

## **WARNING**

Servicing a vehicle can be dangerous. If you have not received service-related training, the risks of injury, property damage, and failure of servicing increase. The recommended servicing procedures for the vehicle in this workshop manual were developed with Mazda-trained technicians in mind. This manual may be useful to non-Mazda trained technicians, but a technician with our service-related training and experience will be at less risk when performing service operations. However, all users of this manual are expected to at least know general safety procedures.

This manual contains "Warnings" and "Cautions" applicable to risks not normally encountered in a general technician's experience. They should be followed to reduce the risk of injury and the risk that improper service or repair may damage the vehicle or render it unsafe. It is also important to understand that the "Warnings" and "Cautions" are not exhaustive. It is impossible to warn of all the hazardous consequences that might result from failure to follow the procedures.

The procedures recommended and described in this manual are effective methods of performing service and repair. Some require tools specifically designed for a specific purpose. Persons using procedures and tools which are not recommended by Mazda Motor Corporation must satisfy themselves thoroughly that neither personal safety nor safety of the vehicle will be jeopardized.

The contents of this manual, including drawings and specifications, are the latest available at the time of printing, and Mazda Motor Corporation reserves the right to change the vehicle designs and alter the contents of this manual without notice and without incurring obligation.

Parts should be replaced with genuine Mazda replacement parts or with parts which match the quality of genuine Mazda replacement parts. Persons using replacement parts of lesser quality than that of genuine Mazda replacement parts must satisfy themselves thoroughly that neither personal safety nor safety of the vehicle will be jeopardized.

Mazda Motor Corporation is not responsible for any problems which may arise from the use of this manual. The cause of such problems includes but is not limited to insufficient service-related training, use of improper tools, use of replacement parts of lesser quality than that of genuine Mazda replacement parts, or not being aware of any revision of this manual.

# Automatic Transaxle Workshop Manual **FW6A-EL**

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### FOREWORD

This manual explains the service points for the above-indicated automotive system. This manual covers all models with the above-indicated automotive system, not any one specific model.

In order to do these procedures safely, quickly, and correctly, you must first read this manual and any other relevant service materials carefully.

All the contents of this manual, including drawings and specifications, are the latest available at the time of printing. As modifications affecting repair or maintenance occur, relevant information supplementary to this volume will be made available at Mazda dealers. This manual should be kept up-to-date.

Mazda Motor Corporation reserves the right to alter the specifications and contents of this manual without obligation or advance notice.

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**Mazda Motor Corporation  
HIROSHIMA, JAPAN**



# GENERAL INFORMATION

**00**  
SECTION

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## GENERAL INFORMATION . . . 00-00

## 00-00 GENERAL INFORMATION

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# GENERAL INFORMATION

## HOW TO USE THIS MANUAL

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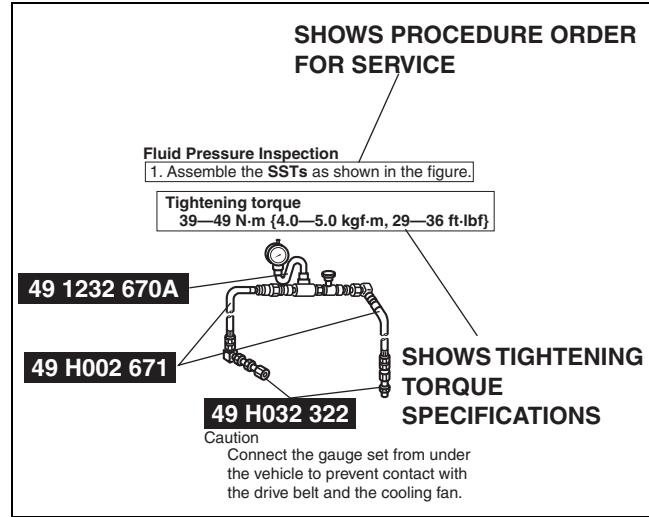
### Range of Topics

- This manual contains procedures for performing all required service operations. The procedures are divided into the following basic operations:
  - Removal/Installation
  - Disassembly/Assembly
  - Replacement
  - Inspection
  - Adjustment
- Simple operations which can be performed easily just by looking at the actual unit (i.e., removal/installation of parts, cleaning of parts, and visual inspection) have been omitted.

### Service Procedure

#### Inspection, adjustment

- Inspection and adjustment procedures are divided into steps. Important points regarding the location and contents of the procedures are explained in detail and shown in the illustrations.



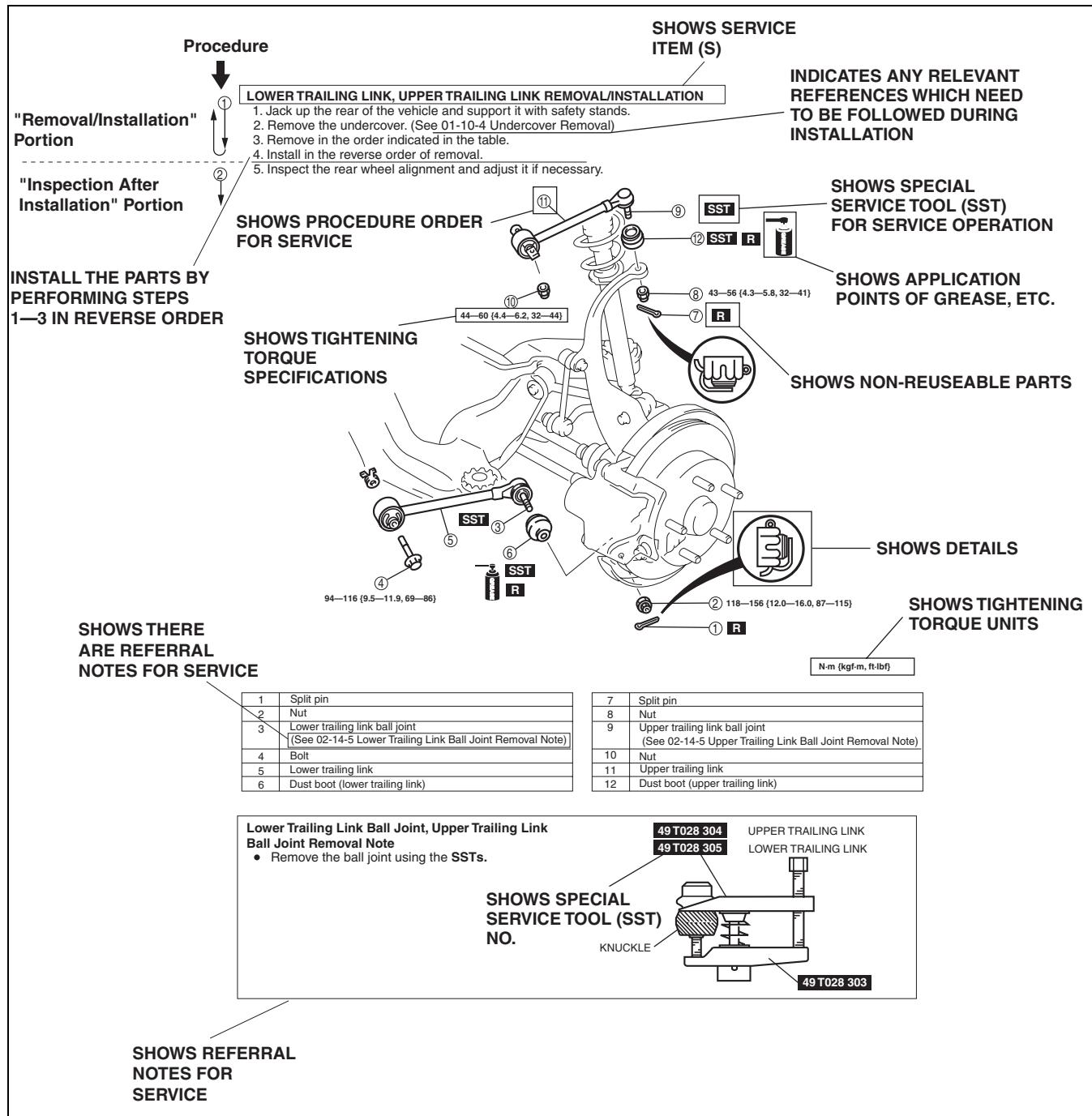
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# GENERAL INFORMATION

## Repair procedure

1. Most repair operations begin with an overview illustration. It identifies the components, shows how the parts fit together, and describes visual part inspection. However, only removal/installation procedures that need to be performed methodically have written instructions.
2. Expendable parts, tightening torques, and symbols for oil, grease, and sealant are shown in the overview illustration. In addition, symbols indicating parts requiring the use of special service tools or equivalent are also shown.
3. Procedure steps are numbered and the part that is the main point of that procedure is shown in the illustration with the corresponding number. Occasionally, there are important points or additional information concerning a procedure. Refer to this information when servicing the related part.

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## GENERAL INFORMATION

### Symbols

- There are eight symbols indicating oil, grease, fluids, sealant, and the use of **SST** or equivalent. These symbols show application points or use of these materials during service.

Symbol	Meaning	Kind
	Apply oil	New appropriate engine oil or gear oil
	Apply brake fluid	New appropriate brake fluid
	Apply automatic transaxle/transmission fluid	New appropriate automatic transaxle/transmission fluid
	Apply grease	Appropriate grease
	Apply sealant	Appropriate sealant
	Apply petroleum jelly	Appropriate petroleum jelly
	Replace part	O-ring, gasket, etc.
	Use SST or equivalent	Appropriate tools

### Advisory Messages

- You will find several **Warnings**, **Cautions**, **Notes**, **Specifications** and **Upper and Lower Limits** in this manual.

### Warning

- A Warning indicates a situation in which serious injury or death could result if the warning is ignored.

### Caution

- A Caution indicates a situation in which damage to the vehicle or parts could result if the caution is ignored.

### Note

- A Note provides added information that will help you to complete a particular procedure.

### Specification

- The values indicate the allowable range when performing inspections or adjustments.

### Upper and lower limits

- The values indicate the upper and lower limits that must not be exceeded when performing inspections or adjustments.

# GENERAL INFORMATION

## UNITS

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Electric current	A (ampere)
Electric power	W (watt)
Electric resistance	ohm
Electric voltage	V (volt)
Length	mm (millimeter) in (inch)
Negative pressure	kPa (kilo pascal) mmHg (millimeters of mercury) inHg (inches of mercury)
Positive pressure	kPa (kilo pascal) kgf/cm <sup>2</sup> (kilogram force per square centimeter) psi (pounds per square inch)
Number of revolutions	rpm (revolutions per minute)
Torque	N·m (Newton meter) kgf·m (kilogram force meter) kgf·cm (kilogram force centimeter) ft-lbf (foot pound force) in-lbf (inch pound force)
Volume	L (liter) US qt (U.S. quart) Imp qt (Imperial quart) ml (milliliter) cc (cubic centimeter) cu in (cubic inch) fl oz (fluid ounce)
Weight	g (gram) oz (ounce)

### Conversion From SI Units (Système International d'Unités)

- All numerical values in this manual are based on SI units. Numbers shown in conventional units are converted from these values.

### Number Of Digits For Converted Values

- The number digits for converted values is the same as the number of significant figures<sup>\*1</sup> of the SI unit.
- For the torque value, the number of significant figures is, in principle, is 2 digits, in consideration of market practicalities. However, if the number of decimal places at the upper and lower limits of the converted value differs, the one with least number of decimal places is used. In addition, if the integer part is 3 digits or more, the integer part becomes the significant number of figures.

\*1 : The number of significant figures is the number of digits from the left-most non-zero digit to the right-most digit including 0. (Example: 0.12 is 2 digits, 41.0 is 3 digits)

### Converted Value Rounding Off And Rounding Up/down

- If there is no tolerance in the SI unit value, after conversion, rounding off is to within the number of significant digits.
- If there is tolerance in the SI unit value and the figure after conversion indicates the upper limit, the number of digits is rounded down to within the number of significant figures. If it indicates the lower limit, they are rounded up to within the number of significant figures.
- Even if the SI unit value is the same, the converted value may differ based on whether that value is the upper or lower limit.

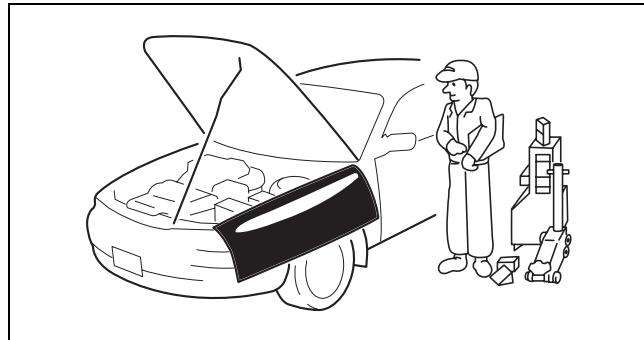
# GENERAL INFORMATION

## FUNDAMENTAL PROCEDURES

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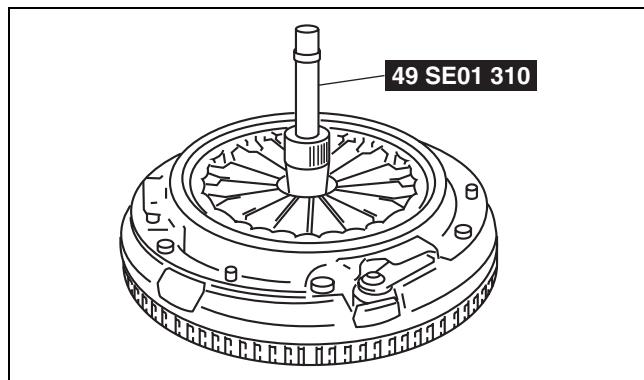
### Preparation of Tools and Measuring Equipment

- Be sure that all necessary tools and measuring equipment are available before starting any work.



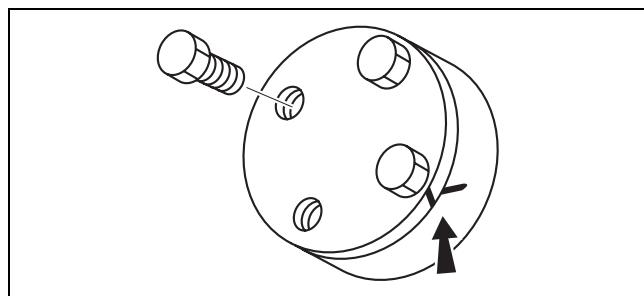
### Special Service Tools

- Use special service tools or equivalent when they are required.



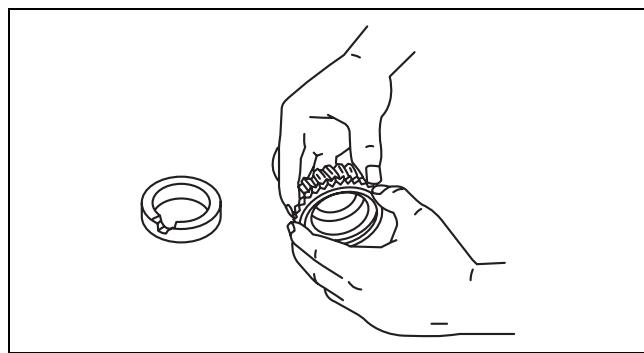
### Disassembly

- If the disassembly procedure is complex, requiring many parts to be disassembled, all parts should be marked in a place that will not affect their performance or external appearance and identified so that reassembly can be performed easily and efficiently.



### Inspection During Removal, Disassembly

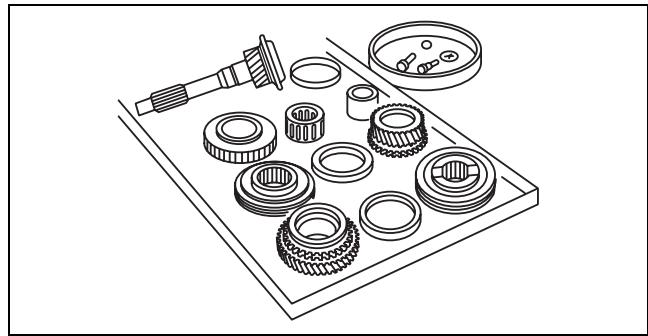
- When removed, each part should be carefully inspected for malfunction, deformation, damage and other problems.



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### Arrangement of Parts

- All disassembled parts should be carefully arranged for reassembly.
- Be sure to separate or otherwise identify the parts to be replaced from those that will be reused.



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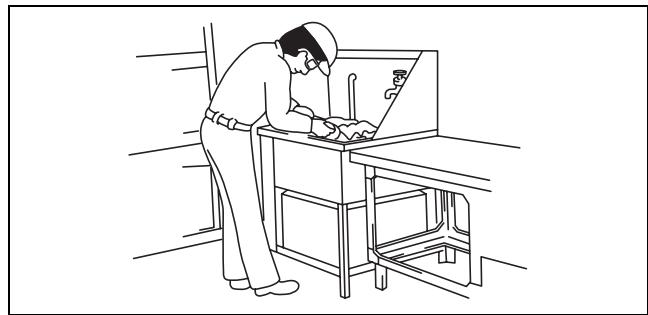
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### Cleaning of Parts

- All parts to be reused should be carefully and thoroughly cleaned in the appropriate method.

#### Warning

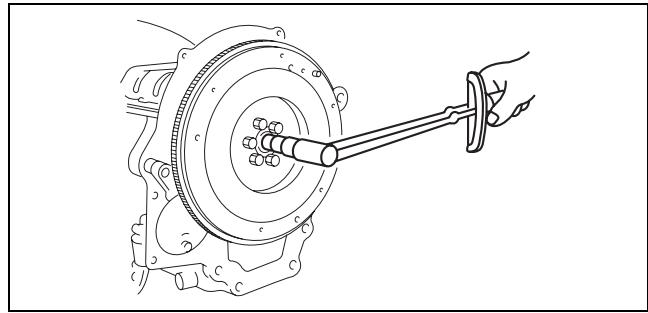
- Using compressed air can cause dirt and other particles to fly out causing injury to the eyes. Wear protective eye wear whenever using compressed air.



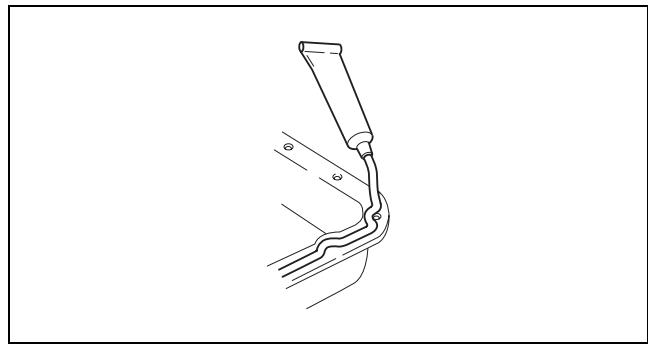
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### Reassembly

- Standard values, such as torques and certain adjustments, must be strictly observed in the reassembly of all parts.
- If removed, the following parts should be replaced with new ones:
  - Oil seals
  - Gaskets
  - O-rings
  - Lockwashers
  - Cotter pins
  - Nylon nuts
- Depending on location:
  - Sealant and gaskets, or both, should be applied to specified locations. When sealant is applied, parts should be installed before sealant hardens to prevent leakage.
  - Oil should be applied to the moving components of parts.
  - Specified oil or grease should be applied at the prescribed locations (such as oil seals) before reassembly.



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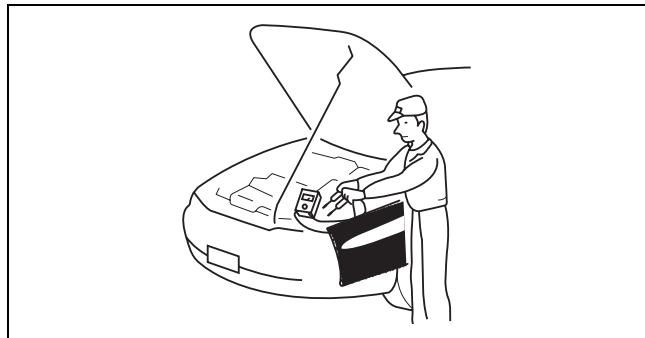


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## GENERAL INFORMATION

### Adjustment

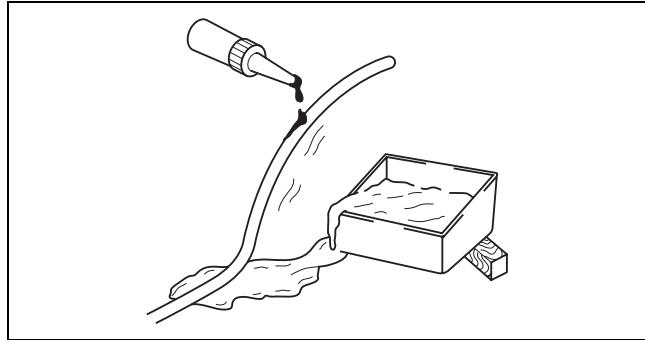
- Use suitable gauges and testers when making adjustments.



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### Rubber Parts and Tubing

- Prevent gasoline or oil from getting on rubber parts or tubing.



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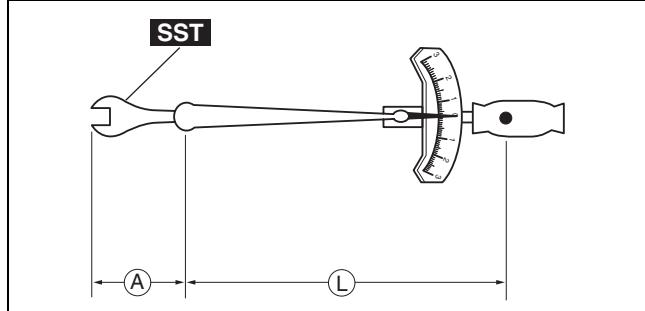
### Torque Formulas

- When using a torque wrench-SST or equivalent combination, the written torque must be recalculated due to the extra length that the SST or equivalent adds to the torque wrench. Recalculate the torque by using the following formulas. Choose the formula that applies to you.

Torque Unit	Formula
N·m	$N\cdot m \times [L/(L+A)]$
kgf·m	$kgf\cdot m \times [L/(L+A)]$
kgf·cm	$kgf\cdot cm \times [L/(L+A)]$
ft·lbf	$ft\cdot lbf \times [L/(L+A)]$
in·lbf	$in\cdot lbf \times [L/(L+A)]$

A : The length of the SST past the torque wrench drive.

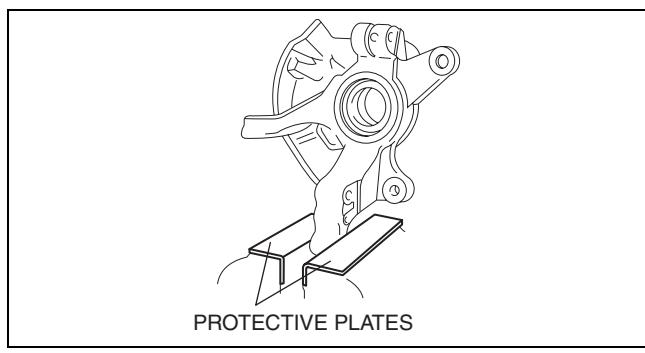
L : The length of the torque wrench.



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### Vise

- When using a vise, put protective plates in the jaws of the vise to prevent damage to parts.



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## **GENERAL INFORMATION**

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### **ABBREVIATIONS**

id000000010100

ATF	Automatic Transaxle Fluid
LH	Left Hand
SST	Special Service Tool
TCC	Torque Converter Clutch
TCM	Transaxle Control Module



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## AUTOMATIC TRANSAXLE

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# AUTOMATIC TRANSAXLE

## FOREWORD

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### Warning

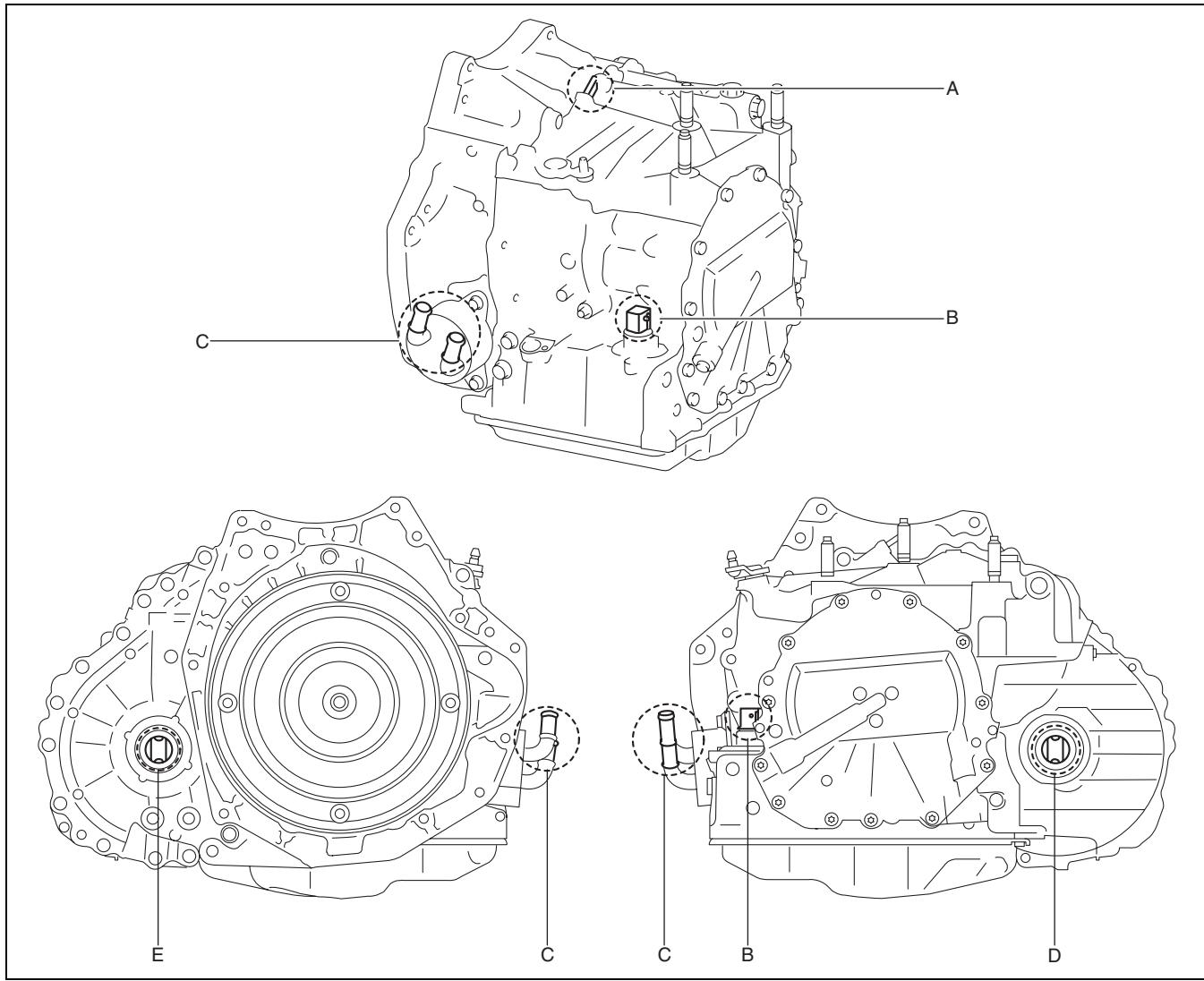
- The engine stand is equipped with a self-lock mechanism. However, if the transaxle is tilted, the self-lock mechanism could become inoperative. This could cause the transaxle to rotate accidentally, resulting in injury. Therefore, make sure that the transaxle is not tilted when it is on the engine stand. When turning the transaxle, grasp the rotation handle firmly.
- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

### Operation Cautions

- Prevent foreign matter penetration into the transaxle.
  - Clean the outside of the transaxle using steam or degreaser before disassembly.

### Caution

- If the outside of the transaxle is cleaned, plug the position shown in the figure with packing tape and be careful that foreign matter, water, or degreaser does not penetrate the transaxle and connector.



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**A: Breather pipe**

**B: Control valve body connector**

**C: Oil cooler**

**D: Oil seal**

**E: Oil seal**

- To prevent dust penetration into the transaxle, perform the procedure in a dust free room.
- To prevent lint penetration into the transaxle, perform the procedure with bare hands or wearing vinyl gloves. Do not use cotton gloves or rag.
- Organize and store the disassembled parts to protect them from dust or dirt.
- Before assembly, verify that each part is clean and dried.
- Clean off remaining old sealant before applying new sealant.
- Do not clean the following parts, otherwise foreign matter or degreaser may penetrate the oil passage or internal part:
  - Control valve body (including the following parts):
    - ON/OFF solenoid
    - Oil pressure switch A
    - Oil pressure switch B
    - Coupler component
- Disassemble while looking for damage, cracks, deformation, scratches, and the assembly condition of parts.
- When servicing, be very careful not to get injured by the edges of parts.
- If ATF is dripping on the floor, wipe it off immediately because a slippery floor is dangerous.
- If the connecting part of a light-alloy part for the transaxle case is disassembled, disassemble it by lightly tapping using a plastic hammer. Do not twist the part or use a flathead screwdriver.
- Thoroughly inspect the foreign matter found in the transaxle or on the magnet to help determine the transaxle condition.
- If using a vise, secure the component using a protective plate (aluminum plate) to prevent component damage.
- Be very careful when handling electronic components.
  - If a connector is disconnected, do not pull the wiring harness. Pull the connector at a straight angle after releasing the lock.
  - Do not touch the terminal as the connector terminal could be damaged.
  - Verify that there is no foreign matter adhering to the connector before connecting the connector.
  - When connecting a connector, insert it straight until it is securely locked.
  - Do not apply impact to electronic components. Replace with a new component if one was dropped or received an impact.
- To prevent damage to parts, always use an air compressor adjusted to the indicated pressure.
- Always use ATF FZ for the ATF.
- Always use silicone sealant TB1217E for sealant.
- If the drive plate is replaced with a new one, immerse it in ATF (ATF FZ) for 2 hours or more to permeate the facing with ATF.
- Do not clean the drive plate using degreaser.
- Do not clean the internal part of the torque converter using degreaser.
- Do not clean the internal part of the oil cooler using degreaser.
- Do not clean aluminum and rubber parts using an alkaline agent.
- Do not clean rubber parts using white gasoline and kerosene.
- When assembling a part which is designated for replacement with every disassembly, always use a new part.
- Replace the damaged or deformed snap ring with a new one.

### Required SSTs, Measuring Instruments, and Parts for Servicing

- SST  
(See 05-60-1 SERVICE TOOLS.)
- Measuring instrument
  - Vernier caliper
  - Micrometer
  - Cylinder gauge or caliper gauge
  - Dial gauge
  - Magnetic stand
  - Depth gauge
  - Depth micrometer
  - Straight edge ruler (two of the same type)
  - Thickness gauge
  - Torque wrench

## AUTOMATIC TRANSAXLE

- Part

Part name	Part number	Quantity	Comment
Bolt	9YA02 1440	3	M14×1.5 bolt, length to 100 mm {3.94 in}
Bolt	9YA02 1015	2	M10×1.5 bolt, length to 35 mm {1.4 in}
Bolt	9YA02 A220	4	M12×1.75 bolt, length to 40 mm {1.6 in}
Snap ring	FZ01 19 469	1	Measurement/adjustment for R-3-5 brake clearance
Shim	FZ01 19 2L1	1	Measurement/adjustment for total end play
ATF	—	—	ATF FZ
Sealant	—	—	Silicone sealant TB1217E

### After Service Precaution

- After installing the overhauled transaxle to the vehicle, perform the procedure in the following order.

#### Note

- For the service procedure, verify the Workshop Manual.

1. TCM configuration

#### Caution

- Perform the TCM configuration only if the control valve body is replaced.

2. Initial learning

3. Mechanical system test

4. Road test

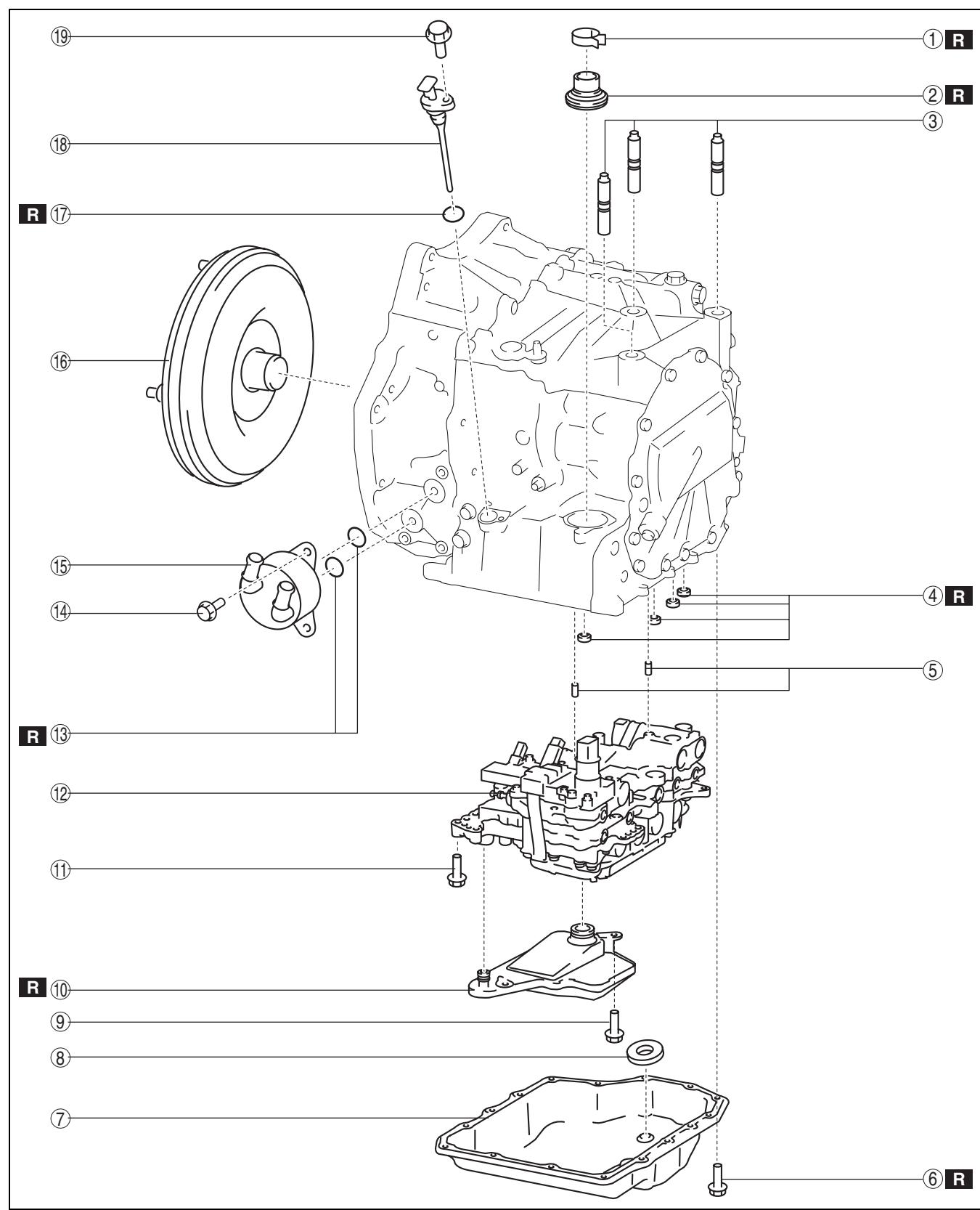
# AUTOMATIC TRANSAXLE

## AUTOMATIC TRANSAXLE LOCATION INDEX

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### Automatic Transaxle 1

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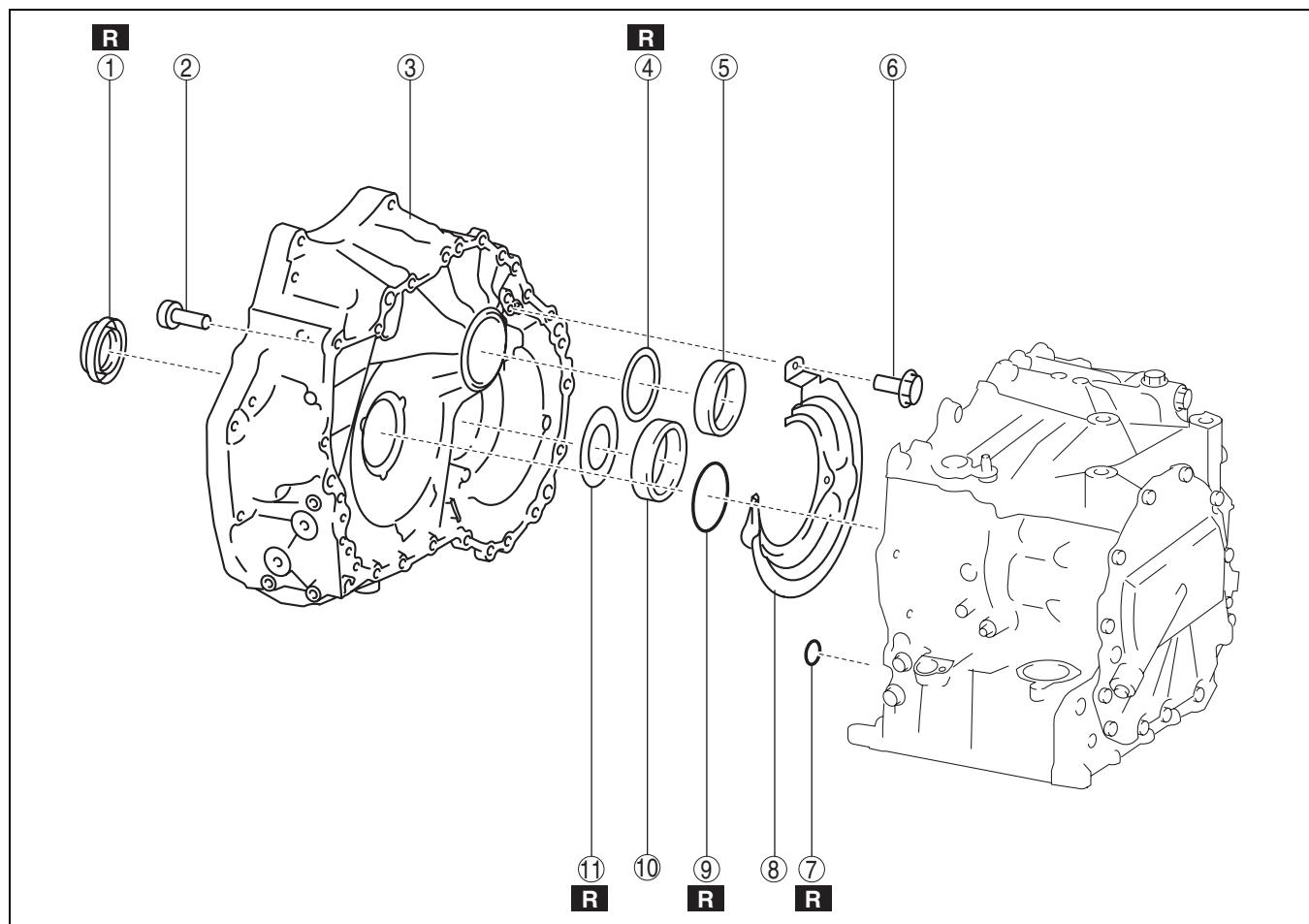
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## AUTOMATIC TRANSAXLE

1	Hose clamp (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	11	11 bolts (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
2	Oil seal (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	12	Control valve body (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-25 Control Valve Body.)
3	Stud bolt (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	13	O-ring (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
4	Gasket (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	14	3 bolts (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
5	Dowel pin (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	15	Oil cooler (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-147 OIL COOLER CLEANING.) (See 05-17-177 OIL COOLER INSPECTION.)
6	16 bolts (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	16	Torque converter (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-145 TORQUE CONVERTER CLEANING.) (See 05-17-154 TORQUE CONVERTER INSPECTION.)
7	Oil pan (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	17	O-ring (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
8	Magnet (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	18	Dipstick (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
9	2 bolts (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	19	Bolt (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
10	Oil strainer (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)		

# AUTOMATIC TRANSAXLE

## Automatic Transaxle 2



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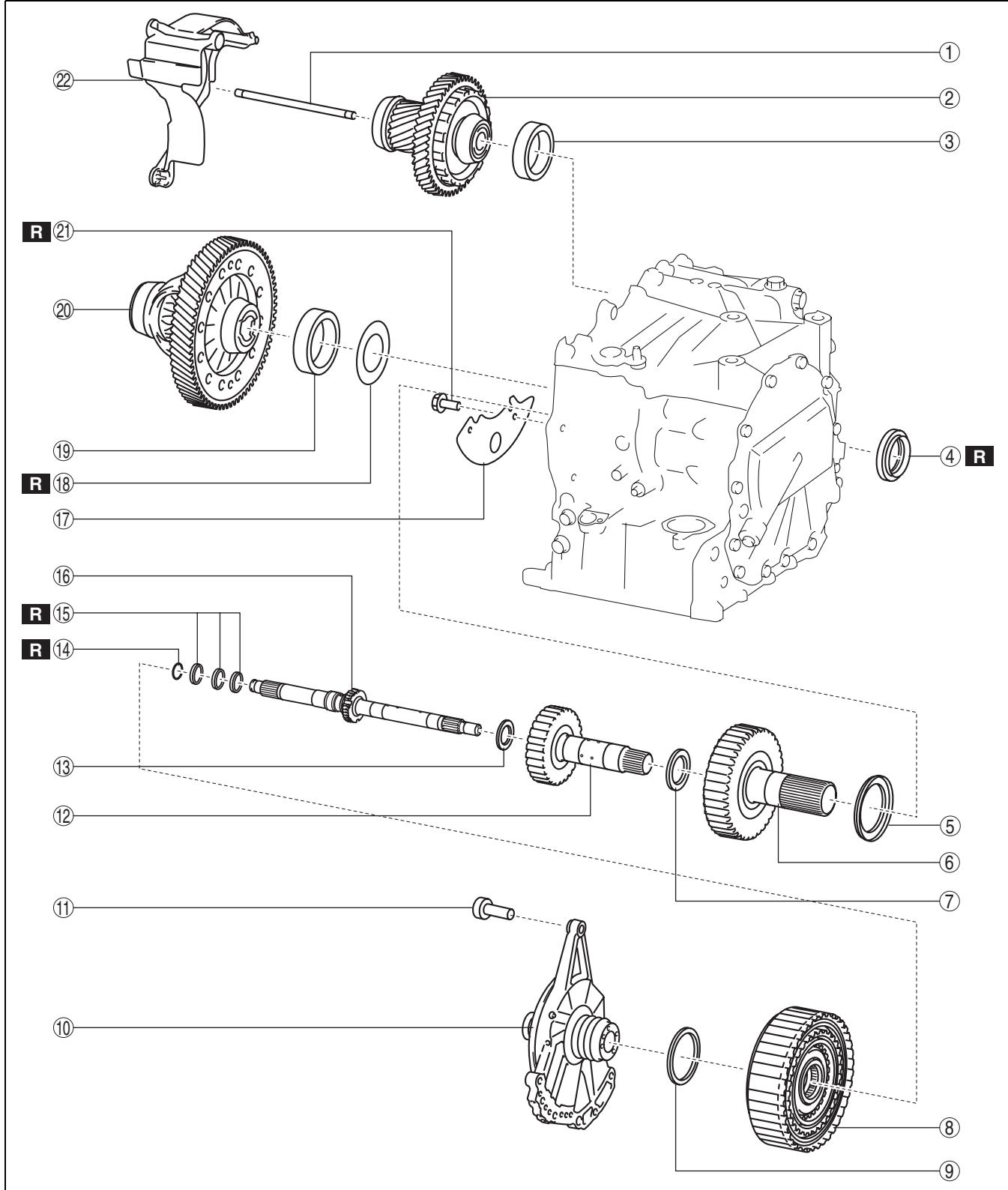
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1	Oil seal (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	6	Bolt (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
2	24 bolts (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	7	O-ring (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
3	Converter housing (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	8	Baffle plate (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
4	Shim (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-364 SECONDARY GEAR AND OUTPUT GEAR PRELOAD MEASUREMENT/ADJUSTMENT.)	9	O-ring (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
5	Bearing race (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	10	Bearing race (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)

# AUTOMATIC TRANSAXLE

11 Shim  
(See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.)  
(See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)  
(See 05-17-375 RING GEAR AND DIFFERENTIAL PRELOAD MEASUREMENT/ADJUSTMENT.)

## Automatic Transaxle 3



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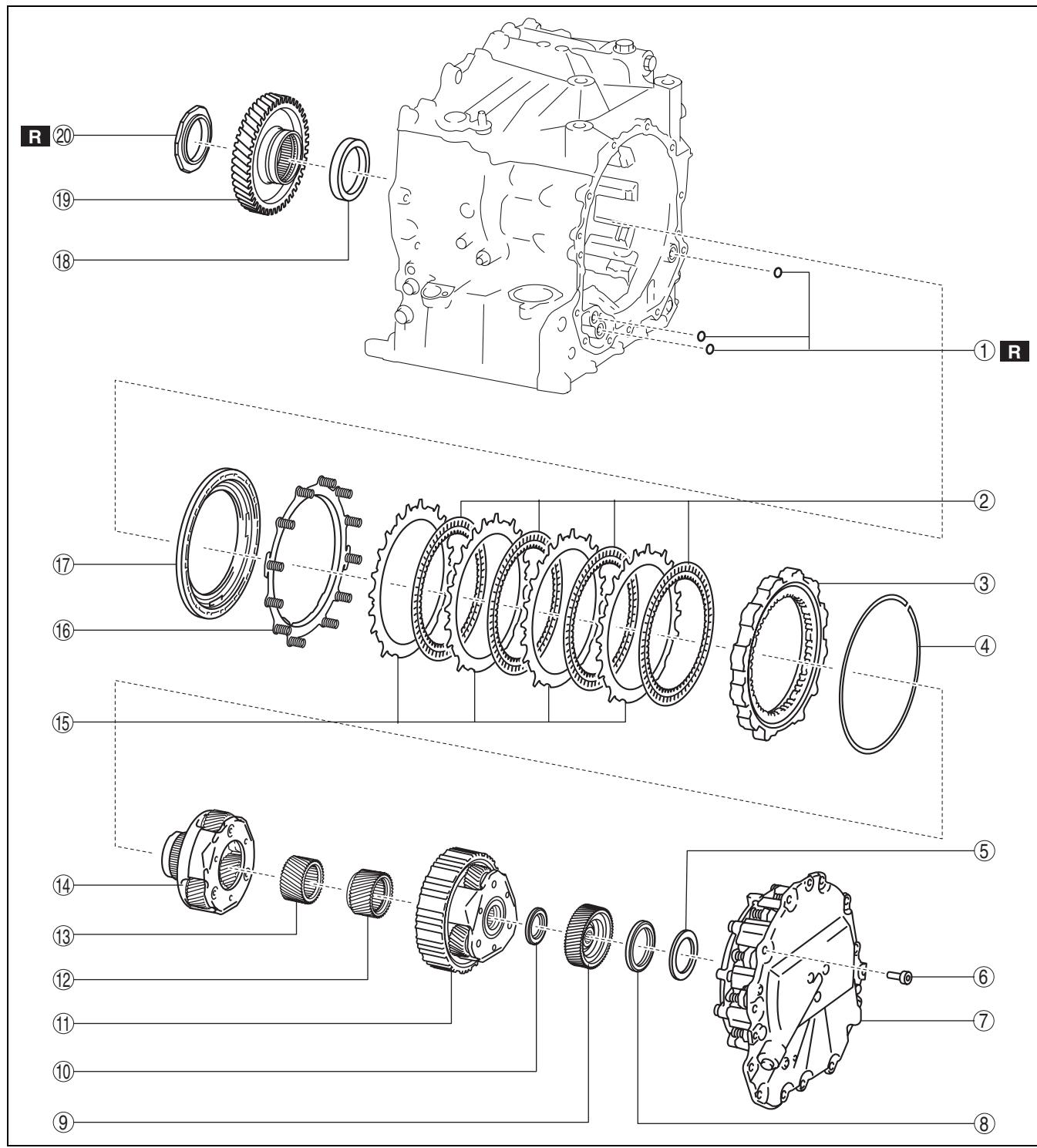
## AUTOMATIC TRANSAXLE

1	Oil pipe (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	11	7 bolts (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
2	Secondary gear and output gear (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-19 Secondary Gear and Output Gear.)	12	High clutch hub (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-173 HIGH CLUTCH HUB INSPECTION.)
3	Bearing race (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	13	Thrust needle bearing (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-155 THRUST NEEDLE BEARING INSPECTION.)
4	Oil seal (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	14	D-ring (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
5	Thrust needle bearing (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-155 THRUST NEEDLE BEARING INSPECTION.)	15	Seal ring (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
6	Low clutch hub (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-173 LOW CLUTCH HUB INSPECTION.)	16	Turbine shaft (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
7	Thrust needle bearing (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-155 THRUST NEEDLE BEARING INSPECTION.)	17	Baffle plate (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
8	Clutch component (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-17 Clutch Component.)	18	Shim (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
9	Thrust needle bearing (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-155 THRUST NEEDLE BEARING INSPECTION.)	19	Bearing race (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
10	Oil pump (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-16 Oil Pump.)	20	Ring gear and differential (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-20 Ring Gear and Differential.)
		21	2 bolts (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
		22	Baffle plate (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)

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# AUTOMATIC TRANSAXLE

## Automatic Transaxle 4



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1	O-ring (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	3	One-way clutch (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-172 ONE-WAY CLUTCH INSPECTION.)
2	Drive plate (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-170 LOW AND REVERSE BRAKE INSPECTION.)		

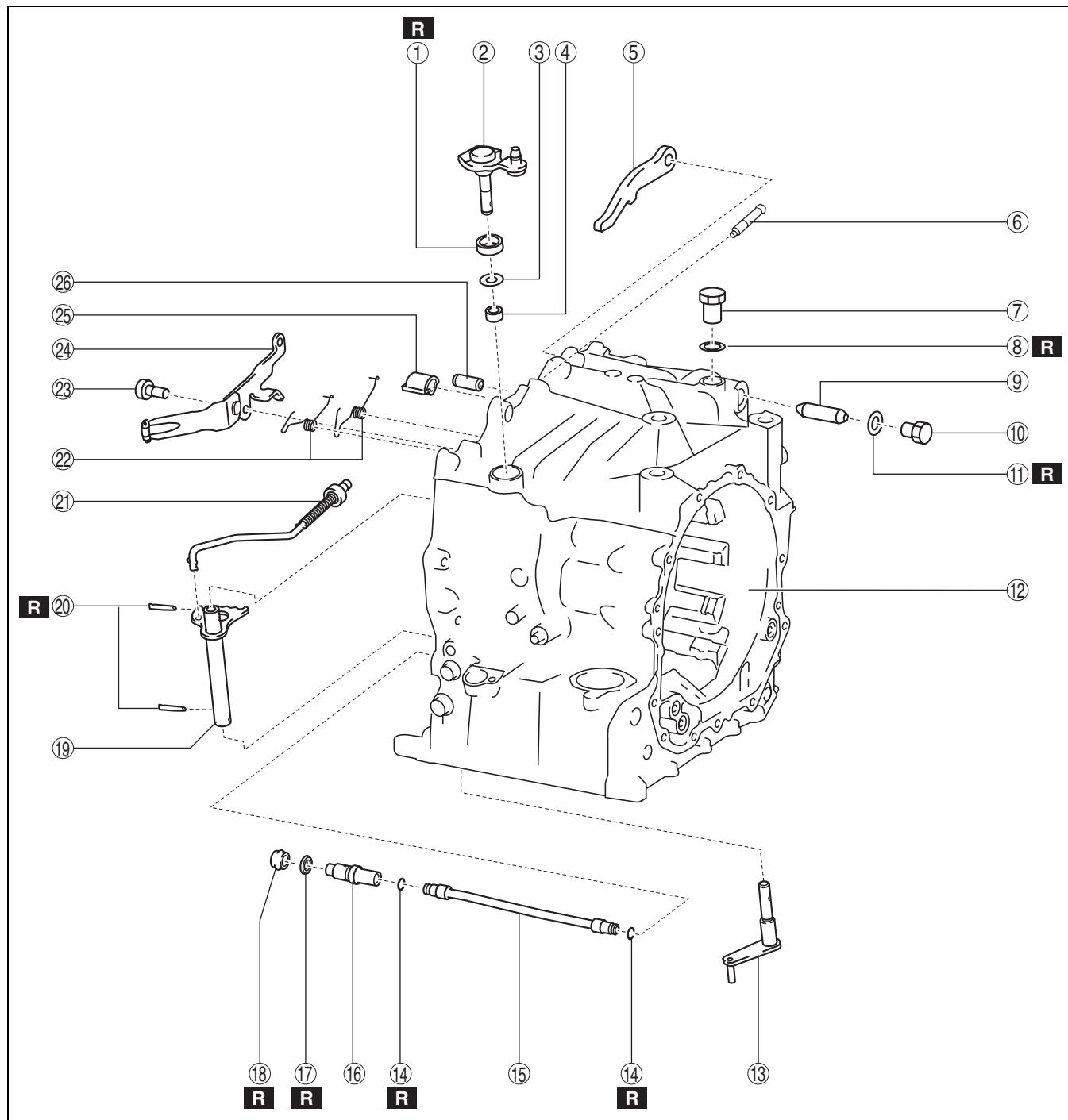
## AUTOMATIC TRANSAXLE

<p>4 Snap ring (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-353 LOW AND REVERSE BRAKE CLEARANCE MEASUREMENT/ADJUSTMENT.)</p>	<p>12 Rear sun gear (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)</p>
<p>5 Shim (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-385 TOTAL END PLAY MEASUREMENT/ADJUSTMENT.)</p>	<p>13 Front sun gear (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)</p>
<p>6 12 bolts (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)</p>	<p>14 Front planetary gear (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-155 FRONT PLANETARY GEAR INSPECTION.)</p>
<p>7 End cover component (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-22 End Cover Component.)</p>	<p>15 Driven plate (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)</p>
<p>8 Thrust needle bearing (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-155 THRUST NEEDLE BEARING INSPECTION.)</p>	<p>16 Springs and retainer component (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)</p>
<p>9 Reduction sun gear (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)</p>	<p>17 Low and reverse brake piston (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)</p>
<p>10 Thrust needle bearing (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-155 THRUST NEEDLE BEARING INSPECTION.)</p>	<p>18 Angular contact ball bearing (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)</p>
<p>11 Rear planetary gear (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-18 Rear Planetary Gear.)</p>	<p>19 Primary gear (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)</p>
	<p>20 Locknut (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)</p>

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# AUTOMATIC TRANSAXLE

## Automatic Transaxle 5



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1	Oil seal (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.) (See 05-17-41 OIL SEAL (PARKING SHIFT LEVER) REPLACEMENT.)	3	Washer (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
2	Parking shift lever component (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	4	Radial needle bearing (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)

5	Parking pawl (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
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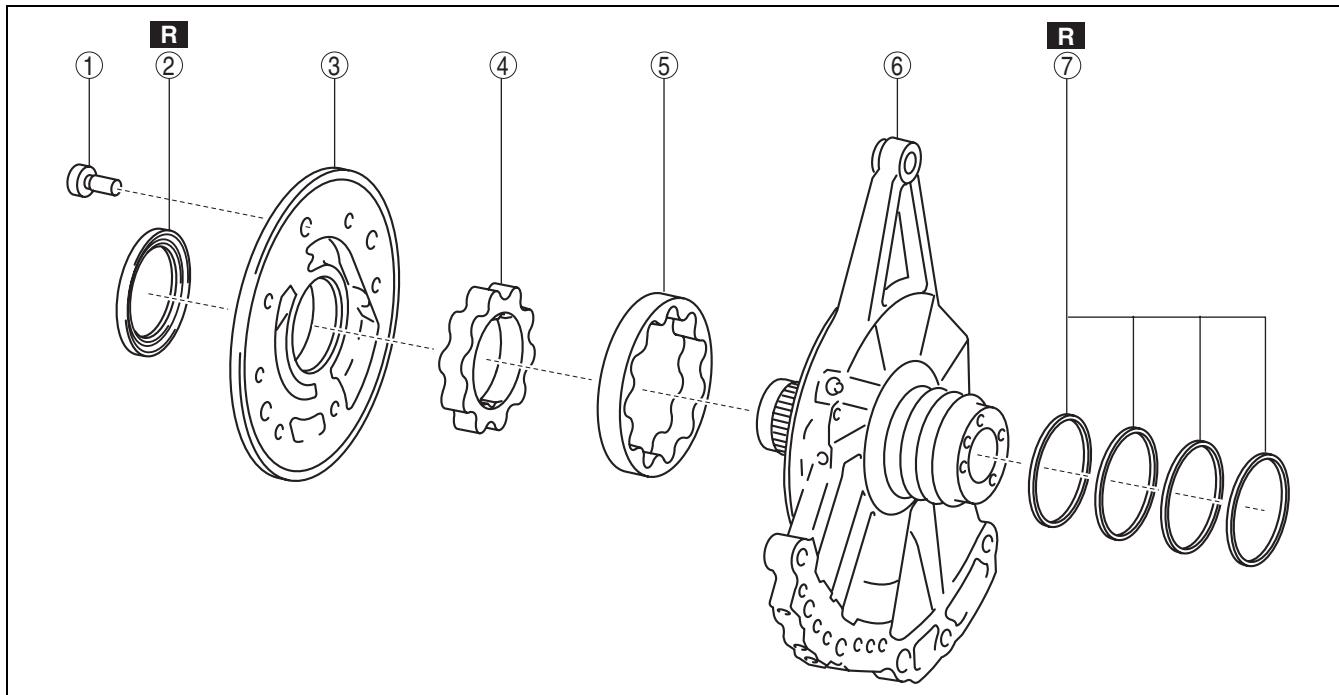
## AUTOMATIC TRANSAXLE

6	Breather pipe (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	17	Gasket (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
7	Plug (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	18	Gasket (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
8	Gasket (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	19	Manual plate component (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
9	Parking pawl shaft (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	20	Roll pin (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
10	Plug (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	21	Parking rod component (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
11	Gasket (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	22	Pawl return spring (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
12	Transaxle case (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	23	2 bolts (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
13	Parking assist lever component (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	24	Detent bracket component (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
14	O-ring (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	25	Support actuator (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
15	Oil pipe (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)	26	Parking pawl pin (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)
16	Connector (See 05-17-64 AUTOMATIC TRANSAXLE DISASSEMBLY.) (See 05-17-180 AUTOMATIC TRANSAXLE ASSEMBLY.)		

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# AUTOMATIC TRANSAXLE

## Oil Pump

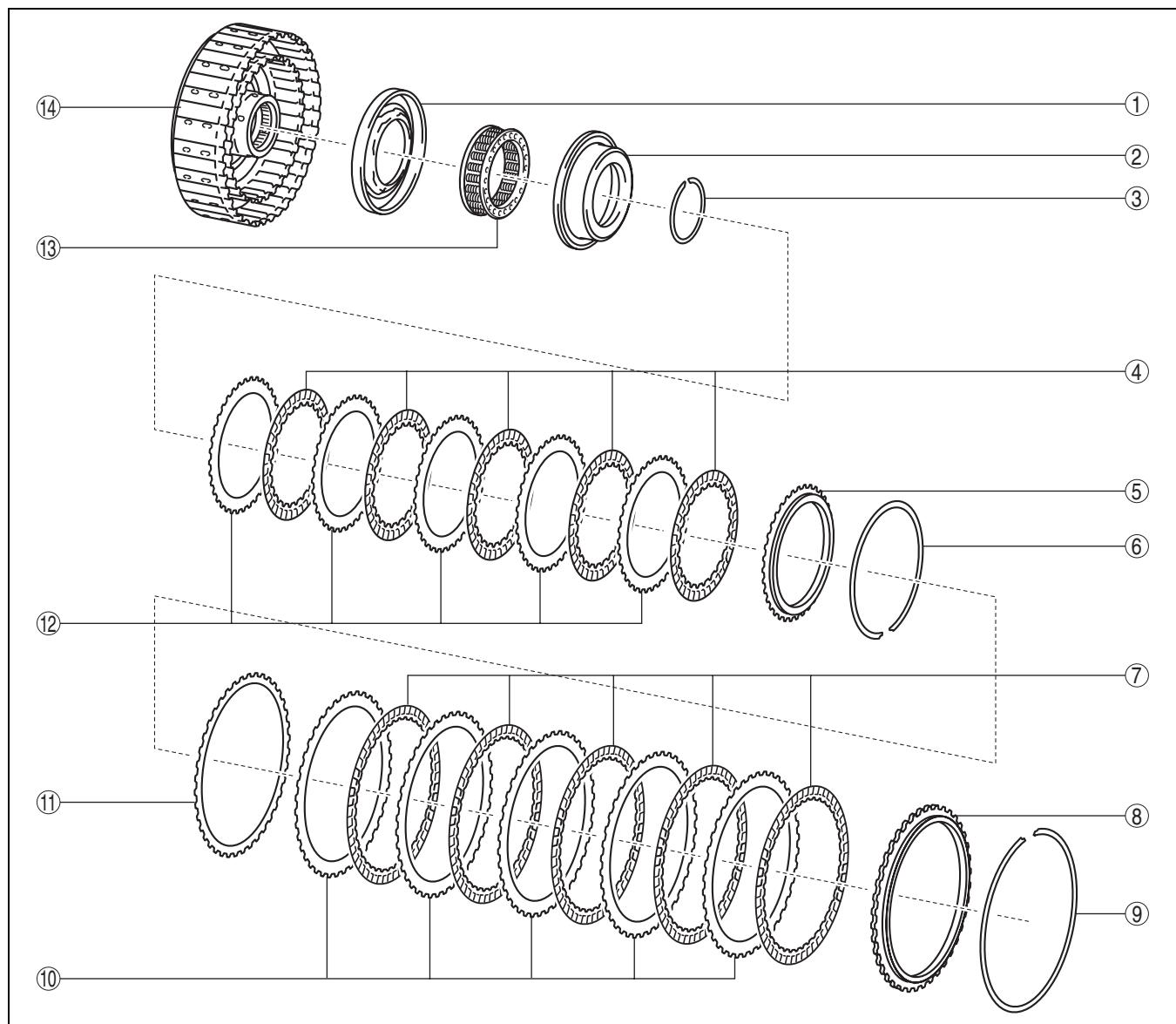


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1	7 bolts (See 05-17-115 OIL PUMP DISASSEMBLY.) (See 05-17-243 OIL PUMP ASSEMBLY.)	4	Inner rotor (See 05-17-115 OIL PUMP DISASSEMBLY.) (See 05-17-243 OIL PUMP ASSEMBLY.) (See 05-17-174 OIL PUMP INSPECTION.)
2	Oil seal (See 05-17-115 OIL PUMP DISASSEMBLY.) (See 05-17-243 OIL PUMP ASSEMBLY.) (See 05-17-29 OIL SEAL (OIL PUMP) REPLACEMENT.)	5	Outer rotor (See 05-17-115 OIL PUMP DISASSEMBLY.) (See 05-17-243 OIL PUMP ASSEMBLY.) (See 05-17-174 OIL PUMP INSPECTION.)
3	Oil pump cover (See 05-17-115 OIL PUMP DISASSEMBLY.) (See 05-17-243 OIL PUMP ASSEMBLY.) (See 05-17-174 OIL PUMP INSPECTION.)	6	Oil pump housing (See 05-17-115 OIL PUMP DISASSEMBLY.) (See 05-17-243 OIL PUMP ASSEMBLY.) (See 05-17-174 OIL PUMP INSPECTION.)
		7	Seal ring (See 05-17-115 OIL PUMP DISASSEMBLY.) (See 05-17-243 OIL PUMP ASSEMBLY.)

# AUTOMATIC TRANSAXLE

## Clutch Component



05-17

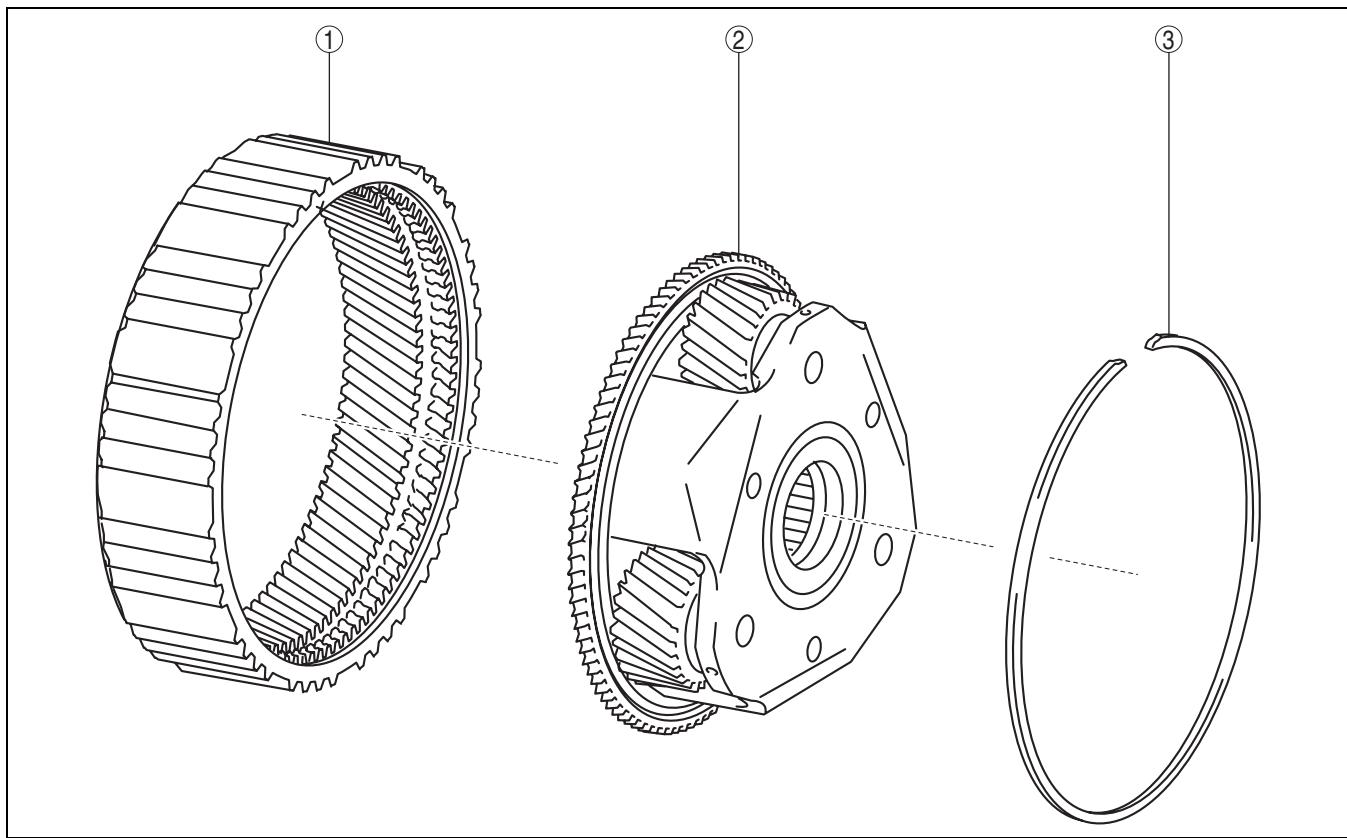
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1	High clutch piston (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.) (See 05-17-247 CLUTCH COMPONENT ASSEMBLY.)	5	Retaining plate (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.) (See 05-17-247 CLUTCH COMPONENT ASSEMBLY.)
2	Seal plate (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.) (See 05-17-247 CLUTCH COMPONENT ASSEMBLY.)	6	Snap ring (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.) (See 05-17-247 CLUTCH COMPONENT ASSEMBLY.) (See 05-17-317 HIGH CLUTCH CLEARANCE MEASUREMENT/ADJUSTMENT.)
3	Snap ring (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.) (See 05-17-247 CLUTCH COMPONENT ASSEMBLY.)	7	Drive plate (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.) (See 05-17-247 CLUTCH COMPONENT ASSEMBLY.) (See 05-17-169 LOW CLUTCH INSPECTION.)
4	Drive plate (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.) (See 05-17-247 CLUTCH COMPONENT ASSEMBLY.) (See 05-17-169 HIGH CLUTCH INSPECTION.)	8	Retaining plate (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.) (See 05-17-247 CLUTCH COMPONENT ASSEMBLY.)

## AUTOMATIC TRANSAXLE

9	Snap ring (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.) (See 05-17-247 CLUTCH COMPONENT ASSEMBLY.) (See 05-17-327 LOW CLUTCH CLEARANCE MEASUREMENT/ADJUSTMENT.)	12	Driven plate (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.) (See 05-17-247 CLUTCH COMPONENT ASSEMBLY.)
10	Driven plate (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.) (See 05-17-247 CLUTCH COMPONENT ASSEMBLY.)	13	Springs and retainer component (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.) (See 05-17-247 CLUTCH COMPONENT ASSEMBLY.) (See 05-17-169 HIGH CLUTCH INSPECTION.)
11	Wave spring (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.) (See 05-17-247 CLUTCH COMPONENT ASSEMBLY.)	14	High clutch drum component (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.) (See 05-17-247 CLUTCH COMPONENT ASSEMBLY.) (See 05-17-169 HIGH CLUTCH INSPECTION.)

### Rear Planetary Gear

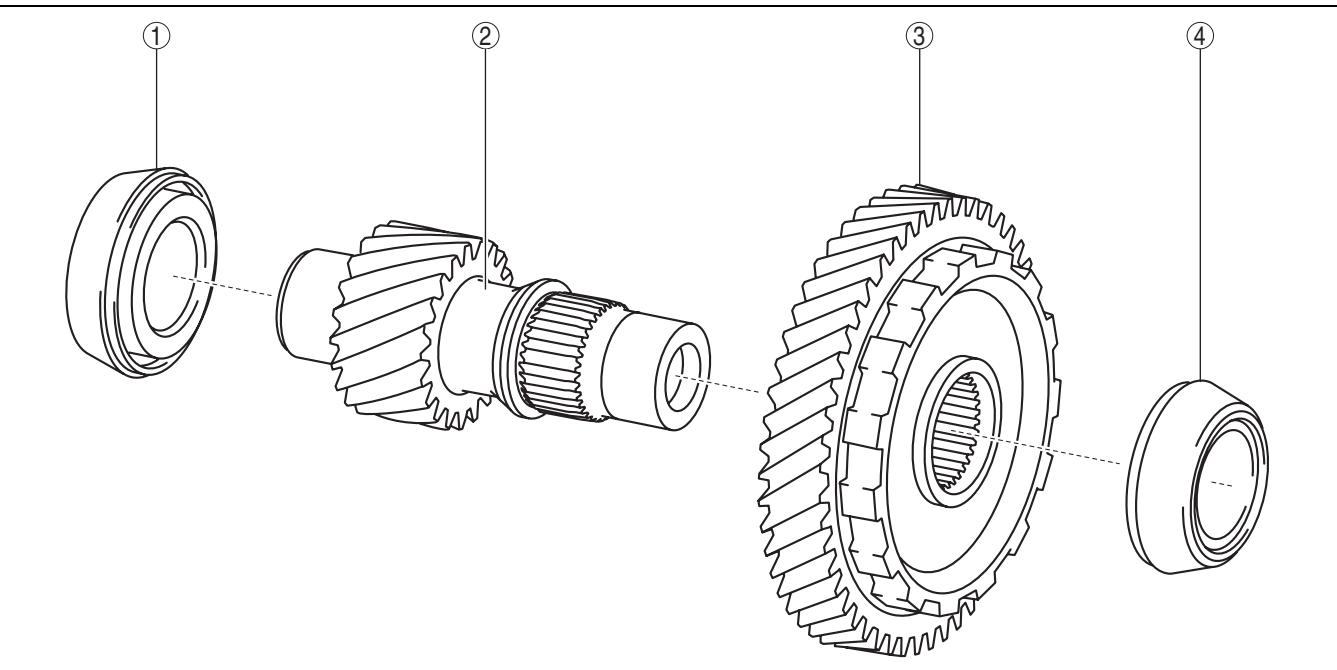


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1	Front internal gear (See 05-17-117 REAR PLANETARY GEAR DISASSEMBLY.) (See 05-17-259 REAR PLANETARY GEAR ASSEMBLY.)	3	Snap ring (See 05-17-117 REAR PLANETARY GEAR DISASSEMBLY.) (See 05-17-259 REAR PLANETARY GEAR ASSEMBLY.)
2	Rear planetary carrier (See 05-17-117 REAR PLANETARY GEAR DISASSEMBLY.) (See 05-17-259 REAR PLANETARY GEAR ASSEMBLY.) (See 05-17-158 REAR PLANETARY GEAR INSPECTION.)		

# AUTOMATIC TRANSAXLE

## Secondary Gear and Output Gear



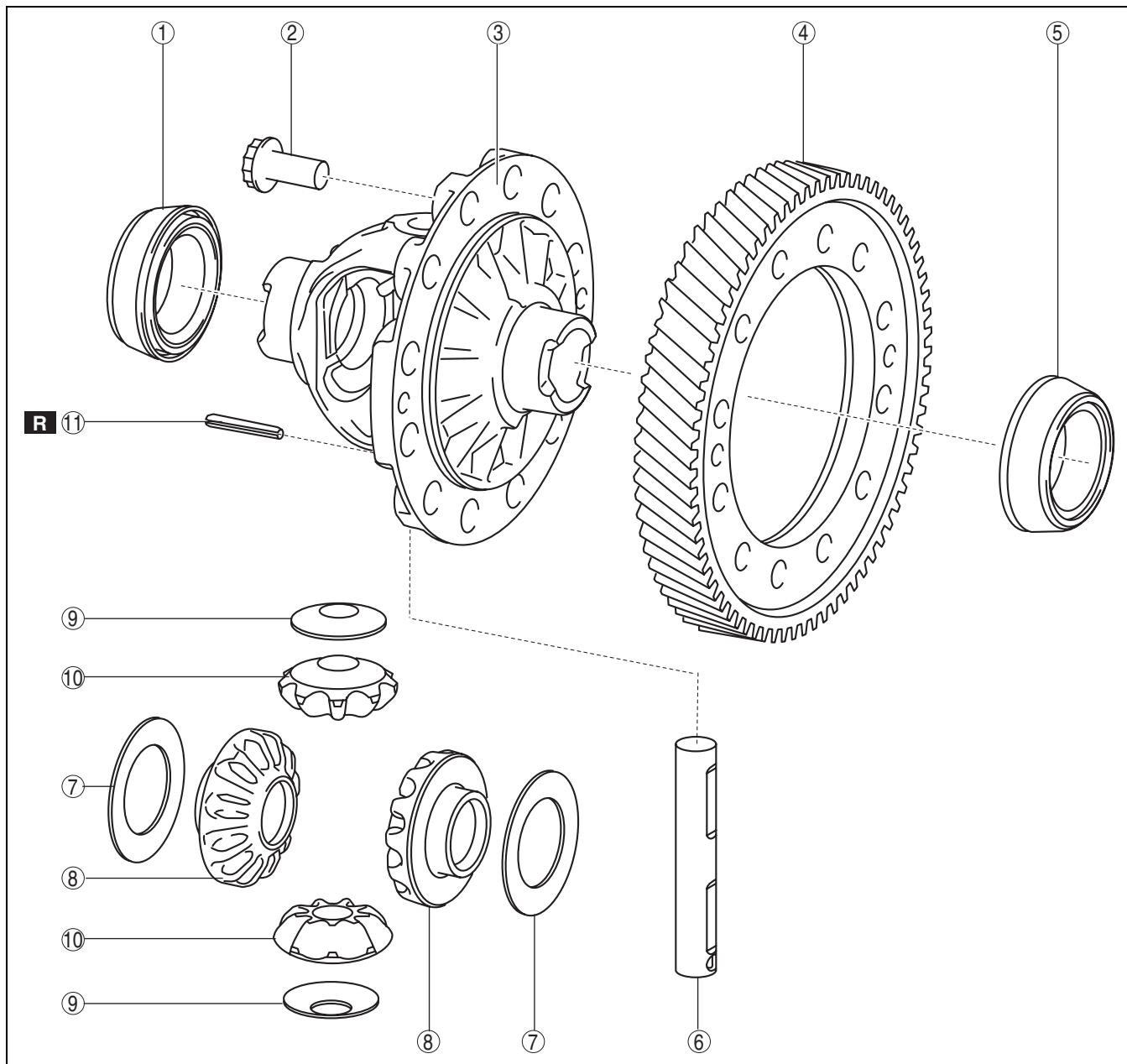
05-17

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1	Tapered roller bearing (See 05-17-119 SECONDARY GEAR AND OUTPUT GEAR DISASSEMBLY.) (See 05-17-263 SECONDARY GEAR AND OUTPUT GEAR ASSEMBLY.) (See 05-17-163 SECONDARY GEAR AND OUTPUT GEAR INSPECTION.)	3	Secondary gear (See 05-17-119 SECONDARY GEAR AND OUTPUT GEAR DISASSEMBLY.) (See 05-17-263 SECONDARY GEAR AND OUTPUT GEAR ASSEMBLY.)
2	Output gear (See 05-17-119 SECONDARY GEAR AND OUTPUT GEAR DISASSEMBLY.) (See 05-17-263 SECONDARY GEAR AND OUTPUT GEAR ASSEMBLY.)	4	Tapered roller bearing (See 05-17-119 SECONDARY GEAR AND OUTPUT GEAR DISASSEMBLY.) (See 05-17-263 SECONDARY GEAR AND OUTPUT GEAR ASSEMBLY.) (See 05-17-163 SECONDARY GEAR AND OUTPUT GEAR INSPECTION.)

# AUTOMATIC TRANSAXLE

## Ring Gear and Differential



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1	Tapered roller bearing (See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.) (See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.) (See 05-17-165 RING GEAR AND DIFFERENTIAL INSPECTION.)	4	Ring gear (See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.) (See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.)
2	12 bolts (See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.) (See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.)	5	Tapered roller bearing (See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.) (See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.) (See 05-17-165 RING GEAR AND DIFFERENTIAL INSPECTION.)
3	Differential gear case (See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.) (See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.) (See 05-17-165 RING GEAR AND DIFFERENTIAL INSPECTION.)	6	Pinion shaft (See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.) (See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.)

## AUTOMATIC TRANSAXLE

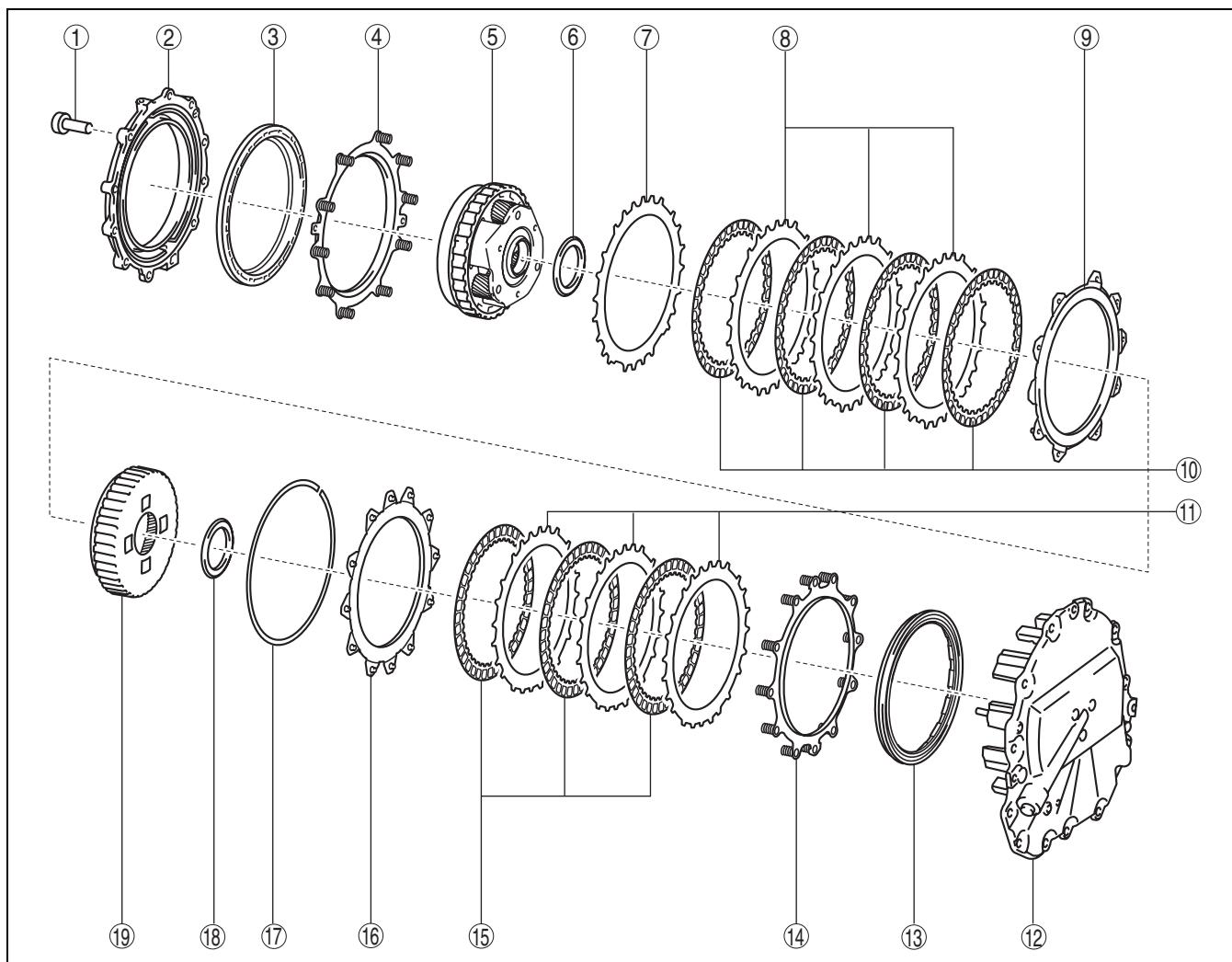
7	Thrust washer (See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.) (See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.) (See 05-17-303 DIFFERENTIAL BACKLASH MEASUREMENT/ADJUSTMENT.)	9	Thrust washer (See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.) (See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.)
8	Side gear (See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.) (See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.)	10	Pinion gear (See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.) (See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.)
		11	Roll pin (See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.) (See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.)

05-17

05-17-21

# AUTOMATIC TRANSAXLE

## End Cover Component



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1	8 bolts (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.)	6	Thrust needle bearing (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.)
2	Brake housing (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.)	7	Retaining plate (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.) (See 05-17-347 2-6 BRAKE CLEARANCE MEASUREMENT/ADJUSTMENT.)
3	2-6 brake piston (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.)	8	Driven plate (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.)
4	Springs and retainer component (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.)	9	Retaining plate (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.)
5	Reduction planetary gear (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.) (See 05-17-24 Reduction Planetary Gear.)		

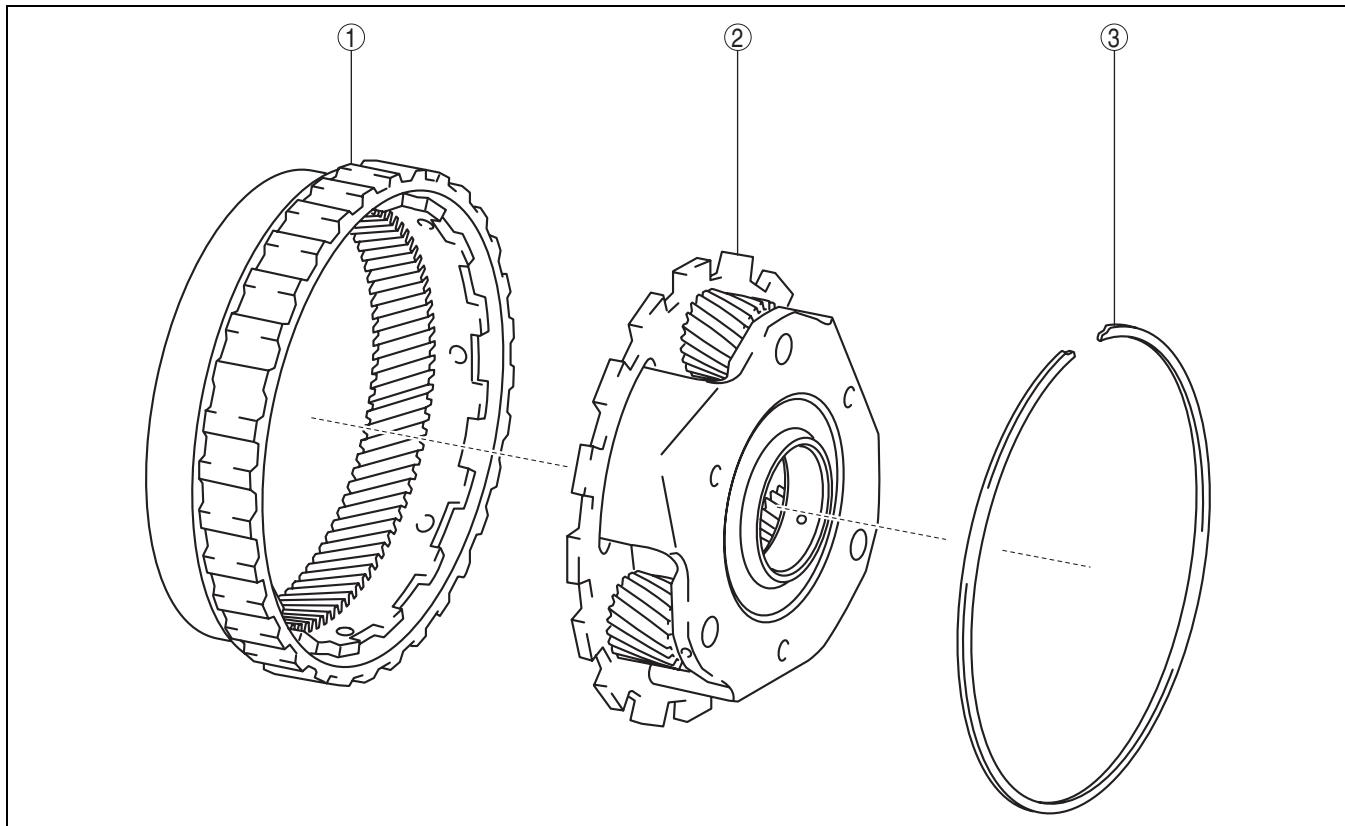
## AUTOMATIC TRANSAXLE

10	Drive plate (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.) (See 05-17-171 R-3-5 BRAKE INSPECTION.)	15	Drive plate (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.) (See 05-17-171 R-3-5 BRAKE INSPECTION.)
11	Driven plate (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.)	16	Retaining plate (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.)
12	End cover (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.) (See 05-17-177 END COVER INSPECTION.)	17	Snap ring (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.) (See 05-17-339 R-3-5 BRAKE CLEARANCE MEASUREMENT/ADJUSTMENT.)
13	R-3-5 brake piston (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.)	18	Thrust needle bearing (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.) (See 05-17-155 THRUST NEEDLE BEARING INSPECTION.)
14	Springs and retainer component (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.)	19	Reduction internal gear (See 05-17-128 END COVER COMPONENT DISASSEMBLY.) (See 05-17-273 END COVER COMPONENT ASSEMBLY.)

05-17

## AUTOMATIC TRANSAXLE

### Reduction Planetary Gear



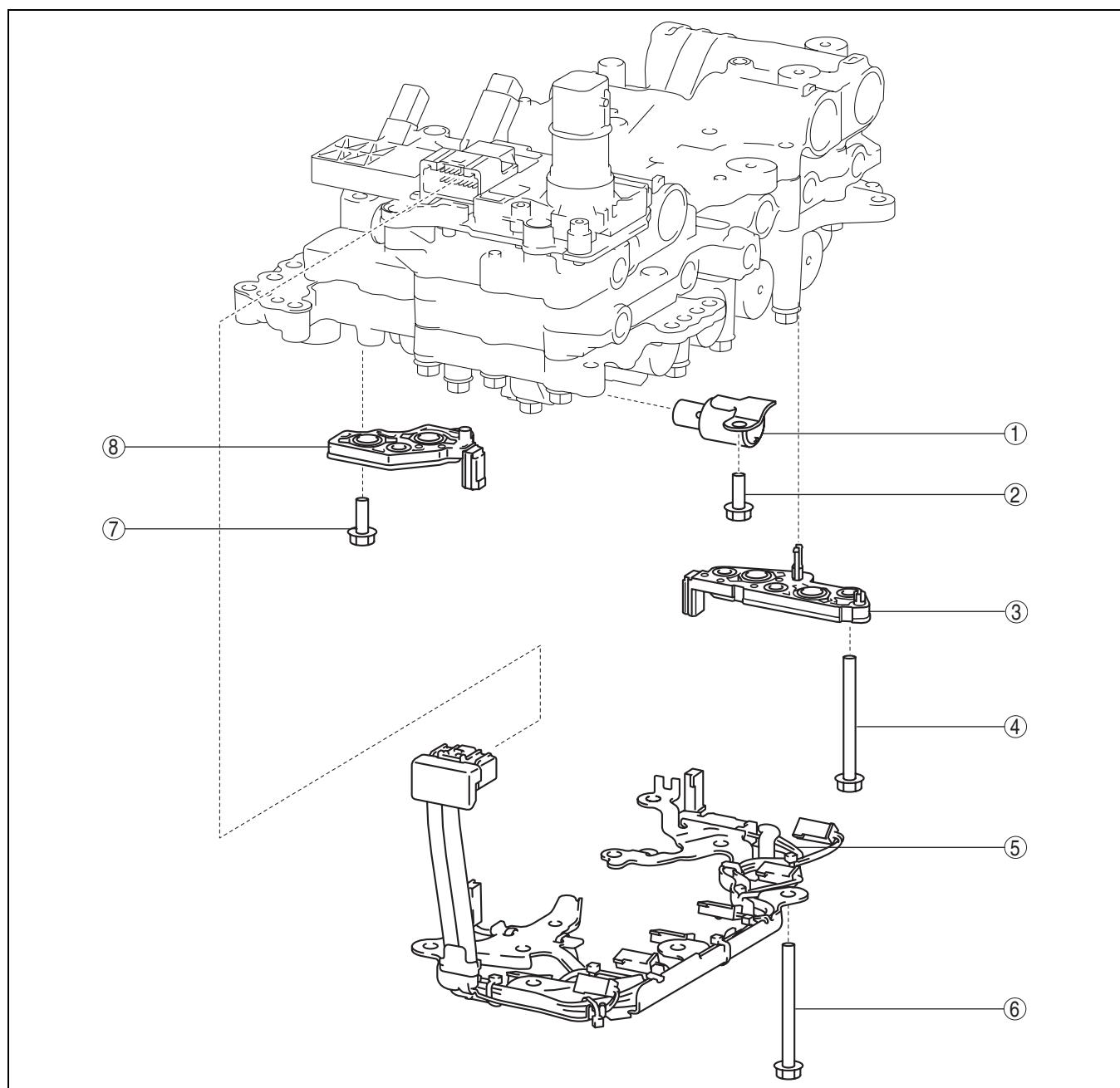
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1	Rear internal gear (See 05-17-136 REDUCTION PLANETARY GEAR DISASSEMBLY.) (See 05-17-261 REDUCTION PLANETARY GEAR ASSEMBLY.)	3	Snap ring (See 05-17-136 REDUCTION PLANETARY GEAR DISASSEMBLY.) (See 05-17-261 REDUCTION PLANETARY GEAR ASSEMBLY.)
2	Reduction planetary carrier (See 05-17-136 REDUCTION PLANETARY GEAR DISASSEMBLY.) (See 05-17-261 REDUCTION PLANETARY GEAR ASSEMBLY.) (See 05-17-161 REDUCTION PLANETARY GEAR INSPECTION.)		

# AUTOMATIC TRANSAXLE

## Control Valve Body

05-17



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1	ON/OFF solenoid (See 05-17-138 CONTROL VALVE BODY DISASSEMBLY.) (See 05-17-288 CONTROL VALVE BODY ASSEMBLY.)	4	3 bolts (See 05-17-138 CONTROL VALVE BODY DISASSEMBLY.) (See 05-17-288 CONTROL VALVE BODY ASSEMBLY.)
2	Bolt (See 05-17-138 CONTROL VALVE BODY DISASSEMBLY.) (See 05-17-288 CONTROL VALVE BODY ASSEMBLY.)	5	Coupler component (See 05-17-138 CONTROL VALVE BODY DISASSEMBLY.) (See 05-17-288 CONTROL VALVE BODY ASSEMBLY.)
3	Oil pressure switch A (See 05-17-138 CONTROL VALVE BODY DISASSEMBLY.) (See 05-17-288 CONTROL VALVE BODY ASSEMBLY.)	6	8 bolts (See 05-17-138 CONTROL VALVE BODY DISASSEMBLY.) (See 05-17-288 CONTROL VALVE BODY ASSEMBLY.)

# AUTOMATIC TRANSAXLE

7	3 bolts (See 05-17-138 CONTROL VALVE BODY DISASSEMBLY.) (See 05-17-288 CONTROL VALVE BODY ASSEMBLY.)	8	Oil pressure switch B (See 05-17-138 CONTROL VALVE BODY DISASSEMBLY.) (See 05-17-288 CONTROL VALVE BODY ASSEMBLY.)
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## AUTOMATIC TRANSAXLE CLEANING

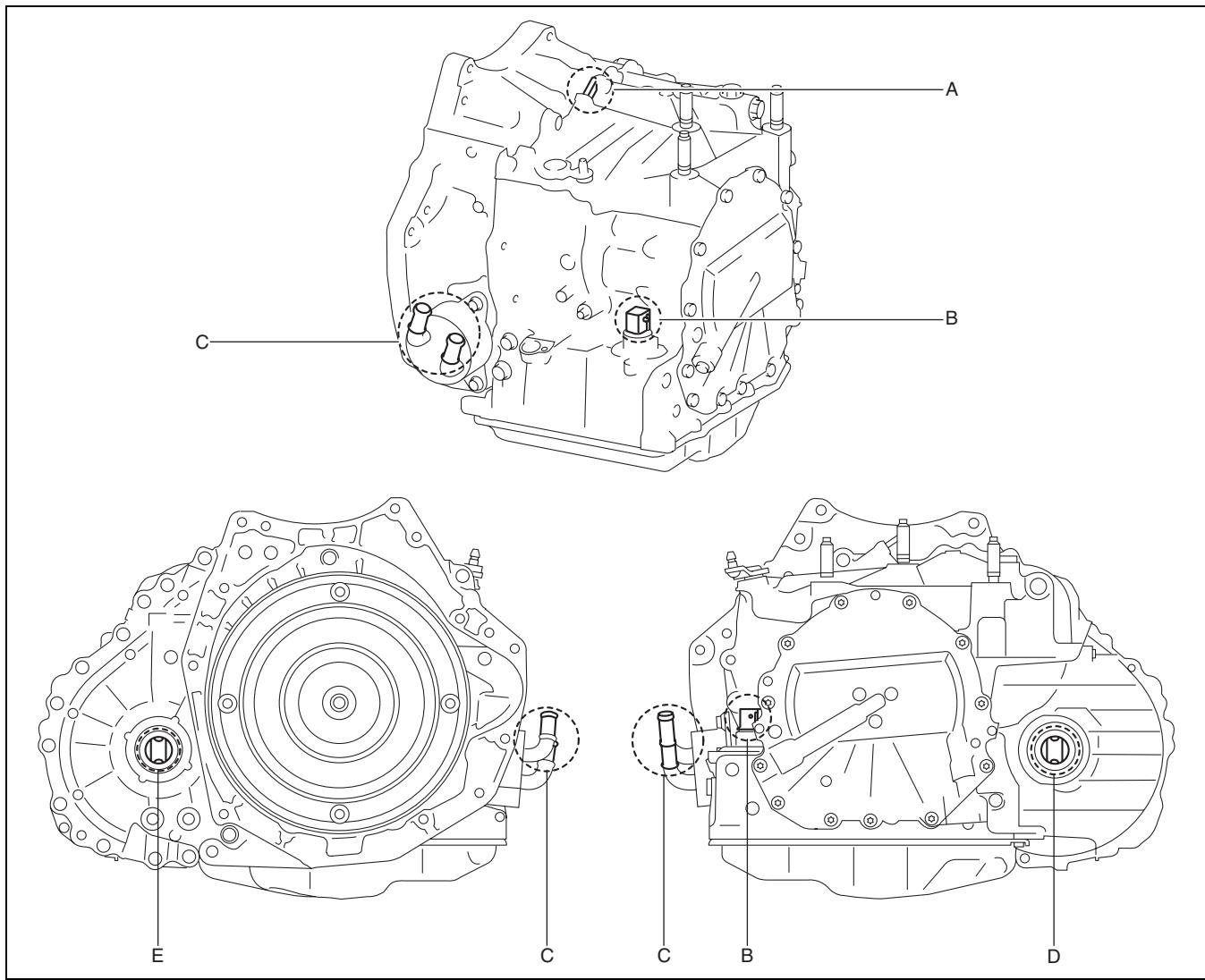
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### Cleaning Before Disassembly

1. Clean the outside of the transaxle using steam or degreaser before disassembly.

#### Caution

- If foreign matter, water, or degreaser penetrates the transaxle and connector, it could cause a malfunction. Before cleaning the outside of the transaxle, plug the position shown in the figure with the packing tape.



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- A:** Breather pipe  
**B:** Control valve body connector  
**C:** Oil cooler  
**D:** Oil seal  
**E:** Oil seal

2. Dry the outside of the transaxle with an air compressor.

**Warning**

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

### Cleaning After Disassembly

05-17

**Caution**

- Do not clean the following parts, otherwise foreign matter or degreaser may penetrate the oil passage or internal part:
  - Control valve body (including the following parts:)
    - ON/OFF solenoid
    - Oil pressure switch A
    - Oil pressure switch B
    - Coupler component

1. Clean the torque converter. (See 05-17-145 TORQUE CONVERTER CLEANING.)

**Caution**

- To prevent damage to the parts, do not clean the inside of the torque converter using degreaser.

2. Clean the oil cooler. (See 05-17-147 OIL COOLER CLEANING.)

**Caution**

- To prevent damage to the parts, do not clean the inside of the oil cooler using degreaser.

3. Flush dirt on the surface of the drive plate with ATF (ATF FZ).

**Caution**

- To prevent damage to the parts, do not clean the drive plate using degreaser.

4. Clean the disassembled parts using degreaser and dry them using an air compressor. In addition, clean the oil passage using the air compressor.

**Warning**

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

**Caution**

- To prevent damage to parts, do not clean aluminum and rubber parts using alkaline agent.
- To prevent damage to parts, do not clean rubber parts using white gasoline and kerosene.

## AUTOMATIC TRANSAXLE

### Cleaning After Assembly

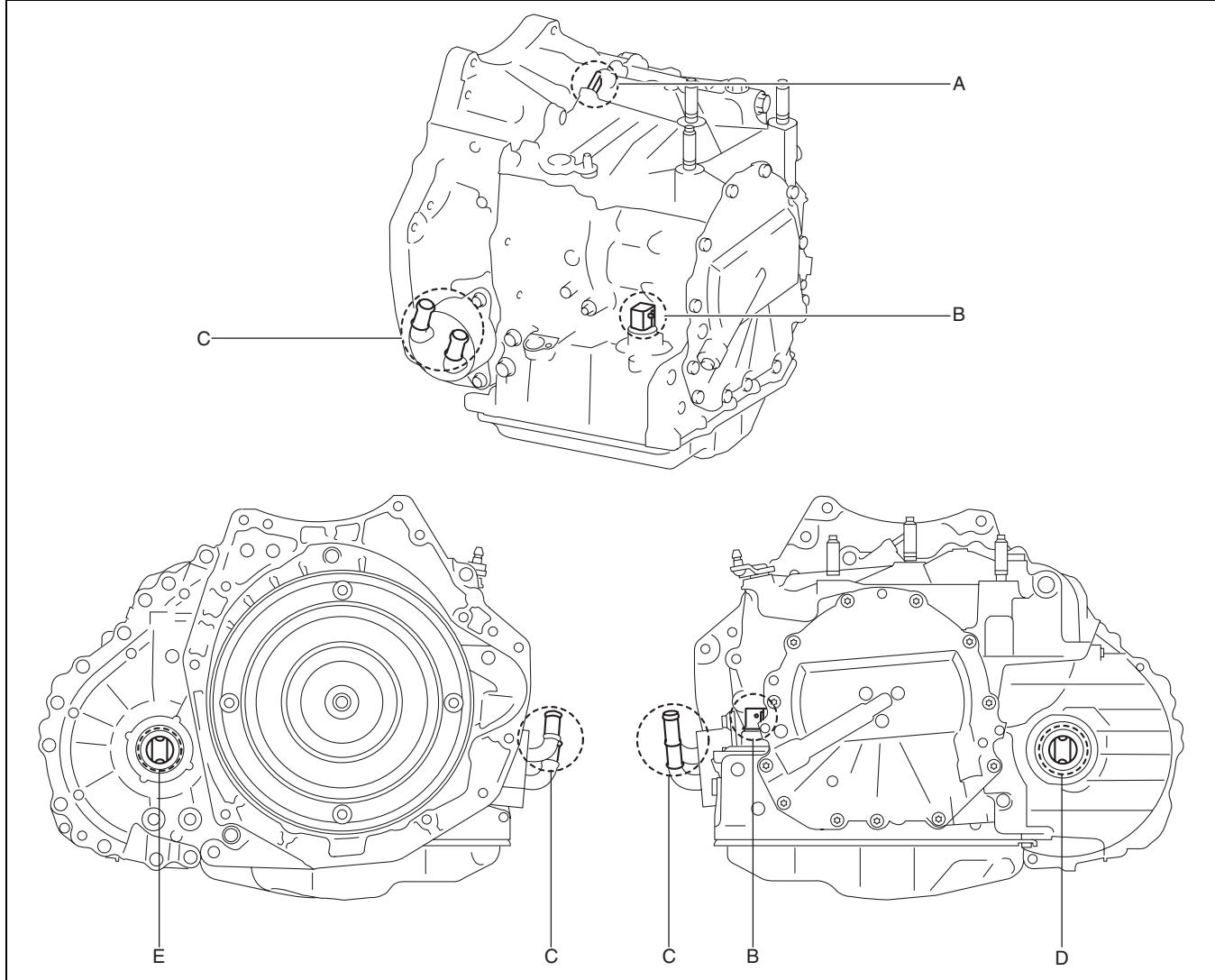
1. Remove the ATF or foreign matter adhering to the outside of the transaxle using degreaser or the air compressor.

#### Warning

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

#### Caution

- If foreign matter, water, or degreaser penetrates the transaxle and connector, it could cause a malfunction. Before cleaning the outside of the transaxle, plug the position shown in the figure with the packing tape.



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**A: Breather pipe**

**B: Control valve body connector**

**C: Oil cooler**

**D: Oil seal**

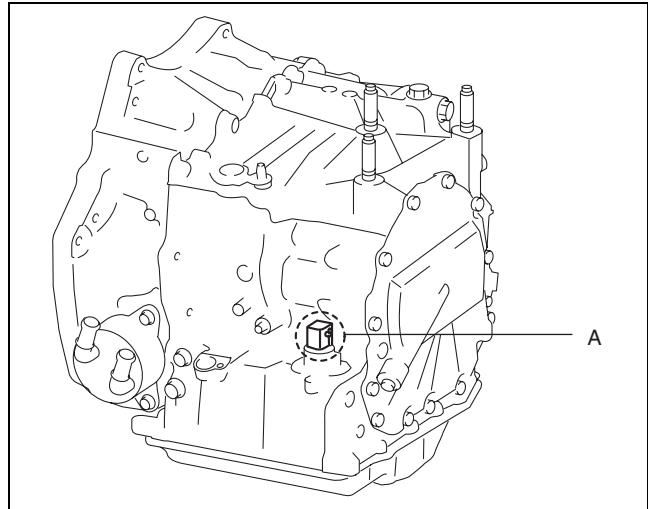
**E: Oil seal**

## AUTOMATIC TRANSAXLE

- Verify that there is no ATF or foreign matter on the connector shown in the figure.

A : Control valve body connector

- If there is ATF or foreign matter on the connector shown in the figure, remove it.



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### OIL SEAL (OIL PUMP) REPLACEMENT

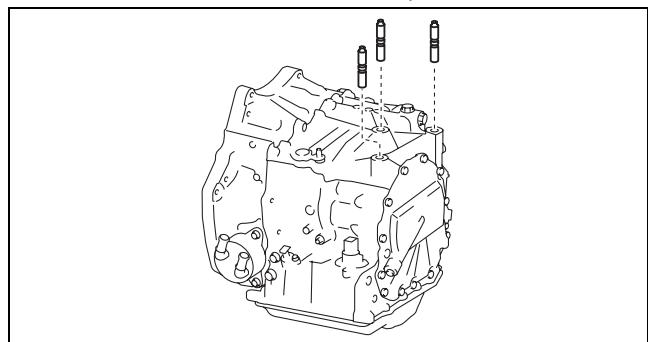
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#### Note

- Perform the following servicing only if the oil seal is replaced due to ATF leakage from the oil seal (oil pump).

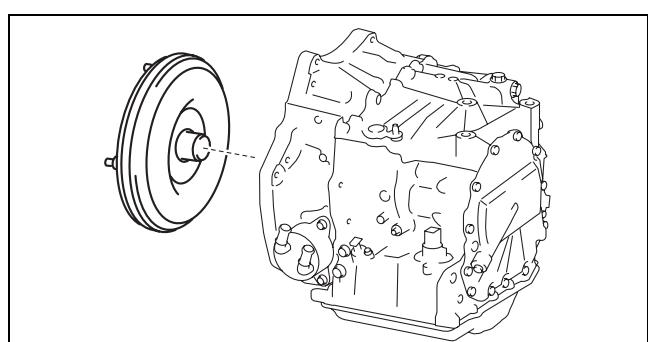
1. Clean the outside of the transaxle. (See 05-17-26 AUTOMATIC TRANSAXLE CLEANING.)

2. Remove the stud bolts.



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3. Remove the torque converter.



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## AUTOMATIC TRANSAXLE

4. Install the transaxle to the SST (engine stand) using the following procedure:

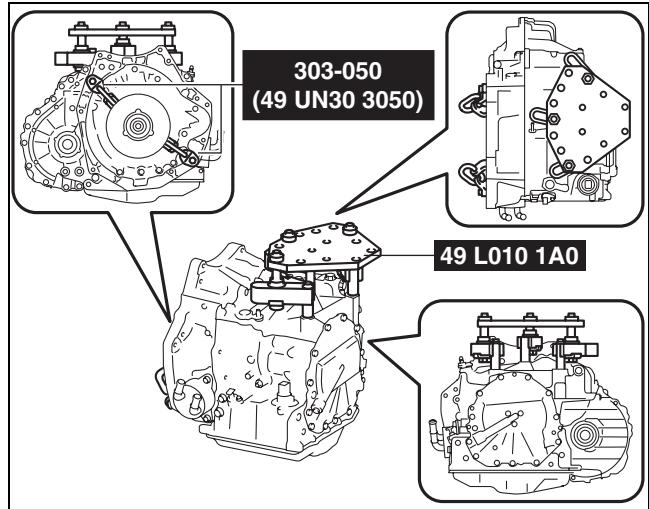
### Caution

- When installing the transaxle to the SST (engine stand) using chain hoists, be careful not to allow the transaxle (oil cooler in particular) to contact the SST (engine stand). If the transaxle contacts the SST, check the areas that made contact and replace damaged parts with new ones.

(1) Install the SSTs to the transaxle using the following procedure.

### Note

- When installing the SST (49 L010 1A0) to the transaxle (stud bolt holes), use part number: 9YA02 1440 or M14×1.5 bolts, length to 100 mm {3.94 in}.
- When installing the SST (49 UN30 3050) to the transaxle, use part number: 9YA02 1015, or M10×1.5 bolts, length to 35 mm {1.4 in}.

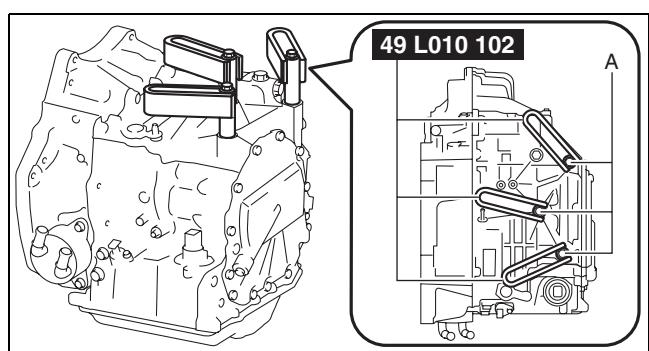


- 1) Temporarily install the arms (49 L010 102) using part number: 9YA02 1440, or M14×1.5 bolts, length to 100 mm {3.94 in}.

A : Part number: 9YA02 1440, or M14×1.5 bolt, length to 100 mm {3.94 in}

### Note

- To adjust the installation position of the SST in Step 3), temporarily tighten the bolts.

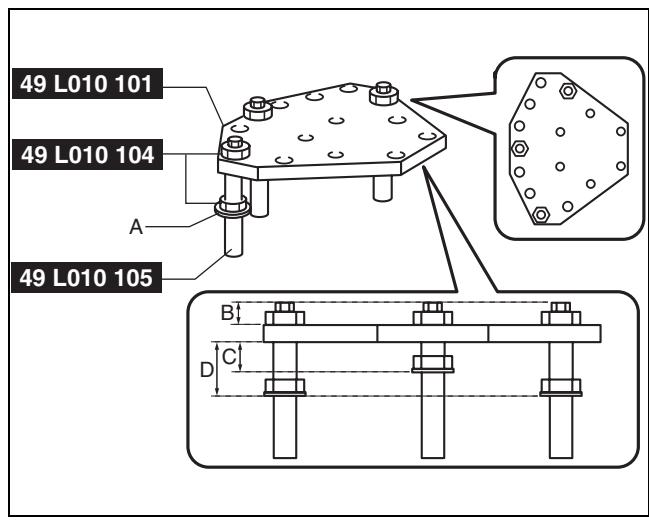


- 2) Assemble the SST (49 L010 1A0).

A : Washer  
B : Approx. 20 mm {0.79 in}  
C : Approx. 26 mm {1.0 in}  
D : Approx. 47 mm {1.9 in}

### Note

- Use bolts (49 L010 105) with a length of 138 mm {5.43 in}.



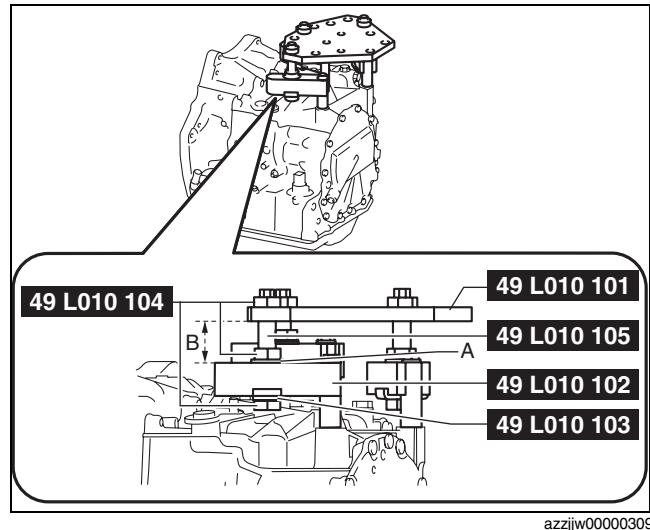
## AUTOMATIC TRANSAXLE

3) Install the SST assembled in Step 2).

A : Washer  
B : Level out

### Note

- Adjust so that the plate (49 L010 101) and arms (49 L010 102) are level, and install.



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4) Verify that nothing other than the SST arms (49 L010 102) installation area contacts the transaxle.

### Caution

- If something other than the SST arms (49 L010 102) installation area contacts the transaxle, readjust the SST to prevent damaging the part.

5) Tighten the nuts and bolts.

### Tightening torque

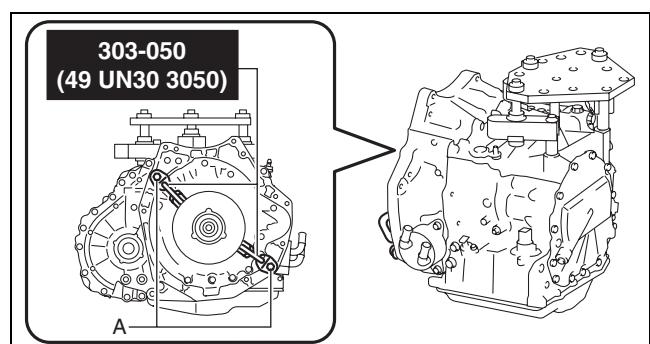
- Bolt: Part number: 9YA02 1440, or M14×1.5 bolt, length to 100 mm {3.94 in}  
40—52 N·m {4.1—5.3 kgf·m, 30—38 ft·lbf}
- Nut: 49 L010 104  
140—160 N·m {15—16 kgf·m, 104—118 ft·lbf}

6) Assemble the SSTs using part number:  
9YA02 1015, or M10×1.5 bolts, length to  
35 mm {1.4 in}.

A : Part number: 9YA02 1015, or M10×1.5 bolt,  
length to 35 mm {1.4 in}

### Tightening torque

38—52 N·m {3.9—5.3 kgf·m, 29—38 ft·lbf}



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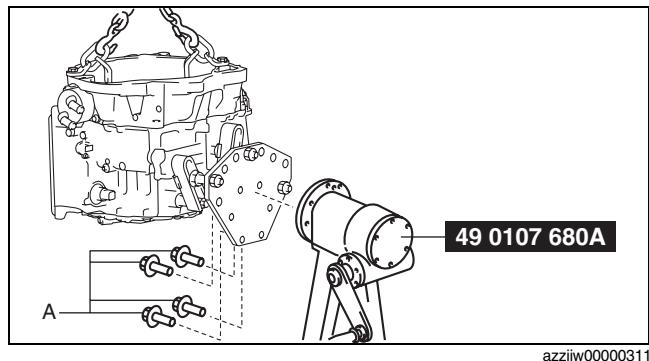
## AUTOMATIC TRANSAXLE

- (2) Using chain hoists, install the transaxle to the SST (engine stand) using part number: 9YA02 A220, or M12×1.75 bolts, length to 40 mm {1.6 in}.

A : Part number: 9YA02 A220, or M12×1.75 bolt, length to 40 mm {1.6 in}

### Caution

- When installing the transaxle to the SST (engine stand) using chain hoists, be careful not to allow the transaxle (oil cooler in particular) to contact the SST (engine stand). If the transaxle contacts the SST, check the areas that made contact and replace damaged parts with new ones.



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### Note

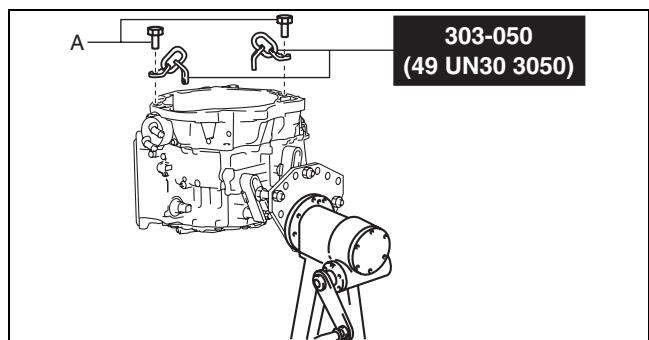
- Tighten the four locations with bolts and securely install the transaxle to the SST (engine stand).

### Tightening torque

88—118 N·m {9.0—12 kgf·m, 65—87 ft·lbf}

- (3) Remove the SSTs.

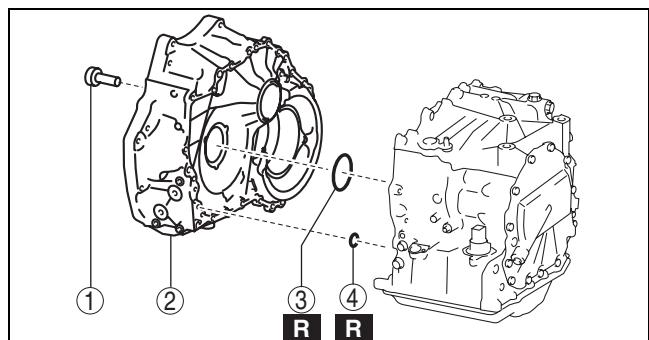
A : Part number: 9YA02 1015, or M10×1.5 bolt, length to 35 mm {1.4 in}



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5. Remove the converter housing using the following procedure:

1	24 bolts
2	Converter housing
3	O-ring (oil pump)
4	O-ring (oil cooler oil passage)

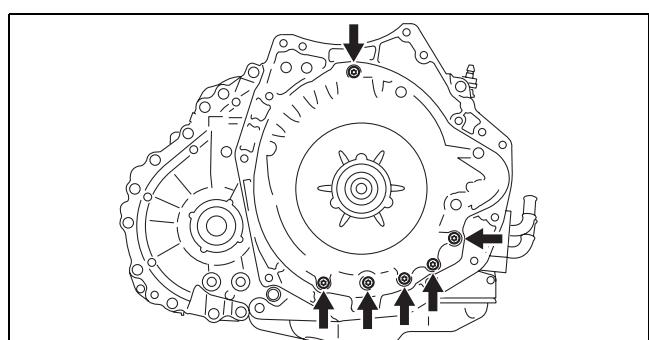


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- (1) Remove the bolts shown in the figure.

### Caution

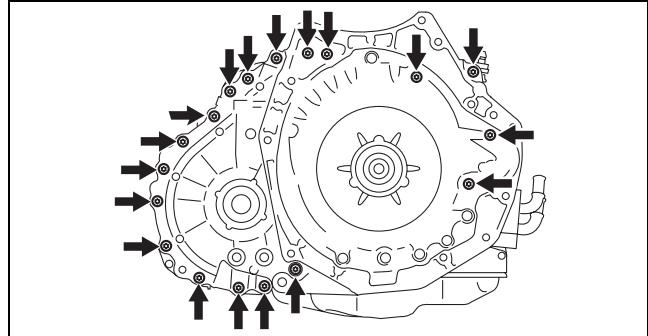
- Sealant has been applied to the removed bolts. If the bolts are reused it could cause ATF leakage, therefore when performing assembly use new bolts.



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## AUTOMATIC TRANSAXLE

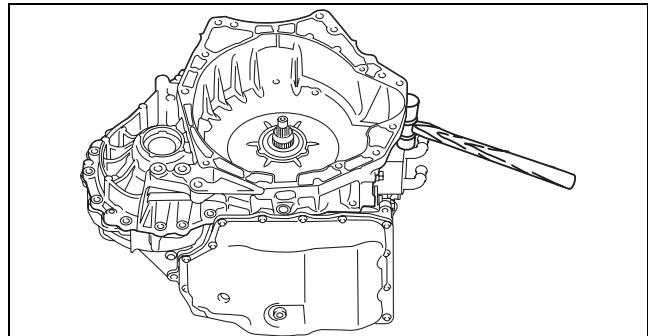
- (2) Remove the bolts shown in the figure.



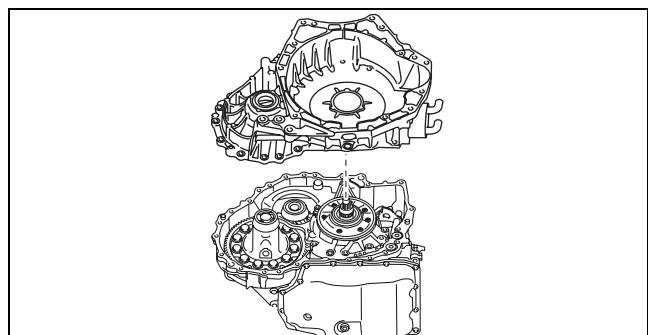
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05-17

- (3) Lightly tap the converter housing using a plastic hammer to remove it.

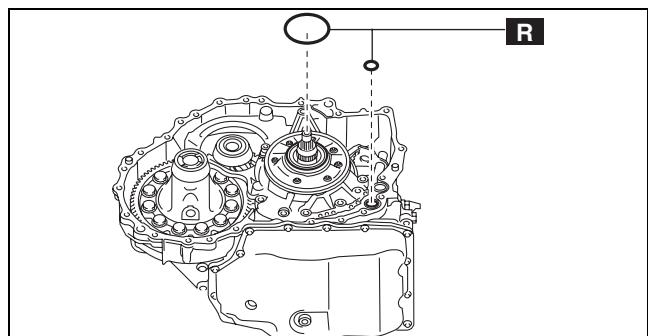


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- (4) Remove the O-rings.

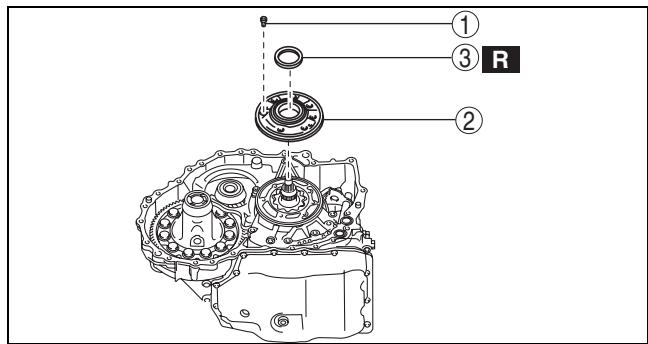


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## AUTOMATIC TRANSAXLE

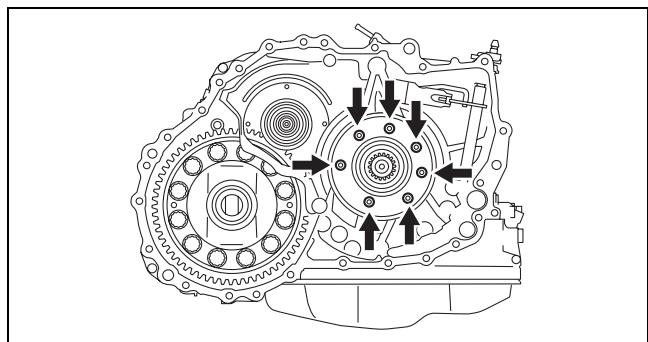
6. Remove the oil seal using the following procedure:

1	7 bolts
2	Oil pump cover
3	Oil seal



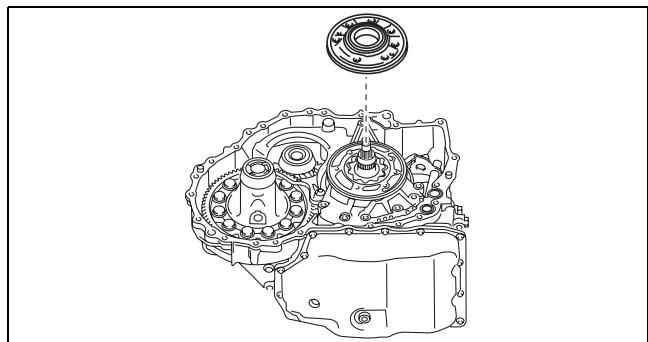
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- (1) Remove the bolts shown in the figure.



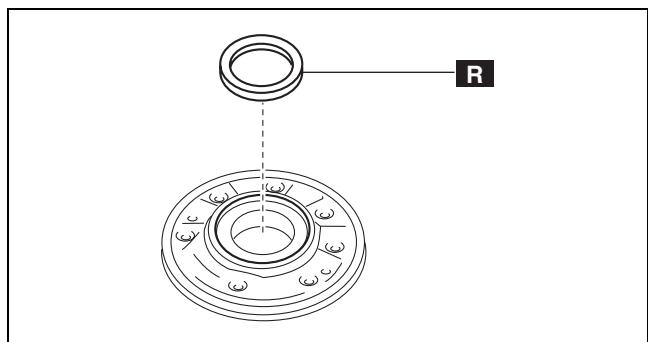
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- (2) Remove the oil pump cover.



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- (3) Remove the oil seal.



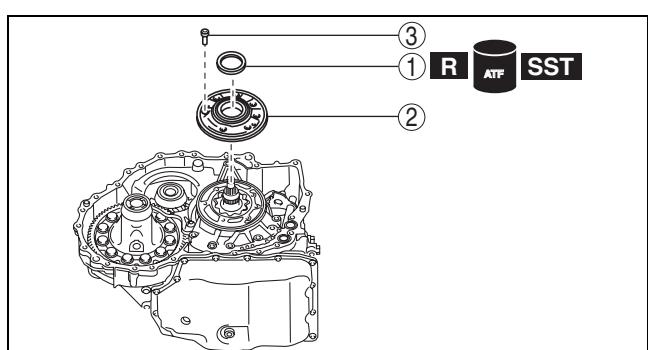
azzjjw00000322

7. Assemble a new oil seal using the following procedure::

1	Oil seal
2	Oil pump cover
3	7 bolts (M6×1.0 bolt, length to approx. 13 mm {0.51 in})

**Caution**

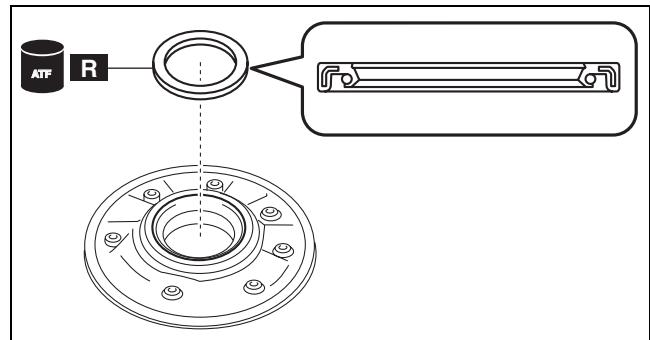
- If an oil seal is reused it could cause ATF leakage, therefore use a new oil seal.



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## AUTOMATIC TRANSAXLE

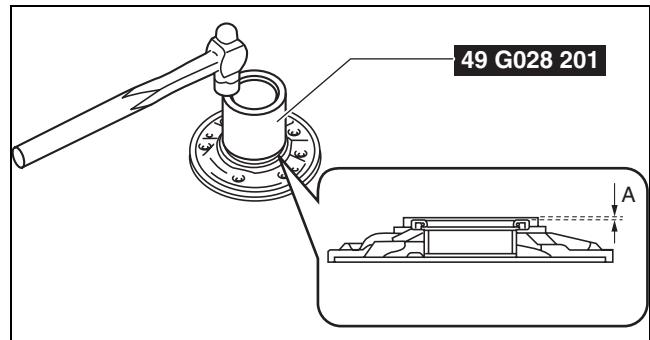
- (1) Apply ATF (ATF FZ) to the engagement area of the new oil seal and oil pump cover.
- (2) Apply ATF (ATF FZ) to the lip of the new oil seal.
- (3) Assemble the new oil seal to the position shown in the figure using the SST.



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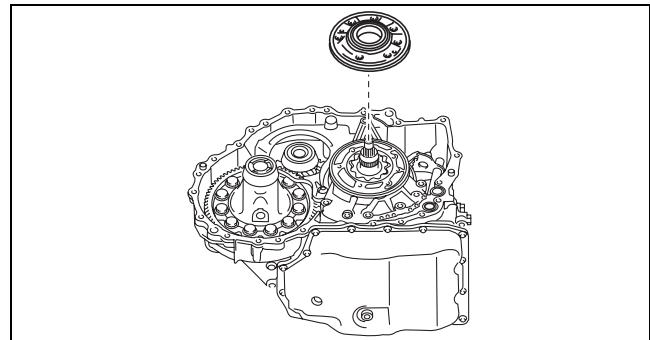
azzjw00000324

A : 0—0.5 mm {0—0.01 in}

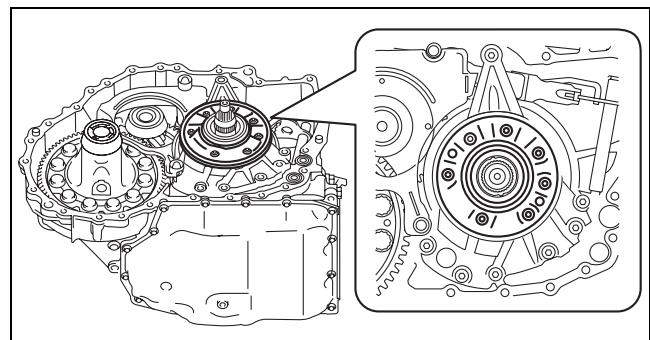


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- (4) Assemble the oil pump cover.



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## AUTOMATIC TRANSAXLE

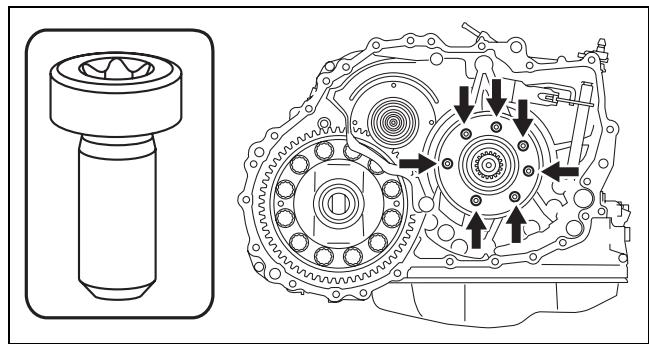
(5) Assemble and tighten the bolts shown in the figure.

### Note

- Bolt size: M6×1.0 bolt, length to approx. 13 mm {0.51 in}

### Tightening torque

9—10 N·m {92—101 kgf·cm, 80—88 in·lbf}

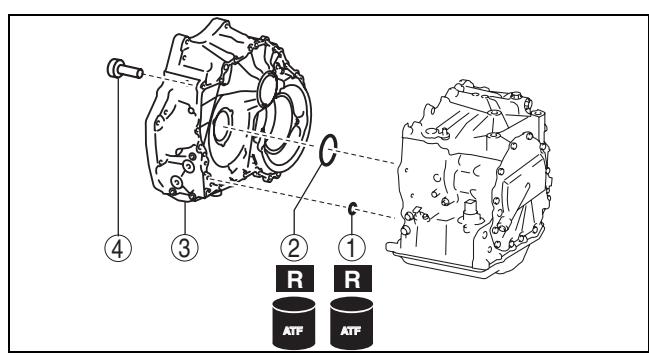


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8. Assemble the converter housing using the following procedure:

1	O-ring (outer diameter approx. 15.6 mm {0.614 in}, thickness approx. 2.4 mm {0.094 in})
2	O-ring (outer diameter approx. 73.3 mm {2.89 in}, thickness approx. 3.0 mm {0.12 in})
3	Converter housing
4	24 bolts * (M8×1.25 bolt, length to approx. 28 mm {1.1 in})

\* : Of the 24 bolts, 6 are applied with sealant



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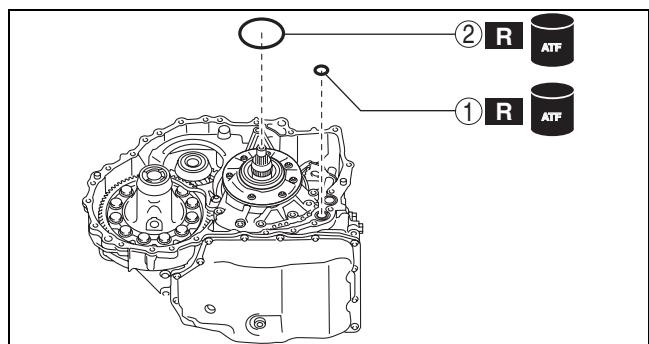
(1) Assemble new O-rings using the following procedure:

### Caution

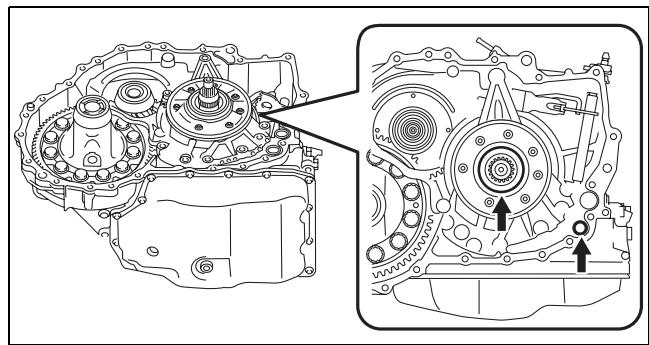
- If an O-ring is reused it could cause ATF leakage, therefore use a new O-ring.

- 1) Apply ATF (ATF FZ) to the new O-rings.
- 2) Assemble the new O-rings.

1	O-ring (outer diameter approx. 15.6 mm {0.614 in}, thickness approx. 2.4 mm {0.094 in})
2	O-ring (outer diameter approx. 73.3 mm {2.89 in}, thickness approx. 3.0 mm {0.12 in})



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## AUTOMATIC TRANSAXLE

- (2) Remove any remaining old sealant on the contact surfaces of the transaxle case and converter housing, and degrease the contact surfaces.

### Caution

- When degreasing and if degreaser is used, use a rag saturated with degreaser and be careful not to allow degreaser to penetrate the interior of the transaxle.
- In addition, after degreasing, visually verify that there is no foreign matter (such as old sealant, cloth fibers) which has penetrated the interior of the transaxle.

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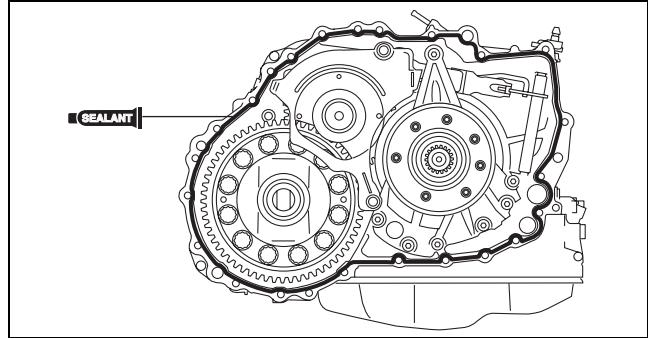
- (3) Apply sealant (silicone sealant TB1217E) to the transaxle case.

### Caution

- If sealant is applied excessively or applied to a part other than the indicated part, the O-ring could deform and the sealant could penetrate the oil passage. Apply an appropriate amount of sealant to the indicated part.

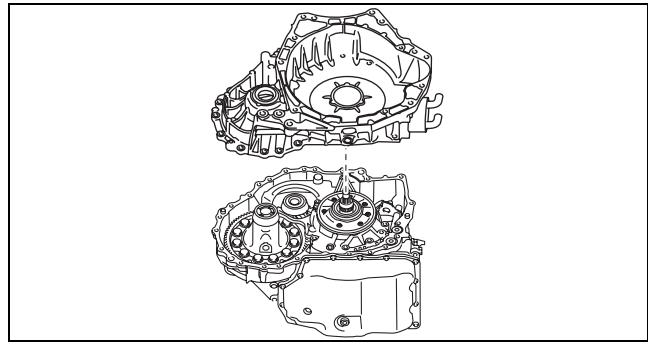
### Note

- Sealant application amount (bead thickness):  $\phi$  1.8—2.5 mm {0.071—0.098 in}



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- (4) Assemble the converter housing before the applied sealant starts to harden.

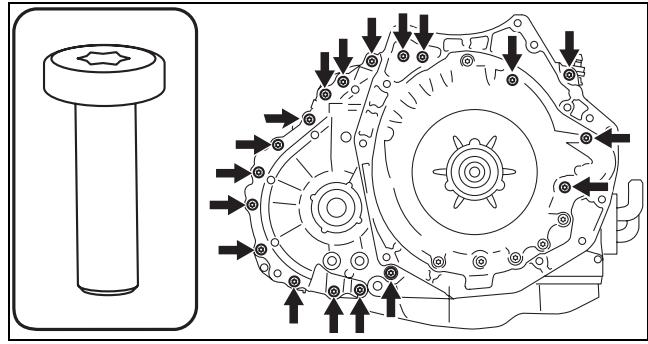


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- (5) Assemble and temporarily tighten the bolts to the positions shown in the figure.

### Note

- Bolt size: M8×1.25 bolt, length to approx. 28 mm {1.1 in}



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# AUTOMATIC TRANSAXLE

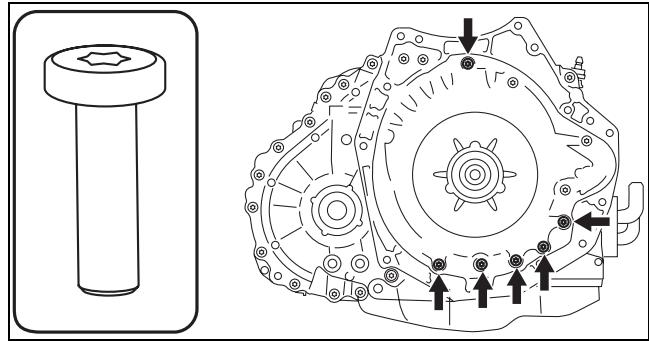
- (6) Assemble and temporarily tighten the new bolts to the positions shown in the figure.

## Caution

- The bolts for the assembly are applied with sealant. If the bolts are reused it could cause ATF leakage, therefore use new bolts.

## Note

- Bolt size: M8×1.25 bolt, length to approx. 28 mm {1.1 in} (with sealant applied)

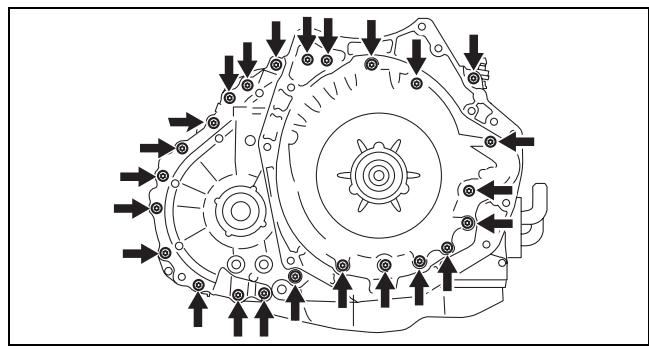


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- (7) Tighten the bolts shown in the figure.

## Tightening torque

19—25 N·m {2.0—2.5 kgf·m, 15—18 ft·lbf}



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9. Remove the SSTs from the transaxle using the following procedure:

## Caution

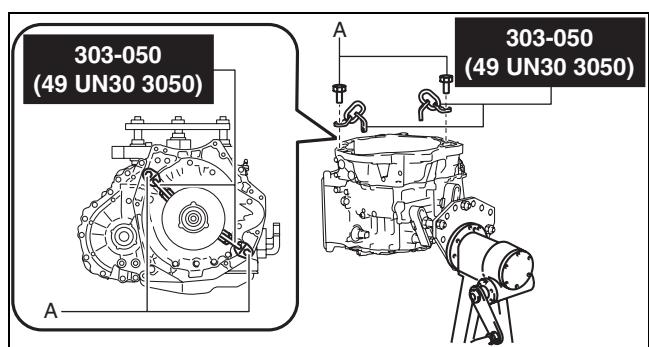
- When removing the transaxle from the SST (engine stand) using chain hoists, be careful not to allow the transaxle (oil cooler in particular) to contact the SST (engine stand). If the transaxle contacts the SST, check the areas that made contact and replace damaged parts with new ones.

- (1) Assemble the SSTs using part number: 9YA02 1015, or M10×1.5 bolts, length to 35 mm {1.4 in}.

A : Part number: 9YA02 1015, or M10×1.5 bolt, length to 35 mm {1.4 in}

## Tightening torque

38—52 N·m {3.9—5.3 kgf·m, 29—38 ft·lbf}



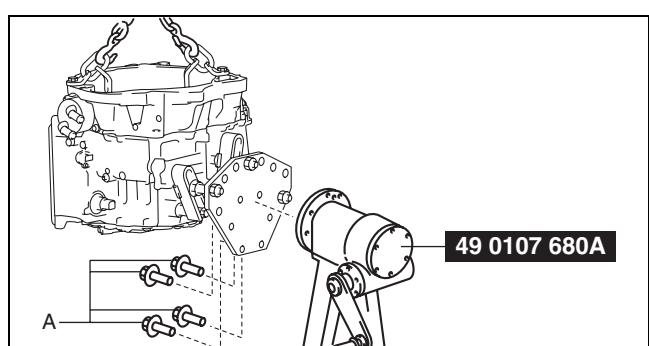
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- (2) Using chain hoists, remove the SST (engine stand) from the transaxle.

A : Part number: 9YA02 A220, or M12×1.75 bolt, length to 40 mm {1.6 in}

## Caution

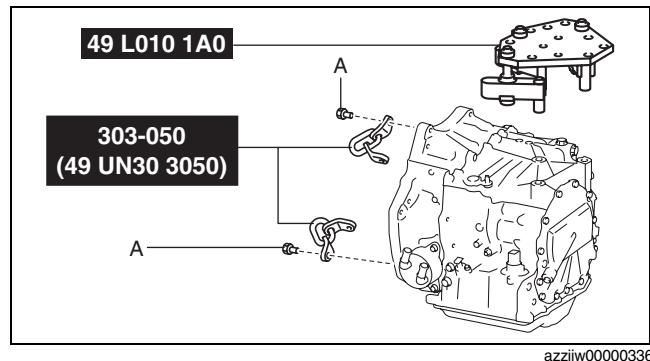
- When removing the transaxle from the SST (engine stand) using chain hoists, be careful not to allow the transaxle (oil cooler in particular) to contact the SST (engine stand). If the transaxle contacts the SST, check the areas that made contact and replace damaged parts with new ones.



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## AUTOMATIC TRANSAXLE

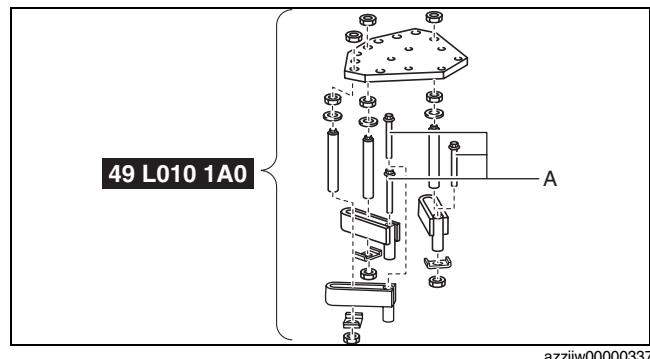
- (3) Remove the SSTs.  
 A : Part number: 9YA02 1015, or M10×1.5 bolt,  
 length to 35 mm {1.4 in}



05-17

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- (4) Disassemble the SST.  
 A : Part number: 9YA02 1440, or M14×1.5 bolt,  
 length to 100 mm {3.94 in}



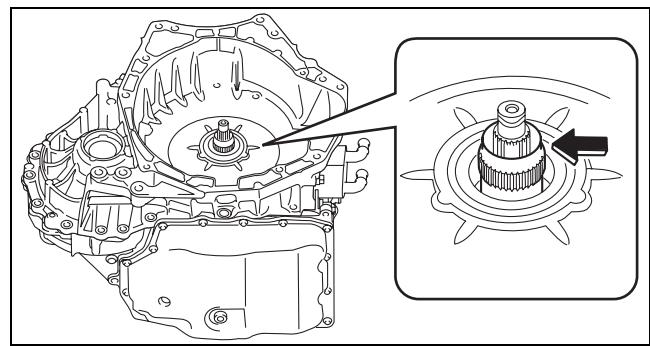
azzjw0000037

10. Assemble the torque converter using the following procedure:

- (1) Apply ATF (ATF FZ) to the end of the starter shaft of the oil pump shown in the figure.

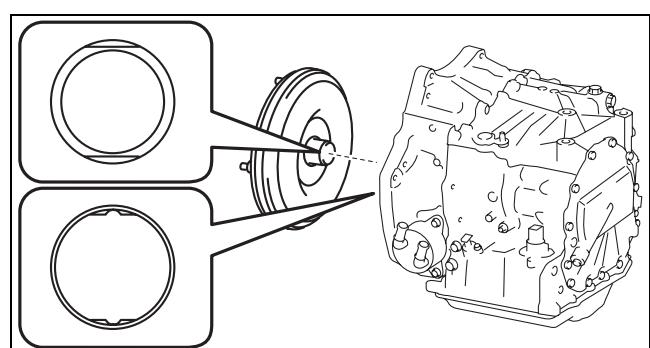
**Caution**

- Accurately perform to protect the torque converter internal parts.



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- (2) Assemble the torque converter so that the two surfaces of the notch on the end of the torque converter engage the inner rotor of the oil pump.



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## AUTOMATIC TRANSAXLE

- (3) To verify that the torque converter is securely assembled, measure the distance shown in the figure.

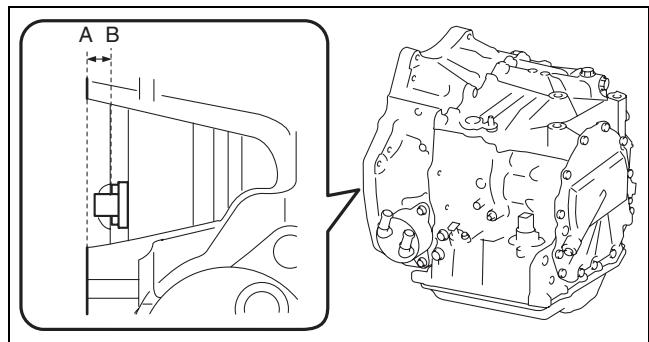
A : Converter housing end (alignment surface with engine)  
B : Torque converter stud bolt seat

**Note**

- Recommended measuring instrument:  
Depth gauge, straight edge ruler

**Specification**

14.6 mm {0.575 in} or more



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- If not within the specification, remove the torque converter and reassemble.

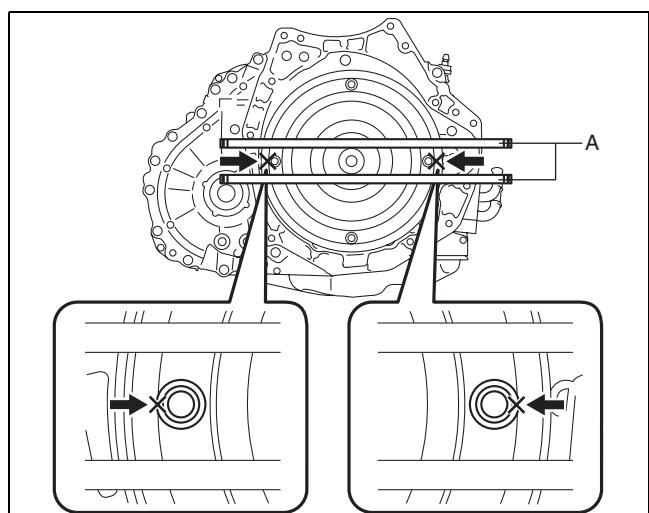
**Note**

- Measurement method

- 1) Set two straight edge rulers along the alignment surface of the converter housing with the engine as shown in the figure.

