FOREWORD

TOYOTA MOTOR CORPORATION

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

Manual Transaxle: C64

Applicable models: COROLLA

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

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

CAUTION

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

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

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

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INTRODUCTION

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HOW TO USE THIS MANUAL TRANSAXLE REPAIR MANUAL

010BW-01

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. Removing and Installing, Replacing, Disassembling, Installing and Checking, Adjusting
3. Final Inspection

(c) This manual explains ”Removing and Installing, Replacing, Disassembling, Installing and Checking, Adjusting”, but ”Final Inspection” is omitted.

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

2. INDEX

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

3. PREPARATION

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

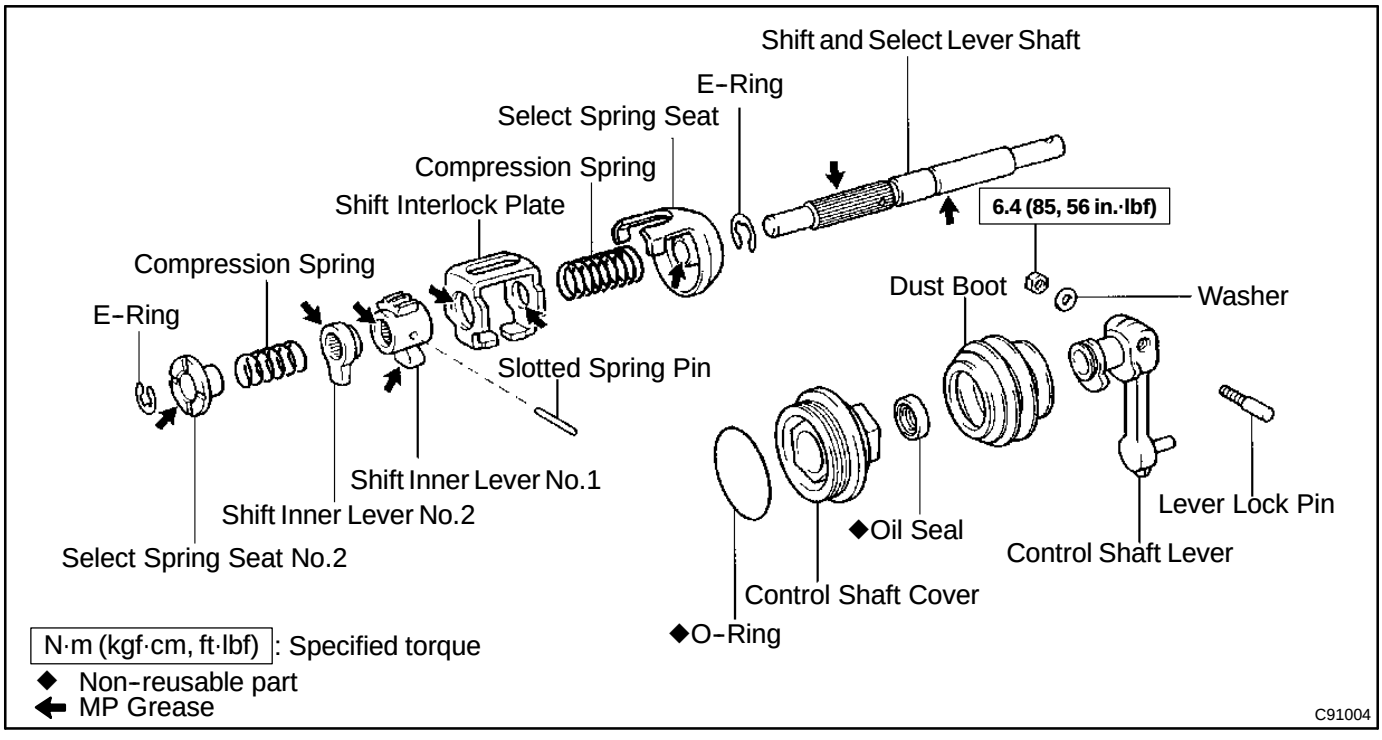
4. REPAIR PROCEDURES

(a) Component drawing is placed as the section or title when 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 components drawing.

Example:



CONTINUED

(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 that case, all the information such as torque, oil, etc. are described in the illustration.

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

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

(g) There may be a case where the illustrations of similar models are used. In that case the details may be different from the actual vehicle.

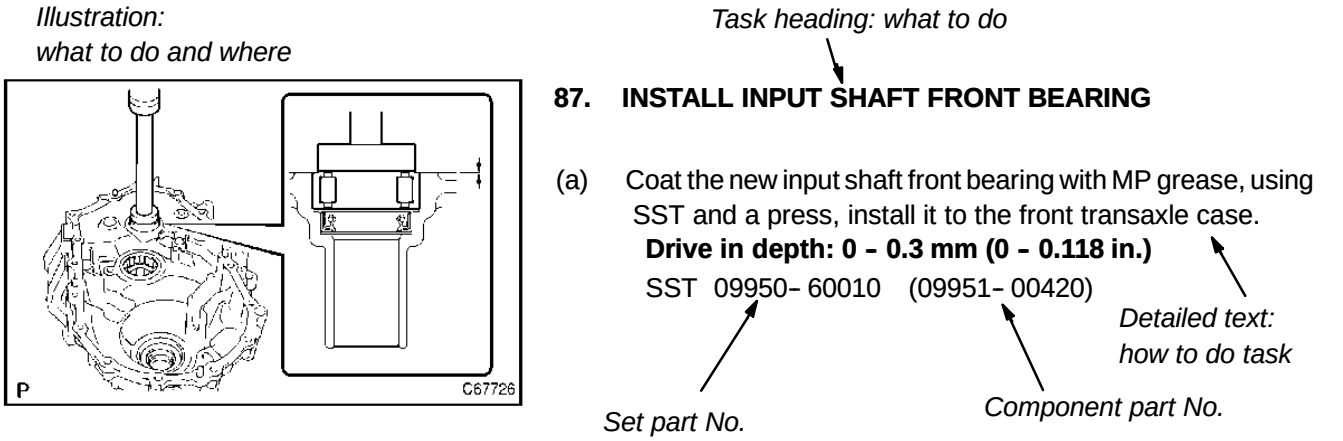
(h) The procedures are presented in a step-by-step format:

(1) The illustration shows what to do and where to do it.

(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:



HINT:

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

5. SERVICE SPECIFICATIONS

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

6. TERMS DEFINITION

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

CONTINUED

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)

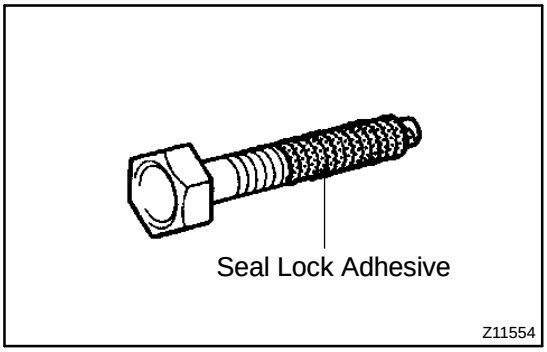
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REPAIR INSTRUCTION FOR MANUAL TRANSAXLE REPAIR MANUAL

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PRECAUTION

1. BASIC REPAIR HINT



(a) PRECOATED PARTS

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

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

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

NOTICE:

Do the torque checking with the lower limit value of the torque tolerance.

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

(b) GASKETS

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

(c) BOLTS, NUTS AND SCREWS

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

CONTINUED

TERMS FOR MANUAL TRANSAXLE REPAIR MANUAL

ABBREVIATIONS USED IN THIS MANUAL

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Abbreviations	Meaning
E/G	Engine
FIPG	Formed In Plce Gasket
MAX	Maximum
MIN	Minimum
MP	Multipurpose
M/T	Manual Transmission
N	Neutral
No.	Number
RH	Right-Hand
SPEC	Specification
SSM	Special Service Materials
SST	Special service Tools
STD	Standard
T/A	Transaxle
T/M	Transmission
TMC	TOYOTA Motor Coporation
w/	With
w/o	Without
1st	First
2nd	Second

CONTINUED

010BZ-01

GLOSSARY OF SAE AND TOYOTA TERMS

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

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

CONTINUED

ISC	Idle Speed Control	-
KS	Knock Sensor	Knock Sensor
MAF	Mass Air Flow	Air Flow Meter
MAP	Manifold Absolute Pressure	Manifold Pressure Intake Vacuum
MC	Mixture Control	Electric Bleed Air Control Valve (EBCV) Mixture Control Valve (MCV) Electric Air Control Valve (EACV)
MDP	Manifold Differential Pressure	-
MFI	Multiport Fuel Injection	Electronic Fuel Injection (EFI)
MIL	Malfunction Indicator Lamp	Check Engine Light
MST	Manifold Surface temperature	-
MVZ	Manifold Vacuum Zone	-
NVRAM	Non-Volatile Random Access Memory	-
O2S	Oxygen Sensor	Oxygen Sensor, O_2 Sensor (O_{2S})
OBD	On-Board Diagnostic	On-Board Diagnostic (OBD)
OC	Oxidation Catalytic Converter	Oxidation Catalyst Converter (OC), CC_0
OP	Open Loop	Open Loop
PAIR	Pulsed Secondary Air Injection	Air Suction (AS)
PCM	Powertrain Control Module	-
PNP	Park/Neutral Position	-
PROM	Programmable Read Only Memory	-
PSP	Power Steering Pressure	-
PTOX	Periodic Trap Oxidizer	Diesel Particulate Filter (DPF) Diesel Particulate Trap (DPT)
RAM	Random Access Memory	Random Access Memory (RAM)
RM	Relay Module	-
ROM	Read Only Memory	Read Only Memory (ROM)
RPM	Engine Speed	Engine Speed
SC	Supercharger	Supercharger
SCB	Supercharger Bypass	-
SFI	Sequential Multiport Fuel Injection	Electronic Fuel Injection (EFI), Sequential Injection
SPL	Smoke Puff Limiter	-
SRI	Service Reminder Indicator	-
SRT	System Readiness Test	-
ST	Scan Tool	-
TB	Throttle Body	Throttle Body
TBI	Throttle Body Fuel Injection	Single Point Injection Central Fuel Injection (Ci)
TC	Turbocharger	Turbocharger
TCC	Torque Converter Clutch	Torque Converter
TCM	Transmission Control Module	Transmission ECU (Electronic Control Unit)
TP	Throttle Position	Throttle Position
TR	Transmission Range	-
TVV	Thermal Vacuum Valve	Bimetallic Vacuum Switching Valve (BVSV) Thermostatic Vacuum Switching Valve (TVSV)
TWC	Three-Way Catalytic Converter	Three-Way Catalytic (TWC) CC_{RO}
TWC+OC	Three-Way + Oxidation Catalytic Converter	CC_R + CC_O
VAF	Volume Air Flow	Air Flow Meter
VR	Voltage Regulator	Voltage Regulator
VSS	Vehicle Speed Sensor	Vehicle Speed Sensor (Read Switch Type)
WOT	Wide Open Throttle	Full Throttle

CONTINUED

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

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PREPARATION

MANUAL TRANSMISSION/TRANSAXLE . . .02–1
PREPARATION 02–1/6

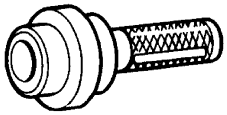
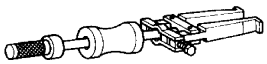
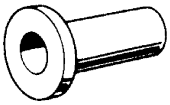
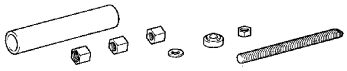
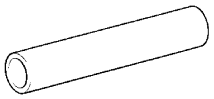
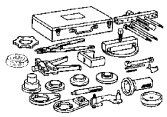
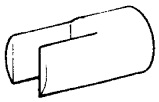
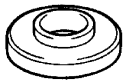
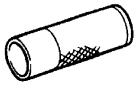
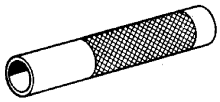
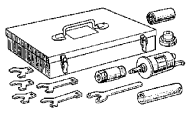
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MANUAL TRANSMISSION/TRANSAXLE

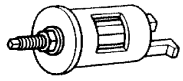
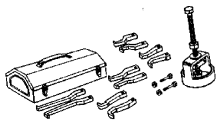
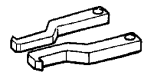
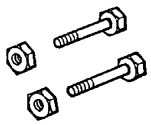
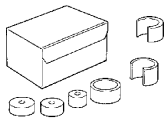
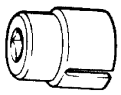
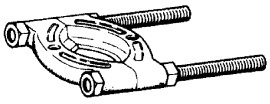
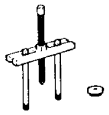
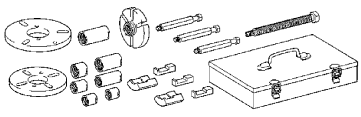
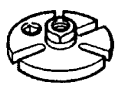
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PREPARATION

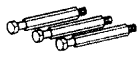
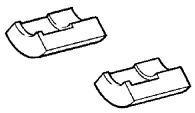
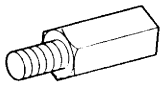
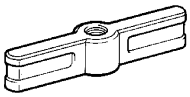
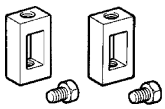
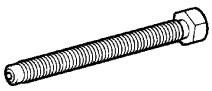
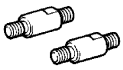
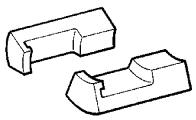
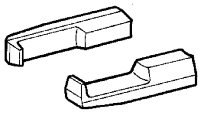
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	09223–50010	Crankshaft Front Oil Seal Replacer	OUTPUT SHAFT ASSY(C64)
	09308–00010	Oil Seal Puller	MANUAL TRANSAXLE ASSY(C64)
	09309–36010	Transmission Rear Bearing Replacer	MANUAL TRANSAXLE ASSY(C64)
	09309–36100	Transmission Bearing Replacer Set	INPUT SHAFT ASSY(C64) OUTPUT SHAFT ASSY(C64)
	(09309–03610)	Body	INPUT SHAFT ASSY(C64) OUTPUT SHAFT ASSY(C64)
	09350–32014	TOYOTA Automatic Transmission Tool Set	MANUAL TRANSAXLE ASSY(C64)
	(09351–32120)	Overdrive Bearing Replacer	MANUAL TRANSAXLE ASSY(C64)
	09564–32011	Differential Preload Adaptor	MANUAL TRANSAXLE ASSY(C64)
	09608–00071	Drive Pinion Rear Bearing Cone Replacer	OUTPUT SHAFT ASSY(C64)
	09608–04031	Front Hub Inner Bearing Cone Replacer	MANUAL TRANSAXLE ASSY(C64) INPUT SHAFT ASSY(C64)
	09612–22011	Tilt Handle Bearing Replacer	OUTPUT SHAFT ASSY(C64)
	09612–24014	Steering Gear Housing Overhaul Tool Set	MANUAL TRANSAXLE ASSY(C64)

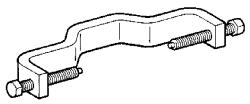
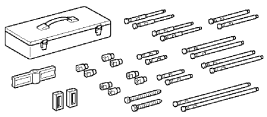
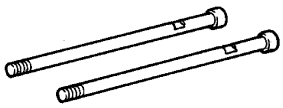
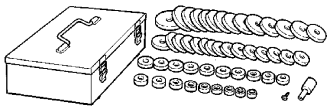
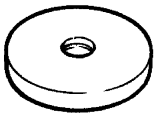
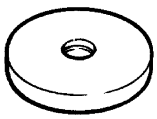
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	(09613–22011)	Steering Rack Shaft Bushing Puller	MANUAL TRANSAXLE ASSY(C64)
	09612–65014	Steering Worm Bearing Puller	MANUAL TRANSAXLE ASSY(C64)
	(09612–01040)	Claw "D"	MANUAL TRANSAXLE ASSY(C64)
	(09612–01050)	Hanger Pin with Nut	MANUAL TRANSAXLE ASSY(C64)
	09710–20011	Front Suspension Bushing Tool Set	MANUAL TRANSAXLE ASSY(C64)
	(09710–06071)	Replacer	MANUAL TRANSAXLE ASSY(C64)
	09726–36010	Lower Control Arm Bushing Replacer	MANUAL TRANSAXLE ASSY(C64)
	09817–16011	Back–up Light Switch Tool	MANUAL TRANSAXLE ASSY(C64)
	09950–00020	Bearing Remover	MANUAL TRANSAXLE ASSY(C64) INPUT SHAFT ASSY(C64) OUTPUT SHAFT ASSY(C64)
	09950–00030	Bearing Remover Attachment	MANUAL TRANSAXLE ASSY(C64)
	09950–30012	Puller A Set	MANUAL TRANSAXLE ASSY(C64)
	(09951–03010)	Upper Plate	MANUAL TRANSAXLE ASSY(C64)
	(09953–03010)	Center Bolt	MANUAL TRANSAXLE ASSY(C64)

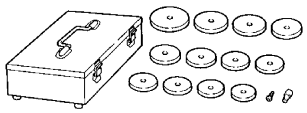
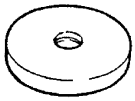
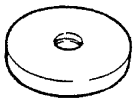
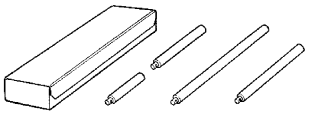
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	(09954–03010)	Arm	MANUAL TRANSAXLE ASSY(C64)
	(09955–03011)	Claw No.1	MANUAL TRANSAXLE ASSY(C64)
	(09956–03080)	Adapter10	MANUAL TRANSAXLE ASSY(C64)
	(09957–04010)	Attachment	MANUAL TRANSAXLE ASSY(C64)
	09950–40011	Puller B Set	MANUAL TRANSAXLE ASSY(C64)
	(09951–00390)	Replacer 39	MANUAL TRANSAXLE ASSY(C64)
	(09951–04010)	Hanger 150	MANUAL TRANSAXLE ASSY(C64)
	(09952–04010)	Slide Arm	MANUAL TRANSAXLE ASSY(C64)
	(09953–04020)	Center Bolt 150	MANUAL TRANSAXLE ASSY(C64)
	(09954–04010)	Arm 25	MANUAL TRANSAXLE ASSY(C64)
	(09955–04021)	Claw No.2	MANUAL TRANSAXLE ASSY(C64)
	(09955–04061)	Claw No.6	MANUAL TRANSAXLE ASSY(C64)
	(09957–04010)	Attachment	MANUAL TRANSAXLE ASSY(C64)

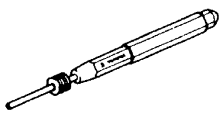
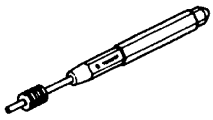
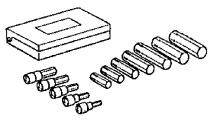
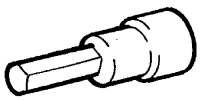
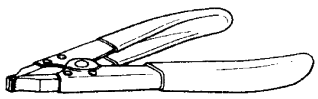
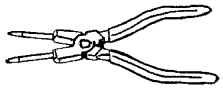
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	(09958–04011)	Holder	MANUAL TRANSAXLE ASSY(C64)
	09950–50013	Puller C Set	MANUAL TRANSAXLE ASSY(C64)
	(09954–05040)	Claw No.4	MANUAL TRANSAXLE ASSY(C64)
	09950–60010	Replacer Set	MANUAL TRANSAXLE ASSY(C64) INPUT SHAFT ASSY(C64) OUTPUT SHAFT ASSY(C64) SHIFT & SELECT LEVER SHAFT ASSY(C64)
	(09951–00190)	Replacer 19	MANUAL TRANSAXLE ASSY(C64)
	(09951–00280)	Replacer 28	SHIFT & SELECT LEVER SHAFT ASSY(C64)
	(09951–00370)	Replacer 37	MANUAL TRANSAXLE ASSY(C64)
	(09951–00390)	Replacer 39	MANUAL TRANSAXLE ASSY(C64)
	(09951–00420)	Replacer 42	MANUAL TRANSAXLE ASSY(C64)
	(09951–00450)	Replacer 45	INPUT SHAFT ASSY(C64) OUTPUT SHAFT ASSY(C64)
	(09951–00530)	Replacer 53	MANUAL TRANSAXLE ASSY(C64)
	(09951–00550)	Replacer 55	MANUAL TRANSAXLE ASSY(C64)
	(09951–00600)	Replacer 60	MANUAL TRANSAXLE ASSY(C64)

CONTINUED

	09950-60020	Replacer Set No.2	MANUAL TRANSAXLE ASSY(C64)
	(09951-00680)	Replacer 68	MANUAL TRANSAXLE ASSY(C64)
	(09951-00710)	Replacer 71	MANUAL TRANSAXLE ASSY(C64)
	09950-70010	Handle Set	MANUAL TRANSAXLE ASSY(C64) SHIFT & SELECT LEVER SHAFT ASSY(C64)
	(09951-07100)	Handle 100	MANUAL TRANSAXLE ASSY(C64)
	(09951-07150)	Handle 150	MANUAL TRANSAXLE ASSY(C64) SHIFT & SELECT LEVER SHAFT ASSY(C64)

Recomended Tools

	09031-00030	Pin Punch	DIFFERENTIAL CASE ASSY(C64)
	09031-00040	Pin Punch .	SHIFT & SELECT LEVER SHAFT ASSY(C64)
	09040-00011	Hexagon Wrench Set	MANUAL TRANSAXLE ASSY(C64)
	(09043-20060)	Socket Hexagon Wrench 6	MANUAL TRANSAXLE ASSY(C64)
	09905-00012	Snap Ring No.1 Expander	MANUAL TRANSAXLE ASSY(C64) SHIFT & SELECT LEVER SHAFT ASSY(C64)
	09905-00013	Snap Ring Pliers	SHIFT & SELECT LEVER SHAFT ASSY(C64)

CONTINUED

Equipment

V-block	
Cylinder gauge	
Dial indicator or dial indicator with magnetic base	
Feeler gauge	
Micrometer	
Torque wrench	
Vernier calipers	
Chisel	
Plastic hammer	
Slide calipers	
Press	
Heater	

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	

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SERVICE SPECIFICATIONS

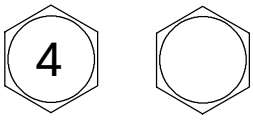
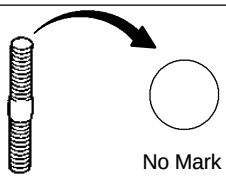
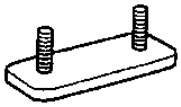
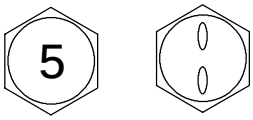
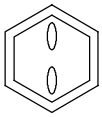
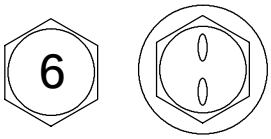
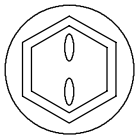
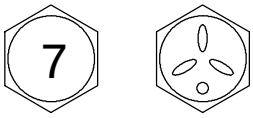
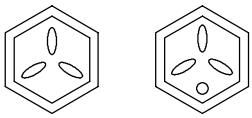
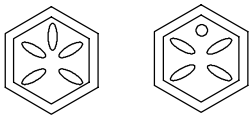
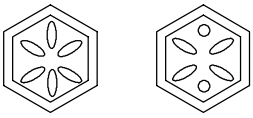
STANDARD BOLT 03-1
HOW TO DETERMINE BOLT STRENGTH 03-1
SPECIFIED TORQUE
FOR STANDARD BOLTS 03-2
HOW TO DETERMINE NUT STRENGTH 03-3
MANUAL TRANSMISSION /
TRANSAXLE 03-4
SERVICE DATA 03-4/6
TORQUE SPECIFICATION 03-7

CONTINUED

STANDARD BOLT

HOW TO DETERMINE BOLT STRENGTH

030LK-01

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

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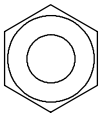
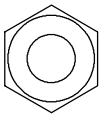
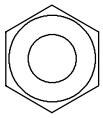
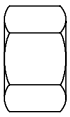
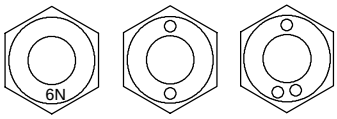
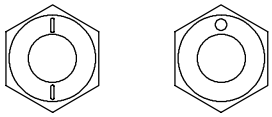
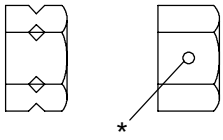
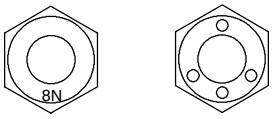
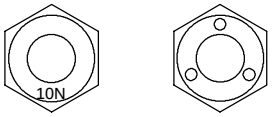
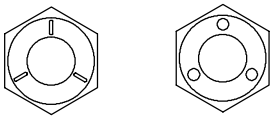
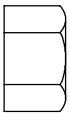
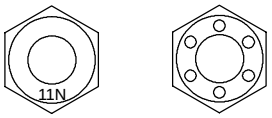
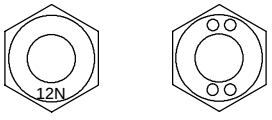
SPECIFIED TORQUE FOR STANDARD BOLTS

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

CONTINUED

030LM-01

HOW TO DETERMINE NUT STRENGTH

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

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

B06432

HINT:

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

Example: Bolt = 4T

Nut = 4N or more

MANUAL TRANSMISSION / TRANSAXLE

SERVICE DATA

030LP-01

Manual transaxle assy		
6th gear thrust clearance	Standard clearance :	0.10 – 0.60 mm (0.0039 – 0.0236 in.)
5th gear thrust clearance	Standard clearance :	0.10 – 0.62 mm (0.0039 – 0.0244 in.)
6th gear radial clearance	Standard clearance :	0.009 – 0.050 mm (0.0004 – 0.0020 in.)
5th gear radial clearance	Standard clearance :	0.015 – 0.056 mm (0.0006 – 0.0022 in.)
Transmission hub sleeve No.3 groove – thickness of the claw part of shift fork No.3	Standard clearance :	0.31 – 0.89 mm (0.0122 – 0.035 in.)
Between synchronizer ring No.3 back and 6th gear spline end	Standard clearance :	0.75 – 1.65 mm (0.0295 – 0.065 in.)
6th gear inner diameter	New gear: Max:	28.015 – 28.031 mm (1.103 – 1.1036 in.) 28.031 mm (1.1036 in.)
Between synchronizer ring No.3 back and 5th gear spline end	Standard clearance :	0.75 – 1.65 mm (0.0295 – 0.0650 in.)
5th gear inner diameter	New gear: Max:	29.915 – 29.931 mm (1.1778 – 1.1784 in.) 29.931 mm (1.1784 in.)
Reverse idler gear sub-assy inner diameter	New gear: Max:	18.040 – 18.058 mm (0.7102 – 0.7109 in.) 18.058 mm (0.7109 in.)
Reverse idler gear shaft outer diameter	New shaft: Min:	17.966 – 17.984 mm (0.7073 – 0.7080 in.) 17.966 mm (0.7073 in.)
Front differential case tapered roller bearing preload	New bearing Used bearing	0.78 – 1.57 N·m (8 – 16 kgf·cm, 7 – 14 in.·lbf) 0.49 – 0.98 N·m (5 – 10 kgf·cm, 4 – 9 in.·lbf)
Front differential case shim RR thickness	AA BB CC DD EE FF GG HH JJ KK LL MM NN PP QQ RR SS TT UU	2.10 mm (0.0827 in.) 2.15 mm (0.0846 in.) 2.20 mm (0.0866 in.) 2.25 mm (0.0886 in.) 2.30 mm (0.0906 in.) 2.35 mm (0.0925 in.) 2.40 mm (0.0945 in.) 2.45 mm (0.0965 in.) 2.50 mm (0.0984 in.) 2.55 mm (0.1004 in.) 2.60 mm (0.1024 in.) 2.65 mm (0.1043 in.) 2.70 mm (0.1063 in.) 2.75 mm (0.1083 in.) 2.80 mm (0.1102 in.) 2.85 mm (0.1122 in.) 2.90 mm (0.1161 in.) 2.95 mm (0.1161 in.) 3.00 mm (0.1181 in.)
Transaxle case oil seal driven in depth		1.6 – 2.2 mm (0.063 – 0.087 in.)
Front transaxle case oil seal driven in depth		15.6 – 16.0 mm (0.6142 – 0.6299 in.)
Input shaft front bearing driven in depth		0 – 0.30 mm (0 – 0.0118 in.)
Transmission case oil seal driven in depth		9.6 – 10.2 mm (0.3780 – 0.4016 in.)
Transmission clutch hub No.3 snap ring clearance		0.1 mm or less (0.004 in. or less)
Transmission clutch hub No.3 snap ring thickness	A B C D E F G H J	1.75 mm (0.0689 in.) 1.80 mm (0.0709 in.) 1.85 mm (0.0728 in.) 1.90 mm (0.0748 in.) 1.95 mm (0.0768 in.) 2.00 mm (0.0787 in.) 2.05 mm (0.0807 in.) 2.10 mm (0.0827 in.) 2.15 mm (0.0846 in.)
Input shaft radial ball bearing snap ring clearance		0.1 mm or less (0.004 in. or less)

CONTINUED

Input shaft radial ball bearing snap ring thickness	B	2.31 mm (0.0909 in.)
	C	2.37 mm (0.0933 in.)
	D	2.43 mm (0.0957 in.)
	E	2.49 mm (0.0980 in.)
	F	2.55 mm (0.1004 in.)
	G	2.61 mm (0.1028 in.)
	H	2.67 mm (0.1051 in.)
	J	2.73 mm (0.1075 in.)
	K	2.79 mm (0.1098 in.)
	L	2.85 mm (0.1122 in.)
	M	2.91 mm (0.1146 in.)
5th gear radial clearance	Standard clearance :	0.015 – 0.056 mm (0.0006 – 0.0022 in.)
6th gear radial clearance	Standard clearance :	0.009 – 0.050 mm (0.0004 – 0.0020 in.)
5th gear thrust clearance	Standard clearance :	0.10 – 0.62 mm (0.0039 – 0.0244 in.)
6th gear thrust clearance	Standard clearance :	0.10 – 0.60 mm (0.0039 – 0.0236 in.)
Input shaft assy		
4th gear thrust clearance	Standard clearance :	0.10 – 0.55 mm (0.0039 – 0.0217 in.)
3rd gear thrust clearance	Standard clearance :	0.10 – 0.35 mm (0.0039 – 0.0138 in.)
4th gear radial clearance	KOYO made:	0.015 – 0.058 mm (0.0006 – 0.0023 in.)
	NSK made:	0.015 – 0.056 mm (0.0006 – 0.0022 in.)
3rd gear radial clearance	KOYO made:	0.015 – 0.058 mm (0.0006 – 0.0023 in.)
	NSK made:	0.015 – 0.056 mm (0.0006 – 0.0022 in.)
Input shaft runout	Max:	0.015 mm (0.006 in.)
Input shaft outer diameter	New shaft part A:	21.991 – 21.006 mm (0.8658 – 0.8270 in.)
	B:	24.885 – 24.900 mm (0.9797 – 0.9803 in.)
	C:	28.985 – 29.000 mm (1.1411 – 1.1417 in.)
	D:	30.985 – 31.000 mm (1.2199 – 1.2205 in.)
	Min part A:	21.991 mm (0.8658 in.)
	B:	24.885 mm (0.9797 in.)
	C:	28.985 mm (1.1411 in.)
	D:	30.985 mm (1.2199 in.)
4th gear inside diameter	New gear:	34.015 – 34.031 (1.3392 – 1.3398 in.)
	Max:	34.031 mm (1.3398 in.)
3rd gear inside diameter	New gear:	36.015 – 36.031 (1.4179 – 1.4185 in.)
	Max:	36.031 mm (1.4185 in.)
Between 4th gear synchronizer ring back and 6th gear spline end	Standard clearance :	0.75 – 1.65 mm (0.0295 – 0.0650 in.)
Between 3rd gear synchronizer ring back and 6th gear spline end	Standard clearance :	0.65 – 1.75 mm (0.0256 – 0.0689 in.)
Transmission hub sleeve No.2 groove – thickness of the claw part of shift fork No.2	Standard clearance :	0.15 – 0.35 mm (0.0059 – 0.0138 in.)
Transmission clutch hub No.2 snap ring clearance		0.1 mm (0.004 in.) or less
Transmission clutch hub No.2 snap ring thickness	0	2.30 mm (0.0906 in.)
	1	2.36 mm (0.0929 in.)
	2	2.42 mm (0.0953 in.)
	3	2.48 mm (0.0976 in.)
	4	2.54 mm (0.1000 in.)
	5	2.60 mm (0.1024 in.)
Input shaft bearing snap ring clearance		0.1 mm (0.004 in.) or less
Input shaft bearing snap ring thickness	A	2.29 mm (0.0902 in.)
	B	2.35 mm (0.0925 in.)
	C	2.41 mm (0.0949 in.)
	D	2.47 mm (0.0972 in.)
	E	2.53 mm (0.0996 in.)
	F	2.59 mm (0.1020 in.)
3rd gear radial clearance	KOYO made:	0.015 – 0.058 mm (0.0006 – 0.0023 in.)
	NSK made:	0.015 – 0.056 mm (0.0006 – 0.0022 in.)
4th gear radial clearance	KOYO made:	0.015 – 0.058 mm (0.0006 – 0.0023 in.)
	NSK made:	0.015 – 0.056 mm (0.0006 – 0.0022 in.)

CONTINUED

3rd gear thrust clearance	Standard clearance :	0.10 – 0.35 mm (0.0039 – 0.0138 in.)
4th gear thrust clearance	Standard clearance :	0.10 – 0.55 mm (0.0039 – 0.0217 in.)
Output shaft assy		
1st gear thrust clearance	Standard clearance :	0.10 – 0.40 mm (0.0039 – 0.0157 in.)
2nd gear thrust clearance	Standard clearance :	0.10 – 0.55 mm (0.0039 – 0.0217 in.)
1st gear radial clearance	KOYO made: NSK made:	0.015 – 0.058 mm (0.0006 – 0.0023 in.) 0.015 – 0.056 mm (0.0006 – 0.0022 in.)
2nd gear radial clearance	KOYO made: NSK made:	0.015 – 0.058 mm (0.0006 – 0.0023 in.) 0.015 – 0.056 mm (0.0006 – 0.0022 in.)
Output shaft runout	Max:	0.015 mm (0.0006 in.)
Output shaft outer diameter	New shaft A: B: Min A: B:	31.985 – 32.000 mm (1.2592 – 1.2598 in.) 37.985 – 38.000 mm (1.4955 – 1.4961 in.) 31.985 mm (1.2592 in.) 37.985 mm (1.4955 in.)
2nd gear inside diameter	New gear: Max:	38.015 – 38.031 mm (1.4967 – 1.4973 in.) 38.031 mm (1.4973 in.)
1st gear inside diameter	New gear: Max:	44.015 – 44.031 mm (1.7329 – 1.7335 in.) 44.031 mm (1.7335 in.)
1st gear thrust washer	New washer: Min:	5.975 – 6.025 mm (0.2352 – 0.2372 in.) 5.975 mm (0.2352 in.)
Between synchronizer ring set No.2 back and 2nd gear spline end Standard clearance :		0.7 – 1.3 mm (0.0276 – 0.0512)
Between synchronizer ring No.1 back and 1st gear spline end Standard clearance :		0.75 – 1.65 mm (0.0295 – 0.065)
Reverse gear groove – thickness of the claw part of reverse shift fork Standard clearance :		0.15 – 0.35 mm (0.0059 – 0.0138 in.)
Transmission clutch hub No.1 snap ring clearance		0.1 mm (0.004 in.) or less
Transmission clutch hub No.1 snap ring thickness	A B C D E F	2.50 mm (0.0984 in.) 2.56 mm (0.1008 in.) 2.62 mm (0.1031 in.) 2.68 mm (0.1055 in.) 2.74 mm (0.1079 in.) 2.80 mm (0.1102 in.)
2nd gear radial clearance	KOYO made: NSK made:	0.015 – 0.058 mm (0.0006 – 0.0023 in.) 0.015 – 0.056 mm (0.0006 – 0.0022 in.)
1st gear radial clearance	KOYO made: NSK made:	0.015 – 0.058 mm (0.0006 – 0.0023 in.) 0.015 – 0.056 mm (0.0006 – 0.0022 in.)
2nd gear thrust clearance	Standard clearance :	0.10 – 0.55 mm (0.0039 – 0.0217 in.)
1st gear thrust clearance	Standard clearance :	0.10 – 0.40 mm (0.0039 – 0.0157 in.)
Shift & select lever shaft assy		
Control shaft cover oil seal driven in depth		0.2 – 1.2 mm (0.0079 – 0.0472 in.)
Shift lever inner No.1 slotted pin driven in depth		0 ± 0.5 mm (0 ± 0.020 in.)
Shift lever inner No.2 slotted pin driven in depth		3.5 ± 0.5 mm (0.1378 ± 0.0197 in.)
Differential case assy		
Front differential side gear backlash		0.05 – 0.20 mm (0.0020 – 0.0079 in.)
Front differential pinion thrust washer thickness	Min:	0.92 mm (0.0362 in.)
Front differential pinion shaft No.1 outer diameter	Min:	16.982 mm (0.6686 in.)
Front differential side gear backlash		0.05 – 0.20 mm (0.0020 – 0.0079 in.)

