



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

NOTICE:

Stake it after adjusting the backlash.



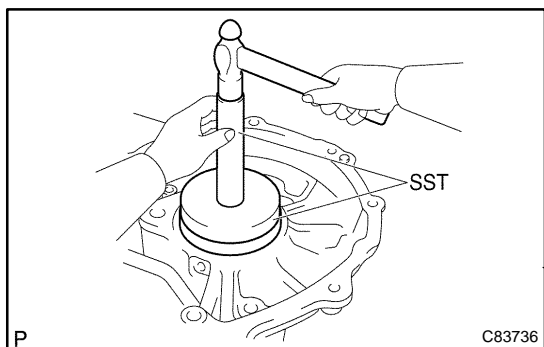
13. INSTALL FR DIFFERENTIAL CASE FRONT TAPERED ROLLER BEARING

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

SST 09550-60010 (09951-00480), 09950-70010 (09951-07100), 09710-04081

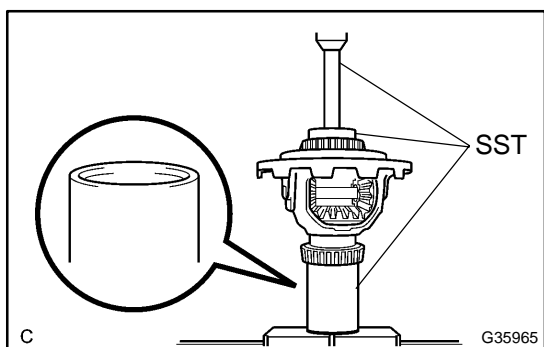
NOTICE:

Do not damage the bearing cage during bearing inner race installation.



- (b) Using SST and a hammer, install the front differential case front tapered roller bearing outer race to the transaxle housing.

SST 09950-70010 (09951-07200), 09950-60020 (09951-00750)



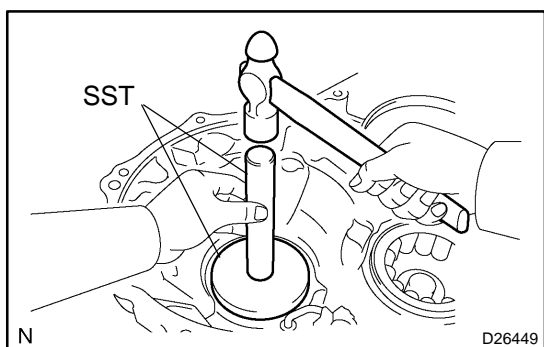
14. INSTALL FR DIFFERENTIAL CASE REAR TAPERED ROLLER BEARING

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

SST 09710-04081, 09550-60010 (09951-00480), 09950-70010 (09951-07100)

NOTICE:

Do not damage the bearing cage during bearing inner race installation.

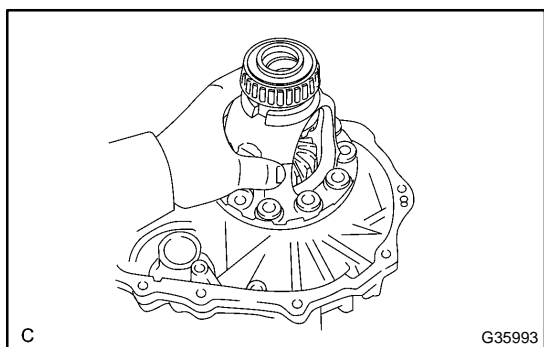


- (b) Install the front differential case rear shim.
 (c) Using SST and a hammer, install the front differential case rear tapered roller bearing outer race to the transaxle housing.

SST 09950-70010 (09951-07150), 09950-60020 (09951-00790)

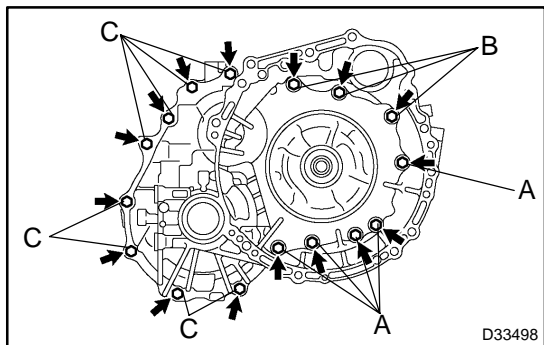
NOTICE:

Ensure that there is no clearance between the bearing and transaxle housing.



15. ADJUST DIFFERENTIAL SIDE BEARING PRELOAD

- (a) Install the differential assy to the transaxle case.



(b) Clean the matching surfaces of the transaxle case and transaxle housing.

(c) Install the transaxle housing to the transaxle case with the 16 bolts.

Torque:

Bolt A: 22 N·m (224 kgf·cm, 16 ft·lbf)

Bolt B: 29 N·m (296 kgf·cm, 21 ft·lbf)

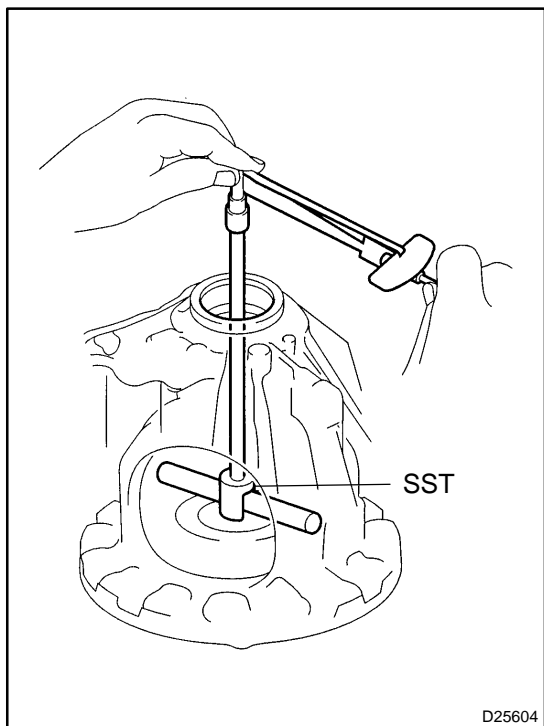
Bolt C: 29 N·m (296 kgf·cm, 21 ft·lbf)

Bolt length:

Bolt A: 50 mm (1.969 in.)

Bolt B: 50 mm (1.969 in.)

Bolt C: 42 mm (1.654 in.)



(d) Using SST, turn the differential assy right and left 2 or 3 times to settle the bearing.

SST 09564-3201 1

(e) Using SST and a torque wrench, measure the turning torque of the differential.

SST 09564-3201 1

Turning torque at 60 rpm:

New bearing

0.20 to 1.00 N·m (2.0 to 10.2 kgf·cm, 1.8 to 8.9 in·lbf)

Used bearing

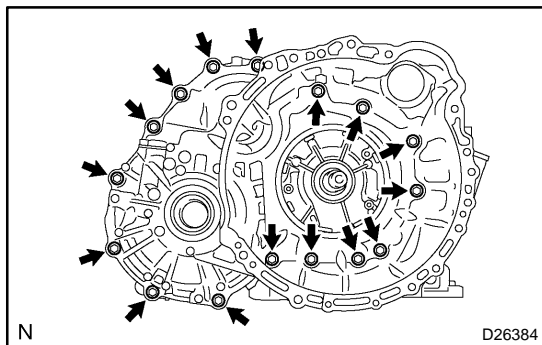
0.10 to 0.35 N·m (1.0 to 3.6 kgf·cm, 0.9 to 3.1 in·lbf)

HINT:

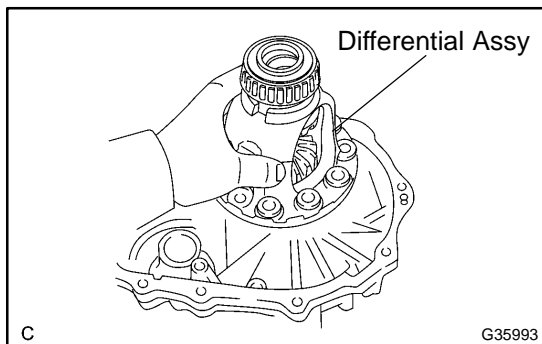
If the turning torque is not within the specified values, refer to the table below to select a shim which turning torque is within the specified values.

Shim thickness: mm (in.)

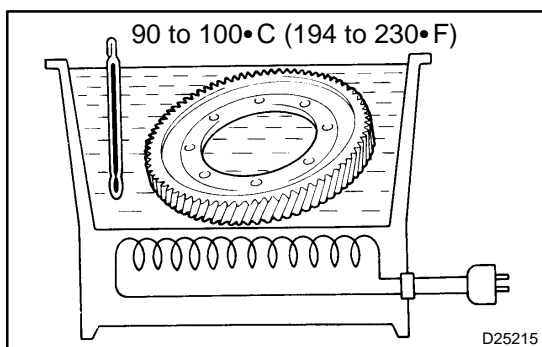
Mark	Thickness	Mark	Thickness
0	1.90 (0.0748)	A	2.40 (0.0945)
1	1.95 (0.0768)	B	2.45 (0.0965)
2	2.00 (0.0787)	C	2.50 (0.0984)
3	2.05 (0.0807)	D	2.55 (0.1004)
4	2.10 (0.0827)	E	2.60 (0.1024)
5	2.15 (0.0846)	F	2.65 (0.1043)
6	2.20 (0.0866)	G	2.70 (0.1063)
7	2.25 (0.0886)	H	2.75 (0.1083)
8	2.30 (0.0906)	J	2.80 (0.1102)
9	2.35 (0.0925)		



(f) Remove the 16 bolts and the transaxle housing.



(g) Remove the differential assy.



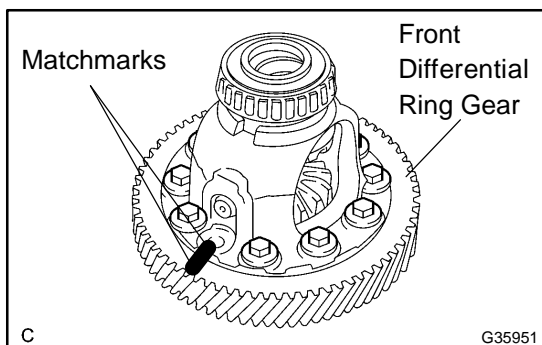
16. INSTALL FRONT DIFFERENTIAL RING GEAR

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

NOTICE:

Do not heat the ring gear to more than 110•C (230.0•F).

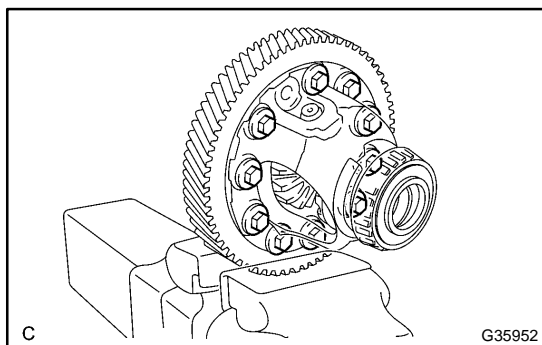
(b) Clean the contact surface of the front differential case.



(c) Align the matchmarks, and install the front differential ring gear case quickly.

NOTICE:

Do not install the bolts while the ring gear is hot.

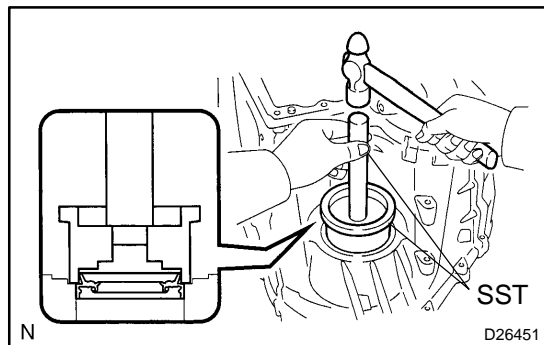


(d) Tighten the 10 bolts.

Torque: 95.1 N·m (970 kgf·cm, 70 ft·lbf)

NOTICE:

Tighten the bolts a little at a time in diagonal order.

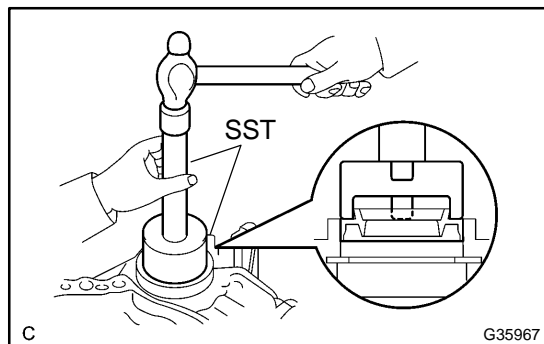


17. INSTALL TRANSAXLE HOUSING OIL SEAL

- (a) Using SST and a hammer, install a new oil seal.
- (b) Coat the lip of the oil seal with a little MP grease.

Oil seal drive in depth: 0 ± 0.5 mm (0 ± 0.0197 in.)

SST 09950-70010 (09951-07150), 09608-32010



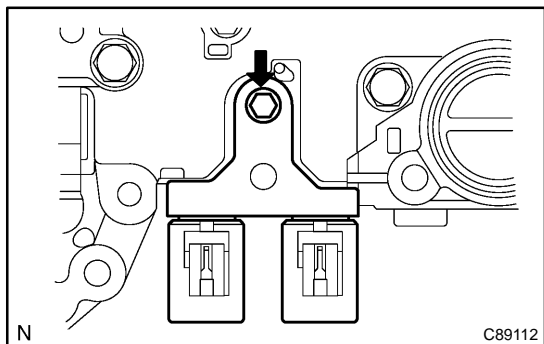
18. INSTALL DIFFERENTIAL SIDE BEARING RETAINER OIL SEAL

- (a) Using SST and a hammer, install a new oil seal.
- (b) Coat the lip of the oil seal with a little MP grease.

Oil seal drive in depth: 0 ± 0.5 mm (0 ± 0.0197 in.)

SST 09950-70010 (09951-07150), 09726-36010

OVERHAUL

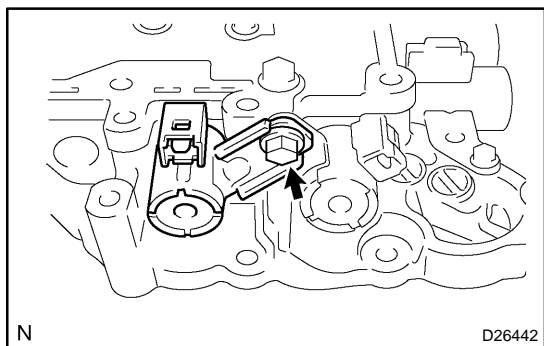


1. REMOVE SHIFT SOLENOID VALVE SL3

- (a) Remove the bolt, solenoid lock plate No.3 and shift solenoid valve SL3 from the valve body assy.

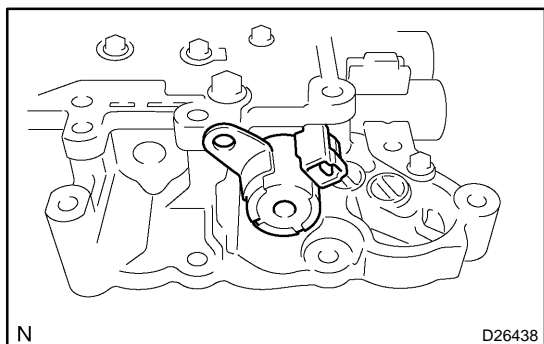
2. REMOVE LINE PRESSURE CONTROL SOLENOID ASSY

- (a) Remove the line pressure control solenoid from the valve body assy.



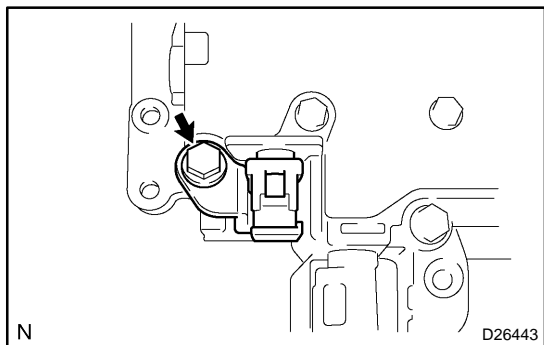
3. REMOVE SHIFT SOLENOID VALVE S4

- (a) Remove the bolt and shift solenoid valve S4 from the valve body assy.



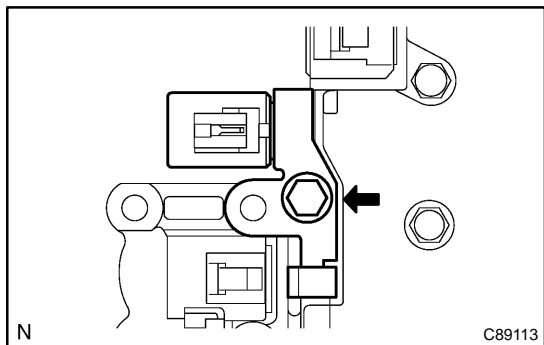
4. REMOVE SHIFT SOLENOID VALVE SR

- (a) Remove the shift solenoid valve SR from the valve body assy.



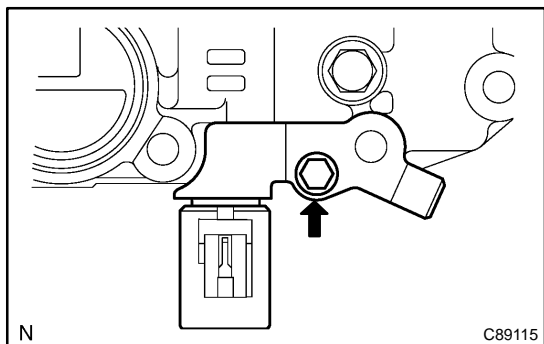
5. REMOVE SHIFT SOLENOID VALVE DSL

- (a) Remove the bolt and shift solenoid valve DSL from the valve body assy.



6. REMOVE SHIFT SOLENOID VALVE SL2

- (a) Remove the bolt, solenoid lock plate No.2 and shift solenoid valve SL2 from the valve body assy.



7. REMOVE SHIFT SOLENOID VALVE SL1

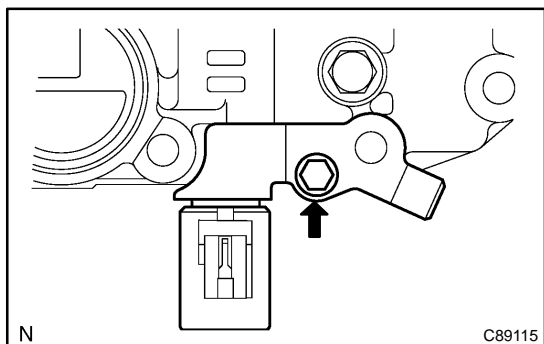
- (a) Remove the bolt, solenoid lock plate and shift solenoid valve SL1 from the valve body assy.

8. REMOVE MANUAL VALVE

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

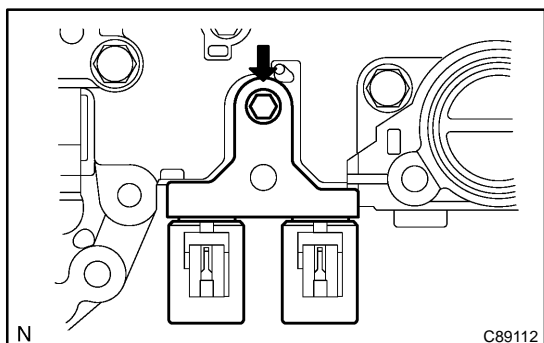
9. INSTALL MANUAL VALVE

- (a) Install the manual valve to the valve body assy.



10. INSTALL SHIFT SOLENOID VALVE SL1

- (a) Install the shift solenoid valve SL1 and solenoid lock plate to the valve body assy with the bolt.
Torque: 6.6 N·m (67 kgf·cm, 58 in·lbf)

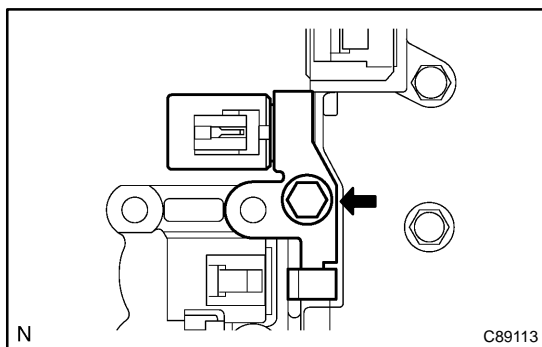


11. INSTALL LINE PRESSURE CONTROL SOLENOID ASSY

- (a) Install the line pressure control solenoid assy to the valve body assy.

12. INSTALL SHIFT SOLENOID VALVE SL3

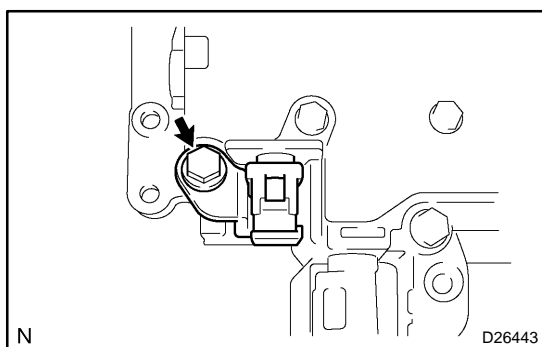
- (a) Install the shift solenoid valve SL3 and solenoid lock plate No.3 to the valve body assy with the bolt.
Torque: 6.6 N·m (67 kgf·cm, 58 in·lbf)



13. INSTALL SHIFT SOLENOID VALVE SL2

- (a) Install the shift solenoid valve SL2 and solenoid lock plate No.2 to the valve body assy with the bolt.

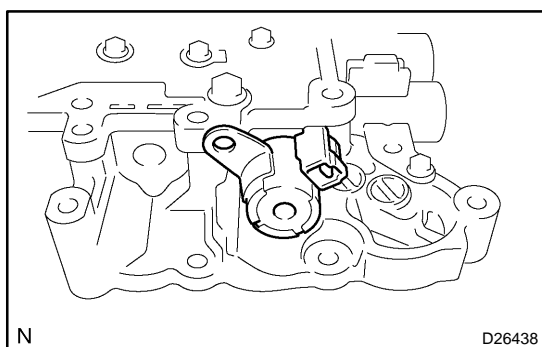
Torque: 10.8 N·m (110 kgf·cm, 8 ft·lbf)



14. INSTALL SHIFT SOLENOID VALVE DSL

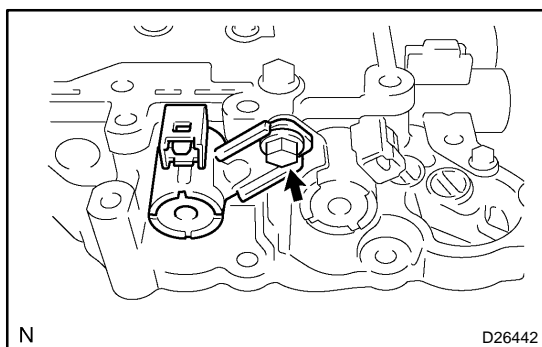
- (a) Install the shift solenoid valve DSL to the valve body assy with the bolt.

Torque: 10.8 N·m (110 kgf·cm, 8 ft·lbf)



15. INSTALL SHIFT SOLENOID VALVE SR

- (a) Install the shift solenoid valve SR to the valve body assy.

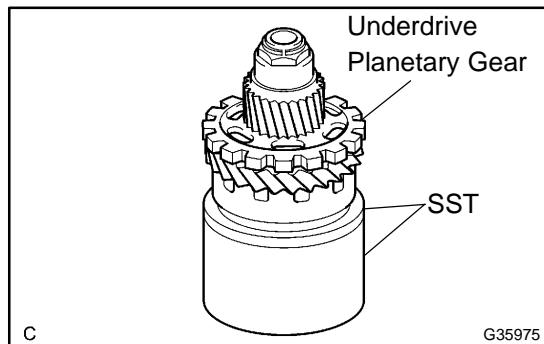


16. INSTALL SHIFT SOLENOID VALVE S4

- (a) Install the shift solenoid valve S4 to the valve body assy with the bolt.

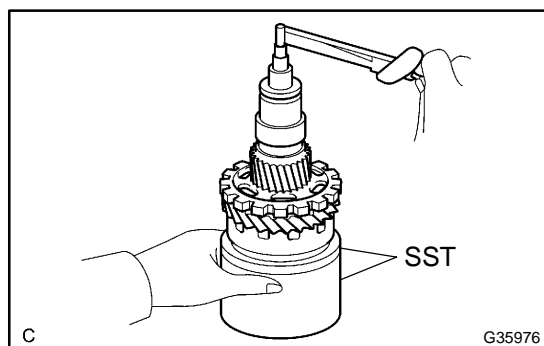
Torque: 10.8 N·m (110 kgf·cm, 8 ft·lbf)

OVERHAUL



1. INSPECT UNDERDRIVE PLANETARY GEAR PRELOAD

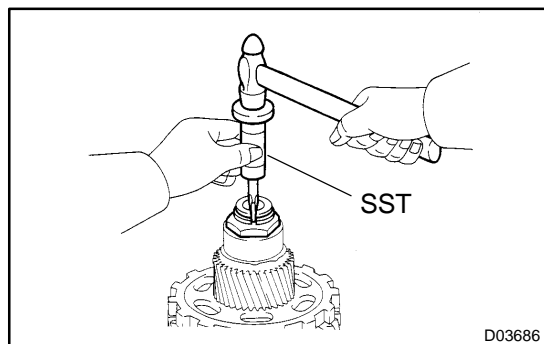
- (a) Using SST, fix the underdrive planetary gear assy.
SST 09387-00050, 09495-65040



- (b) Using SST and a torque wrench, measure the turning torque of the underdrive planetary gear assy while rotating the torque wrench at 60 rpm.
SST 09387-00050, 09495-65040
Turning torque at 60 rpm.:
0.28 to 0.89 N·m (2.9 to 9.1 kgf·cm, 2.478 to 7.877 in·lbf)

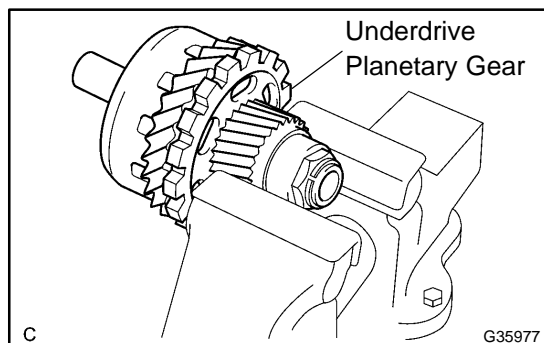
HINT:

Use a torque wrench with a fulcrum length of 160 mm (6.3 in.).



2. REMOVE FRONT PLANETARY GEAR NUT

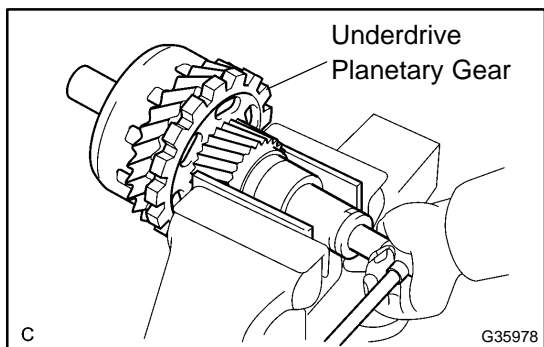
- (a) Using SST, loosen the staked part of the gear nut.
SST 09930-00010 (09931-00010, 09931-00020),
09387-00050, 09495-65040



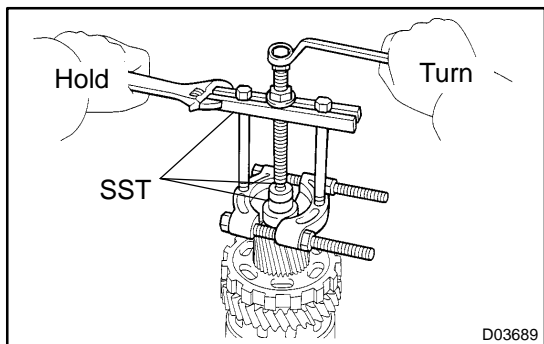
- (b) Clamp the underdrive planetary gear in a soft jaw vise.

NOTICE:

Be careful not to damage the differential drive pinion.

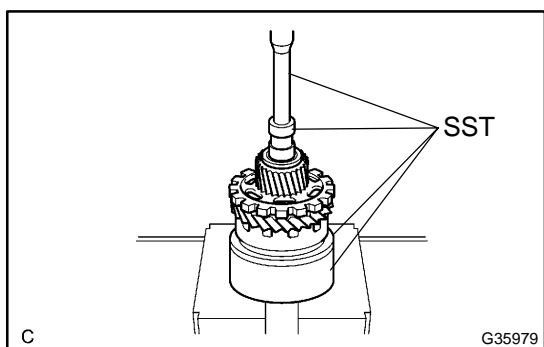


(c) Using a socket wrench, remove the gear nut.



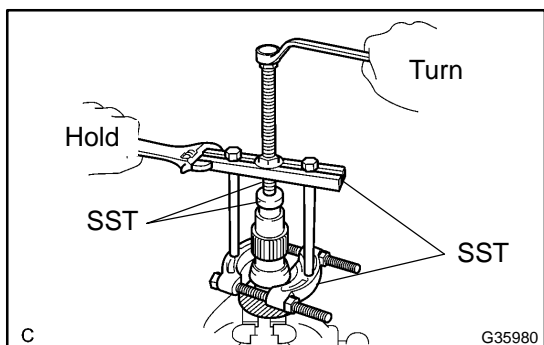
3. REMOVE CYLINDRICAL ROLLER BEARING RACE INNER

(a) Using SST, remove the cylindrical roller bearing race inner.
 SST 09950-00020, 09950-00030, 09950-60010 (09951-00320), 09950-40011 (09957-04010)

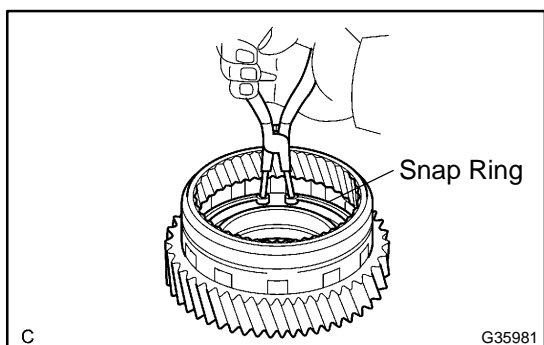


4. REMOVE UNDERDRIVE PLANETARY GEAR ASSY

(a) Using SST and a press, remove the differential drive pinion, parking lock gear, counter driven gear with the underdrive planetary ring gear and angular ball bearing inner race (front side).
 SST 09387-00050, 09495-65040, 09950-60010 (09951-00320), 09950-70010 (09951-07100)

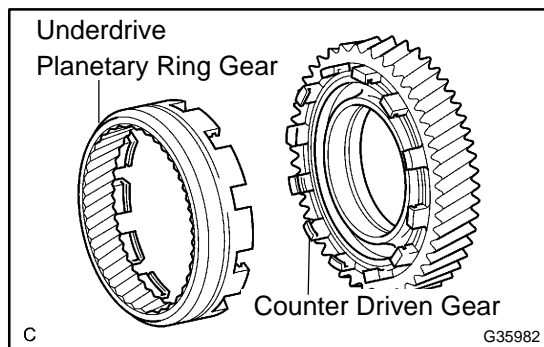


(b) Clamp the underdrive planetary gear in a soft jaw vise.
 (c) Using SST, remove the angular ball bearing inner race (rear side) from the underdrive planetary gear.
 SST 09950-00020, 09950-00030, 09950-40011 (09957-04010), 09950-60010 (09951-00320)

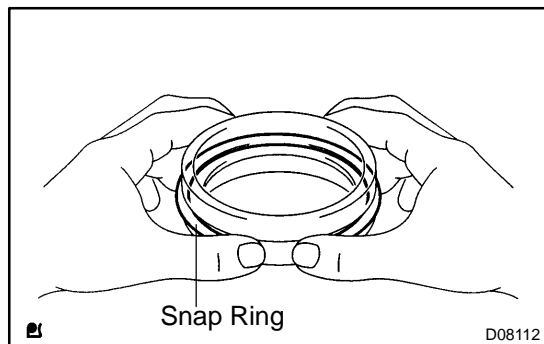


5. REMOVE UNDERDRIVE PLANETARY RING GEAR

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



- (b) Remove the underdrive planetary ring gear from the counter driven gear.

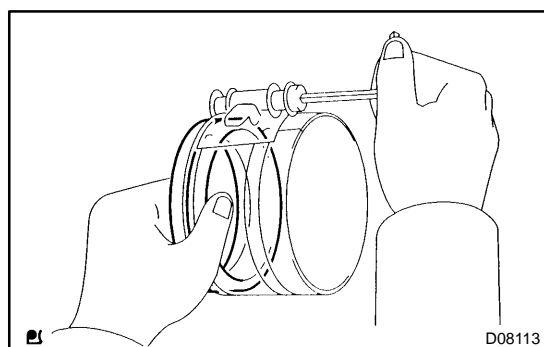


6. INSTALL UNDERDRIVE PLANETARY RING GEAR

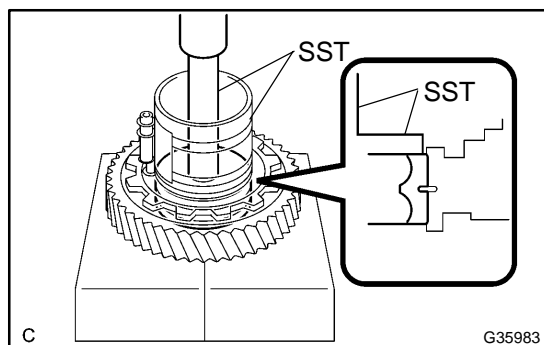
- (a) Install a new snap ring to a new outer race of the angular ball bearing.

HINT:

When replacing the bearing, also replace the counter driven gear with a new one.



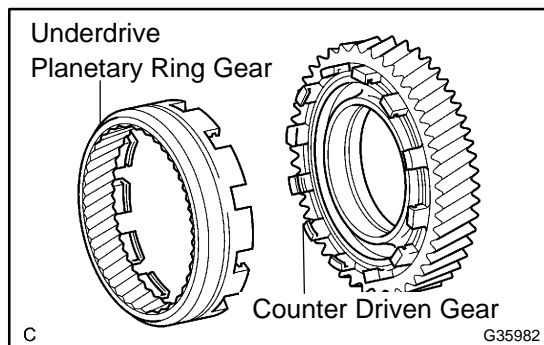
- (b) Using a piston ring compressor, squeeze the snap ring.



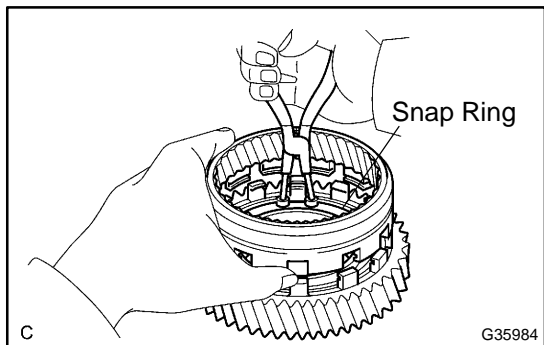
- (c) Using SST and a press, press in the outer race of the angular ball bearing.
 SST 09950-60020 (09951-00890), 09950-70010 (09951-07100),

NOTICE:

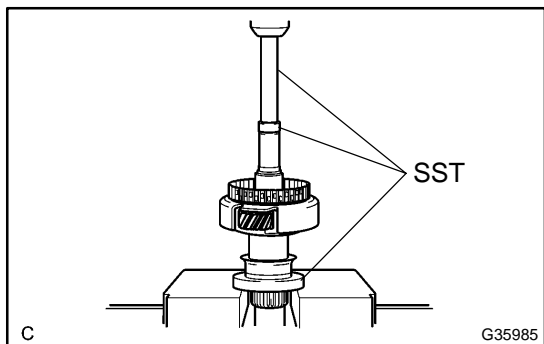
Be sure not to damage the snap ring during outer race installation.



- (d) Install the underdrive planetary ring gear to the counter driven gear.

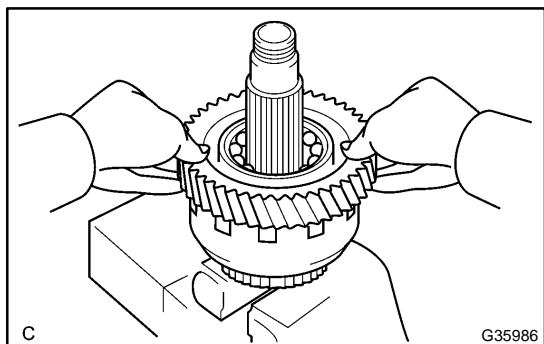


- (e) Using snap ring pliers, install the snap ring.
 SST 09950-60020 (09951-00890), 09950-70010
 (09951-07100), 99999-60012

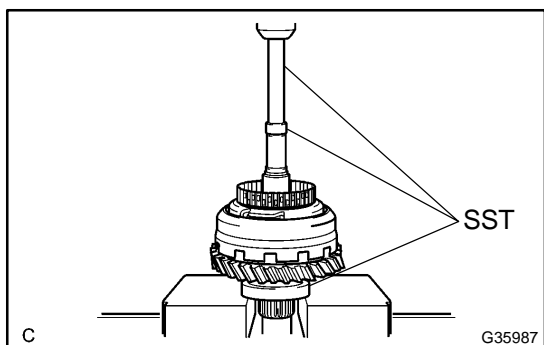


- 7. INSTALL UNDERDRIVE PLANETARY GEAR ASSY**
 (a) Using SST and a press, press the angular ball bearing in-
 inner race (rear side) into the underdrive planetary gear.
 SST 09950-60010 (09951-00260), 09950-70010
 (09951-07100), 09726-40010

NOTICE:
Press the bearing until it becomes flat at the bottom.

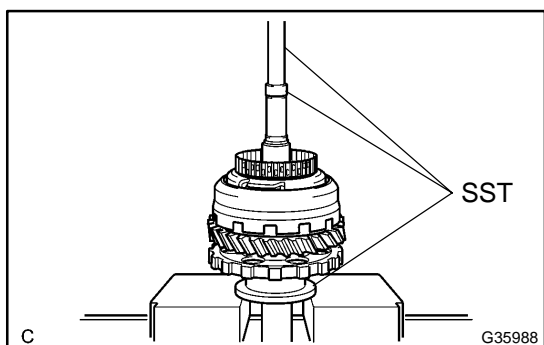


- (b) Install the counter driven gear with the planetary ring gear
 to the underdrive planetary gear.

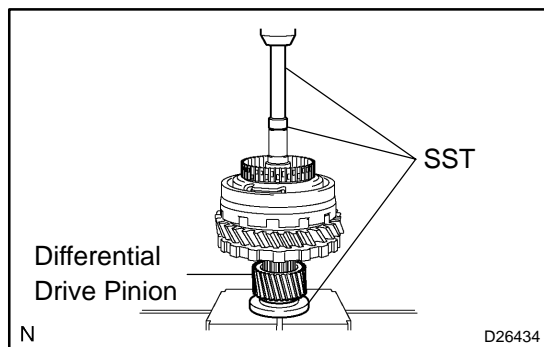


- (c) Using SST and a press, press in the angular ball bearing
 inner race (front side).
 SST 09950-60010 (09951-00260), 09950-70010
 (09951-07100), 09726-40010

NOTICE:
Press the counter driven gear while rotating it.



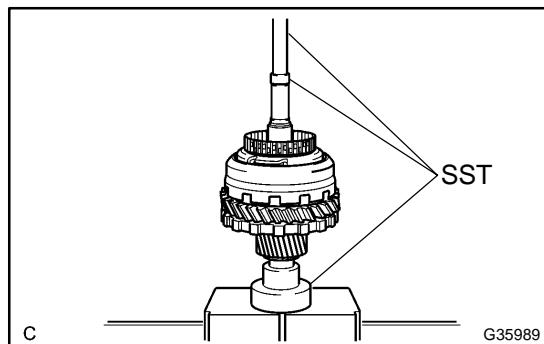
- (d) Using a press, press in the parking lock gear.
NOTICE:
Press the counter driven gear while rotating it.
 SST 09950-60010 (09951-00260), 09950-70010
 (09951-07100), 09316-20011



8. INSTALL DIFFERENTIAL DRIVE PINION

- (a) Using a press, press the differential drive pinion.
SST 09726-40010, 09950-60010 (09951-00260),
09950-70010 (09951-07100)

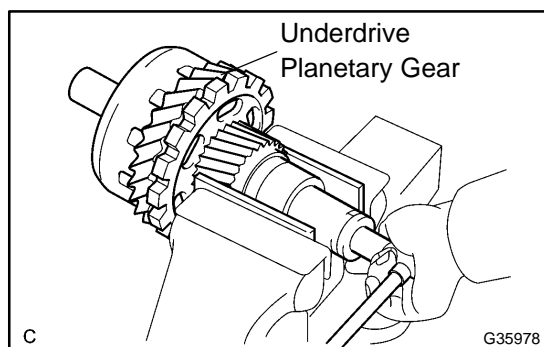
NOTICE:
Press the counter driven gear while rotating it.



9. INSTALL CYLINDRICAL ROLLER BEARING RACE INNER

- (a) Using a press, press the cylindrical roller bearing race inner.

NOTICE:
Press the counter driven gear while rotating it.
SST 09515-21010, 09950-60010 (09951-00260),
09950-70010 (09951-07100)

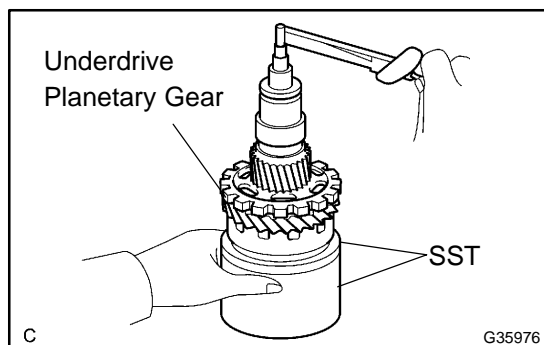


10. INSTALL FRONT PLANETARY GEAR NUT

- (a) Clamp the underdrive planetary gear in a soft jaw vise.

NOTICE:
Be careful not to damage the differential drive pinion.
(b) Using a socket wrench, install a new gear nut.
Torque: 280 N·m (2,855 kgf·cm, 207 ft·lbf)

HINT:
Use a torque wrench with a fulcrum length of 750 mm (29.53 in.).