A : Straight edge ruler

- 2) Measure the positions (2 locations) shown in the figure using a depth gauge and calculate the average value.
- 3) Subtract the thickness of the straight edge ruler from the average value.

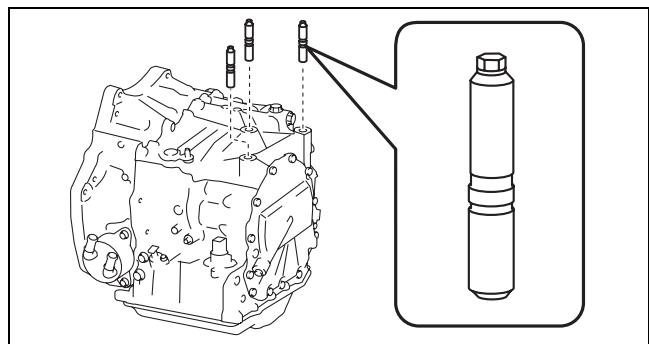


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11. Assemble and tighten the stud bolts.

**Tightening torque**

15—25 N·m {1.6—2.5 kgf·m, 12—18 ft-lbf}



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# AUTOMATIC TRANSAXLE

## OIL SEAL (PARKING SHIFT LEVER) REPLACEMENT

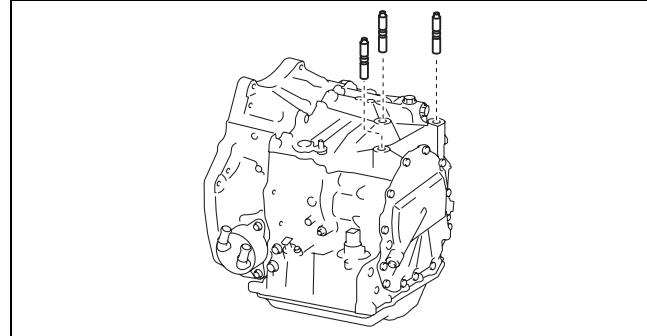
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### Note

- Perform the following servicing only if the oil seal is replaced due to ATF leakage from the oil seal (parking shift lever).

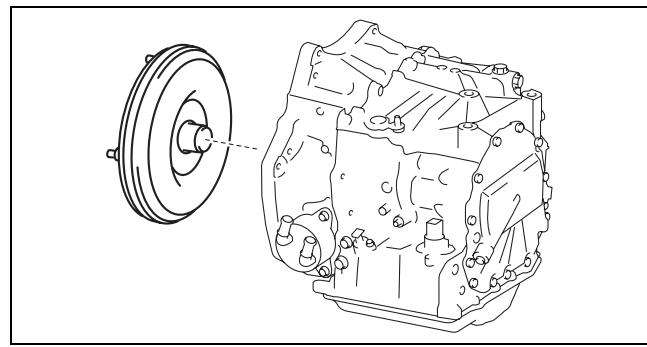
1. Clean the outside of the transaxle. (See 05-17-26 AUTOMATIC TRANSAXLE CLEANING.)

2. Remove the stud bolts.



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3. Remove the torque converter.



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4. Install the transaxle to the SST (engine stand) using the following procedure:

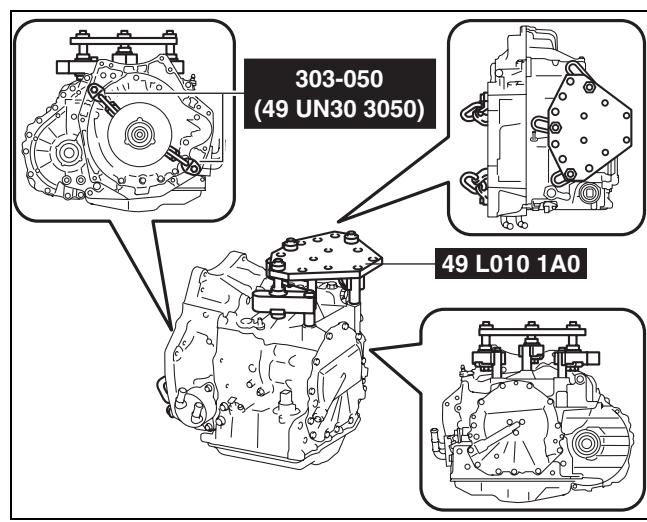
### Caution

- When installing the transaxle to the SST (engine stand) using chain hoists, be careful not to allow the transaxle (oil cooler in particular) to contact the SST (engine stand). If the transaxle contacts the SST, check the areas that made contact and replace damaged parts with new ones.

(1) Install the SSTs to the transaxle using the following procedure.

### Note

- When installing the SST (49 L010 1A0) to the transaxle (stud bolt holes), use part number: 9YA02 1440 or M14×1.5 bolts, length to 100 mm {3.94 in}.
- When installing the SST (49 UN30 3050) to the transaxle, use part number: 9YA02 1015, or M10×1.5 bolts, length to 35 mm {1.4 in}.



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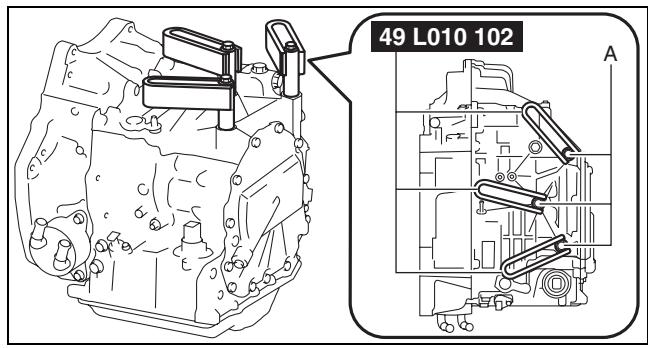
## AUTOMATIC TRANSAXLE

- 1) Temporarily install the arms (49 L010 102) using part number: 9YA02 1440, or M14×1.5 bolts, length to 100 mm {3.94 in}.

A : Part number: 9YA02 1440, or M14×1.5 bolt, length to 100 mm {3.94 in}

**Note**

- To adjust the installation position of the SST in Step 3), temporarily tighten the bolts.



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- 2) Assemble the SST (49 L010 1A0).

A : Washer

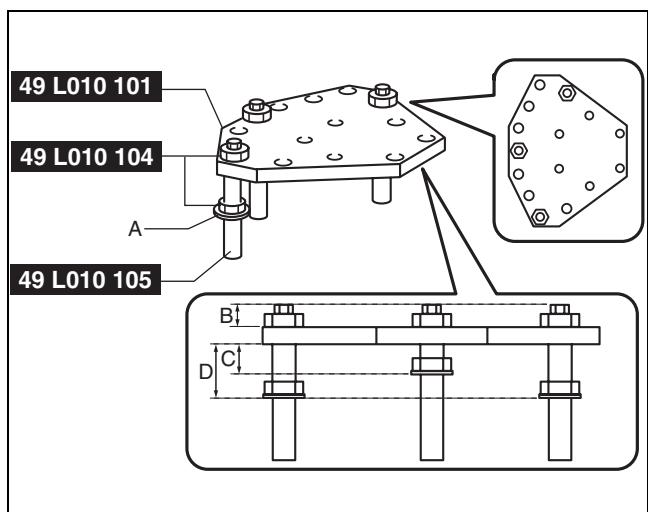
B : Approx. 20 mm {0.79 in}

C : Approx. 26 mm {1.0 in}

D : Approx. 47 mm {1.9 in}

**Note**

- Use bolts (49 L010 105) with a length of 138 mm {5.43 in}.



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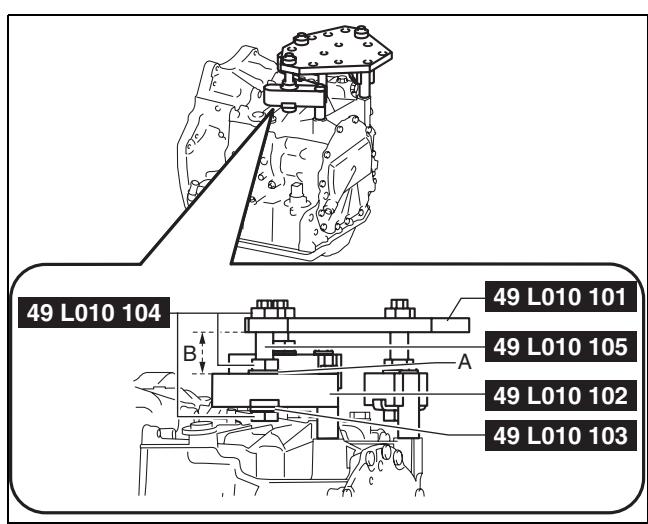
- 3) Install the SST assembled in Step 2).

A : Washer

B : Level out

**Note**

- Adjust so that the plate (49 L010 101) and arms (49 L010 102) are level, and install.



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- 4) Verify that nothing other than the SST arms (49 L010 102) installation area contacts the transaxle.

**Caution**

- If something other than the SST arms (49 L010 102) installation area contacts the transaxle, readjust the SST to prevent damaging the part.

5) Tighten the nuts and bolts.

### Tightening torque

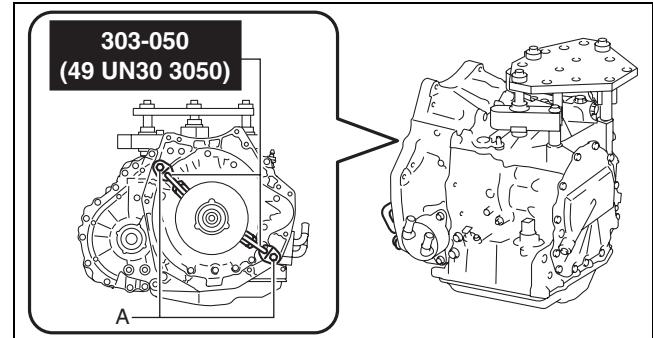
- Bolt: Part number: 9YA02 1440, or M14×1.5 bolt, length to 100 mm {3.94 in}  
40—52 N·m {4.1—5.3 kgf·m, 30—38 ft·lbf}
- Nut: 49 L010 104  
140—160 N·m {15—16 kgf·m, 104—118 ft·lbf}

6) Assemble the SSTs using part number:  
9YA02 1015, or M10×1.5 bolts, length to  
35 mm {1.4 in}.

A : Part number: 9YA02 1015, or M10×1.5 bolt,  
length to 35 mm {1.4 in}

### Tightening torque

38—52 N·m {3.9—5.3 kgf·m, 29—38 ft·lbf}



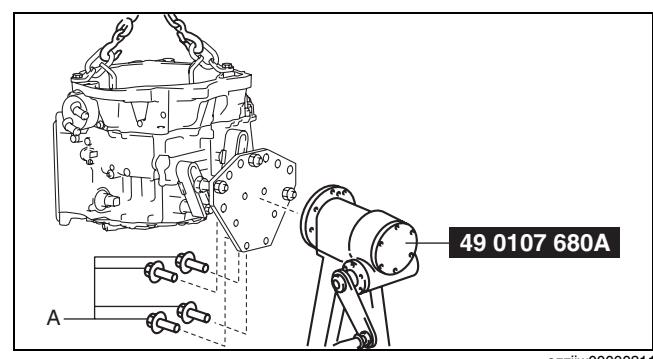
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(2) Using chain hoists, install the transaxle to the SST (engine stand) using part number:  
9YA02 A220, or M12×1.75 bolts, length to 40  
mm {1.6 in}.

A : Part number: 9YA02 A220, or M12×1.75 bolt,  
length to 40 mm {1.6 in}

### Caution

- When installing the transaxle to the SST (engine stand) using chain hoists, be careful not to allow the transaxle (oil cooler in particular) to contact the SST (engine stand). If the transaxle contacts the SST, check the areas that made contact and replace damaged parts with new ones.



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### Note

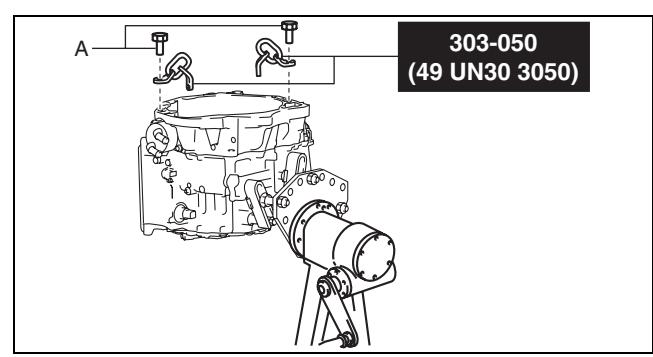
- Tighten the four locations with bolts and securely install the transaxle to the SST (engine stand).

### Tightening torque

88—118 N·m {9.0—12 kgf·m, 65—87 ft·lbf}

(3) Remove the SSTs.

A : Part number: 9YA02 1015, or M10×1.5 bolt,  
length to 35 mm {1.4 in}

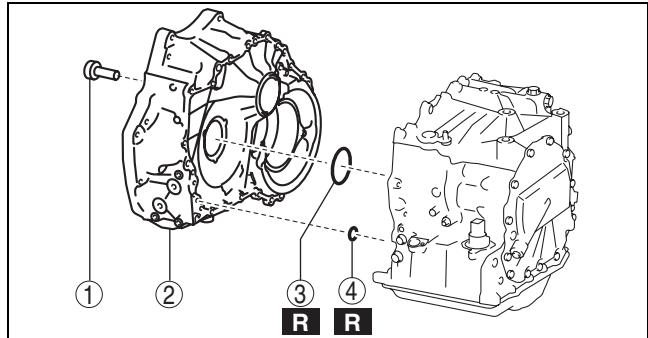


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## AUTOMATIC TRANSAXLE

5. Remove the converter housing using the following procedure:

1	24 bolts
2	Converter housing
3	O-ring (oil pump)
4	O-ring (oil cooler oil passage)

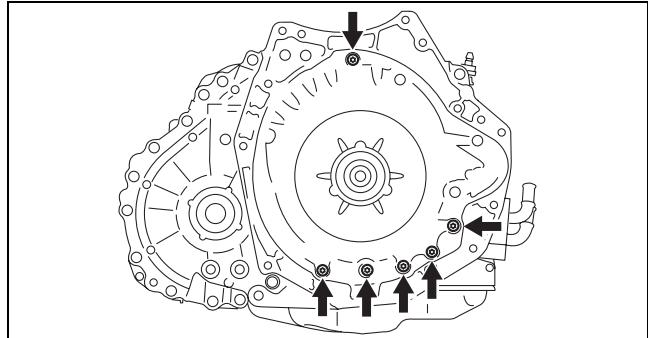


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- (1) Remove the bolts shown in the figure.

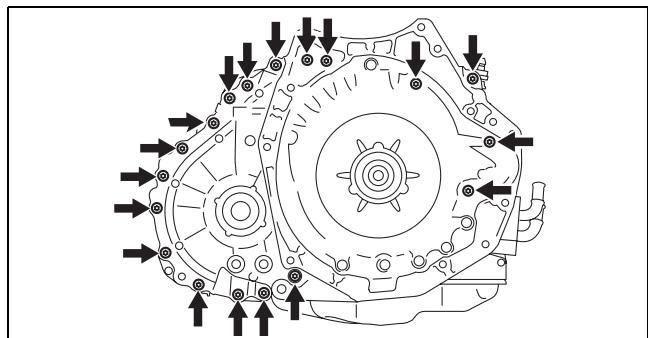
**Caution**

- Sealant has been applied to the removed bolts. If the bolts are reused it could cause ATF leakage, therefore when performing assembly use new bolts.



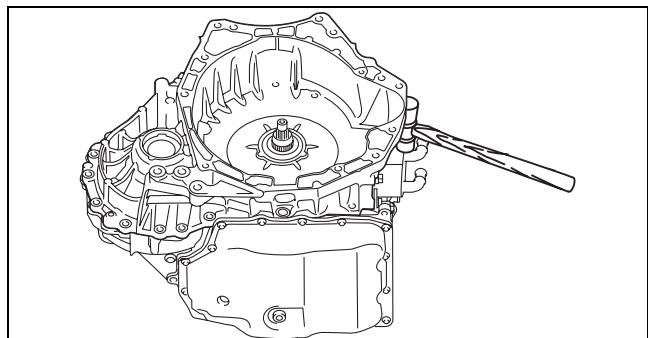
azzjjw00000314

- (2) Remove the bolts shown in the figure.

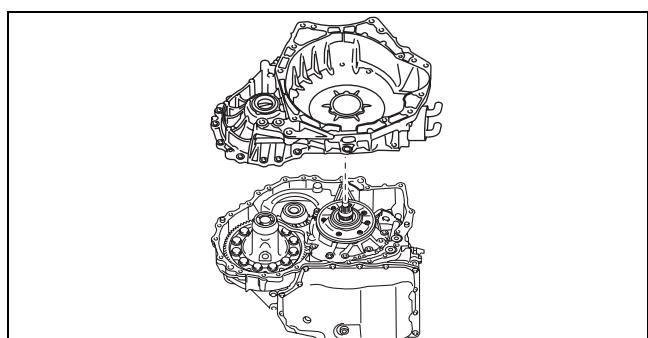


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- (3) Lightly tap the converter housing using a plastic hammer to remove it.



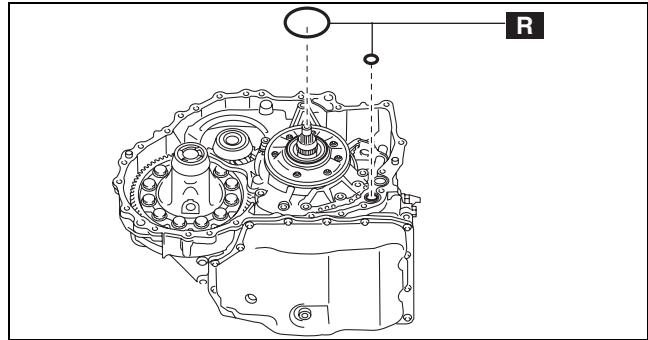
azzjjw00000316



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## AUTOMATIC TRANSAXLE

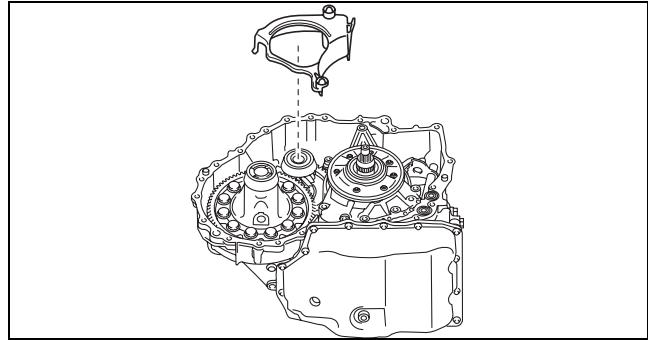
- (4) Remove the O-rings.



05-17

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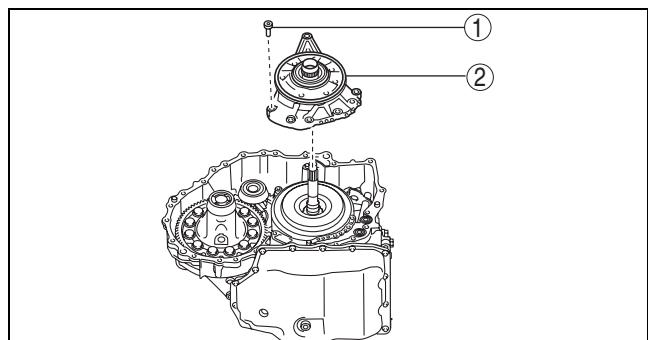
6. Remove the baffle plate.



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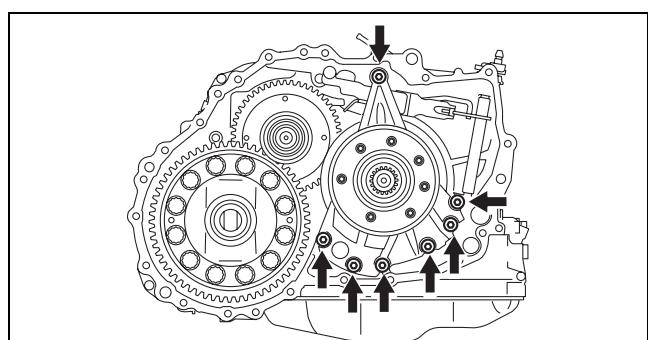
7. Remove the oil pump using the following procedure:

1	7 bolts
2	Oil pump



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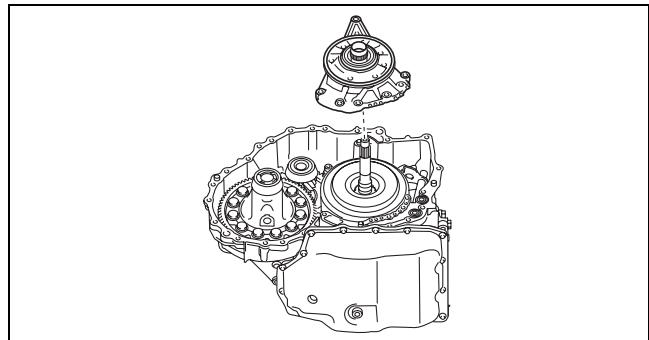
- (1) Remove the bolts shown in the figure.



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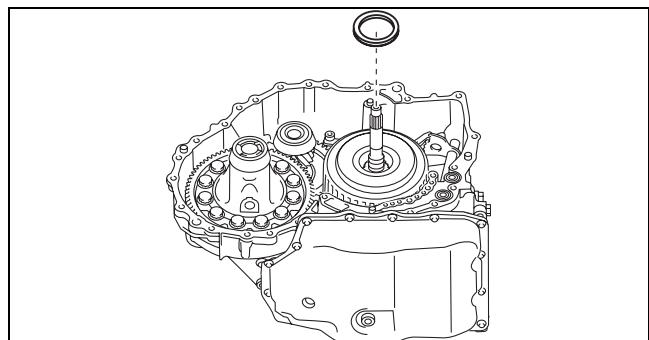
## AUTOMATIC TRANSAXLE

(2) Remove the oil pump.



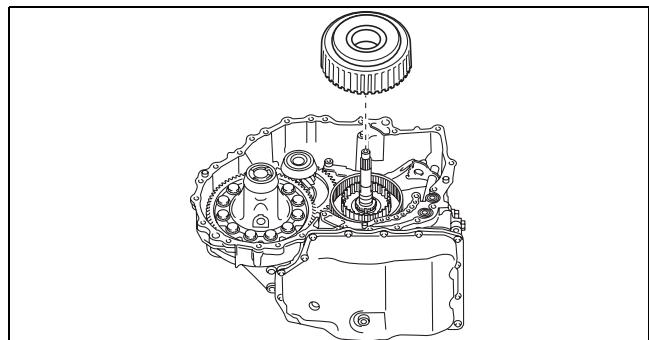
azzjw00000350

8. Remove the thrust needle bearing.



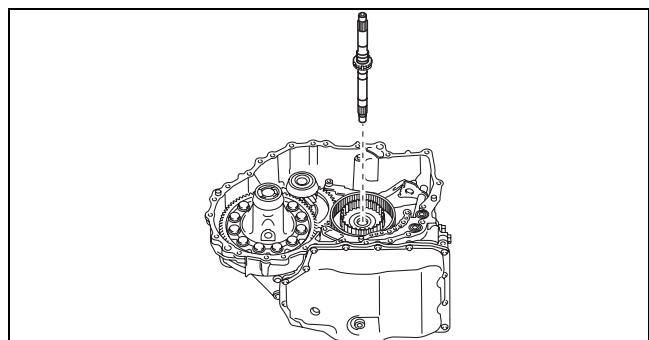
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9. Remove the clutch component.



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10. Remove the turbine shaft.

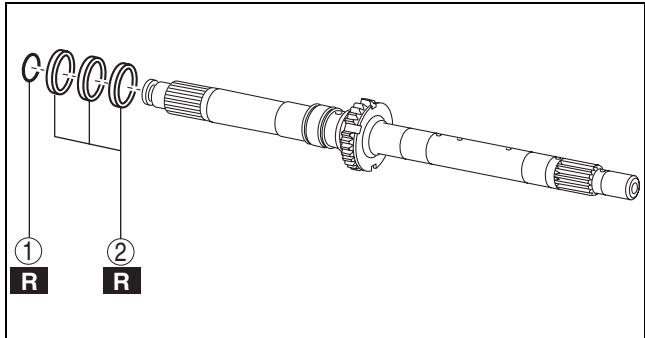


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## AUTOMATIC TRANSAXLE

11. Remove the D-ring and seal rings from the turbine shaft using the procedure in the figure:

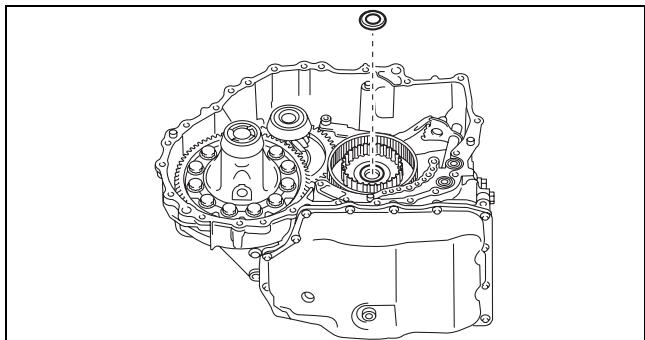
1	D-ring
2	Seal ring



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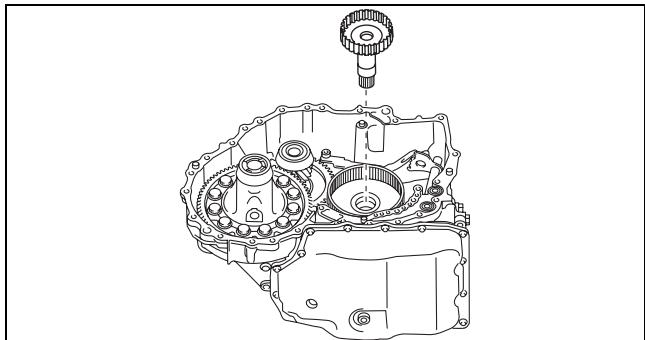
azzjw00000354

12. Remove the thrust needle bearing.



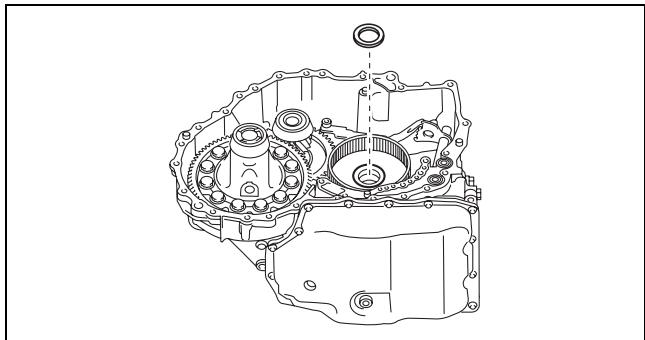
azzjw00000355

13. Remove the high clutch hub.



azzjw00000356

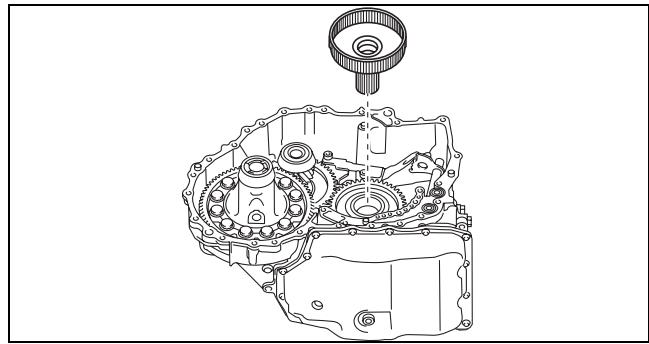
14. Remove the thrust needle bearing.



azzjw00000357

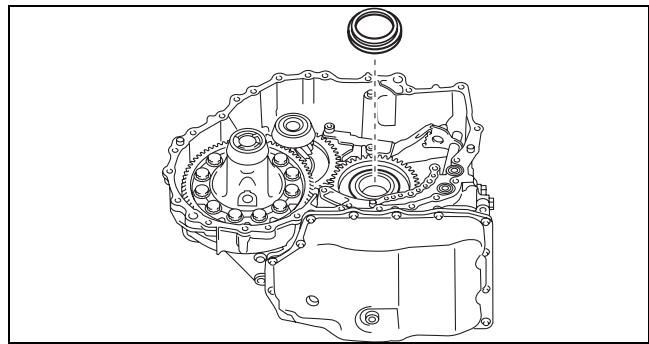
## AUTOMATIC TRANSAXLE

15. Remove the low clutch hub.



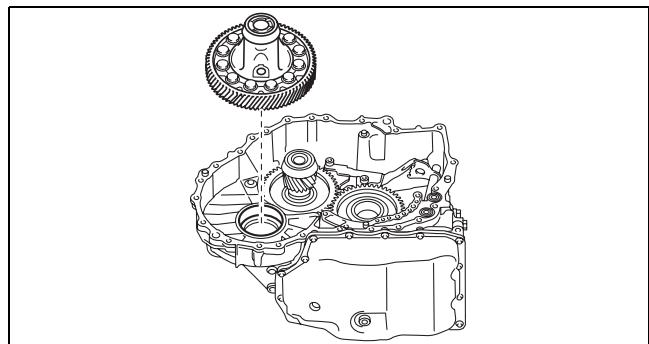
azzjw00000358

16. Remove the thrust needle bearing.



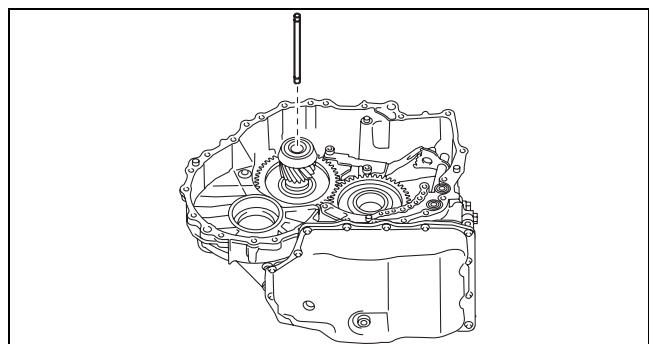
azzjw00000359

17. Remove the ring gear and differential.



azzjw00000360

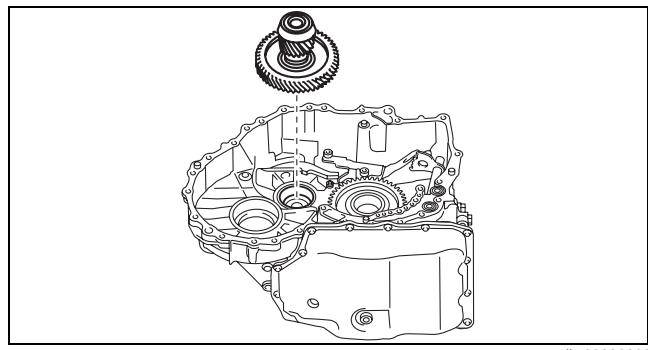
18. Remove the oil pipe.



azzjw00000361

## AUTOMATIC TRANSAXLE

19. Remove the secondary gear and output gear.



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azjw00000362

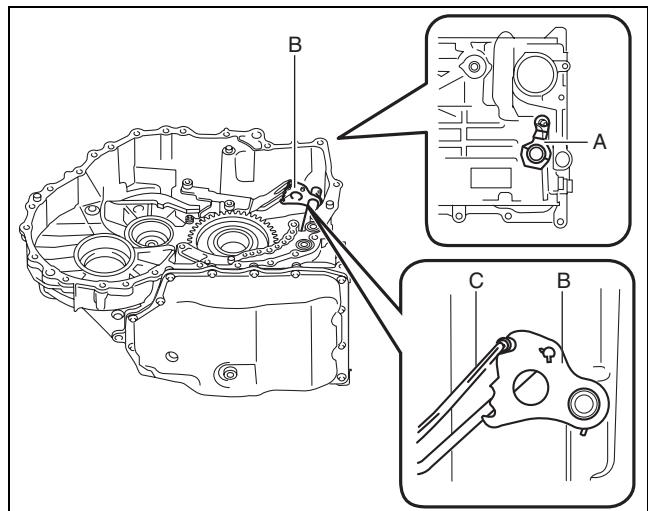
20. Remove the roll pin using the following procedure:

- (1) Verify that the parking shift lever component is in the P position.

A : Parking shift lever component  
B : Manual plate component  
C : Detent bracket component

**Caution**

- If the parking shift lever component is at a position other than P, shift the parking shift lever component to the P position.

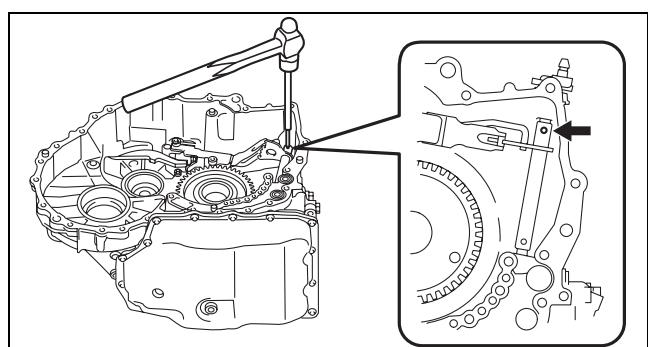


azjw00001376

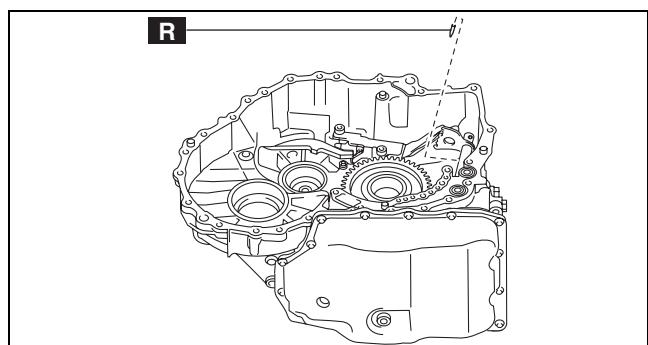
- (2) Remove the roll pin shown in the figure using a pin punch.

**Note**

- Use a pin punch with an end outer diameter of 3 mm {0.119 in} or more, and within 4 mm {0.157 in}.



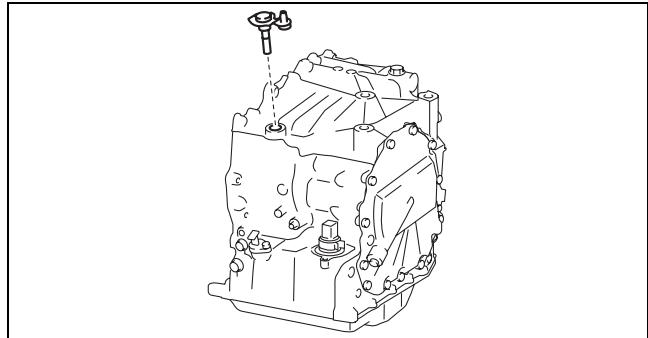
azjw00001370



azjw00001371

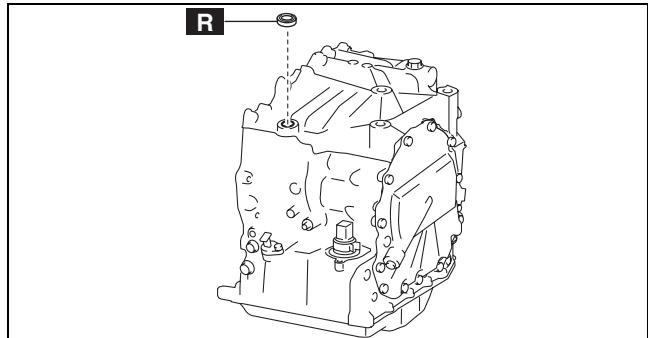
## AUTOMATIC TRANSAXLE

21. Remove the parking shift lever component.



azzjw00000367

22. Remove the oil seal.

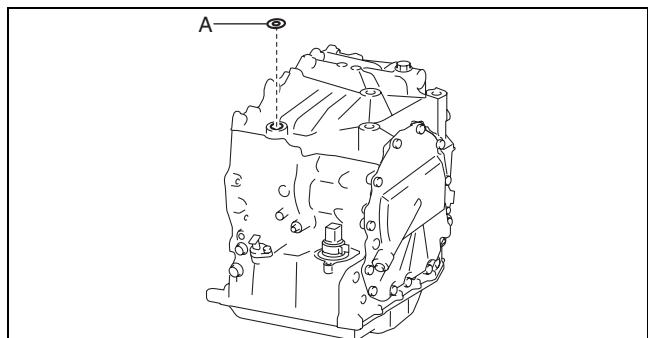


azzjw00000368

### Caution

- If the washer comes off together when the oil seal is removed, clean the washer and assemble it.

A: Washer



azzjw00001372

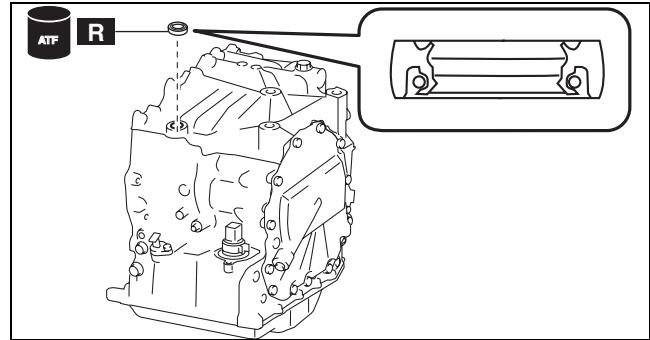
## AUTOMATIC TRANSAXLE

23. Assemble a new oil seal using the following procedure:

### Caution

- If an oil seal is reused it could cause ATF leakage, therefore use a new oil seal.

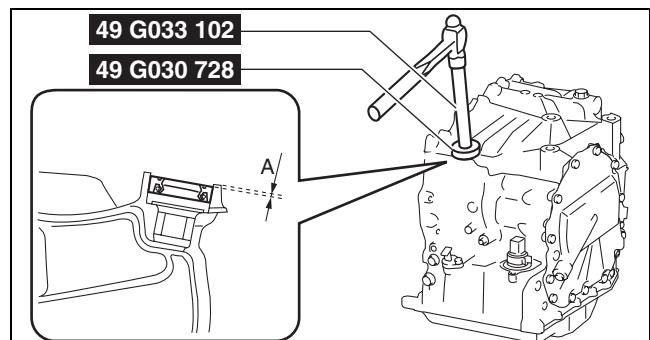
- (1) Apply ATF (ATF FZ) to the engagement area of the new oil seal and transaxle case.
- (2) Apply ATF (ATF FZ) to the lip of the new oil seal.
- (3) Assemble the new oil seal to the position shown in the figure using the SSTs.



05-17

azzjw00000369

A : -0.3—0.3 mm {-0.01—0.01 in}

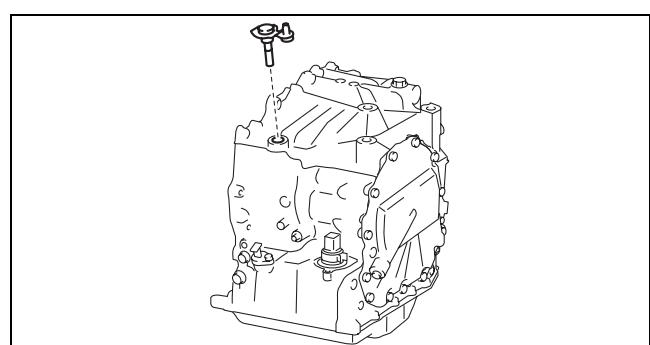


azzjw00000370

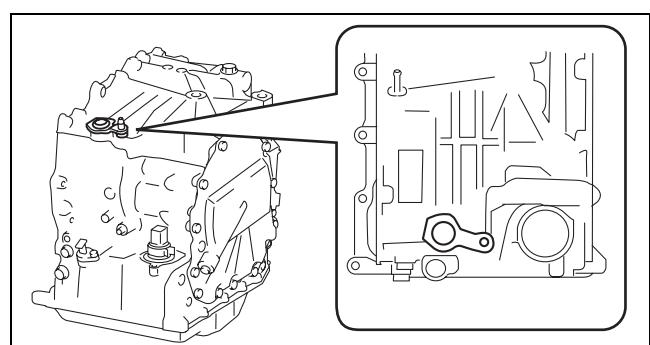
24. Assemble the parking shift lever component.

### Note

- Pass the end of the parking shift lever component through the assembly hole (radial needle bearing) of the transaxle case, and assemble it to the manual plate component.



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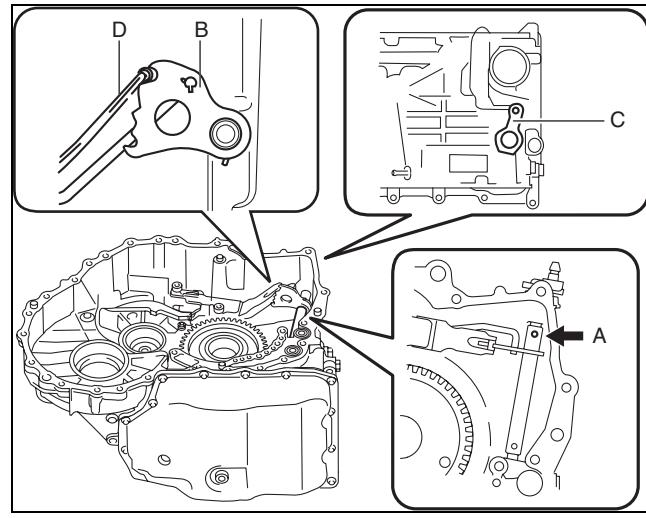
azzjw00000371

## AUTOMATIC TRANSAXLE

25. Assemble a new roll pin using the following procedure:

- (1) Set the manual plate component and parking shift lever component as shown in the figure and align with the roll pin hole.

A : Roll pin hole  
 B : Manual plate component  
 C : Parking shift lever component  
 D : Detent bracket component

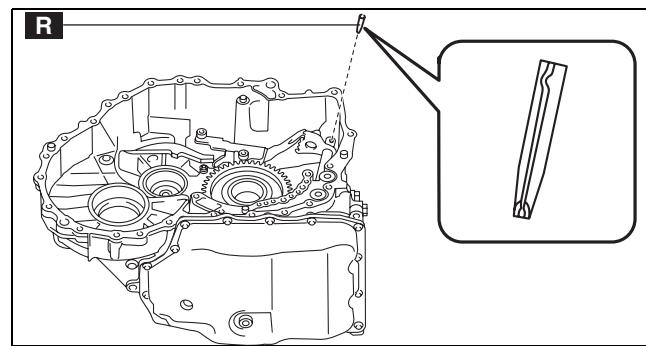


azzjw00001373

- (2) Assemble the new roll pin to the position shown in the figure using a pin punch.

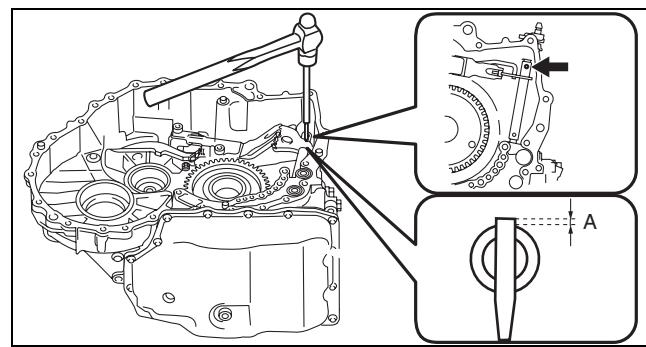
**Note**

- Use a pin punch with an end outer diameter of 5 mm {0.197 in} or more.



azzjw00001374

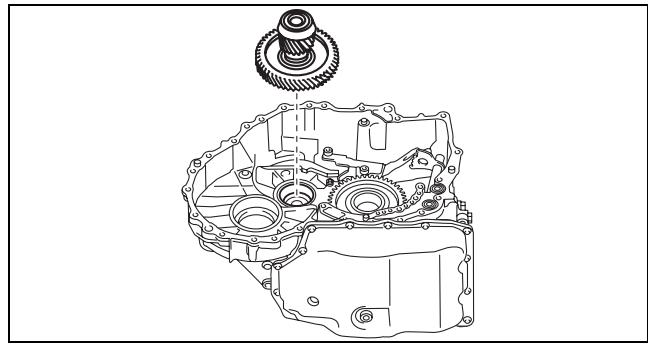
A : 0—1 mm {0—0.03 in}



azzjw00001375

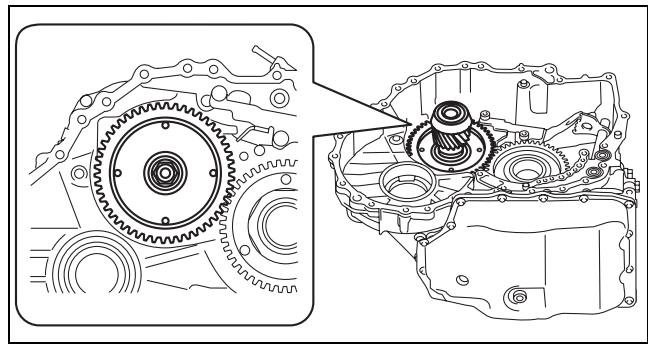
## AUTOMATIC TRANSAXLE

26. Assemble the secondary gear and output gear.



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azzjw00000362

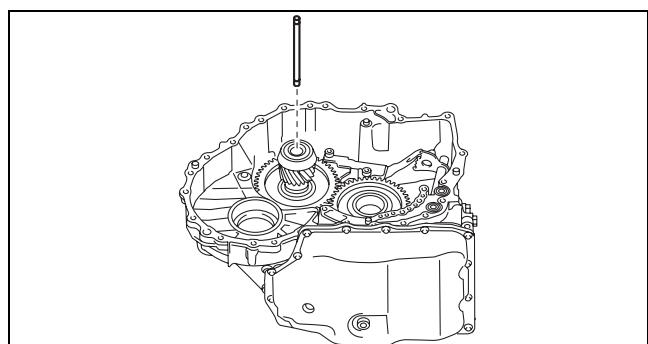


azzjw00000383

27. Assemble the oil pipe.

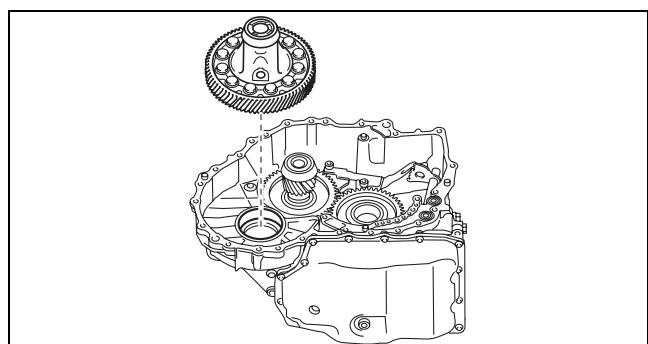
**Caution**

- Do not assemble the oil pipe using a tool such as a hammer to prevent damaging the part. For the oil pipe assembly, it is better to only use your hands to put the oil pipe into the output gear.

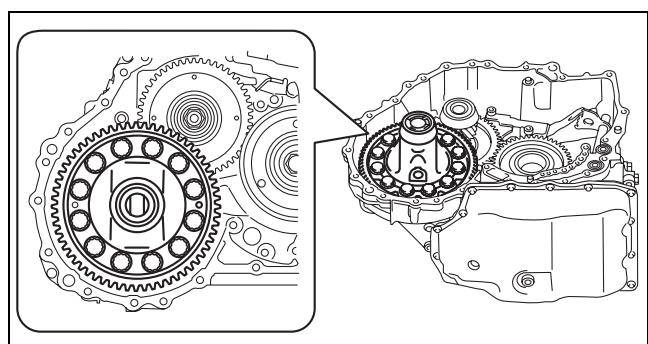


azzjw00000361

28. Assemble the ring gear and differential.



azzjw00000360



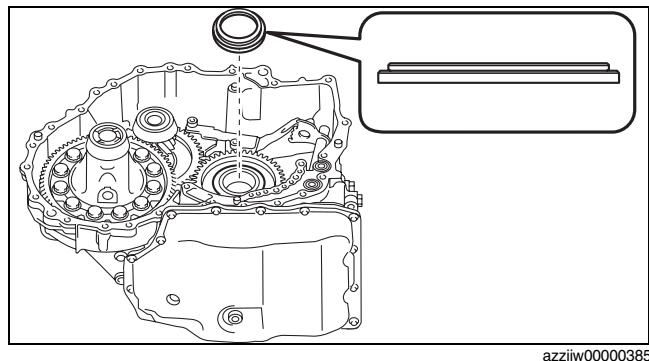
azzjw00000384

# AUTOMATIC TRANSAXLE

29. Assemble the thrust needle bearing.

## Note

- Thrust needle bearing size: Outer diameter approx. 80.3 mm {3.16 in}



azzjw00000385

30. Assemble a new D-ring and new seal rings to the turbine shaft using the following procedure:

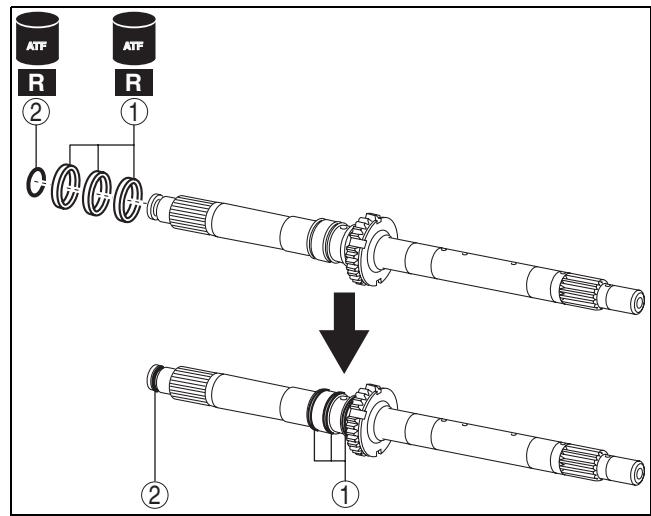
## Caution

- If a D-ring is reused it could cause ATF leakage, therefore use a new D-ring.
- If a seal ring is reused it could cause ATF leakage, therefore use a new seal ring.

(1) Apply ATF (ATF FZ) to the new D-ring and new seal rings.

(2) Assemble the new D-ring and new seal rings to the turbine shaft using the procedure shown in the figure:

1	Seal ring (outer diameter approx. 24.4 mm {0.961 in}, thickness approx. 1.5 mm {0.059 in})
2	D-ring (outer diameter approx. 16.4 mm {0.646 in}, thickness approx. 2.4 mm {0.094 in})

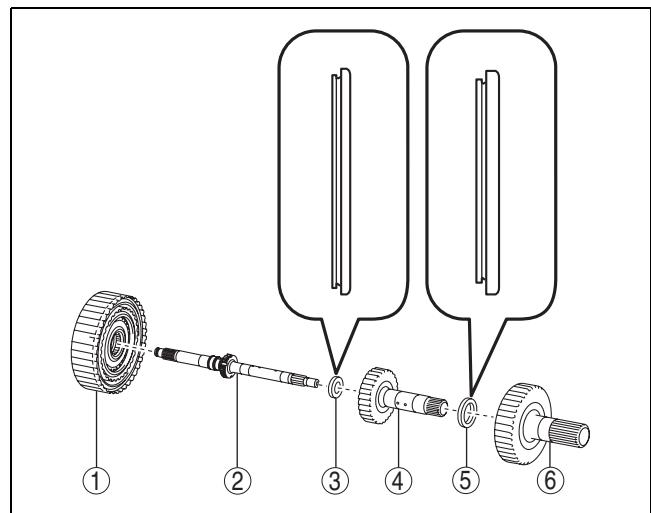


azzjw00000386

31. Assemble together the clutch component, turbine shaft, high clutch hub, low clutch hub, and thrust needle bearing using the following procedure:

(1) Assemble the parts using the procedure shown in the figure:

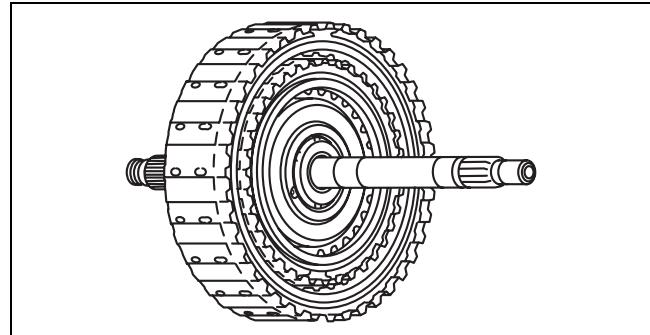
1	Clutch component
2	Turbine shaft
3	Thrust needle bearing (outer diameter approx. 37.3 mm {1.47 in})
4	High clutch hub
5	Thrust needle bearing (outer diameter approx. 51.3 mm {2.02 in})
6	Low clutch hub



azzjw00001415

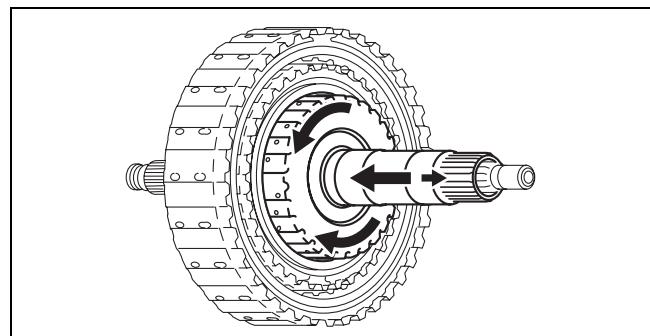
**Note**

- For the high clutch hub and low clutch hub assembly, assembly is easier if the work is performed using the following procedure:
  - High clutch hub
    1. Place the assembled parts on the workbench with the clutch component situated sideways.



azzjw00000389

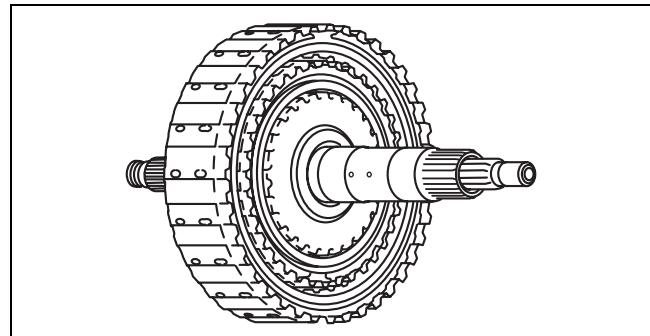
2. While rotating the high clutch hub, engage the splines of each of the high clutch drive plates one by one, and assemble.



azzjw00000390

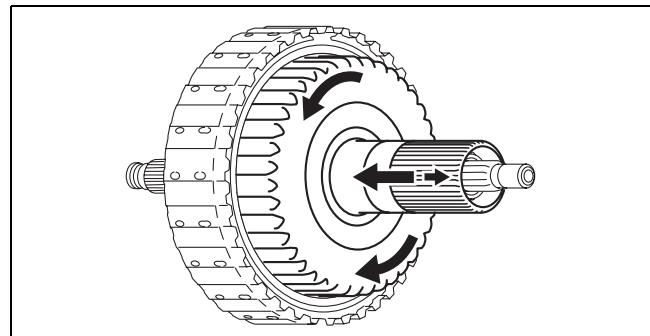
— Low clutch hub

1. Place the assembled parts on the workbench with the clutch component situated sideways.



azzjw00000391

2. While rotating the low clutch hub, engage the splines of each of the low clutch drive plates one by one, and assemble.



azzjw00000392

# AUTOMATIC TRANSAXLE

- (2) To verify that the parts are securely assembled together, measure the distance shown in the figure.

## Note

- Recommended measuring instrument:  
Vernier caliper

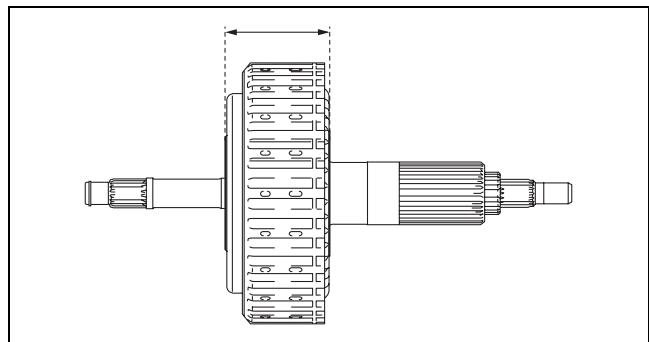
## Specification

63.9—66.0 mm {2.52—2.59 in}

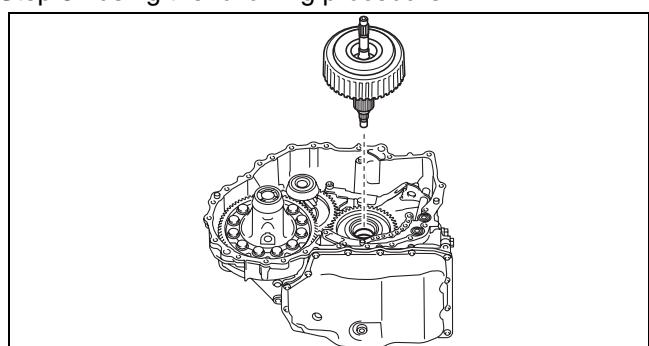
- If not within the specification, disassemble the assembled parts and reassemble.

32. Assemble the parts which were assembled together in Step 31 using the following procedure:

- (1) Assemble the parts assembled together in Step 31.



azzjw00000388



azzjw00000393

- (2) To verify that the parts are securely assembled, measure the distance shown in the figure.

A : Transaxle case end (alignment surface with converter housing)  
B : Clutch component end

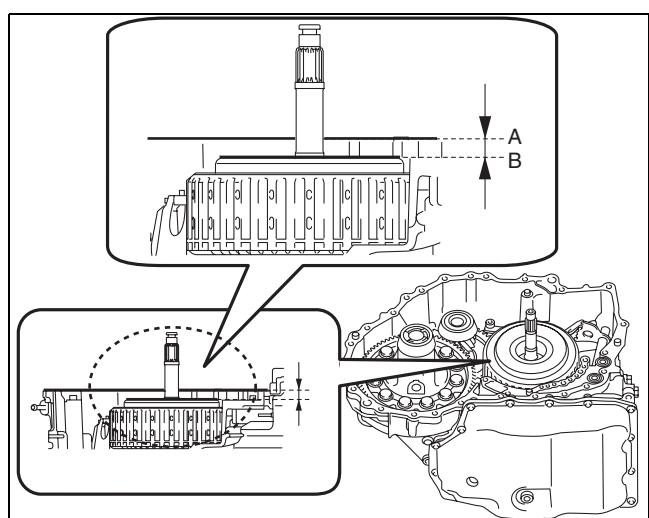
## Note

- Recommended measuring instrument:  
Depth gauge, straight edge ruler

## Specification

11.6—14.8 mm {0.457—0.582 in}

- If not within the specification, remove the parts and perform re-assembly from Step 31.



azzjw00001456

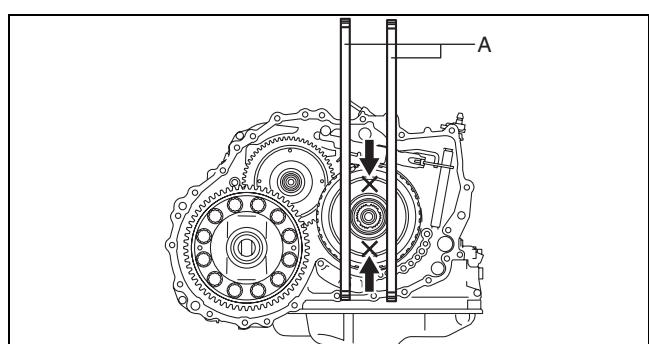
## Note

- Measurement method

- 1) Set two straight edge rulers along the alignment surface of the transaxle case with the converter housing as shown in the figure.

A : Straight edge ruler

- 2) Measure the positions (2 locations) shown in the figure using a depth gauge and calculate the average value.
- 3) Subtract the thickness of the straight edge ruler from the average value.



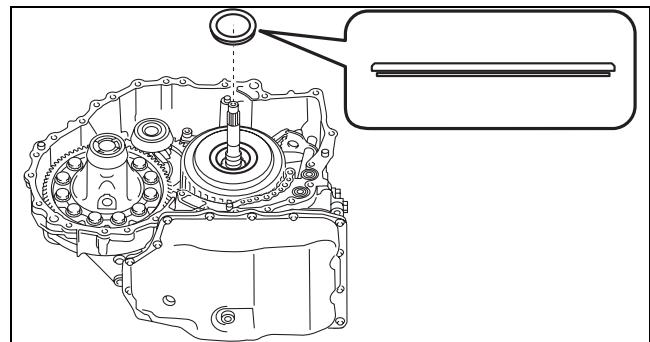
azzjw00000395

## AUTOMATIC TRANSAXLE

33. Assemble the thrust needle bearing.

**Note**

- Thrust needle bearing size: Outer diameter approx. 72.7 mm {2.86 in}

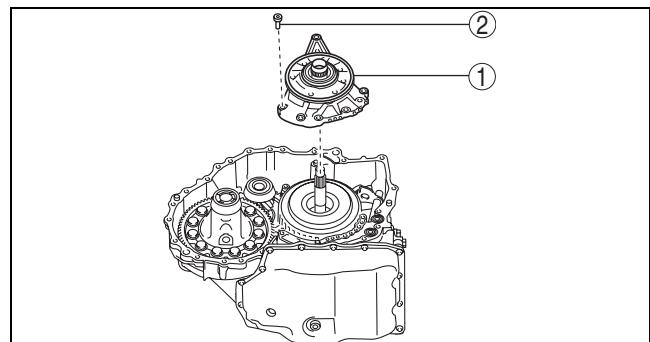


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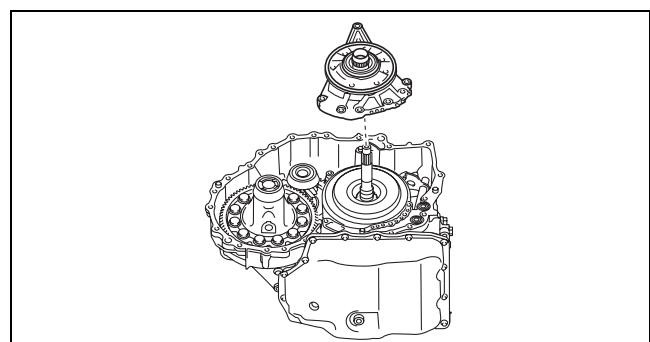
34. Assemble the oil pump using the following procedure:

1	Oil pump
2	7 bolts (M8×1.25 bolt, length to approx. 31 mm {1.2 in})



azzjw00000397

(1) Assemble the oil pump.



azzjw00000350

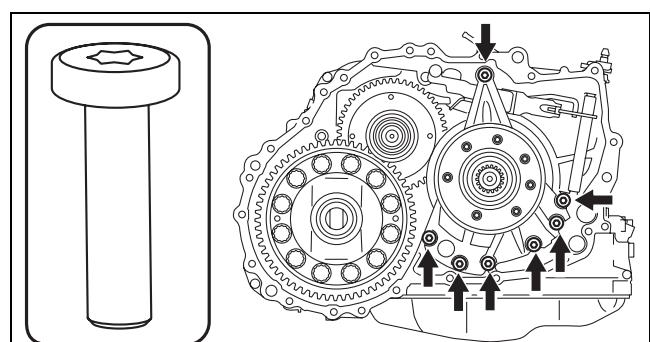
(2) Assemble and tighten the bolts shown in the figure.

**Note**

- Bolt size: M8×1.25 bolt, length to approx. 31 mm {1.2 in}

**Tightening torque**

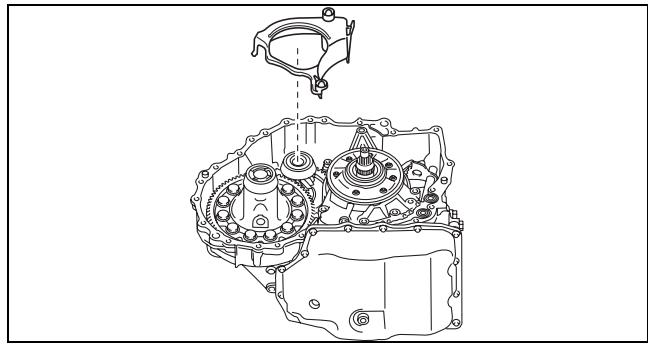
19—25 N·m {2.0—2.5 kgf·m, 15—18 ft·lbf}



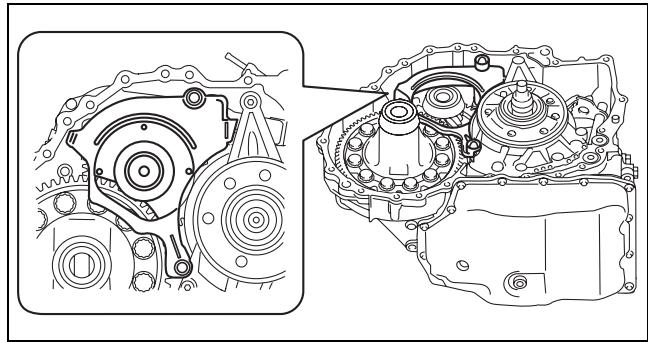
azzjw00000398

## AUTOMATIC TRANSAXLE

35. Assemble the baffle plate.



azzjw00000347

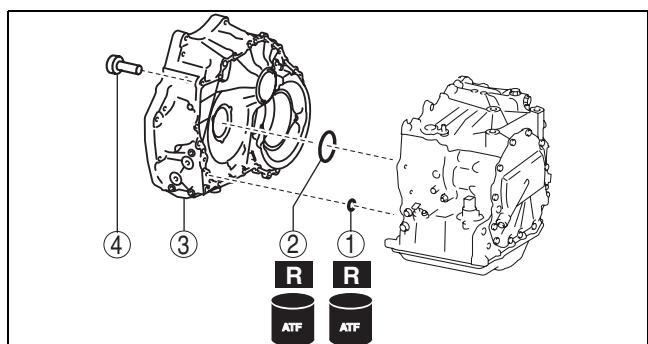


azzjw00000399

36. Assemble the converter housing using the following procedure:

1	O-ring (outer diameter approx. 15.6 mm {0.614 in}, thickness approx. 2.4 mm {0.094 in})
2	O-ring (outer diameter approx. 73.3 mm {2.89 in}, thickness approx. 3.0 mm {0.12 in})
3	Converter housing
4	24 bolts * (M8×1.25 bolt, length to approx. 28 mm {1.1 in})

\* : Of the 24 bolts, 6 are applied with sealant



azzjw00000328

## AUTOMATIC TRANSAXLE

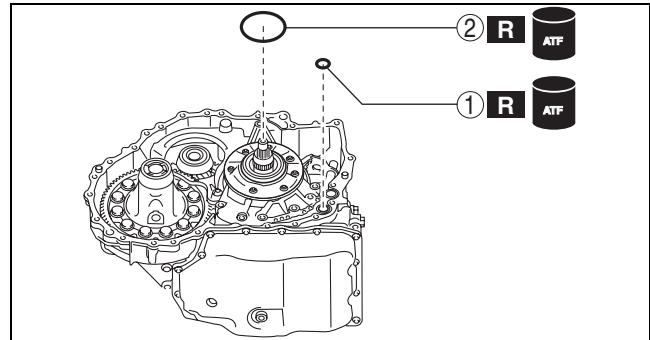
(1) Assemble new O-rings using the following procedure:

### Caution

- If an O-ring is reused it could cause ATF leakage, therefore use a new O-ring.

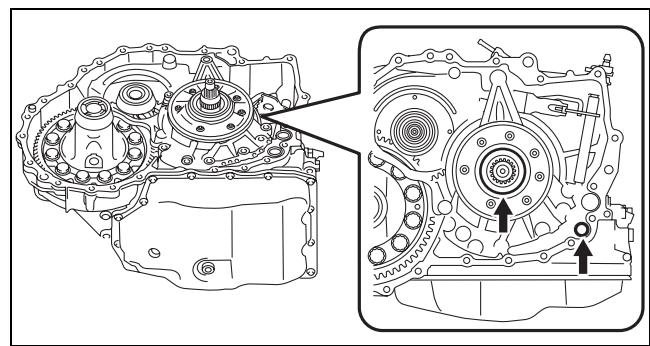
- 1) Apply ATF (ATF FZ) to the new O-rings.
- 2) Assemble the new O-rings.

1	O-ring (outer diameter approx. 15.6 mm {0.614 in}, thickness approx. 2.4 mm {0.094 in})
2	O-ring (outer diameter approx. 73.3 mm {2.89 in}, thickness approx. 3.0 mm {0.12 in})



05-17

azzjw00000329



azzjw00000330

(2) Remove any remaining old sealant on the contact surfaces of the transaxle case and converter housing, and degrease the contact surfaces.

### Caution

- When degreasing and if degreaser is used, use a rag saturated with degreaser and be careful not to allow degreaser to penetrate the interior of the transaxle.  
In addition, after degreasing, visually verify that there is no foreign matter (such as old sealant, cloth fibers) which has penetrated the interior of the transaxle.

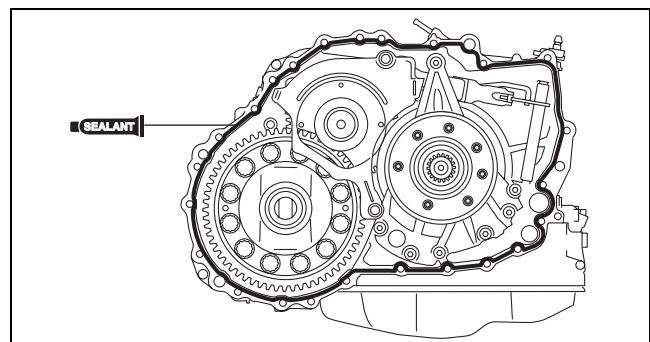
(3) Apply sealant (silicone sealant TB1217E) to the transaxle case.

### Caution

- If sealant is applied excessively or applied to a part other than the indicated part, the O-ring could deform and the sealant could penetrate the oil passage.  
Apply an appropriate amount of sealant to the indicated part.

### Note

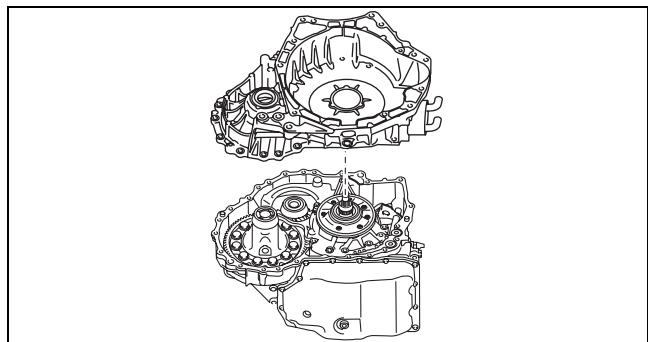
- Sealant application amount (bead thickness):  $\phi$  1.8—2.5 mm {0.071—0.098 in}



azzjw00000331

## AUTOMATIC TRANSAXLE

- (4) Assemble the converter housing before the applied sealant starts to harden.

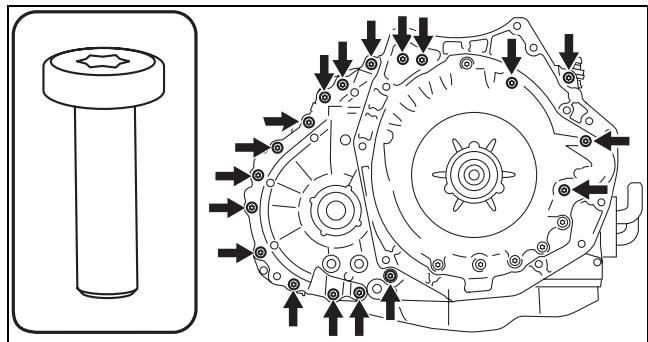


azzjjw00000317

- (5) Assemble and temporarily tighten the bolts to the positions shown in the figure.

**Note**

- Bolt size: M8×1.25 bolt, length to approx. 28 mm {1.1 in}



azzjjw00000332

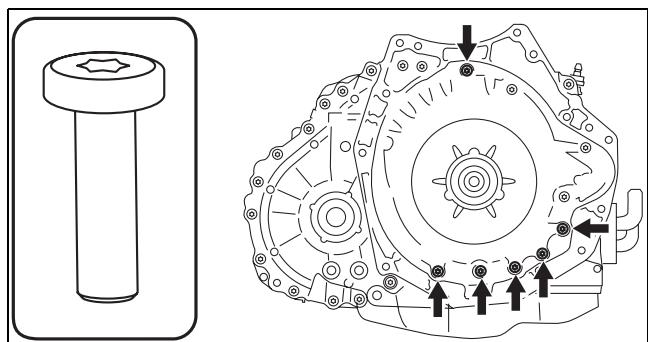
- (6) Assemble and temporarily tighten the new bolts to the positions shown in the figure.

**Caution**

- The bolts for the assembly are applied with sealant. If the bolts are reused it could cause ATF leakage, therefore use new bolts.**

**Note**

- Bolt size: M8×1.25 bolt, length to approx. 28 mm {1.1 in} (with sealant applied)

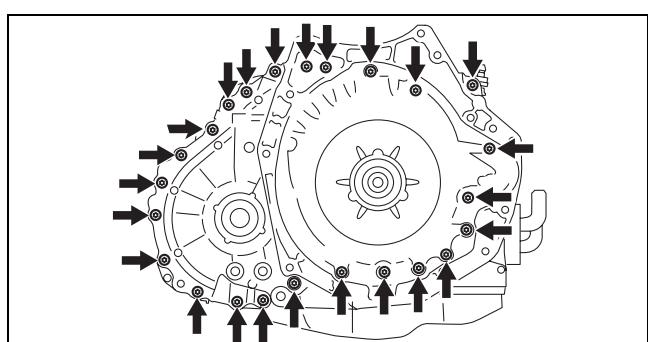


azzjjw00000333

- (7) Tighten the bolts shown in the figure.

**Tightening torque**

19—25 N·m {2.0—2.5 kgf·m, 15—18 ft·lbf}



azzjjw00000334

## AUTOMATIC TRANSAXLE

37. Remove the SSTs from the transaxle using the following procedure:

### Caution

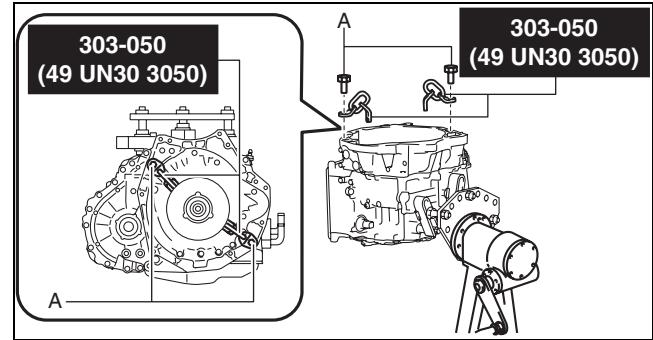
- When removing the transaxle from the SST (engine stand) using chain hoists, be careful not to allow the transaxle (oil cooler in particular) to contact the SST (engine stand). If the transaxle contacts the SST, check the areas that made contact and replace damaged parts with new ones.

(1) Assemble the SSTs using part number:  
9YA02 1015, or M10×1.5 bolts, length to  
35 mm {1.4 in}.

A : Part number: 9YA02 1015, or M10×1.5 bolt,  
length to 35 mm {1.4 in}

### Tightening torque

38—52 N·m {3.9—5.3 kgf·m, 29—38 ft-lbf}



azzjw00000335

(2) Using chain hoists, remove the SST (engine stand) from the transaxle.

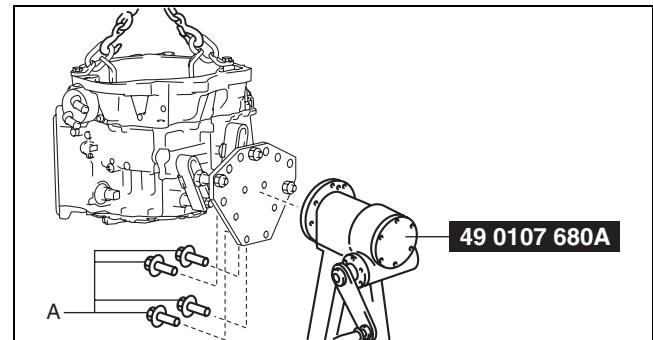
A : Part number: 9YA02 A220, or M12×1.75 bolt,  
length to 40 mm {1.6 in}

### Caution

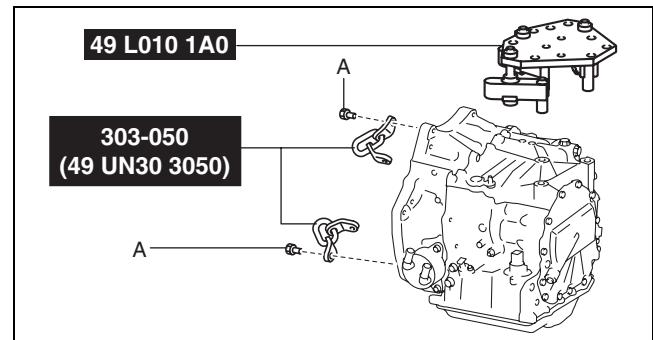
- When removing the transaxle from the SST (engine stand) using chain hoists, be careful not to allow the transaxle (oil cooler in particular) to contact the SST (engine stand). If the transaxle contacts the SST, check the areas that made contact and replace damaged parts with new ones.

(3) Remove the SSTs.

A : Part number: 9YA02 1015, or M10×1.5 bolt,  
length to 35 mm {1.4 in}



azzjw00000311

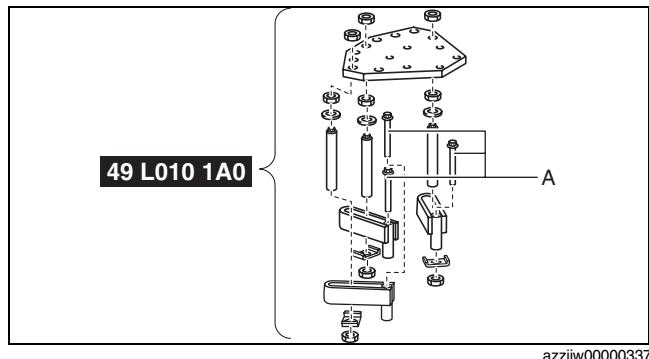


azzjw00000336

## AUTOMATIC TRANSAXLE

(4) Disassemble the SST.

A : Part number: 9YA02 1440, or M14×1.5 bolt,  
length to 100 mm {3.94 in}



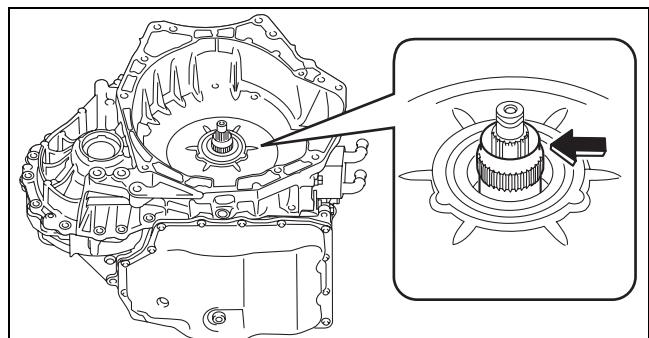
azzjw00000337

38. Assemble the torque converter using the following procedure:

(1) Apply ATF (ATF FZ) to the end of the starter shaft of the oil pump shown in the figure.

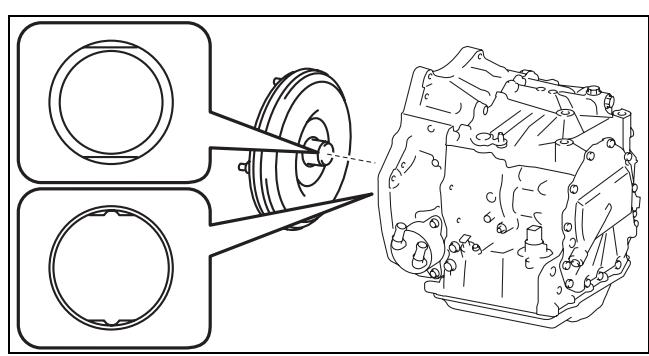
**Caution**

- Accurately perform to protect the torque converter internal parts.



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(2) Assemble the torque converter so that the two surfaces of the notch on the end of the torque converter engage the inner rotor of the oil pump.



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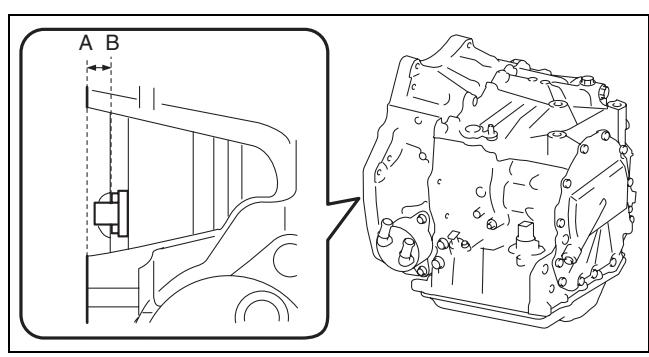
(3) To verify that the torque converter is securely assembled, measure the distance shown in the figure.

A : Converter housing end (alignment surface with engine)

B : Torque converter stud bolt seat

**Note**

- Recommended measuring instrument:  
Depth gauge, straight edge ruler



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**Specification**

14.6 mm {0.575 in} or more

- If not within the specification, remove the torque converter and reassemble.

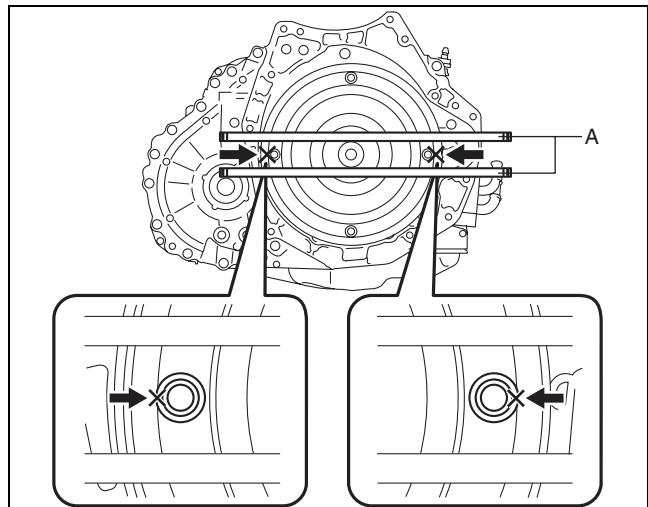
**Note**

- Measurement method

- 1) Set two straight edge rulers along the alignment surface of the converter housing with the engine as shown in the figure.

A : Straight edge ruler

- 2) Measure the positions (2 locations) shown in the figure using a depth gauge and calculate the average value.
- 3) Subtract the thickness of the straight edge ruler from the average value.



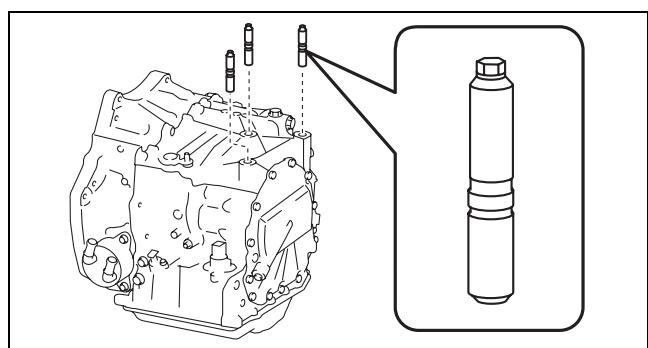
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39. Assemble and tighten the stud bolts.

**Tightening torque**

15—25 N·m {1.6—2.5 kgf·m, 12—18 ft·lbf}



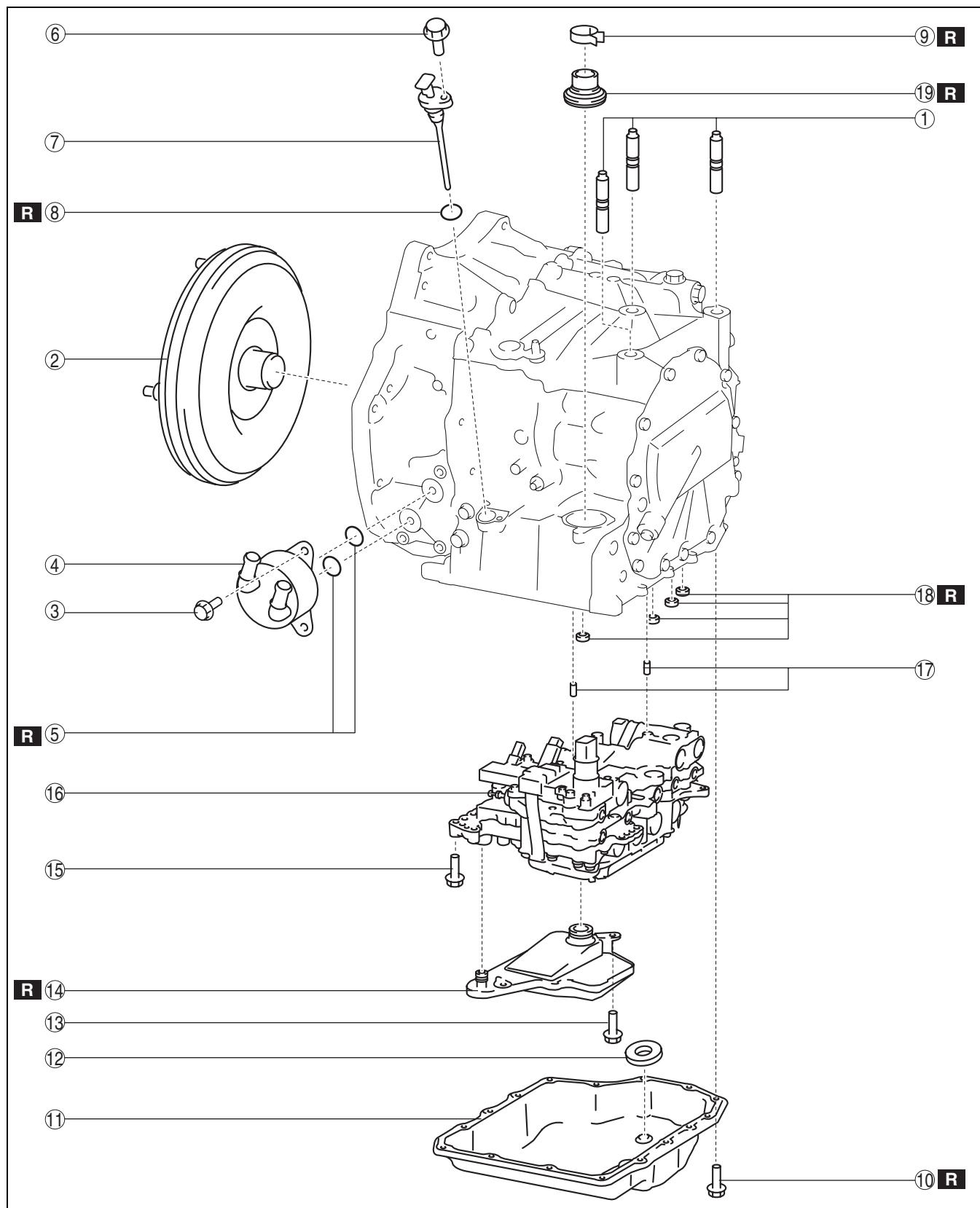
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# AUTOMATIC TRANSAXLE

## AUTOMATIC TRANSAXLE DISASSEMBLY

id051700660600

### Structural View Automatic transaxle 1



b7fw1ua00000001

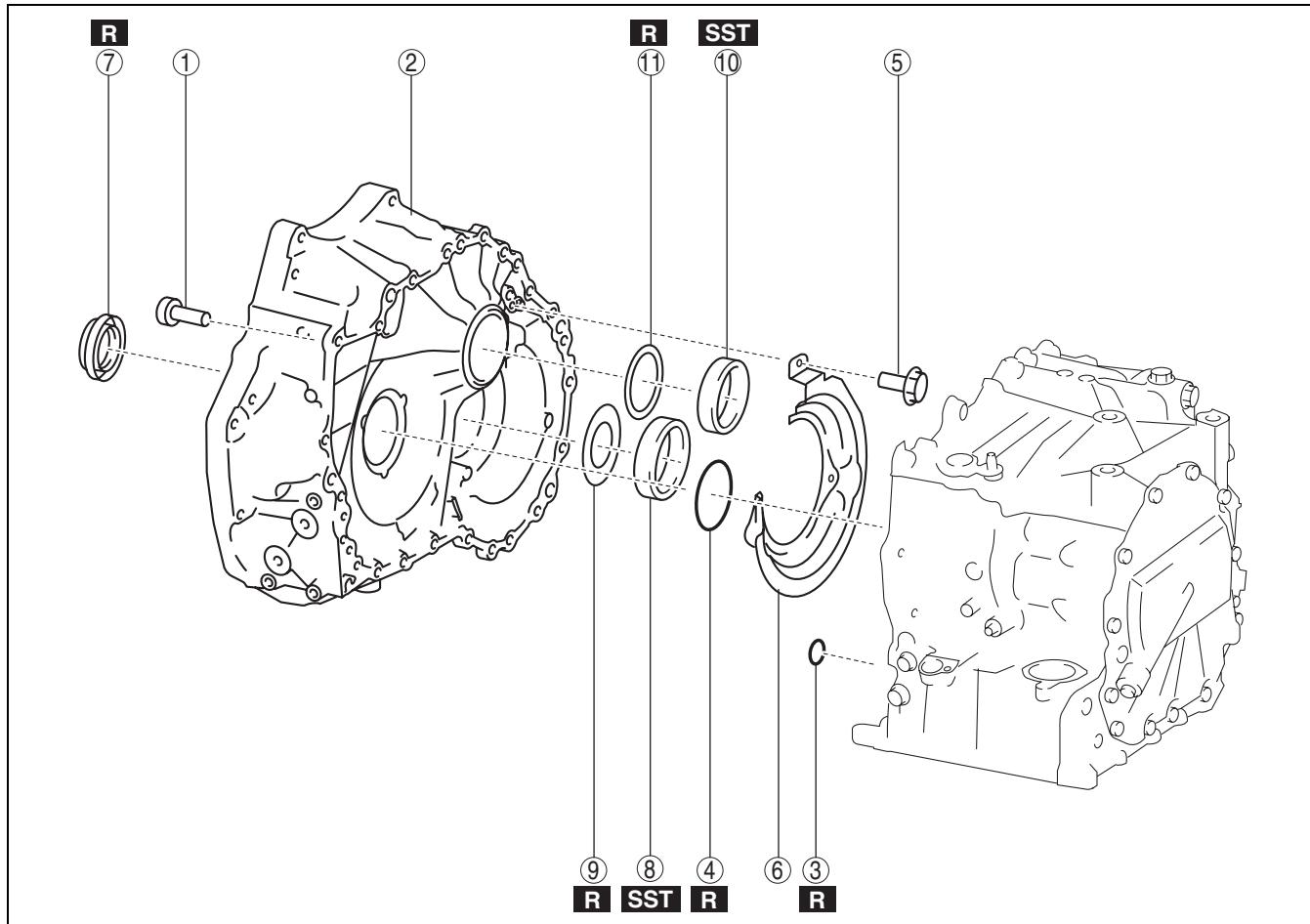
## AUTOMATIC TRANSAXLE

1	Stud bolt
2	Torque converter
3	3 bolts
4	Oil cooler
5	O-ring
6	Bolt
7	Dipstick
8	O-ring
9	Hose clamp
10	16 bolts

11	Oil pan
12	Magnet
13	2 bolts
14	Oil strainer
15	11 bolts
16	Control valve body
17	Dowel pin
18	Gasket
19	Oil seal

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### Automatic transaxle 2



azzjyw00001420

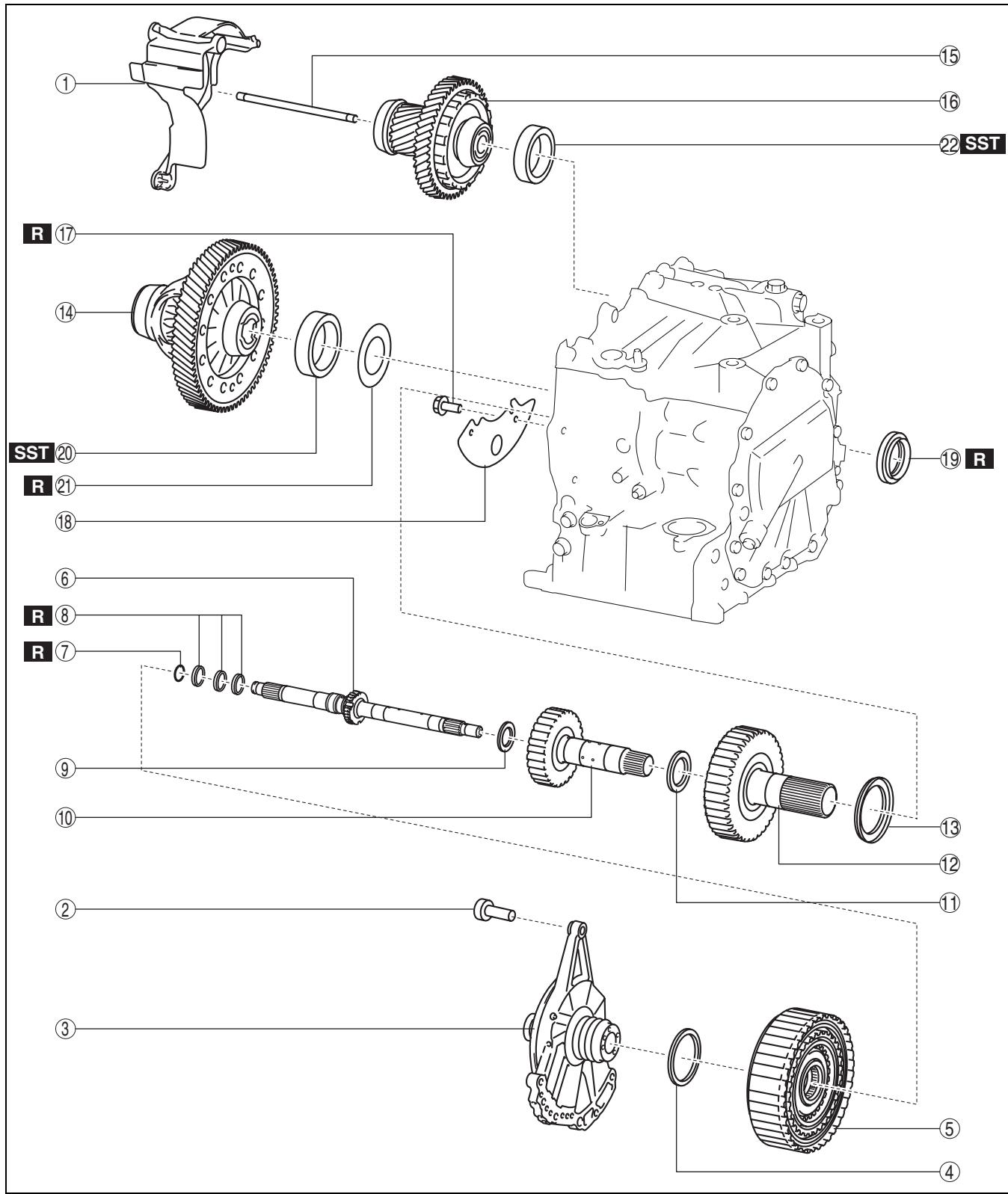
1	24 bolts
2	Converter housing
3	O-ring
4	O-ring
5	3 bolts
6	Baffle plate

7	Oil seal
8	Bearing race
9	Shim
10	Bearing race
11	Shim

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## **AUTOMATIC TRANSAXLE**

## Automatic transaxle 3



azzjjw00001421

1	Baffle plate
2	7 bolts
3	Oil pump
4	Thrust needle bearing
5	Clutch component
6	Turbine shaft

7	D-ring
8	Seal ring
9	Thrust needle bearing
10	High clutch hub
11	Thrust needle bearing
12	Low clutch hub

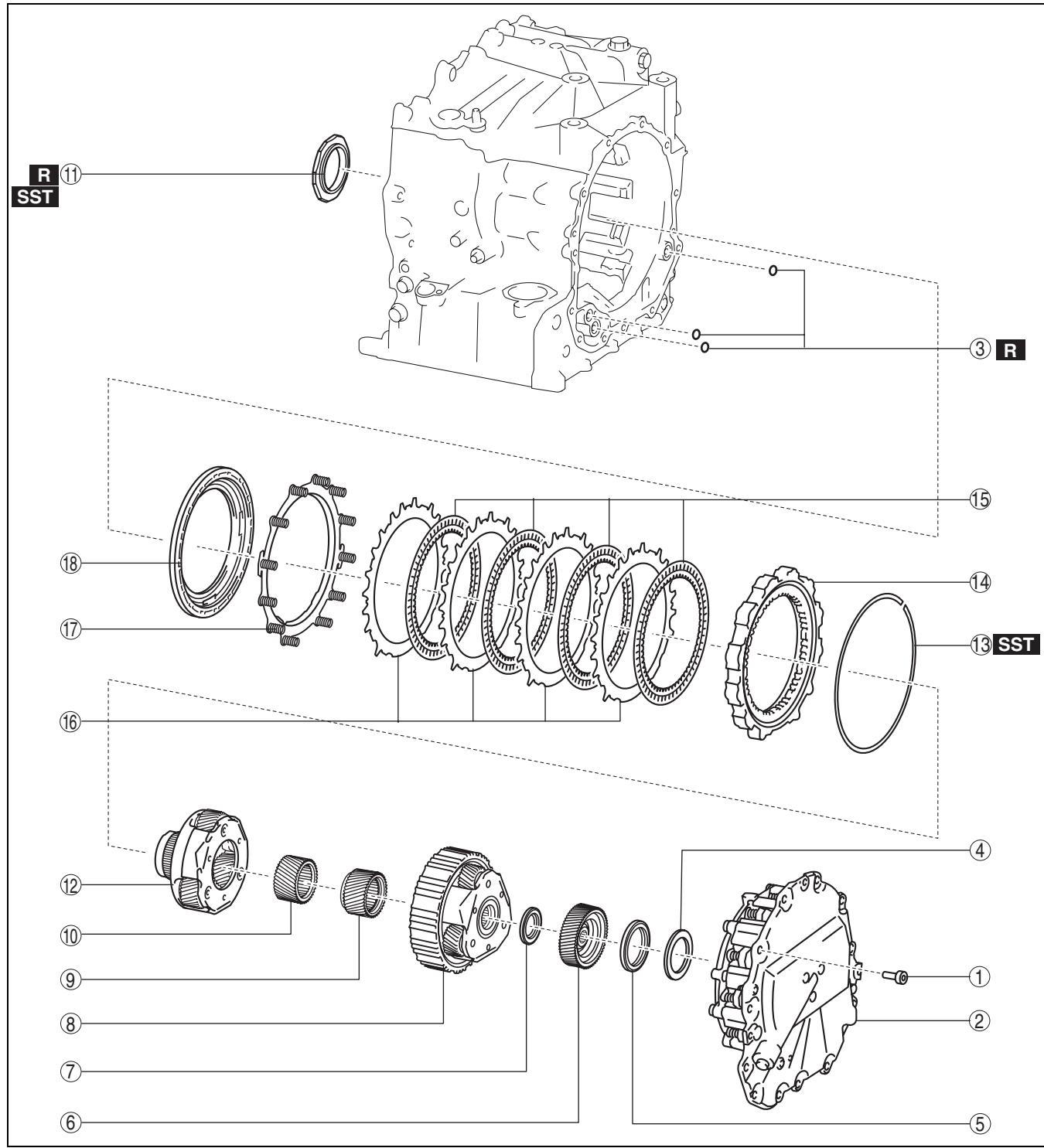
# AUTOMATIC TRANSAXLE

13	Thrust needle bearing
14	Ring gear and differential
15	Oil pipe
16	Secondary gear and output gear
17	2 bolts

18	Baffle plate
19	Oil seal
20	Bearing race
21	Shim
22	Bearing race

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## Automatic transaxle 4



azzjw00001422

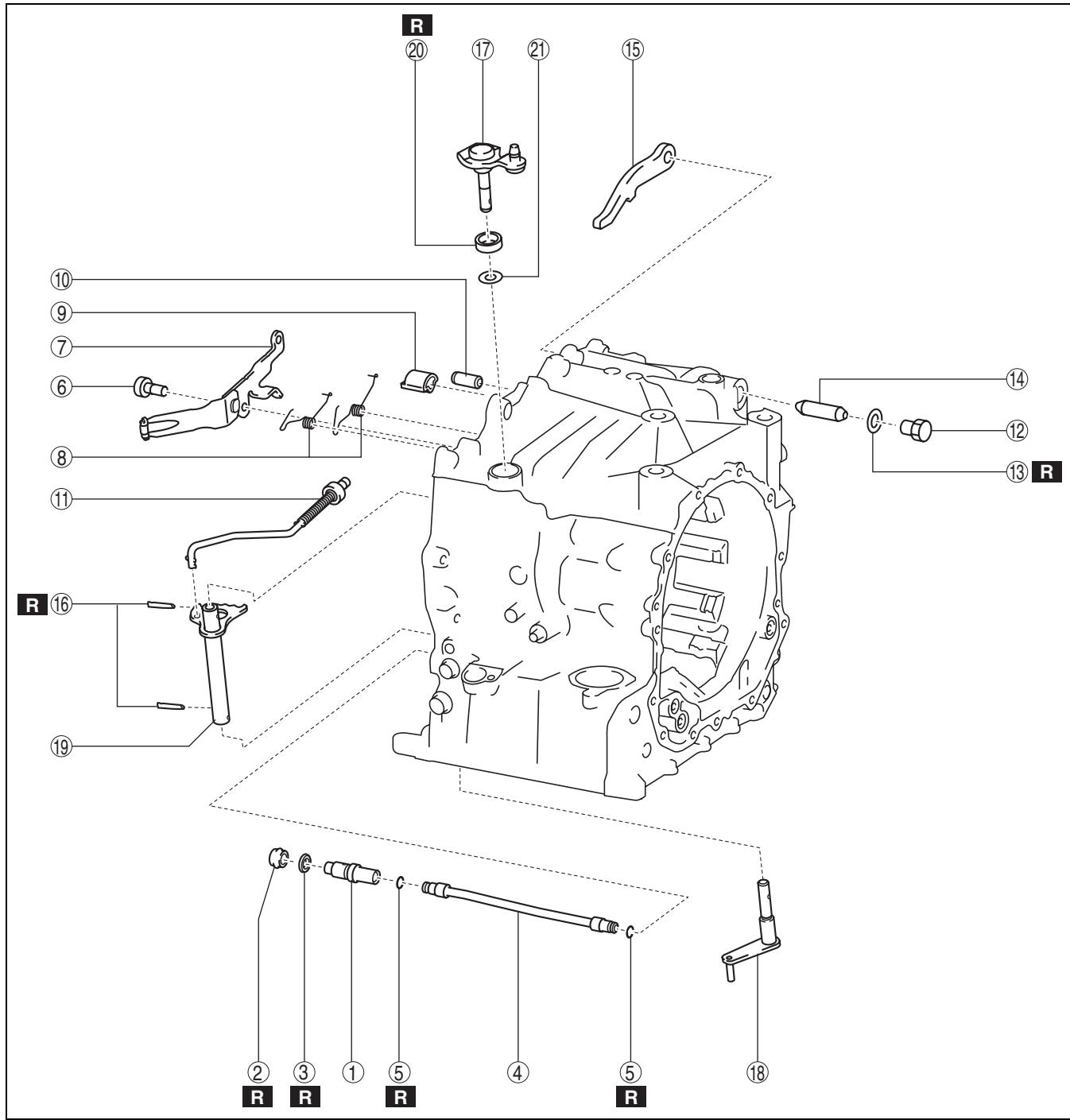
05-17-67

# AUTOMATIC TRANSAXLE

1	12 bolts
2	End cover component
3	O-ring
4	Shim
5	Thrust needle bearing
6	Reduction sun gear
7	Thrust needle bearing
8	Rear planetary gear
9	Rear sun gear

10	Front sun gear
11	Locknut
12	Front planetary gear
13	Snap ring
14	One-way clutch
15	Drive plate
16	Driven plate
17	Springs and retainer component
18	Low and reverse brake piston

## Automatic transaxle 5



azzjw00001423

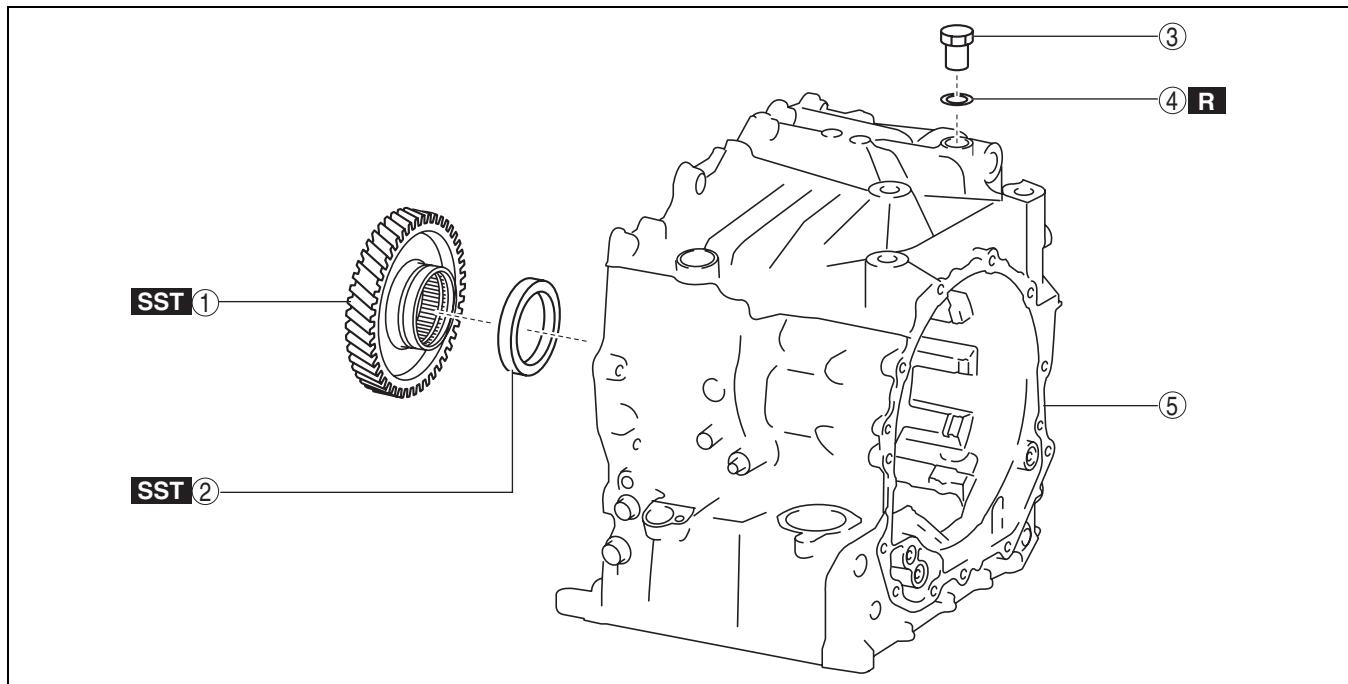
## AUTOMATIC TRANSAXLE

05-17

1	Connector
2	Gasket
3	Gasket
4	Oil pipe
5	O-ring
6	2 bolts
7	Detent bracket component
8	Pawl return spring
9	Support actuator
10	Parking pawl pin
11	Parking rod component

12	Plug
13	Gasket
14	Parking pawl shaft
15	Parking pawl
16	Roll pin
17	Parking shift lever component
18	Parking assist lever component
19	Manual plate component
20	Oil seal
21	Washer

### Automatic transaxle 6



azzjw00001463

1	Primary gear
2	Angular contact ball bearing
3	Plug

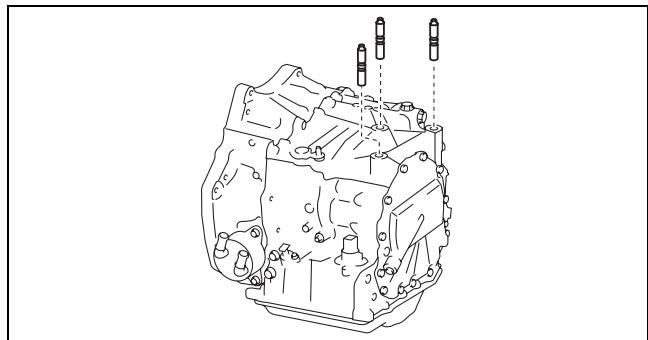
4	Gasket
5	Transaxle case

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## AUTOMATIC TRANSAXLE

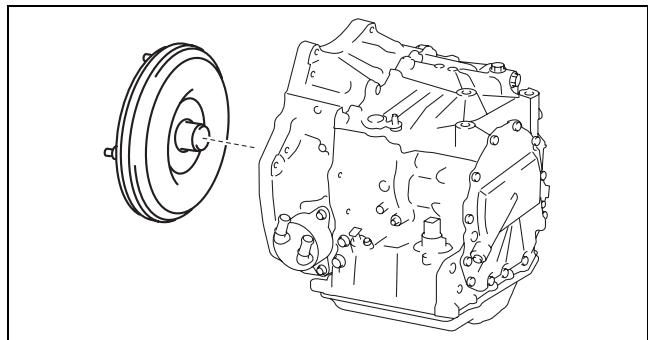
### Disassembly Procedure

1. Clean the outside of the transaxle. (See 05-17-26 AUTOMATIC TRANSAXLE CLEANING.)
2. Remove the stud bolts.



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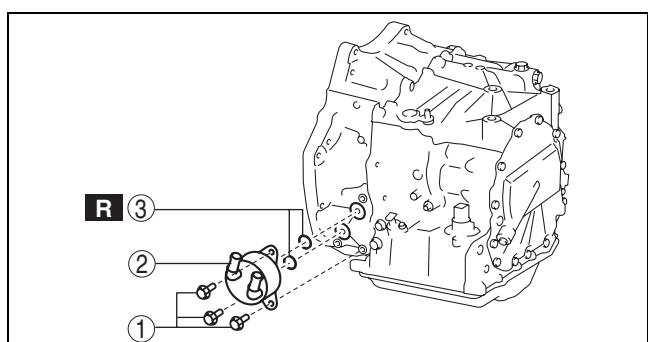
3. Remove the torque converter.



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4. Remove the oil cooler in the order shown in the figure.

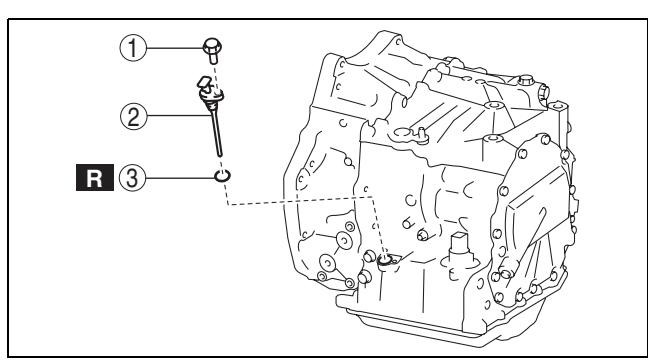
1	Bolt
2	Oil cooler
3	O-ring



azzjw00000412

5. Remove the dipstick in the order shown in the figure.

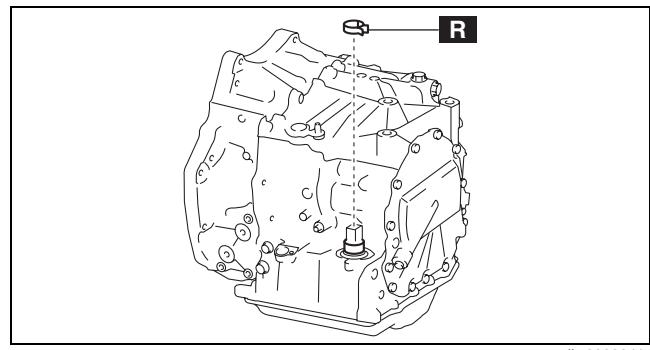
1	Bolt
2	Dipstick
3	O-ring



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## AUTOMATIC TRANSAXLE

6. Remove the hose clamp.



05-17

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7. Install the transaxle to the SST (engine stand) using the following procedure:

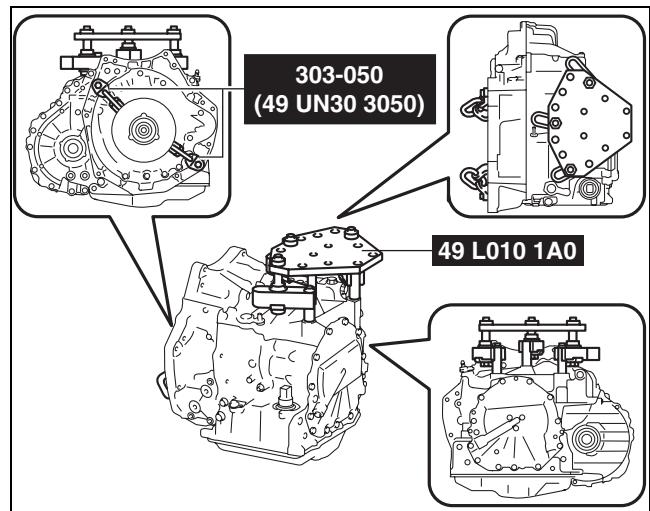
### Caution

- When installing the transaxle to the SST (engine stand) using chain hoists, be careful not to allow the transaxle to contact the SST (engine stand). If the transaxle contacts the SST, check the areas that made contact and replace damaged parts with new ones.

(1) Install the SSTs to the transaxle using the following procedure.

### Note

- When installing the SST (49 L010 1A0) to the transaxle (stud bolt holes), use part number: 9YA02 1440 or M14×1.5 bolts, length to 100 mm {3.94 in}.
- When installing the SST (49 UN30 3050) to the transaxle, use part number: 9YA02 1015, or M10×1.5 bolts, length to 35 mm {1.4 in}.



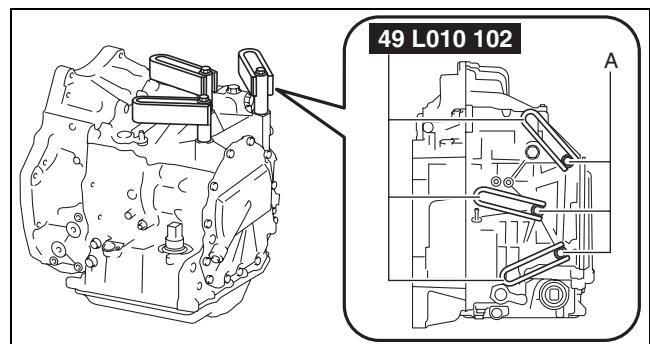
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1) Temporarily install the arms (49 L010 102) using part number: 9YA02 1440, or M14×1.5 bolts, length to 100 mm {3.94 in}.

A : Part number: 9YA02 1440, or M14×1.5 bolt, length to 100 mm {3.94 in}

### Note

- To adjust the installation position of the SST in Step 3), temporarily tighten the bolts.



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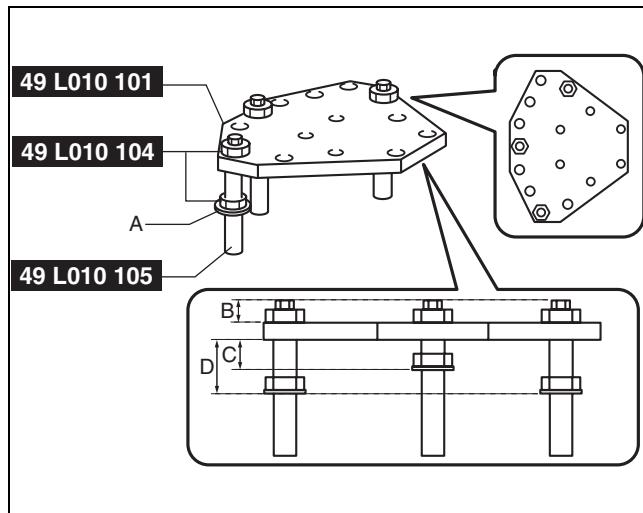
## AUTOMATIC TRANSAXLE

2) Assemble the SST (49 L010 1A0).

- A : Washer
- B : Approx. 20 mm {0.79 in}
- C : Approx. 26 mm {1.0 in}
- D : Approx. 47 mm {1.9 in}

**Note**

- Use bolts (49 L010 105) with a length of 138 mm {5.43 in}.

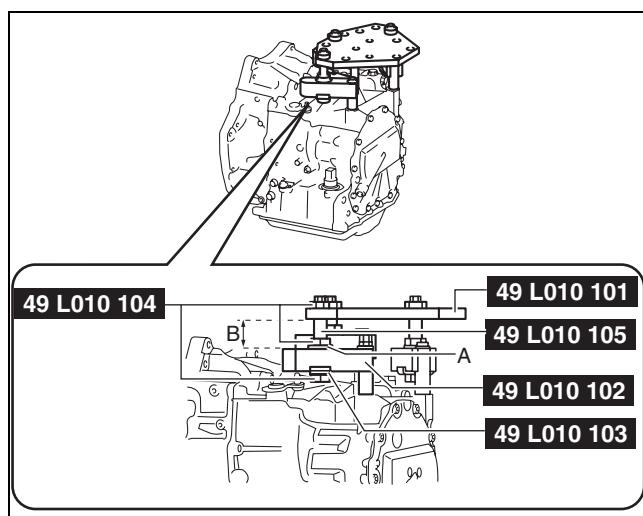


3) Install the SST assembled in Step 2).

- A : Washer
- B : Level out

**Note**

- Adjust so that the plate (49 L010 101) and arms (49 L010 102) are level, and install.



4) Verify that nothing other than the SST arms (49 L010 102) installation area contacts the transaxle.

**Caution**

- If something other than the SST arms (49 L010 102) installation area contacts the transaxle, readjust the SST to prevent damaging the part.

5) Tighten the nuts and bolts.

**Tightening torque**

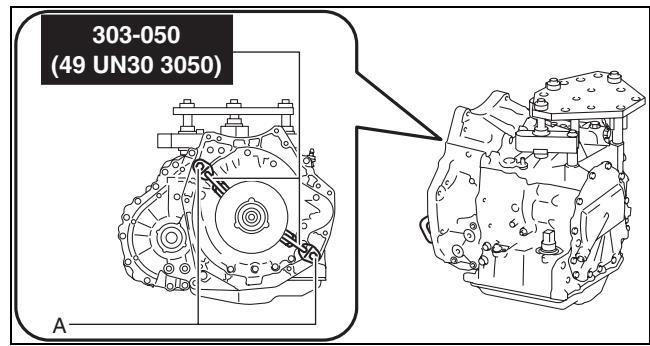
- Bolt: Part number: 9YA02 1440, or M14×1.5 bolt, length to 100 mm {3.94 in}  
40—52 N·m {4.1—5.3 kgf·m, 30—38 ft·lbf}
- Nut: 49 L010 104  
140—160 N·m {15—16 kgf·m, 104—118 ft·lbf}

## AUTOMATIC TRANSAXLE

- 6) Assemble the SSTs using part number: 9YA02 1015, or M10×1.5 bolts, length to 35 mm {1.4 in}.  
 A : Part number: 9YA02 1015, or M10×1.5 bolt, length to 35 mm {1.4 in}

### Tightening torque

38—52 N·m {3.9—5.3 kgf·m, 29—38 ft·lbf}



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05-17

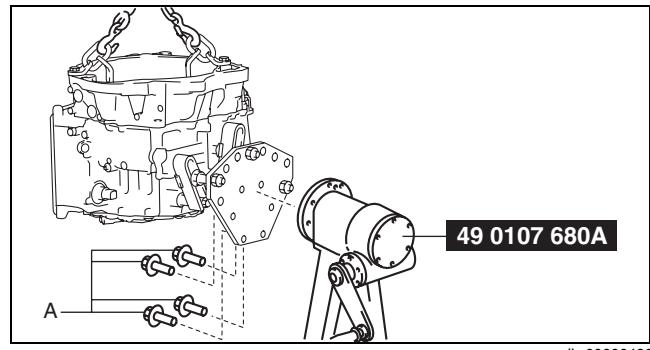
- (2) Using chain hoists, install the transaxle to the SST (engine stand) using part number: 9YA02 A220, or M12×1.75 bolts, length to 40 mm {1.6 in}.  
 A : Part number: 9YA02 A220, or M12×1.75 bolt, length to 40 mm {1.6 in}

### Caution

- When installing the transaxle to the SST (engine stand) using chain hoists, be careful not to allow the transaxle to contact the SST (engine stand). If the transaxle contacts the SST, check the areas that made contact and replace damaged parts with new ones.

### Note

- Tighten the four locations with bolts and securely install the transaxle to the SST (engine stand).

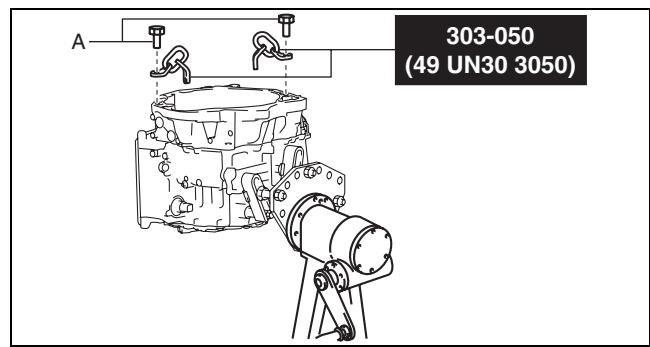


azzjw00000420

### Tightening torque

88—118 N·m {9.0—12 kgf·m, 65—87 ft·lbf}

- (3) Remove the SSTs.  
 A : Part number: 9YA02 1015, or M10×1.5 bolt, length to 35 mm {1.4 in}

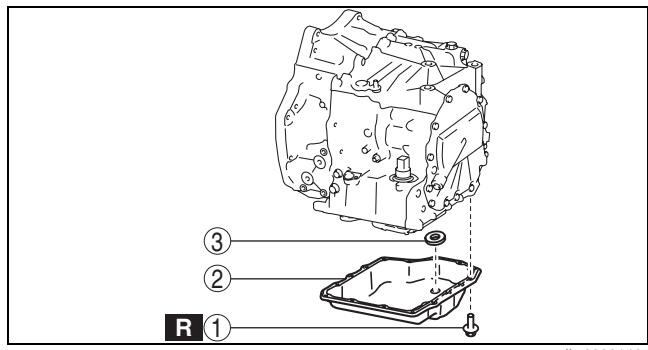


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## AUTOMATIC TRANSAXLE

8. Remove the oil pan and magnet using the following procedure:

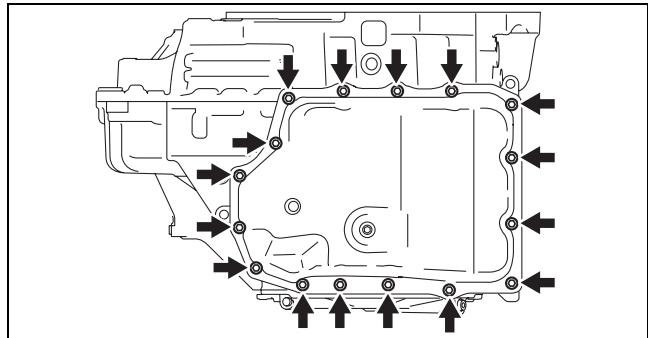
1	16 bolts
2	Oil pan
3	Magnet



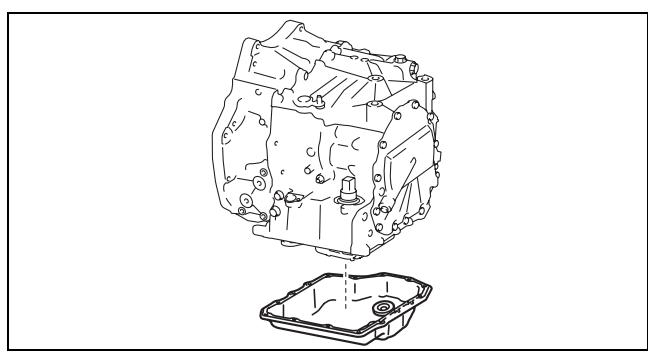
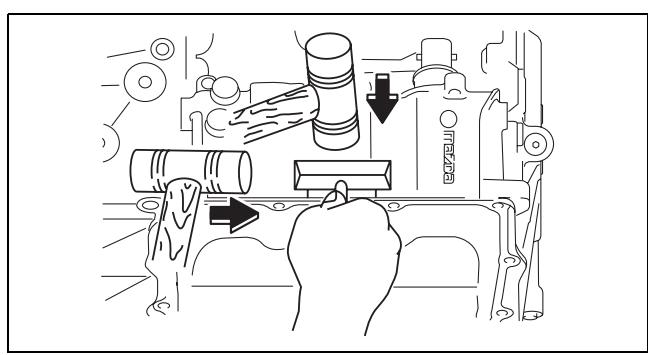
(1) Remove the bolts shown in the figure.

**Caution**

- If the removed bolts with spring washers are reused it could loosen the bolts due to spring weakness, therefore when performing the automatic transaxle assembly, use new bolts.

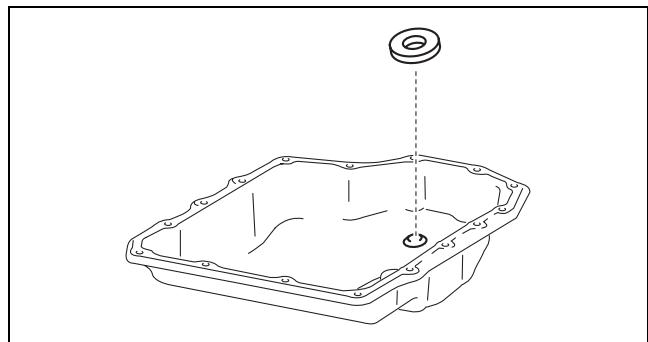


(2) Remove the oil pan using the separator tool.



## AUTOMATIC TRANSAXLE

(3) Remove the magnet.



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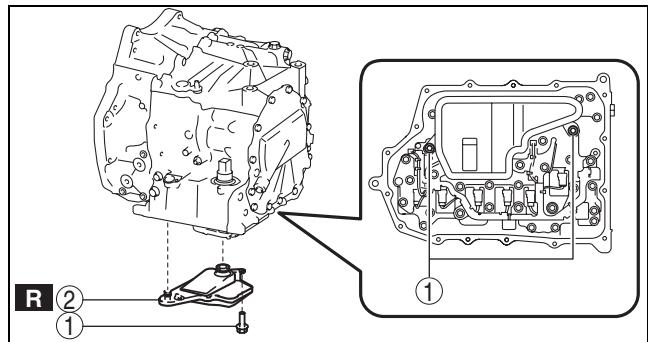
azzjw00000426

9. Remove the oil strainer in the order shown in the figure..

1	Bolt
2	Oil strainer

### Caution

- If the oil strainer is reused while containing excessive foreign matter, it could cause an operation malfunction, therefore when performing the automatic transaxle assembly, use a new oil strainer.



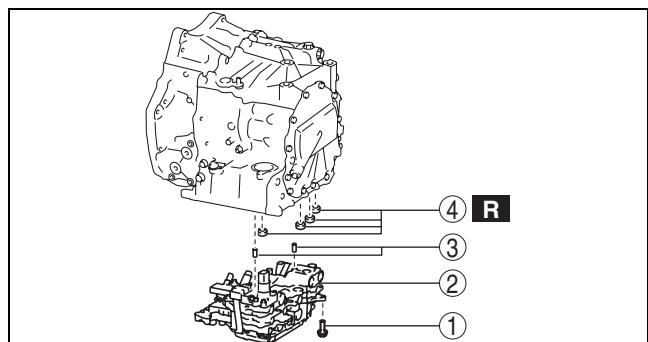
azzjw00001600

10. Remove the control valve body using the following procedure:.

1	11 bolts
2	Control valve body
3	Dowel pin
4	Gasket

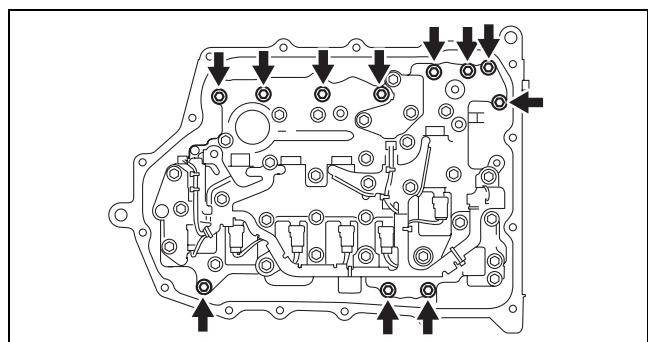
### Caution

- Place the removed control valve body with the TCM side pointing upward on a workbench. If placing it with the TCM side pointing downward on a workbench, the TCM could be damaged.
- Do not drop or apply an impact to the control valve body. Replace the control valve body with a new one if it was dropped or received an impact.



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(1) Remove the bolts shown in the figure.



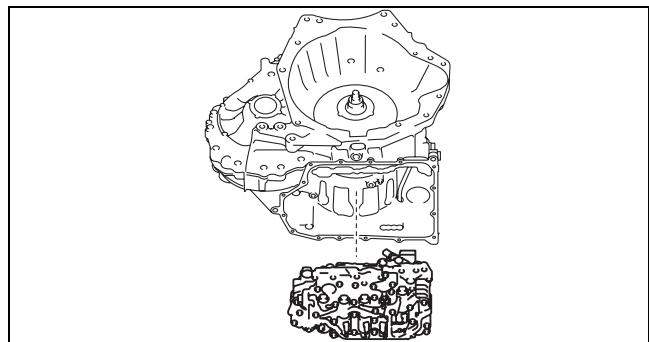
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## AUTOMATIC TRANSAXLE

(2) Remove the control valve body.

### Caution

- Remove the control valve body straight so that force is not applied to the control valve body connector in the lateral direction.



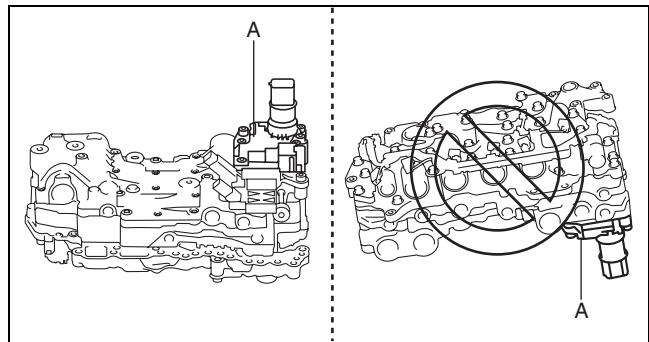
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(3) Place the removed control valve body with the TCM side pointing upward on a workbench.

A : TCM

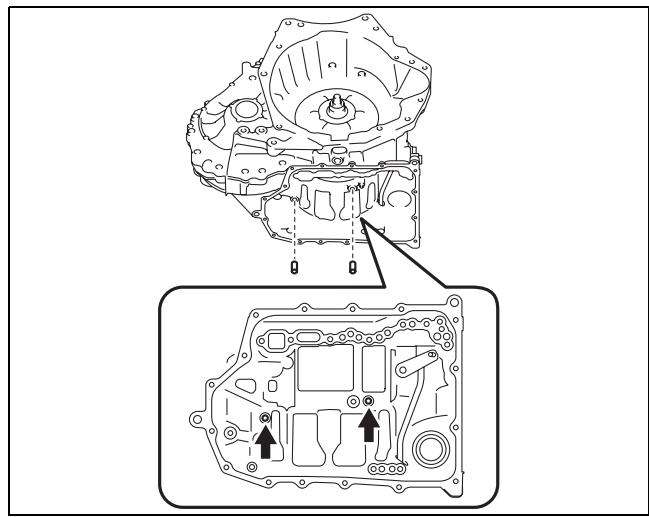
### Caution

- Place the removed control valve body with the TCM side pointing upward on a workbench. If placing it with the TCM side pointing downward on a workbench, the TCM could be damaged.



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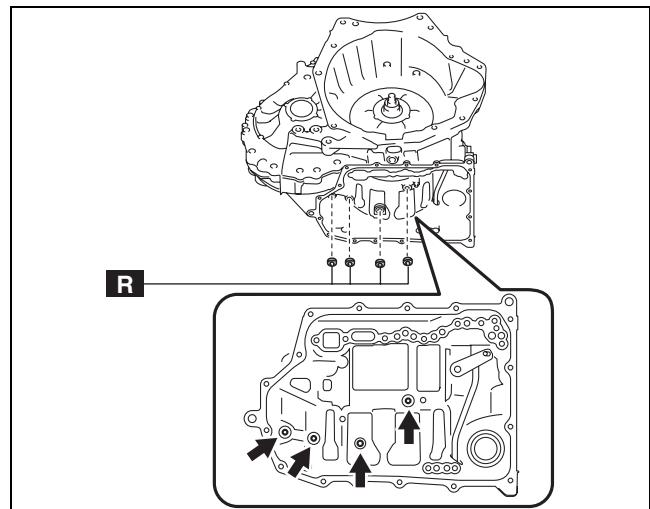
(4) Remove the dowel pins.



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## AUTOMATIC TRANSAXLE

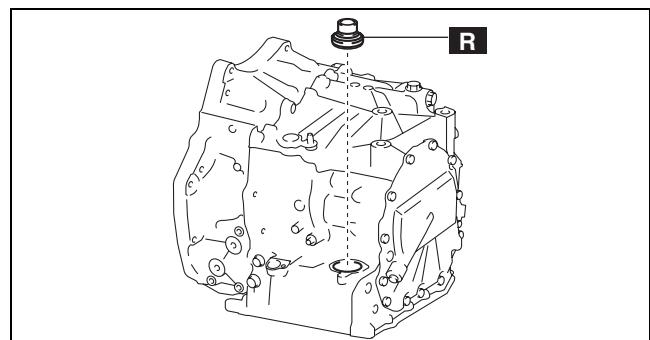
(5) Remove the gaskets.



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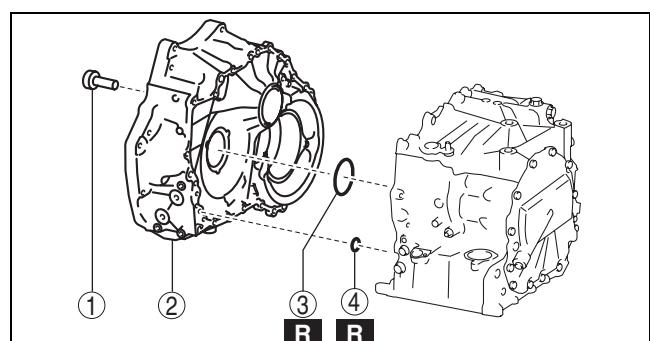
11. Remove the oil seal.



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12. Remove the converter housing using the following procedure:

1	24 bolts
2	Converter housing
3	O-ring (oil pump)
4	O-ring (oil cooler oil passage)

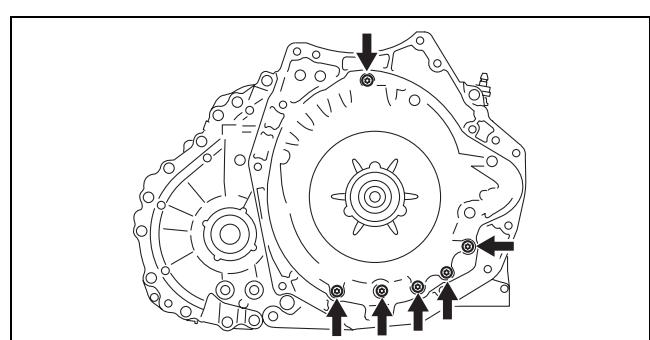


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(1) Remove the bolts shown in the figure.

### Caution

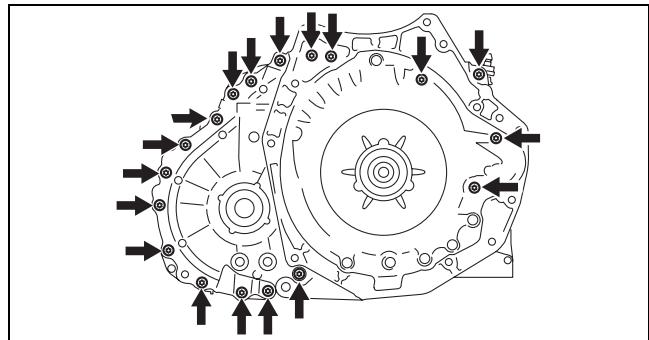
- Sealant has been applied to the removed bolts. If the bolts are reused it could cause ATF leakage, therefore when performing the automatic transaxle assembly, use new bolts.



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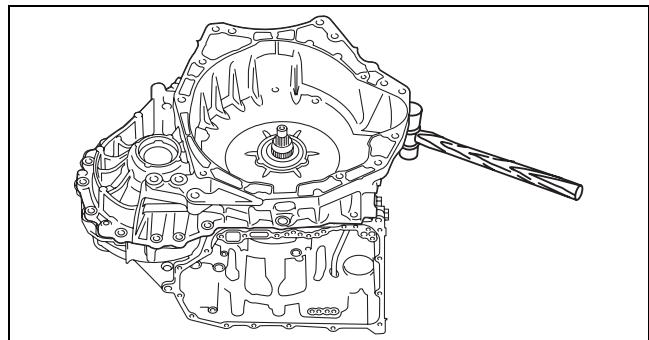
## AUTOMATIC TRANSAXLE

(2) Remove the bolts shown in the figure.

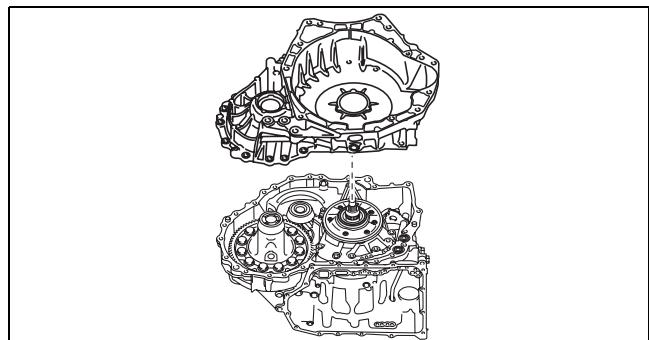


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(3) Lightly tap the converter housing using a plastic hammer to remove it.

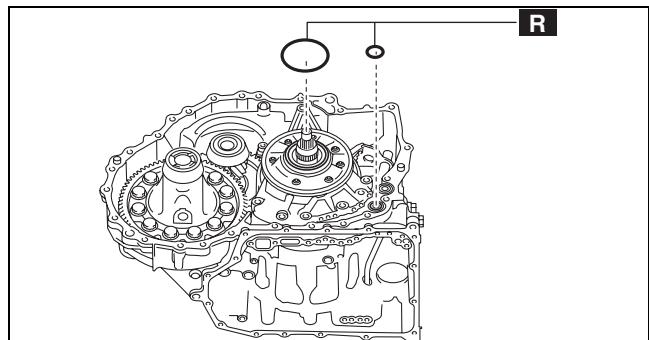


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azzjw00000439

(4) Remove the O-rings.



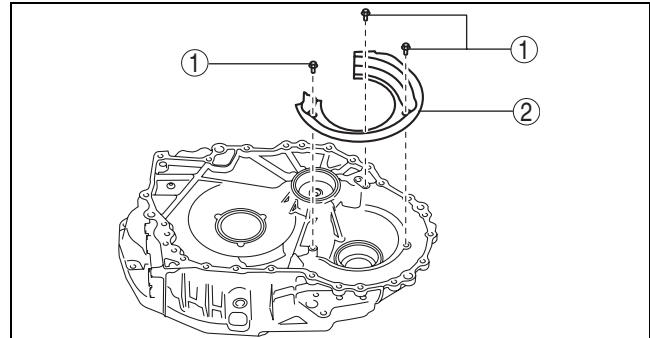
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## AUTOMATIC TRANSAXLE

13. Remove the accessories from the converter housing using the following procedure:

- (1) Remove the baffle plate using the procedure shown in the figure.

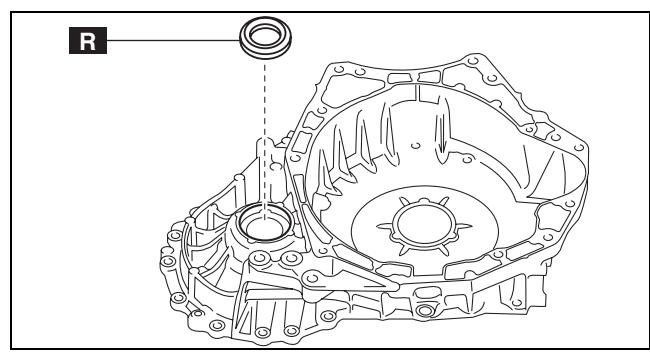
1	Bolt
2	Baffle plate



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azzjw00000441

- (2) Remove the oil seal.

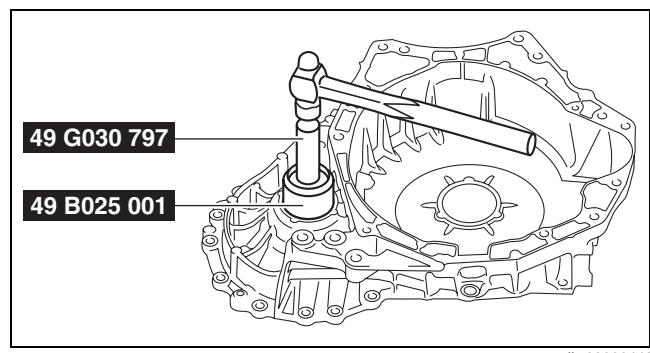


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- (3) Remove the bearing race and shim using the SSTs and procedure shown in the figure.

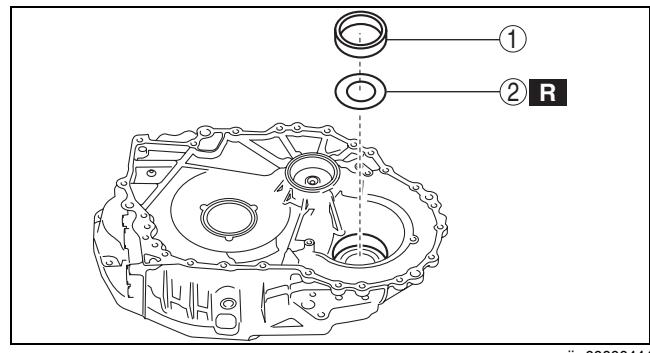
### Caution

- Because the shim will deform when removing the bearing race, use a new shim when performing the automatic transaxle assembly.



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1	Bearing race
2	Shim



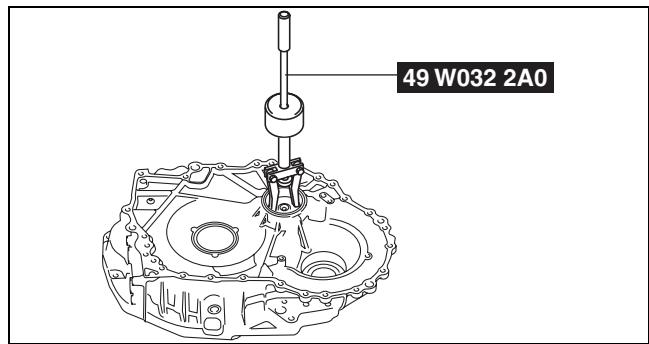
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## AUTOMATIC TRANSAXLE

- (4) Remove the bearing race and shim using the SST and procedure shown in the figure.

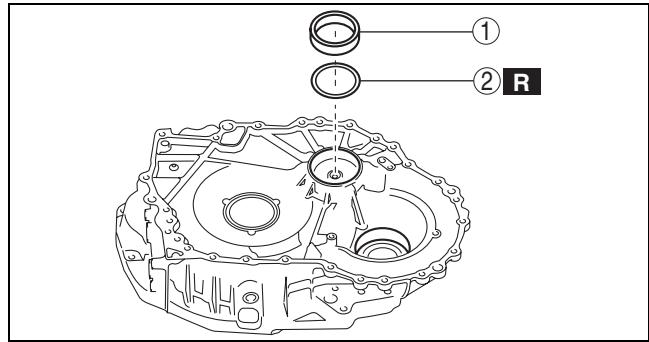
**Caution**

- Because the shim will deform when removing the bearing race, use a new shim when performing the automatic transaxle assembly.