CONTINUED

030LQ-01

TORQUE SPECIFICATION

Part Tightened	N·m	kgf·cm	ft·lbf
Bearing lock plate x Transaxle case	11.3	115	8
Manual transaxle case receiver x Transaxle case	11.3	115	8
Reverse shift arm bracket assy x Transaxle case	17.2	19.2	14
Gear shift fork No.2 x Gear shift fork shaft No.2	15.7	160	12
Gear shift fork head No.1 x Gear shift fork shaft No.2	15.7	160	12
Gear shift fork No.1 x Gear shift fork shaft sub-assy No.1	15.7	160	12
Shift detent ball plug x Transaxle case	24.5	250	18
Oil receiver pipe No.2 (MTM) x Manual transmission case	17.2	175	13
Oil receiver pipe No.1 (MTM) x Manual transmission case	17.2	175	13
Manual transmission case x Transaxle case	29.4	300	22
Transaxle case x Manual transmission case	29.4	300	22
Reverse idler gear shaft bolt x Manual transmission case	29.4	300	22
Manual transmission case plug x Manual transmission case	39.2	400	29
Shift detent ball plug x Manual transmission case	24.5	250	18
Back up lamp switch assy x Manual transmission case	40.2	410	30
Shift & select lever shaft assy x Manual transmission case	19.6	200	14
Lock ball assy No.1 x Manual transmission case	29.4	300	22
Bearing retainer rear (MTM) x Manual transmission case	27.4	279	20
Gear shift fork No.3 x Gear shift fork shaft No.3	15.7	160	12
Manual transmission case cover sub-assy x Manual transmission case	18.1	185	13
Drain (MTM) plug sub-assy x Manual transmission	39.2	400	29
Manual transmission filler plug x Manual transmission case case cover sub-assy	39.2	400	29
Selecting bellcrank assy x Manual transmission case	24.5	250	18
Floor shift control lever housing support bracket x Transaxle case	11.3	115	8
Release fork support x Transaxle case	36.8	375	27
Speedometer driven hole cover sub-assy x Transaxle case	11.3	115	8
Front differential ring gear x Front differential case	77.4	789	57
Shift lever damper x Shift & select lever shaft assy	24	245	18
Selecting bellcrank No.2 x Selecting bellcrank assy	11.8	120	9

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MANUAL TRANSMISSION/TRANSAXLE

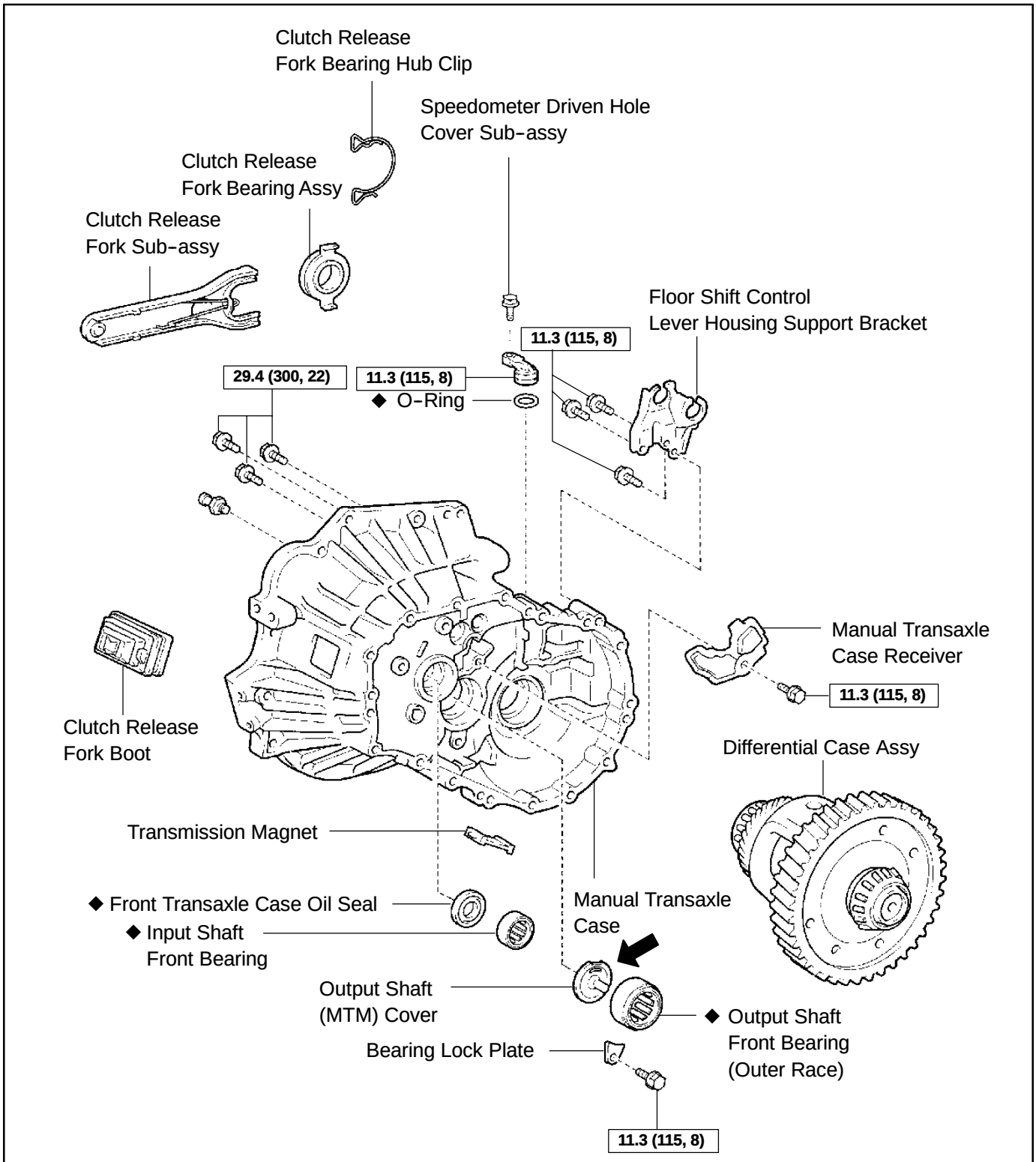
MANUAL TRANSMISSION /
TRANSAXLE (C64) 41-1
COMPONENTS 41-1/8
MANUAL TRANSAXLE ASSY (C64) 41-9
OVERHAUL 41-9/43
INPUT SHAFT ASSY (C64) 41-44
OVERHAUL 41-44/52
OUTPUT SHAFT ASSY (C64) 41-53
OVERHAUL 41-53/63
DIFFERENTIAL CASE ASSY (C64) 41-64
OVERHAUL 41-64/68
SHIFT & SELECT LEVER SHAFT
ASSY (C64) 41-69
OVERHAUL 41-69/75

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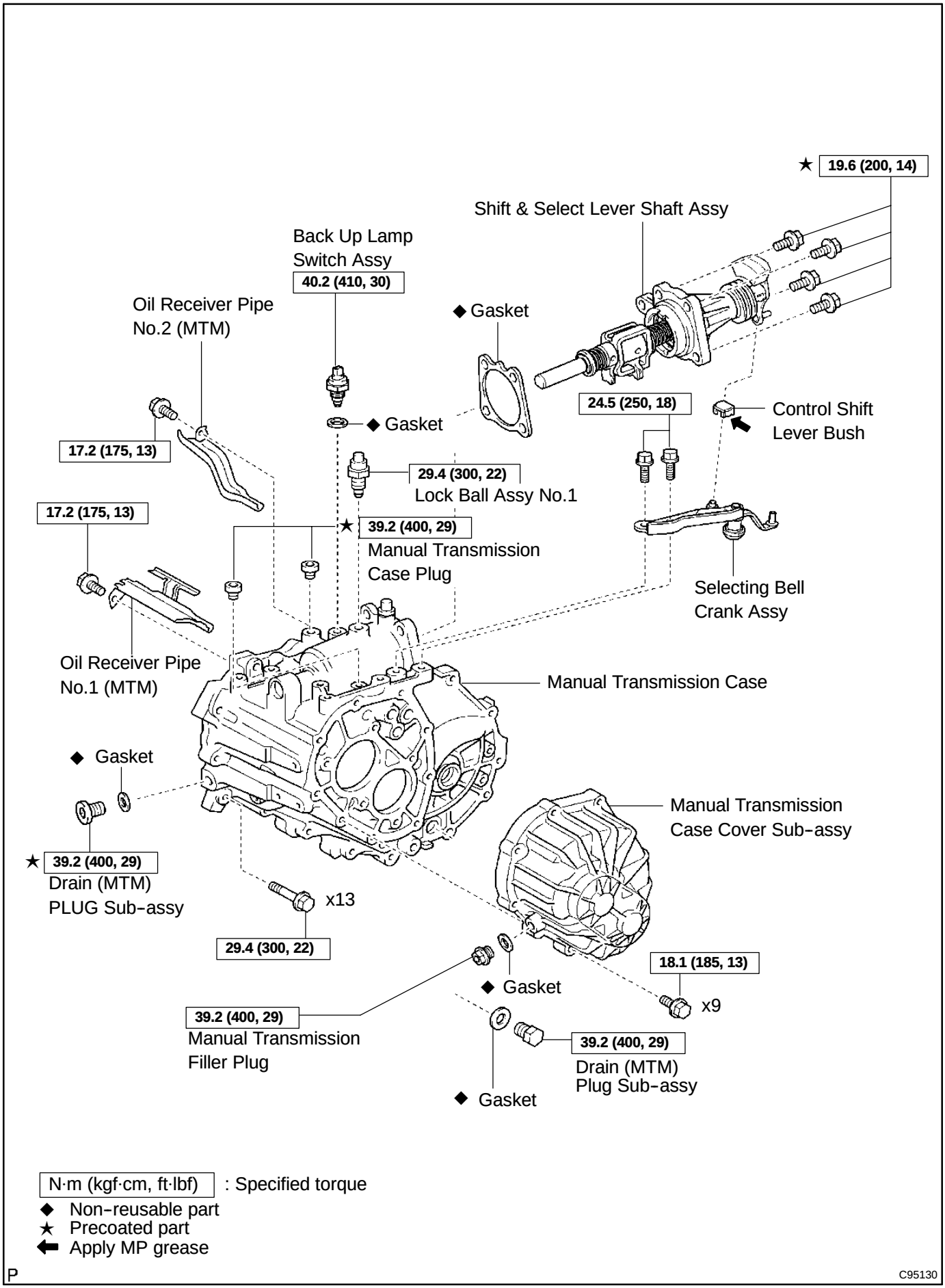
MANUAL TRANSMISSION / TRANSAXLE (C64)

COMPONENTS

4105P-01



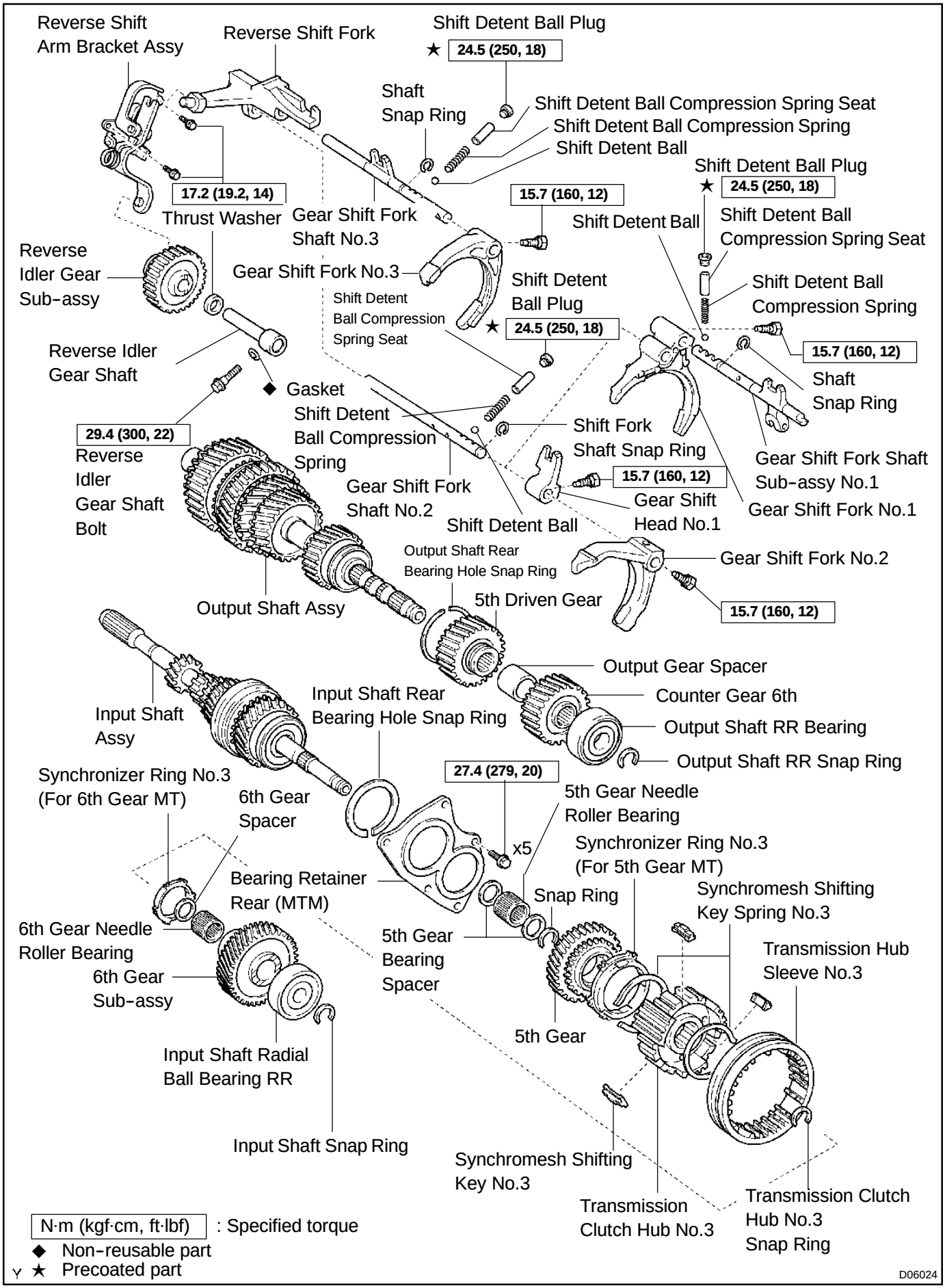
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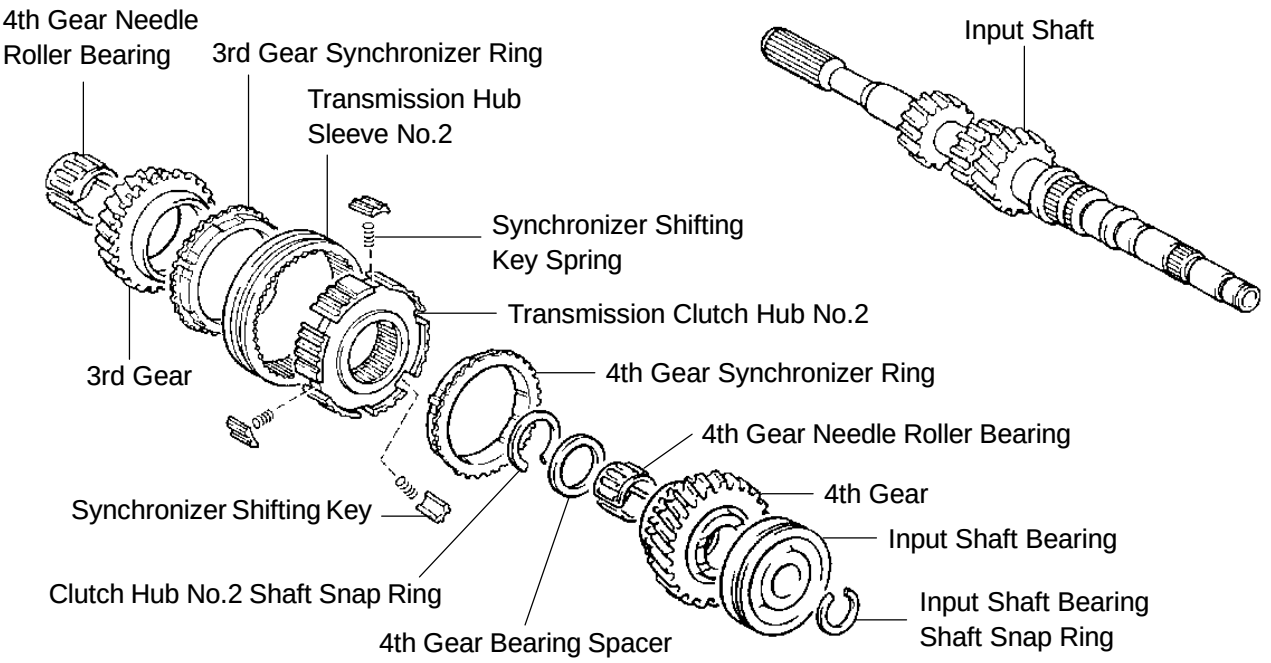


N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
★ Precoated part
⬅ Apply MP grease

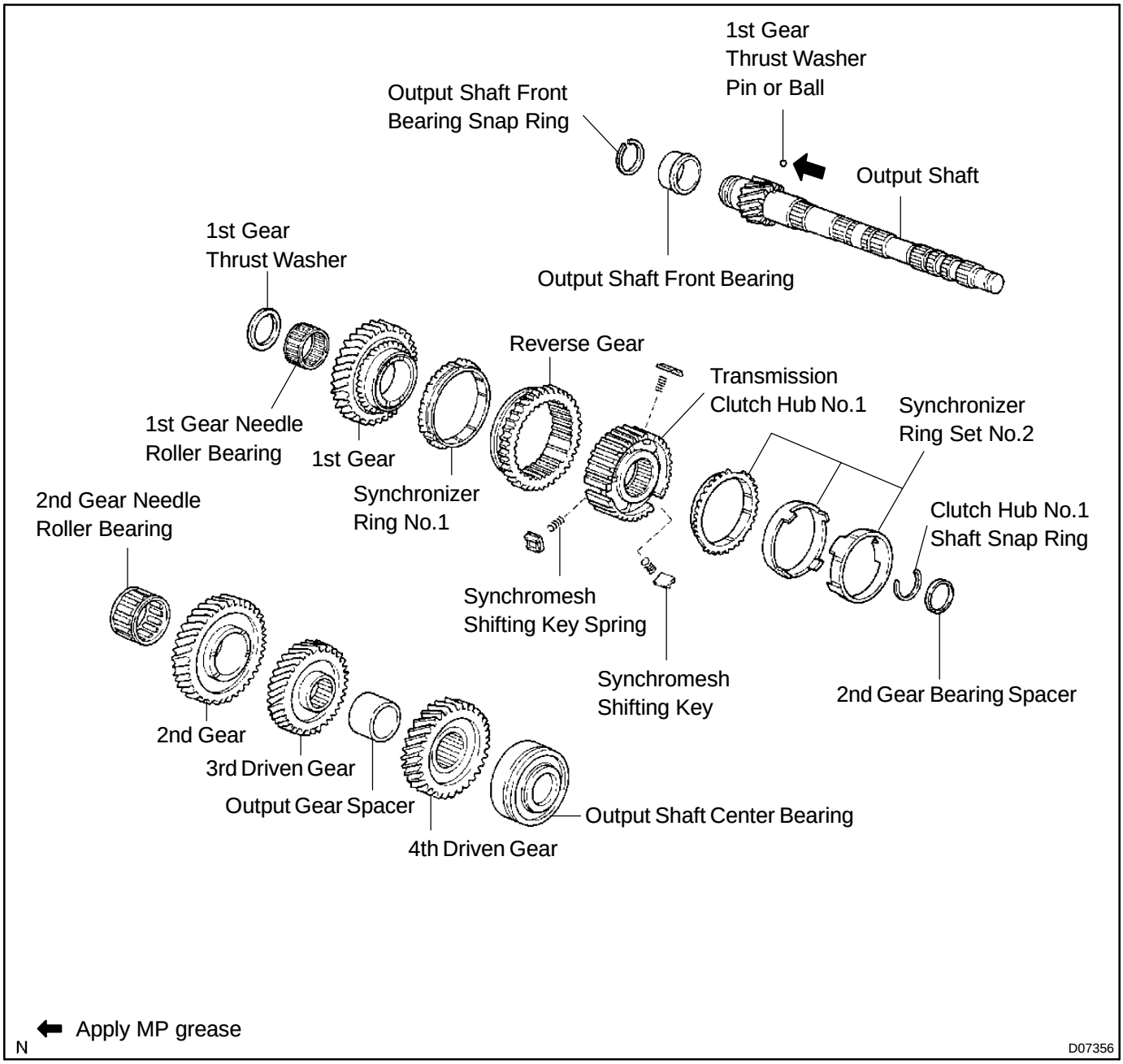
P C95130

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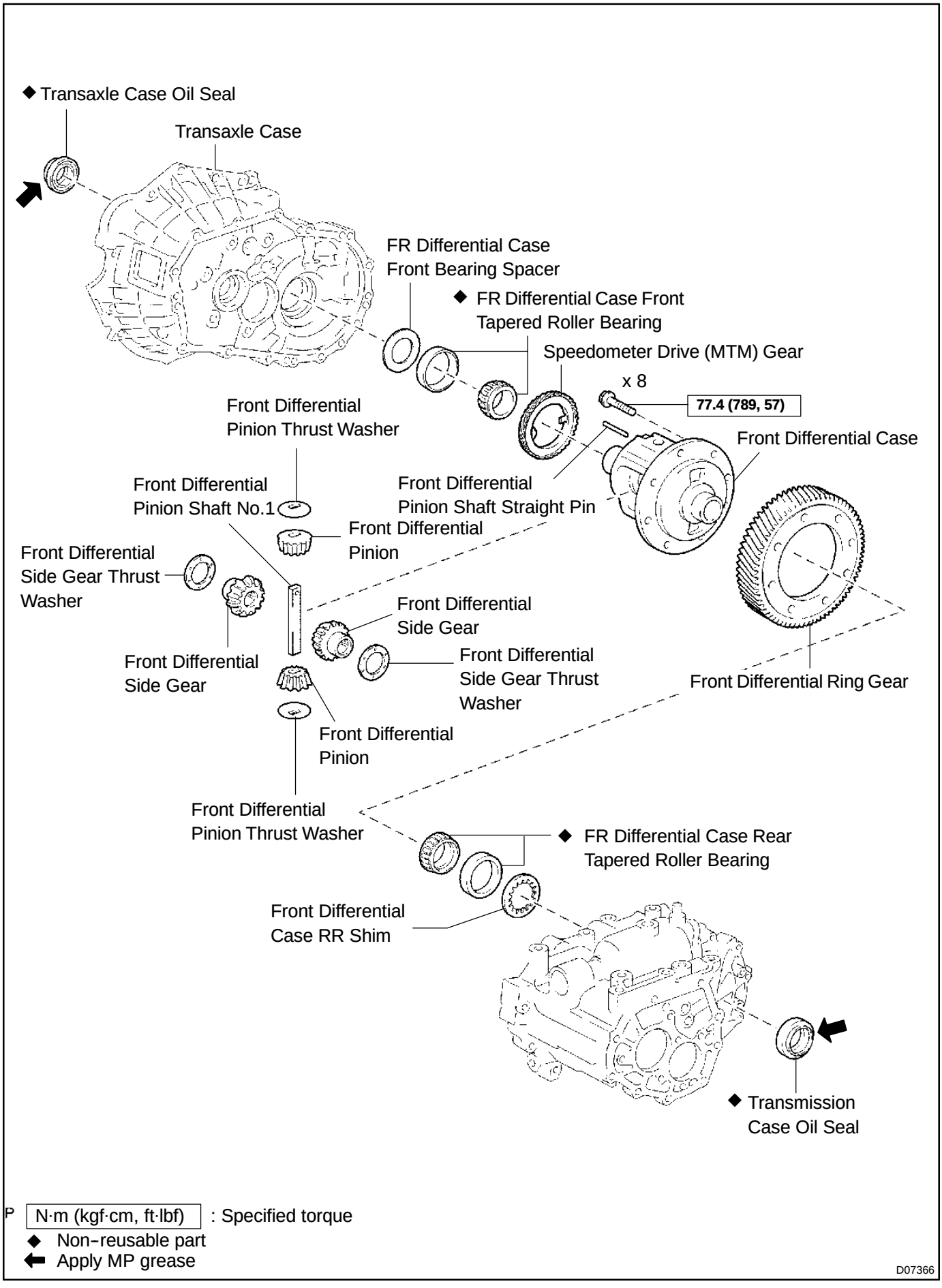

Reverse Shift Arm Bracket Assy
Reverse Shift Fork
Shift Detent Ball Plug
★ 24.5 (250, 18)
Shaft Snap Ring
Shift Detent Ball Compression Spring Seat
Shift Detent Ball Compression Spring
Shift Detent Ball
Shift Detent Ball Plug
★ 24.5 (250, 18)
17.2 (19.2, 14)
Thrust Washer
Gear Shift Fork Shaft No.3
15.7 (160, 12)
Shift Detent Ball
Shift Detent Ball Compression Spring Seat
Reverse Idler Gear Sub-assy
Gear Shift Fork No.3
Shift Detent Ball Plug
★ 24.5 (250, 18)
Shift Detent Ball Compression Spring
Shift Detent Ball Compression Spring Seat
Reverse Idler Gear Shaft
◆ Gasket
15.7 (160, 12)
Shaft Snap Ring
29.4 (300, 22)
Reverse Idler Gear Shaft Bolt
Shift Detent Ball Compression Spring
Shift Fork Shaft Snap Ring
Gear Shift Fork Shaft Sub-assy No.1
15.7 (160, 12)
Gear Shift Head No.1
Gear Shift Fork No.1
Gear Shift Fork Shaft No.2
Shift Detent Ball
Output Shaft Rear Bearing Hole Snap Ring
Gear Shift Fork No.2
15.7 (160, 12)
Output Shaft Assy
5th Driven Gear
Output Gear Spacer
Input Shaft Assy
Input Shaft Rear Bearing Hole Snap Ring
Counter Gear 6th
Output Shaft RR Bearing
Output Shaft RR Snap Ring
Synchronizer Ring No.3 (For 6th Gear MT)
27.4 (279, 20)
6th Gear Spacer
5th Gear Needle Roller Bearing
x5
Synchronizer Ring No.3 (For 5th Gear MT)
Bearing Retainer Rear (MTM)
Snap Ring
Synchromesh Shifting Key Spring No.3
6th Gear Needle Roller Bearing
5th Gear Bearing Spacer
Transmission Hub Sleeve No.3
6th Gear Sub-assy
5th Gear
Input Shaft Radial Ball Bearing RR
Input Shaft Snap Ring
Synchromesh Shifting Key No.3
Transmission Clutch Hub No.3
Transmission Clutch Hub No.3 Snap Ring
N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
★ Precoated part
D06024


4th Gear Needle Roller Bearing
3rd Gear Synchronizer Ring
Transmission Hub Sleeve No.2
Input Shaft
Synchronizer Shifting Key Spring
Transmission Clutch Hub No.2
3rd Gear
4th Gear Synchronizer Ring
4th Gear Needle Roller Bearing
4th Gear
Synchronizer Shifting Key
Input Shaft Bearing
Clutch Hub No.2 Shaft Snap Ring
Input Shaft Bearing Shaft Snap Ring
4th Gear Bearing Spacer
D00326

CONTINUED


1st Gear
Thrust Washer
Pin or Ball
Output Shaft Front
Bearing Snap Ring
Output Shaft
1st Gear
Thrust Washer
Output Shaft Front Bearing
Reverse Gear
Transmission
Clutch Hub No.1
Synchronizer
Ring Set No.2
1st Gear Needle
Roller Bearing
1st Gear
Synchronizer
Ring No.1
2nd Gear Needle
Roller Bearing
Clutch Hub No.1
Shaft Snap Ring
Synchromesh
Shifting Key Spring
Synchromesh
Shifting Key
2nd Gear Bearing Spacer
2nd Gear
3rd Driven Gear
Output Gear Spacer
Output Shaft Center Bearing
4th Driven Gear
Apply MP grease
N
D07356

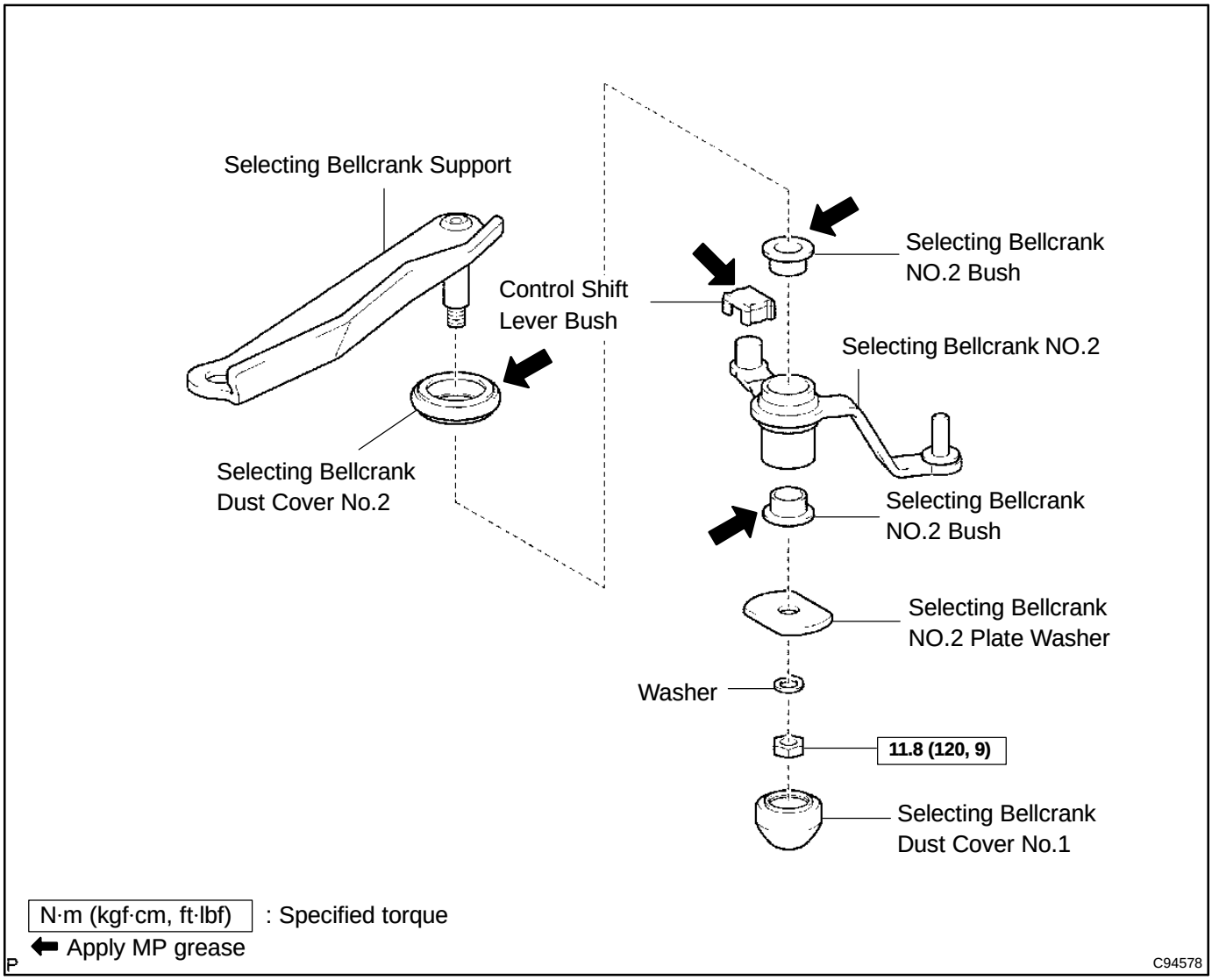
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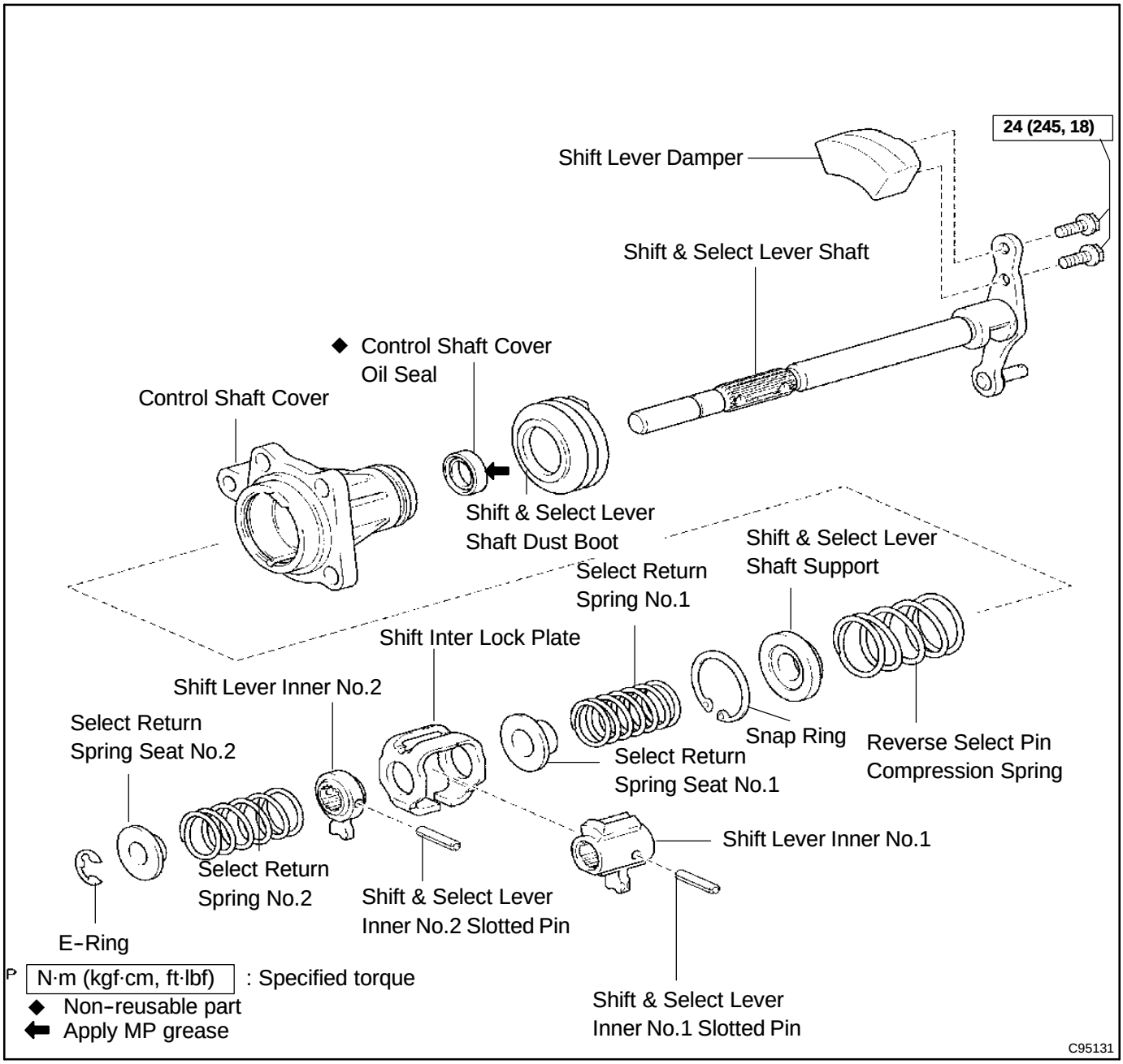
P N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
⬅ Apply MP grease

D07366

CONTINUED


Selecting Bellcrank Support
Control Shift Lever Bush
Selecting Bellcrank Dust Cover No.2
Selecting Bellcrank NO.2 Bush
Selecting Bellcrank NO.2
Selecting Bellcrank NO.2 Bush
Selecting Bellcrank NO.2 Plate Washer
Washer
11.8 (120, 9)
Selecting Bellcrank Dust Cover No.1
N·m (kgf·cm, ft·lbf) : Specified torque
Apply MP grease
P
C94578

CONTINUED


24 (245, 18)
Shift Lever Damper
Shift & Select Lever Shaft
◆ Control Shaft Cover Oil Seal
Control Shaft Cover
Shift & Select Lever Shaft Dust Boot
Shift & Select Lever Shaft Support
Select Return Spring No.1
Shift Inter Lock Plate
Shift Lever Inner No.2
Select Return Spring Seat No.2
Snap Ring
Reverse Select Pin Compression Spring
Select Return Spring Seat No.1
Shift Lever Inner No.1
Select Return Spring No.2
Shift & Select Lever Inner No.2 Slotted Pin
E-Ring
P N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
⬅ Apply MP grease
Shift & Select Lever Inner No.1 Slotted Pin
C95131

CONTINUED

MANUAL TRANSAXLE ASSY (C64)

4105K-01

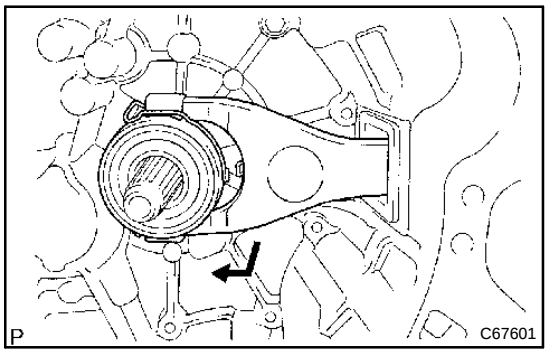
OVERHAUL

HINT:

COMPONENTS: See page 41-1

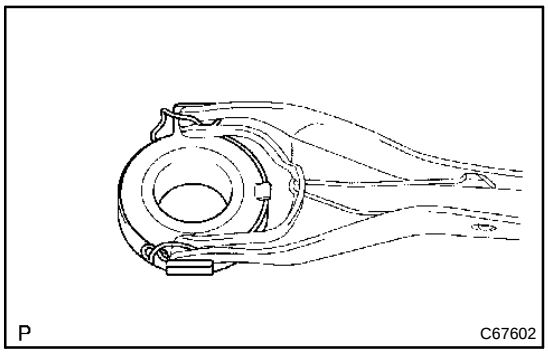
1. REMOVE SPEEDOMETER DRIVEN HOLE COVER SUB-ASSY

(a) Remove the bolt and speedometer driven hole cover sub-assy.
(b) Remove the o-ring from the speedometer driven hole cover sub-assy.



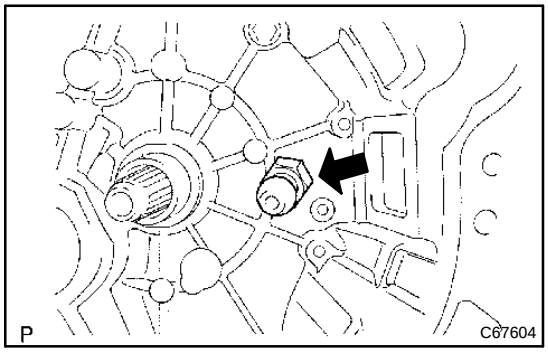
2. REMOVE CLUTCH RELEASE FORK SUB-ASSY

(a) Remove the clutch release fork sub-assy with clutch release bearing assy from the transaxle case.



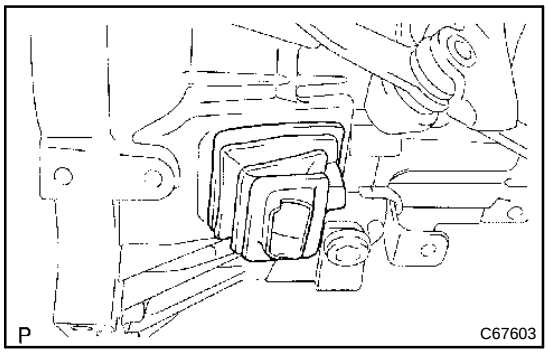
3. REMOVE CLUTCH RELEASE BEARING ASSY

(a) Remove the clutch release bearing hub clip and clutch release bearing assy from the clutch release fork sub-assy.



4. REMOVE RELEASE FORK SUPPORT

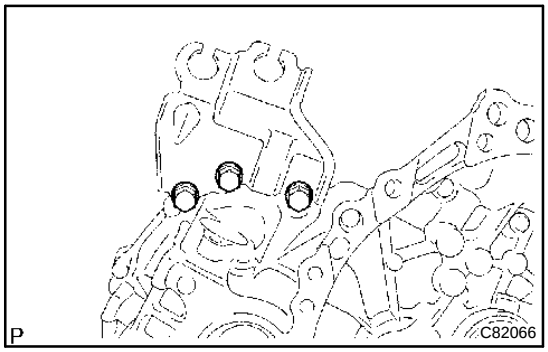
(a) Remove release fork support from the transaxle case.



5. REMOVE CLUTCH RELEASE FORK BOOT

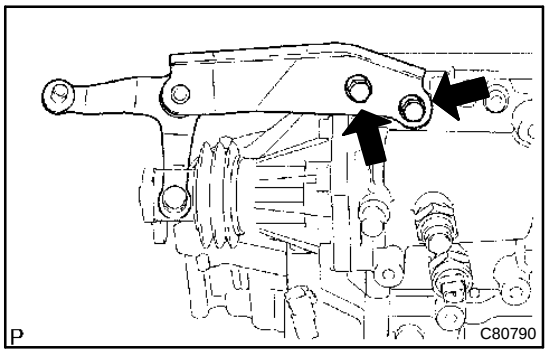
(a) Remove the clutch release fork boot from the transaxle case.