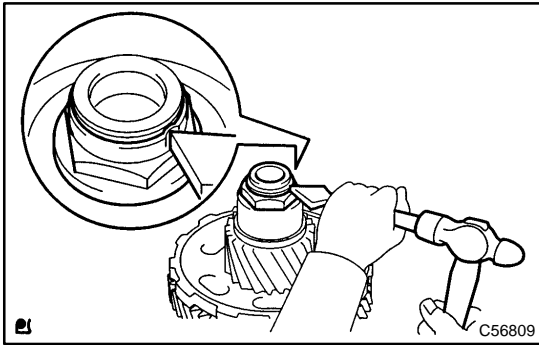


11. INSPECT UNDERDRIVE PLANETARY GEAR PRELOAD

- (a) Using SST and a torque wrench, measure the turning torque of the underdrive planetary gear assy while rotating the torque wrench at 60 rpm.

SST 09387-00050, 09495-65040
Turning torque at 60 rpm.:
0.28 to 0.89 N·m (2.9 to 9.1 kgf·cm, 2.478 to 7.877 in·lbf)

HINT:
Use a torque wrench with a fulcrum length of 160 mm (6.30 in.).

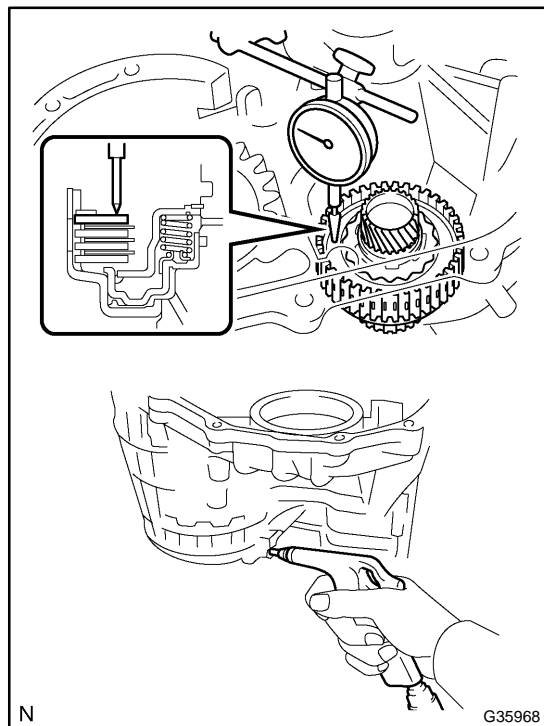


(b) Using a pin punch and hammer, stake the gear nut.

NOTICE:

Make sure that there are no cracks on the nut.

OVERHAUL



1. INSPECT UNDERDRIVE PACK CLEARANCE

- (a) Install the underdrive clutch to the transaxle case.

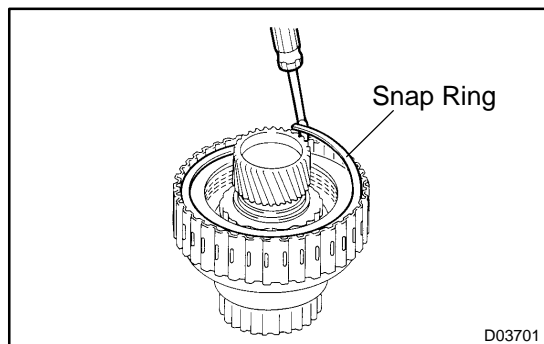
NOTICE:

Be careful not to damage the oil seal rings.

- (b) Install a dial indicator as shown in the illustration.
 (c) Measure the underdrive clutch pack clearance while applying and releasing compressed air (392 kPa, 4.0 kgf/cm², 57 psi).

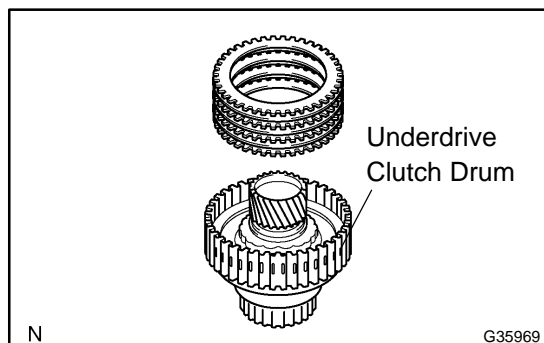
Pack clearance: 1.42 to 1.71 mm (0.0559 to 0.0673 in.)

If the pack clearance is not within specification, inspect the discs, plates and flange.



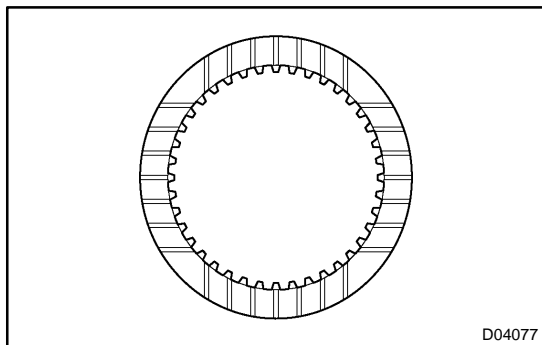
2. REMOVE UNDERDRIVE CLUTCH FLANGE NO.2 HOLE SNAP RING

- (a) Using a screwdriver, remove the underdrive clutch flange No.2 hole snap ring.



3. REMOVE UNDERDRIVE CLUTCH DISC NO.1

- (a) Remove the flange, 3 discs and 3 plates from the underdrive clutch drum.

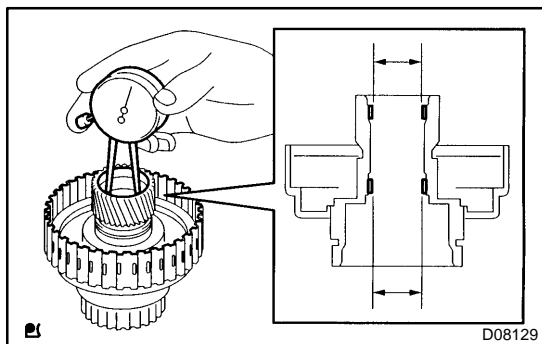


4. INSPECT UNDERDRIVE CLUTCH DISC NO.1

- (a) Check to see if the sliding surfaces of the discs, plates and flange are worn or burnt. If necessary, replace them.

HINT:

- If the lining of the discs comes off or discolors, or a groove is damaged, replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.



5. INSPECT UNDERDRIVE CLUTCH DRUM SUB-ASSY

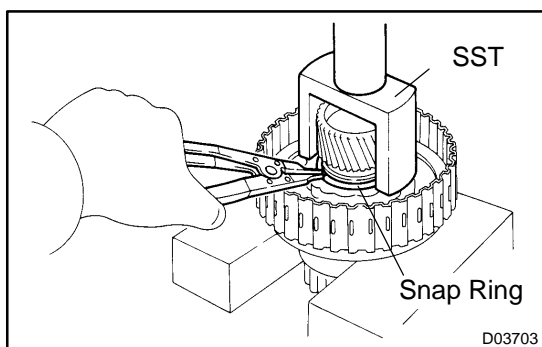
- (a) Using a dial indicator, measure the inside diameter of the underdrive clutch drum bushing.

Standard drum bushing:

32.56 to 32.58 mm (1.2818 to 1.2826 in.)

Maximum drum bushing: 32.63 mm (1.2846 in.)

If the inside diameter is greater than the maximum, replace the underdrive clutch drum.



6. REMOVE UNDERDRIVE CLUTCH RETURN SPRING SUB-ASSY

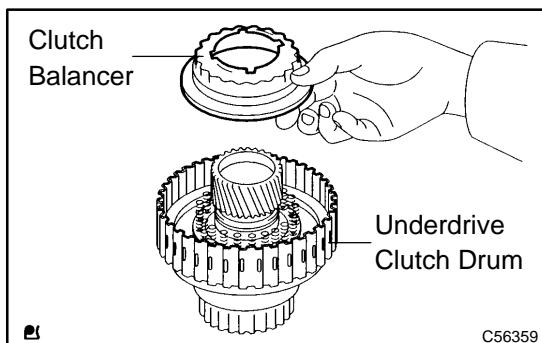
- (a) Place SST on the clutch balancer and compress the spring with a press.

SST 09350-32014 (09351-32070)

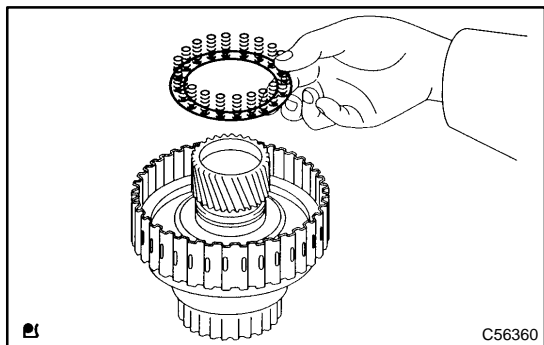
- (b) Using a snap ring expander, remove the snap ring.

NOTICE:

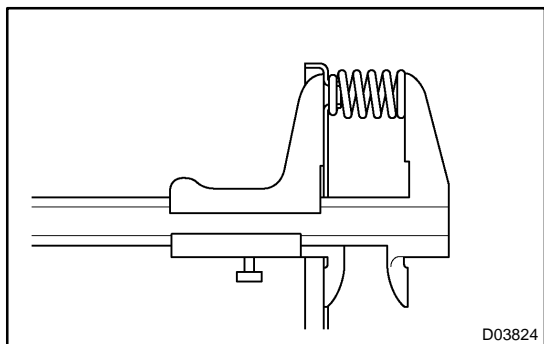
- Stop the press when the spring sheet is lowered to the place 1 to 2 mm (0.039 to 0.078 in.) from the snap ring groove. This prevents the spring sheet from being deformed.
- Do not expand the snap ring excessively.



- (c) Remove the clutch balancer from the underdrive clutch drum.

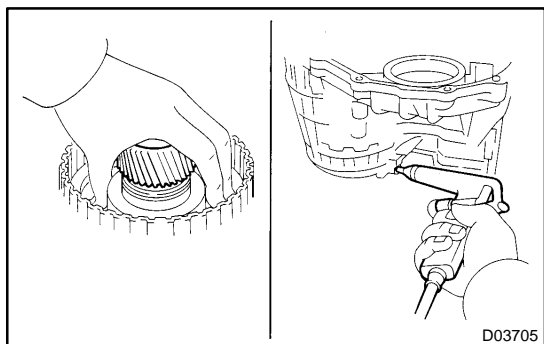


- (d) Remove the return spring from the underdrive clutch drum.



7. INSPECT UNDERDRIVE CLUTCH RETURN SPRING SUB-ASSY

- (a) Using vernier calipers, measure the free length of the spring together with the spring seat.
Standard free length: 17.14 mm (0.6748 in.)



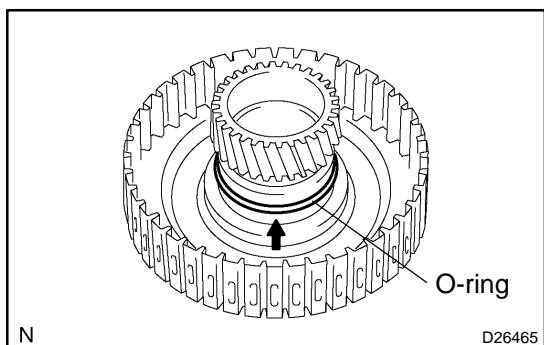
8. REMOVE UNDERDRIVE CLUTCH PISTON SET

- (a) Install the underdrive clutch to the transaxle case.

NOTICE:

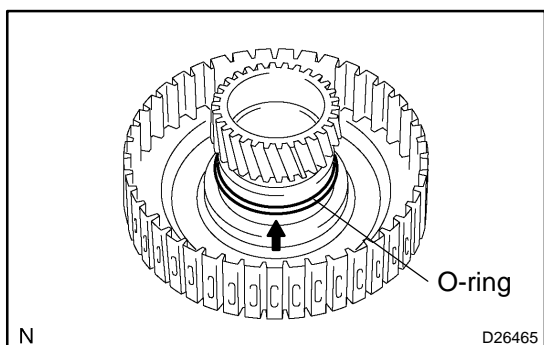
Be careful not to damage the oil seal rings.

- (b) Holding the underdrive clutch piston by hand, apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the transaxle case to remove the underdrive clutch piston.



9. REMOVE UNDERDRIVE CLUTCH DRUM O-RING

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

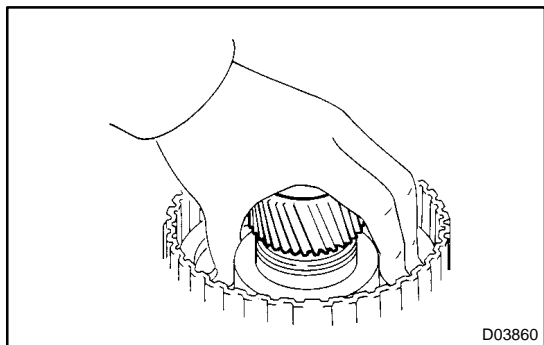


10. INSTALL UNDERDRIVE CLUTCH DRUM O-RING

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

NOTICE:

Ensure that the O-ring is not twisted or pinched.

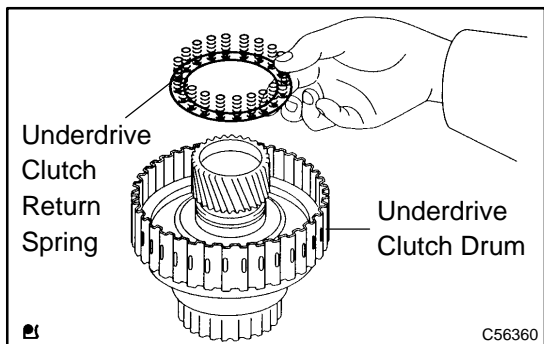


11. INSTALL UNDERDRIVE CLUTCH PISTON SET

- (a) Coat the underdrive clutch piston with ATF, and install it to the underdrive clutch piston drum.

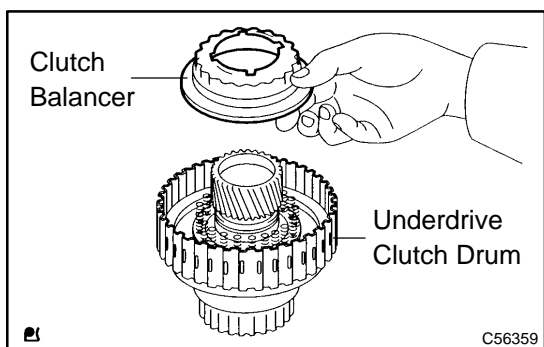
NOTICE:

- Be careful not to damage the O-ring.
- Be careful not to damage the lip seal of the piston.



12. INSTALL UNDERDRIVE CLUTCH RETURN SPRING SUB-ASSY

- (a) Install the return spring to the underdrive clutch drum.

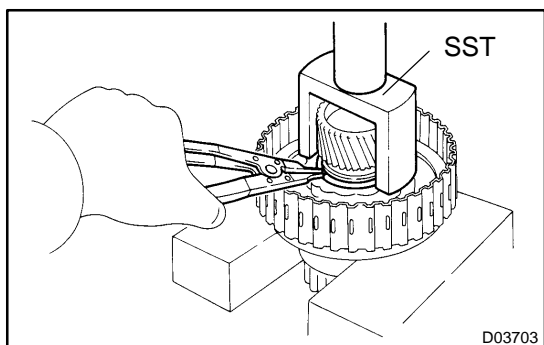


- (b) Coat the clutch balancer with ATF.

- (c) Install the clutch balancer to the underdrive clutch drum.

NOTICE:

- Be careful not to damage the lip seal of the clutch balancer.
- When installing the return spring, ensure that all springs are fit in the clutch balancer correctly.



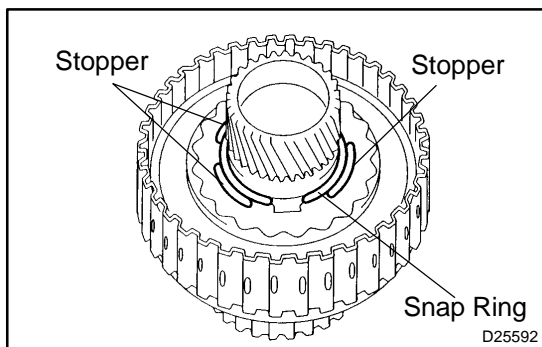
- (d) Place SST on the clutch balancer and compress the piston return spring with a press.

SST 09350-32014 (09351-32070)

- (e) Using a snap ring expander, install the snap ring to the underdrive clutch drum.

NOTICE:

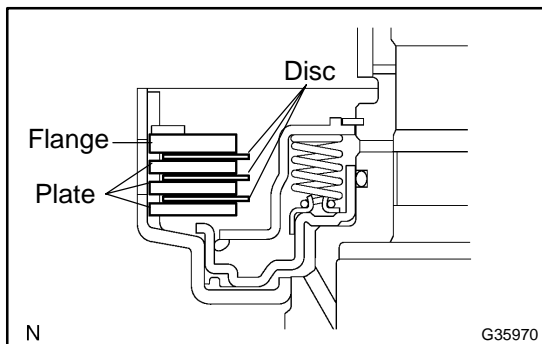
- Stop the press when the spring sheet is lowered to the place 1 to 2 mm (0.039 to 0.078 in.) from the snap ring groove. This prevents the spring sheet from being deformed.
- Do not expand the snap ring excessively.



(f) Set the end gap of the snap ring in the underdrive clutch drum as shown in the illustration.

NOTICE:

Ensure that the end gap of the snap ring is not aligned with any of the stoppers.

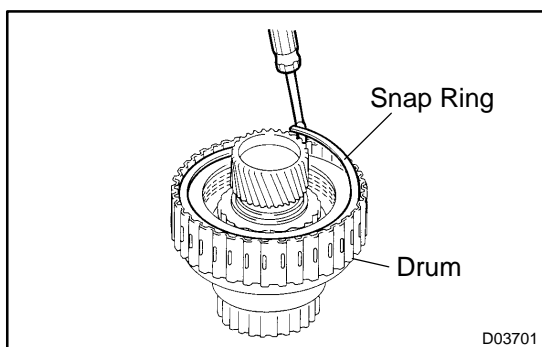


13. INSTALL UNDERDRIVE CLUTCH DISC NO.1

- (a) Coat the 3 discs with ATF.
- (b) Install the 3 plates, 3 discs and flange to the underdrive clutch drum.

NOTICE:

Be careful about the order of the discs, plates and flange.

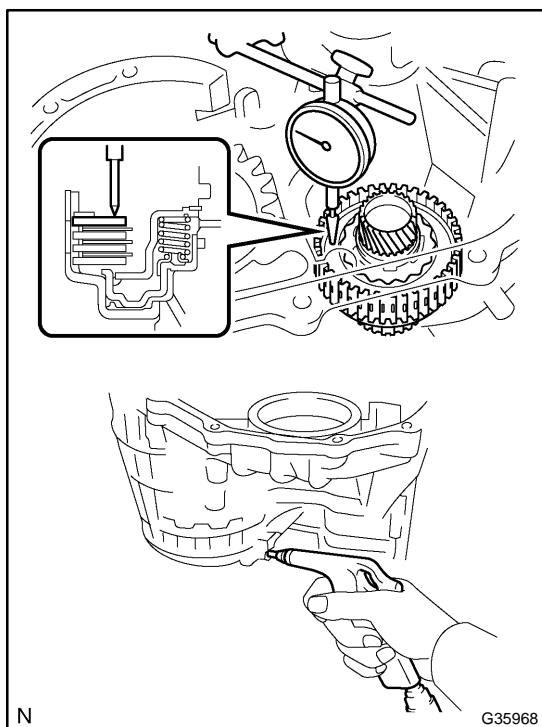


14. INSTALL UNDERDRIVE CLUTCH FLANGE NO.2 HOLE SNAP RING

- (a) Using a screwdriver, install the underdrive clutch flange No.2 hole snap ring.

NOTICE:

The snap ring should be securely fixed in the groove of the drum.



15. INSPECT UNDERDRIVE PACK CLEARANCE

- (a) Install the underdrive clutch to the transaxle case.

NOTICE:

Be careful not to damage the oil seal ring.

- (b) Set a dial indicator as shown in the illustration.
- (c) Measure the underdrive clutch piston stroke while applying and releasing compressed air (392 kPa, 4.0 kgf/cm², 57 psi).

Park clearance: 1.42 to 1.71 mm (0.0559 to 0.0673 in.)

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

If the pack clearance is not within specification, select another flange.

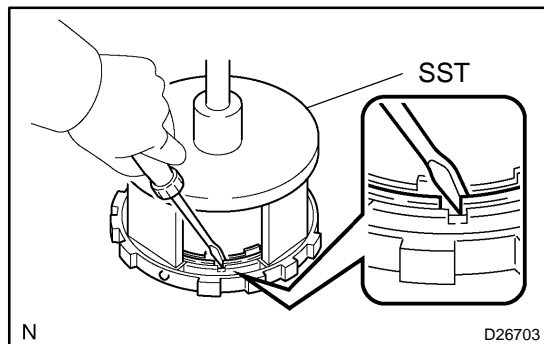
HINT:

There are 7 types of flanges of different thickness.

Flange thickness: mm (in.)

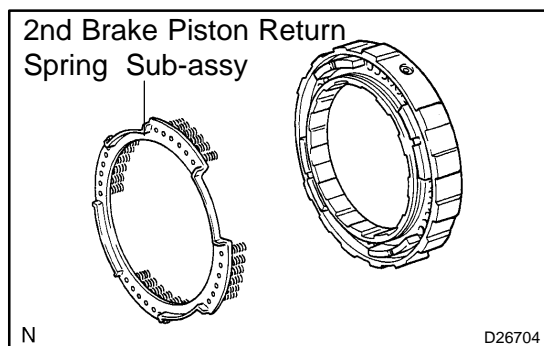
Mark	Thickness	Mark	Thickness
K	2.9 (0.114)	G	3.1 (0.122)
A	3.0 (0.118)	H	3.3 (0.130)
B	3.2 (0.126)	J	3.5 (0.138)
C	3.4 (0.134)	-	-

OVERHAUL

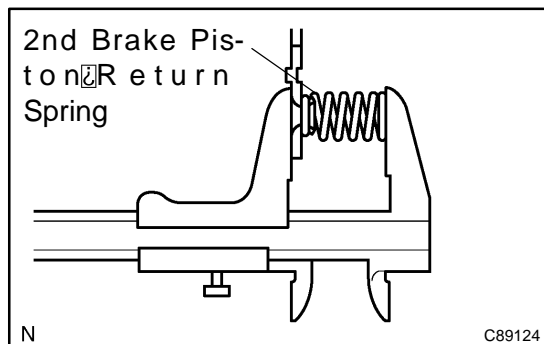


1. REMOVE 2ND BRAKE PISTON RETURN SPRING SUB-ASSY

- (a) Place SST on the return spring and compress it with a press.
SST 09387-00060
- (b) Using a screwdriver, remove the snap ring.

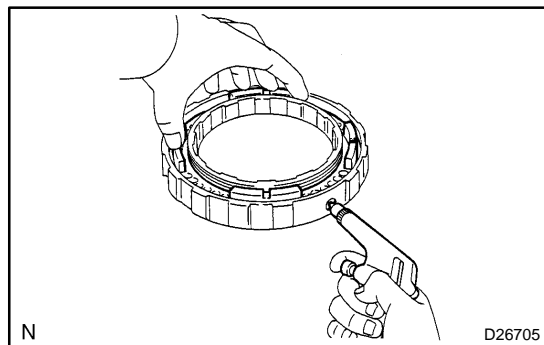


- (c) Remove the 2nd brake piston return spring sub-assy.



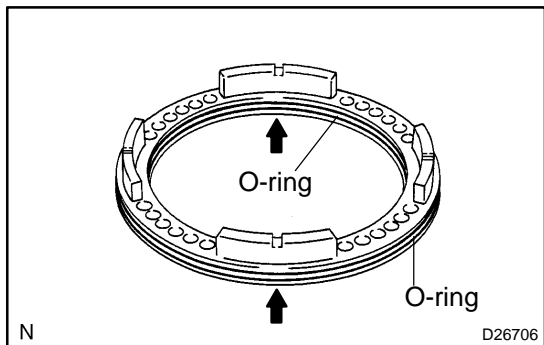
2. INSPECT 2ND BRAKE PISTON RETURN SPRING SUB-ASSY

- (a) Using vernier calipers, measure the free length of the spring together with the spring seat.
Standard free length: 16.61 mm (0.6539 in.)



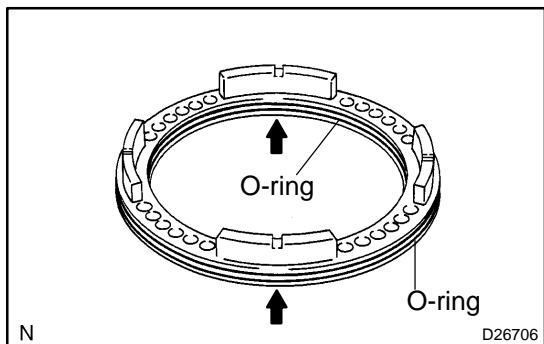
3. REMOVE 2ND BRAKE PISTON

- (a) Hold the 2nd brake piston and apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the 2nd brake cylinder to remove the 2nd brake piston.



4. REMOVE 2ND BRAKE PISTON O-RING

- (a) Remove the 2 O-rings from the 2nd brake piston.

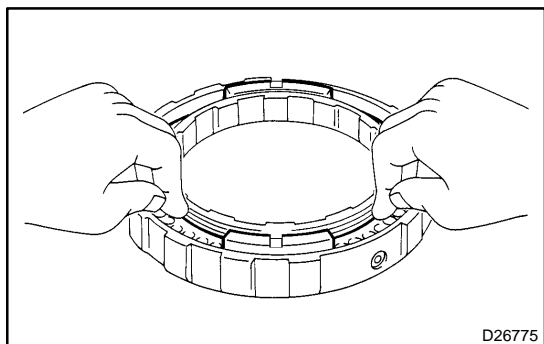


5. INSTALL 2ND BRAKE PISTON O-RING

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

NOTICE:

Ensure that the O-ring is not twisted or pinched.

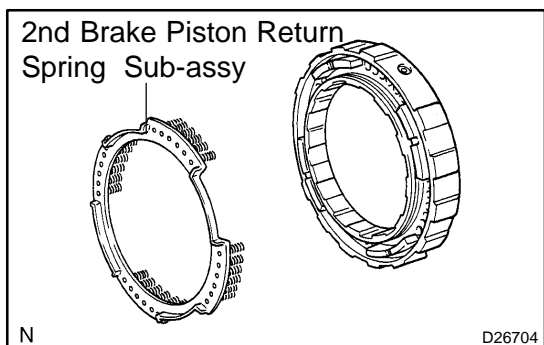


6. INSTALL 2ND BRAKE PISTON

- (a) Coat the 2nd brake piston with ATF, and install it to the 2nd brake cylinder.

NOTICE:

Be careful not to damage the O-rings.

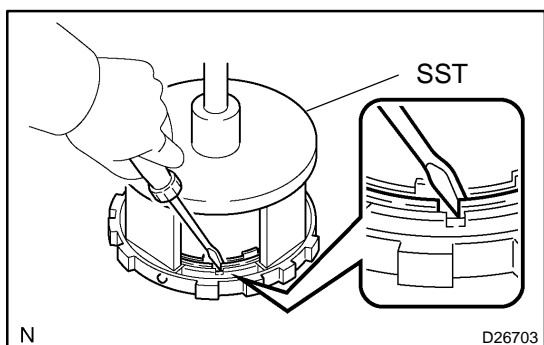


7. INSTALL 2ND BRAKE PISTON RETURN SPRING SUB-ASSY

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

NOTICE:

Ensure that all springs are fit in the piston correctly.



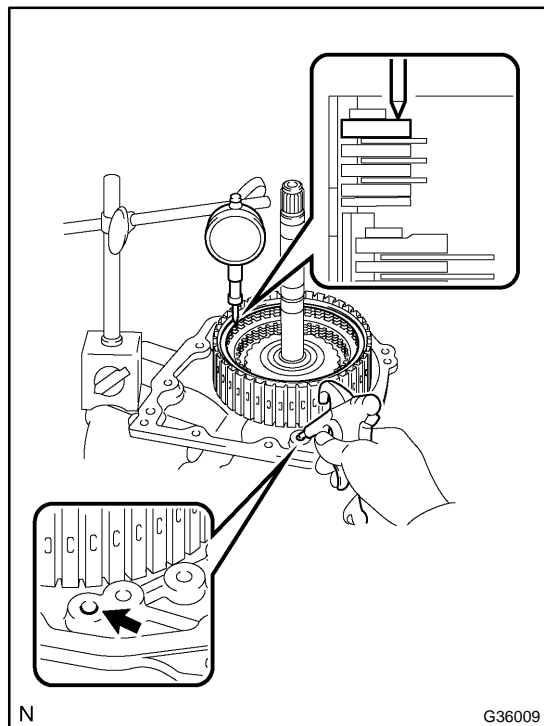
- (b) Place SST on the piston return spring, and compress it with a press.
SST 09387-00060

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

NOTICE:

- Stop the press when the spring sheet is lowered to the place 1 to 2 mm (0.039 to 0.078 in.) from the snap ring groove. This prevents the spring sheet from being deformed.

OVERHAUL



1. INSPECT PACK CLEARANCE OF DIRECT CLUTCH

- (a) Install the intermediate shaft and needle roller bearing on the transaxle rear cover .

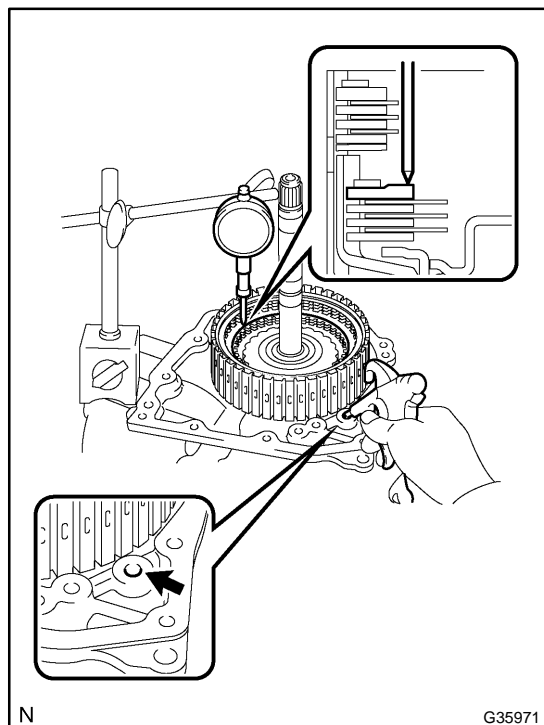
NOTICE:

Be careful not to damage the oil seal ring outers.

- (b) Using a dial indicator, measure the direct clutch pack clearance while applying and releasing compressed air (392 kPa, 4.0 kgf/cm², 57 psi).

Pack clearance: 0.60 to 0.82 mm (0.02362 to 0.03228 in.)

If the pack clearance is not within specification, inspect the discs, plates and flange.

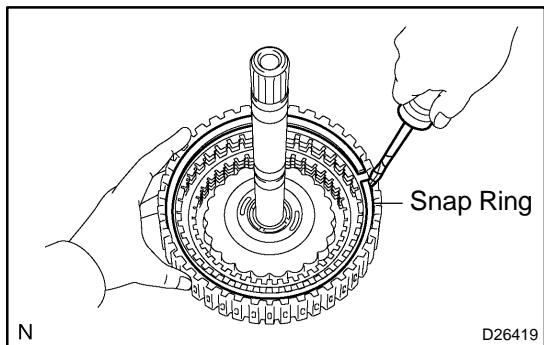


2. INSPECT PACK CLEARANCE OF OVERDRIVE CLUTCH

- (a) Using a dial indicator, measure the overdrive clutch pack clearance while applying and releasing compressed air (392 kPa, 4.0 kgf/cm², 57 psi).

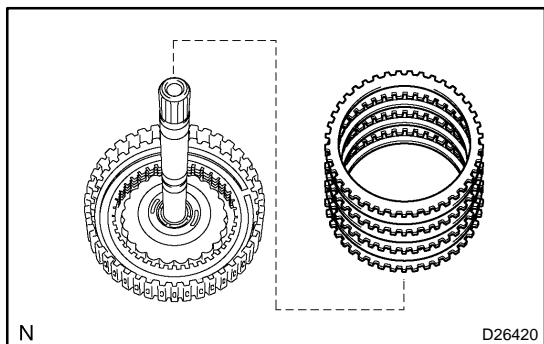
Pack clearance: 0.52 to 0.83 mm (0.02047 to 0.03268 in.)

If the pack clearance is not within specification, inspect the discs, plates and flange.

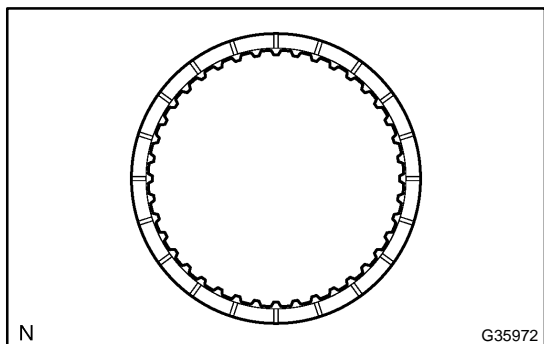


3. REMOVE DIRECT MULTIPLE DISC CLUTCH CLUTCH DISC

(a) Using a screwdriver, remove the snap ring from the intermediate shaft.



(b) Remove the flange, 3 discs, 3 plates and cushion plate from the intermediate shaft.



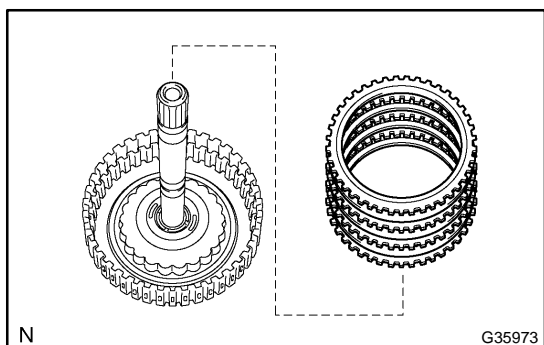
4. INSPECT DIRECT MULTIPLE DISC CLUTCH CLUTCH DISC

(a) Check to see if the sliding surfaces of the discs, plates and flange are worn or burnt.

If necessary, replace them.

HINT:

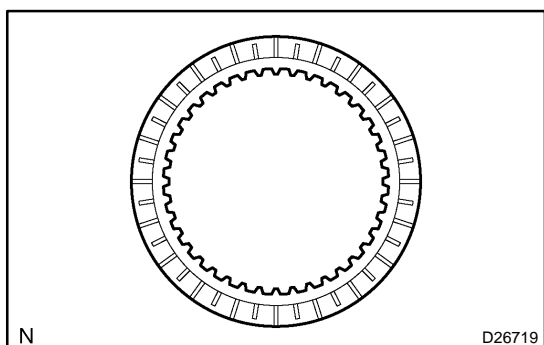
- If the lining of a disc comes off or discolors, or a groove is damaged, replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.



5. REMOVE OVERDRIVE DIRECT CLUTCH DISC

(a) Using a screwdriver, remove the snap ring from the intermediate shaft.

(b) Remove the flange, 3 discs and 3 plates from the intermediate shaft.



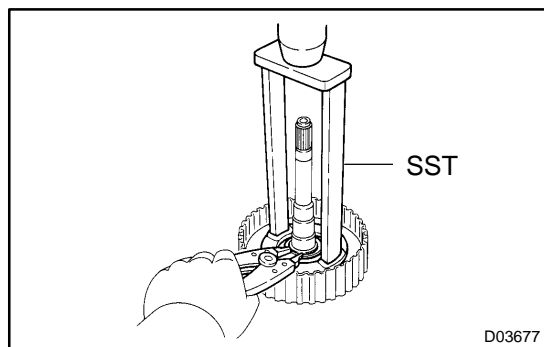
6. INSPECT OVERDRIVE DIRECT CLUTCH DISC

(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 a disc comes off or discolors, or a groove is damaged, replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.

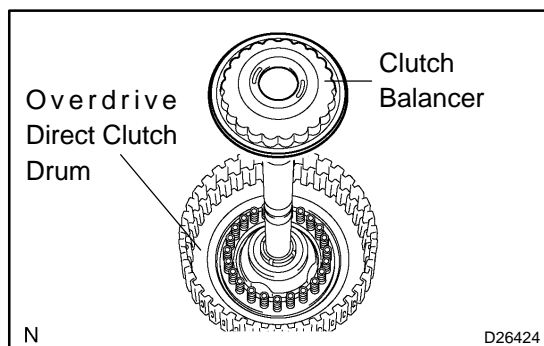


7. REMOVE OVERDRIVE CLUTCH RETURN SPRING SUB-ASSY

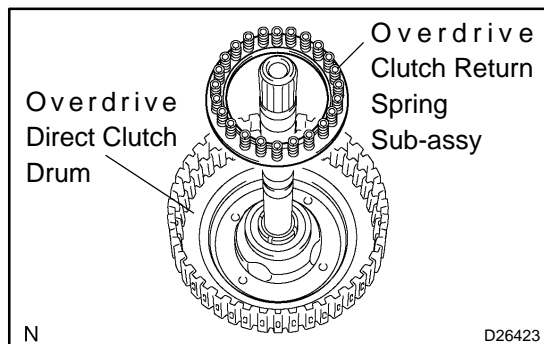
- (a) Place SST on the clutch balancer and compress the spring with a press.
SST 09387-00020
- (b) Using a snap ring expander, remove the snap ring from the direct clutch drum.

NOTICE:

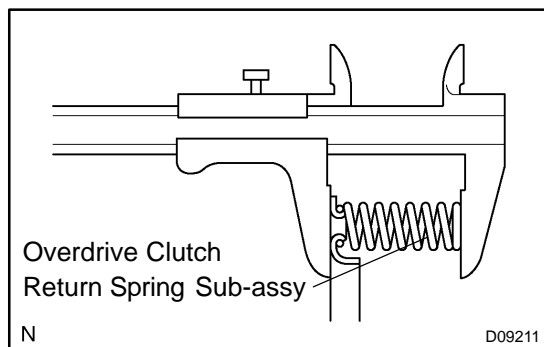
- **Stop the press when the spring sheet is lowered to the place 1 to 2 mm (0.039 to 0.078 in.) from the snap ring groove. This prevents the spring sheet from being deformed.**
- **Do not expand the snap ring excessively.**



- (c) Remove the clutch balancer from the overdrive direct clutch drum.

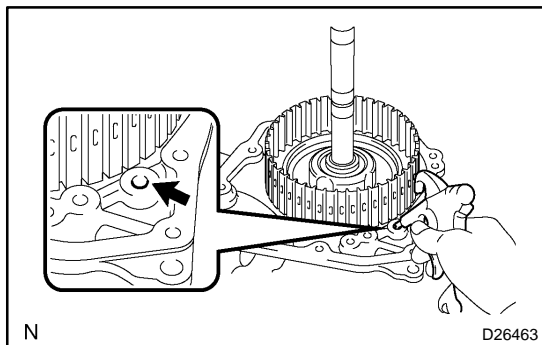


- (d) Remove the overdrive clutch return spring from the overdrive direct clutch drum.



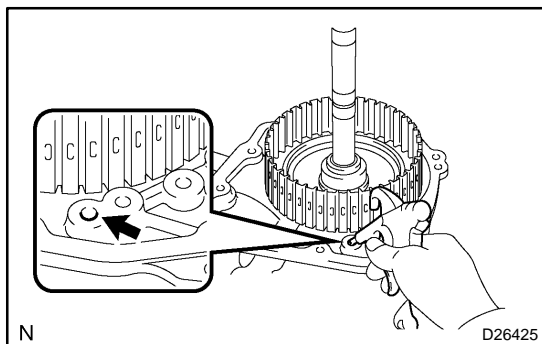
8. INSPECT OVERDRIVE CLUTCH RETURN SPRING SUB-ASSY

- (a) Using vernier calipers, measure the free length of the spring together with the spring seat.
Standard free length: 25.91 mm (1.0201 in.)



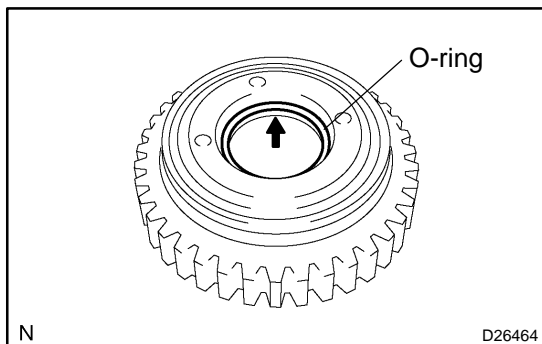
9. REMOVE OVERDRIVE DIRECT CLUTCH PISTON

- (a) Install the intermediate shaft on the transaxle rear cover.
- (b) Holding the direct clutch piston by hand, apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the transaxle rear cover to remove the direct clutch piston.



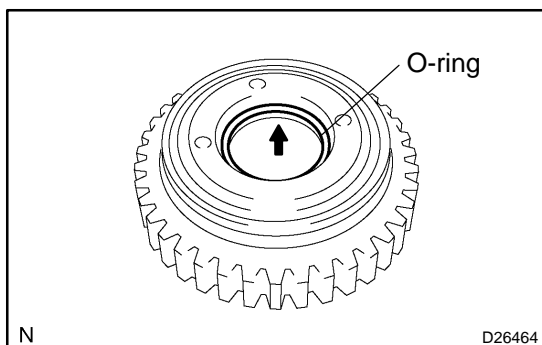
10. REMOVE OVERDRIVE DIRECT CLUTCH DRUM SUB-ASSY

- (a) Holding the direct clutch drum by hand, apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the transaxle rear cover to remove the direct clutch drum.



11. REMOVE OVERDRIVE DIRECT CLUTCH O-RING

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

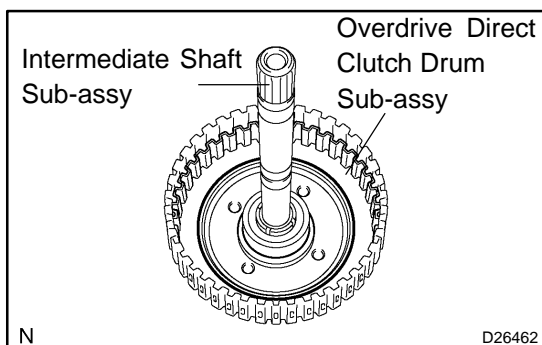


12. INSTALL OVERDRIVE DIRECT CLUTCH O-RING

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

NOTICE:

Ensure that the O-ring is not twisted or pinched.