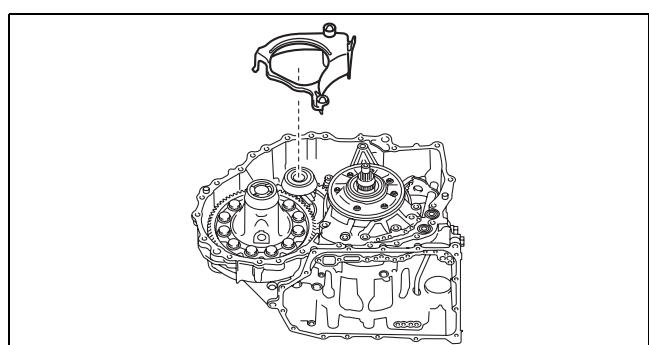
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1	Bearing race
2	Shim



azzjw00000446

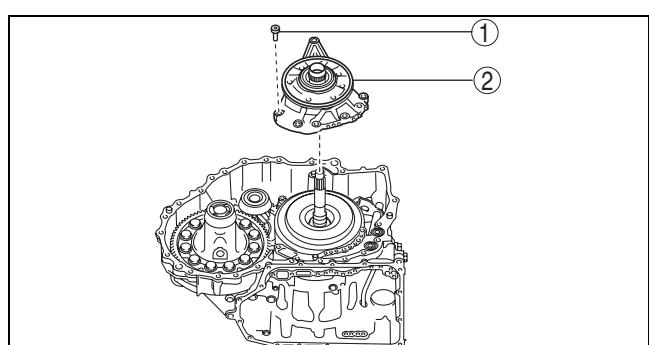
14. Remove the baffle plate.



azzjw00000447

15. Remove the oil pump using the following procedure:

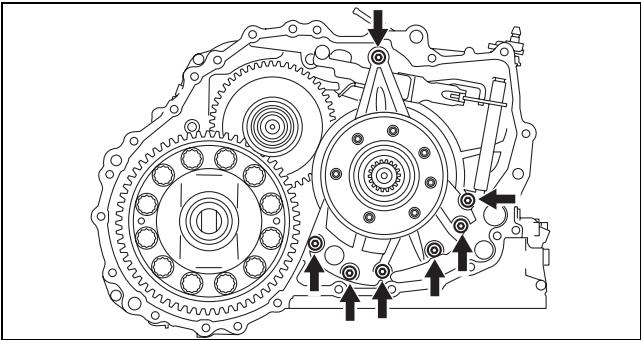
1	7 bolts
2	Oil pump



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## AUTOMATIC TRANSAXLE

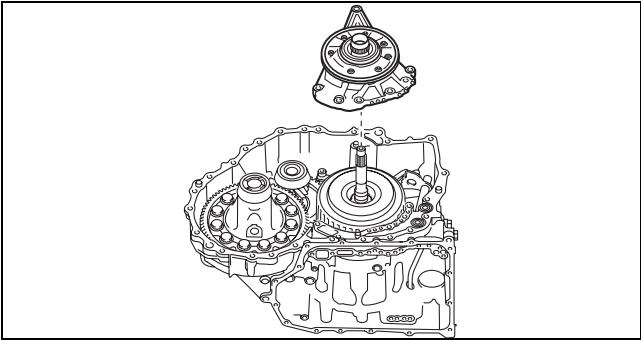
(1) Remove the bolts shown in the figure.



05-17

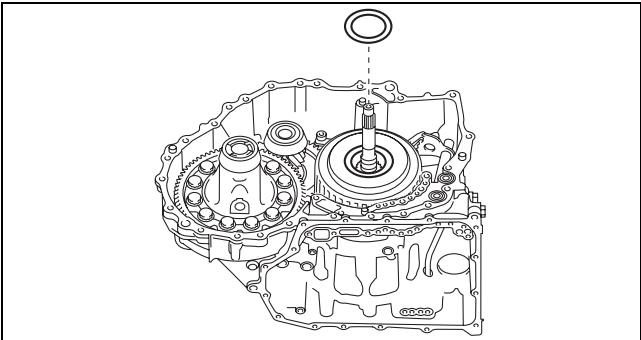
azzjw00000449

(2) Remove the oil pump.



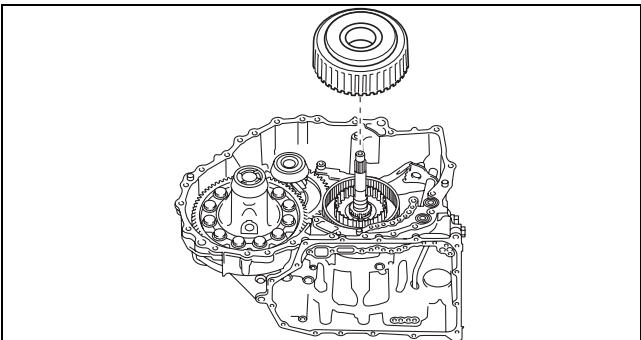
azzjw00000450

16. Remove the thrust needle bearing.



azzjw00000451

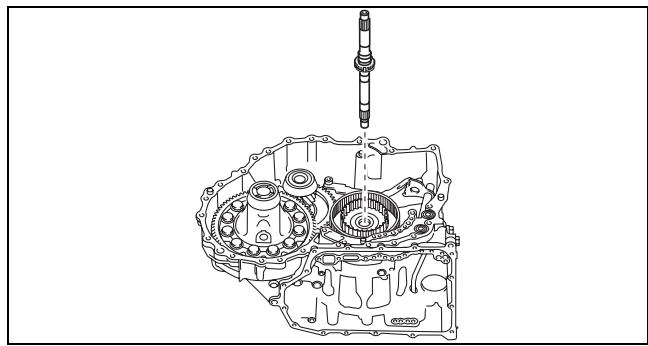
17. Remove the clutch component.



azzjw00000452

## AUTOMATIC TRANSAXLE

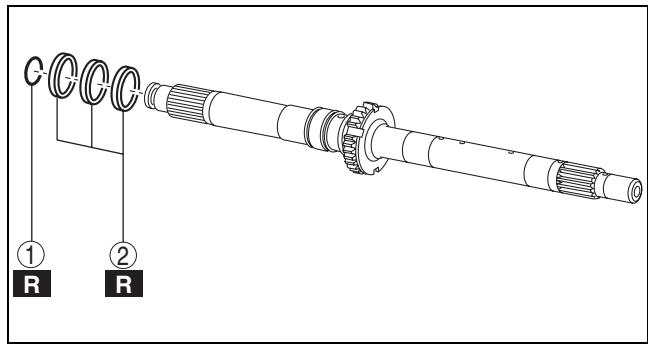
18. Remove the turbine shaft.



azzjw00000453

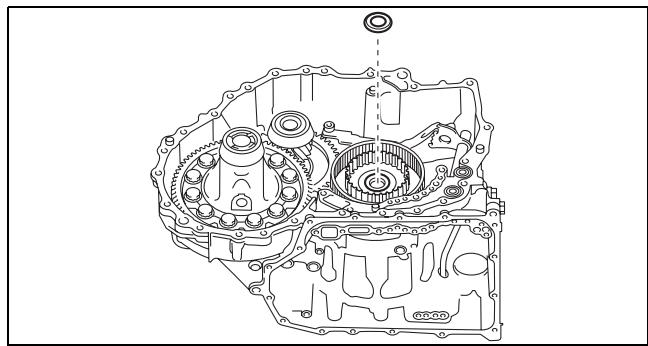
19. Remove the D-ring and seal rings from the turbine shaft using the procedure in the figure:

1	D-ring
2	Seal ring



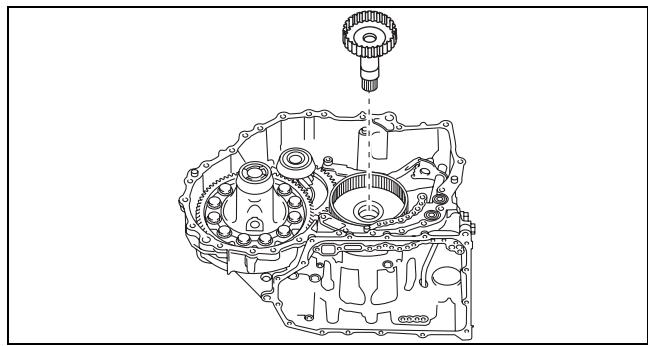
azzjw00000454

20. Remove the thrust needle bearing.



azzjw00000455

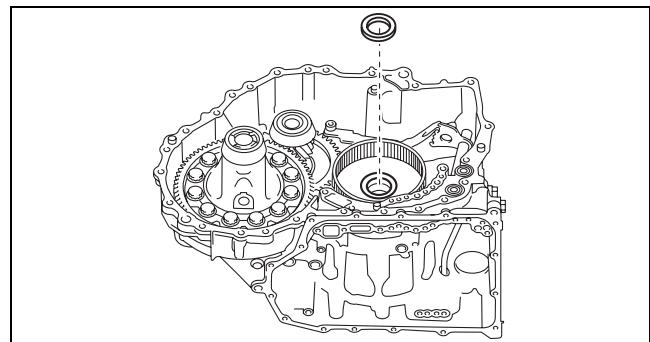
21. Remove the high clutch hub.



azzjw00000456

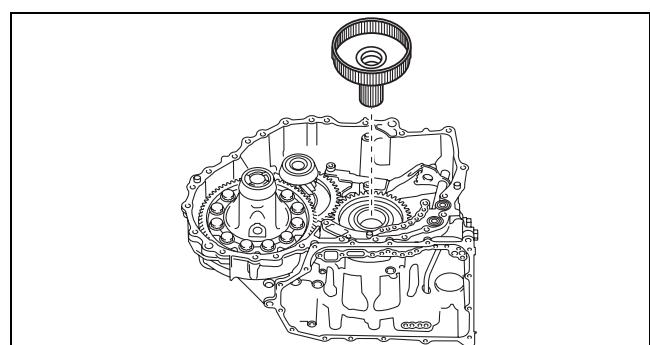
## AUTOMATIC TRANSAXLE

22. Remove the thrust needle bearing.

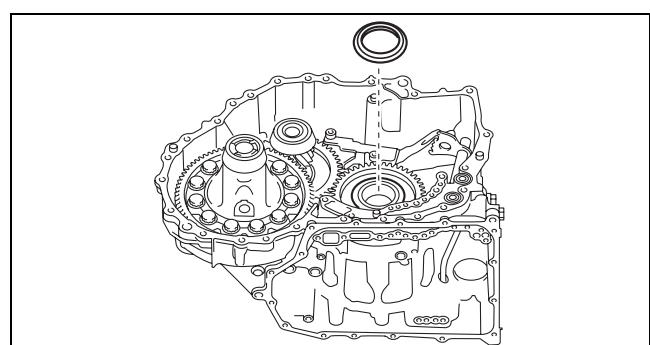


05-17

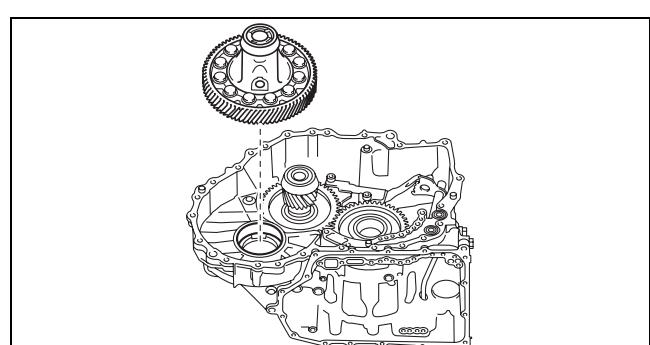
23. Remove the low clutch hub.



24. Remove the thrust needle bearing.



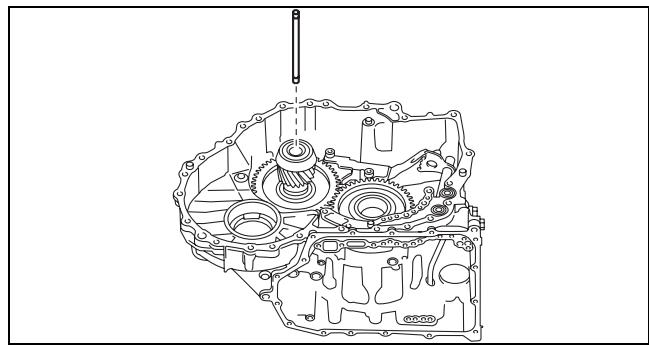
25. Remove the ring gear and differential.



azzjw00000460

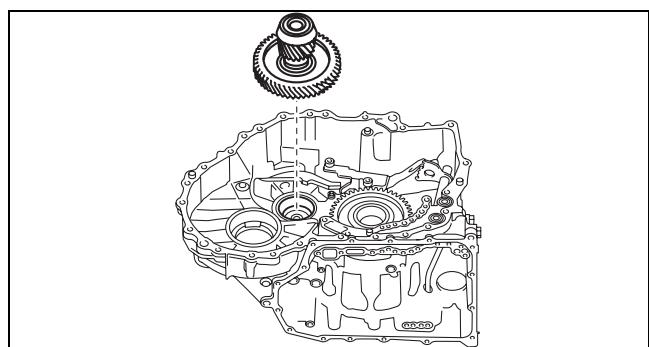
## AUTOMATIC TRANSAXLE

26. Remove the oil pipe.



azzjw00000461

27. Remove the secondary gear and output gear.



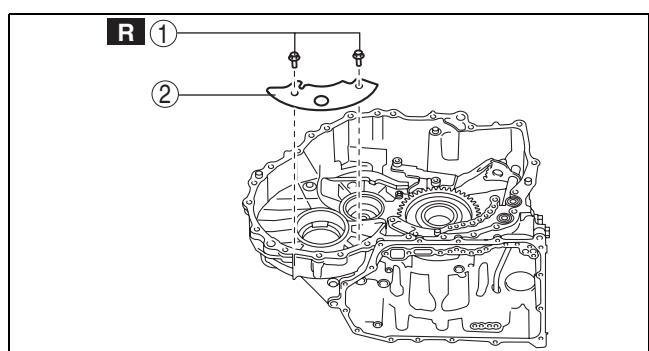
azzjw00000462

28. Remove the baffle plate using the procedure shown in the figure..

1	Bolt
2	Baffle plate

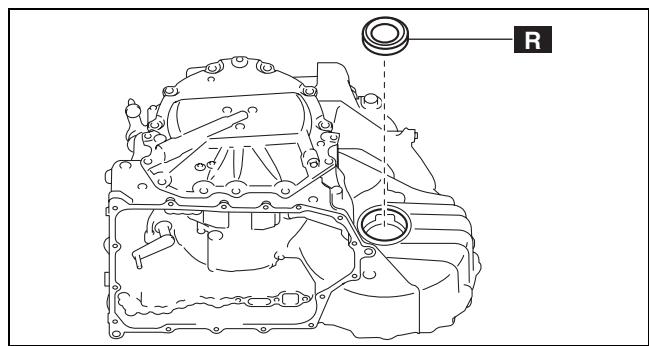
### Caution

- The bolts for the baffle plate assembly are applied with thread-locking compound. If the bolts are reused it could loosen the bolts, therefore when performing the automatic transaxle assembly, use new bolts.



azzjw00000463

29. Remove the oil seal.



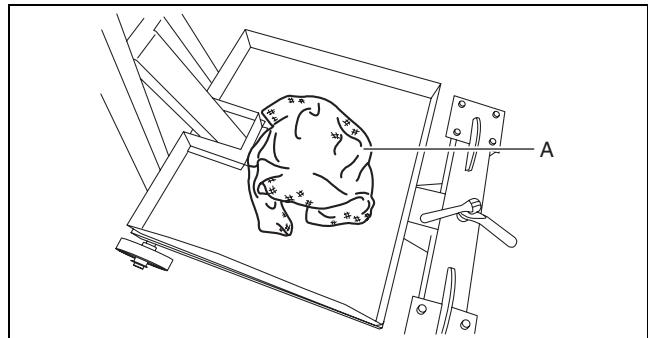
azzjw00000464

## AUTOMATIC TRANSAXLE

30. Remove the bearing race and shim using the following procedure:

- (1) When removing the bearing race and shim using the SST, place a rag as an impact-absorbing material on the oil catch area of the SST (engine stand) because the bearing race and shim will drop when removed.

A : Impact-absorbing material (rag)



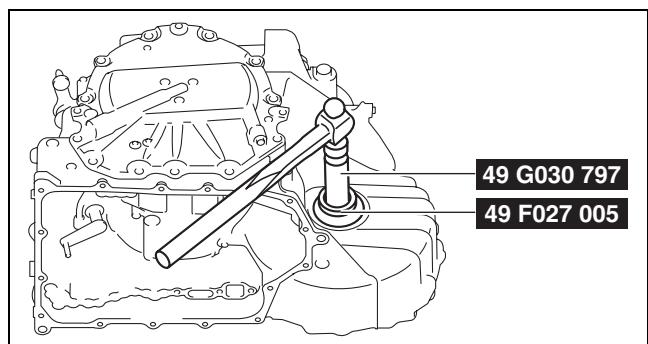
azjjw00000465

05-17

- (2) Remove the bearing race and shim using the SSTs and procedure shown in the figure.

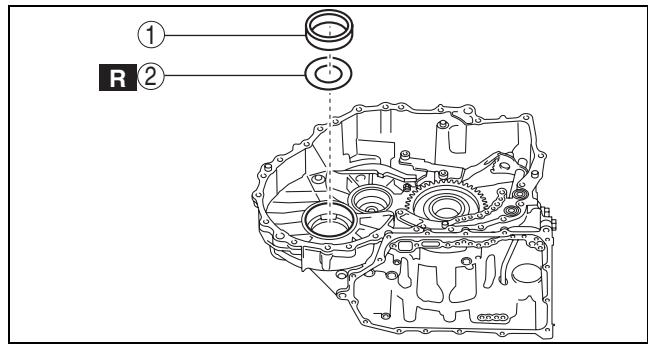
### Caution

- **Because the shim will deform when removing the bearing race, use a new shim when performing the automatic transaxle assembly.**



azjjw00000466

1	Bearing race
2	Shim

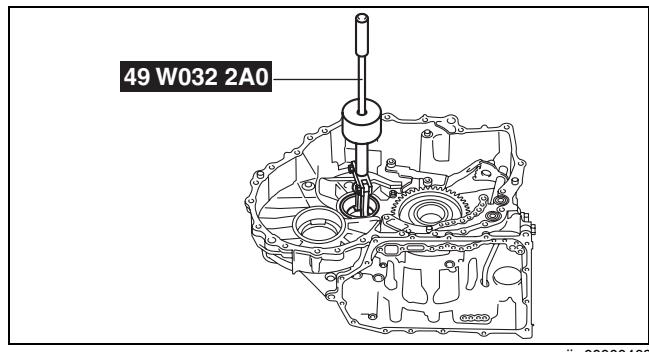


azjjw00000467

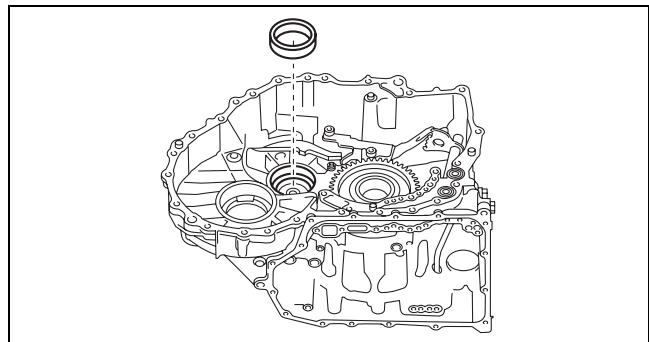
- (3) Remove the rag placed on the oil catch area of the SST (engine stand) used as an impact-absorbing material.

## AUTOMATIC TRANSAXLE

31. Remove the bearing race using the SST.



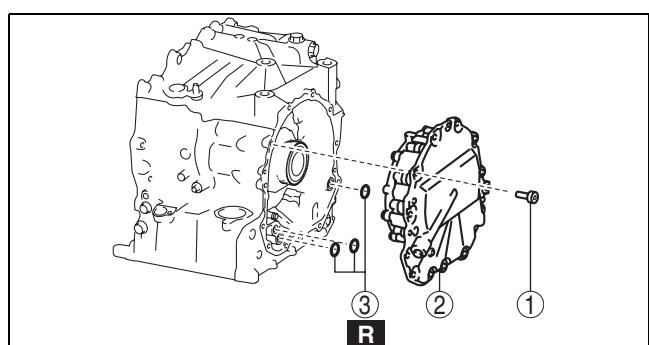
azzjw00000468



azzjw00000469

32. Remove end cover component using the following procedure:

1	12 bolts
2	End cover component
3	O-ring

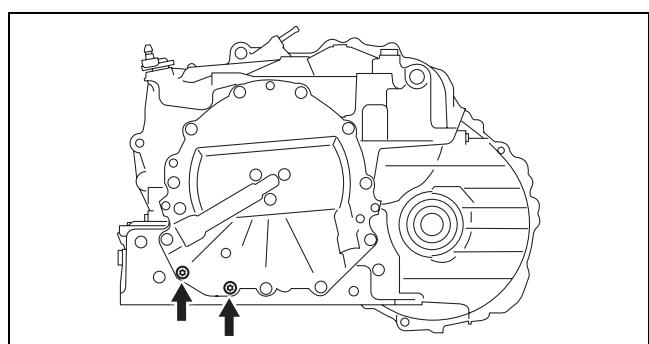


azzjw00000470

(1) Remove the bolts shown in the figure.

### Caution

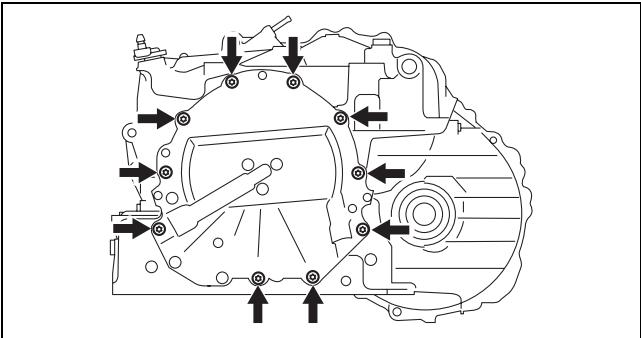
- Sealant has been applied to the removed bolts. If the bolts are reused it could cause ATF leakage, therefore when performing the automatic transaxle assembly, use new bolts.



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## AUTOMATIC TRANSAXLE

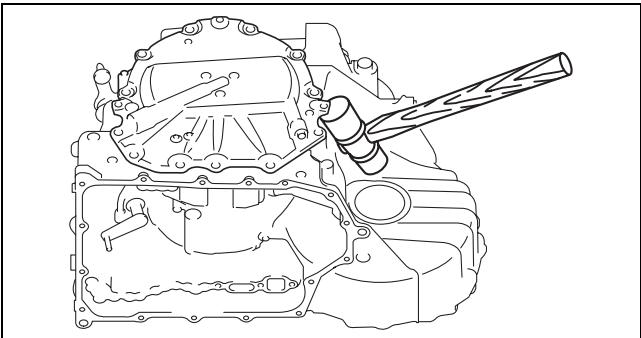
- (2) Remove the bolts shown in the figure.



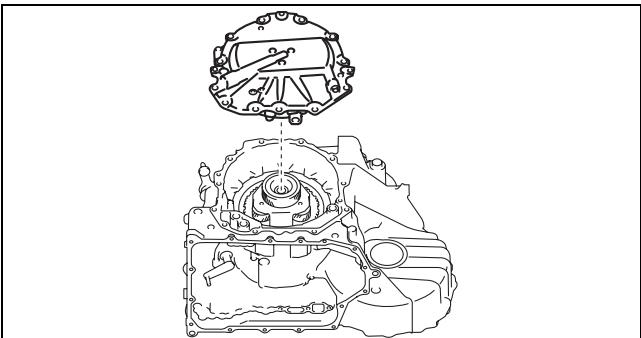
05-17

azzjw00000472

- (3) Lightly tap the end cover component using a plastic hammer to remove it.

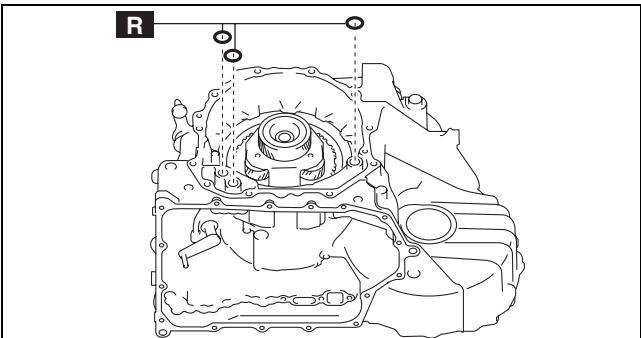


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azzjw00000474

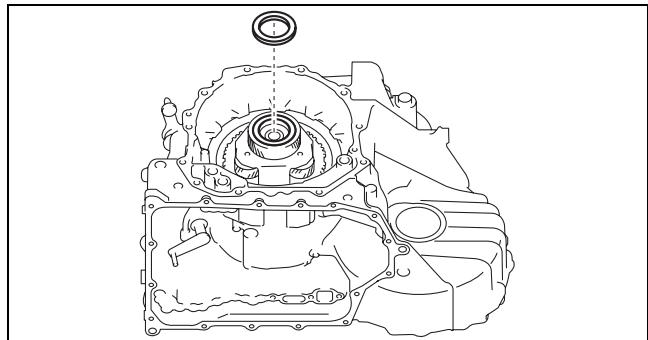
- (4) Remove the O-rings.



azzjw00000475

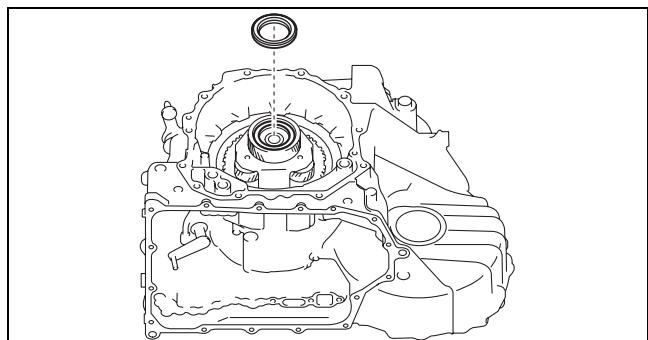
## AUTOMATIC TRANSAXLE

33. Remove the shim.



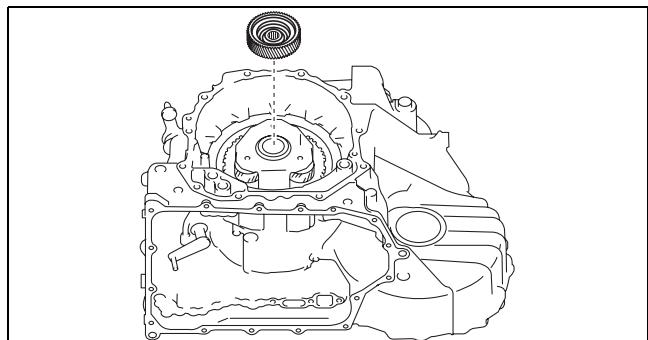
azzjjw00000476

34. Remove the thrust needle bearing.



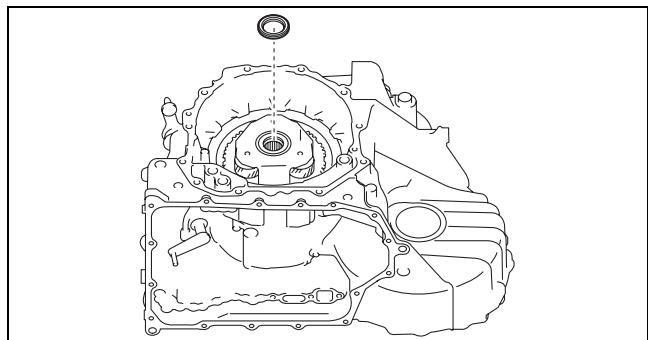
azzjjw00000477

35. Remove the reduction sun gear.



azzjjw00000478

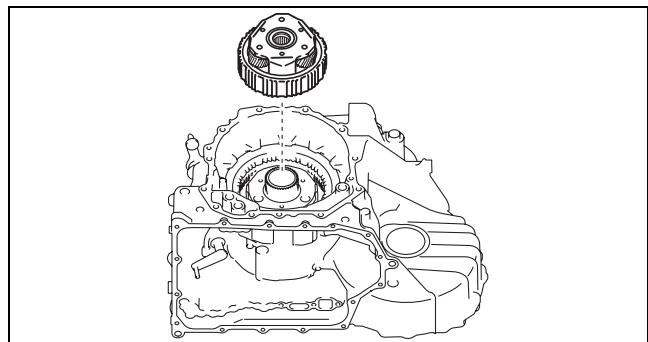
36. Remove the thrust needle bearing.



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## AUTOMATIC TRANSAXLE

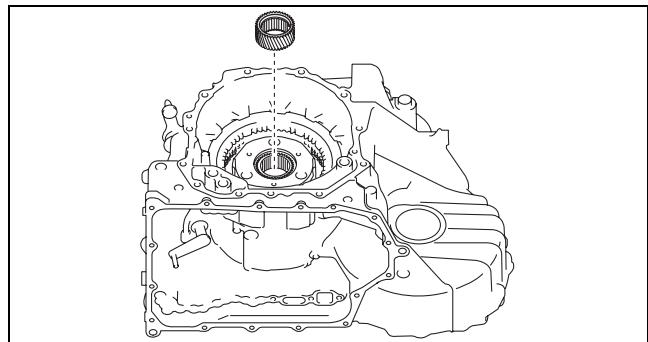
37. Remove the rear planetary gear.



05-17

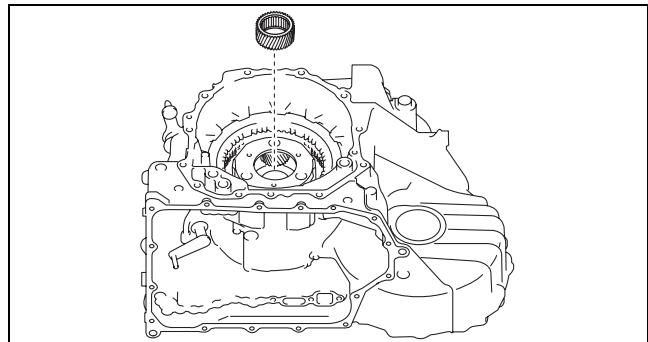
azzjw00000480

38. Remove the rear sun gear.



azzjw00000481

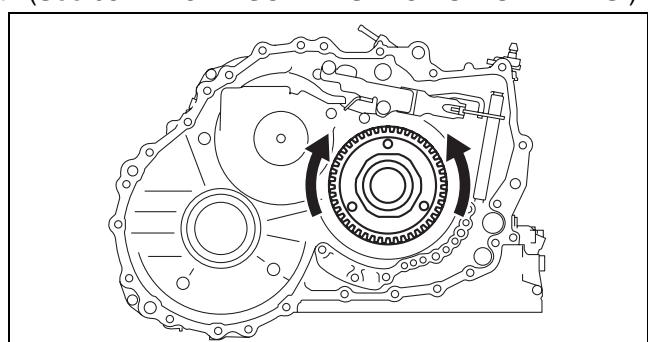
39. Remove the front sun gear.



azzjw00000482

40. Inspect the transaxle case, primary gear, and the angular contact ball bearing using the following procedure:

- (1) Visually inspect the transaxle case and primary gear. (See 05-17-151 VISUAL INSPECTION OF PARTS.)
- (2) Rotate the primary gear by hand and verify that there is no malfunction in the angular contact ball bearing (rotation sticking).
  - If there is a malfunction, remove the primary gear in Step 63 and replace the malfunctioning parts with new ones as when performing the automatic transaxle assembly.



azzjw00000483

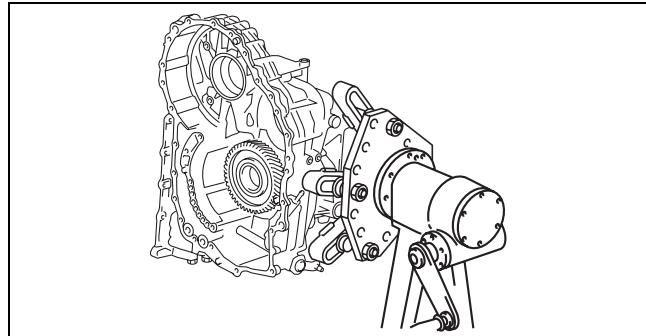
## AUTOMATIC TRANSAXLE

41. Remove the locknut using the following procedure:

### Caution

- Rotate and adjust the rotation handle of the engine stand so that the end cover side is situated sideways and remove the locknut. If the locknut is removed with the end cover side pointed downward, the front planetary gear will drop.
- Torque of approx. 500 N·m {51 kgf·m, 369 ft-lbf} is required to loosen the locknut. For safety purposes, perform the procedure using two people, one loosens the locknut and the other supports the engine stand.

- (1) Rotate and adjust the rotation handle of the engine stand so that the end cover side is situated sideways.



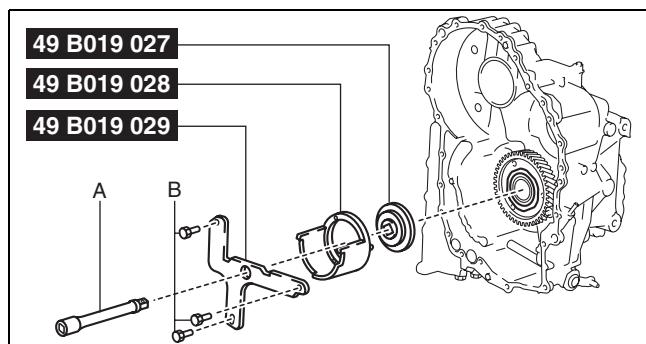
azzjjw00000484

- (2) Install the SSTs.

- A : Extension bar  
B : Bolt supplied with SST (49 B019 029) or M8×1.25, length to 18 mm {0.71 in}

### Note

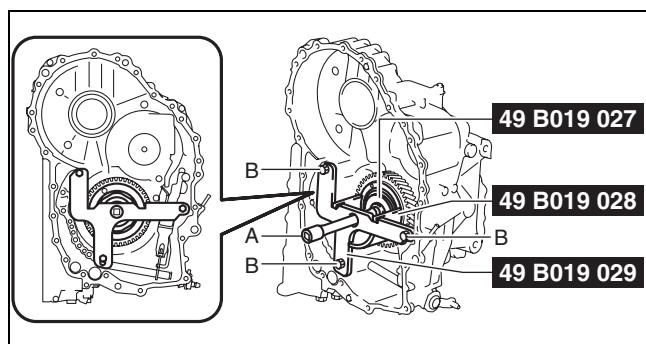
- Engage the three projections of the SST (49 B019 028) to the three holes of the primary gear.
- When installing the SST (49 B019 029), use the bolts supplied with the SST (49 B019 029), or M8×1.25 bolts, length to 18 mm {0.71 in}.



azzjjw00000485

- A : Extension bar  
B : Bolt supplied with SST (49 B019 029) or M8×1.25, length to 18 mm {0.71 in}

**SST installation bolt tightening torque**  
19—25 N·m {2.0—2.5 kgf·m, 15—18 ft-lbf}



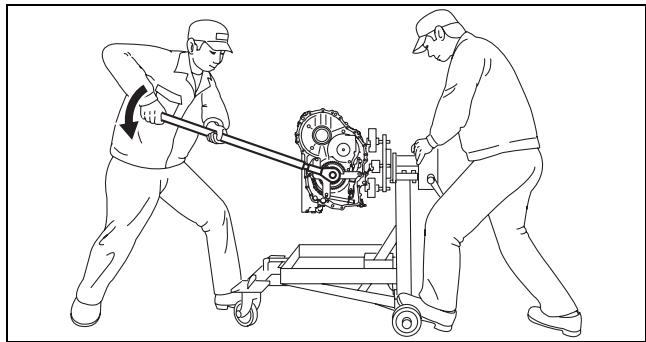
azzjjw00000486

## AUTOMATIC TRANSAXLE

(3) Loosen the locknut and remove it.

### Caution

- **Torque of approx. 500 N·m {51 kgf·m, 369 ft·lbf} is required to loosen the locknut. For safety purposes, perform the procedure using two people, one loosens the locknut and the other supports the engine stand.**



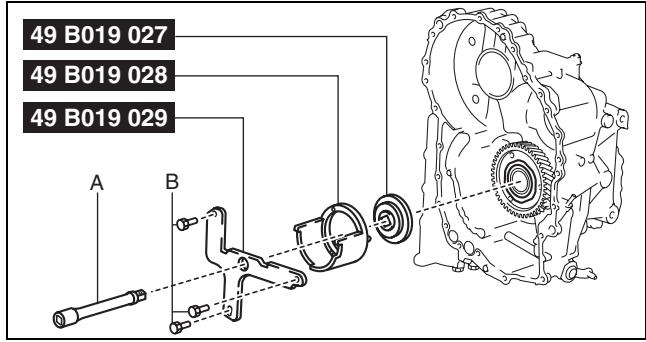
05-17

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(4) Remove the SSTs.

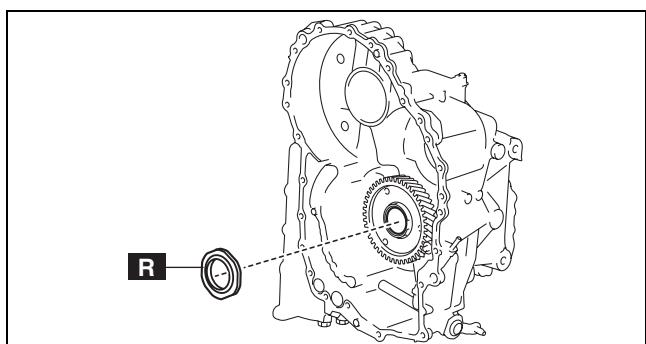
A : Extension bar

B : Bolt supplied with SST (49 B019 029) or  
M8×1.25, length to 18 mm {0.71 in}



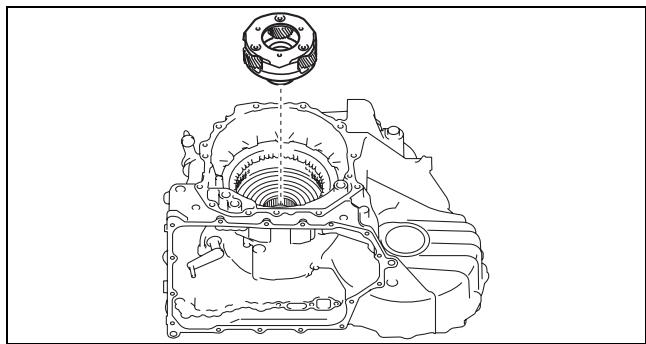
azzjw00000485

(5) Remove the locknut from the front planetary gear.



azzjw00000488

42. Remove the front planetary gear.



azzjw00000489

## AUTOMATIC TRANSAXLE

43. Perform a simple inspection of the low and reverse brake using the following procedure:

- (1) Blow compressed air into the oil passage shown in the figure and verify the operation condition of the low and reverse brake.

### Warning

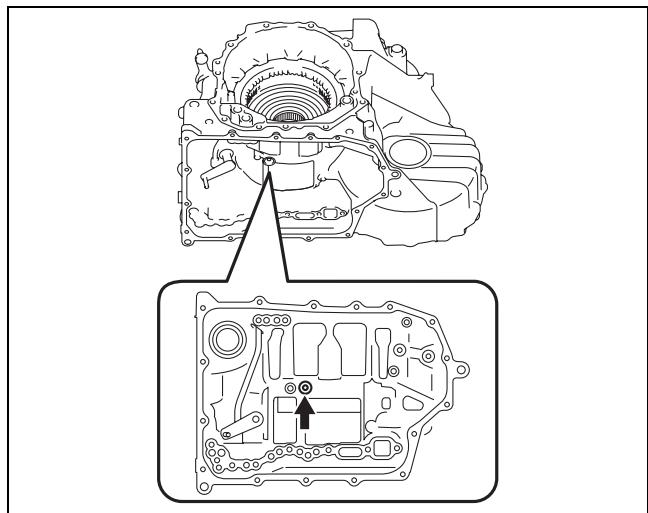
- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

### Caution

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

### Compressed air pressure

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>,  
57—63 psi}

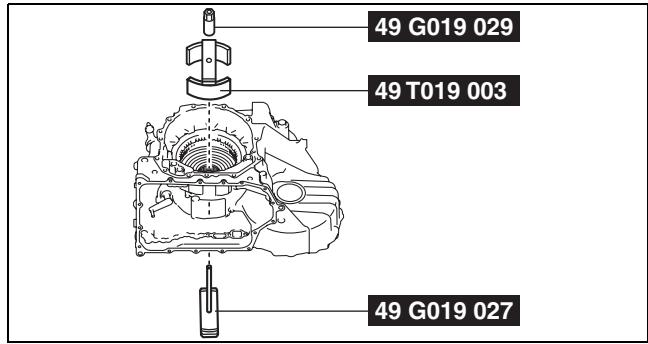


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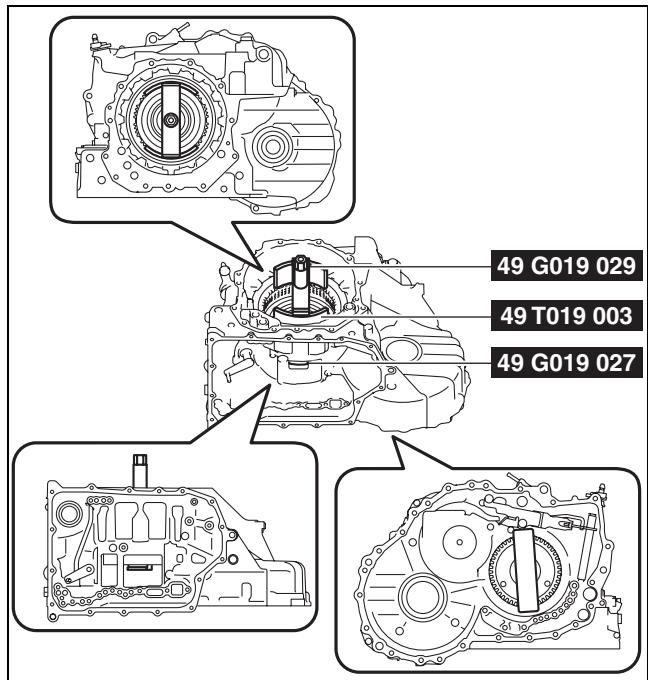
- If there is a malfunction, verify the cause and repair the applicable part after disassembly.

44. Remove the snap ring using the following procedure:

- (1) Install the SSTs.



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azzjw00000492

## AUTOMATIC TRANSAXLE

- (2) Tighten the SST (49 G019 029) until there is no longer any spring force from the springs and retainer component applied to the snap ring.

A : Snap ring  
B : One-way clutch  
C : Gap

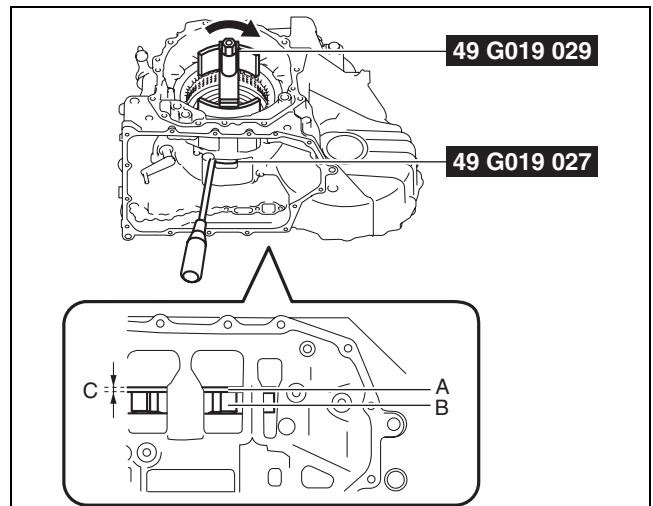
### Caution

- If the SST (49 G019 029) is tightened with excessive force, surrounding parts could be damaged. Stop tightening if a gap appears between the snap ring and one-way clutch

### Note

- Lock the SST (49 G019 027) against rotation using a flathead screwdriver and tighten the SST (49 G019 029).

- (3) Remove the snap ring.



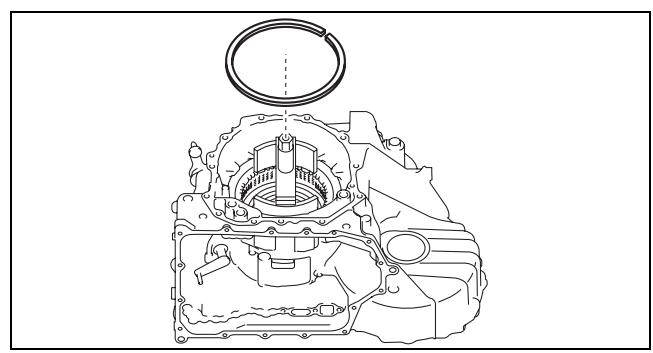
azzjw00000493

05-17

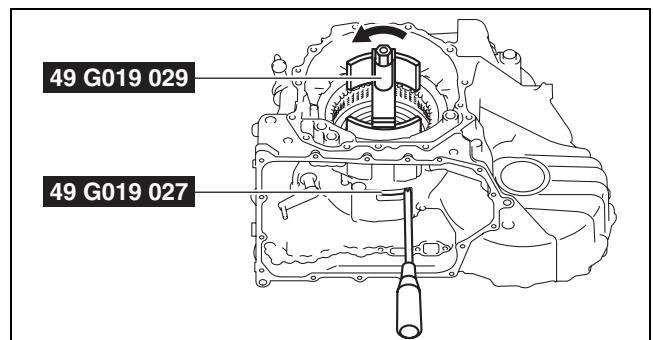
- (4) Loosen the SST (49 G019 029) and remove the SSTs.

### Note

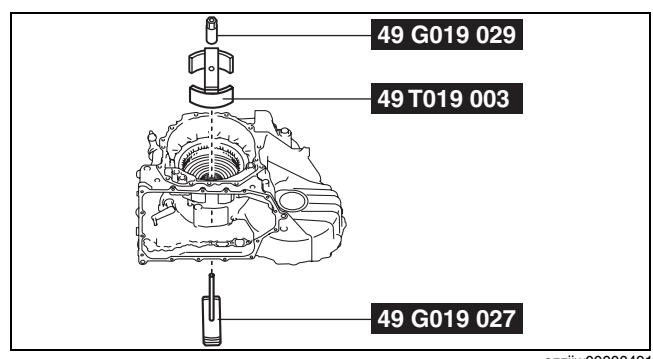
- Lock the SST (49 G019 027) against rotation using a flathead screwdriver and loosen the SST (49 G019 029).



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azzjw00000495



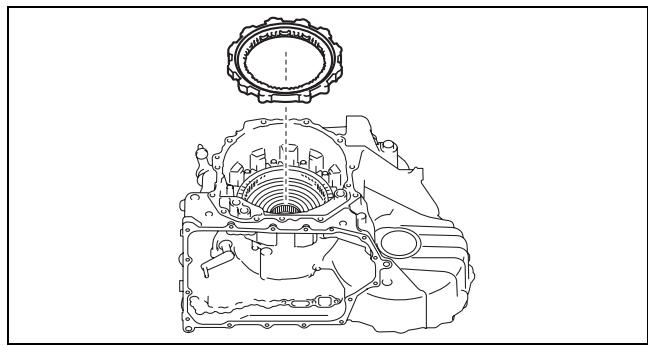
azzjw00000491

## AUTOMATIC TRANSAXLE

45. Remove the one-way clutch.

### Caution

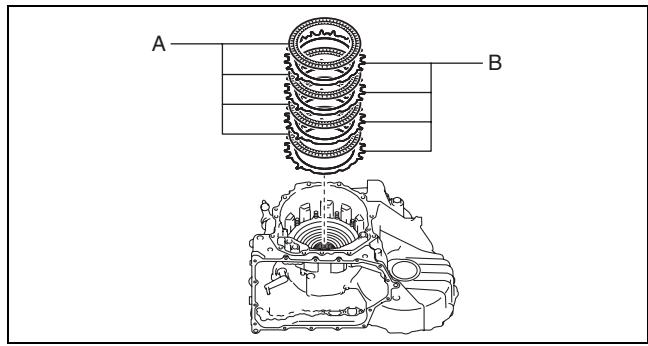
- Do not disassemble the one-way clutch.  
If it has been disassembled, replace the one-way clutch with a new one.



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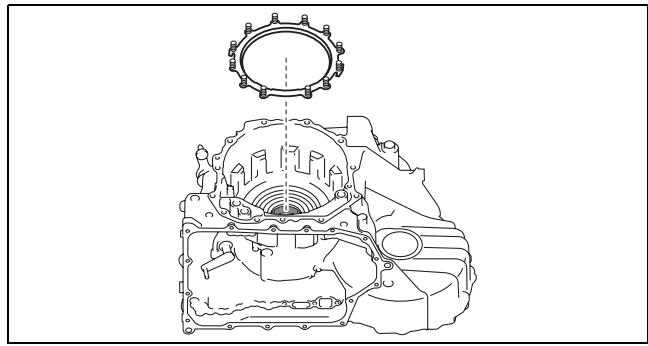
46. Remove the drive plates and driven plates.

A : Drive plate  
B : Driven plate



azzjw00000497

47. Remove the springs and retainer component.



azzjw00000498

48. Remove the low and reverse brake piston using the following procedure:

- (1) Blow compressed air into the oil passage shown in the figure.

### Warning

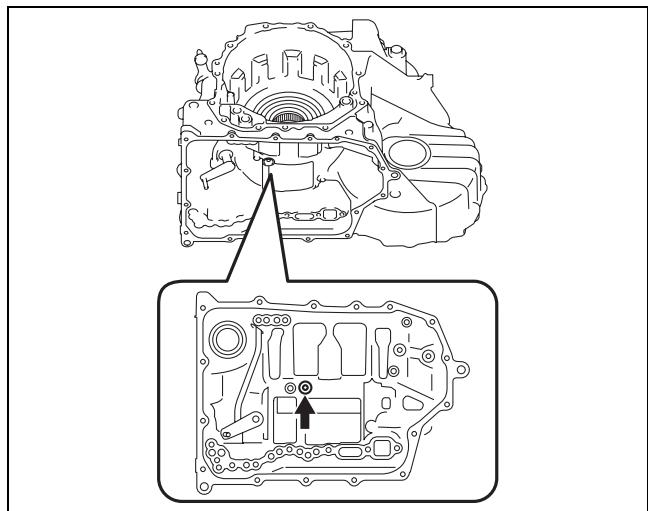
- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

### Caution

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

### Compressed air pressure

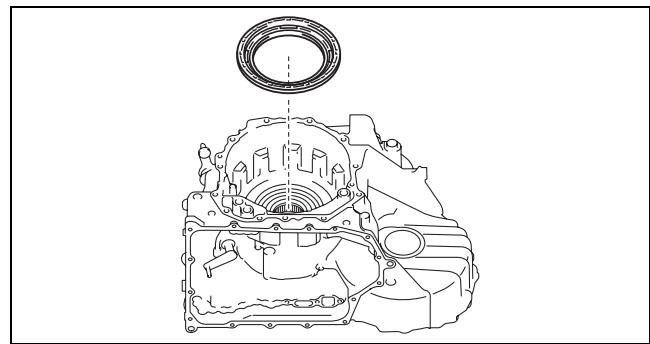
0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>,  
57—63 psi}



azzjw00000499

## AUTOMATIC TRANSAXLE

- (2) Remove the low and reverse brake piston removed from the transaxle case.

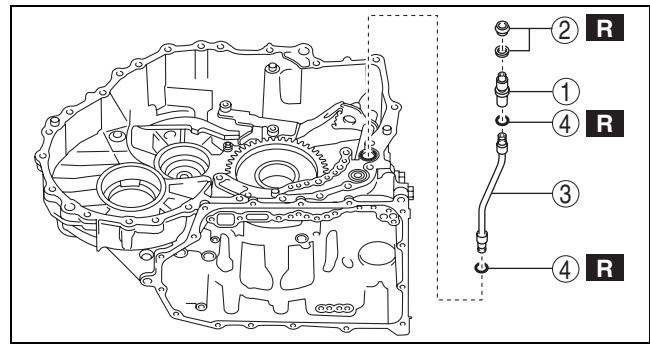


05-17

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49. Remove the connector, gaskets, oil pipe, and the O-rings in the order shown in the figure.

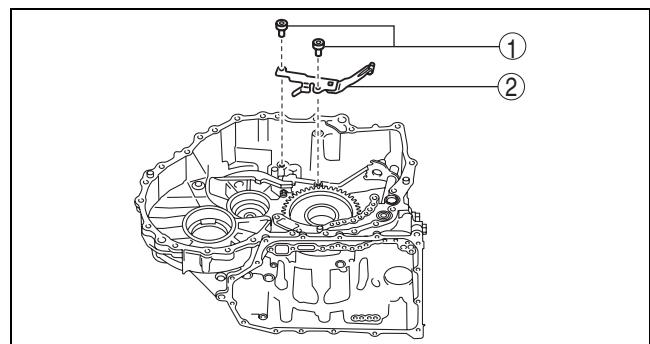
1	Connector
2	Gasket
3	Oil pipe
4	O-ring



azzjw00000501

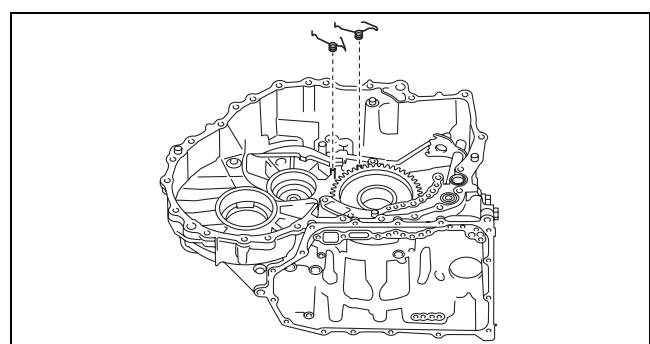
50. Remove the detent bracket component in the order shown in the figure.

1	Bolt
2	Detent bracket component



azzjw00000502

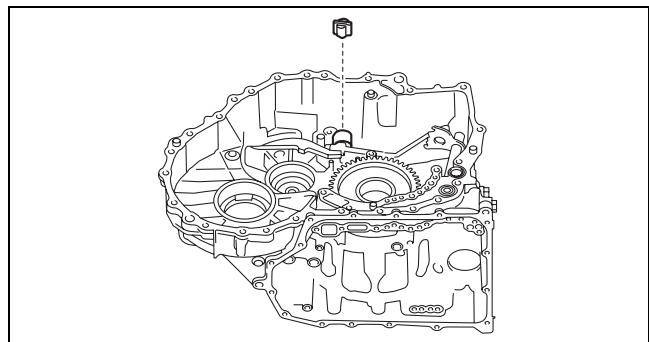
51. Remove the pawl return springs.



azzjw00000503

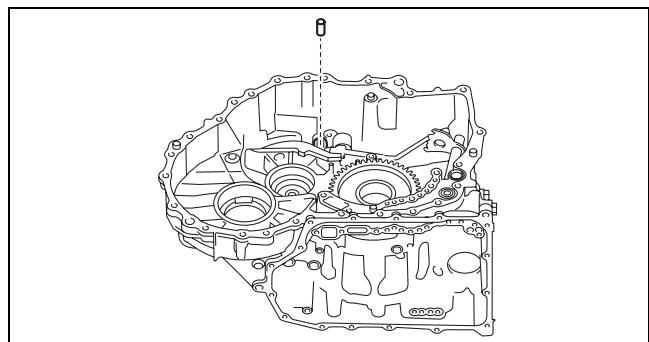
## AUTOMATIC TRANSAXLE

52. Remove the support actuator.



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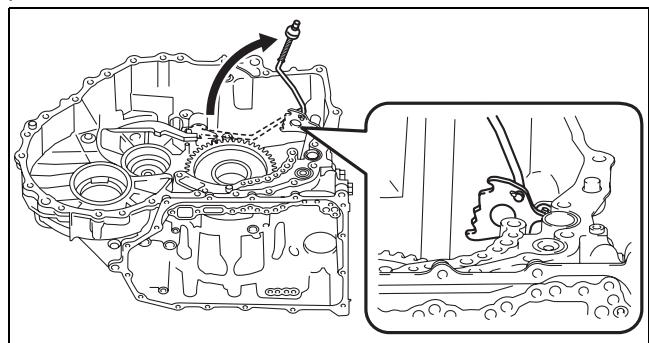
53. Remove the parking pawl pin.



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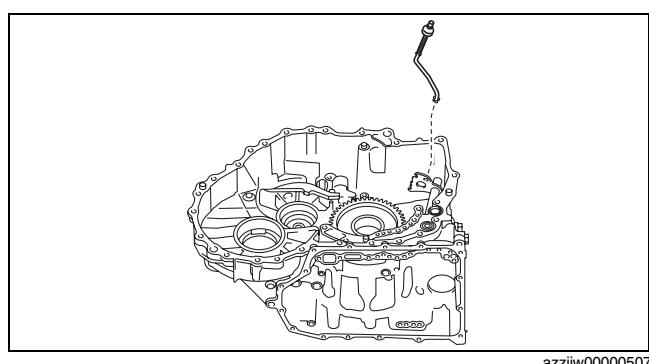
54. Remove the parking rod component using the following procedure:

- (1) Rotate the parking rod component as shown in the figure and align the parking rod component projection with the keyhole of the manual plate component.



azzjw00000506

- (2) Remove the parking rod component.

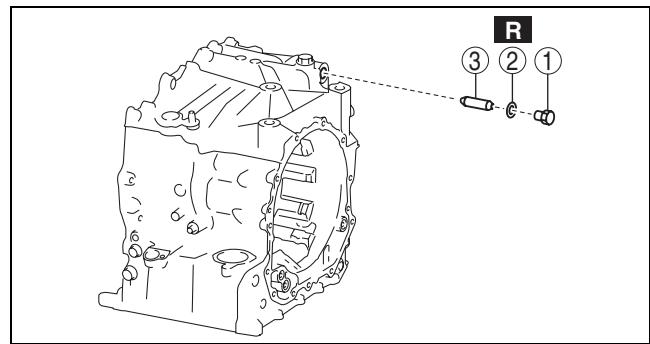


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## AUTOMATIC TRANSAXLE

55. Remove the parking pawl shaft in the order shown in the figure.

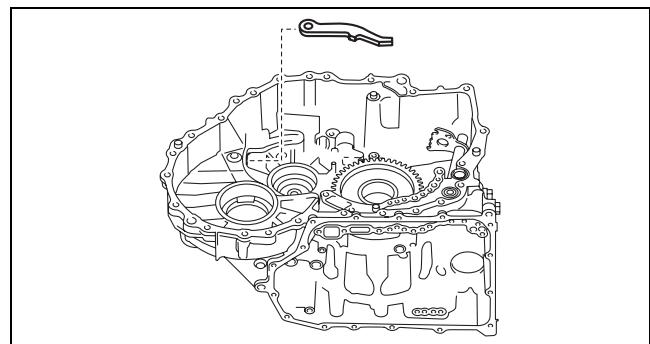
1	Plug
2	Gasket
3	Parking pawl shaft



05-17

azzjw00000508

56. Remove the parking pawl.

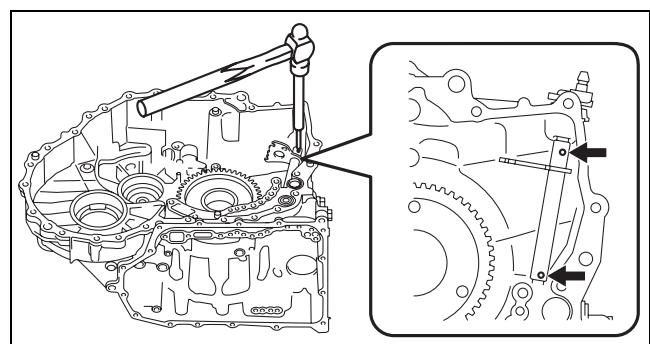


azzjw00000509

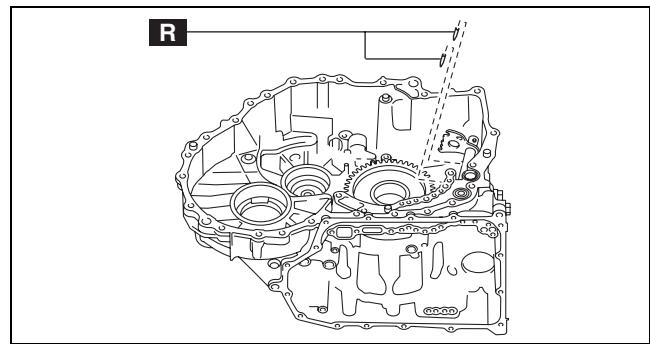
57. Remove the roll pins shown in the figure using a pin punch.

### Note

- Use a pin punch with an end outer diameter of 3 mm {0.119 in} or more, and within 4 mm {0.157 in}.



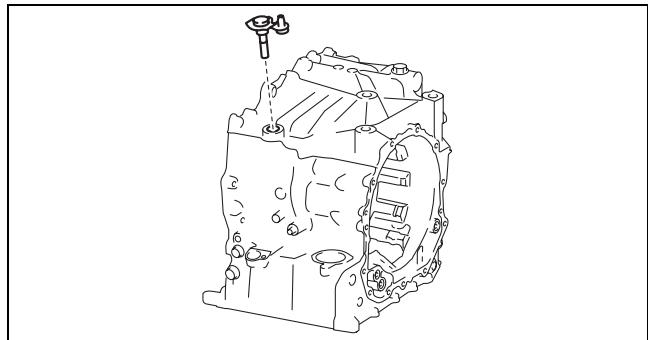
azzjw00000510



azzjw00001498

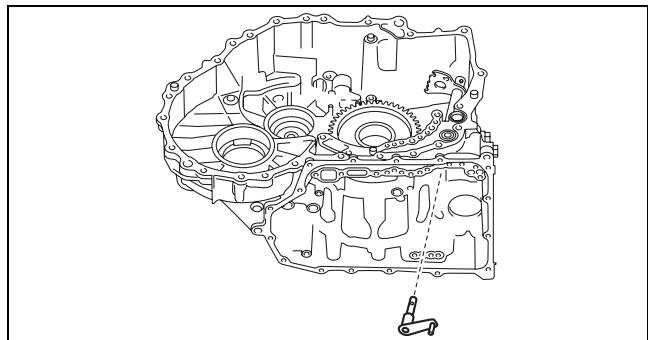
## AUTOMATIC TRANSAXLE

58. Remove the parking shift lever component.



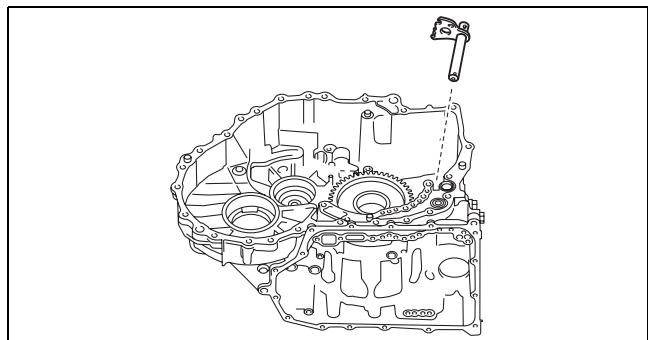
azzjw00000512

59. Remove the parking assist lever component.



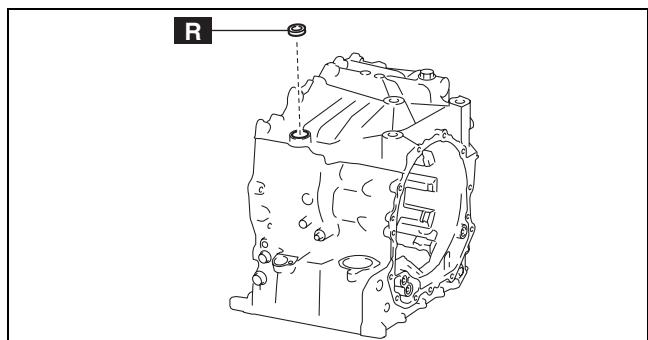
azzjw00000513

60. Remove the manual plate component.



azzjw00000514

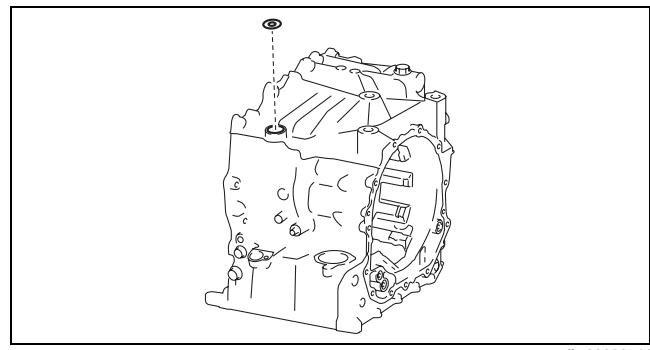
61. Remove the oil seal.



azzjw00000515

## AUTOMATIC TRANSAXLE

62. Remove the washer.



05-17

azzjw00000516

63. Perform the following procedure only if there is a malfunction found in the Step 40 inspection.

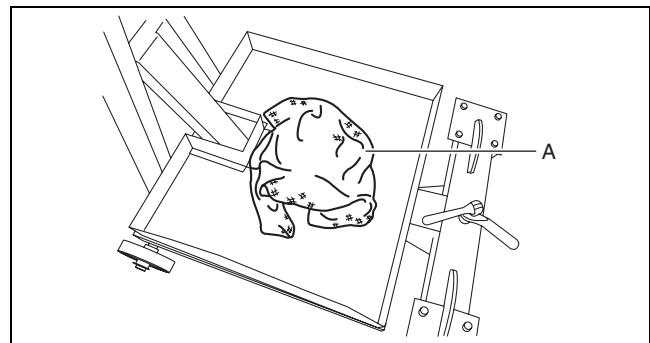
(1) Remove the primary gear using the following procedure:

### Caution

- Because the angular contact ball bearing will be damaged if the primary gear is removed, remove the primary gear only if there is a malfunction found in the Step 40 inspection.
- Because the angular contact ball bearing is integrated with the transaxle case, if the primary gear is removed, replace the transaxle case with a new one as when performing the automatic transaxle assembly.

1) When removing the primary gear using the SST, place a rag as an impact-absorbing material on the oil catch area of the SST (engine stand) because the primary gear will drop when removed.

A : Impact-absorbing material (rag)

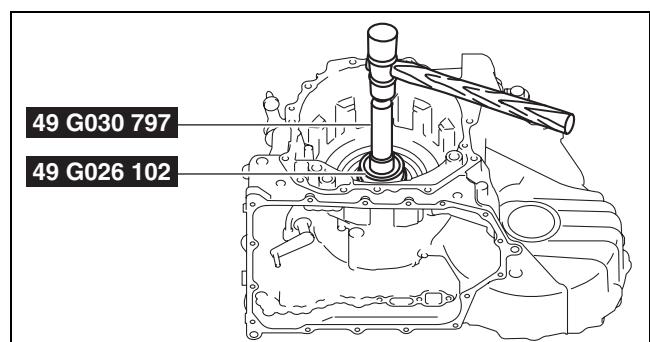


azzjw00000465

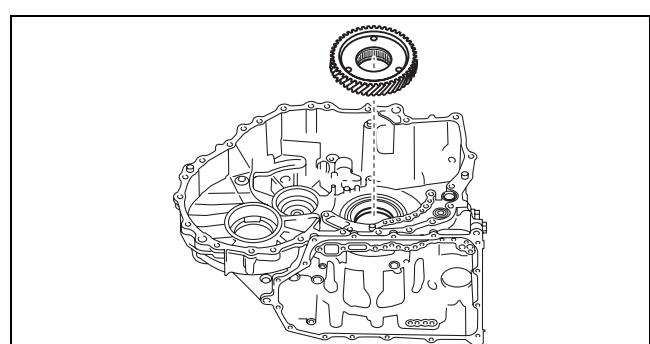
2) Remove the primary gear using the SSTs.

### Note

- Use a plastic hammer.



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azzjw00000518

3) Remove the rag placed on the oil catch area of the SST (engine stand) used as an impact-absorbing material.

05-17-99

## AUTOMATIC TRANSAXLE

(2) Remove the angular contact ball bearing from the primary gear using the following procedure:

### Note

- When removing the primary gear, if the angular contact ball bearing remains in the transaxle case and only the primary gear is removed, the following angular contact ball bearing removal procedure is not necessary.

- 1) Pry the angular contact ball bearing evenly using two flathead screwdrivers to create a gap between the primary gear end and the angular contact ball bearing end until the tab of the SST (49 0839 425C) is inserted.

A : Gap

### Note

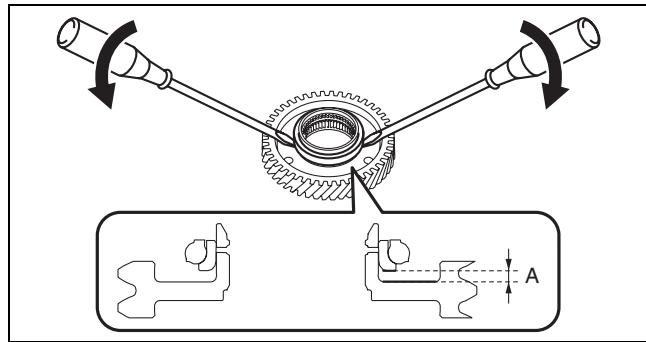
- If there is already a gap between the primary gear end and the angular contact ball bearing end in which the tab of the SST (49 0839 425C) is inserted when removing the primary gear, this procedure is not necessary.

- 2) Secure the primary gear in a vise.

A : Vise

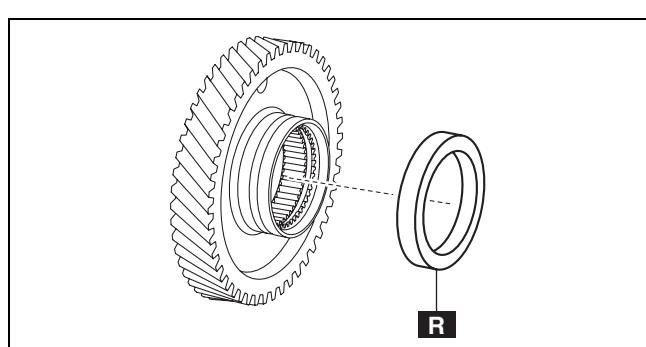
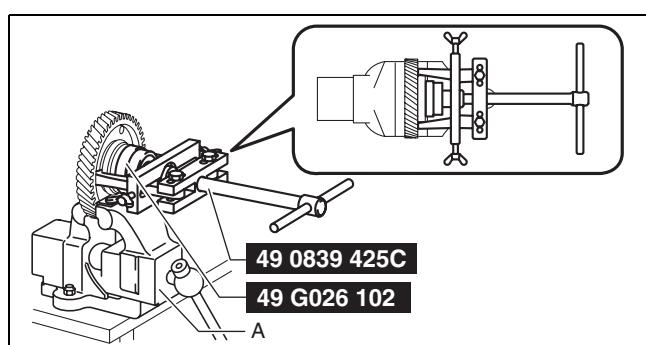
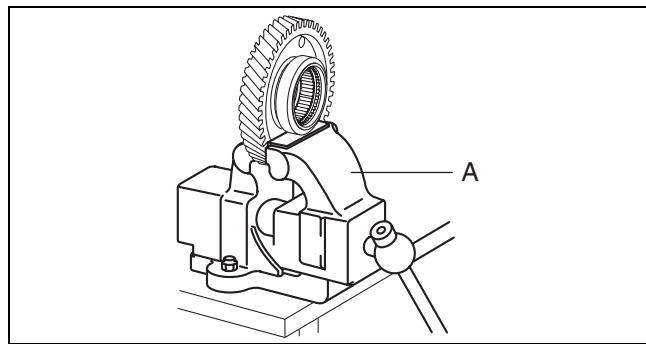
### Caution

- Insert a protective plate between the vise and the part so as not to damage the part.



- 3) Remove the angular contact ball bearing using the SSTs.

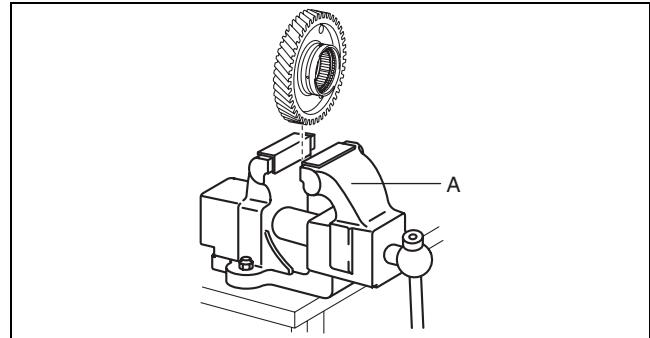
A : Vise



## AUTOMATIC TRANSAXLE

4) Remove the primary gear from the vise.

A : Vise

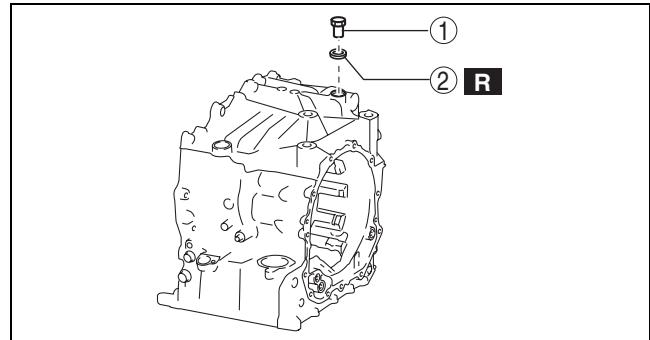


05-17

azzjw00001208

(3) Remove the plug and gasket in the order shown in the figure.

1	Plug
2	Gasket



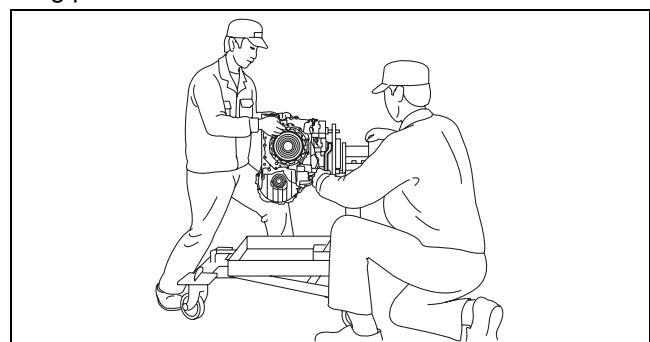
azzjw00000917

64. Remove the SST from the transaxle case using the following procedure:

(1) Remove the transaxle case from the SST  
(engine stand).

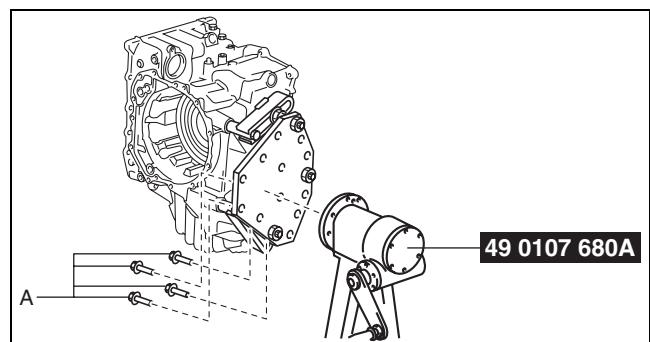
### Caution

- For safety purposes, perform the procedure using two people, one removes the transaxle case from the SST and the other supports the transaxle case.



azzjw00000521

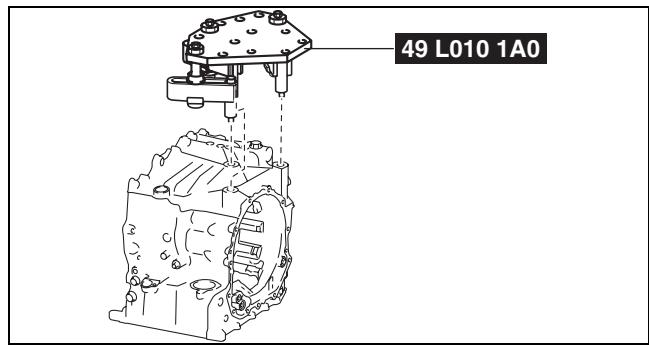
A : Part number: 9YA02 A220, or M12×1.75 bolt,  
length to 40 mm {1.6 in}



azzjw00000522

## AUTOMATIC TRANSAXLE

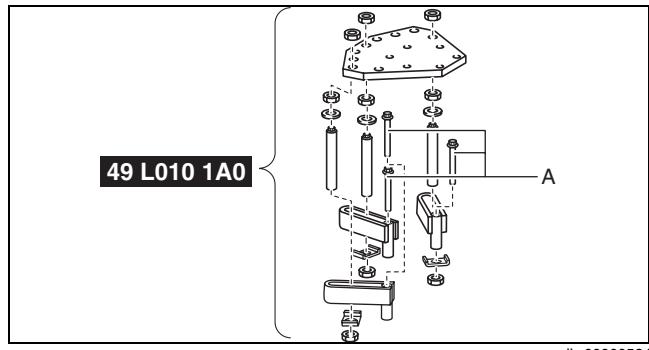
(2) Remove the SST from the transaxle case.



azzjjw00000523

(3) Disassemble the SST.

A : Part number: 9YA02 1440, or M14×1.5 bolt,  
length to 100 mm {3.94 in}



azzjjw00000524

65. Disassemble the parts in the following order.

### Note

- Disassemble the parts in the following order because the parts in the transaxle may be used for inspection, measurement, or adjustment.

- (1) Clutch component (See 05-17-104 CLUTCH COMPONENT DISASSEMBLY)
- (2) Oil pump (See 05-17-115 OIL PUMP DISASSEMBLY)
- (3) Rear planetary gear (See 05-17-117 REAR PLANETARY GEAR DISASSEMBLY)
- (4) Secondary gear and output gear (See 05-17-119 SECONDARY GEAR AND OUTPUT GEAR DISASSEMBLY)
- (5) Ring gear and differential (See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY)
- (6) End cover component (See 05-17-128 END COVER COMPONENT DISASSEMBLY)
- (7) Reduction planetary gear (See 05-17-136 REDUCTION PLANETARY GEAR DISASSEMBLY)
- (8) Control valve body (See 05-17-138 CONTROL VALVE BODY DISASSEMBLY)

66. Clean away the remaining silicone sealant on the transaxle case, converter housing, end cover, and the oil pan.

67. Clean the disassembled parts. (See 05-17-26 AUTOMATIC TRANSAXLE CLEANING.)

## AUTOMATIC TRANSAXLE

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68. Perform the following inspection and replace a malfunctioning part with a new one.
- Visual inspection of parts (See 05-17-151 VISUAL INSPECTION OF PARTS)
  - Torque converter inspection (See 05-17-154 TORQUE CONVERTER INSPECTION)
  - Thrust needle bearing inspection (See 05-17-155 THRUST NEEDLE BEARING INSPECTION)
  - Front planetary gear inspection (See 05-17-155 FRONT PLANETARY GEAR INSPECTION)
  - Rear planetary gear inspection (See 05-17-158 REAR PLANETARY GEAR INSPECTION)
  - Reduction planetary gear inspection (See 05-17-161 REDUCTION PLANETARY GEAR INSPECTION)
  - Secondary gear and output gear inspection (See 05-17-163 SECONDARY GEAR AND OUTPUT GEAR INSPECTION)
  - Ring gear and differential inspection (See 05-17-165 RING GEAR AND DIFFERENTIAL INSPECTION)
  - Low clutch inspection (See 05-17-169 LOW CLUTCH INSPECTION)
  - High clutch inspection (See 05-17-169 HIGH CLUTCH INSPECTION)
  - Low and reverse brake inspection (See 05-17-170 LOW AND REVERSE BRAKE INSPECTION)
  - 2-6 brake inspection (See 05-17-171 2-6 BRAKE INSPECTION)
  - R-3-5 brake inspection (See 05-17-171 R-3-5 BRAKE INSPECTION)
  - One-way clutch inspection (See 05-17-172 ONE-WAY CLUTCH INSPECTION)
  - Low clutch hub inspection (See 05-17-173 LOW CLUTCH HUB INSPECTION)
  - High clutch hub inspection (See 05-17-173 HIGH CLUTCH HUB INSPECTION)
  - Oil pump inspection (See 05-17-174 OIL PUMP INSPECTION)
  - End cover inspection (See 05-17-177 END COVER INSPECTION)
  - Oil cooler inspection (See 05-17-177 OIL COOLER INSPECTION)

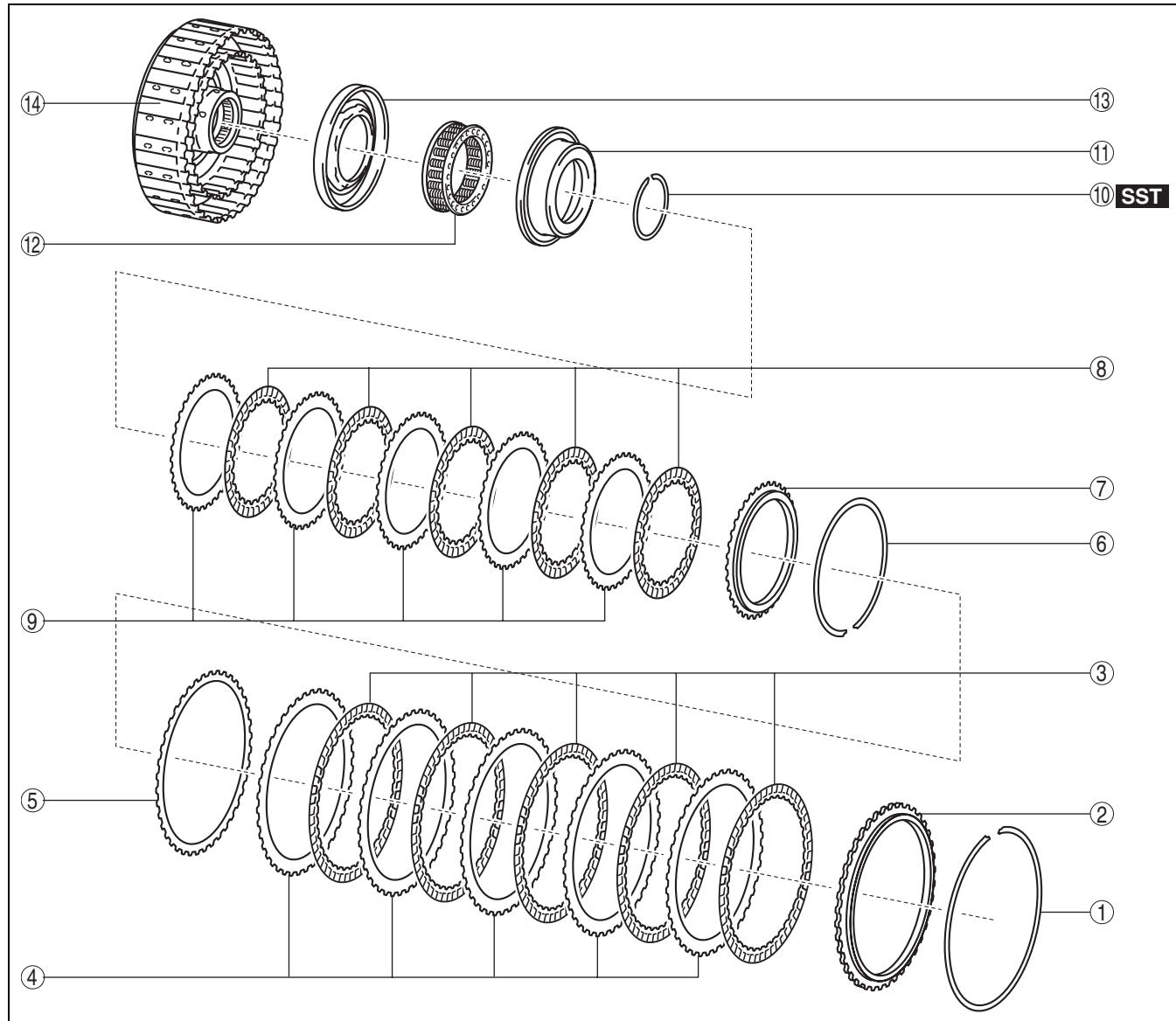
05-17

# AUTOMATIC TRANSAXLE

## CLUTCH COMPONENT DISASSEMBLY

id051700660700

### Structural View



azzjjw00001430

1	Snap ring
2	Retaining plate
3	Drive plate
4	Driven plate
5	Wave spring
6	Snap ring
7	Retaining plate

8	Drive plate
9	Driven plate
10	Snap ring
11	Seal plate
12	Springs and retainer component
13	High clutch piston
14	High clutch drum component

# AUTOMATIC TRANSAXLE

## Disassembly Procedure

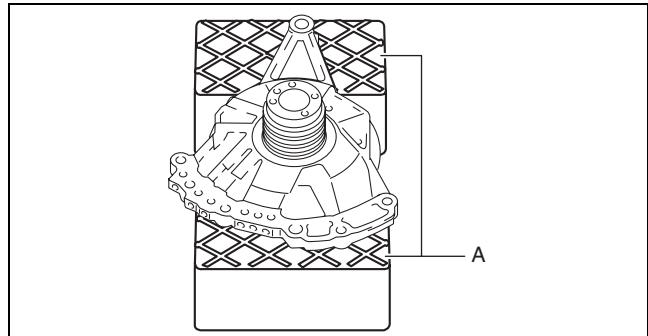
1. Perform a simple inspection of the low clutch and high clutch using the following procedure:

- (1) Set the oil pump on the workbench as shown in the figure.

A : Rubber plate

### Note

- Using the rubber plates, adjust the alignment surface of the oil pump with the transaxle case so that it is level.



05-17

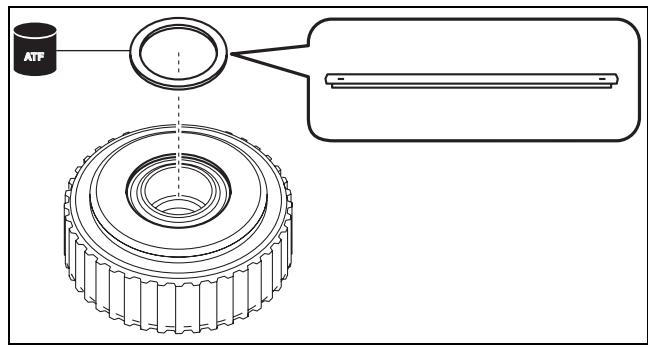
azzjw00000802

(2) Assemble the thrust needle bearing to the clutch component using the following procedure:

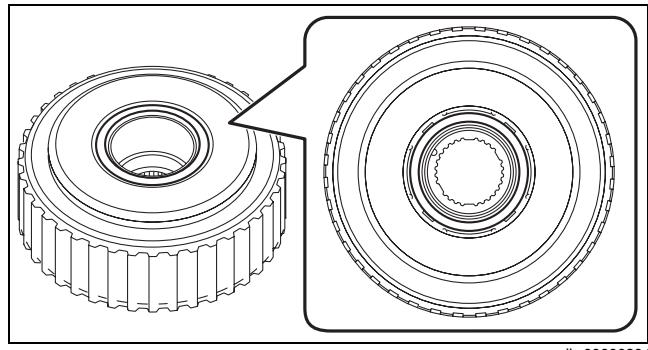
### Note

- Thrust needle bearing size: Outer diameter approx. 72.7 mm {2.86 in}

- 1) To prevent the thrust needle bearing from dropping out, apply ATF (ATF FZ) to the thrust needle bearing.
- 2) Assemble the thrust needle bearing.



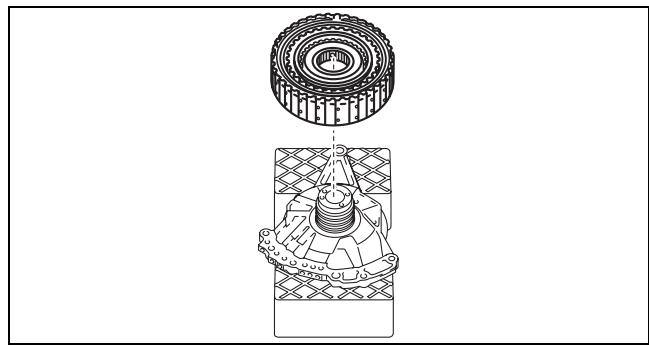
azzjw00000803



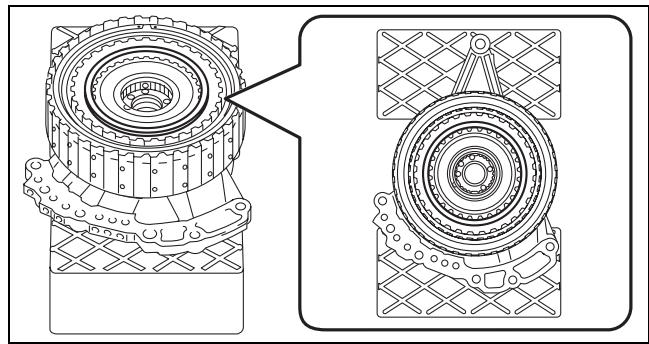
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## AUTOMATIC TRANSAXLE

- (3) Assemble the parts assembled together in Step (2) to the oil pump.



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azzjjw00000806

- (4) Blow compressed air into the oil passage shown in the figure and verify the operation condition of the low clutch.

### Warning

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

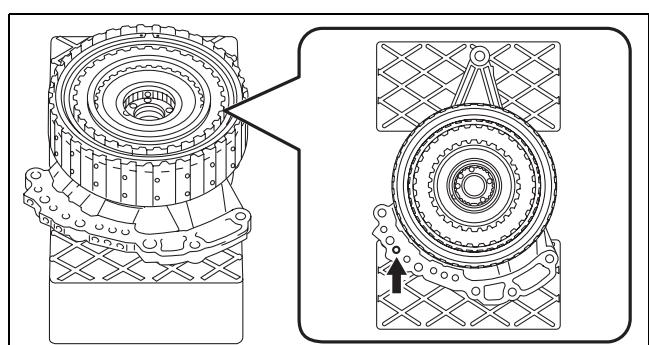
### Caution

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

### Compressed air pressure

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

- If there is a malfunction, verify the cause and repair the applicable part after disassembly.



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## AUTOMATIC TRANSAXLE

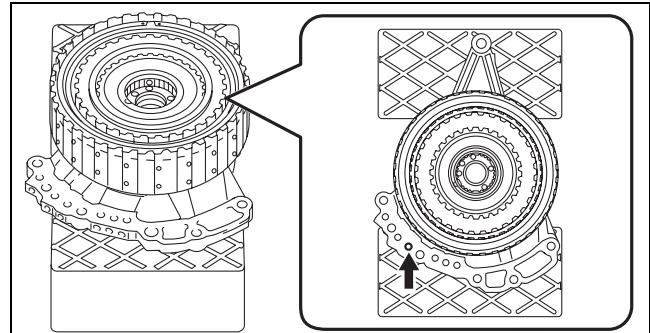
- (5) Blow compressed air into the oil passage shown in the figure and verify the operation condition of the high clutch.

**Warning**

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

**Caution**

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.



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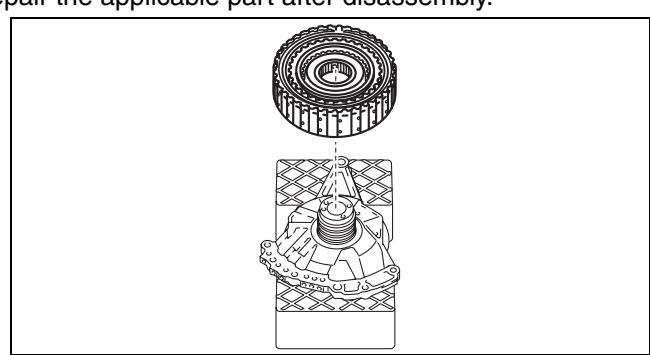
05-17

**Compressed air pressure**

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

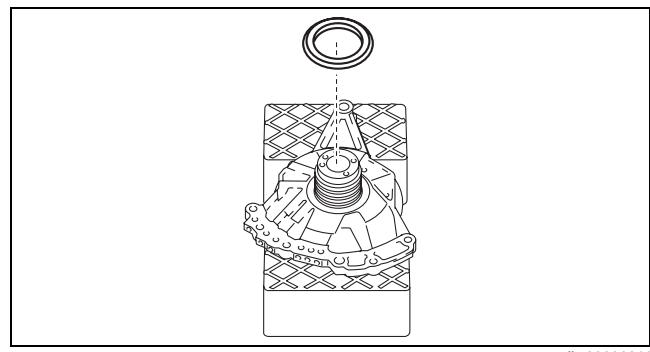
- If there is a malfunction, verify the cause and repair the applicable part after disassembly.

- (6) Remove the clutch component.



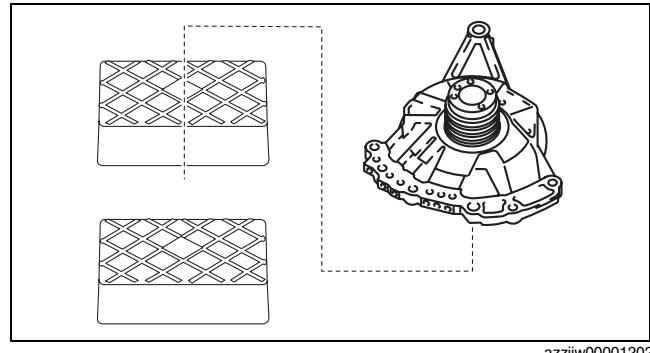
azzjw00000809

- (7) Remove the thrust needle bearing.



azzjw00000810

- (8) Take the oil pump off the rubber plates.

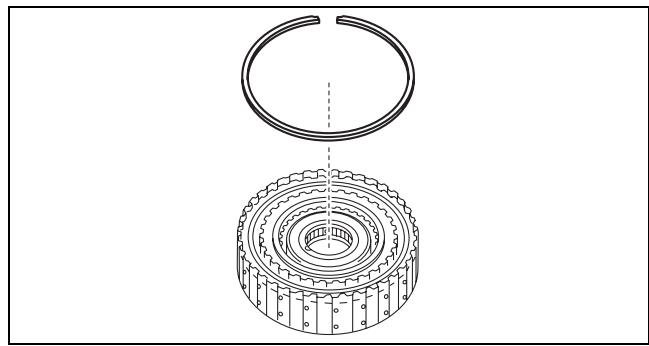


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05-17-107

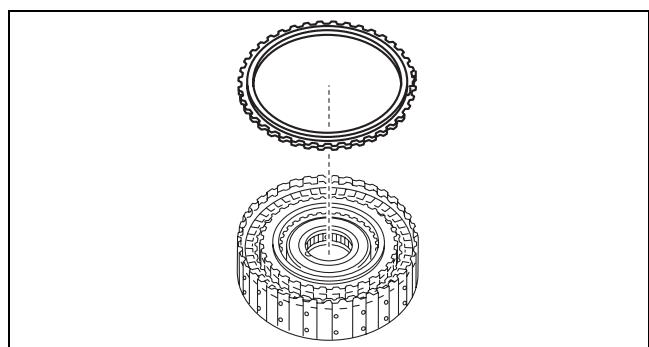
## AUTOMATIC TRANSAXLE

2. Remove the snap ring.



azzjyw00000812

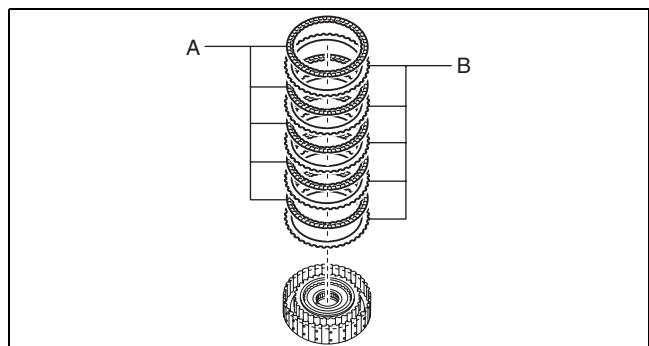
3. Remove the retaining plate.



azzjyw00000813

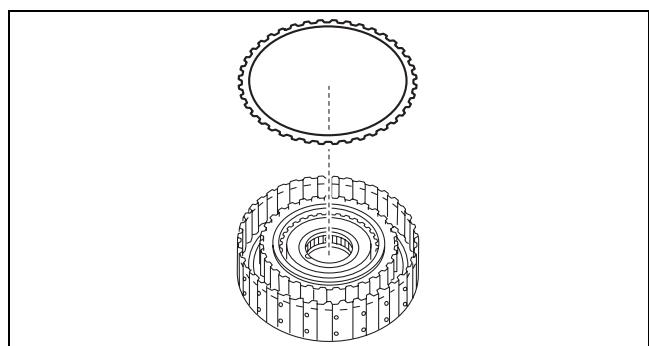
4. Remove the drive plates and driven plates.

A : Drive plate  
B : Driven plate



azzjyw00000814

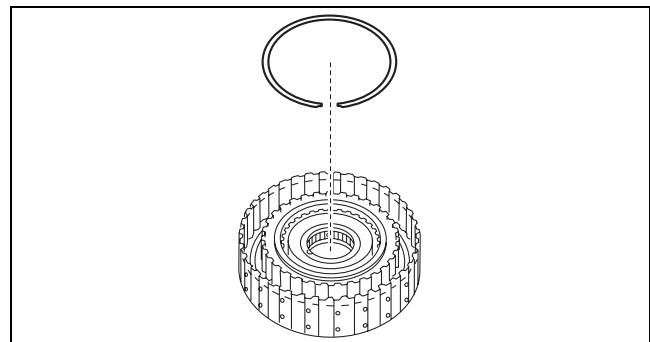
5. Remove the wave spring.



azzjyw00000815

## AUTOMATIC TRANSAXLE

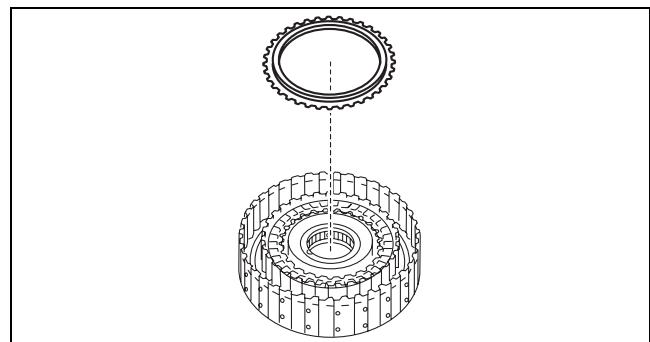
6. Remove the snap ring.



05-17

azzjw00000816

7. Remove the retaining plate.

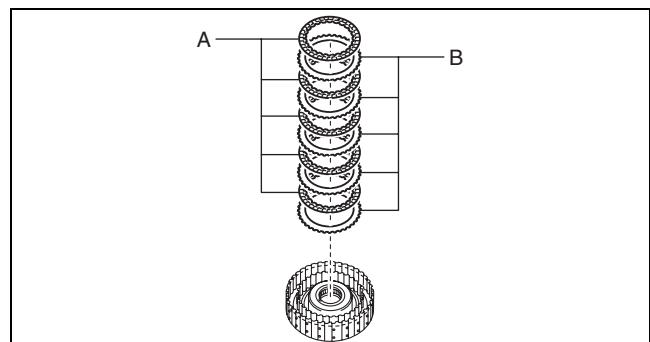


azzjw00000817

8. Remove the drive plates and driven plates.

A : Drive plate

B : Driven plate



azzjw00000818

## AUTOMATIC TRANSAXLE

9. Remove the snap ring using the following procedure:

(1) Install the SSTs.

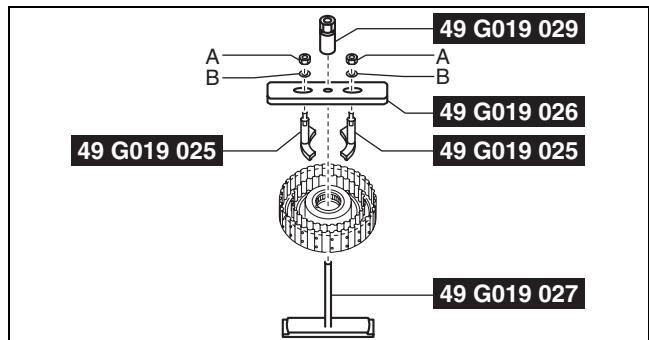
A : Nut included with SST (49 G019 025), or

M8×1.25 nut

B : Washer

**Note**

- When installing the SST (49 G019 025) to the SST (49 G019 026), use the nuts included with the SST (49 G019 025), or M8×1.25 nuts.

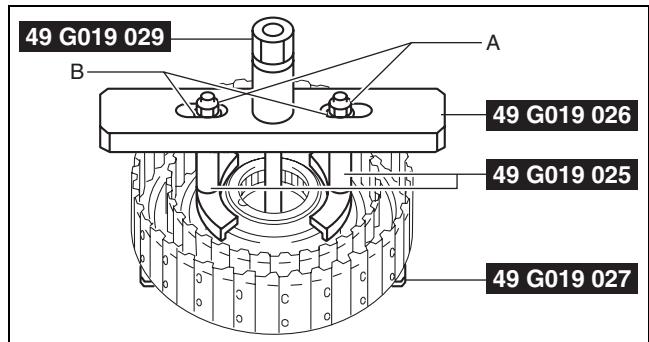


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A : Nut included with SST (49 G019 025), or

M8×1.25 nut

B : Washer



azzjjw00000820

- (2) Tighten the SST (49 G019 029) until there is no longer any spring force from the springs and retainer component applied to the snap ring.

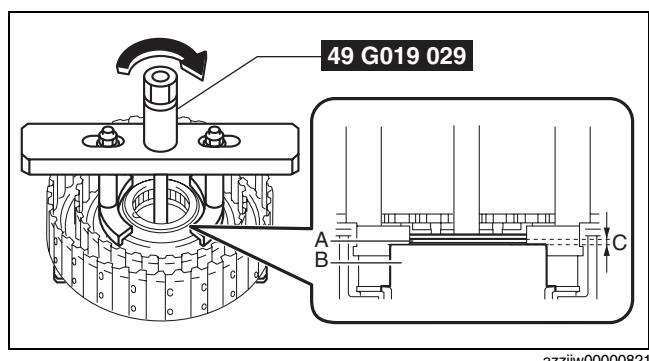
A : Snap ring

B : Seal plate

C : Gap

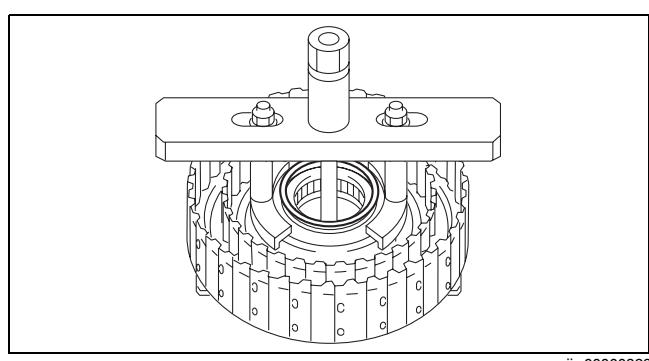
**Caution**

- If the SST (49 G019 029) is tightened with excessive force, surrounding parts could be damaged. Stop tightening if a gap appears between the snap ring and seal plate.



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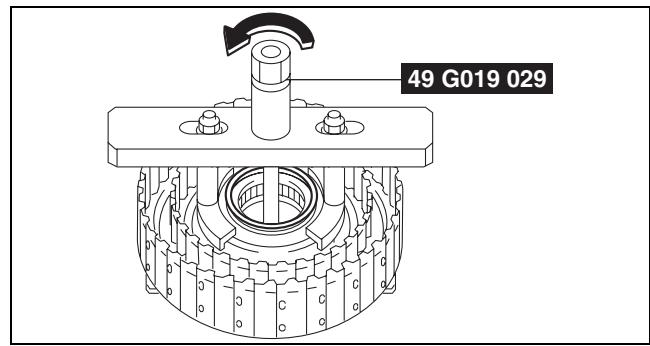
- (3) Remove the snap ring from the snap ring groove.



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## AUTOMATIC TRANSAXLE

- (4) Loosen the SST (49 G019 029) and remove the SSTs.

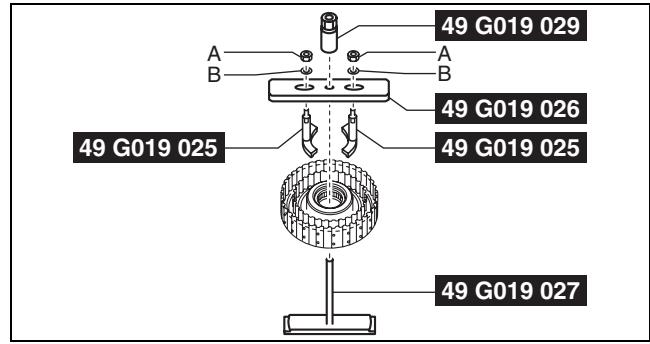


05-17

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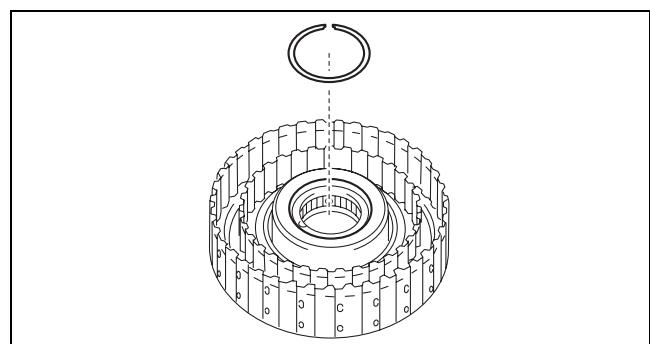
A : Nut included with SST (49 G019 025), or M8×1.25 nut

B : Washer



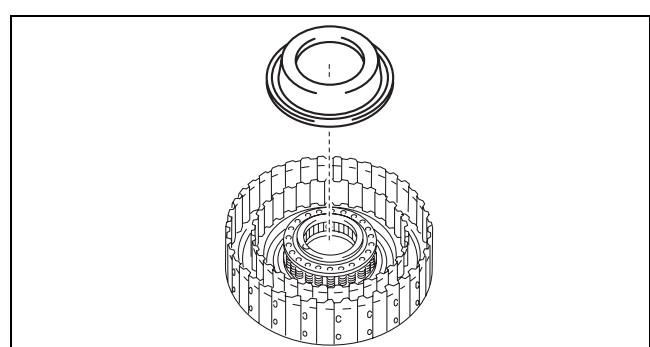
azzjjw00000824

- (5) Remove the snap ring removed from the snap ring groove.



azzjjw00000825

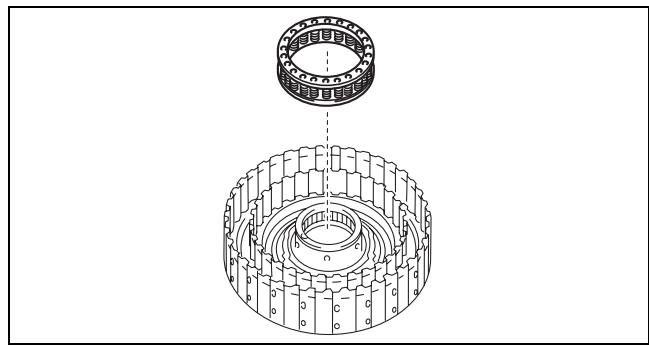
10. Remove the seal plate.



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## AUTOMATIC TRANSAXLE

11. Remove the springs and retainer component.



azzjw00000827

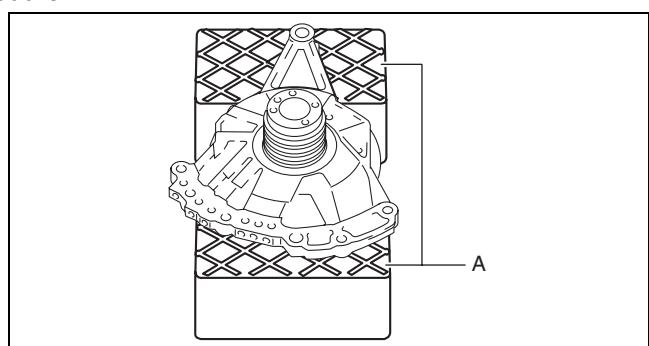
12. Remove the high clutch piston using the following procedure:

- (1) Set the oil pump on the workbench as shown in the figure.

A : Rubber plate

**Note**

- Using the rubber plates, adjust the alignment surface of the oil pump with the transaxle case so that it is level.



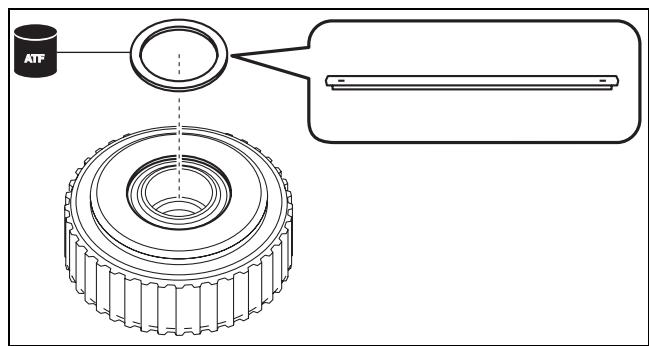
azzjw00000802

(2) Assemble the thrust needle bearing to the high clutch drum component using the following procedure:

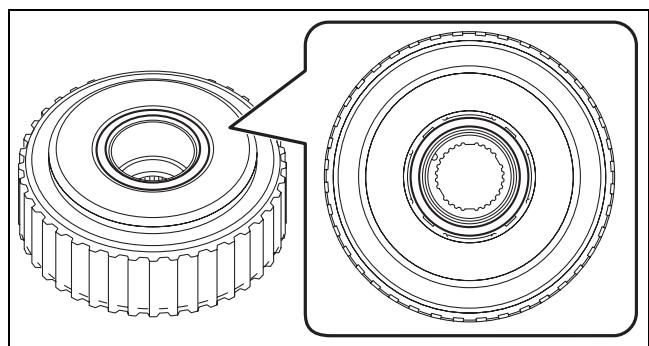
**Note**

- Thrust needle bearing size: Outer diameter approx. 72.7 mm {2.86 in}

- 1) To prevent the thrust needle bearing from dropping out, apply ATF (ATF FZ) to the thrust needle bearing.
- 2) Assemble the thrust needle bearing.



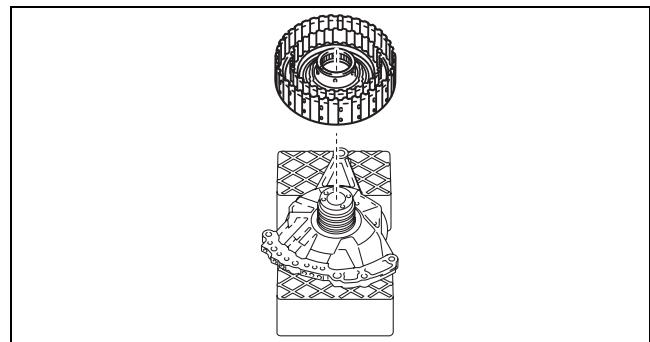
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azzjw00000804

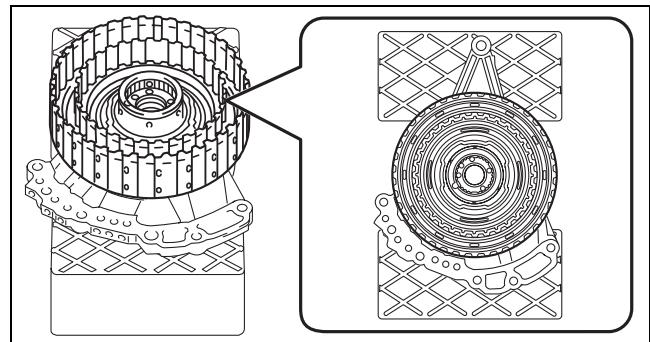
## AUTOMATIC TRANSAXLE

- (3) Assemble the parts assembled together in Step (2) to the oil pump.



05-17

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azzjw00000829

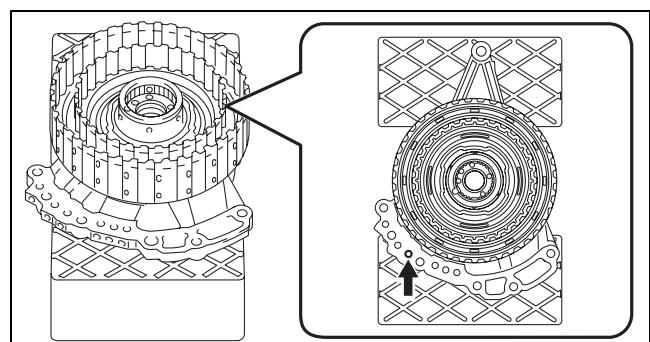
- (4) Blow compressed air into the oil passage shown in the figure.

### Warning

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

### Caution

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

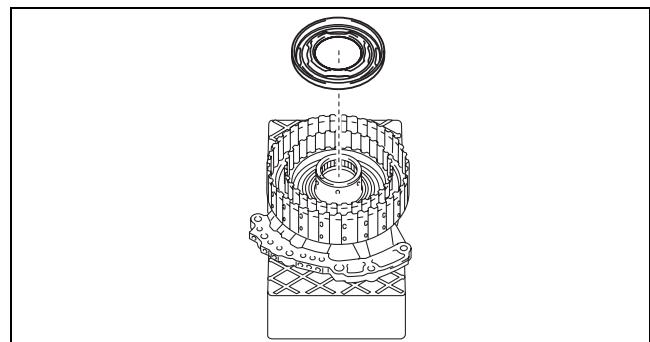


azzjw00000830

### Compressed air pressure

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

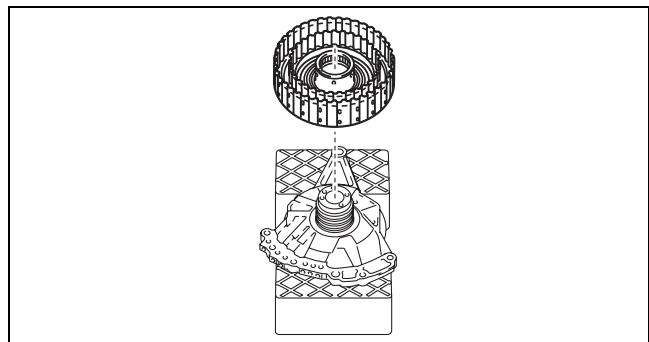
- (5) Remove the high clutch piston removed from the high clutch drum component.



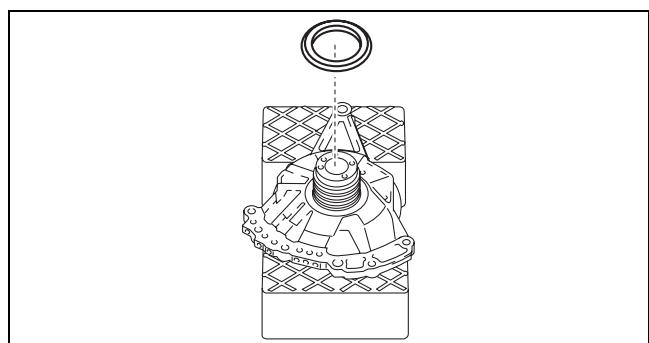
azzjw00000831

## AUTOMATIC TRANSAXLE

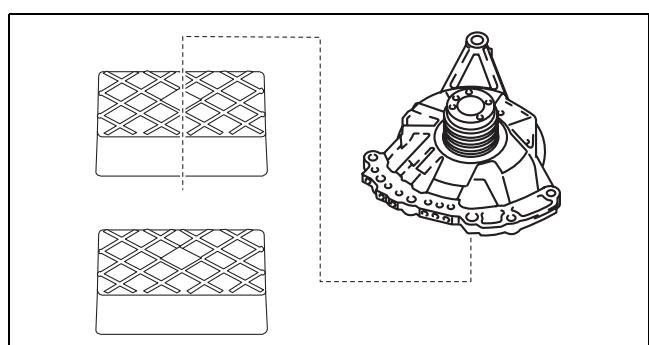
- (6) Remove the high clutch drum component.



- (7) Remove the thrust needle bearing.



- (8) Take the oil pump off the rubber plates.



13. Clean the disassembled parts. (See 05-17-26 AUTOMATIC TRANSAXLE CLEANING.)

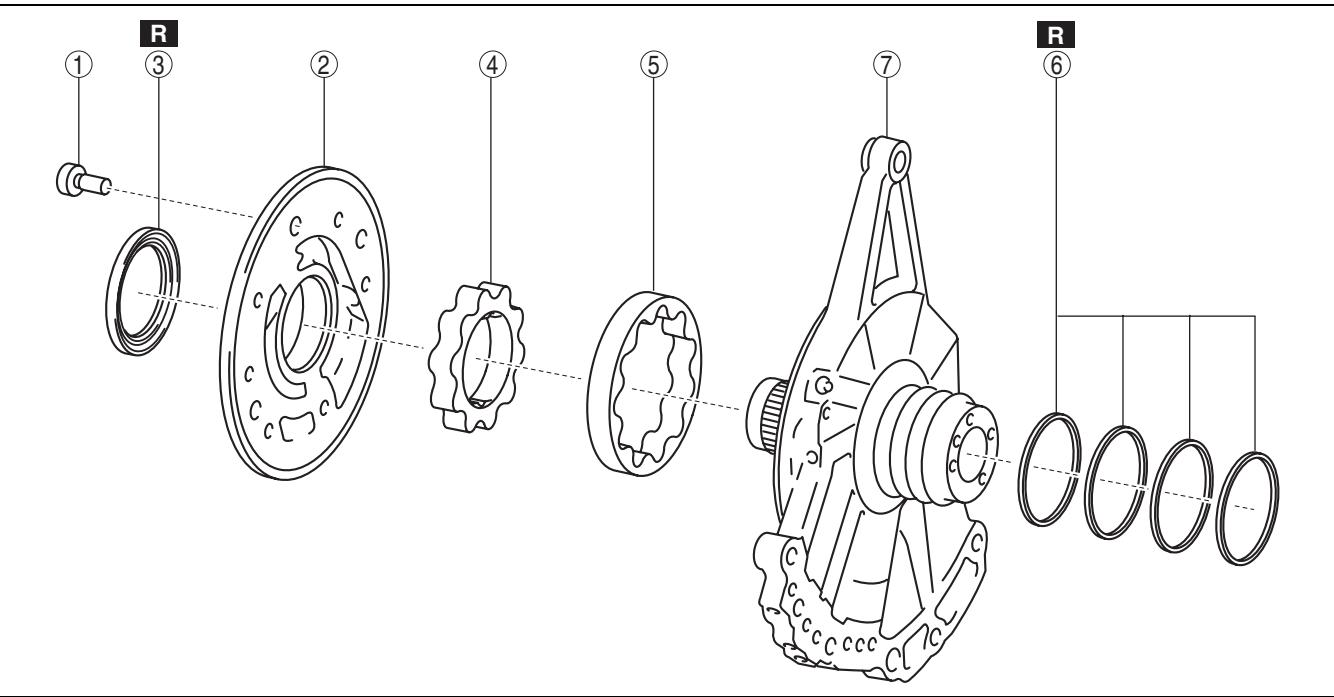
14. Perform the following inspection and replace a malfunctioning part with a new one.

- Visual inspection of parts (See 05-17-151 VISUAL INSPECTION OF PARTS)
- Low clutch inspection (See 05-17-169 LOW CLUTCH INSPECTION)
- High clutch inspection (See 05-17-169 HIGH CLUTCH INSPECTION)

## OIL PUMP DISASSEMBLY

id051700660800

## Structural View



05-17

azzjw00001431

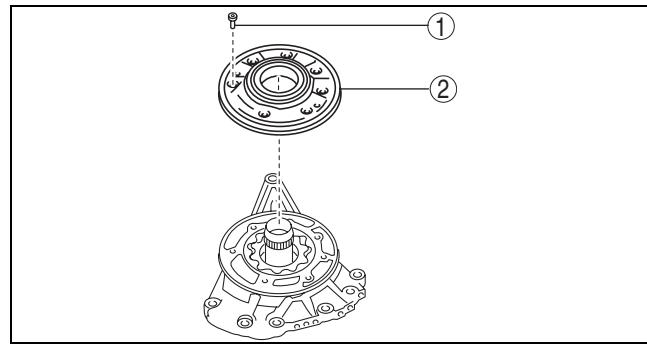
1	7 bolts
2	Oil pump cover
3	Oil seal
4	Inner rotor

5	Outer rotor
6	Seal ring
7	Oil pump housing

## Disassembly Procedure

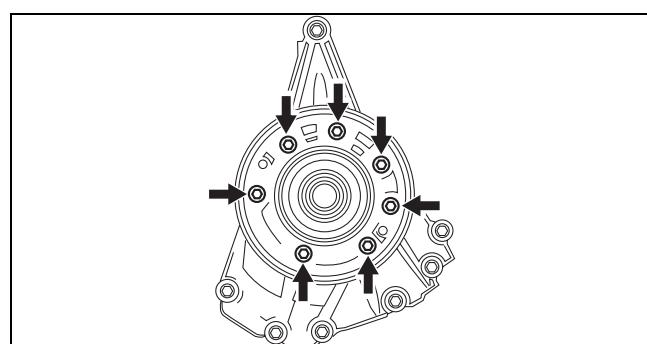
1. Remove the oil pump cover using the following procedure:

1	7 bolts
2	Oil pump cover



azzjw00000833

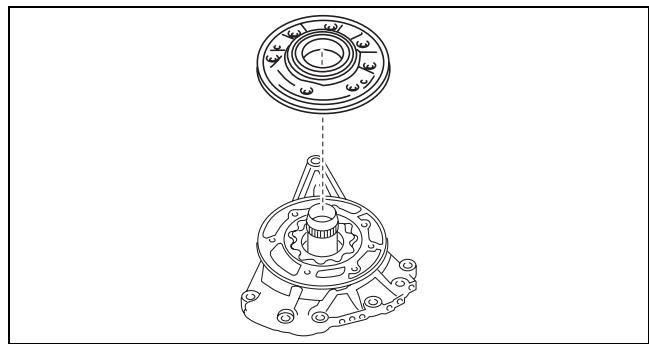
- (1) Remove the bolts shown in the figure.



azzjw00000834

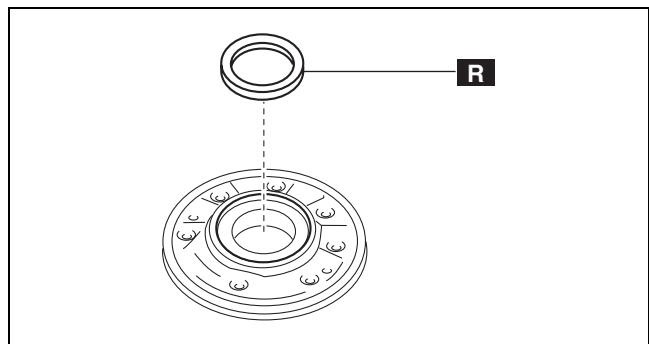
## AUTOMATIC TRANSAXLE

(2) Remove the oil pump cover.



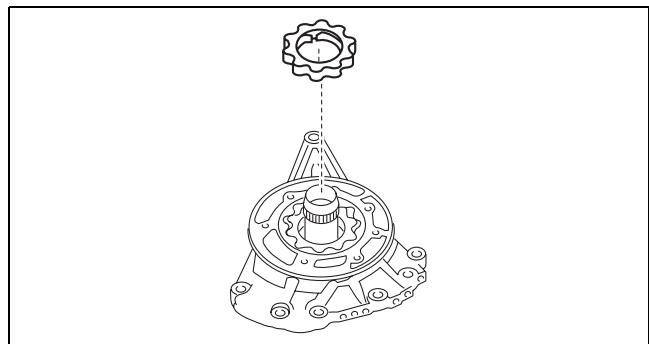
azzjw00000835

2. Remove the oil seal.



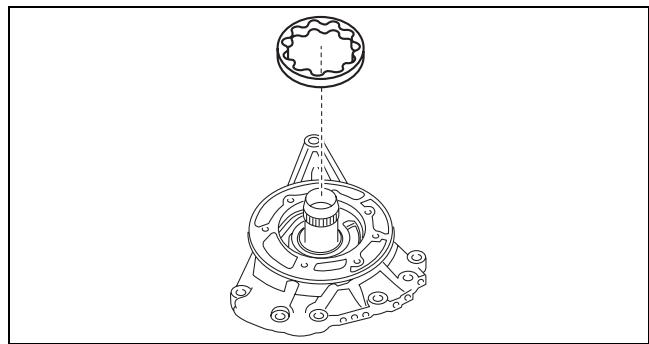
azzjw00000836

3. Remove the inner rotor.



azzjw00000837

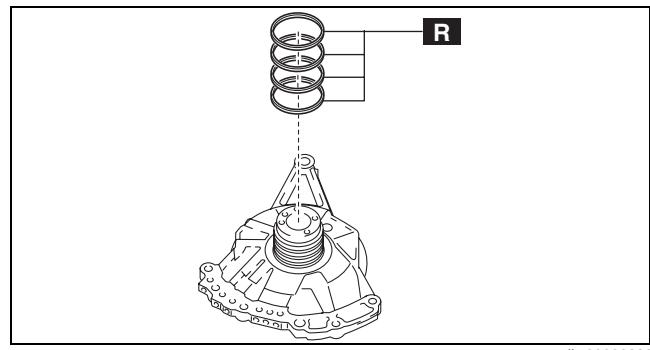
4. Remove the outer rotor.



azzjw00000838

# AUTOMATIC TRANSAXLE

5. Remove the seal rings.



05-17

azzjw00000839

6. Clean the disassembled parts. (See 05-17-26 AUTOMATIC TRANSAXLE CLEANING.)

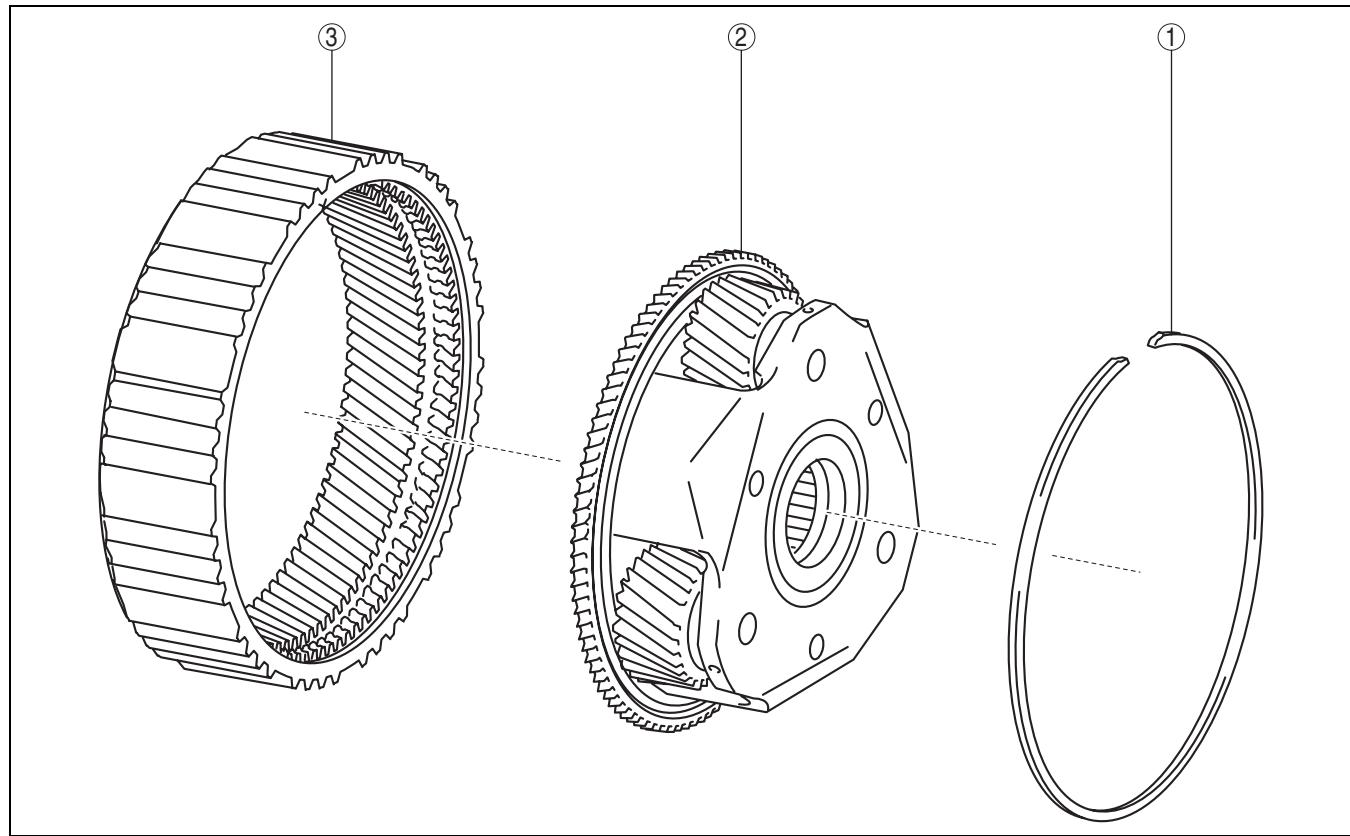
7. Perform the following inspection and replace a malfunctioning part with a new one.

- Visual inspection of parts (See 05-17-151 VISUAL INSPECTION OF PARTS)
- Oil pump inspection (See 05-17-174 OIL PUMP INSPECTION)

## REAR PLANETARY GEAR DISASSEMBLY

id051700660900

### Structural View



azzjw00001432

1	Snap ring
2	Rear planetary carrier

3	Front internal gear
---	---------------------

## AUTOMATIC TRANSAXLE

### Disassembly Procedure

1. Perform the following inspection:

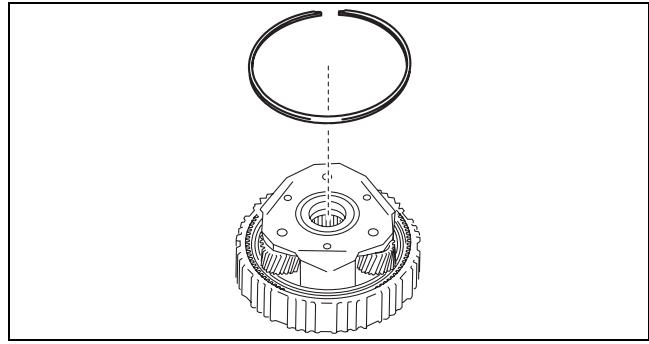
#### Caution

- If there is no malfunction based on the results of the inspection, it is not necessary to disassemble the rear planetary gear.

- Visual inspection of parts (See 05-17-151 VISUAL INSPECTION OF PARTS)
- Rear planetary gear inspection (See 05-17-158 REAR PLANETARY GEAR INSPECTION)

- If there is a malfunction, disassemble the rear planetary gear and replace the malfunctioning part with a new part.

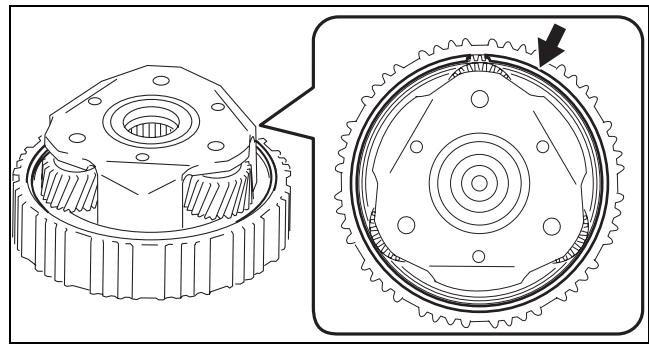
2. Remove the snap ring.



azzjw00000840

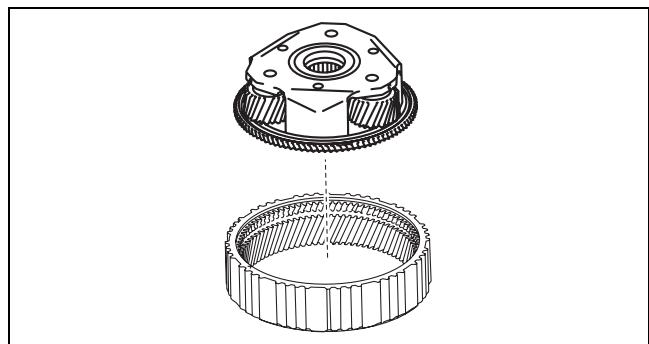
#### Note

When removing the snap ring, insert a precision flathead screwdriver into the position (between front internal gear and snap ring brim) shown in the figure and the snap ring can be easily removed by prying the snap ring brim.



azzjw00001433

3. Remove the rear planetary carrier.



azzjw00001434

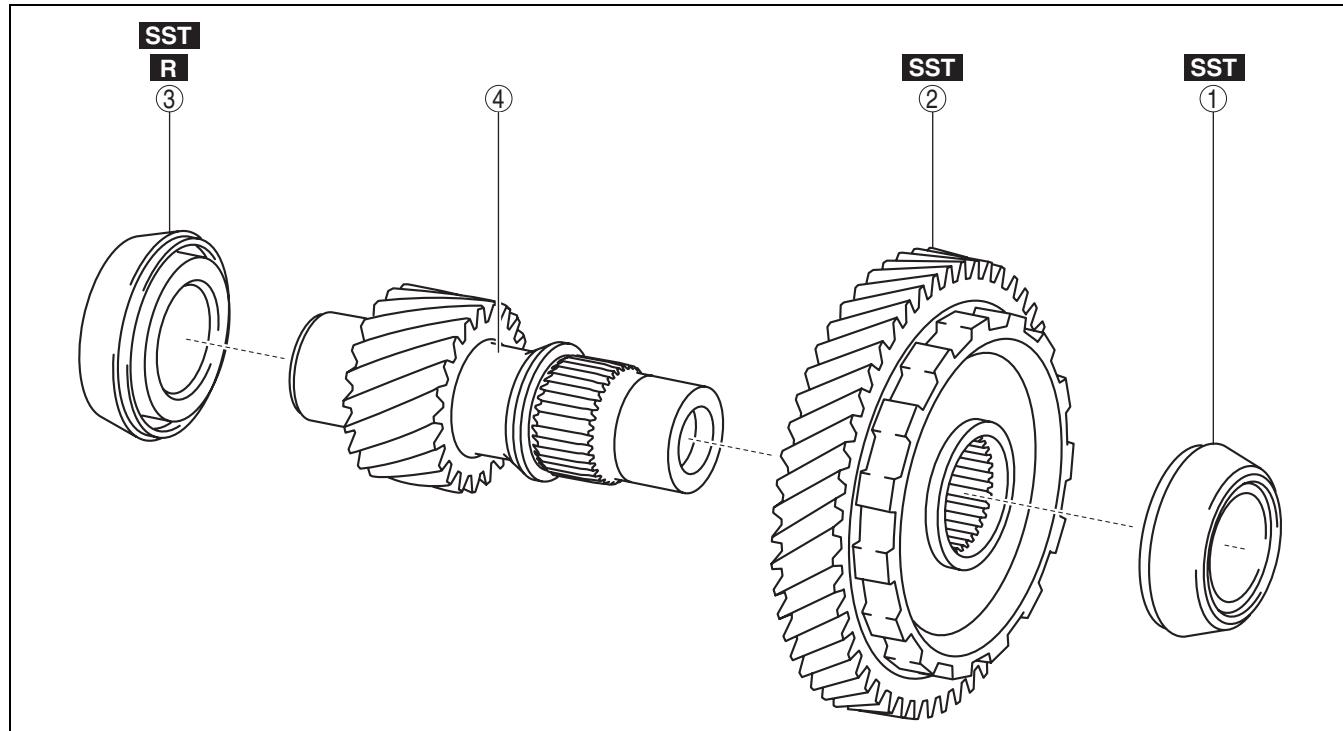
4. Clean the disassembled parts. (See 05-17-26 AUTOMATIC TRANSAXLE CLEANING.)

# AUTOMATIC TRANSAXLE

## SECONDARY GEAR AND OUTPUT GEAR DISASSEMBLY

id051700661000

### Structural View



05-17

azzjw00001469

1	Taper roller bearing (transaxle case side)
2	Secondary gear
3	Taper roller bearing (converter housing side)
4	Output gear

### Disassembly Procedure

1. Perform the following inspection:

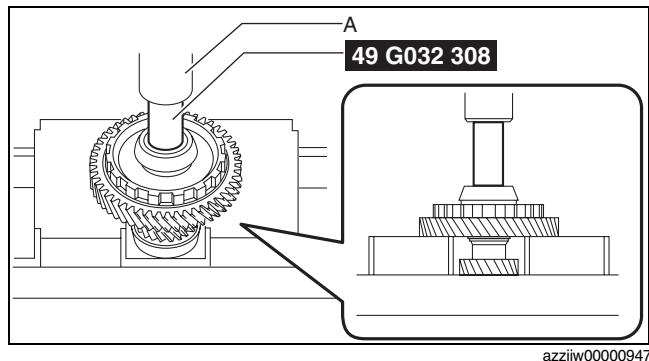
#### Caution

- If there is no malfunction based on the results of the inspection, it is not necessary to disassemble the secondary gear and output gear.
- Visual inspection of parts (See 05-17-151 VISUAL INSPECTION OF PARTS)
- Secondary gear and output gear inspection (See 05-17-163 SECONDARY GEAR AND OUTPUT GEAR INSPECTION)
- If there is a malfunction, disassemble the secondary gear and output gear and replace the malfunctioning part with a new part.

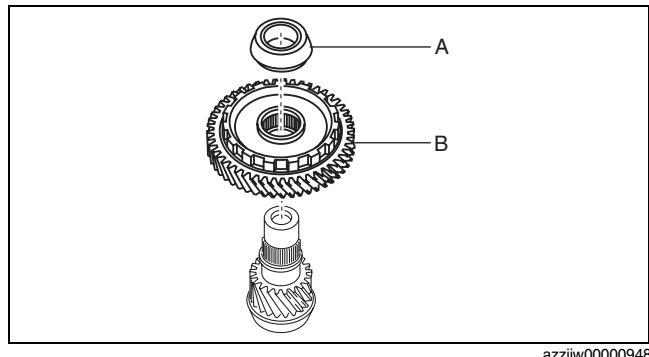
## AUTOMATIC TRANSAXLE

2. Using the SST and press, remove the secondary gear and the taper roller bearing (transaxle case side).

A : Press



A : Taper roller bearing (transaxle case side)  
B : Secondary gear

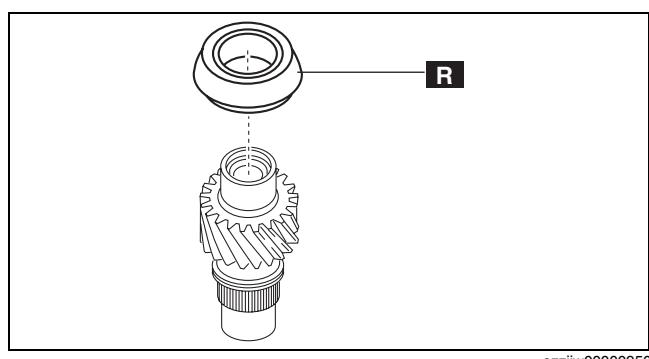
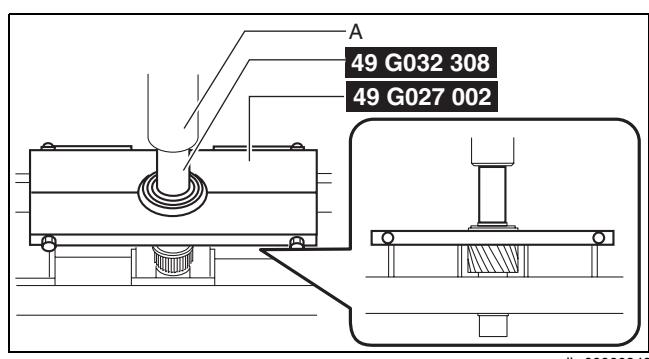


3. Using the SSTs and press, remove the taper roller bearing (converter housing side).

A : Press

### Caution

- When removing the taper roller bearing, the cage will deform when the SST is put on the taper roller bearing cage. When assembling the secondary gear and output gear, use a new taper roller bearing.



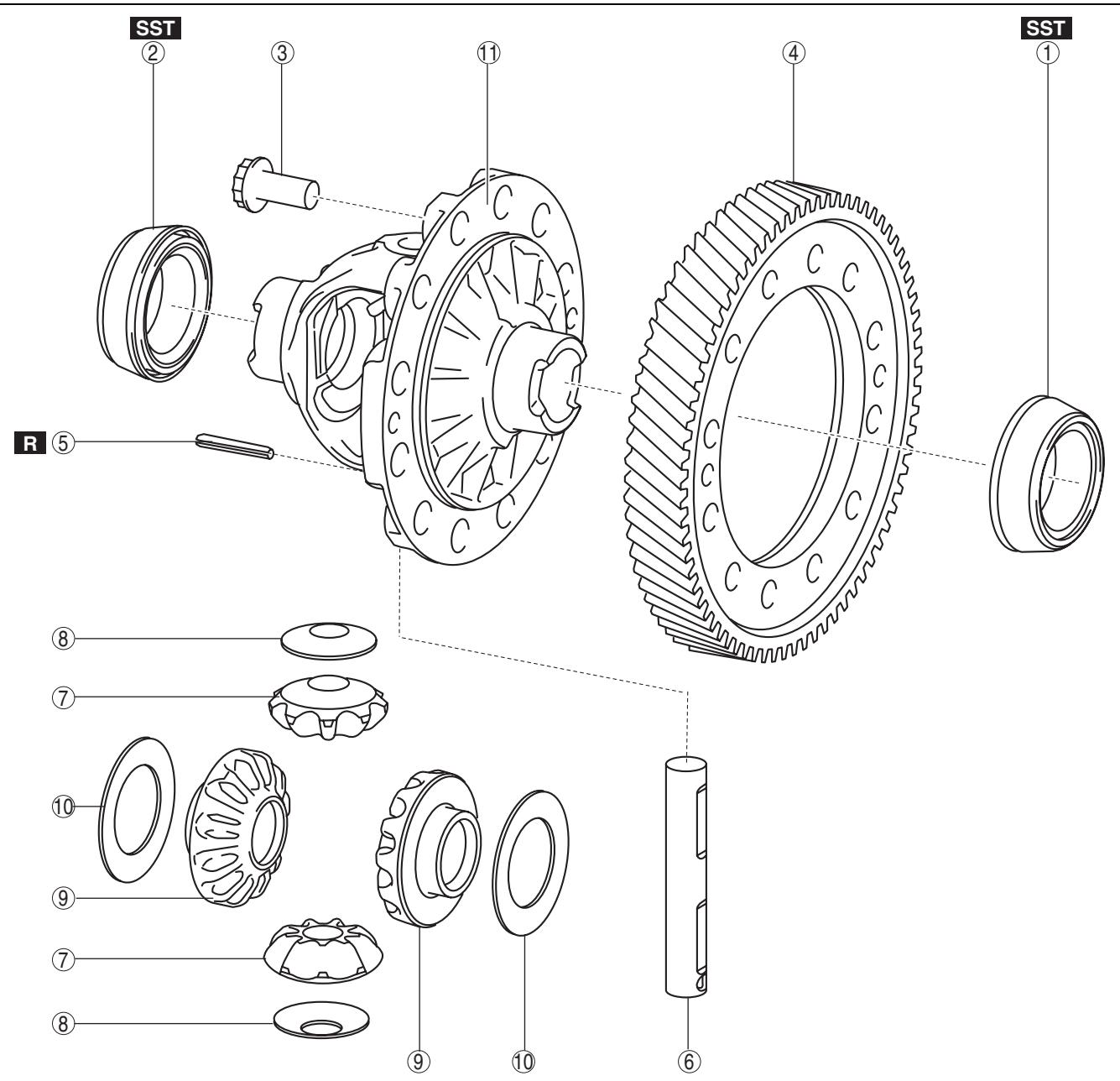
4. Clean the disassembled parts. (See 05-17-26 AUTOMATIC TRANSAXLE CLEANING.)

# AUTOMATIC TRANSAXLE

## RING GEAR AND DIFFERENTIAL DISASSEMBLY

id051700661100

### Structural View



azzjw00001486

1	Taper roller bearing (transaxle case side)
2	Taper roller bearing (converter housing side)
3	12 bolts
4	Ring gear
5	Roll pin
6	Pinion shaft

7	Pinion gear
8	Thrust washer
9	Side gear
10	Thrust washer
11	Differential gear case

# AUTOMATIC TRANSAXLE

## Disassembly Procedure

1. Perform the following inspection:

### Caution

- If there is no malfunction based on the results of the inspection, it is not necessary to disassemble the ring gear and differential.

- Visual inspection of parts (See 05-17-151 VISUAL INSPECTION OF PARTS)
- Ring gear and differential inspection (See 05-17-165 RING GEAR AND DIFFERENTIAL INSPECTION)

- If there is a malfunction, disassemble the ring gear and differential and replace the malfunctioning part with a new part.

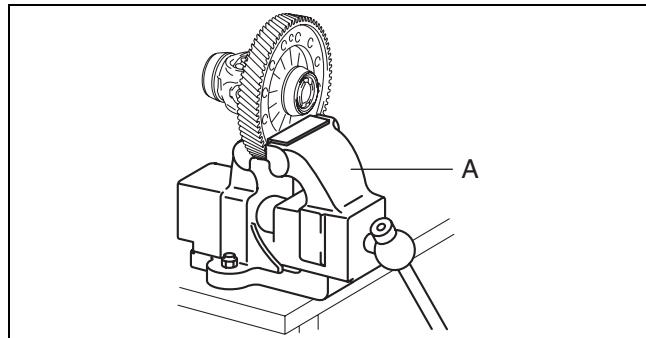
2. Remove the taper roller bearing (transaxle case side) using the following procedure:

- (1) Secure the ring gear and differential in a vise.

A : Vise

### Caution

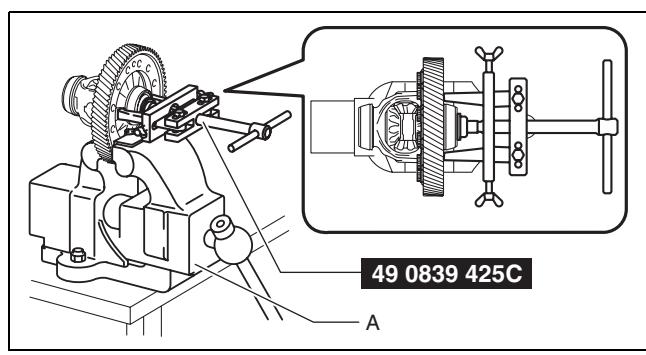
- Insert a protective plate between the vise and the part so as not to damage the part.



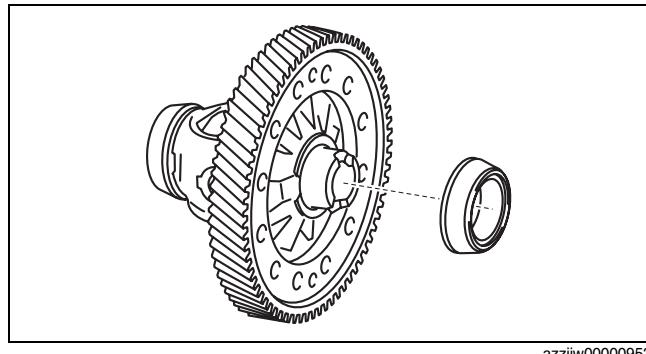
azzjjw00001254

- (2) Remove the taper roller bearing (transaxle case side) using the SST.