CONTINUED



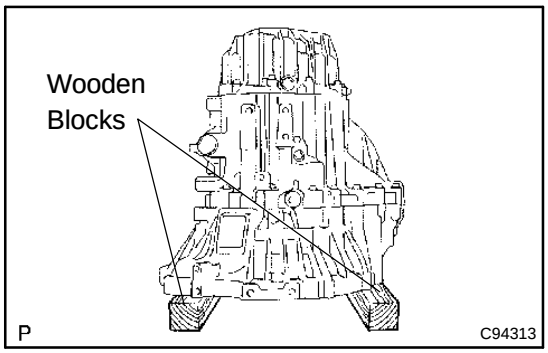
6. REMOVE FLOOR SHIFT CONTROL LEVER HOUSING SUPPORT BRACKET

(a) Remove the 3 bolts and floor shift control lever housing support bracket from the transaxle case.



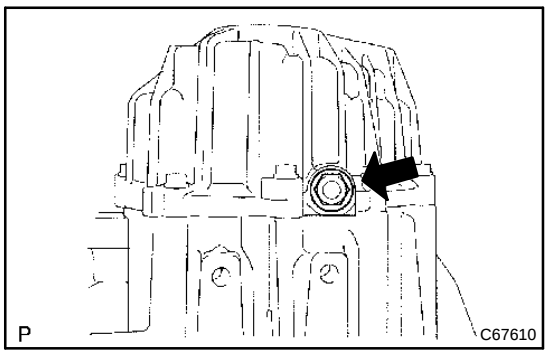
7. REMOVE SELECTING BELL CRANK ASSY

(a) Remove the 2 bolts and selecting bellcrank assy from the manual transmission case.



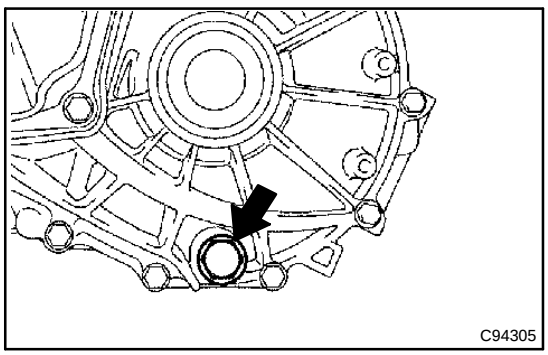
8. FIX MANUAL TRANSAXLE ASSY

(a) Using wooden blocks, fix the manual transaxle assy.



9. REMOVE MANUAL TRANSMISSION FILLER PLUG

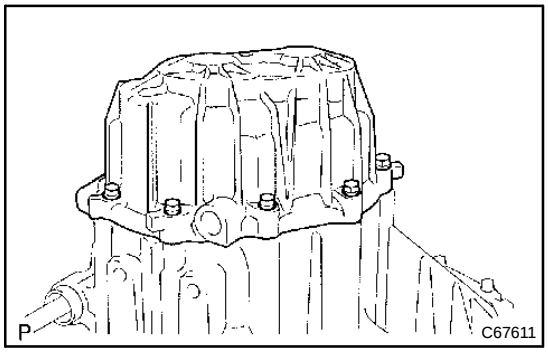
(a) Remove the manual transmission filler plug and gasket from the manual transmission case cover.



10. REMOVE DRAIN (MTM) PLUG SUB–ASSY

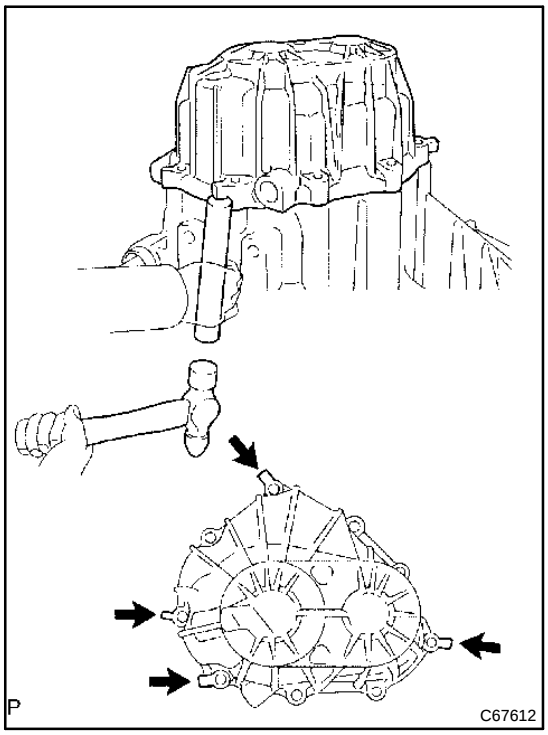
(a) Remove the drain (MTM) plug sub–assy and gasket from the manual transmission case.

CONTINUED



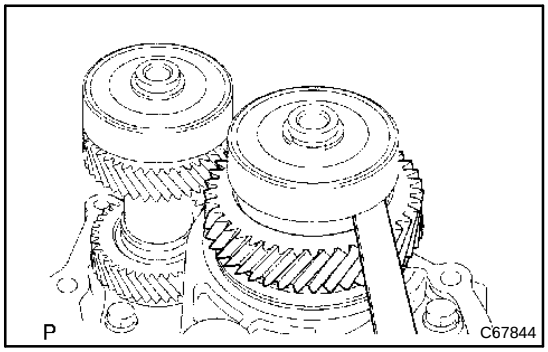
11. REMOVE MANUAL TRANSMISSION CASE COVER SUB-ASSY

(a) Remove the 9 bolts.



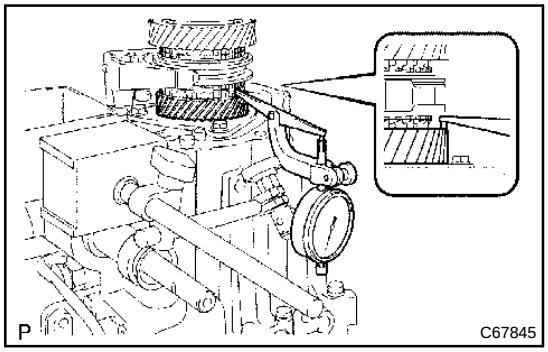
(b) Using a brass bar and a hammer, remove the manual transmission case cover sub-assy.

NOTICE:
Do not damage the manual transmission case cover sub-assy.



12. INSPECT 6TH GEAR THRUST CLEARANCE

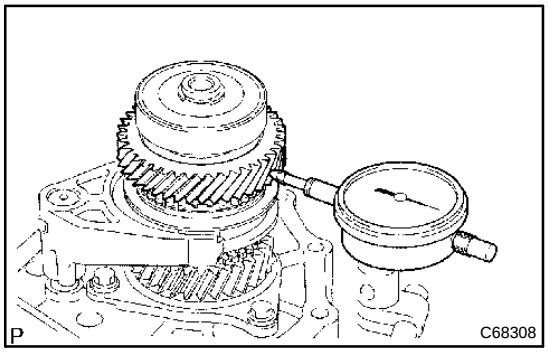
(a) Using a feeler gauge, measure the 6th gear thrust clearance.
Standard clearance:
0.10 - 0.60 mm (0.0039 - 0.0236 in.)



13. INSPECT 5TH GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 5th gear thrust clearance.
Standard clearance:
0.10 - 0.62 mm (0.0039 - 0.0244 in.)

CONTINUED



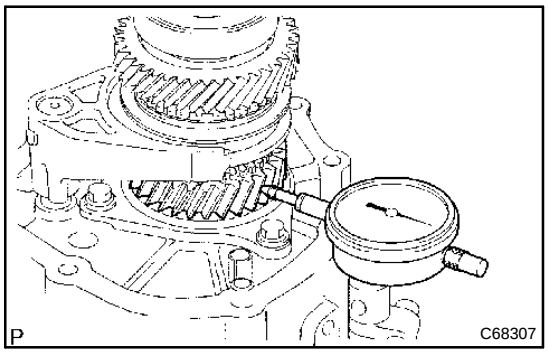
14. INSPECT 6TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 6th gear radial clearance.

Standard clearance:

0.009 - 0.050 mm (0.0004 - 0.0020 in.)

If the clearance is out of the specification, replace the 6th gear needle roller bearing.



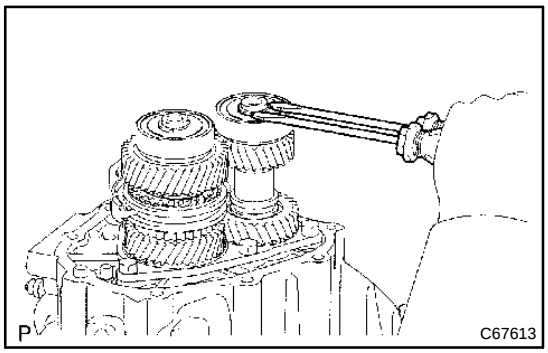
15. INSPECT 5TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 5th gear radial clearance.

Standard clearance:

0.015 - 0.056 mm (0.0006 - 0.0022 in.)

If the clearance is out of specification, replace the 5th gear needle roller bearing.

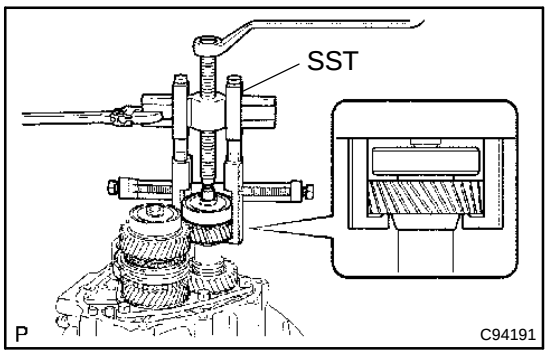


16. REMOVE COUNTER GEAR 6TH

(a) Using 2 screwdrivers and a hammer, remove the output shaft RR snap ring from the output shaft.

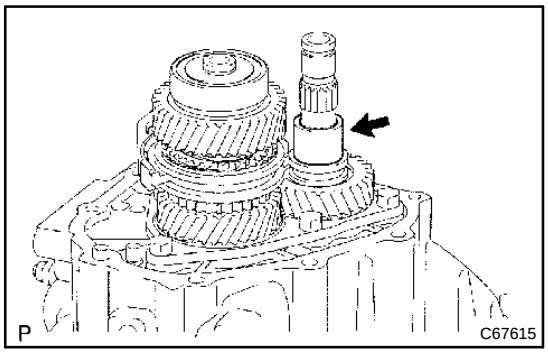
NOTICE:

Using a waste to prevent the snap ring from the being scattered.



(b) Using SST, remove output shaft RR bearing with 6th counter gear from the output shaft.

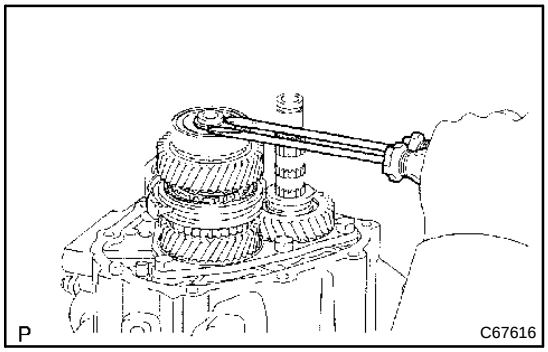
SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04021, 09957-04010, 09958-04011), 09950-60010 (09951-00190)



17. REMOVE OUTPUT GEAR SPACER

(a) Remove the output gear spacer from the output shaft.

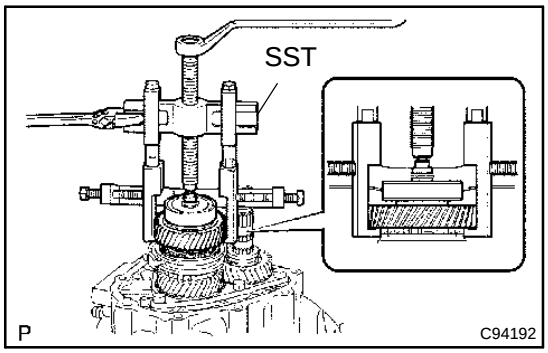
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18. REMOVE 6TH GEAR SUB-ASSY

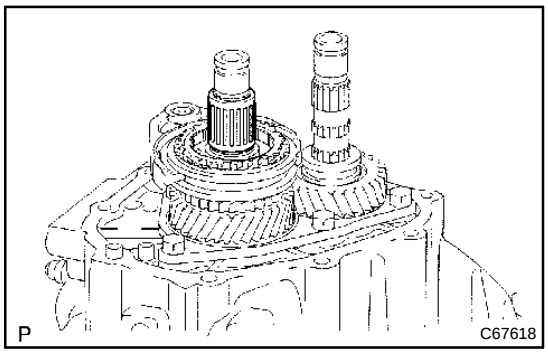
(a) Using 2 screwdrivers and a hammer, remove the input shaft snap ring from the input shaft.

NOTICE:
Using a waste to prevent the snap ring from the being scattered.



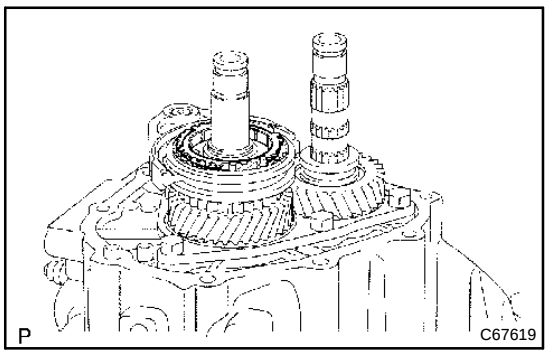
(b) Using SST, remove the input shaft radial ball bearing RR with 6th gear sub-assy from the input shaft.

SST 09950-40011 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04021, 09957-04010, 09958-04011)



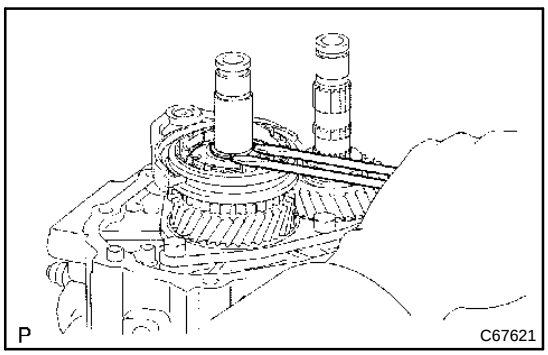
19. REMOVE 6TH GEAR NEEDLE ROLLER BEARING

(a) Remove 6th gear needle roller bearing from the input shaft.



20. REMOVE SYNCHRONIZER RING NO.3 (FOR 6TH GEAR MT)

(a) Remove the synchronizer ring No.3 from the input shaft.

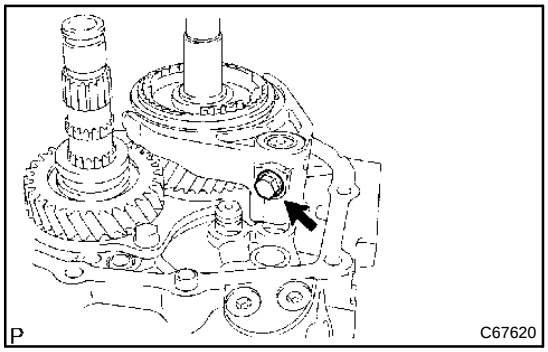


21. REMOVE TRANSMISSION CLUTCH HUB NO.3

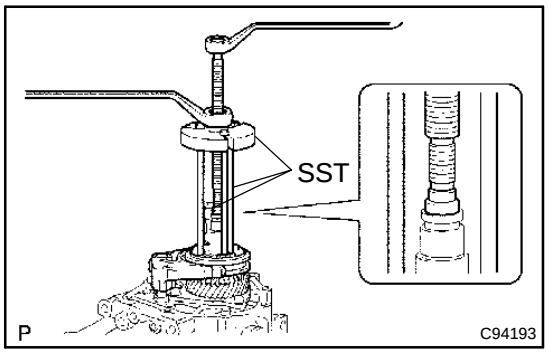
(a) Remove the 6th gear spacer.
(b) Using 2 screwdrivers and a hammer, remove the transmission clutch hub No.3 shaft snap ring from the inputshaft.

NOTICE:
Using a waste to prevent the snap ring from the being scattered.

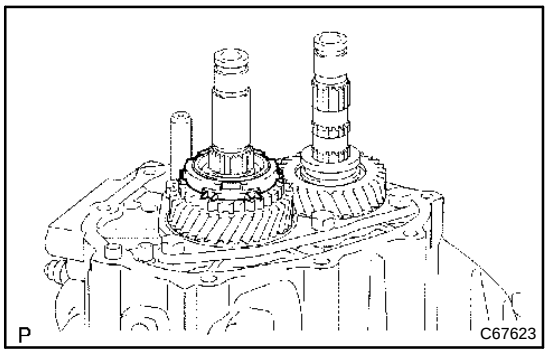
CONTINUED



(c) Remove the shift fork lock bolt from the shift fork No.3.

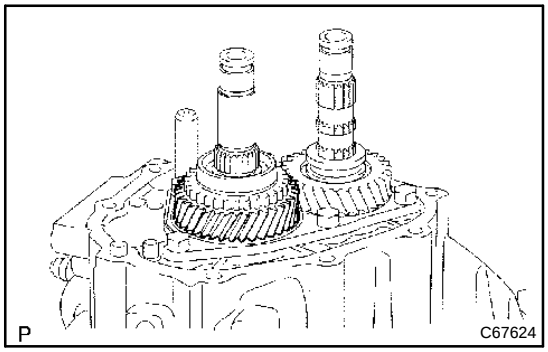


(d) Using SST, remove the transmission clutch hub No.3 with gear shift fork No.3 from the input shaft.
SST 09950-30012 (09951-03010, 09953-03010, 09957-04010), 09950-50013 (09954-05040)



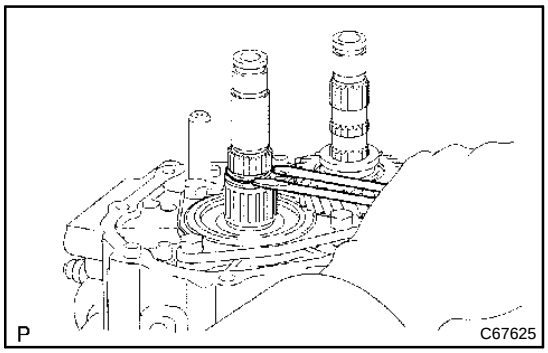
22. REMOVE SYNCHRONIZER RING NO.3 (FOR 5TH GEAR MT)

(a) Remove the synchronizer ring No.3 from the 5th gear.



23. REMOVE 5TH GEAR

(a) Remove the 5th gear from the input shaft.

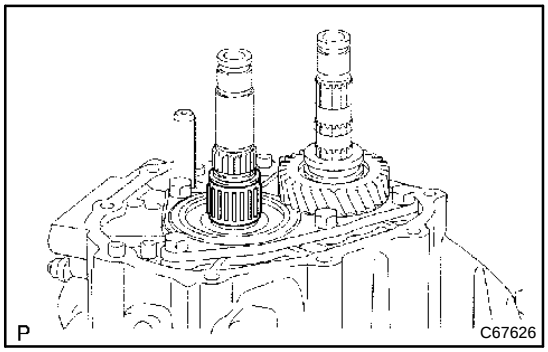


24. REMOVE 5TH GEAR NEEDLE ROLLER BEARING

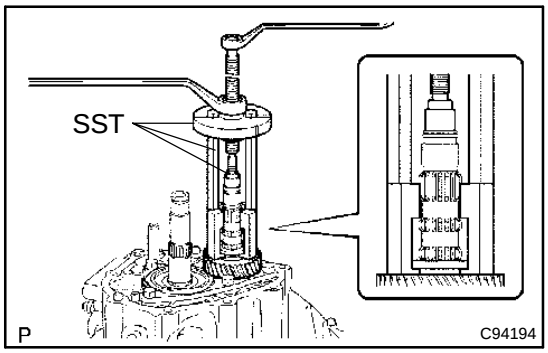
(a) Using 2 screwdrivers and a hammer, remove the transmission clutch hub No.3 shaft snap ring from the inputshaft.

NOTICE:
Using a waste to prevent the snap ring from the being scattered.

CONTINUED



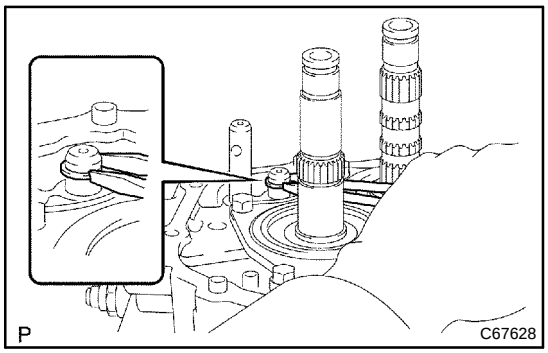
(b) Remove the 5th gear needle roller bearing and 2 5th gear bearing spacers from the input shaft.



25. REMOVE 5TH DRIVEN GEAR

(a) Using SST, remove the 5th driven gear from the output shaft.

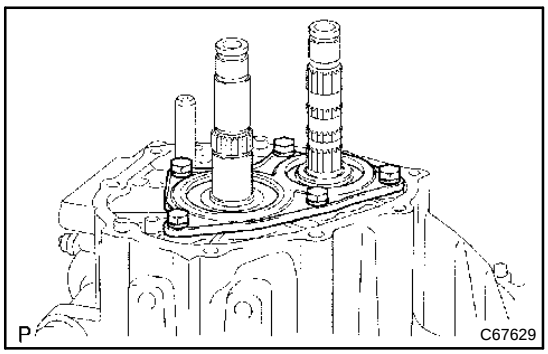
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03011, 09957-04010)
09950-60010 (09951-00190)



26. REMOVE SHIFT FORK SHAFT SHAFT SNAP RING

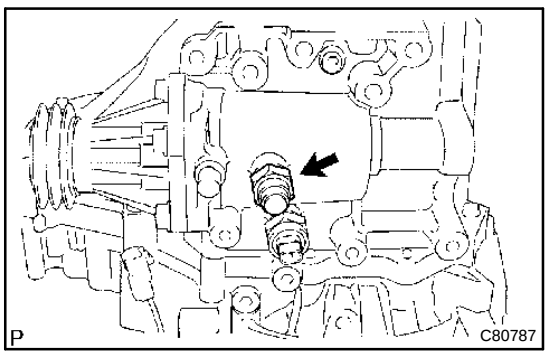
(a) Using 2 screwdrivers and a hammer, remove the shift fork shaft snap ring from the shift fork shaft No.2.

NOTICE:
Using a waste to prevent the snap ring from the being scattered.



27. REMOVE BEARING RETAINER REAR (MTM)

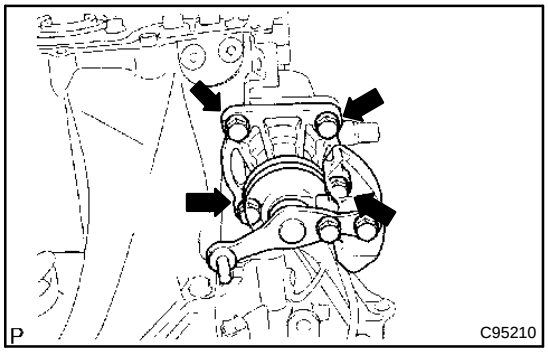
(a) Remove the 5 bolts and bearing retainer rear (MTM) from the manual transmission case.



28. REMOVE LOCK BALL ASSY NO.1

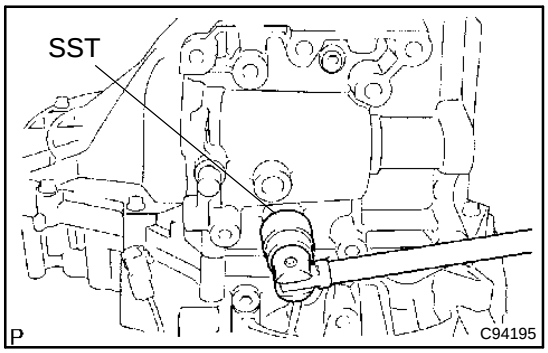
(a) Remove the lock ball assy No.1 from the manual transmission case.

CONTINUED



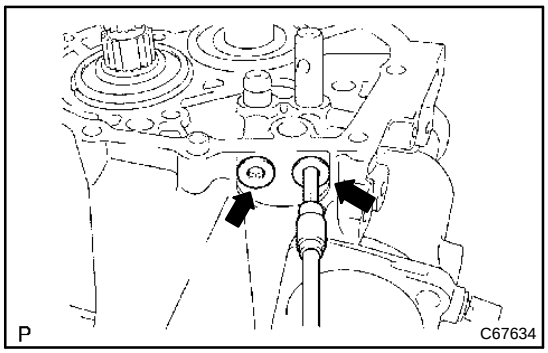
29. REMOVE SHIFT & SELECT LEVER SHAFT ASSY

(a) Remove the 4 bolts and shift & select lever shaft assy and gasket from the manual transmission case.



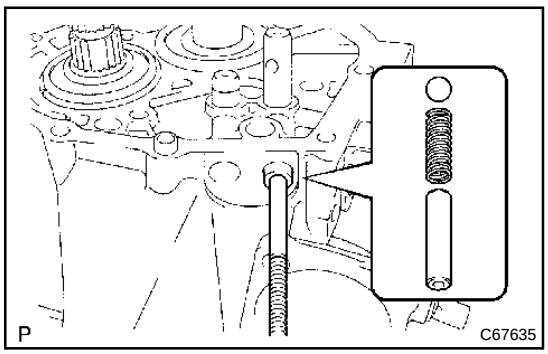
30. REMOVE BACK UP LAMP SWITCH ASSY

(a) Using SST, remove the back up lamp switch assy and gasket from the manual transmission case.
SST 09817-16011

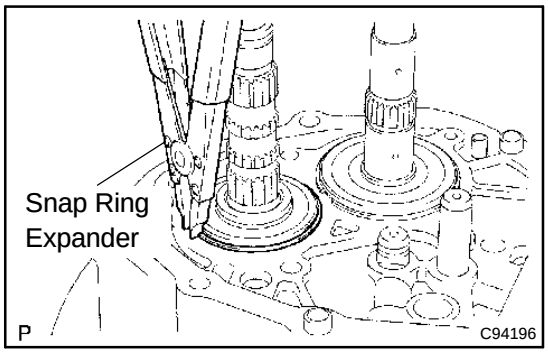


31. REMOVE SHIFT DETENT BALL

(a) Using a socket hexagon wrench 6, remove the 2 shift detent ball plugs from the manual transmission case.



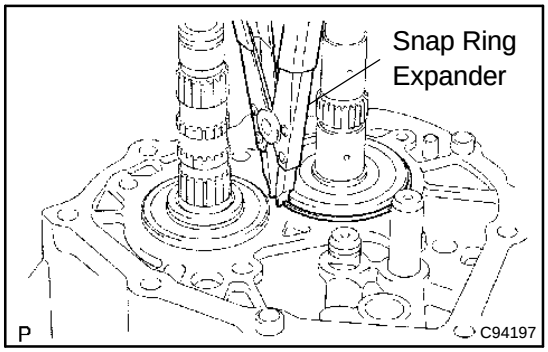
(b) Using a magnetic finger, remove the 2 shift detent ball spring seats, 2 shift detent ball compression springs and 2 shift detent balls from the manual transmission case.



32. REMOVE OUTPUT SHAFT REAR BEARING HOLE SNAP RING

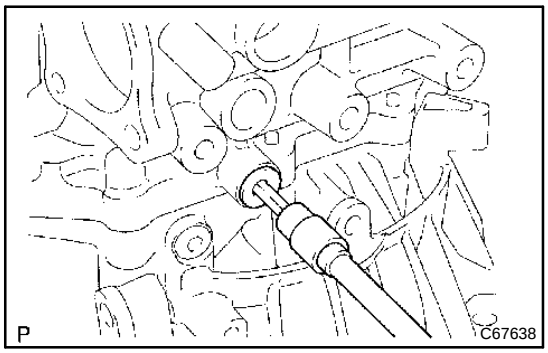
(a) Using a snap ring expander, remove the output shaft rear bearing hole snap ring from the output shaft.

CONTINUED



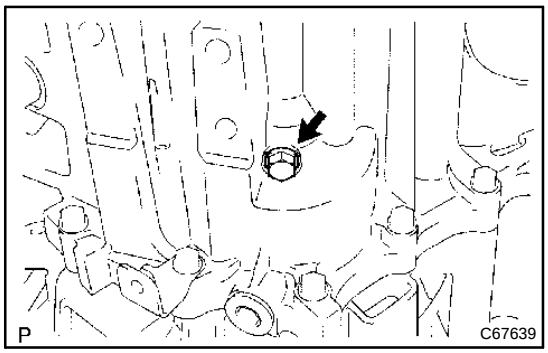
33. REMOVE INPUT SHAFT REAR BEARING HOLE SNAP RING

(a) Using a snap ring expander, remove the input shaft rear bearing hole snap ring.



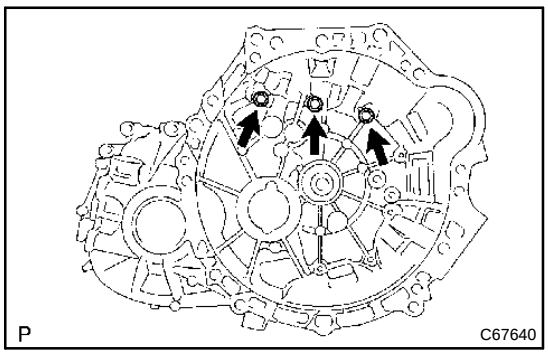
34. REMOVE MANUAL TRANSMISSION CASE PLUG

(a) Using a socket hexagon wrench 6, remove the manual transmission case plug from the manual transmission case.



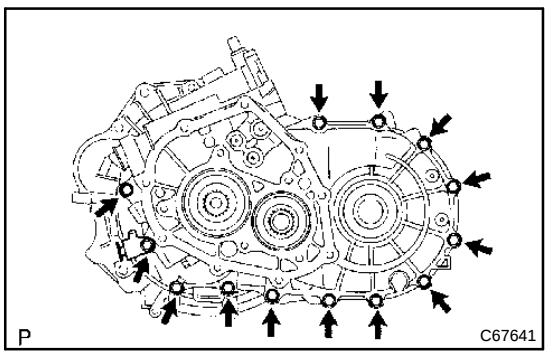
35. REMOVE REVERSE IDLER GEAR SHAFT BOLT

(a) Remove the reverse idler gear shaft bolt and gasket from the manual transmission case.



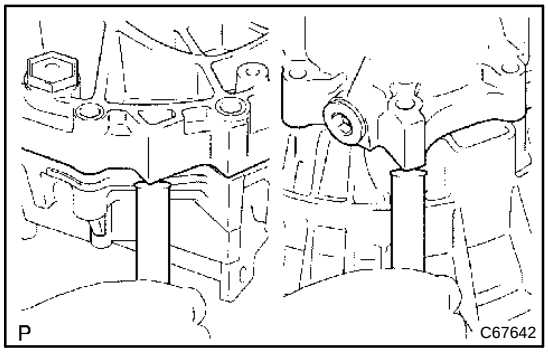
36. REMOVE MANUAL TRANSMISSION CASE

(a) Remove the 3 bolts from the transaxle case side.

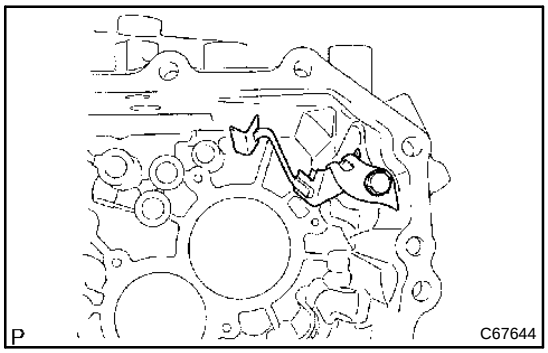


(b) Remove the 13 bolts from manual transmission case side.

CONTINUED



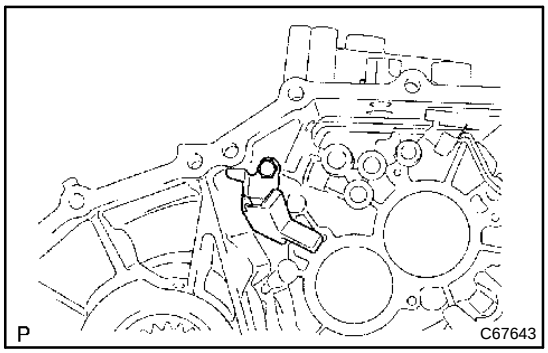
(c) Using a brass bar and a hammer, remove the manual transmission case from the transaxle case.



37. REMOVE OIL RECEIVER PIPE NO.1 (MTM)

(a) Remove the bolt and oil receiver pipe No.1 from the manual transmission case.

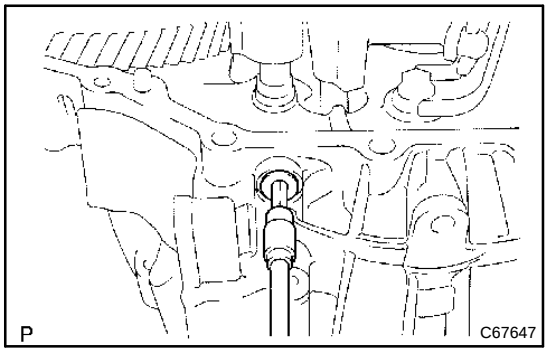
NOTICE:
Be careful not to damage the oil receiver pipe No.1



38. REMOVE OIL RECEIVER PIPE NO.2 (MTM)

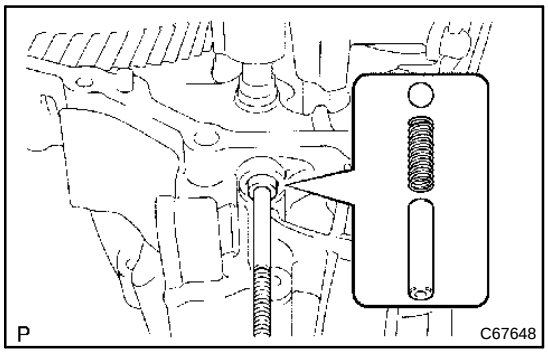
(a) Remove the bolt and oil receiver pipe No.2 from the manual transmission case.

NOTICE:
Be careful not to damage the oil receiver pipe No.2



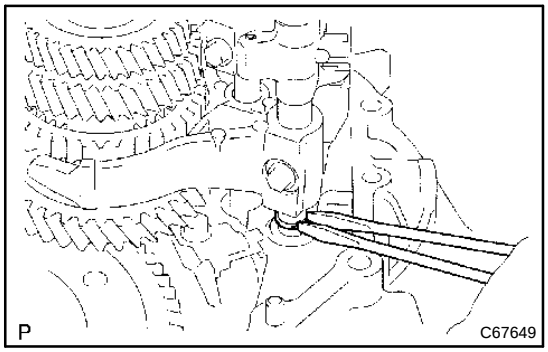
39. REMOVE SHIFT DETENT BALL

(a) Using a socket hexagon wrench 6, remove the shift detent ball plug from the transaxle case.



(b) Using a magnetic finger, remove the shift detent ball spring seat, shift detent ball compression spring and shift detent ball from the transaxle case.

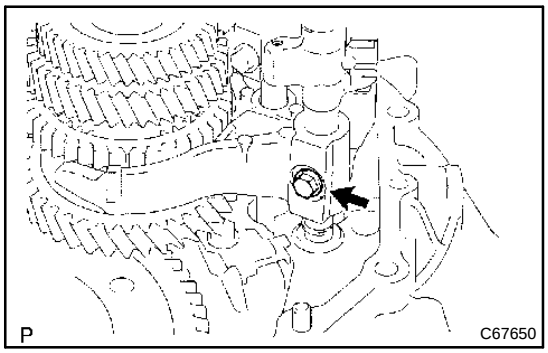
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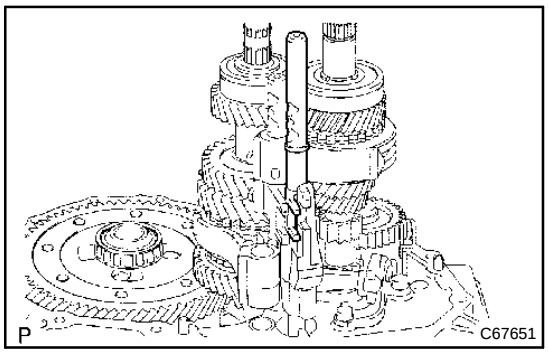
40. REMOVE GEAR SHIFT FORK SHAFT SUB-ASSY NO.1

(a) Using 2 screwdrivers and a hammer, remove shaft snap ring.

NOTICE:
Using a waste to prevent the snap ring from the being scattered.

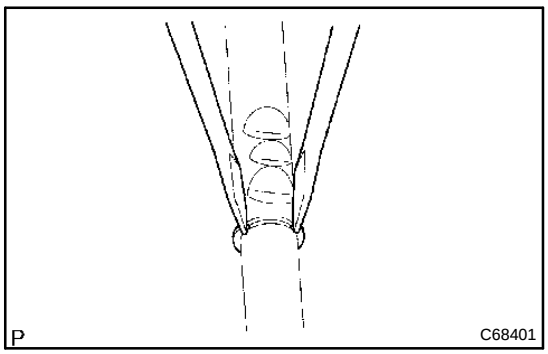


(b) Remove the gear shift fork lock bolt and gear shift fork shaft sub-assy No.1



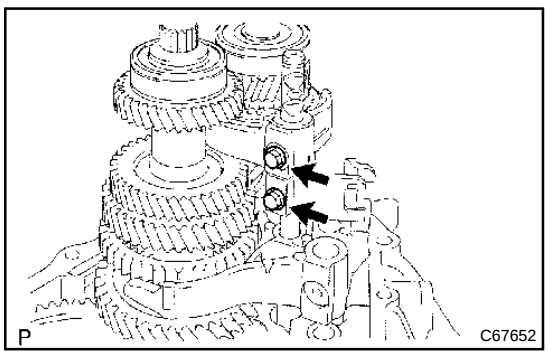
41. REMOVE GEAR SHIFT FORK SHAFT NO.3

(a) Remove the shift fork shaft No.3 from the transaxle case.



(b) Using 2 screwdrivers and a hammer, remove the shaft snap ring from the shift fork shaft No.3

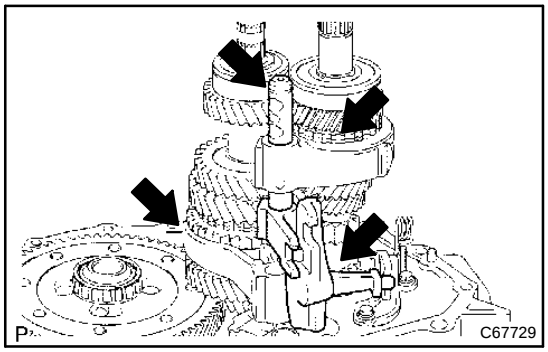
NOTICE:
Using a waste to prevent the snap ring from the being scattered.



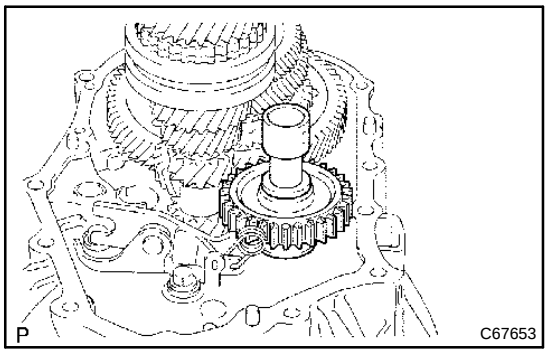
42. REMOVE GEAR SHIFT FORK SHAFT NO.2

(a) Remove the 2 gear shift fork lock bolts from the gear shift fork No.2 and gear shift head No.1

CONTINUED

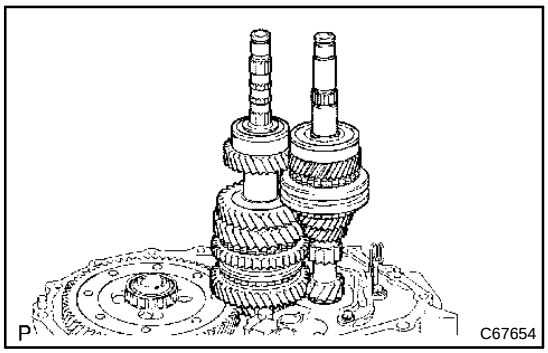


(b) Remove the gear shift fork shaft No.2, gear shift fork No.2, gear shift fork No.1, gear shift head No.1 and reverse shift fork.