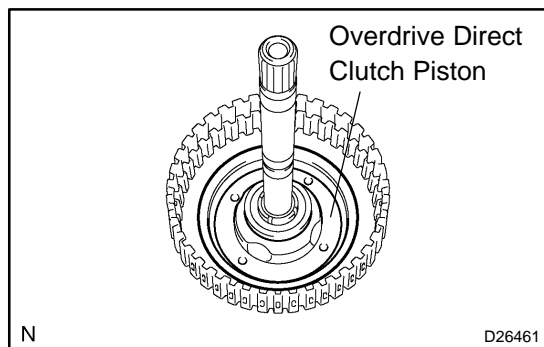


13. INSTALL OVERDRIVE DIRECT CLUTCH DRUM SUB-ASSY

- (a) Coat the direct clutch drum with ATF, and install it to the intermediate shaft.

NOTICE:

- Be careful not to damage the O-ring.
- Be careful not to damage the lip seal of the direct clutch drum.

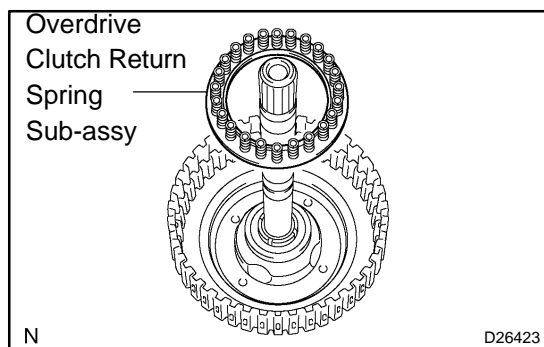


14. INSTALL OVERDRIVE DIRECT CLUTCH PISTON

- (a) Coat the overdrive direct clutch piston with ATF, and install it to the overdrive direct clutch drum sub-assy.

NOTICE:

Be careful not to damage the lip seal of the direct clutch piston.



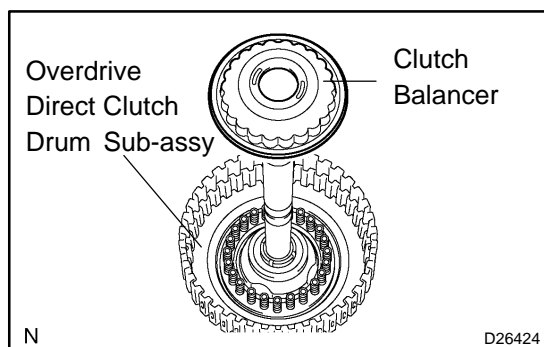
15. INSTALL OVERDRIVE CLUTCH RETURN SPRING SUB-ASSY

- (a) Install the overdrive clutch return spring sub-assy to the overdrive direct clutch drum sub-assy.

NOTICE:

When installing the spring sub-assembly, ensure that all springs are fit in the piston correctly.

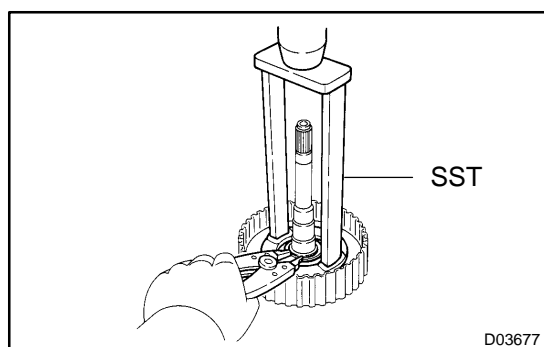
- (b) Coat the clutch balancer with ATF.



- (c) Install the clutch balancer to the overdrive direct clutch drum sub-assy.

NOTICE:

- **Be careful not to damage the lip seal of the direct clutch balancer.**
- **Ensure that the clutch balancer is not pinched and there are no other defects at the sealing lip.**
- **Apply enough ATF to the sealing lip prior to installation.**



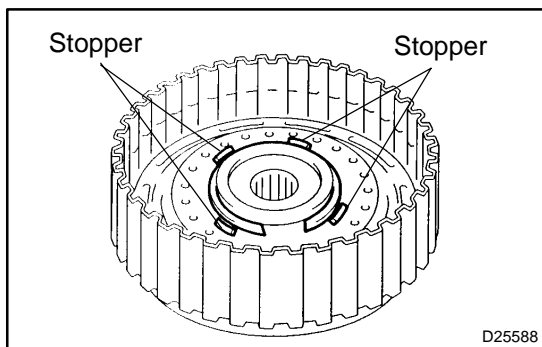
- (d) Place SST on the clutch balancer and compress the piston return spring with a press.

SST 09387-00020

- (e) Using a snap ring expander, install the snap ring to the direct clutch drum.

NOTICE:

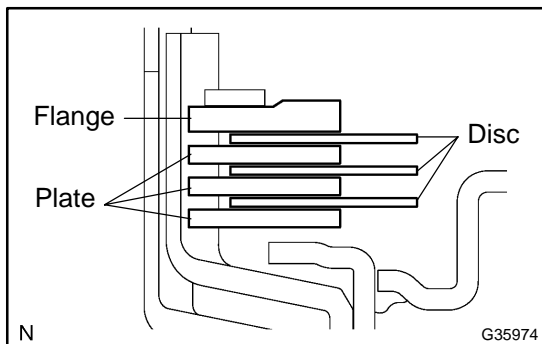
- **Stop the press when the spring sheet is lowered to the place 1 to 2 mm (0.039 to 0.078 in.) from the snap ring groove. This prevents the spring sheet from being deformed.**
- **Do not expand the snap ring excessively.**



(f) Set the end gap of the snap ring in the piston shown in the illustration.

NOTICE:

Ensure that the end gap of the snap ring is not aligned with any of the stoppers.

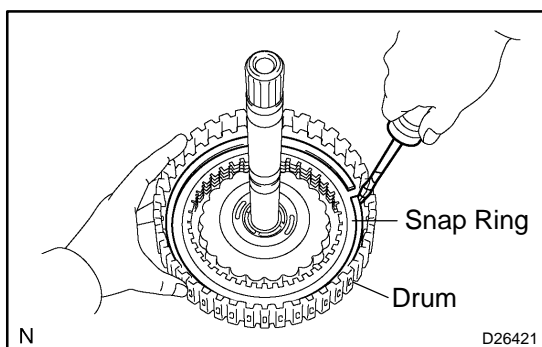


16. INSTALL OVERDRIVE DIRECT CLUTCH DISC

- (a) Coat the 3 discs with ATF.
- (b) Install the 3 plates, 3 discs and flange to the intermediate shaft.

NOTICE:

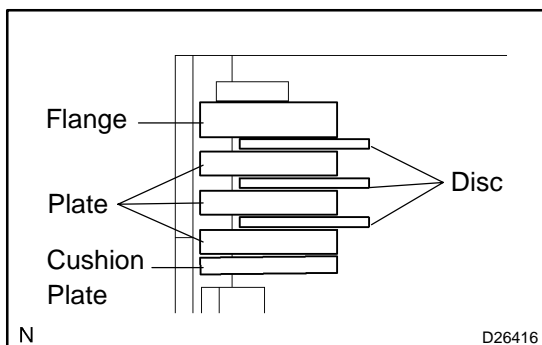
Be careful about the order of the discs, plates and flange.



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

NOTICE:

The snap ring should be securely fixed in the groove of the drum.

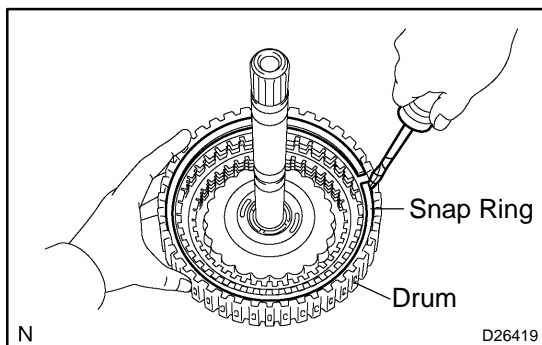


17. INSTALL DIRECT MULTIPLE DISC CLUTCH CLUTCH DISC

- (a) Coat the 3 discs with ATF.
- (b) Install the cushion plate, 3 plates, 3 discs and flange to the intermediate shaft.

NOTICE:

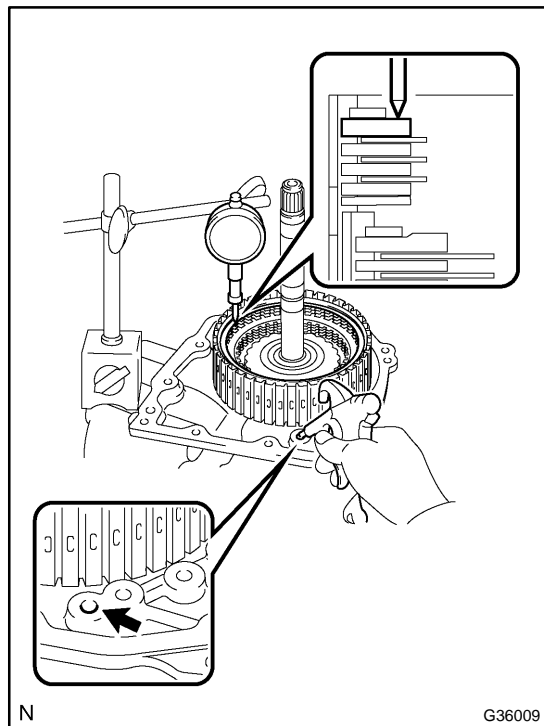
- **Install the cushion plate with the mark on the white surface facing the plate.**
- **Be careful about the order of discs, plates and flange installation.**



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

NOTICE:

The snap ring should be securely fixed in the groove of the drum.



18. INSPECT PACK CLEARANCE OF DIRECT CLUTCH

- (a) Install the intermediate shaft on the transaxle rear cover.
- (b) Using a dial indicator, measure the direct clutch pack clearance while applying and releasing compressed air (392 kPa, 4.0 kgf/cm², 57 psi).

Pack clearance: 0.60 to 0.82 mm (0.02362 to 0.03228 in.)

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

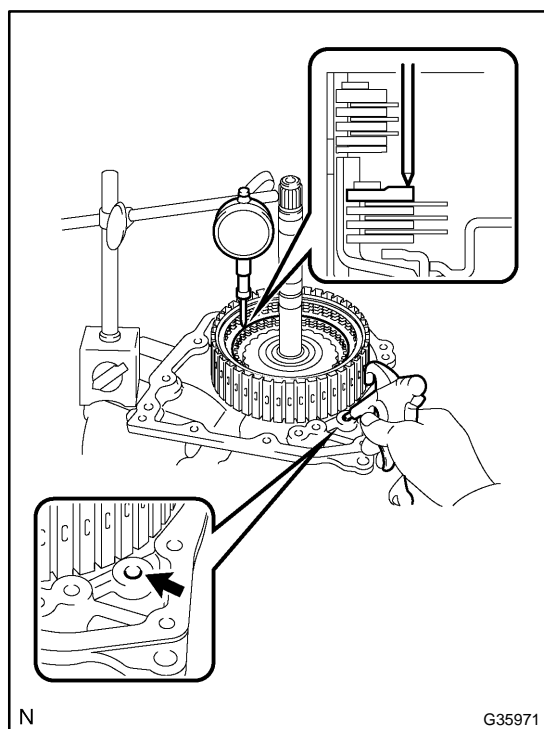
If the stroke is not within specification, select another flange.

HINT:

There are 8 types of flanges of different thickness.

Flange thickness: mm (in.)

No.	Thickness	No.	Thickness
0	2.9 (0.114)	4	3.3 (0.130)
1	3.0 (0.118)	5	3.4 (0.134)
2	3.1 (0.122)	6	3.5 (0.138)
3	3.2 (0.126)	7	3.6 (0.142)



19. INSPECT PACK CLEARANCE OF OVERDRIVE CLUTCH

- (a) Using a dial indicator, measure the overdrive clutch pack clearance while applying and releasing compressed air (392 kPa, 4.0 kgf/cm², 57 psi).

Pack clearance: 0.52 to 0.83 mm (0.02047 to 0.03268 in.)

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

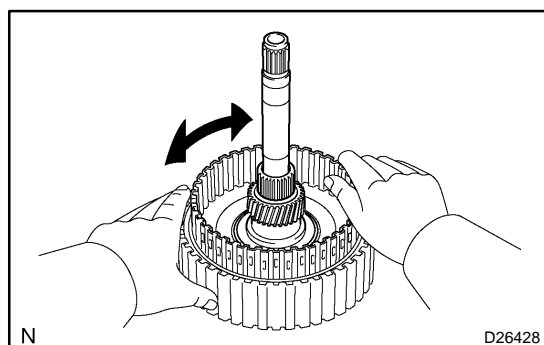
If the stroke is not within standard, select another flange.

HINT:

There are 7 types of flanges of different thickness.

Flange thickness: mm (in.)

No.	Thickness	No.	Thickness
0	2.5 (0.098)	4	2.9 (0.114)
1	2.6 (0.102)	5	3.0 (0.118)
2	2.7 (0.106)	6	3.1 (0.122)
3	2.8 (0.110)	-	-

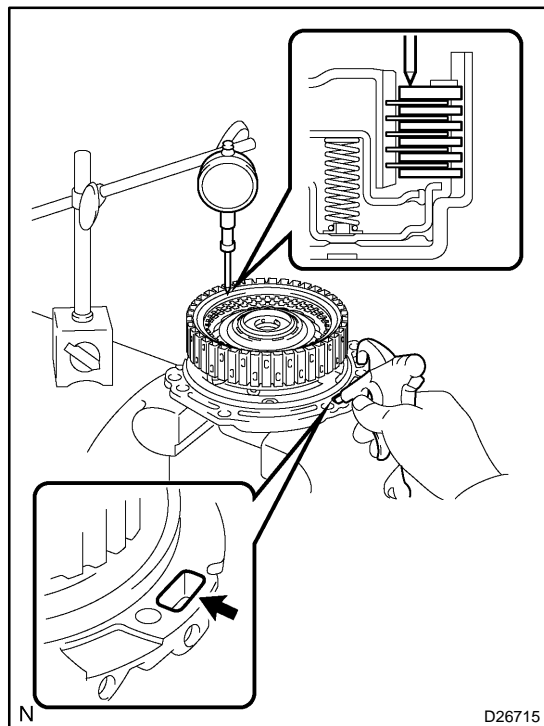


- (b) Check that the disc rotates when rotating the disc after inserting the rear planetary sun gear.

NOTICE:

Do not place the rear planetary sun gear in a vise.

OVERHAUL



1. INSPECT PACK CLEARANCE OF FORWARD CLUTCH

(a) Install the forward clutch on the oil pump.

NOTICE:

Be careful not to damage the oil seal ring of the oil pump.

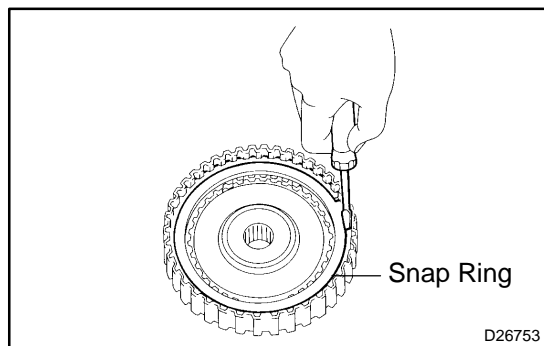
(b) Using a dial indicator, measure the forward clutch pack clearance while applying and releasing compressed air (392 kPa, 4.0 kgf/cm², 57 psi).

Pack clearance: 0.85 to 1.25 mm (0.0335 to 0.0492 in.)

If the clearance is not within specification, inspect the discs, plates and flange.

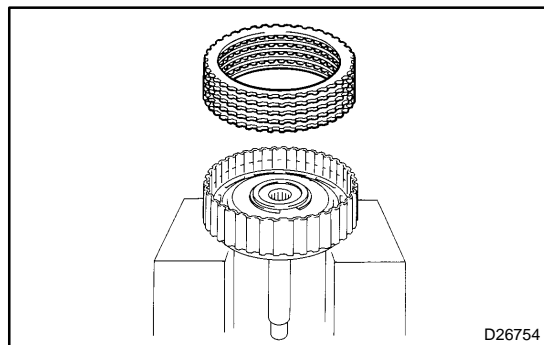
HINT:

As the opening is large, cover it with a shop rag to prevent the compressed air from being released.

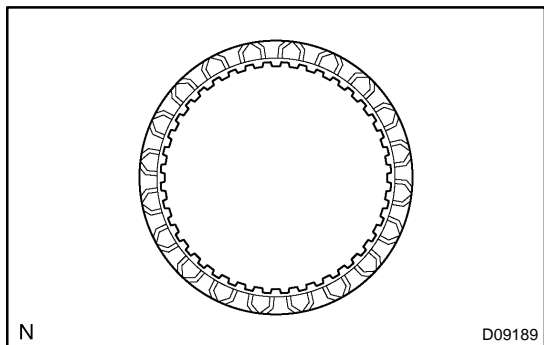


2. REMOVE FORWARD MULTIPLE DISC CLUTCH CLUTCH DISC

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



(b) Remove the flange, 5 discs and 5 plates from the input shaft assy.



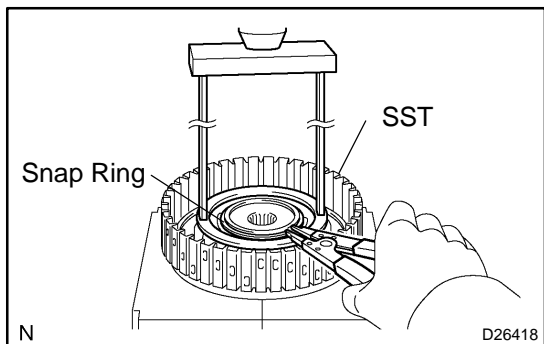
3. INSPECT FORWARD MULTIPLE DISC CLUTCH CLUTCH DISC

- (a) Check to see if the sliding surfaces of the discs, plates and flange are worn or burnt.

If necessary, replace them.

HINT:

- If the lining of a disc comes off or discolors, or a groove is damaged, replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.



4. REMOVE FORWARD CLUTCH RETURN SPRING SUB-ASSY

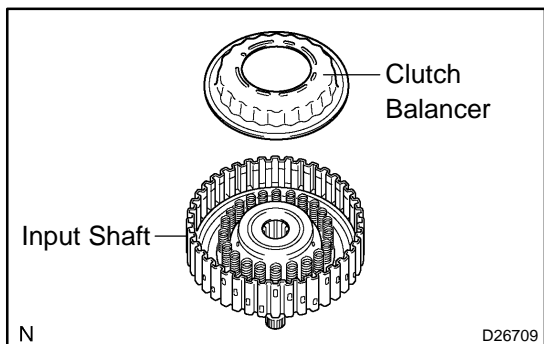
- (a) Place SST on the spring retainer and compress the return spring with a press.

SST 09387-00020

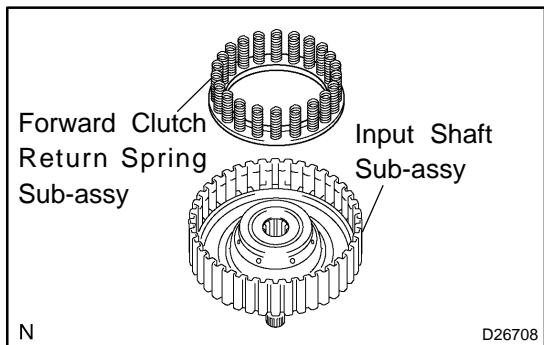
- (b) Using a snap ring expander, remove the snap ring.

NOTICE:

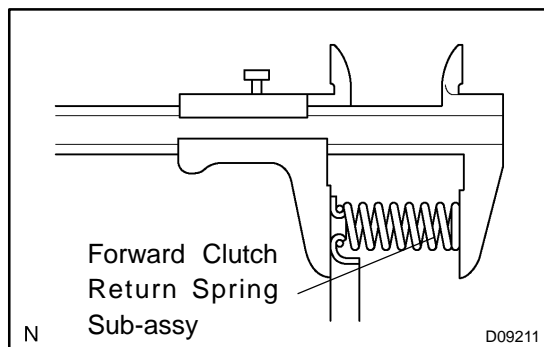
- **Stop the press when the spring sheet is lowered 1 to 2 mm (0.039 to 0.078 in.) from the snap ring groove, preventing the spring sheet from being deformed.**
- **Do not expand the snap ring excessively.**



- (c) Remove the clutch balancer from the input shaft.

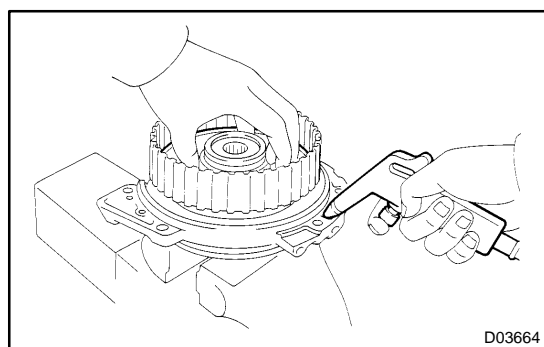


- (d) Remove the forward clutch return spring sub-assy from the input shaft sub-assy.



5. INSPECT FORWARD CLUTCH RETURN SPRING SUB-ASSY

- (a) Using vernier calipers, measure the free length of the spring together with the spring seat.
Standard free length: 26.74 mm (1.0528 in.)

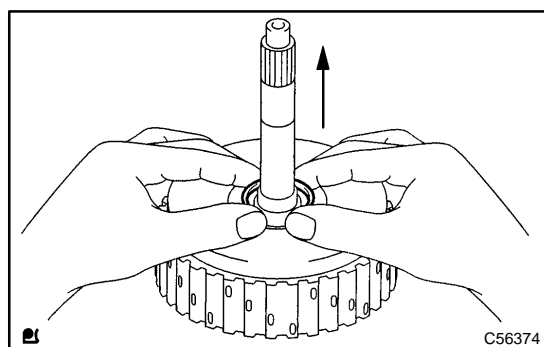


6. REMOVE FORWARD CLUTCH PISTON SUB-ASSY

- (a) Place the forward clutch drum onto the oil pump.
- (b) Holding the forward clutch piston by hand, apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the oil pump to remove the forward clutch piston.

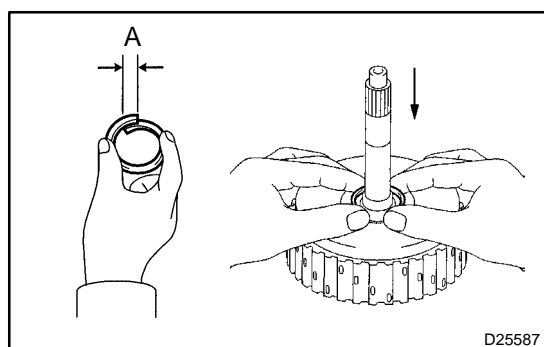
HINT:

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



7. REMOVE INPUT SHAFT OIL SEAL RING

- (a) Remove the input shaft oil seal ring from the input shaft.

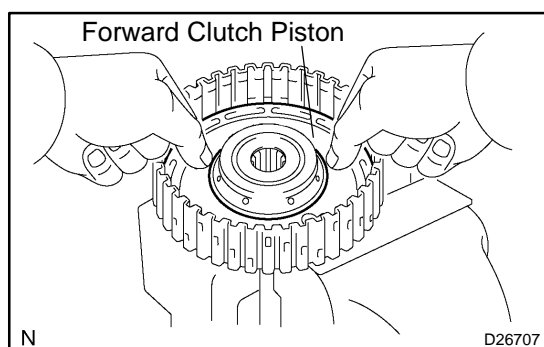


8. INSTALL INPUT SHAFT OIL SEAL RING

- (a) Compress a new input shaft oil seal ring from both sides to adjust dimension A.
Dimension A: 5 mm (0.197 in.)
- (b) Coat the oil seal ring with ATF and install it to the input shaft.

NOTICE:

Do not expand the gap of the oil seal ring too much. Securely engage the hooks.

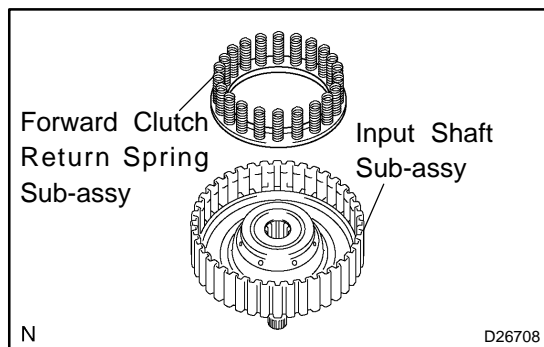


9. INSTALL FORWARD CLUTCH PISTON SUB-ASSY

- (a) Coat the forward clutch piston with ATF, and install it to the input shaft.

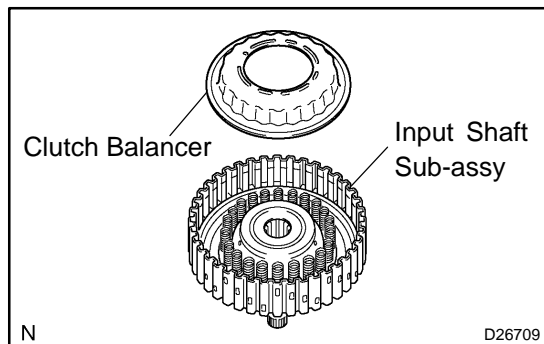
NOTICE:

Be careful not to damage the lip seal of the forward clutch piston.



10. INSTALL FORWARD CLUTCH RETURN SPRING SUB-ASSY

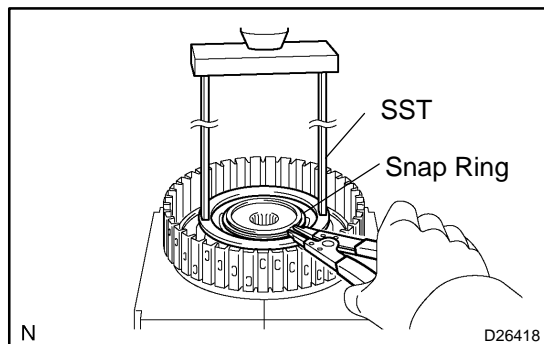
- (a) Install the return spring sub-assy to the input shaft sub-assy.
- (b) Coat the clutch balancer with ATF.



- (c) Install the clutch balancer to the input shaft.

NOTICE:

- Be careful not to damage the lip seal of the forward clutch balancer.
- Ensure that the clutch balancer is not pinched and there are no other defects on it.
- Apply enough ATF to the sealing lip prior to installation.
- When installing the spring sub-assembly, ensure that all springs are fit in the clutch balancer correctly.



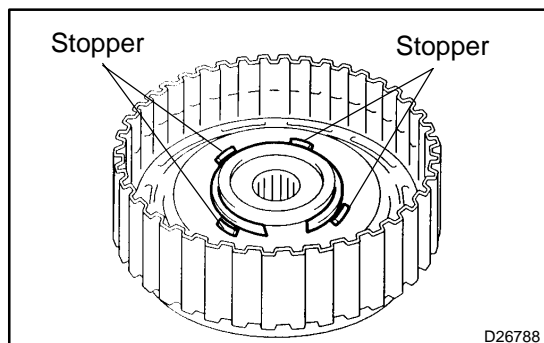
- (d) Place SST on the clutch balancer, and compress the clutch balancer with a press.

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- (e) Install the snap ring with a snap ring expander.
- (f) Be sure the end gap of the snap ring is not aligned with the spring retainer claw.

NOTICE:

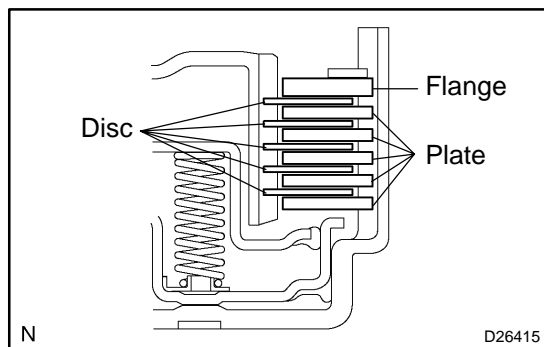
- Stop the press when the spring sheet is lowered to the place 1 to 2 mm (0.039 to 0.078 in.) from the snap ring groove. This prevents the spring sheet from being deformed.
- Do not expand the snap ring excessively.



- (g) Set the end gap of the snap ring in the piston as shown in the illustration.

NOTICE:

Ensure that the end gap of the snap ring is not aligned with any of the stoppers.

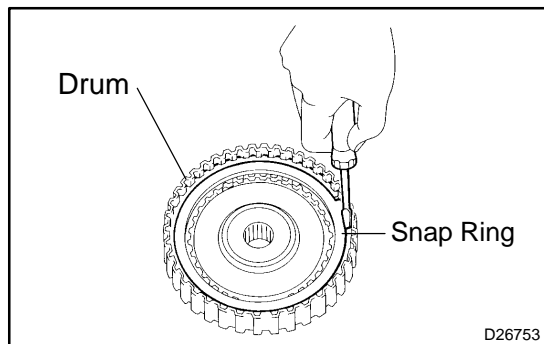


11. INSTALL FORWARD MULTIPLE DISC CLUTCH CLUTCH DISC

- (a) Coat the 5 discs with ATF.
- (b) Install the 5 plates, 5 discs and flange to the input shaft.

NOTICE:

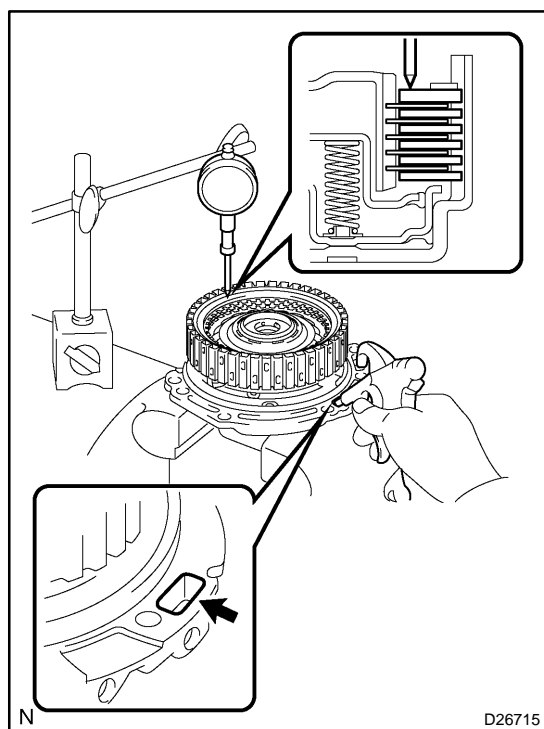
Be careful about the order of the discs, plates and flange.



- (c) Using a screwdriver, install the snap ring.
- (d) Check that the end gap of the snap ring is not aligned with any of the cutouts.

NOTICE:

The snap ring should be securely fixed in the groove of the drum.



12. INSPECT PACK CLEARANCE OF FORWARD CLUTCH

- (a) Using a dial indicator, measure the forward clutch pack clearance while applying and releasing compressed air (392 kPa, 4.0 kgf·cm², 57 psi).

Pack clearance: 0.85 to 1.25 mm (0.0335 to 0.0492 in.)

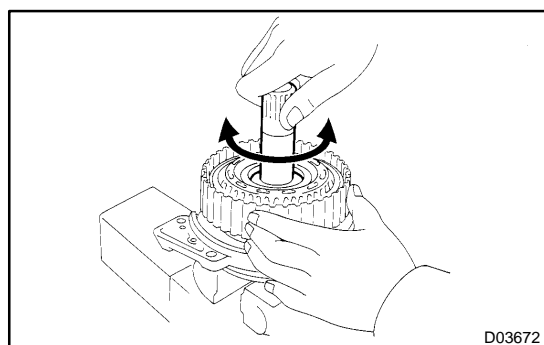
If the piston stroke is less than the minimum, parts may have been assembled incorrectly. Check and reassemble again. If the clearance is not within specification, select another flange.

HINT:

There are 7 types of flanges of different thickness.

Flange thickness: mm (in.)

No.	Thickness	No.	Thickness
0	2.85 (0.1122)	4	3.45 (0.1358)
1	3.00 (0.1181)	5	3.60 (0.1417)
2	3.15 (0.1240)	6	3.75 (0.1476)
3	3.30 (0.1299)	-	-



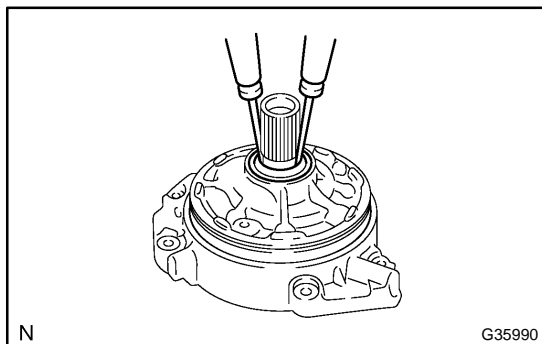
13. INSPECT FORWARD MULTIPLE DISC CLUTCH CLUTCH DISC

- (a) Temporarily install the multiple disc clutch clutch hub into the forward clutch.
- (b) Check if the discs rotate smoothly when rotating the forward clutch assy after inserting the multiple disc clutch into the multiple disc clutch clutch hub.

NOTICE:

Do not place the forward clutch assy in a vise.

OVERHAUL

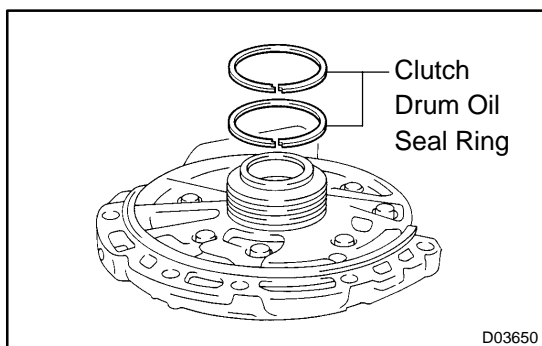


1. INSPECT OIL PUMP ASSY

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

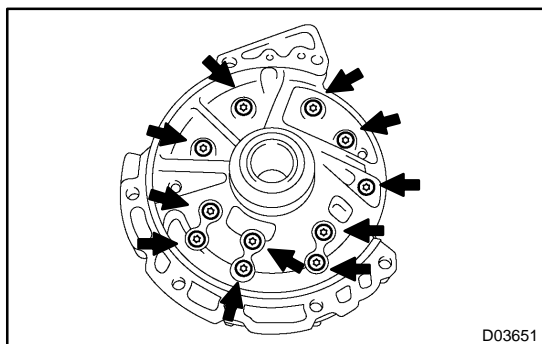
NOTICE:

Be careful not to damage the oil seal lip.



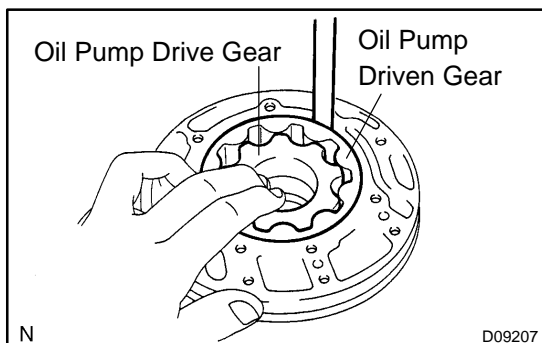
2. REMOVE CLUTCH DRUM OIL SEAL RING

- (a) Remove the 2 clutch drum oil seal rings.



3. REMOVE STATOR SHAFT ASSY

- (a) Using a torx socket (T30), remove the 11 bolts and stator shaft.
- (b) Keep the gears in the order of installation.



4. INSPECT CLEARANCE OF OIL PUMP ASSEMBLY

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

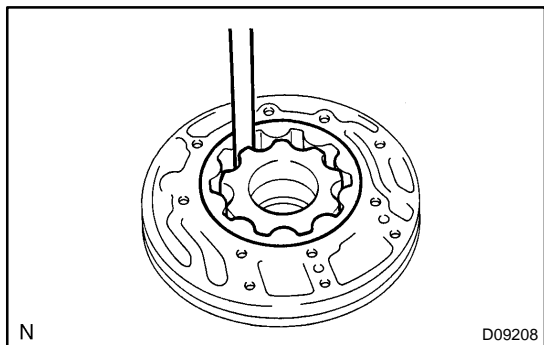
Standard body clearance:

0.10 to 0.17 mm (0.0039 to 0.0067 in.)

Side clearance: 0.02 to 0.05 mm (0.001 to 0.002 in.)

Maximum body clearance: 0.17 mm (0.0067 in.)

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



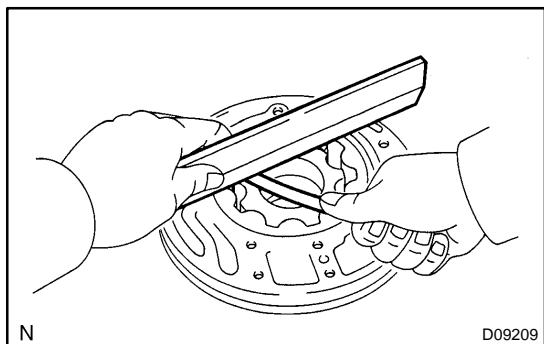
(c) Using a feeler gauge, measure the tip clearance between the driven gear teeth and drive gear teeth.

Standard tip clearance:

0.07 to 0.15 mm (0.0028 to 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.



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

Standard side clearance:

0.02 to 0.05 mm (0.0008 to 0.0020 in.)

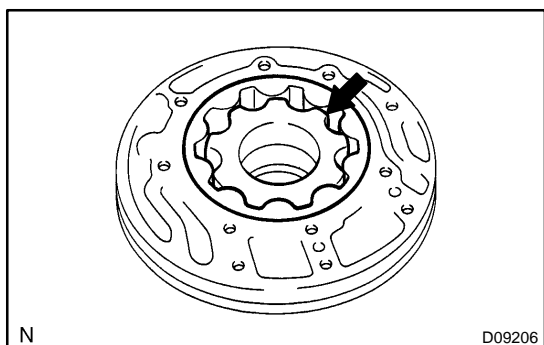
Maximum side clearance: 0.05 mm (0.0020 in.)

Drive gear thickness: mm (in.)

Mark	Thickness
A	11.690 to 11.699 (0.4602 to 0.4606)
B	11.700 to 11.709 (0.4606 to 0.4610)
C	11.710 to 11.720 (0.4610 to 0.4614)
D	11.721 to 11.730 (0.4615 to 0.4618)
E	11.731 to 11.740 (0.4619 to 0.4622)

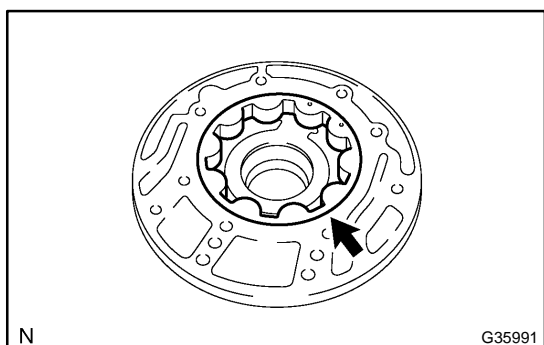
Driven gear thickness: mm (in.)

Mark	Thickness
A	11.690 to 11.699 (0.4602 to 0.4606)
B	11.700 to 11.709 (0.4606 to 0.4610)
C	11.710 to 11.720 (0.4610 to 0.4614)
D	11.721 to 11.730 (0.4615 to 0.4618)
E	11.731 to 11.740 (0.4619 to 0.4622)



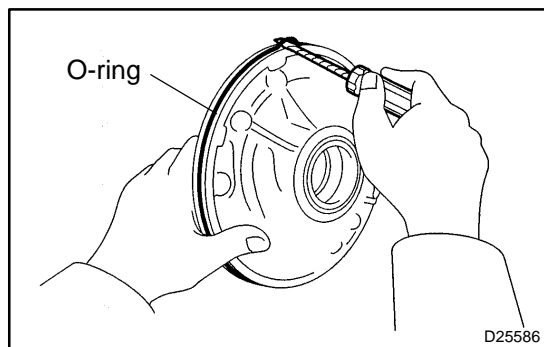
5. REMOVE FRONT OIL PUMP DRIVE GEAR

(a) Remove the front oil pump drive gear.



6. REMOVE FRONT OIL PUMP DRIVEN GEAR

(a) Remove the front oil pump driven gear.

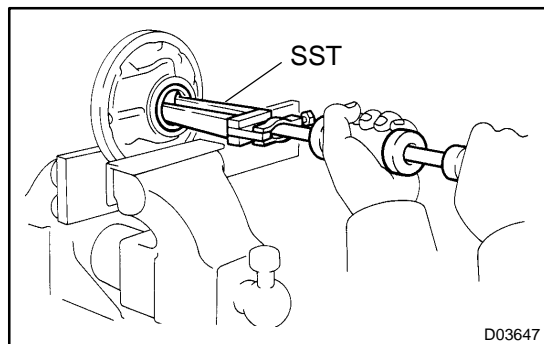


7. REMOVE FRONT OIL PUMP BODY O-RING

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

HINT:

Tape the screwdriver before use.

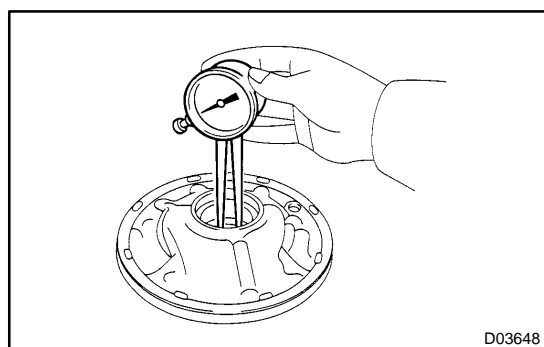


8. REMOVE FRONT OIL PUMP OIL SEAL

(a) Mount the oil pump in a soft jaw vise.

(b) Using SST, remove the oil seal from the oil pump body.

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9. INSPECT FR OIL PUMP & GEAR BODY SUB-ASSY

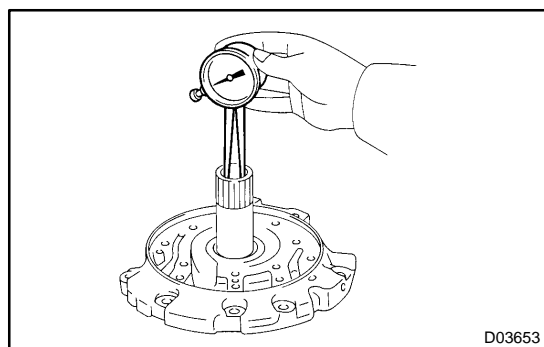
(a) Using a dial indicator, measure the inside diameter of the oil pump body bushing.

Standard inside diameter:

38.113 to 38.138 mm (1.50051 to 1.50149 in.)

Maximum inside diameter: 38.188 mm (1.50346 in.)