A : Vise



azzjjw00000952

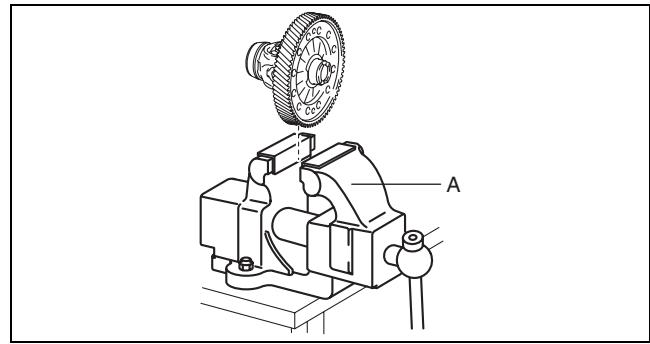


azzjjw00000953

## AUTOMATIC TRANSAXLE

- (3) Remove the ring gear and differential from the vise.

A : Vise



05-17

azzjw00001255

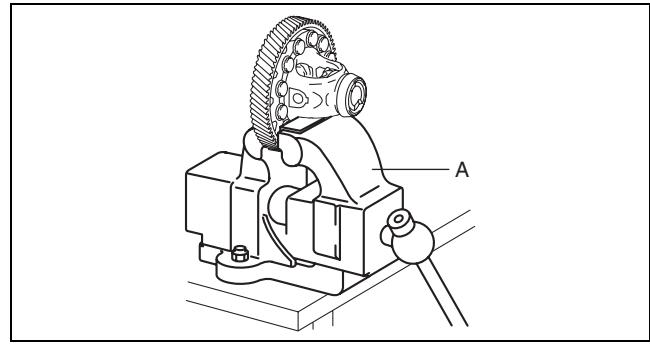
3. Remove the taper roller bearing (converter housing side) using the following procedure:

- (1) Secure the ring gear and differential in a vise.

A : Vise

**Caution**

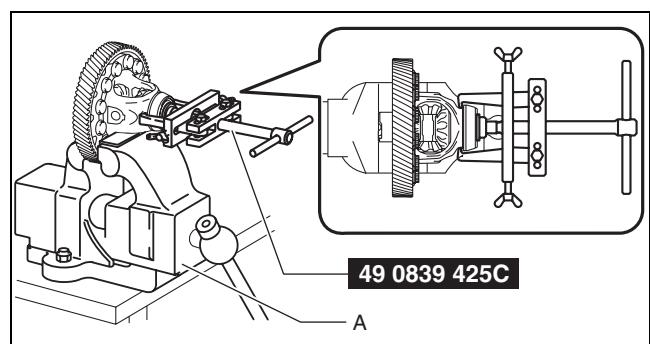
- Insert a protective plate between the vise and the part so as not to damage the part.



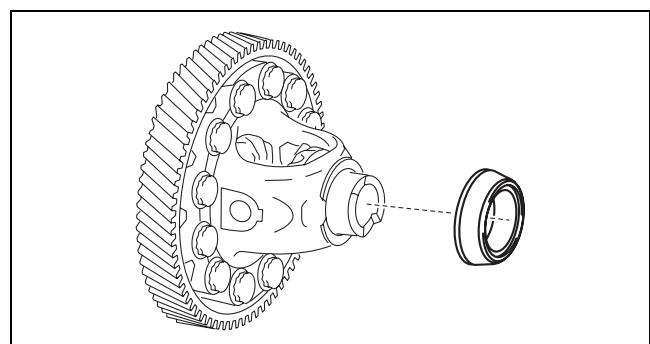
azzjw00001256

- (2) Remove the taper roller bearing (converter housing side) using the SST.

A : Vise



azzjw00000956

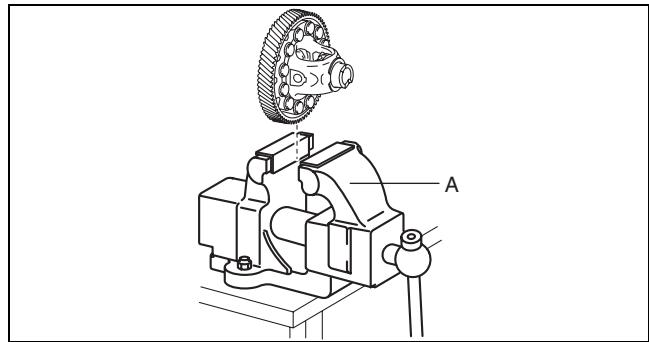


azzjw00000957

## AUTOMATIC TRANSAXLE

- (3) Remove the ring gear and differential from the vise.

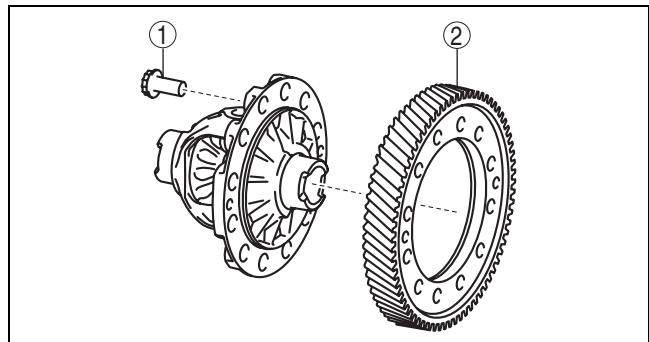
A : Vise



azjwjw00000958

4. Remove the ring gear using the following procedure:

1	12 bolts
2	Ring gear



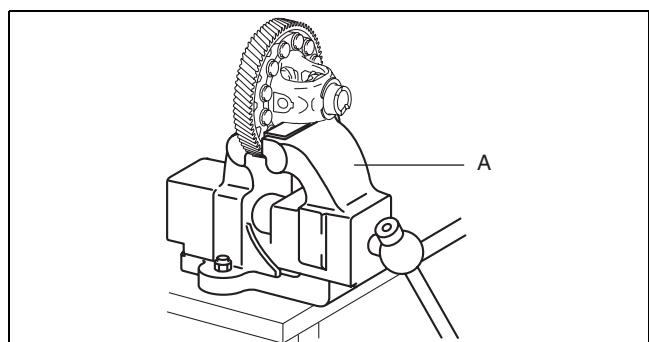
azjwjw00000959

- (1) Secure the ring gear and differential in a vise.

A : Vise

**Caution**

- Insert a protective plate between the vise and the part so as not to damage the part.



azjwjw00000960

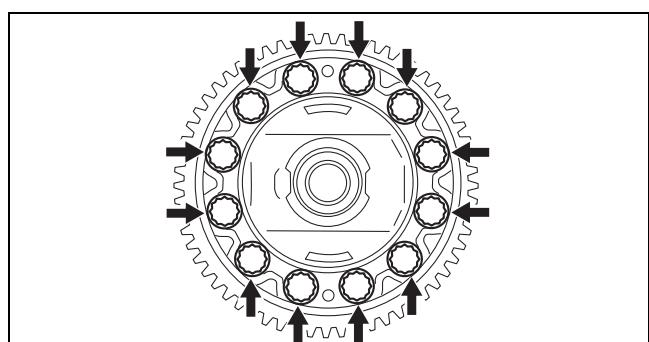
- (2) Loosen the bolts shown in the figure.

**Caution**

- Only loosen the bolts, do not remove them, otherwise the ring gear and differential will fall off.

**Note**

- Change the securing position of the ring gear and differential with the vise and loosen all of the bolts shown in the figure.

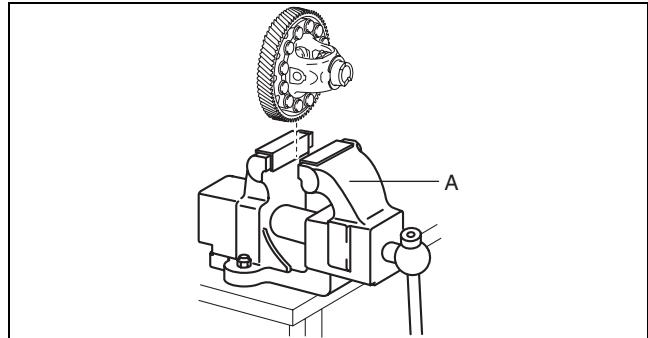


azjwjw00000961

## AUTOMATIC TRANSAXLE

- (3) Remove the ring gear and differential from the vise.

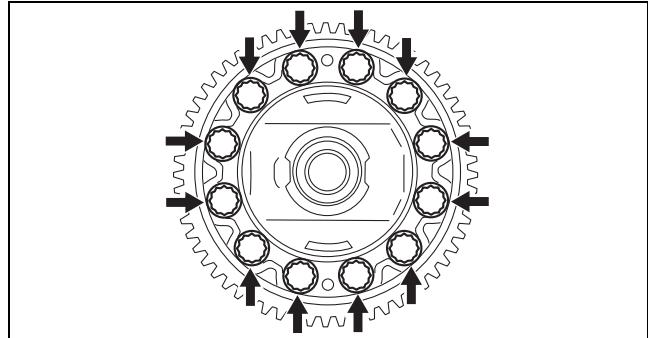
A : Vise



azjjw00000958

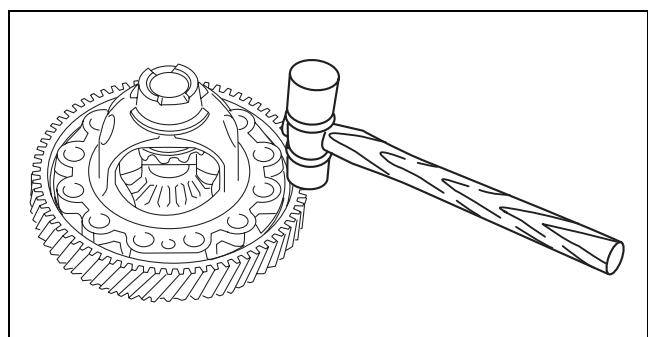
05-17

- (4) Remove the bolts shown in the figure.

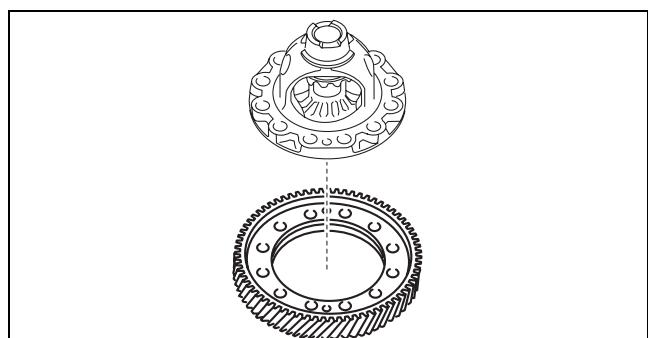


azjjw00000961

- (5) Lightly tap the ring gear with a plastic hammer and remove the ring gear.



azjjw00000962



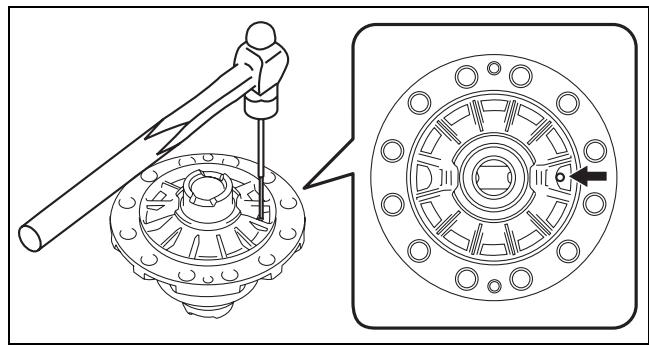
azjjw00000963

## AUTOMATIC TRANSAXLE

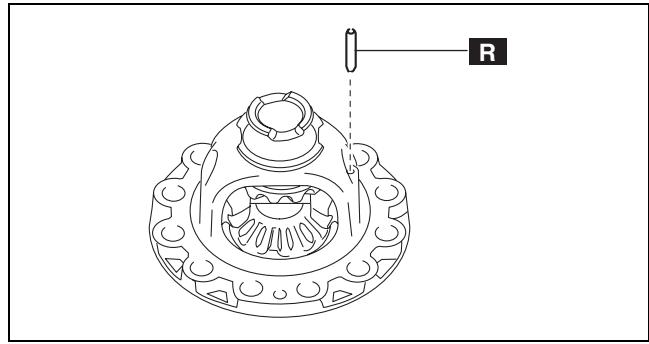
5. Remove the roll pin shown in the figure using a pin punch.

**Note**

- Use a pin punch with an end outer diameter of 3 mm {0.119 in} or more, and within 4 mm {0.157 in}, and an end length of 50 mm {2.0 in} or more.

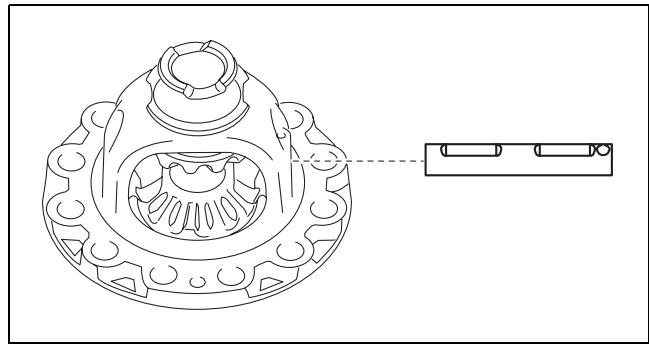


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azzjjw00001488

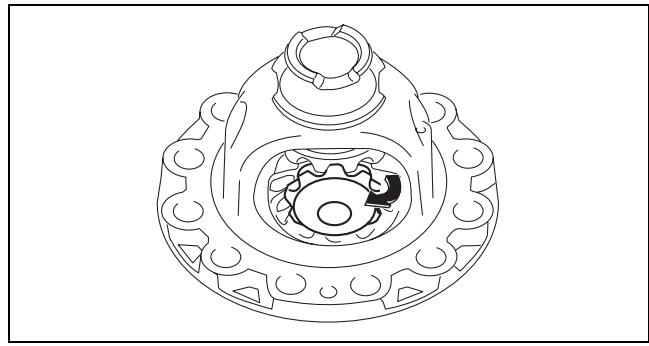
6. Remove the pinion shaft.



azzjjw00001489

7. Remove the pinion gears using the following procedure:

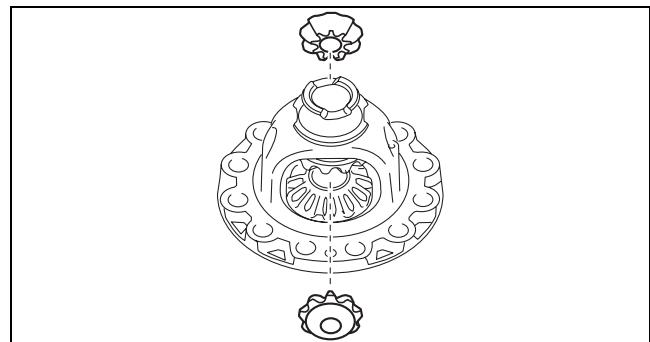
- (1) Rotate the pinion gears as shown in the figure.



azzjjw00001490

## AUTOMATIC TRANSAXLE

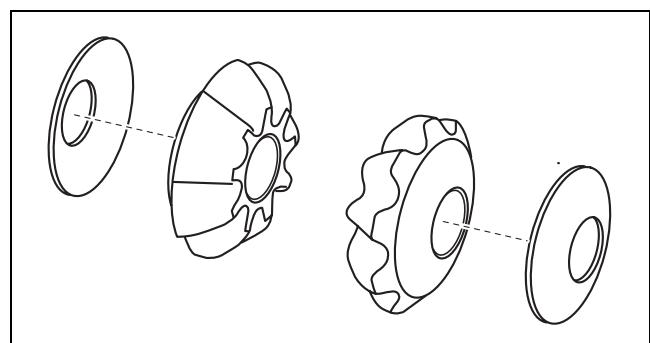
(2) Remove the pinion gears.



05-17

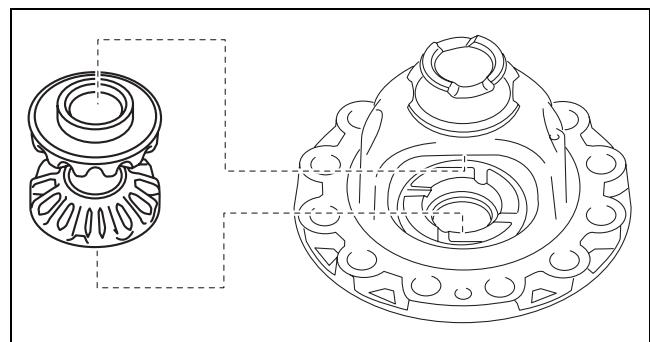
azzjw00001491

8. Remove the thrust washers from the pinion gears.



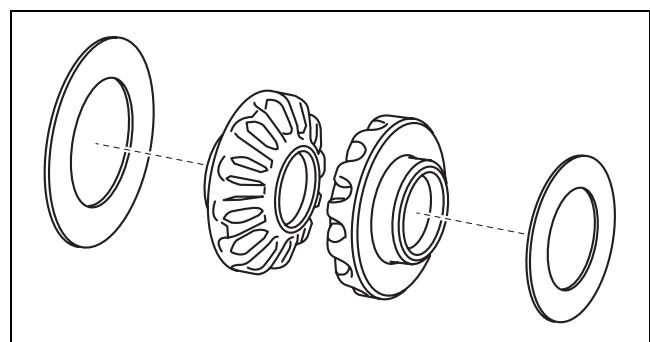
azzjw00001492

9. Remove the side gears.



azzjw00001493

10. Remove the thrust washers from the side gears.



azzjw00001494

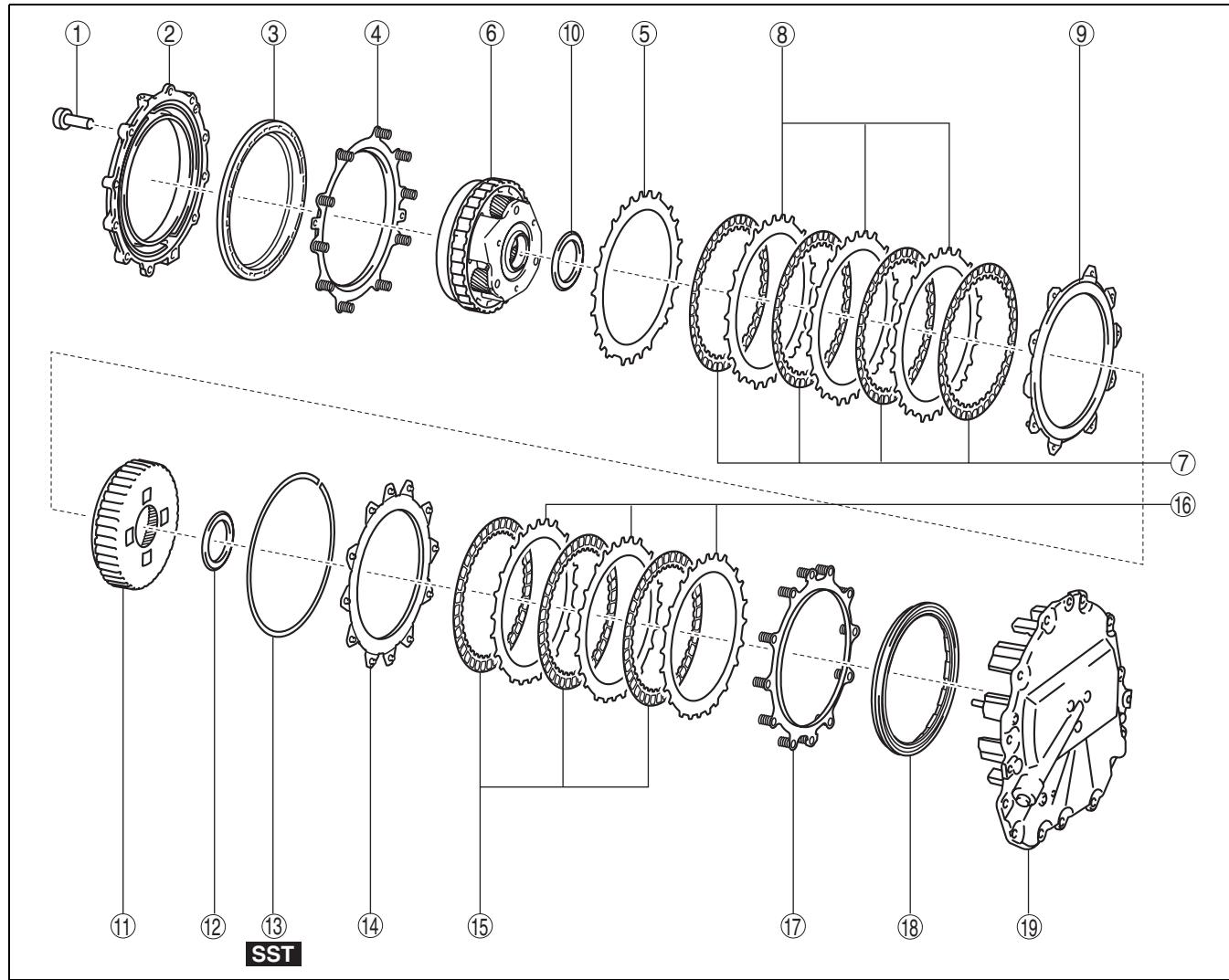
11. Clean the disassembled parts. (See 05-17-26 AUTOMATIC TRANSAXLE CLEANING.)

# AUTOMATIC TRANSAXLE

## END COVER COMPONENT DISASSEMBLY

id051700661200

### Structural View



azzjjw00001495

1	8 bolts
2	Brake housing
3	2-6 brake piston
4	Springs and retainer component
5	Retaining plate
6	Reduction planetary gear
7	Drive plate
8	Driven plate
9	Retaining plate
10	Thrust needle bearing

11	Reduction internal gear
12	Thrust needle bearing
13	Snap ring
14	Retaining plate
15	Drive plate
16	Driven plate
17	Springs and retainer component
18	R-3-5 brake piston
19	End cover

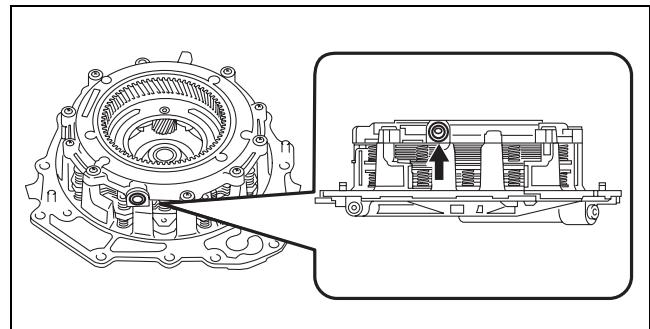
## Disassembly Procedure

1. Perform a simple inspection of the 2-6 brake using the following procedure:

- (1) Blow compressed air into the oil passage shown in the figure and verify the operation condition of the 2-6 brake.

### Warning

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.



azzjw00000964

05-17

### Caution

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

## Compressed air pressure

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

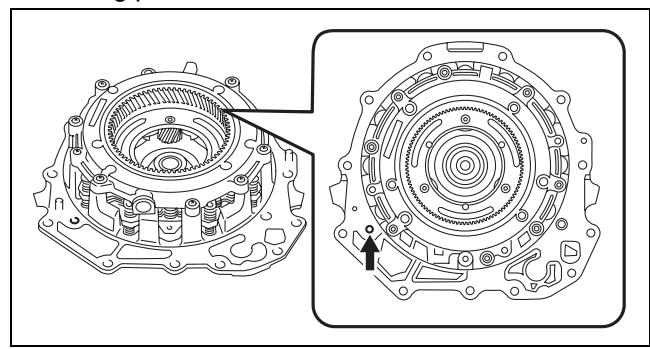
- If there is a malfunction, verify the cause and repair the applicable part after disassembly.

2. Perform a simple inspection of the R-3-5 brake using the following procedure:

- (1) Blow compressed air into the oil passage shown in the figure and verify the operation condition of the R-3-5 brake.

### Warning

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.



azzjw00000965

### Caution

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

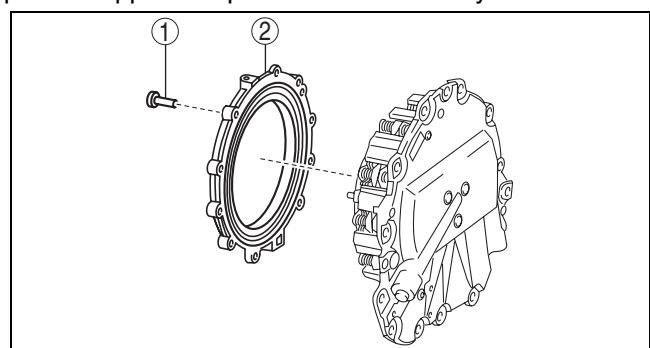
## Compressed air pressure

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

- If there is a malfunction, verify the cause and repair the applicable part after disassembly.

3. Remove the brake housing using the following procedure:

1	8 bolts
2	Brake housing



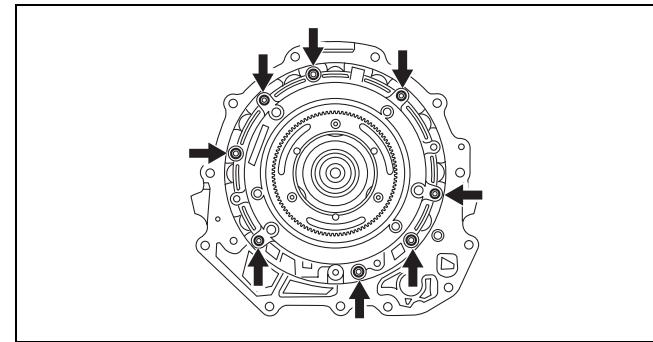
azzjw00000966

## AUTOMATIC TRANSAXLE

- (1) Loosen the bolts shown in the figure uniformly and remove them.

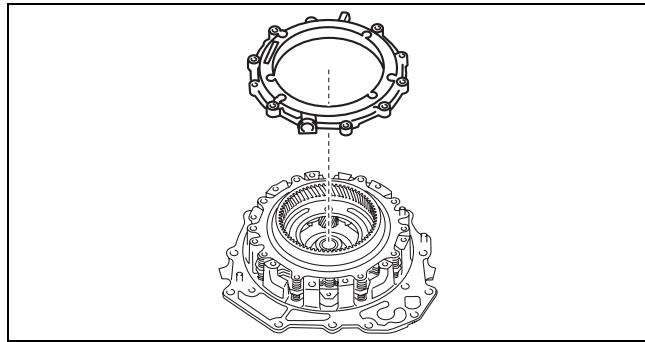
### Caution

- If the bolts are not loosened uniformly and removed, the brake housing will slant and parts could be damaged due to the spring force of the springs and retainer component in the brake housing.



azzjw00000967

- (2) Remove the brake housing.



azzjw00000968

4. Remove the 2-6 brake piston from the brake housing using the following procedure:

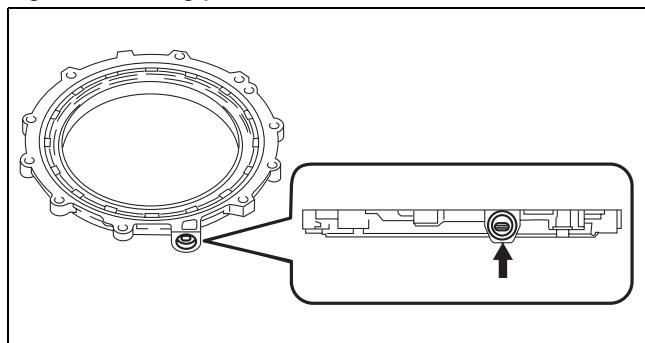
- (1) Blow compressed air into the oil passage shown in the figure.

### Warning

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

### Caution

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

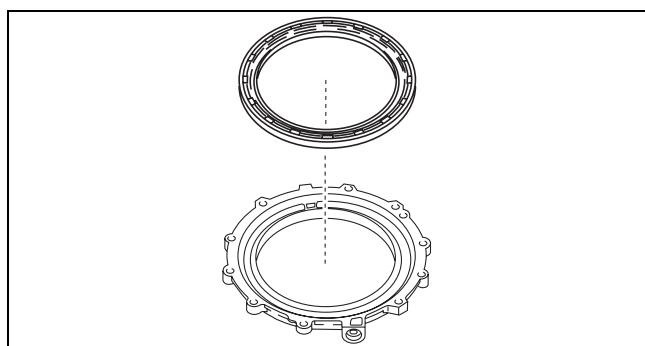


azzjw00000969

### Compressed air pressure

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

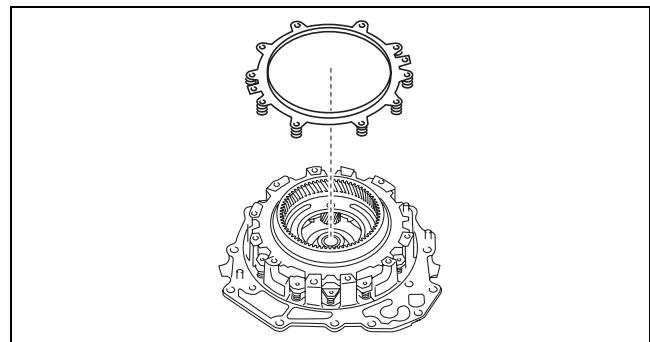
- (2) Remove the 2-6 brake piston removed from the brake housing.



azzjw00000970

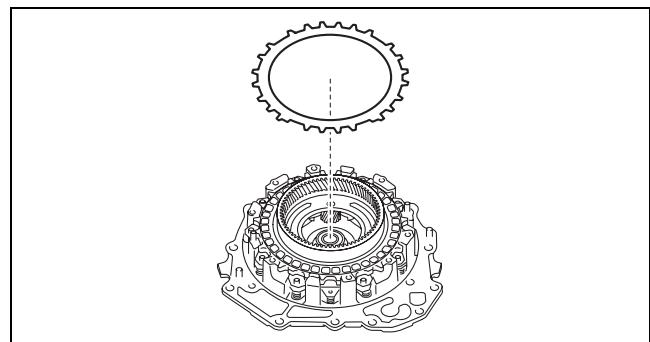
## AUTOMATIC TRANSAXLE

5. Remove the springs and retainer component.

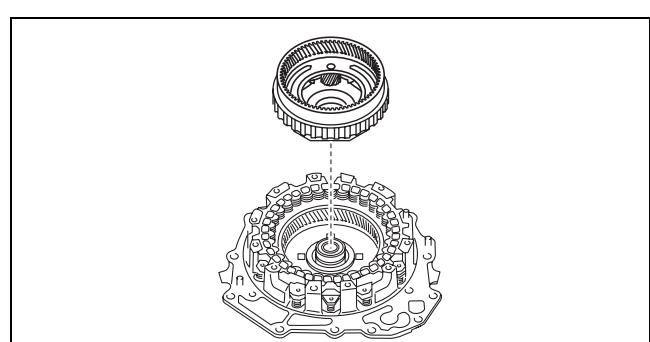


azzjw00000971

6. Remove the retaining plate.

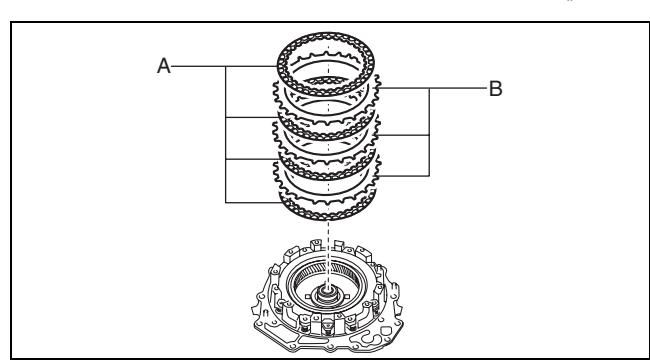


7. Remove the reduction planetary gear.



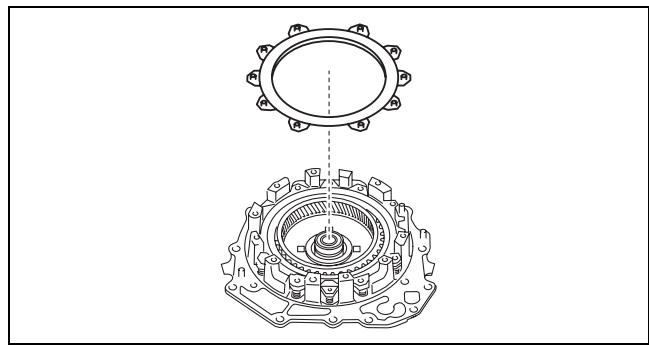
8. Remove the drive plates and driven plates.

A : Drive plate  
B : Driven plate



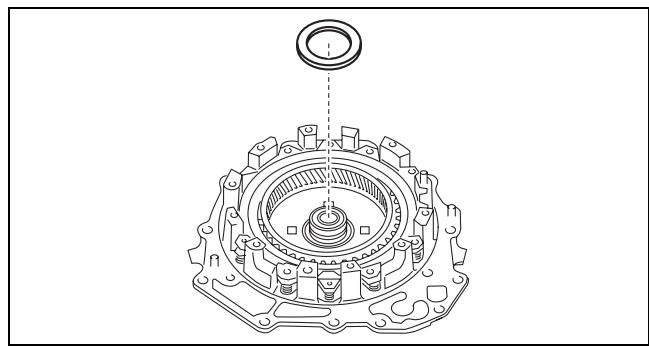
## AUTOMATIC TRANSAXLE

9. Remove the retaining plate.



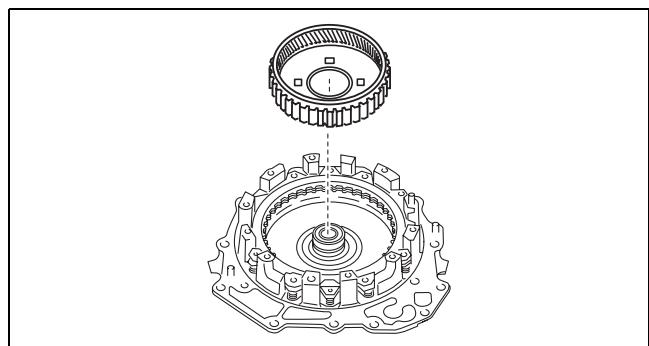
azzjjw00000975

10. Remove the thrust needle bearing.



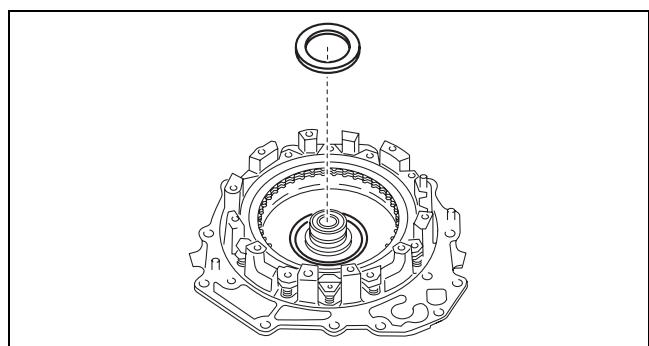
azzjjw00000976

11. Remove the reduction internal gear.



azzjjw00000977

12. Remove the thrust needle bearing.

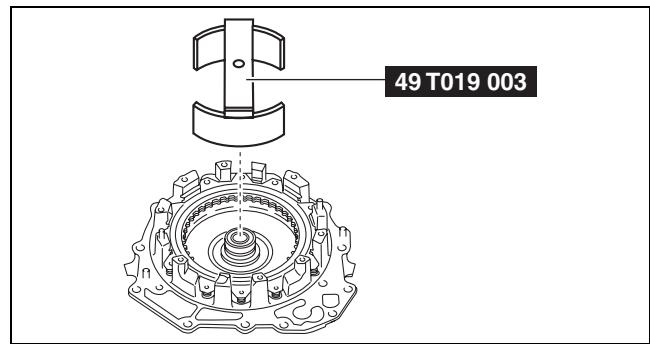


azzjjw00000978

## AUTOMATIC TRANSAXLE

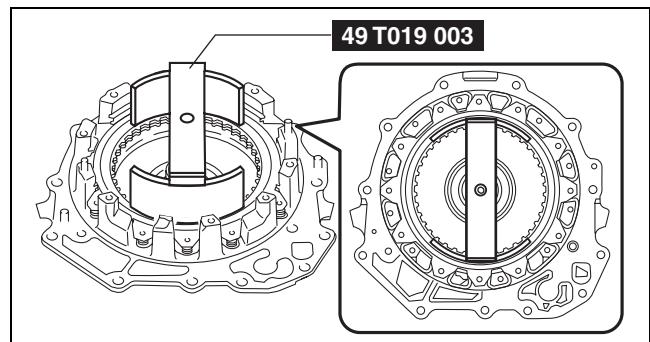
13. Remove the snap ring using the following procedure:

- (1) Install the SST.



05-17

azzjw00000979



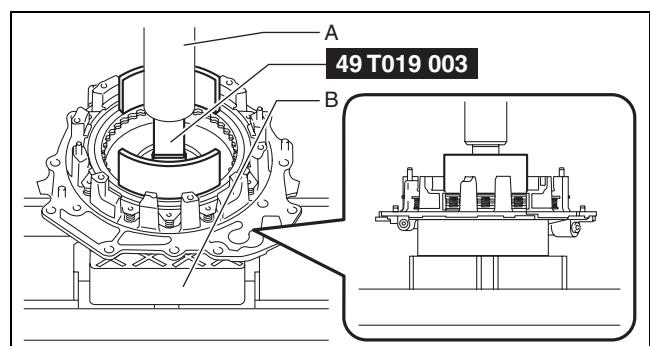
azzjw00001201

- (2) Set the SST and part to the press as shown in the figure.

A : Press  
B : Rubber plate

**Caution**

- Using the rubber plates, adjust the alignment surface of the end cover with the transaxle case so that it is level. Otherwise the parts could tip over during the procedure and get damaged.



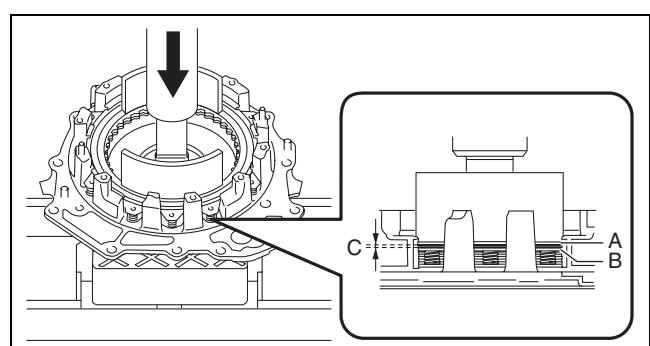
azzjw00000981

- (3) Press the SST down using a press until there is no longer any spring force from the springs and retainer component applied to the snap ring.

A : Snap ring  
B : Retaining plate  
C : Gap

**Caution**

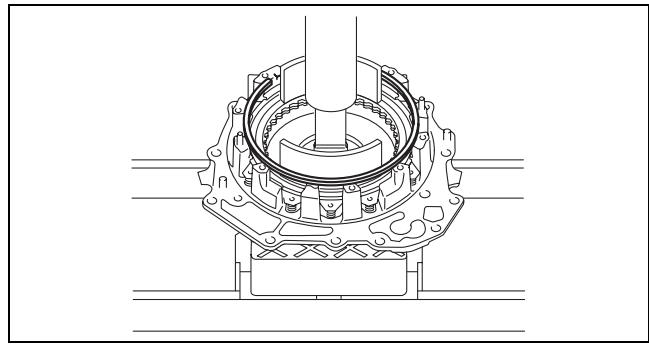
- If the SST is pressed excessively by the press, surrounding parts could be damaged. Stop pressing the SST down using a press if a gap appears between the snap ring and retaining plate.



azzjw00000982

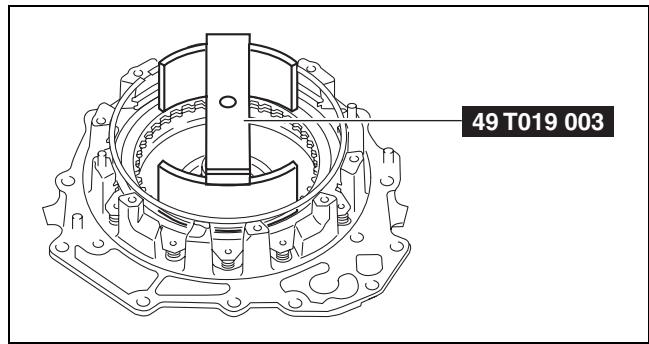
## AUTOMATIC TRANSAXLE

- (4) Remove the snap ring from the snap ring groove.



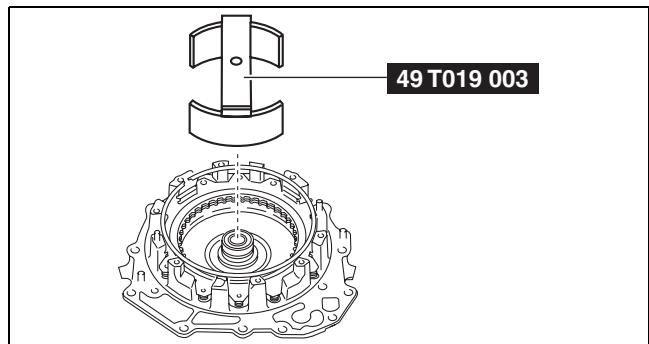
azzjjw00000983

- (5) Take the SST and part off the press.



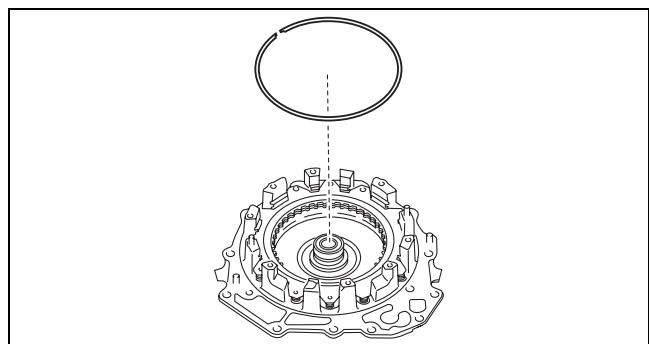
azzjjw00000984

- (6) Remove the SST.



azzjjw00000985

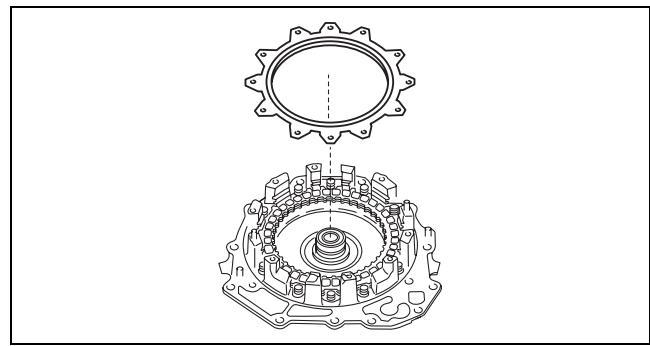
- (7) Remove the snap ring removed from the snap ring groove.



azzjjw00000986

## AUTOMATIC TRANSAXLE

14. Remove the retaining plate.

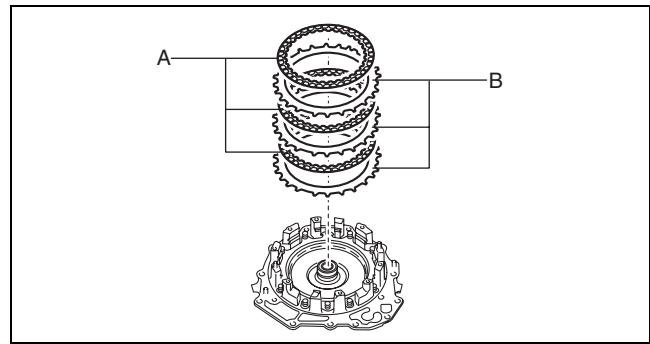


05-17

azzjw00000987

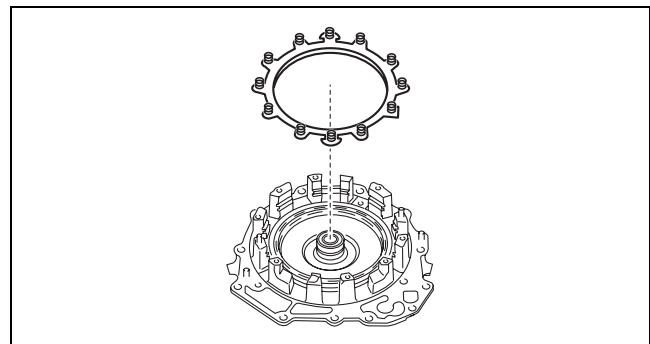
15. Remove the drive plates and driven plates.

A : Drive plate  
B : Driven plate



azzjw00000988

16. Remove the springs and retainer component.



azzjw00000989

17. Remove the R-3-5 brake piston using the following procedure:

- (1) Blow compressed air into the oil passage shown in the figure.

### Warning

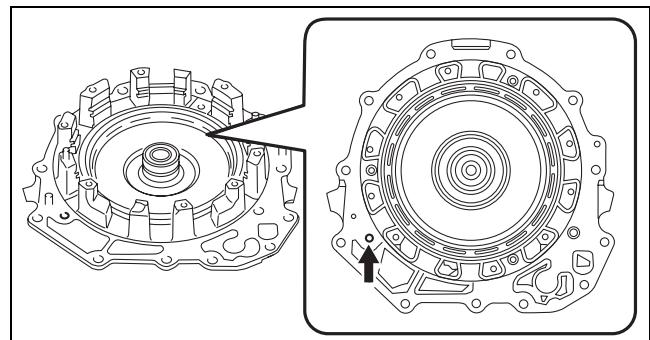
- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

### Caution

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

### Compressed air pressure

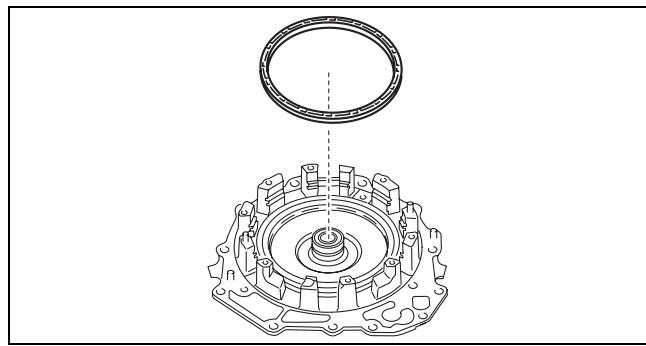
0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}



azzjw00000990

## AUTOMATIC TRANSAXLE

- (2) Remove the R-3-5 brake piston removed from the end cover.



azzjw00000991

18. Clean the disassembled parts. (See 05-17-26 AUTOMATIC TRANSAXLE CLEANING.)

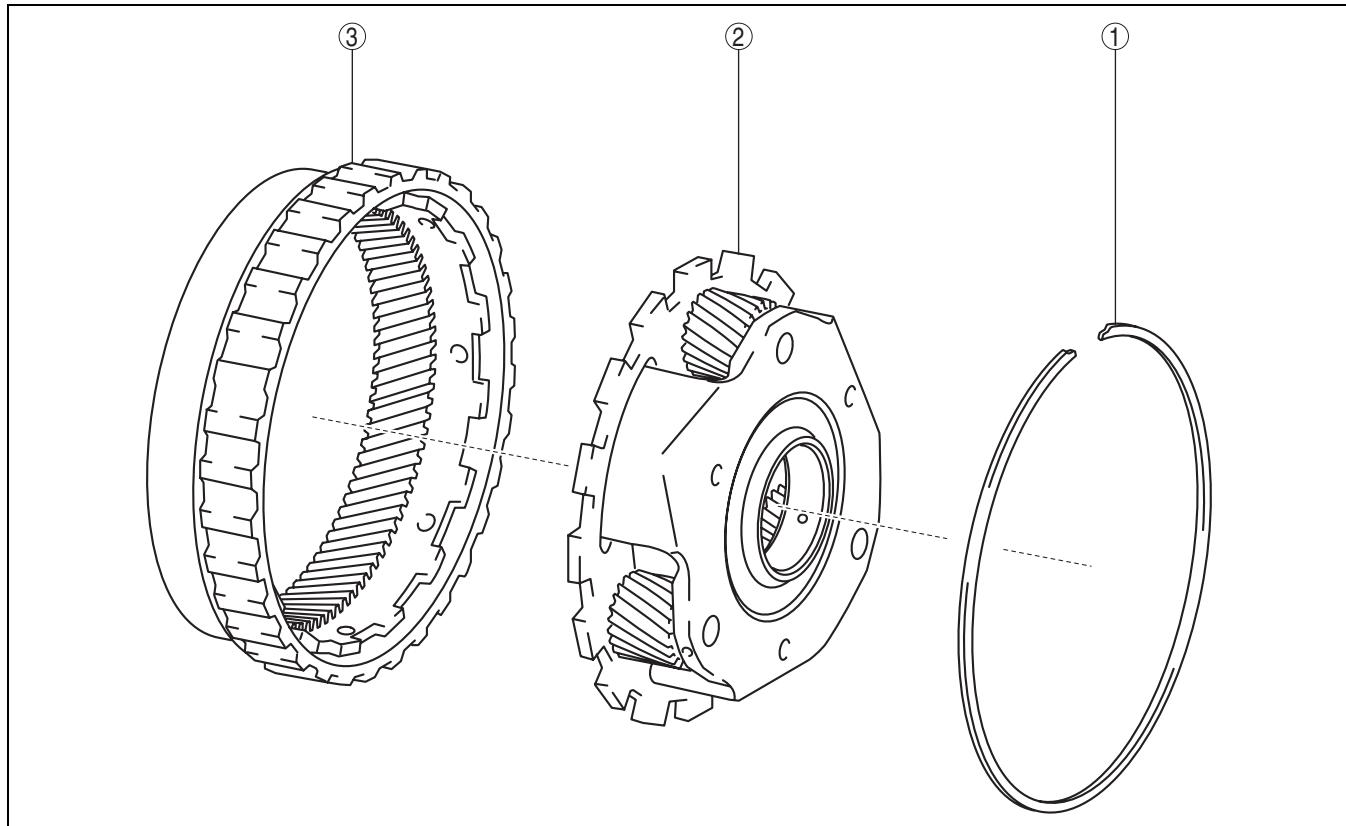
19. Perform the following inspection and replace a malfunctioning part with a new one.

- Visual inspection of parts (See 05-17-151 VISUAL INSPECTION OF PARTS)
- Thrust needle bearing inspection (See 05-17-155 THRUST NEEDLE BEARING INSPECTION)
- Reduction planetary gear inspection (See 05-17-161 REDUCTION PLANETARY GEAR INSPECTION)
- 2-6 brake inspection (See 05-17-171 2-6 BRAKE INSPECTION)
- R-3-5 brake inspection (See 05-17-171 R-3-5 BRAKE INSPECTION)
- End cover inspection (See 05-17-177 END COVER INSPECTION)

### REDUCTION PLANETARY GEAR DISASSEMBLY

id051700661300

#### Structural View



azzjw00001496

1	Snap ring
2	Reduction planetary carrier

3	Rear internal gear
---	--------------------

## Disassembly Procedure

1. Perform the following inspection:

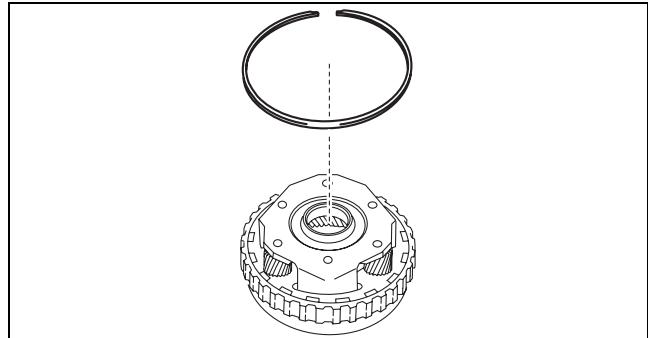
### Caution

- If there is no malfunction based on the results of the inspection, it is not necessary to disassemble the reduction planetary gear.

- Visual inspection of parts (See 05-17-151 VISUAL INSPECTION OF PARTS)
- Reduction planetary gear inspection (See 05-17-161 REDUCTION PLANETARY GEAR INSPECTION)
- If there is a malfunction, disassemble the reduction planetary gear and replace the malfunctioning part with a new part.

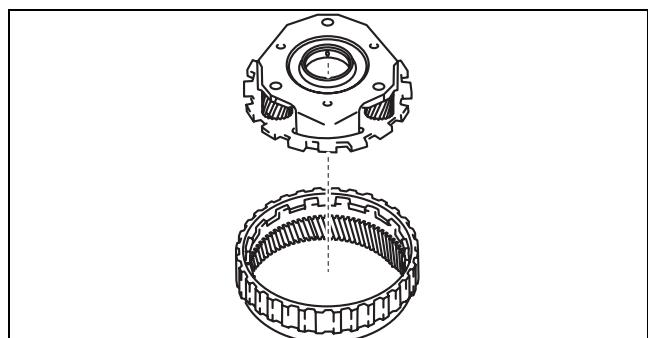
05-17

2. Remove the snap ring.



azzjw00000872

3. Remove the reduction planetary carrier.



azzjw00000873

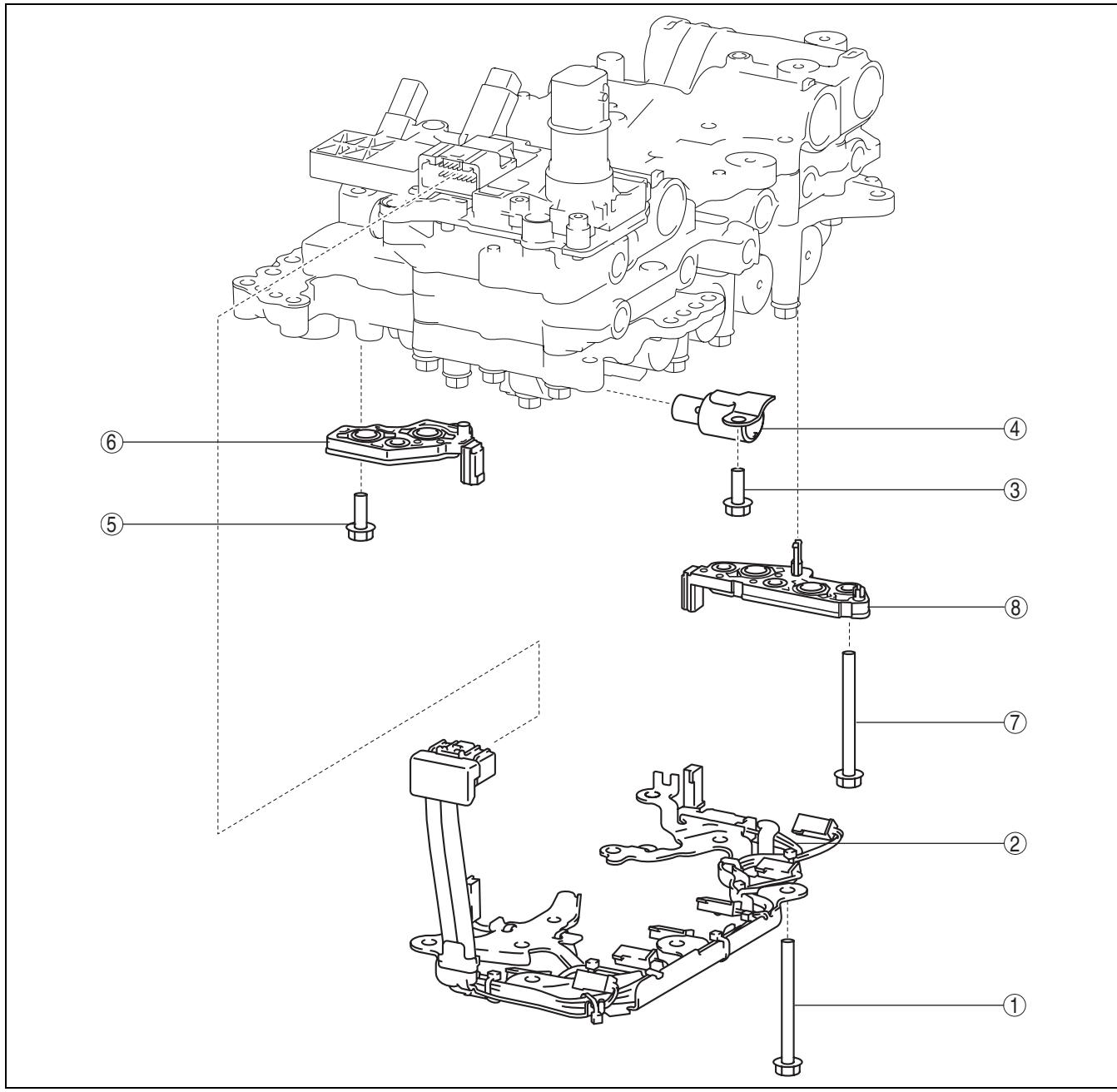
4. Clean the disassembled parts. (See 05-17-26 AUTOMATIC TRANSAXLE CLEANING.)

# AUTOMATIC TRANSAXLE

## CONTROL VALVE BODY DISASSEMBLY

id051700661400

### Structural View



azzjjw00001499

1	8 bolts
2	Coupler component
3	Bolt
4	ON/OFF solenoid

5	3 bolts
6	Oil pressure switch B
7	3 bolts
8	Oil pressure switch A

## Disassembly Procedure

**Caution**

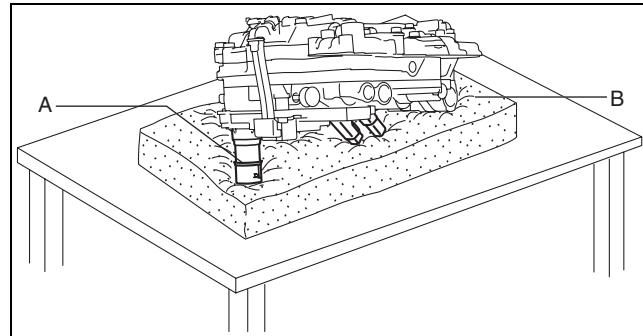
- Disassemble the control valve body and replace the malfunctioning part only if there is a malfunction in the control valve body determined by the troubleshooting procedure and using the vehicle diagnostic tester (M-MDS).

However, if there is a malfunction in the parts other than the following, replace the control valve body with a new one because the parts other than the following are not shipped from the factory as a single component.

- ON/OFF solenoid
- Oil pressure switch A
- Oil pressure switch B
- Coupler component
- Do not drop or apply an impact to the control valve body. Replace the control valve body with a new one if it was dropped or received an impact.
- Placing the TCM side pointed downward on a workbench directly could damage the TCM. If the TCM side is placed pointed downward, place the control valve body on an impact-absorbing material so that the TCM does not contact the workbench directly.

A: TCM

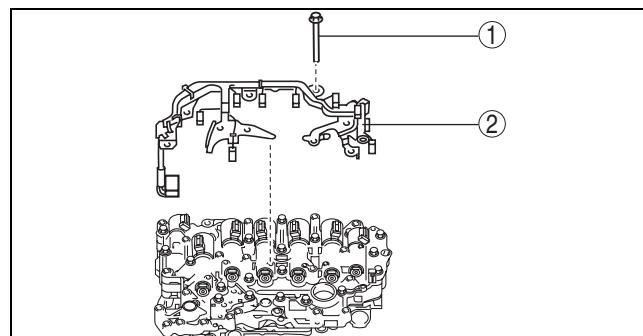
B: Impact-absorbing material



azzjw00001500

1. Remove the coupler component using the following procedure.

1	8 bolts
2	Coupler component



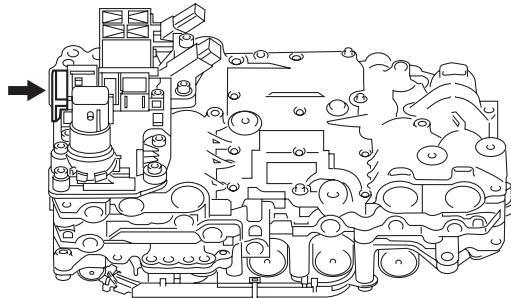
azzjw00000900

## AUTOMATIC TRANSAXLE

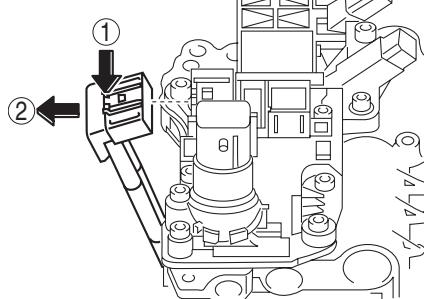
(1) Disconnect the connector shown in the figure.

### Caution

- If a connector is disconnected, do not pull the wiring harness. Pull the connector at a straight angle after releasing the lock.



azzjjw00000896



azzjjw00000897

(2) Place the control valve body on an impact-absorbing material with the TCM side facing downward as shown in the figure.

A : TCM

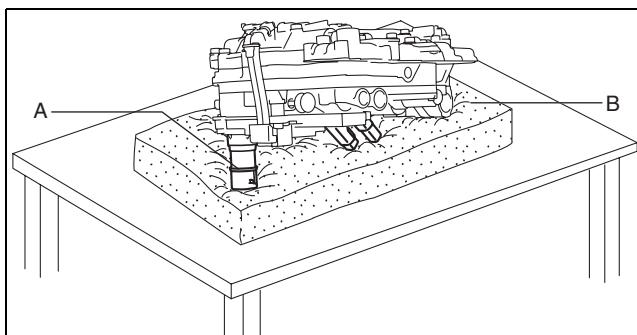
B : Impact-absorbing material

### Caution

- Placing the TCM side pointed downward on a workbench directly could damage the TCM. If the TCM side is placed pointed downward, place the control valve body on an impact-absorbing material so that the TCM does not contact the workbench directly.
- After removing the coupler component, if the control valve body is placed on the workbench with the TCM side facing upward, the pins securing the solenoids shown in the figure could fall off and become lost.

If the solenoid installation position shown in the figure is changed, it will cause a malfunction.

To prevent the pin securing the solenoid from falling, always place the control valve body on an impact-absorbing material with the TCM side facing downward after removing the coupler component.



azzjjw00001500

A : Shift solenoid No.1

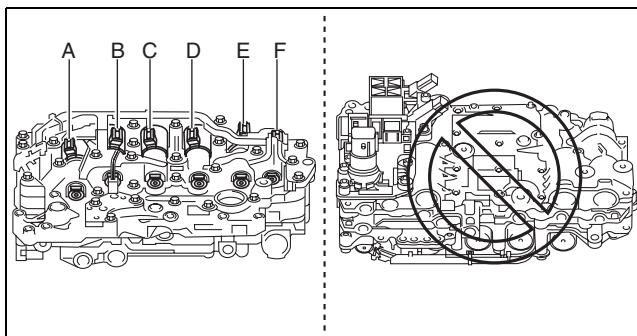
B : Shift solenoid No.4

C : TCC control solenoid

D : Shift solenoid No.3

E : Shift solenoid No.2

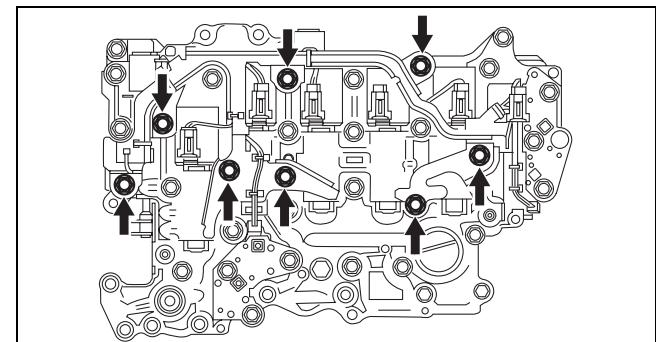
F : Pressure control solenoid



azzjjw00001501

## AUTOMATIC TRANSAXLE

(3) Remove the bolts shown in the figure.



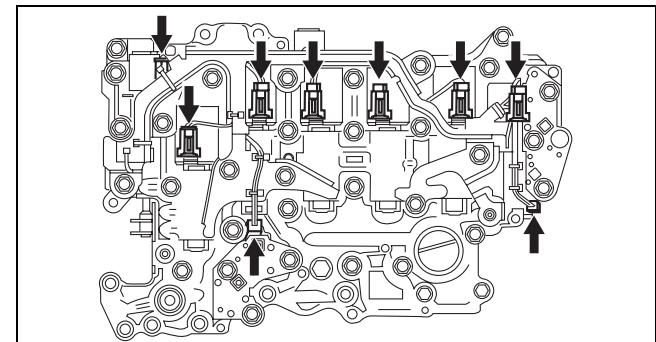
azjjw00000902

05-17

(4) Disconnect the connectors shown in the figure.

**Caution**

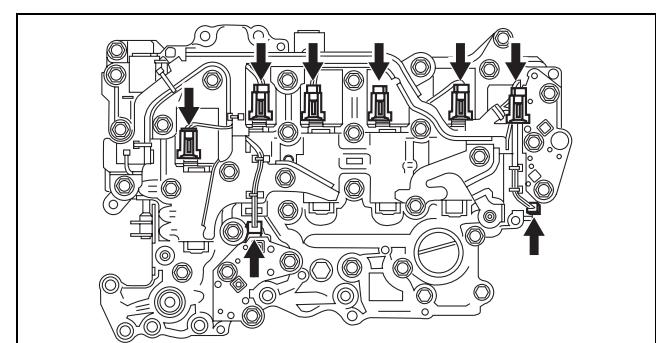
- If a connector is disconnected, do not pull the wiring harness. Pull the connector at a straight after releasing the lock.



azjjw00000903

**Caution**

- For the connector shown in the figure, pull the connector at a straight after releasing the lock using a precision flathead screwdriver.

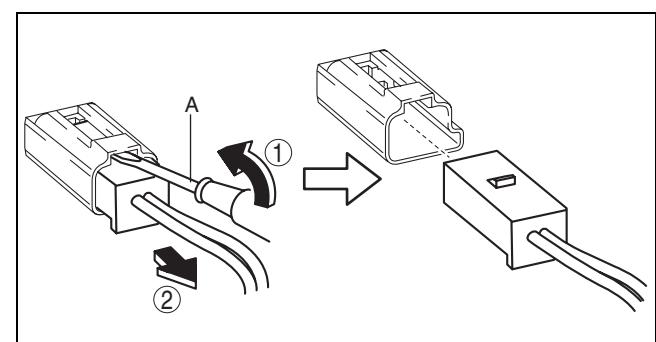


azjjw00000904

**Caution**

- Be careful not to damage the connector using a precision flathead screwdriver.

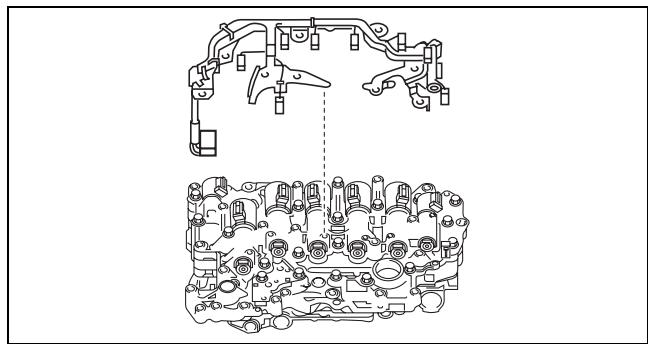
A : Precision flathead screwdriver



azjjw00000905

## AUTOMATIC TRANSAXLE

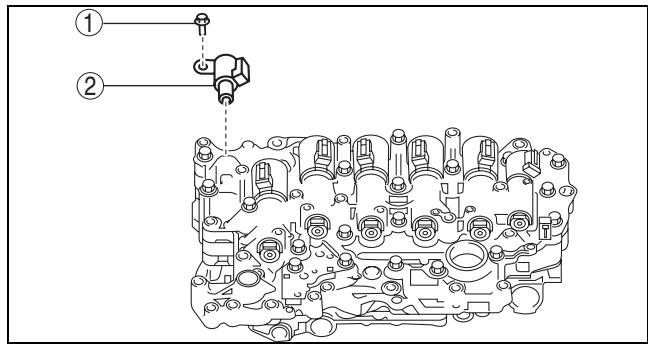
(5) Remove the coupler component.



azzjjw00000906

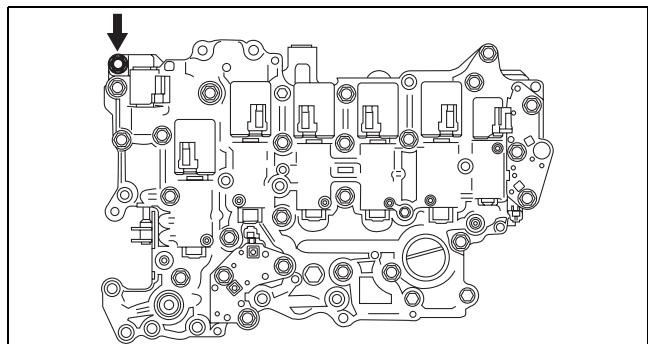
2. Remove the ON/OFF solenoid using the following procedure:

1	Bolt
2	ON/OFF solenoid



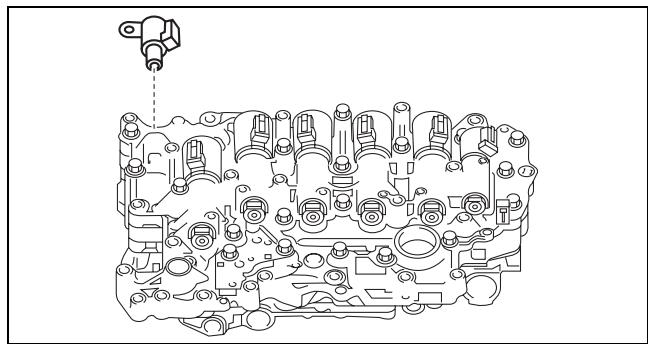
azzjjw00000907

(1) Remove the bolt shown in the figure.



azzjjw00000908

(2) Remove the ON/OFF solenoid.

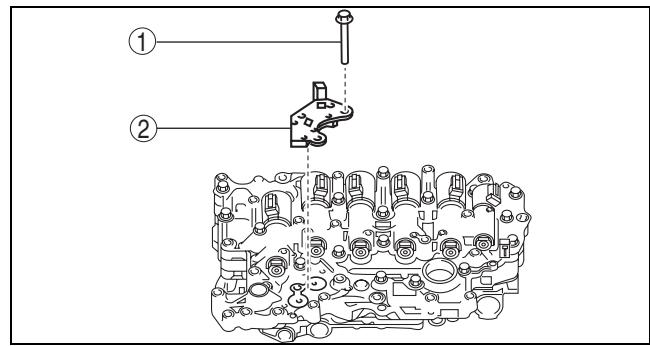


azzjjw00000909

## AUTOMATIC TRANSAXLE

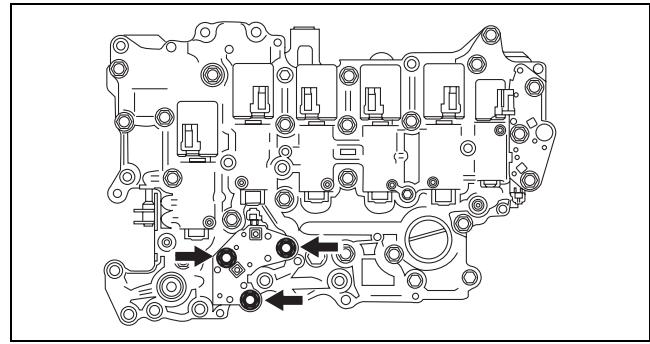
3. Remove oil pressure switch B using the following procedure:

1	3 bolts
2	Oil pressure switch B



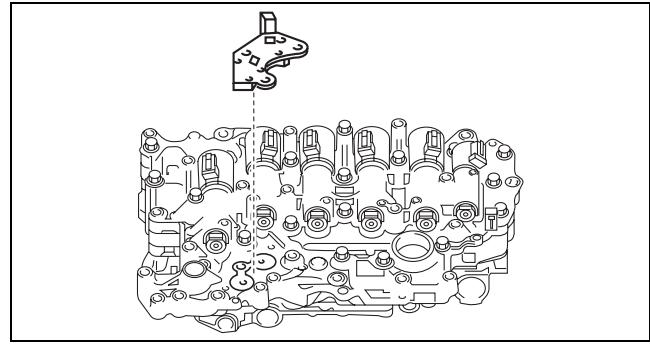
azjjw00000910

- (1) Remove the bolts shown in the figure.



azjjw00000911

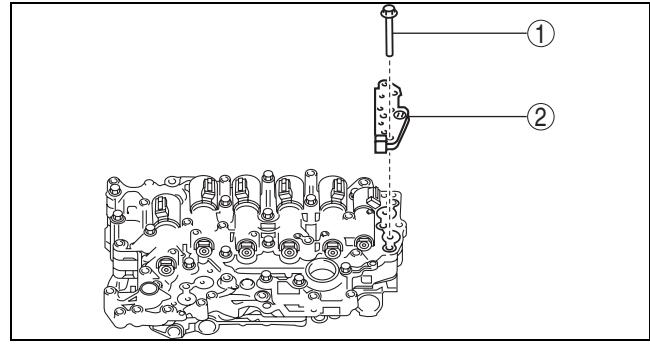
- (2) Remove oil pressure switch B.



azjjw00000912

4. Remove oil pressure switch A using the following procedure:

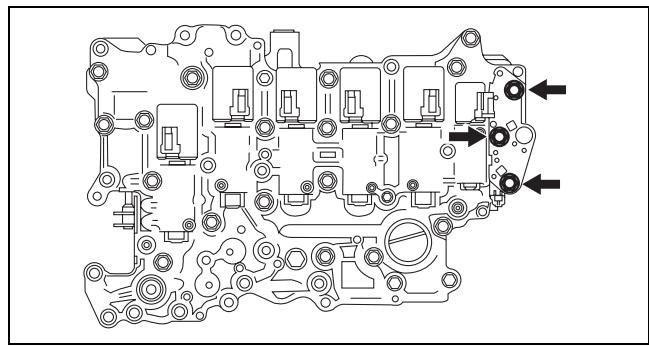
1	3 bolts
2	Oil pressure switch A



azjjw00000913

## AUTOMATIC TRANSAXLE

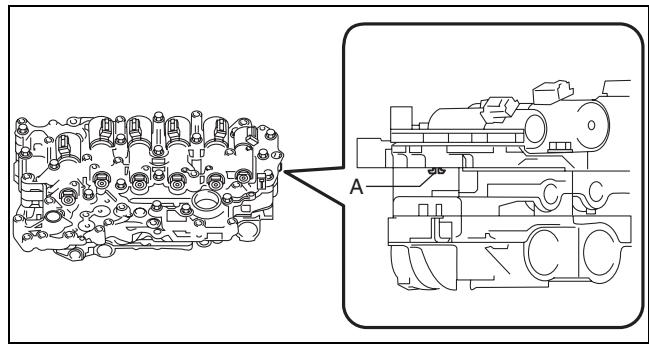
(1) Remove the bolts shown in the figure.



azzjyw00000914

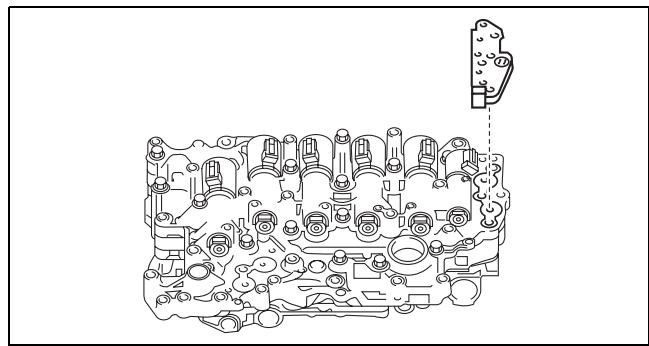
(2) Disengage oil pressure switch A tab.

A : Tab



azzjyw00000915

(3) Remove oil pressure switch A.



azzjyw00000916

## TORQUE CONVERTER CLEANING

id051700661500

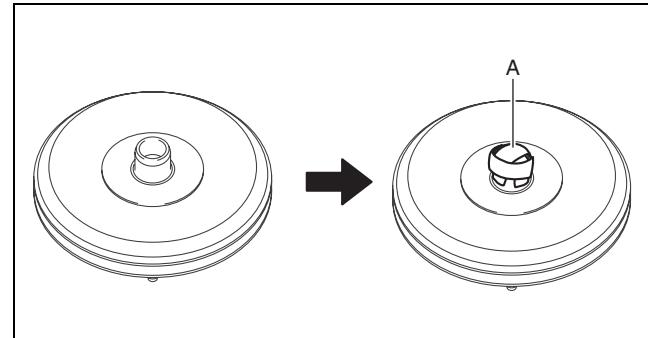
## Cleaning Outside of Torque Converter

1. Plug to the position shown in the figure with packing tape.

A : Plug (packing tape)

**Caution**

- If foreign matter penetrates the torque converter, it could cause a malfunction. Therefore, when cleaning the outside of the torque converter, plug the position shown in the figure with packing tape.



05-17

azzjw00001502

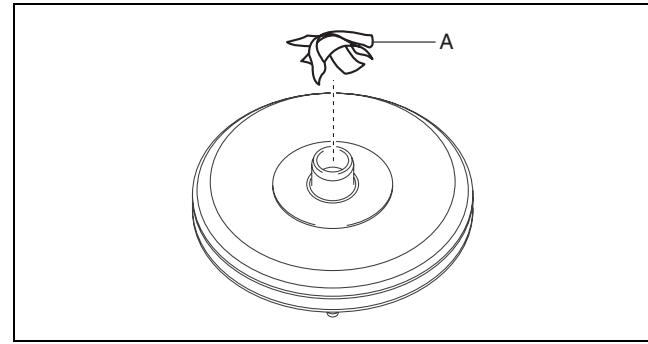
2. Wipe off any dirt or foreign matter adhering to the outside of the torque converter using a rag. Clean depending on the condition using degreaser and dry them using an air compressor.

**Warning**

- Always wear protective eye wear when using the air compressor. Otherwise, degreaser or dirt particles blown off by the air compressor could get into the eyes.

3. Clean away the used packing tape as a plug.

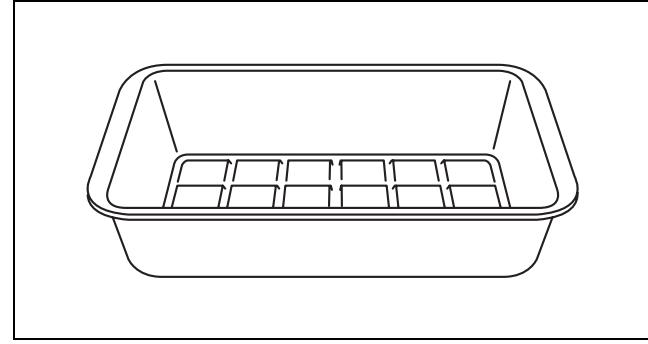
A : Plug (packing tape)



azzjw00001503

## Torque Converter Flushing

1. Prepare a clean oil receptacle.



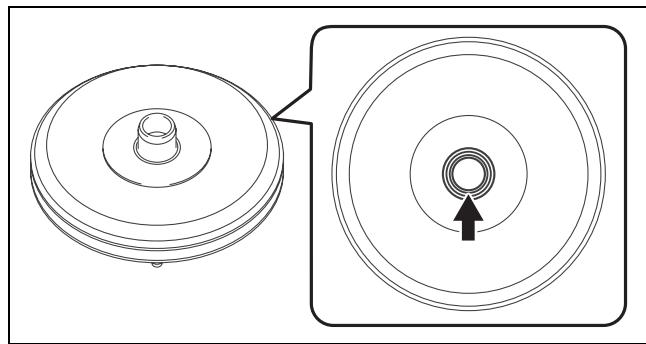
azzjw00001062

## AUTOMATIC TRANSAXLE

2. Add new ATF (ATF FZ) to the torque converter from the position shown in the figure.

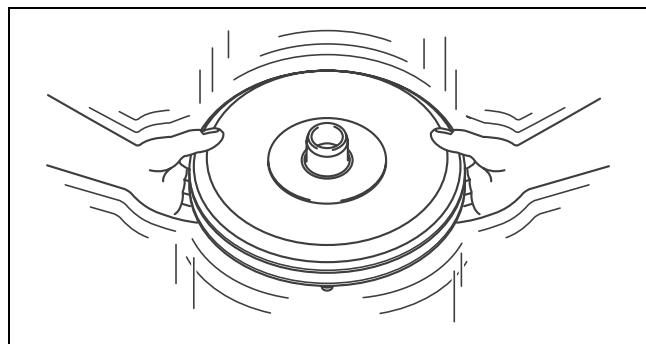
**Note**

- Because the ATF in the torque converter needs to be well stirred, when adding ATF do not completely fill the torque converter. Fill only about halfway.



azzjjw00001063

3. Shake the torque converter to stir the ATF in the torque converter.

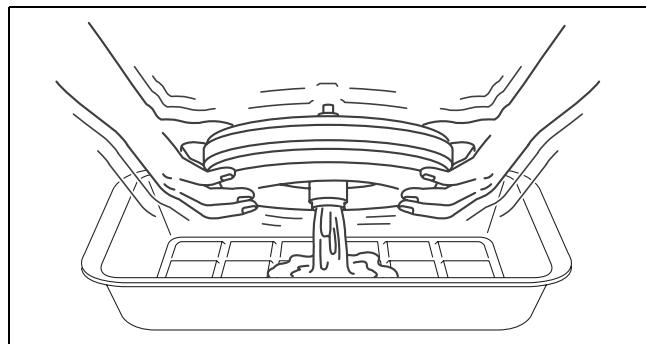


azzjjw00001064

4. Drain the ATF in the torque converter into the clean oil receptacle.

**Note**

- While shaking the torque converter, drain as much of the ATF in the torque converter as possible.



azzjjw00001065

5. Verify that none of the following foreign material is mixed in with the ATF drained from the torque converter:

- Large metal fragments of  $\phi$  0.5 mm {0.02 in} or more that cannot pass through the oil strainer
- Fibrous clutch or brake facing

6. Dispose of the ATF in the oil receptacle and clean the oil receptacle.

7. Perform Steps 2—6 three times.

- If metal fragments and facing material continue to appear in the drained ATF from the torque converter after it is flushed repeatedly, replace the torque converter with a new one.

## OIL COOLER CLEANING

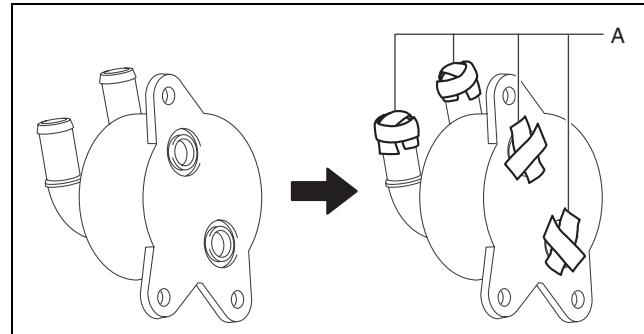
id051700661600

## Cleaning Outside of Oil Cooler

1. Plug to the position shown in the figure with packing tape.
- A : Plug (packing tape)

**Caution**

- If foreign matter penetrates the oil cooler, it could cause a malfunction. Therefore, when cleaning the outside of the oil cooler, plug the position shown in the figure with packing tape.



05-17

azzjw00001504

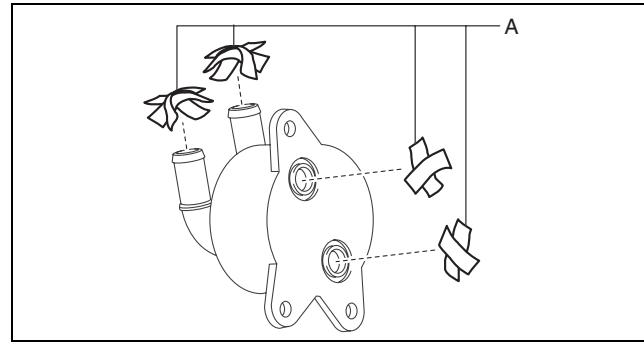
2. Wipe off any dirt or foreign matter adhering to the outside of the oil cooler using a rag. Clean depending on the condition using degreaser and dry them using an air compressor.

**Warning**

- Always wear protective eye wear when using the air compressor. Otherwise, degreaser or dirt particles blown off by the air compressor could get into the eyes.

3. Clean away the used packing tape as a plug.

- A : Plug (packing tape)



azzjw00001505

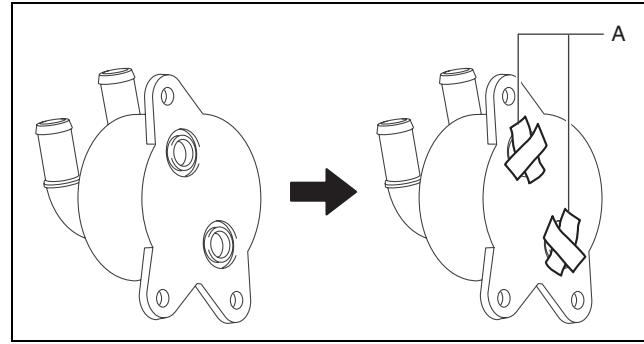
## Oil Cooler Flushing (Water Passage)

1. Plug the position (water passage) shown in the figure with packing tape.

- A : Plug (packing tape)

**Caution**

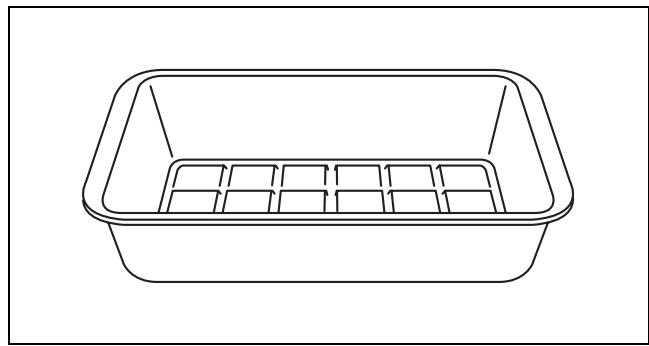
- If engine coolant or water penetrates the oil cooler (in oil passage), it could cause a malfunction. Therefore, when flushing the oil cooler (water passage), plug the position (oil passage) shown in the figure with packing tape.



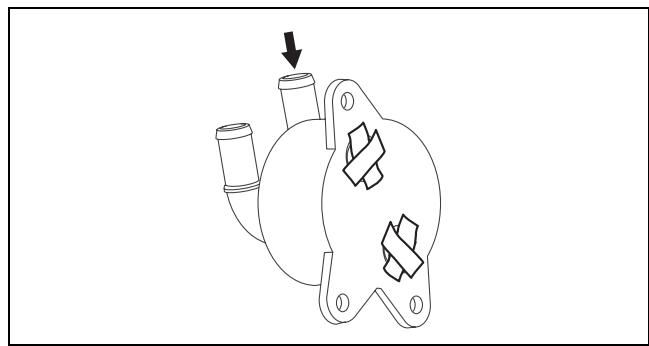
azzjw00001506

## AUTOMATIC TRANSAXLE

2. Prepare a clean oil receptacle.



3. Add water to the oil cooler from the water passage shown in the figure.



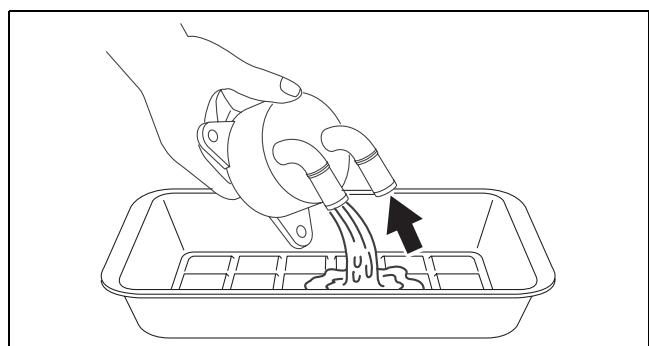
4. Blow compressed air into the water passage shown in the figure and drain the engine coolant and water in the oil cooler.

**Warning**

- Always wear protective eye wear when using the air compressor. Otherwise, engine coolant, water, or dirt particles blown off by the air compressor could get into the eyes.

**Caution**

- Perform the work at a position where the engine coolant and water in the oil cooler can be drained into a clean oil receptacle.
- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.



**Compressed air pressure**

150—200 kPa {1.53—2.03 kgf/cm<sup>2</sup>, 21.8—29.0 psi}

5. Verify that none of the following foreign material is mixed in with the engine coolant and water drained from the oil cooler.
  - Rust or water stain due to deterioration of engine coolant
  - Engine oil
  - Fragments of cooling system parts (plastic, metal, or rubber fragments)
6. Dispose of the engine coolant and water in the oil receptacle and clean the oil receptacle.

7. Perform Steps 3—6 three times.

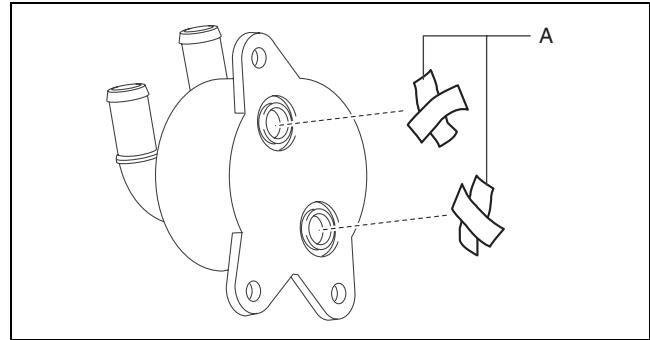
- If foreign material remains even after the oil cooler is flushed repeatedly, replace the oil cooler with a new one and inspect the cooling system part.

**Note**

- For the cooling system part inspection, verify the Workshop Manual.

8. Clean away the used packing tape as a plug.

A : Plug (packing tape)



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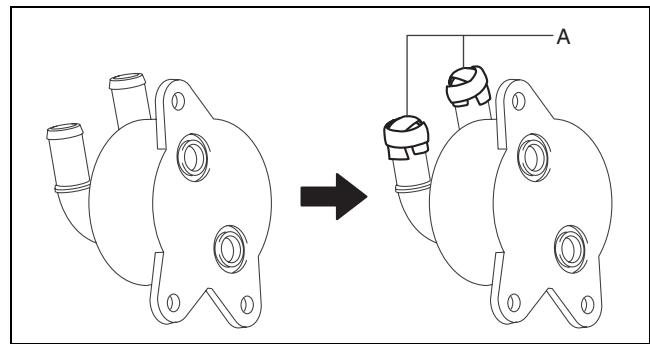
**Oil Cooler Flushing (Oil Passage)**

1. Plug to the position (water passage) shown in the figure with packing tape.

A : Plug (packing tape)

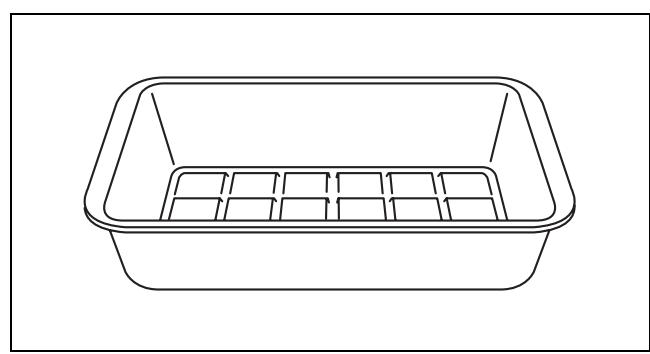
**Caution**

- If ATF penetrates the oil cooler (in water passage), it could cause a malfunction. Therefore, when flushing the oil cooler (oil passage), plug the position (water passage) shown in the figure with packing tape.



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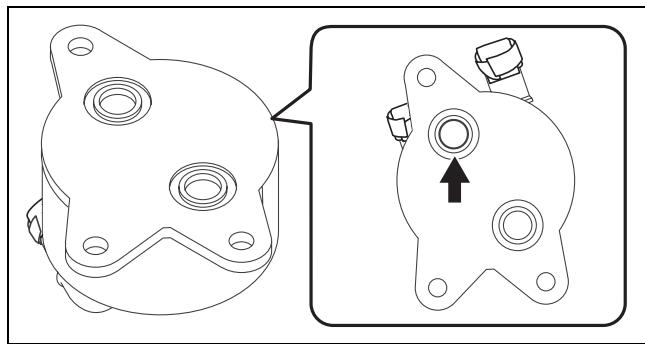
2. Prepare a clean oil receptacle.



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## AUTOMATIC TRANSAXLE

3. Add new ATF (ATF FZ) to the oil cooler from the oil passage shown in the figure.



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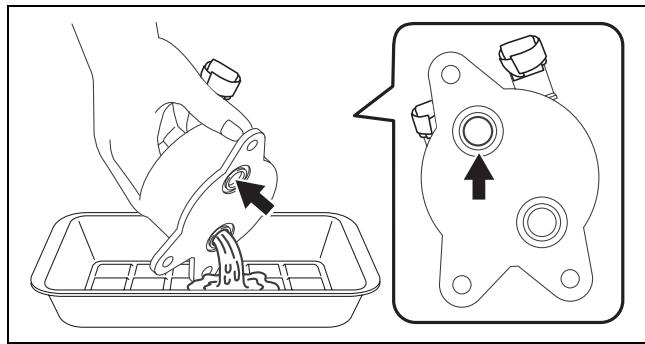
4. Blow compressed air into the oil passage shown in the figure and drain the ATF in the oil cooler.

### Warning

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

### Caution

- Perform the work at a position where the ATF in the oil cooler can be drained into a clean oil receptacle.
- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.



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### Compressed air pressure

491—882 kPa {5.01—8.99 kgf/cm<sup>2</sup>, 71.3—127.0 psi}

5. Verify that none of the following foreign material is mixed in with the ATF drained from the oil cooler.

- Large metal fragments of  $\phi$  0.5 mm {0.02 in} or more that cannot pass through the oil strainer
- Fibrous clutch or brake facing

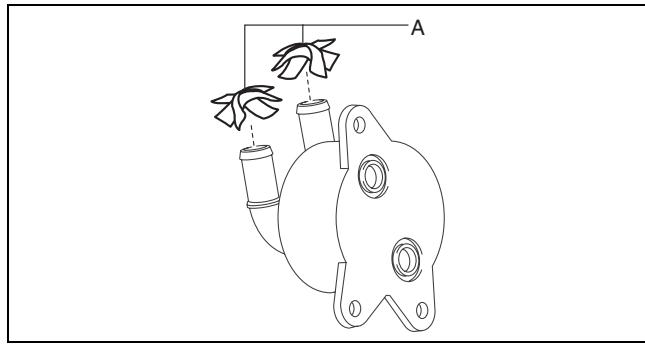
6. Dispose of the ATF in the oil receptacle and clean the oil receptacle.

7. Perform Steps 3—6 three times.

- If foreign material such as metal fragments or facing remain even after the oil cooler is flushed repeatedly, replace the oil cooler with a new one.

8. Clean away the used packing tape used as the plug.

A : Plug (packing tape)



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# AUTOMATIC TRANSAXLE

## VISUAL INSPECTION OF PARTS

id051700661700

1. Visually inspect the parts according to the following table and replace a malfunctioning part with a new one.

### Note

- Check the color depending on the condition to specify the malfunctioning part.

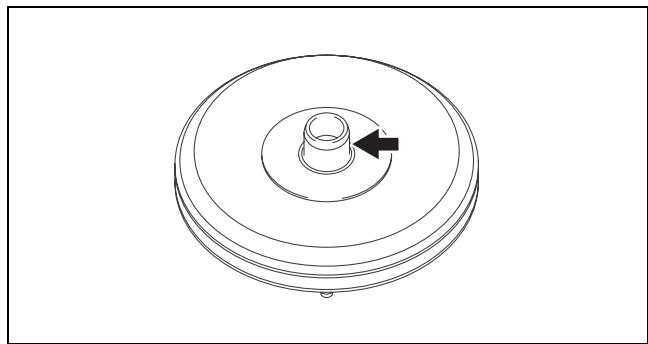
Part name (mechanism name)	Inspection item
Gear	Missing teeth or tooth loss
	Peeling on tooth surface
	Other damage (cracks, wear, impact, deformation, burning or seizure)
Tapered roller bearing	Peeling on sliding surface
	Cage deformation
	Discoloration due to burning (temper color)
	Other damage (cracks, wear, impact, deformation, burning or seizure)
Thrust needle bearing	Peeling on sliding surface
	Discoloration due to burning (temper color)
	Other damage (cracks, wear, impact, deformation, burning or seizure)
Radial needle bearing	Peeling on sliding surface
	Cage deformation
	Discoloration due to burning (temper color)
	Other damage (cracks, wear, impact, deformation, burning or seizure)
Clutch (brake) drive plate	Facing peeling
	Discoloration due to burning (temper color)
	Other damage (cracks, wear, impact, deformation, burning or seizure)
Clutch (brake) piston and seal plate	Lip (rubber) tear or wear
	Other damage (cracks, impact, deformation)
Clutch (brake) springs and retainer component	Spring removal
	Spring deformation (significant attitude)
	Retainer deformation
	Other damage (cracks, wear, impact)
Parts other than the above	External appearance damage (cracks, wear, impact, deformation, burning or seizure)

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## AUTOMATIC TRANSAXLE

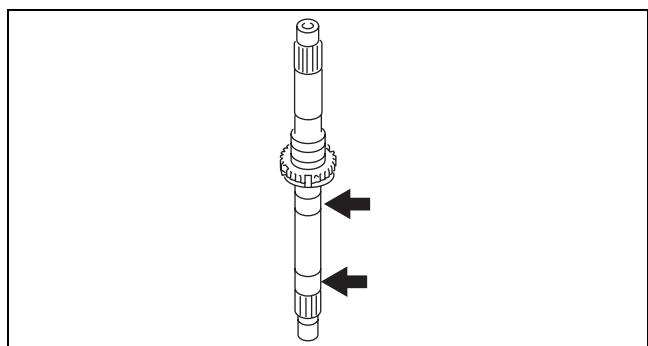
2. Verify that there is no bushing adhesion trace or significant sliding trace on the following bushing sliding part.

- Torque converter
  - If there is a malfunction, replace the torque converter with a new one.



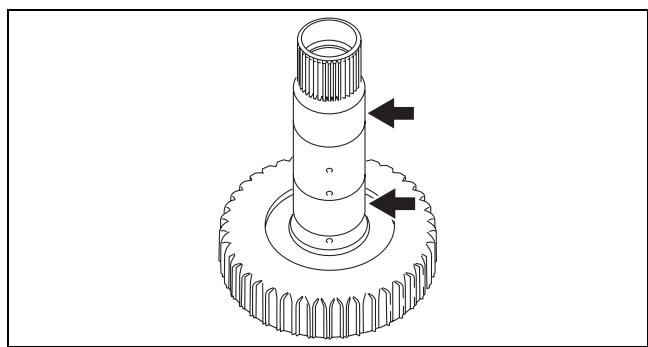
azzjjw00001514

- Turbine shaft
  - If there is a malfunction, replace the turbine shaft with a new one.



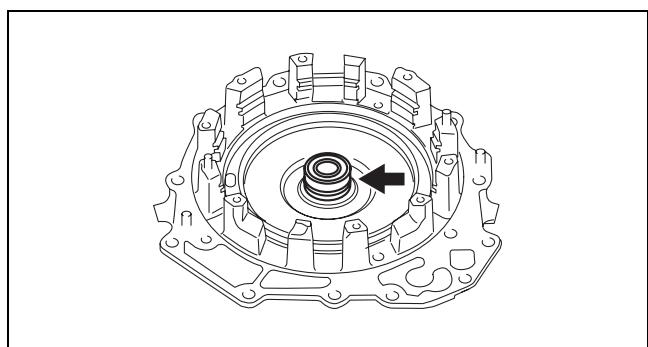
azzjjw00001515

- High clutch hub
  - If there is a malfunction, replace the high clutch hub with a new one.



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- End cover
  - If there is a malfunction, replace the end cover with a new one.

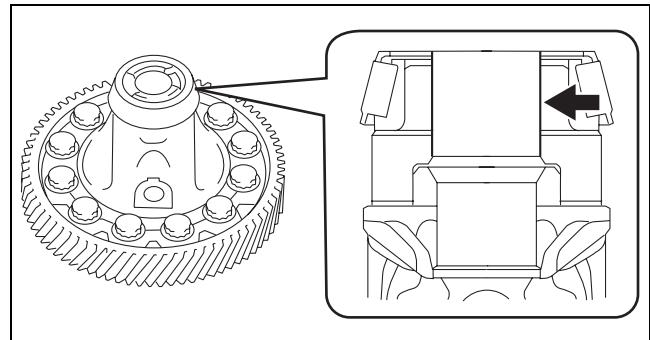


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## AUTOMATIC TRANSAXLE

3. Verify that there is no significant sliding trace on the following journal part.

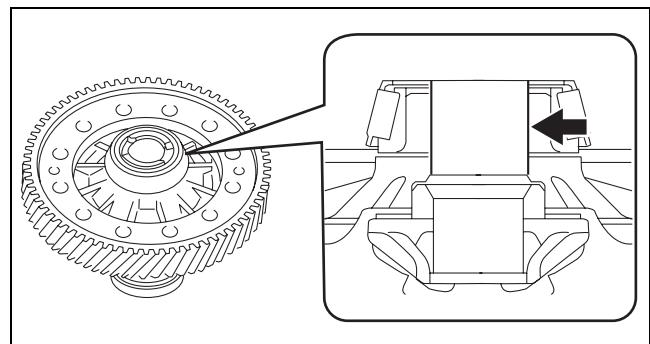
- Ring gear and differential



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- If there is a malfunction, disassemble the ring gear and differential and replace the differential gear case with a new one.  
(See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.)  
(See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.)

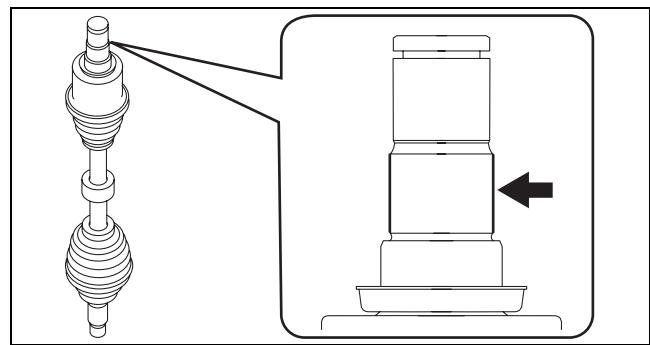


azzjjw00001521

- Drive shaft (LH)
  - If there is a malfunction, disassemble the drive shaft (LH) and replace the outer ring with a new one.

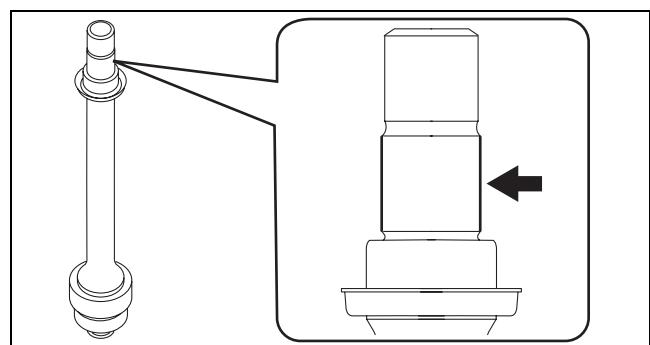
### Note

- For the drive shaft disassembly/assembly procedure, verify the Workshop Manual.



azzjjw00001519

- Joint shaft
  - If there is a malfunction, replace the joint shaft with a new one.



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# AUTOMATIC TRANSAXLE

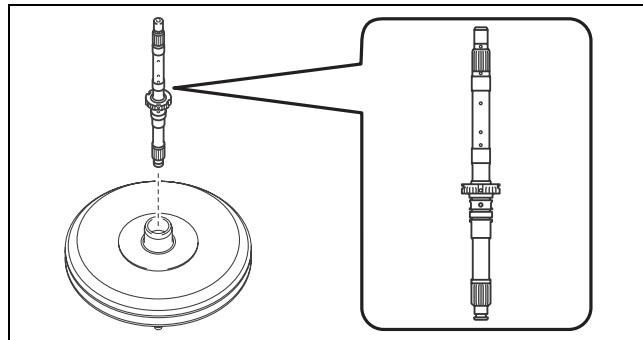
## TORQUE CONVERTER INSPECTION

id051700661800

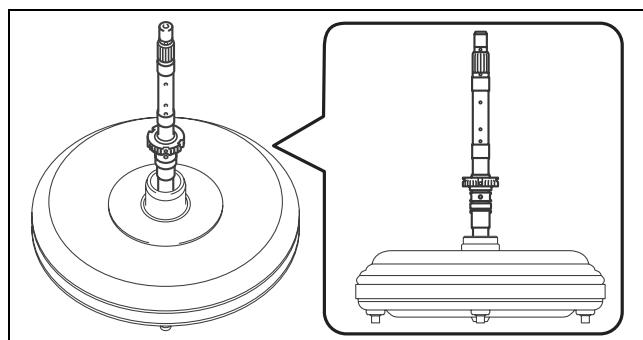
### Caution

- For the torque converter inspection, only an inspection for burning or seizure of the TCC clutch can be performed. For other malfunctions, on-vehicle inspection is required.

1. Assemble the turbine shaft to the torque converter.



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azzjw00001070

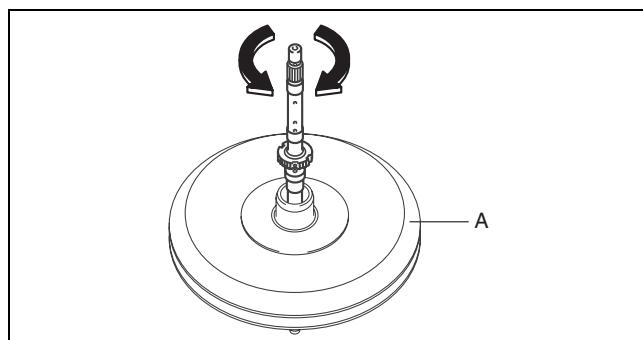
2. With the torque converter secured by hand, rotate the turbine shaft.

A : Secure by hand

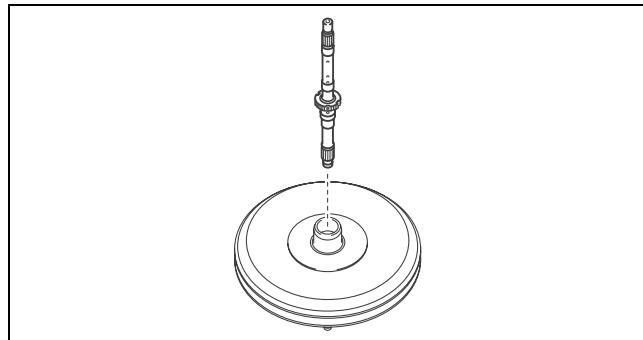
### Note

- When rotating the turbine shaft, a little force is required depending on the amount of ATF in the torque converter.
- If the turbine shaft cannot be rotated, burning or seizure of the TCC clutch can be considered, therefore replace the torque converter with a new one.

3. Remove the turbine shaft.



azzjw00001071



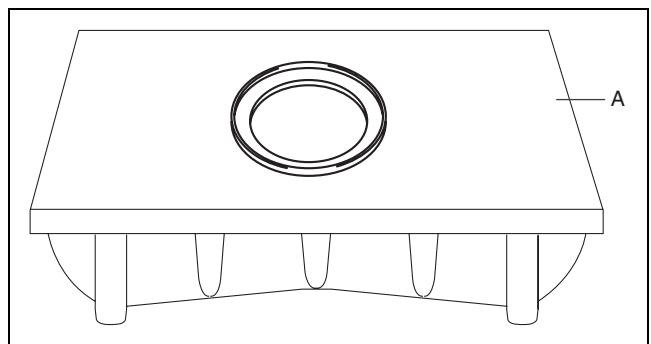
azzjw00001072

# AUTOMATIC TRANSAXLE

## THRUST NEEDLE BEARING INSPECTION

1. Point the flat surface of the thrust needle bearing downward and place it on the surface plate.

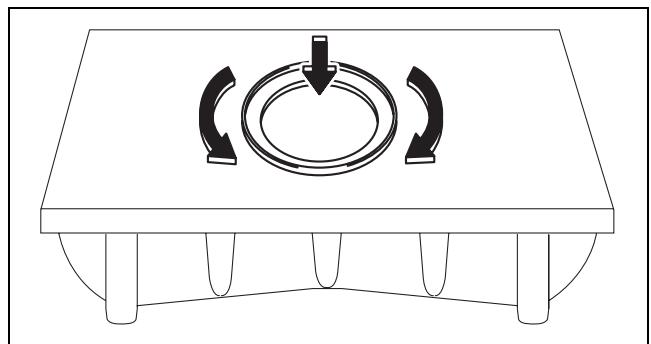
A : Surface plate



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2. With a load applied by hand to the thrust needle bearing, rotate the thrust needle bearing and verify that there is no malfunction (rotation sticking).
  - If there is a malfunction, replace the thrust needle bearing with a new one.

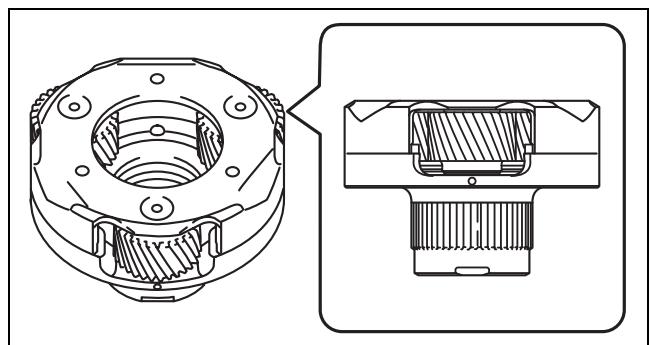


azjjw00001074

## FRONT PLANETARY GEAR INSPECTION

### Radial Needle Bearing Inspection (In Pinion Gear)

1. Place the front planetary gear on a workbench as shown in the figure.

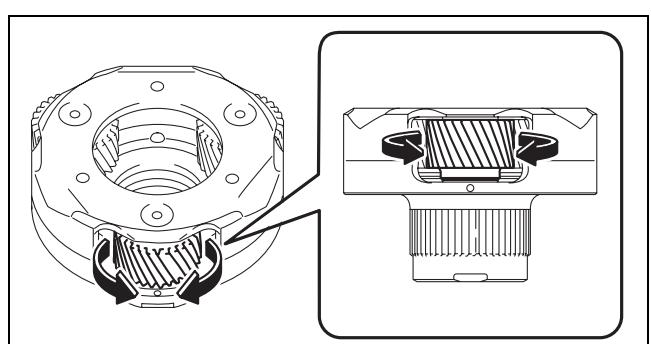


azjjw00001259

2. Rotate the pinion gears by hand and verify that there is no malfunction in the radial needle bearing in the pinion gear (rotation sticking).

#### Caution

- Verify for all the pinion gears.
- If there is a malfunction, replace the front planetary gear with a new one.

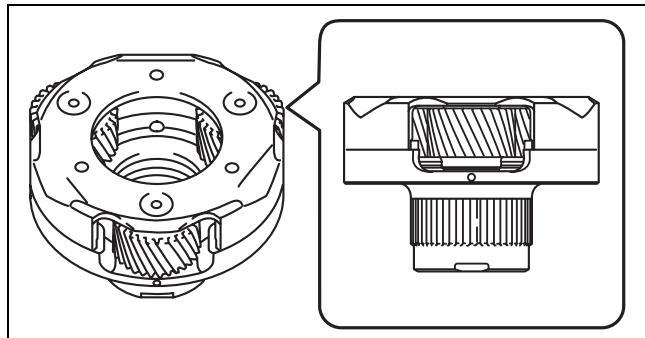


azjjw00001277

# AUTOMATIC TRANSAXLE

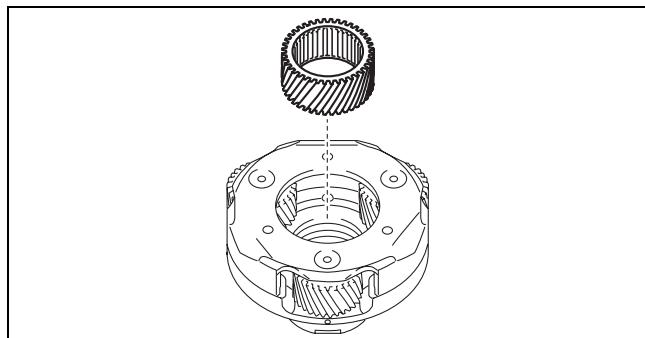
## Thrust Needle Bearing Inspection

1. Place the front planetary gear on a workbench as shown in the figure.

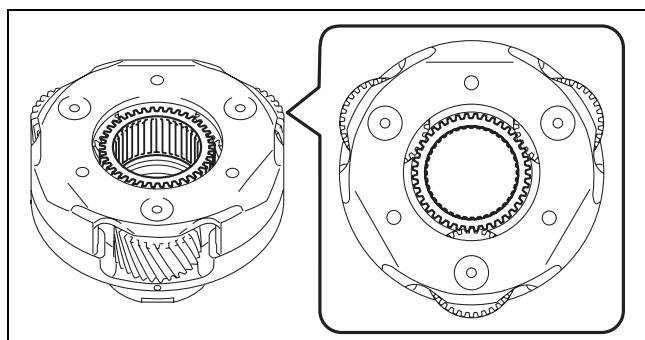


azzjw00001259

2. Assemble the front sun gear to the front planetary gear.



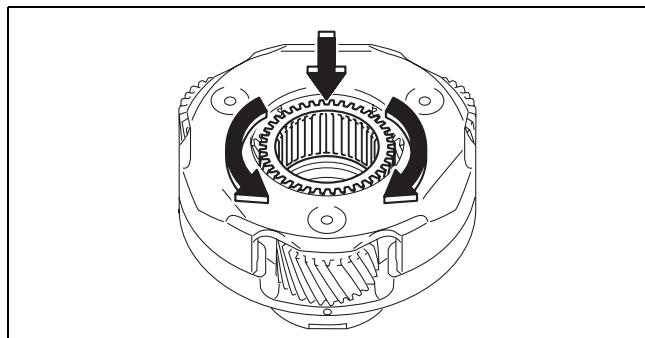
azzjw00001261



azzjw00001262

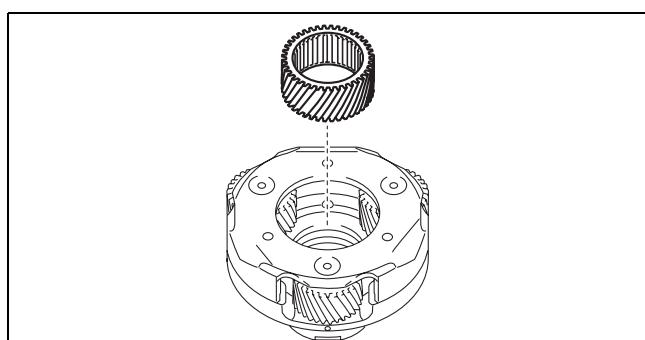
3. With a load applied by hand to the front sun gear, rotate the front sun gear and verify that there is no malfunction in the thrust needle bearing (rotation sticking).

- If there is a malfunction, replace the front planetary gear with a new one.



azzjw00001263

4. Remove the front sun gear.



azzjw00001261

## Pinion Washer Inspection

### Pinion washer visual inspection

1. Visually verify that all of the following washers are between the pinion gear and planetary carrier for one pinion gear.

#### Caution

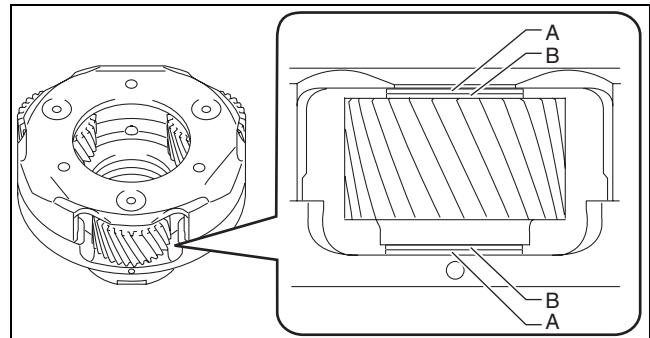
- Verify for all the pinion gears.

- Copper washer (outer side): 2
- Iron washer (inner side): 2

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A : Copper washer (outer side)  
B : Iron washer (inner side)

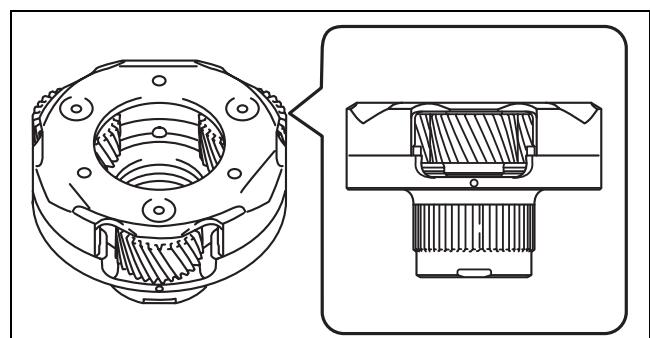
- Even if one of the washers is damaged, replace the front planetary gear with a new one.



azzjw00001522

### Pinion washer wear inspection

1. Place the front planetary gear on a workbench as shown in the figure.



azzjw00001259

2. Measure the gap between the pinion washer and planetary carrier.

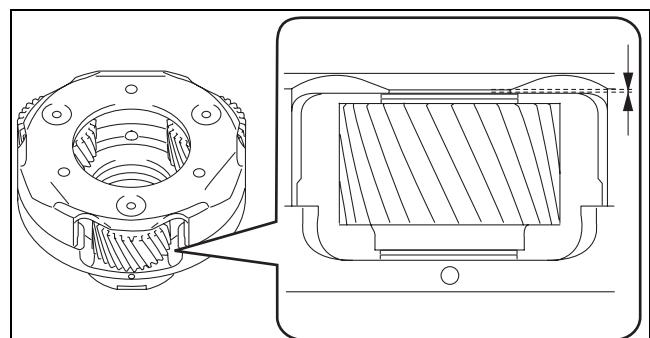
#### Caution

- Measure for all the pinion gears.

#### Note

- Recommended measuring instrument:  
Thickness gauge

**Maximum:**  
**0.879 mm {0.0346 in}**



azzjw00001523

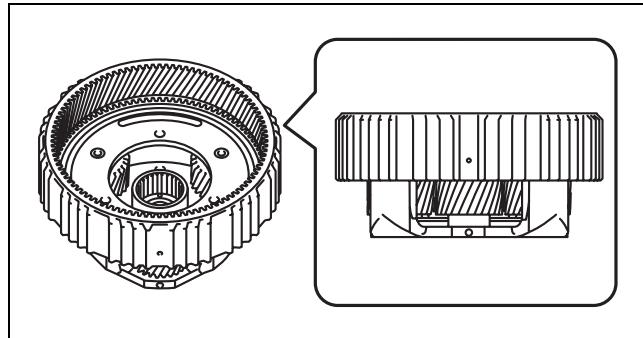
- If it is more than the maximum specification, replace the front planetary gear with a new one.

## REAR PLANETARY GEAR INSPECTION

id051700662100

### Radial Needle Bearing Inspection (In Pinion Gear)

1. Place the rear planetary gear with the front internal gear side pointing upward on a workbench.

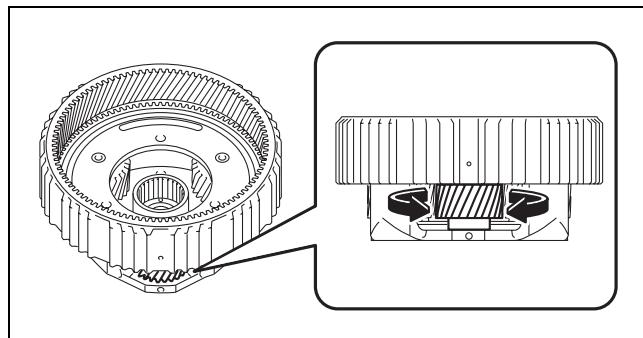


azzjjw00001265

2. Rotate the pinion gears by hand and verify that there is no malfunction in the radial needle bearing in the pinion gear (rotation sticking).

#### Caution

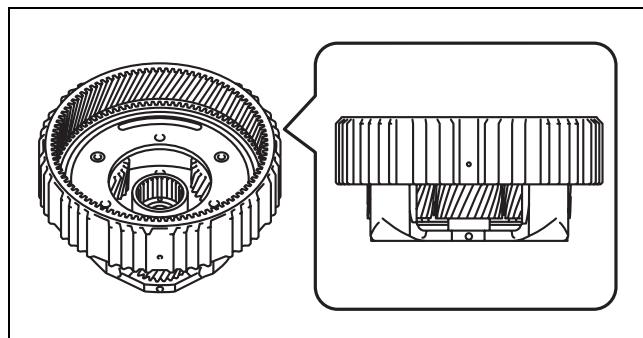
- Verify for all the pinion gears.
- 
- If there is a malfunction, disassemble the rear planetary gear and replace the rear planetary carrier with a new one.  
(See 05-17-117 REAR PLANETARY GEAR DISASSEMBLY.)  
(See 05-17-259 REAR PLANETARY GEAR ASSEMBLY.)



azzjjw00001278

### Thrust Needle Bearing Inspection

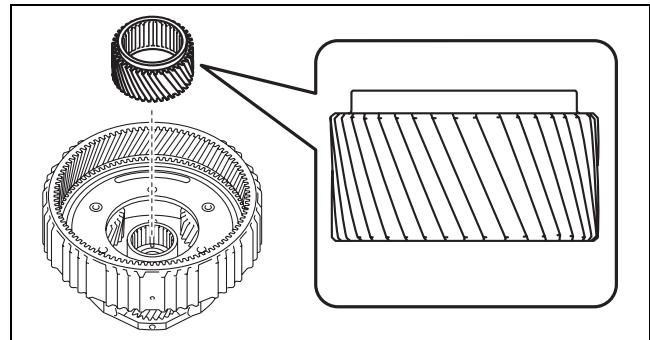
1. Place the rear planetary gear with the front internal gear side pointing upward on a workbench.



azzjjw00001265

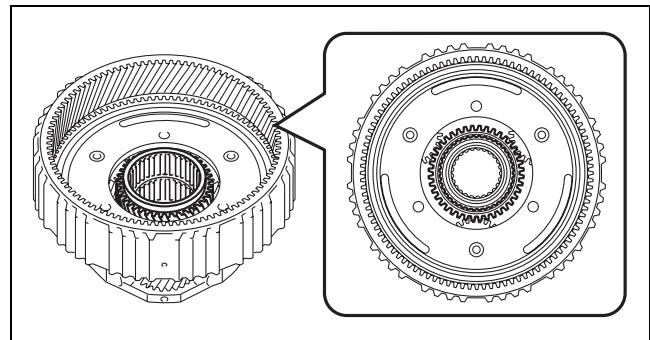
## AUTOMATIC TRANSAXLE

2. Assemble the rear sun gear to the rear planetary gear.



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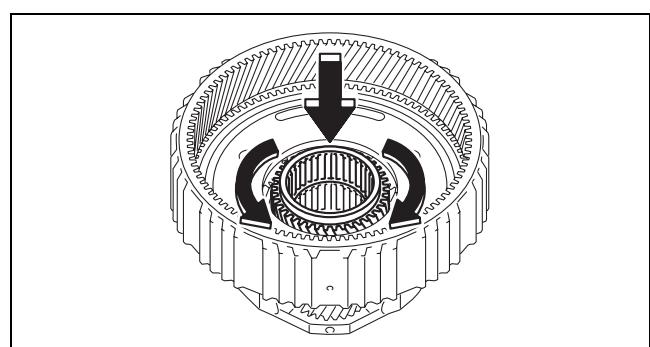
azzjw00001267



azzjw00001268

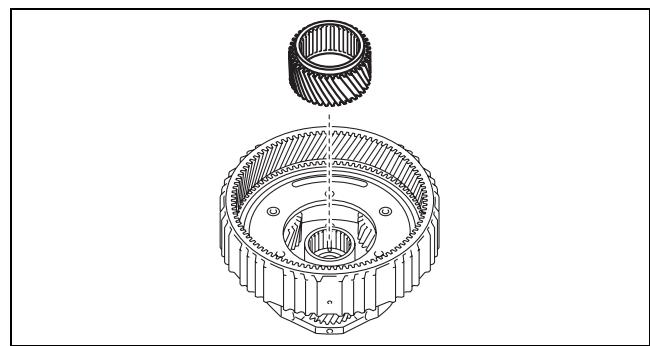
3. With a load applied by hand to the rear sun gear, rotate the rear sun gear and verify that there is no malfunction in the thrust needle bearing (rotation sticking).

- If there is a malfunction, disassemble the rear planetary gear and replace the rear planetary carrier with a new one.  
(See 05-17-117 REAR PLANETARY GEAR DISASSEMBLY.)  
(See 05-17-259 REAR PLANETARY GEAR ASSEMBLY.)



azzjw00001269

4. Remove the rear sun gear.



azzjw00001270

# AUTOMATIC TRANSAXLE

## Pinion Washer Inspection

### Pinion washer visual inspection

1. Visually verify that all of the following washers are between the pinion gear and planetary carrier for one pinion gear.

#### Caution

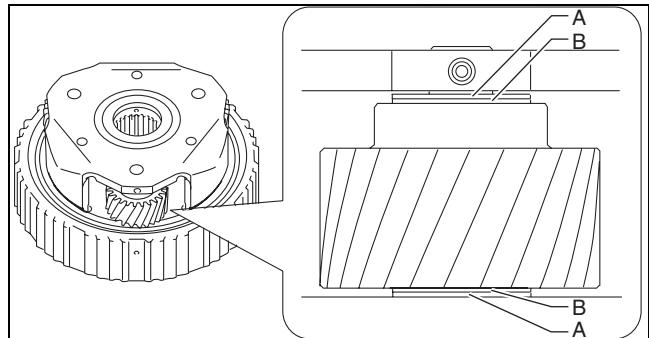
- Verify for all the pinion gears.

- Copper washer (outer side): 2
- Iron washer (inner side): 2

A : Copper washer (outer side)

B : Iron washer (inner side)

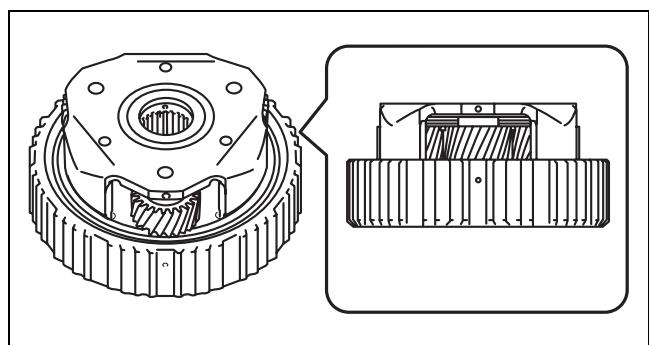
- Even if one of the washers is damaged, disassemble the rear planetary gear and replace the rear planetary carrier with a new one.  
(See 05-17-117 REAR PLANETARY GEAR DISASSEMBLY.)  
(See 05-17-259 REAR PLANETARY GEAR ASSEMBLY.)



azzjw00001524

### Pinion washer wear inspection

1. Place the rear planetary gear with the front internal gear side pointing downward on a workbench.



azzjw00001271

2. Measure the gap between the pinion washer and planetary carrier.

#### Caution

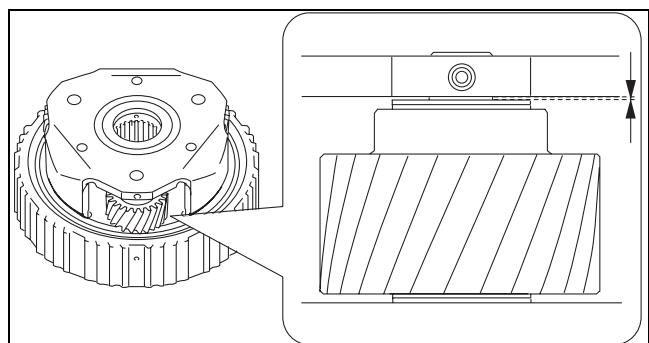
- Measure for all the pinion gears.

#### Note

- Recommended measuring instrument:  
Thickness gauge

#### Maximum:

0.879 mm {0.0346 in}



azzjw00001525

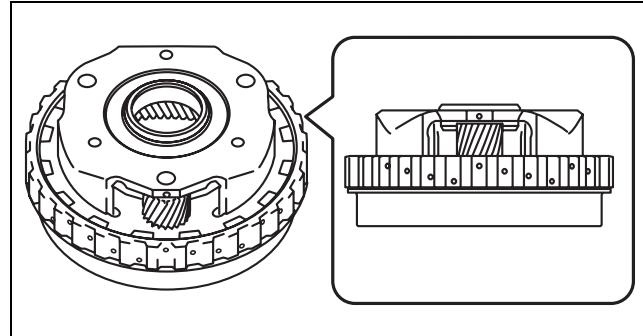
- If it is more than the maximum specification, disassemble the rear planetary gear and replace the rear planetary carrier with a new one.  
(See 05-17-117 REAR PLANETARY GEAR DISASSEMBLY.)  
(See 05-17-259 REAR PLANETARY GEAR ASSEMBLY.)

## REDUCTION PLANETARY GEAR INSPECTION

id051700662200

## Radial Needle Bearing Inspection (In Pinion Gear)

1. Place the reduction planetary gear with the rear internal gear side pointing downward on a workbench.



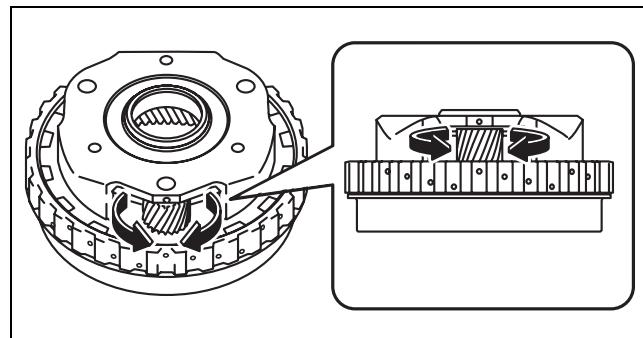
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azzjw00001273

2. Rotate the pinion gears by hand and verify that there is no malfunction in the radial needle bearing in the pinion gear (rotation sticking).

**Caution**

- Verify for all the pinion gears.
- If there is a malfunction, disassemble the reduction planetary gear and replace the reduction planetary carrier with a new one. (See 05-17-136 REDUCTION PLANETARY GEAR DISASSEMBLY.) (See 05-17-261 REDUCTION PLANETARY GEAR ASSEMBLY.)



azzjw00001274

## Pinion Washer Inspection

## Pinion washer visual inspection

1. Visually verify that all of the following washers are between the pinion gear and planetary carrier for one pinion gear.

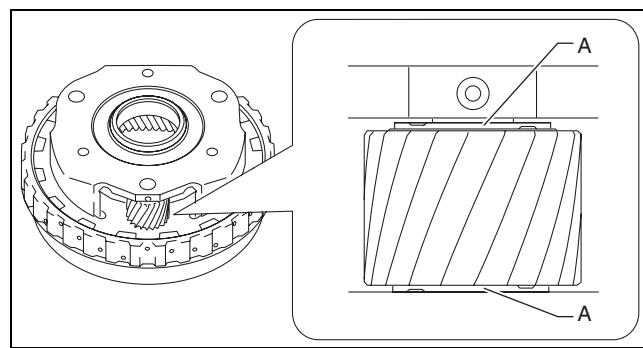
**Caution**

- Verify for all the pinion gears.

— Copper washer: 2

A : Copper washer

- Even if one of the washers are damaged, disassemble the reduction planetary gear and replace the reduction planetary carrier with a new one. (See 05-17-136 REDUCTION PLANETARY GEAR DISASSEMBLY.) (See 05-17-261 REDUCTION PLANETARY GEAR ASSEMBLY.)

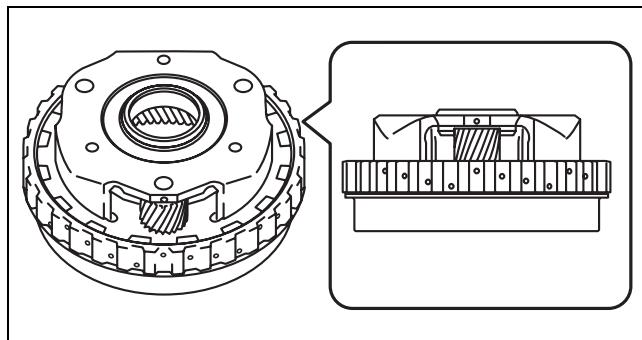


azzjw00001526

# AUTOMATIC TRANSAKLE

## Pinion washer wear inspection

1. Place the reduction planetary gear with the rear internal gear side pointing downward on a workbench.



azzjw00001273

2. Measure the gap between the pinion washer and planetary carrier.

### Caution

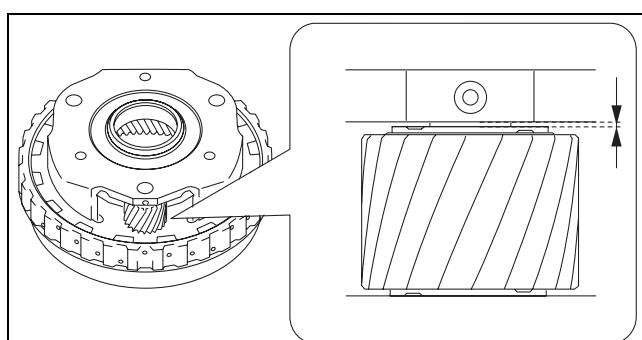
- Measure for all the pinion gears.

### Note

- Recommended measuring instrument:  
Thickness gauge

### Maximum:

0.820 mm {0.0322 in}



azzjw00001527

- If it is more than the maximum specification, disassemble the reduction planetary gear and replace the reduction planetary carrier with a new one.  
(See 05-17-136 REDUCTION PLANETARY GEAR DISASSEMBLY.)  
(See 05-17-261 REDUCTION PLANETARY GEAR ASSEMBLY.)

## Bush Inner Diameter Inspection

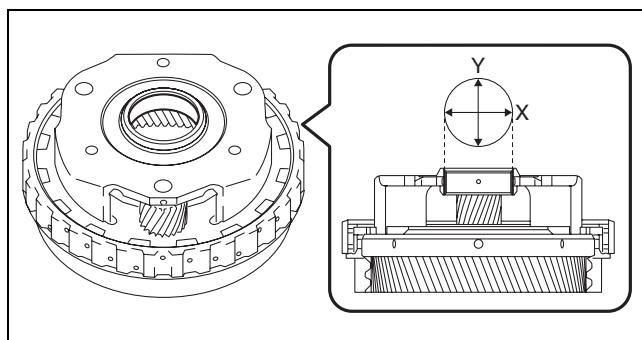
1. Measure the inner diameter of the bush shown in the figure.

### Note

- When measuring, measure near the center of the bush avoiding the oil groove, and then calculate the average value of the X and Y directions as shown in the figure.
- Recommended measuring instrument:  
Cylinder gauge or caliper gauge

### Maximum:

35.095 mm {1.3816 in}



azzjw00001276

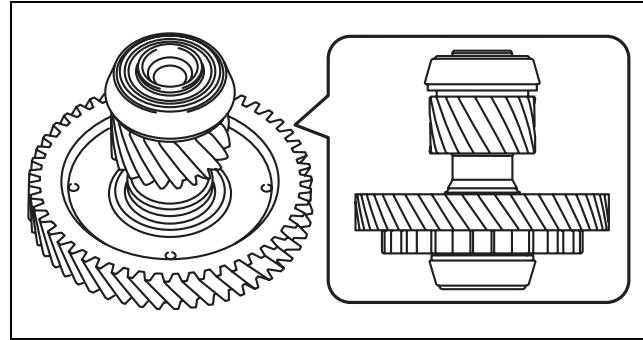
- If it is more than the maximum specification, disassemble the reduction planetary gear and replace the reduction planetary carrier with a new one.  
(See 05-17-136 REDUCTION PLANETARY GEAR DISASSEMBLY.)  
(See 05-17-261 REDUCTION PLANETARY GEAR ASSEMBLY.)

## SECONDARY GEAR AND OUTPUT GEAR INSPECTION

id051700662300

**Taper Roller Bearing Inspection**

1. Place the secondary gear and output gear with the output gear side pointing upward on a workbench.

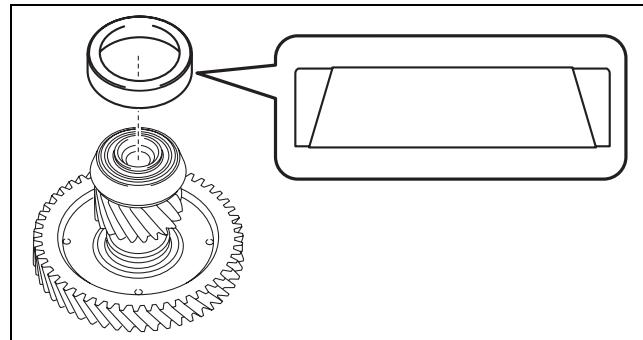


05-17

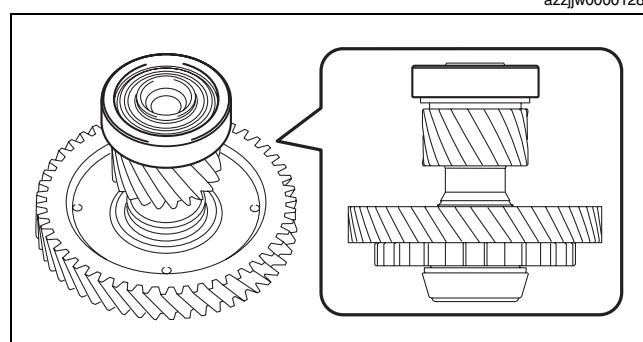
2. Assemble the bearing race to the secondary gear and output gear.

**Note**

- Bearing race size: Outer diameter approx. 75 mm {3.0 in}



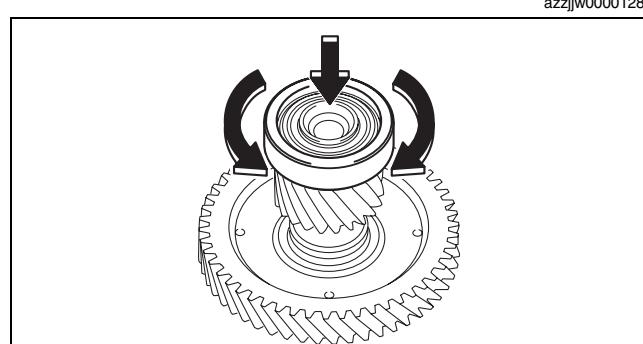
azzjw00001279



azzjw00001280

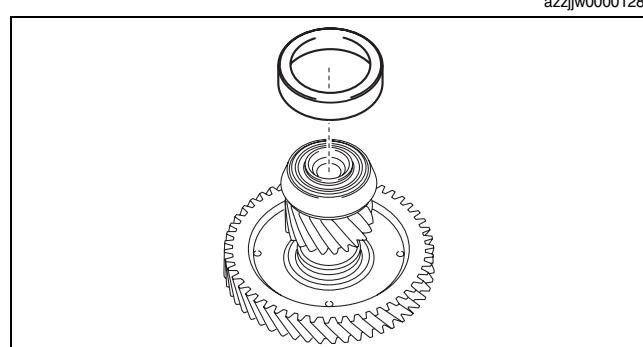
3. With a load applied by hand to the bearing race, rotate the bearing race and verify that there is no malfunction in the taper roller bearing (rotation sticking).

- If there is a malfunction, disassemble the secondary gear and output gear and replace the taper roller bearing with a new one.  
(See 05-17-119 SECONDARY GEAR AND OUTPUT GEAR DISASSEMBLY.)  
(See 05-17-263 SECONDARY GEAR AND OUTPUT GEAR ASSEMBLY.)



azzjw00001281

4. Remove the bearing race.

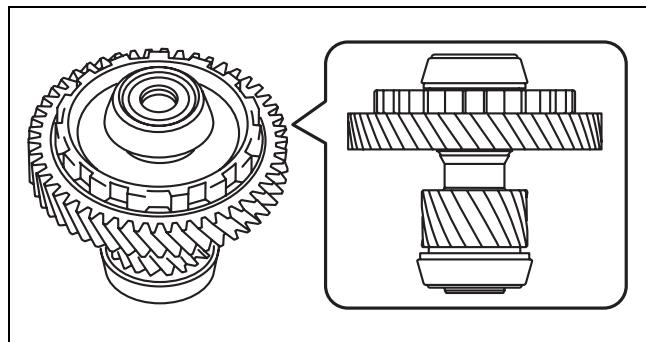


azzjw00001282

azzjw00001283

## AUTOMATIC TRANSAXLE

5. Place the secondary gear and output gear with the output gear side pointing downward on a workbench.

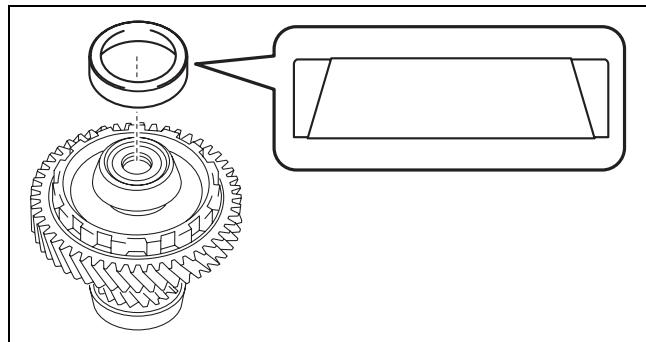


azzjjw00001284

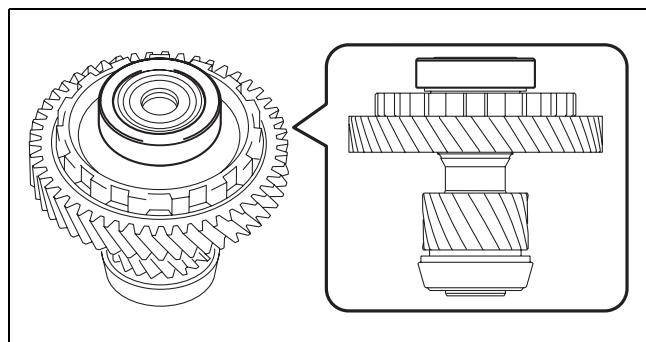
6. Assemble the bearing race to the secondary gear and output gear.

**Note**

- Bearing race size: Outer diameter approx. 70 mm {2.8 in}



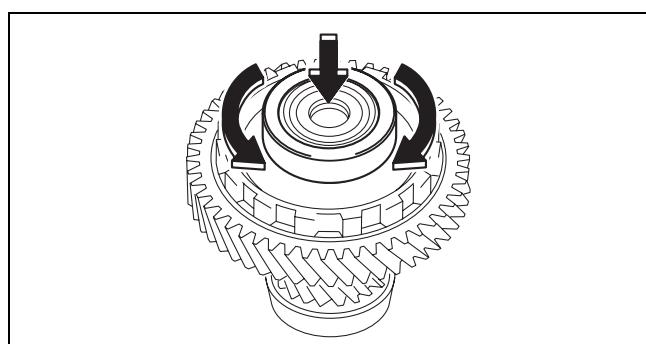
azzjjw00001285



azzjjw00001286

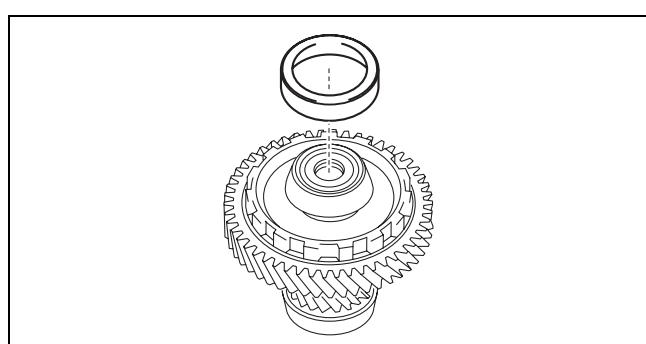
7. With a load applied by hand to the bearing race, rotate the bearing race and verify that there is no malfunction in the taper roller bearing (rotation sticking).

- If there is a malfunction, disassemble the secondary gear and output gear and replace the taper roller bearing with a new one.  
(See 05-17-119 SECONDARY GEAR AND OUTPUT GEAR DISASSEMBLY.)  
(See 05-17-263 SECONDARY GEAR AND OUTPUT GEAR ASSEMBLY.)



azzjjw00001287

8. Remove the bearing race.



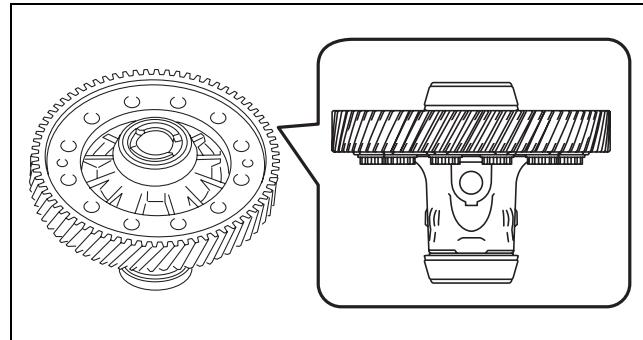
azzjjw00001288

## RING GEAR AND DIFFERENTIAL INSPECTION

id051700662400

## Taper Roller Bearing Inspection

1. Place the ring gear and differential with the ring gear side pointing upward on a workbench.



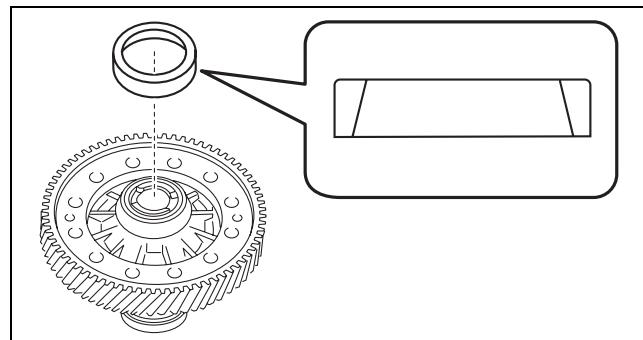
05-17

azzjw00001289

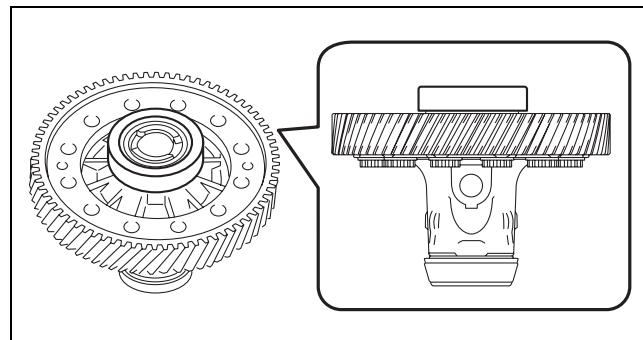
2. Assemble the bearing race to the ring gear and differential.