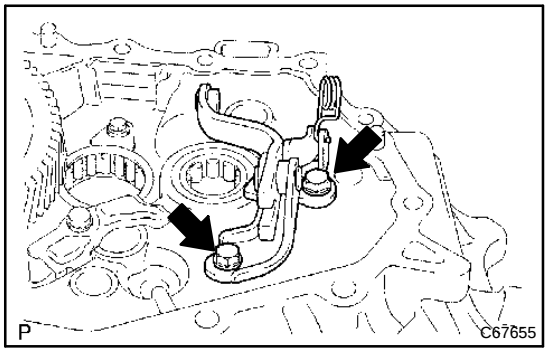
43. REMOVE REVERSE IDLER GEAR SUB-ASSY

(a) Remove the reverse idler gear shaft, thrust washer and reverse idler gear sub-assy from the transaxle case.



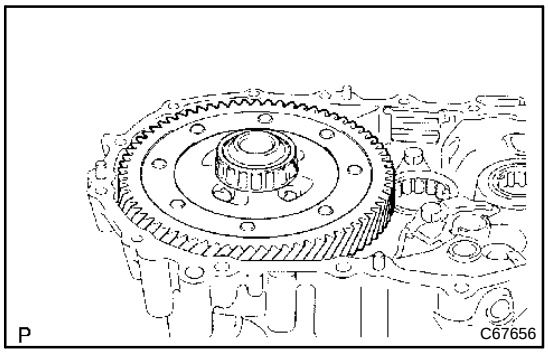
44. REMOVE INPUT SHAFT ASSY

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



45. REMOVE REVERSE SHIFT ARM BRACKET ASSY

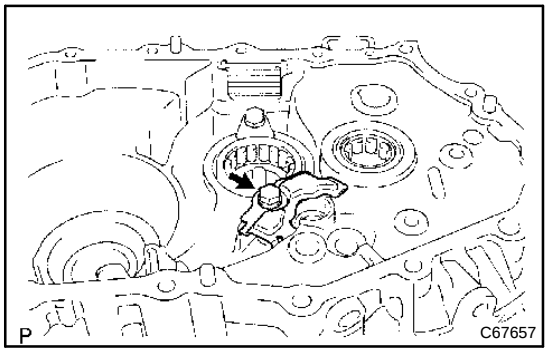
(a) Remove the 2 bolts and reverse shift arm bracket assy from the transaxle case.



46. REMOVE DIFFERENTIAL CASE ASSY

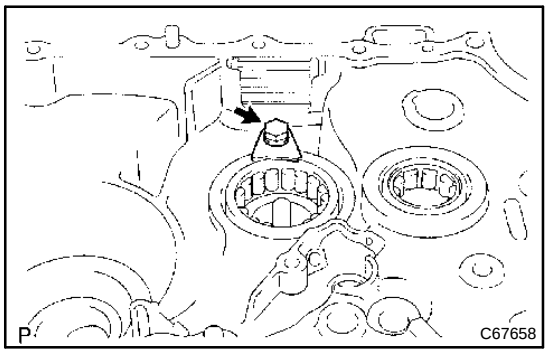
(a) Remove the differential case assy from the transaxle case.

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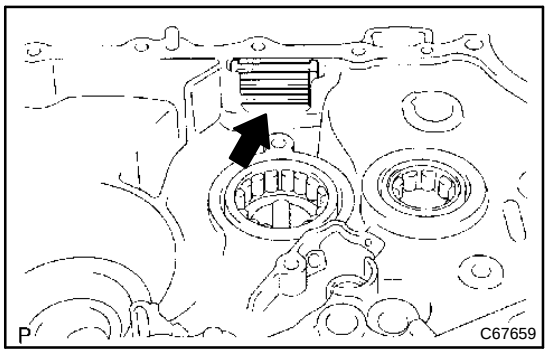
47. REMOVE MANUAL TRANSAXLE CASE RECEIVER

(a) Remove the bolt and manual transaxle case receiver from the transaxle case.



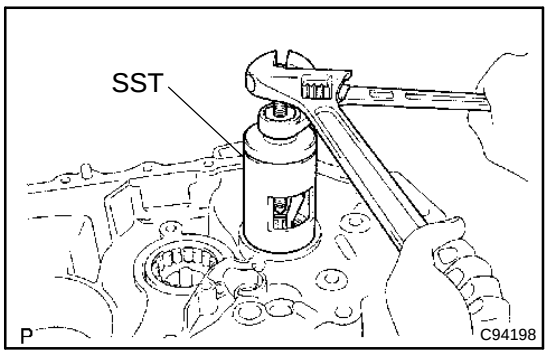
48. REMOVE BEARING LOCK PLATE

(a) Remove the bolt and bearing lock plate from the transaxle case.



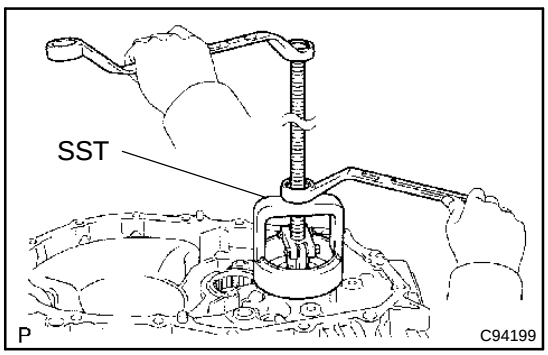
49. REMOVE TRANSMISSION MAGNET

(a) Remove the transmission magnet from the transaxle case.



50. REMOVE INPUT SHAFT FRONT BEARING

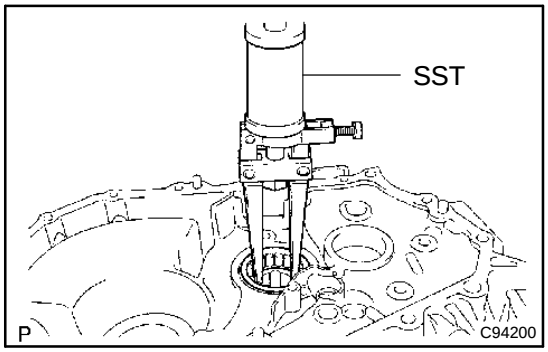
(a) Using SST, remove the input shaft front bearing (outer race) from the transaxle case.
SST 09612-24014 (09613-22011)



51. REMOVE FRONT TRANSAXLE CASE OIL SEAL

(a) Using SST, remove the front transaxle case oil seal from the transaxle case.
SST 09612-65014 (09612-01040, 09612-01050)

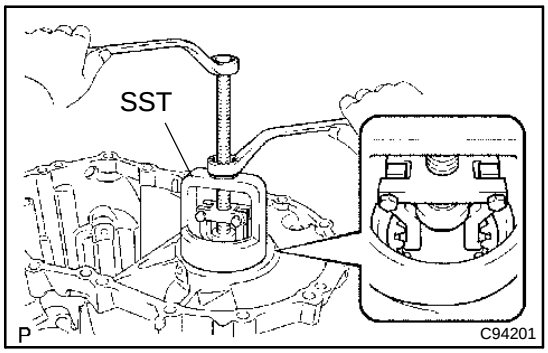
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52. REMOVE OUTPUT SHAFT FRONT BEARING

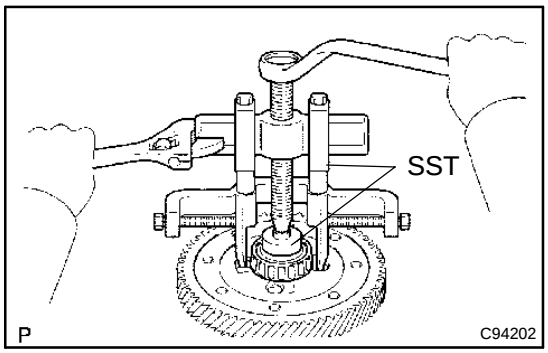
(a) Using SST, remove the output shaft front bearing from the transaxle case.
SST 09308-00010

NOTICE:
Do not apply unreasonable force to the transaxle case when installing it.

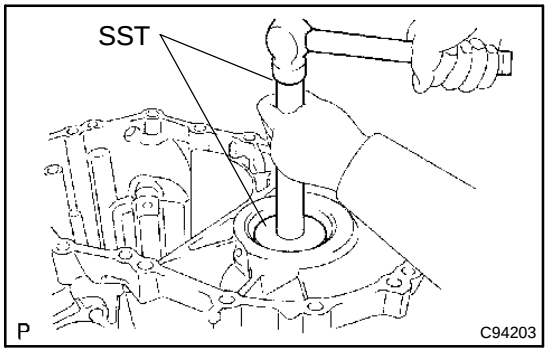


53. REMOVE FR DIFFERENTIAL CASE REAR TAPERED ROLLER BEARING

(a) Using SST, remove the front differential case rear tapered roller bearing (outer race) and shim from manual transmission case.
SST 09612-65014 (09612-01040, 09612-01050)

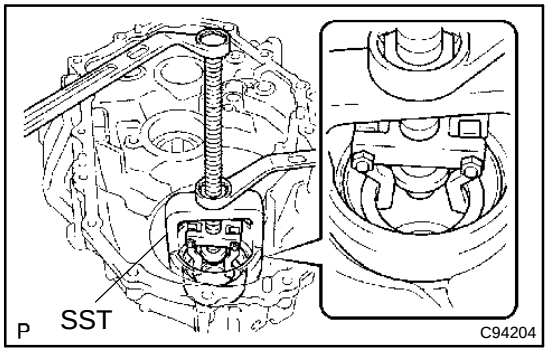


(b) Using SST, remove the FR differential case rear tapered roller bearing (inner race) from the front differential case.
SST 09950-40011 (09951-00390, 09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04061, 09957-04010, 09958-04011), 09950-60010



54. REMOVE TRANSMISSION CASE OIL SEAL

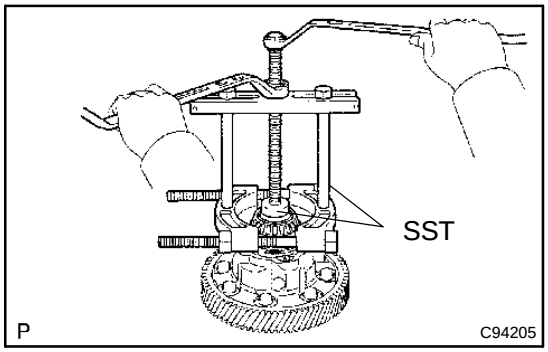
(a) Using SST and a hammer, remove transmission case oil seal from the manual transmission case.
SST 09950-60010 (09951-00530), 09950-70010 (09951-07150)



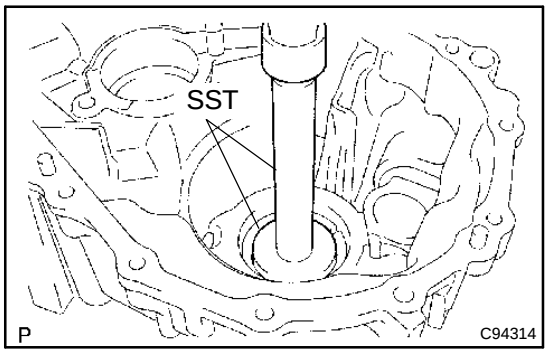
55. REMOVE FR DIFFERENTIAL CASE FRONT TAPERED ROLLER BEARING

(a) Using SST, remove the front differential case front tapered roller bearing (outer race) and front differential case washer FR from the transaxle case.
SST 09612-65014 (09612-01040, 09612-01050)

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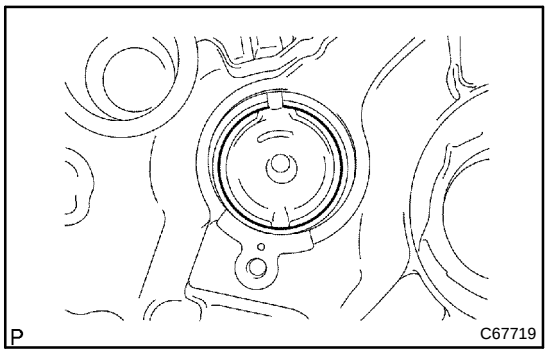


(b) Using SST, remove the FR differential case front tapered roller bearing (inner race) from the front differential case.
SST 09950-00020, 09950-00030, 09950-40011 (09957-04010), 09950-60010 (09951-00390)



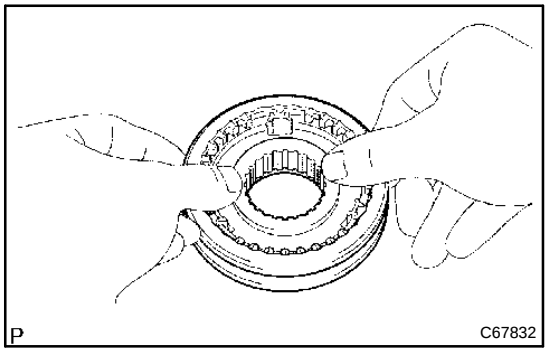
56. REMOVE TRANSAXLE CASE OIL SEAL

(a) Using SST and a hammer, remove transaxle case oil seal from the transaxle case.
SST 09950-60010 (09951-00600), 09950-70010 (09951-07100)



57. REMOVE OUTPUT SHAFT (MTM) COVER

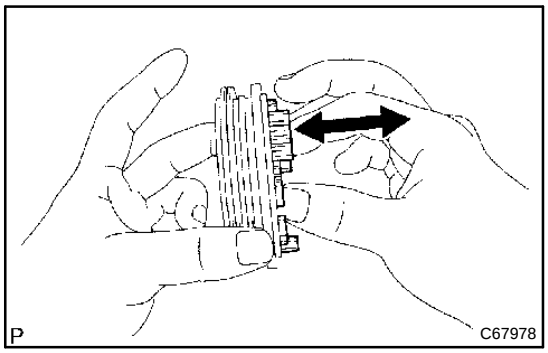
(a) Remove the output (MTM) shaft cover from the transaxle case.



58. REMOVE TRANSMISSION HUB SLEEVE NO.3

(a) Remove the transmission hub sleeve No.3, 3 synchromesh shifting key No.3 and 2 synchromesh shifting key spring No.3

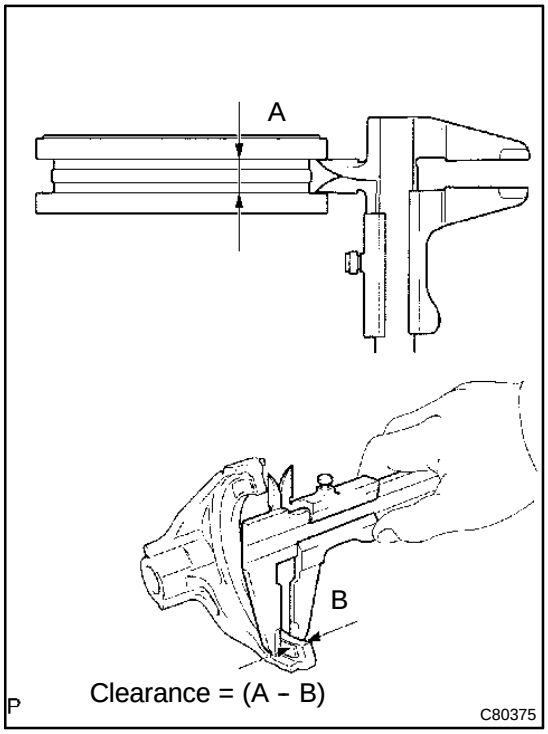
NOTICE:
Using a waste to prevent the synchromesh shifting key and spring from the being scattered.



59. INSPECT TRANSMISSION HUB SLEEVE NO.3

(a) Check the sliding condition between the transmission hub sleeve No.3 and transmission clutch hub No.3.
(b) Check that spline gears of the transmission hub sleeve No.3 is not worn down.

CONTINUED

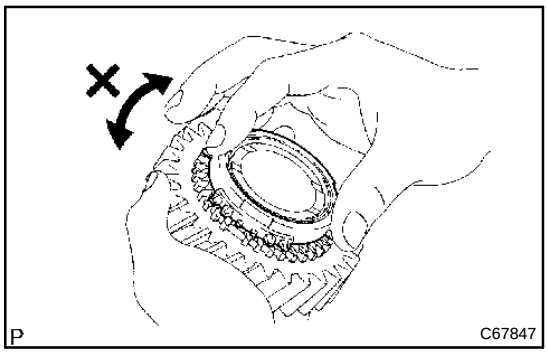


(c) Using a vernier calipers, inspect the transmission hub sleeve No.3 and gear shift fork No.3 as shown in the illustration.

Standard clearance:

0.31 - 0.89 mm (0.0122 - 0.035 in.)

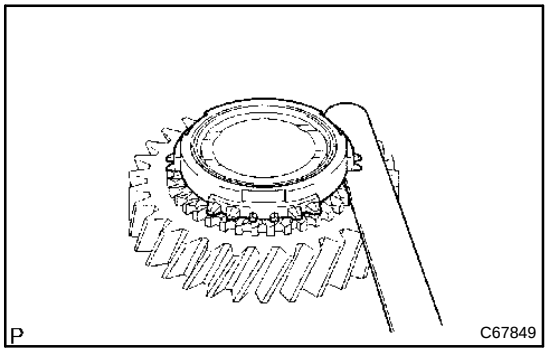
If the clearance out of specification, replace the transmission hub sleeve No.3 and gear shift fork No.3.



60. INSPECT SYNCHRONIZER RING NO.3 (FOR 6TH GEAR MT)

(a) Check for wear of damage.

(b) Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the gear cone, check that the ring locks.

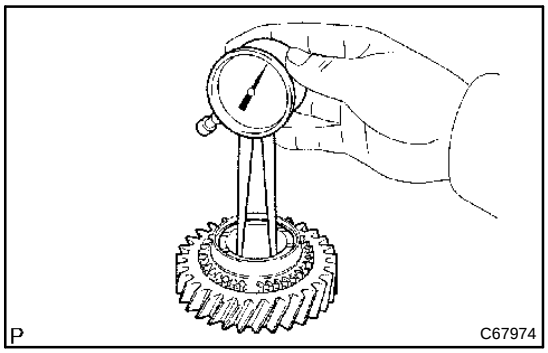


(c) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.

Standard clearance:

0.75 - 1.65 mm (0.0295 - 0.065 in.)

If the clearance is out of specification, replace the synchronizer ring No.3.



61. INSPECT 6TH GEAR SUB-ASSY

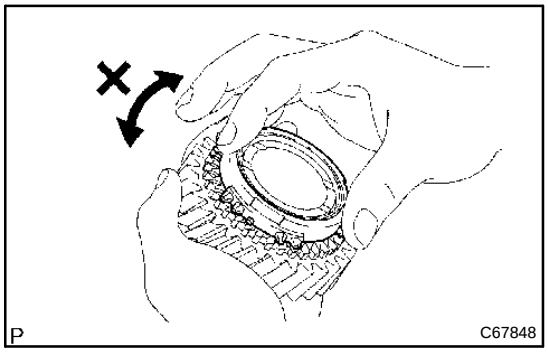
(a) Using a caliper gauge, inspect the 6th gear inner diameter.

Inner diameter:

New gear: mm (in.)	Maximum inner diameter: mm (in.)
28.015 - 28.031 (1.103 - 1.1036)	28.031 (1.1036)

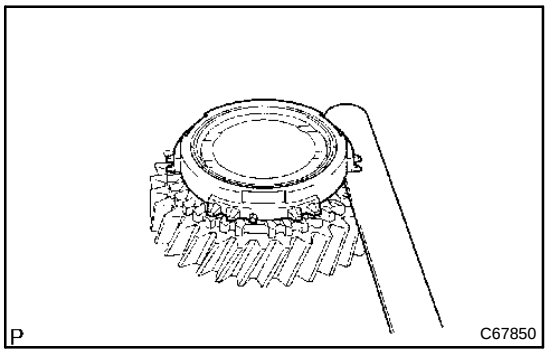
If the clearance is exceeds the maximum, replace the 6 th gear sub-assy.

CONTINUED



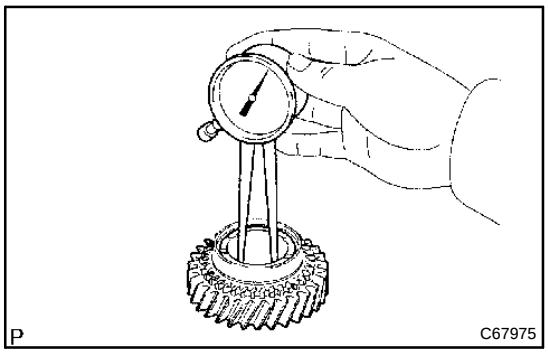
62. INSPECT SYNCHRONIZER RING NO.3 (FOR 5TH GEAR MT)

(a) Check the braking effect of the synchronizer ring.
Turn the synchronizer ring in one direction while pushing it to the gear cone, check that the ring locks.



(b) Using a feeler gauge, measure the clearance between the synchronizer ring back and 5th gear spline end.
Standard clearance:
0.75 - 1.65 mm (0.0295 - 0.0650 in.)

If the clearance is out of specification, replace the synchronizer ring No.3.



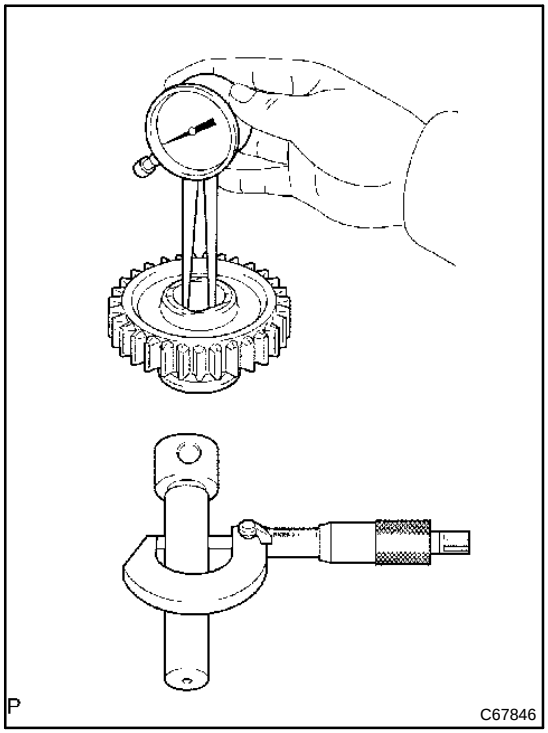
63. INSPECT 5TH GEAR

(a) Using a caliper gauge, inspect the 5th gear inner diameter.

Inner diameter:

New gear: mm (in.)	Maximum inner diameter: mm (in.)
29.915 - 29.931 (1.1778 - 1.1784)	29.931 (1.1784)

If the inner diameter is exceeds the maximum, replace the 5th gear.



64. INSPECT REVERSE IDLER GEAR SUB-ASSY

(a) Using a caliper gauge, inspect the reverse idler gear sub - assy as shown in the illustration.

Inner diameter:

New gear: mm (in.)	Maximum inner diameter: mm (in.)
18.040 - 18.058 (0.7102 - 0.7109)	18.058 (0.7109)

If the inner diameter is exceeds the maximum, replace the reverse idler gear sub-assy.

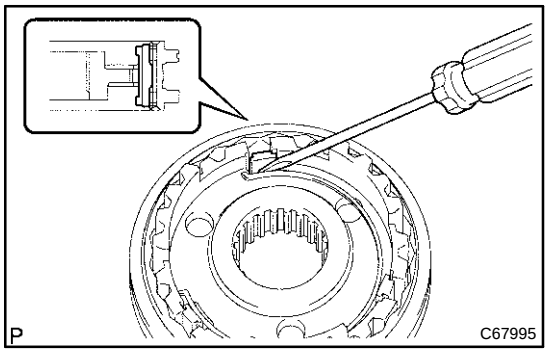
(b) Using a micrometer, inspect the reverse idler gear shaft as shown in the illustration.

Outer diameter:

New idler gear shaft: mm (in.)	Minimum outer diameter: mm (in.)
17.966 - 17.984 (0.7073 - 0.7080)	17.966 (0.7073)

If the outer diameter is exceeds the minimum, replace the reverse idler gear shaft.

CONTINUED



65. INSTALL TRANSMISSION HUB SLEEVE NO.3

(a) Coat the transmission hub sleeve No.3 with gear oil, install it to the transmission clutch hub No.3.

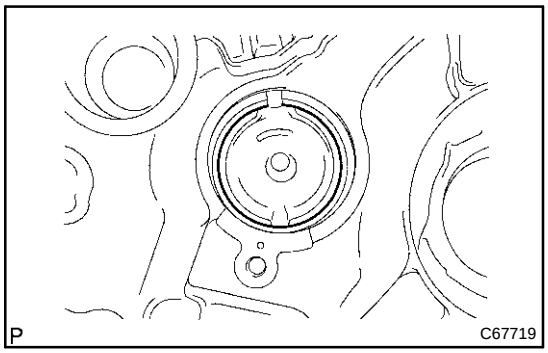
NOTICE:

Do not set the transmission clutch hub No.3 in incorrect orientation.

(b) Using a screwdriver, install the 2 synchromesh shifting key spring No.3 and 3 synchromesh shifting key No.3.

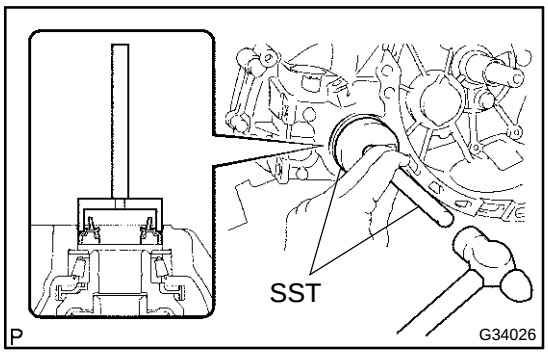
NOTICE:

Do not set both openings of the shifting key spring in the same position.



66. INSTALL OUTPUT SHAFT (MTM) COVER

(a) Coat the output shaft (MTM) cover with MP grease, install it to the transansaxle case.

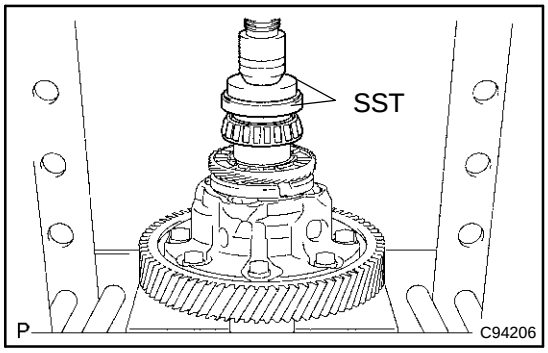


67. INSTALL TRANSAXLE CASE OIL SEAL

(a) Using SST and a hammer, install the transaxle case oil seal No.2 to the transaxle case.

SST 09710–20011 (09710–06071), 09950–70010 (09951–07100)

Driven in depth: 1.6 – 2.2 mm (0.063 – 0.087 in.)

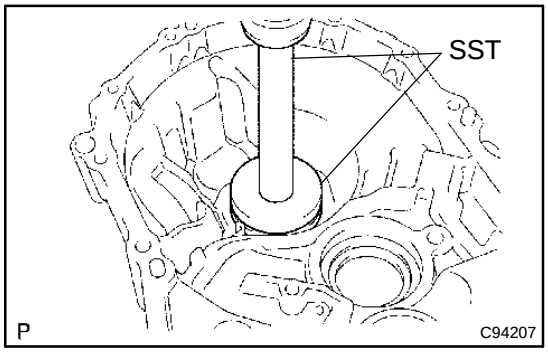


68. INSTALL FR DIFFERENTIAL CASE FRONT TAPERED ROLLER BEARING

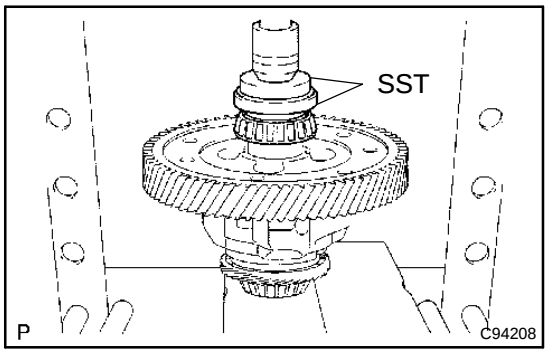
(a) Using SST and a press, install FR differential case front tapered roller bearing (inner race) to the front differential case.

SST 09350–32014 (09351–32120), 09950–60010 (09951–00530)

CONTINUED

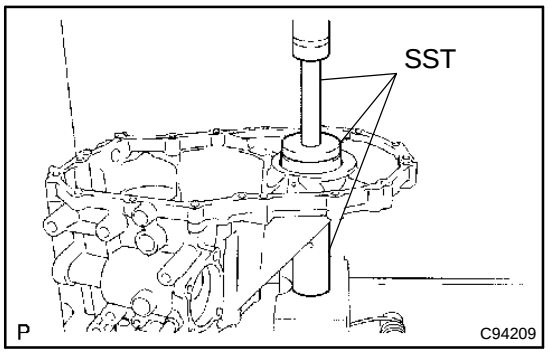


(b) Using SST and a press, install the FR differential case front bearing spacer and FR differential case front tapered roller bearing (outer race) to the transaxle case.
SST 09950-60020 (09951-00680), 09950-70010 (09951-07150)



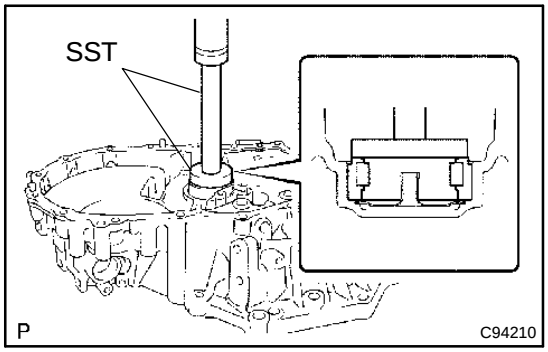
69. INSTALL FR DIFFERENTIAL CASE REAR TAPERED ROLLER BEARING

(a) Using SST and a press, install the FR differential case rear tapered roller bearing (inner race) to the front differential case.
SST 09350-32014 (09351-32120), 09950-60010 (09951-00530)



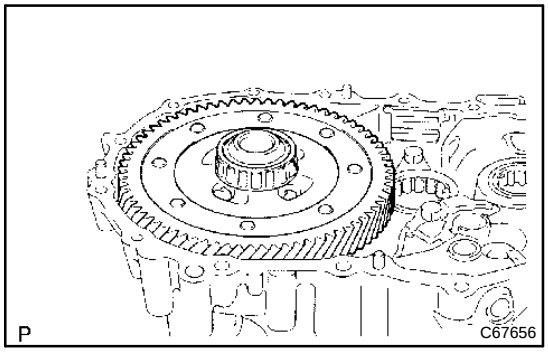
(b) Using SST and a press, install the front differential case shim RR and FR differential case rear tapered roller bearing (outer race) to the manual transmission case.
SST 09309-36010, 09950-60020 (09951-00710), 09950-70010 (09951-07150)

HINT:
Use a front differential case shim RR of the same thickness with the remove one.



70. INSTALL OUTPUT SHAFT FRONT BEARING

(a) Coat the new output shaft front bearing with gear oil, using SST and a press, install it to the transaxle case.
SST 09950-60010 (09951-00550), 09950-70010 (09951-07150)

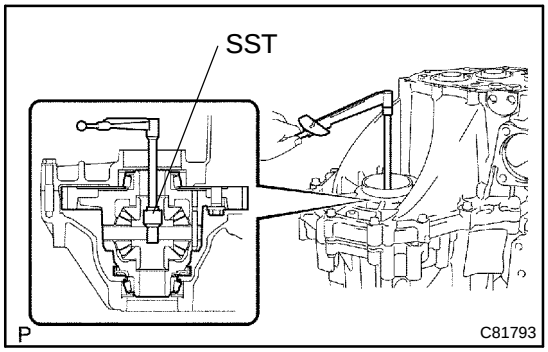


71. ADJUST DIFFERENTIAL SIDE BEARING RRELOAD

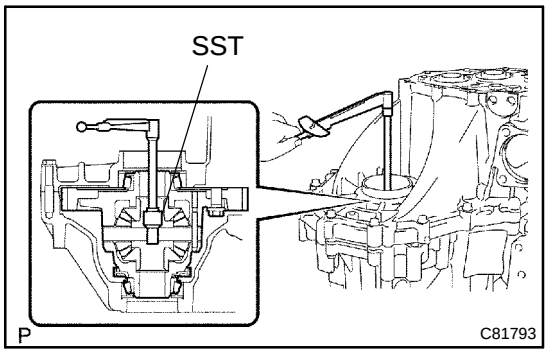
(a) Coat the differential case assy with gear oil, install it to the transaxle case.

(b) Install the manual transmission case with 16 bolts.
Torque: 29.4 N·m (300 kgf·cm, 22 ft·lbf)

CONTINUED



(c) Using SST and a torque wrench, turn the deferential case assy right and left 2 or 3 times to allow the bearings to settle.
SST 09564-32011



(d) Using SST and a torque wrench, measure the preload.
SST 09564-32011

Preload:

Bearing	Torque
New	0.78 - 1.57 N·m (8 - 16 kgf·cm, 7 - 14 in.·lbf)
Used	0.49 - 0.98 N·m (5 - 10 kgf·cm, 4 - 9 in.·lbf)

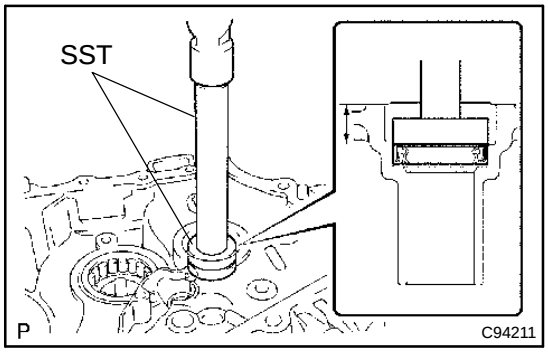
If the preload is out of the specification, select the front differential case shim RR adjust it.
HINT:

Shim thickness:

Part No.	Thickness: mm (in.)	Make
90564-41014	2.10 (0.0827)	AA
90564-41015	2.15 (0.0846)	BB
90564-41016	2.20 (0.0866)	CC
90564-41017	2.25 (0.0886)	DD
90564-41018	2.30 (0.0906)	EE
90564-41019	2.35 (0.0925)	FF
90564-41020	2.40 (0.0945)	GG
90564-41021	2.45 (0.0965)	HH
90564-41022	2.50 (0.0984)	JJ
90564-41023	2.55 (0.1004)	KK
90564-41024	2.60 (0.1024)	LL
90564-41025	2.65 (0.1043)	MM
90564-41026	2.70 (0.1063)	NN
90564-41027	2.75 (0.1083)	PP
90564-41028	2.80 (0.1102)	QQ
90564-41029	2.85 (0.1122)	RR
90564-41030	2.90 (0.1142)	SS
90564-41031	2.95 (0.1161)	TT
90564-41032	3.00 (0.1181)	UU

(e) Remove the 16 bolts and manual transmission case.
(f) Remove the differential case assy from the transaxle case.

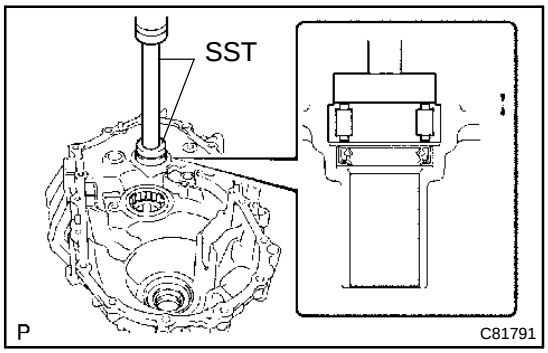
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72. INSTALL FRONT TRANSAXLE CASE OIL SEAL

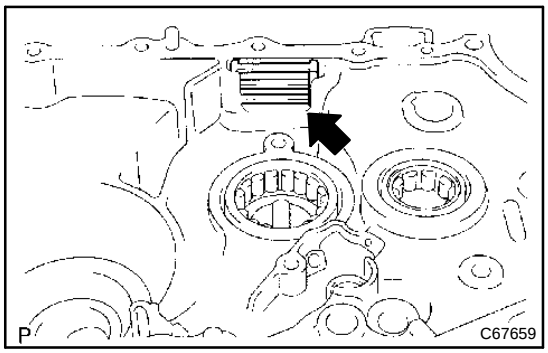
(a) Using SST and a hammer, install a new front transaxle case oil seal to the transaxle case.
SST 09950-60010 (09951-00370), 09950-70010 (09951-07150)
Driven in depth: 15.6 - 16.0 mm (0.6142 - 0.6299 in.)

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



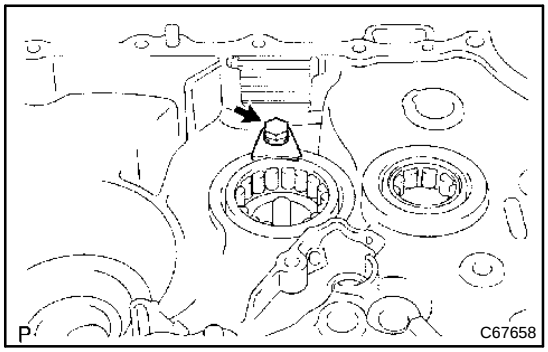
73. INSTALL INPUT SHAFT FRONT BEARING

(a) Coat new input shaft front bearing with MP grease, using SST and a press, install it to the transaxle case.
SST 09950-60010 (09951-00420), 09950-70010 (09951-07150)
Driven in depth: 0 - 0.30 mm (0 - 0.0118 in.)



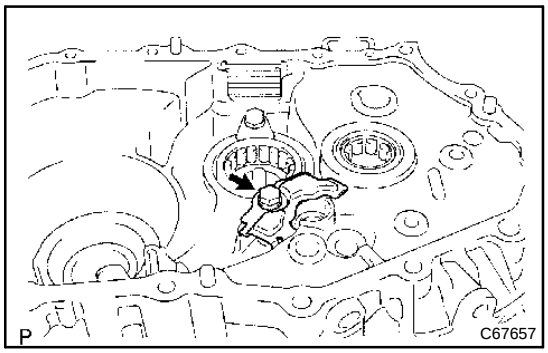
74. INSTALL TRANSMISSION MAGNET

(a) Clean the transmission magnet, install it to the transaxle case.