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



10. INSPECT STATOR SHAFT ASSY

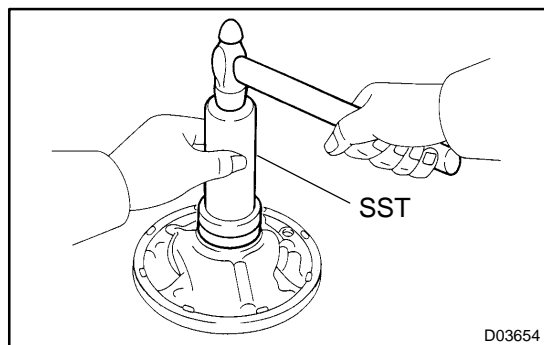
(a) Using a dial indicator, measure the inside diameter of the stator shaft.

Standard inside diameter:

21.500 to 21.526 mm (0.84646 to 0.84748 in.)

Maximum inside diameter: 21.57 mm (0.8492 in.)

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



11. INSTALL FRONT OIL PUMP OIL SEAL

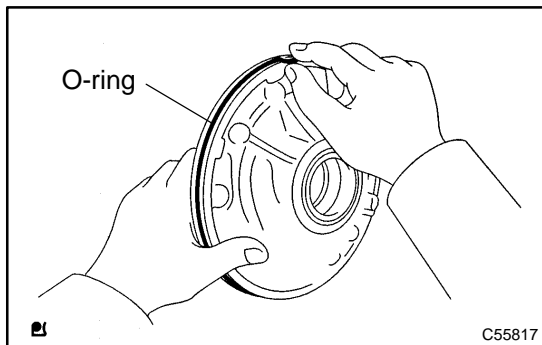
(a) Using SST and a hammer, install a new oil seal to the oil pump body.

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HINT:

The seal end should be level with the outer edge of the oil pump.

(b) Coat the lip of the oil seal with MP grease.

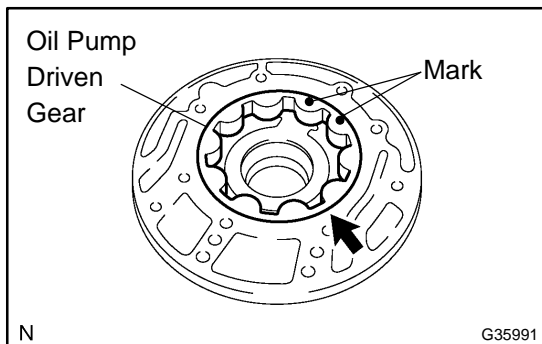


12. INSTALL FRONT OIL PUMP BODY O-RING

- (a) Coat a new O-ring with ATF, and install it to the oil pump body.

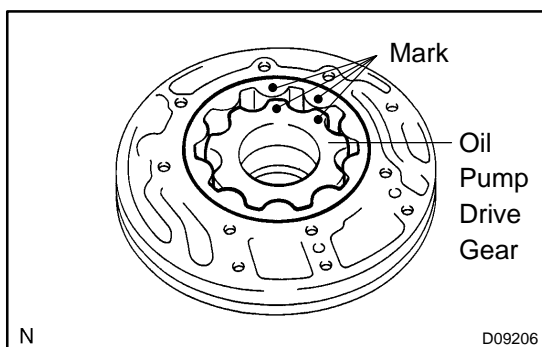
NOTICE:

Ensure that the O-ring is not twisted or pinched.



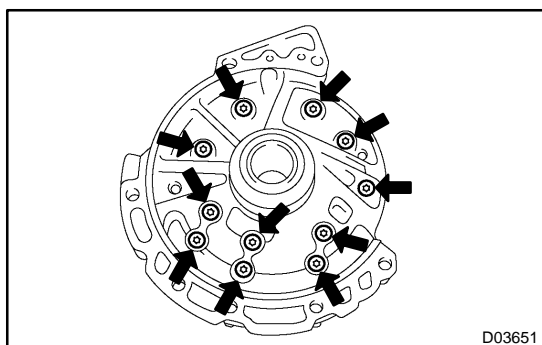
13. INSTALL FRONT OIL PUMP DRIVEN GEAR

- (a) Coat the front oil pump driven gear with ATF, and install it to the oil pump body with the marked side up.



14. INSTALL FRONT OIL PUMP DRIVE GEAR

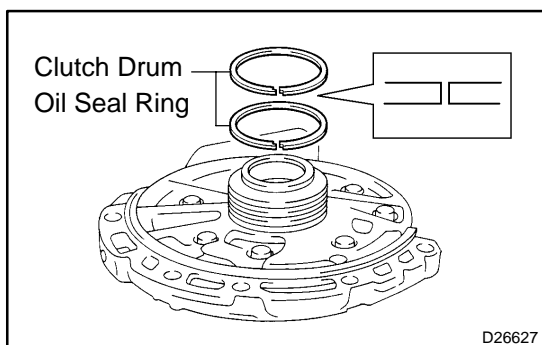
- (a) Coat the front oil pump drive gear with ATF, install it to the oil pump body with the marked side up.



15. INSTALL STATOR SHAFT ASSY

- (a) Set the stator shaft aligned with each bolt hole.
- (b) Using a torx socket (T30), install the 11 bolts.

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



16. INSTALL CLUTCH DRUM OIL SEAL RING

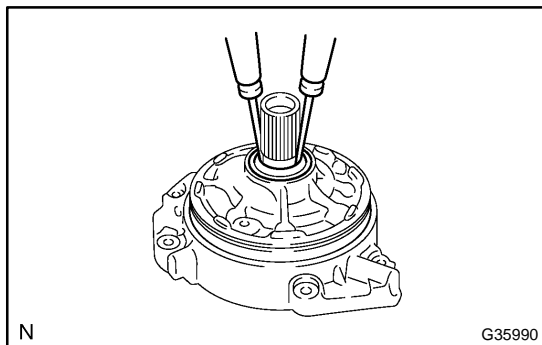
- (a) Coat the 2 new clutch drum oil seal rings with ATF.
- (b) Install the 2 new clutch drum oil seal rings.

NOTICE:

Do not expand the ring ends excessively.

40-66

AUTOMATIC TRANSMISSION / TRANS - OIL PUMP ASSY (U250E)



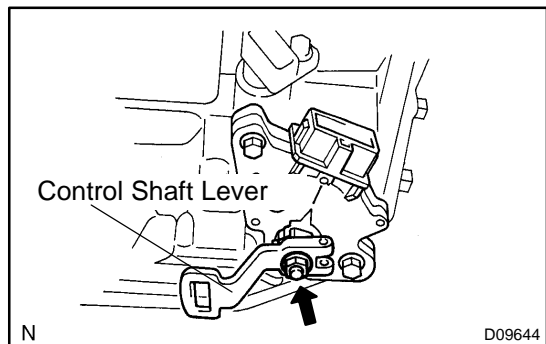
17. INSPECT OIL PUMP ASSY

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

NOTICE:

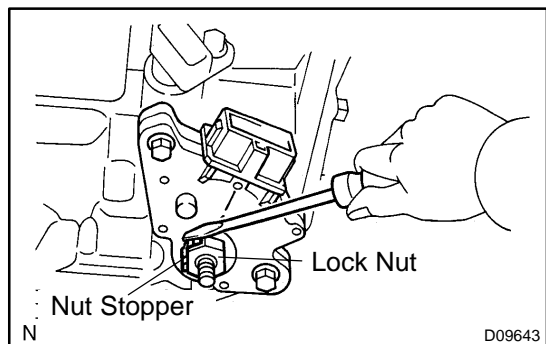
Be careful not to damage the oil seal lip.

OVERHAUL

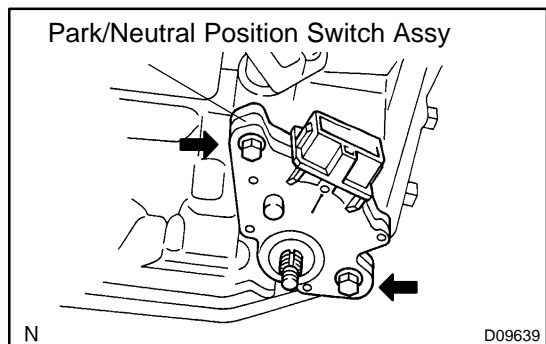


1. REMOVE PARK/NEUTRAL POSITION SWITCH ASSY

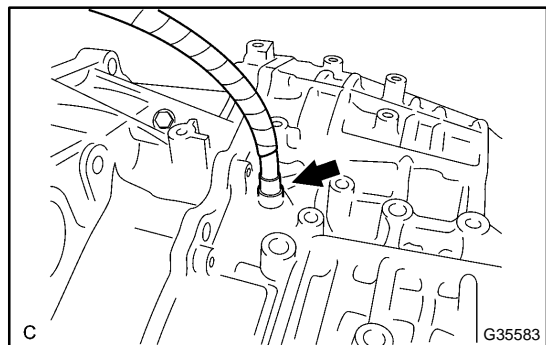
(a) Remove the nut, washer and control shaft lever.



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

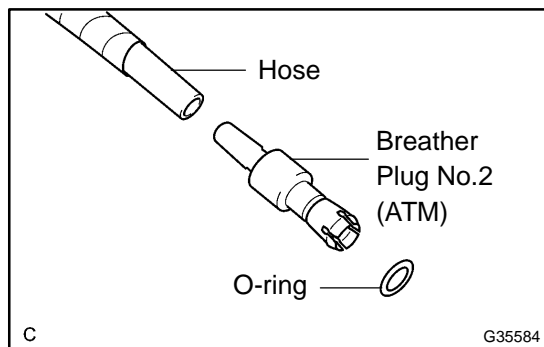


(c) Remove the 2 bolts and pull out the park/neutral position switch assy.

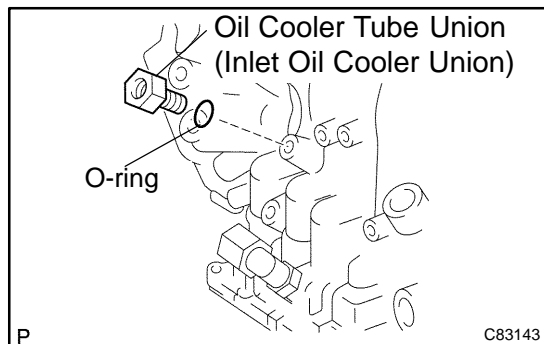


2. REMOVE BREATHER PLUG NO.2 (ATM)

(a) Remove the breather plug No.2 (ATM) from the transaxle case.

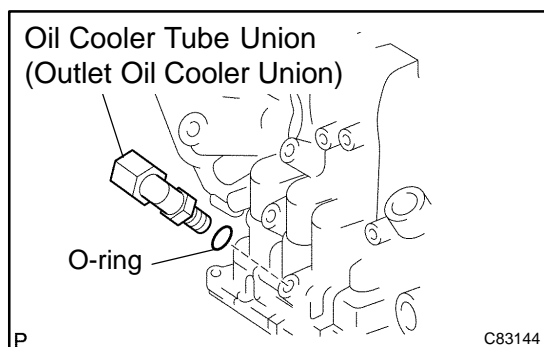


- (b) Remove the hose and O-ring from the breather plug No.2 (ATM).



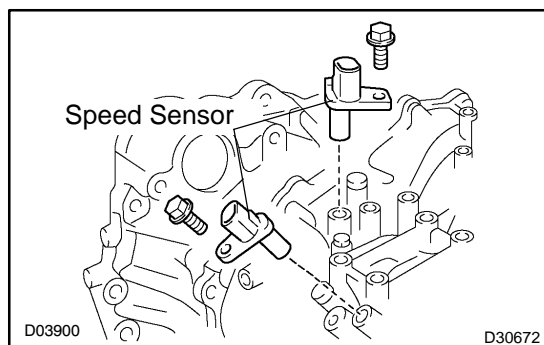
3. REMOVE OIL COOLER TUBE UNION (INLET OIL COOLER UNION)

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



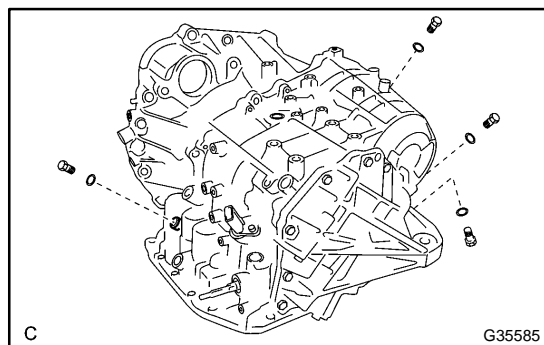
4. REMOVE OIL COOLER TUBE UNION (OUTLET OIL COOLER UNION)

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



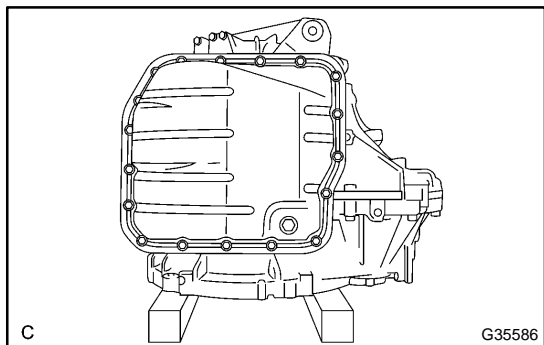
5. REMOVE SPEED SENSOR

- (a) Remove the 2 bolts and the 2 speed sensors from the transaxle assy.



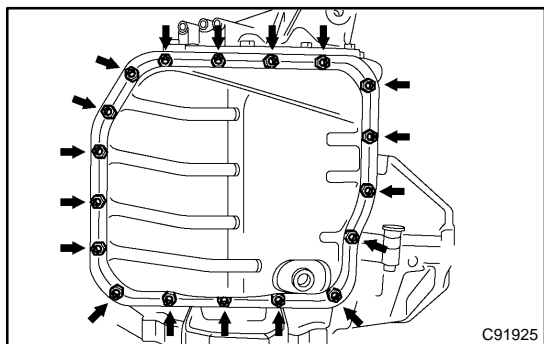
6. REMOVE TRANSAXLE CASE NO.1 PLUG

- (a) Remove the 4 transaxle case No.1 plugs from the transaxle case.
- (b) Remove the 4 O-rings from the 4 transaxle case No.1 plugs.



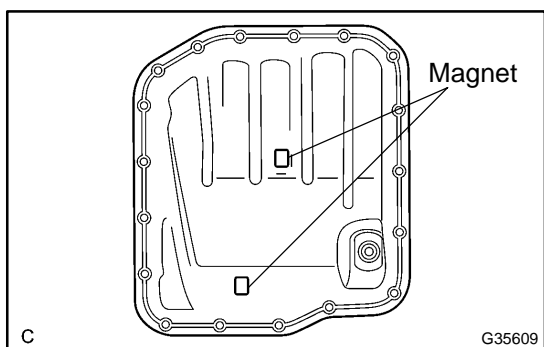
7. FIX AUTOMATIC TRANSAXLE ASSY

- (a) Fix the transaxle assy.

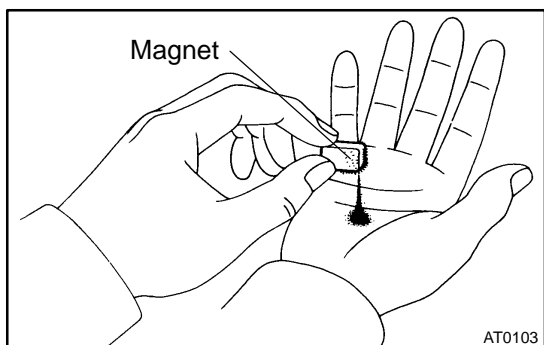


8. REMOVE AUTOMATIC TRANSAXLE OIL PAN SUB-ASSY

- (a) Remove the drain plug and drain plug gasket from the automatic transaxle oil pan sub-assy.
- (b) Remove the 18 bolts, automatic transaxle oil pan sub-assy and gasket.

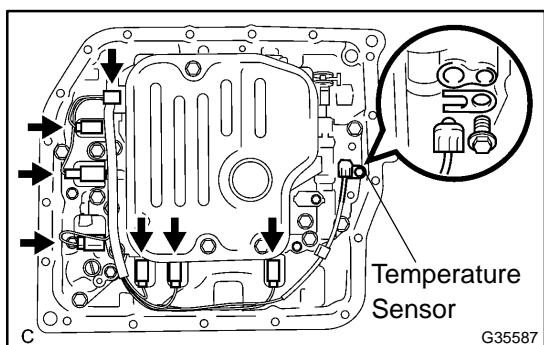


- (c) Remove the 2 transmission oil cleaner magnets from the automatic transaxle oil pan sub-assy.



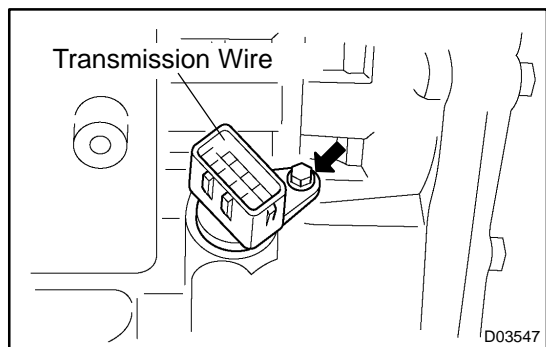
9. INSPECT TRANSMISSION OIL CLEANER MAGNET

- (a) Use the removed magnets to collect any steel chips. Examine the chips and particles in the pan and on the magnets to determine what type of wear has occurred in the transaxle:
Steel (magnetic).... bearing, gear and plate wear
Brass (non-magnetic).... bushing wear



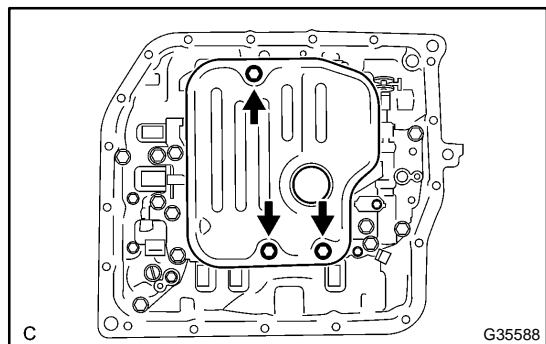
10. DISCONNECT TRANSMISSION WIRE

- (a) Disconnect the 7 connectors from the shift solenoid valves.
- (b) Remove the bolt, lock plate and ATF temperature sensor.



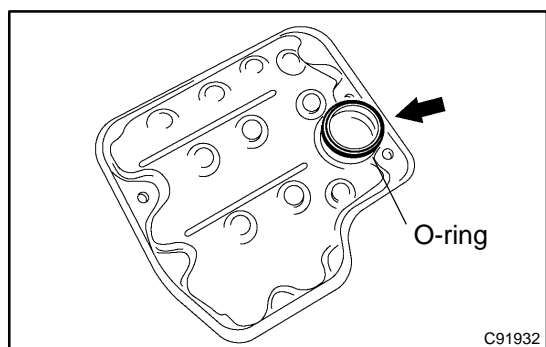
11. REMOVE TRANSMISSION WIRE

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

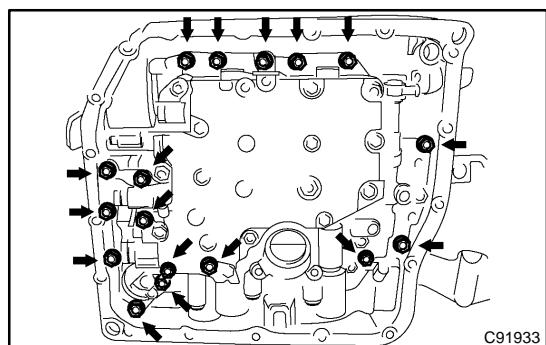


12. REMOVE VALVE BODY OIL STRAINER ASSY

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

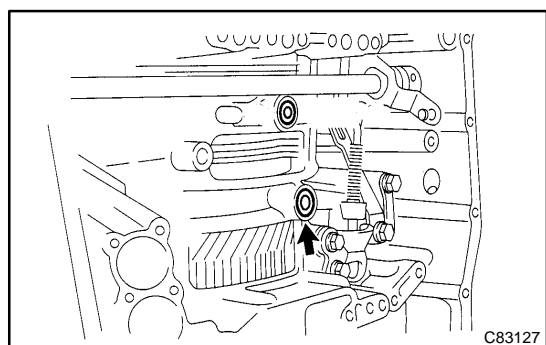


- (b) Remove the O-ring from the valve body oil strainer assy.



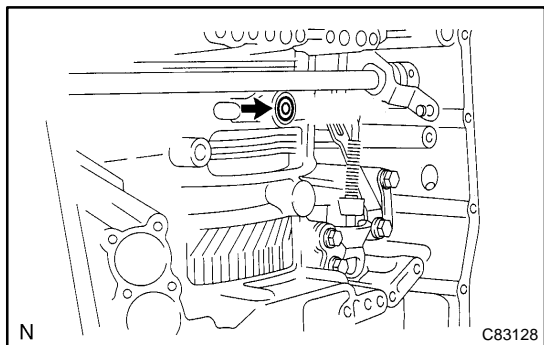
13. REMOVE TRANSMISSION VALVE BODY ASSY

- (a) Support the valve body assy and remove the 17 bolts and transmission valve body assy.

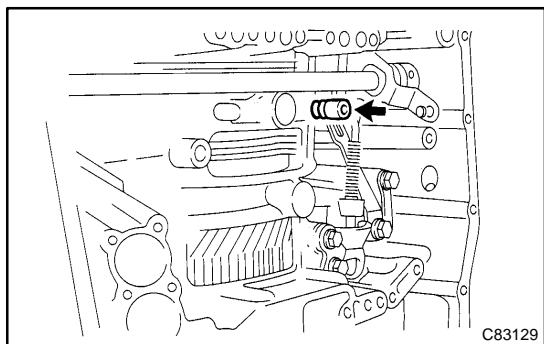


14. REMOVE GOVERNOR APPLY GASKET NO.1

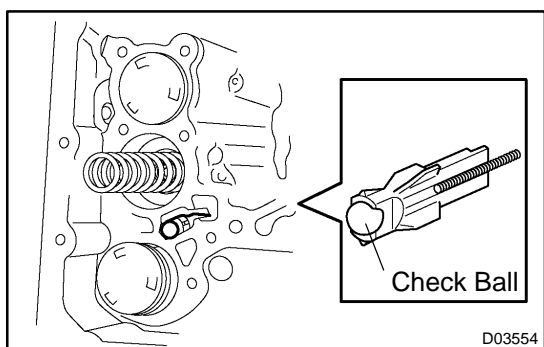
- (a) Remove the governor apply gasket No.1 from the transaxle case.



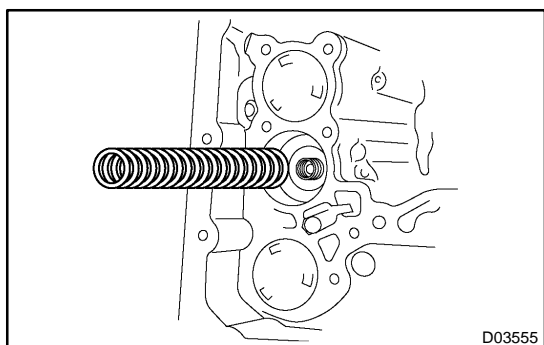
- 15. REMOVE TRANSAXLE CASE 2ND BRAKE GASKET**
 (a) Remove the transaxle case 2nd brake gasket from the transaxle case.



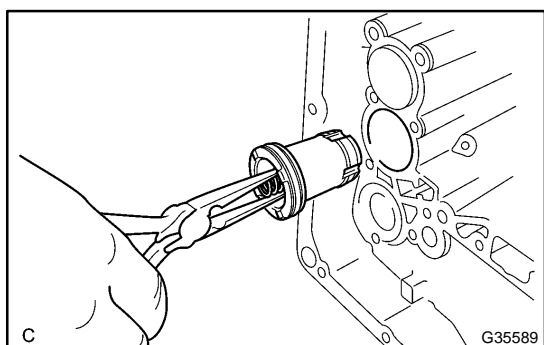
- 16. REMOVE BRAKE DRUM GASKET**
 (a) Remove the brake drum gasket from the transaxle case.



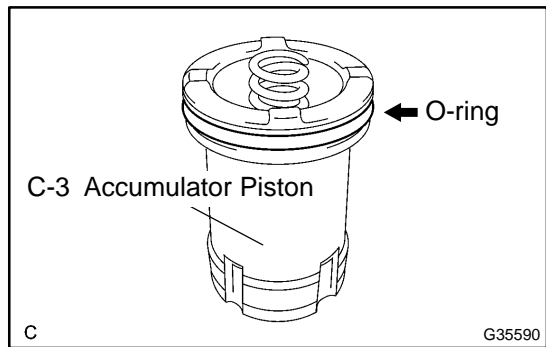
- 17. REMOVE CHECK BALL BODY**
 (a) Remove the check ball body and spring from the transaxle case.



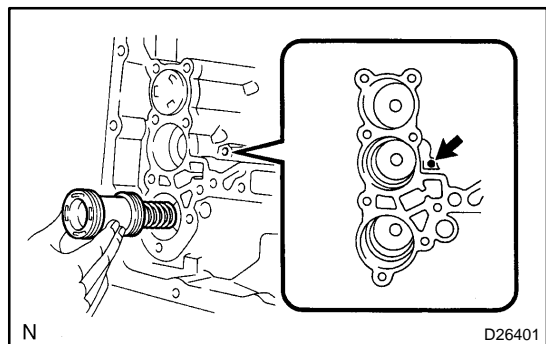
- 18. REMOVE C-3 ACCUMULATOR PISTON**
 (a) Remove the spring from the C-3 accumulator piston.



- (b) Using needle-nose pliers, remove the C-3 accumulator piston from the transaxle case.



(c) Remove the O-ring from the C-3 accumulator piston.

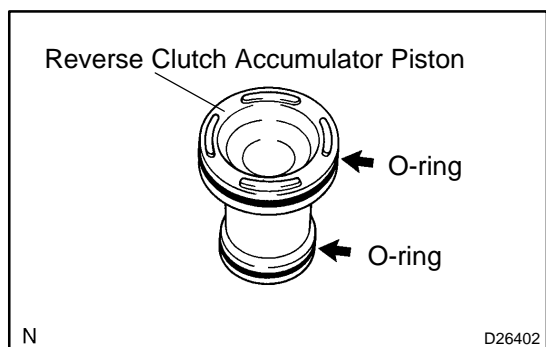


19. REMOVE REVERSE CLUTCH ACCUMULATOR PISTON

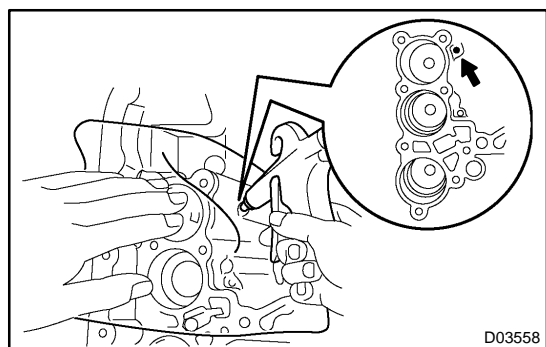
(a) Apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the oil hole and remove the reverse accumulator piston and spring.

NOTICE:

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



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

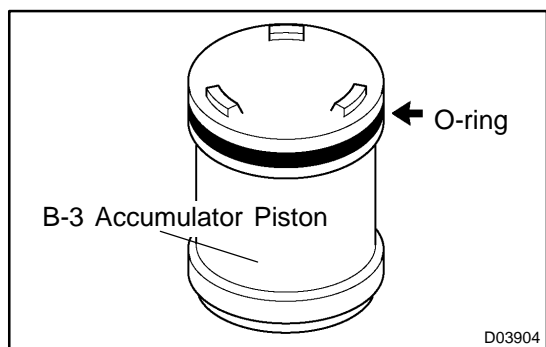


20. REMOVE B-3 ACCUMULATOR PISTON

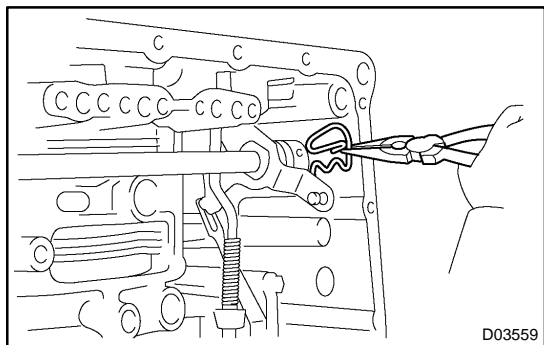
(a) Apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the oil hole and remove the B-3 accumulator piston and 2 springs.

NOTICE:

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

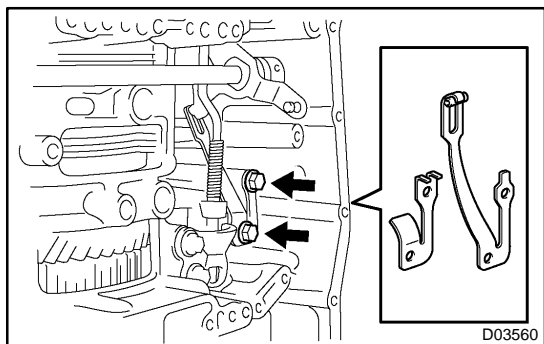


(b) Remove the O-ring from the B-3 accumulator piston.



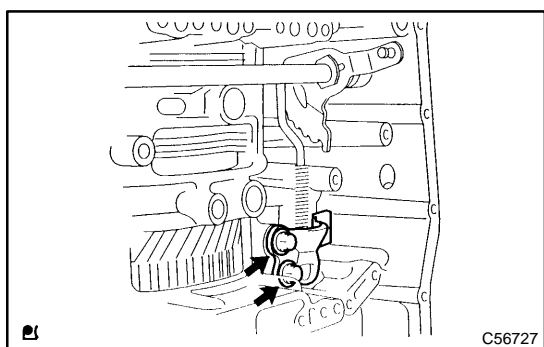
21. REMOVE MANUAL VALVE LEVER SHAFT RETAINER SPRING

- (a) Using needle-nose pliers, remove the manual valve lever shaft retainer spring.



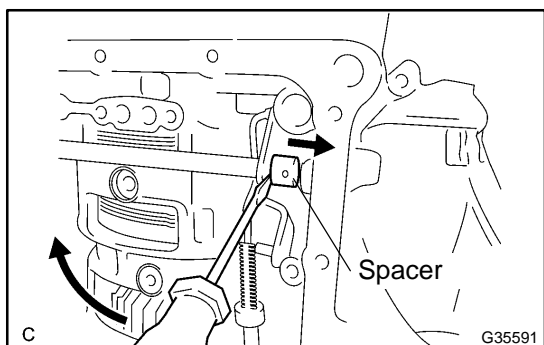
22. REMOVE MANUAL DETENT SPRING SUB-ASSY

- (a) Remove the 2 bolts and manual detent spring sub-assy.



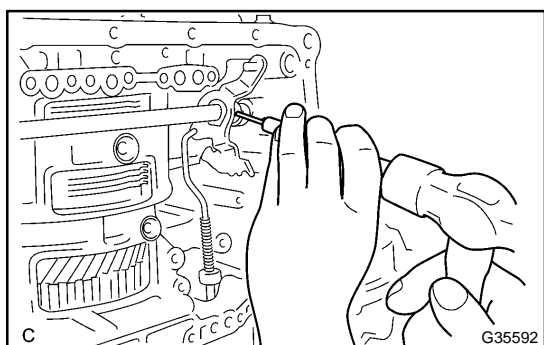
23. REMOVE PARKING LOCK PAWL BRACKET

- (a) Remove the 2 bolts and parking lock pawl bracket.



24. REMOVE MANUAL VALVE LEVER SUB-ASSY

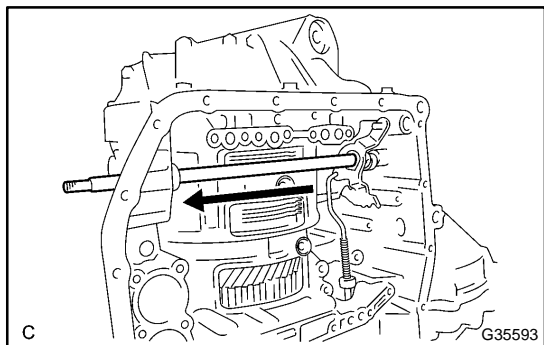
- (a) Using a screwdriver, slide the spacer.



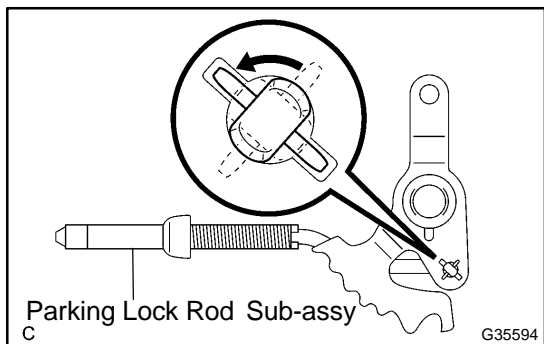
- (b) Using a pin punch ($\phi 35$ mm) and hammer, drive out the pin.

HINT:

Slowly drive out the pin so that it will not fall into the transaxle case.



- (c) Remove the manual valve lever shaft, manual valve lever and spacer.

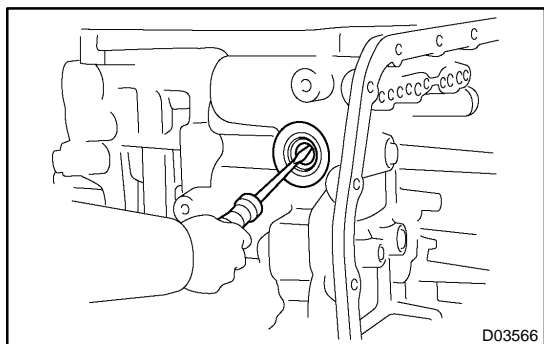


25. REMOVE PARKING LOCK ROD SUB-ASSY

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

HINT:

Align the dial with the notches on the manual valve lever sub-assy to remove the parking lock rod sub-assy.

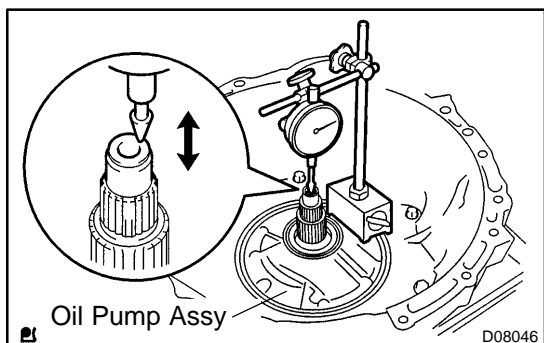


26. REMOVE MANUAL VALVE LEVER SHAFT OIL SEAL

- (a) Using a screwdriver, remove the manual valve lever shaft oil seal from the transaxle case.

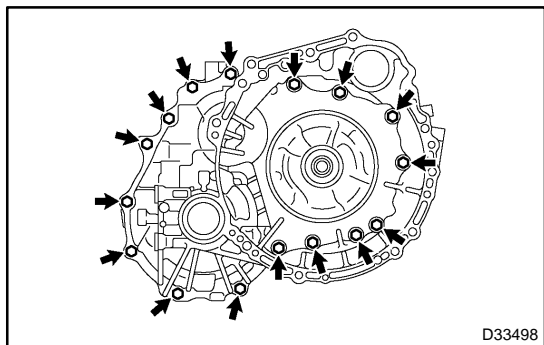
27. FIX AUTOMATIC TRANSAXLE ASSY

- (a) Fix the transaxle case with the oil pump side facing up.



28. INSPECT INPUT SHAFT ENDPLAY

- (a) Using a dial indicator, measure the input shaft end play.
End play: 0.262 to 1.249 mm (0.0103 to 0.0492 in.)

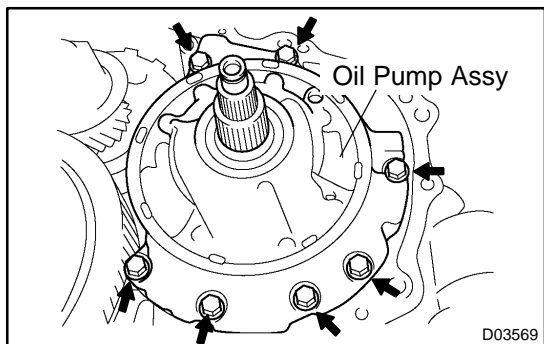


29. REMOVE TRANSAXLE HOUSING

- (a) Remove the 16 bolts.
- (b) Tap on the circumference of the transaxle housing with a plastic hammer to remove the transaxle housing from the transaxle case.

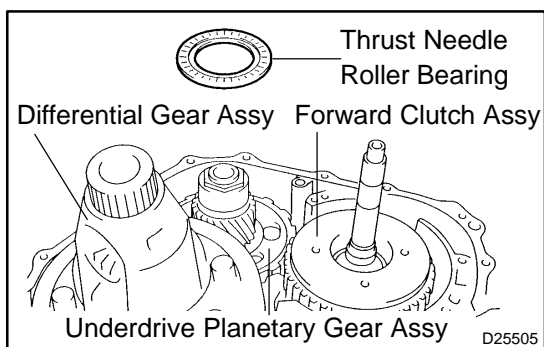
NOTICE:

The differential may be accidentally removed when the transaxle housing is removed.



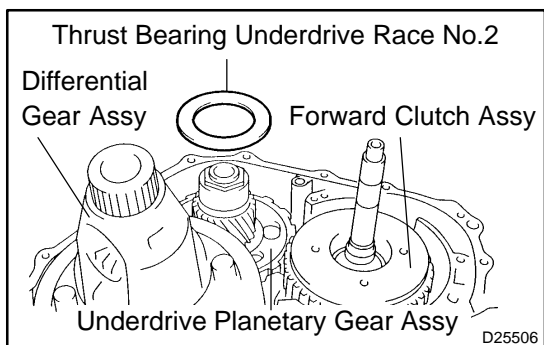
30. REMOVE OIL PUMP ASSY

- (a) Remove the 7 bolts and oil pump assy from the transaxle case.



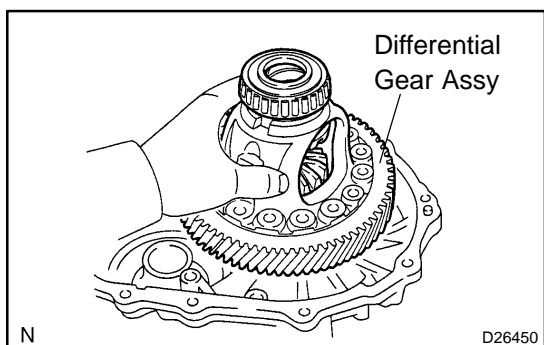
31. REMOVE THRUST NEEDLE ROLLER BEARING

- (a) Remove the thrust needle roller bearing from the underdrive planetary gear assy.



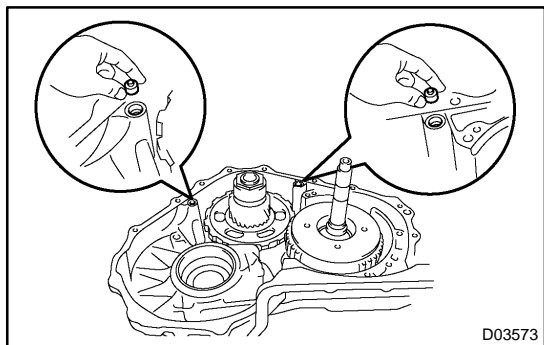
32. REMOVE THRUST BEARING UNDERDRIVE RACE NO.2

- (a) Remove the thrust bearing underdrive race No.2 from the underdrive planetary gear assy.



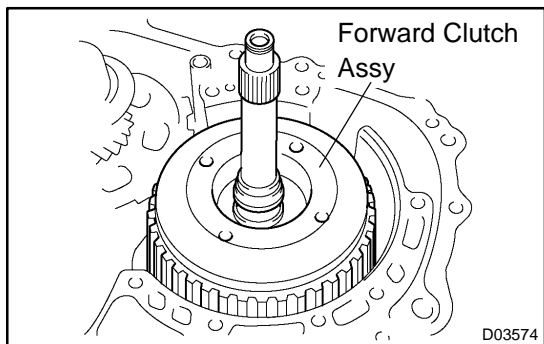
33. REMOVE DIFFERENTIAL GEAR ASSY

- (a) Remove the differential gear assy from the transaxle case.



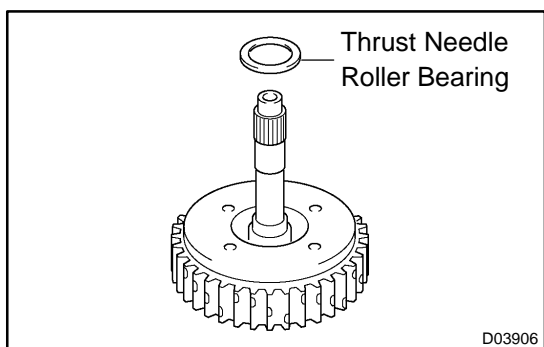
34. REMOVE OVERDRIVE BRAKE GASKET

- (a) Remove the 2 overdrive brake gaskets from the transaxle case.

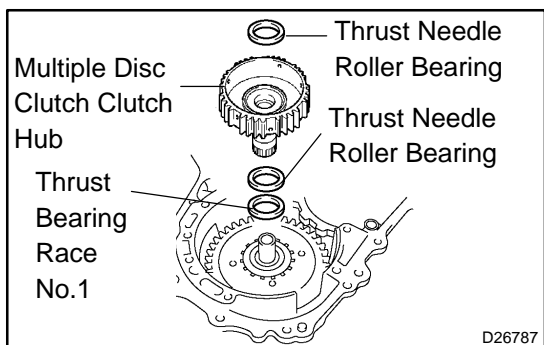


35. REMOVE FORWARD CLUTCH ASSY

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

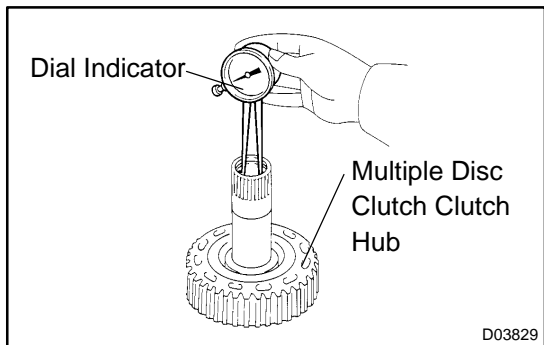


- (b) Remove the thrust needle roller bearing from the forward clutch.



36. REMOVE MULTIPLE DISC CLUTCH CLUTCH HUB

- (a) Remove the thrust needle roller bearing, multiple disc clutch hub, thrust needle roller bearing and thrust bearing race No.1 from the transaxle case.