**Note**

- Bearing race size: Outer diameter approx. 80 mm {3.1 in}



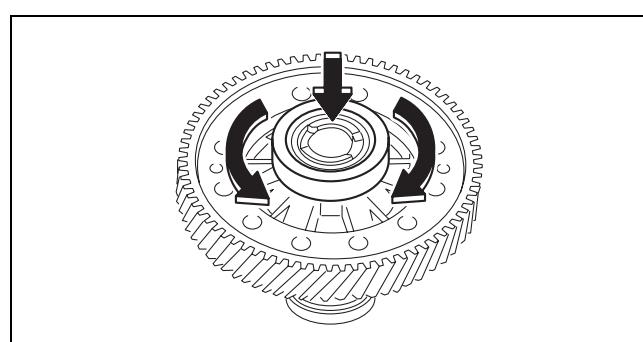
azzjw00001290



azzjw00001291

3. With a load applied by hand to the bearing race, rotate the bearing race and verify that there is no malfunction in the taper roller bearing (rotation sticking).

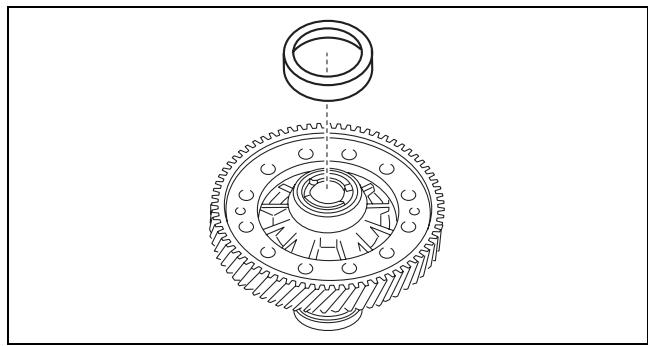
- If there is a malfunction, disassemble the ring gear and differential and replace the taper roller bearing with a new one.  
(See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.)  
(See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.)



azzjw00001292

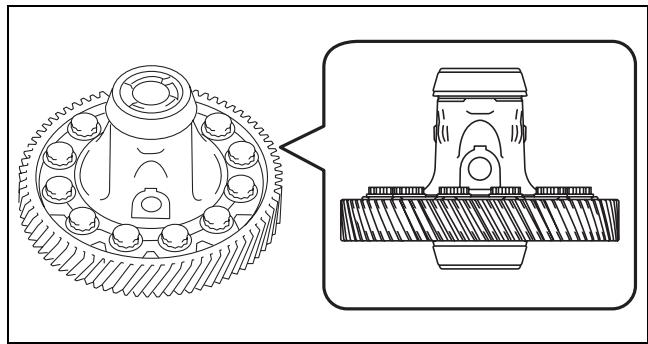
## AUTOMATIC TRANSAXLE

4. Remove the bearing race.



azzjjw00001293

5. Place the ring gear and differential with the ring gear side pointing downward on a workbench.

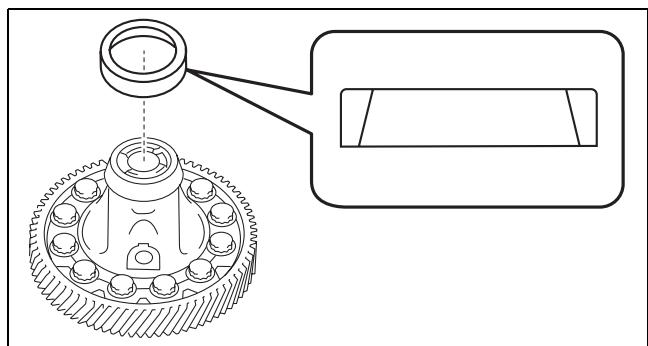


azzjjw00001294

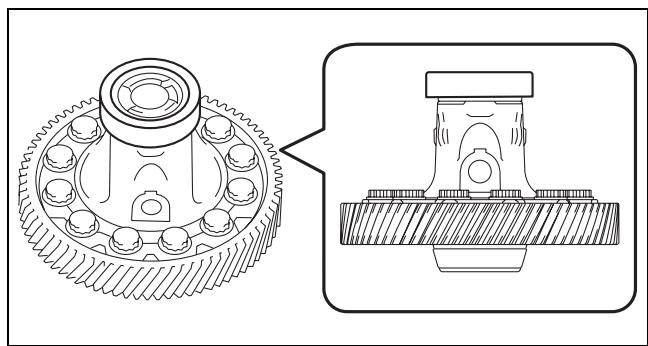
6. Assemble the bearing race to the ring gear and differential.

**Note**

- Bearing race size: Outer diameter approx. 80 mm {3.1 in}



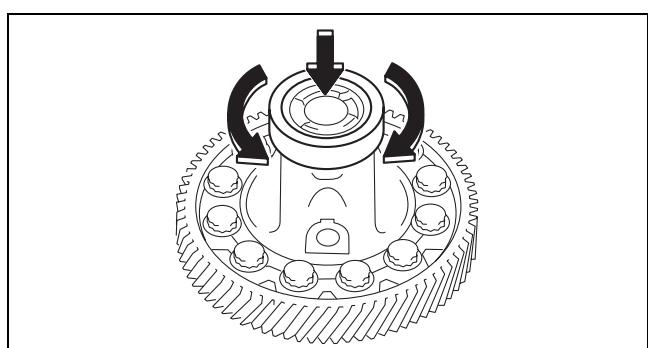
azzjjw00001295



azzjjw00001296

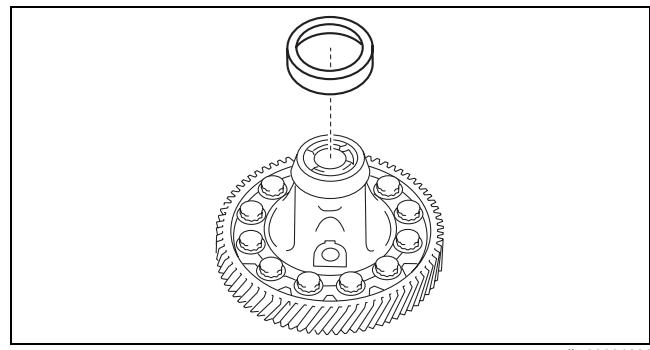
7. With a load applied by hand to the bearing race, rotate the bearing race and verify that there is no malfunction in the taper roller bearing (rotation sticking).

- If there is a malfunction, disassemble the ring gear and differential and replace the taper roller bearing with a new one.  
(See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.)  
(See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.)



azzjjw00001297

8. Remove the bearing race.



05-17

azzjw00001298

## Differential Journal Inspection

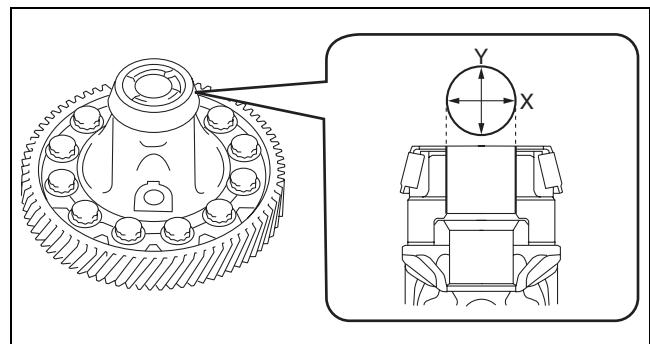
1. Measure the inner diameter of the journal (front side) shown in the figure.

### Note

- When measuring, measure near the center of the journal avoiding the oil groove, and then calculate the average value of the X and Y directions as shown in the figure.
- Recommended measuring instrument:  
Cylinder gauge or caliper gauge

### Maximum:

**30.046 mm {1.1829 in}**



azzjw00001299

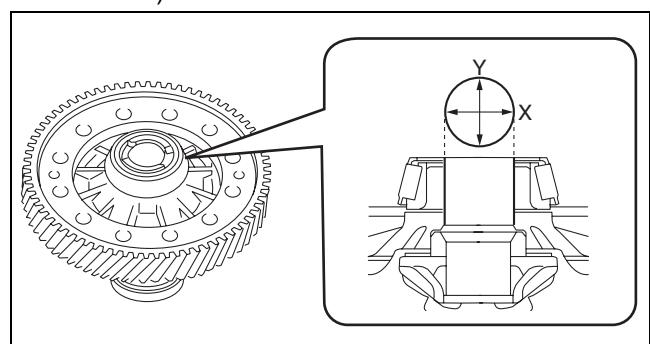
2. Measure the inner diameter of the journal (rear side) shown in the figure.

### Note

- When measuring, measure near the center of the journal avoiding the oil groove, and then calculate the average value of the X and Y directions as shown in the figure.
- Recommended measuring instrument:  
Cylinder gauge or caliper gauge

### Maximum:

**30.046 mm {1.1829 in}**



azzjw00001300

## Differential Backlash Inspection

1. Perform the following the inspection and measurement/adjustment in the order and replace a malfunctioning part with a new one.
  - (1) Drive shaft journal inspection (See 05-17-168 DRIVE SHAFT JOURNAL INSPECTION.)
  - (2) Differential backlash measurement/adjustment (See 05-17-303 DIFFERENTIAL BACKLASH MEASUREMENT/ADJUSTMENT.)

# AUTOMATIC TRANSAXLE

## DRIVE SHAFT JOURNAL INSPECTION

id051700665500

1. Remove the drive shaft (LH) from the vehicle.

**Note**

- For the drive shaft (LH) removal procedure from the vehicle, verify the Workshop Manual.

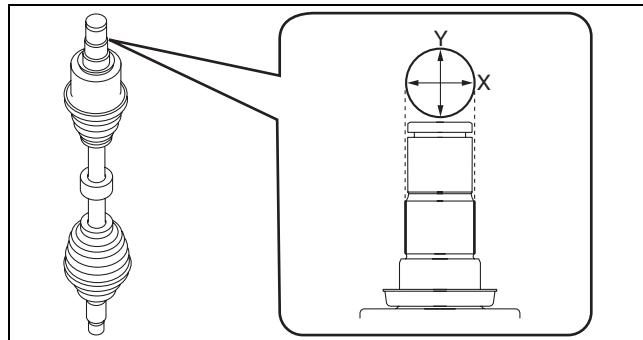
2. Measure the outer diameter of the drive shaft (LH) journal.

**Note**

- When measuring, measure near the center of the journal, and then calculate the average value of the X and Y directions as shown in the figure.
- Recommended measuring instrument:  
Micrometer

**Minimum:**

29.959 mm {1.1795 in}



azzjjw00001301

- If it is less than the minimum specification, disassemble the drive shaft (LH) and replace the outer ring with a new one.

**Note**

- For the drive shaft disassembly/assembly procedure, verify the Workshop Manual.

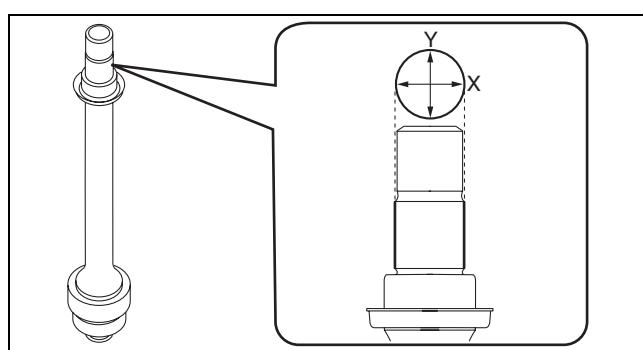
3. Measure the outer diameter of the joint shaft journal.

**Note**

- When measuring, measure near the center of the journal, and then calculate the average value of the X and Y directions as shown in the figure.
- Recommended measuring instrument:  
Micrometer

**Minimum:**

29.944 mm {1.1789 in}



azzjjw00001302

- If it is less than the minimum specification, replace the joint shaft with a new one.

## LOW CLUTCH INSPECTION

id051700662500

### Drive Plate Inspection

- Measure the thickness of the drive plate in four locations (each separated by 90°) and calculate the average value.

#### Caution

- When measuring the thickness of the drive plate, measure the thickness including the facing.
- Measure the thickness of all the drive plates.

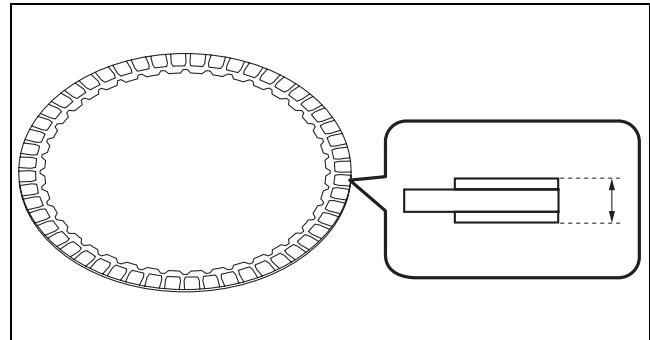
#### Note

- Drive plate size: Outer diameter approx. 159.1 mm {6.264 in}
- Recommended measuring instrument: Micrometer

#### Minimum:

1.475 mm {0.05808 in}

- If it is less than the minimum specification, replace the drive plate with a new one.



azzjw00001312

05-17

## HIGH CLUTCH INSPECTION

id051700662600

### Drive Plate Inspection

- Measure the thickness of the drive plate in four locations (each separated by 90°) and calculate the average value.

#### Caution

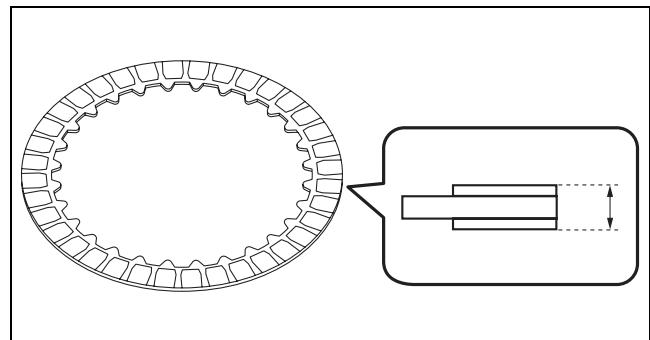
- When measuring the thickness of the drive plate, measure the thickness including the facing.
- Measure the thickness of all the drive plates.

#### Note

- Drive plate size: Outer diameter approx. 116.8 mm {4.598 in}
- Recommended measuring instrument: Micrometer

#### Minimum:

1.375 mm {0.05414 in}



azzjw00001313

- If it is less than the minimum specification, replace the drive plate with a new one.

# AUTOMATIC TRANSAXLE

## Springs and Retainer Component Inspection

1. Measure the free length of the springs and retainer component in four locations (each separated by 90°) and calculate the average value.

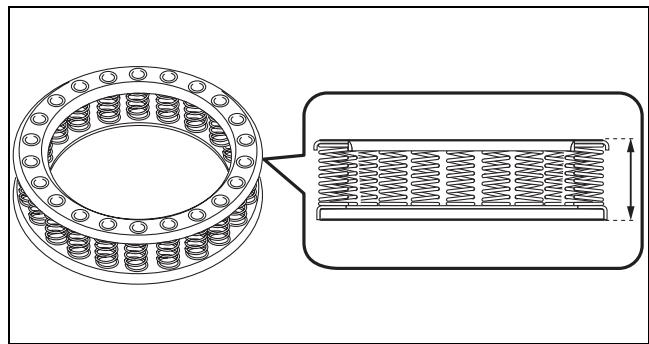
### Note

- Springs and retainer component size: Outer diameter approx. 79.5 mm {3.13 in}
- Recommended measuring instrument: Vernier caliper

### Minimum:

25.4 mm {1.01 in}

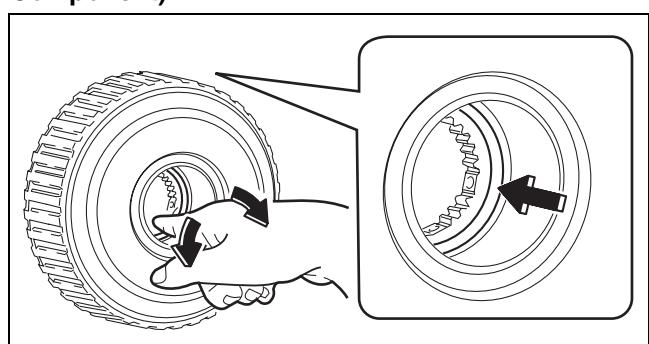
- If it is less than the minimum specification, replace the springs and retainer component with a new one.



azzjw00001528

## Radial Needle Bearing Inspection (In High Clutch Drum Component)

1. Rotate the radial needle bearing shown in the figure by hand and verify that there is no malfunction in the radial needle bearing (rotation sticking).
  - If there is a malfunction, replace the high clutch drum component with a new one.



azzjw00001315

## LOW AND REVERSE BRAKE INSPECTION

### Drive Plate Inspection

1. Measure the thickness of the drive plate in four locations (each separated by 90°) and calculate the average value.

### Caution

- When measuring the thickness of the drive plate, measure the thickness including the facing.
- Measure the thickness of all the drive plates.

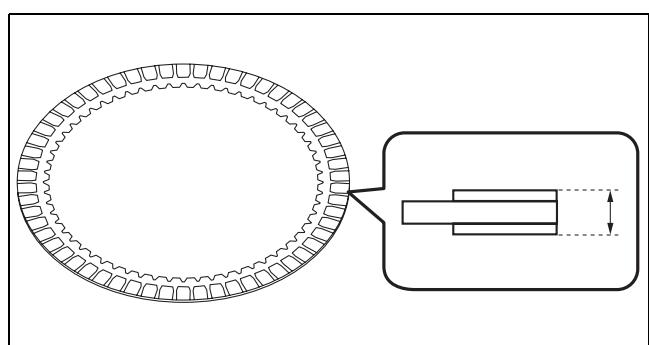
### Note

- Drive plate size: Outer diameter approx. 174.1 mm {6.854 in}
- Recommended measuring instrument: Micrometer

### Minimum:

1.475 mm {0.05808 in}

- If it is less than the minimum specification, replace the drive plate with a new one.



azzjw00001316

**2-6 BRAKE INSPECTION**

id051700662800

**Drive plate inspection**

- Measure the thickness of the drive plate in four locations (each separated by 90°) and calculate the average value.

**Caution**

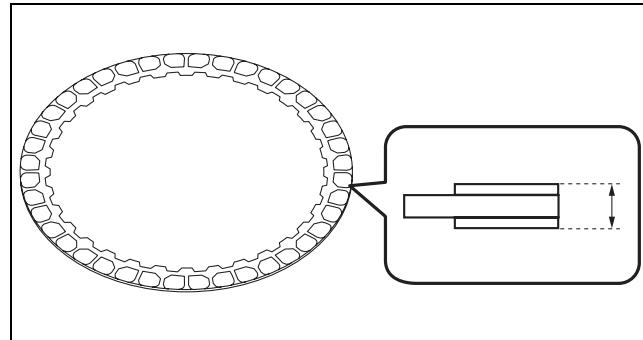
- When measuring the thickness of the drive plate, measure the thickness including the facing.**
- Measure the thickness of all the drive plates.**

**Note**

- Drive plate size: Outer diameter approx. 171.9 mm {6.768 in}
- Recommended measuring instrument: Micrometer

**Minimum:****1.475 mm {0.05808 in}**

- If it is less than the minimum specification, replace the drive plate with a new one.



azzjw00001318

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**R-3-5 BRAKE INSPECTION**

id051700662900

**Drive Plate Inspection**

- Measure the thickness of the drive plate in four locations (each separated by 90°) and calculate the average value.

**Caution**

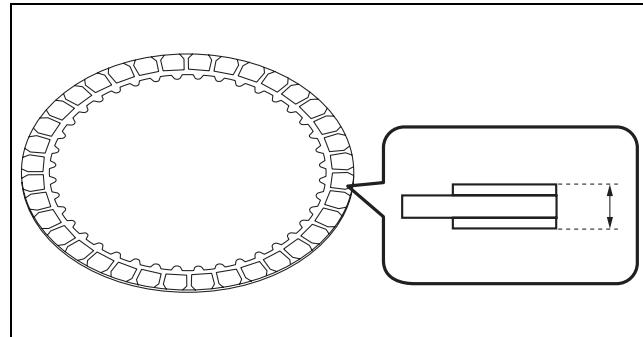
- When measuring the thickness of the drive plate, measure the thickness including the facing.**
- Measure the thickness of all the drive plates.**

**Note**

- Drive plate size: Outer diameter approx. 169.4 mm {6.669 in}
- Recommended measuring instrument: Micrometer

**Minimum:****1.635 mm {0.06438 in}**

- If it is less than the minimum specification, replace the drive plate with a new one.



azzjw00001320

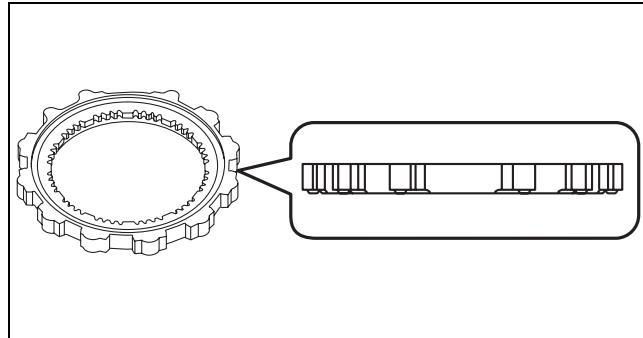
## ONE-WAY CLUTCH INSPECTION

id051700663000

### Caution

- Do not disassemble the one-way clutch. If it has been disassembled, replace the one-way clutch with a new one.

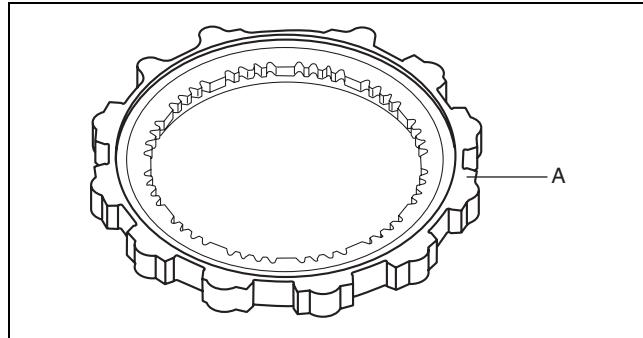
1. Place the one-way clutch on a workbench as shown in the figure.



azzjw00001322

2. Secure the outer plate of the one-way clutch by hand.

A : Secure by hand

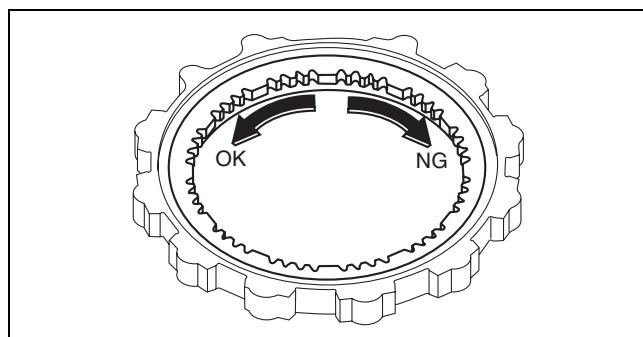


azzjw00001323

3. Rotate the inner plate of the one-way clutch by hand and verify that it rotates counterclockwise and locks, and does not rotate clockwise.

### Caution

- When the inner plate of the one-way clutch is rotated, a ratchet sound occurs because it is a mechanical diode-type one-way clutch, but this does not indicate a malfunction.
- If there is a malfunction, replace the one-way clutch with a new one.



azzjw00001324

## LOW CLUTCH HUB INSPECTION

id051700663100

## Bush Inner Diameter Inspection

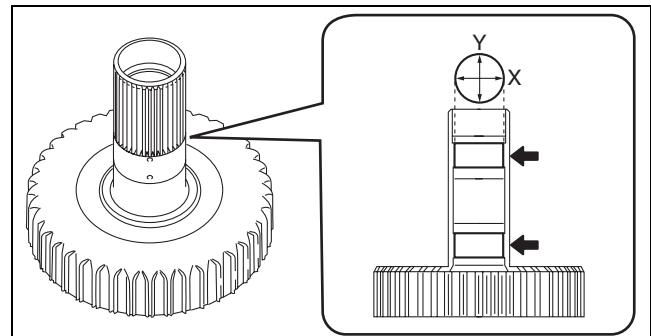
- Measure the inner diameter of bush in two locations shown in the figure.

**Note**

- When measuring, measure near the center of the bush avoiding the oil groove, and then calculate the average value of the X and Y directions as shown in the figure.
- Recommended measuring instrument:  
Cylinder gauge or caliper gauge

**Maximum:**

31.270 mm {1.2311 in}



azzjw00001348

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- If it is more than the maximum specification, replace the low clutch hub with a new one.

## HIGH CLUTCH HUB INSPECTION

id051700663200

## Bush Inner Diameter Inspection

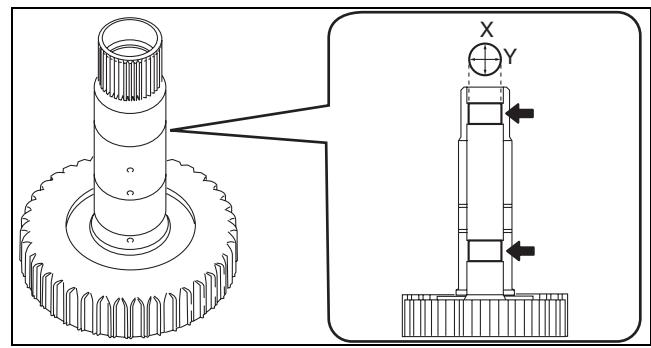
- Measure the inner diameter of bush in two locations shown in the figure.

**Note**

- When measuring, measure near the center of the bush avoiding the oil groove, and then calculate the average value of the X and Y directions as shown in the figure.
- Recommended measuring instrument:  
Cylinder gauge or caliper gauge

**Maximum:**

18.038 mm {0.71015 in}



azzjw00001326

- If it is more than the maximum specification, replace the high clutch hub with a new one.

# AUTOMATIC TRANSAXLE

## OIL PUMP INSPECTION

id051700663300

### Side Clearance Inspection

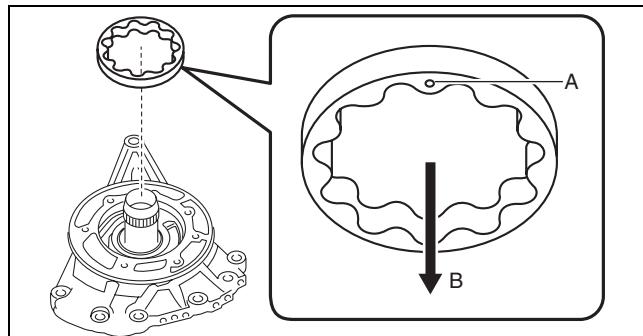
1. Assemble the outer rotor.

A : Mark

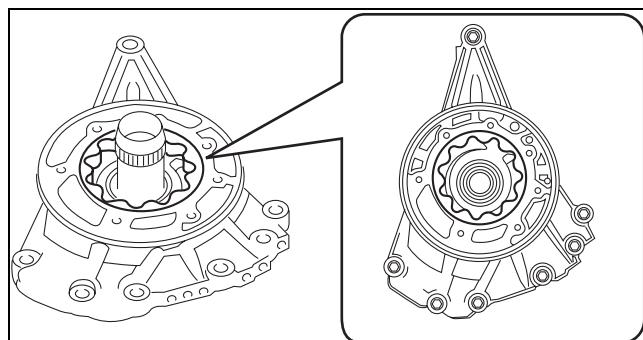
B : Assembly direction (oil pump housing side)

#### Note

- Assemble so that the outer rotor marking is facing the oil pump housing.



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azzjjw00001328

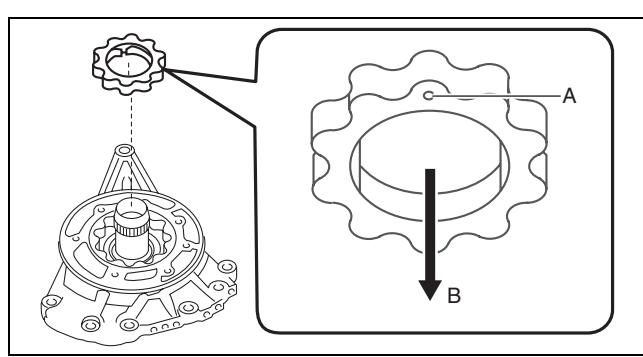
2. Assemble the inner rotor.

A : Mark

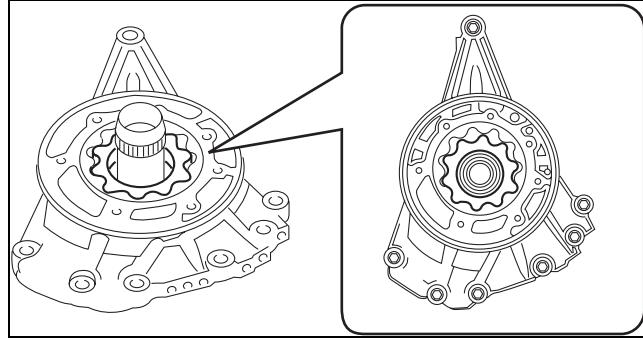
B : Assembly direction (oil pump housing side)

#### Note

- Assemble with the inner rotor marking pointed at the oil pump housing.



azzjjw00001529



azzjjw00001330

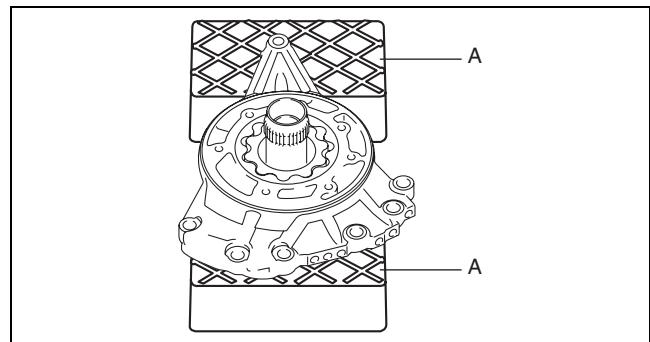
## AUTOMATIC TRANSAXLE

3. Set the assembled parts on the workbench as shown in the figure.

A : Rubber plate

### Caution

- To reduce error during the side clearance measurement, use the rubber plates to adjust the alignment surface of the oil pump housing with the oil pump cover so that it is level.



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4. Measure the side clearance shown in the figure in four locations (each separated by 90°) and calculate the average value.

A : Inner rotor

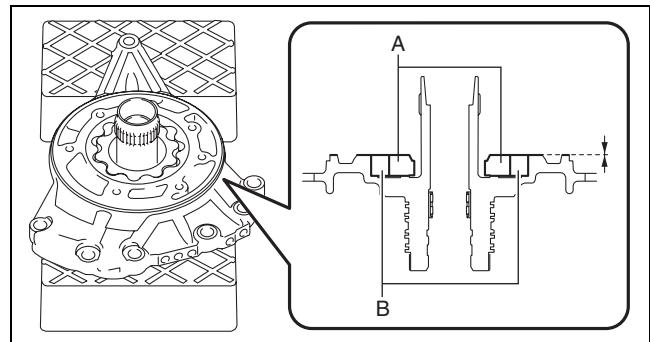
B : Outer rotor

### Caution

- Measure the inner rotor and outer rotor side clearances.

### Note

- Recommended measuring instrument:  
Thickness gauge, straight edge ruler



azzjw00001332

### Maximum:

- Inner rotor: 0.045 mm {0.0017 in}
- Outer rotor: 0.050 mm {0.0019 in}

If it is more than the maximum specification, replace the oil pump with a new one.

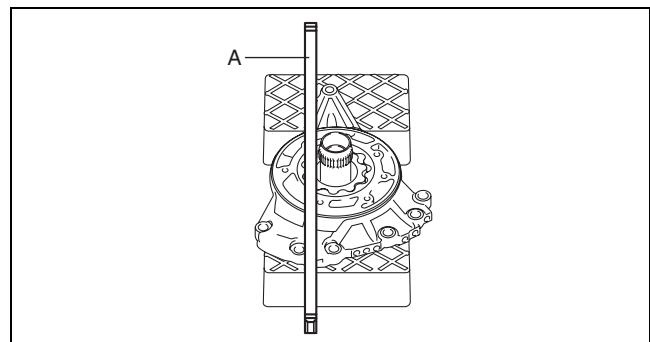
### Note

- Measurement method

- (1) Set the straight edge ruler along the alignment surface of the oil pump housing with the oil pump cover as shown in the figure.

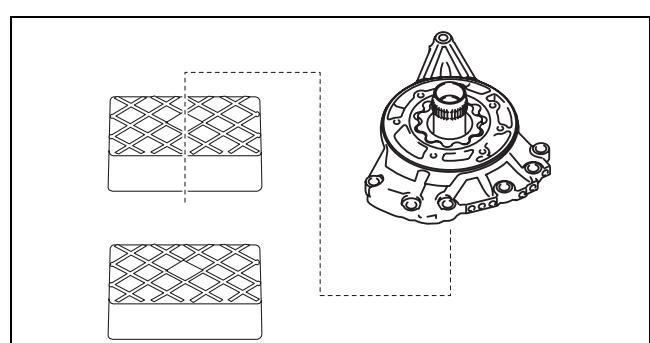
A : Straight edge ruler

- (2) Measure the gaps between the straight edge ruler and the inner rotor, and the straight edge ruler and the outer rotor using a thickness gauge.



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5. Take the parts in which the side clearance has been measured off the rubber plates.

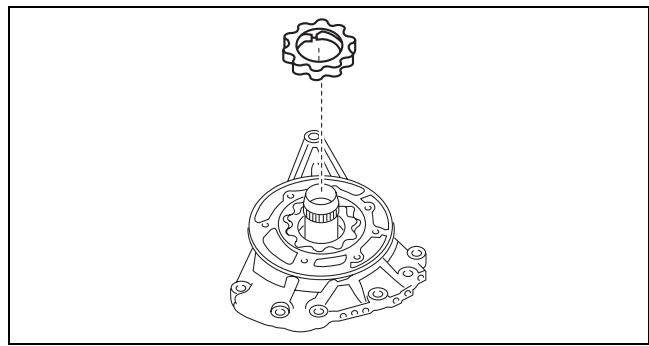


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05-17-175

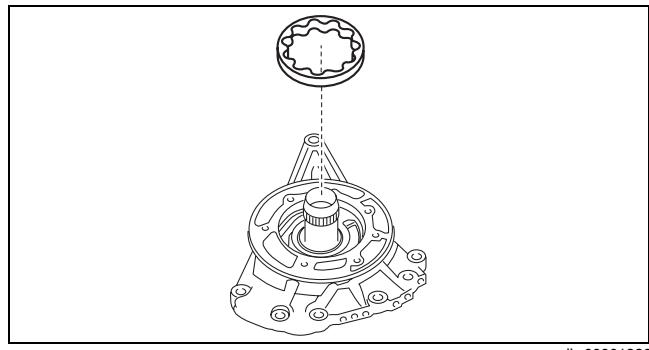
## AUTOMATIC TRANSAXLE

6. Remove the inner rotor.



azzjjw00001335

7. Remove the outer rotor.



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### Bush Inner Diameter Inspection (In Oil Pump Cover)

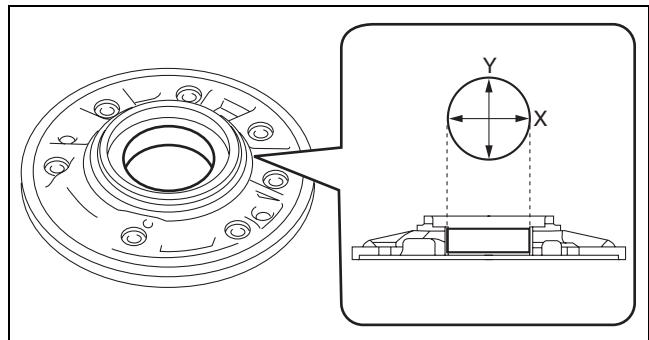
1. Measure the inner diameter of the bush shown in the figure.

#### Note

- When measuring, measure near the center of the bush avoiding the dimple, and then calculate the average value of the X and Y directions as shown in the figure.
- Recommended measuring instrument: Cylinder gauge or caliper gauge

#### Maximum:

44.006 mm {1.7325 in}

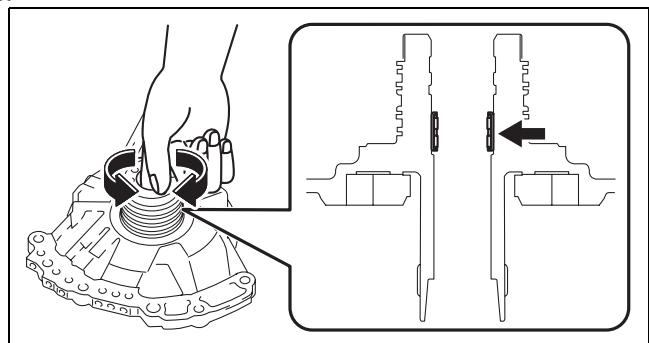


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- If it is more than the maximum specification, replace the oil pump cover with a new one.

### Radial Needle Bearing Inspection (In Oil Pump Housing)

1. Rotate the radial needle bearing shown in the figure by hand and verify that there is no malfunction in the radial needle bearing (rotation sticking).
- If there is a malfunction, replace the oil pump with a new one.



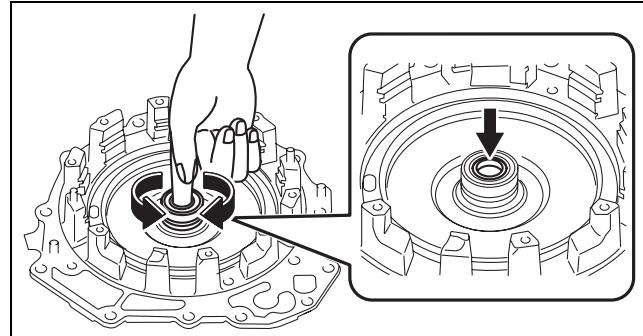
azzjjw00001338

## END COVER INSPECTION

id051700663400

## Radial Needle Bearing Inspection

1. Rotate the radial needle bearing shown in the figure by hand and verify that there is no malfunction in the radial needle bearing (rotation sticking).
  - If there is a malfunction, replace the end cover with a new one.

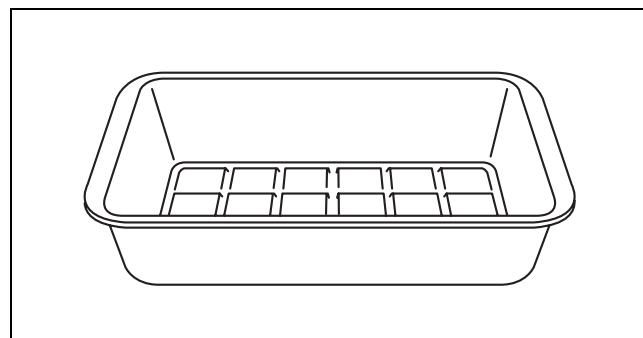


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## OIL COOLER INSPECTION

id051700663500

1. Prepare a clean oil receptacle.



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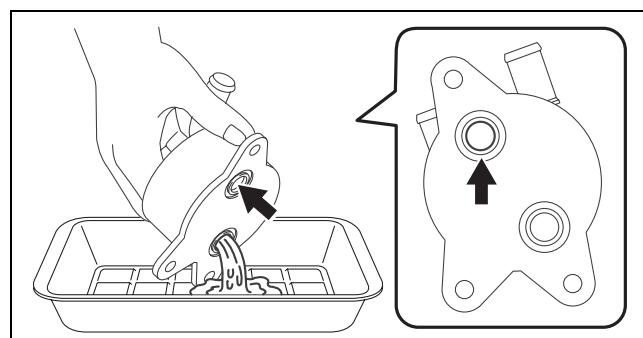
2. Blow compressed air into the oil passage shown in the figure and drain the ATF in the oil cooler.

**Warning**

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

**Caution**

- Perform the work at a position where the ATF in the oil cooler can be drained into a clean oil receptacle.
- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.



azzjw00001342

**Compressed air pressure**491—882 kPa {5.01—8.99 kgf/cm<sup>2</sup>, 71.3—127.0 psi}

3. Dispose of the ATF in the oil receptacle and clean the oil receptacle.

## AUTOMATIC TRANSAXLE

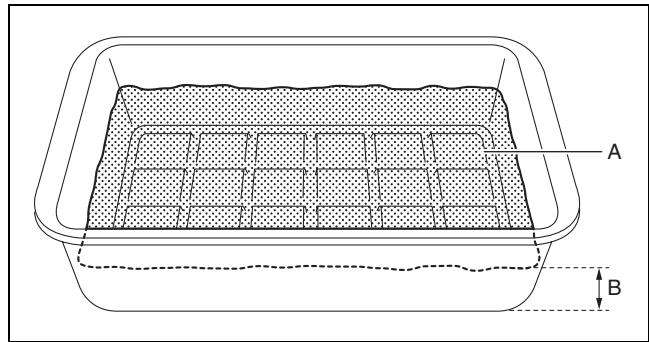
4. Add water into the clean oil receptacle.

A : Water

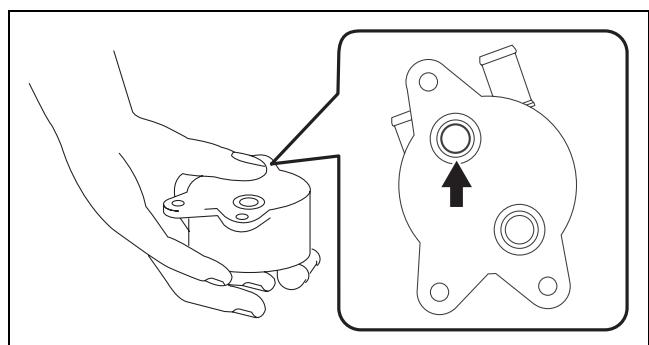
B : Approx. 70 mm {2.8 in}

### Note

- Add water until the water depth reaches approx. 70 mm {2.8 in}.



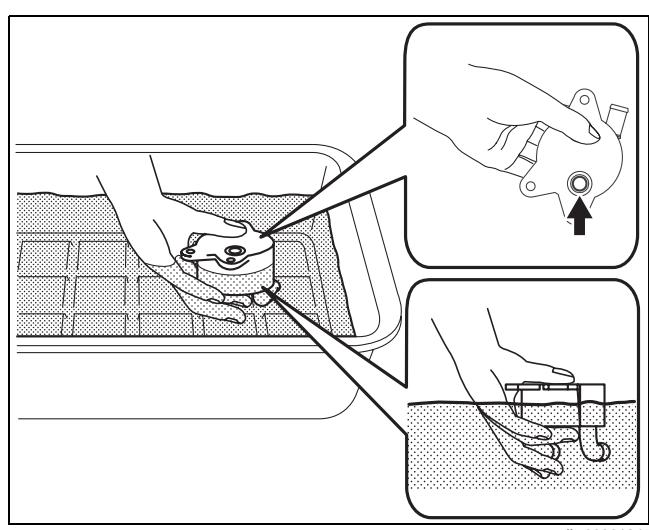
5. Cover the oil passage by hand.



6. Immerse the oil cooler in the water in the oil receptacle to the level shown in the figure.

### Caution

- Be careful not to allow water to penetrate the oil passage shown in the figure. If water penetrates the oil passage, flush and drain the water in the oil cooler oil passage. (See 05-17-147 OIL COOLER CLEANING.)

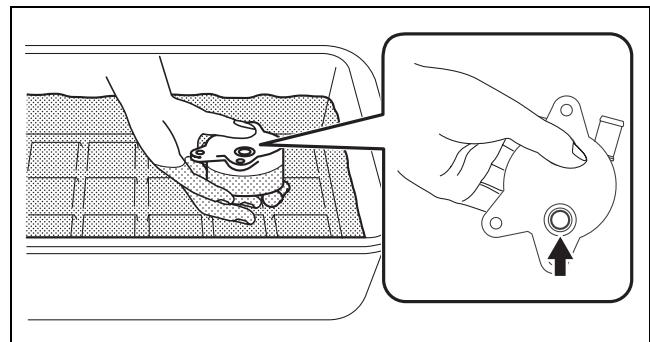


## AUTOMATIC TRANSAXLE

- Blow compressed air into the oil passage shown in the figure, apply compressed air pressure to the oil cooler for 3 min, and verify that there is no air leakage from the part which was soaked in water in the oil cooler.

### Warning

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.



azzjw00001346

05-17

### Caution

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

### Note

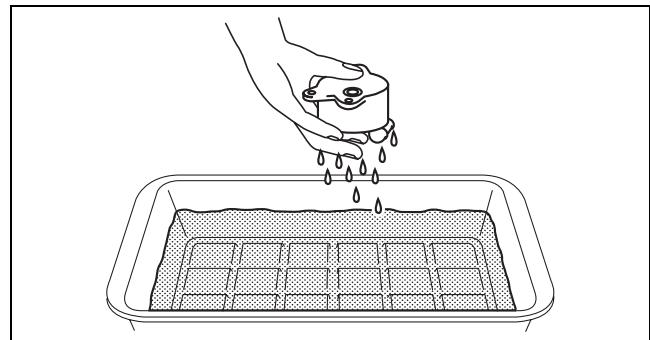
- A small amount of air leakage due to the compressed air pressure from the area where the oil passage is covered by your hand is of no concern, therefore, apply compressed air pressure to the oil cooler for 3 min.

### Compressed air pressure

150—200 kPa {1.53—2.03 kgf/cm<sup>2</sup>, 21.8—29.0 psi}

- If there is a malfunction, replace the oil cooler with a new one.

- Remove the oil cooler from the water and wipe off any water remaining around the oil cooler.



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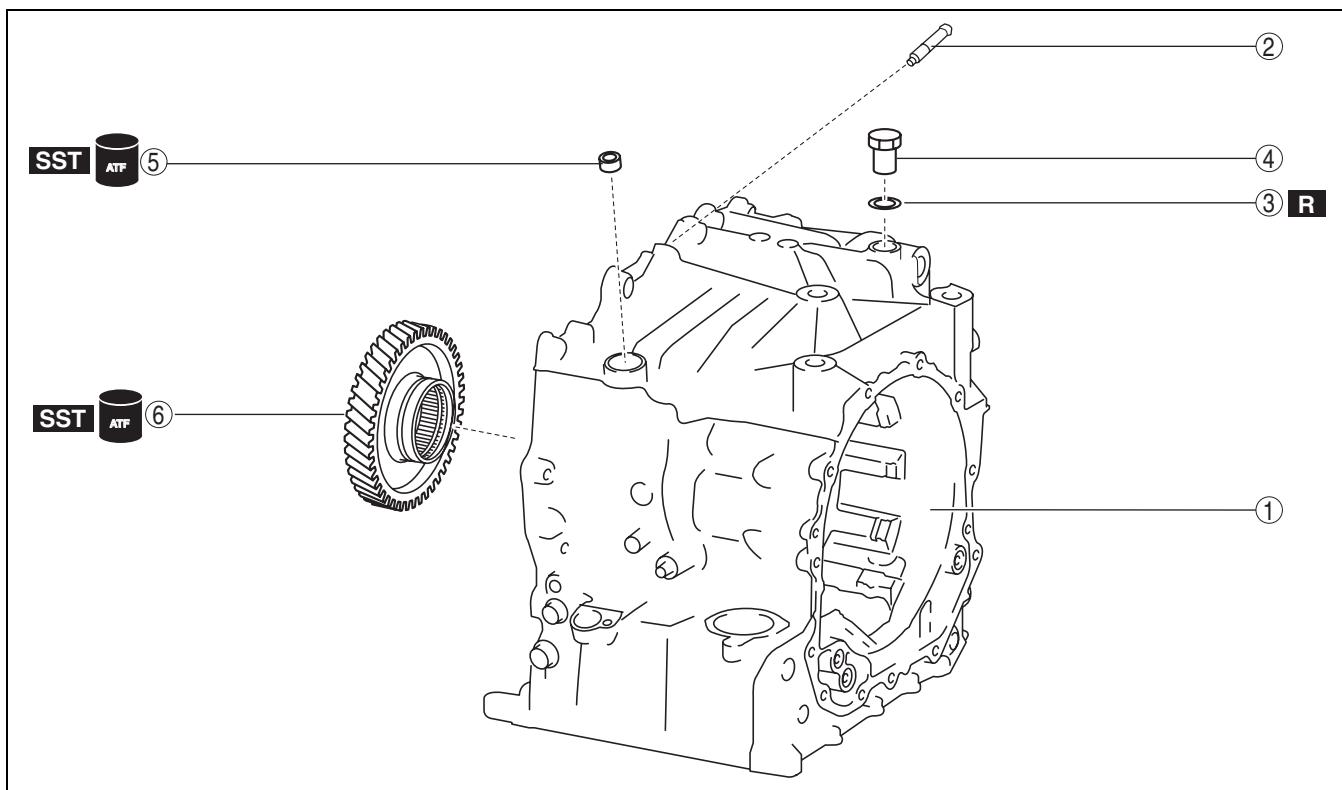
- Dispose of the water in the oil receptacle and clean the oil receptacle.

# AUTOMATIC TRANSAXLE

## AUTOMATIC TRANSAXLE ASSEMBLY

id051700664400

### Structural View Automatic transaxle 1



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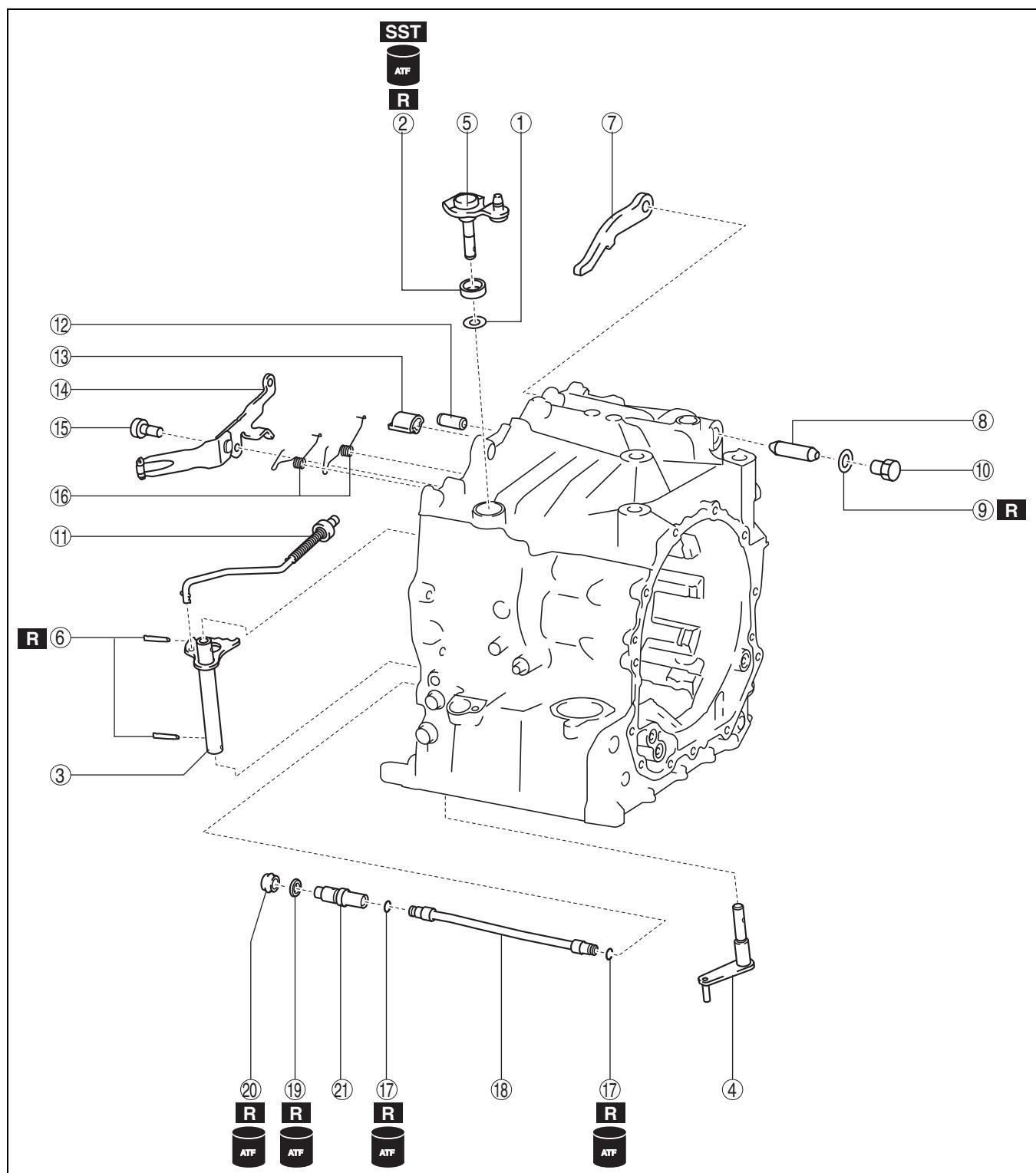
1	Transaxle case
2	Breather pipe
3	Gasket

4	Plug (M18×1.5 bolt, length to approx. 21.5 mm {0.846 in})
5	Radial needle bearing
6	Primary gear

# AUTOMATIC TRANSAXLE

## Automatic transaxle 2

05-17



azzjw00001555

1	Washer
2	Oil seal
3	Manual plate component
4	Parking assist lever component
5	Parking shift lever component
6	Roll pin
7	Parking pawl
8	Parking pawl shaft

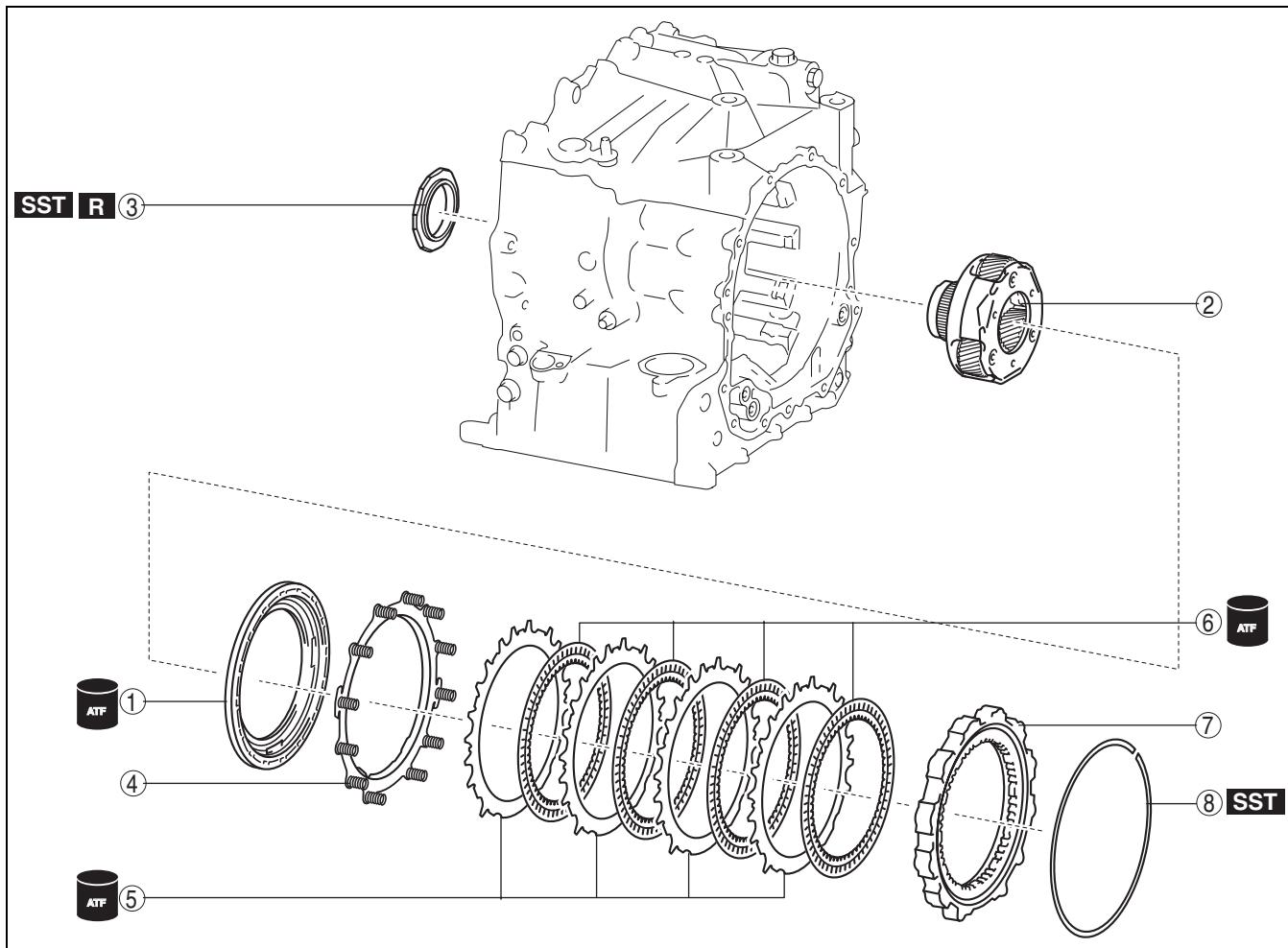
9	Gasket
10	Plug (M14×1.5, length to approx. 10 mm {0.39 in})
11	Parking rod component
12	Parking pawl pin
13	Support actuator
14	Detent bracket component
15	2 bolts (M8×1.25 bolt, length to approx. 16 mm {0.63 in})

## AUTOMATIC TRANSAXLE

16	Pawl return spring
17	O-ring (outer diameter approx. 11.6 mm {0.457 in}, thickness approx. 1.9 mm {0.075 in})
18	Oil pipe

19	Gasket
20	Gasket
21	Connector

### Automatic transaxle 3



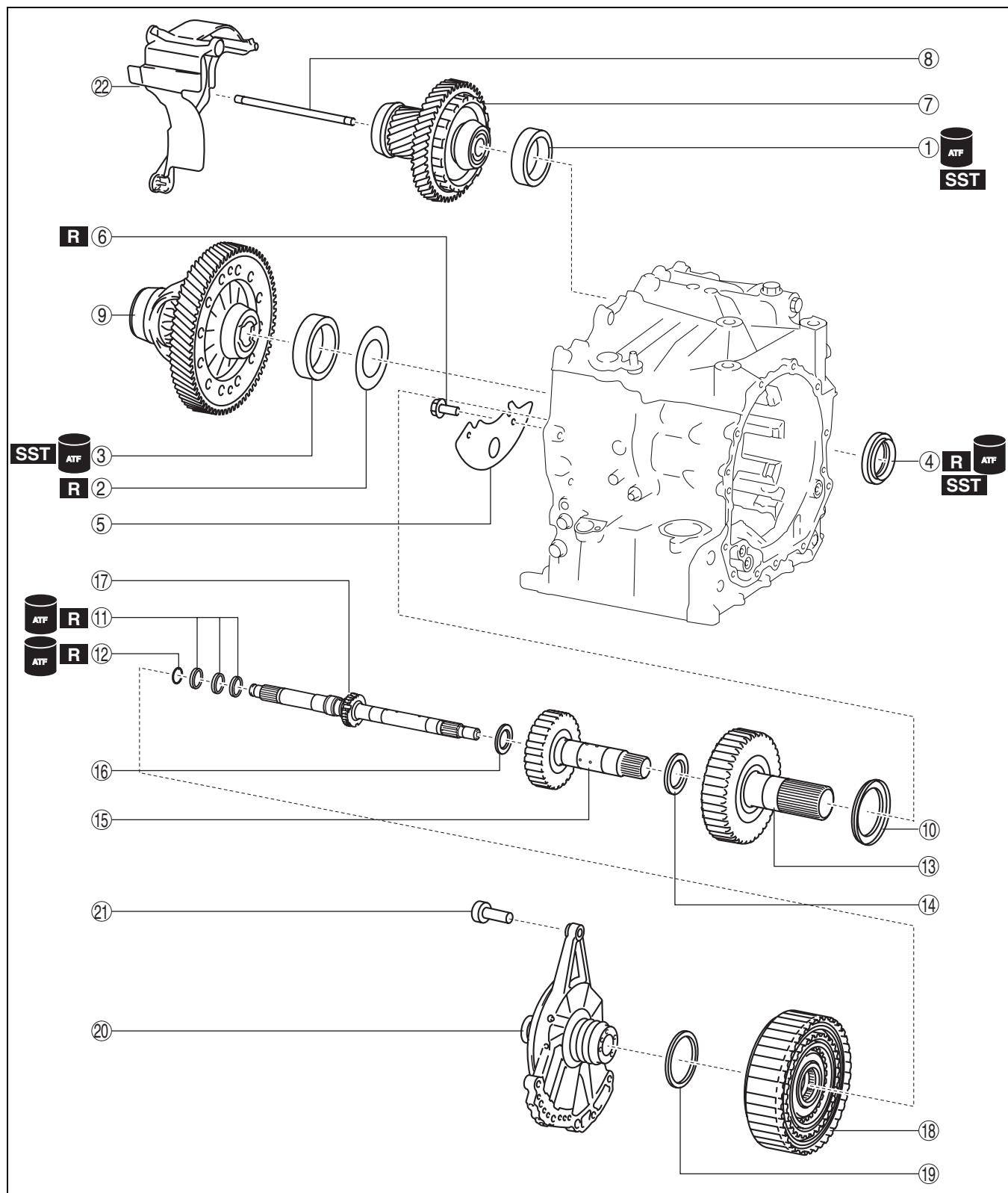
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1	Low and reverse brake piston
2	Front planetary gear
3	Locknut
4	Springs and retainer component (inner diameter approx. 152.3 mm {5.996 in})

5	Driven plate (inner diameter approx. 149.6 mm {5.890 in})
6	Drive plate (outer diameter approx. 174.1 mm {6.854 in})
7	One-way clutch
8	Snap ring (outer diameter approx. 198.0 mm {7.795 in}) (selection)

# AUTOMATIC TRANSAXLE

## Automatic transaxle 4



azzjw00001557

1	Bearing race (outer diameter approx. 70 mm {2.8 in})
2	Shim (outer diameter approx. 79 mm {3.1 in}, thickness approx. 0.5 mm {0.02 in})
3	Bearing race (outer diameter approx. 80 mm {3.1 in})
4	Oil seal (outer diameter approx. 63 mm {2.5 in})

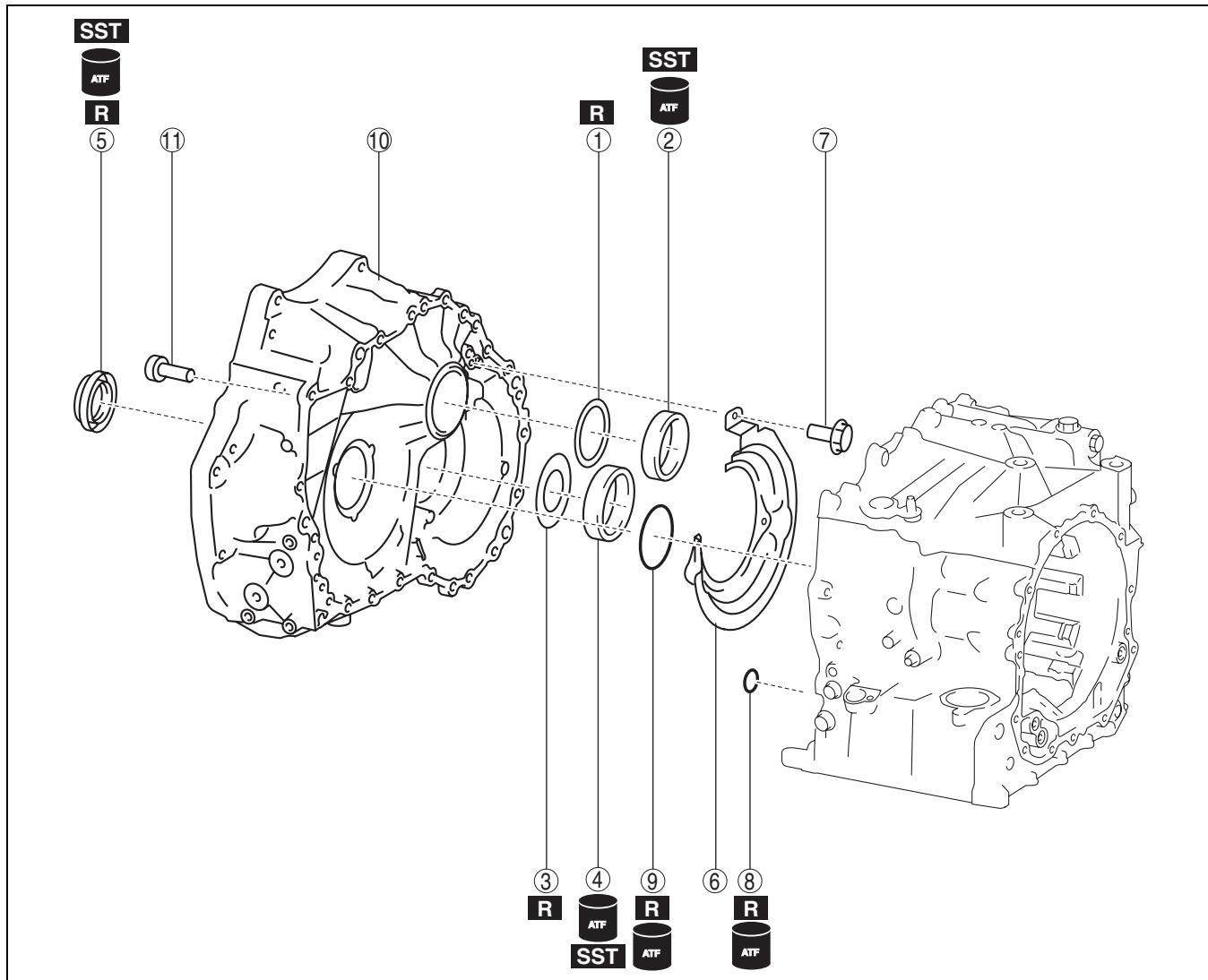
5	Baffle plate
6	2 bolts (M6×1.0 bolt, length to approx. 15 mm {0.59 in}*)
7	Secondary gear and output gear
8	Oil pipe
9	Ring gear and differential

# AUTOMATIC TRANSAXLE

10	Thrust needle bearing (outer diameter approx. 80.3 mm {3.16 in})	16	Thrust needle bearing (outer diameter approx. 37.3 mm {1.47 in})
11	Seal ring (outer diameter approx. 24.4 mm {0.961 in}, thickness approx. 1.5 mm {0.059 in})	17	Turbine shaft
12	D-ring (outer diameter approx. 16.4 mm {0.646 in}, thickness approx. 2.4 mm {0.094 in})	18	Clutch component
13	Low clutch hub	19	Thrust needle bearing (outer diameter approx. 72.7 mm {2.86 in})
14	Thrust needle bearing (outer diameter approx. 51.3 mm {2.02 in})	20	Oil pump
15	High clutch hub	21	7 bolts (M8×1.25 bolt, length to approx. 31 mm {1.2 in})
		22	Baffle plate

\* : Length without spring washer is indicated due to bolt with spring washer. Length with spring washer is approx. 13 mm {0.51 in}. In addition, this bolt is applied with thread-locking compound.

## Automatic transaxle 5



azzjjw00001558

1	Shim (outer diameter approx. 74 mm {2.9 in}) (selection)
2	Bearing race (outer diameter approx. 75 mm {3.0 in})
3	Shim (outer diameter approx. 79 mm {3.1 in}) (selection)
4	Bearing race (outer diameter approx. 80 mm {3.1 in})

5	Oil seal (outer diameter approx. 65 mm {2.6 in})
6	Baffle plate
7	3 bolts (M6×1.0 bolt, length to approx. 14 mm {0.55 in})
8	O-ring (outer diameter approx. 15.6 mm {0.614 in}, thickness approx. 2.4 mm {0.094 in})

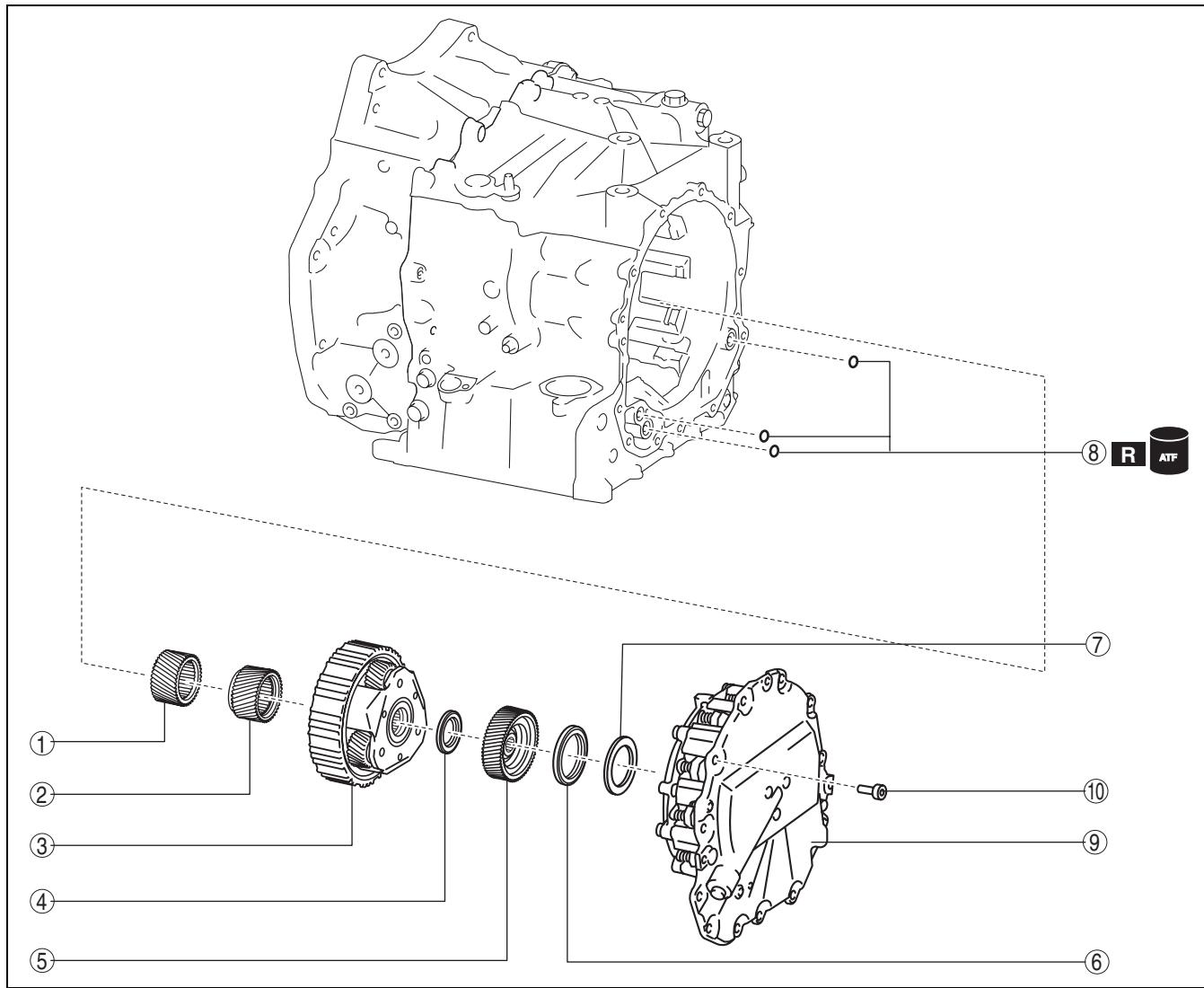
# AUTOMATIC TRANSAXLE

9	O-ring (outer diameter approx. 73.3 mm {2.89 in}, thickness approx. 3.0 mm {0.12 in})	11	24 bolts * (M8×1.25 bolt, length to approx. 28 mm {1.1 in})
10	Converter housing		

\* : Of the 24 bolts, 6 are applied with sealant

05-17

## Automatic transaxle 6



azzjw00001559

1	Front sun gear
2	Rear sun gear
3	Rear planetary gear
4	Thrust needle bearing (outer diameter approx. 44 mm {1.7 in})
5	Reduction sun gear
6	Thrust needle bearing (outer diameter approx. 61.5 mm {2.42 in})

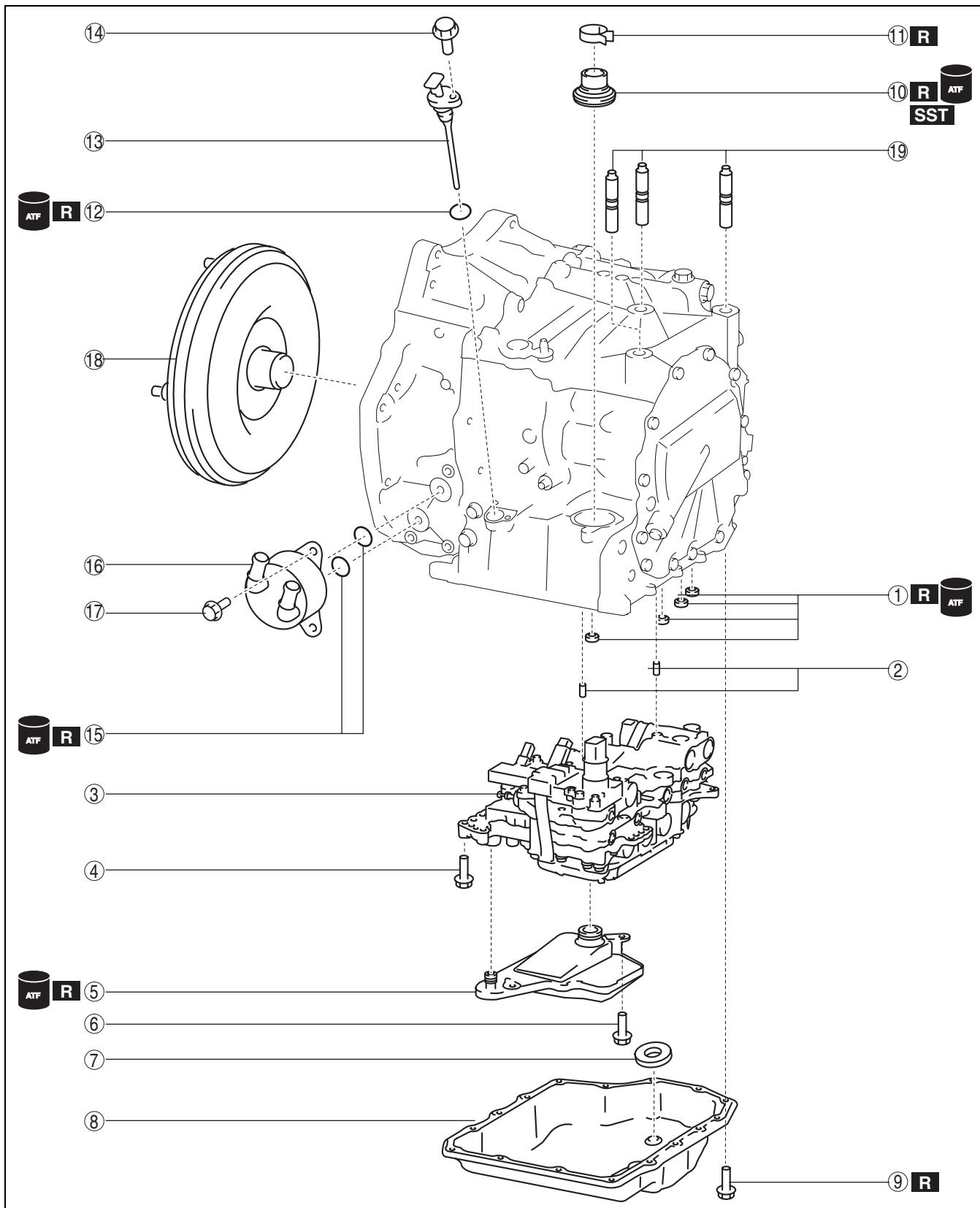
7	Shim (outer diameter approx. 59.5 mm {2.34 in}) (selection)
8	O-ring (outer diameter approx. 15.6 mm {0.614 in}, thickness approx. 2.4 mm {0.094 in})
9	End cover component
10	12 bolts * (M8×1.25 bolt, length to approx. 21 mm {0.83 in})

\* : Of the 12 bolts, 2 are applied with sealant

05-17-185

# AUTOMATIC TRANSAXLE

## Automatic transaxle 7



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# AUTOMATIC TRANSAXLE

05-17

1	Gasket
2	Dowel pin
3	Control valve body
4	11 bolts (M6×1.0 bolt, length to approx. 30 mm {1.2 in})
5	Oil strainer
6	2 bolts (M6×1.0 bolt, length to approx. 16 mm {0.63 in})
7	Magnet
8	Oil pan
9	16 bolts (M6×1.0 bolt, length to approx. 15 mm {0.59 in}*)

10	Oil seal
11	Hose clamp
12	O-ring (outer diameter approx. 16.6 mm {0.654 in}, thickness approx. 2.4 mm {0.094 in})
13	Dipstick
14	Bolt (M6×1.0 bolt, length to approx. 16 mm {0.63 in})
15	O-ring (outer diameter approx. 24.4 mm {0.961 in}, thickness approx. 2.4 mm {0.094 in})
16	Oil cooler
17	3 bolts (M8×1.25 bolt, length to approx. 25 mm {0.98 in})
18	Torque converter
19	Stud bolt

\* : Length without spring washer is indicated due to bolt with spring washer. Length with spring washer is approx. 13 mm {0.51 in}.

## Assembly Procedure

- Assemble the parts in the following order.

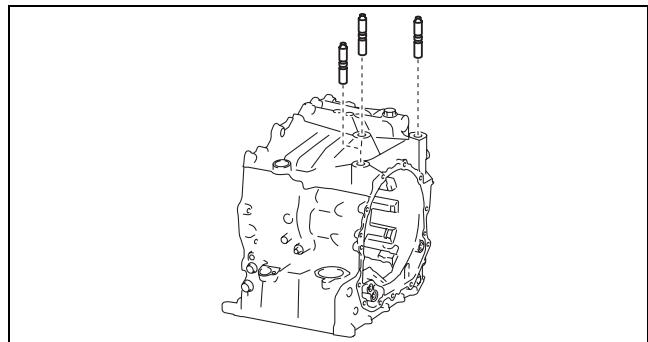
### Note

- Assemble the parts in the following order because the parts in the transaxle may be used for measurement/adjustment.

- (1) Oil pump (See 05-17-243 OIL PUMP ASSEMBLY)
- (2) Clutch component (See 05-17-247 CLUTCH COMPONENT ASSEMBLY)
- (3) Rear planetary gear (See 05-17-259 REAR PLANETARY GEAR ASSEMBLY)
- (4) Reduction planetary gear (See 05-17-261 REDUCTION PLANETARY GEAR ASSEMBLY)
- (5) Secondary gear and output gear (See 05-17-263 SECONDARY GEAR AND OUTPUT GEAR ASSEMBLY)
- (6) Ring gear and differential (See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY)
- (7) End cover component (See 05-17-273 END COVER COMPONENT ASSEMBLY)
- (8) Control valve body (See 05-17-288 CONTROL VALVE BODY ASSEMBLY)

- If the transaxle case is replaced with a new one, perform the following procedure:

- Remove the stud bolts.



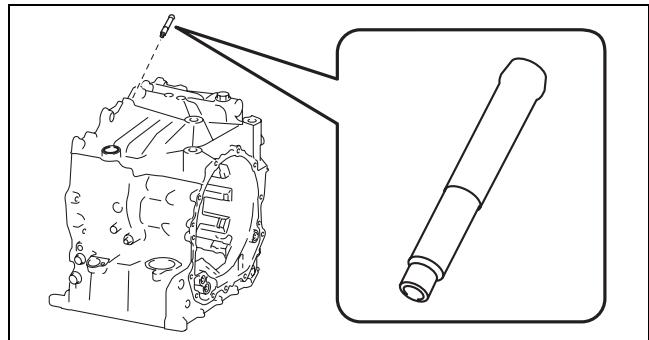
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## AUTOMATIC TRANSAXLE

(2) Assemble a new breather pipe to the position shown in the figure.

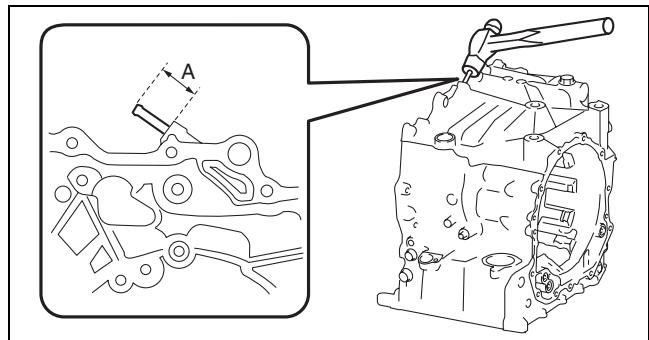
### Note

- Lightly tap and assemble so as not damage the breather pipe.



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A : 25—27 mm {1.0—1.06 in}



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(3) Assemble the plug and new gasket in the order shown in the figure..

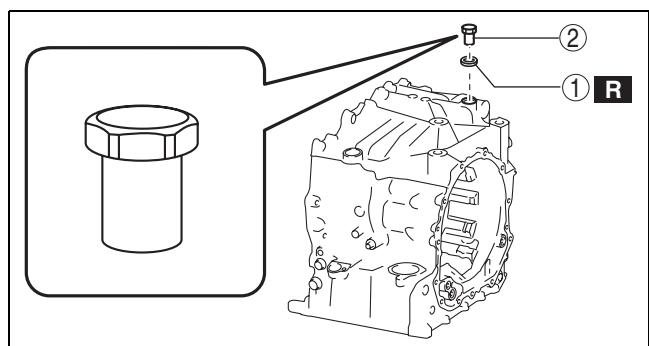
1	Gasket
2	Plug (M18×1.5 bolt, length to approx. 21.5 mm {0.846 in})

### Caution

- If a gasket is reused it could cause ATF leakage, therefore use a new gasket.

### Plug tightening torque

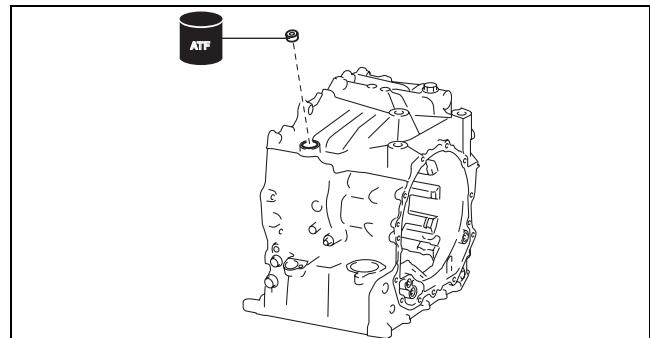
39—59 N·m {4.0—6.0 kgf·m, 29—43 ft·lbf}



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## AUTOMATIC TRANSAXLE

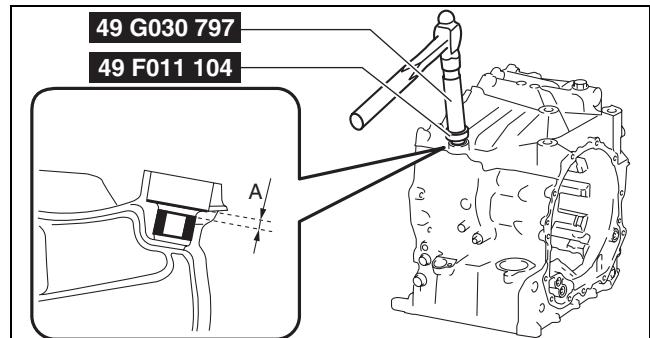
- (4) Assemble a new radial needle bearing using the following procedure:
- 1) Apply ATF (ATF FZ) to the engagement area of the new radial needle bearing and transaxle case.
  - 2) Assemble the new radial needle bearing to the position shown in the figure using the SSTs.



05-17

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A : 1.9—2.9 mm {0.08—0.11 in}



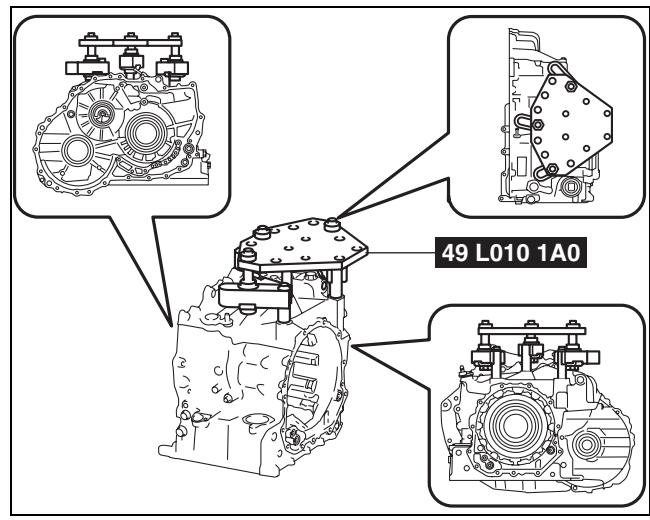
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3. Install the transaxle case to the SST (engine stand) using the following procedure:

- (1) Install the SSTs to the transaxle case using the following procedure.

### Note

- When installing the SST (49 L010 1A0) to the transaxle case (stud bolt holes), use part number: 9YA02 1440 or M14×1.5 bolts, length to 100 mm {3.94 in}.
- When installing the SST (49 UN30 3050) to the transaxle case, use part number: 9YA02 1015, or M10×1.5 bolts, length to 35 mm {1.4 in}.



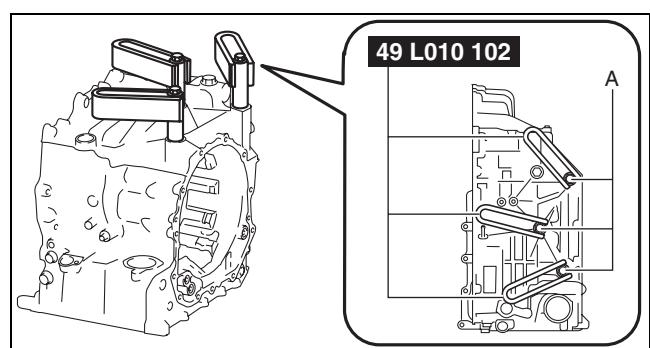
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- 1) Temporarily install the arms (49 L010 102) using part number: 9YA02 1440, or M14×1.5 bolts, length to 100 mm {3.94 in}.

A : Part number: 9YA02 1440, or M14×1.5 bolt, length to 100 mm {3.94 in}

### Note

- To adjust the installation position of the SST in Step 3), temporarily tighten the bolts.



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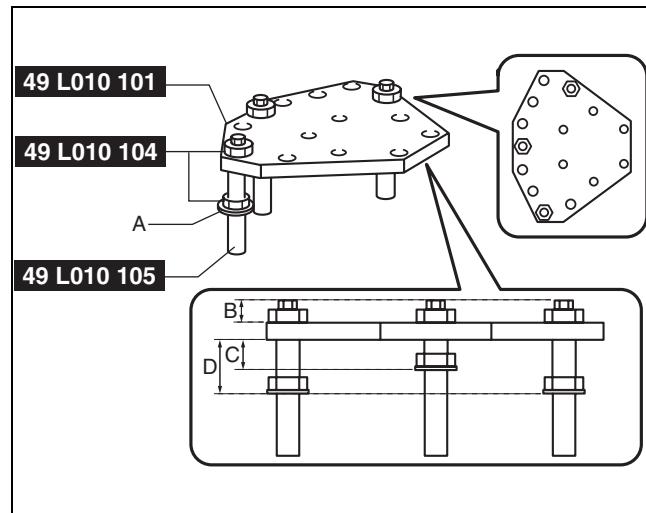
## AUTOMATIC TRANSAXLE

2) Assemble the SST (49 L010 1A0).

- A : Washer
- B : Approx. 20 mm {0.79 in}
- C : Approx. 26 mm {1.0 in}
- D : Approx. 47 mm {1.9 in}

**Note**

- Use bolts (49 L010 105) with a length of 138 mm {5.43 in}.



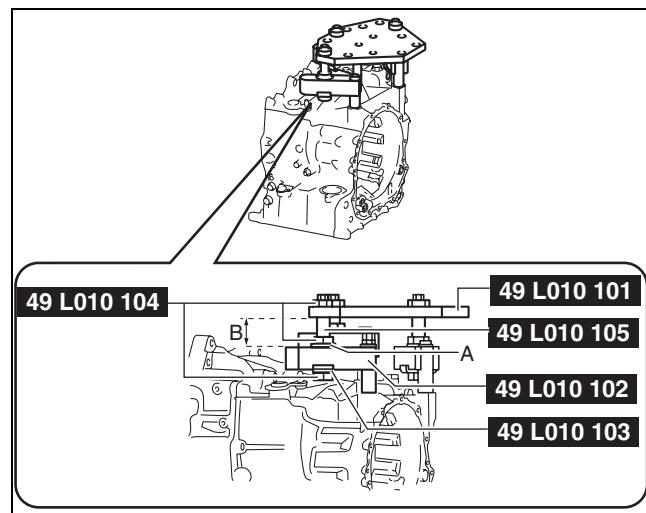
azzjw00000542

3) Install the SST assembled in Step 2).

- A : Washer
- B : Level out

**Note**

- Adjust so that the plate (49 L010 101) and arms (49 L010 102) are level, and install.



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4) Verify that nothing other than the SST arms (49 L010 102) installation area contacts the transaxle case and breather pipe.

**Caution**

- If something other than the SST arms (49 L010 102) installation area contacts the transaxle case and breather pipe, readjust the SST to prevent damaging the part.

5) Tighten the nuts and bolts.

**Tightening torque**

- Bolt: Part number: 9YA02 1440, or M14×1.5 bolt, length to 100 mm {3.94 in}  
40—52 N·m {4.1—5.3 kgf·m, 30—38 ft·lbf}
- Nut: 49 L010 104  
140—160 N·m {15—16 kgf·m, 104—118 ft·lbf}

## AUTOMATIC TRANSAXLE

- (2) Install the transaxle case to the SST (engine stand) using part number: 9YA02 A220, or M12×1.75 bolts, length to 40 mm {1.6 in}.

### Caution

- For safety purposes, perform the procedure using two people, one installs the transaxle case to the SST and the other supports the transaxle case.

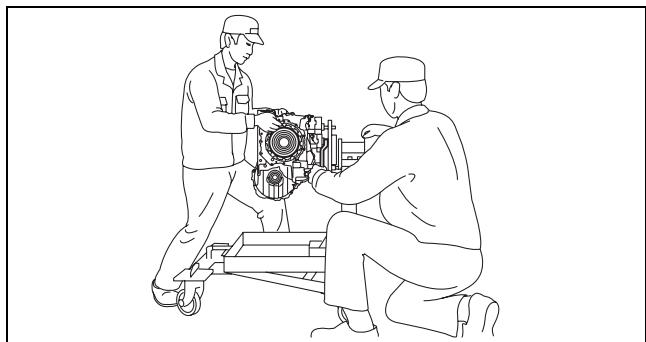
### Note

- Tighten the four locations with bolts and securely install the transaxle case to the SST (engine stand).

A : Part number: 9YA02 A220, or M12×1.75 bolt, length to 40 mm {1.6 in}

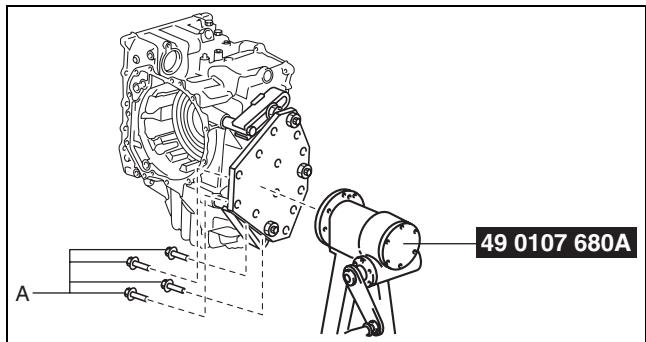
### Tightening torque

88—118 N·m {9.0—12 kgf·m, 65—87 ft·lbf}



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05-17



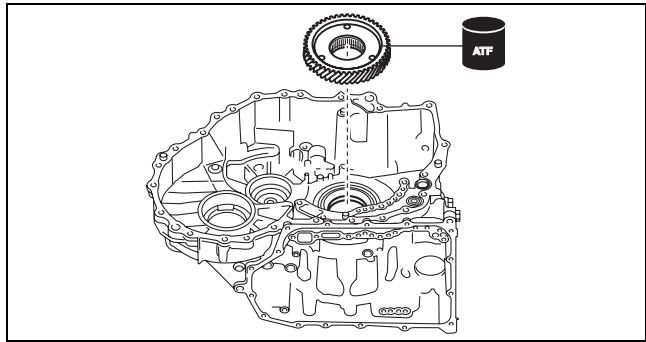
azzjw00000545

4. Assemble the primary gear using the following procedure:

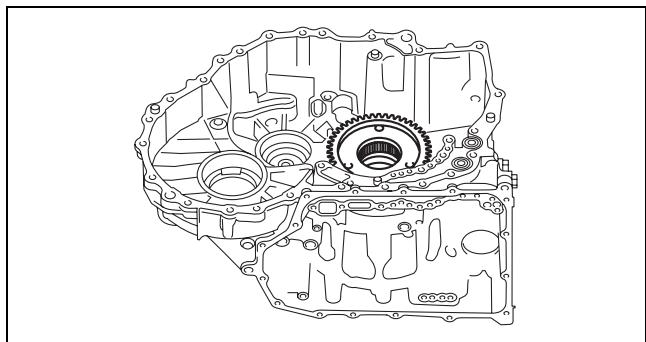
### Note

- Perform this procedure only if the transaxle case is replaced with a new one.

- (1) Apply ATF (ATF FZ) to the engagement area of the primary gear and angular contact ball bearing.
- (2) Assemble the primary gear on the angular contact ball bearing.



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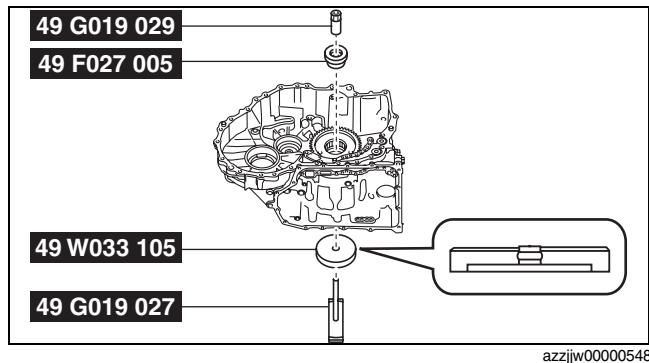


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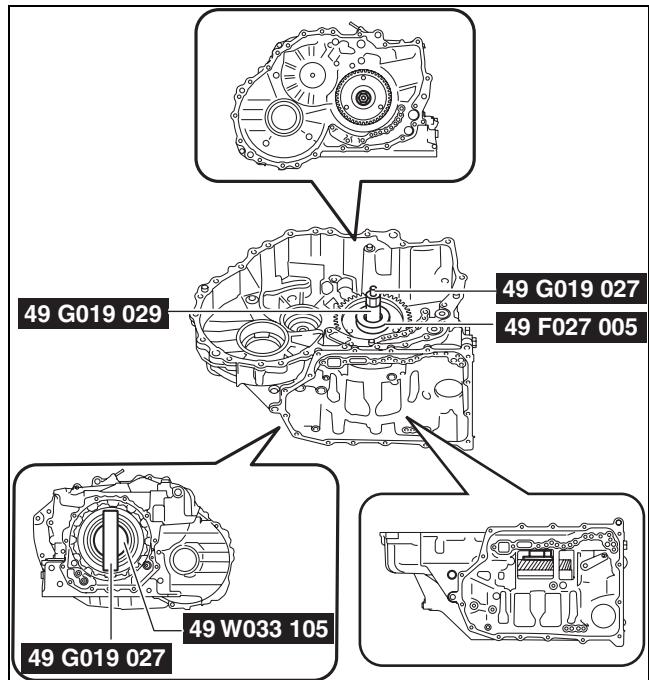
05-17-191

## AUTOMATIC TRANSAXLE

- (3) Install the SSTs.

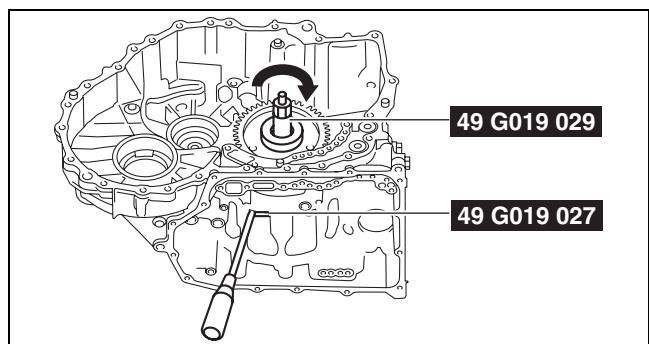


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- (4) Lock the SST (49 G019 027) against rotation using a flathead screwdriver, tighten the SST (49 G019 029), and assemble the primary gear.



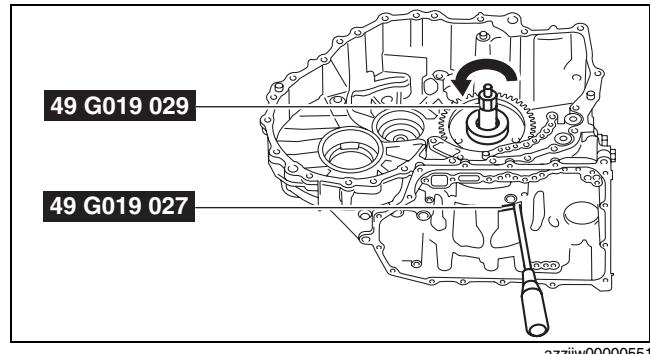
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## AUTOMATIC TRANSAXLE

- (5) Loosen the SST (49 G019 029) and remove the SSTs.

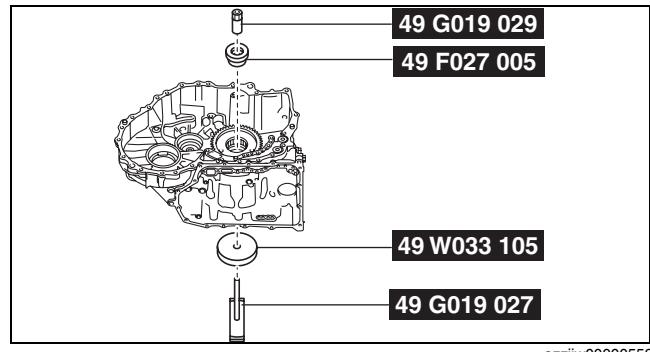
**Note**

- Lock the SST (49 G019 027) against rotation using a flathead screwdriver and loosen the SST (49 G019 029).



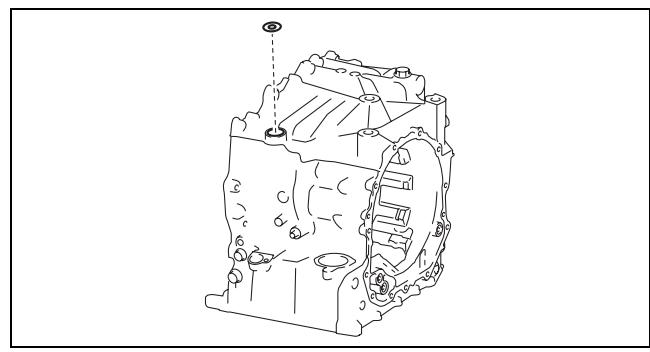
05-17

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5. Assemble the washer.



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## AUTOMATIC TRANSAXLE

6. Assemble a new oil seal using the following procedure:

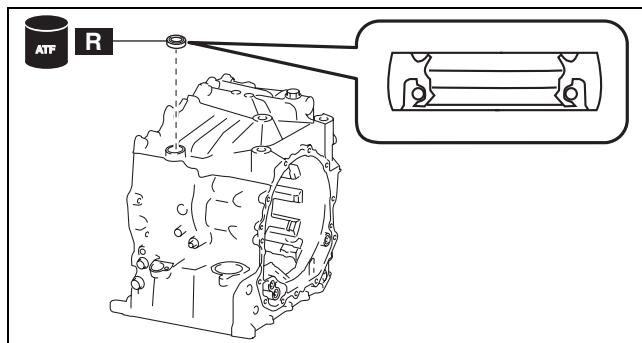
**Caution**

- If an oil seal is reused it could cause ATF leakage, therefore use a new oil seal.

(1) Apply ATF (ATF FZ) to the engagement area of the new oil seal and transaxle case.

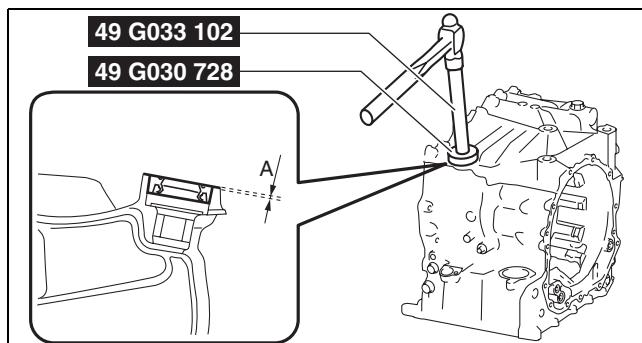
(2) Apply ATF (ATF FZ) to the lip of the new oil seal.

(3) Assemble the new oil seal to the position shown in the figure using the SSTs.



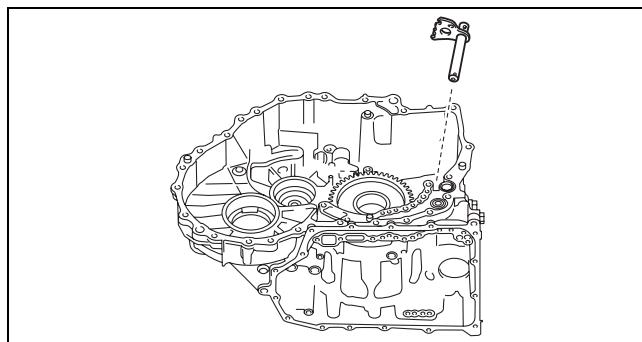
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A : -0.3—0.3 mm {-0.01—0.01 in}

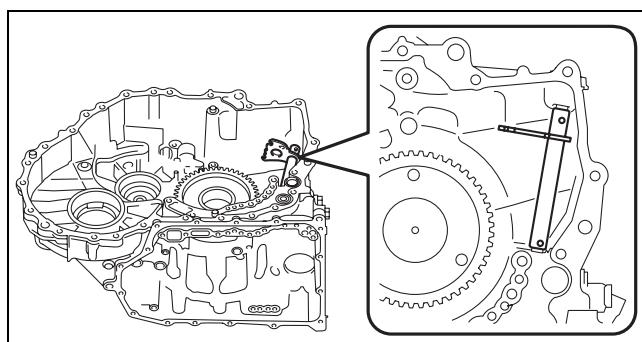


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7. Assemble the manual plate component.



azzjjw00000556



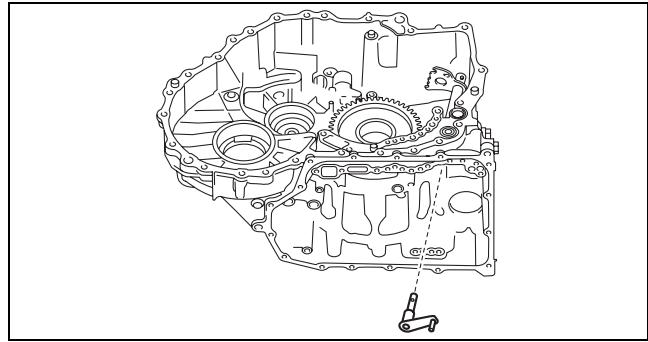
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## AUTOMATIC TRANSAXLE

8. Assemble the parking assist lever component.

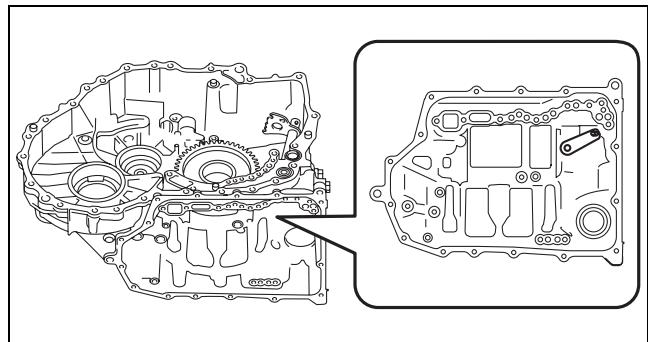
**Note**

- Pass the end of the parking assist lever component through the assembly hole of the transaxle case, and assemble it to the manual plate component.



05-17

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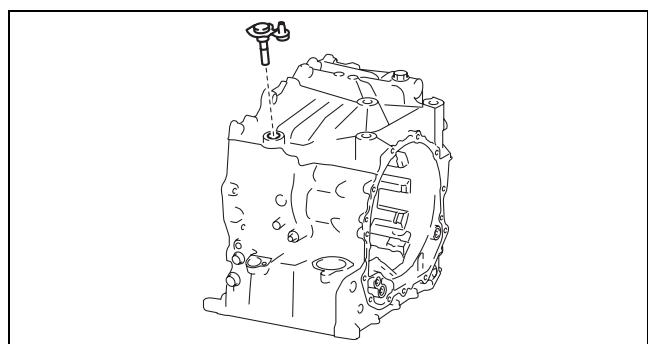


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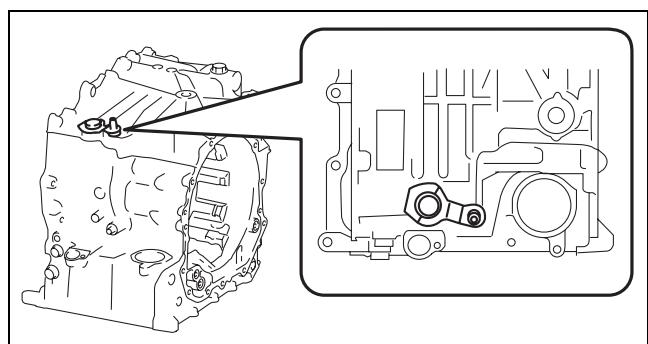
9. Assemble the parking shift lever component.

**Note**

- Pass the end of the parking shift lever component through the assembly hole (radial needle bearing) of the transaxle case, and assemble it to the manual plate component.



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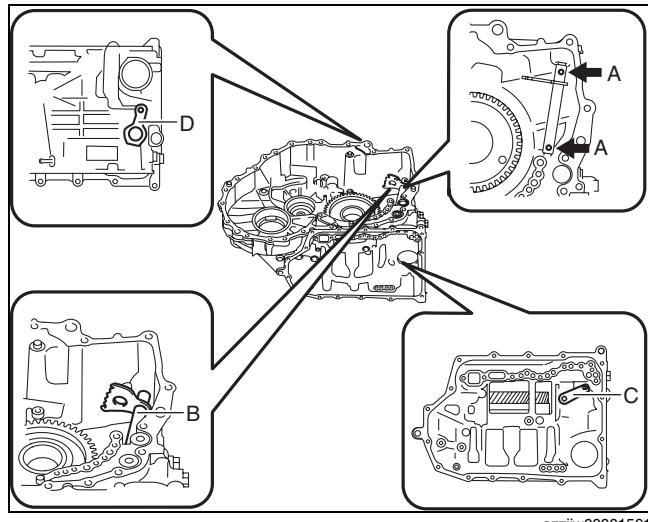
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## AUTOMATIC TRANSAXLE

10. Assemble the new roll pins using the following procedure:

- (1) Set the manual plate component, parking assist lever component, and the parking shift lever component as shown in the figure and align with the roll pin hole.

A : Roll pin hole  
B : Manual plate component  
C : Parking assist lever component  
D : Parking shift lever component

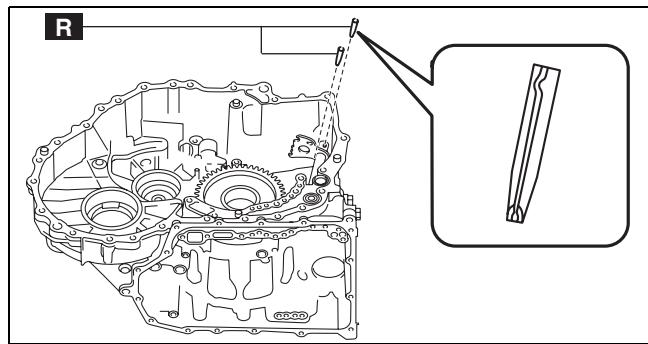


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- (2) Assemble the new roll pins to the position shown in the figure using a pin punch.

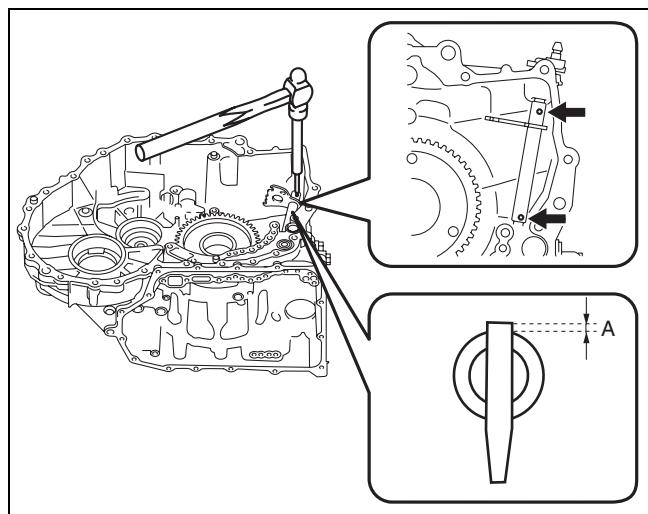
**Note**

- Use a pin punch with an end outer diameter of 5 mm {0.197 in} or more.



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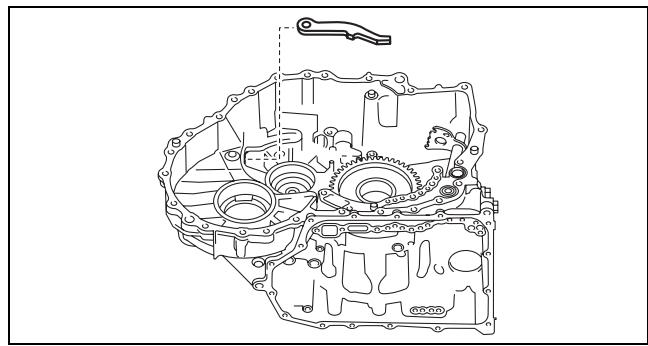
A : 0—1 mm {0—0.03 in}



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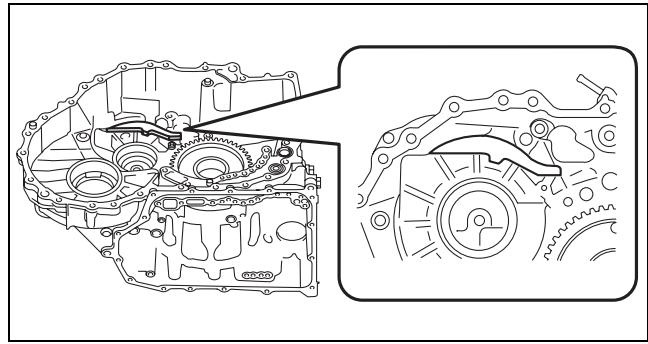
## AUTOMATIC TRANSAXLE

11. Assemble the parking pawl.



05-17

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12. Assemble the parking pawl shaft using the procedure shown in the figure..

1	Parking pawl shaft
2	Gasket
3	Plug (M14×1.5, length to approx. 10 mm {0.39 in})

### Caution

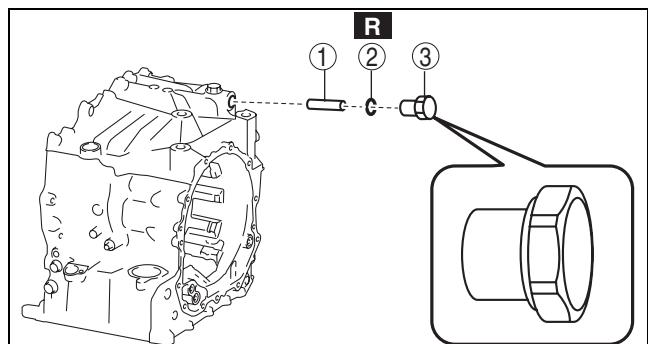
- If a gasket is reused it could cause ATF leakage, therefore use a new gasket.

### Note

- Pass the parking pawl shaft through the assembly holes of the transaxle case and the parking pawl and assemble.

### Plug tightening torque

20—29 N·m {2.1—2.9 kgf·m, 15—21 ft·lbf}

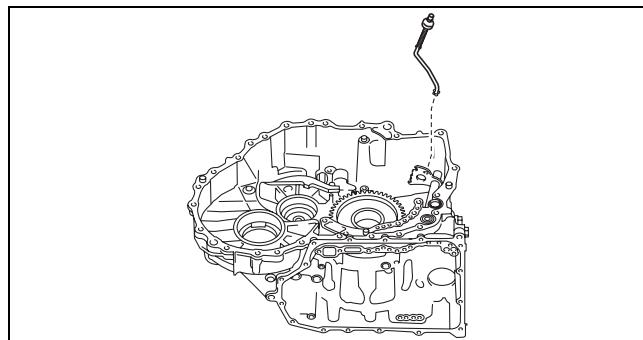


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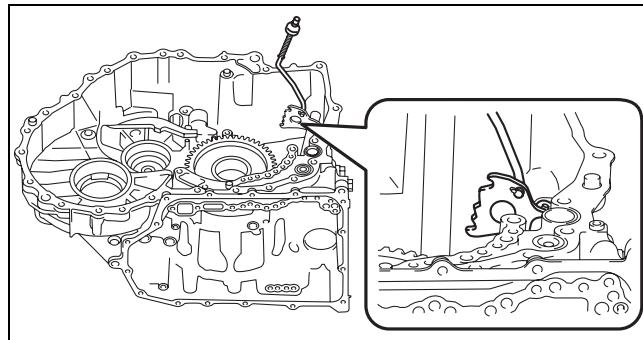
## AUTOMATIC TRANSAXLE

13. Assemble the parking rod component using the following procedure:

- (1) Align the parking rod component projection to the key hole of the manual plate component and assemble.

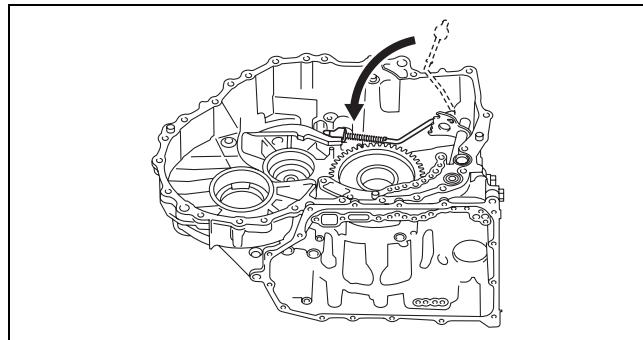


azzjw00000568



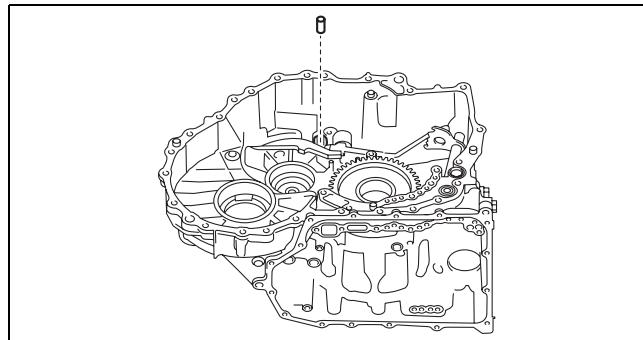
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- (2) Rotate the parking rod component as shown in the figure.

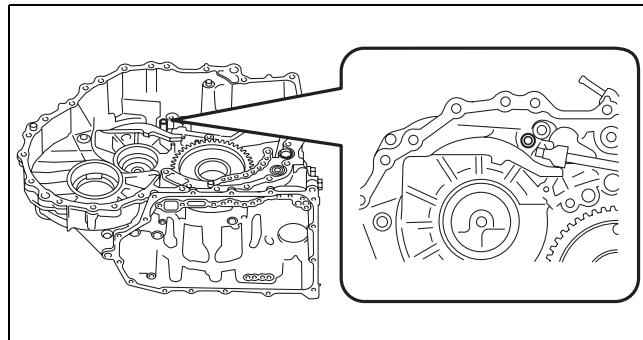


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14. Assemble the parking pawl pin.



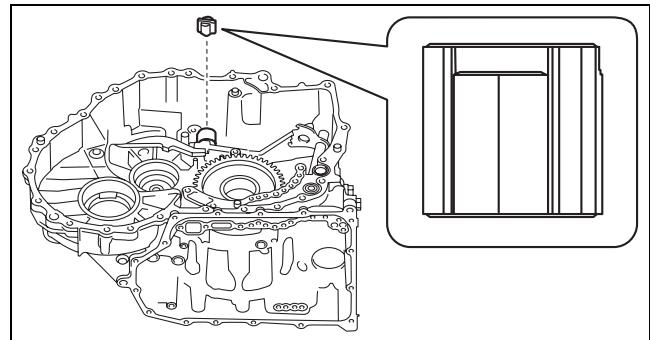
azzjw00000571



azzjw00000572

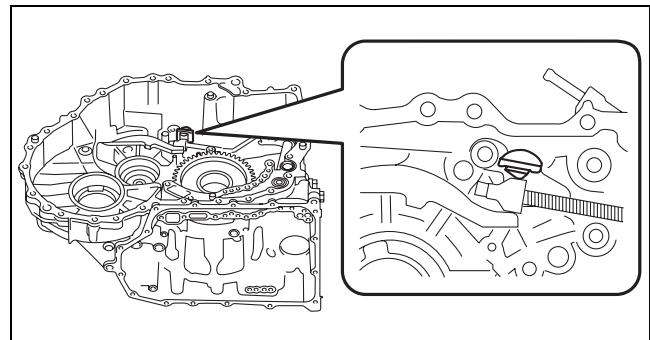
## AUTOMATIC TRANSAXLE

15. Assemble the support actuator.



05-17

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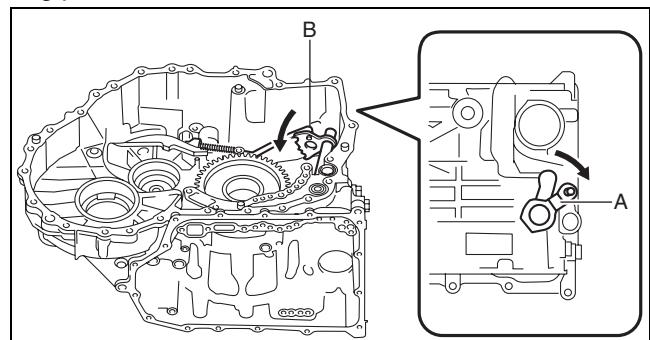
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16. Assemble the detent bracket component using the following procedure:

- (1) Rotate the parking shift lever component (manual plate component) as shown in the figure.

A : Parking shift lever component

B : Manual plate component



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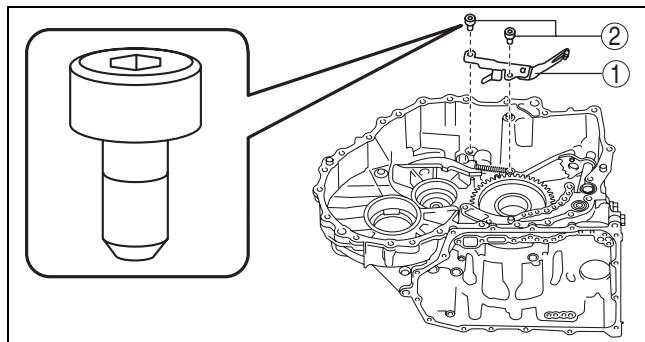
## AUTOMATIC TRANSAXLE

- (2) Assemble the detent bracket component using the procedure shown in the figure..

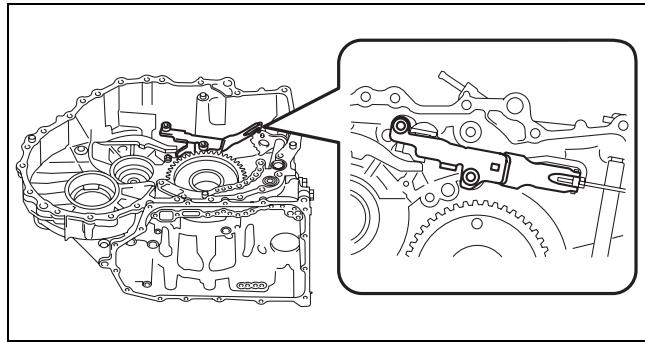
1	Detent bracket component
2	Bolt (M8×1.25 bolt, length to approx. 16 mm {0.63 in})

**Caution**

- When tightening bolts, verify that the detent bracket component does not interfere with the manual plate component to prevent damaging the part.



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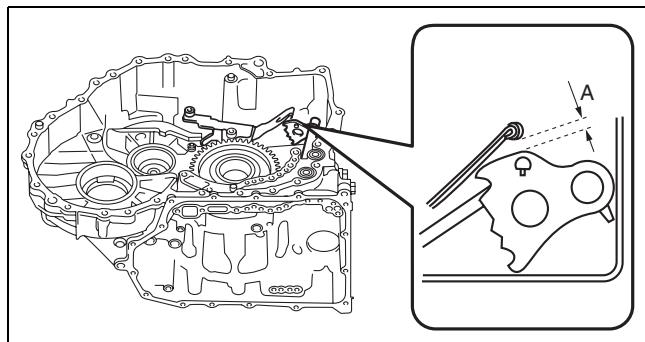


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A : Gap

**Detent bracket component assembly bolt tightening torque**

11—14 N·m {113—142 kgf·cm,  
98—123 in·lbf}



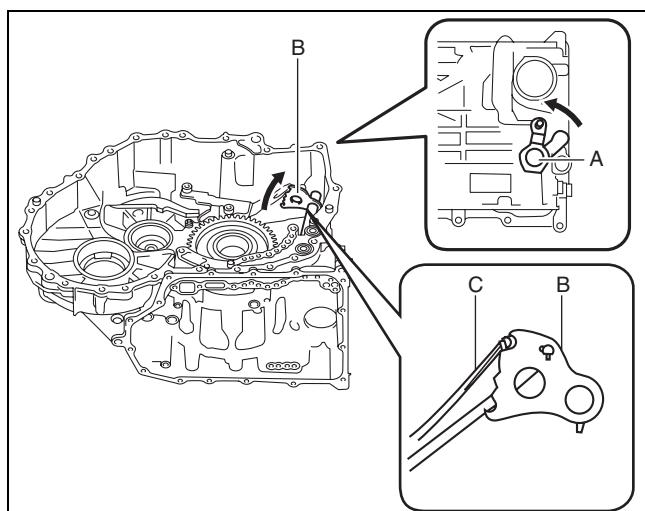
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- (3) Rotate the parking shift lever component (manual plate component) as shown in the figure, and align the detent bracket component with the groove of the manual plate component.

A : Parking shift lever component

B : Manual plate component

C : Detent bracket component

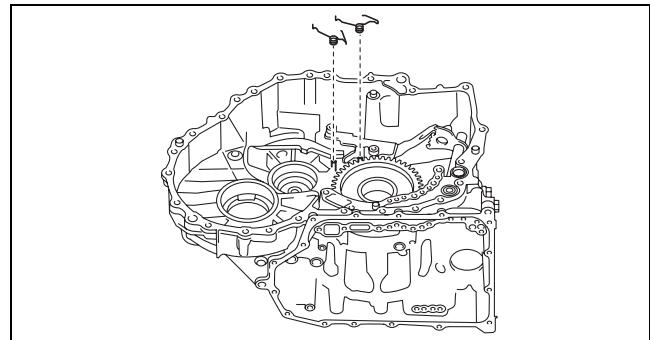


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## AUTOMATIC TRANSAXLE

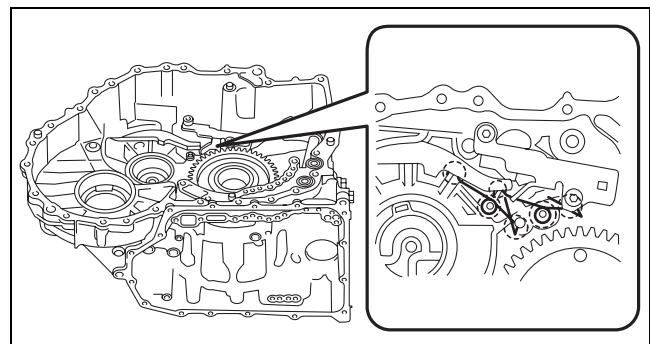
17. Assemble the pawl return springs using the following procedure:

(1) Assemble the pawl return springs.



05-17

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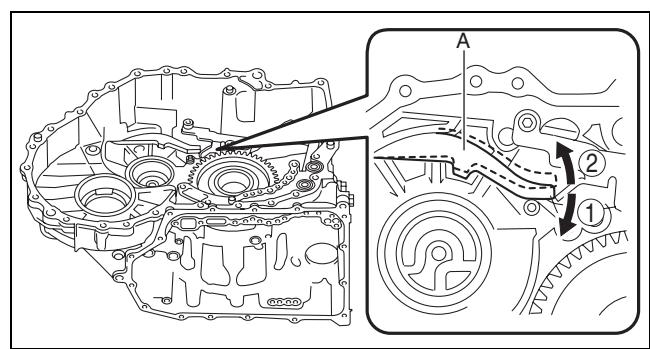


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(2) To verify that the parts are securely assembled, move the parking pawl in the direction of (1) by hand, and verify that the parking pawl returns to its original position (direction (2)) when removing your hand.

A : Parking pawl

- If there is a malfunction, remove the pawl return springs and reassemble.



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## AUTOMATIC TRANSAXLE

18. Assemble the connector, new gaskets, the oil pipe, and new O-rings using the following procedure:

1	Oil pipe
2	O-ring (outer diameter approx. 11.6 mm {0.457 in}, thickness approx. 1.9 mm {0.075 in})
3	Connector
4	Gasket

**Caution**

- If a gasket is reused it could cause ATF leakage, therefore use a new gasket.
- If an O-ring is reused it could cause ATF leakage, therefore use a new O-ring.

(1) Apply ATF (ATF FZ) to the new gaskets and new O-rings.

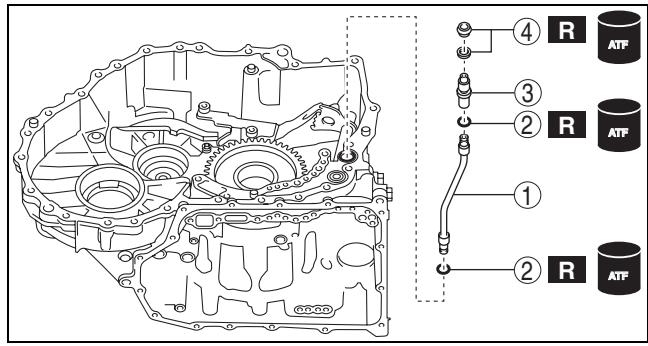
(2) Assemble the connector, new gaskets, the oil pipe, and new O-rings using the following procedure:

1	Oil pipe
2	O-ring (outer diameter approx. 11.6 mm {0.457 in}, thickness approx. 1.9 mm {0.075 in})
3	Connector
4	Gasket

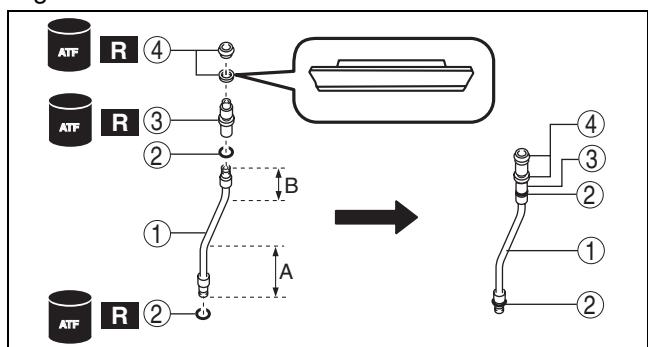
A : Long

B : Short

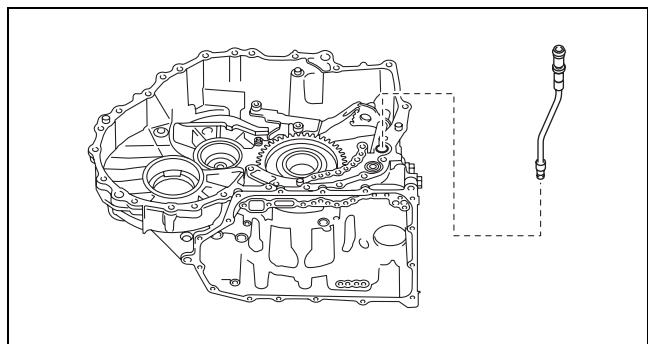
(3) Assemble the parts assembled together in Step (2).



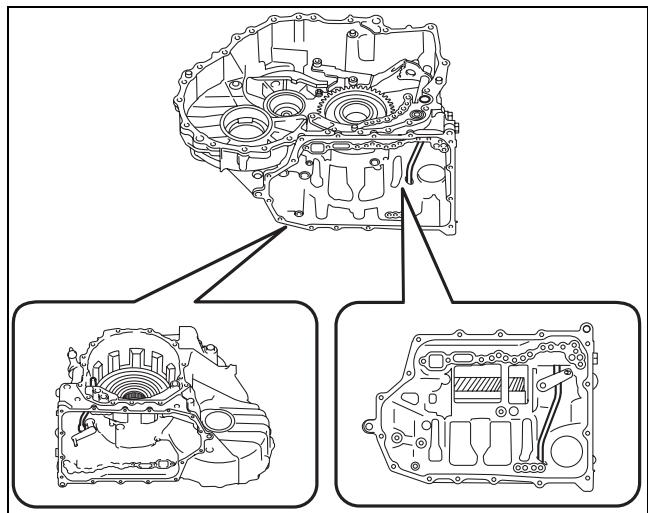
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azzjjw00000728



azzjjw00000585

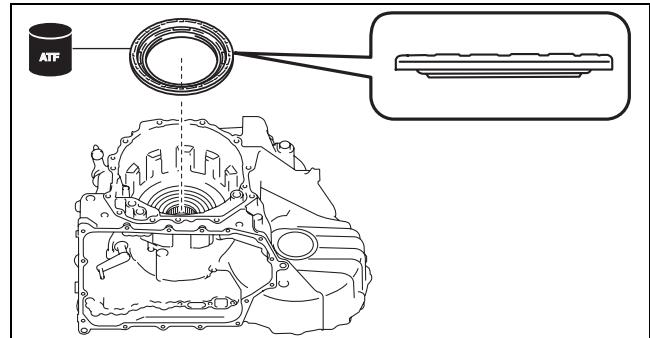


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## AUTOMATIC TRANSAXLE

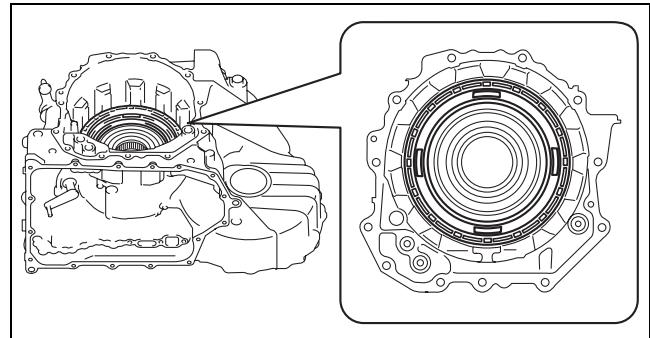
19. Assemble the low and reverse brake piston using the following procedure:

- (1) Apply ATF (ATF FZ) to the lip of the low and reverse brake piston.
- (2) Assemble the low and reverse brake piston.



05-17

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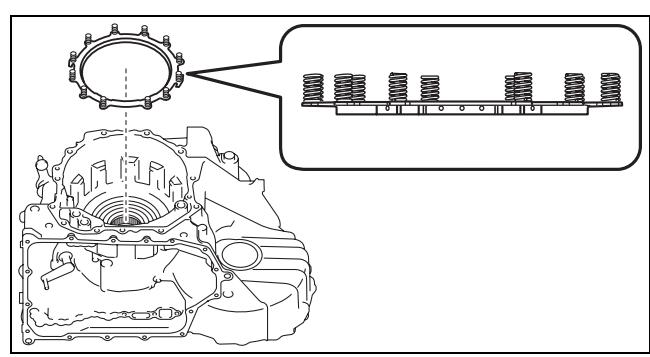


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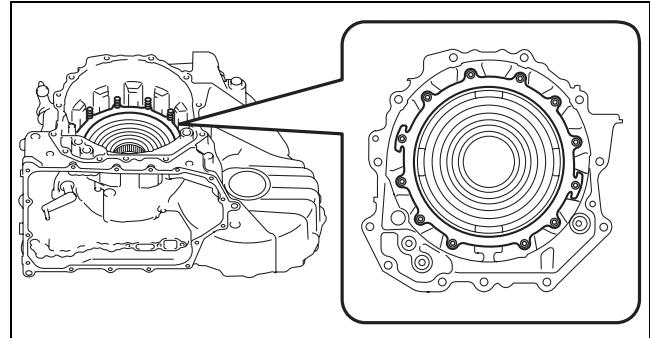
20. Assemble the springs and retainer component.

**Note**

- Springs and retainer component size: Inner diameter approx. 152.3 mm {5.996 in}



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# AUTOMATIC TRANSAXLE

21. Assemble the drive plates and driven plates using the following procedure:

## Note

- Drive plate size: Outer diameter approx. 174.1 mm {6.854 in}
- Driven plate size: Inner diameter approx. 149.6 mm {5.890 in}

(1) Apply ATF (ATF FZ) to the drive plates and driven plates.

## Caution

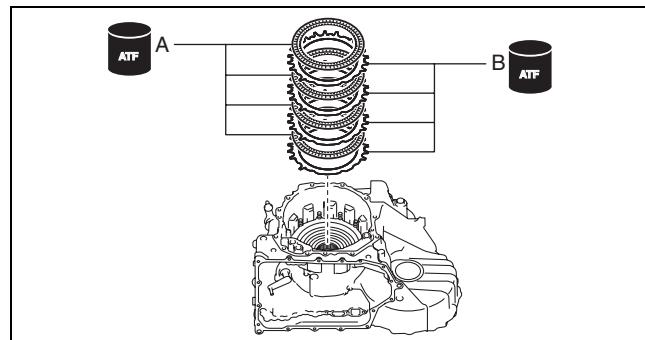
- If the drive plate is replaced with a new one, immerse it in ATF (ATF FZ) for 2 hours or more to permeate the facing with ATF.

(2) Assemble the drive plates and driven plates.

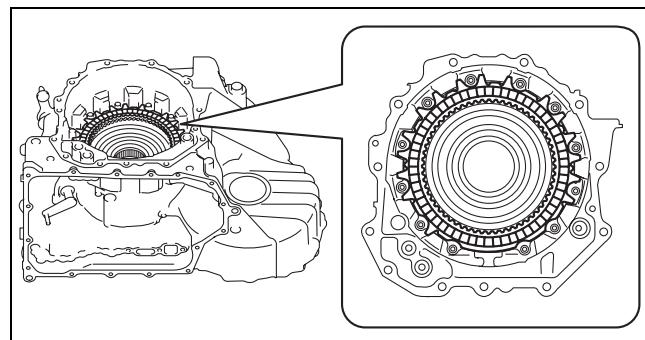
A : Drive plate  
B : Driven plate

## Assembly order

Driven plate—drive plate—driven plate—drive plate—driven plate—drive plate—driven plate—drive plate

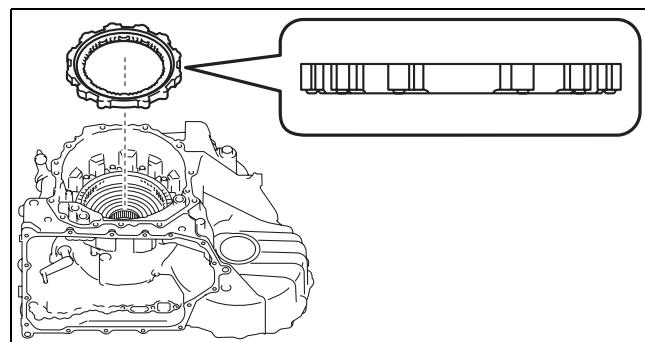


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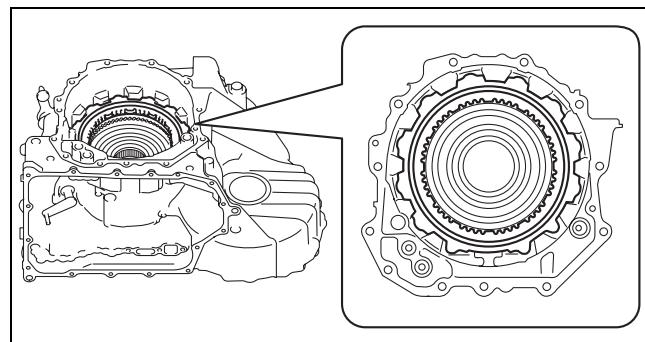


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22. Assemble the one-way clutch.



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## AUTOMATIC TRANSAXLE

23. Assemble the snap ring using the following procedure:

**Note**

- Snap ring size: Outer diameter approx. 198.0 mm {7.795 in}

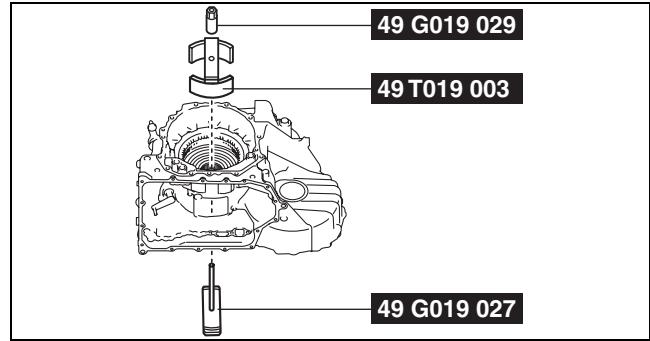
(1) Measure the low and reverse brake clearance and select the appropriate snap ring. (See 05-17-353 LOW AND REVERSE BRAKE CLEARANCE MEASUREMENT/ADJUSTMENT.)

05-17

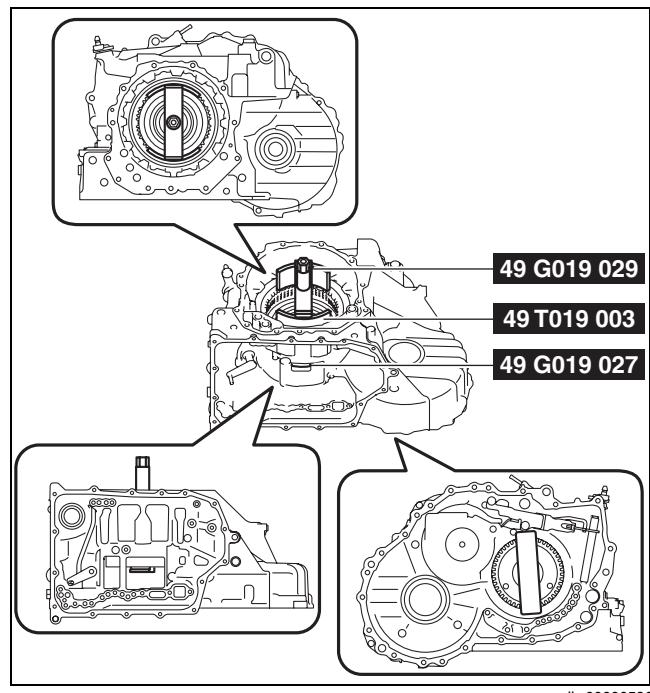
**Note**

- If the snap ring is assembled for the low and reverse brake clearance measurement/adjustment, the following snap ring assembly procedure is not necessary.

(2) Install the SSTs.



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## AUTOMATIC TRANSAXLE

- (3) Tighten the SST (49 G019 029) until the snap ring groove of the transaxle case comes out.

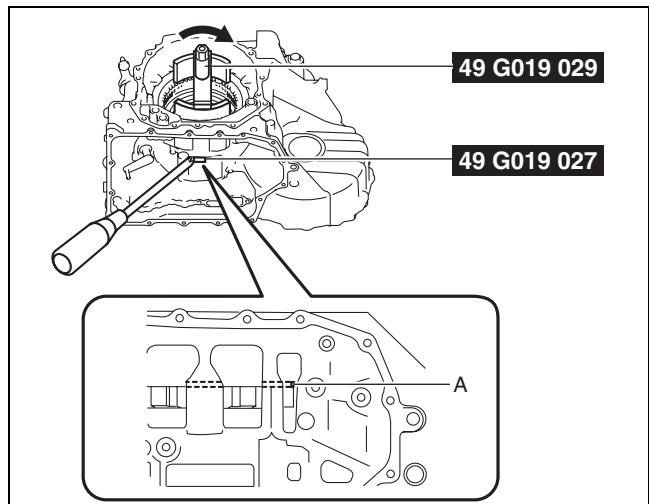
A : Snap ring groove

### Caution

- If the SST (49 G019 029) is tightened with excessive force, surrounding parts could be damaged. Stop tightening the SST when the snap ring groove of the transaxle case comes out.

### Note

- Lock the SST (49 G019 027) against rotation using a flathead screwdriver and tighten the SST (49 G019 029).



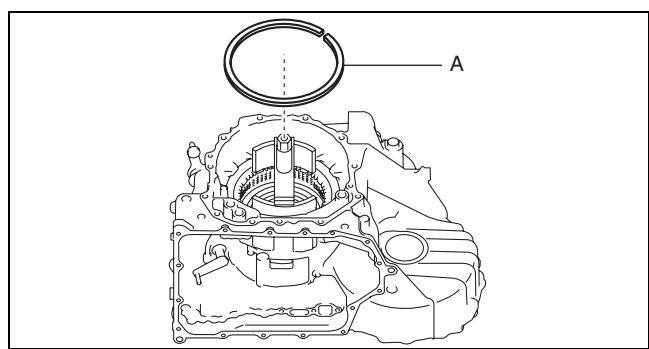
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- (4) Assemble the selected snap ring in Step (1) to the position shown in the figure.

A : Selection

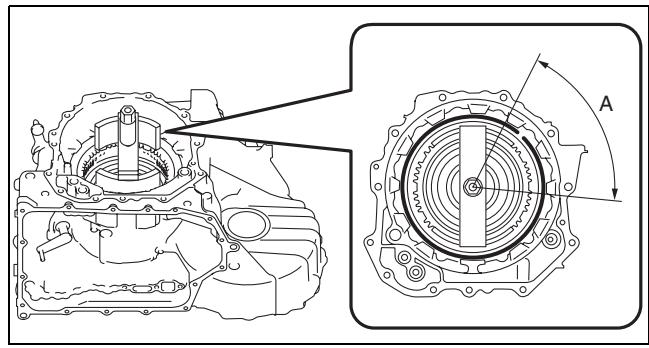
### Caution

- Assemble the snap ring so that the end gap of the snap ring is in the area shown in the figure.
- After assembling the snap ring, verify that the snap ring is securely assembled to the bottom of the snap ring groove.



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A : End of snap ring assembly area



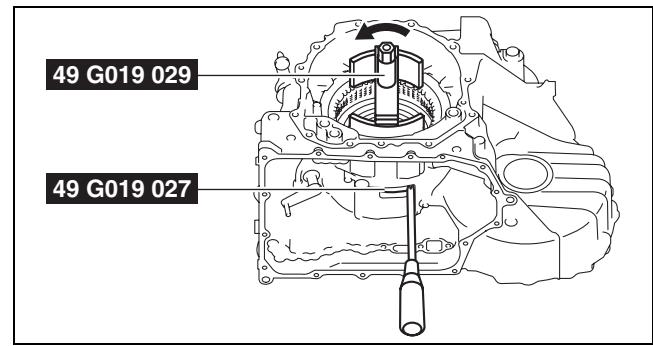
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## AUTOMATIC TRANSAXLE

- (5) Loosen the SST (49 G019 029) and remove the SSTs.

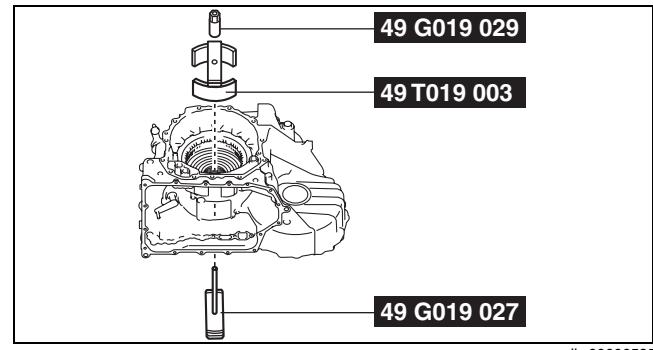
**Note**

- Lock the SST (49 G019 027) against rotation using a flathead screwdriver and loosen the SST (49 G019 029).