75. INSTALL BEARING LOCK PLATE

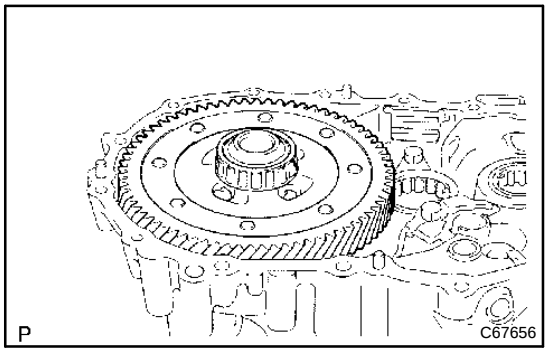
(a) Install the bearing lock plate with bolt to the transaxle case.
Torque: 11.3 N·m (115 kgf·cm, 8 ft·lbf)



76. INSTALL MANUAL TRANSAXLE CASE RECEIVER

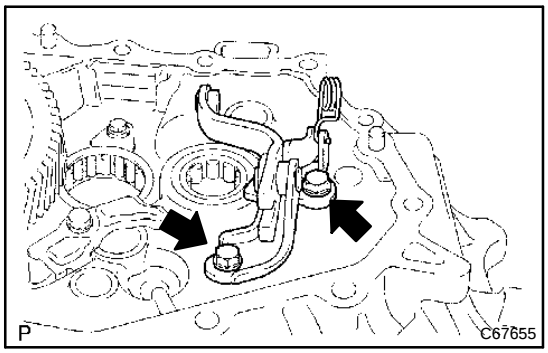
(a) Install the manual transaxle case receiver with bolt to the transaxle case.
Torque: 11.3 N·m (115 kgf·cm, 8 ft·lbf)

CONTINUED



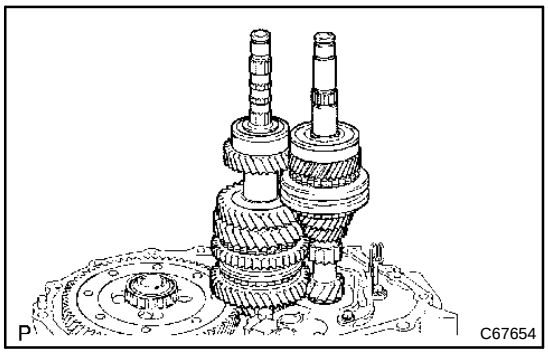
77. INSTALL DIFFERENTIAL CASE ASSY

(a) Coat the differential case tapered roller bearing with gear oil, install the differential case assy to the transaxle case.



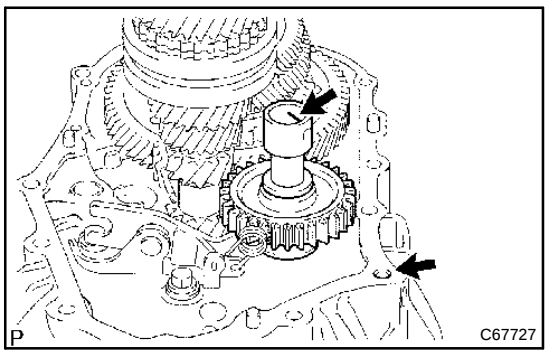
78. INSTALL REVERSE SHIFT ARM BRACKET ASSY

(a) Install the reverse shift arm bracket assy with 2 bolts to the transaxle case.
Torque: 17.2 N·m (19.2 kgf·cm, 14 ft·lbf)



79. INSTALL INPUT SHAFT ASSY

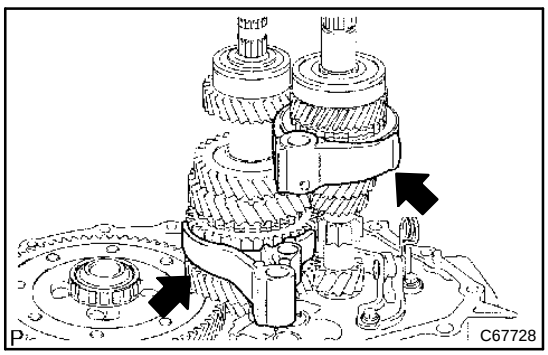
(a) Coat the sliding and rotating surface of the input and output shafts with gear oil, install them to the transaxle case.



80. INSTALL REVERSE IDLER GEAR SUB-ASSY

(a) Coat the reverse idler gear sub-assy, thrust washer and reverse idler gear shaft with gear oil, install them to the transaxle case.

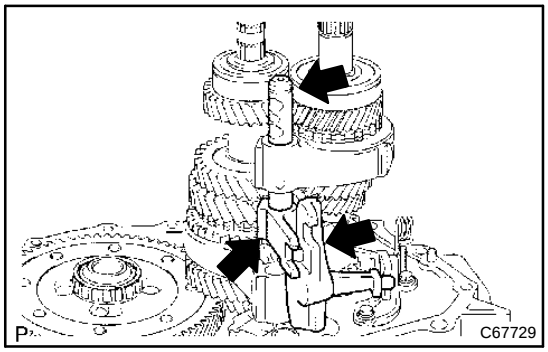
HINT:
Align the mark on the reverse idler gear shaft with the bolt hole shown in the illustration.



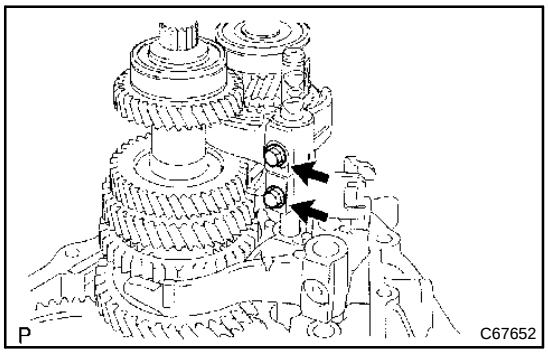
81. INSTALL GEAR SHIFT FORK SHAFT NO.2

(a) Coat the gear shift fork No.2 and gear shift fork No.1 with gear oil, install them to the input and output shafts.

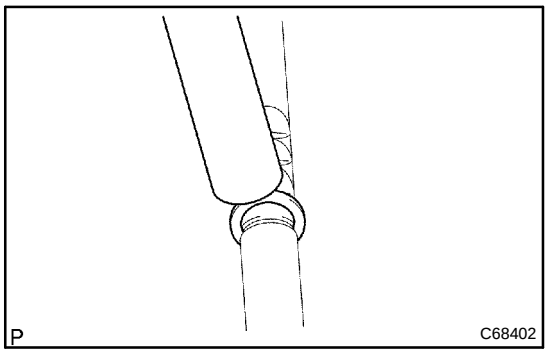
CONTINUED



(b) Coat the gear shift fork shaft No.2 with gear oil, install the gear shift head No.1, reverse shift fork and gear shift fork shaft No.2.

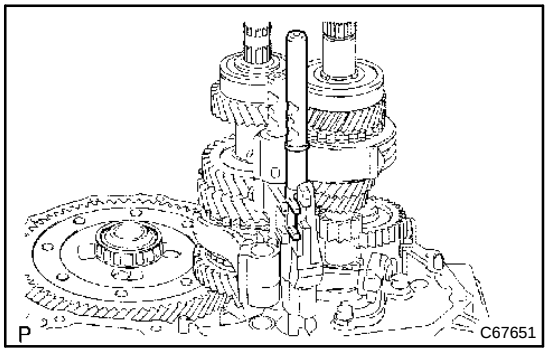


(c) Coat the 2 shift lock bolts with sealant, install them to the gear shift fork No.2 and gear shift head No.1.
Sealant:
Part No.08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
Torque: 15.7 N·m (160 kgf·cm, 12 ft·lbf)

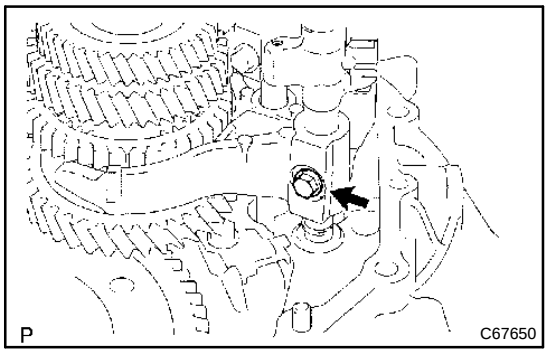


82. INSTALL GEAR SHIFT FORK SHAFT NO.3

(a) Using a brass bar and a hammer, install the shaft snap ring to the gear shift fork shaft No.3.



(b) Coat the gear shift fork shaft No.3 with gear oil, install it to the transaxle case.

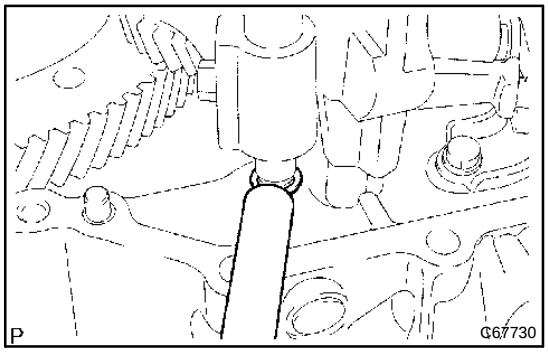


83. INSTALL GEAR SHIFT FORK SHAFT SUB-ASSY NO.1

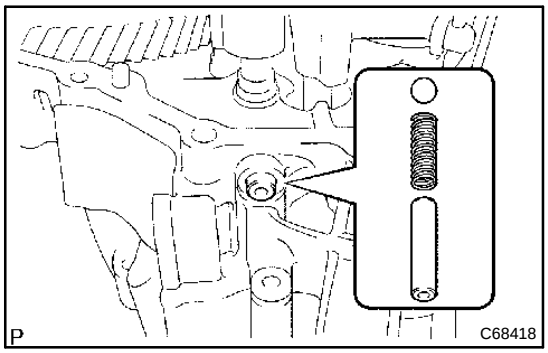
(a) Coat the gear shift fork shaft sub-assy No.1 with gear oil, install it to the transaxle case.

(b) Coat the shift fork lock bolt with sealant, install it to the gear shift fork No.1.
Sealant:
Part No.08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
Torque: 15.7 N·m (160 kgf·cm, 12 ft·lbf)

CONTINUED

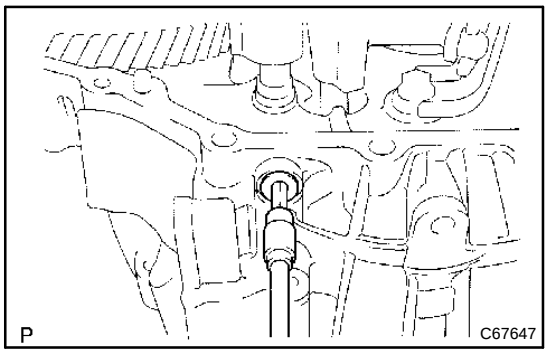


(c) Using a brass bar and a hammer, install shaft snap ring.

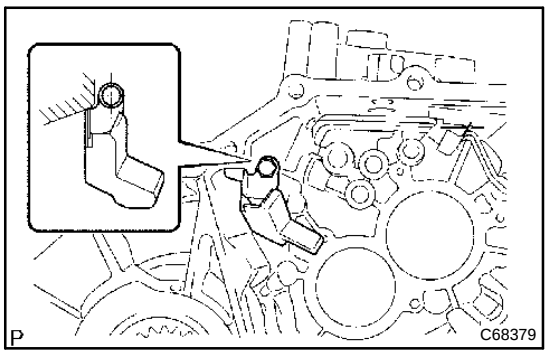


84. INSTALL SHIFT DETENT BALL

(a) Install the shift detent ball, shift detent ball compression spring and shift detent ball spring seat to the transaxle case.

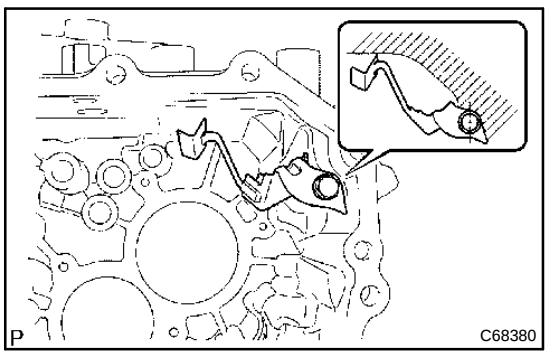


(b) Coat the shift detent ball plug with sealant, using SST, install it to the transaxle case.
Sealant:
Part No.08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
Torque: 24.5 N·m (250 kgf·cm, 18 ft·lbf)



85. INSTALL OIL RECEIVER PIPE NO.2 (MTM)

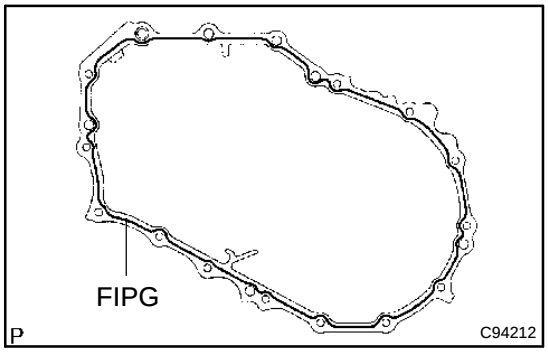
(a) Install the oil receiver pipe No.2 (MTM) with bolt to the manual transmission case.
Torque: 17.2 N·m (175 kgf·cm, 13 ft·lbf)



86. INSTALL OIL RECEIVER PIPE NO.1 (MTM)

(a) Install the oil receiver pipe No.1 (MTM) with bolt to the manual transmission case.
Torque: 17.2 N·m (175 kgf·cm, 13 ft·lbf)

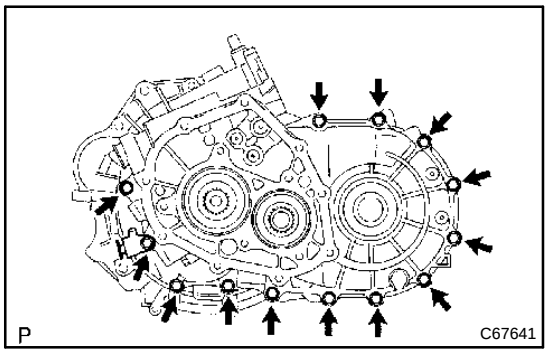
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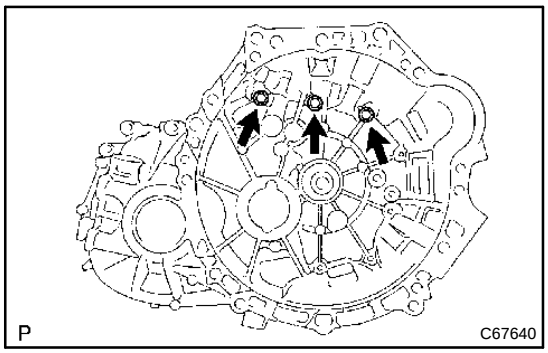
87. INSTALL MANUAL TRANSMISSION CASE

(a) Apply FIPG to the manual transmission case, as shown to the illustration.
FIPG:
Part No.08826-00090, THREE BOND 1281 or equivalent

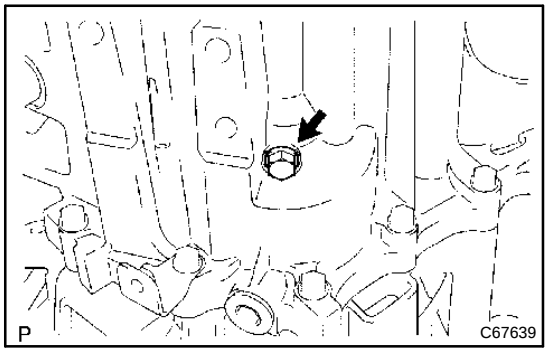
NOTICE:
Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material.



(b) Install the 13 bolts to the manual transmission side.
Torque: 29.4 N·m (300 kgf·cm, 22 ft·lbf)

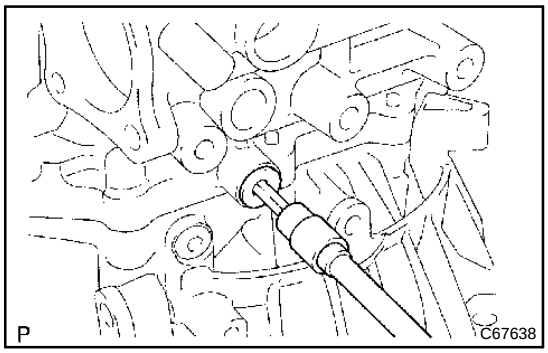


(c) Install the 3 bolts to the transaxle case side.
Torque: 29.4 N·m (300 kgf·cm, 22 ft·lbf)



88. INSTALL REVERSE IDLER GEAR SHAFT BOLT

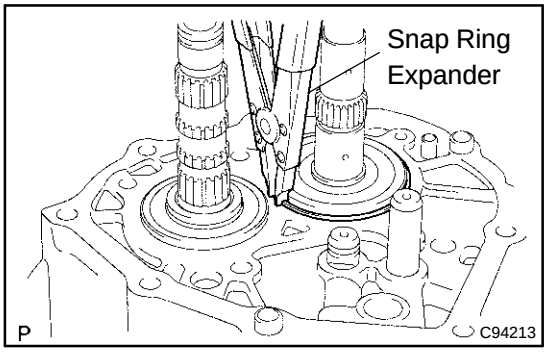
(a) Coat the reverse idler gear shaft bolt with sealant, install it with new gasket to the manual transmission case.
Sealant:
Part No.08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
Torque: 29.4 N·m (300 kgf·cm, 22 ft·lbf)



89. INSTALL MANUAL TRANSMISSION CASE PLUG

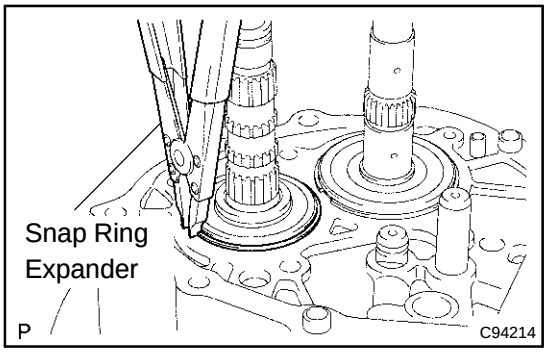
(a) Coat the transmission case plug with sealant, using socket hexagon wrench 6, install it to the manual transmission case.
Sealant:
Part No.08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
Torque: 39.2 N·m (400 kgf·cm, 29 ft·lbf)

CONTINUED



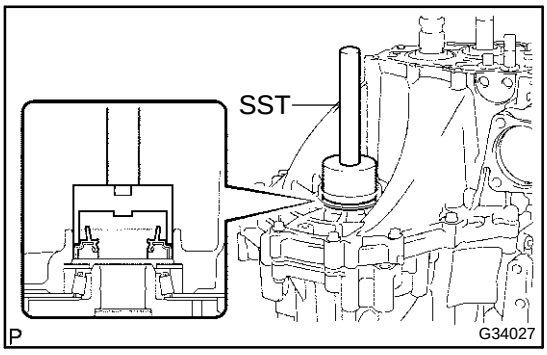
90. INSTALL INPUT SHAFT REAR BEARING HOLE SNAP RING

(a) Using a snap ring expander, install the input shaft rear bearing hole snap ring to the input shaft.



91. INSTALL OUTPUT SHAFT REAR BEARING HOLE SNAP RING

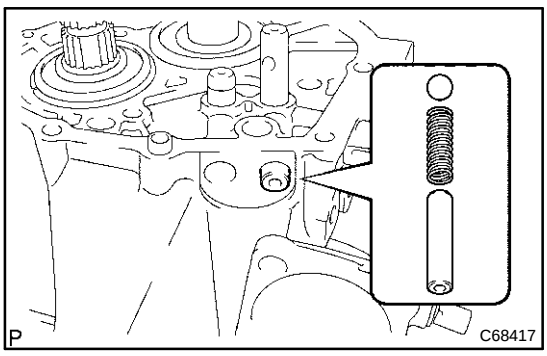
(a) Using a snap ring expander, install the output shaft rear bearing hole snap ring to the output shaft.



92. INSTALL TRANSMISSION CASE OIL SEAL

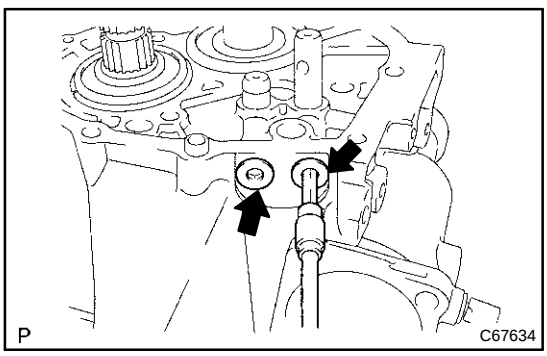
(a) Using SST and a hammer, install the transmission case oil seal to the manual transmission case.
SST 09726–36010, 09950–70010 (09951–07100)
Driven in depth: 9.6 – 10.2 mm (0.3780 – 0.4016 in.)

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



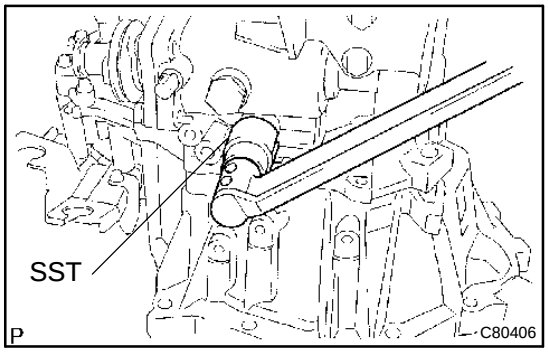
93. INSTALL SHIFT DETENT BALL

(a) Install the 2 shift detent balls, 2 shift detent ball springs and 2 shift detent ball spring seats to the manual transmission case.



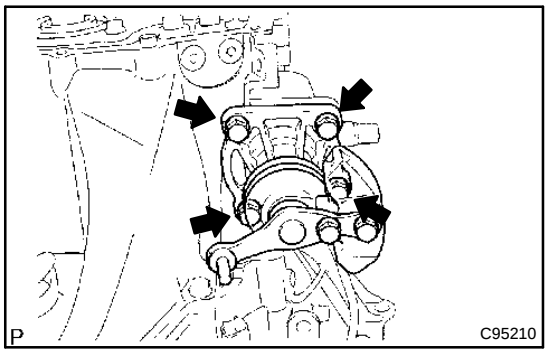
(b) Coat the 2 shift detent ball plugs with sealant, install it to the manual transmission case.
Sealant:
Part No.08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent
Torque: 24.5 N·m (250 kgf·cm, 18 ft·lbf)

CONTINUED



94. INSTALL BACK UP LAMP SWITCH ASSY

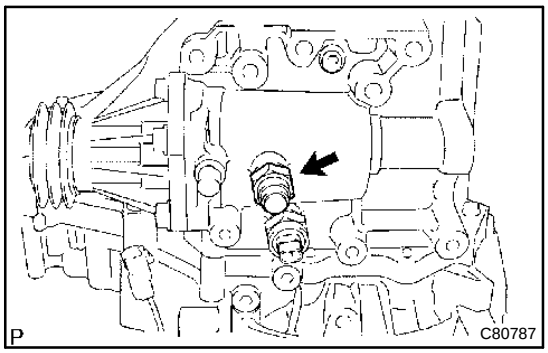
(a) Using SST, install the back up lamp switch assy with a new gasket to the manual transmission case.
SST 09817-16011
Torque: 40.2 N·m (410 kgf·cm, 30 ft·lbf)



95. INSTALL SHIFT & SELECT LEVER SHAFT ASSY

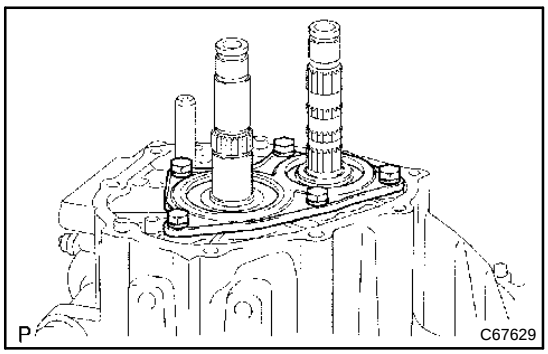
(a) Coat the shift & select lever shaft assy with gear oil.

(b) Coat the 4 bolts with sealant, install them with new gasket and shift & select lever shaft assy.
Sealant:
Part No.08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
Torque: 19.6 N·m (200 kgf·cm, 14 ft·lbf)



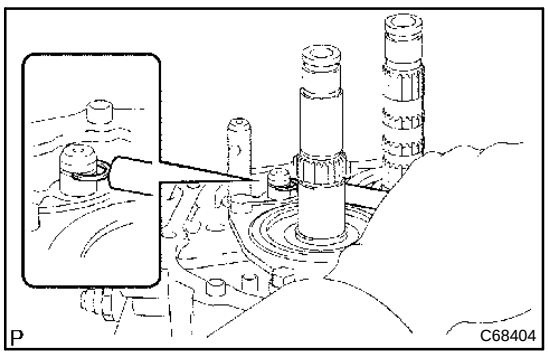
96. INSTALL LOCK BALL ASSY NO.1

(a) Coat the lock ball assy No.1 with sealant, install it to the manual transmission case.
Torque: 29.4 N·m (300 kgf·cm, 22 ft·lbf)



97. INSTALL BEARING RETAINER REAR (MTM)

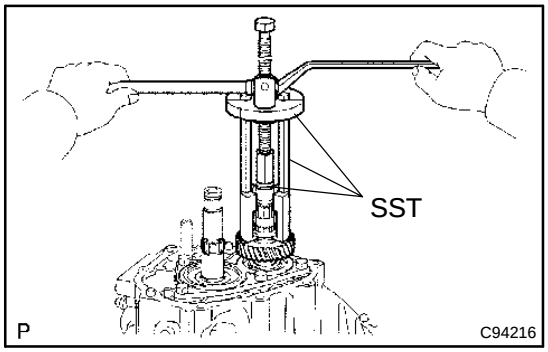
(a) Coat the 5 bolts with sealant, install it with bearing retainer rear to the manual transmission case.
Sealant:
Part No.08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent
Torque: 27.4 N·m (279 kgf·cm, 20 ft·lbf)



98. INSTALL SHIFT FORK SHAFT SHAFT SNAP RING

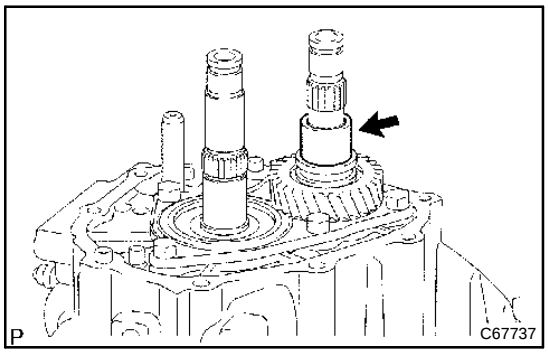
(a) Using a brass bar and a hammer, install the shift fork shaft snap ring to the shift fork shaft No.2.

CONTINUED



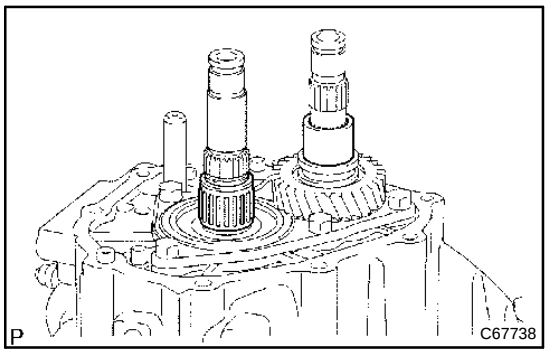
99. INSTALL 5TH DRIVEN GEAR

(a) Using SST, install the 5th driven gear to the output shaft.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03011, 09956-03080)



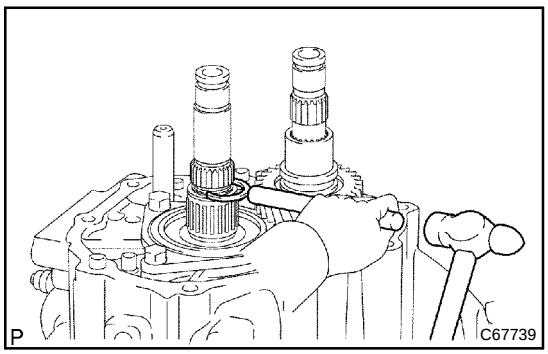
100. INSTALL OUTPUT GEAR SPACER

(a) Install the output gear spacer to the output shaft.

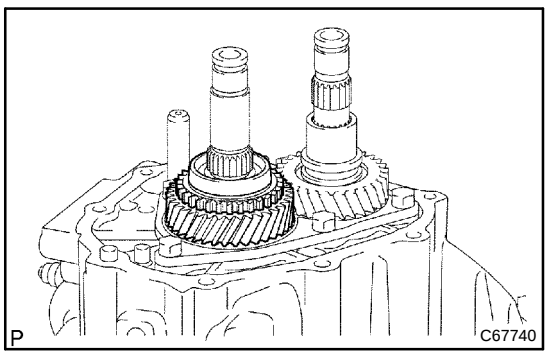


101. INSTALL 5TH GEAR NEEDLE ROLLER BEARING

(a) Coat the 2 5th gear bearing spacers, and 5th gear needle roller bearing with gear oil, install them to the input shaft.



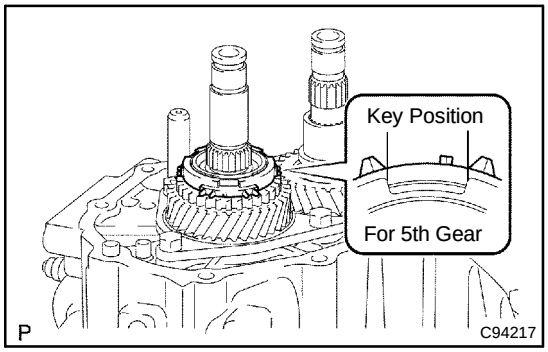
(b) Using a brass bar and a hammer, install the transmission clutch hub No.3 shaft snap ring to the input shaft.



102. INSTALL 5TH GEAR

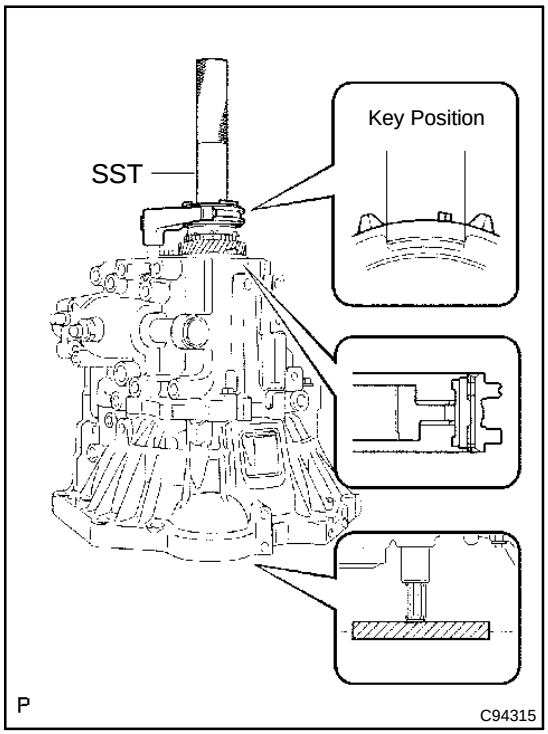
(a) Coat the 5th gear with gear oil, install it to the input shaft.

CONTINUED



103. INSTALL SYNCHRONIZER RING NO.3 (FOR 5TH GEAR MT)

(a) Coat the synchronizer ring No.3 with gear oil, install it to the 5th gear.

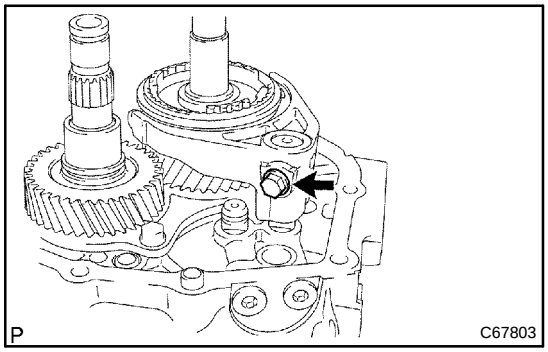


104. INSTALL TRANSMISSION CLUTCH HUB NO.3

(a) Using SST and a hammer, install the transmission clutch hub No.3 with gear shift fork No.3 to the input shaft.
SST 09608–04031

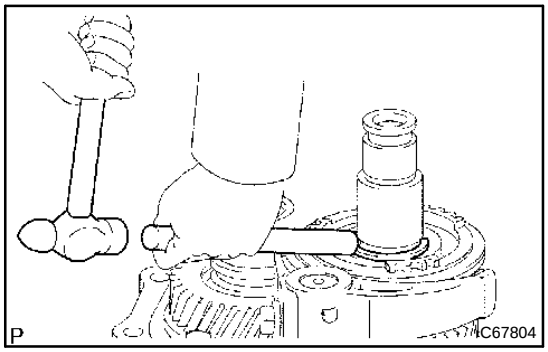
NOTICE:

- **Before driving in the transmission clutch hub No.3, place the suitable sized wooden block on the rear side of the input shaft, as shown in the illustration.**
- **When driving it in, fix the input shaft rear bearing is over loaded, it might be damaged.**



(b) Coat the shift fork lock bolt with sealant, install it to the gear shift fork No.3.
Torque: 15.7 N·m (160 kgf·cm, 12 ft·lbf)

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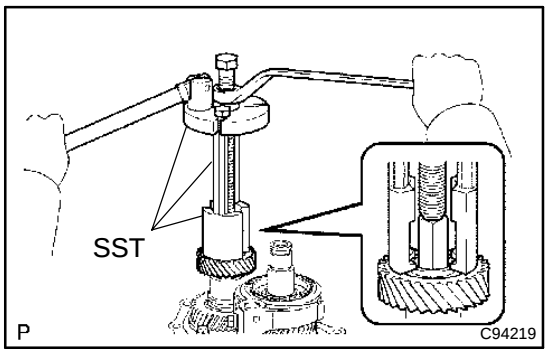


(c) Select a snap ring that will minimum axial play.
Clearance: 0.1 mm (0.004 in.) or less

Snap ring Thickness:

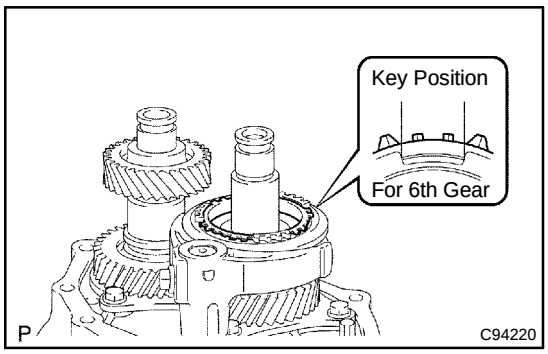
Part No.	Thickness: mm (in.)	Mark
90520-20074	1.75 (0.0689)	A
90520-20075	1.80 (0.0709)	B
90520-20076	1.85 (0.0728)	C
90520-20077	1.90 (0.0748)	D
90520-20078	1.95 (0.0768)	E
90520-20079	2.00 (0.0787)	F
90520-20080	2.05 (0.0807)	G
90520-20081	2.10 (0.0827)	H
90520-20082	2.15 (0.0846)	J

(d) Using a brass bar and a hammer, install the snap ring to the input shaft.



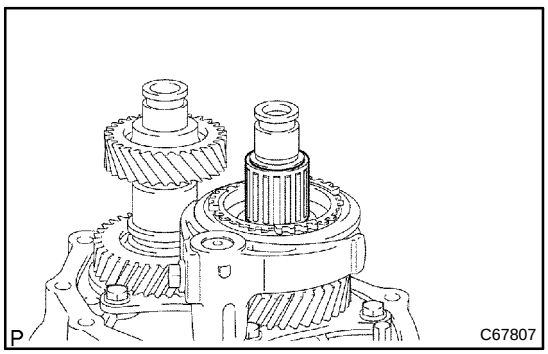
105. INSTALL COUNTER GEAR 6TH

(a) Using SST, install the counter gear to the output shaft.
SST 09950-30012 (09951-03010, 09953-03010, 09954-03010, 09955-03011, 09956-03080)



106. INSTALL SYNCHRONIZER RING NO.3 (FOR 6TH GEAR MT)

(a) Coat the synchronizer ring No.3 with gear oil, install it to the transmission clutch hub No.3.



107. INSTALL 6TH GEAR NEEDLE ROLLER BEARING

(a) Coat the 6th gear needle roller bearing with gear oil, install it to the input shaft.

CONTINUED

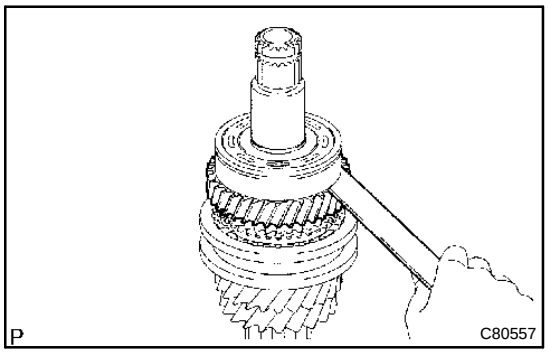
INPUT SHAFT ASSY (C64)

OVERHAUL

4105L-01

HINT:

COMPONENTS: See page 41-1

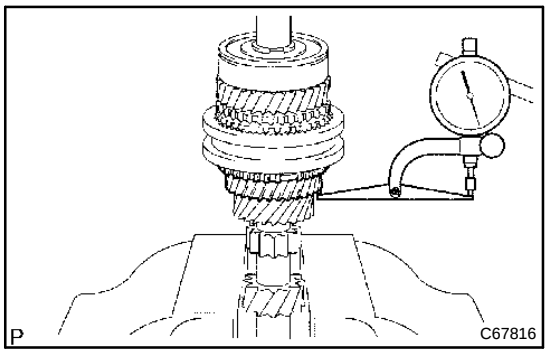


1. INSPECT 4TH GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 4th gear thrust clearance.

Standard clearance:

0.10 - 0.55 mm (0.0039 - 0.0217 in.)

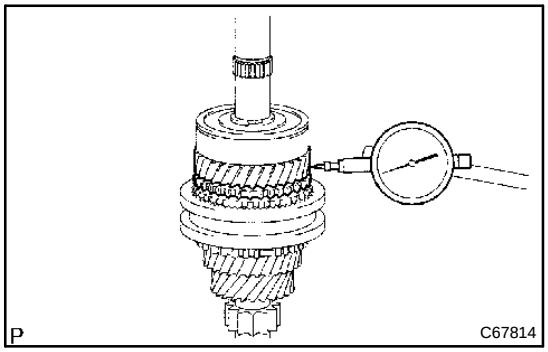


2. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 3rd gear thrust clearance.

Standard clearance:

0.10 - 0.35 mm (0.0039 - 0.0138 in.)



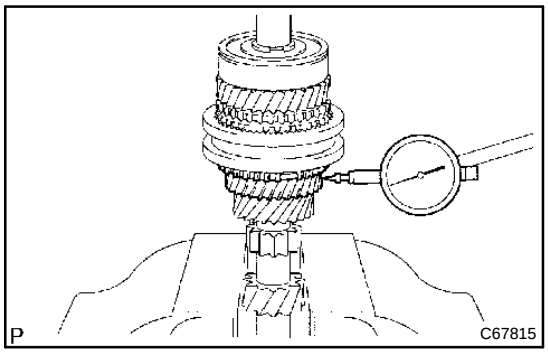
3. INSPECT 4TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 4th gear radial clearance.

Standard clearance:

Bearing	Clearance: mm (in.)
KOYO made	0.015 - 0.058 (0.0006 - 0.0023)
NSK made	0.015 - 0.056 (0.0006 - 0.0022)

If the clearance is out of specification, replace the 4th gear needle roller bearing.