37. INSPECT MULTIPLE DISC CLUTCH CLUTCH HUB

- (a) Using a dial indicator, measure the inside diameter of the multiple disc clutch clutch hub bushing.

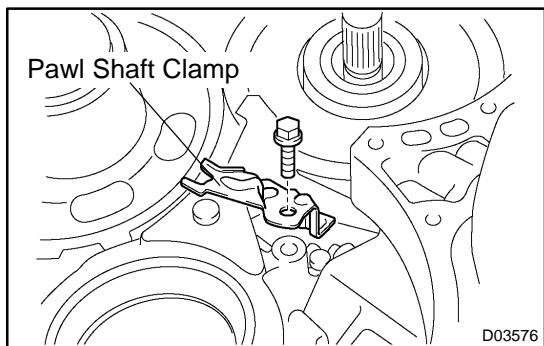
Standard inside diameter:

23.025 to 23.046 mm (0.9065 to 0.9073 in.)

Maximum inside diameter: 23.09 mm (0.9091 in.)

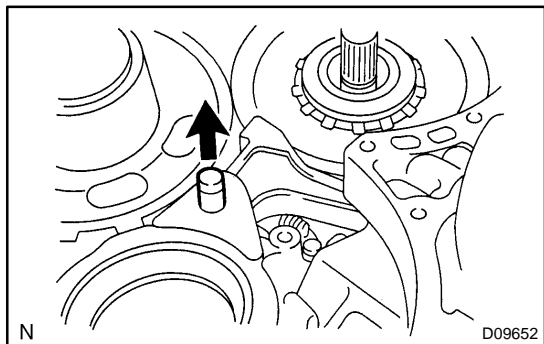
NOTICE:

- If the inside diameter is greater than the maximum, replace the multiple disc clutch clutch hub with a new one.
- Check the contact surface of the bush in the direct clutch shaft. If any scratch or discoloration is identified, replace the direct clutch sub-assy with a new one.

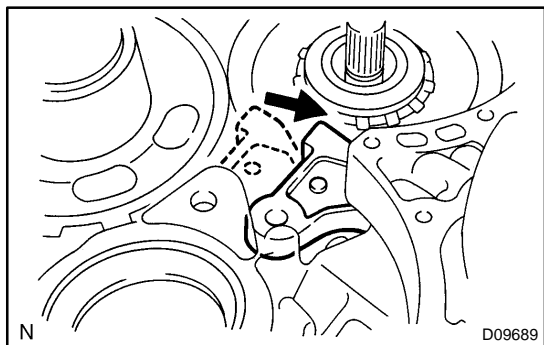


38. REMOVE UNDERDRIVE PLANETARY GEAR ASSY

- (a) Remove the bolt and pawl shaft clamp from the transaxle case.



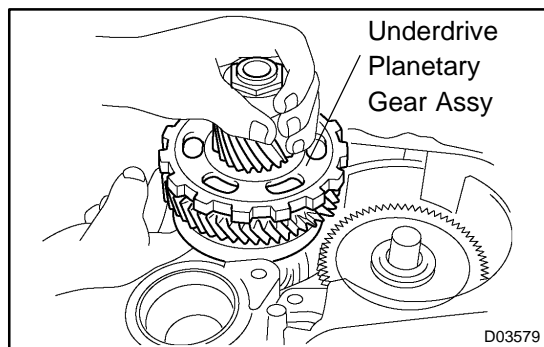
- (b) Remove the parking lock pawl shaft from the transaxle case.



- (c) Push the parking lock pawl.

HINT:

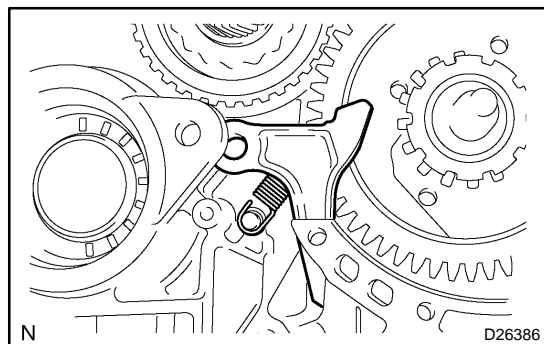
Failure to do so will cause interference when the underdrive planetary gear is removed.



(d) Remove the underdrive planetary gear assy from the transaxle case.

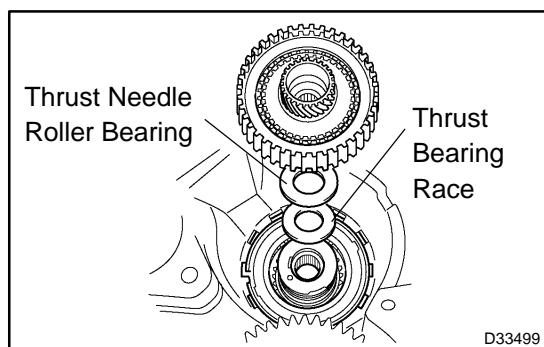
NOTICE:

Be careful so that the underdrive planetary gear assy will not fall out.



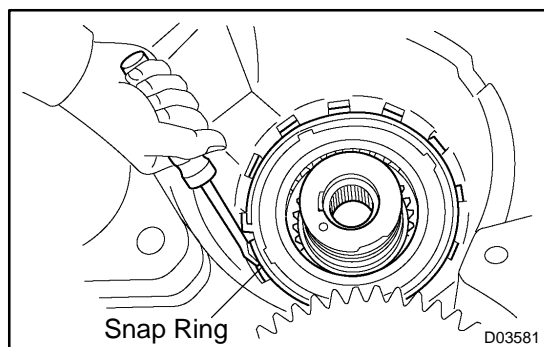
39. REMOVE PARKING LOCK PAWL

(a) Remove the spring, pawl pin and parking lock pawl.



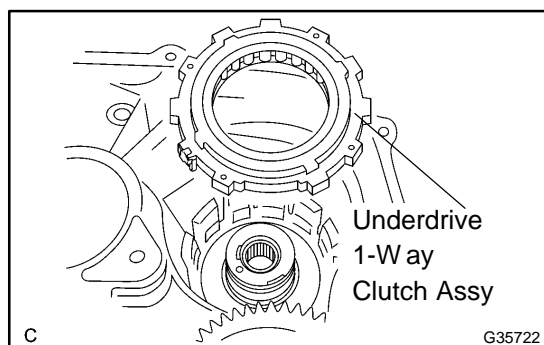
40. REMOVE UNDERDRIVE CLUTCH ASSY

(a) Remove the underdrive clutch assy, thrust needle roller bearing and thrust bearing race from the transaxle case.

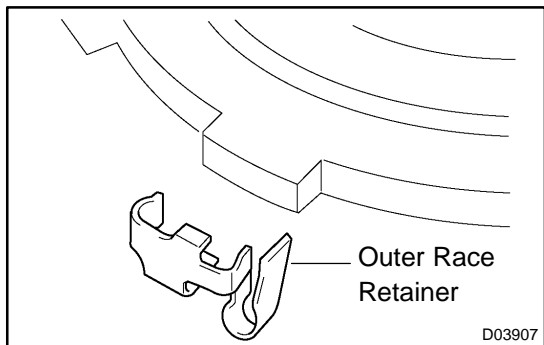


41. REMOVE UNDERDRIVE 1 WAY CLUTCH ASSY

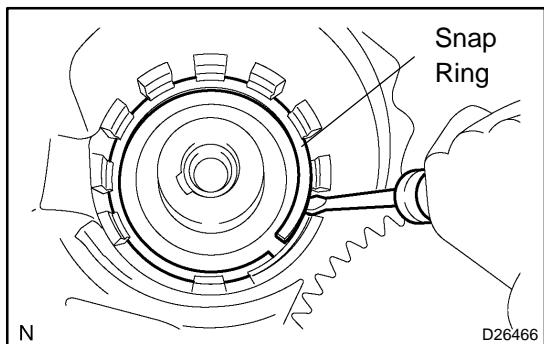
(a) Using a screwdriver, remove the snap ring from the transaxle case.



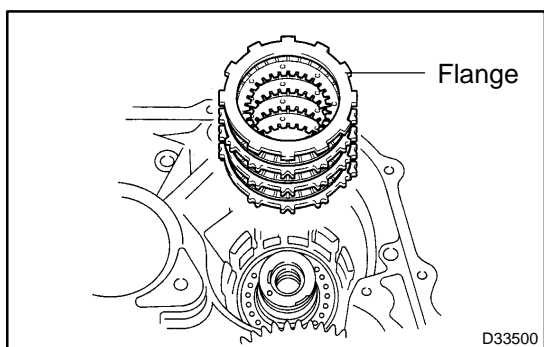
(b) Remove the underdrive 1-way clutch assy from the transaxle case.



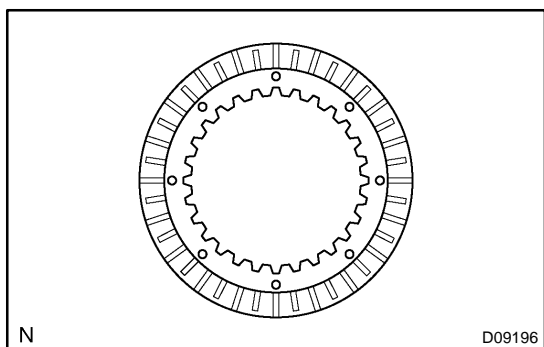
- (c) Remove the outer race retainer from the 1-way clutch assy.



- 42. REMOVE UNDERDRIVE CLUTCH DISC NO.2**
 (a) Using a screwdriver, remove the snap ring.



- (b) Remove the flange, 3 discs and 3 plates from the transaxle case.

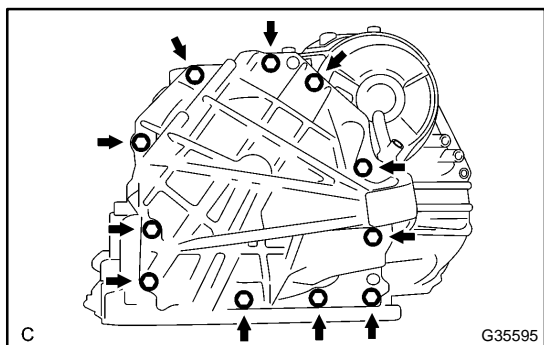


43. INSPECT UNDERDRIVE CLUTCH DISC NO.2

- (a) Check to see if the sliding surfaces of the discs, plates and flange are worn or burnt.
 If necessary, replace them.

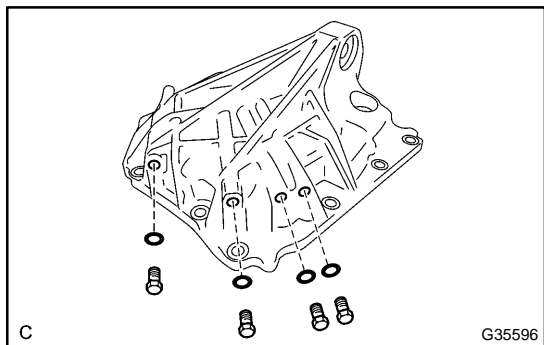
NOTICE:

- If the lining of a disc comes off or discolors, or a groove is damaged, replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.



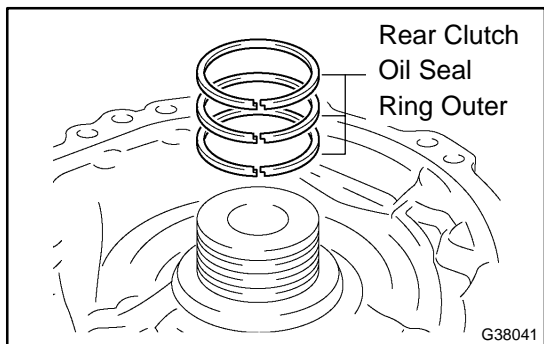
44. REMOVE TRANSAXLE REAR COVER SUB-ASSY

- (a) Remove the 11 bolts.
 (b) Tap on the circumference of the rear cover with a plastic hammer to remove the transaxle rear cover sub-assy from the transaxle case.



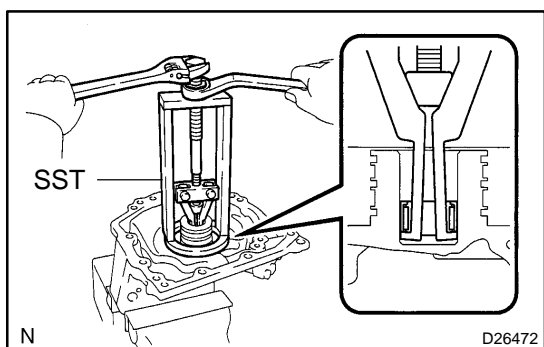
45. REMOVE TRANSAXLE CASE NO.1 PLUG

- (a) Remove the 4 transaxle case No.1 plugs from the transaxle rear cover.
- (b) Remove the 4 O-rings from the 4 transaxle case No.1 plugs.



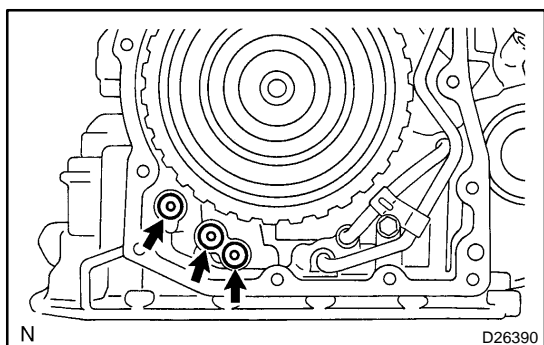
46. REMOVE REAR CLUTCH OIL SEAL RING OUTER

- (a) Remove the 3 rear clutch oil seal ring outers from the transaxle rear cover.



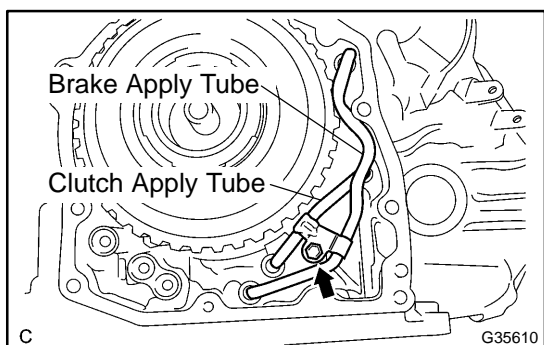
47. REMOVE NEEDLE ROLLER BEARING

- (a) Using SST, remove the needle-roller bearing from the transaxle rear cover.
SST 09387-00041 (09387-01021, 09387-01030, 09387-01040)



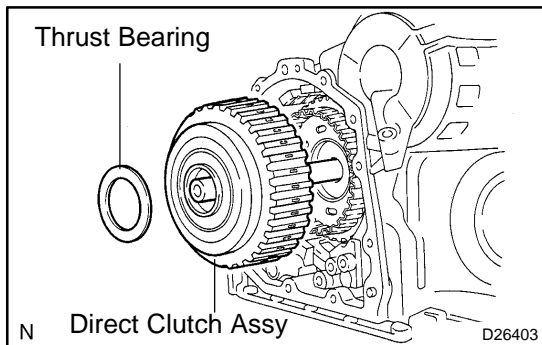
48. REMOVE GOVERNOR APPLY GASKET NO.1

- (a) Using a screwdriver, remove the 3 apply gaskets.



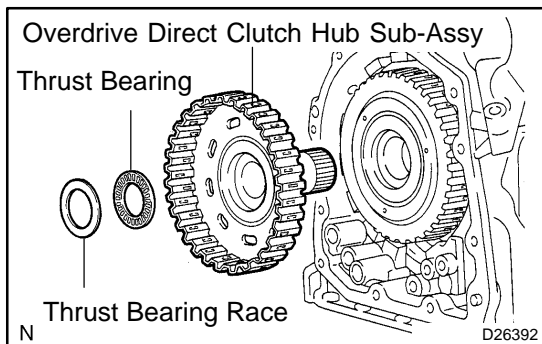
49. REMOVE BRAKE APPLY TUBE

- (a) Remove the bolt and clamp.
- (b) Remove the clutch apply tube.
- (c) Remove the brake apply tube.



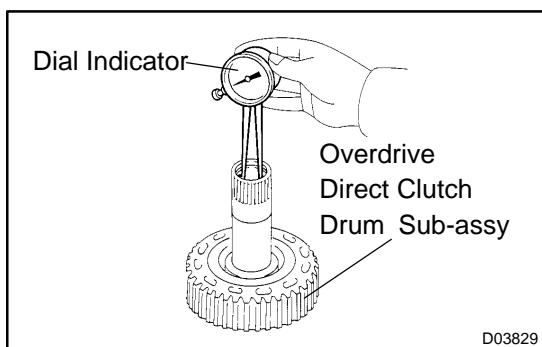
50. REMOVE DIRECT CLUTCH ASSY

- (a) Remove the thrust bearing and the direct clutch assy from the transaxle case.



51. REMOVE OVERDRIVE DIRECT CLUTCH HUB SUB-ASSY

- (a) Remove the thrust bearing race, thrust bearing and overdrive direct clutch hub sub-assy from the rear planetary sun gear assy.



52. INSPECT OVERDRIVE DIRECT CLUTCH DRUM SUB-ASSY

- (a) Using a dial indicator, measure the inside diameter of the overdrive direct clutch drum sub-assy bushing.

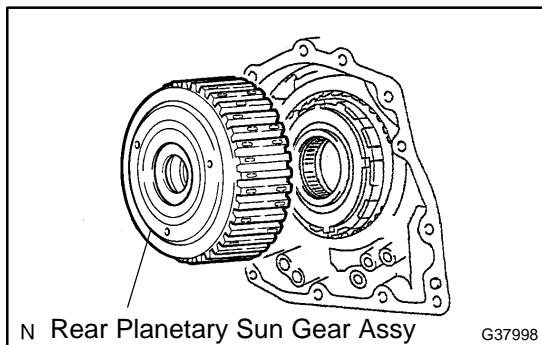
Standard inside diameter:

23.025 to 23.046 mm (0.9065 to 0.9073 in.)

Maximum inside diameter: 23.09 mm (0.9091 in.)

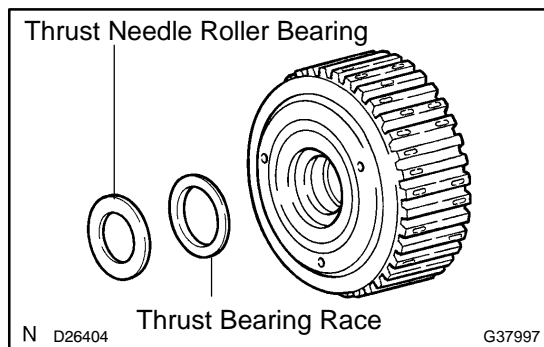
NOTICE:

- If the inside diameter is greater than the maximum, replace the overdrive direct clutch drum sub-assy with a new one.
- Check the contact surface of the bush in the direct clutch shaft. If any scratch or discoloration is identified, replace the overdrive direct clutch drum sub-assy with a new one.

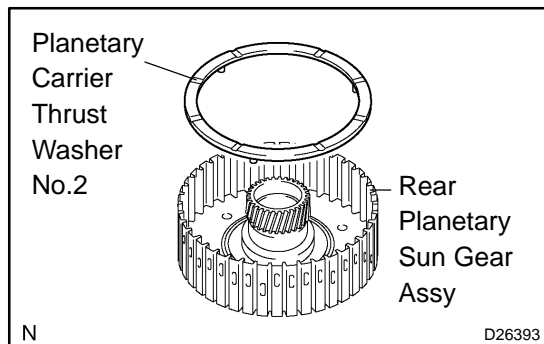


53. REMOVE REAR PLANETARY SUN GEAR ASSY

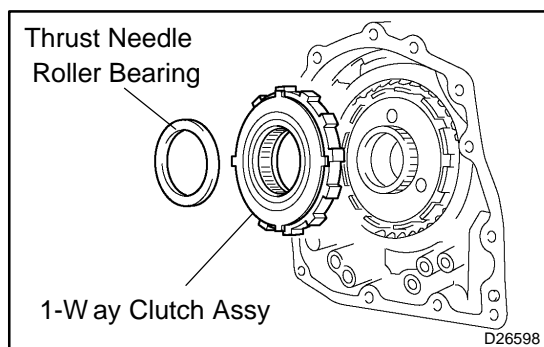
- (a) Remove the rear planetary sun gear assy from the transaxle case.



- (b) Remove the thrust needle roller bearing and thrust bearing race from the rear planetary sun gear assy.

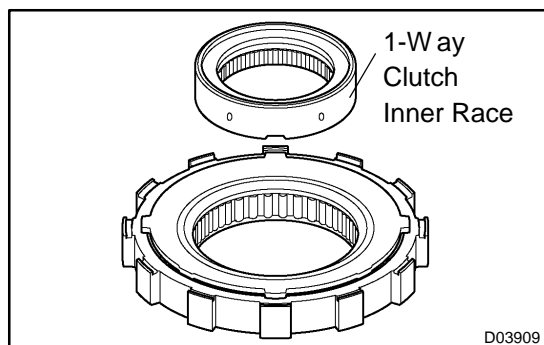


- (c) Remove the planetary carrier thrust washer No.2 from the rear planetary sun gear assy.

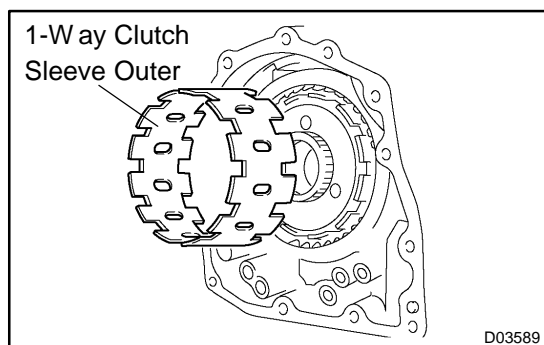


54. REMOVE 1 WAY CLUTCH ASSY

- (a) Remove the 1-way clutch assy and the thrust needle roller bearing from the transaxle case.

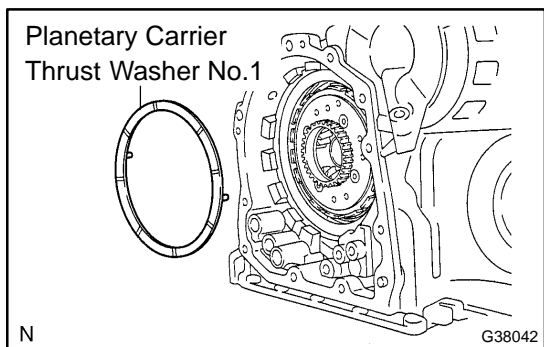


- (b) Remove the 1-way clutch inner race from the 1-way clutch assy.



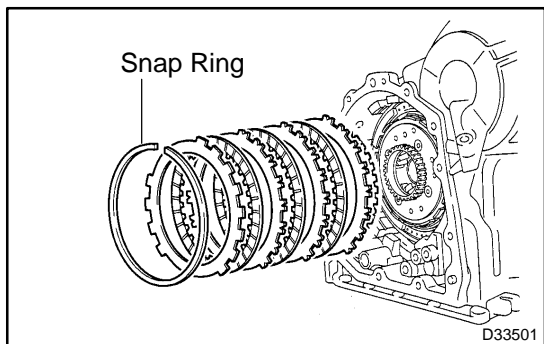
55. REMOVE 1WAY CLUTCH SLEEVE OUTER

- (a) Remove the 1-way clutch sleeve outer from the transaxle case.



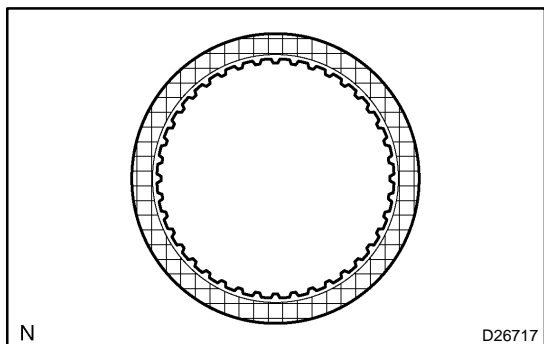
56. REMOVE PLANETARY CARRIER THRUST WASHER NO.1

- (a) Remove the planetary carrier thrust washer No.1 from the planetary gear Assy.



57. REMOVE 2ND BRAKE DISC

- (a) Using a screwdriver, remove the snap ring.
 (b) Remove the flange, 3 discs and 3 plates from the trans-axle case.

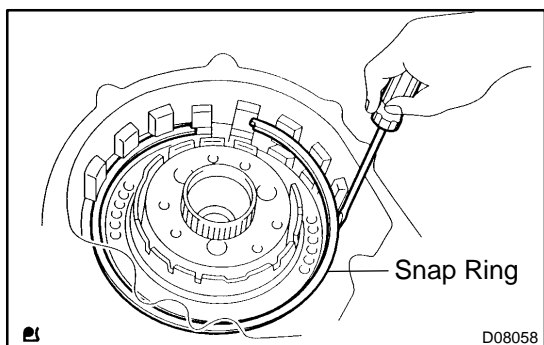


58. INSPECT 2ND BRAKE DISC

- (a) Check to see if the sliding surfaces of the discs, plates and flange are worn or burnt.
 If necessary, replace them.

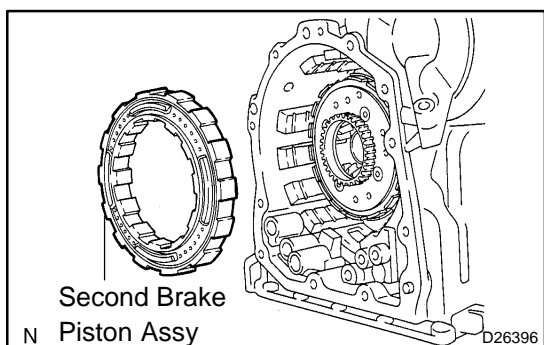
NOTICE:

- If the lining of a disc comes off or discolors, or a groove is damaged, replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.

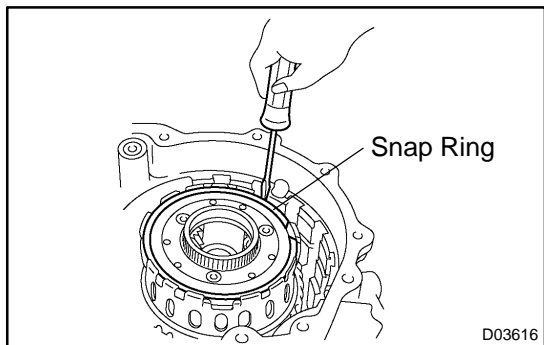


59. REMOVE SECOND BRAKE PISTON ASSY

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

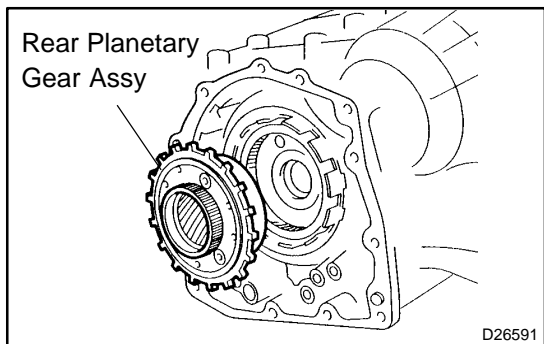


- (b) Remove the second brake piston Assy from the transaxle case.

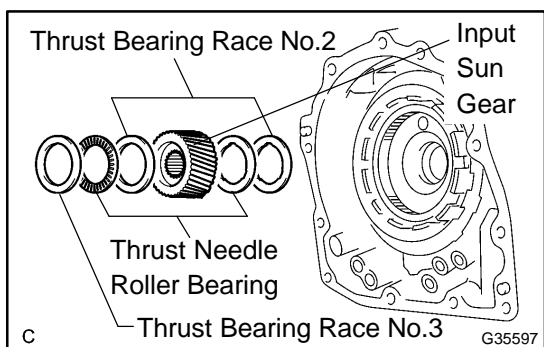


60. REMOVE REAR PLANETARY GEAR ASSY

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

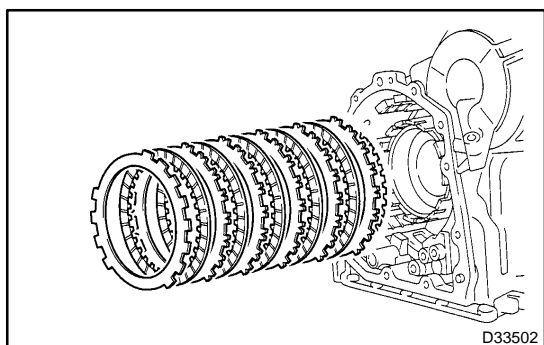


(b) Remove the rear planetary gear assy from the transaxle case.



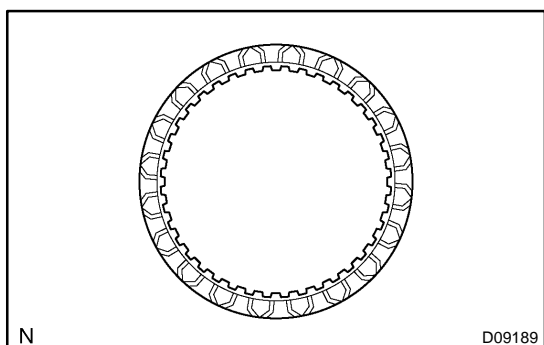
61. REMOVE INPUT SUN GEAR

(a) Remove the input sun gear, 2 thrust needle roller bearings, 2 thrust bearing race No.2 and thrust bearing race No.3 from the transaxle case.



62. REMOVE 1ST & REVERSE BRAKE DISC

(a) Remove the flange, 5 discs and 5 plates from the transaxle case.



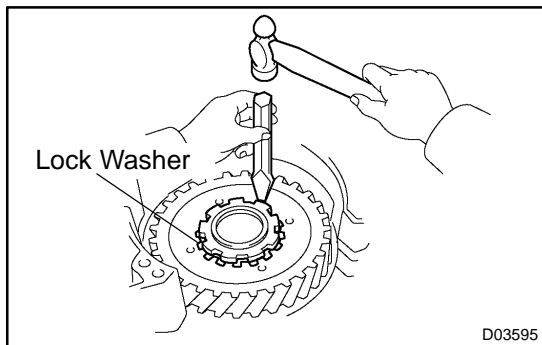
63. INSPECT 1ST & REVERSE BRAKE DISC

(a) Check to see if the sliding surfaces of the discs, plates and flange are worn or burnt.

If necessary, replace them.

NOTICE:

- If the lining of a disc comes off or discolors, or a groove is damaged, replace all discs.
- Before assembling new discs, soak them in ATF for at least 15 minutes.

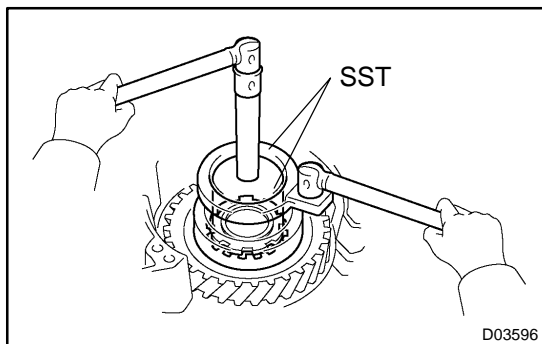


64. REMOVE FRONT PLANETARY GEAR ASSY

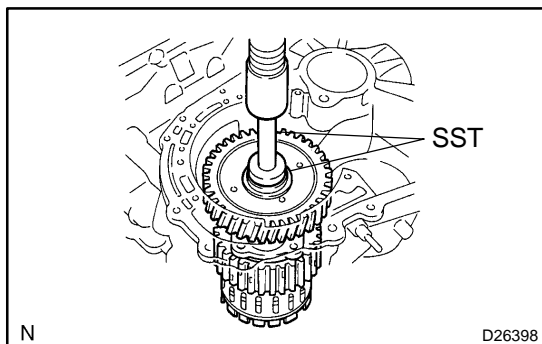
(a) Using a chisel and hammer, unstick the lock washer.

NOTICE:

Bend down all claws of the washer. Otherwise SST cannot be fully pressed against the nut to loosen it.

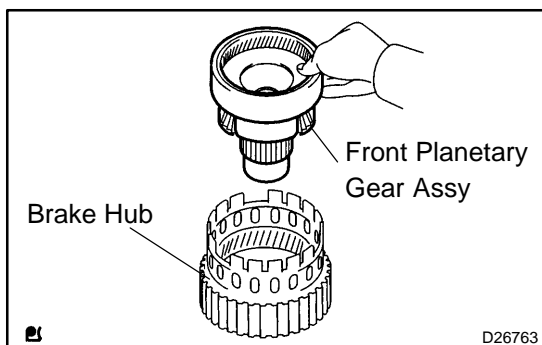


(b) Using SST, remove the nut and lock washer.
SST 09387-00030, 09387-00080

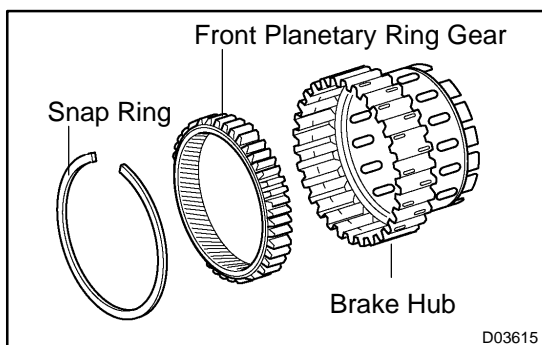


(c) Using SST and a press, remove the front planetary gear assy from the counter drive gear.

SST 09950-60010 (09951-00450), 09950-70010 (09951-07100)

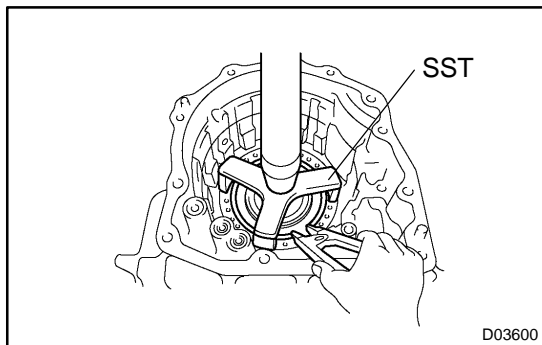


(d) Remove the front planetary gear assy from the brake hub.



65. REMOVE FRONT PLANETARY RING GEAR

(a) Using a screwdriver, remove the snap ring and front planetary ring gear from the brake hub.

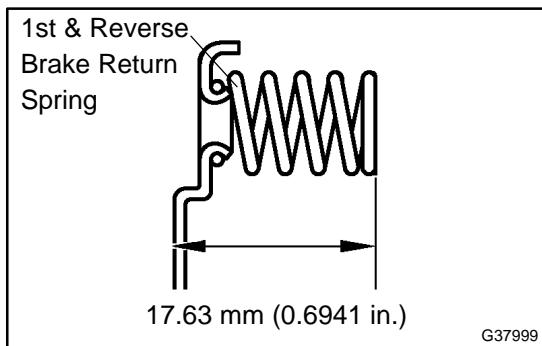


66. REMOVE 1ST & REVERSE BRAKE RETURN SPRING SUB-ASSY

- (a) Place SST on the return spring, and compress the return spring with a press.
SST 09387-00070
- (b) Using a snap ring expander, remove the snap ring.

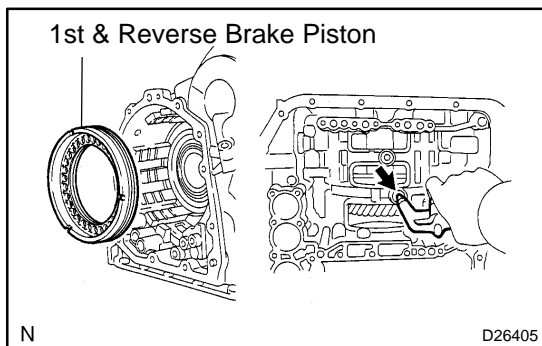
NOTICE:

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



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

- (a) Using vernier calipers, measure the free length of the spring together with the spring seat.
Standard free length: 17.63 mm (0.6941 in.)

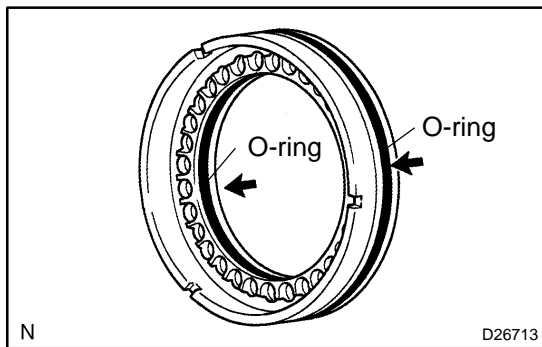


68. REMOVE 1ST & REVERSE BRAKE PISTON

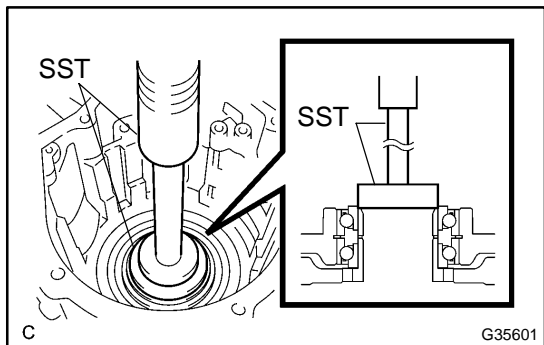
- (a) Apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the transaxle case to remove the 1st & reverse brake piston.

NOTICE:

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

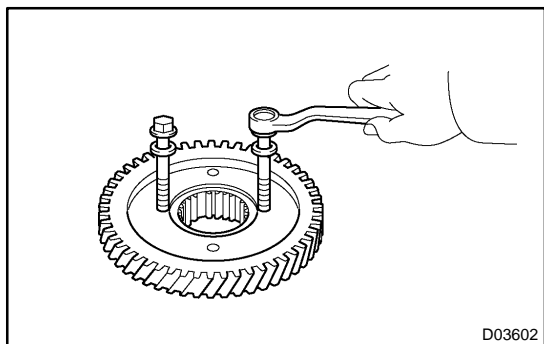


- (b) Remove the 2 O-rings from the 1st & reverse brake piston.

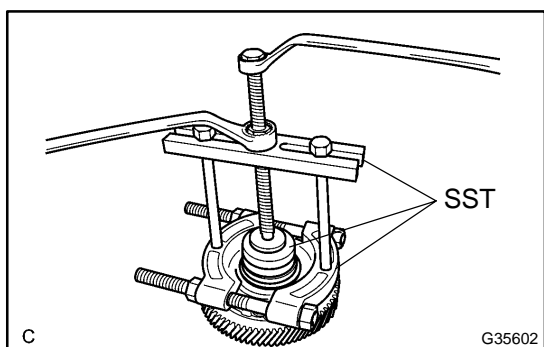


69. REMOVE COUNTER DRIVE GEAR

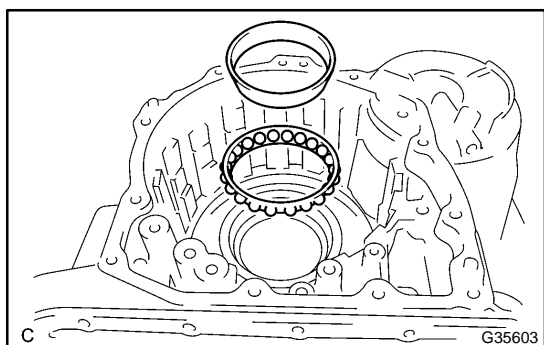
(a) Using SST and a press, remove the counter drive gear from the transaxle case.



(b) As shown in the illustration, tighten the 2 bolts evenly and leave a clearance of approx. 20.0 mm (0.797 in.) between the counter drive gear and the inner race.

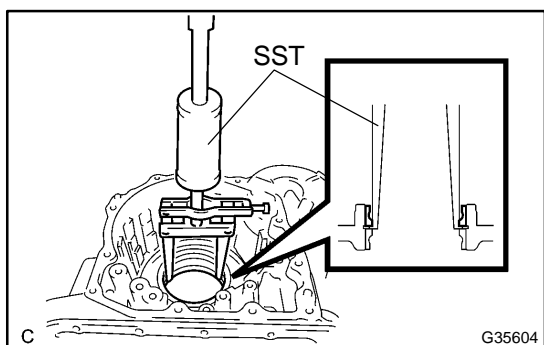


(c) Using SST, remove the bearing inner race (front side).
SST 09950-60010 (09951-00590), 09950-00020, 09950-00030

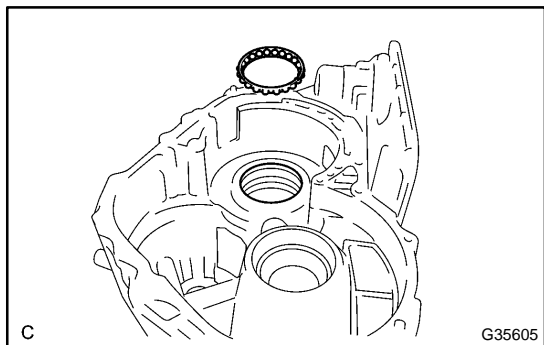


70. REMOVE COUNTER DRIVE ANGULAR BALL BEARING

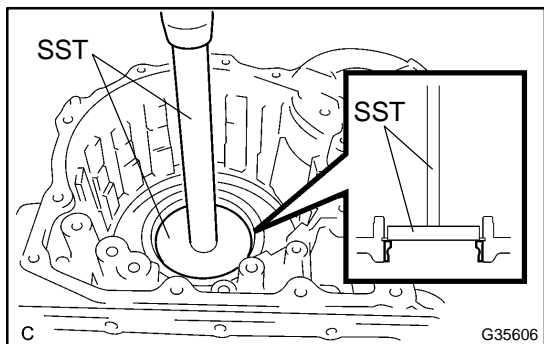
(a) Remove the bearing inner race (rear side) and angular ball (rear side).



(b) Using SST, remove the bearing outer race (rear side) from the transaxle case.
SST 09308-00010

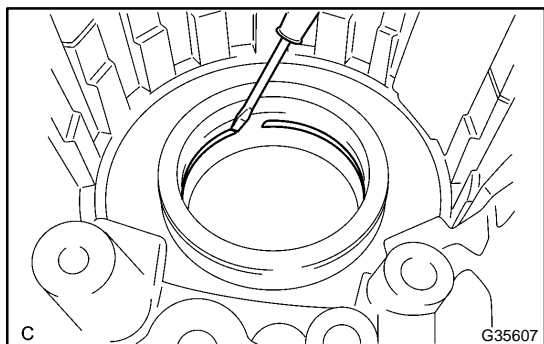


(c) Remove the angular ball (front side).