05-17

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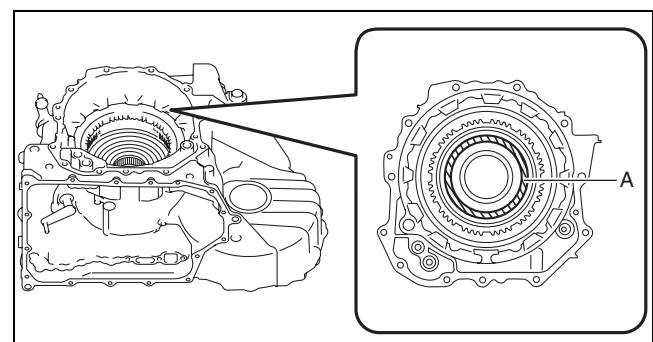
24. Apply ATF to the angular contact ball bearing using the following procedure:

**Caution**

- To reduce error during the secondary gear and output gear preload measurement, accurately perform the following procedure:

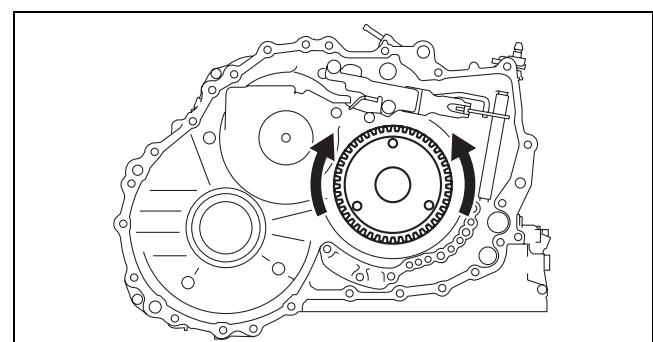
- (1) Apply ATF (ATF FZ) to the angular contact ball bearing ball.

A : ATF application area



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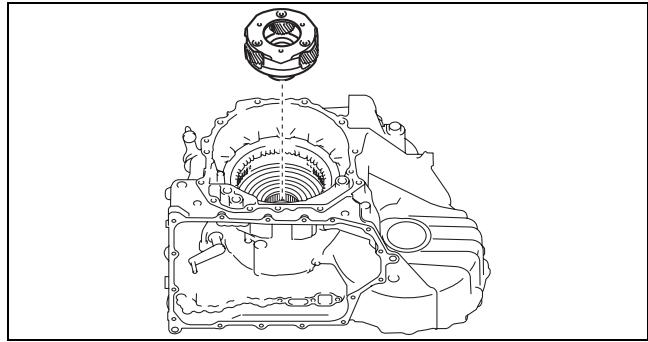
- (2) Rotate the primary gear and apply ATF to the angular contact ball bearing.



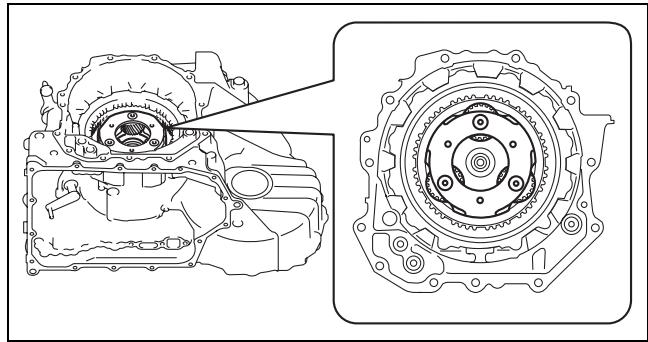
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## AUTOMATIC TRANSAXLE

25. Assemble the front planetary gear.



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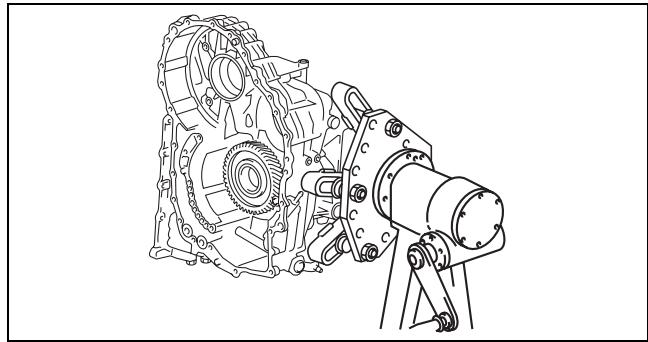
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26. Assemble a new locknut using the following procedure:

### Caution

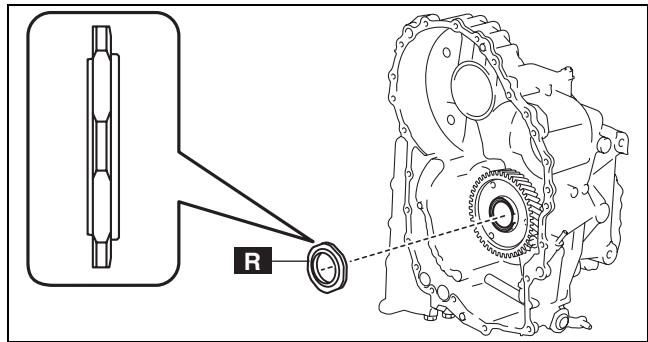
- Because the front planetary gear will drop if the end cover side is pointed downward before assembling the locknut, rotate the engine stand rotation handle, adjust so that the end cover side is situated sideways, and assemble the locknut.
- Always use a new locknut. If the removed locknut is reused, it may cause a transaxle malfunction.
- For tightening the locknut, 321—345 N·m {33—35 kgf·m, 237—254 ft·lbf} torque is required. For safety purposes, perform the procedure using two people, one tightens the locknut and the other supports the engine stand (transaxle case).

- (1) Rotate and adjust the rotation handle of the engine stand so that the end cover side is situated sideways.



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- (2) Assemble and temporarily tighten a new locknut.



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## AUTOMATIC TRANSAXLE

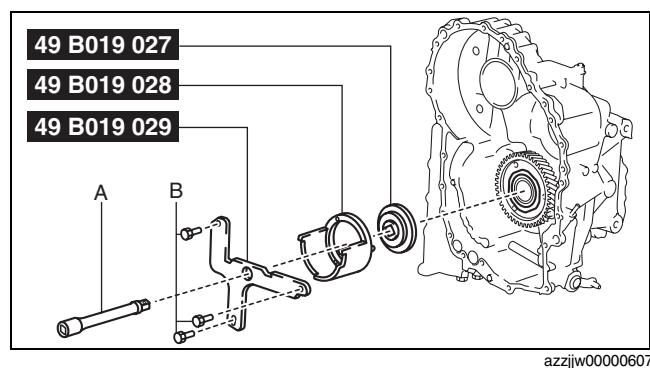
(3) Install the SSTs.

A : Extension bar

B : Bolt supplied with SST (49 B019 029) or  
M8×1.25, length to 18 mm {0.71 in}

### Note

- Engage the three projections of the SST (49 B019 028) to the three holes of the primary gear.
- When installing the SST (49 B019 029), use the bolts supplied with the SST (49 B019 029), or M8×1.25 bolt, length to 18 mm {0.71 in}.



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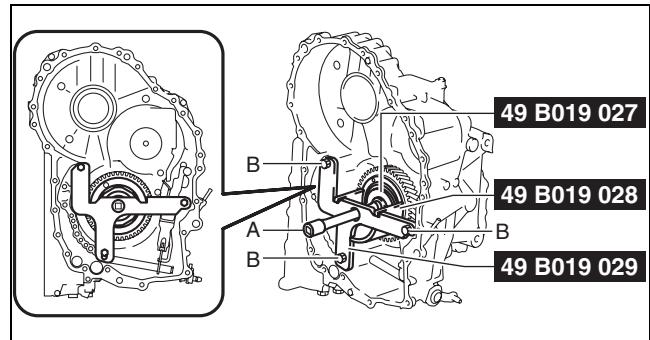
05-17

A : Extension bar

B : Bolt supplied with SST (49 B019 029) or  
M8×1.25, length to 18 mm {0.71 in}

### SST installation bolt tightening torque

19—25 N·m {2.0—2.5 kgf·m, 15—18 ft·lbf}

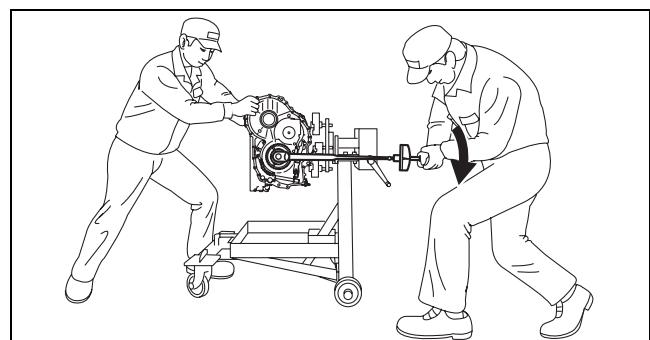


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(4) Tighten the locknut.

### Caution

- For tightening the locknut, 321—345 N·m {33—35 kgf·m, 237—254 ft·lbf} torque is required. For safety purposes, perform the procedure using two people, one tightens the locknut and the other supports the engine stand (transaxle case).



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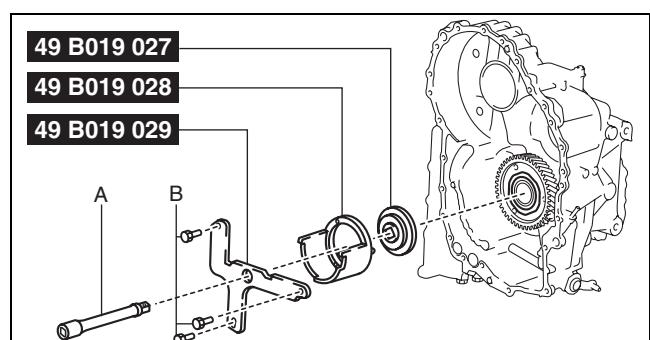
### Tightening torque

321—345 N·m {33—35 kgf·m, 237—254 ft·lbf}

(5) Remove the SSTs.

A : Extension bar

B : Bolt supplied with SST (49 B019 029) or  
M8×1.25, length to 18 mm {0.71 in}



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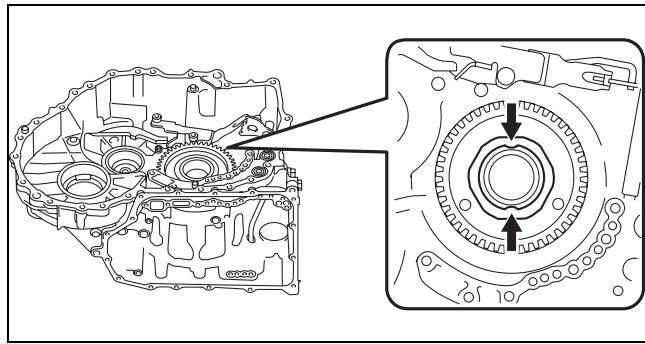
05-17-209

## AUTOMATIC TRANSAXLE

- (6) Crimp the locknut at the two positions shown in the figure using a pin punch.

**Note**

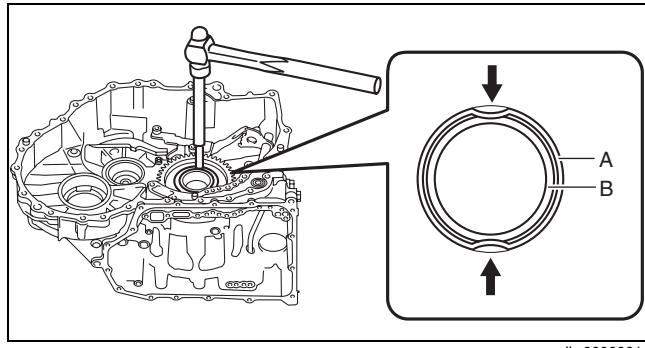
- Crimp the locknut flange until it contacts the whole groove of the front planetary gear end.



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A : Locknut flange

B : Front planetary gear end



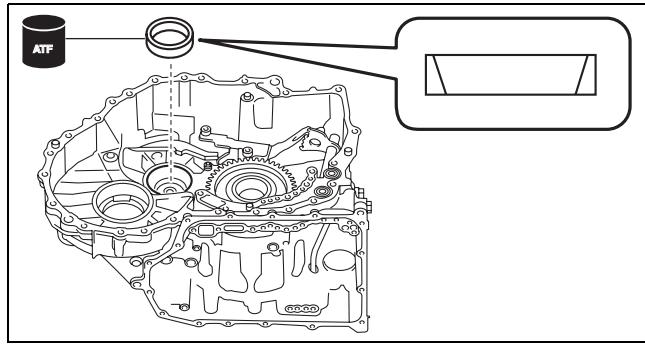
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27. Assemble the bearing race using the following procedure:

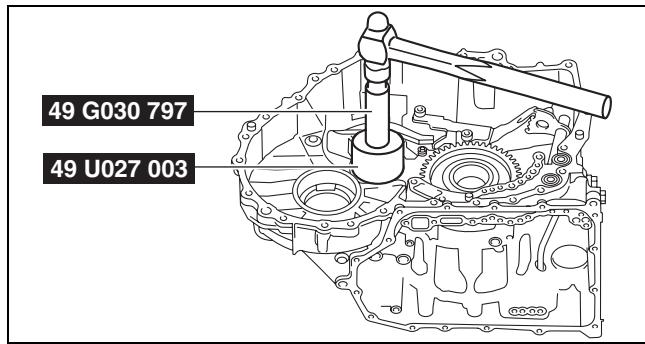
**Note**

- Bearing race size: Outer diameter approx. 70 mm {2.8 in}

- (1) Apply ATF (ATF FZ) to the engagement area of the bearing race and transaxle case.  
(2) Assemble the bearing race using the SSTs.



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## AUTOMATIC TRANSAXLE

28. Assemble the bearing race and a new shim using the following procedure:

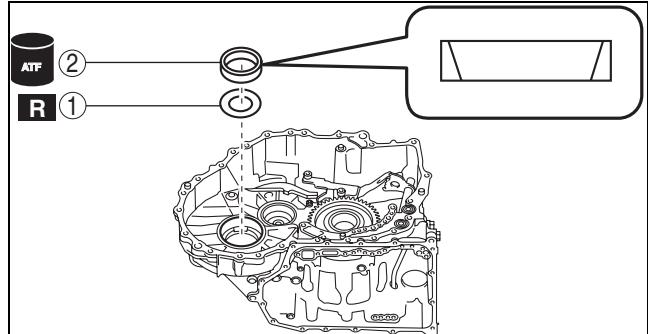
### Caution

- Always use a new shim. If a deformed shim is reused, it may cause a transaxle malfunction.

(1) Apply ATF (ATF FZ) to the engagement area of the bearing race and transaxle case.

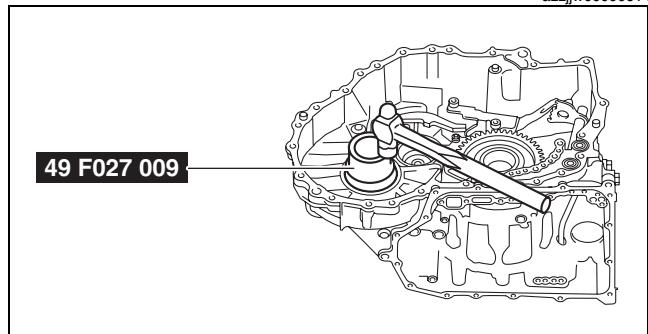
(2) Using the SST, assemble the bearing race and a new shim using the following procedure:

1	Shim (outer diameter approx. 79 mm {3.1 in}, thickness approx. 0.5 mm {0.02 in})
2	Bearing race (outer diameter approx. 80 mm {3.1 in})



05-17

azzjw00000614



azzjw00000615

29. Assemble a new oil seal using the following procedure:

### Caution

- If an oil seal is reused it could cause ATF leakage, therefore use a new oil seal.

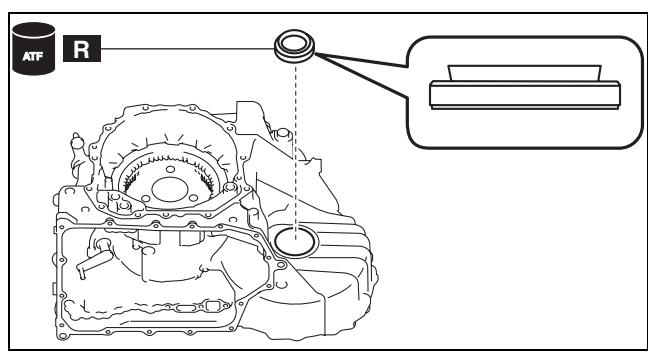
### Note

- Oil seal size: Outer diameter approx. 63 mm {2.5 in}

(1) Apply ATF (ATF FZ) to the engagement area of the new oil seal and transaxle case.

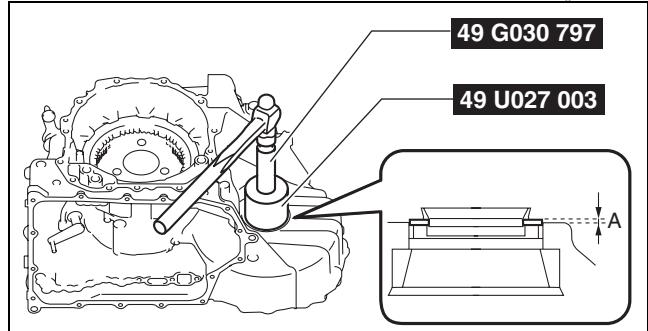
(2) Apply ATF (ATF FZ) to the lip of the new oil seal.

(3) Assemble the new oil seal to the position shown in the figure using the SSTs.



azzjw00000616

A : -0.8—0.5 mm {-0.03—0.01 in}



azzjw00000617

05-17-211

## AUTOMATIC TRANSAXLE

30. Press the angular contact ball bearing to the primary gear side using the following procedure:

### Caution

- To reduce error during the total end play measurement, accurately perform the following procedure:

### Note

- Work overview

— There is a gap between the snap ring groove of the angular contact ball bearing, snap ring, and the snap ring groove of the transaxle case because the angular contact ball bearing is fixed to the transaxle case by the snap ring.

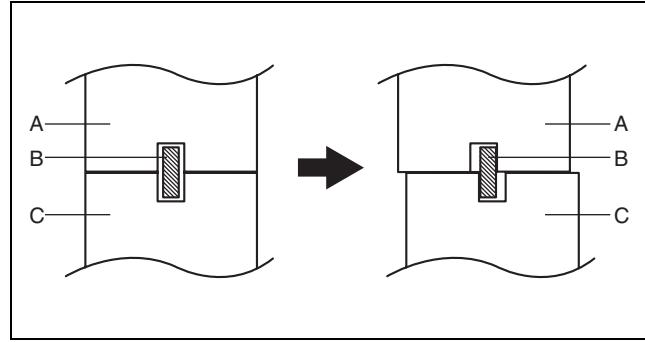
The gap causes an error during the total end play measurement.

Using the following procedure, the error during the total end play measurement is reduced by moving the angular contact ball bearing to the standard position.

A : Transaxle case

B : Snap ring

C : Angular contact ball bearing



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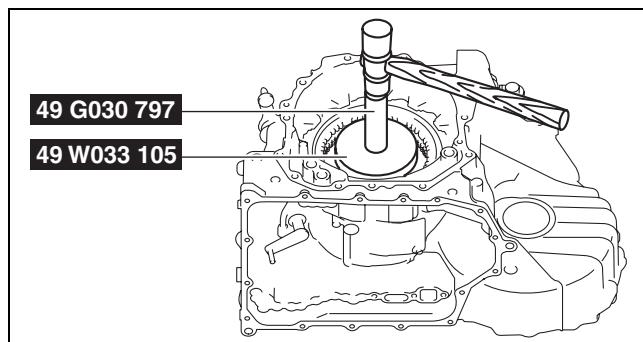
- (1) Press the angular contact ball bearing to the primary gear side using the SSTs.

### Caution

- Do not strongly tap the SST contacting the front planetary gear to prevent damage to the parts.

### Note

- Lightly tap the SST contacting the front planetary gear 2—3 times using a plastic hammer and press the angular contact ball bearing to the primary gear side.



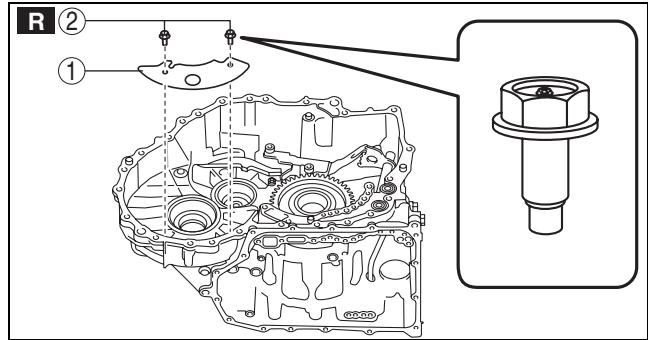
azzjw00000619

## AUTOMATIC TRANSAXLE

31. Assemble the baffle plate using the procedure shown in the figure..

1	Baffle plate
2	Bolt (M6×1.0 bolt, length to approx. 15 mm {0.59 in}*)

\* : Length without spring washer is indicated due to bolt with spring washer. Length with spring washer is approx. 13 mm {0.51 in}.

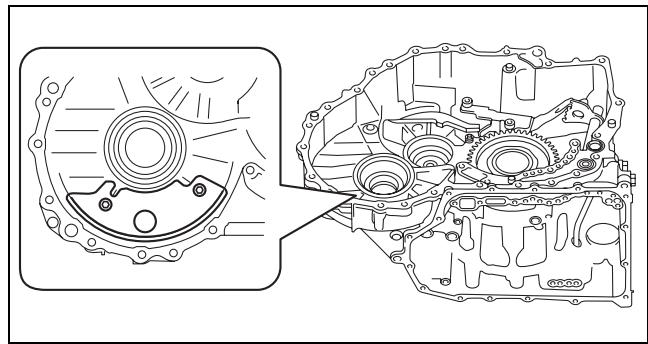


05-17

### Caution

- The bolts for the baffle plate assembly are applied with thread-locking compound. If the bolts are reused it could loosen the bolts, therefore use new bolts.**

**Baffle plate assembly bolt tightening torque  
8—10 N·m {82—101 kgf·cm, 71—88 in-lbf}**



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32. Assemble the accessories included in the converter housing using the following procedure:

(1) Assemble the bearing race and a new shim using the following procedure:

### Caution

- Always use a new shim. If a deformed shim is reused, it may cause a transaxle malfunction.**

1) Measure the secondary gear and output gear preload and select the appropriate new shim. (See 05-17-364 SECONDARY GEAR AND OUTPUT GEAR PRELOAD MEASUREMENT/ADJUSTMENT.)

### Note

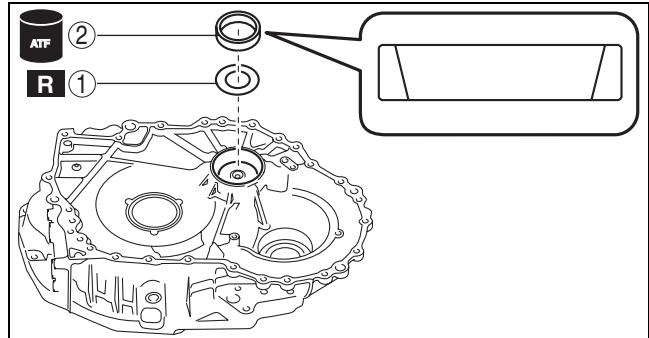
- If the bearing race and a new shim are assembled for the secondary gear and output gear preload measurement/adjustment, the following assembly procedure for the bearing race and a new shim is not necessary.

2) Apply ATF (ATF FZ) to the engagement area of the bearing race and converter housing.

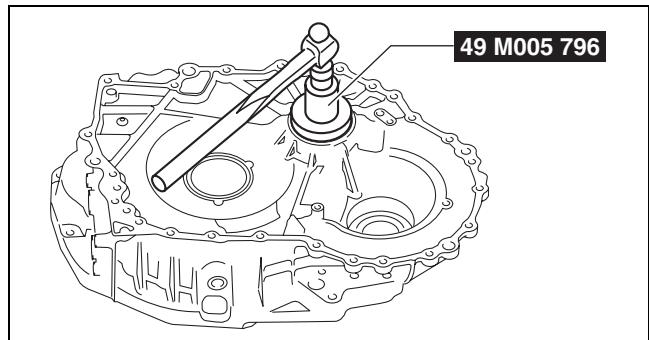
## AUTOMATIC TRANSAXLE

- 3) Using the SST, assemble the bearing race and the selected new shim in Step 1) using the following procedure:

1	Shim (outer diameter approx. 74 mm {2.9 in}) (selection)
2	Bearing race (outer diameter approx. 75 mm {3.0 in})



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- (2) Assemble the bearing race and a new shim using the following procedure:

**Caution**

- Always use a new shim. If a deformed shim is reused, it may cause a transaxle malfunction.

- 1) Measure the ring gear and differential preload and select the appropriate new shim. (See 05-17-375 RING GEAR AND DIFFERENTIAL PRELOAD MEASUREMENT/ADJUSTMENT.)

**Note**

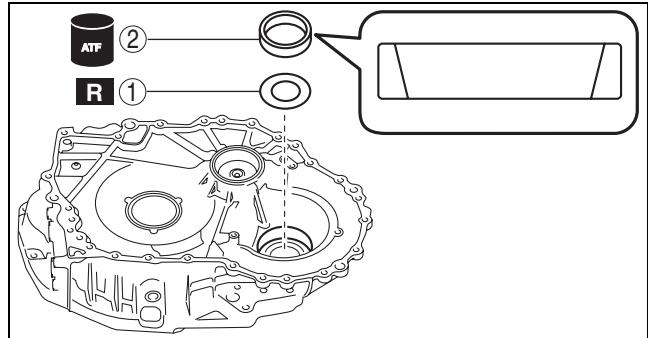
- If the bearing race and a new shim are assembled for the ring gear and differential preload measurement/adjustment, the following assembly procedure for the bearing race and a new shim is not necessary.

- 2) Apply ATF (ATF FZ) to the engagement area of the bearing race and converter housing.

## AUTOMATIC TRANSAXLE

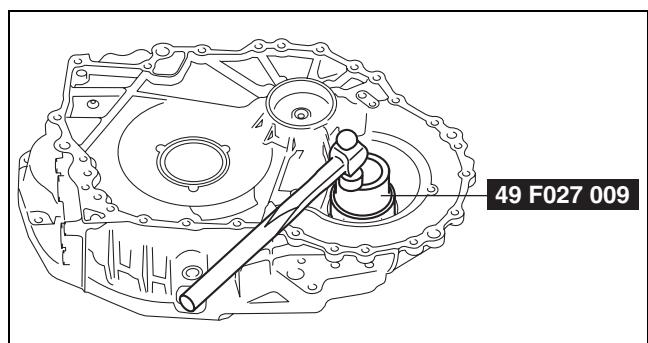
- 3) Using the SST, assemble the bearing race and the selected new shim in Step 1) using the following procedure:

1	Shim (outer diameter approx. 79 mm {3.1 in}) (selection)
2	Bearing race (outer diameter approx. 80 mm {3.1 in})



05-17

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- (3) Assemble a new oil seal using the following procedure:

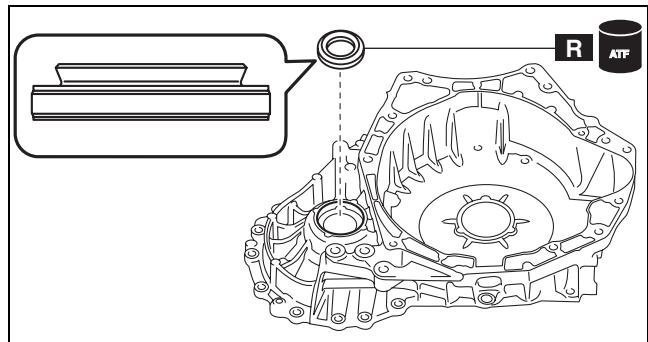
### Caution

- If an oil seal is reused it could cause ATF leakage, therefore use a new oil seal.

### Note

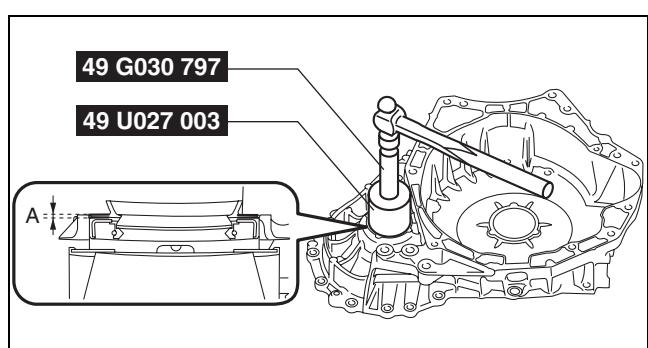
- Oil seal size: Outer diameter approx. 65 mm {2.6 in}

- Apply ATF (ATF FZ) to the engagement area of the new oil seal and converter housing.
- Apply ATF (ATF FZ) to the lip of the new oil seal.
- Assemble the new oil seal to the position shown in the figure using the SSTs.



azzjw00000626

A : -0.8—0.5 mm {-0.03—0.01 in}



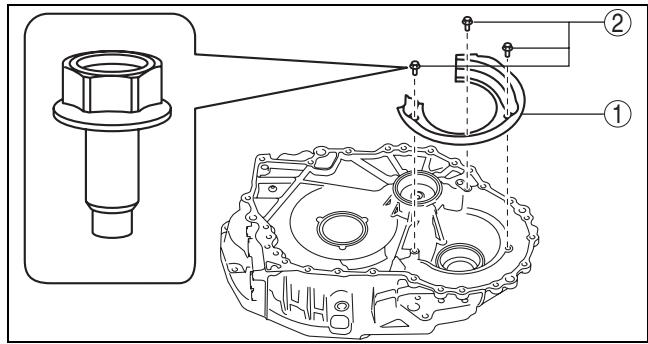
azzjw00000627

## AUTOMATIC TRANSAXLE

- 4) Assemble the baffle plate using the procedure shown in the figure.

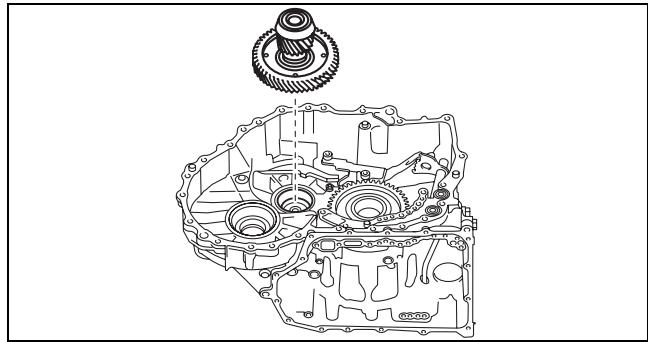
1	Baffle plate
2	Bolt (M6×1.0 bolt, length to approx. 14 mm {0.55 in})

**Baffle plate assembly bolt tightening torque  
8—10 N·m {82—101 kgf·cm, 71—88 in·lbf}**

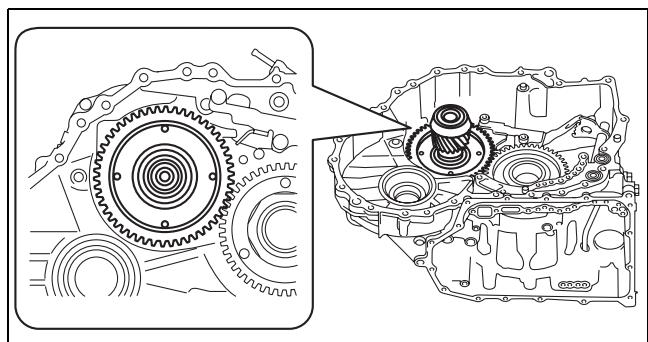


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33. Assemble the secondary gear and output gear.



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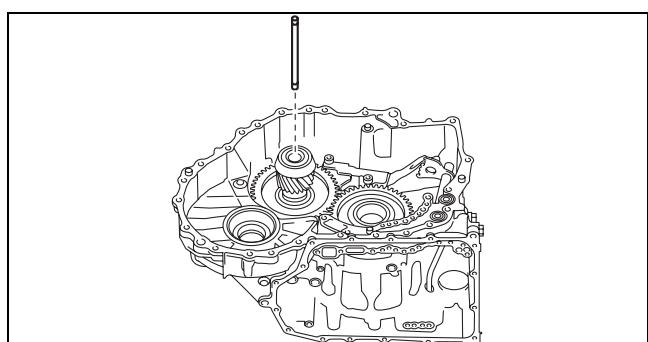


azzjjw00000630

34. Assemble the oil pipe.

**Caution**

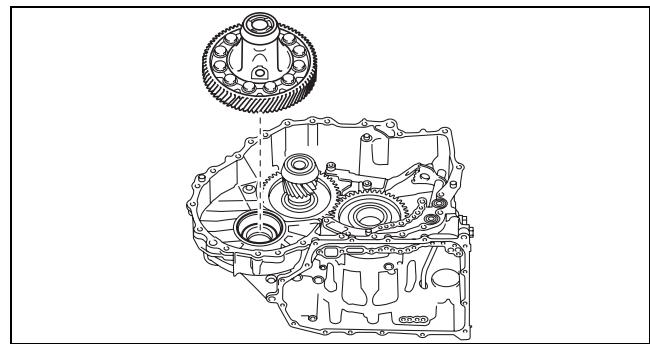
- **Do not assemble the oil pipe using a tool such as a hammer to prevent damaging the part. For the oil pipe assembly, it is better to only use your hands to put the oil pipe into the output gear.**



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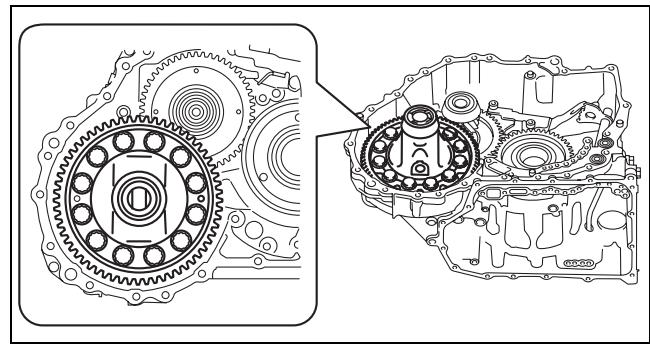
## AUTOMATIC TRANSAXLE

35. Assemble the ring gear and differential.



05-17

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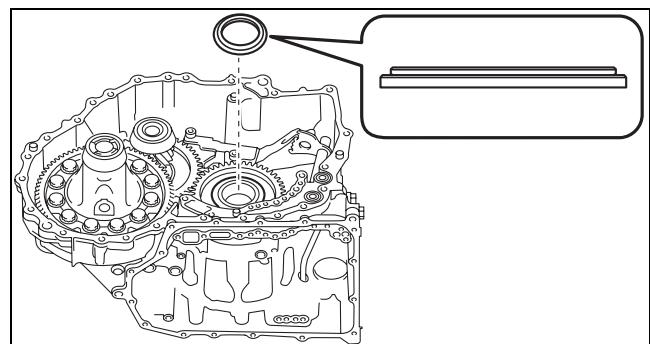


azzjw00000633

36. Assemble the thrust needle bearing.

**Note**

- Thrust needle bearing size: Outer diameter approx. 80.3 mm {3.16 in}



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## AUTOMATIC TRANSAXLE

37. Assemble a new D-ring and new seal rings to the turbine shaft using the following procedure:

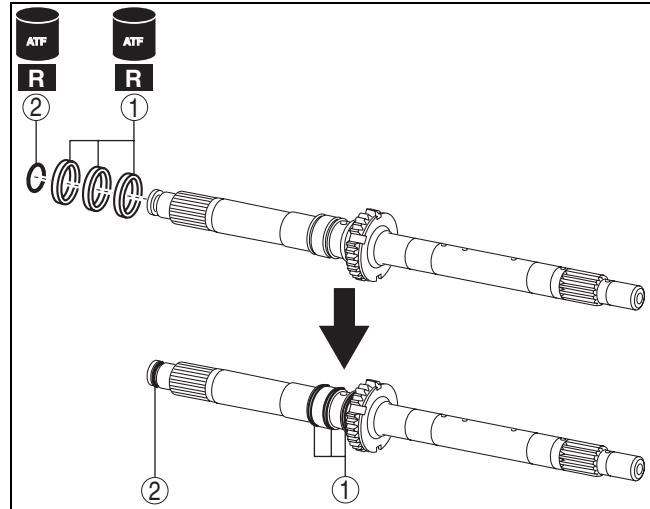
**Caution**

- If a D-ring is reused it could cause ATF leakage, therefore use a new D-ring.
- If a seal ring is reused it could cause ATF leakage, therefore use a new seal ring.

(1) Apply ATF (ATF FZ) to the new D-ring and new seal rings.

(2) Assemble the new D-ring and new seal rings to the turbine shaft using the procedure shown in the figure:

1	Seal ring (outer diameter approx. 24.4 mm {0.961 in}, thickness approx. 1.5 mm {0.059 in})
2	D-ring (outer diameter approx. 16.4 mm {0.646 in}, thickness approx. 2.4 mm {0.094 in})

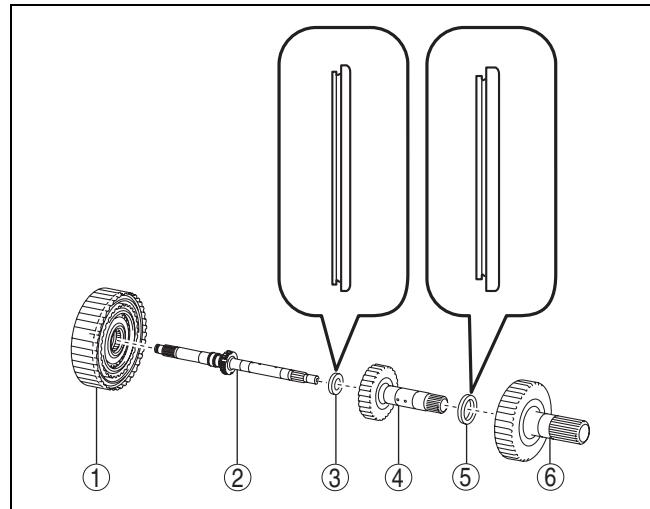


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38. Assemble together the clutch component, turbine shaft, high clutch hub, low clutch hub, and thrust needle bearing using the following procedure:

(1) Assemble the parts using the procedure shown in the figure:

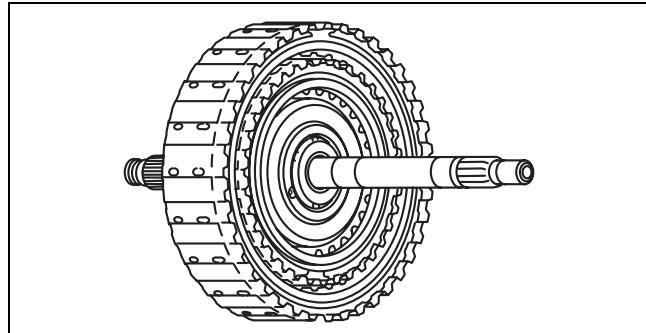
1	Clutch component
2	Turbine shaft
3	Thrust needle bearing (outer diameter approx. 37.3 mm {1.47 in})
4	High clutch hub
5	Thrust needle bearing (outer diameter approx. 51.3 mm {2.02 in})
6	Low clutch hub



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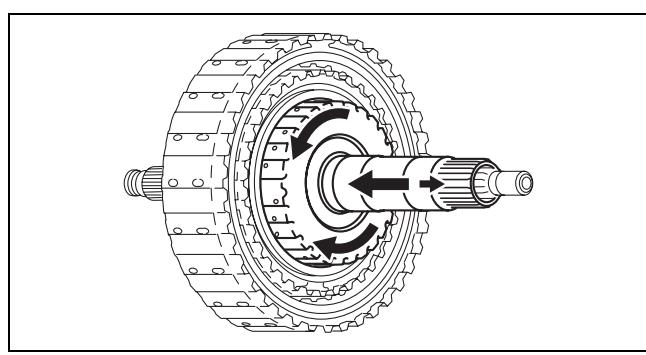
**Note**

- For the high clutch hub and low clutch hub assembly, assembly is easier if the work is performed using the following procedure:
  - High clutch hub
    1. Place the assembled parts on the workbench with the clutch component situated sideways.



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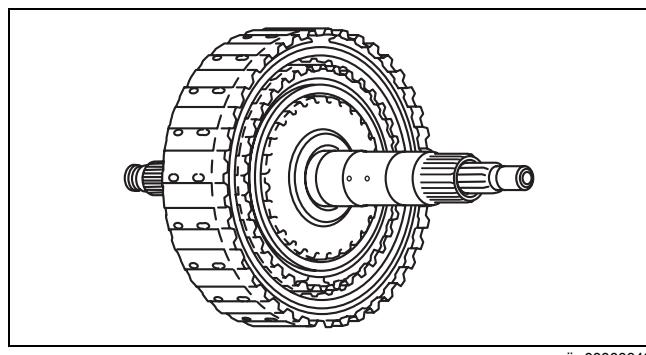
2. While rotating the high clutch hub, engage the splines of each of the high clutch drive plates one by one, and assemble.



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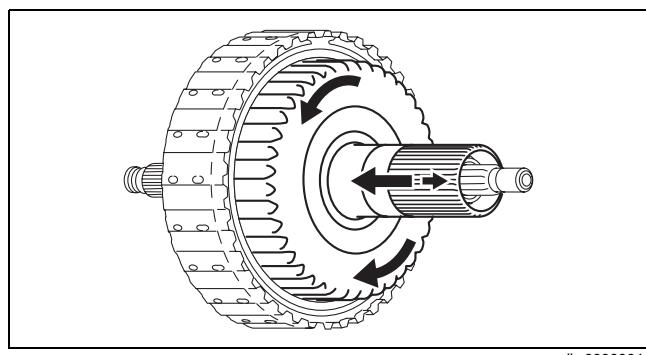
**— Low clutch hub**

1. Place the assembled parts on the workbench with the clutch component situated sideways.



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2. While rotating the low clutch hub, engage the splines of each of the low clutch drive plates one by one, and assemble.



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# AUTOMATIC TRANSAXLE

- (2) To verify that the parts are securely assembled together, measure the distance shown in the figure.

## Note

- Recommended measuring instrument:  
Vernier caliper

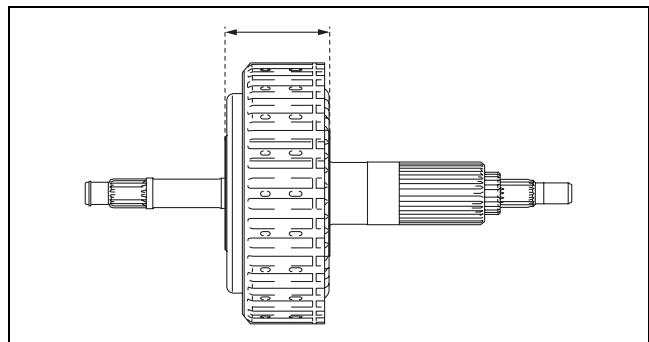
## Specification

63.9—66.0 mm {2.52—2.59 in}

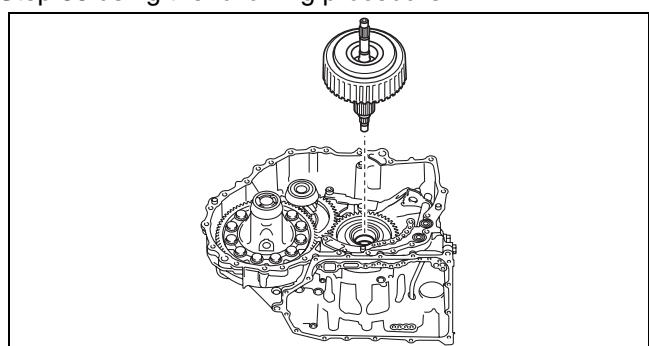
- If not within the specification, disassemble the assembled parts and reassemble.

39. Assemble the parts which were assembled together in Step 38 using the following procedure:

- (1) Assemble the parts assembled together in Step 38.



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- (2) To verify that the parts are securely assembled, measure the distance shown in the figure.

A : Transaxle case end (alignment surface with converter housing)

B : Clutch component end

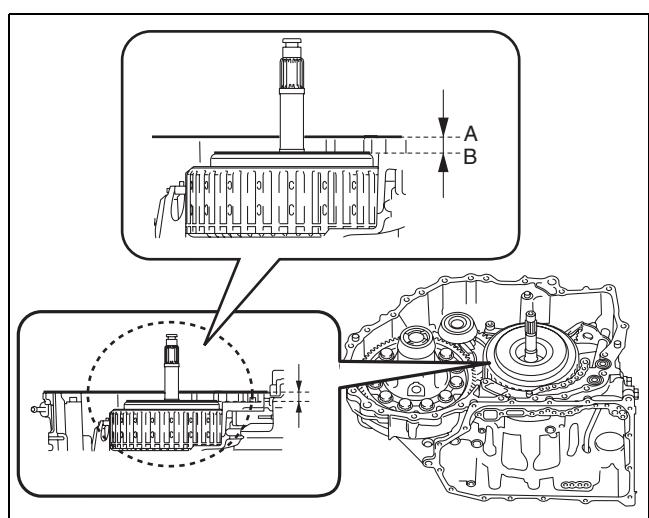
## Note

- Recommended measuring instrument:  
Depth gauge, straight edge ruler

## Specification

11.6—14.8 mm {0.457—0.582 in}

- If not within the specification, remove the parts and perform re-assembly from Step 38.



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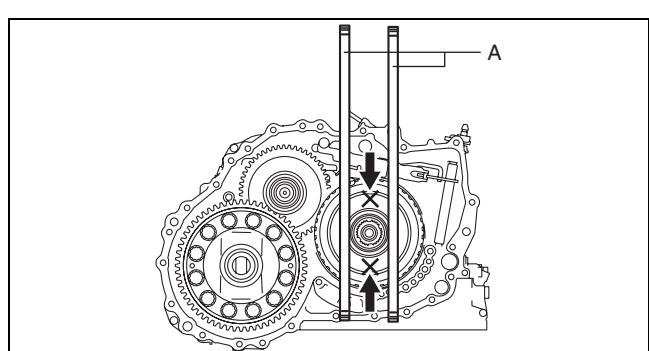
## Note

- Measurement method

- 1) Set two straight edge rulers along the alignment surface of the transaxle case with the converter housing as shown in the figure.

A : Straight edge ruler

- 2) Measure the positions (2 locations) shown in the figure using a depth gauge and calculate the average value.
- 3) Subtract the thickness of the straight edge ruler from the average value.



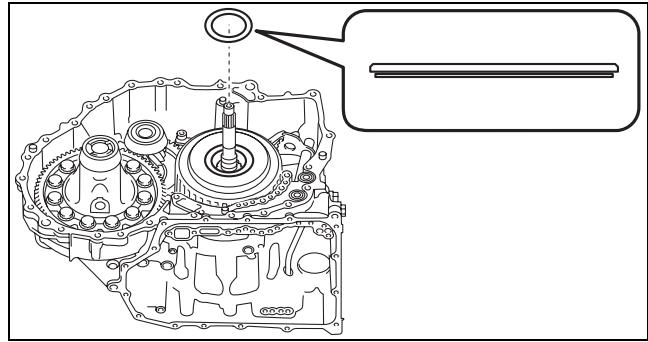
azjwjw00000644

# AUTOMATIC TRANSAXLE

40. Assemble the thrust needle bearing.

**Note**

- Thrust needle bearing size: Outer diameter approx. 72.7 mm {2.86 in}

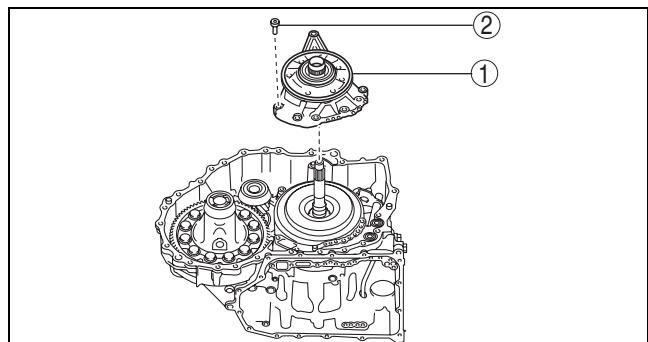


05-17

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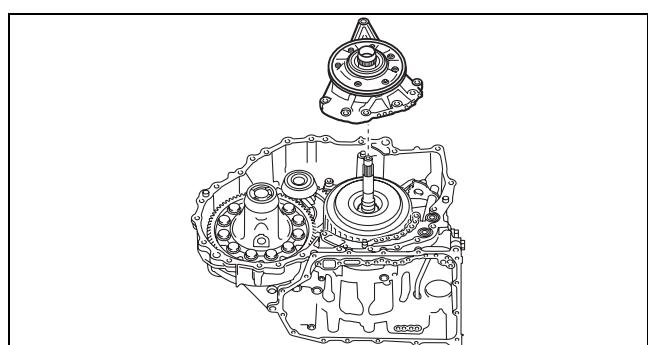
41. Assemble the oil pump using the following procedure:

1	Oil pump
2	7 bolts (M8×1.25 bolt, length to approx. 31 mm {1.2 in})



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(1) Assemble the oil pump.



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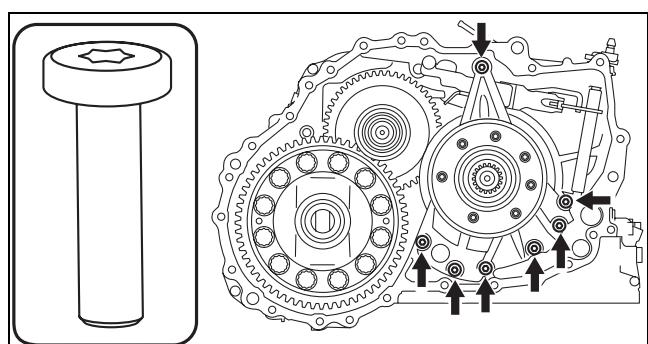
(2) Assemble and tighten the bolts shown in the figure.

**Note**

- Bolt size: M8×1.25 bolt, length to approx. 31 mm {1.2 in}

**Tightening torque**

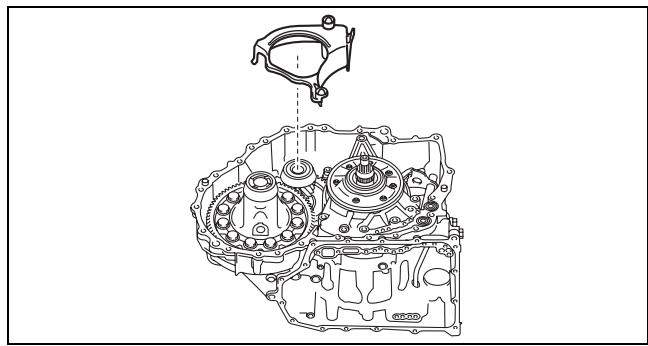
19—25 N·m {2.0—2.5 kgf·m, 15—18 ft·lbf}



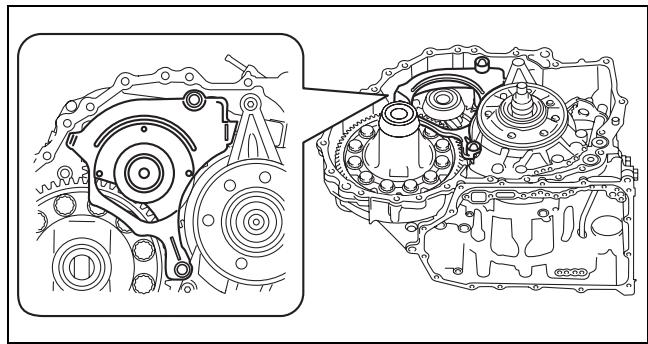
azzjw00000648

## AUTOMATIC TRANSAXLE

42. Assemble the baffle plate.



azzjw00000649

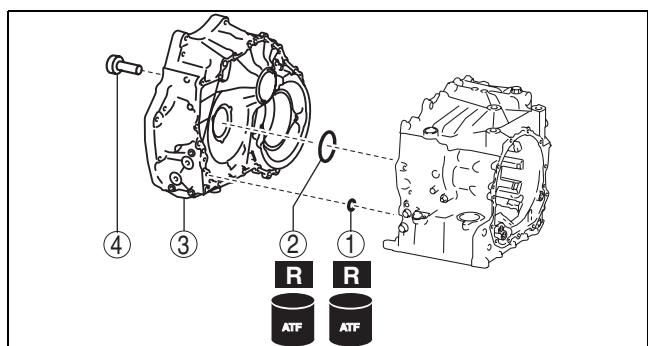


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43. Assemble the converter housing using the following procedure:

1	O-ring (outer diameter approx. 15.6 mm {0.614 in}, thickness approx. 2.4 mm {0.094 in})
2	O-ring (outer diameter approx. 73.3 mm {2.89 in}, thickness approx. 3.0 mm {0.12 in})
3	Converter housing
4	24 bolts * (M8×1.25 bolt, length to approx. 28 mm {1.1 in})

\* : Of the 24 bolts, 6 are applied with sealant



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# AUTOMATIC TRANSAXLE

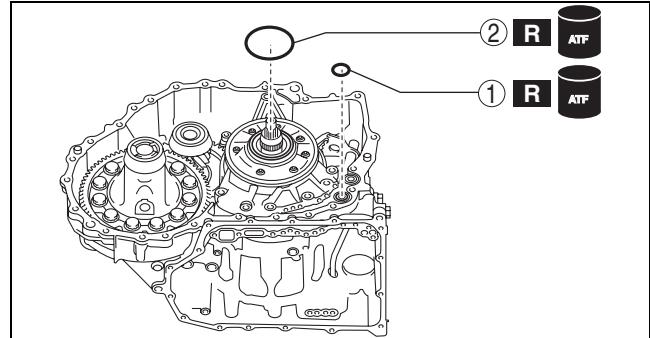
(1) Assemble new O-rings using the following procedure:

## Caution

- If an O-ring is reused it could cause ATF leakage, therefore use a new O-ring.

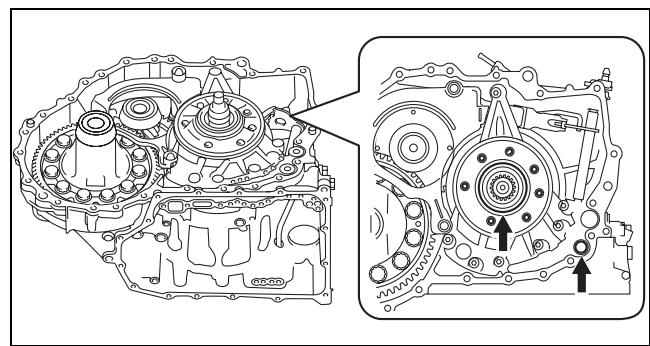
- 1) Apply ATF (ATF FZ) to the new O-rings.
- 2) Assemble the new O-rings in the order shown in the figure.

1	O-ring (outer diameter approx. 15.6 mm {0.614 in}, thickness approx. 2.4 mm {0.094 in})
2	O-ring (outer diameter approx. 73.3 mm {2.89 in}, thickness approx. 3.0 mm {0.12 in})



05-17

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- (2) Remove any remaining old sealant on the contact surfaces of the transaxle case and converter housing, and degrease the contact surfaces.

## Caution

- When degreasing and if degreaser is used, use a rag saturated with degreaser and be careful not to allow degreaser to penetrate the interior of the transaxle.  
In addition, after degreasing, visually verify that there is no foreign matter (such as old sealant, cloth fibers) which has penetrated the interior of the transaxle.

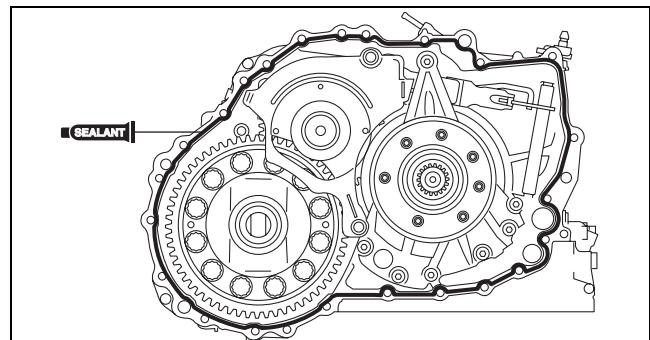
- (3) Apply sealant (silicone sealant TB1217E) to the transaxle case.

## Caution

- If sealant is applied excessively or applied to a part other than the indicated part, the O-ring could deform and the sealant could penetrate the oil passage.  
Apply an appropriate amount of sealant to the indicated part.

## Note

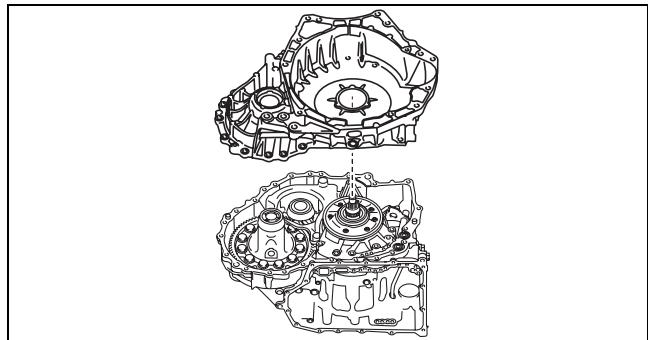
- Sealant application amount (bead thickness):  $\phi$  1.8—2.5 mm {0.071—0.098 in}



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## AUTOMATIC TRANSAXLE

- (4) Assemble the converter housing before the applied sealant starts to harden.

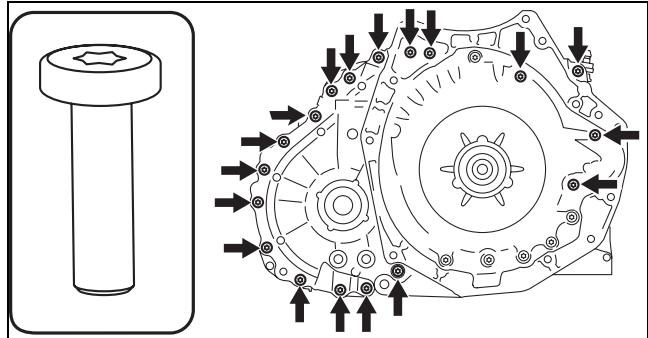


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- (5) Assemble and temporarily tighten the bolts to the positions shown in the figure.

**Note**

- Bolt size: M8×1.25 bolt, length to approx. 28 mm {1.1 in}



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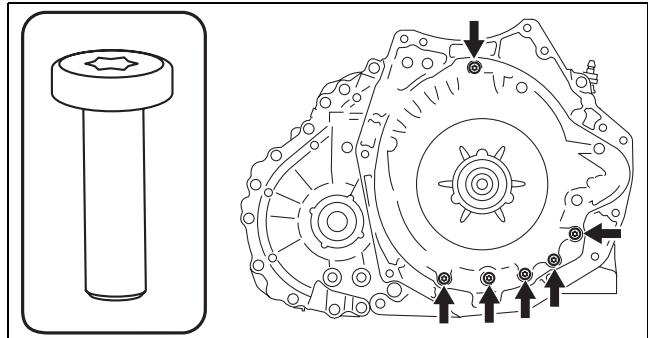
- (6) Assemble and temporarily tighten the new bolts to the positions shown in the figure.

**Caution**

- The bolts for the assembly are applied with sealant. If the bolts are reused it could cause ATF leakage, therefore use new bolts.

**Note**

- Bolt size: M8×1.25 bolt, length to approx. 28 mm {1.1 in} (with sealant applied)

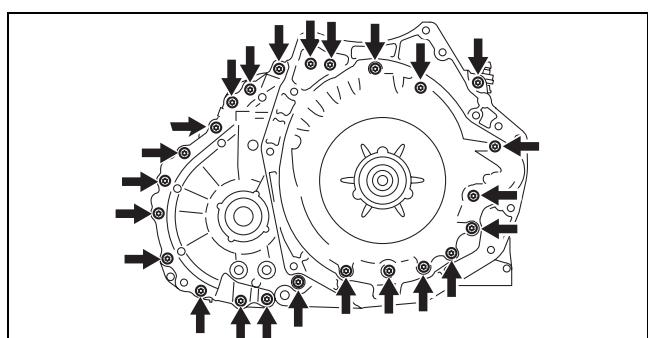


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- (7) Tighten the bolts shown in the figure.

**Tightening torque**

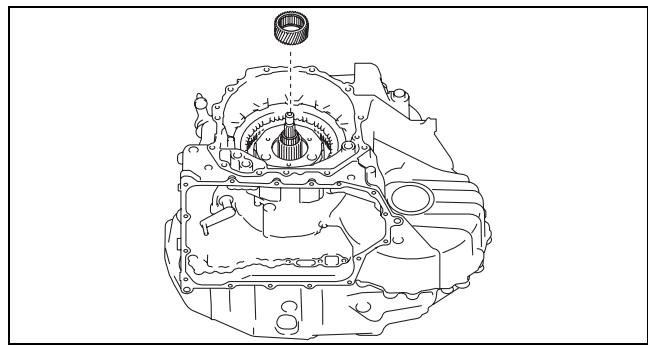
19—25 N·m {2.0—2.5 kgf·m, 15—18 ft·lbf}



azzjw00000658

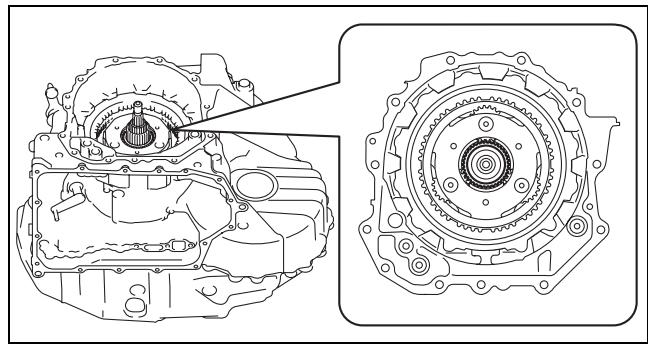
## AUTOMATIC TRANSAXLE

44. Assemble the front sun gear.



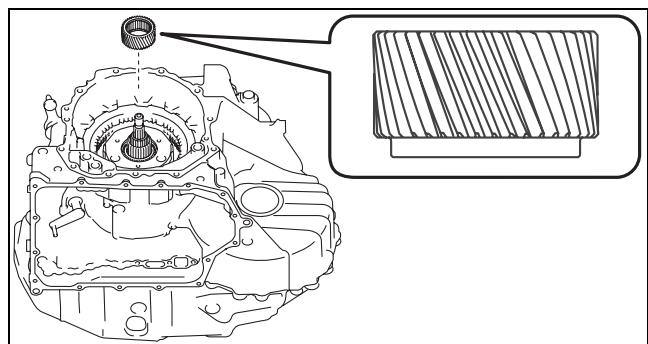
05-17

azzjw00000659

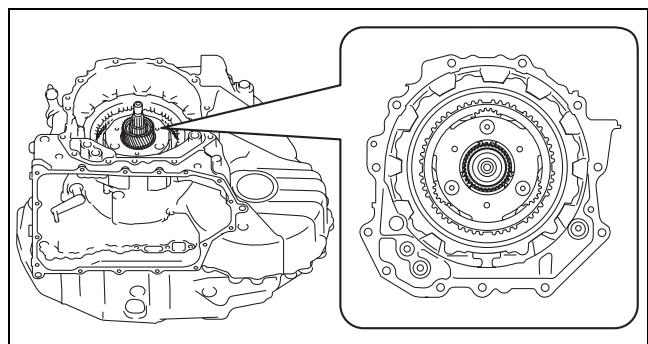


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45. Assemble the rear sun gear.



azzjw00000661



azzjw00000662

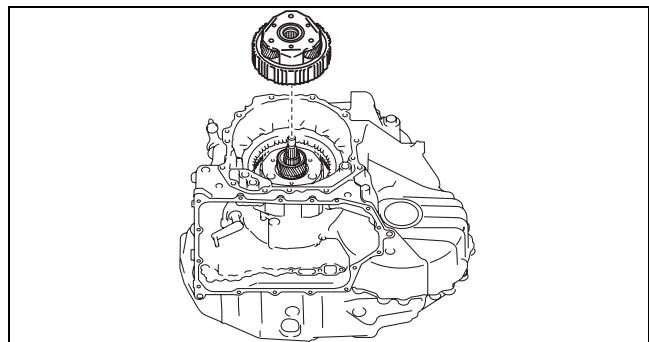
## AUTOMATIC TRANSAXLE

46. Assemble the rear planetary gear using the following procedure:

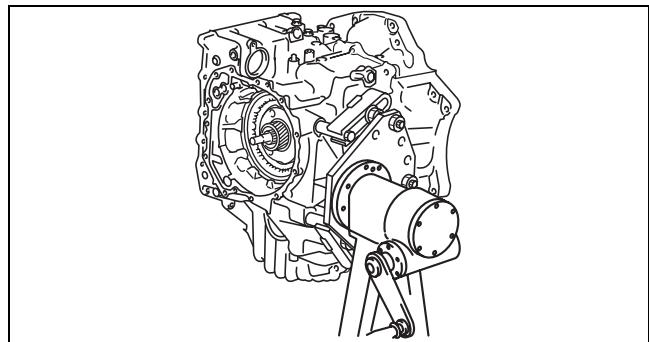
(1) Assemble the rear planetary gear.

**Note**

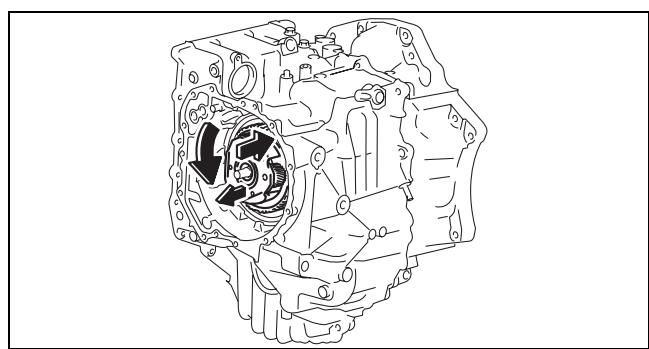
- If the rear planetary gear assembly is difficult, assembly is easier if the work is performed using the following procedure:



1. Rotate and adjust the rotation handle of the engine stand so that the end cover side is situated sideways.



2. While rotating the rear planetary gear, engage the splines of each drive plate of the low and reverse brake one by one, and assemble.



- (2) To verify that the rear planetary gear is securely assembled, measure the distance shown in the figure.

A : Transaxle case end (alignment surface with end cover)  
B : Rear planetary gear end

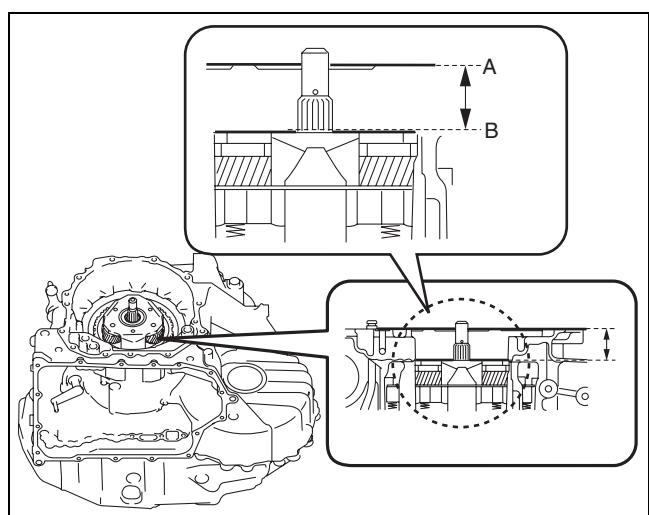
**Note**

- Recommended measuring instrument:  
Depth gauge, straight edge ruler

**Specification**

32.8—35.1 mm {1.30—1.38 in}

- If not within the specification, remove the rear planetary gear and reassemble.



**Note**

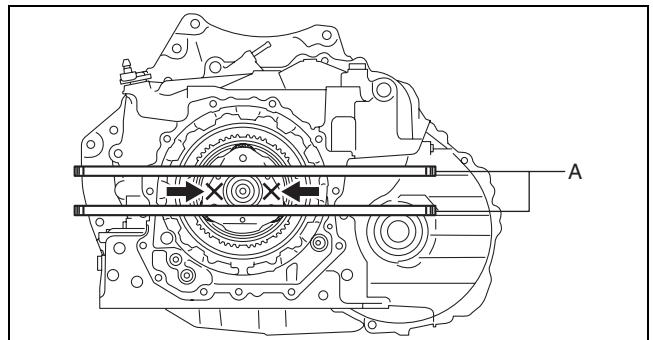
- Measurement method

- 1) Set two straight edge rulers along the alignment surface of the transaxle case with the end cover as shown in the figure.

A : Straight edge ruler

- 2) Measure the positions (2 locations) shown in the figure using a depth gauge and calculate the average value.
- 3) Subtract the thickness of the straight edge ruler from the average value.

05-17

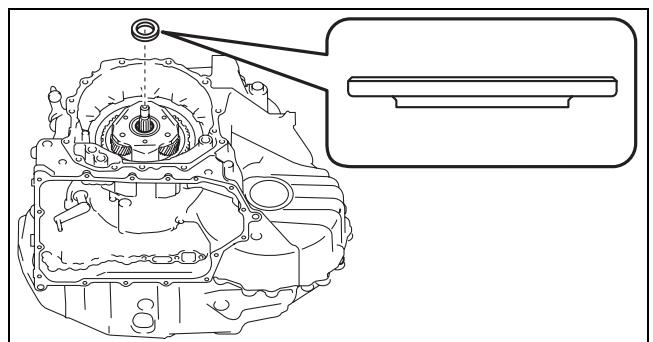


azzjw00000667

47. Assemble the thrust needle bearing.

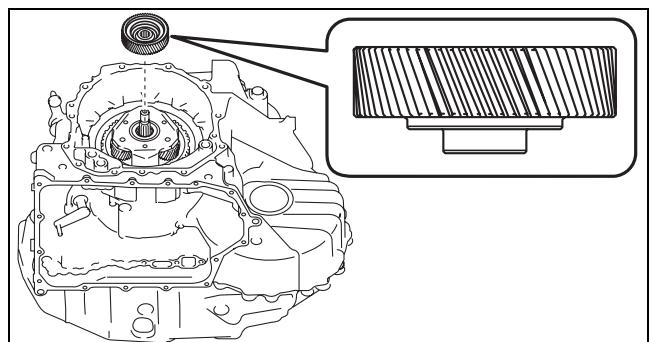
**Note**

- Thrust needle bearing size: Outer diameter approx. 44 mm {1.7 in}

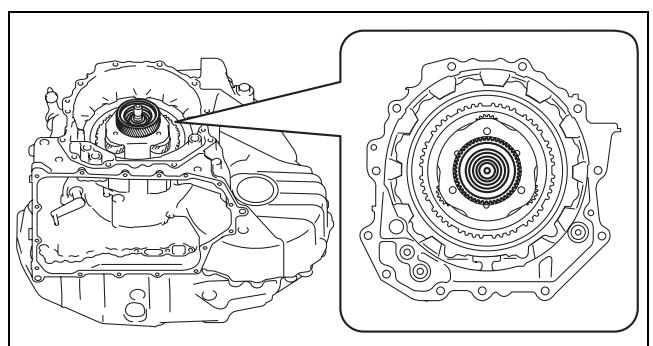


azzjw00000668

48. Assemble the reduction sun gear.



azzjw00000669



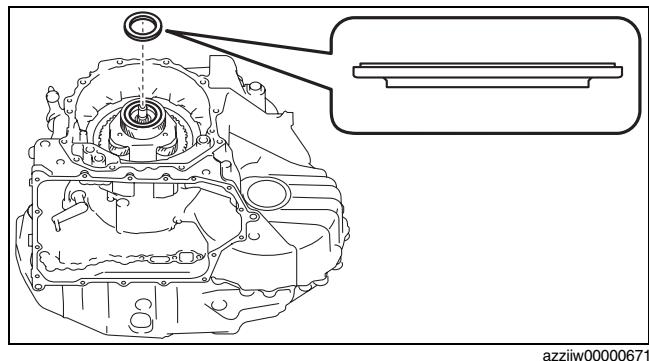
azzjw00000670

## AUTOMATIC TRANSAXLE

49. Assemble the thrust needle bearing.

**Note**

- Thrust needle bearing size: Outer diameter approx. 61.5 mm {2.42 in}



azzjjw00000671

50. Assemble the shim using the following procedure:

**Note**

- Shim size: Outer diameter approx. 59.5 mm {2.34 in}

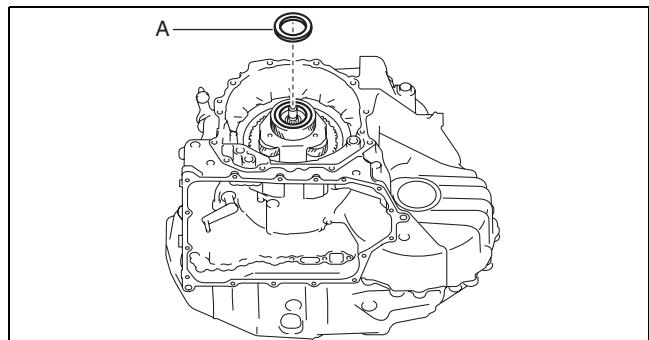
(1) Measure the total end play and select the appropriate shim. (See 05-17-385 TOTAL END PLAY MEASUREMENT/ADJUSTMENT.)

**Caution**

- The total end play is the play (gap) in the axial direction of each planetary gear. If the total end play adjustment is not performed, it may cause damage to the thrust needle bearing between each planetary gear or other parts.

(2) Assemble the selected shim in Step (1).

A : Selection

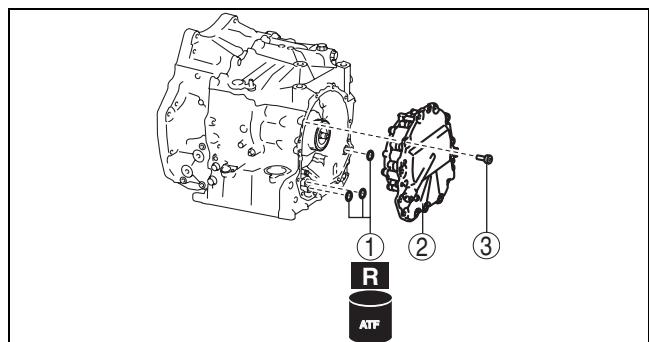


azzjjw00000672

51. Assemble the end cover component using the following procedure:

1	O-ring (outer diameter approx. 15.6 mm {0.614 in}, thickness approx. 2.4 mm {0.094 in})
2	End cover component
3	12 bolts * (M8×1.25 bolt, length to approx. 21 mm {0.83 in})

\* : Of the 12 bolts, 2 are applied with sealant



azzjjw00000673

## AUTOMATIC TRANSAXLE

(1) Assemble new O-rings using the following procedure:

### Caution

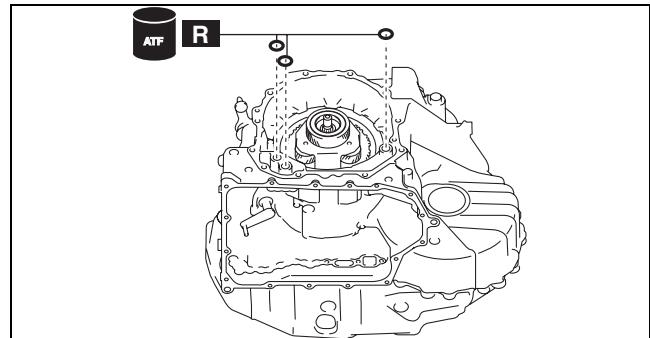
- If an O-ring is reused it could cause ATF leakage, therefore use a new O-ring.

### Note

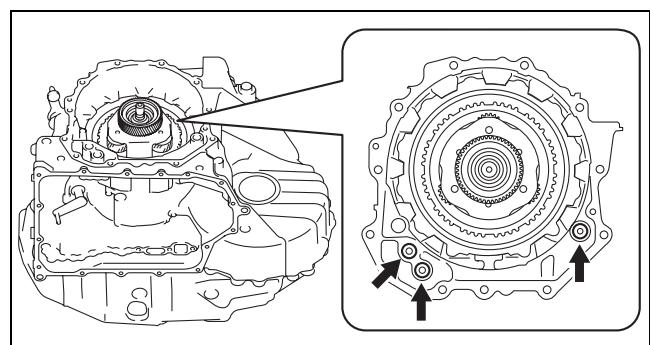
- O-ring size: Outer diameter approx. 15.6 mm {0.614 in}, thickness approx. 2.4 mm {0.094 in}

- 1) Apply ATF (ATF FZ) to the new O-rings.
- 2) Assemble the new O-rings.

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azzjw00000675

(2) Remove any remaining old sealant on the contact surfaces of the transaxle case and end cover, and degrease the contact surfaces.

### Caution

- When degreasing and if degreaser is used, use a rag saturated with degreaser and be careful not to allow degreaser to penetrate the interior of the transaxle.  
In addition, after degreasing, visually verify that there is no foreign matter (such as old sealant, cloth fibers) which has penetrated the interior of the transaxle.

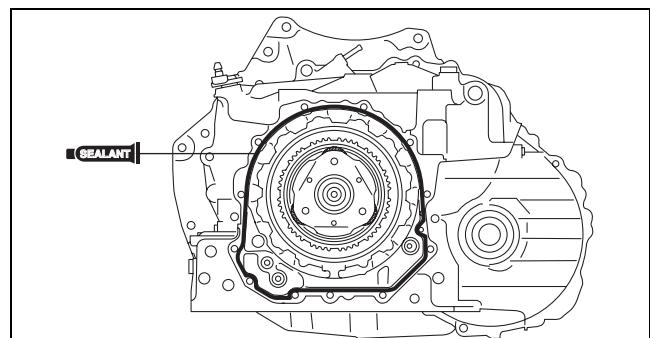
(3) Apply sealant (silicone sealant TB1217E) to the transaxle case.

### Caution

- If sealant is applied excessively or applied to a part other than the indicated part, the O-ring could deform and the sealant could penetrate the oil passage. Apply an appropriate amount of sealant to the indicated part.

### Note

- Sealant application amount (bead thickness):  $\phi$  0.5—1.8 mm {0.02—0.07 in}



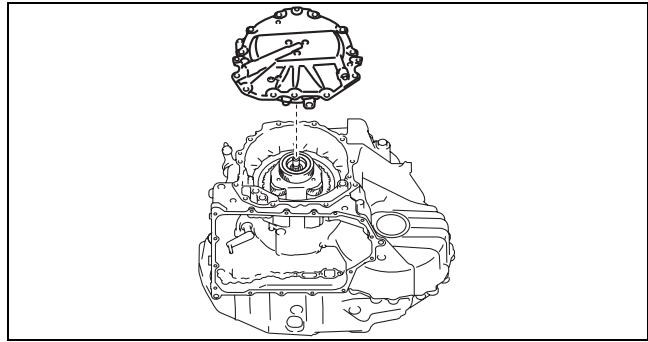
azzjw00000676

## AUTOMATIC TRANSAXLE

- (4) Assemble the end cover component before the applied sealant starts to harden.

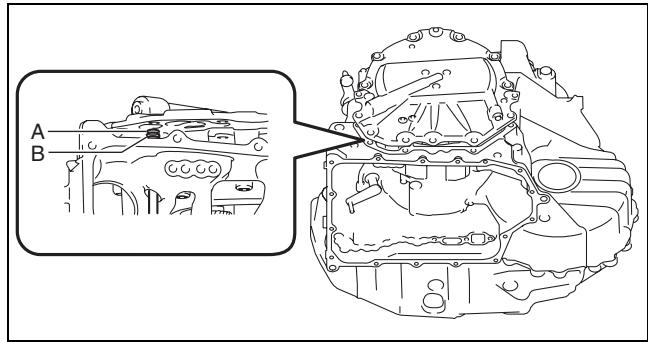
**Note**

- Adjust the oil pipe and assemble the end cover component so that the oil pipe is assembled to the end cover oil passage.



azzjjw00000677

A : End cover oil passage  
B : Oil pipe

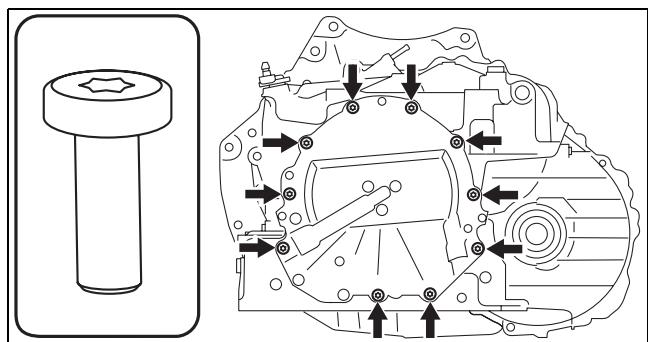


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- (5) Assemble and temporarily tighten the bolts to the positions shown in the figure.

**Note**

- Bolt size: M8×1.25 bolt, length to approx. 21 mm {0.83 in}



azzjjw00000679

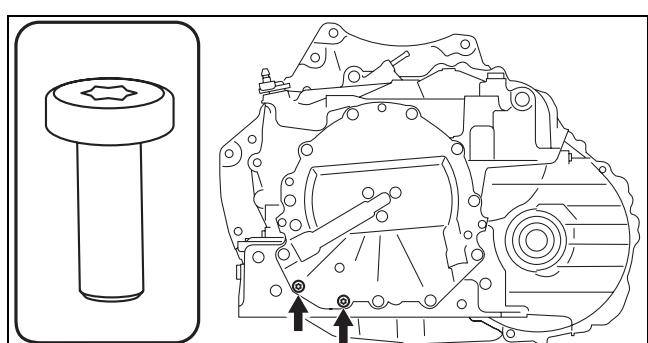
- (6) Assemble and temporarily tighten the new bolts to the positions shown in the figure.

**Caution**

- The bolts for the assembly are applied with sealant. If the bolts are reused it could cause ATF leakage, therefore use new bolts.

**Note**

- Bolt size: M8×1.25 bolt, length to approx. 21 mm {0.83 in} (with sealant applied)



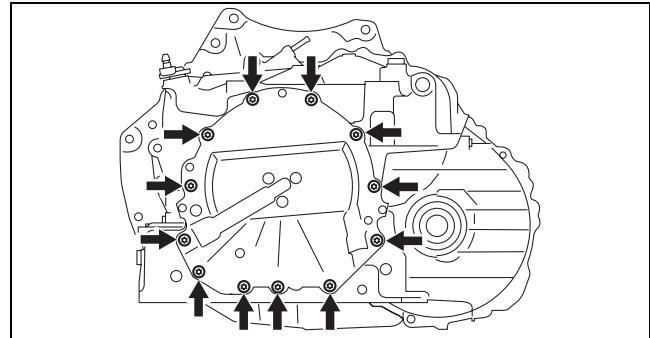
azzjjw00000680

## AUTOMATIC TRANSAXLE

(7) Tighten the bolts shown in the figure.

### Tightening torque

19—25 N·m {2.0—2.5 kgf·m, 15—18 ft·lbf}



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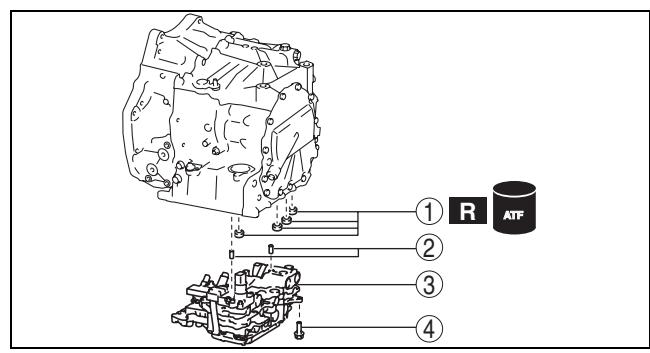
05-17

52. Assemble the control valve body using the following procedure:.

1	Gasket
2	Dowel pin
3	Control valve body
4	11 bolts (M6×1.0 bolt, length to approx. 30 mm {1.2 in})

### Caution

- Do not drop or apply an impact to the control valve body. Replace the control valve body with a new one if it was dropped or received an impact.



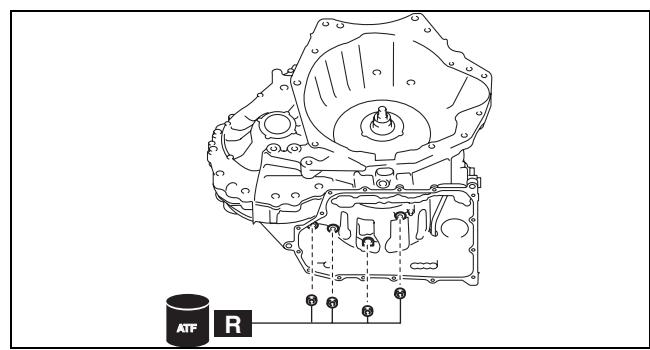
azzjw00000682

(1) Assemble new gaskets using the following procedure:

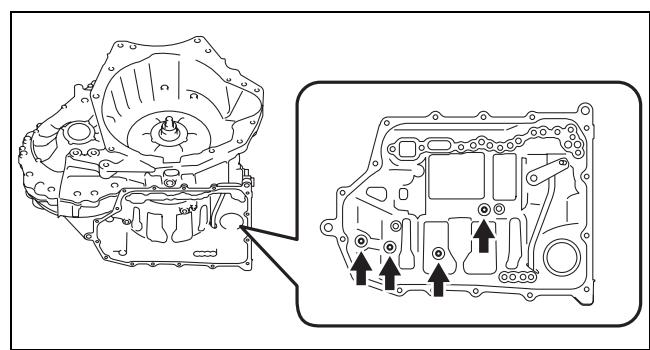
### Caution

- If a gasket is reused it could cause ATF leakage, therefore use a new gasket.

- 1) Apply ATF (ATF FZ) to the new gaskets.
- 2) Assemble the new gaskets.



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azzjw00000684

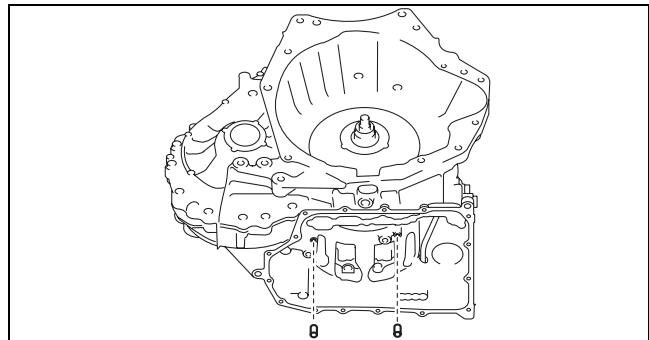
05-17-231

## AUTOMATIC TRANSAXLE

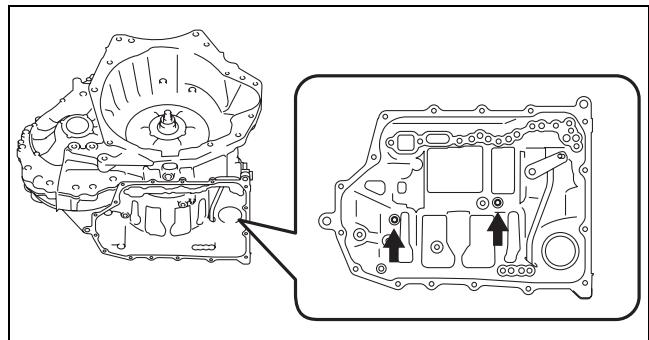
(2) Assemble the dowel pins.

### Caution

- Do not assemble the dowel pin using a tool such as a hammer to prevent damaging the part. For the dowel pin assembly, only insert the dowel pin to the transaxle case assembly hole by hand.

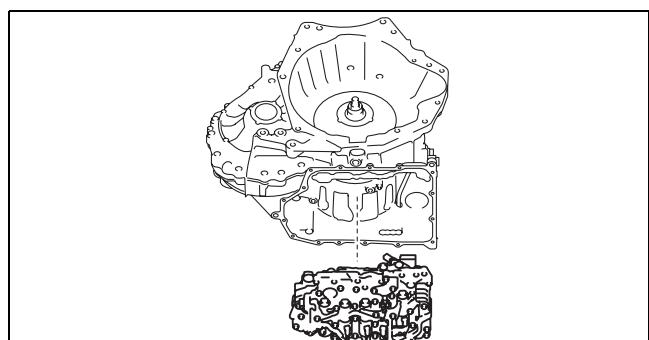


azzjjw00000685



azzjjw00000686

(3) Assemble the control valve body.



azzjjw00000687

### Caution

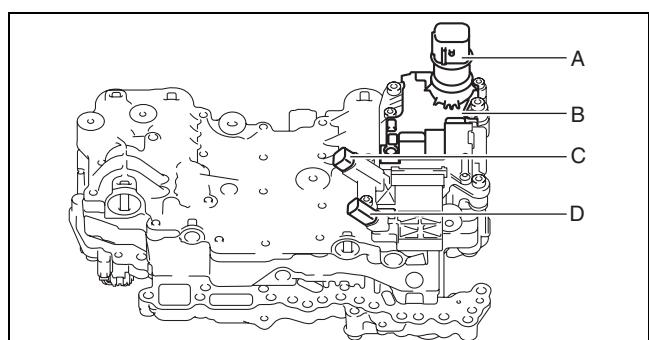
- Assemble the control valve body at a straight angle so that force is not applied to the control valve body connector in the lateral direction.
- Assemble the control valve body so that the TCM, turbine/input shaft speed sensor, and the output shaft speed sensor do not contact the transaxle case.

A : Control valve body connector

B : TCM

C : Output shaft speed sensor

D : Turbine/input shaft speed sensor



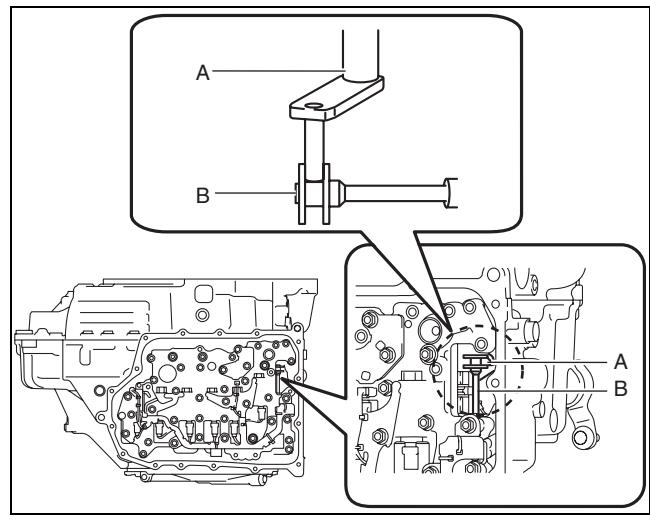
azzjjw00001566

**Caution**

- Adjust the manual valve and assemble the control valve body so that the parking assist lever component end is engaged with the manual valve.

A : Parking assist lever component

B : Manual valve



05-17

azzjw00000730

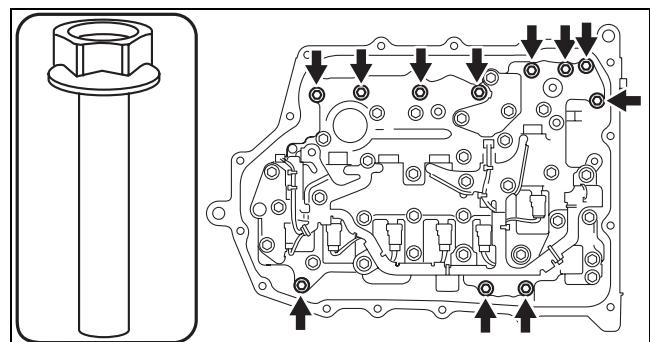
- (4) Assemble and tighten the bolts shown in the figure.

**Note**

- Bolt size: M6×1.0 bolt, length to approx. 30 mm {1.2 in}

**Tightening torque**

9—10 N·m {92—101 kgf·cm, 80—88 in·lbf}



azzjw00000689

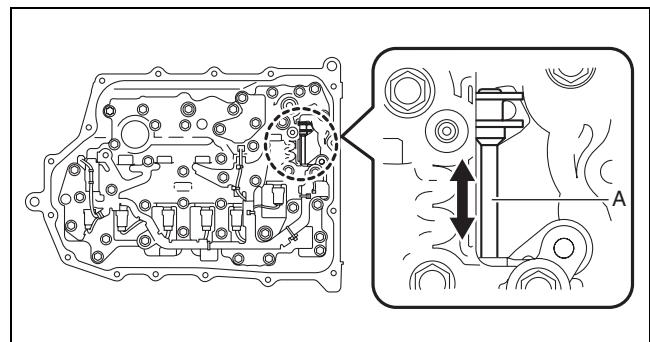
- (5) Move the manual valve in the direction shown in the figure and verify that the manual valve is engaged with the parking assist lever component end.

A : Manual valve

**Note**

- If the manual valve is only moved for excessive play on both surfaces of the parking assist lever component and the manual valve, the manual valve is correctly connected to the parking assist lever component.

- If there is a malfunction, remove the control valve body and reassemble.



azzjw00001212

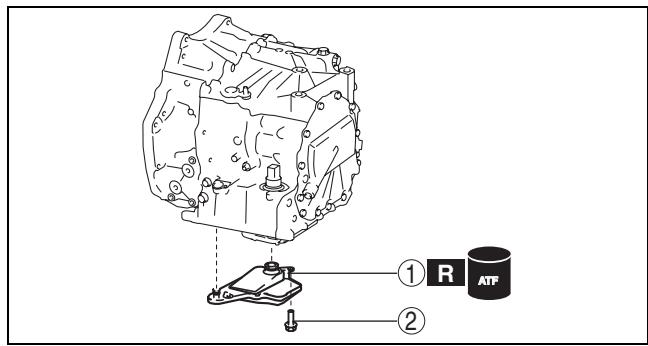
## AUTOMATIC TRANSAXLE

53. Assemble a new oil strainer using the following procedure::

1	Oil strainer
2	2 bolts (M6×1.0 bolt, length to approx. 16 mm {0.63 in})

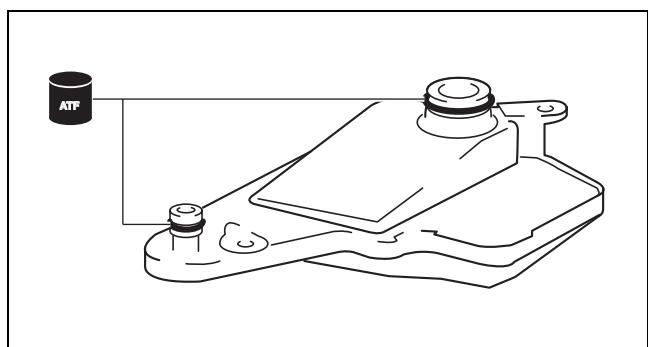
**Caution**

- If an oil strainer is reused while containing excessive foreign matter, it could cause an operation malfunction, therefore use a new oil strainer.



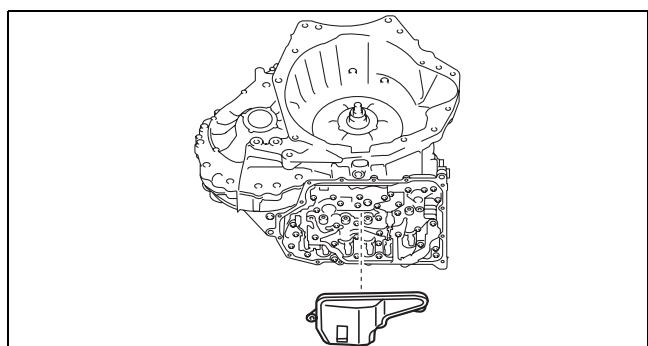
azjwjw00001607

(1) Apply ATF (ATF FZ) to the new oil strainer O-rings.

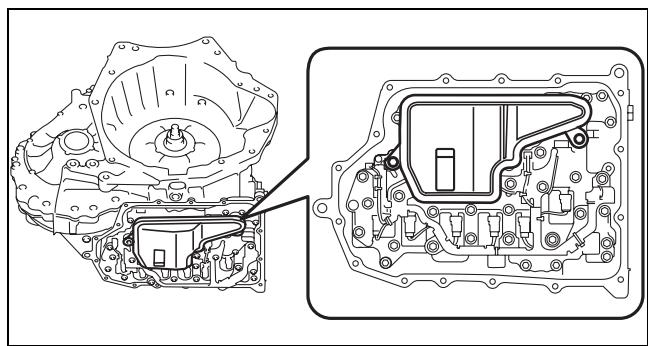


azjwjw00001608

(2) Assemble the new oil strainer.



azjwjw00000692



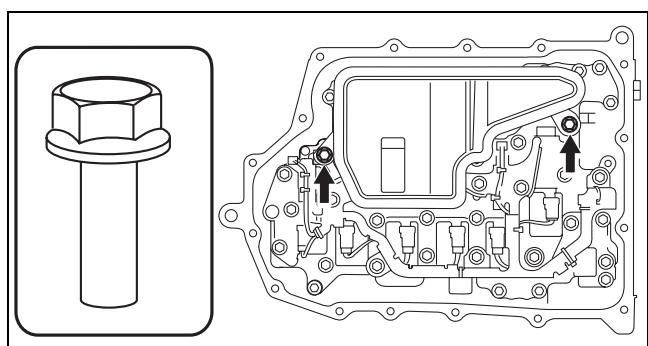
azjwjw00000693

(3) Assemble and tighten the bolts shown in the figure.

**Note**

- Bolt size: M6×1.0 bolt, length to approx. 16 mm {0.63 in}

**Tightening torque**  
9—10 N·m {92—101 kgf·cm, 80—88 in·lbf}



azjwjw00000694

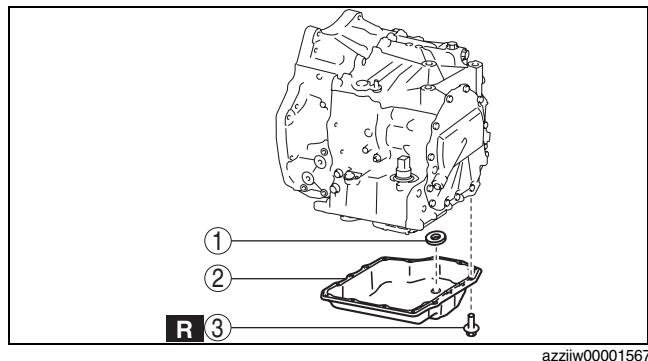
## AUTOMATIC TRANSAXLE

54. Assemble the oil pan and magnet using the following procedure:

1	Magnet
2	Oil pan
3	16 bolts (M6×1.0 bolt, length to approx. 15 mm {0.59 in}*)

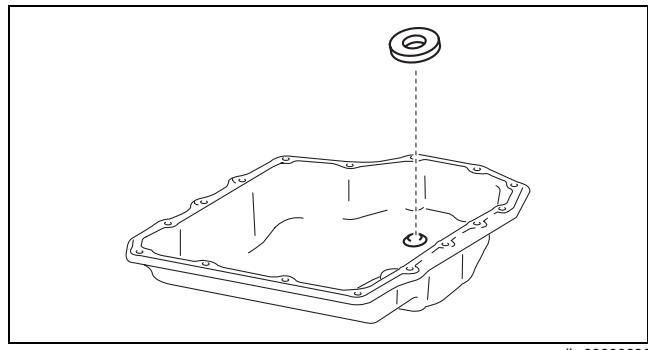
- \* : Length without spring washer is indicated due to bolt with spring washer. Length with spring washer is approx. 13 mm {0.51 in}.

05-17



azzjw00001567

(1) Assemble the magnet.



azzjw00000696

(2) Remove any remaining old sealant on the contact surfaces of the transaxle case and oil pan, and degrease the contact surfaces.

### Caution

- When degreasing and if degreaser is used, use a rag saturated with degreaser and be careful not to allow degreaser to penetrate the interior of the transaxle.  
In addition, after degreasing, visually verify that there is no foreign matter (such as old sealant, cloth fibers) which has penetrated the interior of the transaxle.

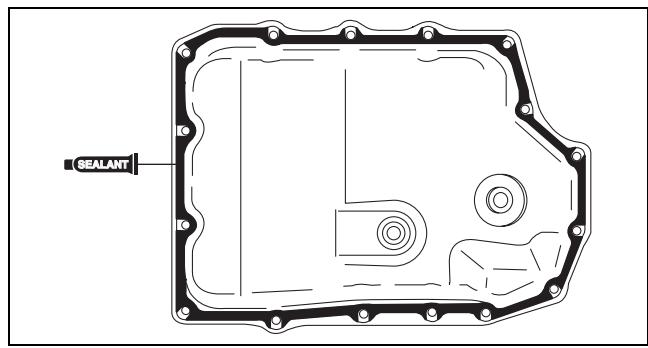
(3) Apply sealant (silicone sealant TB1217E) to the oil pan.

### Caution

- If sealant is applied excessively or applied to a part other than the indicated part, the sealant could penetrate the transaxle inside. Apply an appropriate amount of sealant to the indicated part.

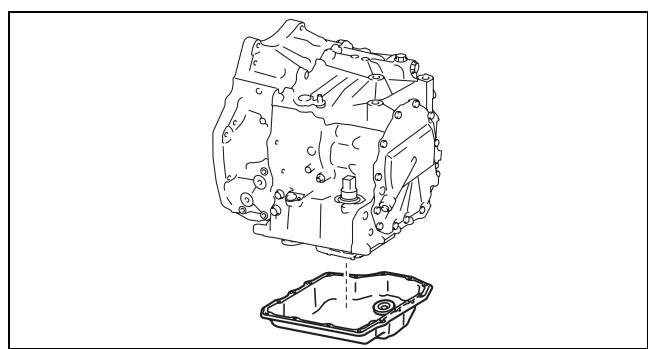
### Note

- Sealant application amount (bead thickness):  $\phi$  1.9—6.7 mm {0.08—0.26 in}



azzjw00000697

(4) Assemble the oil pan before the applied sealant starts to harden.



azzjw00000698

## AUTOMATIC TRANSAXLE

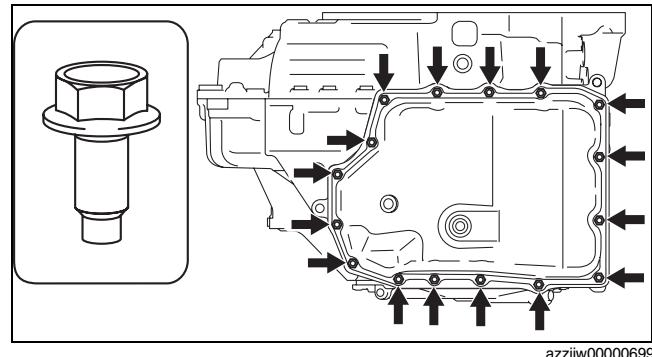
- (5) Assemble and tighten the new bolts to the positions shown in the figure.

**Caution**

- The bolts for assembling are used for bolts with spring washer. If the bolts with spring washer are reused it could loosen the bolts due to spring weakness, therefore use new bolts.

**Note**

- Bolt size: M6×1.0 bolt, length to approx. 15 mm {0.59 in}\*<sup>\*</sup>



azzjjw00000699

\* : Length without spring washer is indicated due to bolt with spring washer. Length with spring washer is approx. 13 mm {0.51 in}.

**Tightening torque**

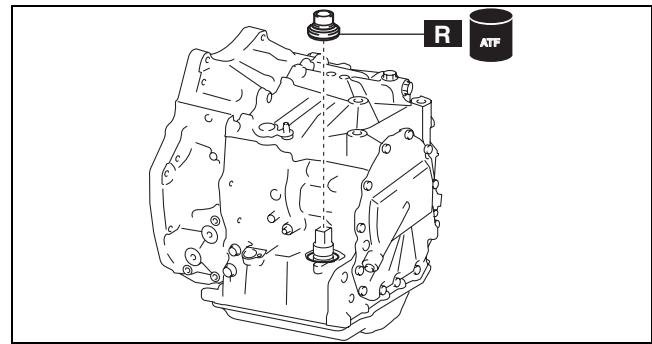
8—10 N·m {82—101 kgf·cm, 71—88 in·lbf}

55. Assemble a new oil seal using the following procedure:

**Caution**

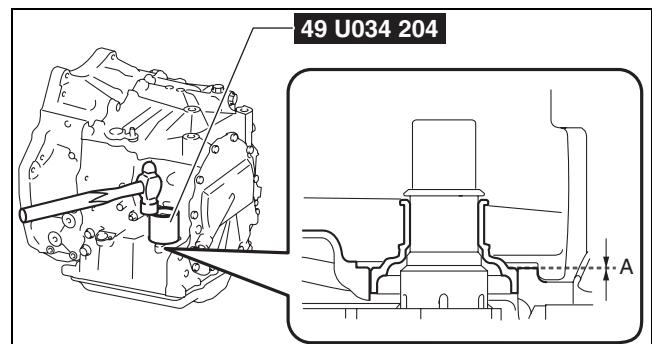
- If an oil seal is reused it could cause ATF leakage, therefore use a new oil seal.

- (1) Apply ATF (ATF FZ) to the engagement area of the new oil seal and transaxle case.
- (2) Apply ATF (ATF FZ) to the engagement area of the new oil seal and connector.
- (3) Assemble the new oil seal to the position shown in the figure using the SST.



azzjjw00000700

A : -0.5—1.5 mm {-0.01—0.05 in}



azzjjw00000731

## AUTOMATIC TRANSAXLE

56. Remove the SSTs from the transaxle using the following procedure:

### Caution

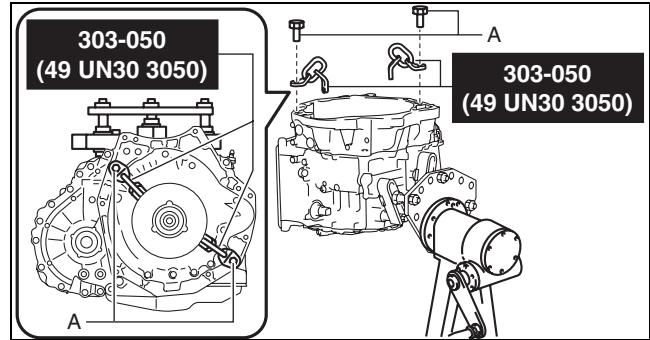
- When removing the transaxle from the SST (engine stand) using chain hoists, be careful not to allow the transaxle to contact the SST (engine stand). If the transaxle contacts the SST, check the areas that made contact and replace damaged parts with new ones.

(1) Assemble the SSTs using part number:  
9YA02 1015, or M10×1.5 bolts, length to  
35 mm {1.4 in}.

A : Part number: 9YA02 1015, or M10×1.5 bolt,  
length to 35 mm {1.4 in}

### Tightening torque

38—52 N·m {3.9—5.3 kgf·m, 29—38 ft·lbf}



azzjw00000702

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(2) Using chain hoists, remove the SST (engine stand) from the transaxle.

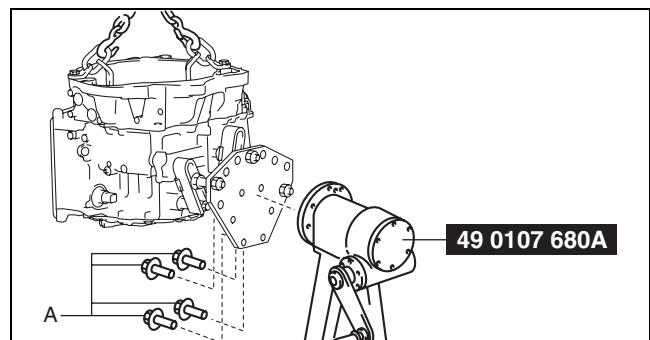
A : Part number: 9YA02 A220, or M12×1.75 bolt,  
length to 40 mm {1.6 in}

### Caution

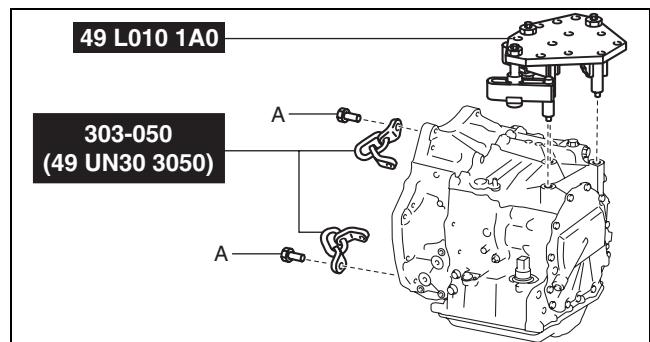
- When removing the transaxle from the SST (engine stand) using chain hoists, be careful not to allow the transaxle to contact the SST (engine stand). If the transaxle contacts the SST, check the areas that made contact and replace damaged parts with new ones.

(3) Remove the SSTs.

A : Part number: 9YA02 1015, or M10×1.5 bolt,  
length to 35 mm {1.4 in}



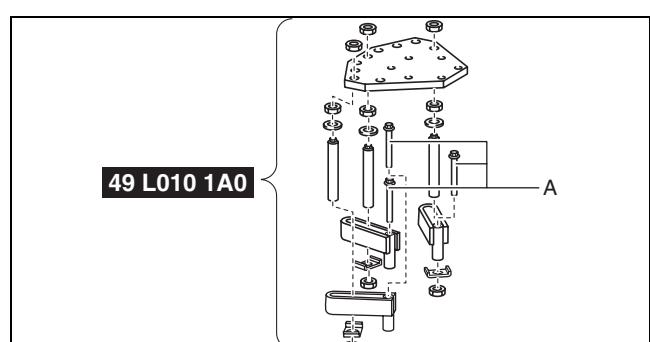
azzjw00000703



azzjw00000704

(4) Disassemble the SST.

A : Part number: 9YA02 1440, or M14×1.5 bolt,  
length to 100 mm {3.94 in}



azzjw00000705

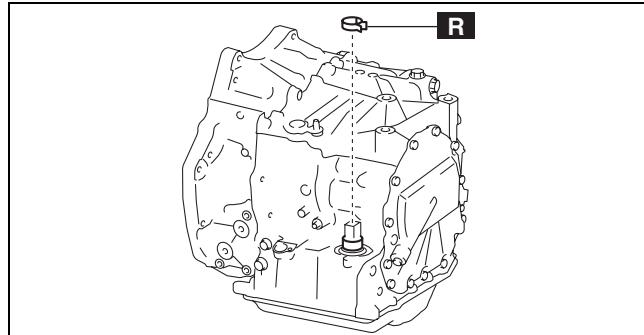
## AUTOMATIC TRANSAXLE

57. Assemble a new hose clamp using the following procedure:

### Caution

- If a hose clamp is reused it could cause ATF leakage, therefore use a new hose clamp.

(1) Assemble the new hose clamp to the position shown in the figure.

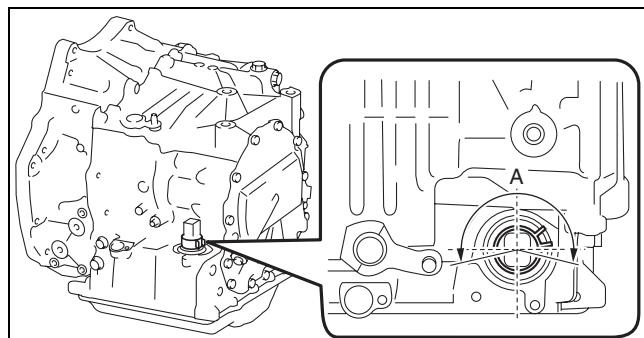


azzjw00000706

### Caution

- Assemble the hose clamp tab to within the range shown in the figure.

A : 210°



azzzcw00000084

(2) Verify that the hose clamp is assembled to within the position shown in the figure.

A : Hose clamp assembly area

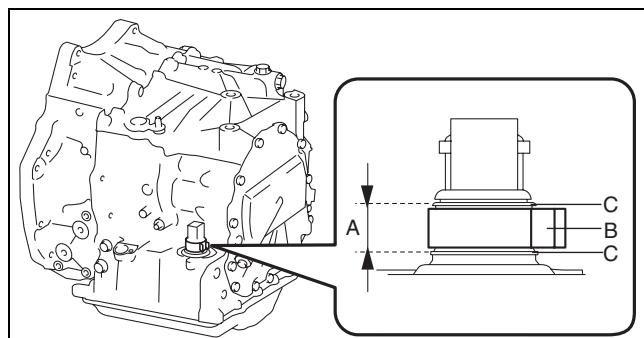
B : Hose clamp

C : Oil seal flange

### Caution

- Verify that the hose clamp does not contact the oil seal flange.

- If not within the area, adjust so that the hose clamp assembly position is within the area.

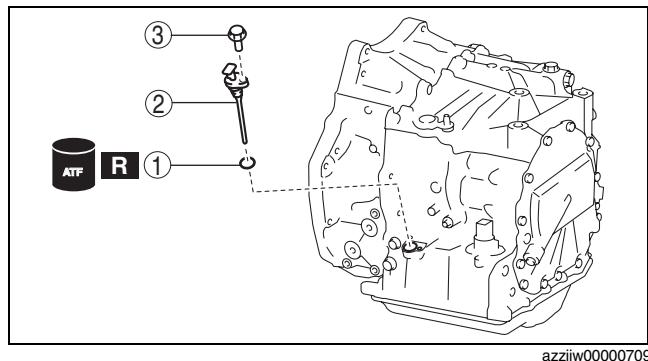


azzjw00000732

## AUTOMATIC TRANSAXLE

58. Assemble the dipstick using the following procedure:

1	O-ring (outer diameter approx. 16.6 mm {0.654 in}, thickness approx. 2.4 mm {0.094 in})
2	Dipstick
3	Bolt (M6×1.0 bolt, length to approx. 16 mm {0.63 in})



azzjw00000709

05-17

(1) Assemble a new O-ring using the following procedure:

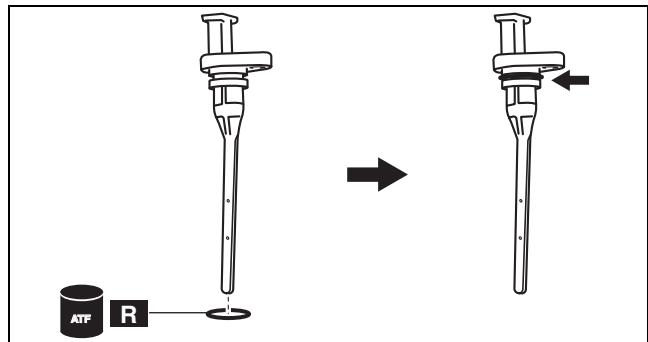
**Caution**

- If an O-ring is reused it could cause ATF leakage, therefore use a new O-ring.

**Note**

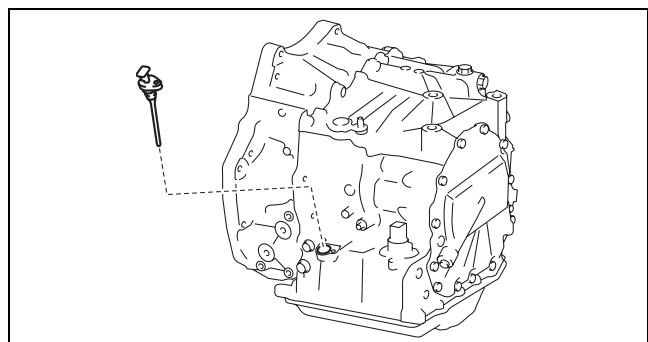
- O-ring size: Outer diameter approx. 16.6 mm {0.654 in}, thickness approx. 2.4 mm {0.094 in}

- 1) Apply ATF (ATF FZ) to the new O-ring.
- 2) Assemble the new O-ring.



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(2) Assemble the dipstick.



azzjw00000711

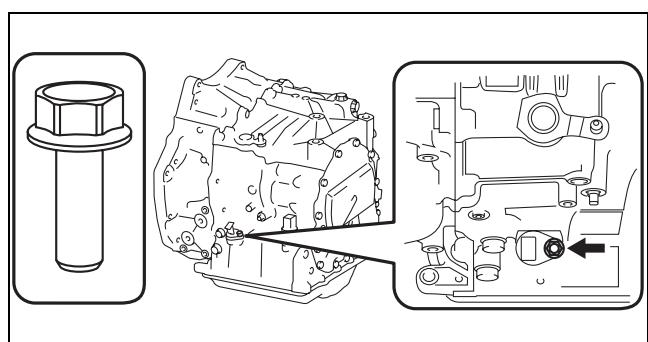
(3) Assemble and tighten the bolt shown in the figure.

**Note**

- Bolt size: M6×1.0 bolt, length to approx. 16 mm {0.63 in}

**Tightening torque**

8—11 N·m {82—112 kgf·cm, 71—97 in·lbf}



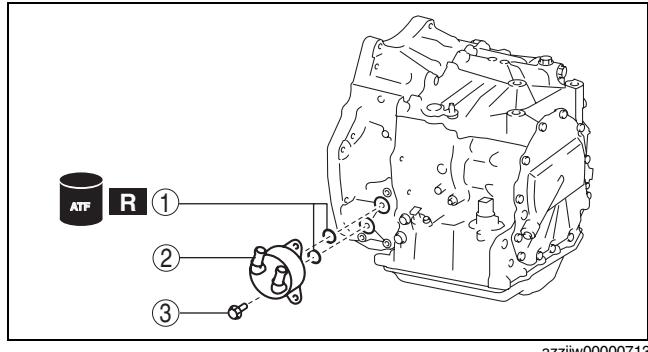
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05-17-239

## AUTOMATIC TRANSAXLE

59. Assemble the oil cooler using the following procedure:

1	O-ring (outer diameter approx. 24.4 mm {0.961 in}, thickness approx. 2.4 mm {0.094 in})
2	Oil cooler
3	3 bolts (M8×1.25 bolt, length to approx. 25 mm {0.98 in})



azzjyw00000713

(1) Assemble new O-rings using the following procedure:

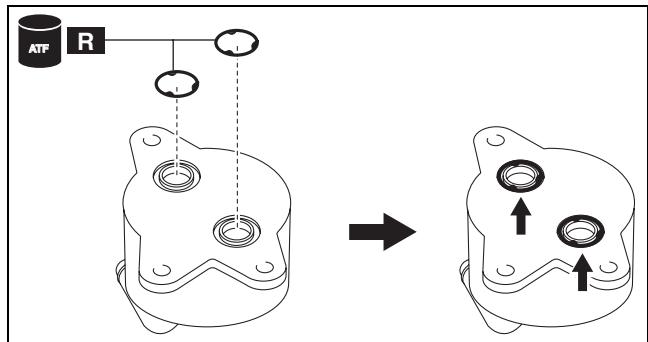
**Caution**

- If an O-ring is reused it could cause ATF leakage, therefore use a new O-ring.

**Note**

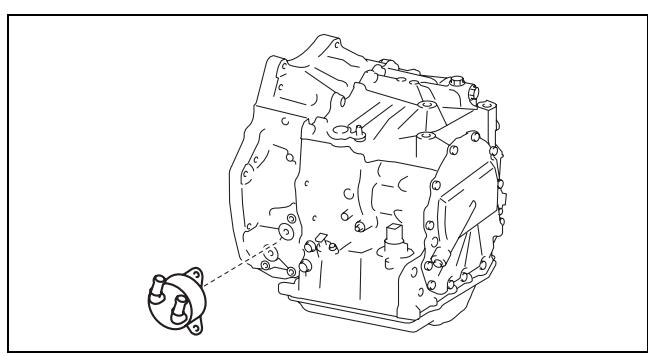
- O-ring size: Outer diameter approx. 24.4 mm {0.961 in}, thickness approx. 2.4 mm {0.094 in}

- 1) Apply ATF (ATF FZ) to the new O-rings.
- 2) Assemble the new O-rings.



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(2) Assemble the oil cooler.



azzjyw00000715

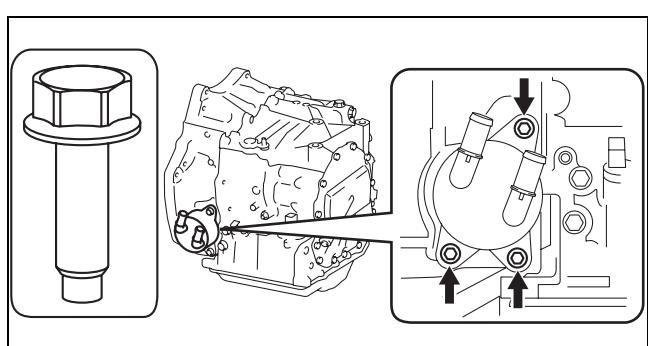
(3) Assemble and tighten the bolts shown in the figure.

**Note**

- Bolt size: M8×1.25 bolt, length to approx. 25 mm {0.98 in}

**Tightening torque**

22—27 N·m {2.3—2.7 kgf·m, 17—19 ft·lbf}



azzjyw00000716

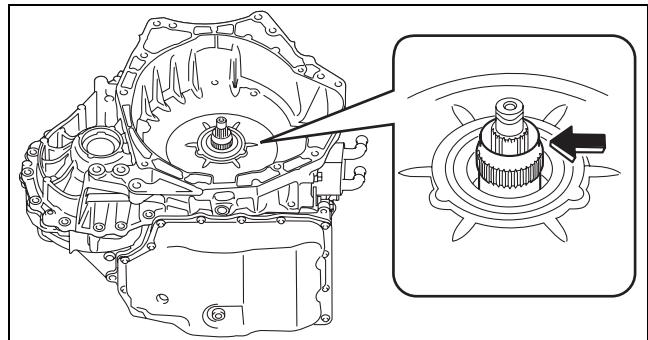
## AUTOMATIC TRANSAXLE

60. Assemble the torque converter using the following procedure:

- (1) Apply ATF (ATF FZ) to the stator shaft end of the oil pump shown in the figure.

### Caution

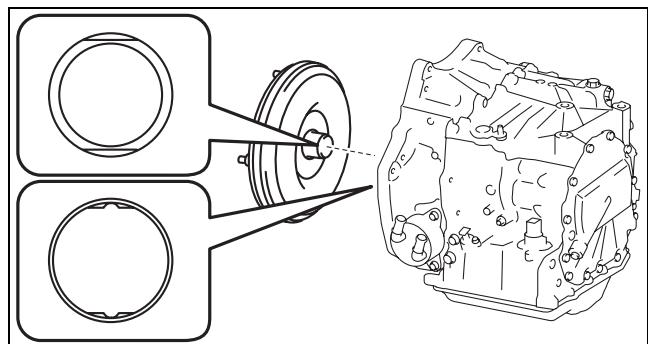
- Accurately perform the procedure to protect the internal parts of the torque converter.



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05-17

- (2) Assemble the torque converter so that the two surfaces of the notch on the end of the torque converter engage the inner rotor of the oil pump.



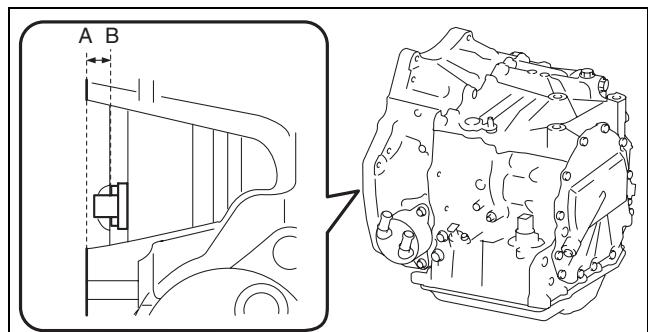
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- (3) To verify that the torque converter is securely assembled, measure the distance shown in the figure.

A : Converter housing end (alignment surface with engine)  
B : Stud bolt seating face of torque converter

### Note

- Recommended measuring instrument:  
Depth gauge, straight edge ruler



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### Specification

14.6 mm {0.575 in} or more

- If not within the specification, remove the torque converter and reassemble.

### Note

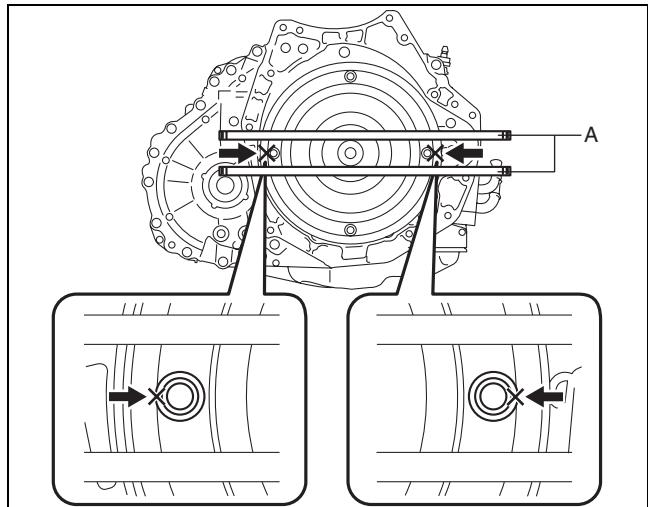
- Measurement method

## AUTOMATIC TRANSAXLE

- 1) Set two straight edge rulers along the alignment surface of the converter housing with the engine as shown in the figure.

A : Straight edge ruler

- 2) Measure the positions (2 locations) shown in the figure using a depth gauge and calculate the average value.
- 3) Subtract the thickness of the straight edge ruler from the average value.

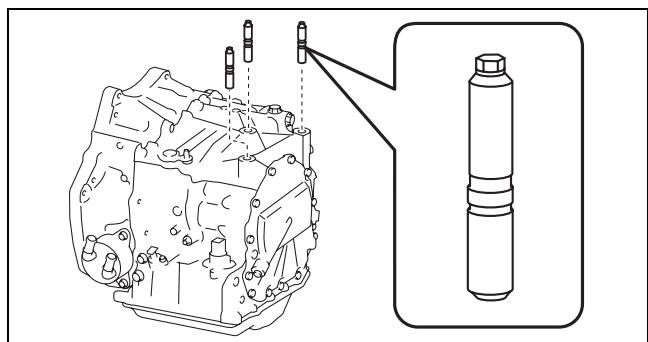


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61. Assemble and tighten the stud bolts.

### Tightening torque

15—25 N·m {1.6—2.5 kgf·m, 12—18 ft·lbf}



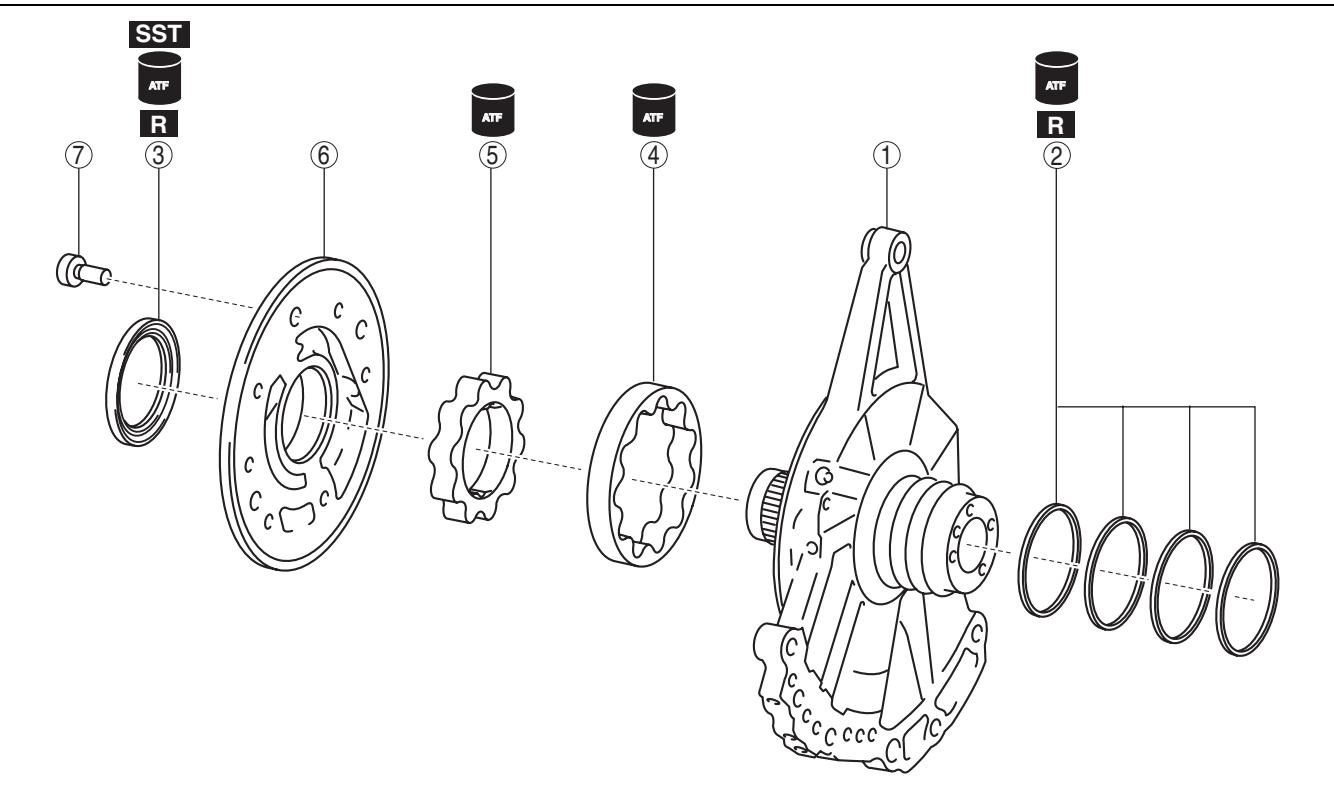
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# AUTOMATIC TRANSAXLE

## OIL PUMP ASSEMBLY

id051700663600

### Structural View



azzjw00001530

1	Oil pump housing
2	Seal ring (outer diameter approx. 52.5 mm {2.07 in}, thickness approx. 1.5 mm {0.059 in})
3	Oil seal
4	Outer rotor

5	Inner rotor
6	Oil pump cover
7	7 bolts (M6×1.0 bolt, length to approx. 13 mm {0.51 in})

### Assembly Procedure

- Assemble new seal rings using the following procedure:

#### Caution

- If a seal ring is reused it could cause ATF leakage, therefore use a new seal ring.

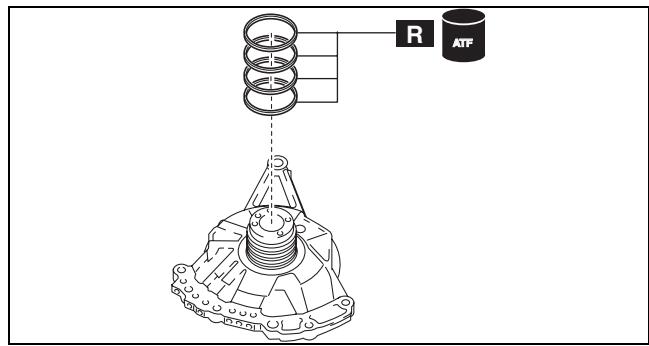
#### Note

- Seal ring size: Outer diameter approx. 52.5 mm {2.07 in}, thickness approx. 1.5 mm {0.059 in}

- Apply ATF (ATF FZ) to the new seal rings.

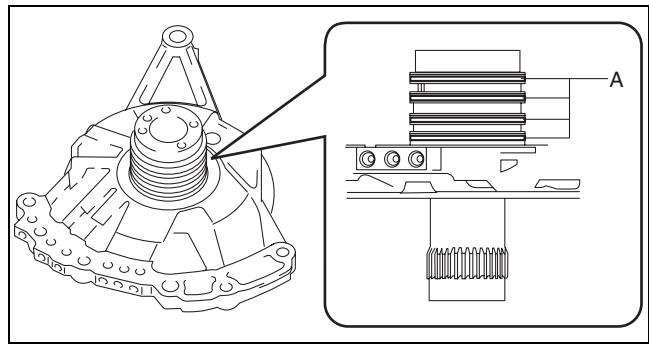
## AUTOMATIC TRANSAXLE

(2) Assemble the new seal rings.



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A : Seal ring



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2. Assemble the outer rotor using the following procedure:

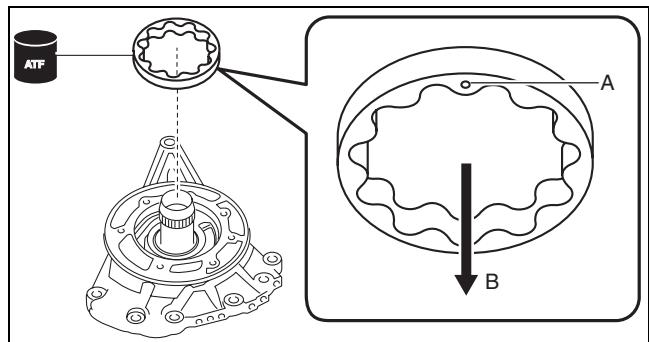
- (1) Apply ATF (ATF FZ) to the outer rotor.
- (2) Assemble the outer rotor.

A : Mark

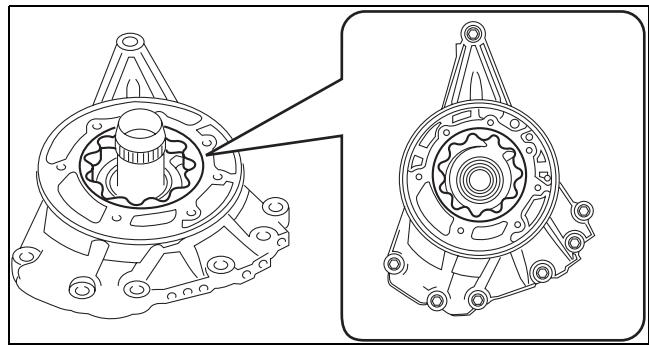
B : Assembly direction (oil pump housing side)

**Note**

- Assemble so that the outer rotor marking is facing the oil pump housing.



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## AUTOMATIC TRANSAXLE

3. Assemble the inner rotor using the following procedure:

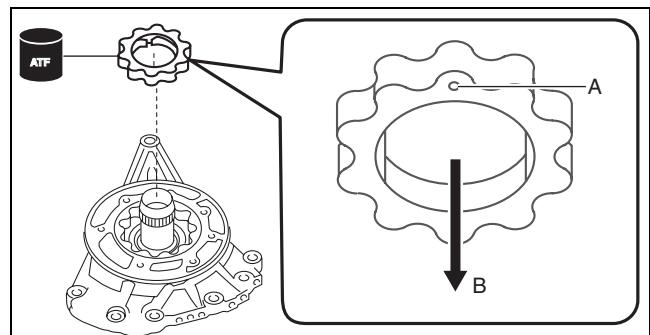
- (1) Apply ATF (ATF FZ) to the inner rotor.
- (2) Assemble the inner rotor.

A : Mark

B : Assembly direction (oil pump housing side)

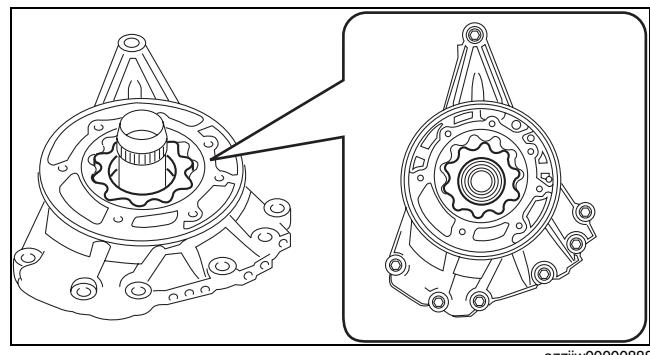
**Note**

- Assemble so that the inner rotor marking is facing the oil pump housing.



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4. Assemble a new oil seal using the following procedure:

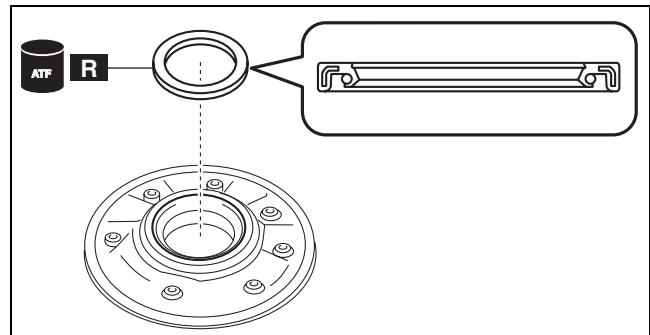
**Caution**

- If an oil seal is reused it could cause ATF leakage, therefore use a new oil seal.

(1) Apply ATF (ATF FZ) to the engagement area of the new oil seal and oil pump cover.

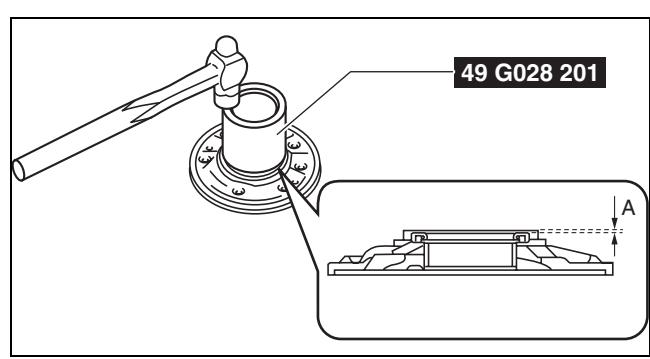
(2) Apply ATF (ATF FZ) to the lip of the new oil seal.

(3) Assemble the new oil seal to the position shown in the figure using the SST.



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A : 0—0.5 mm {0—0.01 in}

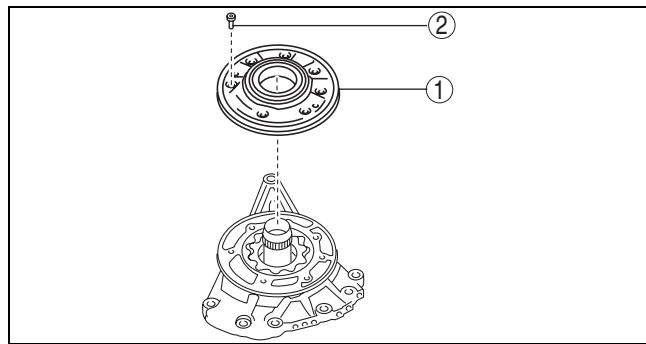


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## AUTOMATIC TRANSAXLE

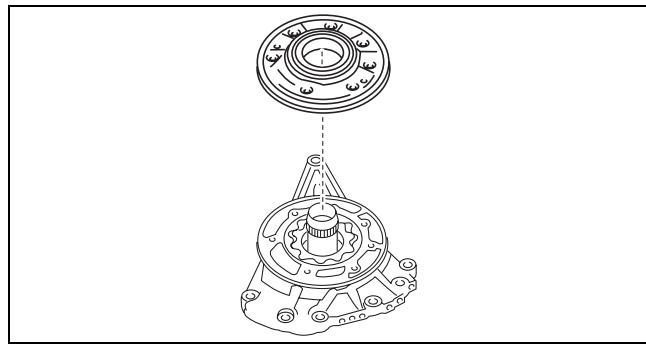
5. Assemble the oil pump cover using the following procedure:

1	Oil pump cover
2	7 bolts (M6×1.0 bolt, length to approx. 13 mm {0.51 in})

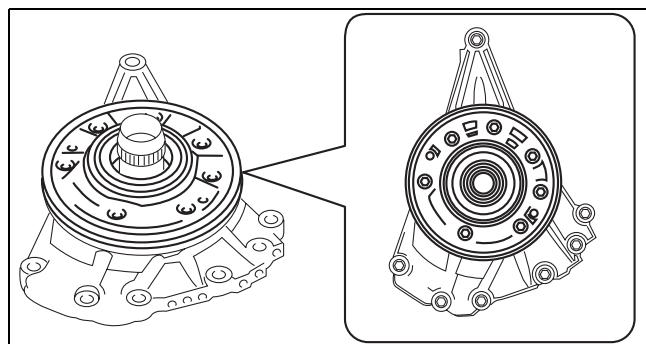


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- (1) Assemble the oil pump cover.



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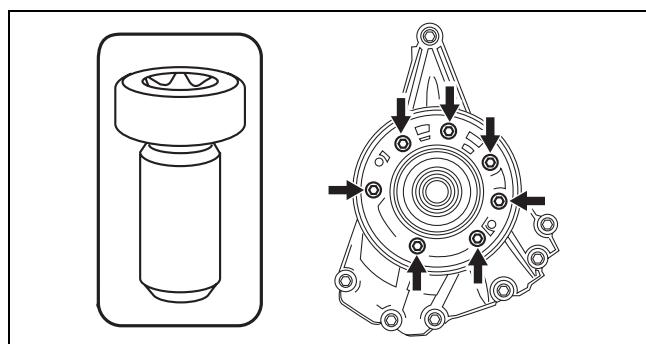
azzjjw00000893

- (2) Assemble and tighten the bolts shown in the figure.

**Note**

- Bolt size: M6×1.0 bolt, length to approx. 13 mm {0.51 in}

**Tightening torque**  
9—10 N·m {92—101 kgf·cm, 80—88 in·lbf}



azzjjw00000894

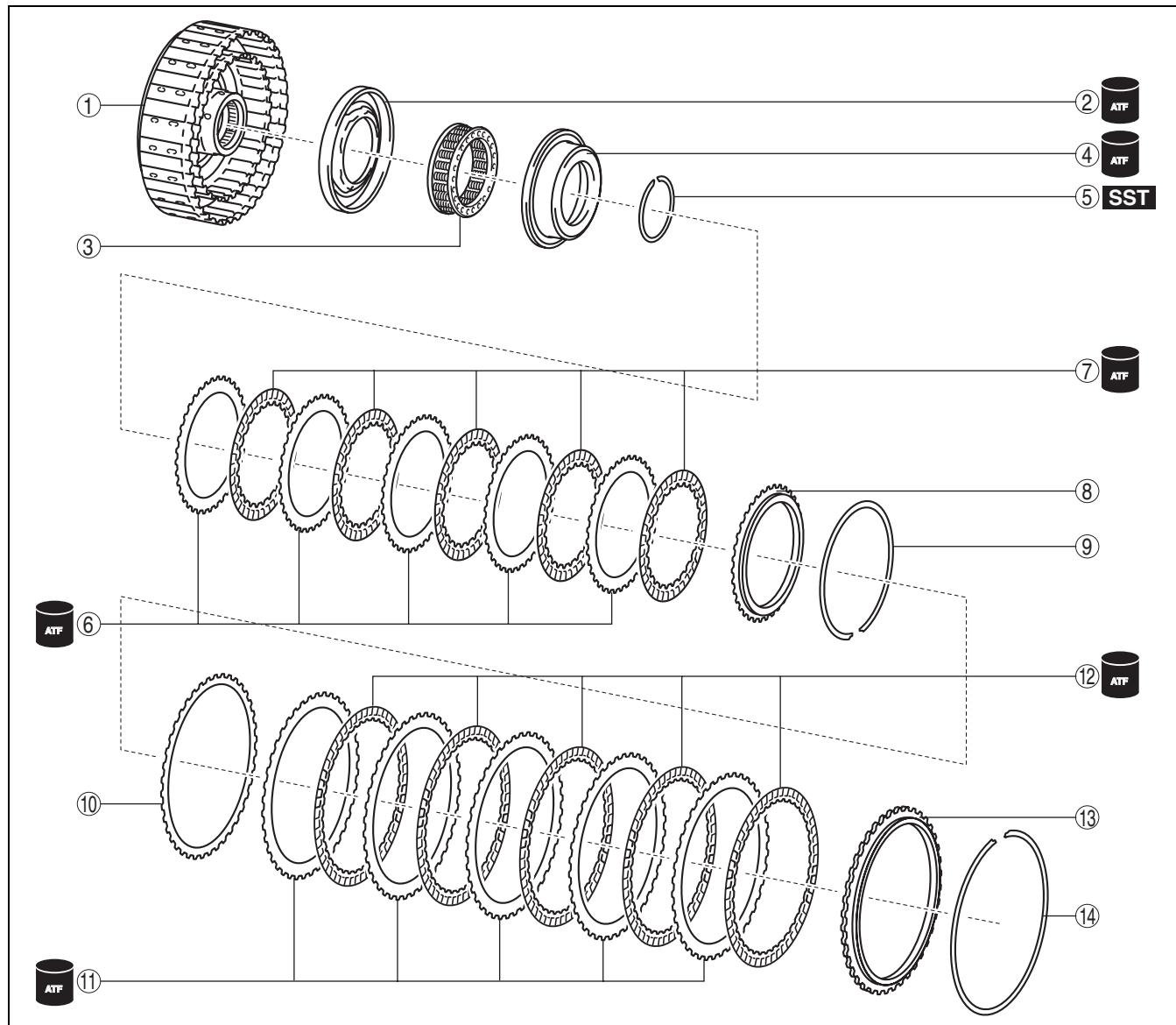
# AUTOMATIC TRANSAXLE

## CLUTCH COMPONENT ASSEMBLY

id051700663700

### Structural View

05-17



azzjw00001532

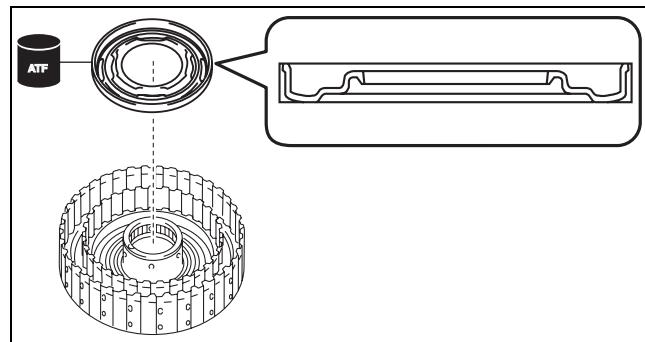
1	High clutch drum component
2	High clutch piston
3	Springs and retainer component (outer diameter approx. 79.5 mm {3.13 in})
4	Seal plate
5	Snap ring (outer diameter approx. 56.5 mm {2.22 in})
6	Driven plate (inner diameter approx. 95.5 mm {3.76 in})
7	Drive plate (outer diameter approx. 116.8 mm {4.598 in})

8	Retaining plate (inner diameter approx. 95.5 mm {3.76 in})
9	Snap ring (outer diameter approx. 127.4 mm {5.016 in}) (selection)
10	Wave spring
11	Driven plate (inner diameter approx. 139.9 mm {5.508 in})
12	Drive plate (outer diameter approx. 159.1 mm {6.264 in})
13	Retaining plate (inner diameter approx. 139.9 mm {5.508 in})
14	Snap ring (outer diameter approx. 169.3 mm {6.665 in}) (selection)

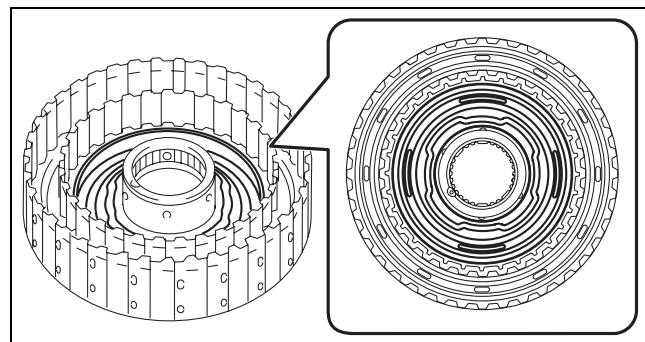
# AUTOMATIC TRANSAXLE

## Assembly Procedure

1. Assemble the high clutch piston using the following procedure:
  - (1) Apply ATF (ATF FZ) to the high clutch piston lip.
  - (2) Assemble the high clutch piston.