4. INSPECT 3RD GEAR RADIAL CLEARANCE

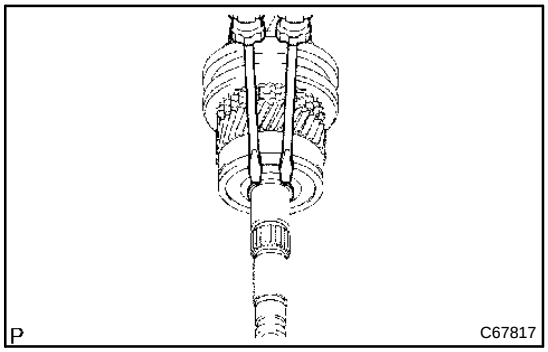
(a) Using a dial indicator, measure the 3rd gear radial clearance.

Standard clearance:

Bearing	Clearance: mm (in.)
KOYO made	0.015 - 0.058 (0.0006 - 0.0023)
NSK made	0.015 - 0.056 (0.0006 - 0.0022)

If the clearance is out of specification, replace the 3rd gear needle roller bearing.

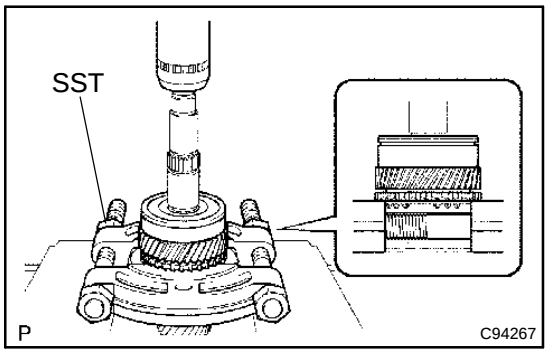
CONTINUED



5. REMOVE 4TH GEAR

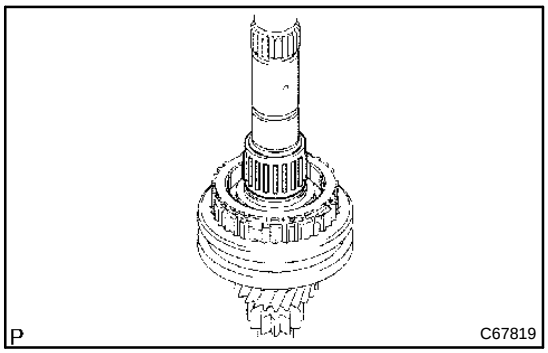
(a) Using 2 screwdrivers and a hammer, remove the input shaft bearing shaft snap ring.

NOTICE:
Using a waste to prevent the snap ring from the being scattered.



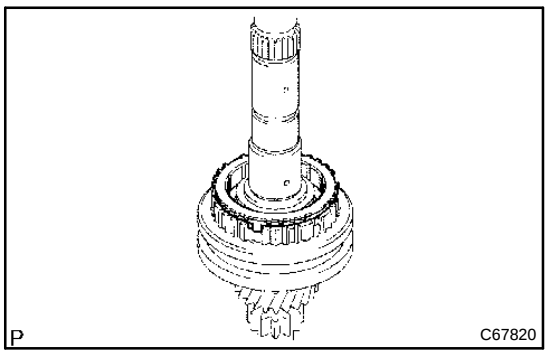
(b) Using SST and a press, remove the input shaft bearing with 4th gear from the input shaft.
SST 09950-00020

NOTICE:
Do not tighten SST excessively.



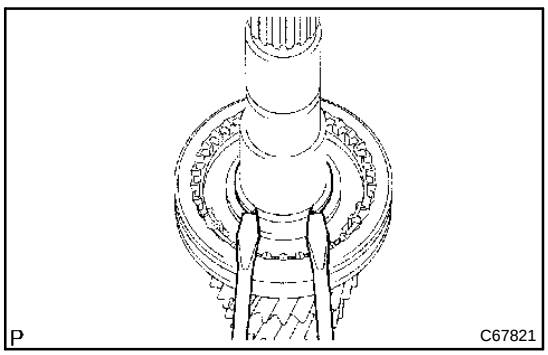
6. REMOVE 4TH GEAR NEEDLE ROLLER BEARING

(a) Remove the 4th gear needle roller bearing and 4th gear bearing spacer from the input shaft.



7. REMOVE 4TH GEAR SYNCHRONIZER RING

(a) Remove the 4th gear synchronizer ring from the transmission clutch hub No.2.

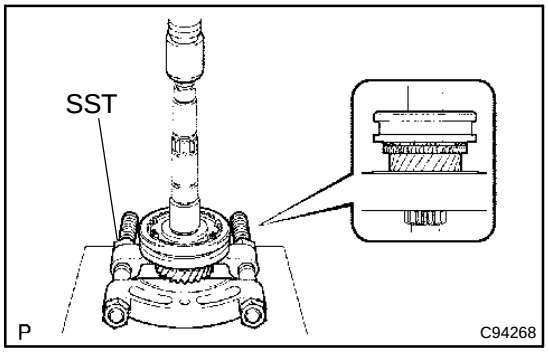


8. REMOVE 3RD GEAR

(a) Using 2 screwdrivers and a hammer, remove the clutch hub No.2 shaft snap ring from the input shaft.

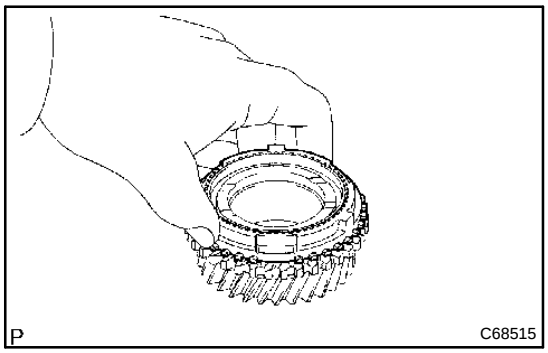
NOTICE:
Using a waste to prevent the snap ring from the being scattered.

CONTINUED



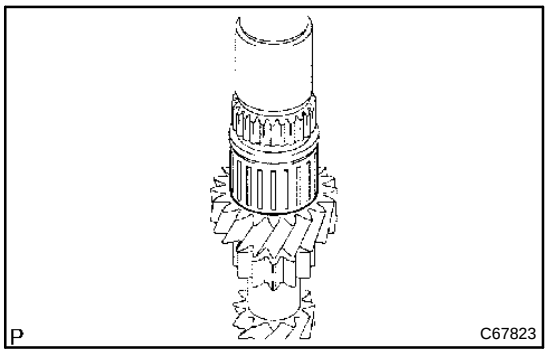
(b) Using SST and a press, remove the transmission clutch hub No.2 with 3rd gear from the input shaft.
SST 09950-00020

NOTICE:
Do not tighten SST excessively.



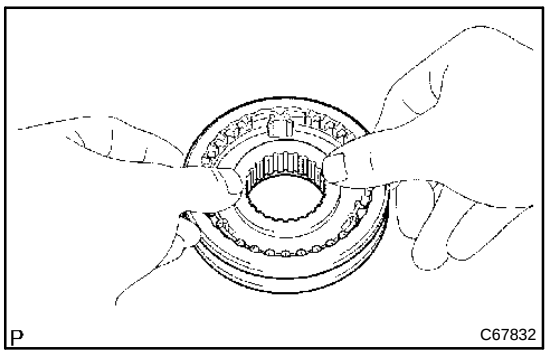
9. REMOVE 3RD GEAR SYNCHRONIZER RING

(a) Remove the 3rd gear synchronizer ring from the 3rd gear.



10. REMOVE 3RD GEAR NEEDLE ROLLER BEARING

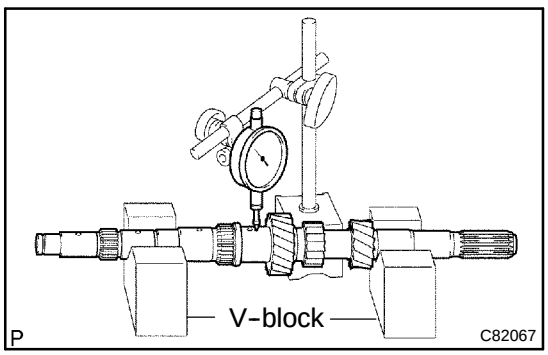
(a) Remove the 3rd gear needle roller bearing from the input shaft.



11. REMOVE TRANSMISSION HUB SLEEVE NO.2

(a) Remove the transmission hub sleeve No.2, 3 synchromesh shifting keys and 3 transmission shifting key springs from the transmission clutch hub No.2.

NOTICE:
Using a waste to prevent the synchromesh shifting key and spring from the being scattered.

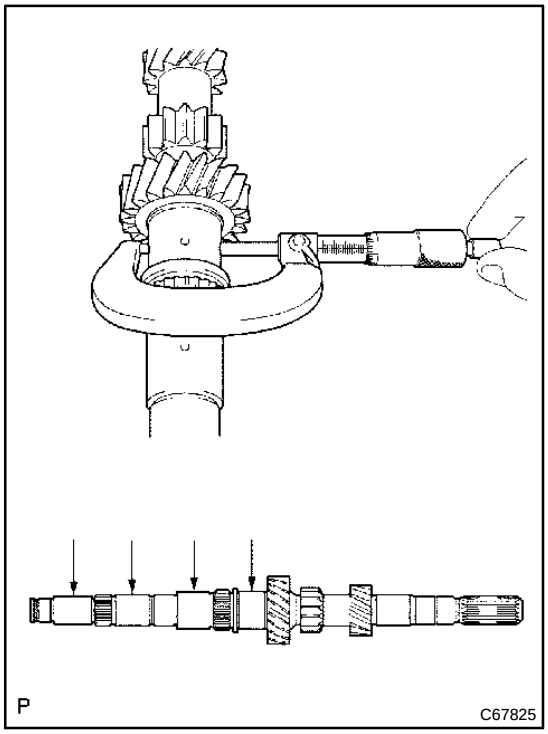


12. INSPECT INPUT SHAFT

(a) Using a dial indicator and 2 V-blocks, measure the shaft runout.
Maximum runout: 0.015 mm (0.006 in.)

If the run out is exceeds the maximum, replace the input shaft.

CONTINUED

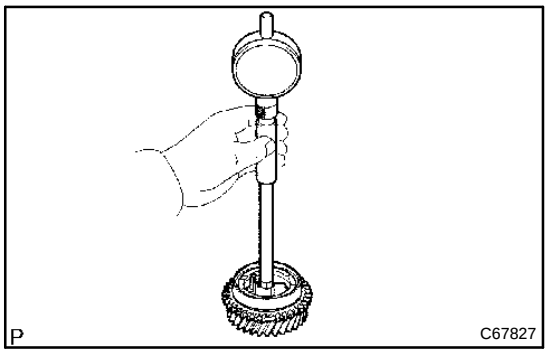


(b) Using a micrometer, measure the outer diameter of the input shaft jurnal surface.

Outer diameter:

Part	New shaft: mm (in.)	Minimum outer diameter: mm (in.)
A	21.991 - 21.006 (0.8658 - 0.8270)	21.991 (0.8658)
B	24.885 - 24.900 (0.9797 - 0.9803)	24.885 (0.9797)
C	28.985 - 29.000 (1.1411 - 1.1417)	28.985 (1.1411)
D	30.985 - 31.000 (1.2199 - 1.2205)	30.985 (1.2199)

If the outer diameter is less than the minimum, replace the input shaft.



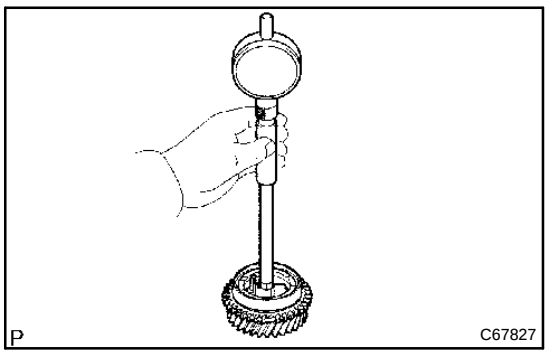
13. INSPECT 4TH GEAR

(a) Using a cylinder gauge, measure the inside diameter of the 4th gear.

Inside diameter:

New gear: mm (in.)	Maximum inside diameter: mm (in.)
34.015 - 34.031 (1.3392 - 1.3398)	34.031 (1.3398)

If the inside diameter is exceeds the maximum, replace the 4th gear.



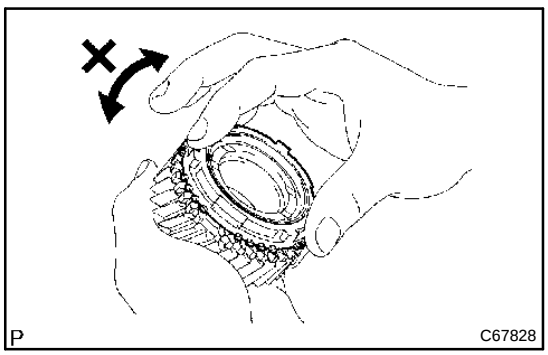
14. INSPECT 3RD GEAR

(a) Using a cylinder gauge, measure the inside diameter of the 3rd gear.

Inside diameter:

New gear: mm (in.)	Maximum inside diameter: mm (in.)
36.015 - 36.031 (1.4179 - 1.4185)	36.031 (1.4185)

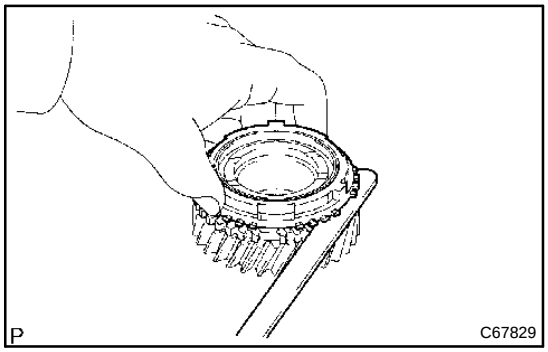
If the inside diameter is exceeds the maximum, replace the 4th gear.



15. INSPECT 4TH GEAR SYNCHRONIZER RING

(a) Coat the 4th gear cone with gear oil. Check the braking effect of the 4th gear synchronizer ring.

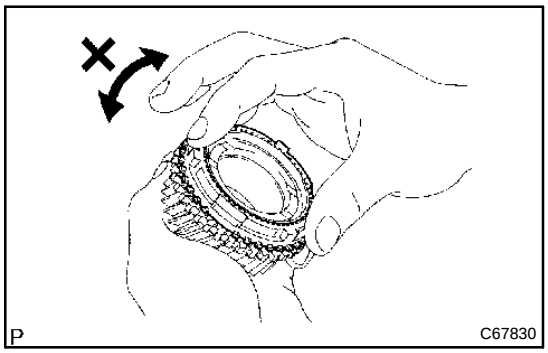
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(b) Using a feeler gauge, measure the clearance between the 4th gear synchronizer ring back and 4th gear spline end.

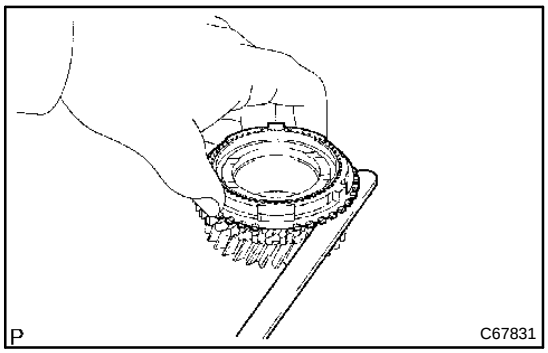
Standard clearance:
0.75 - 1.65 mm (0.0295 - 0.0650 in.)

If the clearance is out of specification, replace the 4th gear synchronizer ring.



16. INSPECT 3RD GEAR SYNCHRONIZER RING

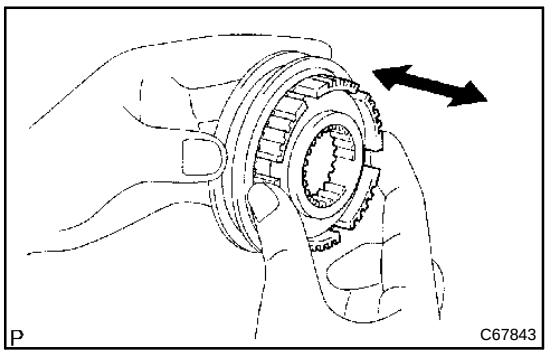
(a) Coat the 3rd gear cone with gear oil. Check the braking effect of the 3rd gear synchronizer ring.



(b) Using a feeler gauge, measure the clearance between the 3rd gear synchronizer ring back and 3rd gear spline end.

Standard clearance:
0.65 - 1.75 mm (0.0256 - 0.0689 in.)

If the clearance is out of specification, replace the 3rd gear synchronizer ring.

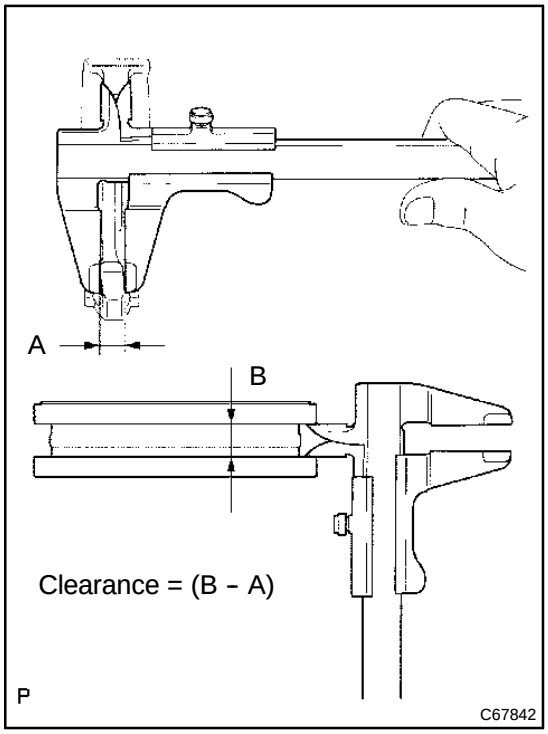


17. INSPECT TRANSMISSION HUB SLEEVE NO.2

(a) Check the sliding condition between the transmission hub No.2 and transmission hub sleeve No.2.

(b) Check that the spline gear's edges of the transmission hub sleeve No.2 is not worn down.

CONTINUED

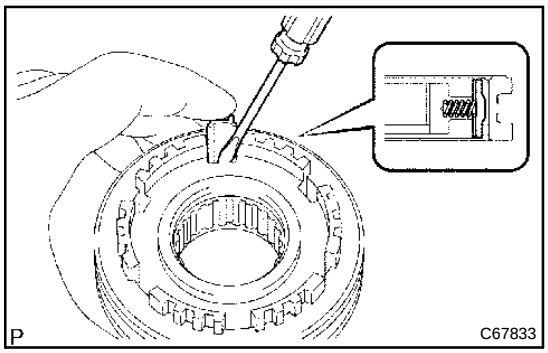


(c) Using a vernier calipers, inspect the transmission hub sleeve No.2 and gear shift fork No.2 as shown in the ilustration.

Standard clearance:

0.15 – 0.35 mm (0.0059 – 0.0138 in.)

If the clearance is out of specification, replace the transmission hub sleeve No.2 and gear shift fork No.2.



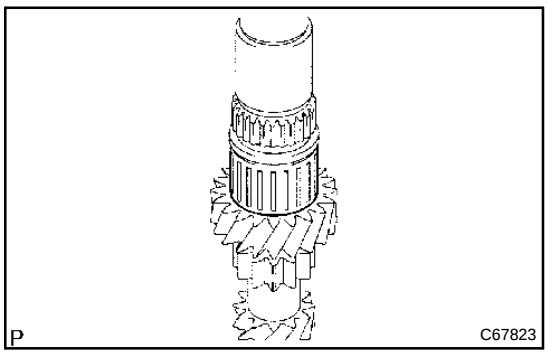
18. INSTALL TRANSMISSION HUB SLEEVE NO.2

(a) Coat the transmission hub sleeve No.2 with gear oil, install it to the transmission clutch hub No.2.

NOTICE:

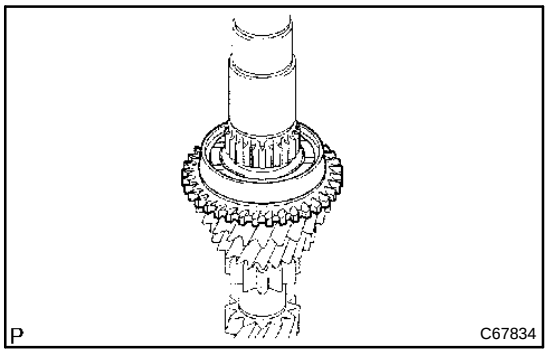
Do not set the transmission hub sleeve No.2 and the transmission clutch hub No.2 in incorrect orientation.

(b) Using a screwdriver, install the 3 synchromesh shifting key springs with 3 synchromesh shifting keys.



19. INSTALL 3RD GEAR NEEDLE ROLLER BEARING

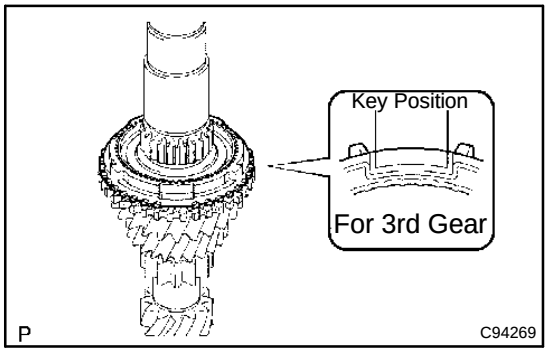
(a) Coat the 3rd gear needle roller bearing with gear oil, install it to the input shaft.



20. INSTALL 3RD GEAR

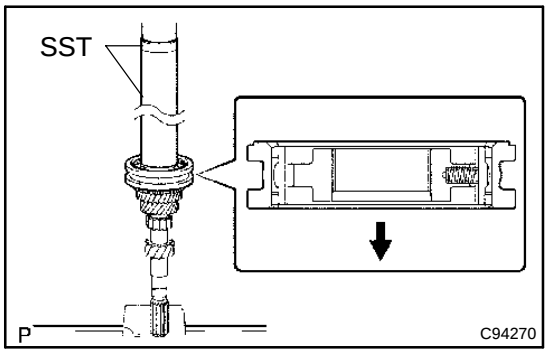
(a) Coat the 3rd gear with gear oil, install it to the input shaft.

CONTINUED



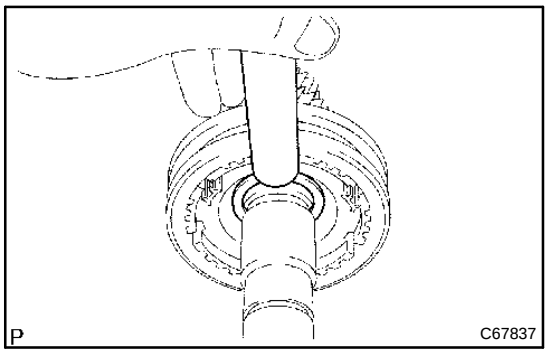
21. INSTALL 3RD GEAR SYNCHRONIZER RING

(a) Coat the 3rd gear synchronizer ring with gear oil, install it to the 3rd gear.



22. INSTALL TRANSMISSION CLUTCH HUB NO.2

(a) Using SST and a press, install the transmission clutch hub No.2 to the input shaft.
SST 09309-36100 (09309-03610), 09950-60010 (09951-00450)

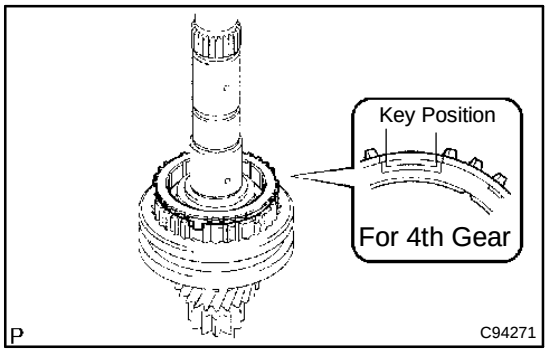


(b) Select a snap ring that will allow minimum axial play.
Standard clearance:
0.1 mm (0.004 in.) or less

Snap ring thickness:

Part No.	Thickness: mm (in.)	Mark
90520-27046	2.30 (0.0906)	0
90520-27047	2.36 (0.0929)	1
90520-27048	2.42 (0.0953)	2
90520-27049	2.48 (0.0976)	3
90520-27050	2.54 (0.1000)	4
90520-27051	2.60 (0.1024)	5

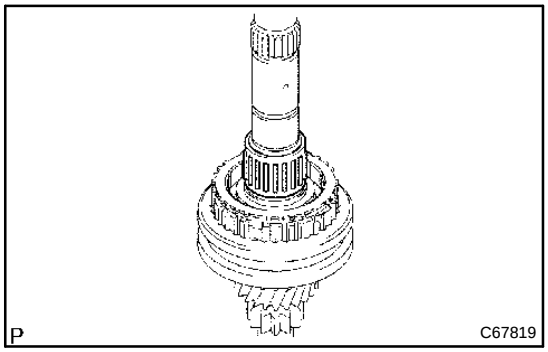
(c) Using a brass bar and a hammer, install the snap ring to the input shaft.



23. INSTALL 4TH GEAR SYNCHRONIZER RING

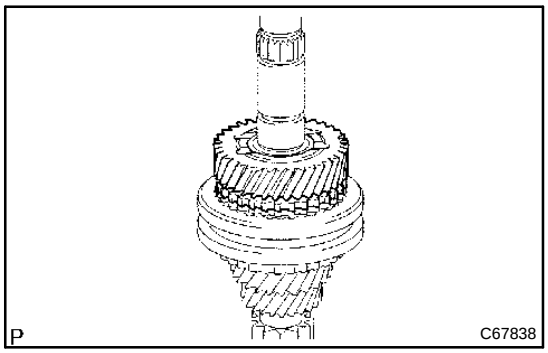
(a) Coat the 4th gear synchronizer ring with gear oil, install it to the transmission clutch hub No.2.

CONTINUED



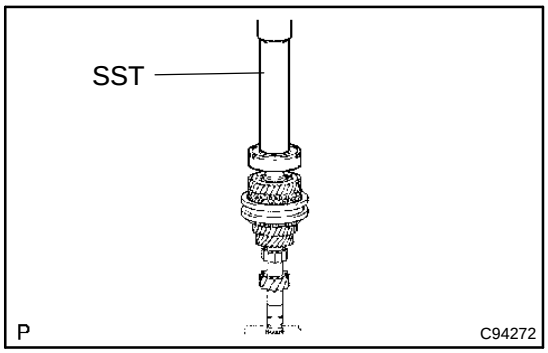
24. INSTALL 4TH GEAR NEEDLE ROLLER BEARING

(a) Coat the 4th gear bearing spacer and 4th gear needle roller bearing with gear oil, install them to the input shaft.



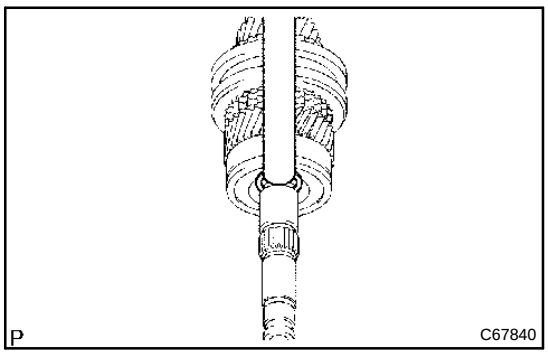
25. INSTALL 4TH GEAR

(a) Coat the 4th gear with gear oil, install it to the input shaft.



26. INSTALL INPUT SHAFT BEARING

(a) Using SST and a press, install the input shaft bearing to the input shaft.
SST 09608-04031



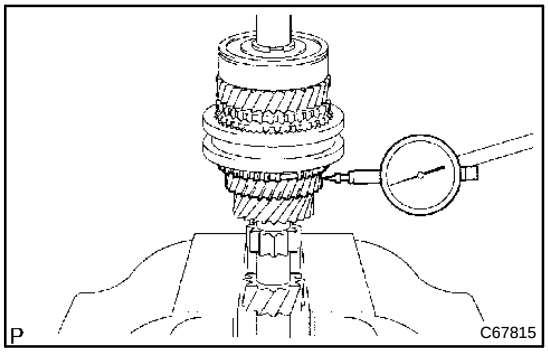
(b) Select a snap ring that will allow minimum axial play.
Standard clearance:
0.1 mm (0.004 in.) or less

Snap ring thickness:

Part No.	Thickness: mm (in.)	Mark
90520-22006	2.29 (0.0902)	A
90520-22007	2.35 (0.0925)	B
90520-22008	2.41 (0.0949)	C
90520-22009	2.47 (0.0972)	D
90520-22010	2.53 (0.0996)	E
90520-22011	2.59 (0.1020)	F

(c) Using a brass bar and a hammer, install the snap ring to the input shaft.

CONTINUED



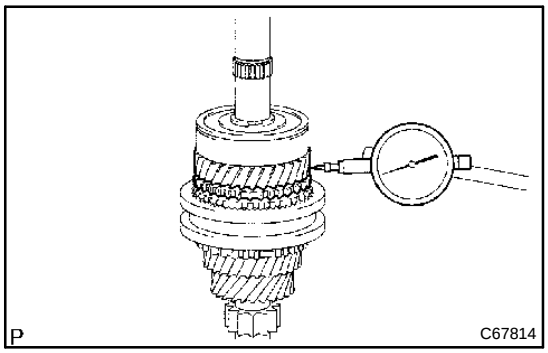
27. INSPECT 3RD GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 3rd gear radial clearance.

Standard clearance:

Bearing	Clearance: mm (in.)
KOYO made	0.015 – 0.058 (0.0006 – 0.0023)
NSK made	0.015 – 0.056 (0.0006 – 0.0022)

If the clearance is out of specification, replace the 3rd gear needle roller bearing.



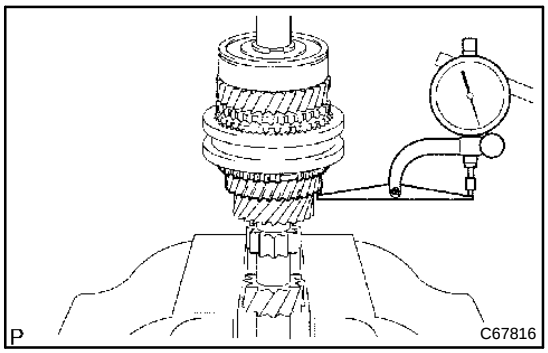
28. INSPECT 4TH GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 4th gear radial clearance.

Standard clearance:

Bearing	Clearance: mm (in.)
KOYO made	0.015 – 0.058 (0.0006 – 0.0023)
NSK made	0.015 – 0.056 (0.0006 – 0.0022)

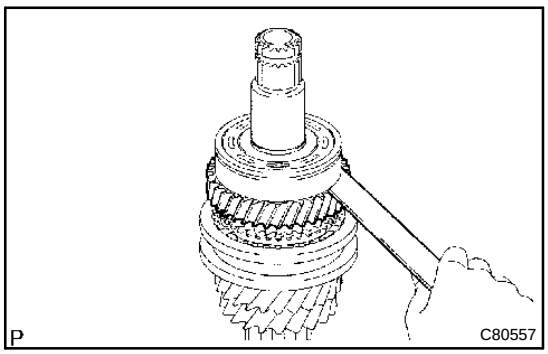
If the clearance is out of specification, replace the 4th gear needle roller bearing.



29. INSPECT 3RD GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 3rd gear thrust clearance.

Standard clearance:
0.10 – 0.35 mm (0.0039 – 0.0138 in.)



30. INSPECT 4TH GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 4th gear thrust clearance.

Standard clearance:
0.10 – 0.55 mm (0.0039 – 0.0217 in.)

CONTINUED

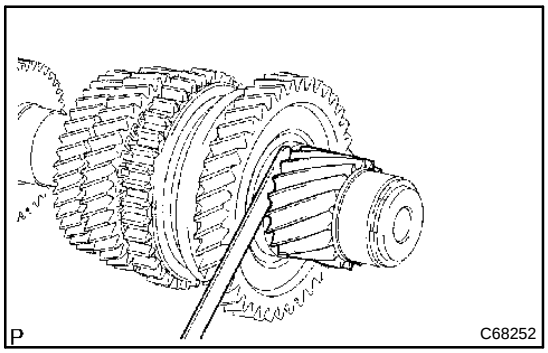
OUTPUT SHAFT ASSY (C64)

OVERHAUL

4105M-01

HINT:

COMPONENTS: See page 41–1

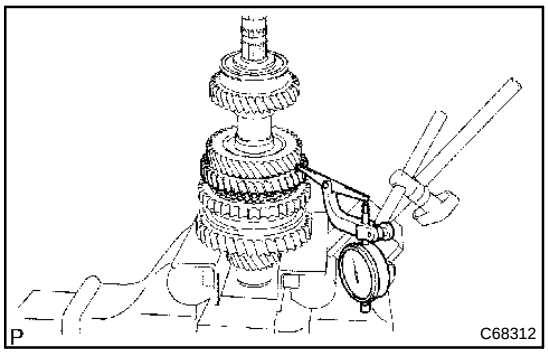


1. INSPECT 1ST GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 1st gear thrust clearance.

Standard clearance:

0.10 – 0.40 mm (0.0039 – 0.0157 in.)

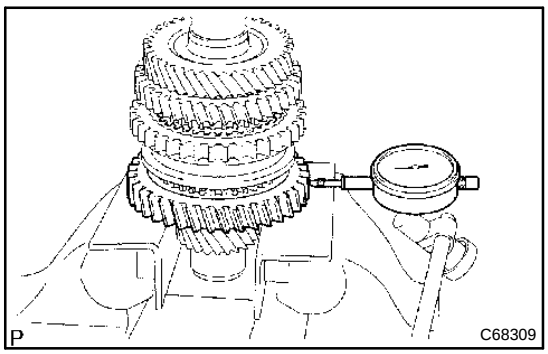


2. INSPECT 2ND GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 2nd gear thrust clearance.

Standard clearance:

0.10 – 0.55 mm (0.0039 – 0.0217 in.)



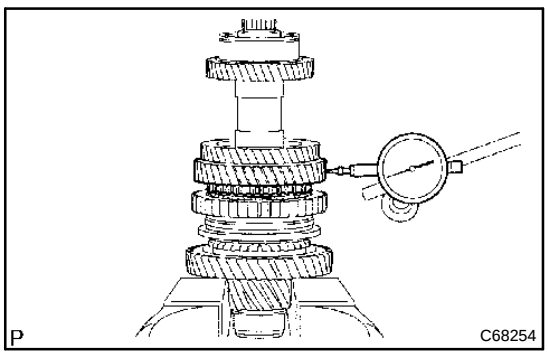
3. INSPECT 1ST GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 1st gear radial clearance.

Standard clearance:

Bearing	Clearance: mm (in.)
KOYO made	0.015 – 0.058 (0.0006 – 0.0230)
NSK made	0.015 – 0.056 (0.0006 – 0.0022)

If the clearance is out of specification, replace the 1st gear needle roller bearing.



4. INSPECT 2ND GEAR RADIAL CLEARANCE

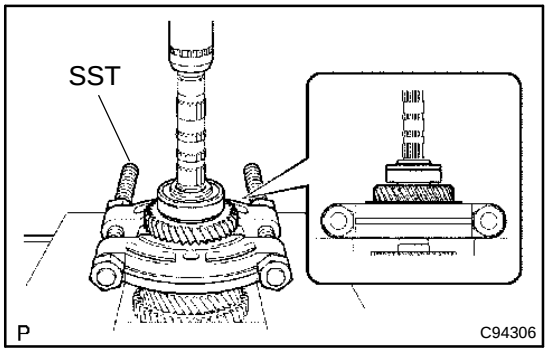
(a) Using a dial indicator, measure the 2nd gear radial clearance.

Standard clearance:

Bearing	Clearance: mm (in.)
KOYO made	0.015 – 0.058 (0.0006 – 0.0230)
NSK made	0.015 – 0.056 (0.0006 – 0.0022)

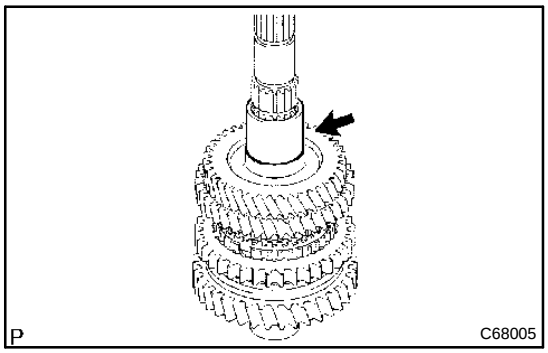
If the clearance is out of specification, replace the 2nd gear needle roller bearing.

CONTINUED



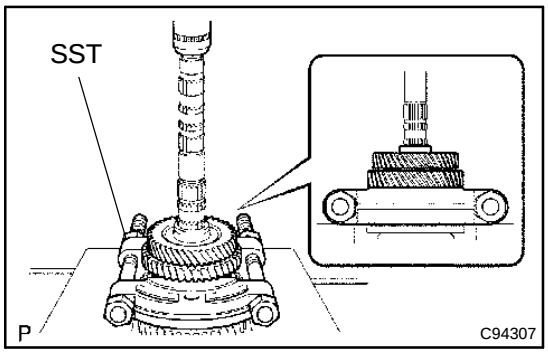
5. REMOVE 4TH DRIVEN GEAR

(a) Using SST and a press, remove the output shaft center bearing with 4th driven gear from the output shaft.
SST 09950-00020



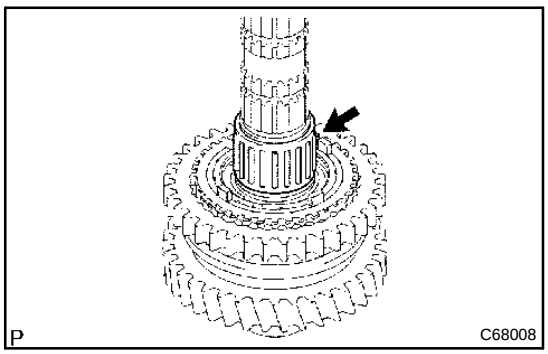
6. REMOVE OUTPUT GEAR SPACER

(a) Remove the output gear spacer from the output shaft.



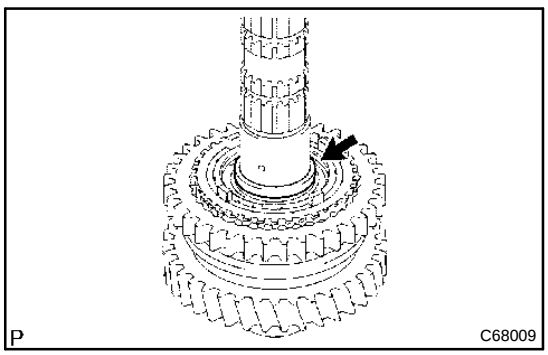
7. REMOVE 2ND GEAR

(a) Using SST and a press, remove the 3rd driven gear with 2nd gear from the output shaft.
SST 09950-00020



8. REMOVE 2ND GEAR NEEDLE ROLLER BEARING

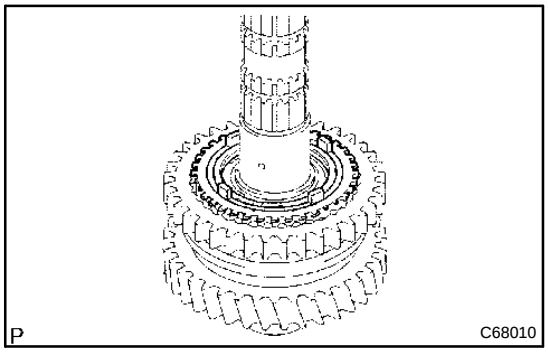
(a) Remove the 2nd gear needle roller bearing from the output shaft.