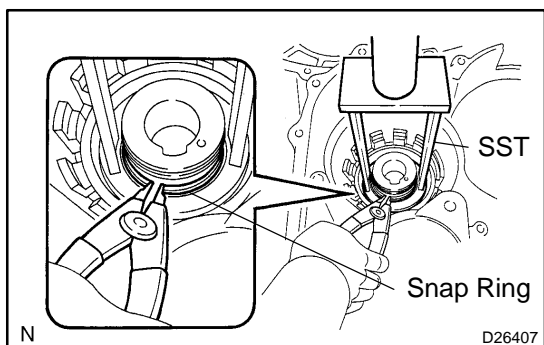


(d) Using SST and a press, remove the bearing outer race (front side) from the transaxle case.

SST 09950-70010 (09951-07200), 09950-60020 (09951-00810)



(e) Using a screwdriver, remove the snap ring from the transaxle case.



71. REMOVE UNDERDRIVE BRAKE RETURN SPRING SUB-ASSY

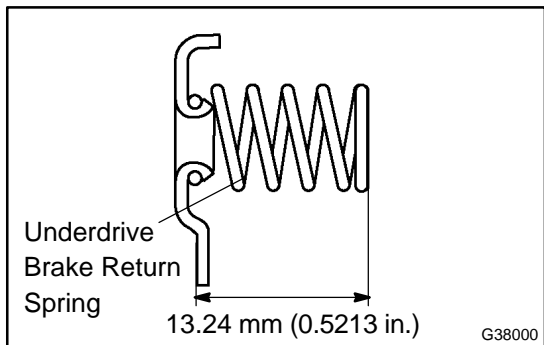
(a) Place SST on the return spring, and compress the return spring with a press.

SST 09387-00020

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

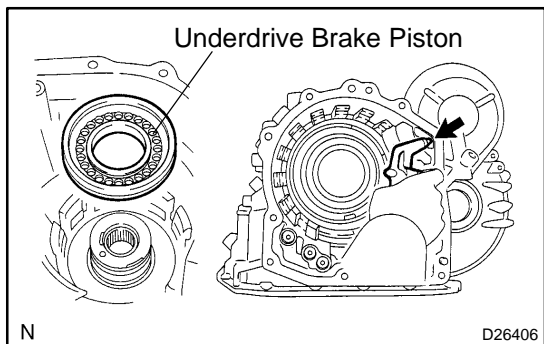
NOTICE:

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



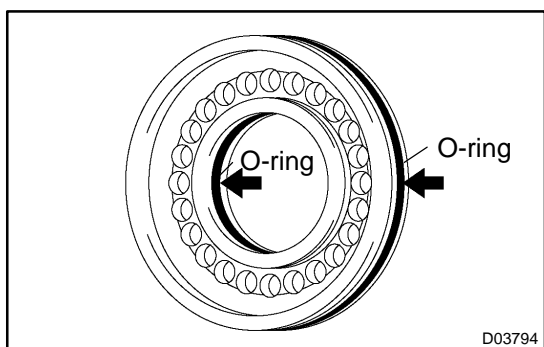
72. INSPECT UNDERDRIVE BRAKE RETURN SPRING SUB-ASSY

- (a) Using vernier calipers, measure the free length of the spring together with the spring seat.
Standard free length: 13.24 mm (0.5213 in.)

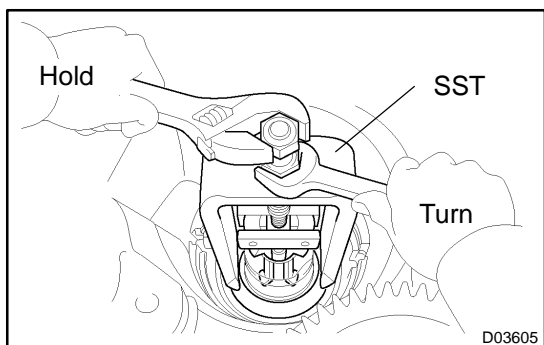


73. REMOVE UNDERDRIVE BRAKE PISTON

- (a) Apply compressed air (392 kPa, 4.0 kgf/cm², 57 psi) to the transaxle case to remove the underdrive brake piston.

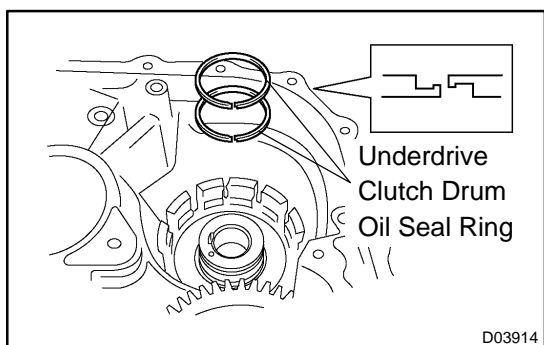


- (b) Remove the 2 O-rings from the underdrive brake piston.



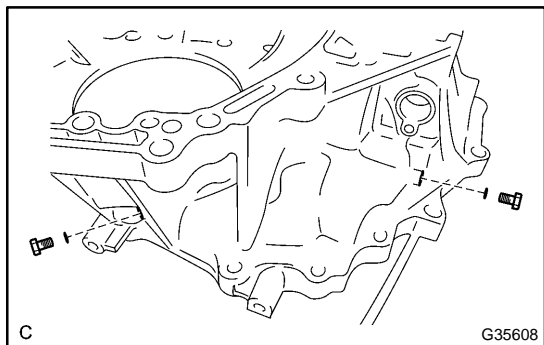
74. REMOVE NEEDLE ROLLER BEARING

- (a) Using SST, remove the needle-roller bearing from the transaxle case.
SST 09387-00041 (09387-01010, 09387-01030, 09387-01040)



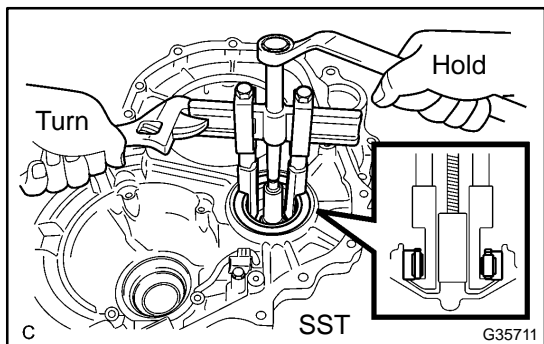
75. REMOVE UNDERDRIVE CLUTCH DRUM OIL SEAL RING

- (a) Remove the 2 oil seal rings from the transaxle case.



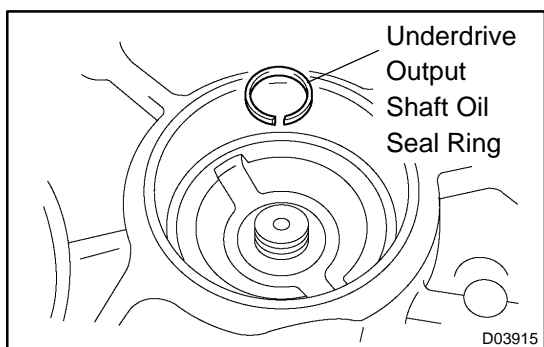
76. REMOVE TRANSAXLE CASE NO.1 PLUG

- (a) Remove the 2 transaxle case No.1 plugs.
- (b) Remove the 2 O-rings from the 2 transaxle case No.1 plugs.



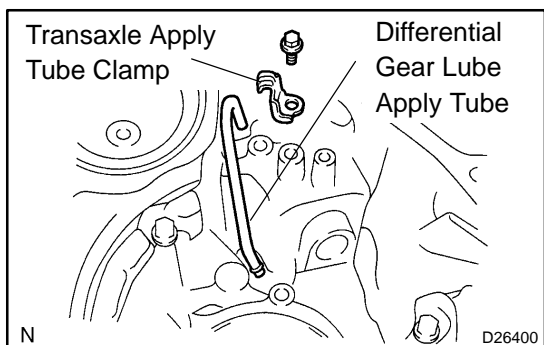
77. REMOVE UNDERDRIVE CYLINDRICAL ROLLER BEARING

- (a) Using SST, remove the underdrive cylindrical roller bearing from the transaxle case.
SST 09950-50013 (09951-05010, 09953-05020),
09950-40011 (09952-04010, 09954-04010,
09955-04061, 09957-04010), 09820-00031



78. REMOVE UNDERDRIVE OUTPUT SHAFT OIL SEAL RING

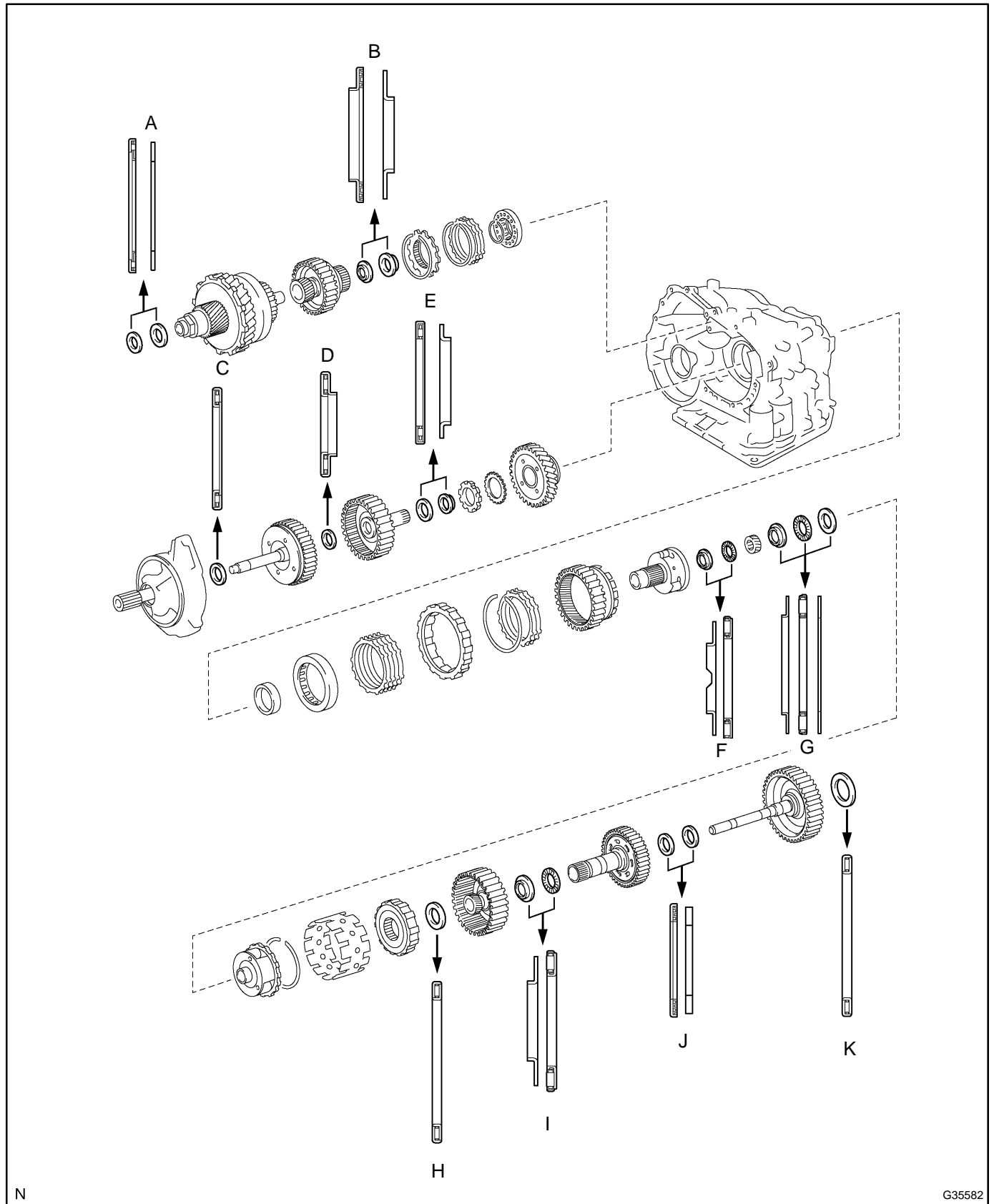
- (a) Remove the underdrive output shaft oil seal ring from the transaxle housing.



79. REMOVE DIFFERENTIAL GEAR LUBE APPLY TUBE

- (a) Remove the bolt, transaxle apply tube clamp and differential gear lube apply tube from the transaxle housing.

80. BEARING POSITION

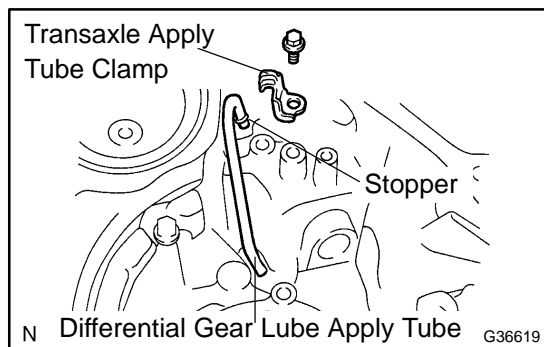


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G35582

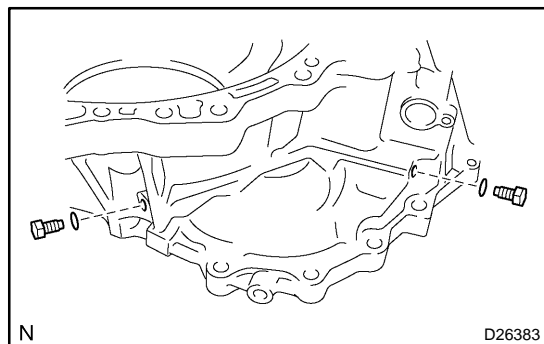
AUTOMATIC TRANSMISSION / TRANS - AUTOMATIC TRANSAXLE ASSY (U250E)

Mark	Front Race Diameter Inside / Outside mm (in.)	Thrust Bearing Diameter Inside / Outside mm (in.)	Rear Race Diameter Inside / Outside mm (in.)
A	-	53.0 (2.0866) / 78.2 (3.0787)	52.1 (2.0512) / 75.5 (2.9724)
B	-	37.73 (1.4854) / 58.0 (2.2835)	29.9 (1.1772) / 55.5 (2.1850)
C	-	33.85 (1.3327) / 52.2 (2.0551)	-
D	-	23.5 (0.9252) / 44.0 (1.7323)	-
E	-	36.3 (1.4291) / 52.2 (2.0551)	34.5 (1.3583) / 48.5 (1.9094)
F	34.5 (1.3583) / 56.82 (2.2370)	32.4 (1.2756) / 56.62 (2.2291)	-
G	40.3 (1.5866) / 58.0 (2.2835)	38.6 (1.5197) / 60.0 (2.3622)	38.6 (1.5197) / 58.0 (2.2835)
H	-	53.6 (2.1102) / 69.6 (2.7402)	-
I	33.1 (1.3031) / 45.4 (1.7874)	31.85 (1.2539) / 45.2 (1.7795)	-
J	-	25.0 (0.9843) / 39.5 (1.5551)	23.6 (0.9291) / 36.6 (1.4409)
K	-	55.9 (2.2008) / 76 (2.9921) or 76.6 (3.0157)	-

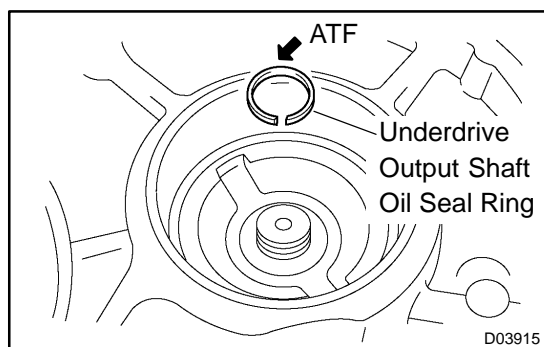


- 81. INSTALL DIFFERENTIAL GEAR LUBE APPLY TUBE**
 (a) Install the differential gear lube apply tube and transaxle apply tube clamp with the bolt to the transaxle housing.
Torque: 9.8 N·m (100 kgf·cm, 87 in.·lbf)

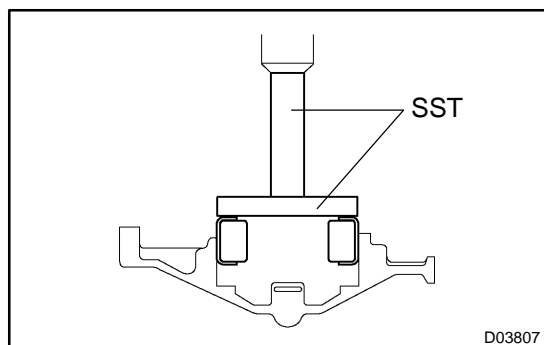
NOTICE:
Make sure to insert the pipe to the stopper.



- 82. INSTALL TRANSAXLE CASE NO.1 PLUG**
 (a) Install 2 new O-rings to the 2 transaxle case No.1 plugs.
 (b) Install the 2 transaxle case No.1 plugs to the transaxle housing.
Torque: 7.4 N·m (75 kgf·cm, 65 in.·lbf)

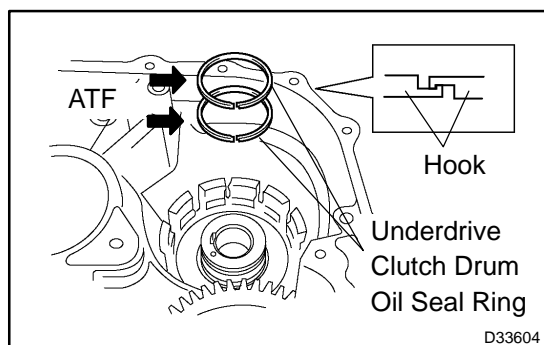


- 83. INSTALL UNDERDRIVE OUTPUT SHAFT OIL SEAL RING**
 (a) Coat a new oil seal ring with ATF and install it to the transaxle housing.

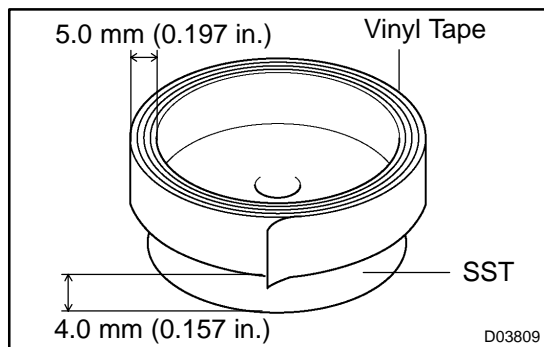


- 84. INSTALL UNDERDRIVE CYLINDRICAL ROLLER BEARING**
 (a) Coat the underdrive cylindrical roller bearing with ATF.
 (b) Using SST and a press, install the underdrive cylindrical roller bearing.

NOTICE:
Do not apply excessive pressure to the bearing.
 SST 09950-60020 (09951-00780), 09950-70010 (09951-07100)



- 85. INSTALL UNDERDRIVE CLUTCH DRUM OIL SEAL RING**
 (a) Coat 2 new underdrive clutch drum oil seal rings with ATF, and install them to the transaxle rear cover.
- NOTICE:**
- **Do not overly expand the gap of the oil seal ring.**
 - **Engage the hooks securely. Confirm the smooth rotation.**



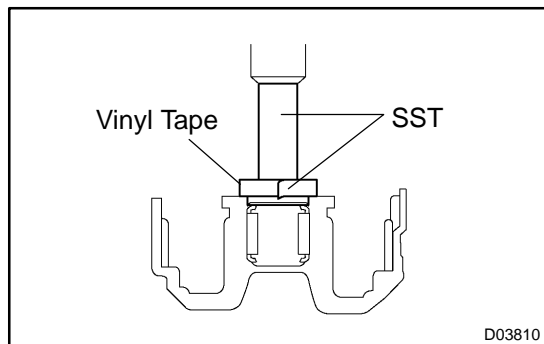
86. INSTALL NEEDLE ROLLER BEARING

- (a) Wind vinyl tape around SST at the point 4.0 mm (0.157 in.) above from the bottom end until the thickness of the wound tape becomes about 5.0 mm (0.197 in.).

NOTICE:

Clean SST to remove oil before winding vinyl tape.

- (b) Coat a new needle roller bearing with ATF.

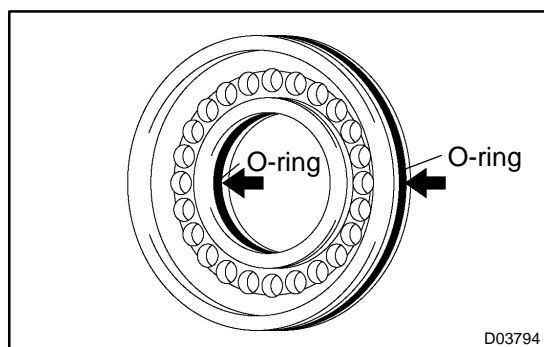


- (c) Using SST and a press, install the needle roller bearing to the transaxle case.

SST 09950-60010 (09951-00320), 09950-70010 (09951-07100)

NOTICE:

When the wound vinyl tape come into contact with the transaxle case, stop press-fitting.



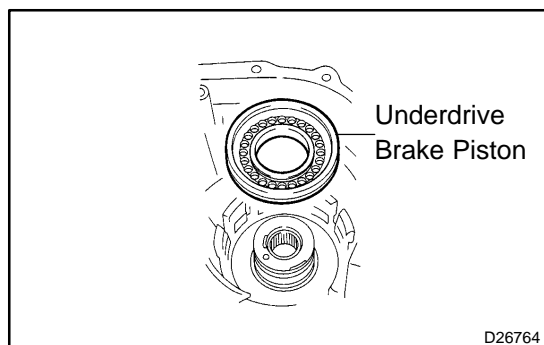
87. INSTALL UNDERDRIVE BRAKE PISTON

- (a) Coat 2 new O-rings with ATF, and install them to the underdrive brake piston.

NOTICE:

- **Ensure that the O-rings are not twisted or pinched.**
- **Apply enough ATF to the O-rings prior to installation.**

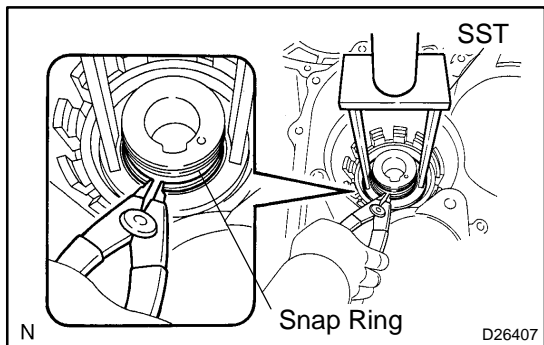
- (b) Coat the underdrive brake piston with ATF.



- (c) Install the underdrive brake piston to the transaxle case.

NOTICE:

Be careful not to damage the O-rings.

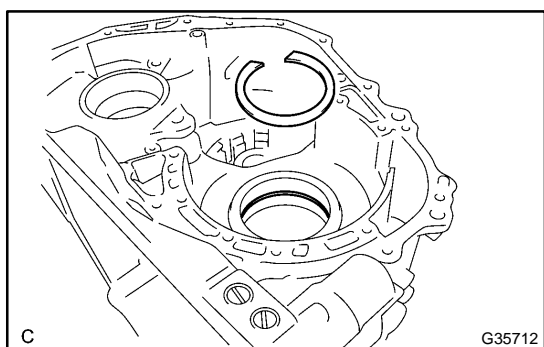


88. INSTALL UNDERDRIVE CLUTCH RETURN SPRING SUB-ASSY

- (a) Place SST on the underdrive clutch return spring sub-assy and compress the underdrive clutch return spring sub-assy with a press.
SST 09387-00020
- (b) Using a snap ring expander, install the snap ring to the transaxle case.

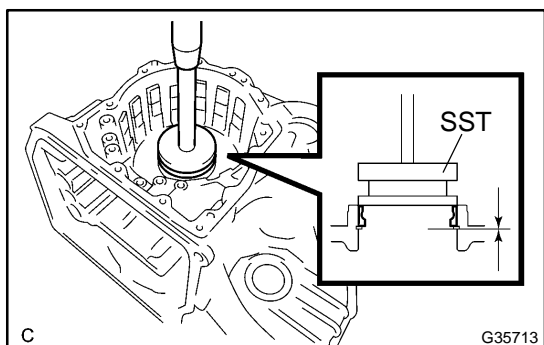
NOTICE:

- Stop the press when the spring sheet is lowered 1 to 2 mm (0.039 to 0.078 in.) from the snap ring groove, to prevent the spring sheet from being deformed.
- Do not expand the snap ring excessively.
- When installing the spring sub-assembly, ensure that all springs are fit in the piston correctly.
- The snap ring should be securely fixed in the groove of the transaxle case.



89. INSTALL COUNTER DRIVE ANGULAR BALL BEARING

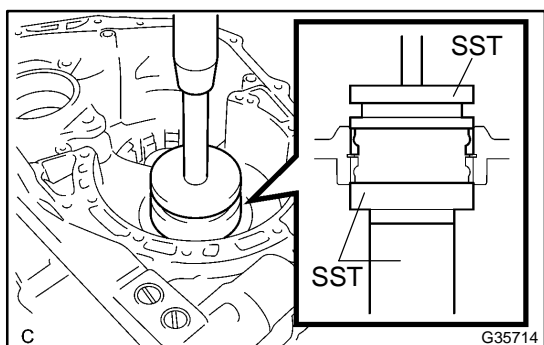
- (a) Install the snap ring to the transaxle case.



- (b) Using SST and a press, install the bearing outer race (rear side) to the transaxle case.
SST 09316-12010, 09950-60020 (09951-00810), 09950-70010 (09951-07150)

NOTICE:

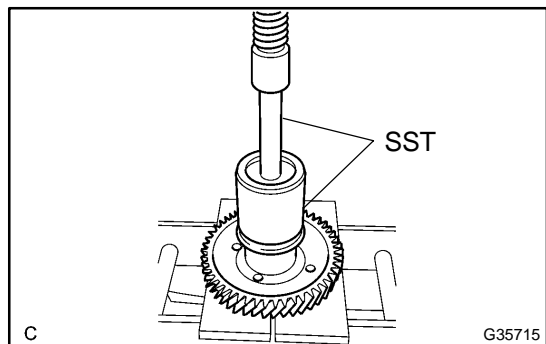
- Ensure that the snap ring is securely installed.
- Do not apply excessive pressure to the bearing outer race.



- (c) Using SST and press, install the bearing outer race (front side) to the transaxle case.
SST 09316-12010, 09950-60020 (09951-00810), 09950-70010 (09951-07150), 09523-36010, 09502-24010

NOTICE:

- Do not apply excessive pressure to the bearing outer race.
 - Install the bearing outer race with a press while holding the bearing outer race with SST (09502-24010, 09523-36010).
- (d) Install the 2 angular balls to the transaxle case.

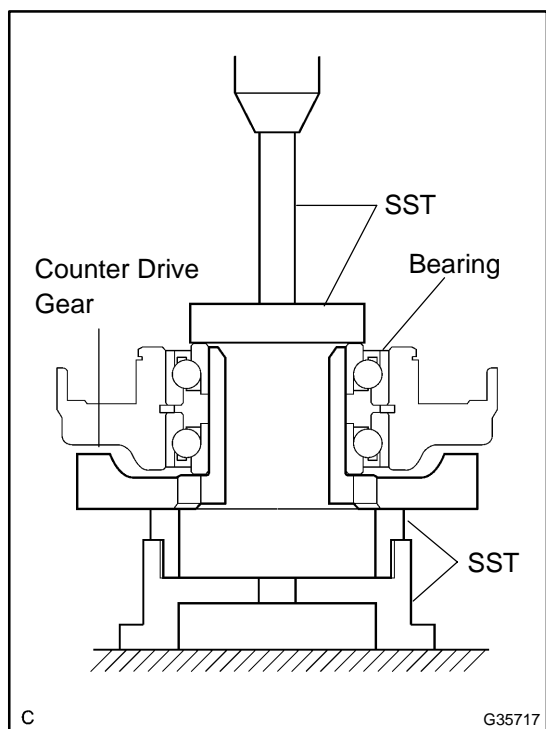


90. INSTALL COUNTER DRIVE GEAR

- (a) Coat the counter drive gear with ATF.
- (b) Using SST and a press, install the bearing inner race (front side) to the counter drive gear.
SST 09950-70010 (09951-07150), 09649-17010

NOTICE:

Do not apply excessive pressure to the bearing inner race.

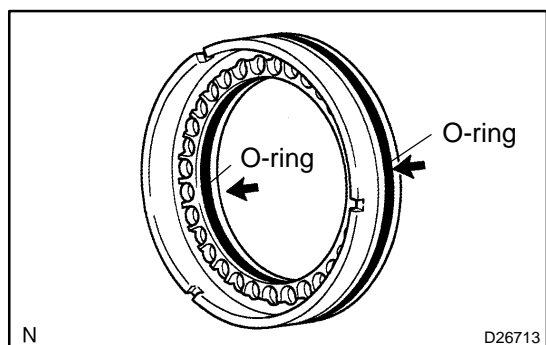


- (c) Using SST and a press, install the counter drive gear and bearing inner race (rear side) to the transaxle case.

NOTICE:

Do not apply excessive pressure to them.

SST 09223-15030, 09527-17011, 09950-60020 (09951-00720), 09950-70010 (09951-07150)

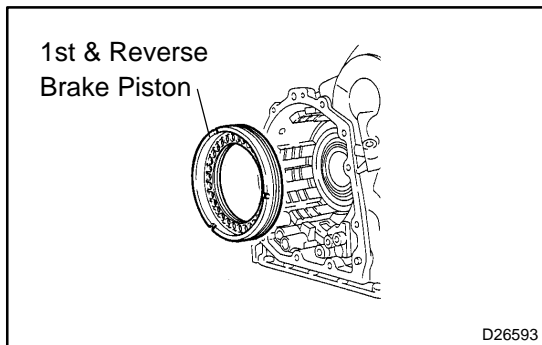


91. INSTALL 1ST & REVERSE BRAKE PISTON

- (a) Coat 2 new O-rings with ATF.
- (b) Install the 2 O-rings to the 1st & reverse brake piston.

NOTICE:

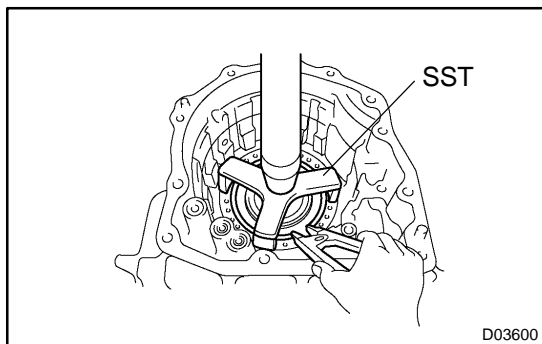
- Ensure that the O-rings are not twisted or pinched.
- Apply enough ATF to the O-rings prior to installation.



- (c) Coat the 1st & reverse brake piston with ATF, and install it to the transaxle case.

NOTICE:

Be careful not to damage the O-rings.

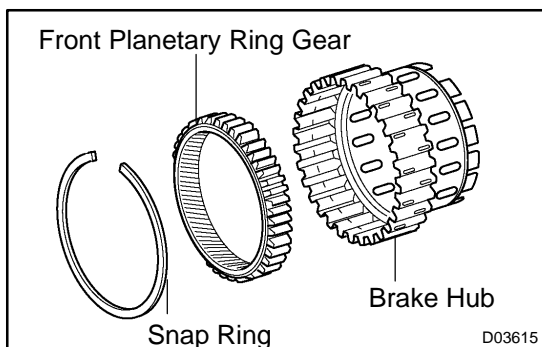


92. INSTALL 1ST & REVERSE BRAKE RETURN SPRING SUB-ASSY

- (a) Place SST on the 1st & reverse brake return spring sub-assy and compress the 1st & reverse brake return spring sub-assy with a press.
SST 09387-00070
- (b) Using a snap ring expander, install the snap ring to the transaxle case.

NOTICE:

- Stop the press when the spring sheet is lowered to the place 1 to 2 mm (0.039 to 0.078 in.) from the snap ring groove, preventing the spring sheet from being deformed.
- Do not expand the snap ring excessively.
- When installing the spring sub-assembly, ensure that all springs are fit in the piston correctly.
- The snap ring should be securely fixed in the groove of the cylinder.
- Fix the snap ring to the inside of the spring seat claw securely.

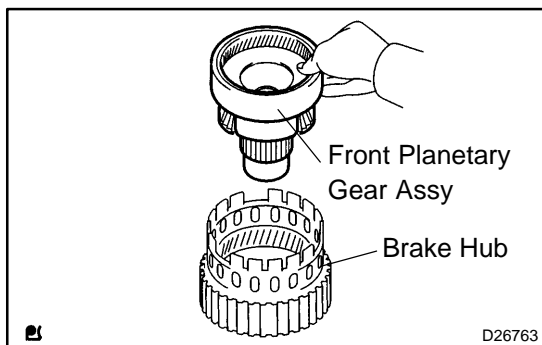


93. INSTALL FRONT PLANETARY RING GEAR

- (a) Using a screwdriver, install the front planetary ring gear and snap ring to the brake hub.

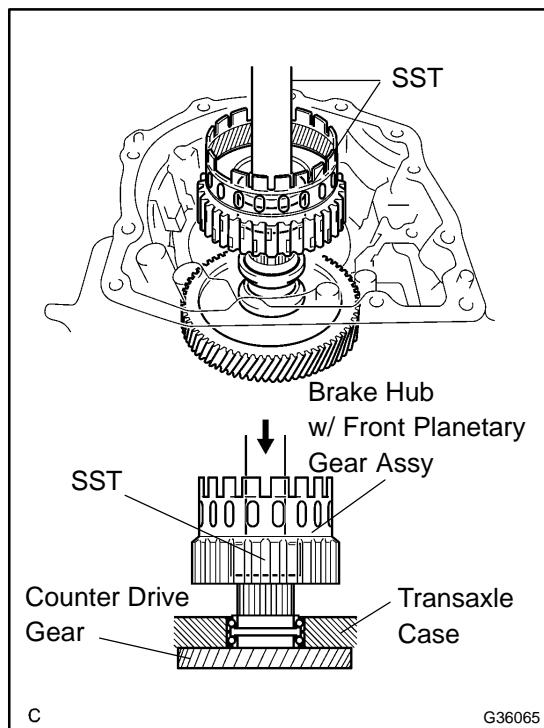
NOTICE:

Confirm the snap ring is fixed in the groove of the brake hub correctly.



94. INSTALL FRONT PLANETARY GEAR ASSY

- (a) Install the front planetary gear assy to the brake hub.

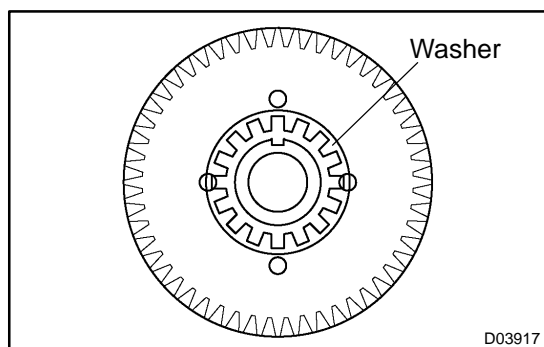


(b) Using SST and a press, press-fit the front planetary gear assy.

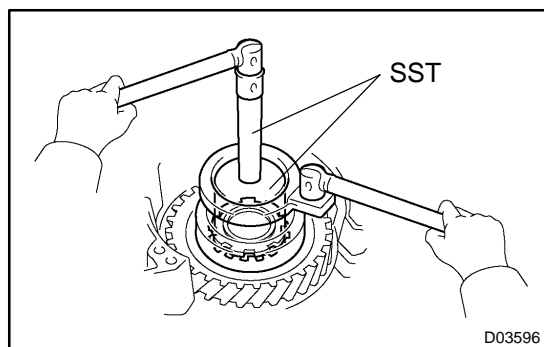
SST 09950-60010 (09951-00500), 09950-70010 (09951-07100)

NOTICE:

- Do not apply excessive pressure to the front planetary gear assy.
- Press the front planetary gear assembly until it just comes into contact with the angular ball bearings (front and rear sides).



(c) Install a new washer, as shown in the illustration.



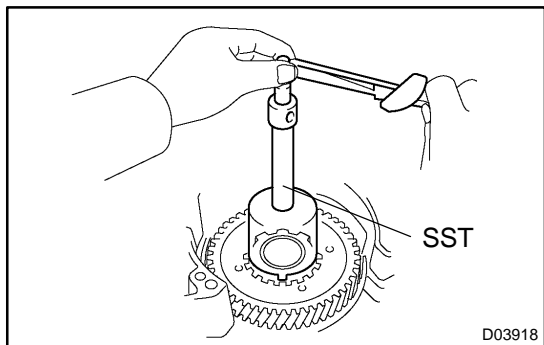
(d) Using SST, install the nut.

SST 09387-00030, 09387-00080

Torque: 185 N·m (1,886 kgf·cm, 136 ft·lbf)

NOTICE:

Install the washer after pressing each part, then tighten the nut to the minimum tightening torque.



- (e) Using SST and a torque wrench, measure the turning torque of the bearing while rotating SST at 60 rpm. When the measured value is not within the specified range, gradually tighten the nut until it falls within the specified range.

SST 09387-00080

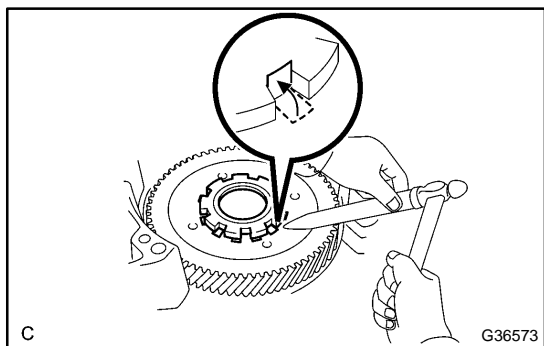
Torque: 350 N·m (3,569 kgf·cm, 258 ft·lbf) (a limit)

Turning torque at 60 rpm:

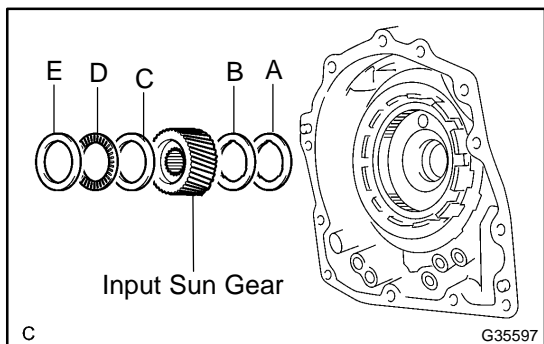
0.19 to 0.4 N·m (1.9 to 4.1 kgf·cm, 1.7 to 3.5 in·lbf)

HINT:

Use a torque wrench with a fulcrum length of 160 mm (6.3 in.) to measure the turning torque.



- (f) Using a chisel and hammer, stake the washer.



95. INSTALL INPUT SUN GEAR

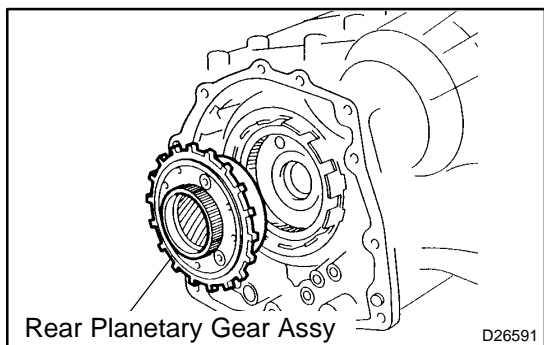
- (a) Coat the 2 thrust bearings with ATF.
 (b) Install the input sun gear, thrust needle roller bearings, 2 thrust bearing race No.2 and thrust bearing race No.3 to the transaxle case.

NOTICE:

- Ensure that the parts are installed in the correct order and direction.

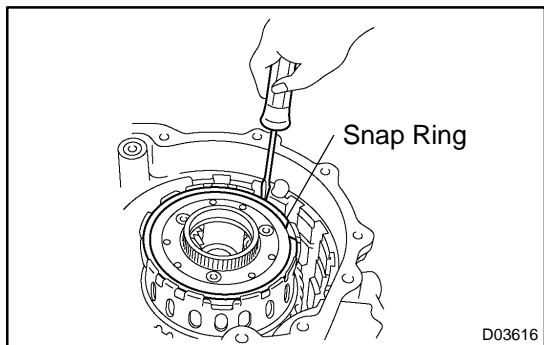
Thrust bearing and bearing race diameter: mm (in.)

	inside	outside
Bearing Race, A	34.5 (1.3583)	56.82 (2.2370)
Thrust Bearing, B	32.4 (1.2756)	56.62 (2.2291)
Bearing Race, C	40.3 (1.5866)	58.0 (2.2835)
Thrust Bearing, D	38.6 (1.5197)	60.0 (2.3622)
Bearing Race, E	38.6 (1.5197)	58.0 (2.2835)



96. INSTALL REAR PLANETARY GEAR ASSY

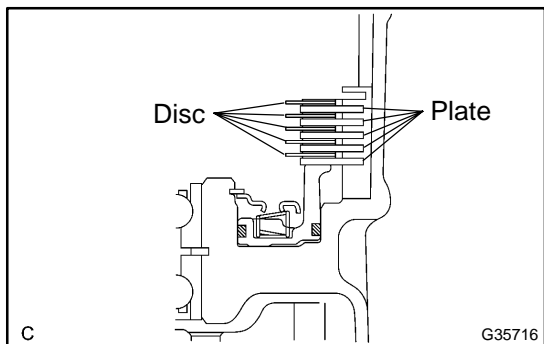
- (a) Install the rear planetary gear assy to the brake hub.



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

NOTICE:

Confirm the snap ring is fixed in the groove of the brake hub correctly.



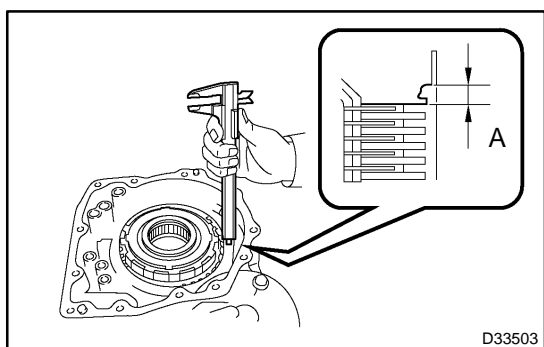
97. INSTALL 1ST & REVERSE BRAKE DISC

(a) Coat the 5 discs with ATF.

(b) Install the 5 plates and 5 discs.

NOTICE:

Be careful about the order of the discs, and plates.



98. INSPECT PACK CLEARANCE OF FIRST & REVERSE BRAKE

(a) Using vernier calipers, measure the distance between the disc surface and the contact surface of the second brake cylinder and transaxle case (Dimension A).