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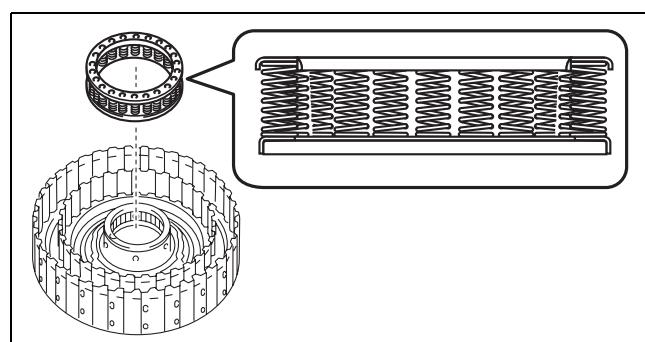


azzjw00000844

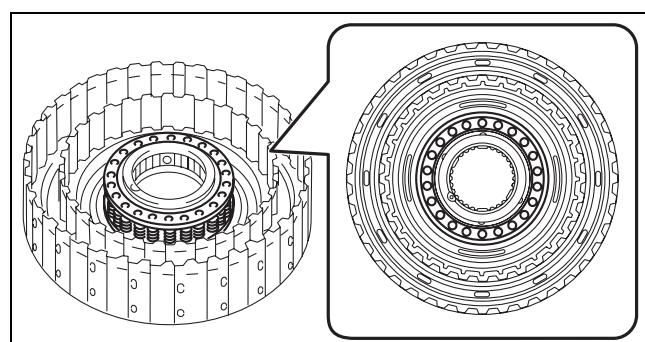
2. Assemble the springs and retainer component.

### Note

- Springs and retainer component size: Outer diameter approx. 79.5 mm {3.13 in}



azzjw00001257

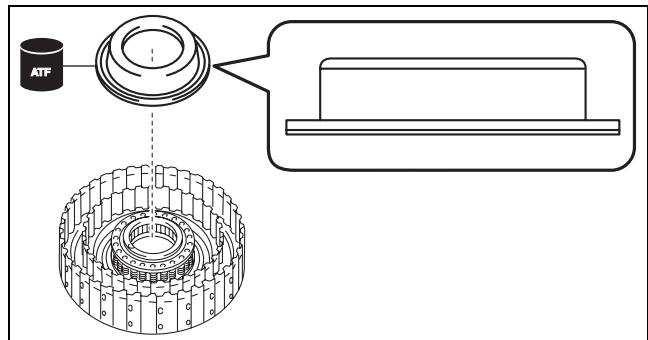


azzjw00000846

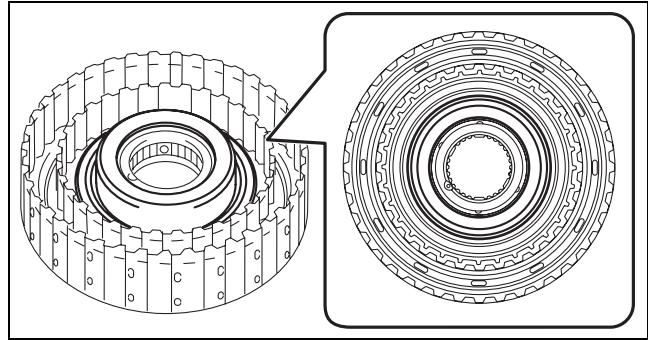
## AUTOMATIC TRANSAXLE

3. Assemble the seal plate using the following procedure:

- (1) Apply ATF (ATF FZ) to the seal plate lip.
- (2) Assemble the seal plate.



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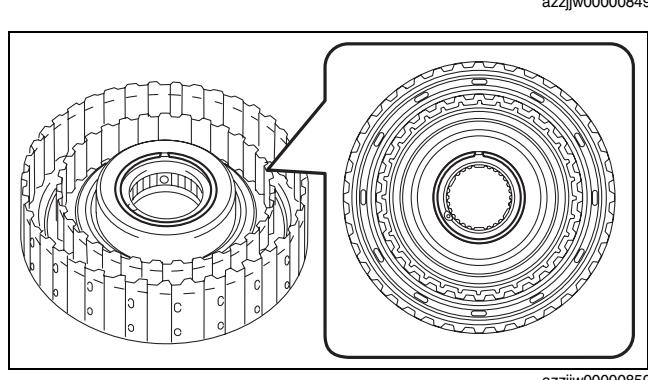
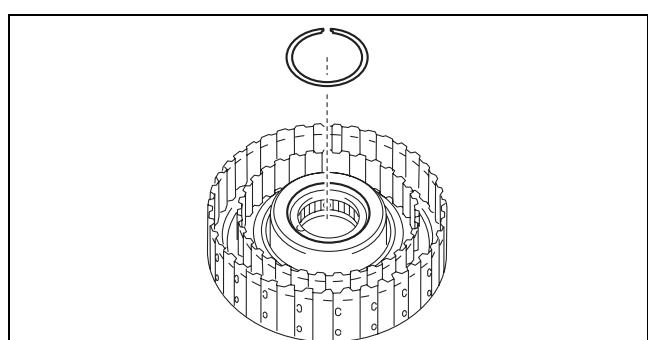


4. Assemble the snap ring using the following procedure:

**Note**

- Snap ring size: Outer diameter approx. 56.5 mm {2.22 in}

- (1) Set the snap ring to the top of the seal plate.



## AUTOMATIC TRANSAXLE

(2) Install the SSTs.

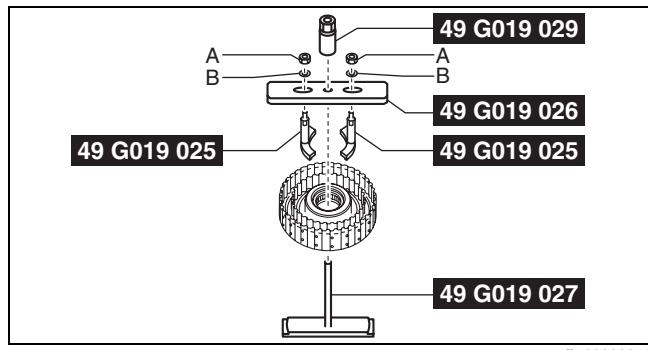
A : Nut included with SST (49 G019 025), or

M8×1.25 nut

B : Washer

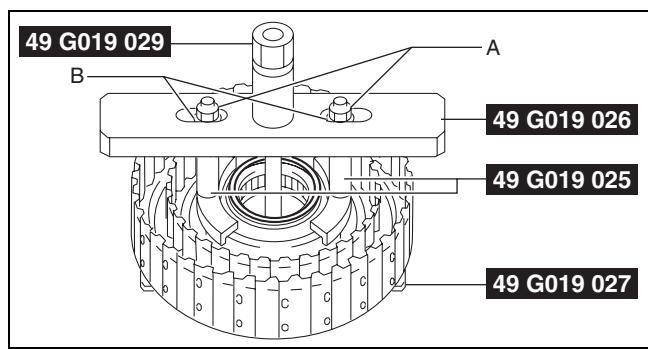
### Note

- When installing the SST (49 G019 025) to the SST (49 G019 026), use the nuts included with the SST (49 G019 025), or M8×1.25 nuts.



A : Nut included with SST (49 G019 025), or  
M8×1.25 nut

B : Washer

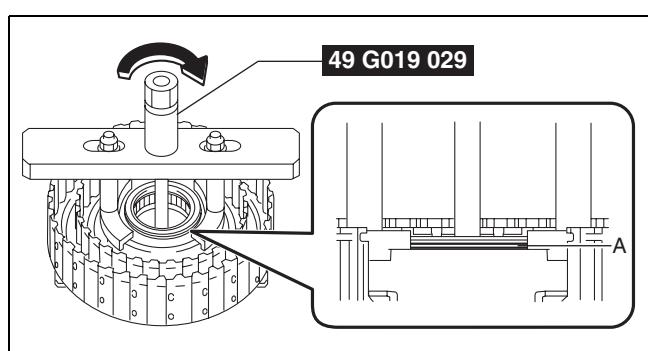


(3) Tighten the SST (49 G019 029) until the snap ring groove of the high clutch drum component comes out.

A : Snap ring groove

### Caution

- If the SST (49 G019 029) is tightened with excessive force, surrounding parts could be damaged. Stop tightening the SST when the snap ring groove of the high clutch drum component comes out.

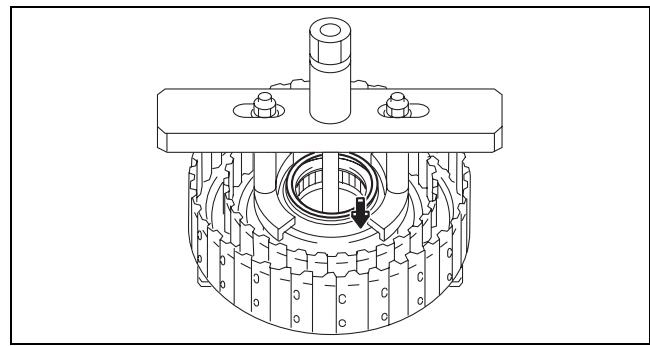


## AUTOMATIC TRANSAXLE

(4) Assemble the snap ring.

### Caution

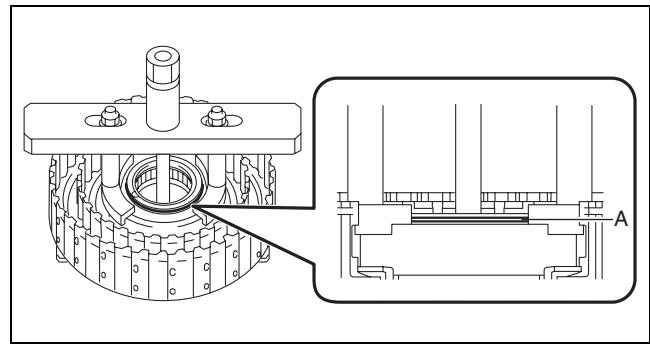
- After assembling the snap ring, verify that the snap ring is securely inserted into the bottom of the snap ring groove.



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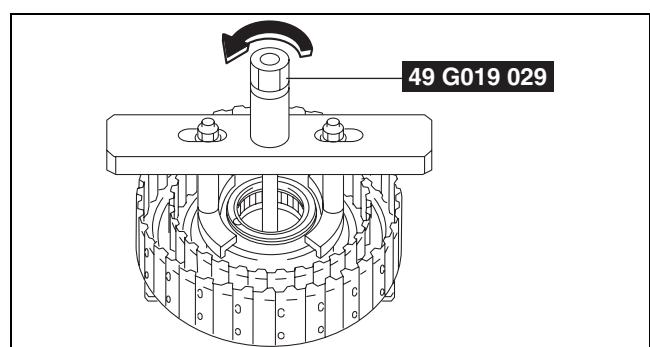
05-17

A : Snap ring



azzjw00000855

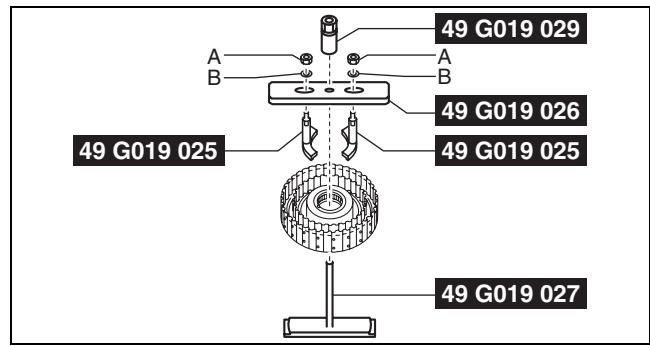
(5) Loosen the SST (49 G019 029) and remove the SSTs.



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A : Nut included with SST (49 G019 025), or  
M8×1.25 nut

B : Washer



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05-17-251

# AUTOMATIC TRANSAXLE

5. Assemble the drive plates and driven plates using the following procedure:

## Note

- Drive plate size: Outer diameter approx. 116.8 mm {4.598 in}
- Driven plate size: Inner diameter approx. 95.5 mm {3.76 in}

(1) Apply ATF (ATF FZ) to the drive plates and driven plates.

## Caution

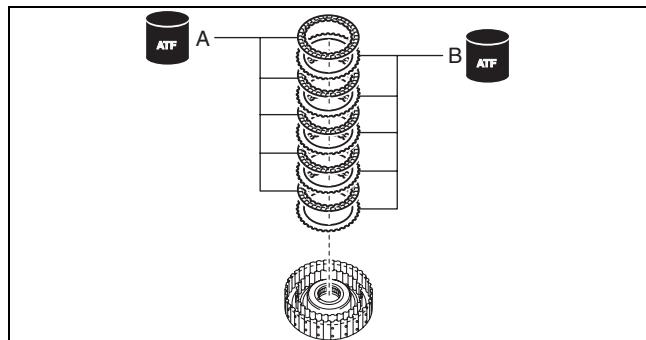
- If the drive plate is replaced with a new one, immerse it in ATF (ATF FZ) for 2 hours or more to permeate the facing with ATF.

(2) Assemble the drive plates and driven plates.

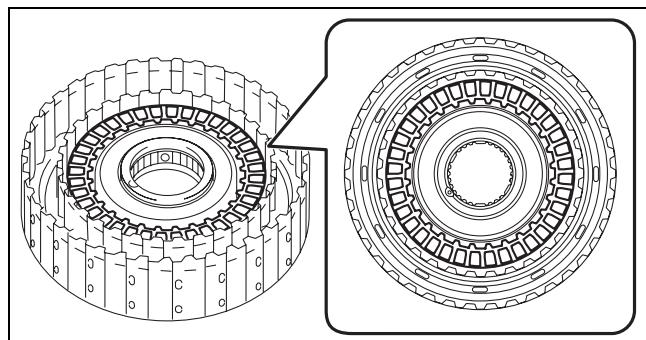
A : Drive plate  
B : Driven plate

## Assembly order

Driven plate—drive plate—driven plate—drive plate—driven plate—drive plate—driven plate—drive plate—driven plate—drive plate



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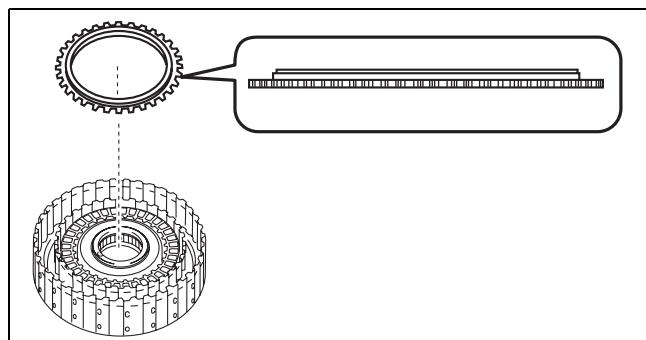


azzjw00000859

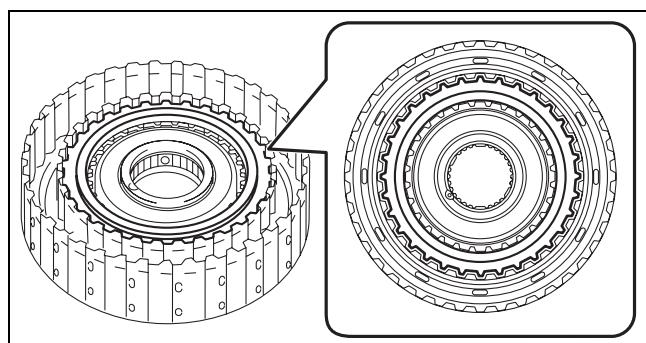
6. Assemble the retaining plate.

## Note

- Retaining plate size: Inner diameter approx. 95.5 mm {3.76 in}



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azzjw00000861

# AUTOMATIC TRANSAXLE

7. Assemble the snap ring using the following procedure:

## Note

- Snap ring size: Outer diameter approx. 127.4 mm {5.016 in}

(1) Measure the high clutch clearance and select the appropriate snap ring. (See 05-17-317 HIGH CLUTCH CLEARANCE MEASUREMENT/ADJUSTMENT.)

05-17

## Note

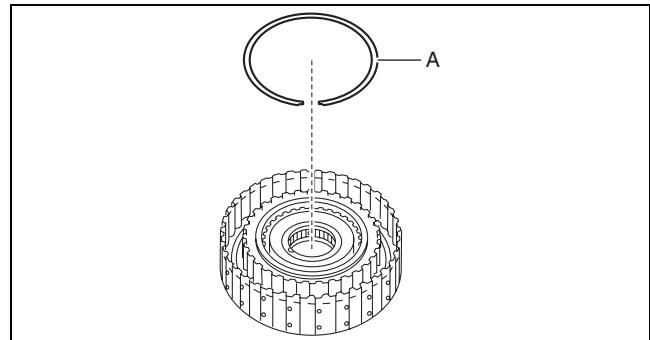
- If the snap ring is assembled for the high clutch clearance measurement/adjustment, the following snap ring assembly procedure is not necessary.

(2) Assemble the selected snap ring in Step (1).

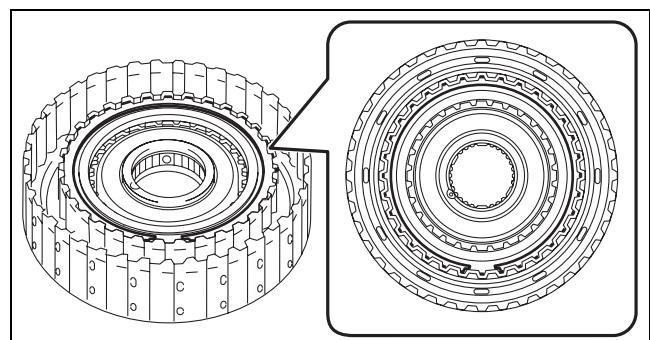
A : Selection

## Caution

- After assembling the snap ring, verify that the snap ring is securely inserted into the bottom of the snap ring groove.

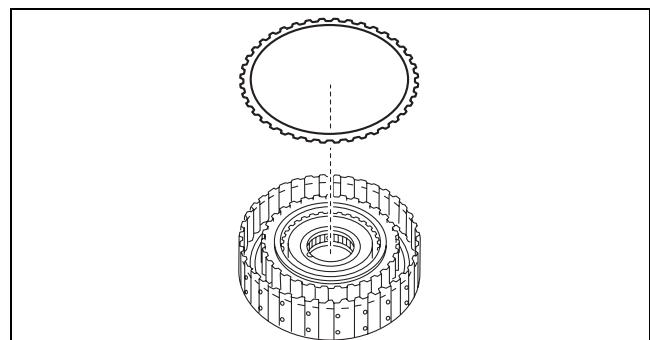


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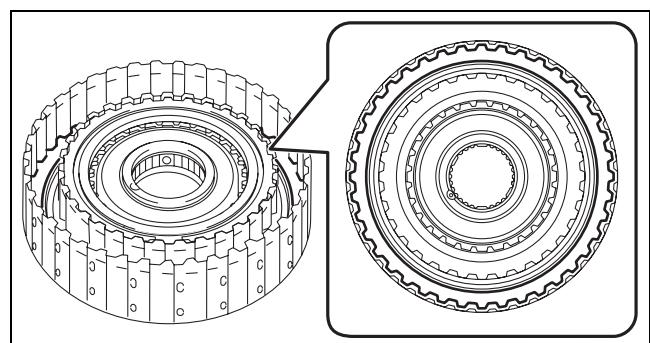


azzjw00000863

8. Assemble the wave spring.



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azzjw00000865

# AUTOMATIC TRANSAXLE

9. Assemble the drive plates and driven plates using the following procedure:

## Note

- Drive plate size: Outer diameter approx. 159.1 mm {6.264 in}
- Driven plate size: Inner diameter approx. 139.9 mm {5.508 in}

(1) Apply ATF (ATF FZ) to the drive plates and driven plates.

## Caution

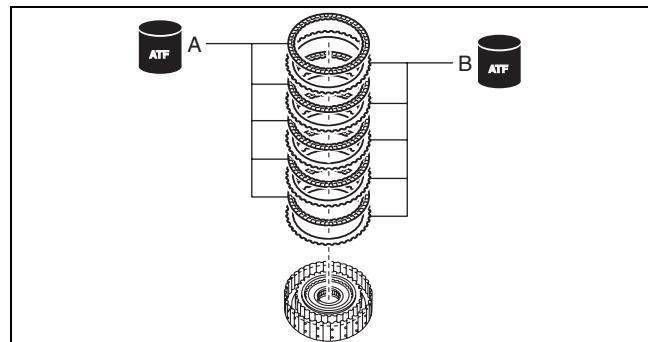
- If the drive plate is replaced with a new one, immerse it in ATF (ATF FZ) for 2 hours or more to permeate the facing with ATF.

(2) Assemble the drive plates and driven plates.

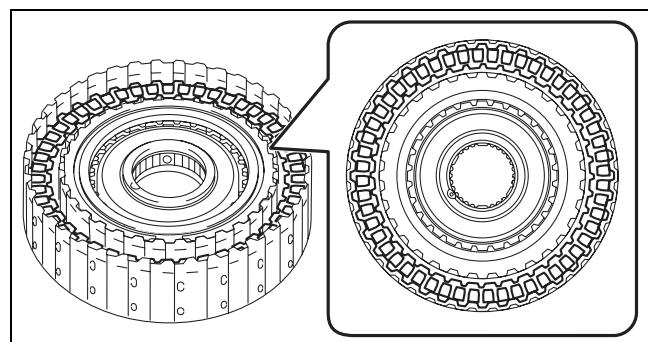
A : Drive plate  
B : Driven plate

## Assembly order

Driven plate—drive plate—driven plate—drive plate—driven plate—drive plate—driven plate—drive plate—driven plate—drive plate



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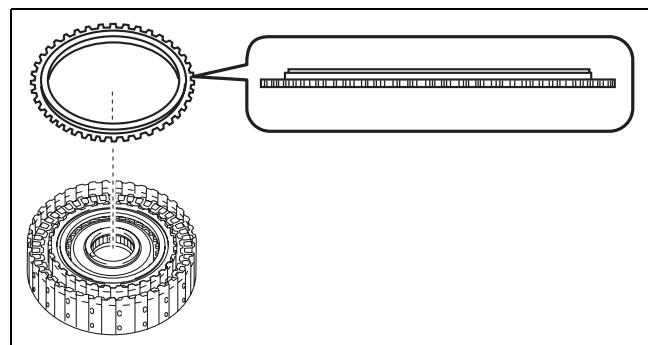


azzjjw00000867

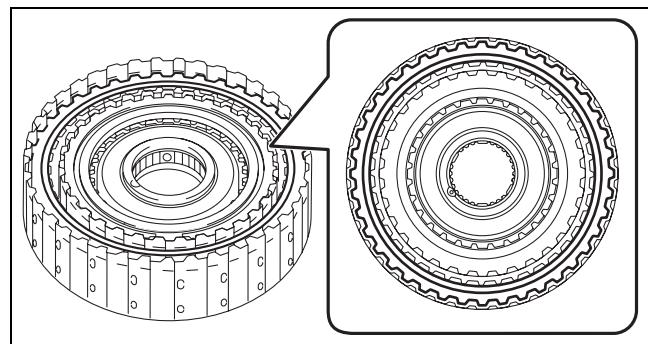
10. Assemble the retaining plate.

## Note

- Retaining plate size: Inner diameter approx. 139.9 mm {5.508 in}



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azzjjw00000869

## AUTOMATIC TRANSAXLE

11. Assemble the snap ring using the following procedure:

**Note**

- Snap ring size: Outer diameter approx. 169.3 mm {6.665 in}

(1) Measure the low clutch clearance and select the appropriate snap ring. (See 05-17-327 LOW CLUTCH CLEARANCE MEASUREMENT/ADJUSTMENT.)

05-17

**Note**

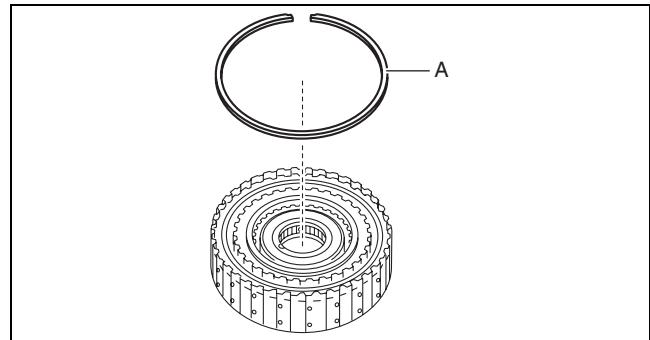
- If the snap ring is assembled for the low clutch clearance measurement/adjustment, the following snap ring assembly procedure is not necessary.

(2) Assemble the selected snap ring in Step (1) to the position shown in the figure.

A : Selection

**Caution**

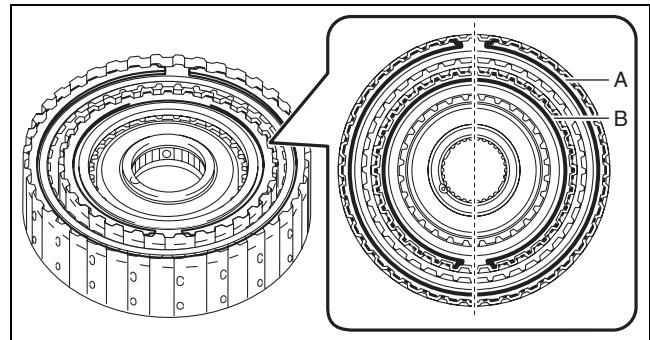
- Assemble so that the end gap of the snap ring is positioned diagonally opposed to the end gap of the snap ring for the high clutch.
- After assembling the snap ring, verify that the snap ring is securely inserted into the bottom of the snap ring groove.



azzjw00000870

A : Snap ring (low clutch)

B : Snap ring (high clutch)



azzjw00000871

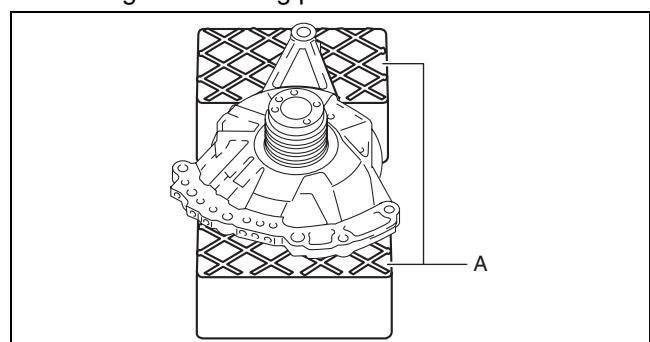
12. Perform a simple inspection of the low clutch and high clutch using the following procedure:

(1) Set the oil pump on the workbench as shown in the figure.

A : Rubber plate

**Note**

- Using the rubber plates, adjust the alignment surface of the oil pump with the transaxle case so that it is level.



azzjw00000802

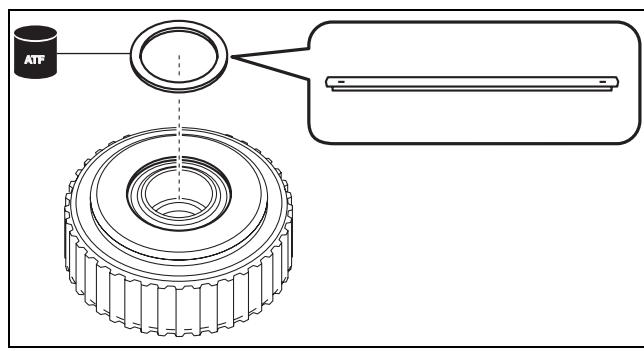
## AUTOMATIC TRANSAXLE

(2) Assemble the thrust needle bearing to the clutch component using the following procedure:

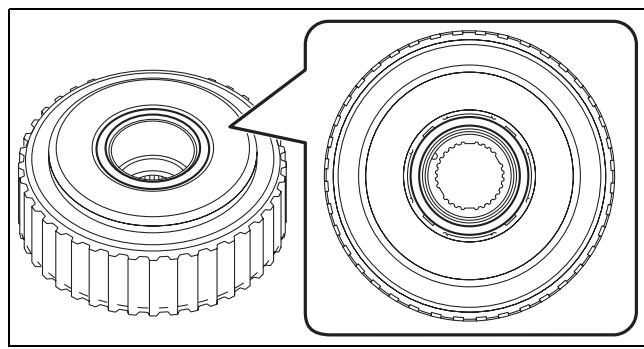
### Note

- Thrust needle bearing size: Outer diameter approx. 72.7 mm {2.86 in}

- 1) To prevent the thrust needle bearing from dropping out, apply ATF (ATF FZ) to the thrust needle bearing.
- 2) Assemble the thrust needle bearing.

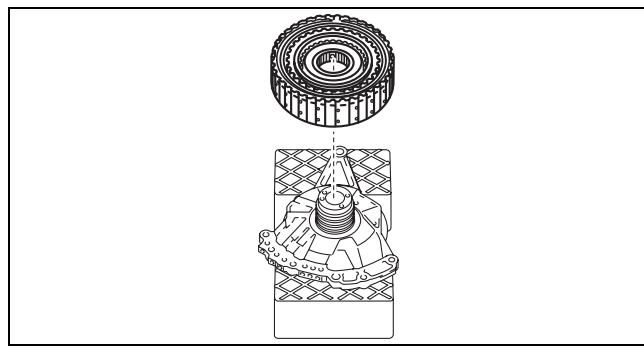


azzjw00000803

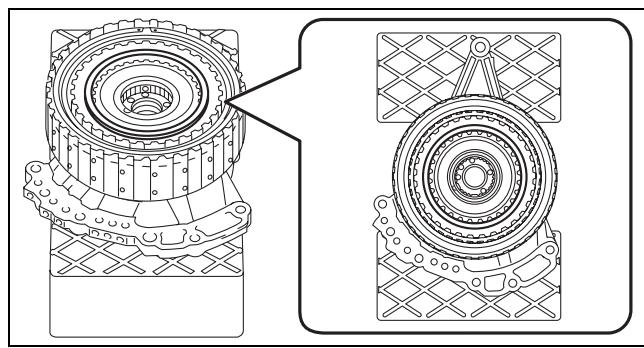


azzjw00000804

(3) Assemble the parts assembled together in Step (2) to the oil pump.



azzjw00000805



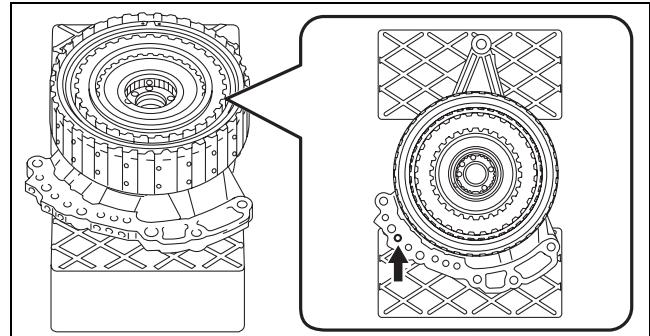
azzjw00000806

## AUTOMATIC TRANSAXLE

- (4) Blow compressed air into the oil passage shown in the figure and verify the operation condition of the low clutch.

**Warning**

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.



azzjw00000807

05-17

**Caution**

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

### Compressed air pressure

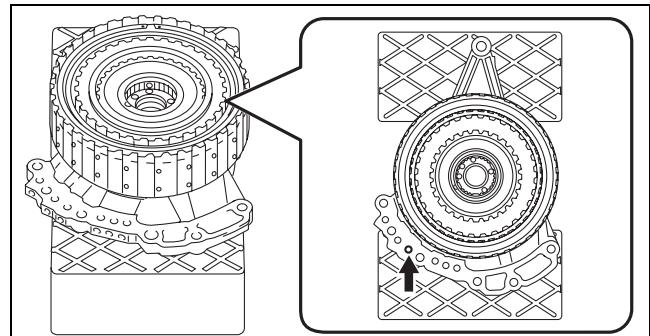
0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

- If there is a malfunction, perform disassembly again, verify the cause and repair the applicable part.  
(See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.)

- (5) Blow compressed air into the oil passage shown in the figure and verify the operation condition of the high clutch.

**Warning**

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.



azzjw00000808

**Caution**

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

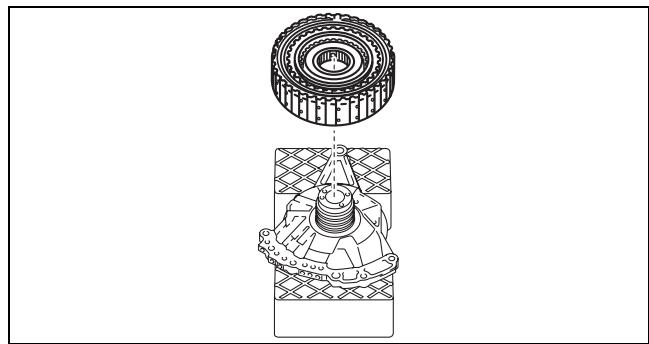
### Compressed air pressure

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

- If there is a malfunction, perform disassembly again, verify the cause and repair the applicable part.  
(See 05-17-104 CLUTCH COMPONENT DISASSEMBLY.)

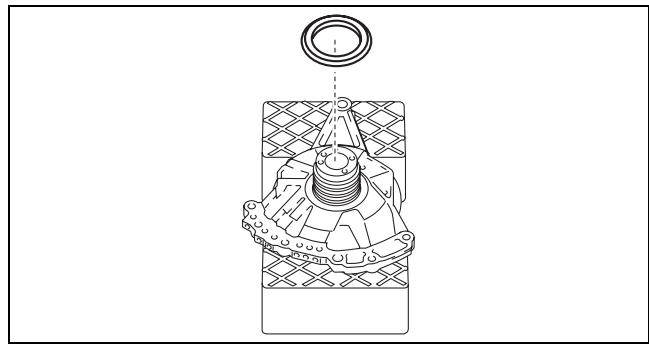
## AUTOMATIC TRANSAXLE

(6) Remove the clutch component.



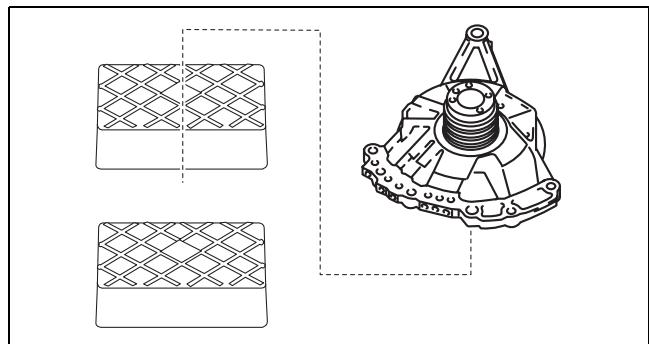
azzjw00000809

(7) Remove the thrust needle bearing.



azzjw00000810

(8) Take the oil pump off the rubber plates.



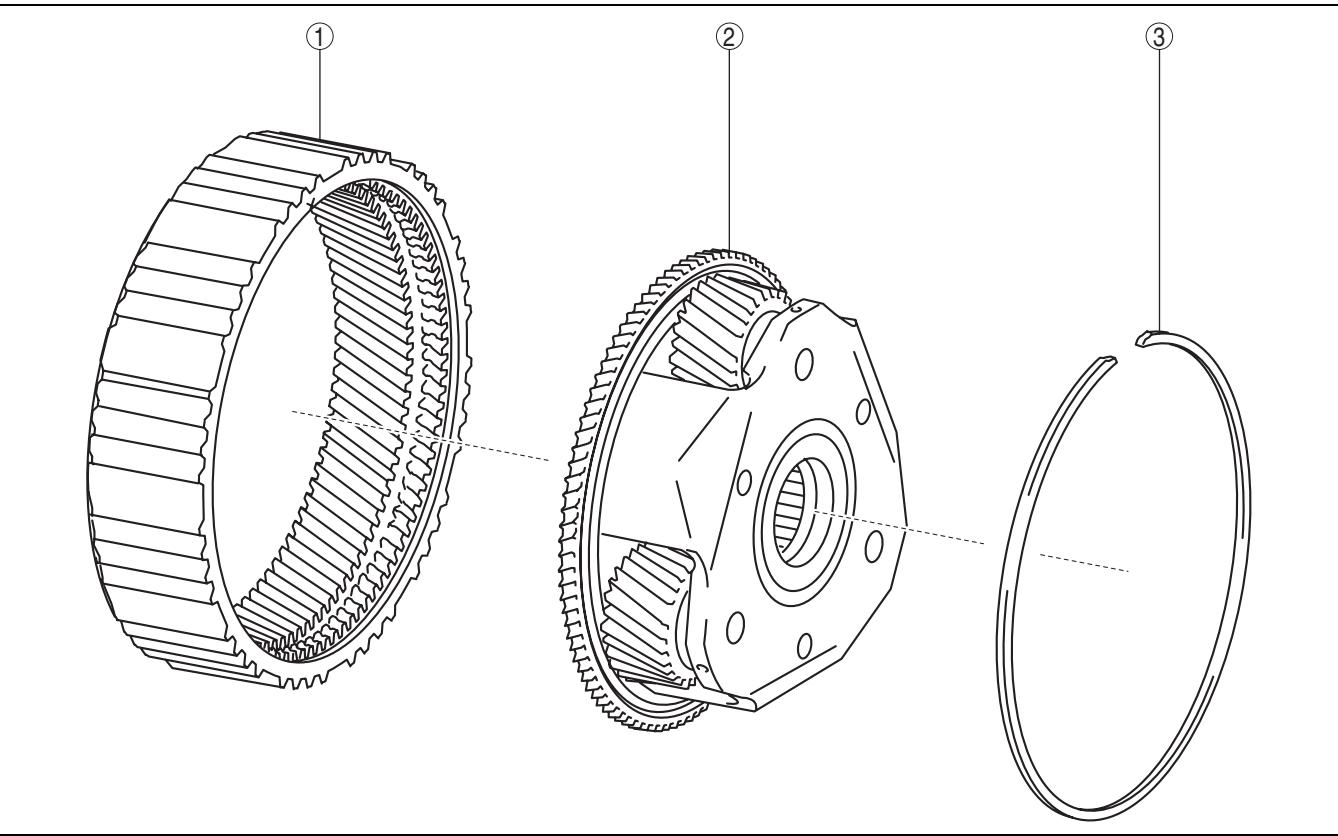
azzjw00001258

# AUTOMATIC TRANSAXLE

## REAR PLANETARY GEAR ASSEMBLY

id051700663800

### Structural View



05-17

azzjw00000293

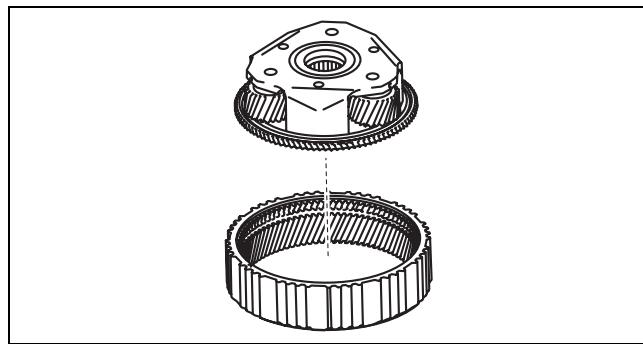
1	Front internal gear
2	Rear planetary carrier

3	Snap ring (outer diameter approx. 135.6 mm {5.339 in})
---	---

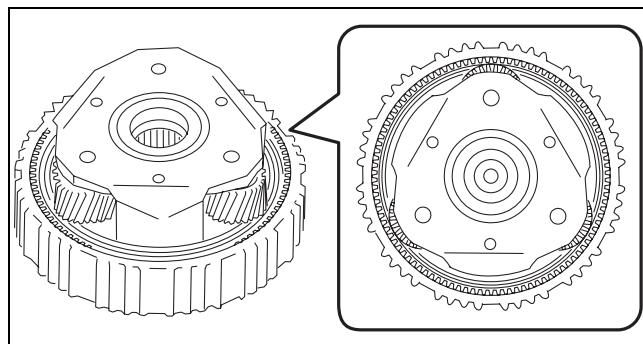
# AUTOMATIC TRANSAXLE

## Assembly Procedure

1. Assemble the rear planetary carrier.



azzjw00000874



azzjw00000875

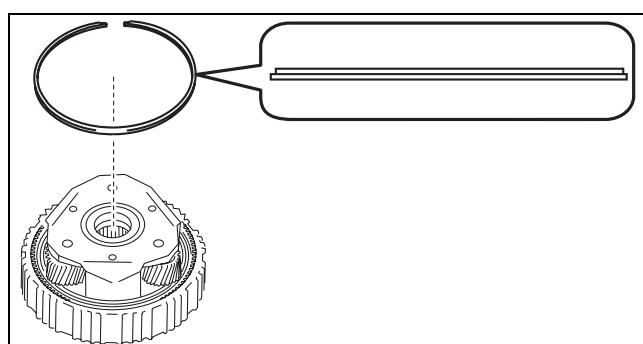
2. Assemble the snap ring.

### Caution

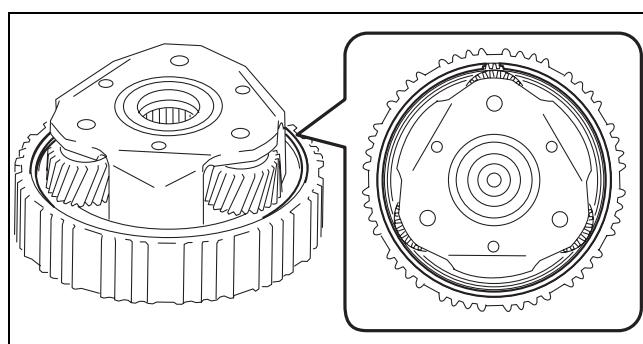
- After assembling the snap ring, verify that the snap ring is securely inserted into the bottom of the snap ring groove.

### Note

- Snap ring size: Outer diameter approx. 135.6 mm {5.339 in}



azzjw00000876



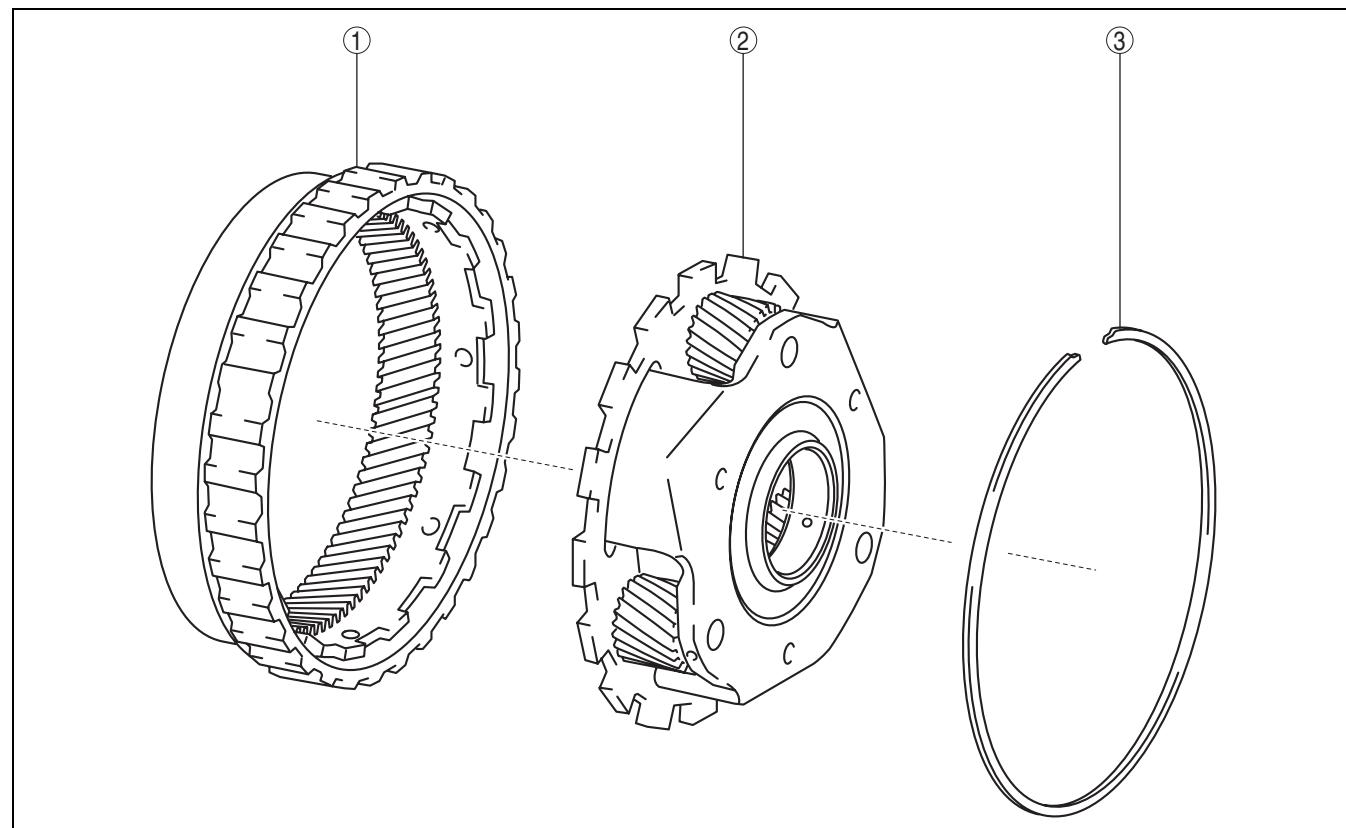
azzjw00000877

# AUTOMATIC TRANSAXLE

## REDUCTION PLANETARY GEAR ASSEMBLY

id051700663900

### Structural View



05-17

azzjw00000297

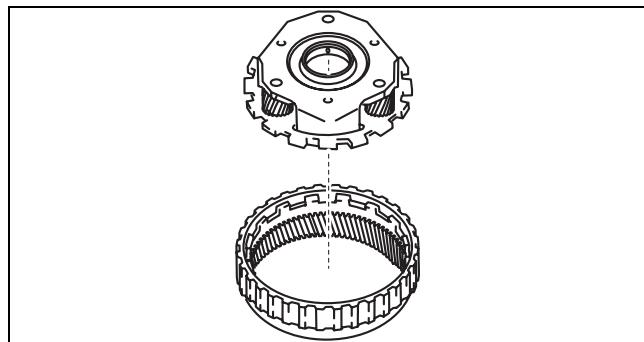
1	Rear internal gear
2	Reduction planetary carrier

3	Snap ring (outer diameter approx. 142.5 mm {5.610 in})
---	---

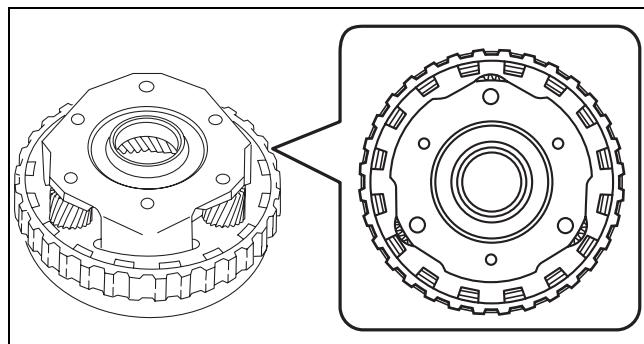
# AUTOMATIC TRANSAXLE

## Assembly Procedure

1. Assemble the reduction planetary carrier.



azzjw00000878



azzjw00000879

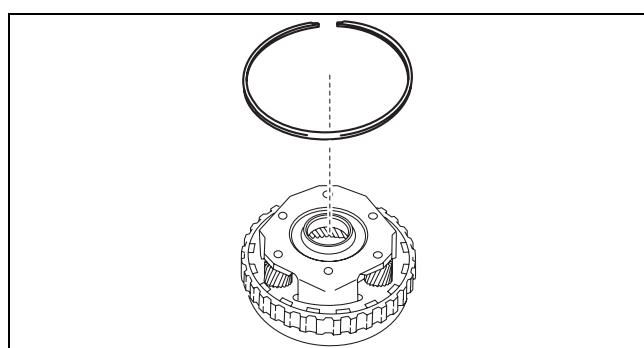
2. Assemble the snap ring.

### Caution

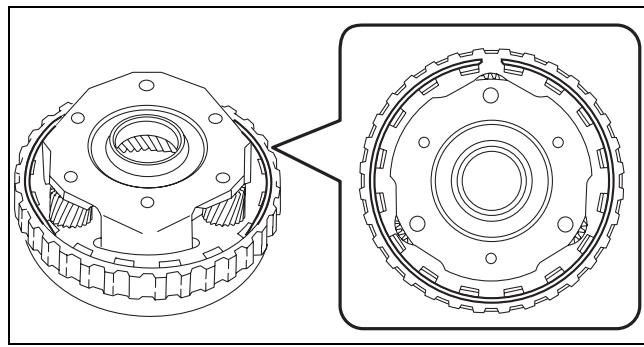
- After assembling the snap ring, verify that the snap ring is securely inserted into the bottom of the snap ring groove.

### Note

- Snap ring size: Outer diameter approx. 142.5 mm {5.610 in}



azzjw00000880



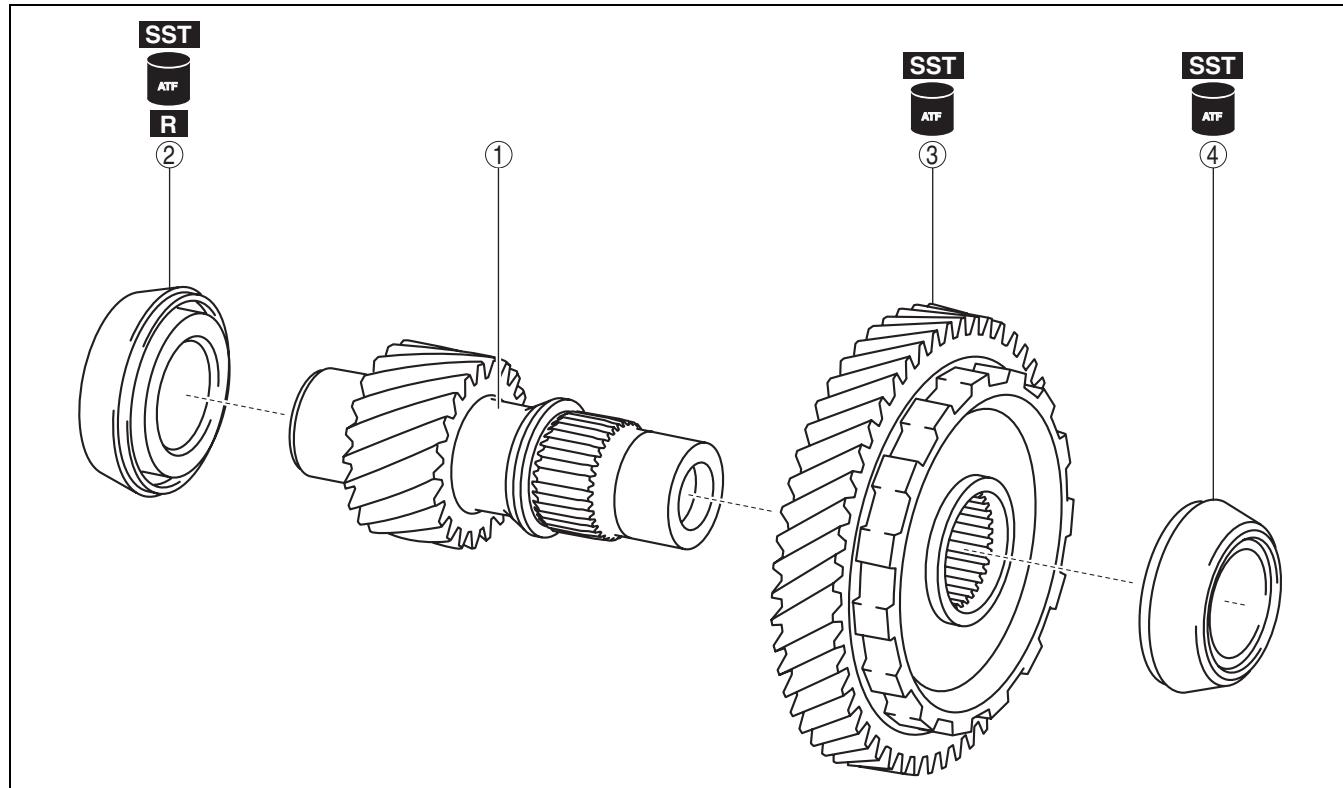
azzjw00000881

# AUTOMATIC TRANSAXLE

## SECONDARY GEAR AND OUTPUT GEAR ASSEMBLY

id051700664000

### Structural View



05-17

azzjw00001533

1	Output gear
2	Taper roller bearing (converter housing side) (inner diameter 35.5 mm {1.398 in})

3	Secondary gear
4	Taper roller bearing (transaxle case side) (inner diameter 35 mm {1.378 in})

# AUTOMATIC TRANSAXLE

## Assembly Procedure

- Assemble a new taper roller bearing (converter housing side) using the following procedure:

### Caution

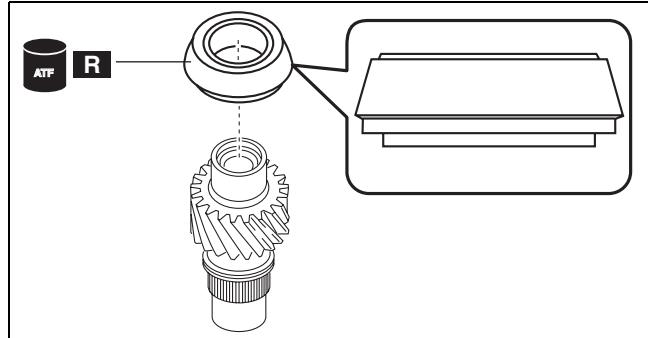
- Use a new taper roller bearing. If taper roller bearing with a deformed cage are reused, it may cause a transaxle malfunction.

### Note

- Taper roller bearing size: Inner diameter approx. 35.5 mm {1.398 in}

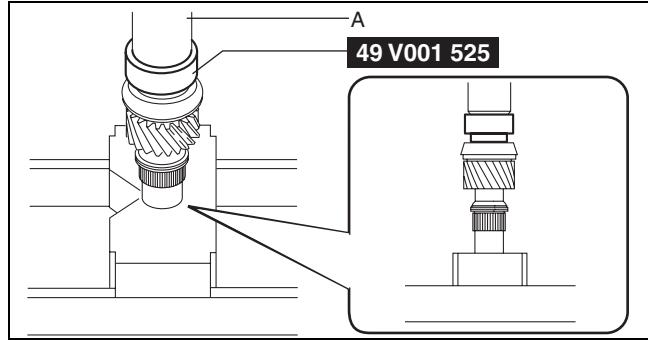
(1) Apply ATF (ATF FZ) to the engagement area of the new taper roller bearing and output gear.

(2) Using the SST and press, assemble the new taper roller bearing.



azzjjw00000993

A : Press

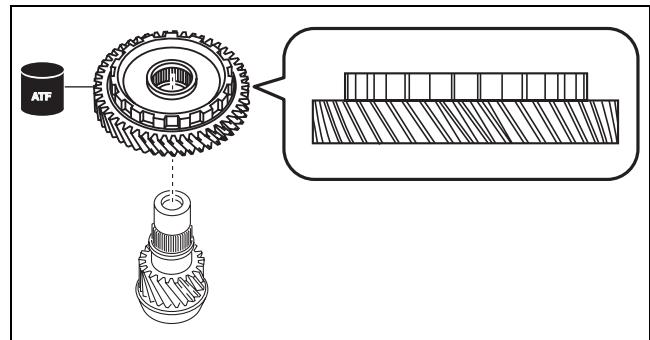


azzjjw00000994

## AUTOMATIC TRANSAXLE

2. Assemble the secondary gear using the following procedure:

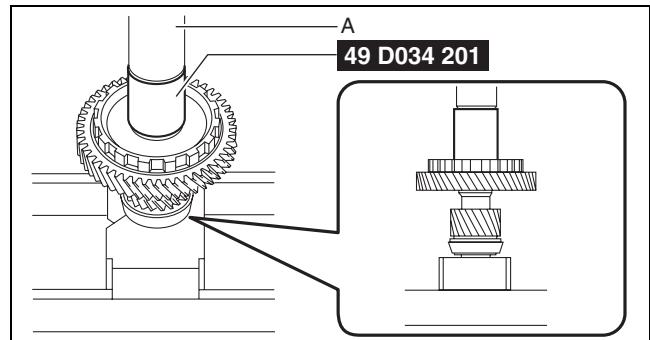
- (1) Apply ATF (ATF FZ) to the engagement area (spline area) of the secondary gear and output gear.
- (2) Using the SST and press, assemble the secondary gear.



05-17

azzjw00000995

A : Press



azzjw00000996

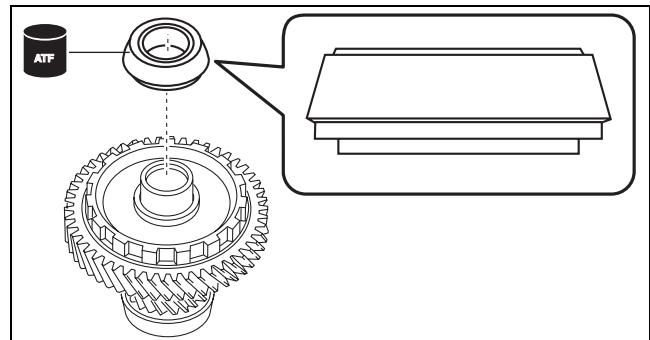
3. Assemble the taper roller bearing (transaxle case side) using the following procedure:

**Note**

- Taper roller bearing size: Inner diameter approx. 35 mm {1.378 in}

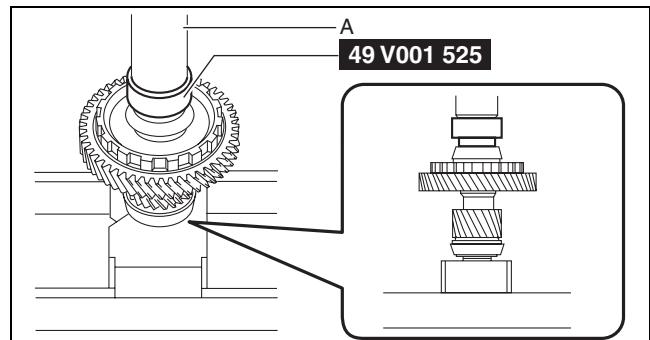
(1) Apply ATF (ATF FZ) to the engagement area of the taper roller bearing and output gear.

- (2) Using the SST and press, assemble the taper roller bearing.



azzjw00000997

A : Press



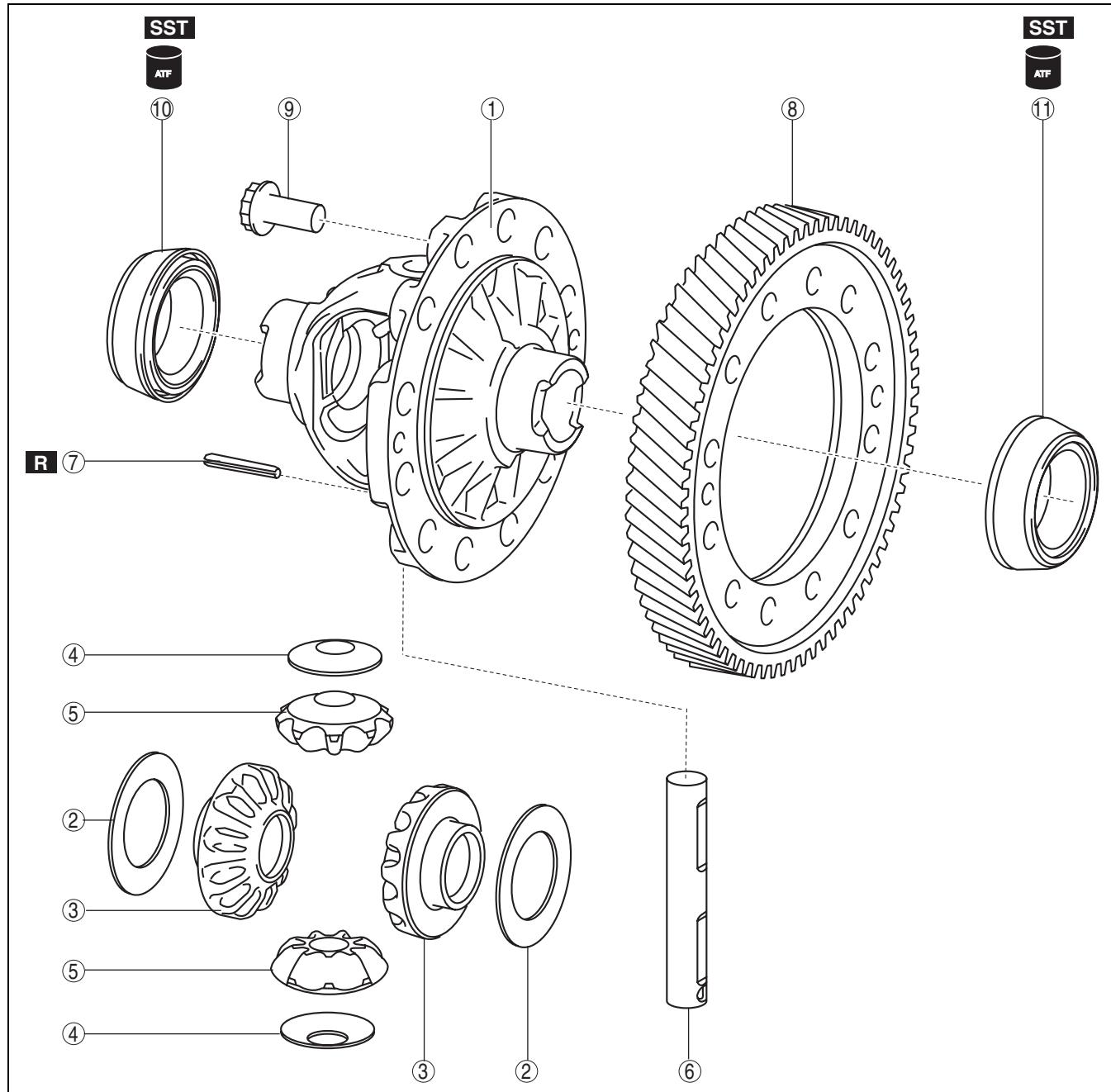
azzjw00000998

# AUTOMATIC TRANSAXLE

## RING GEAR AND DIFFERENTIAL ASSEMBLY

id051700664100

### Structural View



azzjjw00001534

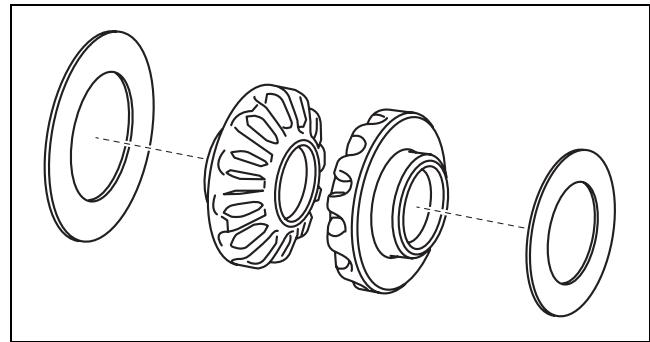
1	Differential gear case
2	Thrust washer (selection)
3	Side gear
4	Thrust washer
5	Pinion gear
6	Pinion shaft
7	Roll pin

8	Ring gear
9	12 bolts (M13×1.0 bolt, length to approx. 26.2 mm {1.03 in})
10	Taper roller bearing (converter housing side) (inner diameter approx. 45 mm {1.8 in})
11	Taper roller bearing (transaxle case side) (inner diameter approx. 45 mm {1.8 in})

# AUTOMATIC TRANSAXLE

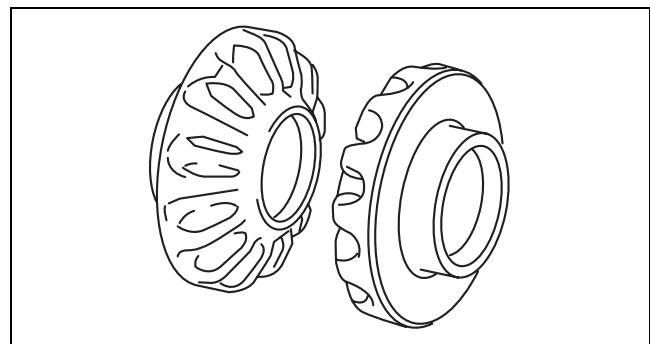
## Assembly Procedure

1. Assemble the thrust washers to the side gears.



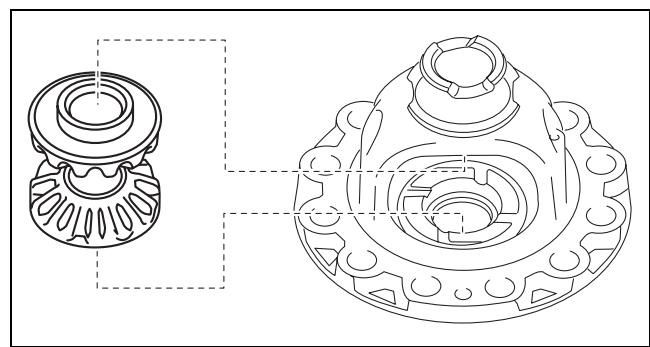
05-17

azzjw00001535

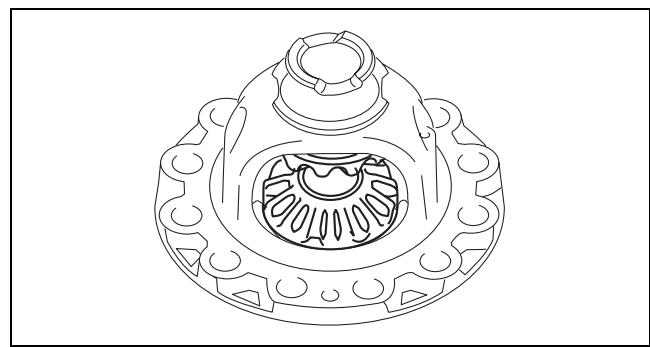


azzjw00001536

2. Assemble the side gears which have the thrust washers assembled to them.



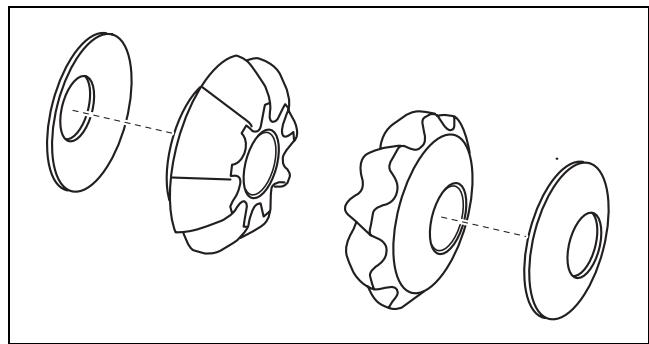
azzjw00001537



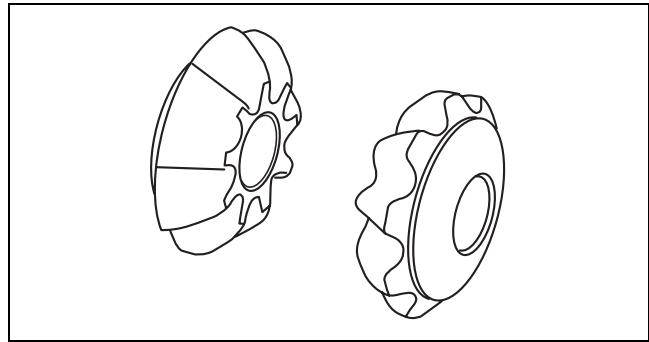
azzjw00001538

## AUTOMATIC TRANSAXLE

3. Assemble the thrust washers to the pinion gears.



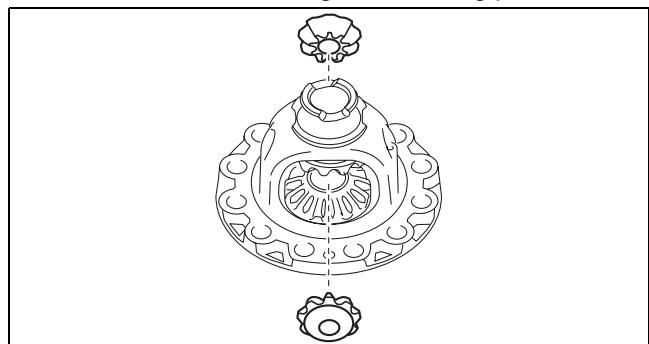
azzjjw00001539



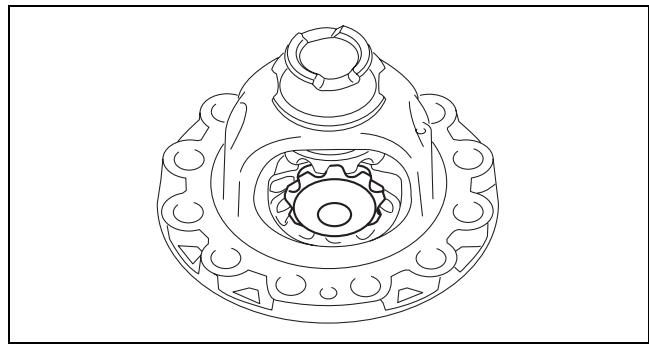
azzjjw00001540

4. Assemble the pinion gears which have the thrust washers assembled to them using the following procedure:

- (1) Assemble the pinion gears which have the thrust washers assembled to them.



azzjjw00001541

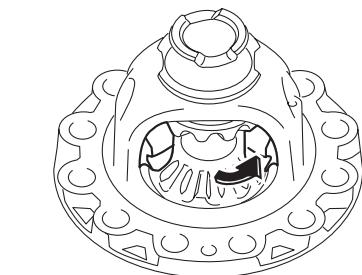


azzjjw00001542

- (2) Rotate the pinion gears so that the pinion shaft holes of the differential gear case and the pinion gears are aligned as shown in the figure.

**Note**

- If the pinion shaft holes of the differential gear case and the pinion gears are not aligned, remove the pinion gears, change the side gears combination, and reassemble.



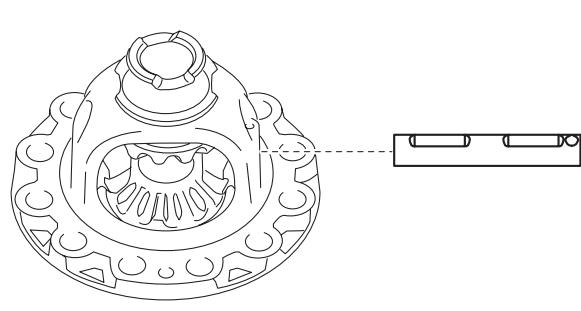
azzjw00001543

05-17

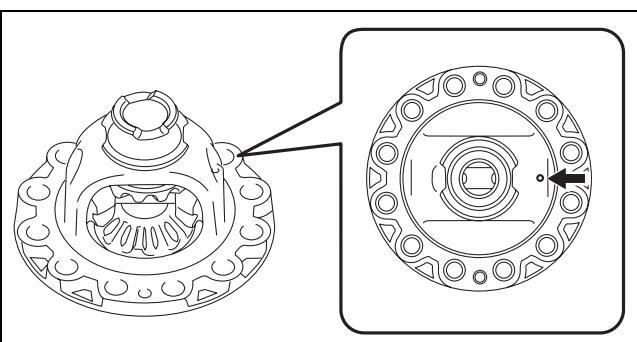
5. Assemble the pinion shaft.

**Caution**

- Assemble the pinion shaft so that the roll pin holes of the differential gear case and the pinion shaft are aligned.



azzjw00001544



azzjw00001545

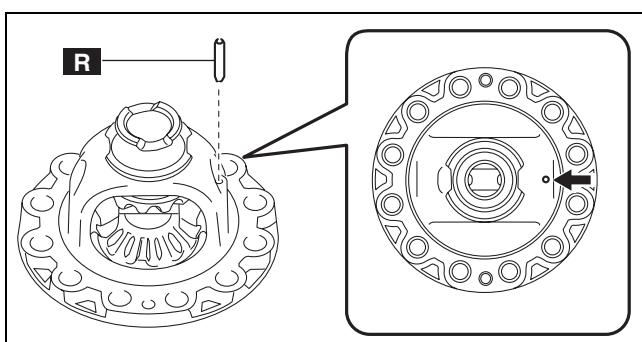
6. Assemble a new roll pin to the position shown in the figure using a pin punch.

**Caution**

- Assemble so that the end gap of the roll pin is positioned in the direction shown in the figure.

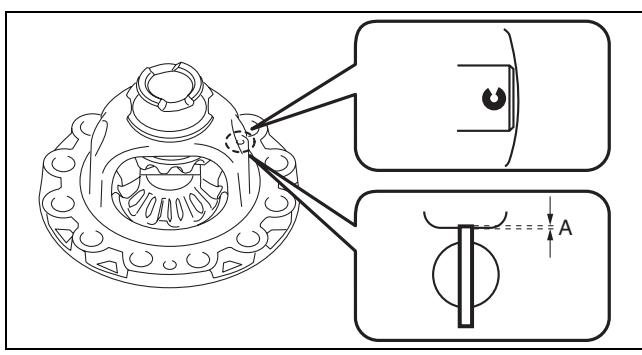
**Note**

- Use a pin punch with an end outer diameter of 5 mm {0.197 in} or more, and within 8 mm {0.314 in}.



azzjw00001546

A : -0.5—0.5 mm {-0.01—0.01 in}

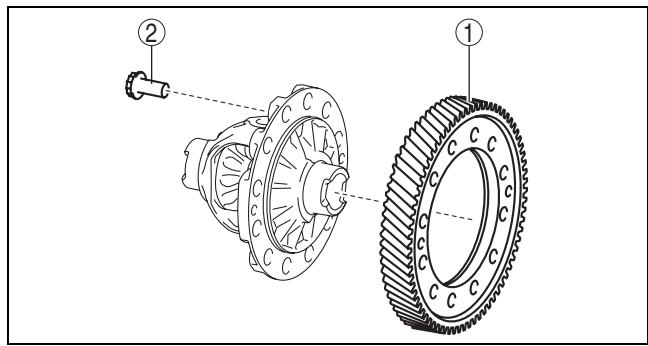


azzjw00001547

# AUTOMATIC TRANSAXLE

7. Assemble the ring gear using the following procedure:

1	Ring gear
2	12 bolts (M13×1.0 bolt, length to approx. 26.2 mm {1.03 in})

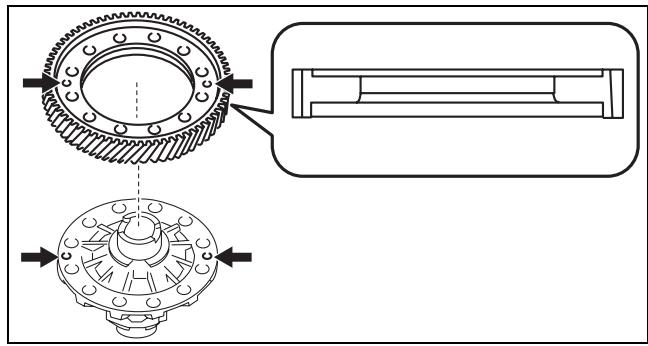


azjwjw00001000

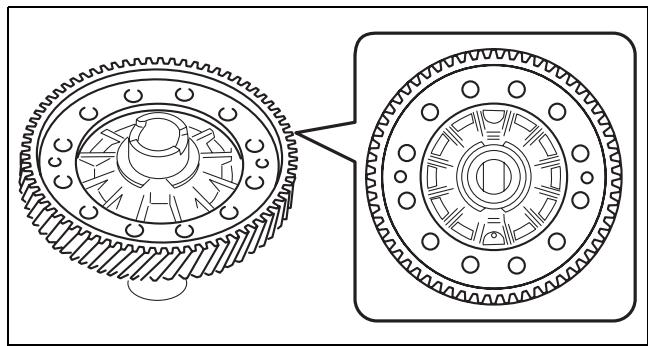
(1) Assemble the ring gear.

**Note**

- Assemble the ring gear so that the differential holes and ring gear holes shown in the figure are aligned.



azjwjw00001001

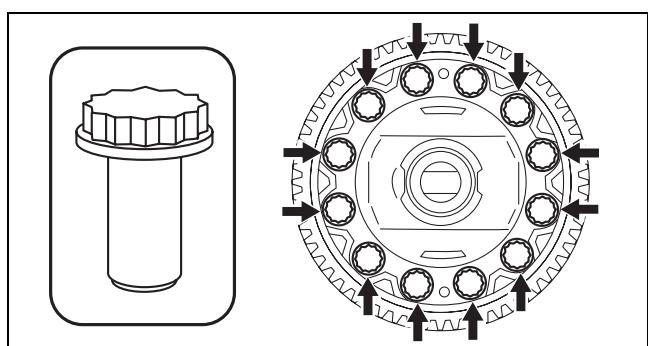


azjwjw00001002

(2) Assemble and temporarily tighten the bolts to the positions shown in the figure.

**Note**

- Bolt size: M13×1.0 bolt, length to approx. 26.2 mm {1.03 in}



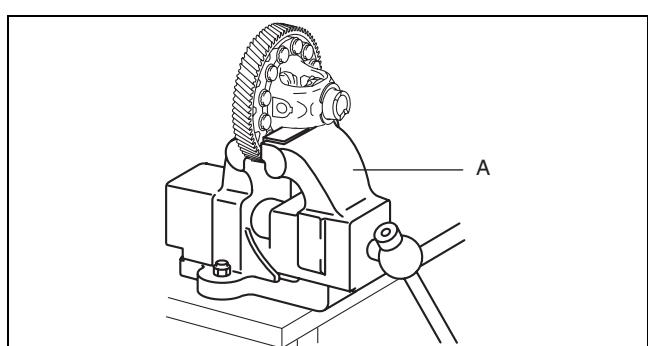
azjwjw00001003

(3) Secure the ring gear and differential in a vise.

A : Vise

**Caution**

- Insert a protective plate between the vise and the part so as not to damage the part.



azjwjw00001004

# AUTOMATIC TRANSAXLE

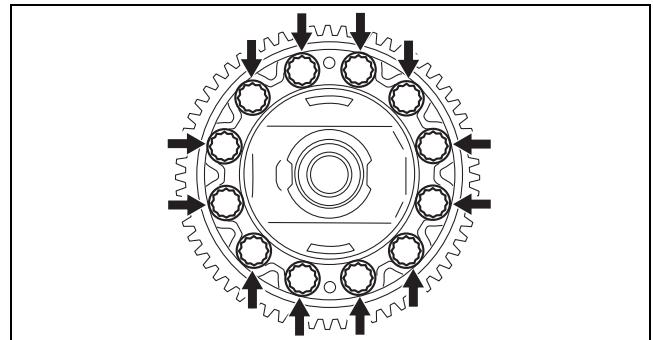
(4) Tighten the bolts shown in the figure.

## Note

- Change the vise securing position of the ring gear and differential and tighten all of the bolts shown in the figure.

## Tightening torque

152—176 N·m {16—17 kgf·m, 113—129 ft·lbf}

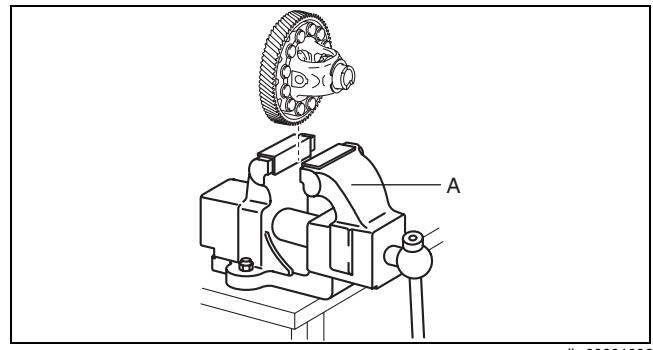


azzjw00001005

05-17

(5) Remove the ring gear and differential from the vise.

A : Vise



azzjw00001006

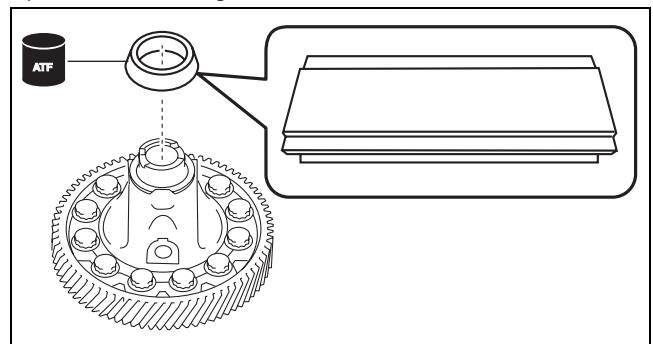
8. Assemble the taper roller bearing (converter housing side) using the following procedure:

## Note

- Taper roller bearing size: Inner diameter approx. 45 mm {1.8 in}

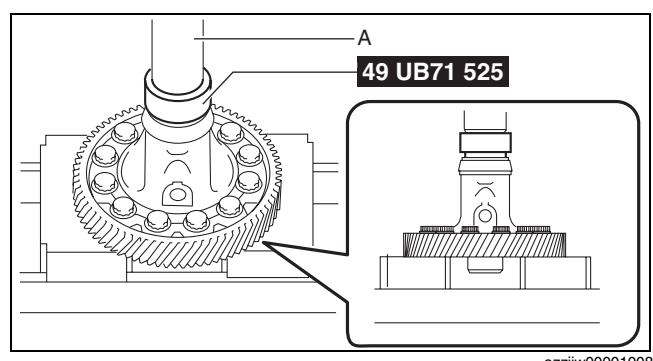
(1) Apply ATF (ATF FZ) to the engagement area of the taper roller bearing and differential.

(2) Using the SST and press, assemble the taper roller bearing.



azzjw00001007

A : Press



azzjw00001008

05-17-271

## AUTOMATIC TRANSAXLE

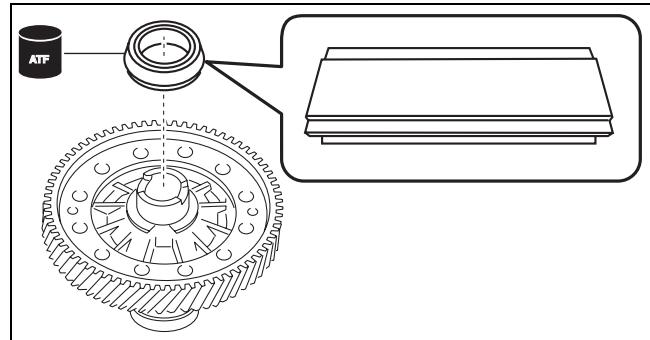
9. Assemble the taper roller bearing (transaxle case side) using the following procedure:

**Note**

- Taper roller bearing size: Inner diameter approx. 45 mm {1.8 in}

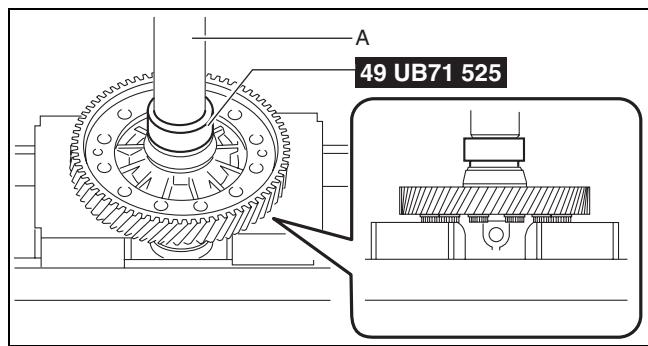
(1) Apply ATF (ATF FZ) to the engagement area of the taper roller bearing and differential.

(2) Using the SST and press, assemble the taper roller bearing.



azzjw00001009

A : Press



azzjw00001010

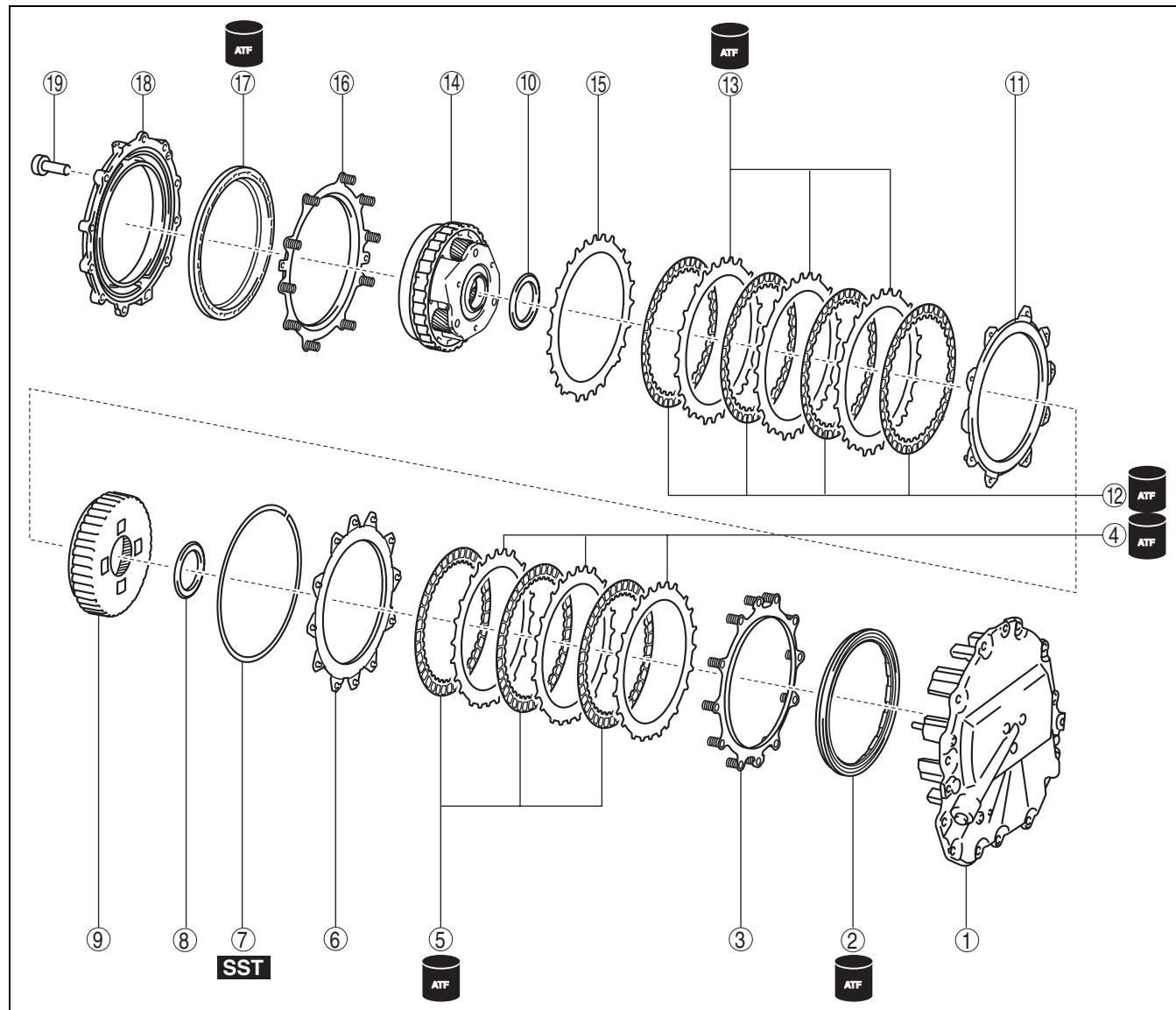
10. Perform the differential backlash measurement/adjustment. (See 05-17-303 DIFFERENTIAL BACKLASH MEASUREMENT/ADJUSTMENT.)

# AUTOMATIC TRANSAXLE

## END COVER COMPONENT ASSEMBLY

id051700664200

### Structural View



05-17

azzjw00001548

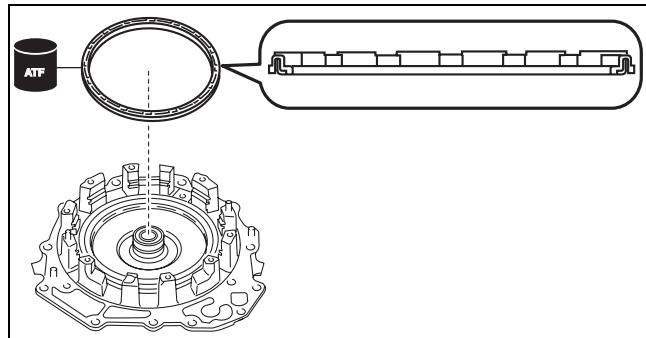
1	End cover
2	R-3-5 brake piston
3	Springs and retainer component (inner diameter approx. 148.8 mm {5.858 in})
4	Driven plate (inner diameter approx. 141.8 mm {5.583 in})
5	Drive plate (outer diameter approx. 169.4 mm {6.669 in})
6	Retaining plate (inner diameter approx. 141.8 mm {5.583 in})
7	Snap ring (outer diameter approx. 186.2 mm {7.331 in}) (selection)
8	Thrust needle bearing (outer diameter approx. 63 mm {2.5 in})
9	Reduction internal gear
10	Thrust needle bearing (outer diameter approx. 63 mm {2.5 in})

11	Retaining plate (inner diameter approx. 148 mm {5.83 in})
12	Drive plate (outer diameter approx. 171.9 mm {6.768 in})
13	Driven plate (outer diameter approx. 148 mm {5.83 in}, thickness approx. 1.6 mm {0.063 in})
14	Reduction planetary gear
15	Retaining plate (inner diameter approx. 148 mm {5.83 in}) (selection)
16	Springs and retainer component (inner diameter approx. 150.6 mm {5.929 in})
17	2-6 brake piston
18	Brake housing
19	8 bolts (M6×1.0 bolt, length to approx. 25 mm {0.98 in})

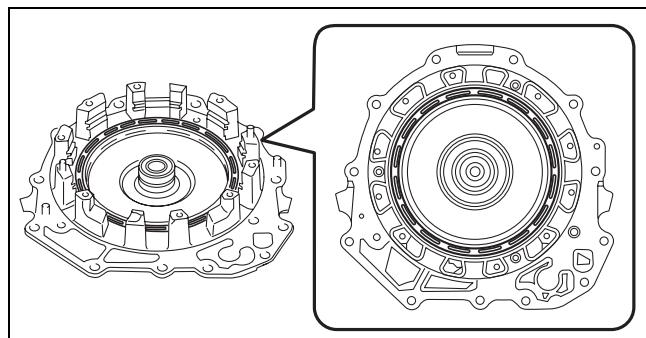
# AUTOMATIC TRANSAXLE

## Assembly Procedure

1. Assemble the R-3-5 brake piston using the following procedure:
  - (1) Apply ATF (ATF FZ) to the R-3-5 brake piston lip.
  - (2) Assemble the R-3-5 brake piston.



azzjw00001012

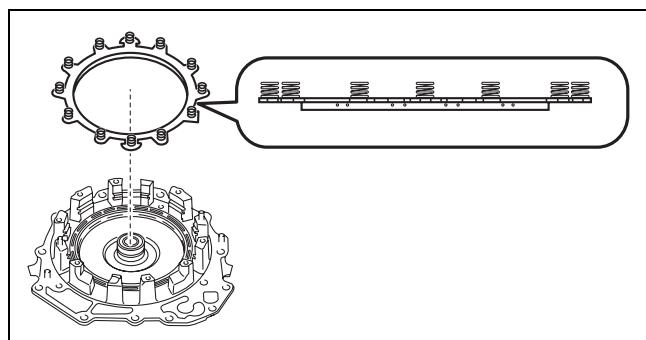


azzjw00001013

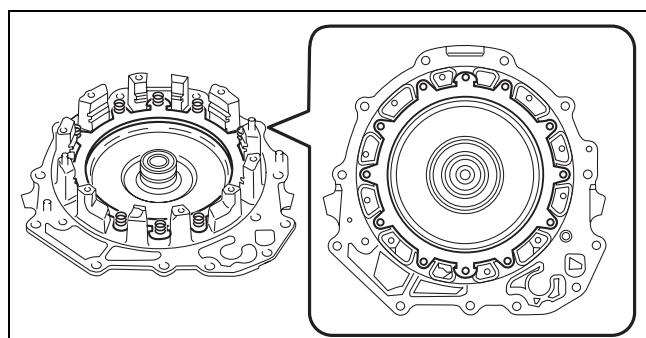
2. Measure the R-3-5 brake clearance and select the appropriate snap ring. (See 05-17-339 R-3-5 BRAKE CLEARANCE MEASUREMENT/ADJUSTMENT.)
3. Assemble the springs and retainer component.

### Note

- Springs and retainer component size: Inner diameter approx. 148.8 mm {5.858 in}



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azzjw00001015

# AUTOMATIC TRANSAXLE

4. Assemble the drive plates and driven plates using the following procedure:

## Note

- Drive plate size: Outer diameter approx. 169.4 mm {6.669 in}
- Driven plate size: Inner diameter approx. 141.8 mm {5.583 in}

(1) Apply ATF (ATF FZ) to the drive plates and driven plates.

05-17

## Caution

- If the drive plate is replaced with a new one, immerse it in ATF (ATF FZ) for 2 hours or more to permeate the facing with ATF.

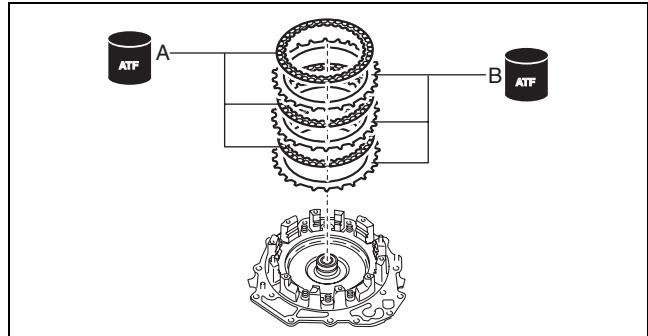
(2) Assemble the drive plates and driven plates.

A : Drive plate

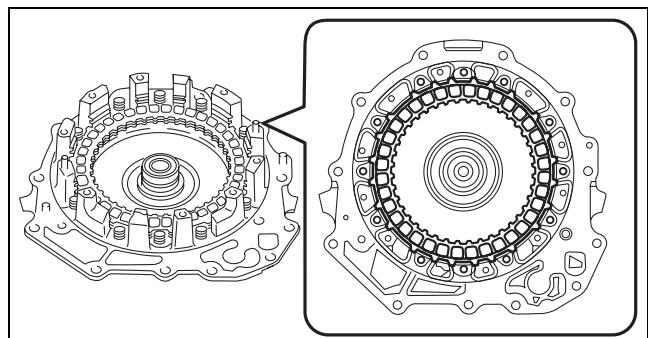
B : Driven plate

## Assembly order

Driven plate—drive plate—driven plate—drive plate—driven plate—drive plate



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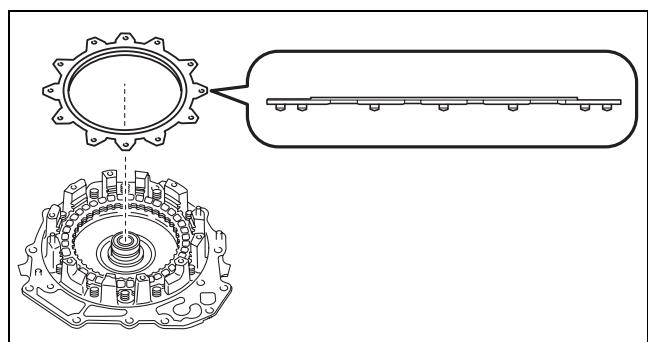


azzjw00001017

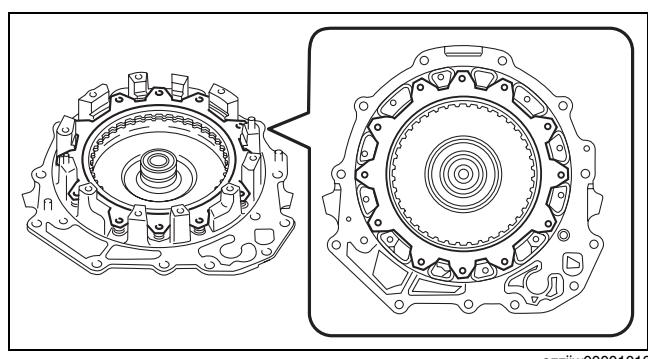
5. Assemble the retaining plate.

## Note

- Retaining plate size: Inner diameter approx. 141.8 mm {5.583 in}



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azzjw00001019

## AUTOMATIC TRANSAXLE

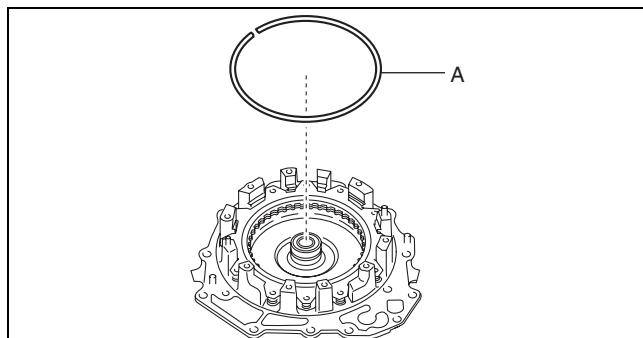
6. Assemble the snap ring using the following procedure:

**Note**

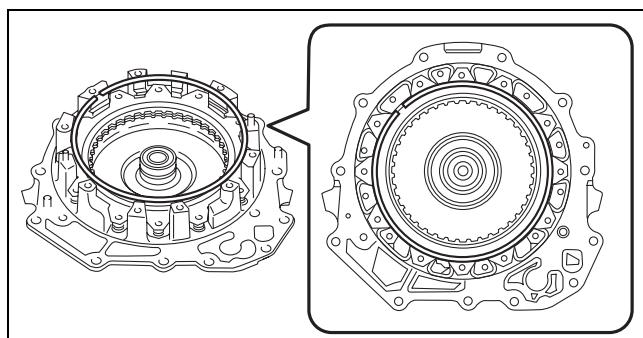
- Snap ring size: Outer diameter approx. 186.2 mm {7.331 in}

(1) Set the snap ring selected in Step 2 on top of the end cover.

A : Selection

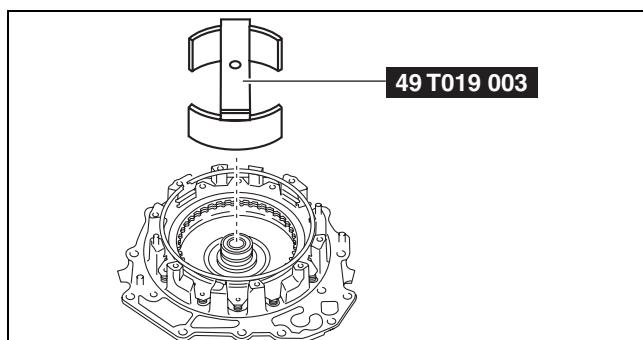


azzjw00001020

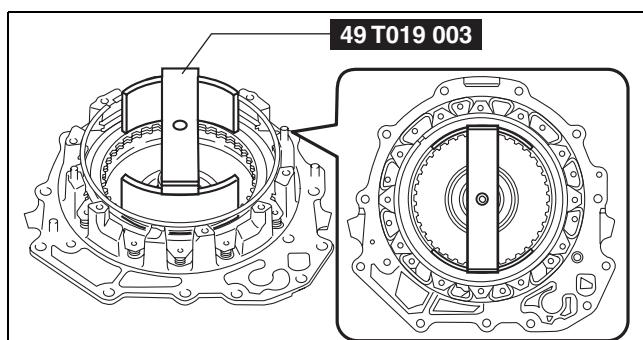


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(2) Install the SST.



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azzjw00001023

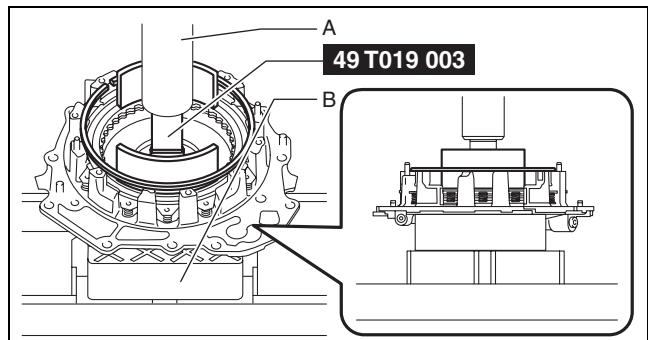
## AUTOMATIC TRANSAXLE

- (3) Set the SST and part to the press as shown in the figure.

A : Press  
B : Rubber plate

**Caution**

- Using the rubber plates, adjust the alignment surface of the end cover with the transaxle case so that it is level. Otherwise the parts could tip over during the procedure and get damaged.



azzjw00001024

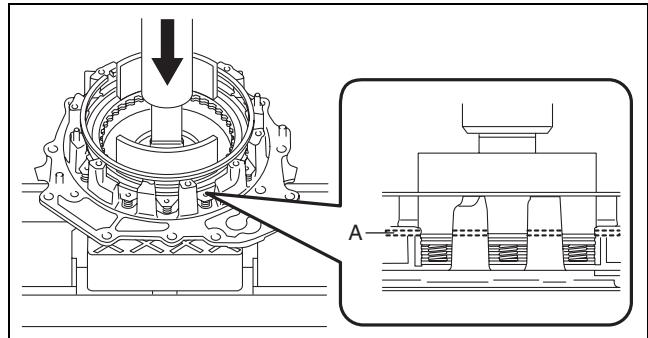
05-17

- (4) Press down the SST using the press until the snap ring groove of the end cover comes out.

A : Snap ring groove

**Caution**

- If the SST is pressed excessively by the press, surrounding parts could be damaged. Stop pressing down the SST using the press when the snap ring groove of the end cover comes out.



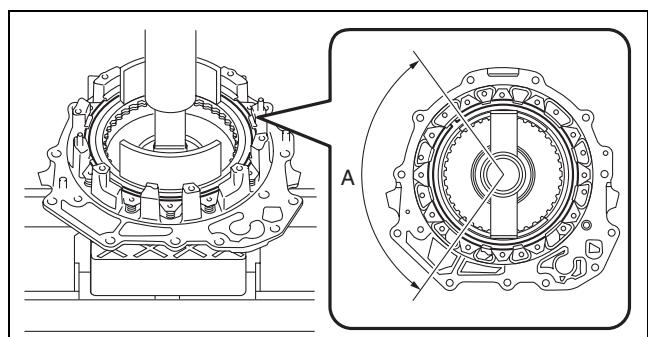
azzjw00001025

- (5) Assemble the snap ring to the position shown in the figure.

A : End gap of snap ring assembly area

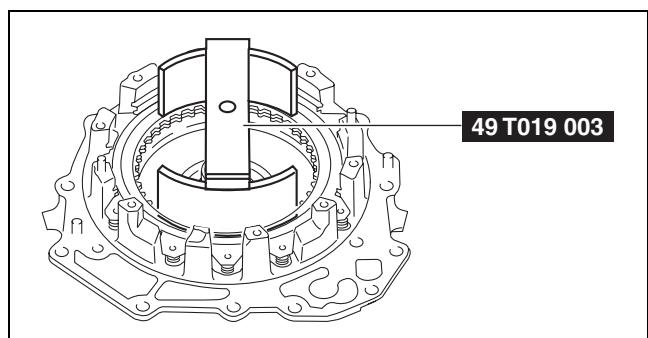
**Caution**

- Assemble the snap ring so that the end gap of the snap ring is in the area shown in the figure.
- After assembling the snap ring, verify that the snap ring is securely inserted into the bottom of the snap ring groove.



azzjw00001026

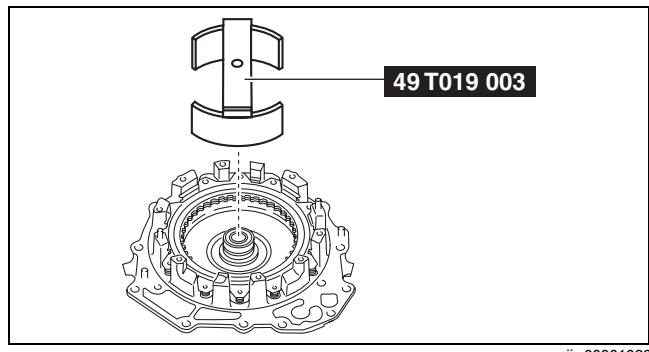
- (6) Take the SST and part off the press.



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## AUTOMATIC TRANSAXLE

(7) Remove the SST.



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7. Perform an operation verification of the R-3-5 brake using the following procedure:

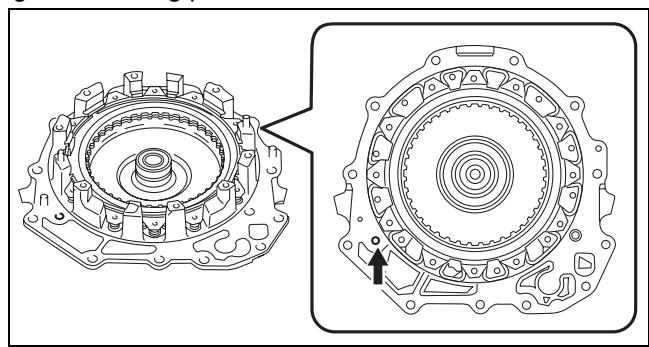
- (1) Blow compressed air into the oil passage shown in the figure and verify the operation condition of the R-3-5 brake.

### Warning

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

### Caution

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.



azzjw00001029

### Compressed air pressure

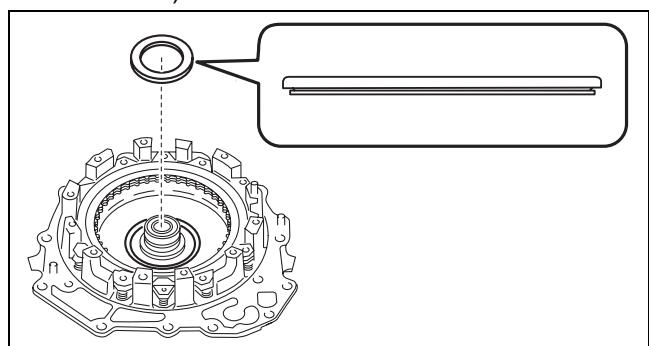
0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

- If there is a malfunction, perform disassembly again, verify the cause and repair the applicable part.  
(See 05-17-128 END COVER COMPONENT DISASSEMBLY.)

8. Assemble the thrust needle bearing.

### Note

- Thrust needle bearing size: Outer diameter approx. 63 mm {2.5 in}



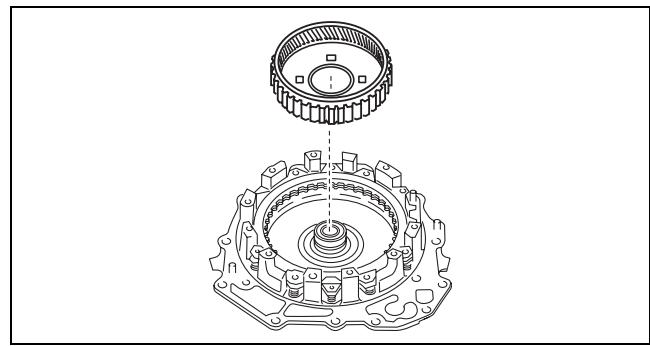
azzjw00001030

# AUTOMATIC TRANSAXLE

## 9. Assemble the reduction internal gear.

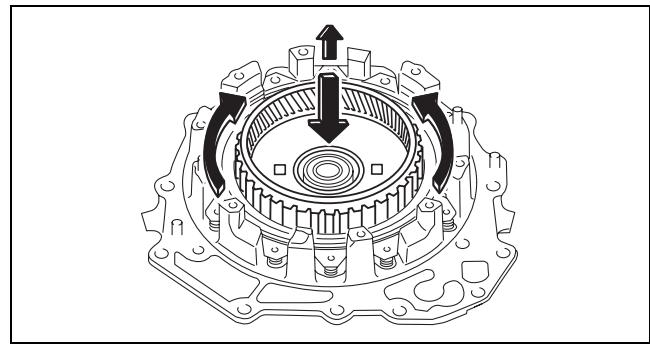
### Note

- While rotating the reduction internal gear, engage the splines of each of the R-3-5 brake drive plates one by one, and assemble.



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05-17



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## 10. To verify that the reduction internal gear is securely assembled, measure the distance shown in the figure.

A : End cover end (alignment surface with brake housing)

B : Reduction internal gear end

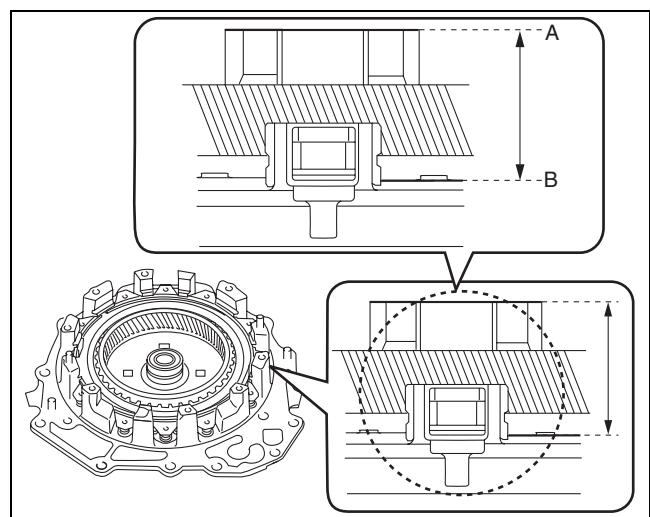
### Note

- Recommended measuring instrument:  
Depth gauge, straight edge ruler

### Specification

45.0—46.1 mm {1.78—1.81 in}

- If not within the specification, remove the reduction internal gear and reassemble.



azzjw00001549

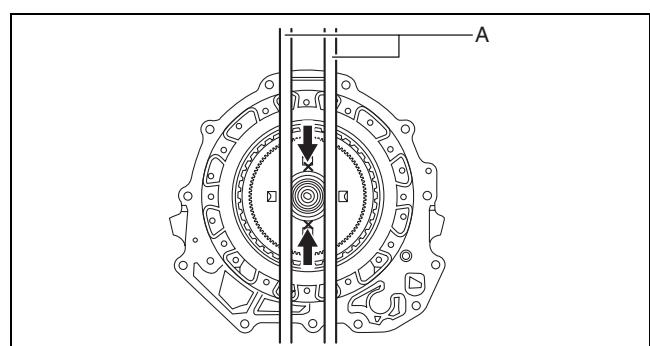
### Note

- Measurement method

- (1) Set two straight edge rulers along the alignment surfaces of the end cover with the brake housing as shown in the figure.

A : Straight edge ruler

- (2) Measure the positions (2 locations) shown in the figure using a depth gauge and calculate the average value.
- (3) Subtract the thickness of the straight edge ruler from the average value.



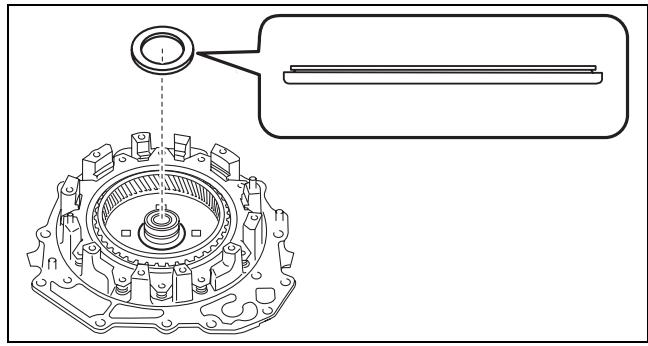
azzjw00001034

## AUTOMATIC TRANSAXLE

11. Assemble the thrust needle bearing.

**Note**

- Thrust needle bearing size: Outer diameter approx. 63 mm {2.5 in}

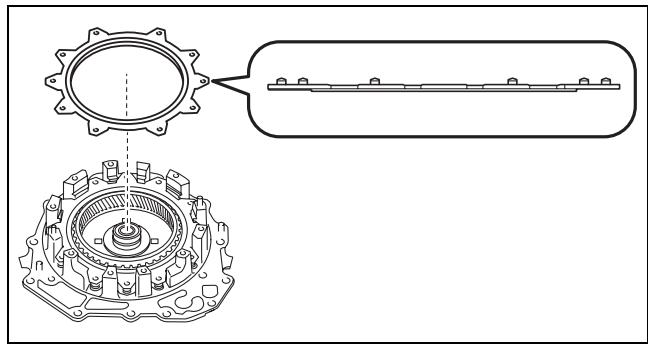


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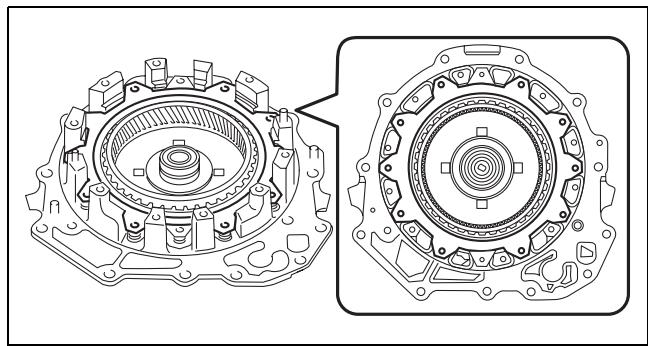
12. Assemble the retaining plate.

**Note**

- Retaining plate size: Inner diameter approx. 148 mm {5.83 in}



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azzjjw00001037

## AUTOMATIC TRANSAXLE

13. Assemble the drive plates and driven plates using the following procedure:

### Caution

- The driven plate has a similar shape to the retaining plate used for the 2-6 brake clearance adjustment. Before assembling the driven plate, always verify the plate thickness and the shape.

### Note

- Drive plate size: Outer diameter approx. 171.9 mm {6.768 in}
- Driven plate size: Inner diameter approx. 148 mm {5.83 in}, thickness approx. 1.6 mm {0.063 in}

05-17

(1) Apply ATF (ATF FZ) to the drive plates and driven plates.

### Caution

- If the drive plate is replaced with a new one, immerse it in ATF (ATF FZ) for 2 hours or more to permeate the facing with ATF.

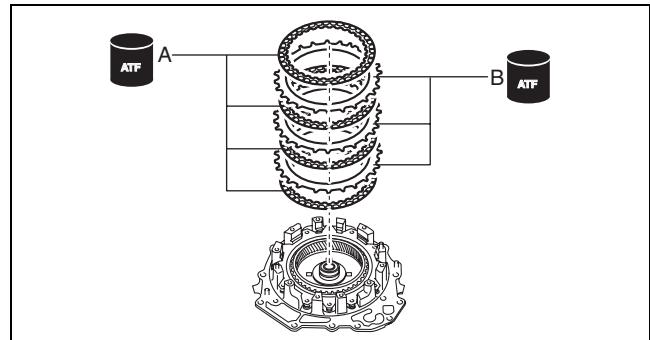
(2) Assemble the drive plates and driven plates.

A : Drive plate

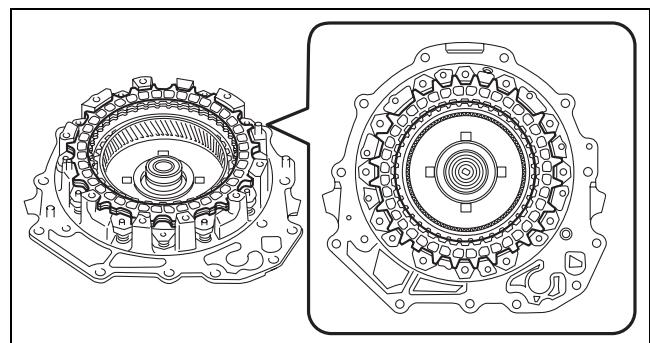
B : Driven plate

### Assembly order

Drive plate—driven plate—drive plate—driven plate—drive plate—driven plate—drive plate



azzjw00001038



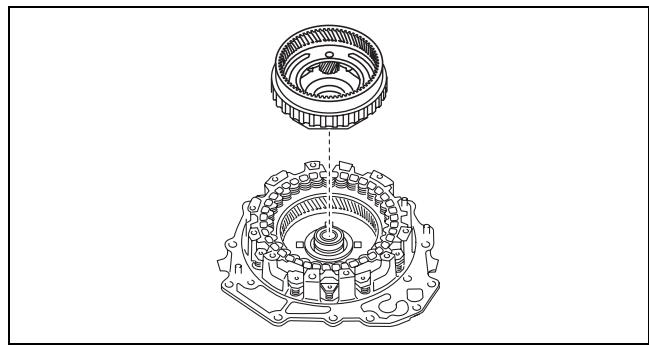
azzjw00001039

## AUTOMATIC TRANSAXLE

14. Assemble the reduction planetary gear.

**Note**

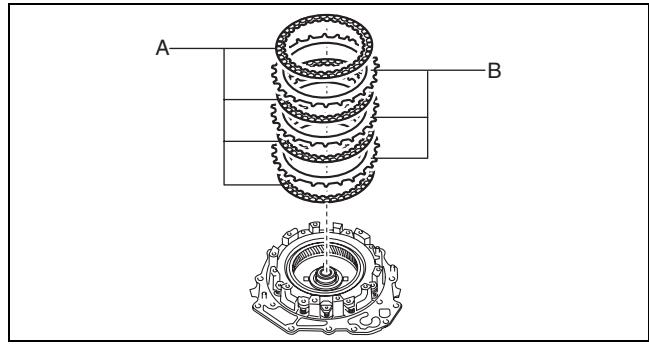
- If the reduction planetary gear assembly is difficult, assembly is easier if the work is performed using the following procedure:



azzjjw00001040

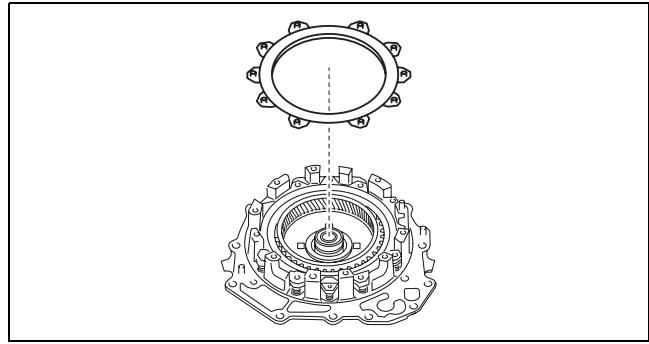
(1) Remove the drive plates and driven plates.

A : Drive plate  
B : Driven plate



azzjjw00001041

(2) Remove the retaining plate.



azzjjw00001042

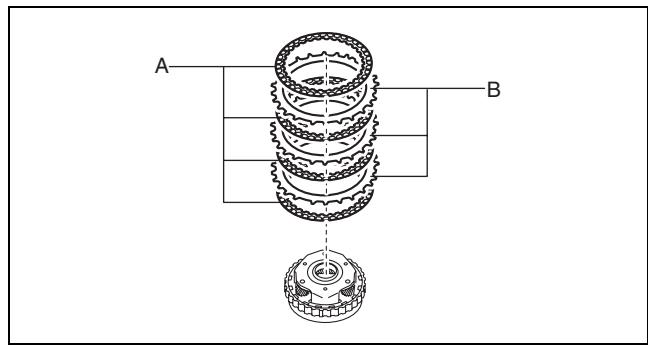
## AUTOMATIC TRANSAXLE

- (3) Assemble the drive plates and driven plates to the reduction planetary gear shown in the figure.

A : Drive plate  
B : Driven plate

### Caution

- The driven plate has a similar shape to the retaining plate used for the 2-6 brake clearance adjustment. Before assembling the driven plate, always verify the plate thickness and the shape.



azzjw00001043

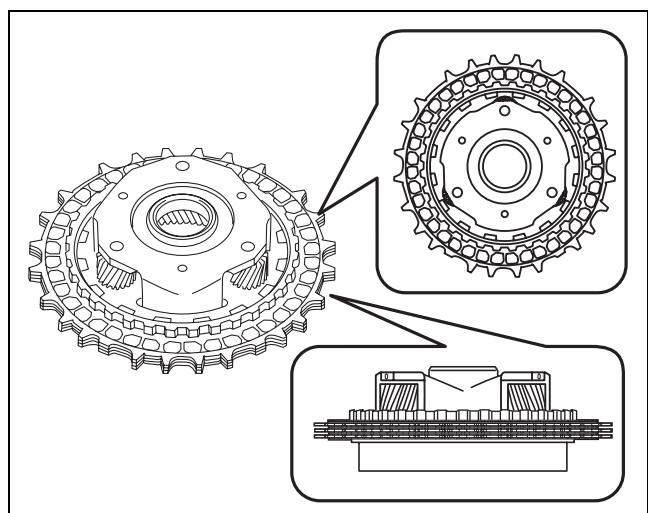
05-17

### Note

- Drive plate size: Outer diameter approx. 171.9 mm {6.768 in}
- Driven plate size: Inner diameter approx. 148 mm {5.83 in}, thickness approx. 1.6 mm {0.063 in}
- Align the spline positions of the driven plate while assembling.

### Assembly order

Drive plate—driven plate—drive plate—driven plate—drive plate—driven plate—drive plate

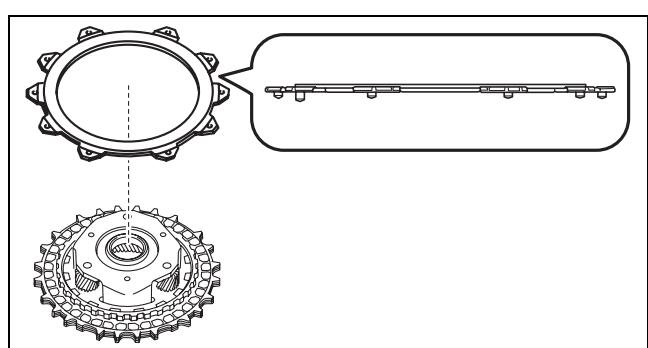


azzjw00001044

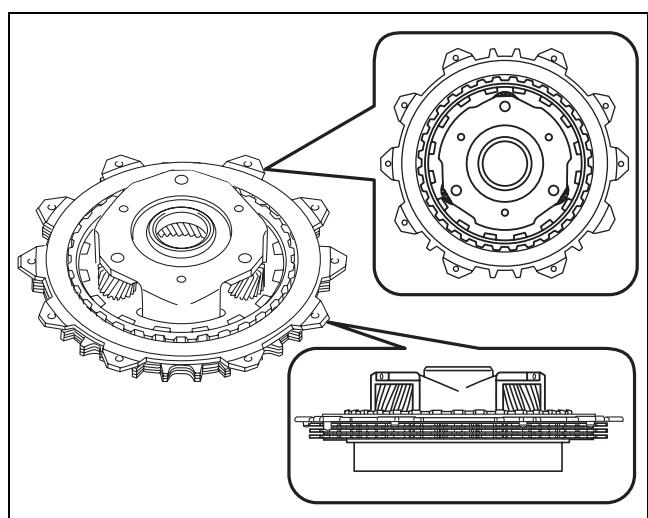
- (4) Assemble the retaining plate to the reduction planetary gear as shown in the figure.

### Note

- Retaining plate size: Inner diameter approx. 148 mm {5.83 in}
- Assemble the retaining plate so that the splines of the retaining plate and the splines of the driven plates are positioned as shown in the figure.



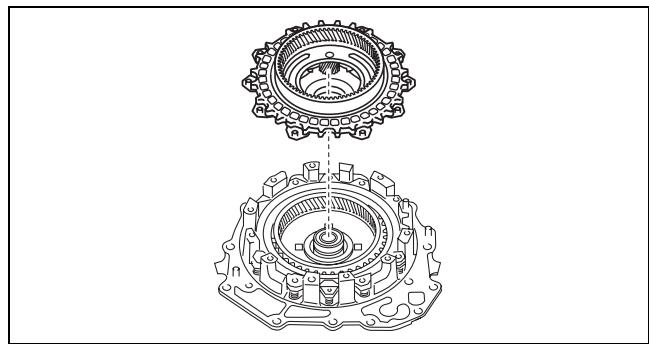
azzjw00001045



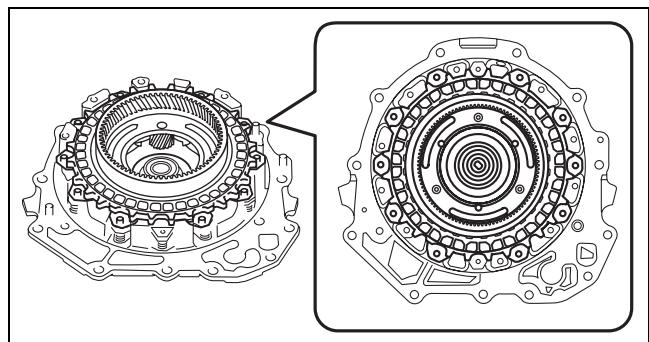
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## AUTOMATIC TRANSAXLE

- (5) Assemble the parts assembled together in Steps (3) and (4).



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15. To verify that the reduction planetary gear is securely assembled, measure the distance shown in the figure.

- A : Reduction planetary gear end (rear internal gear end)
- B : End cover end (alignment surface with transaxle case)

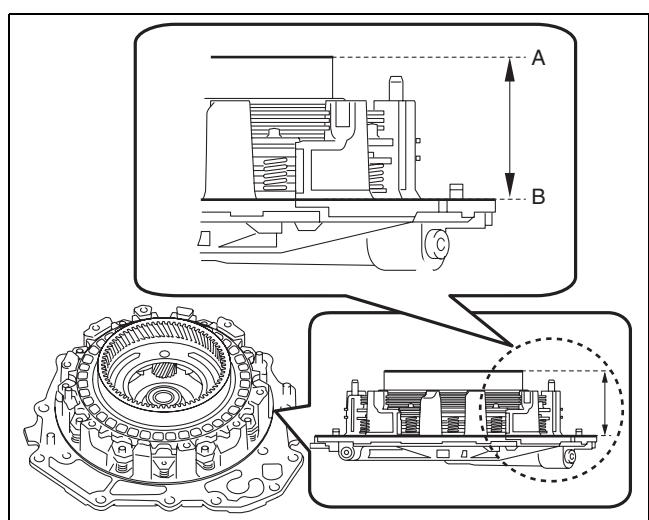
**Note**

- Recommended measuring instrument:  
Depth gauge, straight edge ruler

**Specification**

61.3—63.1 mm {2.42—2.48 in}

- If not within the specification, remove the reduction planetary gear and reassemble.



azzjjw00001550

**Note**

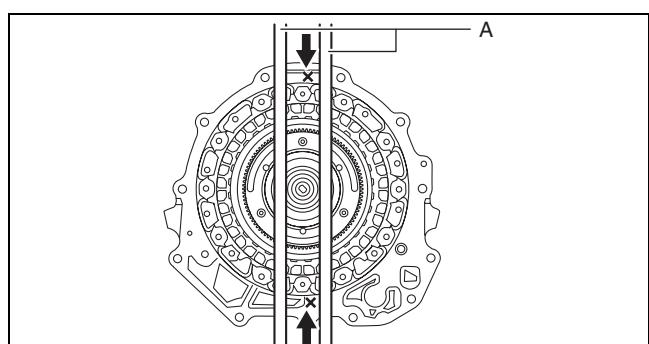
- Measurement method

(1) Set two straight edge rulers on the reduction planetary gear (rear internal gear) as shown in the figure.

- A : Straight edge ruler

(2) Measure the positions (2 locations) shown in the figure using a depth gauge and calculate the average value.

(3) Subtract the thickness of the straight edge ruler from the average value.



azzjjw00001050

## AUTOMATIC TRANSAXLE

16. Assemble the retaining plate using the following procedure:

- (1) Measure the 2-6 brake clearance and select the appropriate retaining plate. (See 05-17-347 2-6 BRAKE CLEARANCE MEASUREMENT/ADJUSTMENT.)

**Note**

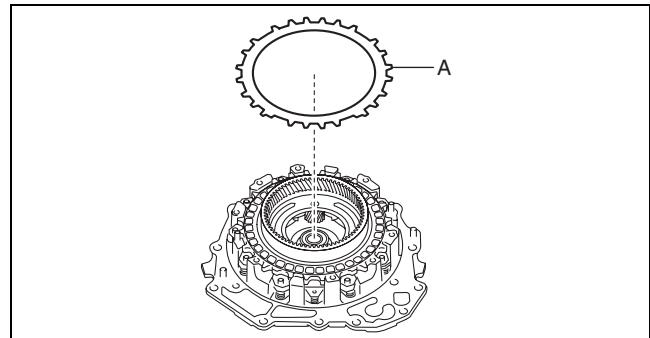
- If the retaining plate is assembled for the 2-6 brake clearance measurement/adjustment, the following retaining plate assembly procedure is not necessary.

- (2) Assemble the retaining plate selected in Step (1).

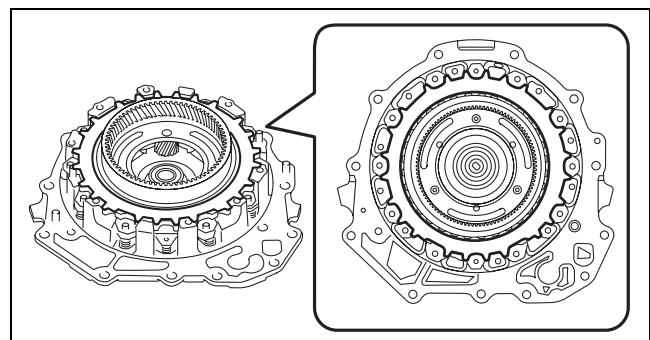
A : Selection

**Note**

- Retaining plate: Inner diameter approx. 148 mm {5.83 in}



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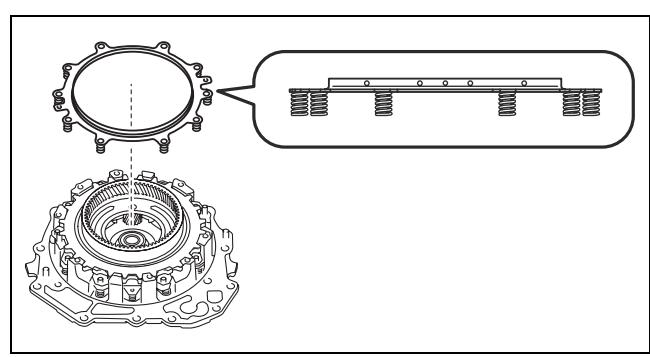


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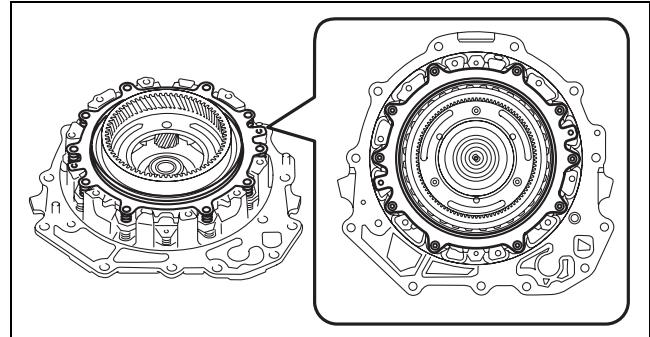
17. Assemble the springs and retainer component.

**Note**

- Springs and retainer component size: Inner diameter approx. 150.6 mm {5.929 in}



azzjw00001053

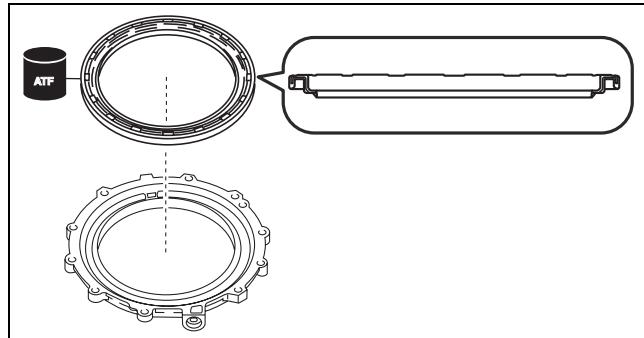


azzjw00001054

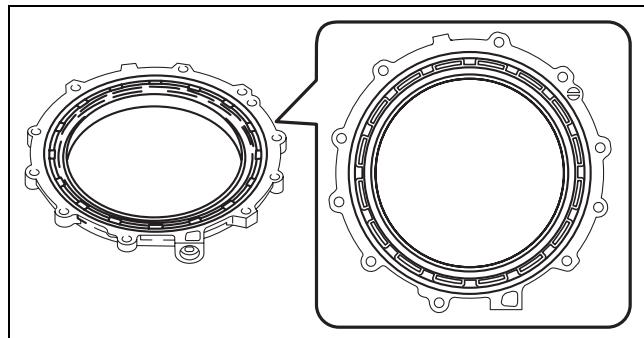
## AUTOMATIC TRANSAXLE

18. Assemble the 2-6 brake piston to the brake housing using the following procedure:

- (1) Apply ATF (ATF FZ) to the 2-6 brake piston lip.
- (2) Assemble the 2-6 brake piston.



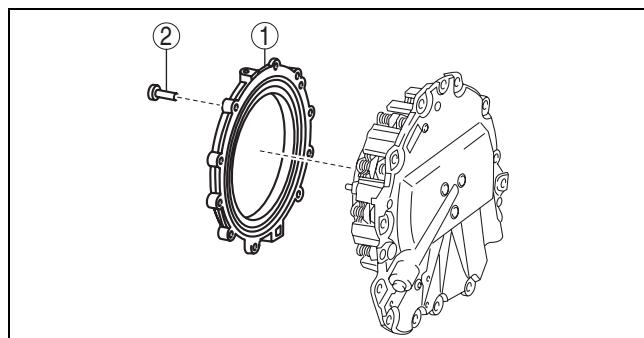
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azzjw00001056

19. Assemble the brake housing using the following procedure:

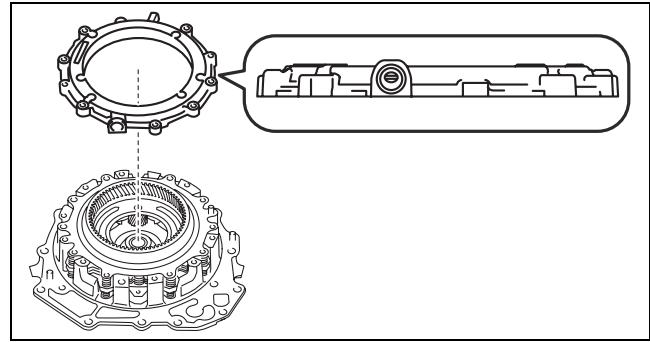
1	Brake housing
2	8 bolts (M6×1.0 bolt, length to approx. 25 mm {0.98 in})



azzjw00001057

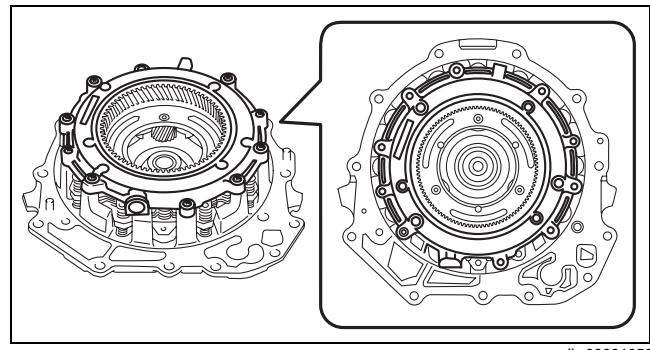
## AUTOMATIC TRANSAXLE

(1) Assemble the brake housing.



05-17

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azzjw00001059

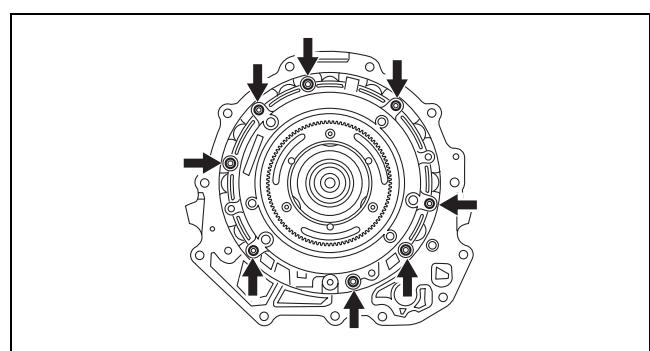
(2) Assemble and tighten the bolts shown in the figure uniformly.

### Caution

- If the bolts are not tightened uniformly, the brake housing will slant and parts could be damaged due to the spring force of the springs and retainer component in the brake housing.

### Note

- Bolt size: M6×1.0 bolt, length to approx. 25 mm {0.98 in}



azzjw00001060

### Tightening torque

8—10 N·m {82—101 kgf·cm, 71—88 in·lbf}

20. Perform an operation verification of the 2-6 brake using the following procedure:

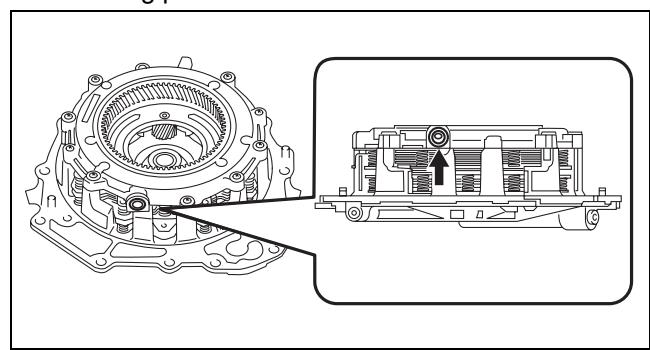
(1) Blow compressed air into the oil passage shown in the figure and verify the operation condition of the 2-6 brake.

### Warning

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

### Note

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.



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### Compressed air pressure

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

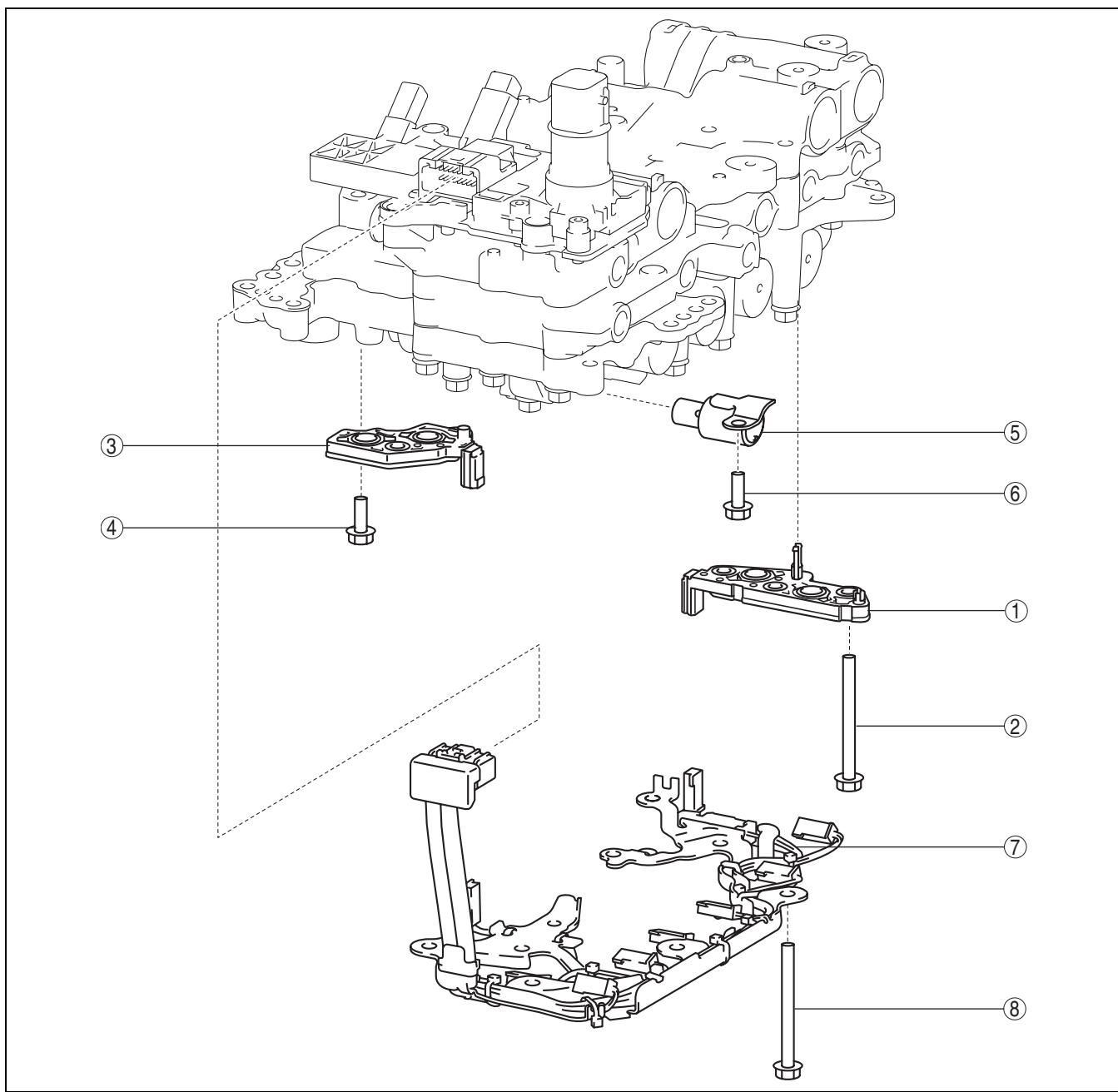
- If there is a malfunction, perform disassembly again, verify the cause and repair the applicable part. (See 05-17-128 END COVER COMPONENT DISASSEMBLY.)

# AUTOMATIC TRANSAXLE

## CONTROL VALVE BODY ASSEMBLY

id051700664300

### Structural View



azzjjw00001551

1	Oil pressure switch A
2	3 bolts (M6×1.0 bolt, length to approx. 60 mm {2.4 in})
3	Oil pressure switch B
4	2 bolts (M6×1.0 bolt, length to approx. 60 mm {2.4 in}) 1 bolt (M6×1.0 bolt, length to approx. 16 mm {0.63 in})

5	ON/OFF solenoid
6	Bolt (M6×1.0 bolt, length to approx. 16 mm {0.63 in})
7	Coupler component
8	6 bolts (M6×1.0 bolt, length to approx. 80 mm {3.1 in}) 1 bolt (M6×1.0 bolt, length to approx. 60 mm {2.4 in}) 1 bolt (M6×1.0 bolt, length to approx. 16 mm {0.63 in})

## Assembly Procedure

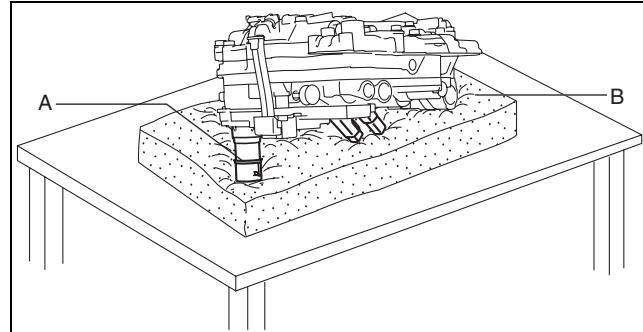
### Caution

- Do not drop or apply an impact to the control valve body. Replace the control valve body with a new one if it was dropped or received an impact.

1. Place the control valve body with the TCM side pointing downward on an impact-absorbing material as shown in the figure.

A : TCM

B : Impact-absorbing material



azzjw00001552

### Caution

- Placing the TCM side pointed downward on a workbench directly could damage the TCM. If the TCM side is placed pointed downward, place the control valve body on an impact-absorbing material so that the TCM does not contact the workbench directly.
- If the control valve body is placed on the workbench with the TCM side pointing upward, the pins securing the solenoids shown in the figure could fall off and become lost. If the solenoid installation position shown in the figure is changed, it will cause a malfunction. To prevent the pin securing the solenoid from falling, always place the control valve body on an impact-absorbing material with the TCM side pointing downward until the coupler component is assembled.

A : Shift solenoid No.1

B : Shift solenoid No.4

C : TCC control solenoid

D : Shift solenoid No.3

E : Shift solenoid No.2

F : Pressure control solenoid

2. Verify that the pins securing the pressure control solenoid, TCC control valve, and each shift solenoid are not removed using the following procedure:

- (1) Pull each solenoid in the direction of the arrow shown in the figure and verify that it is secured.

A : Shift solenoid No.1

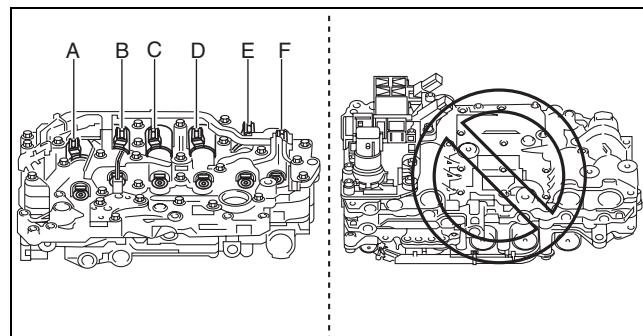
B : Shift solenoid No.4

C : TCC control solenoid

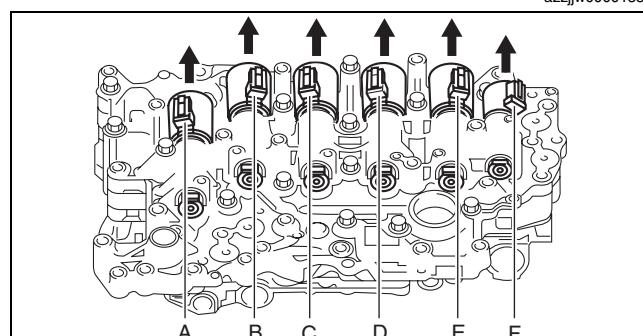
D : Shift solenoid No.3

E : Shift solenoid No.2

F : Pressure control solenoid



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- If there is a malfunction, assemble the pin securing the solenoid to the malfunctioning part.