9. REMOVE 2ND GEAR BEARING SPACER

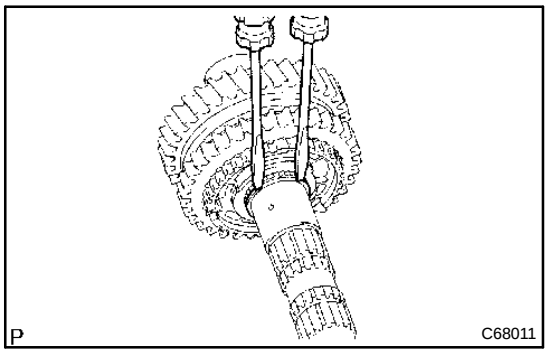
(a) Remove the 2nd gear bearing spacer from the outputshaft.

CONTINUED



10. REMOVE SYNCHRONIZER RING SET NO.2

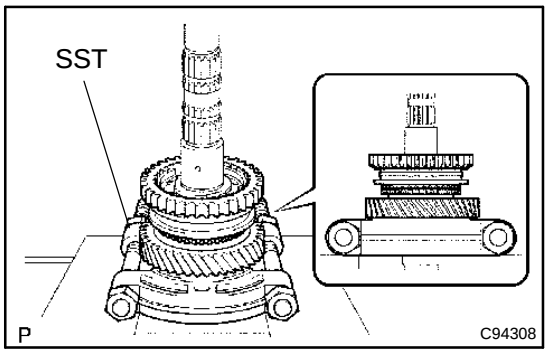
(a) Remove the synchronizer ring set No.2 from the output shaft.



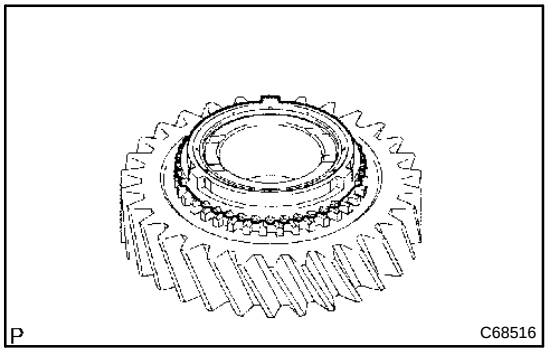
11. REMOVE 1ST GEAR

(a) Using 2 screwdrivers and a hammer, remove the clutch hub No.1 shaft snap ring from the output shaft.

NOTICE:
Using a waste to prevent the snap ring from being scattered.

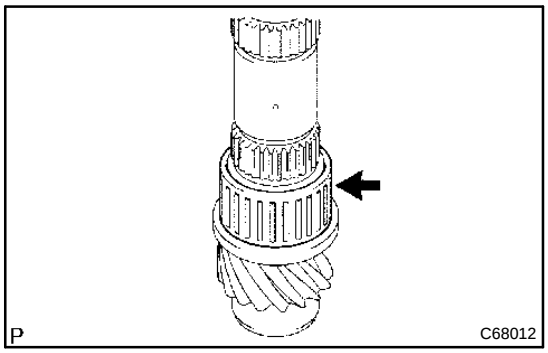


(b) Using SST and a press, remove the transmission clutch hub No.1 with 1st gear from the output shaft.
SST 09950-00020



12. REMOVE SYNCHRONIZER RING NO.1

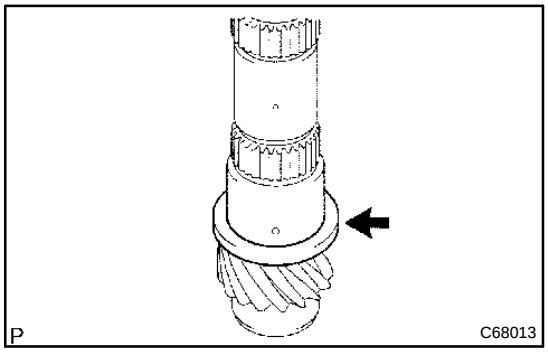
(a) Remove the synchronizer ring No.1 from the 1st gear.



13. REMOVE 1ST GEAR NEEDLE ROLLER BEARING

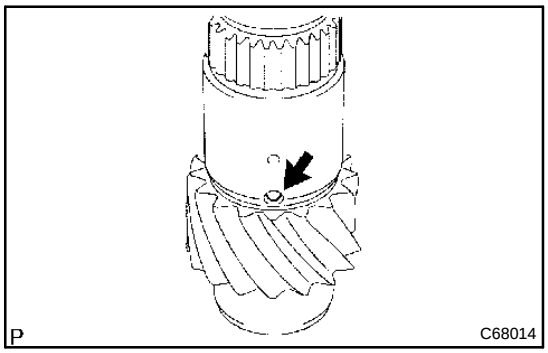
(a) Remove the 1st gear needle roller bearing from the output shaft.

CONTINUED



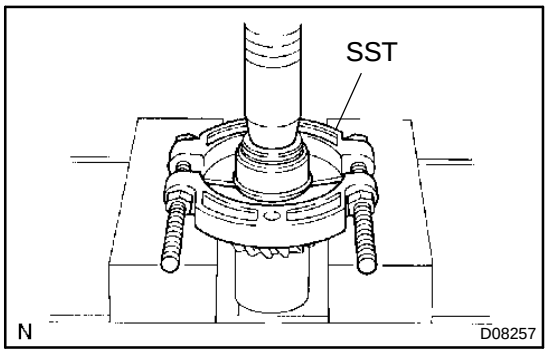
14. REMOVE 1ST GEAR THRUST WASHER

(a) Remove the 1st gear thrust washer from the output shaft.



15. REMOVE 1ST GEAR THRUST WASHER PIN OR BALL

(a) Remove the 1st gear thrust washer pin or ball from the output shaft.

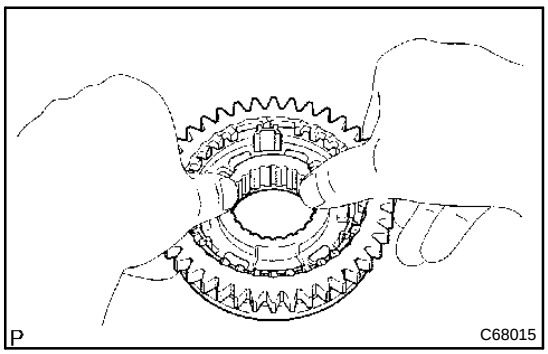


16. REMOVE OUTPUT SHAFT FRONT BEARING

(a) Using 2 screwdrivers, remove the output shaft front bearing snap ring.

(b) Using SST and a press, remove the output shaft front bearing from the output shaft.

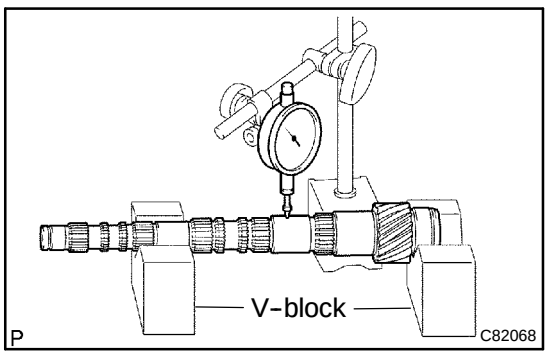
SST 09950-00020



17. REMOVE REVERSE GEAR

(a) Remove the 3 synchromesh shifting keys, 3 synchromesh shifting key springs and reverse gear.

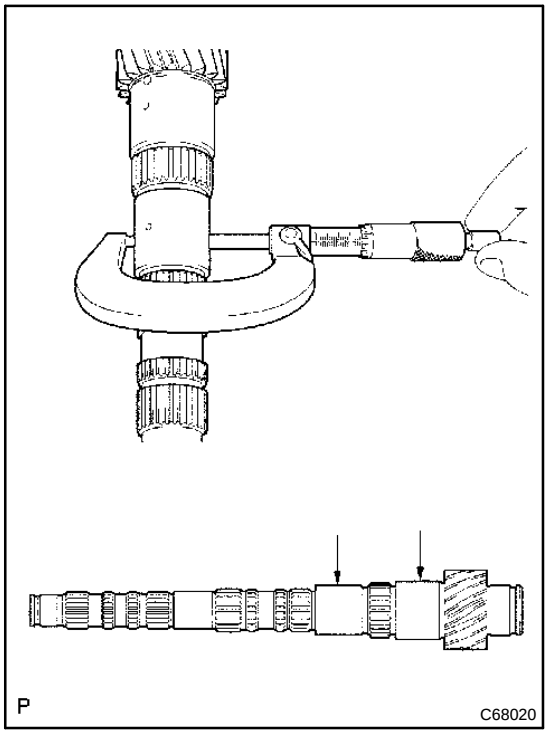
NOTICE:
Using a waste to prevent the synchromesh shifting key and spring from being scattered.



18. INSPECT OUTPUT SHAFT

(a) Using a dial indicator and 2 V-blocks, measure the shaft runout.
Maximum runout: 0.015 mm (0.0006 in.)

CONTINUED

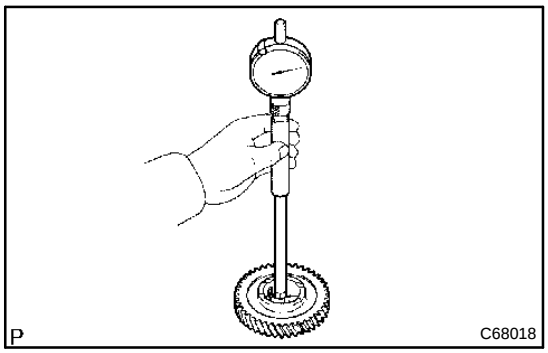


(b) Using a micrometer, measure the outer diameter of the output shaft jurnal surface.

Outer diameter:

Part	New shaft: mm (in.)	Minimum outer diameter: mm (in.)
A	31.985 – 32.000 (1.2592 – 1.2598)	31.985 (1.2592)
B	37.985 – 38.000 (1.4955 – 1.4961)	37.985 (1.4955)

If the outer diameter is less than the minimum, replace the output shaft.



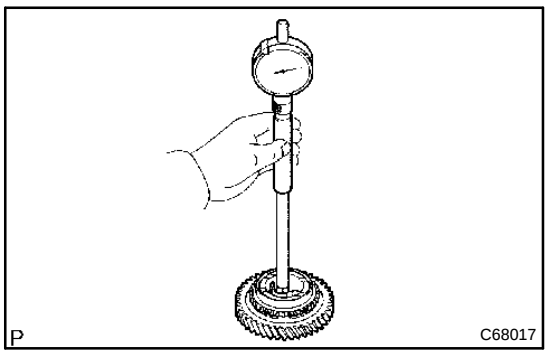
19. INSPECT 2ND GEAR

(a) Using a cylinder gauge, measure the inside diameter of the 2nd gear.

Inside diameter:

New gear: mm (in.)	Maximum inside diameter: mm (in.)
38.015 – 38.031 (1.4967 – 1.4973)	38.031 (1.4973)

If the inside diameter is exceeds the maximum, replace the 2nd gear.



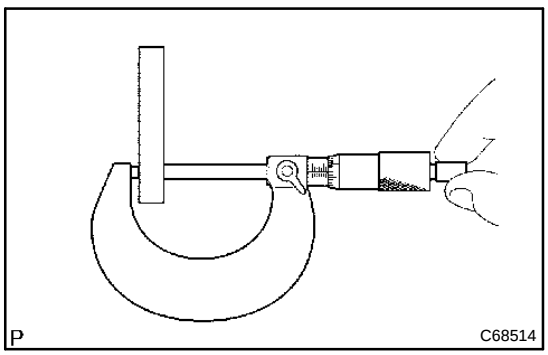
20. INSPECT 1ST GEAR

(a) Using a cylinder gauge, measure the inside diameter of the 1st gear.

Inside diameter:

New gear: mm (in.)	Maximum inside diameter: mm (in.)
44.015 – 44.031 (1.7329 – 1.7335)	44.031 (1.7335)

If the inside diameter is exceeds the maximum, replace the 1st gear.



21. INSPECT 1ST GEAR THRUST WASHER

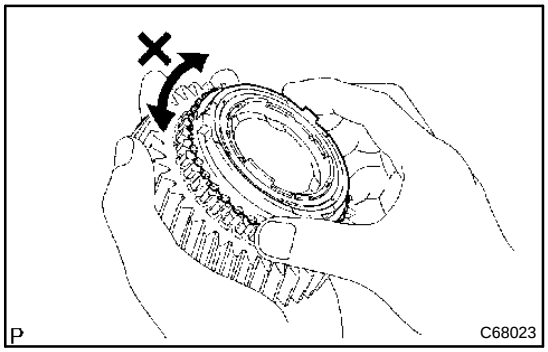
(a) Using a micrometer, measure the thickness of 1st gear thrust washer.

Thickness:

New thrust washer: mm (in.)	Minimum thickness: mm (in.)
5.975 – 6.025 (0.2352 – 0.2372)	5.9755 (0.2352)

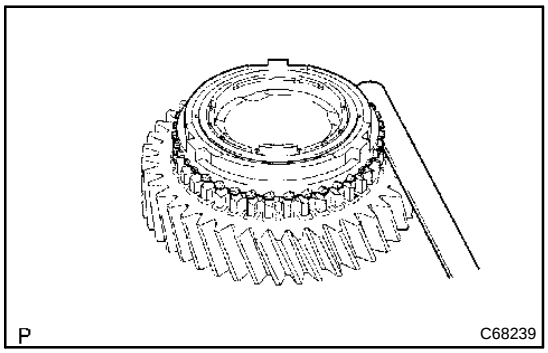
If the thickness is less than the minimum, replace the 1st gear thrust washer.

CONTINUED



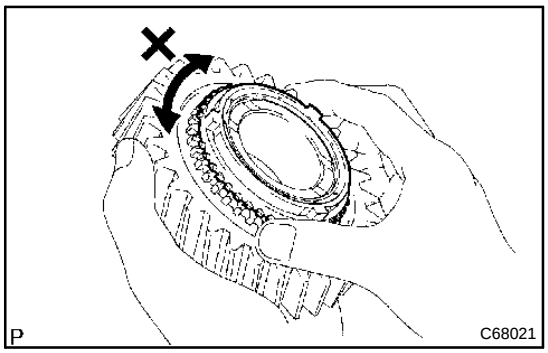
22. INSPECT SYNCHRONIZER RING SET NO.2

(a) Coat the 2nd gear cone with gear oil.
Check the braking effect of the synchronizer ring.



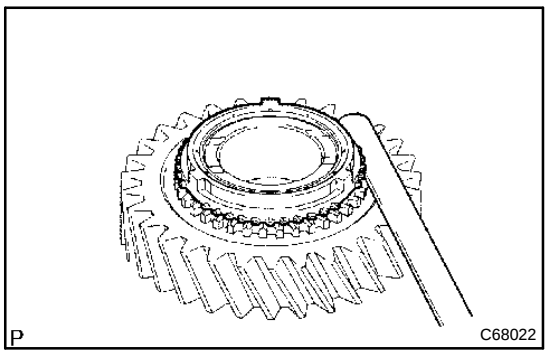
(b) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.
Standard clearance: 0.7 – 1.3 mm (0.0276 – 0.0512)

If the clearance is out of specification, replace the synchronizer ring set No.2.



23. INSPECT SYNCHRONIZER RING NO.1

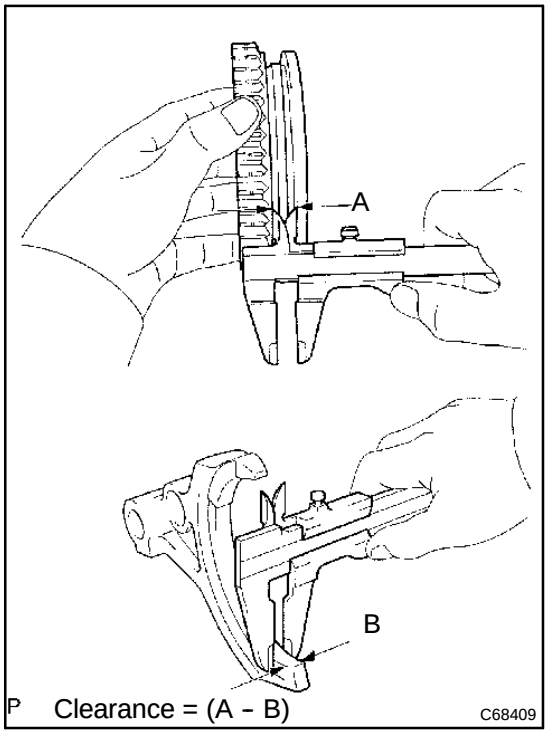
(a) Coat the 1st gear cone with gear oil.
Check the braking effect of the synchronizer ring.



(b) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.
Standard clearance: 0.75 – 1.65 mm (0.0295 – 0.065)

If the clearance is out of specification, replace the synchronizer ring No.1.

CONTINUED



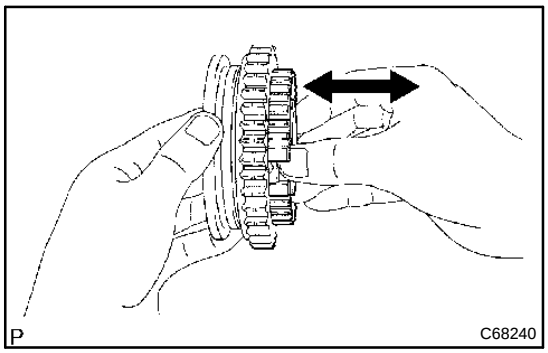
24. INSPECT REVERSE GEAR

(a) Using a vernier caliper, measure the clearance between reverse gear and shift fork.

Standard clearance:

0.15 – 0.35 mm (0.0059 – 0.0138 in.)

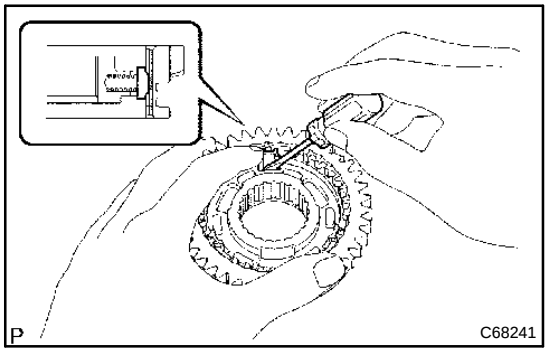
If the clearance is out of specification, replace the reverse gear and reverse shift fork.



25. INSPECT TRANSMISSION CLUTCH HUB NO.1

(a) Check that the transmission clutch hub No.1 and reverse gear slides smoothly.

(b) Check that the spline gear's edges of the reverse gear is not worn down.



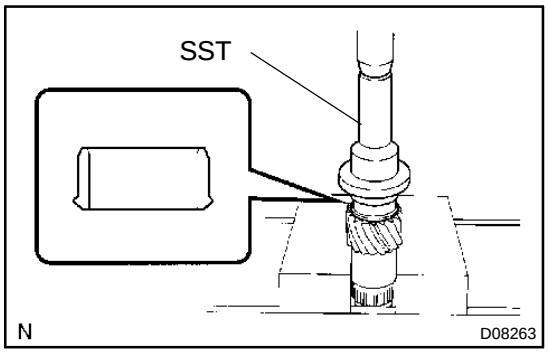
26. INSTALL REVERSE GEAR

(a) Coat the reverse gear with gear oil, install it to the transmission clutch hub No.1.

NOTICE:

Do not set the reverse gear and transmission clutch hub No.1 in incorrect orientation.

(b) Using a screwdriver, install the 3 synchromesh shifting key springs and 3 synchromesh shifting keys.



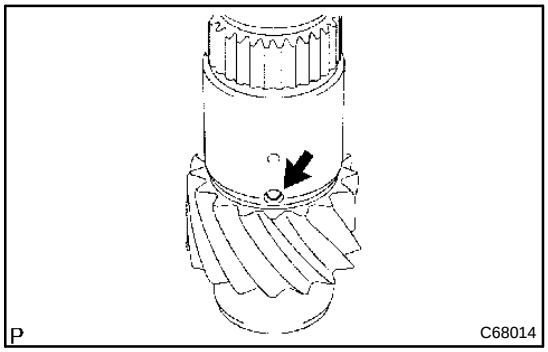
27. INSTALL OUTPUT SHAFT FRONT BEARING

(a) Using SST and a press, install the output shaft front bearing (inner race) to the output shaft.

SST 09223–50010

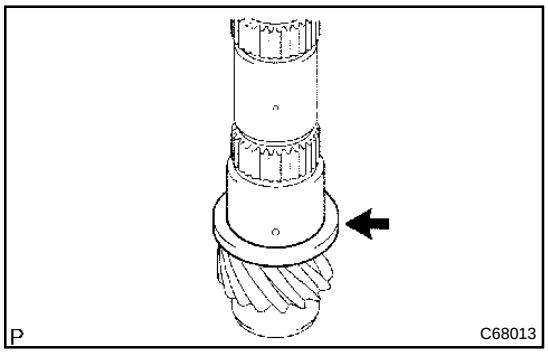
(b) Using a brass bar and a hammer, install the output shaft snap ring to the output shaft.

CONTINUED



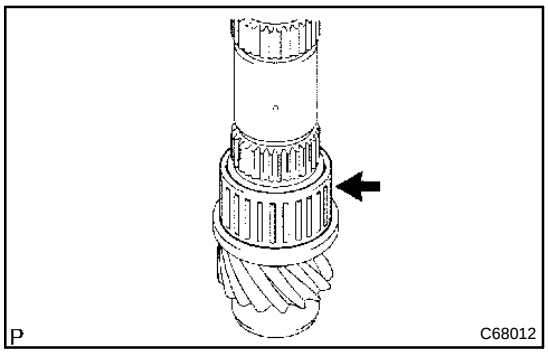
28. INSTALL 1ST GEAR THRUST WASHER PIN OR BALL

(a) Coat the 1st gear thrust washer pin or ball with MP grease, install it to the output shaft.



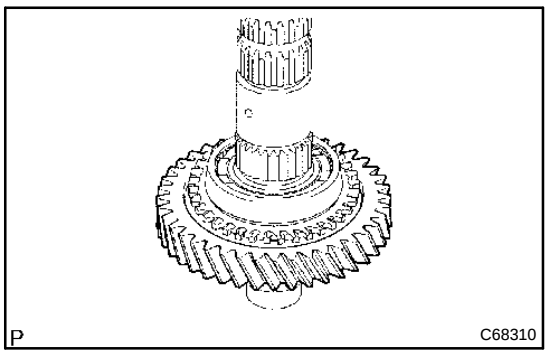
29. INSTALL 1ST GEAR THRUST WASHER

(a) Coat the 1st gear thrust washer with gear oil, install it to the output shaft.



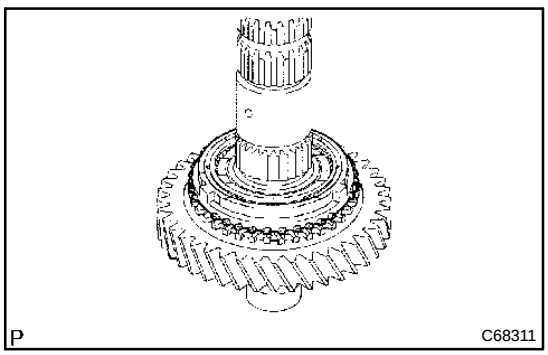
30. INSTALL 1ST GEAR NEEDLE ROLLER BEARING

(a) Coat the 1st gear needle roller bearing with gear oil, install it to the output shaft.



31. INSTALL 1ST GEAR

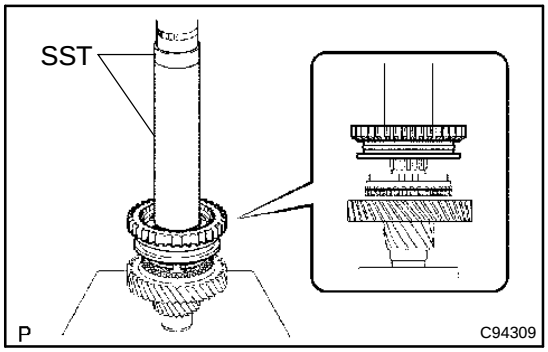
(a) Coat the 1st gear with gear oil, install it to the output shaft.



32. INSTALL SYNCHRONIZER RING NO.1

(a) Coat the synchronizer ring No.1 with gear oil, install it to the 1st gear.

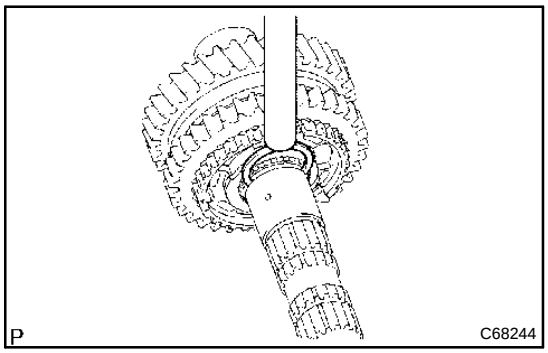
CONTINUED



33. INSTALL TRANSMISSION CLUTCH HUB NO.1

(a) Using SST and a press, install the transmission clutch hub No.1 to the output shaft.
SST 09309-36100 (09309-03610), 09950-60010 (09951-00450)

NOTICE:
The 1st gear can be turned.

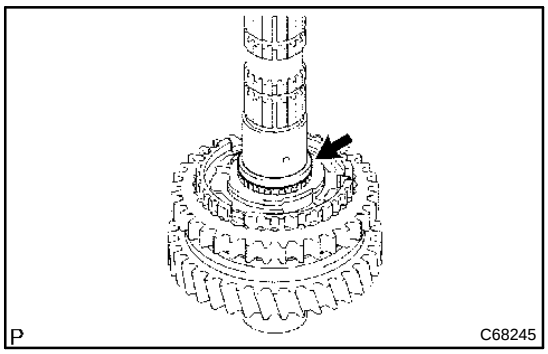


(b) Select a snap ring that will allow minimum axial play.
Standard clearance: 0.1 mm (0.004 in.) or less

Snap ring thickness:

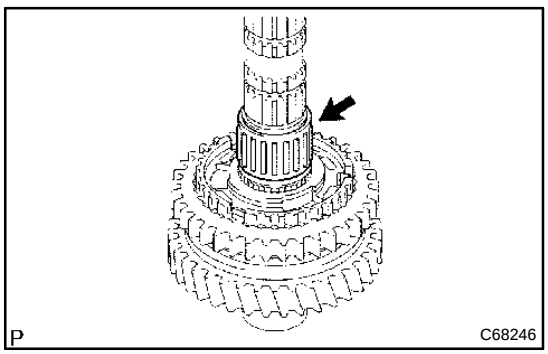
Part No.	Thickness: mm (in.)	Mark
90520 - 29018	2.50 (0.0984)	A
90520 - 29019	2.56 (0.1008)	B
90520 - 29020	2.62 (0.1031)	C
90520 - 29021	2.68 (0.1055)	D
90520 - 29022	2.74 (0.1079)	E
90520 - 29023	2.80 (0.1102)	F

(c) Using a brass bar and a hammer, install the snap ring to the output shaft.



34. INSTALL 2ND GEAR BEARING SPACER

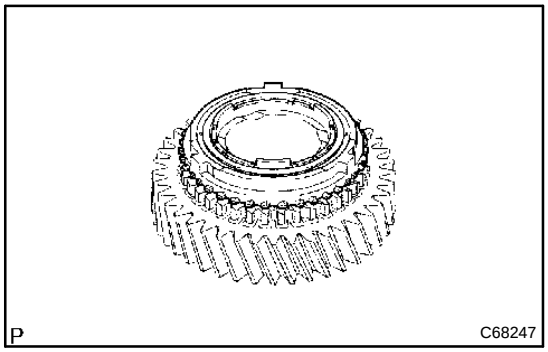
(a) Coat the 2nd gear bearing spacer with gear oil, install it to the output shaft.



35. INSTALL 2ND GEAR NEEDLE ROLLER BEARING

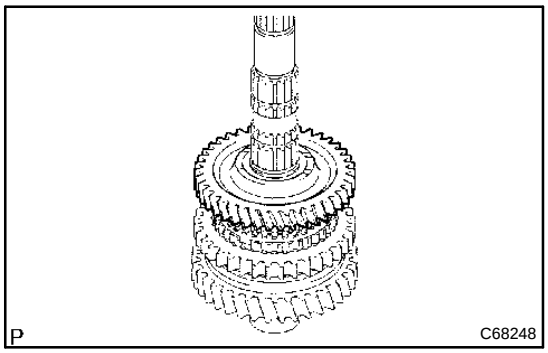
(a) Coat the 2nd gear needle roller bearing with gear oil, install it to the output shaft.

CONTINUED



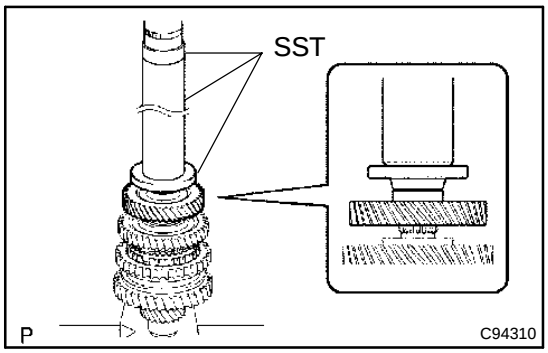
36. INSTALL SYNCHRONIZER RING SET NO.2

(a) Coat the synchronizer ring set No.2 with gear oil, install it to the 2nd gear.



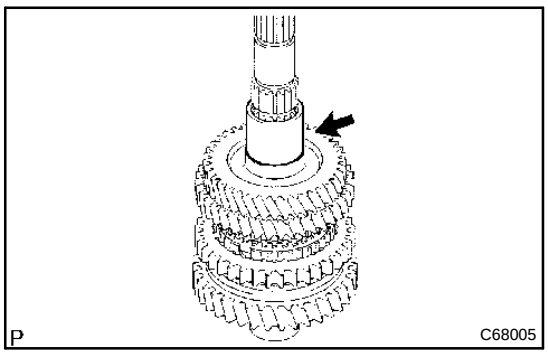
37. INSTALL 2ND GEAR

(a) Coat the 2nd gear with oil, install it to the output shaft.



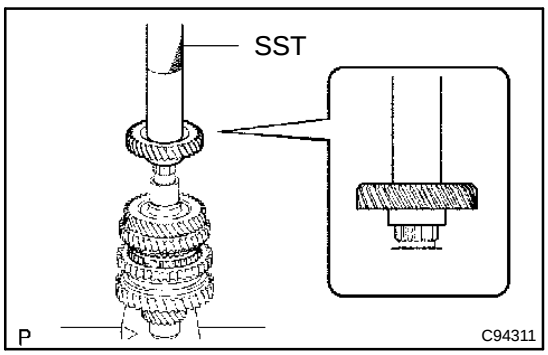
38. INSTALL 3RD DRIVEN GEAR

(a) Using SST and a press, install the 3rd driven gear to the output shaft.
SST 09309-36100 (09309-03610), 09608-00071, 09950-60010 (09951-00450)



39. INSTALL OUTPUT GEAR SPACER

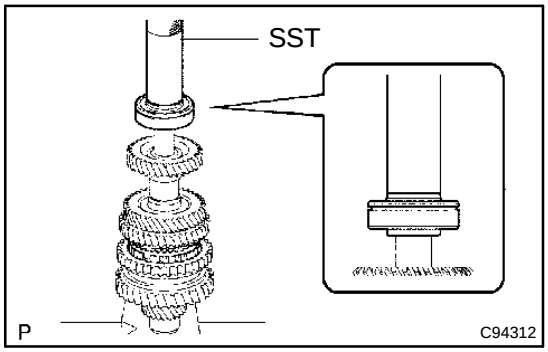
(a) Install the output gear spacer to the output shaft.



40. INSTALL 4TH DRIVEN GEAR

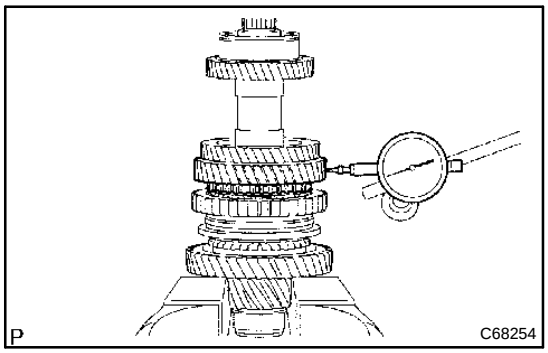
(a) Using SST and a press, install 4th driven gear to the output shaft.
SST 09612-22011

CONTINUED



41. INSTALL OUTPUT SHAFT CENTER BEARING

(a) Using SST and a press, install output shaft bearing CTR to the output shaft.
SST 09612–22011



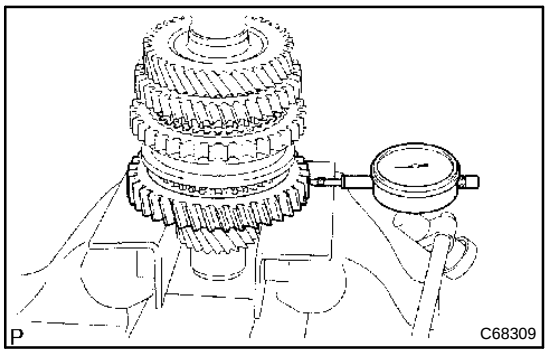
42. INSPECT 2ND GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 2nd gear radial clearance.

Standard clearance:

Bearing	Clearance: mm (in.)
KOYO made	0.015 – 0.058 (0.0006 – 0.0230)
NSK made	0.015 – 0.056 (0.0006 – 0.0022)

If the clearance is out of specification, replace the 2nd gear needle roller bearing.



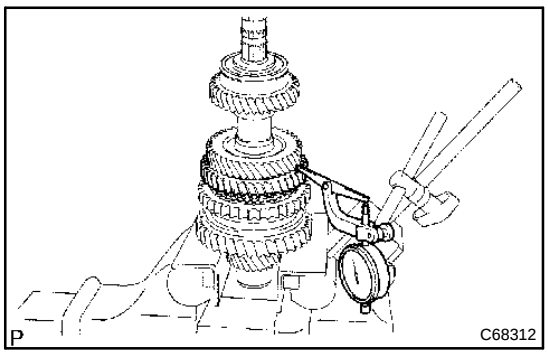
43. INSPECT 1ST GEAR RADIAL CLEARANCE

(a) Using a dial indicator, measure the 1st gear radial clearance.

Standard clearance:

Bearing	Clearance: mm (in.)
KOYO made	0.015 – 0.058 (0.0006 – 0.0230)
NSK made	0.015 – 0.056 (0.0006 – 0.0022)

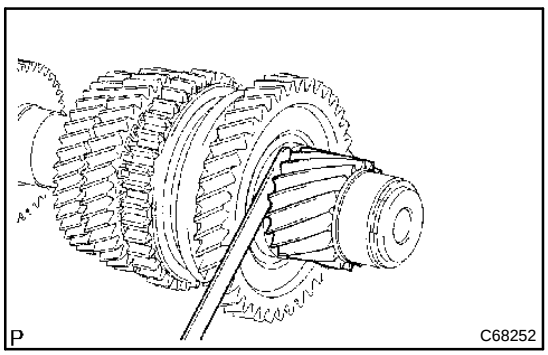
If the clearance is out of specification, replace the 1st gear needle roller bearing.



44. INSPECT 2ND GEAR THRUST CLEARANCE

(a) Using a dial indicator, measure the 2nd gear thrust clearance.

Standard clearance:
0.10 – 0.55 mm (0.0039 – 0.0217 in.)



45. INSPECT 1ST GEAR THRUST CLEARANCE

(a) Using a feeler gauge, measure the 1st gear thrust clearance.

Standard clearance:
0.10 – 0.40 mm (0.0039 – 0.0157 in.)

CONTINUED

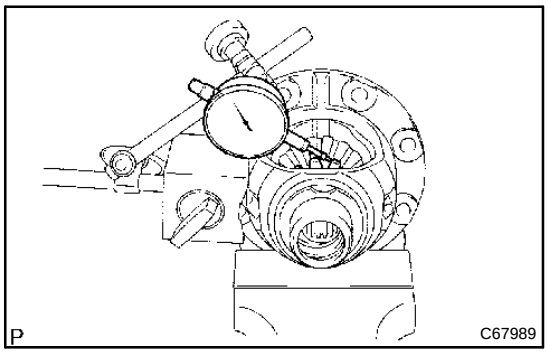
DIFFERENTIAL CASE ASSY (C64)

4105N-01

OVERHAUL

HINT:

COMPONENTS: See page 41-1

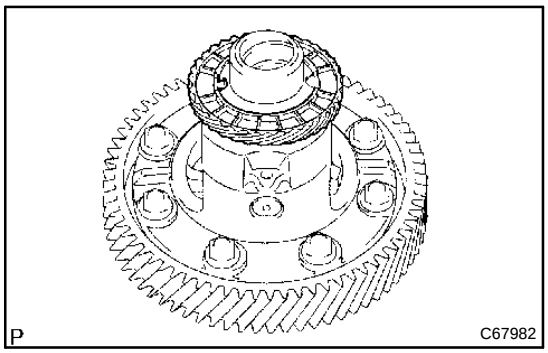


1. REMOVE FRONT DIFFERENTIAL SIDE GEAR BACKLASH

(a) Fixing the front differential pinion from the front differential case side. Using a dial indicator, measure the backlash of the front differential side gear.

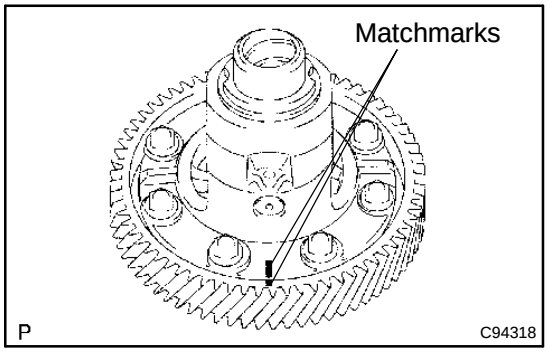
Standard backlash:

0.05 - 0.20 mm (0.0020 - 0.0079 in.)



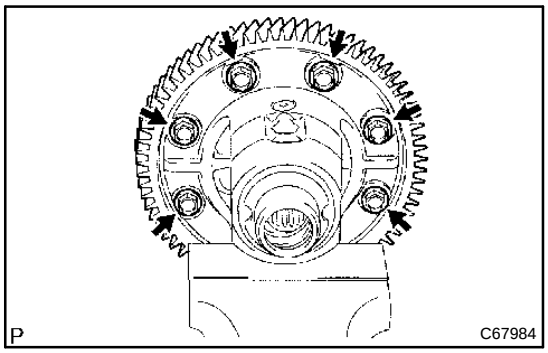
2. REMOVE SPEEDOMETER DRIVE (MTM) GEAR

(a) Remove the speedometer drive (MTM) gear from the front differential case.