(b) Select an appropriate flange so that the pack clearance will meet the specified values.

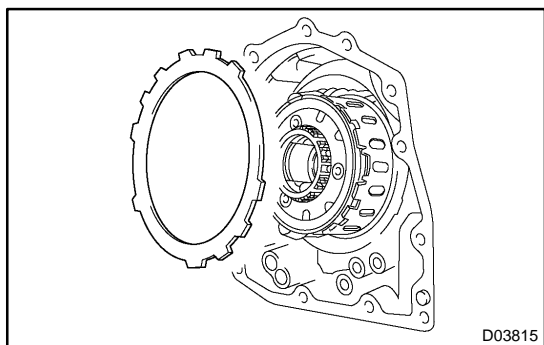
Pack clearance: 0.745 to 1.21 mm (0.0293 to 0.0476 in.)

HINT:

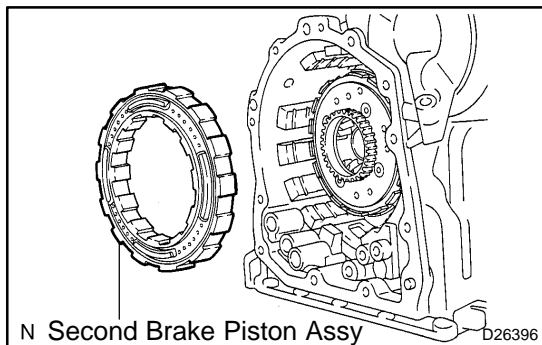
Pack clearance = Dimension A - Flange thickness

Flange thickness: mm (in.)

Mark	Thickness	Mark	Thickness
1	1.8 (0.071)	5	2.2 (0.087)
2	1.9 (0.075)	6	2.3 (0.091)
3	2.0 (0.079)	7	2.4 (0.094)
4	2.1 (0.083)	8	2.5 (0.098)

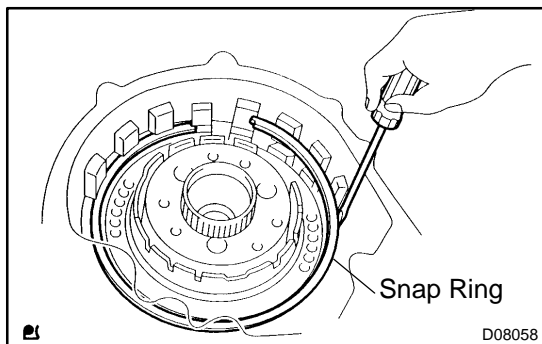


(c) Install the flange.



99. INSTALL SECOND BRAKE PISTON ASSY

(a) Install the second brake piston assy to the transaxle case.

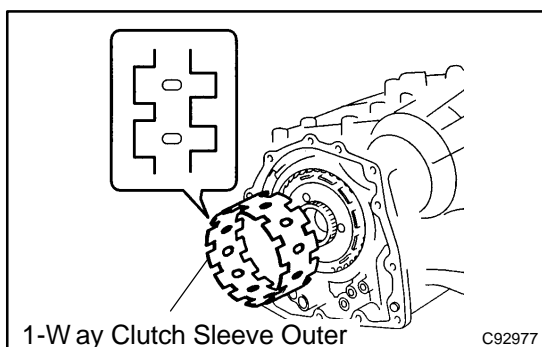


(b) Install the snap ring and measure the snap ring inside diameter.

Inside diameter: More than 167 mm (6.57 in.)

NOTICE:

- Install the tapered snap ring in the correct direction.
- When the diameter does not meet the specified values, replace the snap ring with a new one.
- After assembling, confirm that there is no clearance between the second brake cylinder and the fitting surface of the cylinder in the transaxle case.

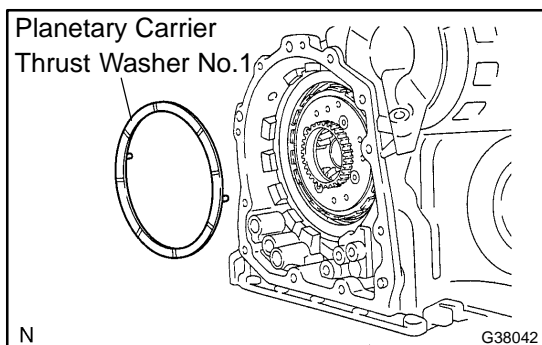


100. INSTALL 1WAY CLUTCH SLEEVE OUTER

(a) Install the 1-way clutch sleeve outer to the second brake cylinder assy.

NOTICE:

Check the direction of the sleeve outer.

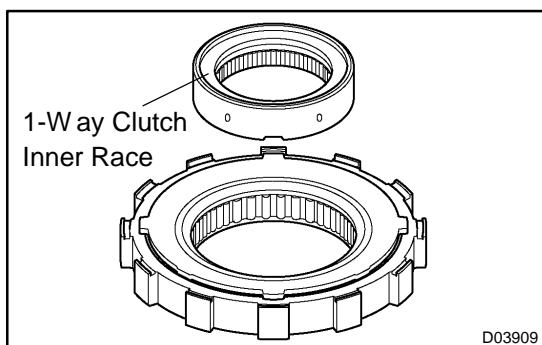


101. INSTALL PLANETARY CARRIER THRUST WASHER NO.1

(a) Coat the planetary carrier thrust washer No.1 with ATF, and install it onto the rear planetary gear assy.

NOTICE:

After installation, confirm that the projection is securely fitted in the hole of the rear planetary gear assembly.

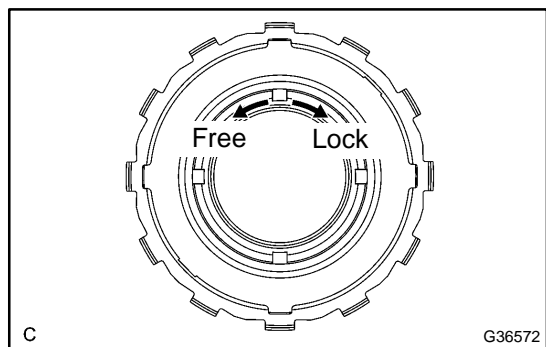


102. INSTALL 1 WAY CLUTCH ASSY

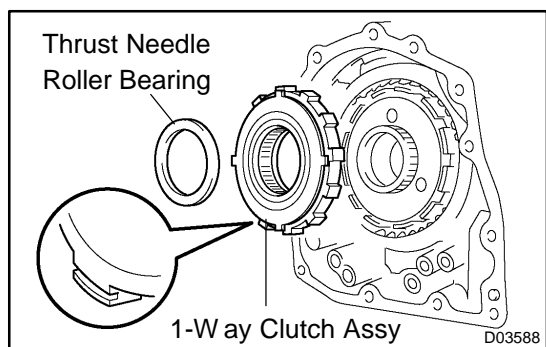
(a) Install the 1-way clutch inner race to the 1-way clutch.

NOTICE:

- Check the direction of the inner race.
- Confirm that the identification mark can be seen.



(b) Check the rotating direction of the 1-way clutch inner race for lock or free operation, as shown in the illustration.



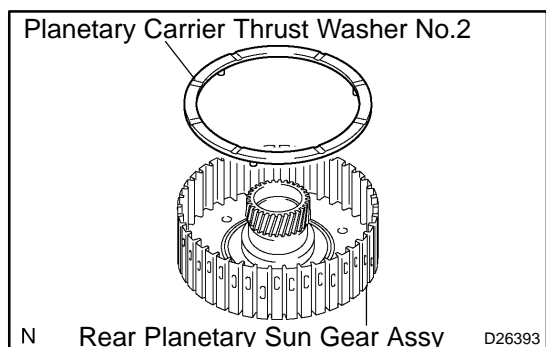
(c) Install the 1-way clutch and thrust needle roller bearing to the 1-way clutch sleeve outer.

Bearing diameter: mm (in.)

	Inside	Outside
Bearing	53.6 (2.1102)	69.6 (2.7402)

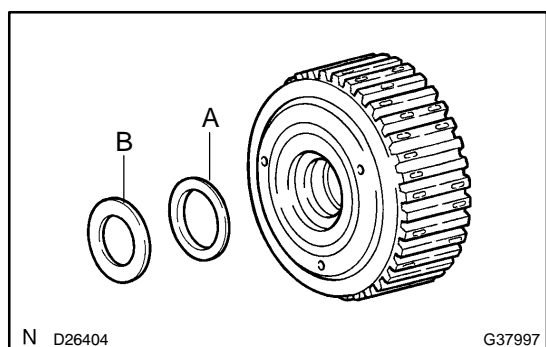
NOTICE:

Install the thrust bearing properly so that no colored race will be visible.



103. INSTALL REAR PLANETARY SUN GEAR ASSY

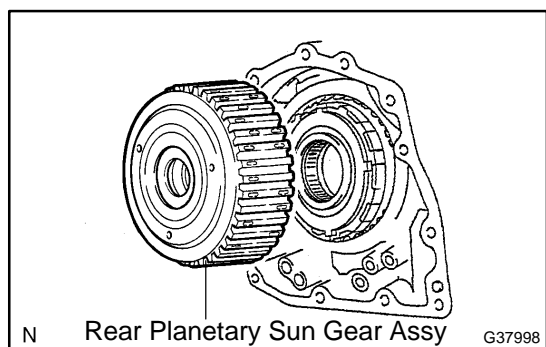
(a) Coat the planetary carrier thrust washer No.2 with ATF, and install it onto the rear planetary sun gear assy.



(b) Coat the thrust needle roller bearing with ATF. Install the thrust bearing race and needle roller bearing onto the rear planetary sun gear.

Bearing diameter: mm (in.)

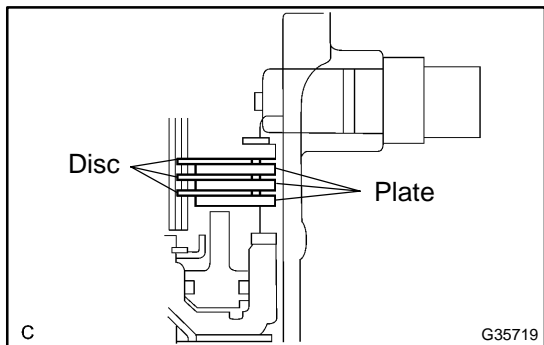
	Inside	Outside
Race, A	33.1 (1.3031)	45.4 (1.7874)
Bearing, B	31.85 (1.2539)	45.2 (1.7795)



(c) Install the rear planetary sun gear assy to the rear planetary gear.

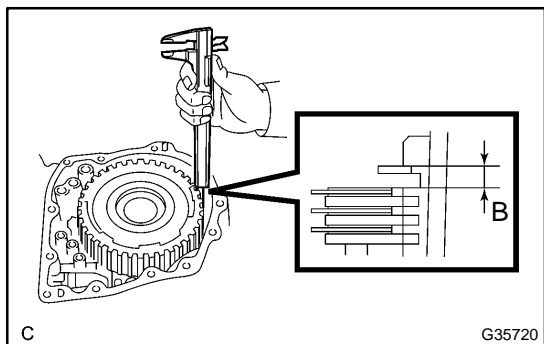
NOTICE:

When installing the rear planetary sun gear assembly, confirm that the discs engage.



104. INSTALL 2ND BRAKE DISC

- (a) Coat the 3 discs with ATF.
- (b) Install the 3 discs and 3 plates to the transaxle case.
- (c) Temporarily install the snap ring.



105. INSPECT PACK CLEARANCE OF SECOND BRAKE

- (a) Using vernier calipers, measure the distance between the disc surface and snap ring surface (Dimension B).
- (b) Select an appropriate flange so that the pack clearance will meet the specified values.

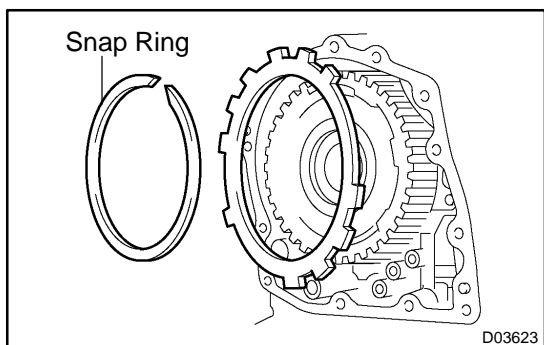
Pack clearance: 0.53 to 0.91 mm (0.0209 to 0.0358 in.)

HINT:

Pack clearance = Dimension B - Flange thickness - Snap ring thickness 1.6 mm (0.063 in.)

Flange thickness: mm (in.)

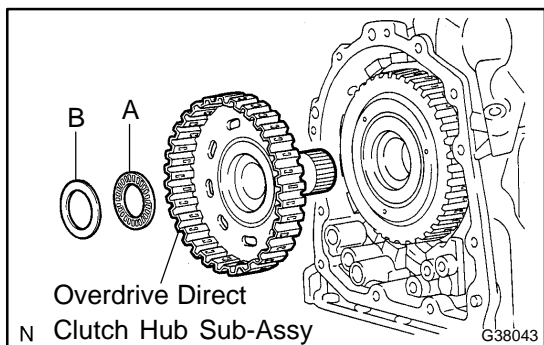
Mark	Thickness	Mark	Thickness
0	2.9 (0.114)	5	3.4 (0.134)
1	3.0 (0.118)	6	3.5 (0.138)
2	3.1 (0.122)	7	3.6 (0.142)
3	3.2 (0.126)	8	3.7 (0.146)
4	3.3 (0.130)	-	-



- (c) Remove the snap ring, attach the selected flange and re-install the snap ring.

NOTICE:

Install the snap ring so that its gap is visible through the groove of the transaxle case.



106. INSTALL OVERDRIVE DIRECT CLUTCH HUB SUB-ASSY

- (a) Install the overdrive direct clutch hub sub-assy to the planetary gear assy.

NOTICE:

Be careful not to damage the bush inside the overdrive clutch hub while installing.

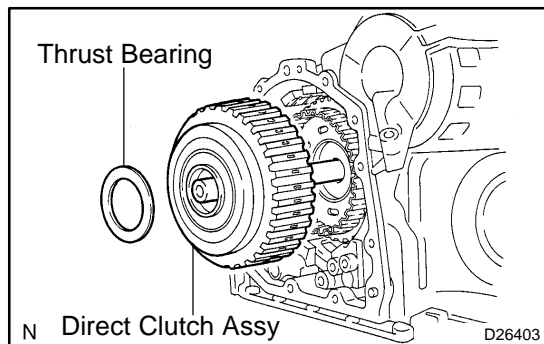
- (b) Coat the thrust bearing with ATF.
- (c) Install the bearing race and the thrust bearing to the direct clutch hub.

NOTICE:

When installing the bearing, hold the overdrive clutch hub side.

Bearing and race diameter: mm (in.)

	Inside	Outside
Bearing, A	25.0 (0.9843)	39.5 (1.5551)
Race, B	23.6 (0.9291)	36.6 (1.4409)

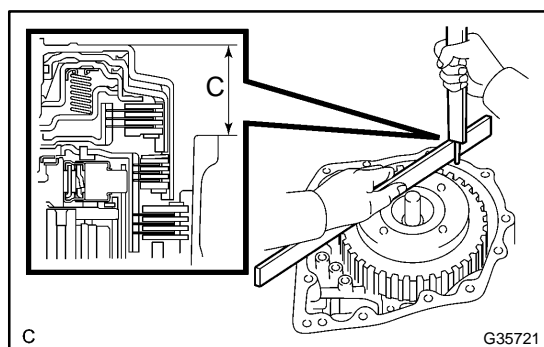


107. INSTALL DIRECT CLUTCH ASSY

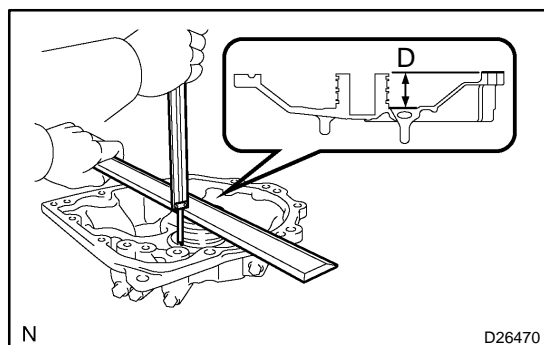
- (a) Coat the thrust bearing with ATF.
- (b) Install the direct clutch assy and thrust bearing to the rear planetary sun gear assy.

NOTICE:

The disc in the direct clutch should completely match with the hub attached outside the rear planetary sun gear. Otherwise, the rear cover cannot be installed.



- (c) Clean the connecting part of the transaxle case and the rear cover.
- (d) As shown in the illustration, place a straight edge on the direct clutch drum and measure the distance between the transaxle case and the straight edge using vernier calipers (Dimension C).



- (e) Using vernier calipers and a simple straight edge, measure the distance shown in the illustration.
- (f) Calculate the end play value using the following formula. Select a thrust bearing which satisfies the end play value and install it.

End play: 0.199 to 0.970 mm (0.0078 to 0.0382 in.)

NOTICE:

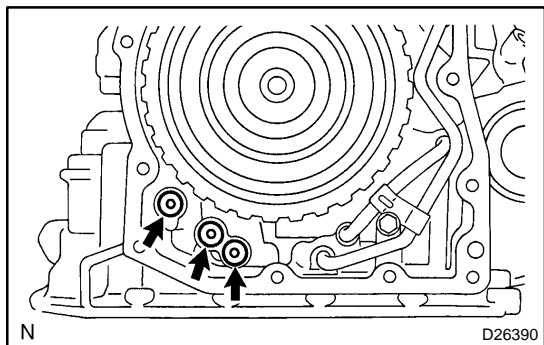
Make sure that the no colored race side is facing the direct clutch assy.

HINT:

End play = Dimension D - Dimension C

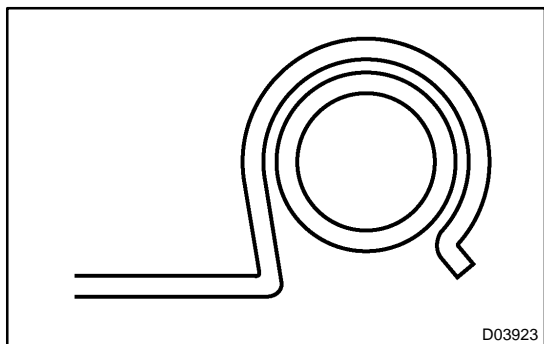
Bearing thickness and diameter : mm (in.)

Thickness	Inside	Outside
3.6 (0.1417)	55.9 (2.2008)	76 (2.9921)
3.9 (0.1535)	55.9 (2.2008)	76.6 (3.0157)



108. INSTALL GOVERNOR APPLY GASKET NO.1

- (a) Install 3 new governor apply gasket No.1 to the transaxle case.

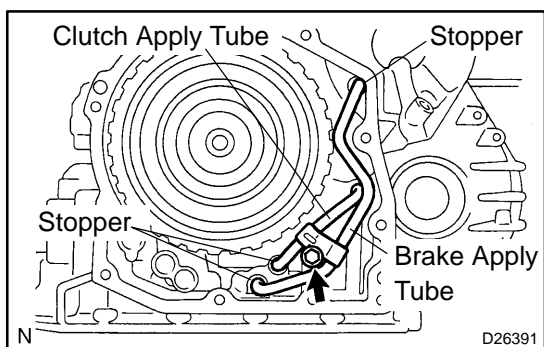


109. INSTALL BRAKE APPLY TUBE

- (a) Install the clamp to the brake apply tube.

NOTICE:

Make sure to install the clamp to the apply tube before installing the apply tube to the transaxle case. This prevents the apply tube from being deformed or damaged.

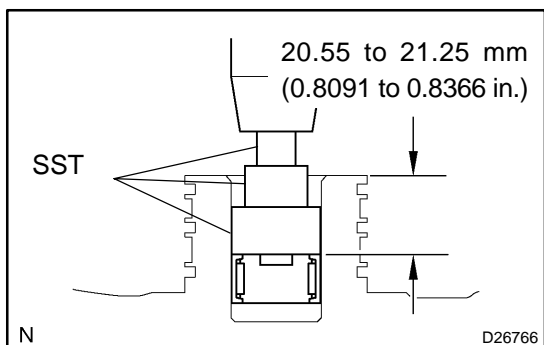


- (b) Install the clutch apply tube.
 (c) Install the brake apply tube to the transaxle case with the bolt.

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

NOTICE:

Each pipe should be securely inserted until it reaches the stopper.



110. INSTALL NEEDLE ROLLER BEARING

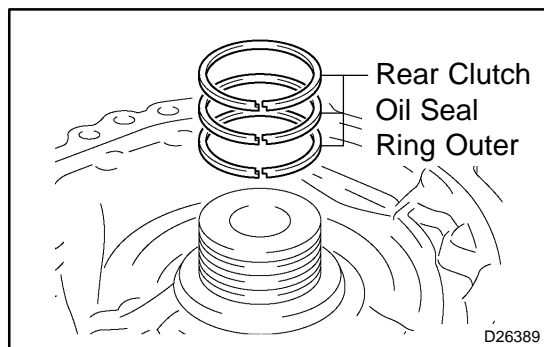
- (a) Using SST and a press, install a new needle roller bearing to the transaxle rear cover.

SST 09950-60010 (09951-00230, 09952-06010, 09951-00360)

Press fit depth: 20.55 to 21.25 mm (0.8091 to 0.8366 in.)

NOTICE:

- Face the inscribed mark side of the bearing race up.
 - Press-fit until the specified value is obtained.
- (b) Coat a needle roller bearing with ATF.

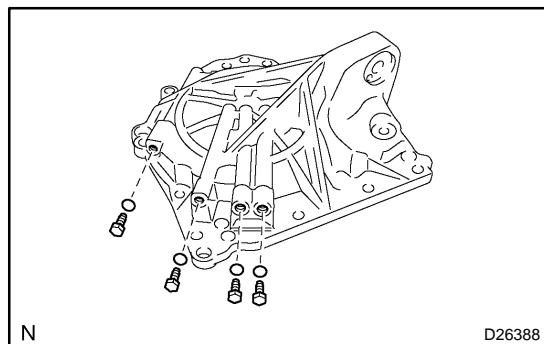


111. INSTALL REAR CLUTCH OIL SEAL RING OUTER

- (a) Coat 3 new rear clutch oil seal ring outers with ATF, and install them to the transaxle rear cover.

NOTICE:

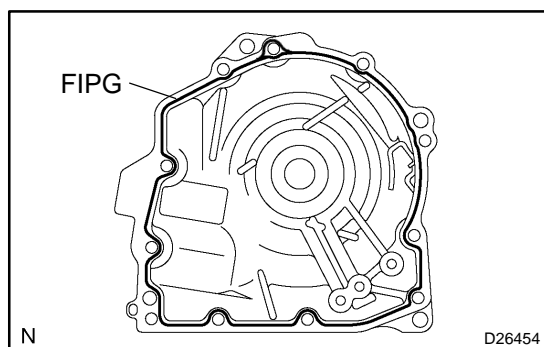
The snap ring should be securely fixed in the groove of the transaxle rear cover.



112. INSTALL TRANSAXLE CASE NO.1 PLUG

- (a) Install 4 new O-rings to the 4 transaxle case No.1 plugs.
- (b) Install the 4 transaxle case No.1 plugs to the transaxle rear cover.

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



113. INSTALL TRANSAXLE REAR COVER SUB-ASSY

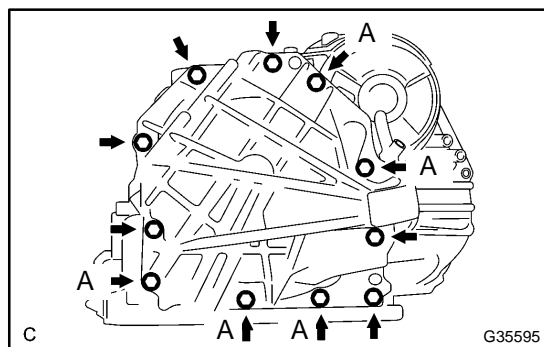
- (a) Remove any packing material and be careful not to get oil on the contacting surfaces of the transaxle rear cover sub-assy and the transaxle case.
- (b) Apply FIPG to the cover.

FIPG:

Part No. 08826-00090, THREE BOND 1281 or equivalent.

NOTICE:

Apply FIPG in a continuous line (width 1.2mm (0.047in.)) along the sealing surface.



- (c) Apply liquid sealer to the "A" bolt threads.

Sealant:

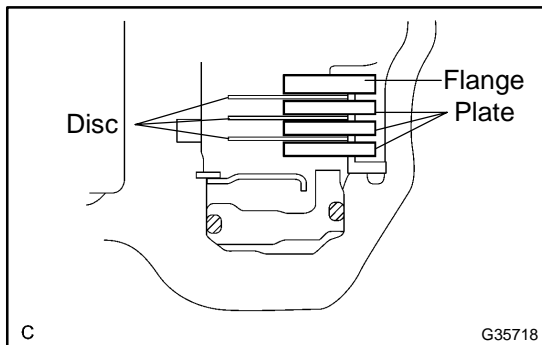
Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent.

- (d) Install the 11 bolts.

Torque:

Bolt A: 19 N·m (190 kgf·cm, 14 ft·lbf)

Other bolts: 25 N·m (250 kgf·cm, 18 ft·lbf)

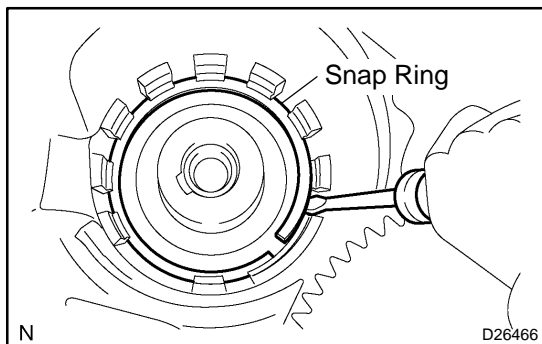


114. INSTALL UNDERDRIVE CLUTCH DISC NO.2

- (a) Coat the 3 discs with ATF.
- (b) Install the 3 discs, 3 plates and flange to the transaxle case.

NOTICE:

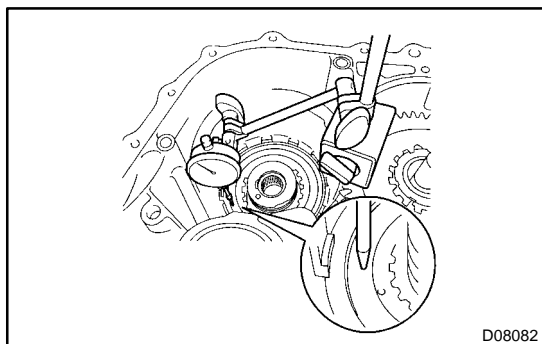
Be careful about the order of the discs, plates and flange.



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

NOTICE:

The snap ring should be securely fixed in the groove of the drum.



115. INSPECT PACK CLEARANCE OF UNDERDRIVE CLUTCH NO.2

- (a) Using a dial indicator, measure the underdrive clutch No.2 pack clearance while applying and releasing compressed air (392 kPa, 4.0 kgf/cm², 57 psi).

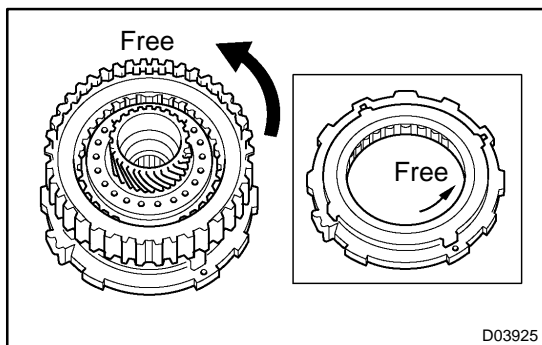
Pack clearance: 1.645 to 2.20 mm (0.0648 to 0.0866 in.)

HINT:

Select an appropriate flange from the table below so that it will meet the specified value.

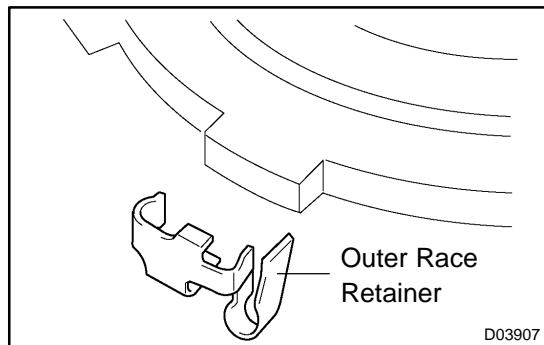
Flange thickness: mm (in.)

Mark	Thickness	Mark	Thickness
Y	2.8 (0.110)	C	3.4 (0.134)
A	3.0 (0.118)	D	3.6 (0.142)
B	3.2 (0.126)	-	-



116. INSPECT UNDERDRIVE 1 WAY CLUTCH ASSY

- (a) Temporarily install the underdrive 1-way clutch assy to the underdrive clutch.
- (b) Rotate the underdrive clutch assy to check the rotating direction for lock or free operation.
- (c) Remove the underdrive 1-way clutch assy.

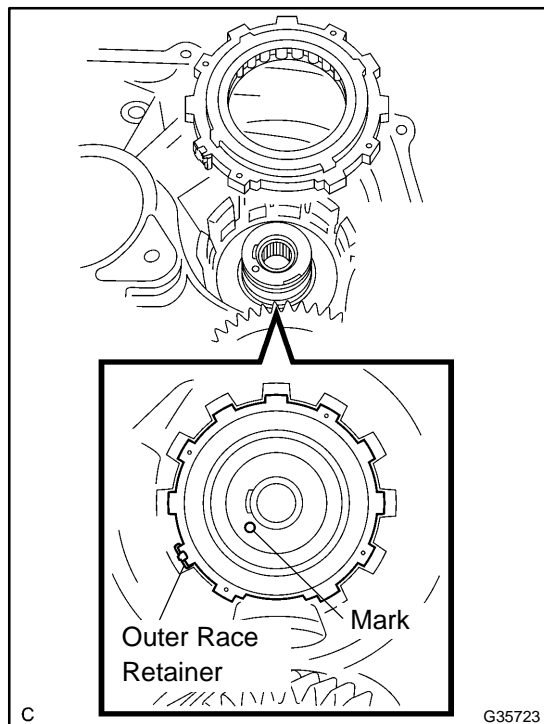


117. INSTALL UNDERDRIVE 1 WAY CLUTCH ASSY

(a) Install the outer race retainer to the underdrive 1-way clutch.

NOTICE:

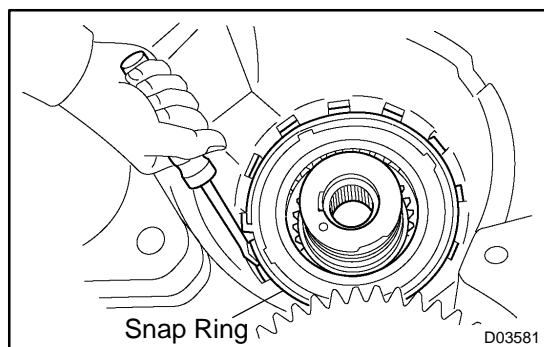
Fix the outer race retainer to the external tooth of the 1-way clutch securely.



(b) Install the 1-way clutch to the transaxle case.

NOTICE:

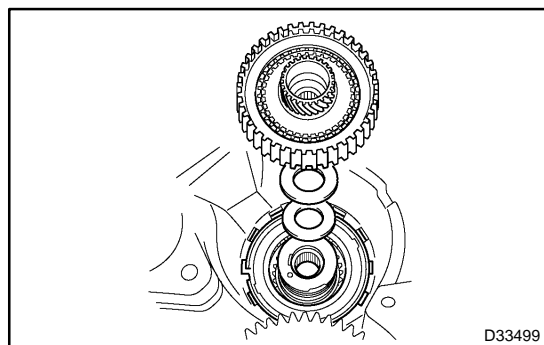
Ensure that the outer race retainer and the mark on the transaxle case are aligned.



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

NOTICE:

The snap ring should be securely fixed in the groove of the transaxle case.



118. INSTALL UNDERDRIVE CLUTCH ASSY

(a) Coat the bearing and bearing race with ATF, and install them onto the underdrive clutch assy.

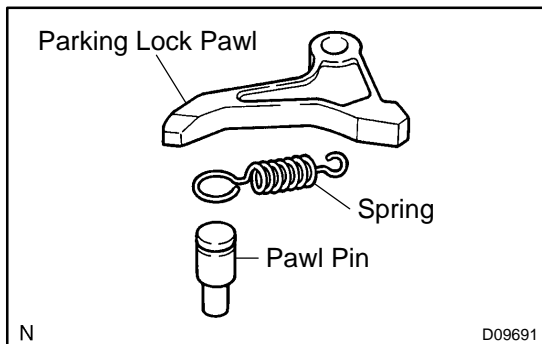
Bearing and bearing race diameter: mm (in.)

	Inside	Outside
Bearing	37.73 (1.4854)	58.0 (2.2835)
Race	29.9 (1.1772)	55.5 (2.1850)

(b) Install the underdrive clutch assy to the transaxle case.

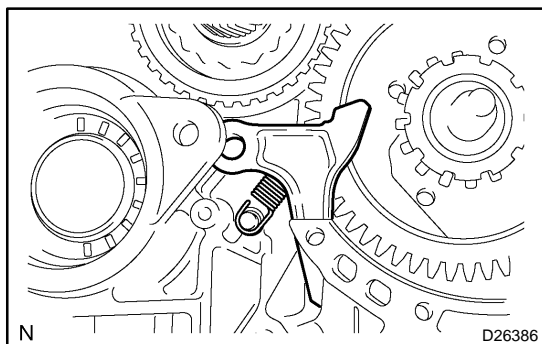
NOTICE:

When installing the underdrive clutch drum assy, be sure not to damage the oil seal rings.

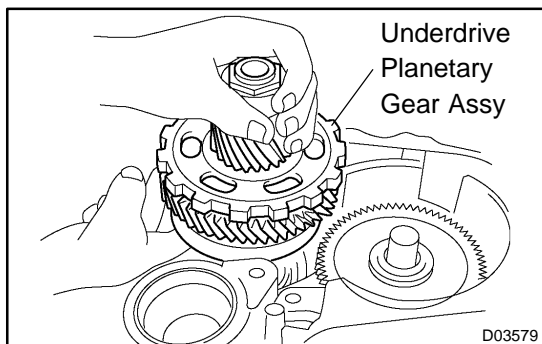


119. INSTALL PARKING LOCK PAWL

(a) Install the pawl pin and spring to the parking lock pawl.



(b) Temporarily install the parking lock pawl, pin and spring to the transaxle case, as shown in the illustration.

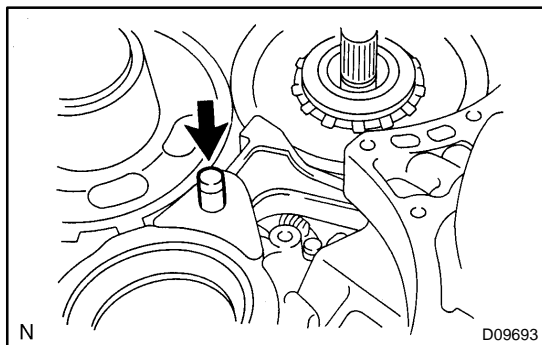


120. INSTALL UNDERDRIVE PLANETARY GEAR ASSY

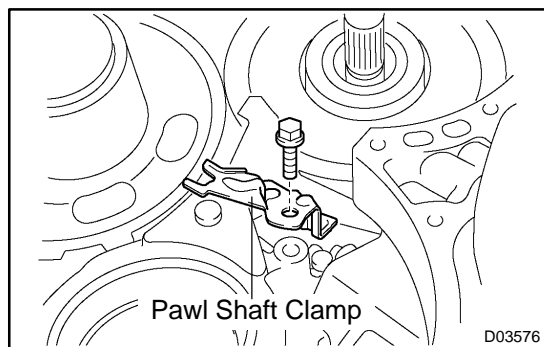
(a) Install the underdrive planetary gear assy to the transaxle case.

NOTICE:

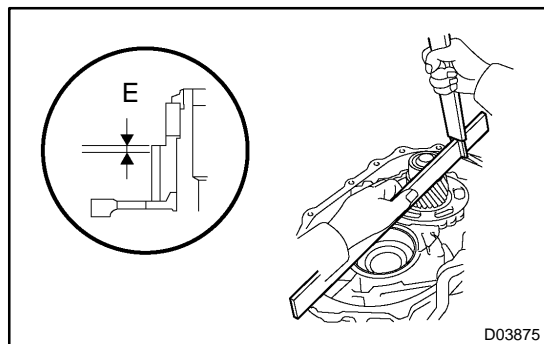
Engage all the discs of the underdrive clutch and hub splines of the underdrive planetary gear assy firmly and assemble them securely.



(b) Install the parking lock pawl shaft.

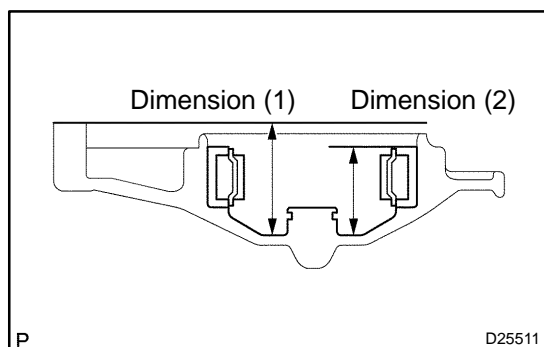


- (c) Install the pawl shaft clamp with the bolt.
Torque: 9.8 N·m (100 kgf·cm, 87 in·lbf)



- (d) Using a straight edge and vernier calipers as shown in the illustration, measure the gap between the top of the differential drive pinion in the underdrive planetary gear and the contact surface of the transaxle case and housing (Dimension E).

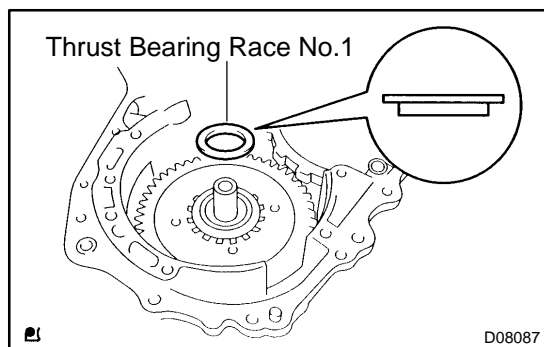
NOTICE:
Note down the dimension E as it is necessary for the following process.



- (e) As shown in the illustration, measure the 2 places of the transaxle housing, and calculate the dimension F using the following formula.

NOTICE:
Note down the dimension F as it is necessary for the following process.

HINT:
 Dimension F = Dimension (1) - Dimension (2)

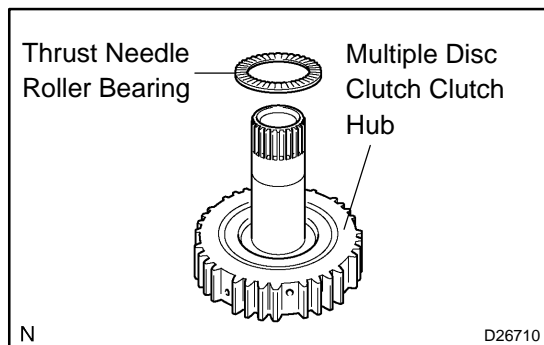


121. INSTALL MULTIPLE DISC CLUTCH CLUTCH HUB

- (a) Install the thrust bearing race No.1 to the transaxle case in the correct direction.

Bearing race diameter: mm (in.)

	Inside	Outside
Bearing race	34.5 (1.3583)	48.5 (1.9094)

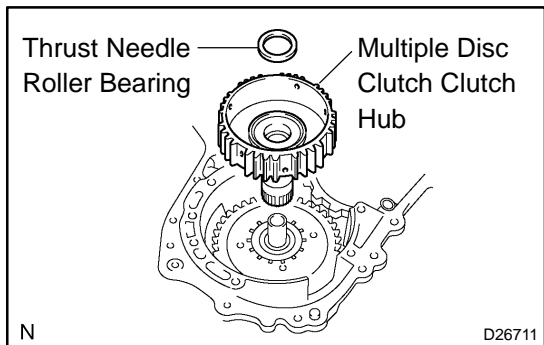


- (b) Coat the thrust needle roller bearing with ATF, and install it onto the multiple disc clutch hub.

Thrust bearing and race diameter: mm (in.)

	Inside	Outside
Thrust Bearing	36.3 (1.4291)	52.2 (2.0551)

- (c) Coat the needle roller bearing with ATF.

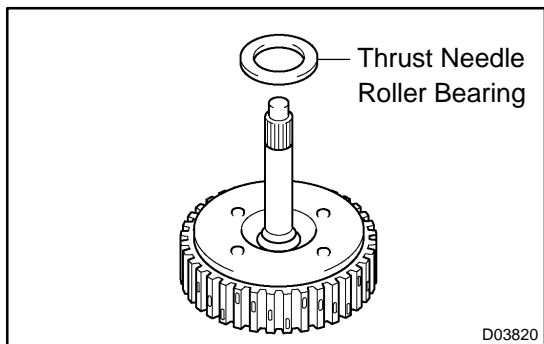


(d) Install the needle roller bearing to the multiple disc clutch clutch hub.

Bearing diameter: mm (in.)

	Inside	Outside
Bearing	23.5 (0.9252)	44.0 (1.7323)

(e) Install the multiple disc clutch clutch hub to the transaxle case.



122. INSTALL FORWARD CLUTCH ASSY

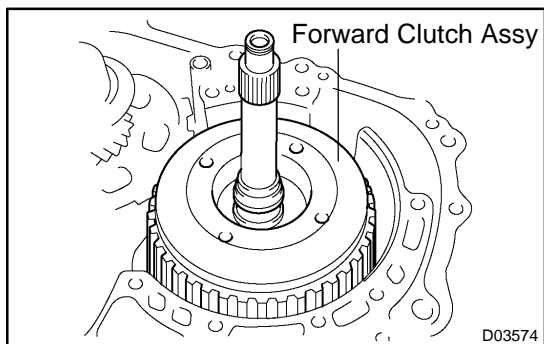
- (a) Coat the thrust needle roller bearing with ATF.
- (b) Install the thrust needle roller bearing to the forward clutch assy.

Thrust bearing diameter: mm (in.)

	Inside	Outside
Thrust Bearing	33.85 (1.3327)	52.2 (2.0551)

NOTICE:

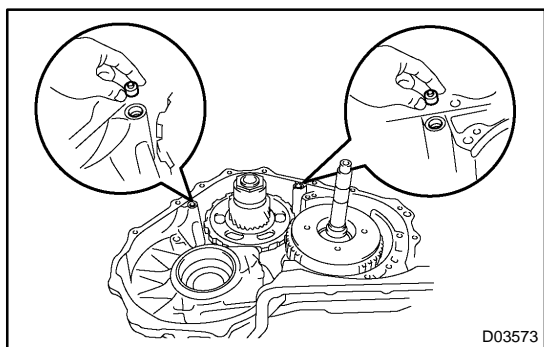
Install the thrust bearing properly so that temper colored race will be visible.