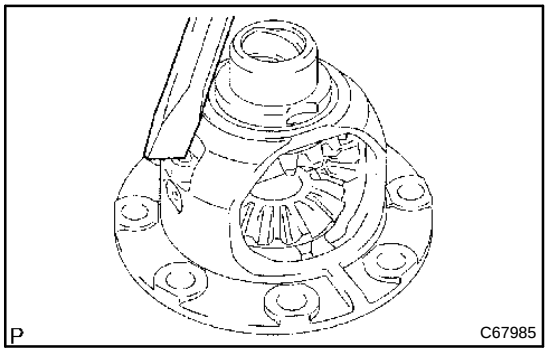
3. REMOVE FRONT DIFFERENTIAL RING GEAR

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



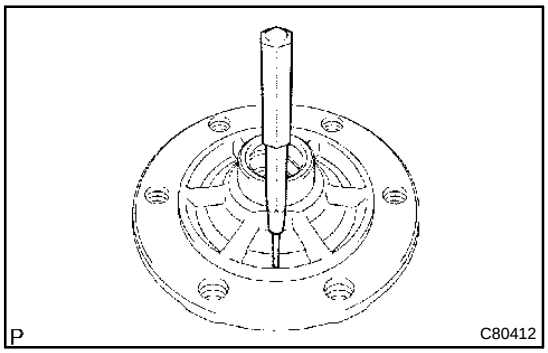
(b) Remove the 8 bolts. Using a hammer, remove the front differential ring gear.

CONTINUED

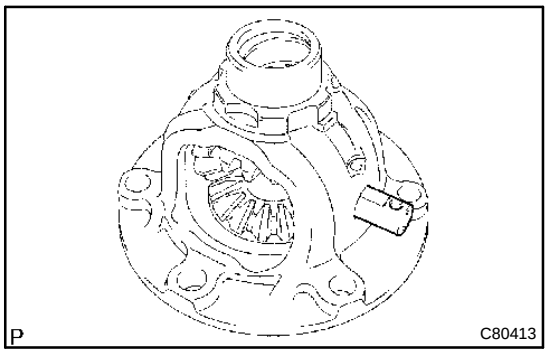


4. REMOVE FRONT DIFFERENTIAL PINION SHAFT STRAIGHT PIN

(a) Using a chisel and a hammer, loosen the staked part of the front differential case.

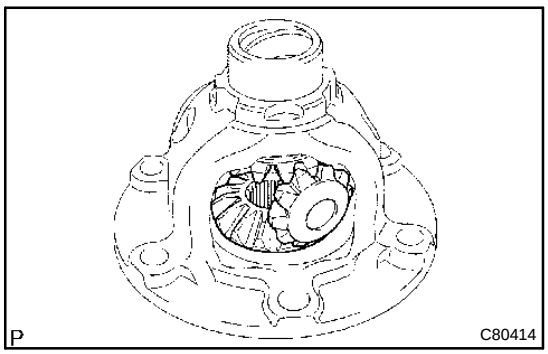


(b) Using a pin punch (ϕ 3 mm) and a hammer, remove the front differential pinion shaft straight pin from the front differential case.



5. REMOVE FRONT DIFFERENTIAL PINION SHAFT NO.1

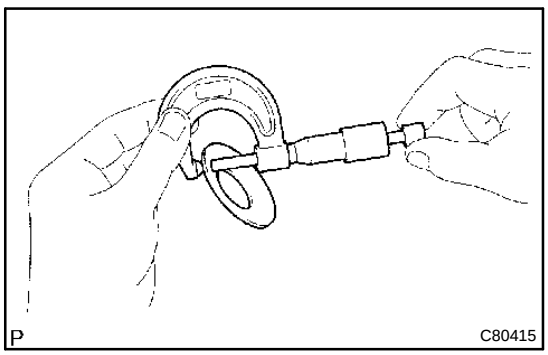
(a) Remove the front differential pinion shaft No.1 from the front differential case.



6. REMOVE FRONT DIFFERENTIAL SIDE GEAR

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

HINT:
Revolving the front differential pinion, remove the 2 pinions and side gear.

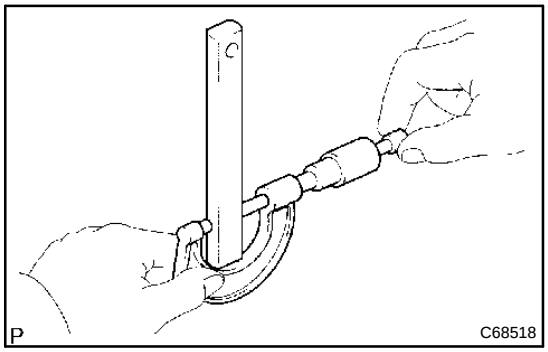


7. INSPECT FRONT DIFFERENTIAL PINION THRUST WASHER

(a) Using a micrometer, measure the thickness of the front differential pinion thrust washer.
Minimum thickness: 0.92 mm (0.0362 in.)

If the clearance is less than the minimum, replace the front differential pinion thrust washer.

CONTINUED

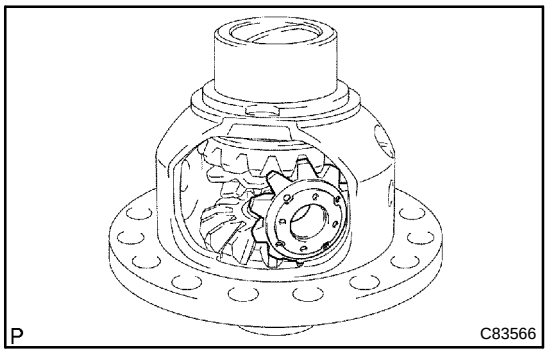


8. INSPECT FRONT DIFFERENTIAL PINION SHAFT NO.1

(a) Using a micrometer, measure the the outer diameter of the front differential pinion shaft No.1.

Minimum outer diameter: 16.982 mm (0.6686 in.)

If the outer diameter is less than the minimum, replace the front differential pinion shaft No.1.



9. INSTALL FRONT DIFFERENTIAL SIDE GEAR

(a) Coat the sliding and rotating surface of the 2 front differential side gears with MP grease.

(b) Install the 2 front differential side gear thrust washers to the 2 front differential side gear.

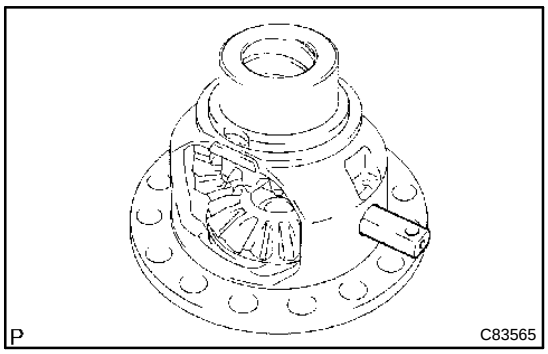
HINT:

Install the front differential side gear thrust washer as thick as the remove one.

(c) Install the 2 front differential side gears, 2 front differential pinions and 2 front differential side gear thrust washers to the front differential case.

HINT:

Revolving the front differential pinion, install the 2 front differential pinions with front differential case.

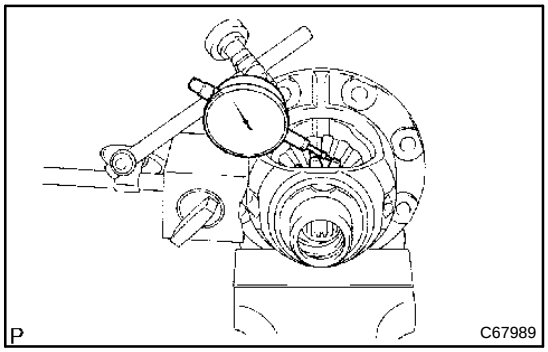


10. INSTALL FRONT DIFFERENTIAL PINION SHAFT NO.1

(a) Coat the rotating surface of the front differential pinion shaft No.1 with gear oil.

(b) Install the front differential pinion shaft No.1 to the front differential case so that the hole for the front differential pinion shaft straight pin is aligned with the hole in the front differential case.

CONTINUED



11. ADJUST FRONT DIFFERENTIAL SIDE GEAR BACKLASH

(a) Fixing the front differential pinion to the front differential case side. Using a dial indicator, measure the front differential side gear backlash.

Standard backlash:

0.05 - 0.20 mm (0.0020 - 0.0079 in.)

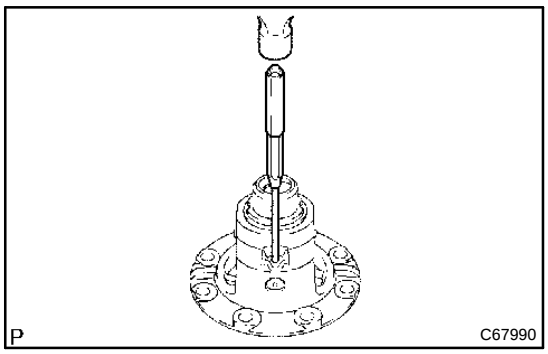
If the backlash is out of specification, replace the side gear thrust washer.

Thrust washer thickness:

Part No.	Thickness: mm (in.)
41361 - 22140	0.95 (0.0374)
41361 - 22020	1.00 (0.0394)
41361 - 22150	1.05 (0.0413)
41361 - 22030	1.10 (0.0433)
41361 - 22160	1.15 (0.0453)
41361 - 22040	1.20 (0.0472)

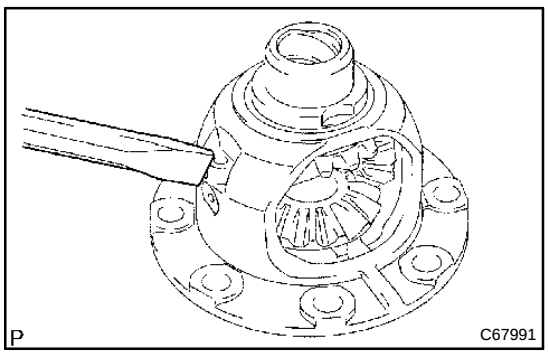
HINT:

- Because the thrust washer does not have any mark for distinction, measure the front thickness with a micrometer to select a proper thrust washer.
- Select washers of the same thickness for both the righ and left.



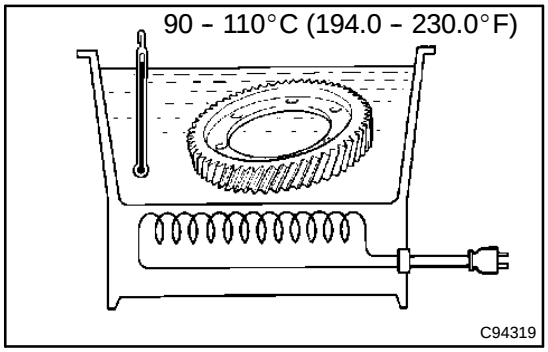
12. INSTALL FRONT DIFFERENTIAL PINION SHAFT STRAIGHT PIN

(a) Using a pin punch (ϕ 3 mm) and a hammer, install the front differential pinion shaft straight pin to the front differential case.



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

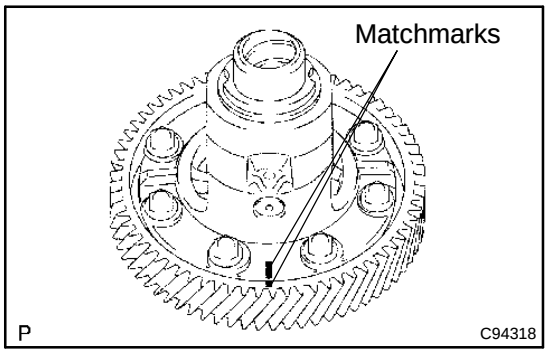
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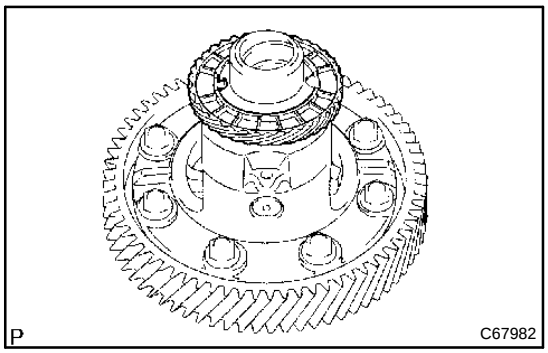
13. INSTALL FRONT DIFFERENTIAL RING GEAR

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

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



(c) Align the both matchmarks, quickly install the 8 bolts with the front differential ring gear to the front differential case.
Torque: 77.4 N·m (789 kgf·cm, 57 ft·lbf)



14. INSTALL SPEEDOMETER DRIVE (MTM) GEAR

(a) Install the speedometer drive gear to the front differential case.

CONTINUED

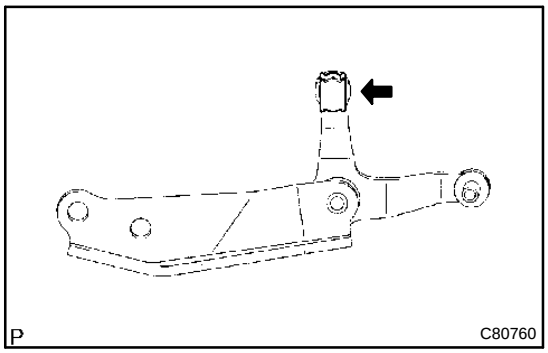
SHIFT & SELECT LEVER SHAFT ASSY (C64)

4105O-01

OVERHAUL

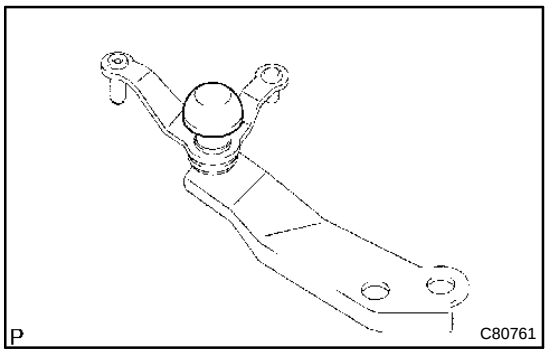
HINT:

COMPONENTS: See page 41–1



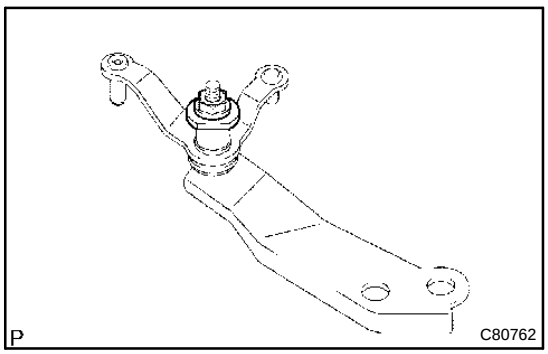
1. REMOVE CONTROL SHIFT LEVER BUSH

(a) Remove the control shift lever bush from the selecting bellcrank assy.



2. REMOVE SELECTING BELLCRANK DUST COVER NO.1

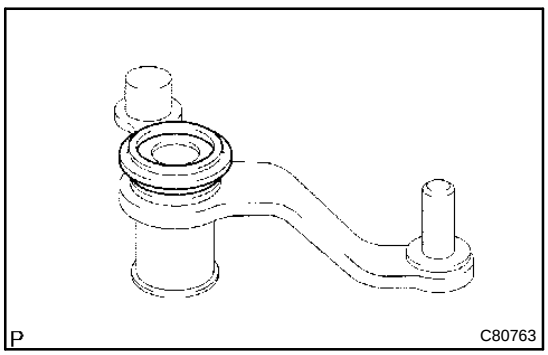
(a) Remove the selecting bellcrank dust cover No.1 from the selecting bellcrank assy.



3. REMOVE SELECTING BELLCRANK NO.2

(a) Remove the nut, spring washer and selecting bellcrank assy No.2 plate washer.

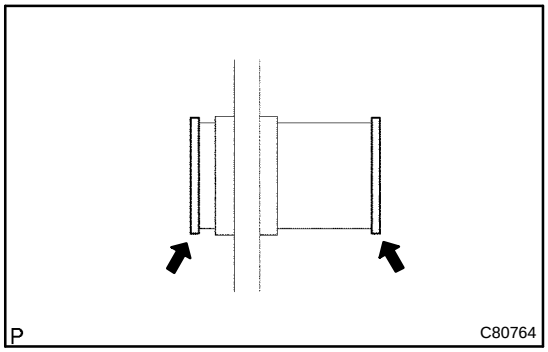
(b) Remove the selecting bellcrank No.2 from the selecting bellcrank support.



4. REMOVE SELECTING BELLCRANK DUST COVER NO.2

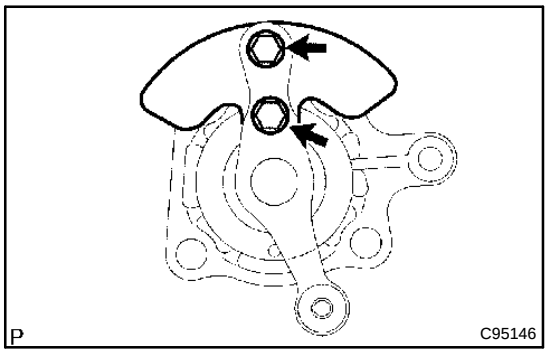
(a) Remove the selecting bellcrank dust cover No.2 from the selecting bellcrank No.2.

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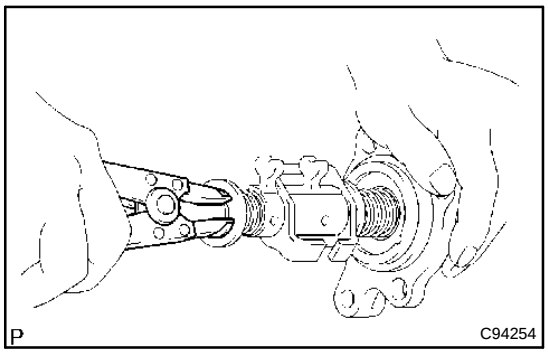
5. REMOVE SELECTING BELLCRANK NO.2 BUSH

(a) Remove the 2 selecting bellcrank No.2 bushes from the selecting bellcrank No.2.



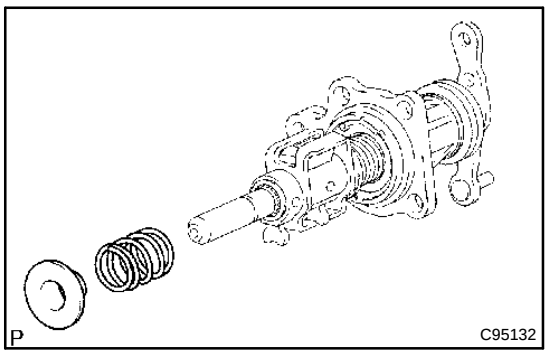
6. REMOVE SHIFT LEVER DAMPER

(a) Remove the 2 bolts and shift lever damper from the shift & select lever shaft assy.

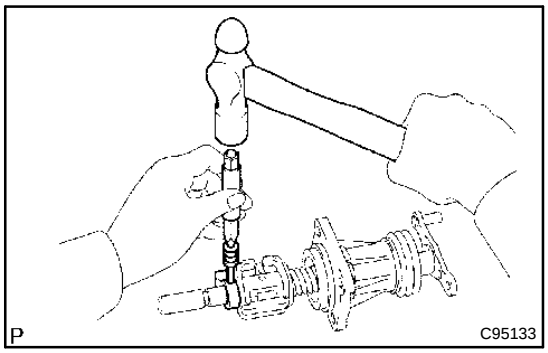


7. REMOVE SELECT SPRING SEAT NO.2

(a) Using a snap ring expander, remove the E–ring from the shift & select lever shaft assy.



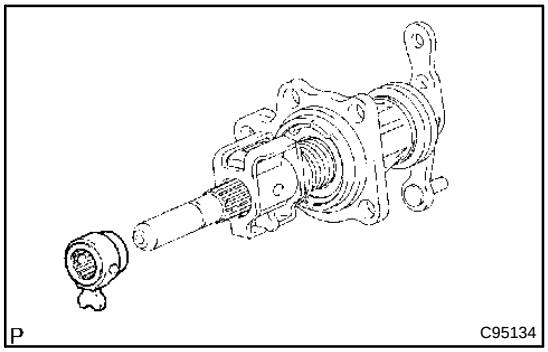
(b) Remove the select spring seat No.2 and select return spring No.2 from the shift & select lever shaft assy.



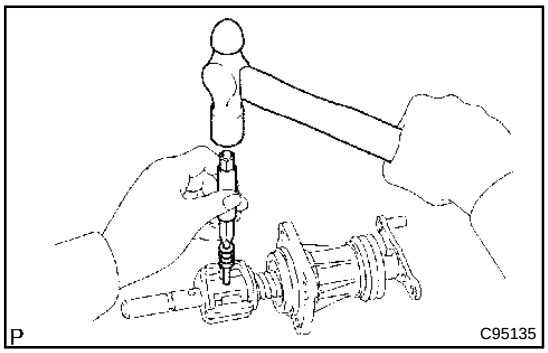
8. REMOVE SHIFT LEVER INNER NO.2

(a) Using a pin punch (ϕ 5 mm), remove the shift & select lever inner No.2 slotted pin from the shift & select lever shaft assy.

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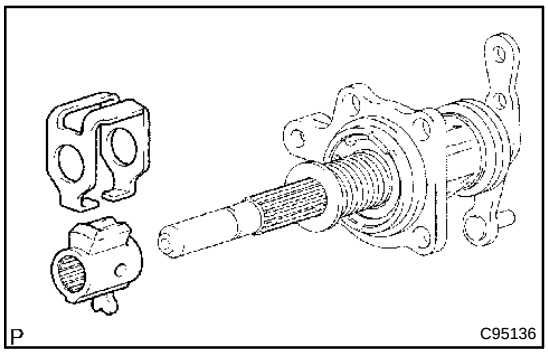


(b) Remove the shift lever inner No.2 from the shift & select lever shaft assy.

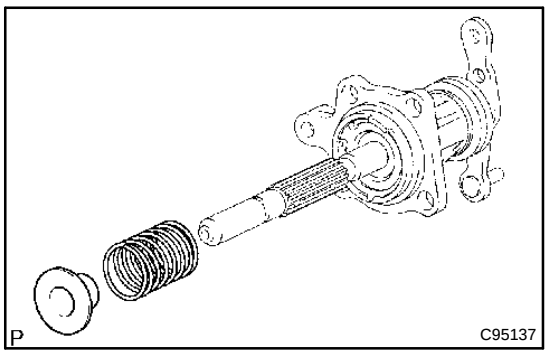


9. REMOVE SHIFT LEVER INNER NO.1

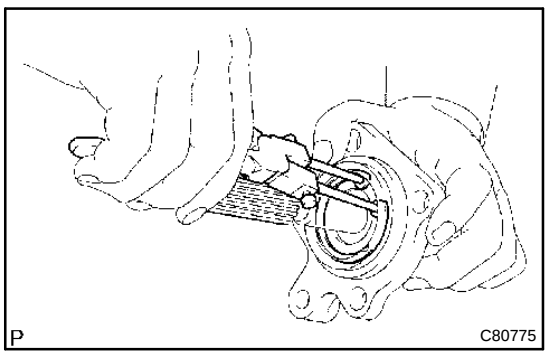
(a) Using a pin punch (ϕ 5 mm) and a hammer, remove the shift lever inner No.1 slotted pin from the shift & select lever shaft assy.



(b) Remove the shift lever inner No.1 and shift inter lock plate from the shift & select lever shaft assy.



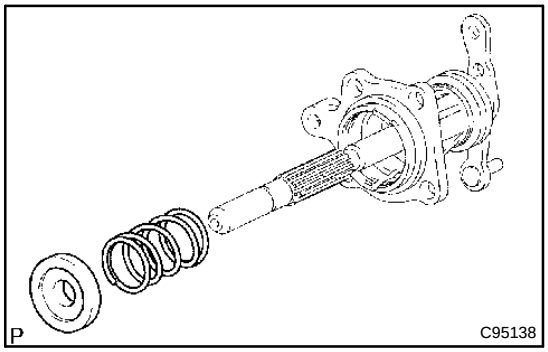
(c) Remove the select spring seat No.1 and select return spring No.1 from the shift & select lever shaft assy.



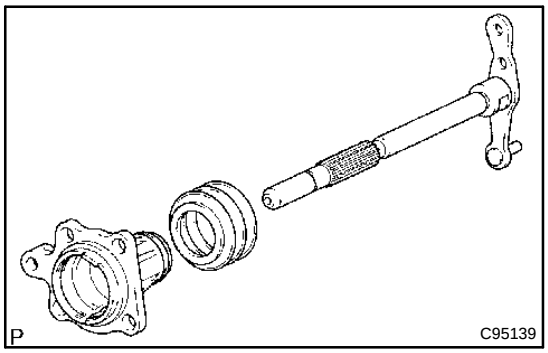
10. REMOVE SHIFT & SELECT LEVER SHAFT SUPPORT

(a) Using a snap ring expander, remove the snap ring from the control shaft cover.

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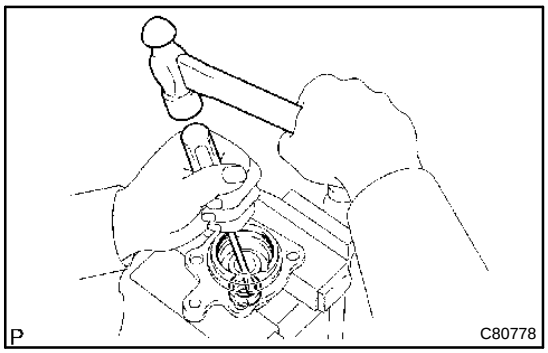


(b) Remove the shift & select lever shaft support and reverse select pin compression spring from the control shaft cover.



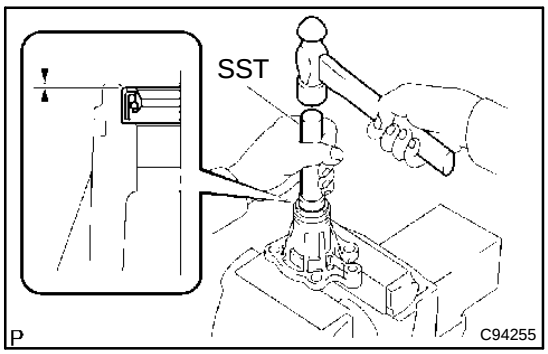
11. REMOVE SHIFT & SELECT LEVER SHAFT

(a) Remove the shift & select lever shaft and shift & select lever shaft dust boot from the control shaft cover.



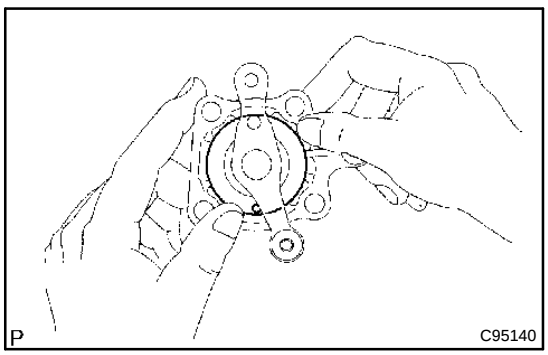
12. REMOVE CONTROL SHAFT COVER OIL SEAL

(a) Using a screwdriver and a hammer, remove the control shaft cover oil seal from the control shaft cover.



13. INSTALL CONTROL SHAFT COVER OIL SEAL

(a) Coat the control shaft cover oil seal with MP grease.
(b) Using SST and a hammer, install the control shaft cover oil seal to the control shaft cover.
SST 09950-60010 (09951-00280), 09950-70010 (09951-07150)
Driven in depth: 0.2 - 1.2 mm (0.0079 - 0.0472 in.)

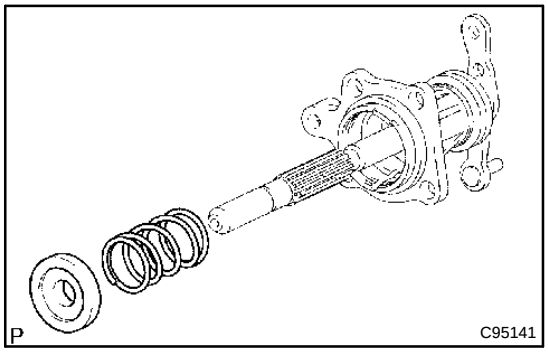


14. INSTALL SHIFT & SELECT LEVER SHAFT

(a) Coat the shift & select lever shaft with gear oil.
(b) Install the shift & select lever shaft with shift & select lever shaft dust boots to the control shaft cover.

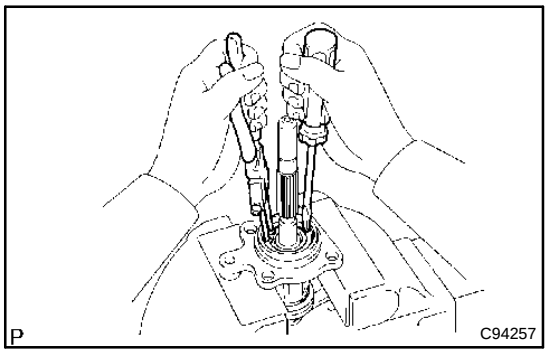
HINT:
Install the shift & select lever shaft boots with the projection up and the hole side down.

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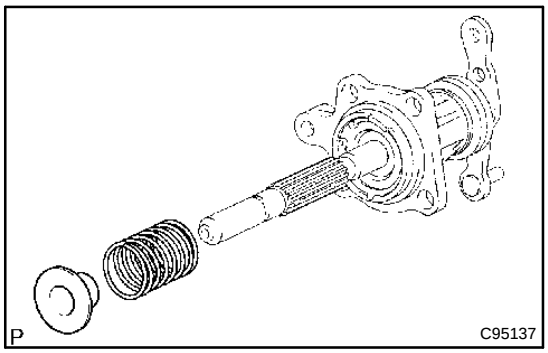


15. INSTALL SHIFT & SELECT LEVER SHAFT SUPPORT

(a) Install the shift & select lever shaft support and reverse select pin compression spring to the control shaft cover.

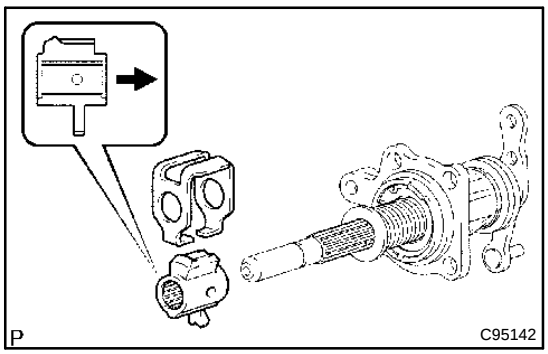


(b) Using a snap ring expander and a screwdriver, install the snap ring to the control shaft cover.

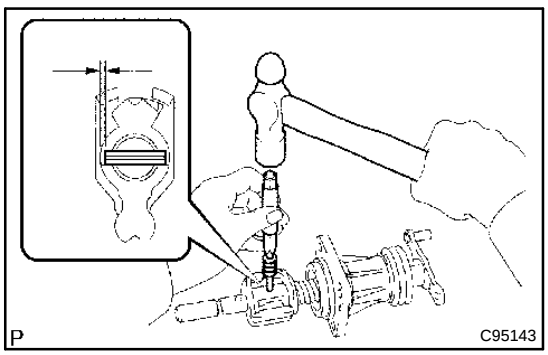


16. INSTALL SHIFT LEVER INNER NO.1

(a) Install the select spring seat No.1 with select return spring No.1 to the shift & select lever shaft assy.

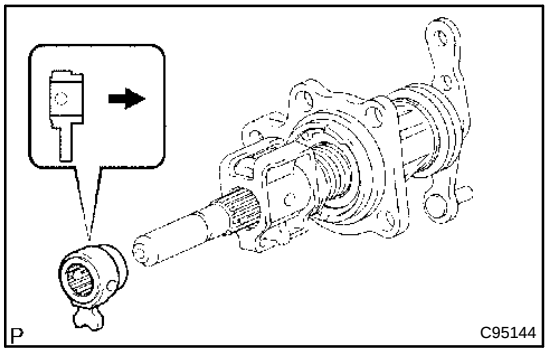


(b) Coat the shift lever inner No.1 with gear oil.
(c) Install the shift lever inner No.1 with shift inter lock plate to the shift & select lever shaft assy.



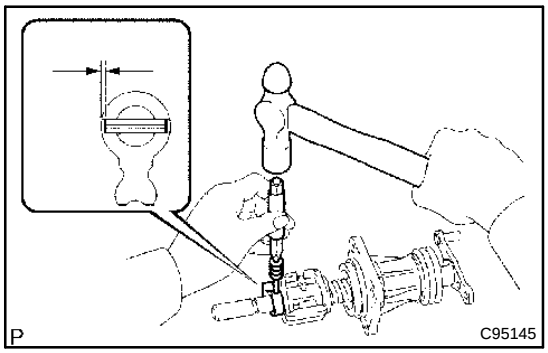
(d) Using a pin punch (ϕ 5 mm) and a hammer, install the shift inner lever slotted pin to the shift & select lever shaft assy.
Driven in depth: 0 ± 0.5 mm (0 ± 0.020 in.)

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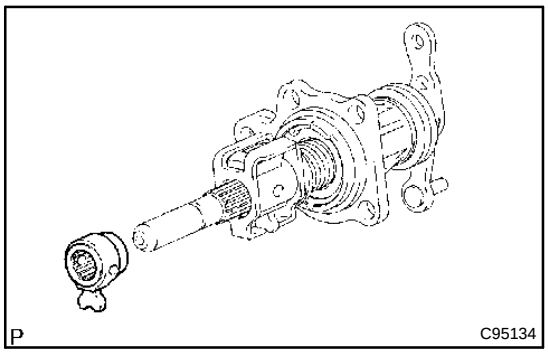


17. INSTALL SHIFT LEVER INNER NO.2

(a) Coat the shift lever inner No.2 with gear oil.
(b) Install the shift & select lever inner No.2 to the shift & select lever shaft assy.

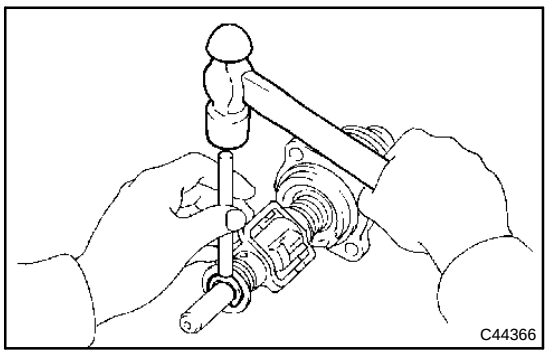


(c) Using a pin punch (ϕ 5 mm) and a hammer, install the shift inner lever slotted pin to the shift & select lever shaft assy.
Driven in depth: 3.5 ± 0.5 mm (0.1378 ± 0.0197 in.)



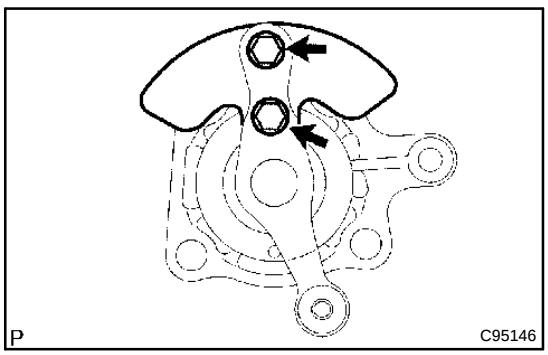
18. INSTALL SELECT SPRING SEAT NO.2

(a) Install the select spring seat No.2 with select return spring No.2 to the shift & select lever shaft assy.



(b) Using a brass bar and a hammer, install the E-ring to the shift & select lever shaft assy.

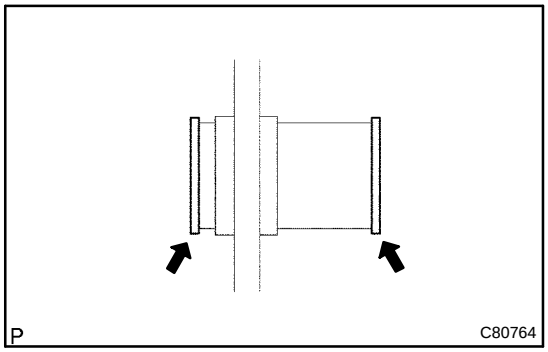
NOTICE:
Do not damage the shift & select lever shaft assy.



19. REMOVE SHIFT LEVER DAMPER

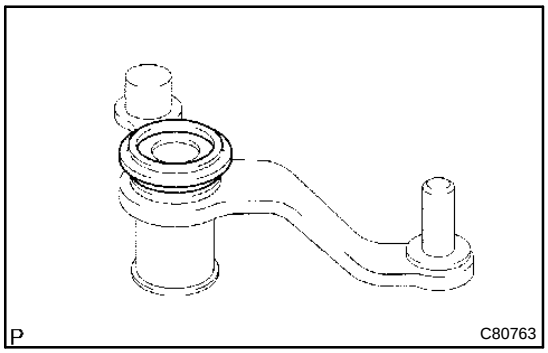
(a) Install the 2 bolts with shift lever damper to the shift & select lever shaft assy.
Torque: 24 N·m (245 kgf·cm, 18 ft·lbf)

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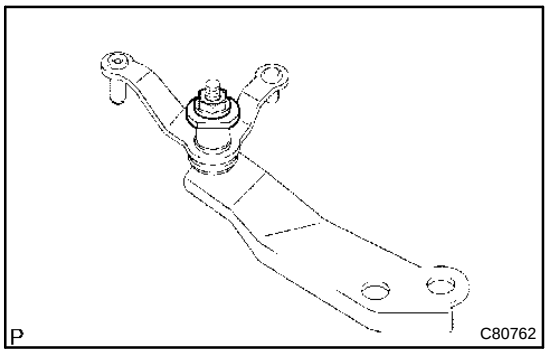
20. INSTALL SELECTING BELLCRANK NO.2 BUSH

(a) Coat the 2 selecting bellcrank No.2 bushes with MP grease, install them to the selecting bellcrank No.2.



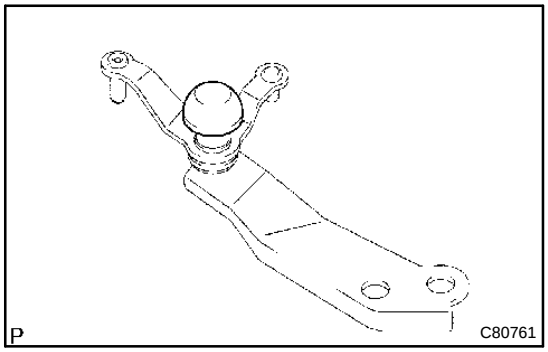
21. INSTALL SELECTING BELLCRANK DUST COVER NO.2

(a) Coat the selecting bellcrank dust cover No.2 with MP grease, install it to the selecting bellcrank No.2.



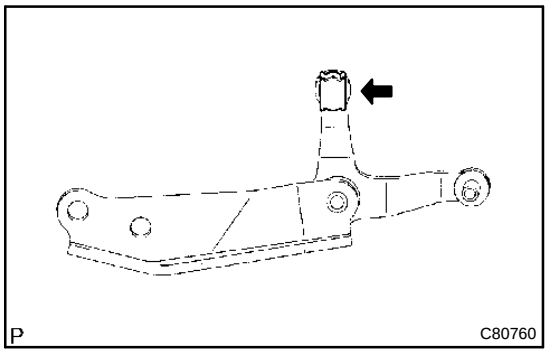
22. INSTALL SELECTING BELLCRANK NO.2

(a) Install the selecting bellcrank No.2, selecting bellcrank No.2 plate washer, spring washer and nut.
Torque: 11.8 N·m (120 kgf·cm, 9 ft·lbf)



23. INSTALL SELECTING BELLCRANK DUST COVER NO.1

(a) Install the selecting bellcrank dust cover No.1 to the selecting bellcrank assy.



24. INSTALL CONTROL SHIFT LEVER BUSH

(a) Install shift & select lever bush to the selecting bellcrank assy.

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