(c) Install the forward clutch assy to the transaxle case.

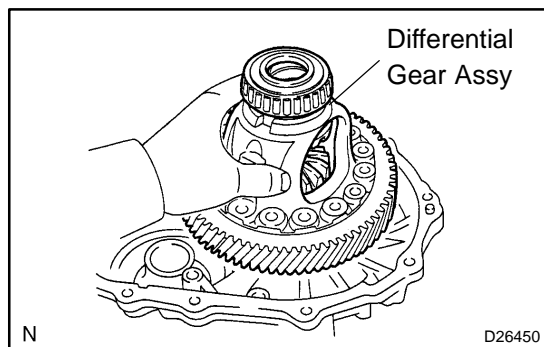
NOTICE:

- Align the splines of all discs in the forward clutch assy with those of the multiple clutch clutch hub to assemble them securely.
- Be careful not to damage the bush inside the forward clutch assy while installing.



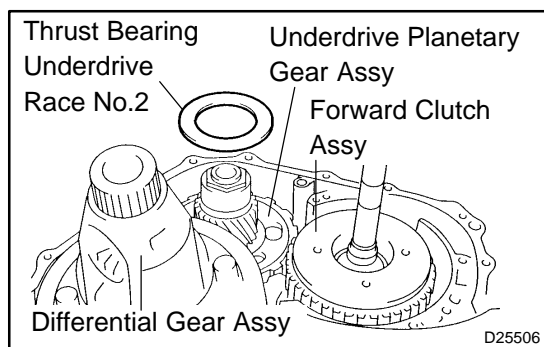
123. INSTALL OVERDRIVE BRAKE GASKET

(a) Install 2 new overdrive brake gaskets.



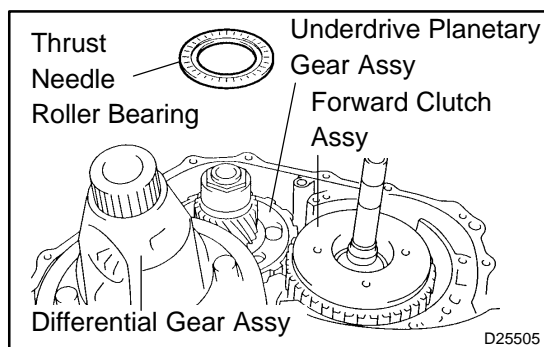
124. INSTALL DIFFERENTIAL GEAR ASSY

- (a) Install the differential gear assy to the transaxle case.



125. INSTALL THRUST BEARING UNDERDRIVE RACE NO.2

- (a) Install the thrust bearing underdrive race No.2 to the underdrive planetary gear assy.



126. INSTALL THRUST NEEDLE ROLLER BEARING

- (a) Coat the thrust needle roller bearing with ATF.
- (b) Calculate the end play value using the following formula. (Dimensions E and F were measured when installing the needle roller bearing and underdrive planetary gear.) Select an appropriate underdrive planetary gear thrust bearing race No.2 which satisfies the specified end play value, and install it.

End play: 0.198 to 0.693 mm (0.00780 to 0.02728 in.)

HINT:

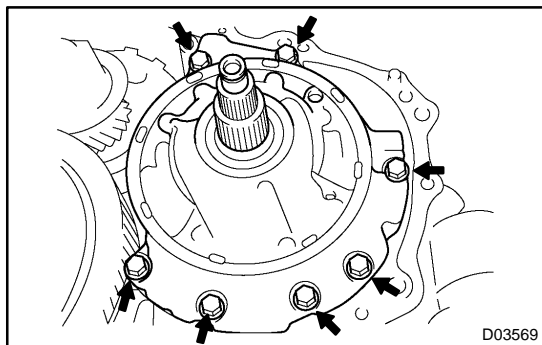
End play = Dimension F - Dimension E - Thrust bearing thickness 2.5 mm (0.0984 in.) - Underdrive thrust bearing race No.2 thickness.

Race thickness: mm (in.)

F - E	Thickness
Less than 7.339 (0.2890)	3.5 (0.138)
7.339 (0.2890) or more	3.8 (0.150)

Bearing and bearing race diameter: mm (in.)

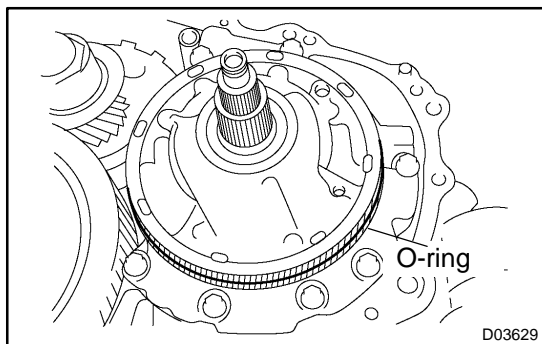
	Inside	Outside
Bearing	53.0 (2.0866)	78.2 (3.0787)
Bearing race	52.1 (2.0512)	75.5 (2.9724)



127. INSTALL OIL PUMP ASSY

- (a) Install the oil pump assy to the transaxle case with the 7 bolts.

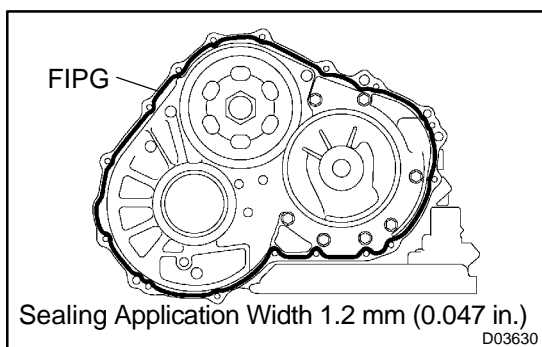
Torque: 22 N·m (225 kgf·cm, 16 ft·lbf)



- (b) Coat the O-ring of the oil pump assy with ATF.

NOTICE:

Confirm the input shaft rotates smoothly with manual operation after assembling the oil pump assy.



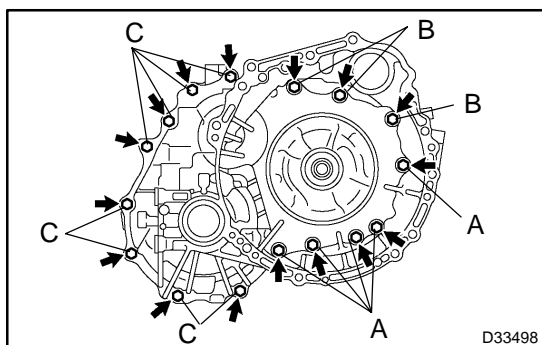
128. INSTALL TRANSAXLE HOUSING

- (a) Remove any packing material and be careful not to get oil on the contacting surface of the transaxle case or transaxle housing.

- (b) Apply FIPG to the transaxle case.

FIPG:

Part No. 08826-00090, THREE BOND 1281 or equivalent



- (c) Install the transaxle housing to the transaxle case with the 16 bolts.

Torque:

Bolt A: 22 N·m (225 kgf·cm, 16 ft·lbf)

Bolt B: 29 N·m (296 kgf·cm, 21 ft·lbf)

Bolt C: 29 N·m (296 kgf·cm, 21 ft·lbf)

HINT:

Apply seal packing or equivalent to the bolts A.

Sealant:

Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent.

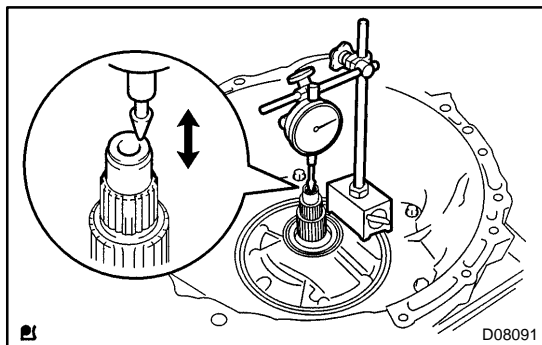
Bolt A: 50 mm (1.969 in.)

Bolt B: 50 mm (1.969 in.)

Bolt C: 42 mm (1.654 in.)

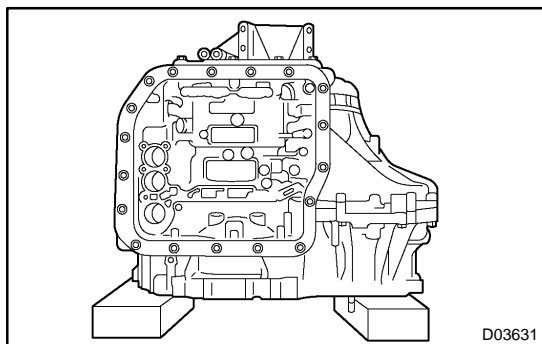
NOTICE:

Because the bolts A are seal bolts, apply seal packing to them and tighten within 10 minutes of application.



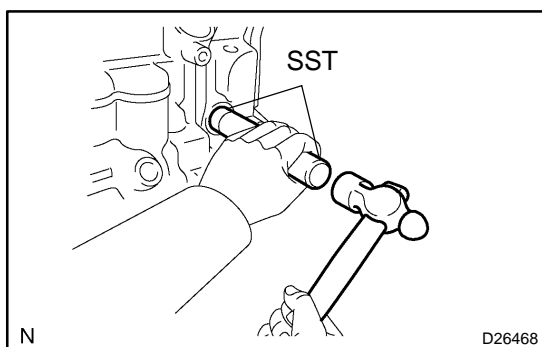
129. INSPECT INPUT SHAFT ENDPLAY

- (a) Using a dial indicator, measure the input shaft end play.
End play: **0.262 to 1.249 mm (0.0100 to 0.0494 in.)**



130. FIX AUTOMATIC TRANSAXLE ASSY

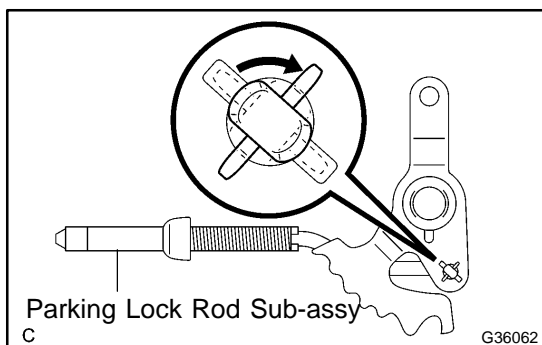
- (a) Fix the transaxle assy.



131. INSTALL MANUAL VALVE LEVER SHAFT OIL SEAL

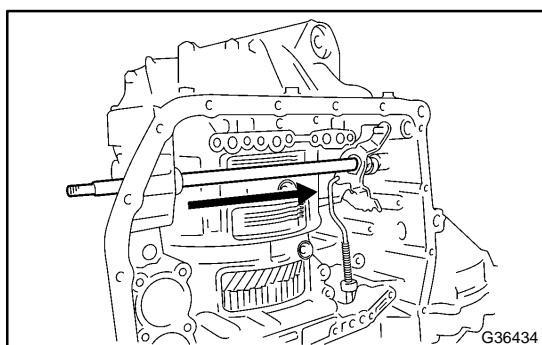
- (a) Coat a new oil seal with MP grease.
- (b) Install the oil seal to the transaxle case.
SST 09950-60010 (09951-00230), 09950-70010 (09951-07100)

Oil seal drive in depth: -0.5 to 0.5 (-0.0197 to 0.0197in.)



132. INSTALL PARKING LOCK ROD SUB-ASSY

- (a) Install the parking lock rod to the manual valve lever.
HINT:
Align the dial with the notches on the manual valve lever and turn the dial 90° to install the parking lock rod.

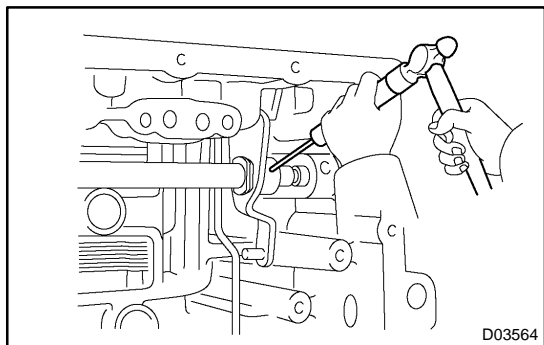


133. INSTALL MANUAL VALVE LEVER SUB-ASSY

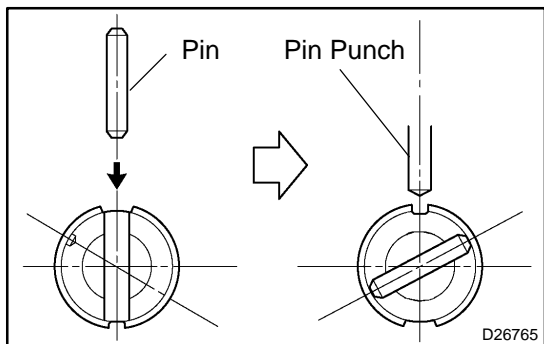
- (a) Install a new spacer and the manual valve lever shaft to the transaxle case.

NOTICE:

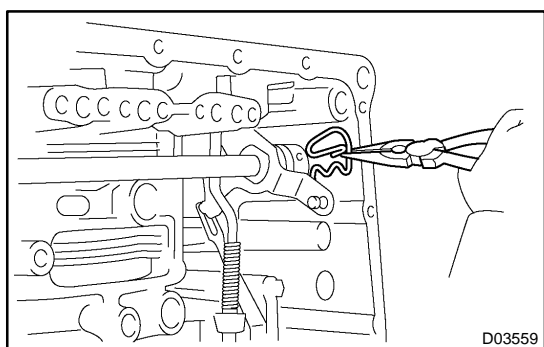
Do not damage the oil seal while installing the shaft to the transaxle case.



(b) Using a pin punch and hammer, drive in a new pin.



- (c) Turn the spacer and the lever shaft to align the smaller hole of the spacer with the staking position mark on the lever shaft.
- (d) Using a pin punch, stake the spacer through the smaller hole.
- (e) Check that the spacer does not turn.

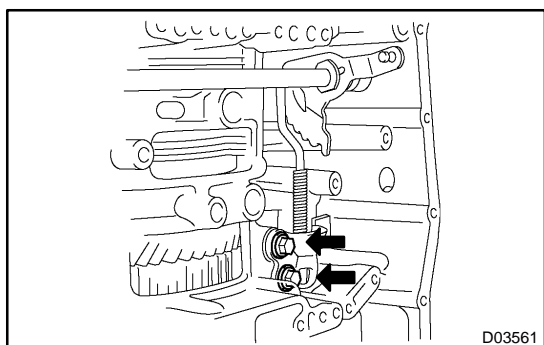


134. INSTALL MANUAL VALVE LEVER SHAFT RETAINER SPRING

(a) Using needle-nose pliers, install the retainer spring.

NOTICE:

Hang the spring on the shaft securely.



135. INSTALL PARKING LOCK PAWL BRACKET

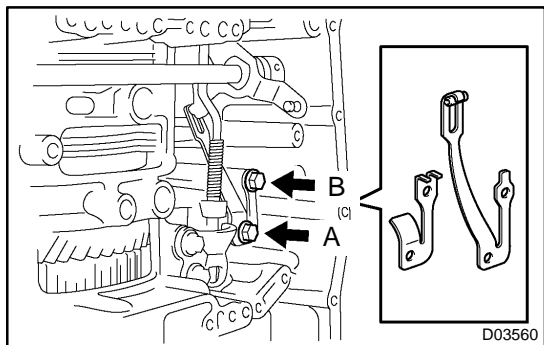
(a) Install the parking lock pawl bracket with the 2 bolts.

Torque: 20 N·m (205 kgf·cm, 15 ft·lbf)

Bolt length: 25 mm (0.984 in.)

NOTICE:

Be sure the parking rod is placed between the parking pawl and the guide of the parking bracket when the parking bracket is installed.



136. INSTALL MANUAL DETENT SPRING SUB-ASSY

(a) Install the manual detent spring sub-assy with the 2 bolts.

NOTICE:

Make sure to install the manual detent spring first and then the cover.

HINT:

First tighten bolt A then bolt B.

Torque:

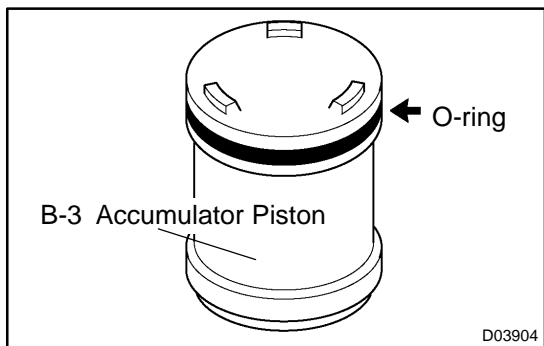
Bolt A: 20 N·m (205 kgf·cm, 15 ft·lbf)

Bolt B: 12 N·m (120 kgf·cm, 9 ft·lbf)

Bolt length:

Bolt A: 27 mm (1.063 in.)

Bolt B: 16 mm (0.630 in.)

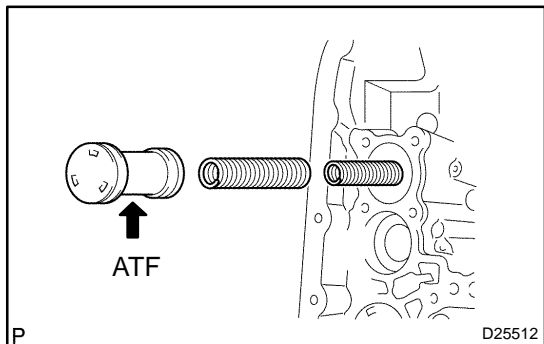


137. INSTALL B-3 ACCUMULATOR PISTON

(a) Coat a new O-ring with ATF, and install it to the B-3 accumulator piston.

NOTICE:

Ensure that the O-ring is not twisted.



(b) Coat the piston with ATF.

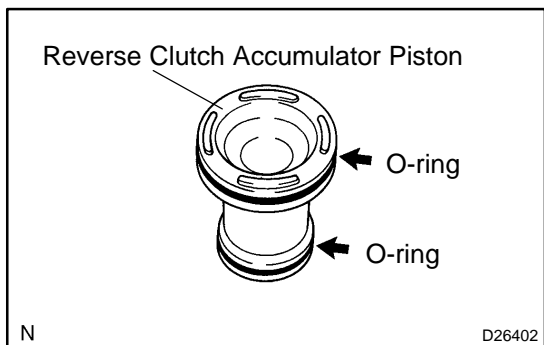
(c) Install the 2 compression springs and piston.

NOTICE:

Install the correct springs to the B-3 accumulator piston by checking the color or dimension of the springs.

Accumulator spring:

Free length Outer diameter mm (in.)	Color
Inner 62.00 (2.4409) / 15.50 (0.610)	Purple
Outer 74.23 (2.9224) / 21.70 (0.854)	Purple

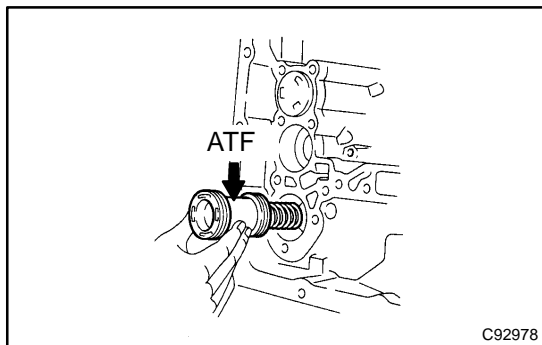


138. INSTALL REVERSE CLUTCH ACCUMULATOR PISTON

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

NOTICE:

Ensure that the O-rings are not twisted.



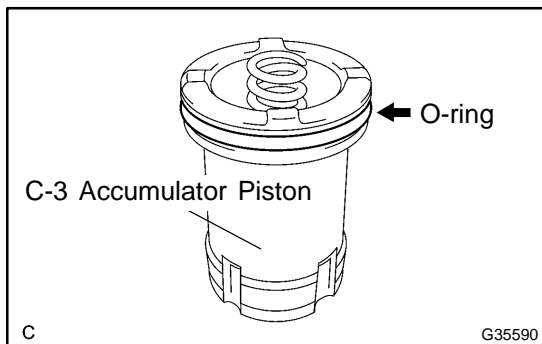
(b) Coat the piston with ATF, and install the spring and piston to the transaxle case.

NOTICE:

Install the correct spring to the reverse accumulator piston by checking the color or dimension of the spring.

Accumulator spring:

Free length Outer diameter mm (in.)	Color
60.96 (2.3999) / 14.10 (0.555)	Yellow

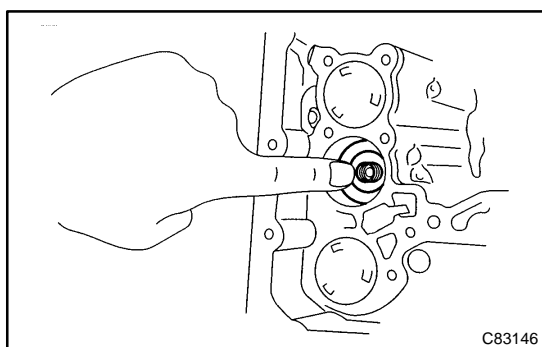


139. INSTALL C-3 ACCUMULATOR PISTON

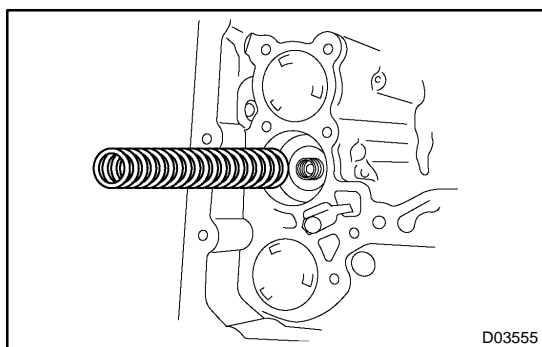
(a) Coat a new O-ring with ATF, and install it to the C-3 accumulator piston.

NOTICE:

Ensure that the O-ring is not twisted.



(b) Coat the piston with ATF, and install it to the transaxle case.



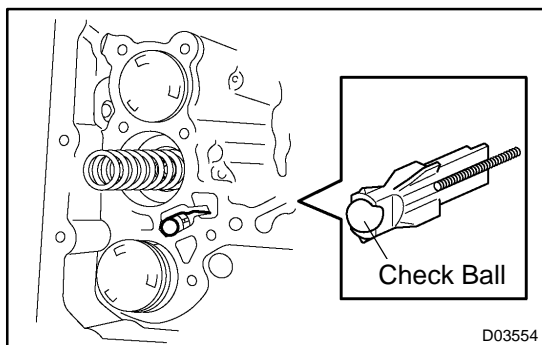
(c) Install the spring to the C-3 accumulator piston.

NOTICE:

Install the correct spring to the C-3 accumulator piston by checking the color or dimension of the spring.

Accumulator spring:

Free length Outer diameter mm (in.)	Color
72.20 (2.8425) / 19.0 (0.748)	Colorless



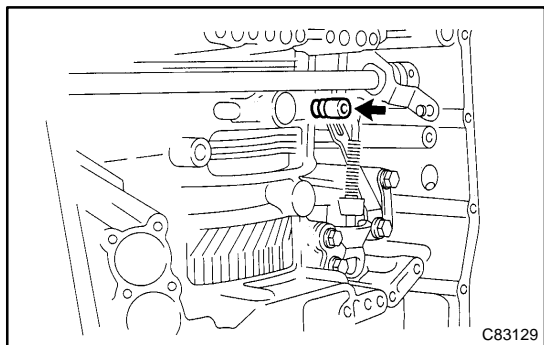
140. INSTALL CHECK BALL BODY

(a) Coat the check ball body with ATF.

(b) Install the check ball body and spring.

NOTICE:

Regarding the installation of the spring for the check ball body, be sure to place the spring in the hole in the ball body. Be careful about the direction of the parts.

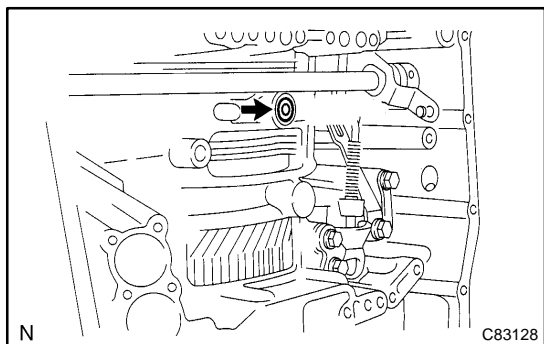


141. INSTALL BRAKE DRUM GASKET

- (a) Coat a new brake drum gasket with ATF, and install it to the transaxle case.

NOTICE:

Be sure not to damage the lip of the brake drum gasket when inserting it to the case. Be careful about the direction of the gasket.

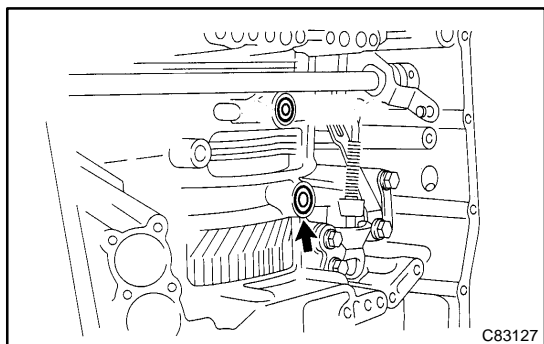


142. INSTALL TRANSAXLE CASE 2ND BRAKE GASKET

- (a) Coat a new transaxle case 2nd brake gasket with ATF, and install it to the transaxle case.

NOTICE:

Be sure not to damage the lip of the 2nd brake gasket when inserting it to the case.

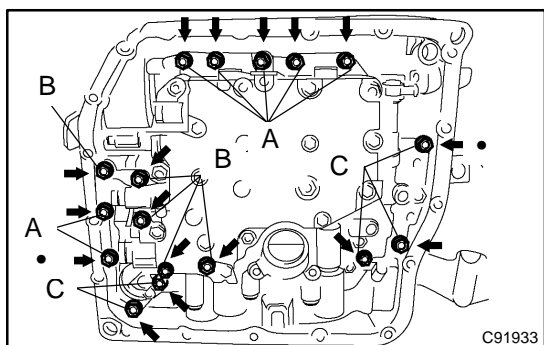


143. INSTALL GOVERNOR APPLY GASKET NO.1

- (a) Coat a new governor apply gasket No.1 with ATF, and install it to the transaxle case.

NOTICE:

Be sure not to damage the lip of the governor apply gasket No.1 when inserting it to the case.



144. INSTALL TRANSMISSION VALVE BODY ASSY

- (a) Confirm the manual valve lever position, and install the valve body with the 17 bolts to the transaxle case.

Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)

Bolt length:

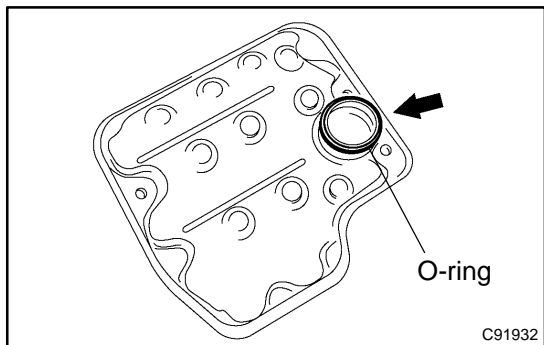
Bolt A: 25 mm (0.984 in.)

Bolt B: 57 mm (2.244 in.)

Bolt C: 41 mm (1.614 in.)

NOTICE:

- Push the valve body against the accumulator piston spring and the check ball body to install it.
- When installing the valve body to the transaxle case, do not hold the solenoids.
- First, temporarily tighten the bolts marked by • in the illustration because they are positioning bolts.

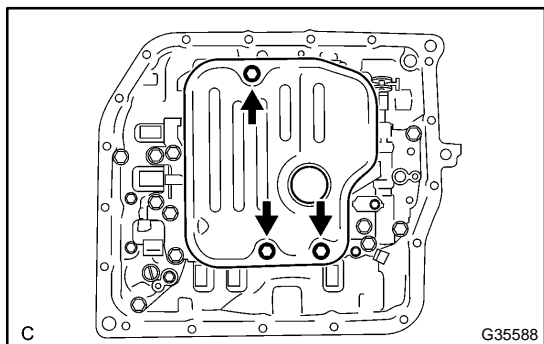


145. INSTALL VALVE BODY OIL STRAINER ASSY

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

NOTICE:

Ensure that the O-ring is not twisted or pinched.

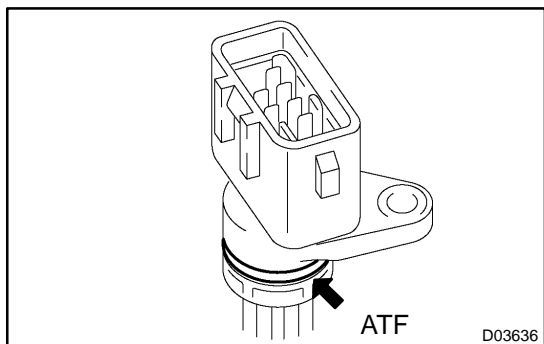


(b) Install the oil strainer to the valve body with the 3 bolts.

Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)

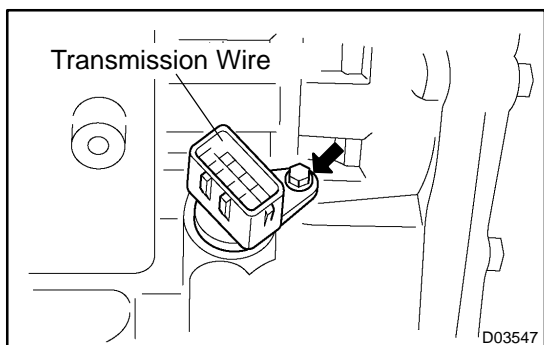
NOTICE:

Apply ATF to the bolts.



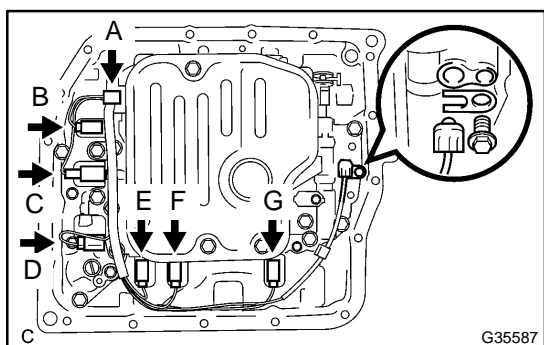
146. INSTALL TRANSMISSION WIRE

(a) Coat the O-ring of the transmission wire with ATF.



(b) Install the transmission wire with the bolt.

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



147. CONNECT TRANSMISSION WIRE

(a) Coat the O-ring of the ATF temperature sensor with ATF.

(b) Install the ATF temperature sensor with the lock plate and bolt.

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

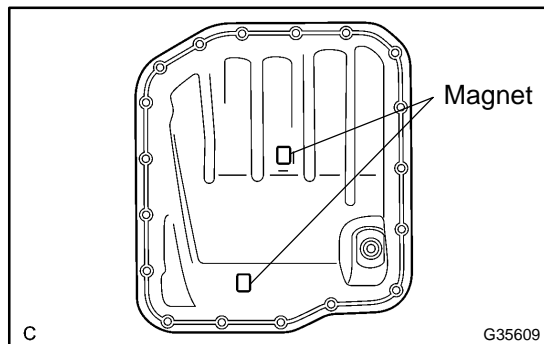
NOTICE:

Apply ATF to the bolt.

(c) Connect the 7 solenoid connectors.

NOTICE:

Connect the connectors in the following order: A, B, C, D, E, F, G

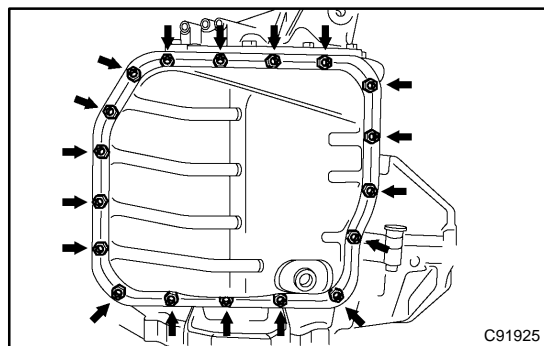


148. INSTALL AUTOMATIC TRANSAXLE OIL PAN SUB-ASSY

- (a) Install the 2 magnets in the oil pan.
- (b) Apply seal packing or equivalent to the 18 bolts.

Sealant:

Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent.



- (c) Install a new oil pan gasket and the oil pan to the transaxle case with the 18 bolts.

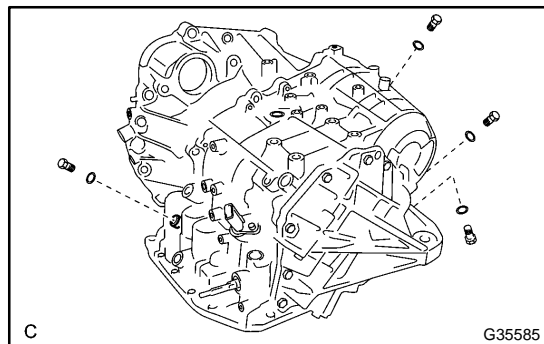
Torque: 7.8 N·m (80 kgf·cm, 69 in·lbf)

NOTICE:

- Because the bolts should be seal bolts, apply seal packing to them and tighten within 10 minutes of application.
- Completely remove any oil or grease from the contacting surface of the transaxle case and the oil pan with the gasket before installation.

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

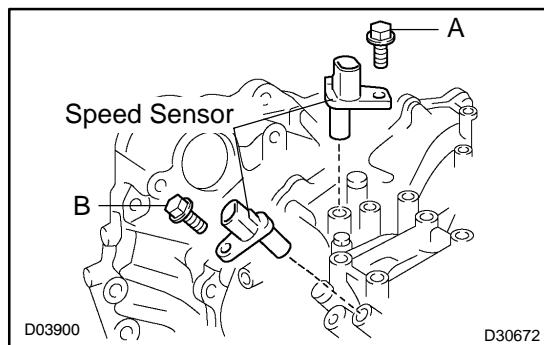
Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)



149. INSTALL TRANSAXLE CASE NO.1 PLUG

- (a) Coat 4 new O-rings with ATF, and install them to the 4 transaxle case No.1 plugs.
- (b) Install the 4 transaxle case No.1 plugs to the transaxle case.

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



150. INSTALL SPEED SENSOR

- (a) Apply liquid sealer to the "A" bolt threads.

Sealant:

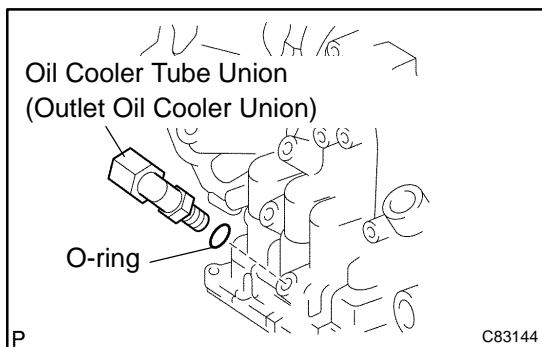
Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent.

- (b) Install the 2 sensors to the transaxle case with the 2 bolts.

Torque:

Bolt A: 8.8 N·m (90 kgf·cm, 79 in·lbf)

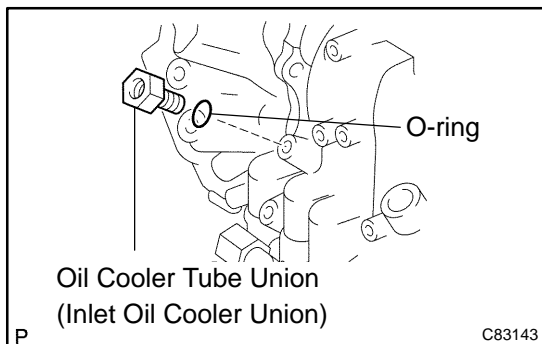
Bolt B: 11 N·m (110 kgf·cm, 8 ft·lbf)



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

- (a) Coat a new O-ring with ATF, and install it to the oil cooler tube union (outlet oil cooler union).
- (b) Install the oil cooler tube union (outlet oil cooler union) to the transaxle case.

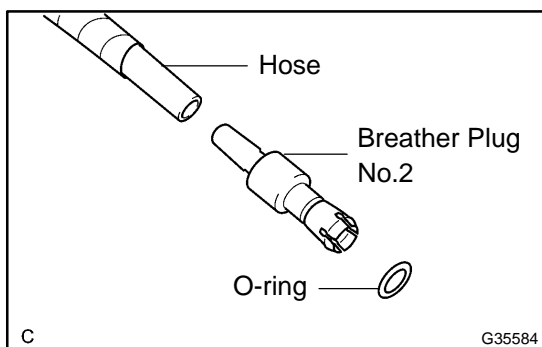
Torque: 27 N·m (276 kgf·cm, 20 ft·lbf)



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

- (a) Coat a new O-ring with ATF, and install it to the oil cooler tube union (inlet oil cooler union).
- (b) Install the oil cooler tube union (inlet oil cooler union) to the transaxle case.

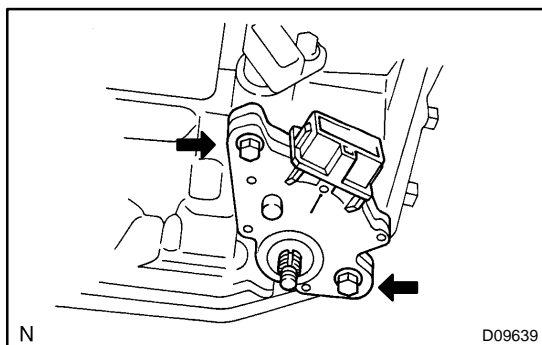
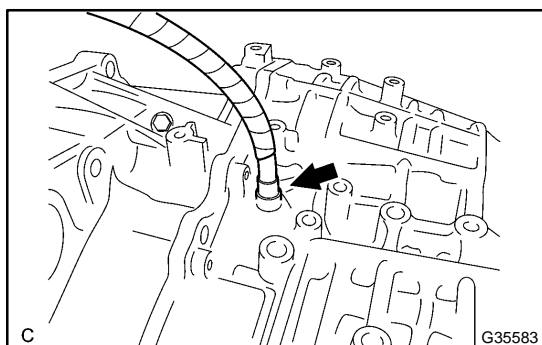
Torque: 27 N·m (275 kgf·cm, 20 ft·lbf)



153. INSTALL BREATHER PLUG NO.2 (ATM)

- (a) Install the hose and a new O-ring to the breather plug No.2 (ATM).

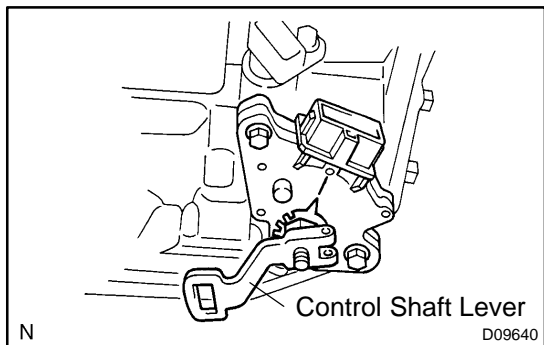
- (b) Install the breather plug No.2 (ATM) to the transaxle case.



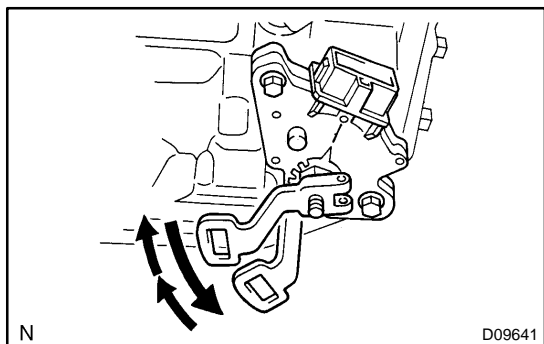
154. INSTALL PARK/NEUTRAL POSITION SWITCH ASSY

- (a) Install the park/neutral position switch onto the manual valve lever shaft and temporarily install the 2 adjusting bolts.
- (b) Install a new nut stopper and the nut.

Torque: 6.9 N·m (70 kgf·cm, 61 in·lbf)

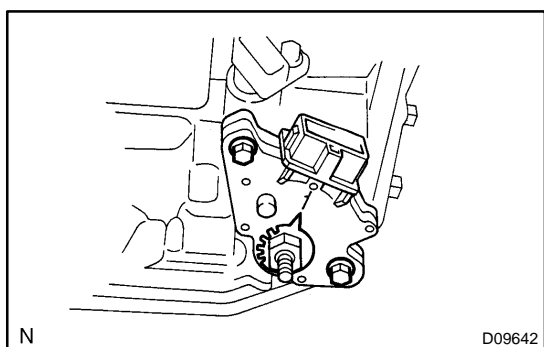


(c) Temporarily install the control shaft lever.



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

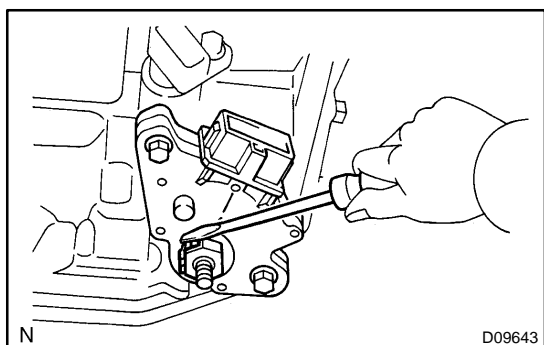
(e) Remove the control shaft lever.



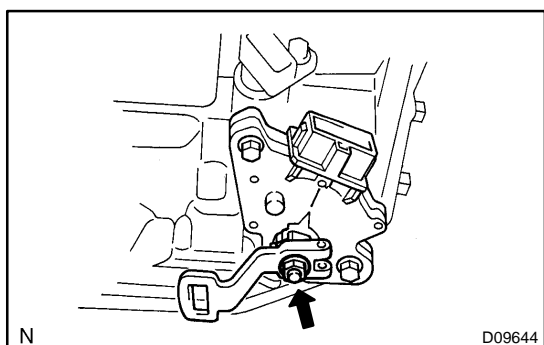
(f) Align the groove with the neutral basic line.

(g) Tighten the 2 bolts.

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



(h) Using a screwdriver, stake the nut stopper.



(i) Install the control shaft lever, washer and nut.

Torque: 13 N·m (130 kgf·cm, 9 ft.-lbf)