A : Shift solenoid No.1

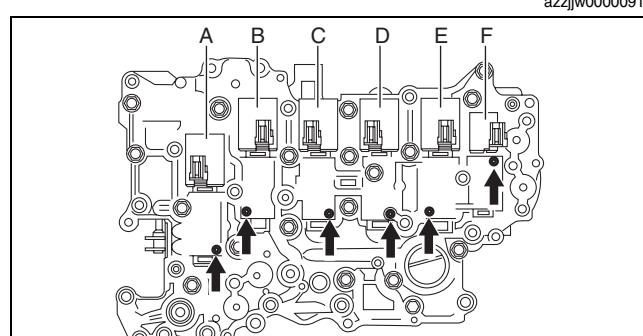
B : Shift solenoid No.4

C : TCC control solenoid

D : Shift solenoid No.3

E : Shift solenoid No.2

F : Pressure control solenoid

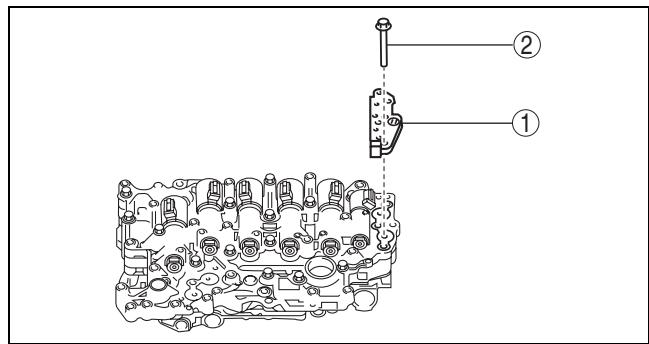


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## AUTOMATIC TRANSAXLE

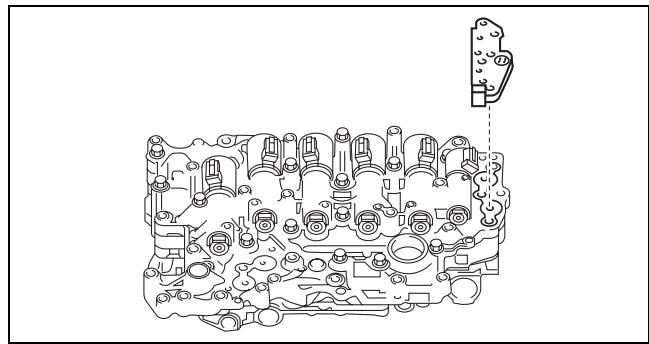
3. Assemble the oil pressure switch A using the following procedure:

1	Oil pressure switch A
2	3 bolts (M6×1.0 bolt, length to approx. 60 mm {2.4 in})

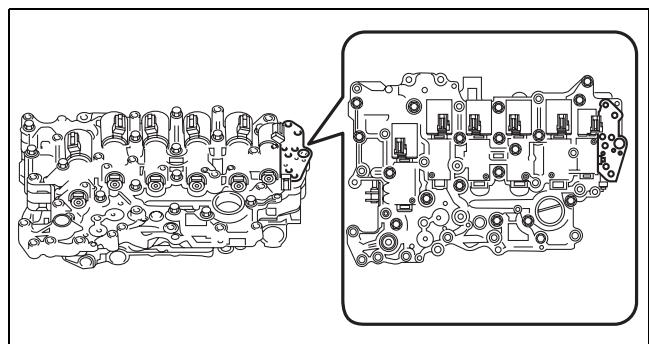


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(1) Assemble the oil pressure switch A.



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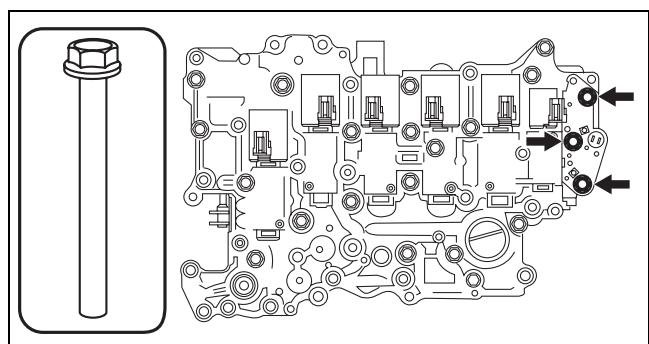
azzjjw00000923

(2) Assemble and tighten the bolts shown in the figure.

**Note**

- Bolt size: M6×1.0 bolt, length to approx. 60 mm {2.4 in}

**Tightening torque**  
9—10 N·m {92—101 kgf·cm, 80—88 in·lbf}

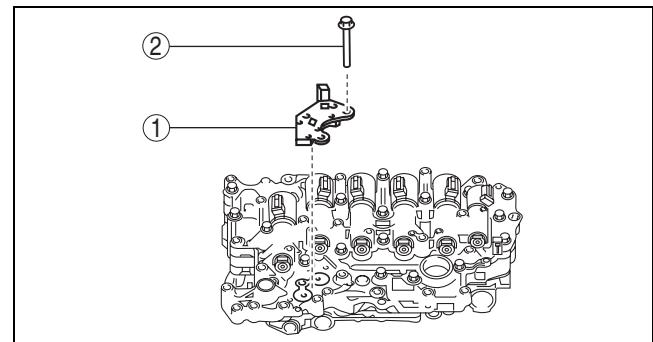


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## AUTOMATIC TRANSAXLE

4. Assemble the oil pressure switch B using the following procedure:

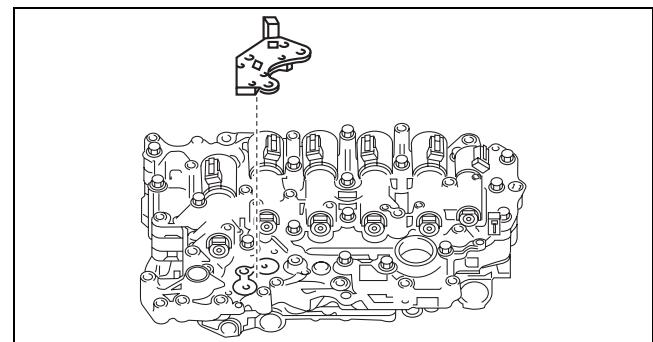
1	Oil pressure switch B
2	2 bolts (M6×1.0 bolt, length to approx. 60 mm {2.4 in}) 1 bolt (M6×1.0 bolt, length to approx. 16 mm {0.63 in})



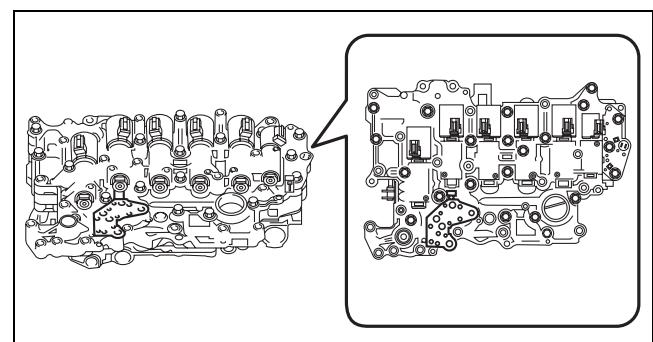
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- (1) Assemble the oil pressure switch B.



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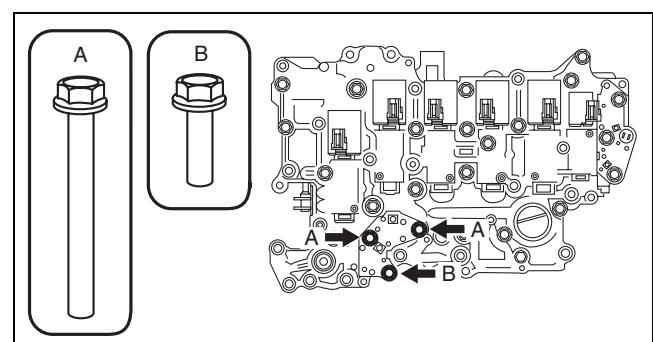
azjjw00000927

- (2) Assemble and tighten the bolts shown in the figure.

- A : Bolt (M6×1.0 bolt, length to approx. 60 mm {2.4 in})  
 B : Bolt (M6×1.0 bolt, length to approx. 16 mm {0.63 in})

**Tightening torque**

9—10 N·m {92—101 kgf·cm, 80—88 in-lbf}

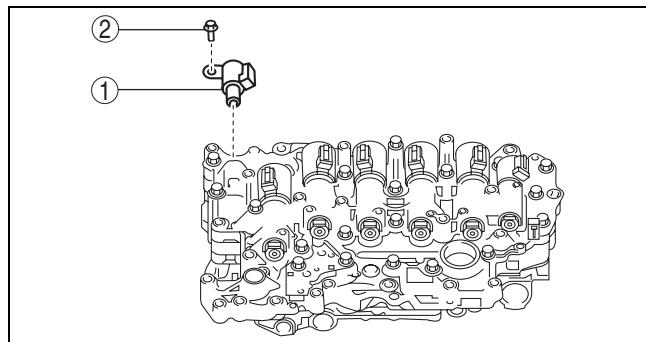


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## AUTOMATIC TRANSAXLE

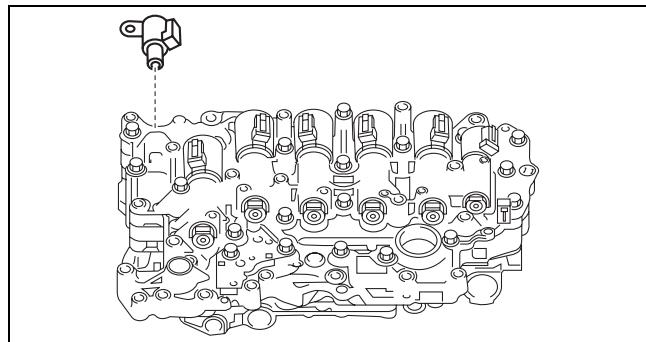
5. Assemble the ON/OFF solenoid using the following procedure:

1	ON/OFF solenoid
2	Bolt (M6×1.0 bolt, length to approx. 16 mm {0.63 in})

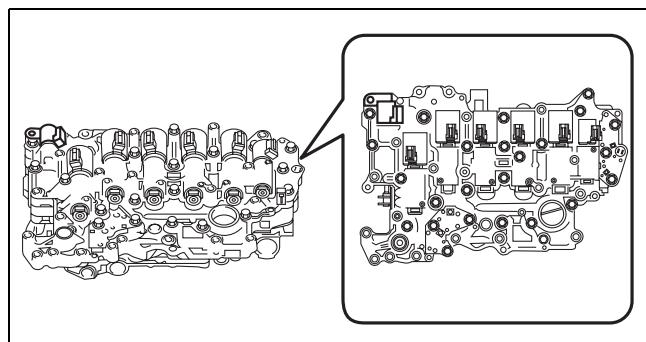


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(1) Assemble the ON/OFF solenoid.



azjwjw00000930



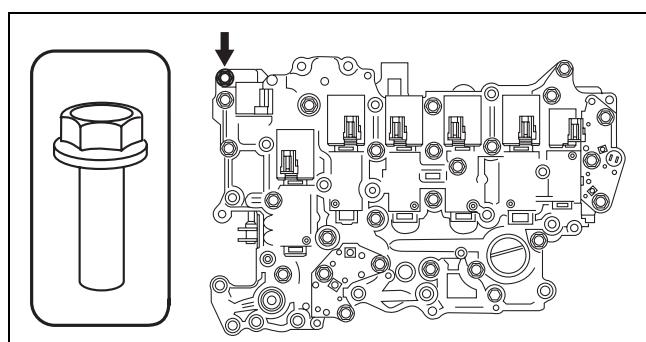
azjwjw00000931

(2) Assemble and tighten the bolt shown in the figure.

**Note**

- Bolt size: M6×1.0 bolt, length to approx. 16 mm {0.63 in}

**Tightening torque**  
9—10 N·m {92—101 kgf·cm, 80—88 in·lbf}

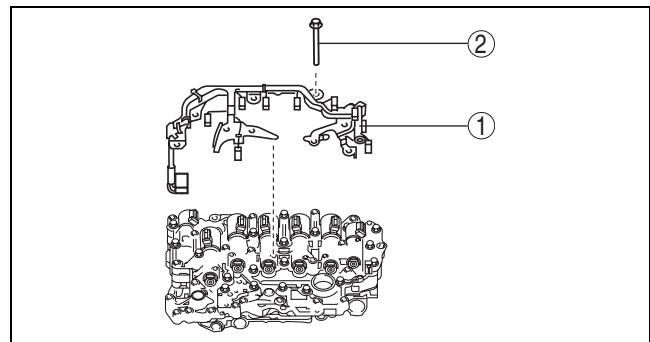


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## AUTOMATIC TRANSAXLE

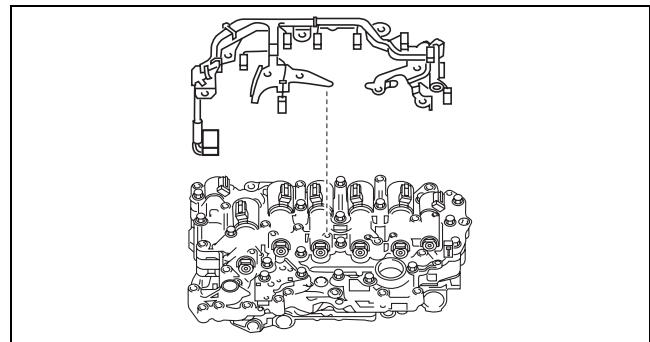
6. Assemble the coupler component using the following procedure:

1	Coupler component
2	6 bolts (M6×1.0 bolt, length to approx. 80 mm {3.1 in}) 1 bolt (M6×1.0 bolt, length to approx. 60 mm {2.4 in}) 1 bolt (M6×1.0 bolt, length to approx. 16 mm {0.63 in})

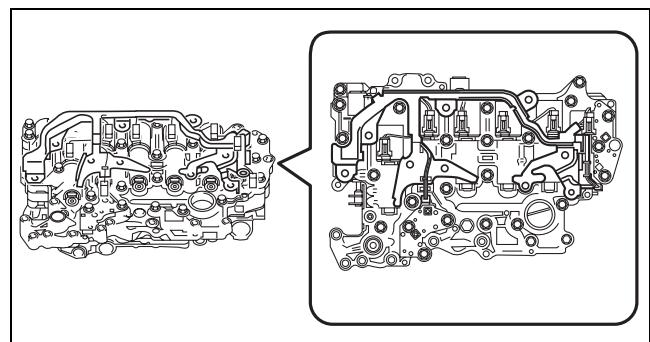


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(1) Assemble the coupler component.



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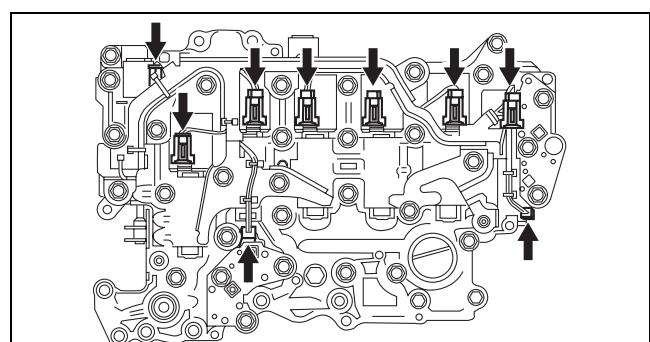


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(2) Connect the connectors shown in the figure.

**Caution**

- When connecting a connector, insert it straight until it is securely locked.



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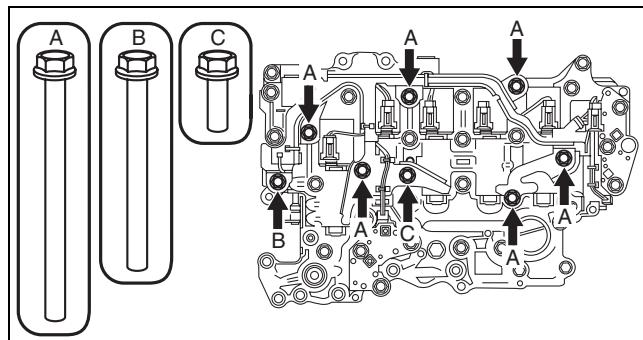
## AUTOMATIC TRANSAXLE

(3) Assemble and tighten the bolts shown in the figure.

A : Bolt (M6×1.0 bolt, length to approx. 80 mm {3.1 in})

B : Bolt (M6×1.0 bolt, length to approx. 60 mm {2.4 in})

C : Bolt (M6×1.0 bolt, length to approx. 16 mm {0.63 in})



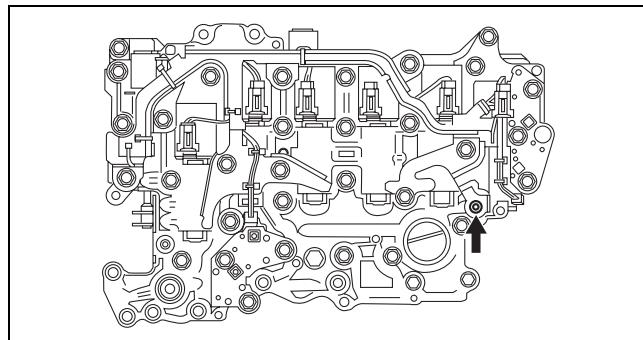
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**Caution**

- **Tighten the bolts while pressing the coupler component so that the bolt hole shown in the figure and coupler component hole do not shift.**

**Tightening torque**

9—10 N·m {92—101 kgf·cm, 80—88 in·lbf}

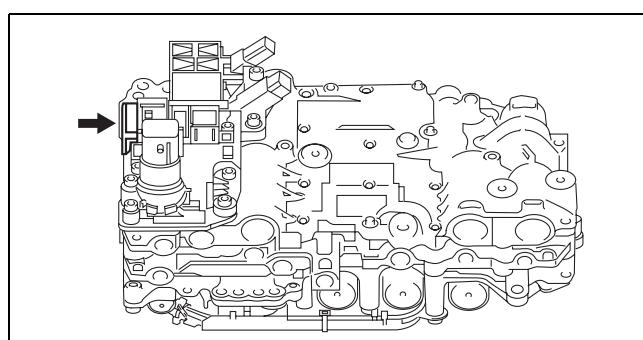


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(4) Connect the connector shown in the figure.

**Caution**

- **When connecting a connector, insert it at a straight angle until it is securely locked.**



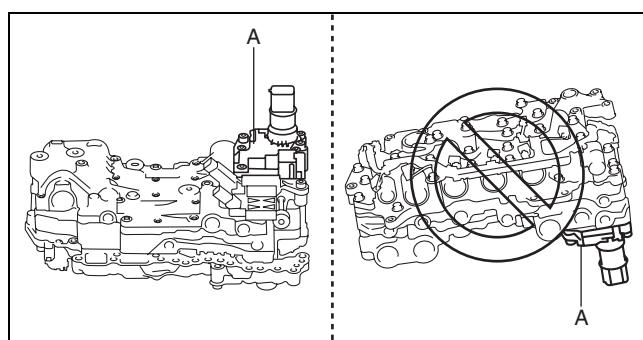
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7. Place the assembled control valve body with the TCM side pointing upward on a workbench.

A : TCM

**Caution**

- **Place the assembled control valve body with the TCM side pointing upward on a workbench. If it is placed with the TCM side pointing downward on the workbench, the TCM could be damaged.**



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# AUTOMATIC TRANSAXLE

## MEASUREMENT/ADJUSTMENT VALUE INPUT SHEET

id051700665300

### Differential Backlash Measurement/Adjustment

Symbol	Item	Formula	Unit	First time	Second time	Third time
A	FRONT SIDE GEAR AND PINION GEAR BACKLASH	—	mm {in}			
B	REAR SIDE GEAR AND PINION GEAR BACKLASH	—	mm {in}			
C	FRONT DIFFERENTIAL BACKLASH	Average value of A	mm {in}			
D	REAR DIFFERENTIAL BACKLASH	Average value of B	mm {in}			
E	STANDARD DIFFERENTIAL BACKLASH	—	mm {in}	0.030—0.150 {0.0012—0.0059}		
F	MEASUREMENT RESULT OF FRONT DIFFERENTIAL BACKLASH	—	mm {in}	OK/NG	OK/NG	OK/NG
G	MEASUREMENT RESULT OF REAR DIFFERENTIAL BACKLASH	—	mm {in}	OK/NG	OK/NG	OK/NG
H	THICKNESS OF REMOVED FRONT THRUST WASHER	—	mm {in}			
I	THICKNESS OF REMOVED REAR THRUST WASHER	—	mm {in}			
J	MEDIAN VALUE OF DIFFERENTIAL BACKLASH SPECIFICATION	—	mm {in}	0.090 {0.00354}		
K	FRONT DIFFERENTIAL BACKLASH GAP	C - J	mm {in}			
L	REAR DIFFERENTIAL BACKLASH GAP	D - J	mm {in}			
M	FRONT THRUST WASHER THICKNESS GAP	K × 0.1 mm {0.00394 in} / 0.08 mm {0.00315 in}	mm {in}			
N	REAR THRUST WASHER THICKNESS GAP	L × 0.1 mm {0.00394 in} / 0.08 mm {0.00315 in}	mm {in}			
O	THICKNESS OF OPTIMUM FRONT THRUST WASHER	H + M	mm {in}			
P	THICKNESS OF OPTIMUM REAR THRUST WASHER	I + N	mm {in}			

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### Description example

Symbol	Item	Formula	Unit	First time	Second time	Third time
A	FRONT SIDE GEAR AND PINION GEAR BACKLASH	—	mm {in}	0.160 {0.00630}	0.170 {0.00669}	0.110 {0.00433}
B	REAR SIDE GEAR AND PINION GEAR BACKLASH	—	mm {in}	0.160 {0.00630}	0.150 {0.00591}	0.085 {0.00335}
C	FRONT DIFFERENTIAL BACKLASH	Average value of A	mm {in}	0.165 {0.00650}	0.105 {0.00413}	
D	REAR DIFFERENTIAL BACKLASH	Average value of B	mm {in}	0.155 {0.00610}	0.080 {0.00315}	
E	STANDARD DIFFERENTIAL BACKLASH	—	mm {in}	0.030—0.150 {0.0012—0.0059}		
F	MEASUREMENT RESULT OF FRONT DIFFERENTIAL BACKLASH	—	mm {in}	OK(NG)	OK(NG)	OK/NG
G	MEASUREMENT RESULT OF REAR DIFFERENTIAL BACKLASH	—	mm {in}	OK(NG)	OK(NG)	OK/NG
H	THICKNESS OF REMOVED FRONT THRUST WASHER	—	mm {in}	0.810 {0.03189}		
I	THICKNESS OF REMOVED REAR THRUST WASHER	—	mm {in}	0.795 {0.0313}		
J	MEDIAN VALUE OF DIFFERENTIAL BACKLASH SPECIFICATION	—	mm {in}	0.090 {0.00354}		
K	FRONT DIFFERENTIAL BACKLASH GAP	C - J	mm {in}	0.075 {0.00295}		
L	REAR DIFFERENTIAL BACKLASH GAP	D - J	mm {in}	0.065 {0.00256}		
M	FRONT THRUST WASHER THICKNESS GAP	K × 0.1 mm {0.00394 in} / 0.08 mm {0.00315 in}	mm {in}	0.094 {0.00369}		
N	REAR THRUST WASHER THICKNESS GAP	L × 0.1 mm {0.00394 in} / 0.08 mm {0.00315 in}	mm {in}	0.081 {0.00320}		
O	THICKNESS OF OPTIMUM FRONT THRUST WASHER	H + M	mm {in}	0.904 {0.03559}		
P	THICKNESS OF OPTIMUM REAR THRUST WASHER	I + N	mm {in}	0.876 {0.03449}		

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05-17-295

# AUTOMATIC TRANSAXLE

## High Clutch Clearance Measurement/Adjustment

Symbol	Item	Formula	Unit	First time	Second time	Third time
A	DIAL GAUGE VALUE WITH PISTON OPERATED	—	mm {in}			
B	DIAL GAUGE VALUE WITHOUT PISTON OPERATED	—	mm {in}			
C	HIGH CLUTCH CLEARANCE	A - B	mm {in}			
D	HIGH CLUTCH CLEARANCE SPECIFICATION	—	mm {in}	1.300—1.500 {0.05119—0.05905}		
E	MEASUREMENT RESULT OF HIGH CLUTCH CLEARANCE	—	mm {in}	OK/NG	OK/NG	OK/NG
F	THICKNESS OF REMOVED SNAP RING	—	mm {in}			
G	RANGE	C + F	mm {in}			

azzzcw00000066

## Description example

Symbol	Item	Formula	Unit	First time	Second time	Third time
A	DIAL GAUGE VALUE WITH PISTON OPERATED	—	mm {in}	1.605 {0.06319}	1.245 {0.04902}	
B	DIAL GAUGE VALUE WITHOUT PISTON OPERATED	—	mm {in}	0.055 {0.00217}	-0.090 {-0.00354}	
C	HIGH CLUTCH CLEARANCE	A - B	mm {in}	1.550 {0.06102}	1.335 {0.05256}	
D	HIGH CLUTCH CLEARANCE SPECIFICATION	—	mm {in}	1.300—1.500 {0.05119—0.05905}		
E	MEASUREMENT RESULT OF HIGH CLUTCH CLEARANCE	—	mm {in}	OK(NG)	OK(NG)	OK/NG
F	THICKNESS OF REMOVED SNAP RING	—	mm {in}	1.615 {0.06358}		
G	RANGE	C + F	mm {in}	3.165 {0.12461}		

azzzcw00000067

# AUTOMATIC TRANSAXLE

## Low Clutch Clearance Measurement/Adjustment

Symbol	Item	Formula	Unit	First time	Second time	Third time
A	WEIGHT OF WEIGHT	—	N {kgf, lbf}			
B	CORRECTION VALUE OF LOW CLUTCH CLEARANCE (WEIGHT OF UNIT N)	(A - 90 N) × 0.00157 mm {0.0000618 in}	mm {in}			
	CORRECTION VALUE OF LOW CLUTCH CLEARANCE (WEIGHT OF UNIT kgf)	(A - 9.18 kgf) × 0.01540 mm {0.0006063 in}	mm {in}			
	CORRECTION VALUE OF LOW CLUTCH CLEARANCE (WEIGHT OF UNIT lbf)	(A - 20.23 lbf) × 0.00698 mm {0.0002748 in}	mm {in}			
C	DIAL GAUGE VALUE WITH PISTON OPERATED	—	mm {in}			
D	DIAL GAUGE VALUE WITHOUT PISTON OPERATED	—	mm {in}			
E	LOW CLUTCH CLEARANCE	C - D - B	mm {in}			
F	LOW CLUTCH CLEARANCE SPECIFICATION	—	mm {in}	1.400—1.600 {0.05512—0.06299}		
G	MEASUREMENT RESULT OF LOW CLUTCH CLEARANCE	—	mm {in}	OK/NG	OK/NG	OK/NG
H	THICKNESS OF REMOVED SNAP RING	—	mm {in}			
I	RANGE	E + H	mm {in}			

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## Description example

Symbol	Item	Formula	Unit	First time	Second time	Third time
A	WEIGHT OF WEIGHT	—	N {kgf, lbf}	150 {15.30, 33.72}	150 {15.30, 33.72}	
B	CORRECTION VALUE OF LOW CLUTCH CLEARANCE (WEIGHT OF UNIT N)	(A - 90 N) × 0.00157 mm {0.0000618 in}	mm {in}	0.0942 {0.00371}	0.0942 {0.00371}	
	CORRECTION VALUE OF LOW CLUTCH CLEARANCE (WEIGHT OF UNIT kgf)	(A - 9.18 kgf) × 0.01540 mm {0.0006063 in}	mm {in}			
	CORRECTION VALUE OF LOW CLUTCH CLEARANCE (WEIGHT OF UNIT lbf)	(A - 20.23 lbf) × 0.00698 mm {0.0002748 in}	mm {in}			
C	DIAL GAUGE VALUE WITH PISTON OPERATED	—	mm {in}	2.320 {0.09134}	2.115 {0.08327}	
D	DIAL GAUGE VALUE WITHOUT PISTON OPERATED	—	mm {in}	0.595 {0.02343}	0.480 {0.01890}	
E	LOW CLUTCH CLEARANCE	C - D - B	mm {in}	1.6308 {0.06420}	1.5408 {0.06066}	
F	LOW CLUTCH CLEARANCE SPECIFICATION	—	mm {in}	1.400—1.600 {0.05512—0.06299}		
G	MEASUREMENT RESULT OF LOW CLUTCH CLEARANCE	—	mm {in}	OK/NG	OK/NG	OK/NG
H	THICKNESS OF REMOVED SNAP RING	—	mm {in}	1.705 {0.06713}		
I	RANGE	E + H	mm {in}	3.3358 {0.13133}		

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05-17-297

# AUTOMATIC TRANSAXLE

## R-3-5 Brake Clearance Measurement/Adjustment

Symbol	Item	Formula	Unit	First time
A	RETAINER THICKNESS OF SPRINGS AND RETAINER COMPONENT	—	mm{in}	
B	DIAL GAUGE VALUE WITH R-3-5 BRAKE PISTON OPERATED	—	mm{in}	
C	DIAL GAUGE VALUE WITHOUT R-3-5 BRAKE PISTON OPERATED	—	mm{in}	
D	R-3-5 BRAKE CLEARANCE ADJUSTMENT VALUE	B - C	mm{in}	
E	THICKNESS OF SNAP RING (FZ01 19 469) FOR R-3-5 BRAKE CLEARANCE MEASUREMENT/ADJUSTMENT	—	mm{in}	
F	RANGE	D + E - A	mm{in}	

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## Description example

Symbol	Item	Formula	Unit	First time
A	RETAINER THICKNESS OF SPRINGS AND RETAINER COMPONENT	—	mm{in}	1.225 {0.04823}
B	DIAL GAUGE VALUE WITH R-3-5 BRAKE PISTON OPERATED	—	mm{in}	2.280 {0.08976}
C	DIAL GAUGE VALUE WITHOUT R-3-5 BRAKE PISTON OPERATED	—	mm{in}	0.205 {0.00807}
D	R-3-5 BRAKE CLEARANCE ADJUSTMENT VALUE	B - C	mm{in}	2.075 {0.08169}
E	THICKNESS OF SNAP RING (FZ01 19 469) FOR R-3-5 BRAKE CLEARANCE MEASUREMENT/ADJUSTMENT	—	mm{in}	2.625 {0.10335}
F	RANGE	D + E - A	mm{in}	3.475 {0.13681}

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# AUTOMATIC TRANSAXLE

## 2-6 Brake Clearance Measurement/Adjustment

Symbol	Item	Formula	Unit	First time	Second time	Third time
A	RETAINER THICKNESS OF SPRINGS AND RETAINER COMPONENT	—	mm {in}		←	←
B	DISTANCE A	—	mm {in}			
C	AVERAGE VALUE OF DISTANCE A	Average value of B	mm {in}			
D	2-6 BRAKE CLEARANCE	C - A	mm {in}			
E	2-6 BRAKE CLEARANCE SPECIFICATION	—	mm {in}	1.000—1.200 {0.03938—0.04724}		
F	MEASUREMENT RESULT OF 2-6 BRAKE CLEARANCE	—	mm {in}	OK/NG	OK/NG	OK/NG
G	THICKNESS OF REMOVED RETAINING PLATE	—	mm {in}			
H	RANGE	D + G	mm {in}			

05-17

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## Description example

Symbol	Item	Formula	Unit	First time	Second time	Third time
A	RETAINER THICKNESS OF SPRINGS AND RETAINER COMPONENT	—	mm {in}	1.425 {0.05610}	←	←
B	DISTANCE A	—	mm {in}	2.675 {0.10532} 2.650 {0.10433} 2.665 {0.10492} 2.670 {0.10512}	2.580 {0.10157} 2.555 {0.10059} 2.560 {0.10079} 2.565 {0.10098}	
C	AVERAGE VALUE OF DISTANCE A	Average value of B	mm {in}	2.665 {0.10492}	2.565 {0.10098}	
D	2-6 BRAKE CLEARANCE	C - A	mm {in}	1.240 {0.04882}	1.140 {0.04488}	
E	2-6 BRAKE CLEARANCE SPECIFICATION	—	mm {in}	1.000—1.200 {0.03938—0.04724}		
F	MEASUREMENT RESULT OF 2-6 BRAKE CLEARANCE	—	mm {in}	OK(NG)	OK(NG)	OK/NG
G	THICKNESS OF REMOVED RETAINING PLATE	—	mm {in}	2.015 {0.07933}		
H	RANGE	D + G	mm {in}	3.255 {0.12815}		

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# AUTOMATIC TRANSAXLE

## Low and Reverse Brake Clearance Measurement/Adjustment

Symbol	Item	Formula	Unit	First time			Second time			Third time		
A	DIAL GAUGE VALUE WITH PISTON OPERATED	—	mm {in}									
B	DIAL GAUGE VALUE WITHOUT PISTON OPERATED	—	mm {in}									
C	LOW AND REVERSE BRAKE CLEARANCE	A - B	mm {in}									
D	AVERAGE VALUE OF LOW AND REVERSE BRAKE CLEARANCE	Average value of C	mm {in}									
E	LOW AND REVERSE BRAKE CLEARANCE SPECIFICATION	—	mm {in}	1.650—1.850 {0.06497—0.07283}								
F	MEASUREMENT RESULT OF LOW AND REVERSE BRAKE CLEARANCE	—	mm {in}	OK/NG			OK/NG			OK/NG		
G	THICKNESS OF REMOVED SNAP RING	—	mm {in}									
H	RANGE	D + G	mm {in}									

azzzcw00000068

## Description example

Symbol	Item	Formula	Unit	First time			Second time			Third time		
A	DIAL GAUGE VALUE WITH PISTON OPERATED	—	mm {in}	2.470 {0.09724}	2.665 {0.10492}	2.070 {0.08150}	1.840 {0.07244}	1.570 {0.06181}	1.845 {0.07264}	1.695 {0.06673}	1.760 {0.06929}	
B	DIAL GAUGE VALUE WITHOUT PISTON OPERATED	—	mm {in}	0.595 {0.02343}	0.765 {0.03012}	0.205 {0.00807}	-0.035 {-0.00138}	-0.105 {-0.00413}	0.155 {0.00610}	0.010 {0.00039}	0.090 {0.00354}	
C	LOW AND REVERSE BRAKE CLEARANCE	A - B	mm {in}	1.875 {0.07382}	1.900 {0.07480}	1.865 {0.07343}	1.875 {0.07382}	1.675 {0.06594}	1.690 {0.06654}	1.685 {0.06634}	1.670 {0.06575}	
D	AVERAGE VALUE OF LOW AND REVERSE BRAKE CLEARANCE	Average value of C	mm {in}	1.879 {0.07398}			1.680 {0.06614}					
E	LOW AND REVERSE BRAKE CLEARANCE SPECIFICATION	—	mm {in}	1.650—1.850 {0.06497—0.07283}								
F	MEASUREMENT RESULT OF LOW AND REVERSE BRAKE CLEARANCE	—	mm {in}	OK(NG)			OK(NG)			OK/NG		
G	THICKNESS OF REMOVED SNAP RING	—	mm {in}	2.305 {0.09075}								
H	RANGE	D + G	mm {in}	4.184 {0.16472}								

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# AUTOMATIC TRANSAXLE

## Secondary Gear and Output Gear Preload Measurement/Adjustment

Symbol	Item	Formula	Unit	First time	Second time	Third time
A	ANGULAR CONTACT BALL BEARING PRELOAD	—	N·m {kgf·cm, in·lbf}		←	←
B	TOTAL PRELOAD	—	N·m {kgf·cm, in·lbf}			
C	SECONDARY GEAR AND OUTPUT GEAR PRELOAD	B - A	N·m {kgf·cm, in·lbf}			
D	SECONDARY GEAR AND OUTPUT GEAR PRELOAD SPECIFICATION	—	N·m {kgf·cm, in·lbf}	2.8—3.7 {28.6—37.7, 24.8—32.7}		
E	MEASUREMENT RESULT OF SECONDARY GEAR AND OUTPUT GEAR PRELOAD	—	—	OK/NG	OK/NG	OK/NG
F	THICKNESS OF REMOVED SHIM	—	mm {in}			
G	MEDIAN VALUE OF SECONDARY GEAR AND OUTPUT GEAR PRELOAD SPECIFICATION	—	N·m {kgf·cm, in·lbf}	3.25 {33.1, 28.7}		
H	PRELOAD GAP	G - C	N·m {kgf·cm, in·lbf}			
I	SHIM THICKNESS GAP	$H \times 0.1 \text{ mm } \{0.00394 \text{ in}\} / 1.6 \text{ N·m } \{16.3 \text{ kgf·cm, 14.1 in·lbf}\}$	mm {in}			
J	THICKNESS OF OPTIMUM SHIM	F + I	mm {in}			

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## Description example

Symbol	Item	Formula	Unit	First time	Second time	Third time
A	ANGULAR CONTACT BALL BEARING PRELOAD	—	N·m {kgf·cm, in·lbf}	1.2 {12.2, 10.6}	←	←
B	TOTAL PRELOAD	—	N·m {kgf·cm, in·lbf}	3.7 {37.7, 32.7}	4.4 {44.8, 38.9}	
C	SECONDARY GEAR AND OUTPUT GEAR PRELOAD	B - A	N·m {kgf·cm, in·lbf}	2.5 {25.5, 22.1}	3.2 {32.6, 28.3}	
D	SECONDARY GEAR AND OUTPUT GEAR PRELOAD SPECIFICATION	—	N·m {kgf·cm, in·lbf}	2.8—3.7 {28.6—37.7, 24.8—32.7}		
E	MEASUREMENT RESULT OF SECONDARY GEAR AND OUTPUT GEAR PRELOAD	—	—	OK/NG	OK/NG	OK/NG
F	THICKNESS OF REMOVED SHIM	—	mm {in}	0.855 {0.03366}		
G	MEDIAN VALUE OF SECONDARY GEAR AND OUTPUT GEAR PRELOAD SPECIFICATION	—	N·m {kgf·cm, in·lbf}	3.25 {33.1, 28.7}		
H	PRELOAD GAP	G - C	N·m {kgf·cm, in·lbf}	0.75 {7.6, 6.6}		
I	SHIM THICKNESS GAP	$H \times 0.1 \text{ mm } \{0.00394 \text{ in}\} / 1.6 \text{ N·m } \{16.3 \text{ kgf·cm, 14.1 in·lbf}\}$	mm {in}	0.047 {0.00185}		
J	THICKNESS OF OPTIMUM SHIM	F + I	mm {in}	0.902 {0.03551}		

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05-17-301

# AUTOMATIC TRANSAXLE

## Ring Gear and Differential Preload Measurement/Adjustment

Symbol	Item	Formula	Unit	First time	Second time	Third time
A	RING GEAR AND DIFFERENTIAL PRELOAD	—	N·m {kgf·cm, in·lbf}			
B	RING GEAR AND DIFFERENTIAL PRELOAD SPECIFICATION	—	N·m {kgf·cm, in·lbf}	2.8—4.1 {28.6—41.8, 24.8—36.2}		
C	MEASUREMENT RESULT OF RING GEAR AND DIFFERENTIAL PRELOAD	—	—	OK/NG	OK/NG	OK/NG
D	THICKNESS OF REMOVED SHIM	—	mm {in}			
E	MEDIAN VALUE OF RING GEAR AND DIFFERENTIAL PRELOAD SPECIFICATION	—	N·m {kgf·cm, in·lbf}	3.45 {35.2, 30.5}		
F	PRELOAD GAP	E - A	N·m {kgf·cm, in·lbf}			
G	SHIM THICKNESS GAP	$F \times 0.1 \text{ mm } \{0.00394 \text{ in}\} / 1.5 \text{ N·m } \{15.3 \text{ kgf·cm, 13.3 in·lbf}\}$	mm {in}			
H	THICKNESS OF OPTIMUM SHIM	D + G	mm {in}			

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## Description example

Symbol	Item	Formula	Unit	First time	Second time	Third time
A	RING GEAR AND DIFFERENTIAL PRELOAD	—	N·m {kgf·cm, in·lbf}	2.5 {25.5, 22.1}	3.4 {34.7, 30.1}	
B	RING GEAR AND DIFFERENTIAL PRELOAD SPECIFICATION	—	N·m {kgf·cm, in·lbf}	2.8—4.1 {28.6—41.8, 24.8—36.2}		
C	MEASUREMENT RESULT OF RING GEAR AND DIFFERENTIAL PRELOAD	—	—	OK/NG	OK/NG	OK/NG
D	THICKNESS OF REMOVED SHIM	—	mm {in}	0.905 {0.03563}		
E	MEDIAN VALUE OF RING GEAR AND DIFFERENTIAL PRELOAD SPECIFICATION	—	N·m {kgf·cm, in·lbf}	3.45 {35.2, 30.5}		
F	PRELOAD GAP	E - A	N·m {kgf·cm, in·lbf}	0.95 {9.7, 8.4}		
G	SHIM THICKNESS GAP	$F \times 0.1 \text{ mm } \{0.00394 \text{ in}\} / 1.5 \text{ N·m } \{15.3 \text{ kgf·cm, 13.3 in·lbf}\}$	mm {in}	0.063 {0.00248}		
H	THICKNESS OF OPTIMUM SHIM	D + G	mm {in}	0.968 {0.03811}		

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## Total End Play Measurement/Adjustment

Symbol	Item	Formula	Unit	First time			
A	TOTAL END PLAY ADJUSTMENT VALUE	—	mm{in}				
B	AVERAGE OF TOTAL END PLAY ADJUSTMENT VALUE	Average value of A	mm{in}				
C	THICKNESS OF SHIM (FZ01 19 2L1) FOR TOTAL END PLAY MEASUREMENT/ADJUSTMENT	—	mm{in}				
D	RANGE	B + C	mm{in}				

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## Description example

Symbol	Item	Formula	Unit	First time			
A	TOTAL END PLAY ADJUSTMENT VALUE	—	mm{in}	0.120 {0.00472}	0.110 {0.00433}	0.110 {0.00433}	0.120 {0.00472}
B	AVERAGE OF TOTAL END PLAY ADJUSTMENT VALUE	Average value of A	mm{in}		0.115 {0.00453}		
C	THICKNESS OF SHIM (FZ01 19 2L1) FOR TOTAL END PLAY MEASUREMENT/ADJUSTMENT	—	mm{in}		3.010 {0.11850}		
D	RANGE	B + C	mm{in}		3.125 {0.12303}		

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## DIFFERENTIAL BACKLASH MEASUREMENT/ADJUSTMENT

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**Preparation Before Servicing**

- Print out the measurement/adjustment value input sheet. (See 05-17-295 MEASUREMENT/ADJUSTMENT VALUE INPUT SHEET.)

**Note**

- When performing the measurement/adjustment, input the measured and calculated values into the measurement/adjustment value input sheet.
- When performing the other measurements/adjustments, if the measurement/adjustment value input sheet has been printed out, use the printed sheet.

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**Differential Backlash Measurement****Note**

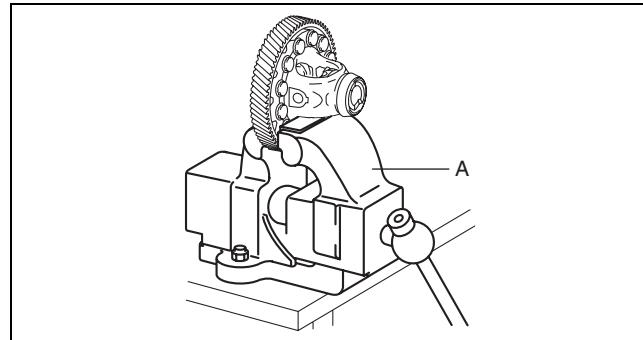
- Measure the tooth play (gap) between the side gear and pinion gear as the differential backlash.

- Secure the ring gear and differential in a vise.

A : Vise

**Caution**

- Insert a protective plate between the vise and the part so as not to damage the part.



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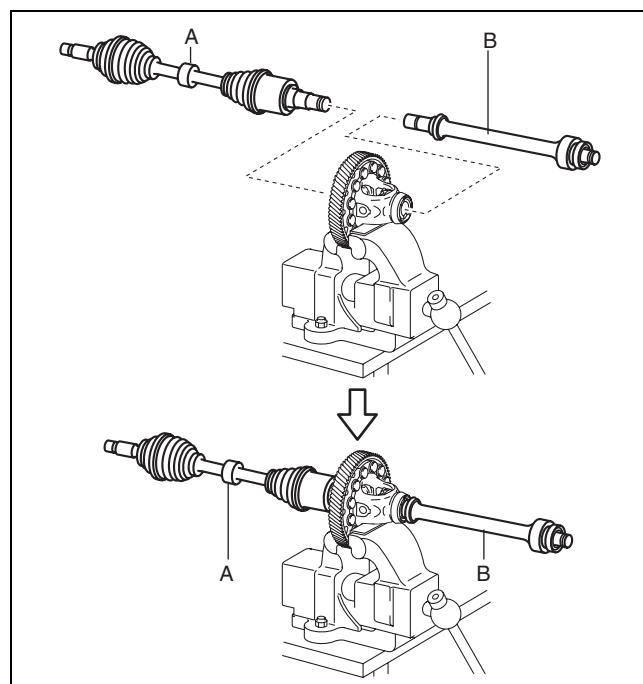
- Assemble the drive shaft (LH) and joint shaft to the ring gear and differential.

A : Drive shaft (LH)

B : Joint shaft

**Caution**

- Because the drive shaft (LH) clip is not required for the differential backlash measurement, do not assemble it.



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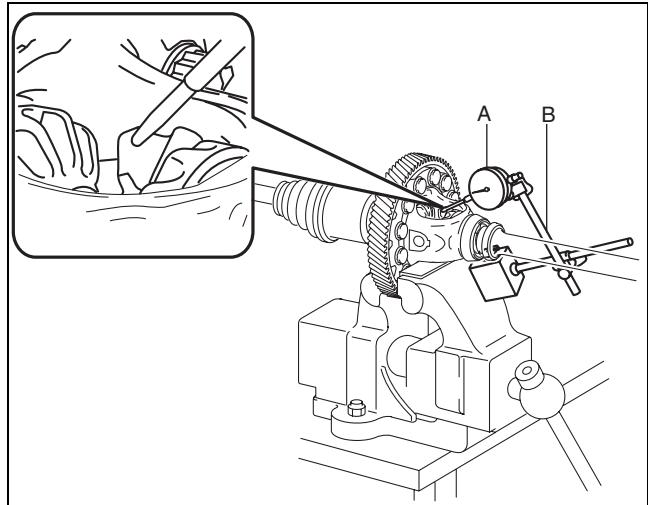
## AUTOMATIC TRANSAXLE

3. Set the dial gauge and magnetic stand as shown in the figure.

A : Dial gauge  
B : Magnetic stand

**Caution**

- To reduce error during the backlash measurement, set the dial gauge so that it is perpendicular to the teeth of the pinion gear.



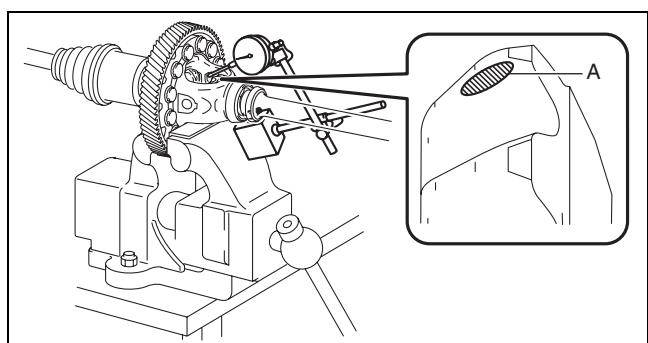
azzjw00001349

4. Set the dial gauge end to the pinion gear teeth.

A : Area in which dial gauge end is set

**Caution**

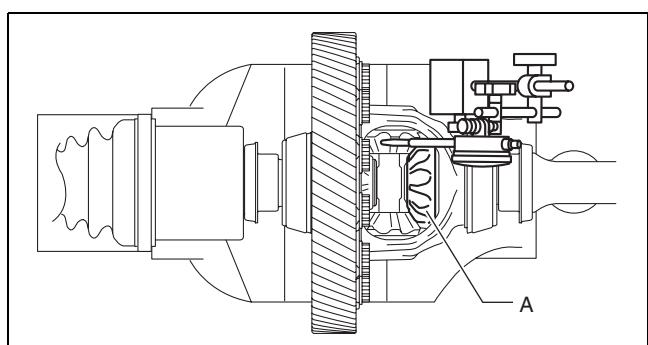
- To reduce error during the backlash measurement, set the dial gauge end to within the area shown in the figure.



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5. Secure the side gear on the front side by hand.

A : Secure by hand



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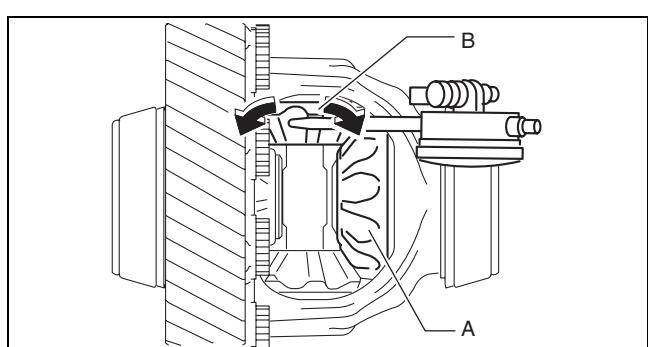
6. Move the pinion gear with the dial gauge that has been set by hand and measure the backlash.

A : Secure by hand

B : Move the pinion gear by hand such that the secured side gear does not move.

**Caution**

- Because a difference occurs in the backlash measurement value if the secured side gear moves, move the pinion gear by hand so that the secured side gear does not move.



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## AUTOMATIC TRANSAXLE

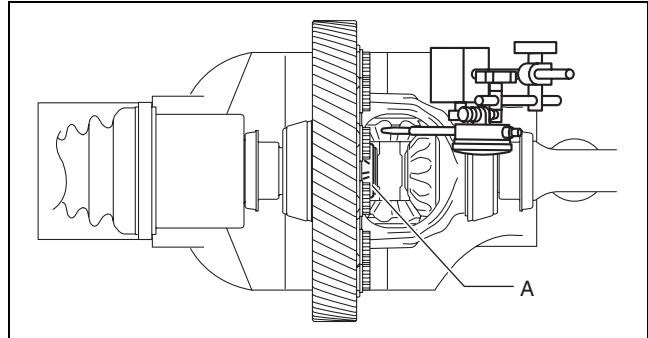
7. Input the measured side gear on the front side and pinion gear backlash into the measurement/adjustment value input sheet.

### Note

- Input into section A in the measurement/adjustment value input sheet.

8. Secure the side gear on the rear side by hand.

A : Secure by hand



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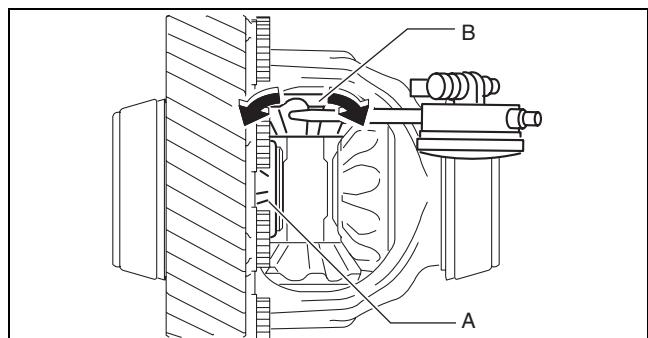
9. Move the pinion gear with the dial gauge that has been set by hand and measure the backlash.

A : Secure by hand

B : Move the pinion gear by hand such that the secured side gear does not move.

### Caution

- Because a difference occurs in the backlash measurement value if the secured side gear moves, move the pinion gear by hand so that the secured side gear does not move.



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10. Input the measured side gear on the rear side and the pinion gear backlash into the measurement/adjustment value sheet.

### Note

- Input into section B in the measurement/adjustment value sheet.

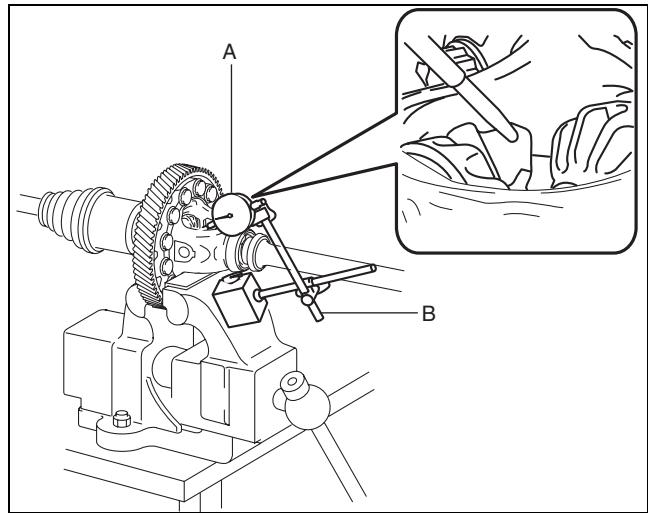
11. Set the dial gauge and magnetic stand to the pinion gear on the opposite side.

A : Dial gauge

B : Magnetic stand

### Caution

- To reduce error during the backlash measurement, set the dial gauge so that it is perpendicular to the teeth of the pinion gear.



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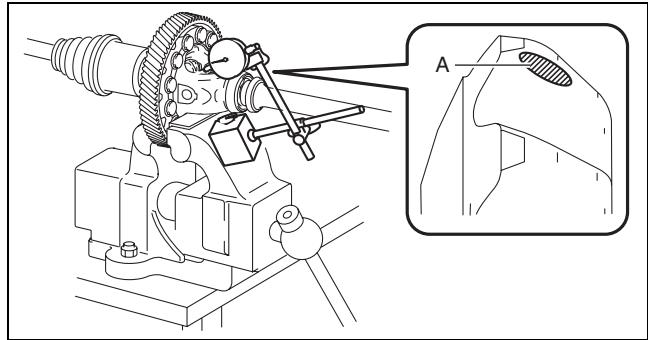
## AUTOMATIC TRANSAXLE

12. Set the dial gauge end to the pinion gear teeth.

A : Area in which dial gauge end is set

**Caution**

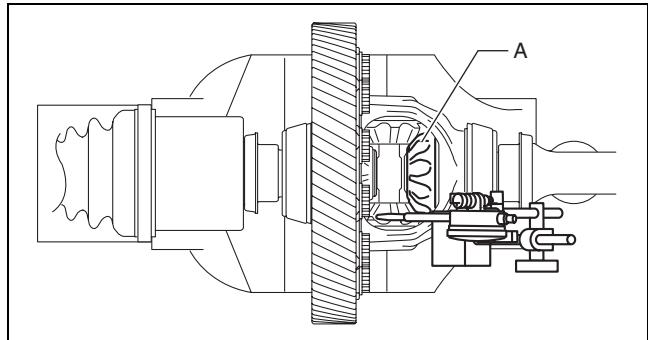
- To reduce error during the backlash measurement, set the dial gauge end to within the area shown in the figure.



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13. Secure the side gear on the front side by hand.

A : Secure by hand



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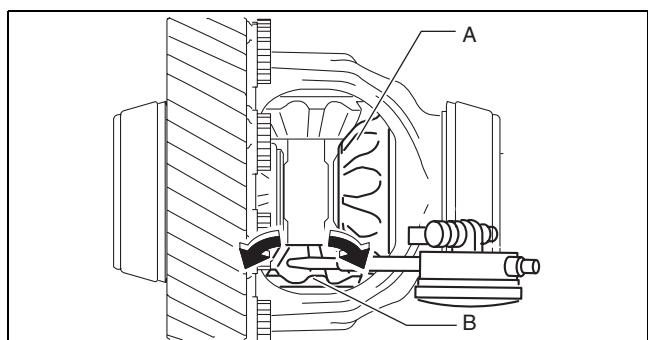
14. Move the pinion gear with the dial gauge that has been set by hand and measure the backlash.

A : Secure by hand

B : Move the pinion gear by hand such that the secured side gear does not move.

**Caution**

- Because a difference occurs in the backlash measurement value if the secured side gear moves, move the pinion gear by hand so that the secured side gear does not move.



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15. Input the measure side gear on the front side and the pinion gear backlash into the measurement/adjustment value sheet.

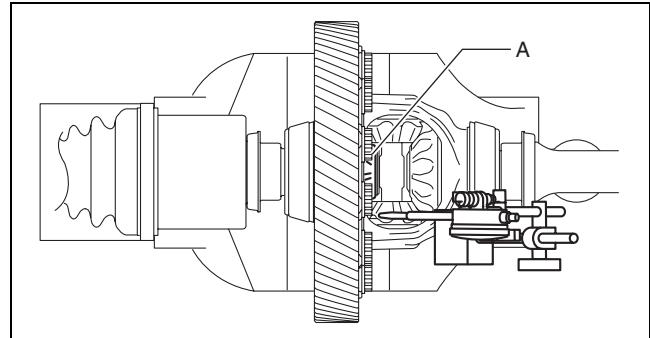
**Note**

- Input into section A in the measurement/adjustment value sheet.

## AUTOMATIC TRANSAXLE

16. Secure the side gear on the rear side by hand.

A : Secure by hand



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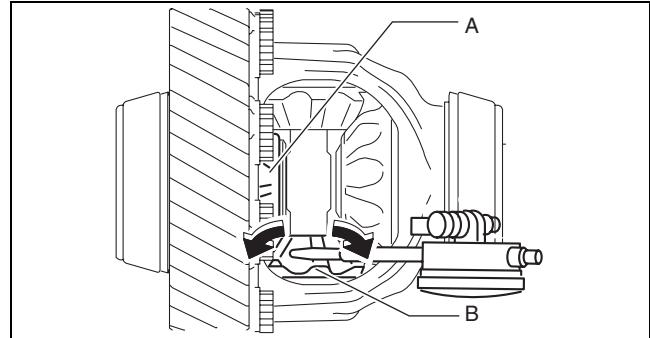
17. Move the pinion gear with the dial gauge that has been set by hand and measure the backlash.

A : Secure by hand

B : Move the pinion gear by hand such that the secured side gear does not move.

**Caution**

- Because a difference occurs in the backlash measurement value if the secured side gear moves, move the pinion gear by hand so that the secured side gear does not move.



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18. Input the measured side gear on the rear side and the pinion gear backlash into the measurement/adjustment value sheet.

**Note**

- Input into section B in the measurement/adjustment value sheet.

19. Calculate the average value of the measured side gear on the front side and the pinion gear backlash.

20. Input the average value of the calculated side gear on the front side and the pinion gear backlash into the measurement/adjustment value sheet.

**Note**

- The average value of the calculated side gear on the front side and the pinion gear backlash is the differential backlash on the front side.

21. Calculate the average value of the measured side gear on the rear side and the pinion gear backlash.

22. Input the average value of the calculated side gear on the rear side and the pinion gear backlash into the measurement/adjustment value sheet.

**Note**

- The average value of the calculated side gear on the rear side and the pinion gear backlash is the differential backlash on the rear side.

23. Verify that the differential backlash on the front side and the differential backlash on the rear side satisfy the specification.

**Specification**

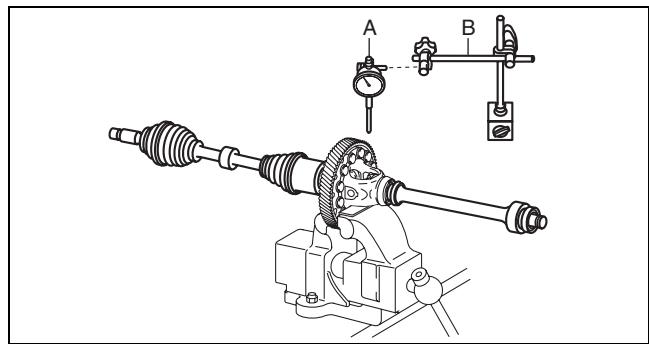
0.030—0.150 mm {0.0012—0.0059 in}

- If not within the specification, perform the differential backlash adjustment. (See 05-17-309 Differential Backlash Adjustment.)
- If it exceeds the specification even if the thrust washer with a thickness of 0.95 mm {0.037 in}, which is the thickest, is assembled after performing the differential backlash adjustment, disassemble the ring gear and differential and replace the differential gear case with a new one.  
(See 05-17-121 RING GEAR AND DIFFERENTIAL DISASSEMBLY.)  
(See 05-17-266 RING GEAR AND DIFFERENTIAL ASSEMBLY.)

## AUTOMATIC TRANSAXLE

24. Remove the dial gauge and magnetic stand.

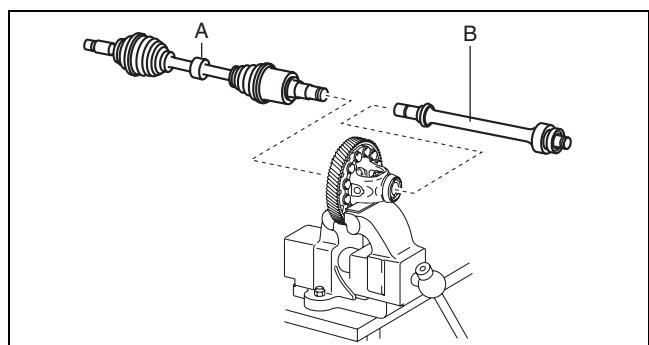
- A : Dial gauge  
B : Magnetic stand



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25. Remove the drive shaft (LH) and joint shaft.

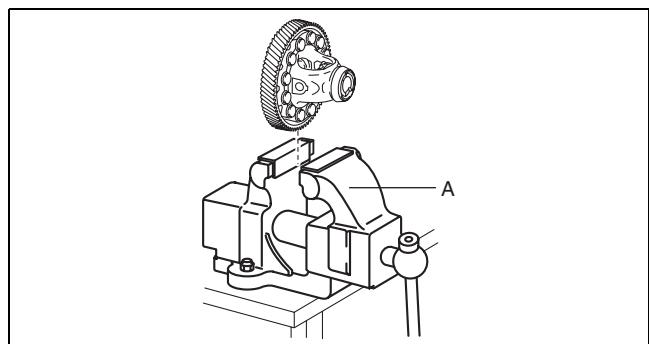
- A : Drive shaft (LH)  
B : Joint shaft



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26. Remove the ring gear and differential from the vise.

- A : Vise



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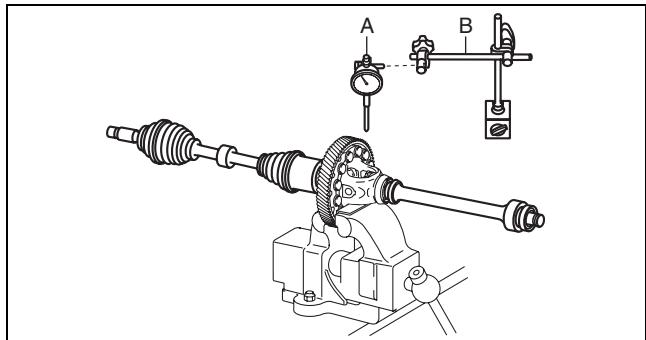
# AUTOMATIC TRANSAXLE

## Differential Backlash Adjustment

1. Remove the dial gauge and magnetic stand.

A : Dial gauge

B : Magnetic stand



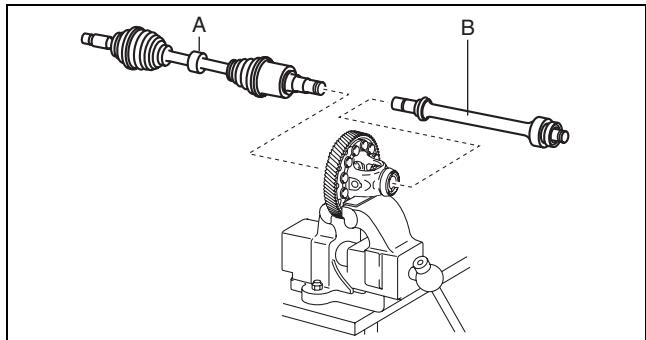
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2. Remove the drive shaft (LH) and joint shaft.

A : Drive shaft (LH)

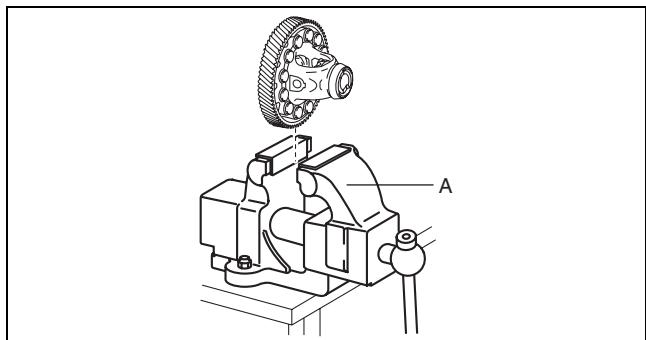
B : Joint shaft



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3. Remove the ring gear and differential from the vise.

A : Vise

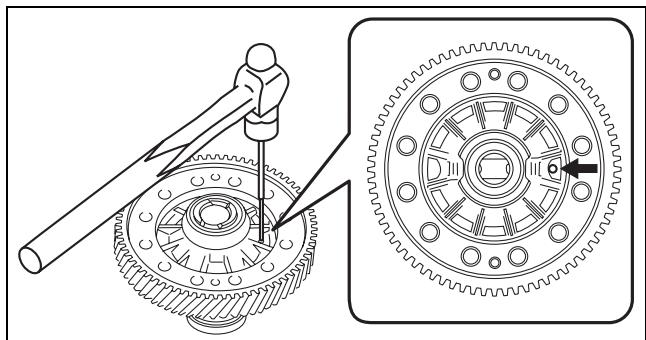


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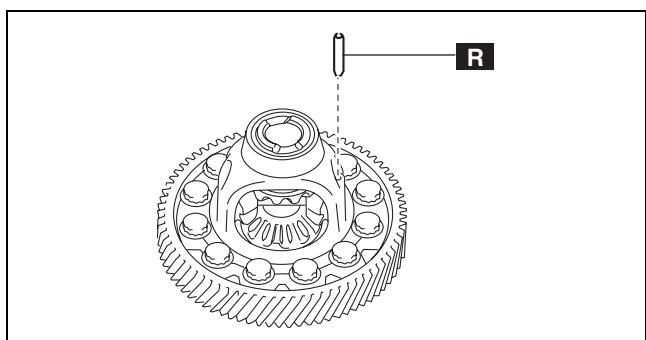
4. Remove the roll pin shown in the figure using a pin punch.

### Note

- Use a pin punch with an end outer diameter of 3 mm {0.119 in} or more, and within 4 mm {0.157 in} and an end length of 50 mm {2.0 in} or more.



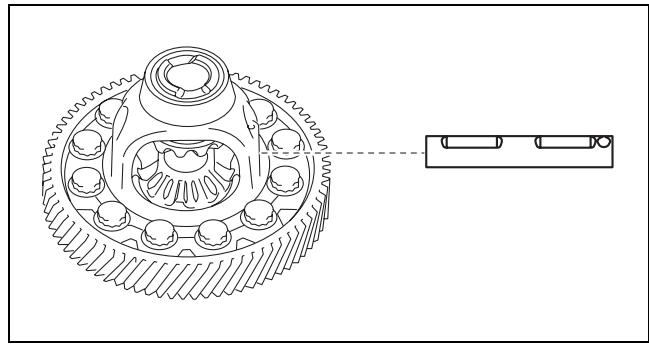
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## AUTOMATIC TRANSAXLE

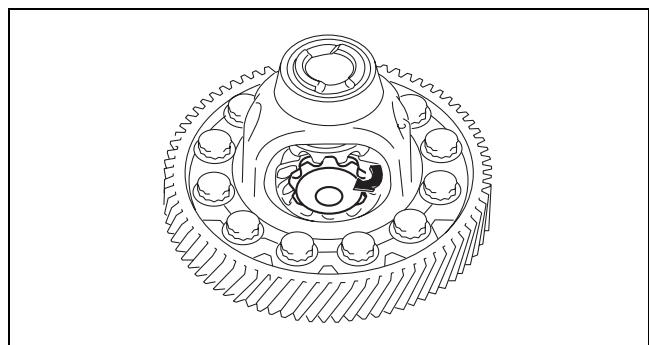
5. Remove the pinion shaft.



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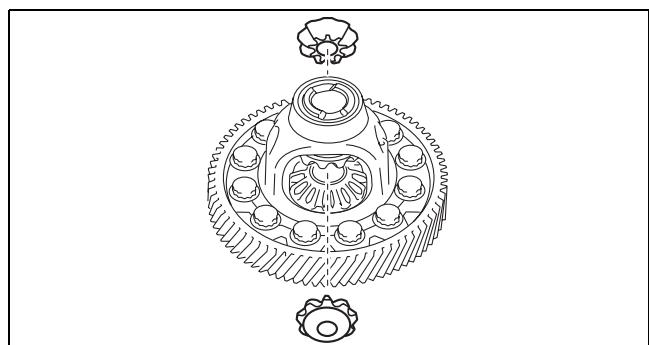
6. Remove the pinion gears using the following procedure:

- (1) Rotate the pinion gears as shown in the figure.



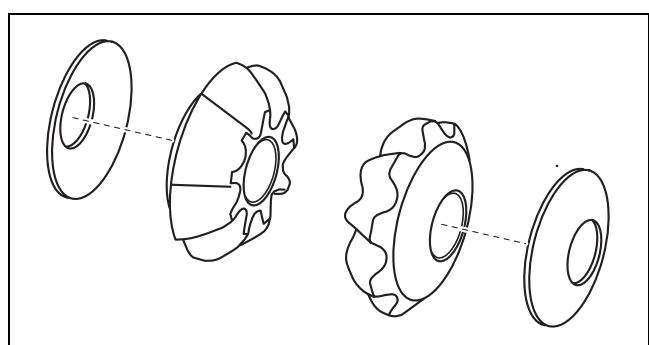
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- (2) Remove the pinion gears.



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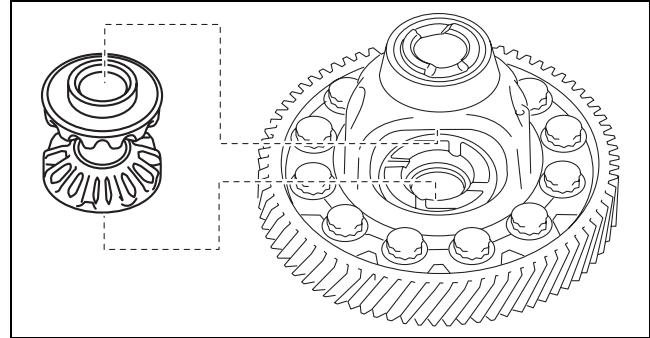
7. Remove the thrust washers from the pinion gears.



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## AUTOMATIC TRANSAXLE

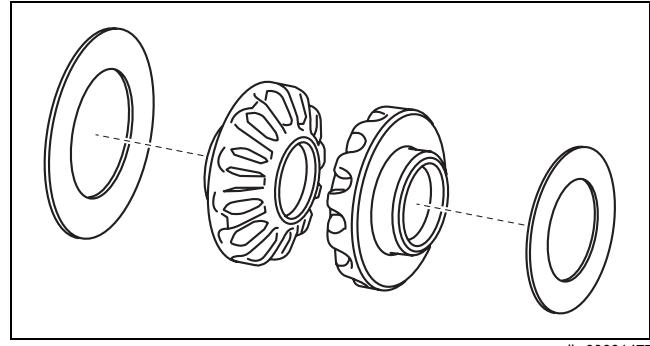
8. Remove the side gears.



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9. Remove the thrust washers from the side gears.



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10. Measure the thickness of the removed thrust washers from the side gears.

**Note**

- Recommended measuring instrument: Micrometer

11. Input the measured thrust washer thickness into the measurement/adjustment value input sheet.

12. Perform the following calculation to calculate the differential backlash gap.

**Note**

- The differential backlash gap is the difference between the differential backlash and the median value of the differential backlash specification.

**Differential backlash gap on front side = C - J**

C: Differential backlash on front side

J: Median value of differential backlash specification (0.090 mm {0.00354 in})

**Note**

**Example**

C: Differential backlash on front side is 0.165 mm {0.00650 in}

Differential backlash gap on front side = 0.165 mm {0.00650 in} - 0.090 mm {0.00354 in} = 0.075 mm {0.00295 in}

**Differential backlash gap on rear side = D - J**

D: Differential backlash on rear side

J: Median value of differential backlash specification (0.090 mm {0.00354 in})

**Note**

**Example**

D: Differential backlash on rear side is 0.155 mm {0.00610 in}

Differential backlash gap on rear side = 0.155 mm {0.00610 in} - 0.090 mm {0.00354 in} = 0.065 mm {0.00256 in}

13. Input the differential backlash gap into the measurement/adjustment value sheet.

## AUTOMATIC TRANSAXLE

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14. Perform the following calculation to calculate the gap in the thrust washer thickness.

**Note**

- The gap in the thrust washer thickness is the difference between the removed thrust washer thickness and the optimum thrust washer thickness.
- If the thrust washer thickness is thickened 0.1 mm {0.00394 in}, the differential backlash decreases approx. 0.08 mm {0.00315 in}.

**Thrust washer thickness gap on front side =  $K \times 0.1 \text{ mm } \{0.00394 \text{ in}\} / 0.08 \text{ mm } \{0.00315 \text{ in}\}$**

K: Differential backlash gap on front side

**Note**

**Example**

K: Differential backlash gap on front side is 0.075 mm {0.00295 in}

Thrust washer thickness gap on front side =  $0.075 \text{ mm } \{0.00295 \text{ in}\} \times 0.1 \text{ mm } \{0.00394 \text{ in}\} / 0.08 \text{ mm } \{0.00315 \text{ in}\} = 0.094 \text{ mm } \{0.00369 \text{ in}\}$

**Thrust washer thickness gap on rear side =  $L \times 0.1 \text{ mm } \{0.00394 \text{ in}\} / 0.08 \text{ mm } \{0.00315 \text{ in}\}$**

L: Differential backlash gap on rear side

**Note**

**Example**

L: Differential backlash gap on rear side is 0.065 mm {0.00256 in}

Thrust washer thickness gap on rear side =  $0.065 \text{ mm } \{0.00256 \text{ in}\} \times 0.1 \text{ mm } \{0.00394 \text{ in}\} / 0.08 \text{ mm } \{0.00315 \text{ in}\} = 0.081 \text{ mm } \{0.00320 \text{ in}\}$

15. Input the calculated thrust washer thickness gap into the measurement/adjustment value sheet.

16. Perform the following calculation to calculate the optimum thrust washer thickness.

**Optimum thrust washer thickness on front side =  $H + M$**

H: Thickness of removed thrust washer on front side

M: Thrust washer thickness gap on front side

**Note**

**Example**

H: Thickness of removed thrust washer on front side is 0.810 mm {0.03189 in}

M: Thrust washer thickness gap on front side is 0.094 mm {0.00369 in}

Thickness of optimum thrust washer on front side =  $0.810 \text{ mm } \{0.03189 \text{ in}\} + 0.094 \text{ mm } \{0.00369 \text{ in}\} = 0.904 \text{ mm } \{0.03559 \text{ in}\}$

**Thickness of optimum thrust washer on rear side =  $I + N$**

I: Thickness of removed thrust washer on rear side

N: Thrust washer thickness gap on rear side

**Note**

**Example**

I: Thickness of removed thrust washer on rear side is 0.795 mm {0.0313 in}

N: Thrust washer thickness gap on rear side is 0.081 mm {0.00320 in}

Thickness of optimum thrust washer on rear side =  $0.795 \text{ mm } \{0.0313 \text{ in}\} + 0.081 \text{ mm } \{0.00320 \text{ in}\} = 0.876 \text{ mm } \{0.03449 \text{ in}\}$

17. Input the calculated optimum thrust washer thickness into the measurement/adjustment value sheet.

## AUTOMATIC TRANSAXLE

18. Select the nearest thrust washer for the calculated optimum thrust washer thickness from the following table:

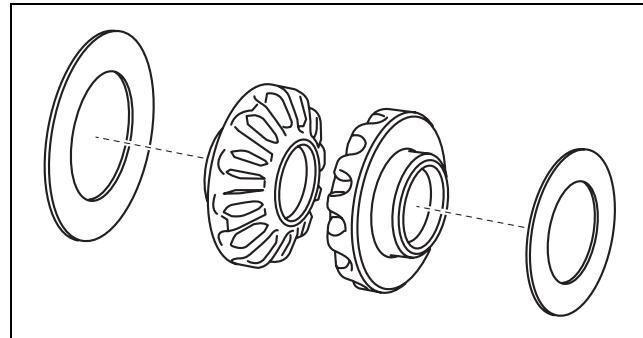
**Caution**

- Select the same thickness of the thrust washers on the front and rear sides  
If the thrust washers of the same thickness are assembled on the front and rear sides, measure the differential backlash again, and if the measurement value does not satisfy the specification, thrust washers of varied thickness on the front and rear sides is alright.

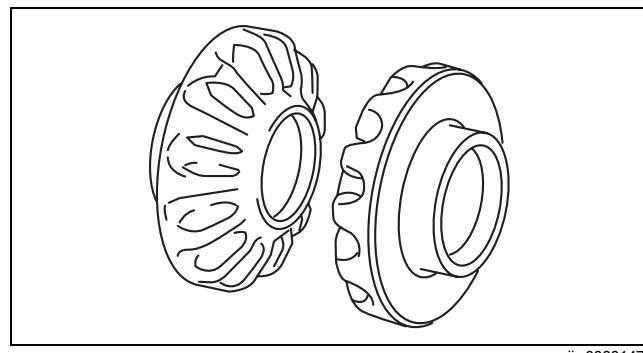
05-17

Selected thrust washer thickness
0.95 mm {0.037 in}
0.90 mm {0.035 in}
0.85 mm {0.033 in}
0.80 mm {0.031 in}
0.75 mm {0.030 in}

19. Assemble the selected thrust washers to the side gears.



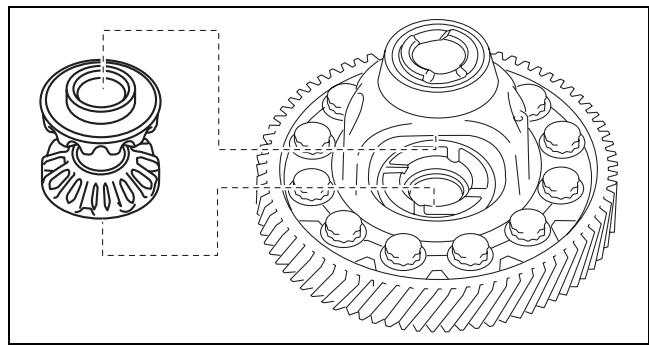
azzjw00001477



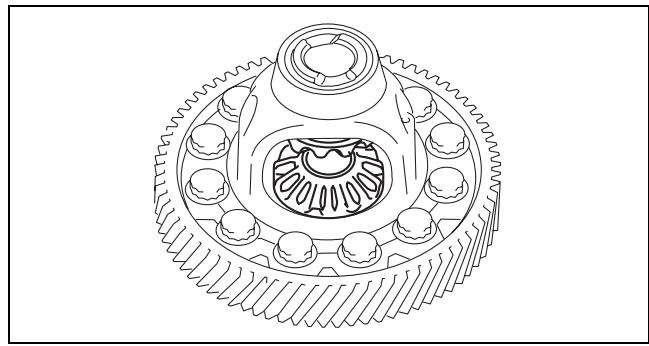
azzjw00001478

## AUTOMATIC TRANSAXLE

20. Assemble the side gears which have the thrust washers assembled to them.

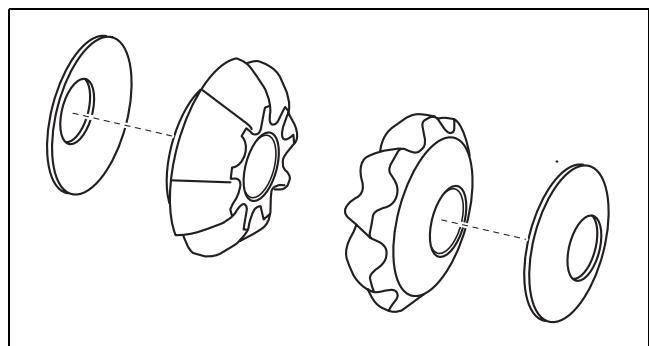


azzjw00001476

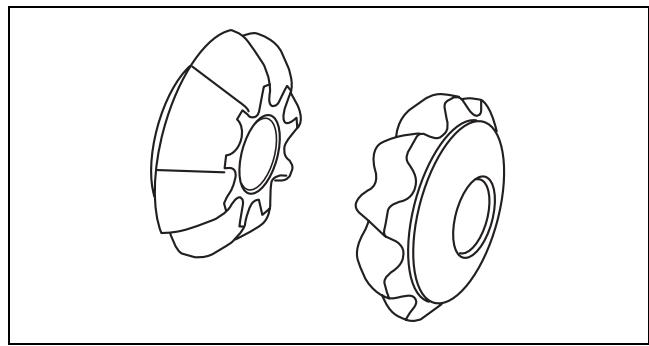


azzjw00001479

21. Assemble the thrust washers to the pinion gears.



azzjw00001475

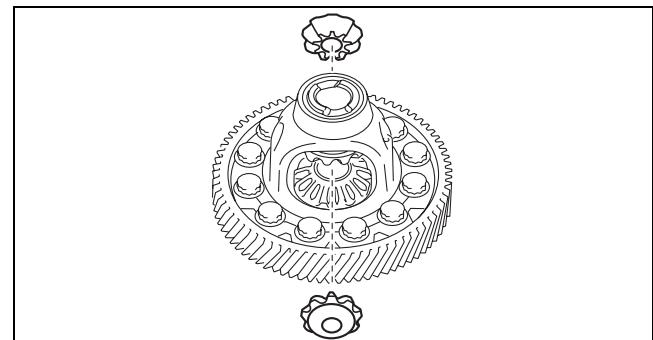


azzjw00001480

## AUTOMATIC TRANSAXLE

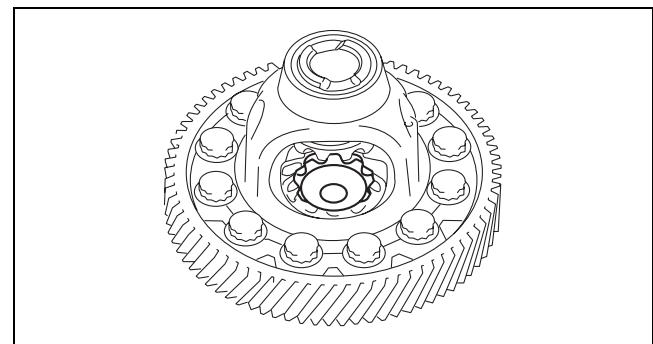
22. Assemble the pinion gears which have the thrust washers assembled to them using the following procedure:

- (1) Assemble the pinion gears which have the thrust washers assembled to them.



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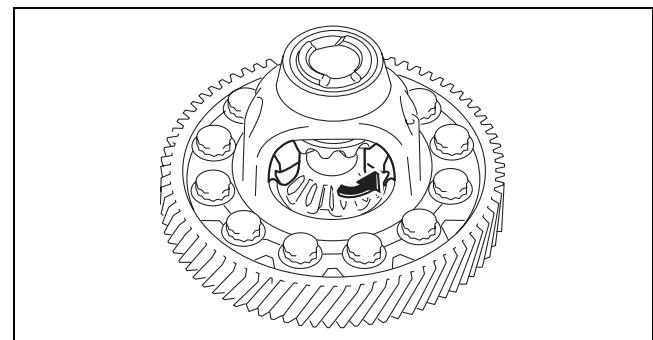


azzjw00001481

- (2) Rotate the pinion gears so that the pinion shaft holes of the differential gear case and the pinion gears are aligned as shown in the figure.

**Note**

- If the pinion shaft holes of the differential gear case and the pinion gears are not aligned, remove the pinion gears, change the side gears combination, and reassemble.



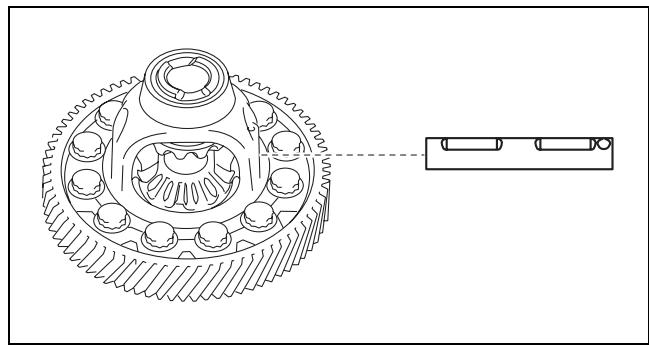
azzjw00001482

## AUTOMATIC TRANSAXLE

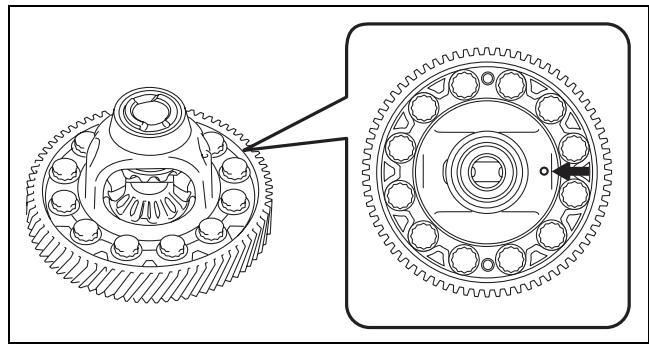
23. Assemble the pinion shaft.

### Caution

- Assemble the pinion shaft so that the roll pin holes of the differential gear case and the pinion shaft are aligned.



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azzjjw00001483

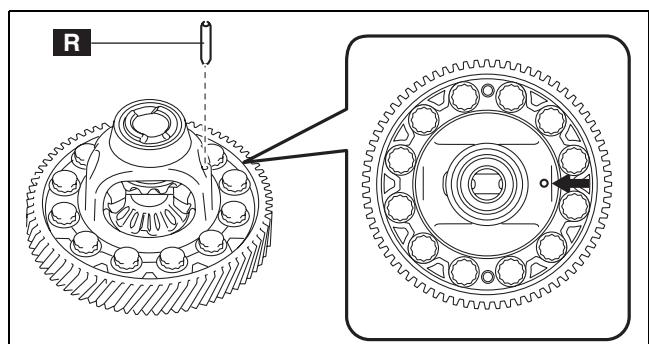
24. Assemble a new roll pin to the position shown in the figure using a pin punch.

### Caution

- Assemble so that the end gap of the roll pin is positioned in the direction shown in the figure.

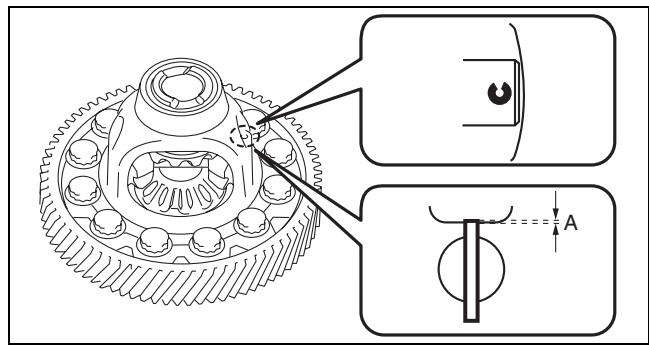
### Note

- Use a pin punch with an end outer diameter of 5 mm {0.197 in} or more, and within 8 mm {0.314 in}.



azzjjw00001484

A : -0.5—0.5 mm {-0.01—0.01 in}



azzjjw00001485

25. Perform the differential backlash measurement. (See 05-17-303 Differential Backlash Measurement.)

## HIGH CLUTCH CLEARANCE MEASUREMENT/ADJUSTMENT

id051700664600

**Preparation Before Servicing**

- Print out the measurement/adjustment value input sheet. (See 05-17-295 MEASUREMENT/ADJUSTMENT VALUE INPUT SHEET.)

**Note**

- When performing the measurement/adjustment, input the measured and calculated values into the measurement/adjustment value input sheet.
- When performing the other measurements/adjustments, if the measurement/adjustment value input sheet has been printed out, use the printed sheet.

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**High Clutch Clearance Measurement**

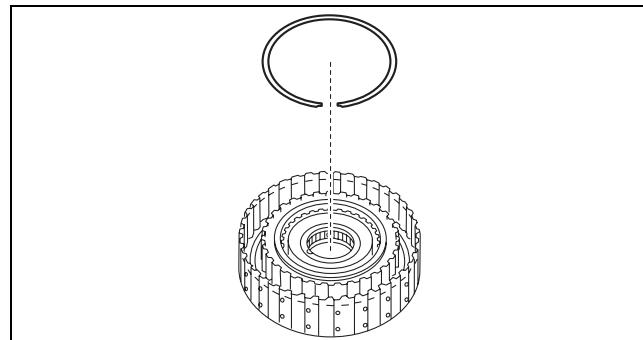
- Assemble the snap ring.

**Caution**

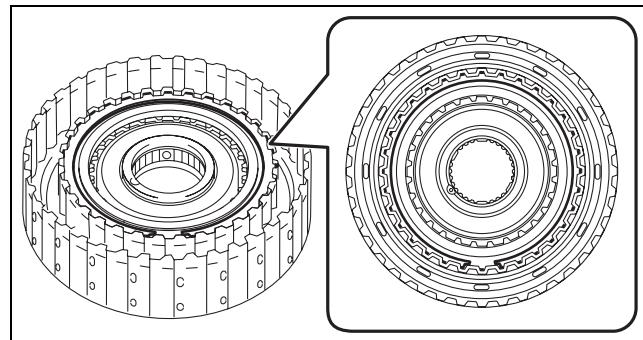
- After assembling the snap ring, verify that the snap ring is securely inserted into the bottom of the snap ring groove.**

**Note**

- Snap ring size: Outer diameter approx. 127.4 mm {5.016 in}



azzjw00001102



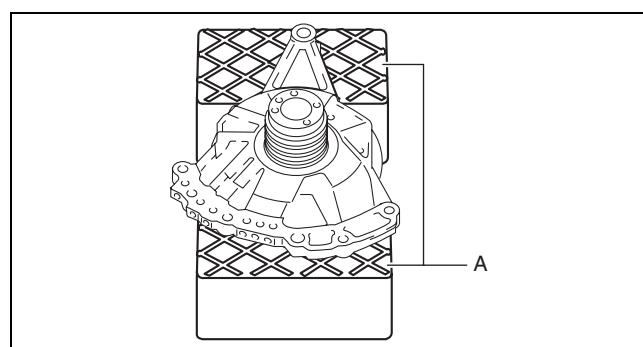
azzjw00001103

- Set the oil pump on the workbench as shown in the figure.

A : Rubber plate

**Caution**

- To reduce error during the high clutch clearance measurement, use the rubber plates to adjust the alignment surface of the oil pump with the transaxle case so that it is level.**



azzjw00001104

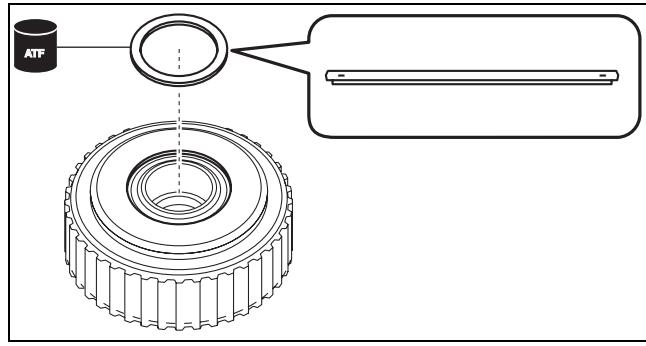
## AUTOMATIC TRANSAXLE

3. Assemble the thrust needle bearing to the clutch component using the following procedure:

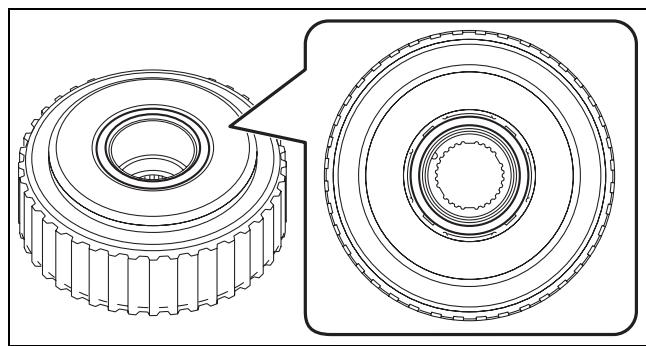
**Note**

- Thrust needle bearing size: Outer diameter approx. 72.7 mm {2.86 in}

- (1) To prevent the thrust needle bearing from dropping out, apply ATF (ATF FZ) to the thrust needle bearing.
- (2) Assemble the thrust needle bearing.

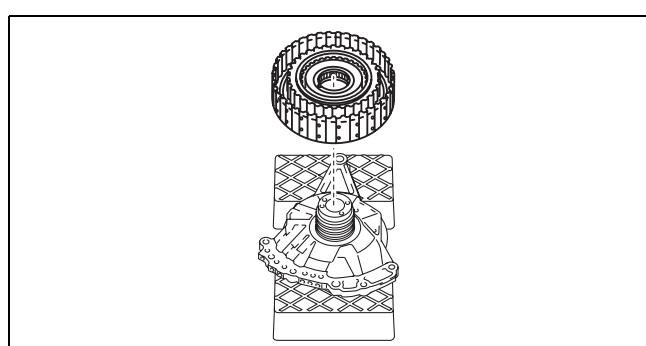


azzjw00001105

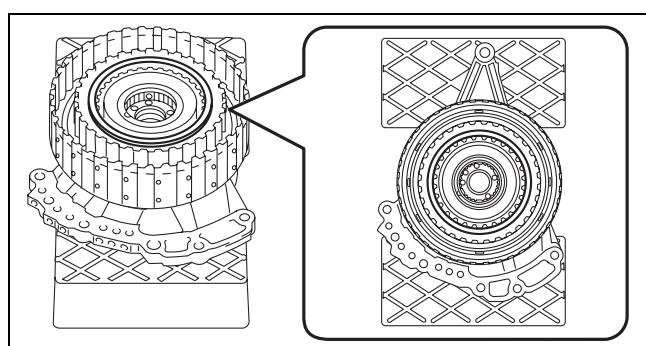


azzjw00001106

4. Assemble the parts assembled together in Step 3 to the oil pump.



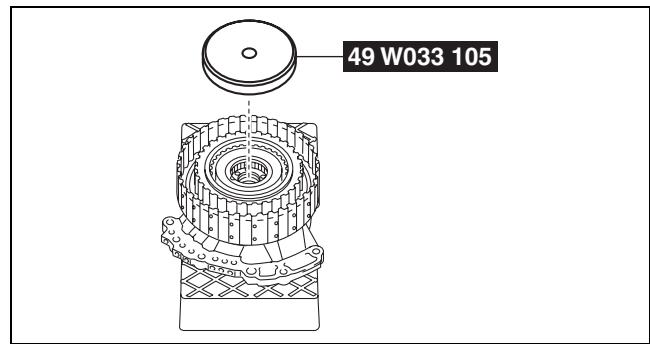
azzjw00001107



azzjw00001108

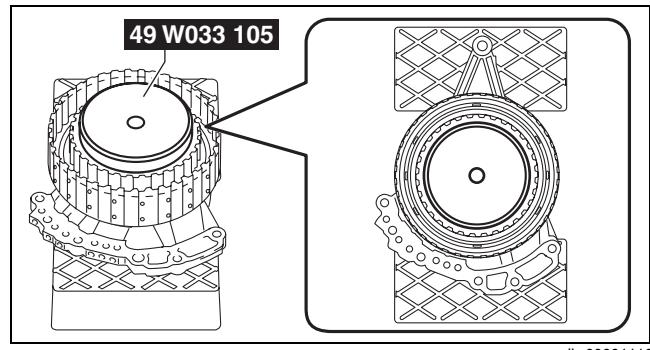
## AUTOMATIC TRANSAXLE

5. Install the SST.



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azzjjw00001110

6. Place a 98—196 N {10.0—19.9 kgf, 23.0—44.0 lbf} weight on the SST.

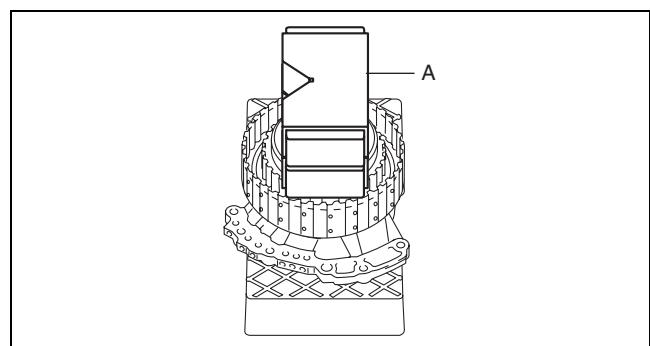
A : Weight (V-block)

**Caution**

- To reduce error during the high clutch clearance measurement, place the weight near the center of the SST.

**Note**

- Use a V-block as a weight.



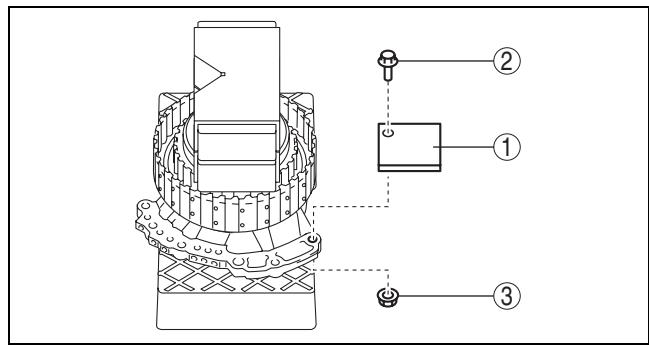
azzjjw00001111

# AUTOMATIC TRANSAXLE

7. Set the measuring instrument to the oil pump using the following procedure:

- (1) Install an appropriate steel plate for securing the magnetic stand used in the procedure shown in the figure..

1	Steel plate (for securing magnetic stand)
2	Bolt (M8)
3	Nut (M8)



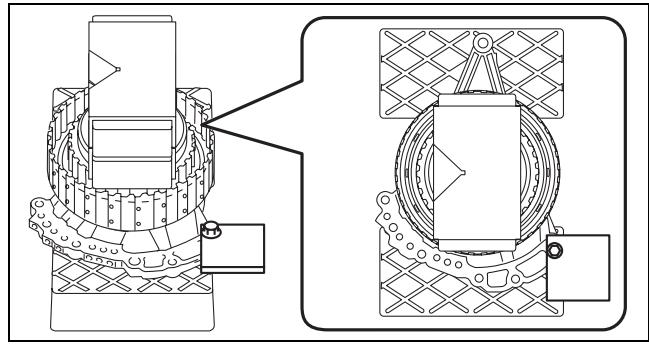
azzjw00001112

## Caution

- If the bolt and nut are tightened with excessive force when installing the steel plate, the alignment surface of the oil pump with the transaxle case could be damaged. Tighten the bolt and nut so that the steel plate does not move during the high clutch clearance measurement.

## Note

- When installing the steel plate to the oil pump, use an M8 bolt and nut.



azzjw00001113

## Steel plate installation bolt tightening torque

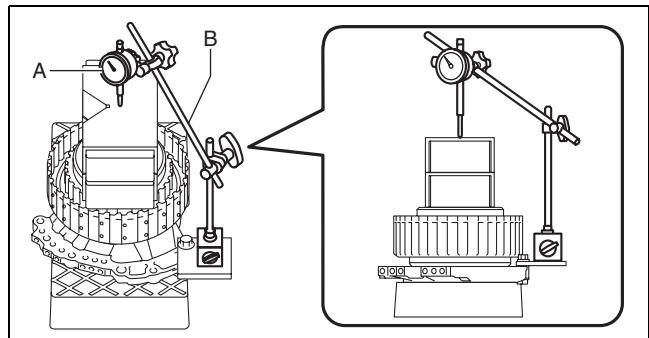
15 N·m {1.5 kgf·m, 11 ft·lbf} or less (tighten so that steel plate does not move during high clutch clearance measurement)

- (2) Set the dial gauge and magnetic stand as shown in the figure.

A : Dial gauge  
B : Magnetic stand

## Caution

- To reduce error during the high clutch clearance measurement, set the dial gauge so that it is perpendicular to the alignment surface of the oil pump with the transaxle case.



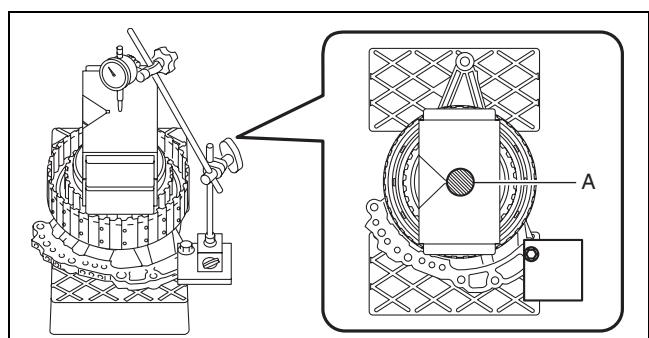
azzjw00001114

- (3) Set the dial gauge end near the center of the weight.

A : Area in which dial gauge end is set

## Caution

- To reduce error during the high clutch clearance measurement, set the dial gauge end to within the area shown in the figure.



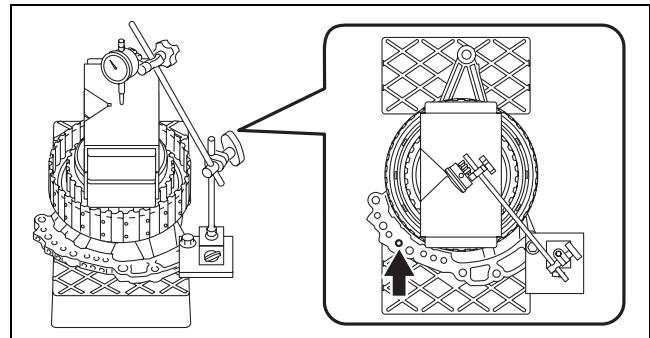
azzjw00001115

8. Measure the high clutch clearance using the following procedure:

- (1) Blow compressed air into the oil passage shown in the figure and verify the operation condition of the high clutch piston (approx. 3 times).

**Warning**

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.



azzjw00001116

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**Caution**

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

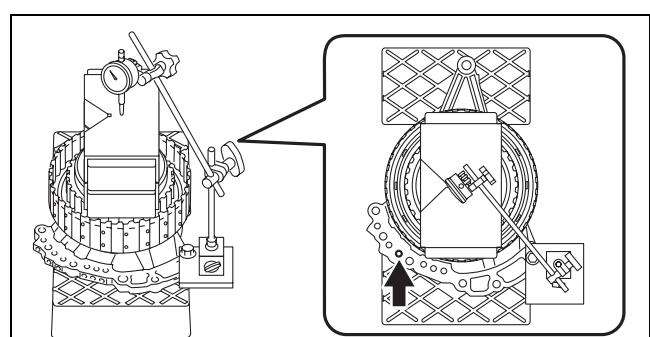
**Compressed air pressure**

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

- (2) Blow compressed air into the oil passage shown in the figure and operate the high clutch piston to read the value when the dial gauge is stabilized.

**Warning**

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.



azzjw00001116

**Caution**

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

**Compressed air pressure**

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

- (3) Input the dial gauge value, which was read while the high clutch piston was operating, into the measurement/adjustment value input sheet.
- (4) Release the compressed air and read the dial gauge value without the high clutch piston operating.
- (5) Input the dial gauge value, which was read without the high clutch piston operating, into the measurement/adjustment value input sheet.
- (6) Perform the following calculation to calculate the high clutch clearance.

**High clutch clearance = A - B**

- A: Dial gauge value with high clutch piston operated  
B: Dial gauge value without high clutch piston operated

**Note**

**Example**

A: Dial gauge value with high clutch piston operating is 1.605 mm {0.06319 in}

B: Dial gauge value without high clutch piston operating is 0.055 mm {0.00217 in}

High clutch clearance = 1.605 mm {0.06319 in} - 0.055 mm {0.00217 in} = 1.550 mm {0.06102 in}

- (7) Input the calculated high clutch clearance into the measurement/adjustment value input sheet.
- (8) Verify that the high clutch clearance satisfies the specification.

**Specification**

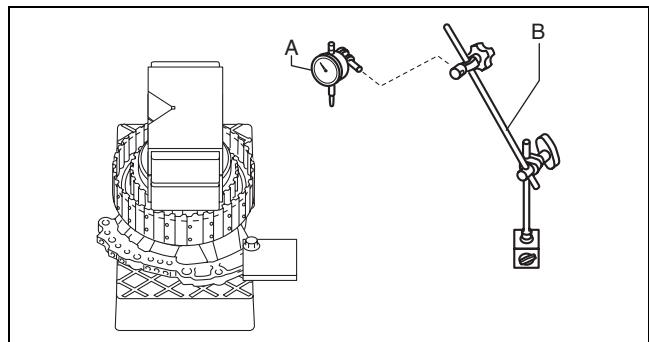
1.300—1.500 mm {0.05119—0.05905 in}

- If not within the specification, adjust the high clutch clearance. (See 05-17-324 High Clutch Clearance Adjustment.)

## AUTOMATIC TRANSAXLE

9. Remove the dial gauge and magnetic stand.

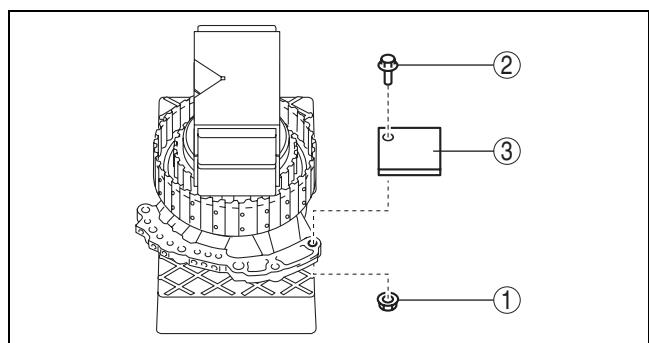
- A : Dial gauge  
B : Magnetic stand



azzjjw00001117

10. Remove the steel plate for securing the magnetic stand using the procedure shown in the figure.

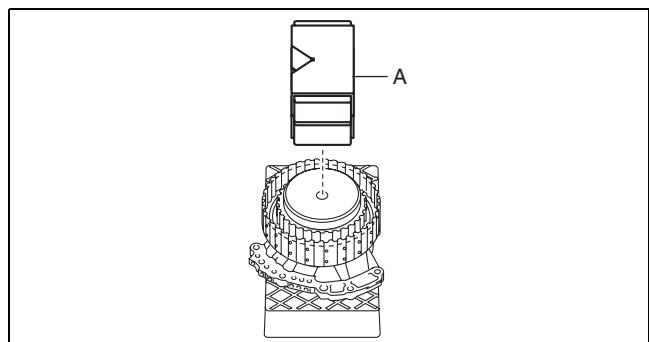
1	Nut (M8)
2	Bolt (M8)
3	Steel plate (for securing magnetic stand)



azzjjw00001118

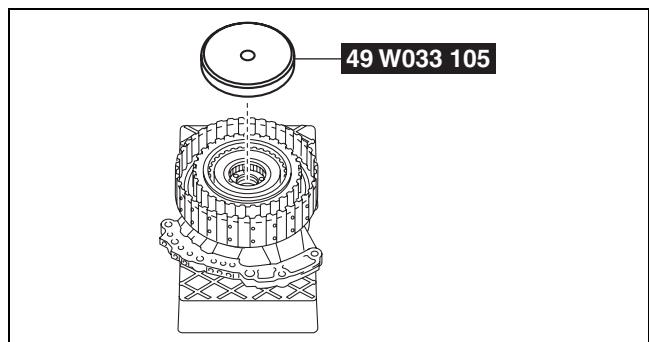
11. Remove the weight on the SST.

- A : Weight (V-block)



azzjjw00001119

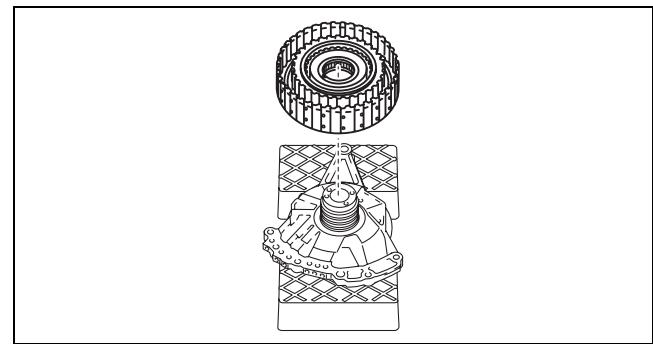
12. Remove the SST.



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## AUTOMATIC TRANSAXLE

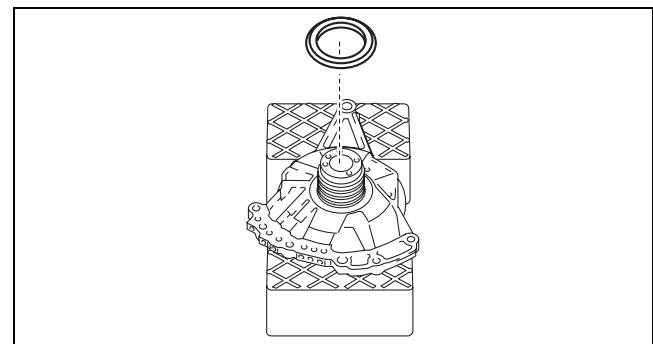
13. Remove the clutch component.



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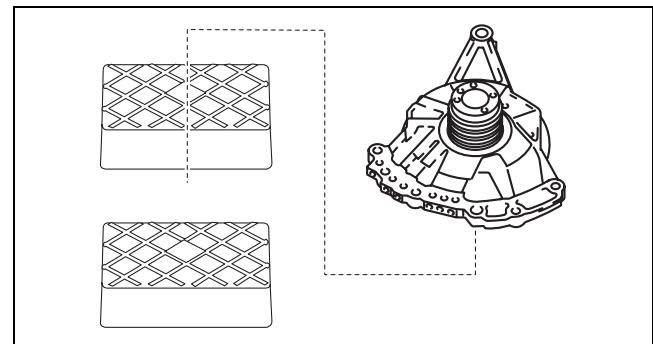
azzjw00001107

14. Remove the thrust needle bearing.



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15. Take the oil pump off the rubber plates.



azzjw00001121

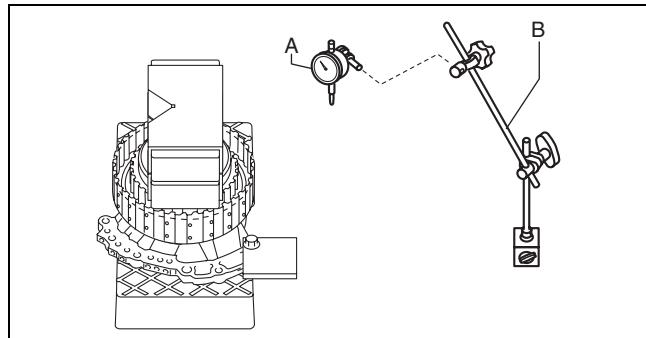
# AUTOMATIC TRANSAXLE

## High Clutch Clearance Adjustment

1. Remove the dial gauge and magnetic stand.

A : Dial gauge

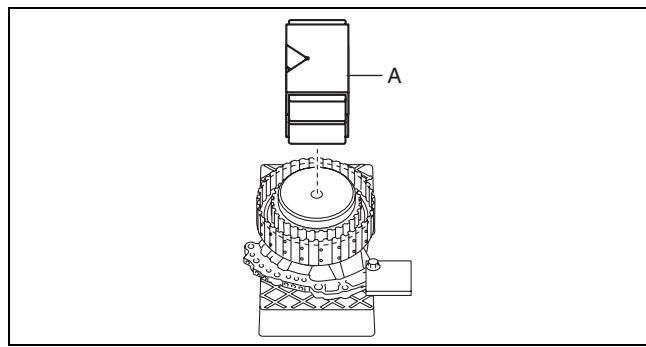
B : Magnetic stand



azzjjw00001117

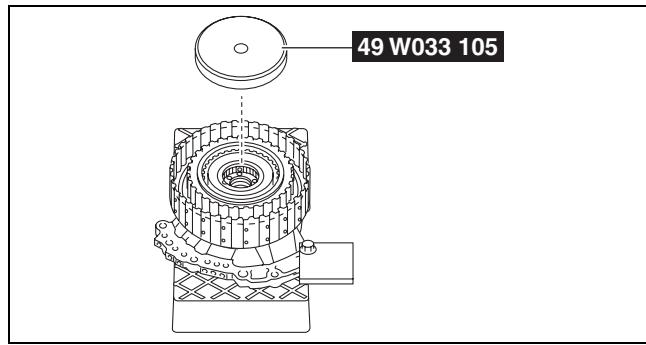
2. Remove the weight on the SST.

A : Weight (V-block)



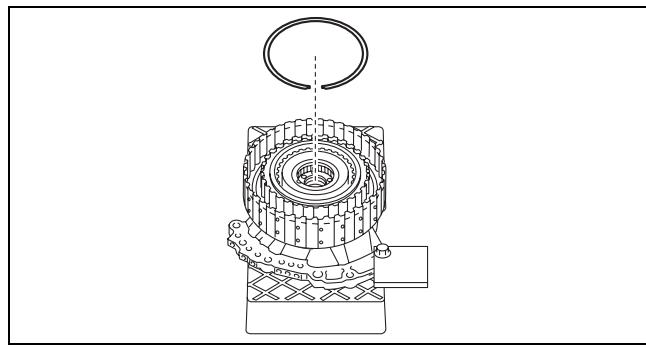
azzjjw00001122

3. Remove the SST.



azzjjw00001123

4. Remove the snap ring.



azzjjw00001124

5. Measure the thickness of the removed snap ring.

### Note

- Recommended measuring instrument: Micrometer

6. Input the measured snap ring thickness into the measurement/adjustment value input sheet.

## AUTOMATIC TRANSAXLE

7. Select the appropriate snap ring from the following table:

Range*	Selected snap ring thickness
Exceeds 3.450 mm {0.1358 in}, 3.550 mm {0.1398 in} or less	2.1 mm {0.083 in}
Exceeds 3.350 mm {0.1319 in}, 3.450 mm {0.1358 in} or less	2.0 mm {0.079 in}
Exceeds 3.250 mm {0.1280 in}, 3.350 mm {0.1319 in} or less	1.9 mm {0.075 in}
Exceeds 3.150 mm {0.1240 in}, 3.250 mm {0.1280 in} or less	1.8 mm {0.071 in}
Exceeds 3.050 mm {0.1201 in}, 3.150 mm {0.1240 in} or less	1.7 mm {0.067 in}
Exceeds 2.950 mm {0.1161 in}, 3.050 mm {0.1201 in} or less	1.6 mm {0.063 in}
Exceeds 2.850 mm {0.1122 in}, 2.950 mm {0.1161 in} or less	1.5 mm {0.059 in}
Exceeds 2.750 mm {0.1083 in}, 2.850 mm {0.1122 in} or less	1.4 mm {0.055 in}
Exceeds 2.650 mm {0.1043 in}, 2.750 mm {0.1083 in} or less	1.3 mm {0.051 in}
Exceeds 2.550 mm {0.1004 in}, 2.650 mm {0.1043 in} or less	1.2 mm {0.047 in}

\* : The range is the sum of the high clutch clearance and the thickness value of the removed snap ring.

**Range = C + F**

C: High clutch clearance

F: Thickness of removed snap ring

### Note

### Example

C: High clutch clearance is 1.550 mm {0.06102 in}

F: Thickness of removed snap ring is 1.615 mm {0.06358 in}

Range = 1.550 mm {0.06102 in} + 1.615 mm {0.06358 in} = 3.165 mm {0.1246 in}, the selected snap ring has a thickness of 1.8 mm {0.071 in}.

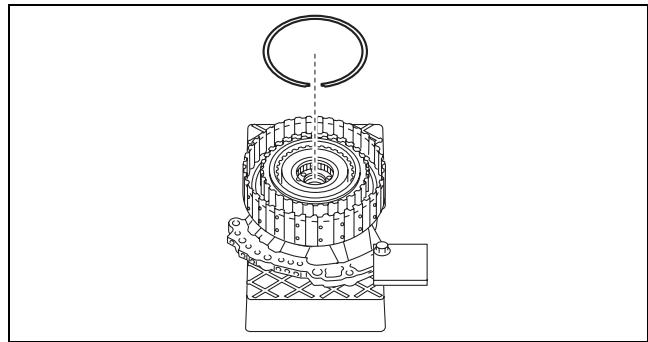
8. Assemble the selected snap ring.

### Caution

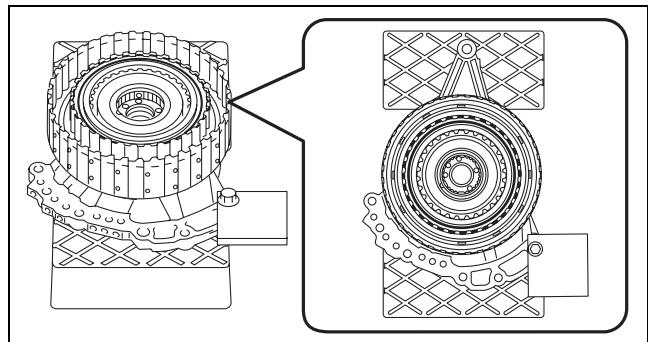
- After assembling the snap ring, verify that the snap ring is securely inserted into the bottom of the snap ring groove.

### Note

- Snap ring size: Outer diameter approx. 127.4 mm {5.016 in}



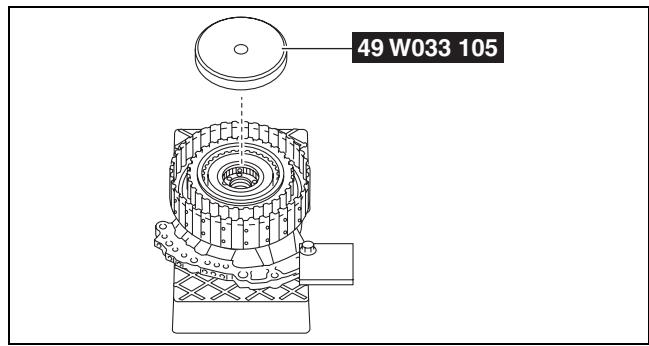
azzjw00001124



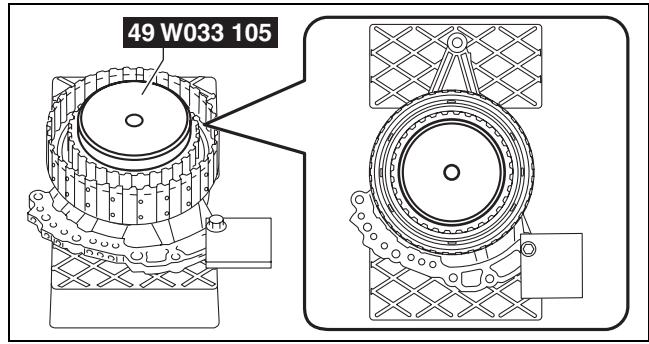
azzjw00001125

## AUTOMATIC TRANSAXLE

9. Install the SST.



azzjjw00001123



azzjjw00001126

10. Place a 98—196 N {10.0—19.9 kgf, 23.0—44.0 lbf} weight on the SST.

A : Weight (V-block)

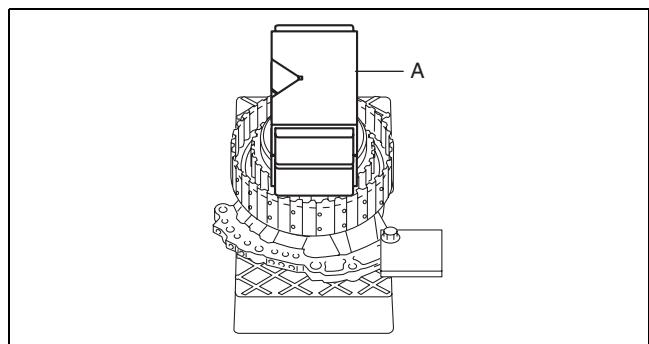
**Caution**

- To reduce error during the high clutch clearance measurement, place the weight near the center of the SST.

**Note**

- Use a V-block as a weight.

11. Perform the high clutch clearance measurement from Step 7 (2). (See 05-17-317 High Clutch Clearance Measurement.)



azzjjw00001127

## LOW CLUTCH CLEARANCE MEASUREMENT/ADJUSTMENT

id051700664500

**Preparation Before Servicing**

- Print out the measurement/adjustment value input sheet. (See 05-17-295 MEASUREMENT/ADJUSTMENT VALUE INPUT SHEET.)

**Note**

- When performing the measurement/adjustment, input the measured and calculated values into the measurement/adjustment value input sheet.
- When performing the other measurements/adjustments, if the measurement/adjustment value input sheet has been printed out, use the printed sheet.

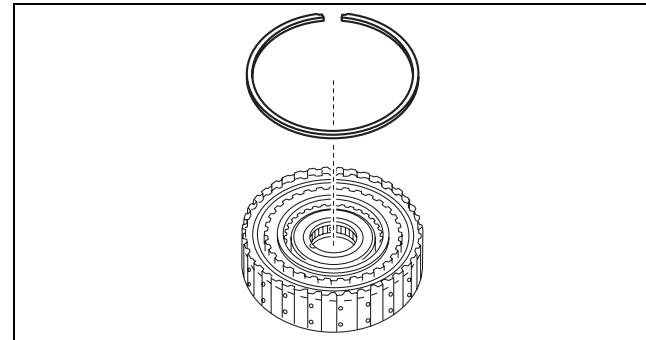
05-17

**Low Clutch Clearance Measurement**

- Assemble the snap ring to the position shown in the figure.

**Caution**

- Assemble so that the end gap of the snap ring is positioned diagonally opposed to the end gap of the snap ring for the high clutch.**
- After assembling the snap ring, verify that the snap ring is securely inserted into the bottom of the snap ring groove.**



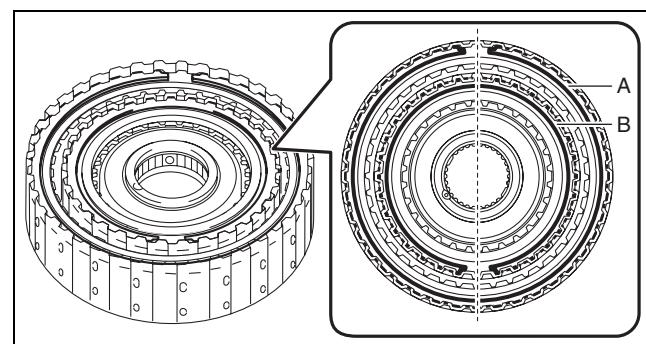
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**Note**

- Snap ring size: Outer diameter approx. 169.3 mm {6.665 in}

A : Snap ring (low clutch)

B : Snap ring (high clutch)



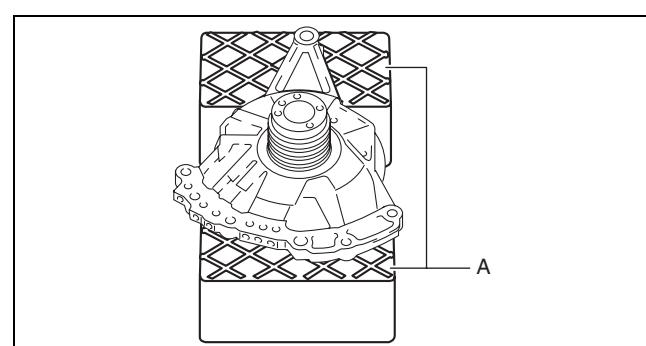
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- Set the oil pump on the workbench as shown in the figure.

A : Rubber plate

**Caution**

- To reduce error during the low clutch clearance measurement, use the rubber plates to adjust the alignment surface of the oil pump with the transaxle case so that it is level.**



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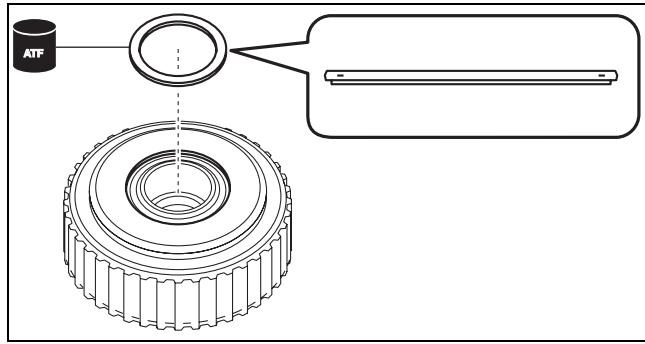
## AUTOMATIC TRANSAXLE

3. Assemble the thrust needle bearing to the clutch component using the following procedure:

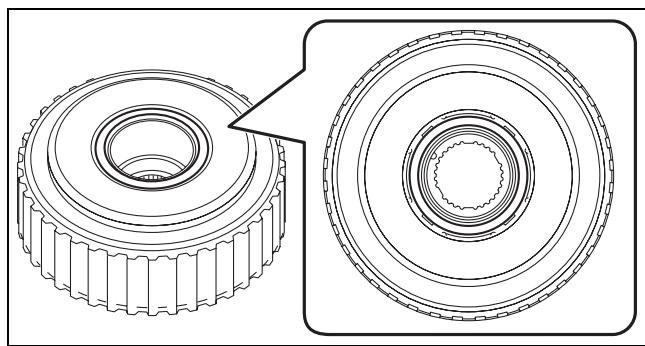
**Note**

- Thrust needle bearing size: Outer diameter approx. 72.7 mm {2.86 in}

- (1) To prevent the thrust needle bearing from dropping out, apply ATF (ATF FZ) to the thrust needle bearing.
- (2) Assemble the thrust needle bearing.

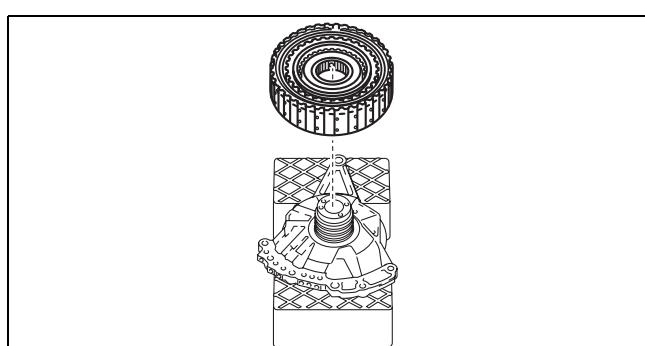


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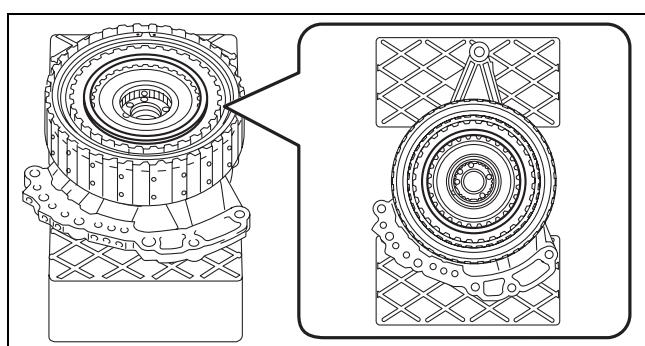


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4. Assemble the parts assembled together in Step 3 to the oil pump.



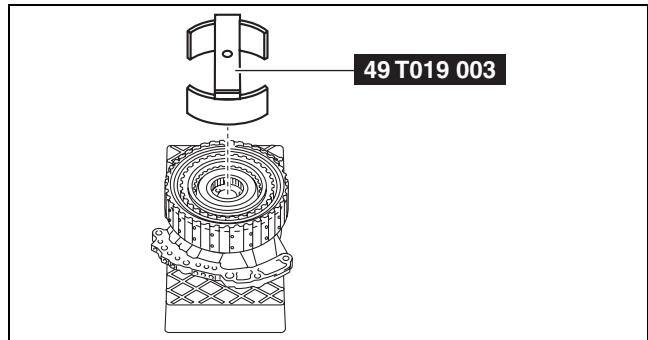
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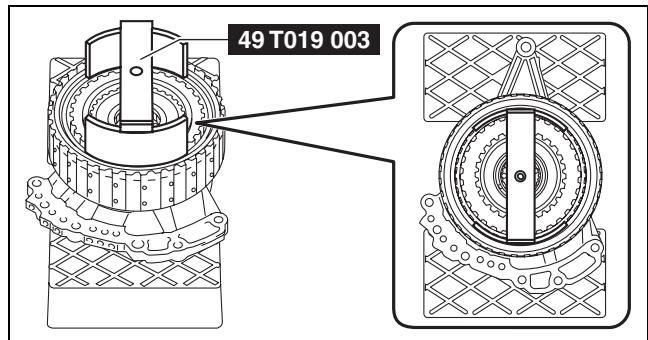
## AUTOMATIC TRANSAXLE

5. Install the SST.



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6. Place a 98—196 N {10.0—19.9 kgf, 23.0—44.0 lbf} weight on the SST using the following procedure:

**Note**

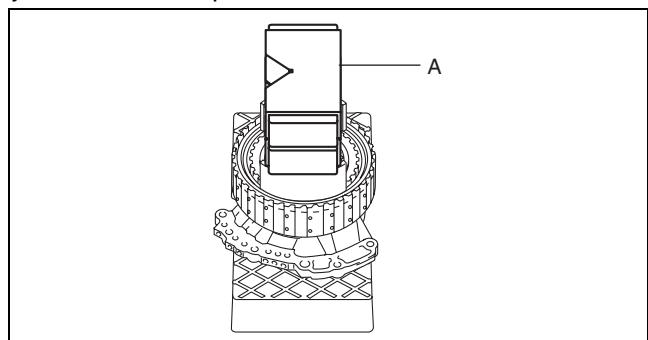
- Use a V-block as a weight.

- (1) Measure the weight of the weight placed on the SST.
- (2) Input the measured weight into the measurement/adjustment value input sheet.
- (3) Place the measured weight on the SST.

A : Weight (V-block)

**Caution**

- To reduce error during the low clutch clearance measurement, place the weight near the center of the SST.



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## AUTOMATIC TRANSAXLE

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7. Perform the following calculation to calculate the correction value for the low clutch clearance.

**Note**

- Because a wave spring is included in the low clutch, a correction value is required for the low clutch clearance according to the weight of the weight used during the low clutch clearance measurement.

**Correction value of low clutch clearance (weight of unit is N) =  $(A - 90 \text{ N}) \times 0.00157 \text{ mm} \{0.0000618 \text{ in}\}$**

A: Weight of weight

**Note**

**Example**

A: Weight of weight is 150 N

Correction value of low clutch clearance =  $(150 \text{ N} - 90 \text{ N}) \times 0.00157 \text{ mm} \{0.0000618 \text{ in}\} = 0.0942 \text{ mm} \{0.00371 \text{ in}\}$

**Correction value of low clutch clearance (weight of unit is kgf) =  $(A - 9.18 \text{ kgf}) \times 0.01540 \text{ mm}$**

**{0.0006063 in}**

A: Weight of weight

**Note**

**Example**

A: Weight of weight is 15.30 kgf

Correction value of low clutch clearance =  $(15.30 \text{ kgf} - 9.18 \text{ kgf}) \times 0.01540 \text{ mm} \{0.0006063 \text{ in}\} = 0.0942 \text{ mm} \{0.00371 \text{ in}\}$

**Correction value of low clutch clearance (weight of unit is lbf) =  $(A - 20.23 \text{ lbf}) \times 0.00698 \text{ mm}$**

**{0.0002748 in}**

A: Weight of weight

**Note**

**Example**

A: Weight of weight is 33.72 lbf

Correction value of low clutch clearance =  $(33.72 \text{ lbf} - 20.23 \text{ lbf}) \times 0.00698 \text{ mm} \{0.0002748 \text{ in}\} = 0.0942 \text{ mm} \{0.00371 \text{ in}\}$

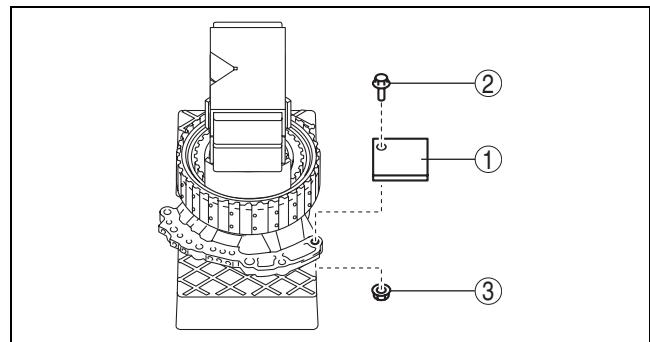
8. Input the calculated correction value of the low clutch clearance into the measurement/adjustment value input sheet.

## AUTOMATIC TRANSAXLE

9. Set the measuring instrument to the oil pump using the following procedure:

- (1) Install an appropriate steel plate for securing the magnetic stand used in the procedure shown in the figure..

1	Steel plate (for securing magnetic stand)
2	Bolt (M8)
3	Nut (M8)



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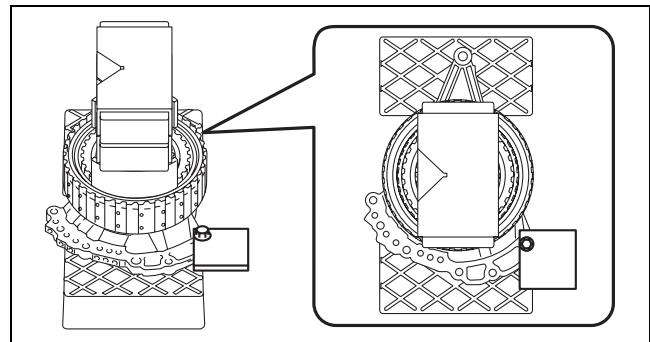
05-17

### Caution

- If the bolt and nut are tightened with excessive force when installing the steel plate, the alignment surface of the oil pump with the transaxle case could be damaged. Tighten the bolt and nut so that the steel plate does not move during low clutch clearance measurement.

### Note

- When installing the steel plate to the oil pump, use an M8 bolt and nut.



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### Steel plate installation bolt tightening torque

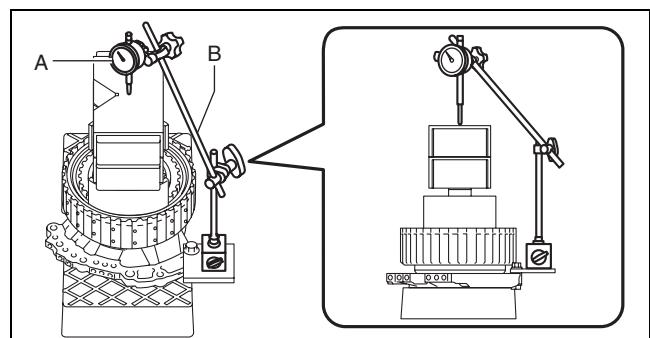
15 N·m {1.5 kgf·m, 11 ft·lbf} or less (tighten so that steel plate does not move during low clutch clearance measurement)

- (2) Set the dial gauge and magnetic stand as shown in the figure.

A : Dial gauge  
B : Magnetic stand

### Caution

- To reduce error during the low clutch clearance measurement, set the dial gauge so that it is perpendicular to the alignment surface of the oil pump with the transaxle case.



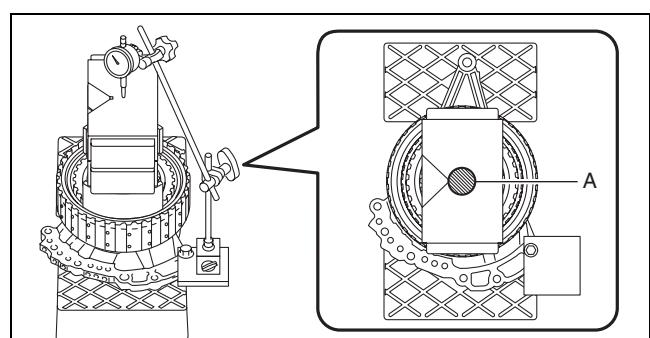
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- (3) Set the dial gauge end near the center of the weight.

A : Area in which dial gauge end is set

### Caution

- To reduce error during the low clutch clearance measurement, set the dial gauge end to within the area shown in the figure.



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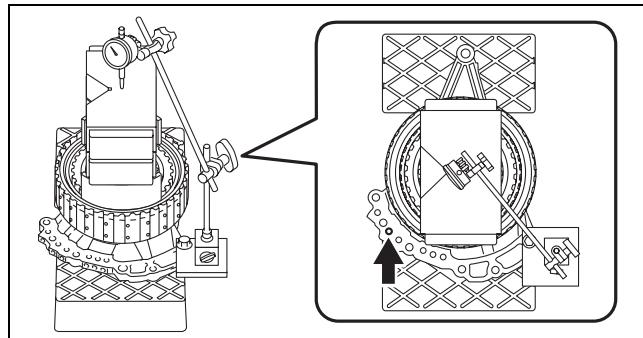
## AUTOMATIC TRANSAXLE

10. Measure the low clutch clearance using the following procedure:

- (1) Blow compressed air into the oil passage shown in the figure and verify the operation condition of the low clutch piston (approx. 3 times).

### Warning

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.



azzjw00001089

### Caution

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

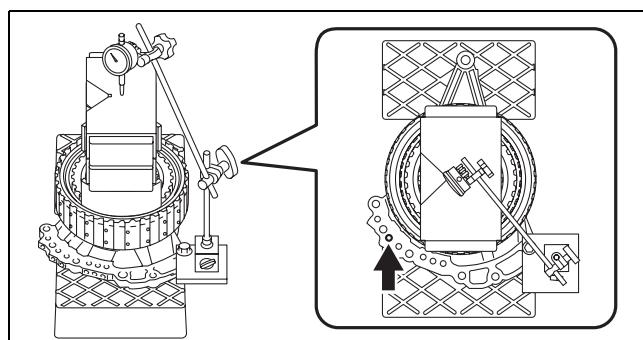
### Compressed air pressure

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

- (2) Blow compressed air into the oil passage shown in the figure and operate the low clutch piston to read the value when the dial gauge is stabilized.

### Warning

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.



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### Caution

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

### Compressed air pressure

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

- (3) Input the dial gauge value, which was read while the low clutch piston was operating, into the measurement/adjustment value input sheet.  
(4) Release the compressed air and read the dial gauge value without the low clutch piston operating.  
(5) Input the dial gauge value, which was read without the low clutch piston operating, into the measurement/adjustment value input sheet.  
(6) Perform the following calculation to calculate the low clutch clearance.

**Low clutch clearance = C - D - B**

B: Correction value of low clutch clearance

C: Dial gauge value with low clutch piston operated

D: Dial gauge value without low clutch piston operated

### Note

#### Example

B: Correction value of low clutch clearance is 0.0942 mm {0.00371 in}

C: Dial gauge value with low clutch piston operated is 2.320 mm {0.09134 in}

D: Dial gauge value without low clutch piston operated is 0.595 mm {0.02343 in}

$$\text{Low clutch clearance} = 2.320 \text{ mm} \{0.09134 \text{ in}\} - 0.595 \text{ mm} \{0.02343 \text{ in}\} - 0.0942 \text{ mm} \{0.00371 \text{ in}\} \\ = 1.6308 \text{ mm} \{0.06420 \text{ in}\}$$

- (7) Input the calculated low clutch clearance into the measurement/adjustment value input sheet.

(8) Verify that the low clutch clearance satisfies the specification.

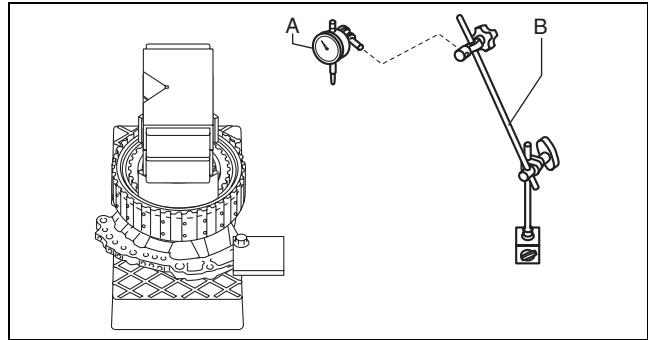
## Specification

1.400—1.600 mm {0.05512—0.06299 in}

- If not within the specification, adjust the low clutch clearance. (See 05-17-335 Low Clutch Clearance Adjustment.)

11. Remove the dial gauge and magnetic stand.

A : Dial gauge  
B : Magnetic stand

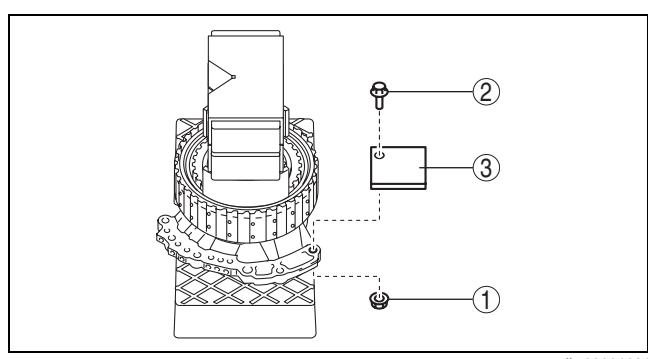


05-17

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12. Remove the steel plate for securing the magnetic stand using the procedure shown in the figure.

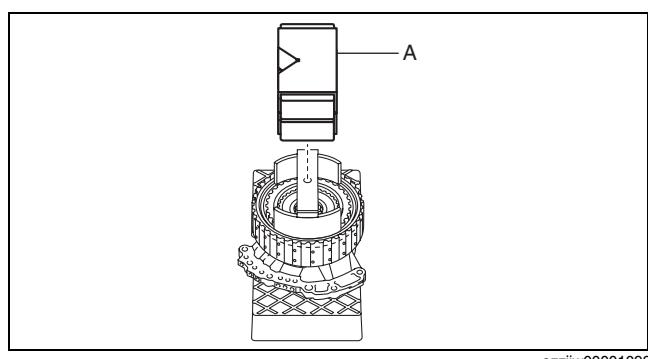
1	Nut (M8)
2	Bolt (M8)
3	Steel plate (for securing magnetic stand)



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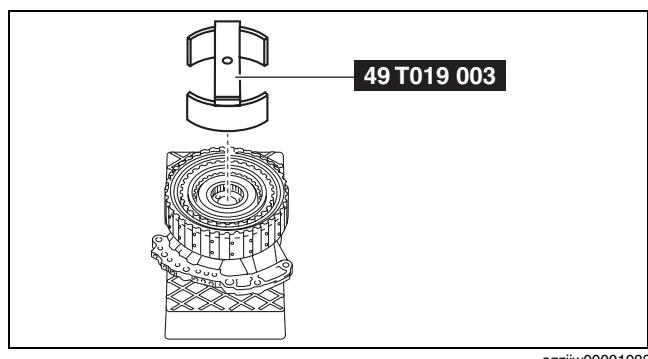
13. Remove the weight on the SST.

A : Weight (V-block)



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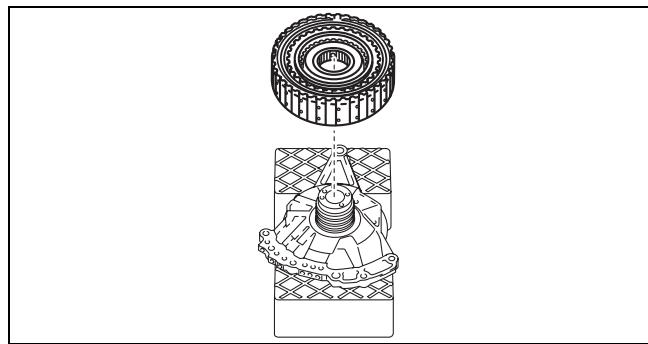
14. Remove the SST.



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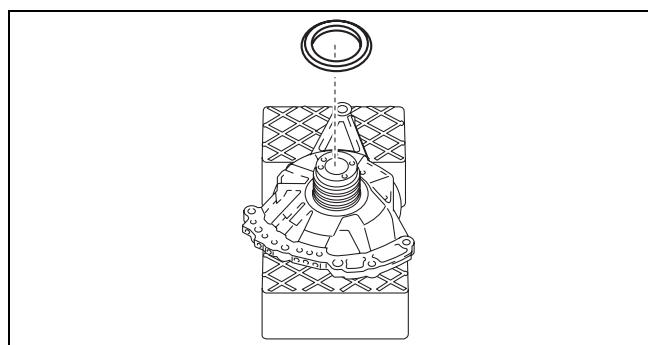
## AUTOMATIC TRANSAXLE

15. Remove the clutch component.



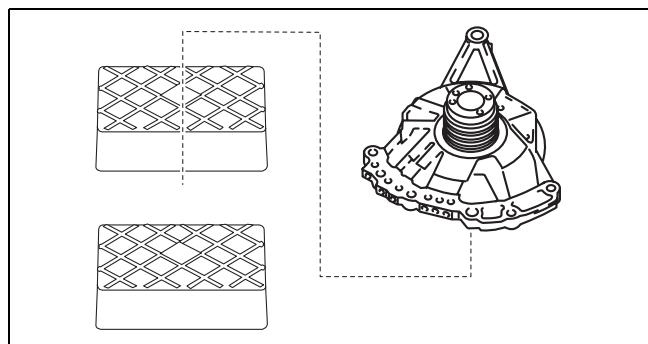
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16. Remove the thrust needle bearing.



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17. Take the oil pump off the rubber plates.



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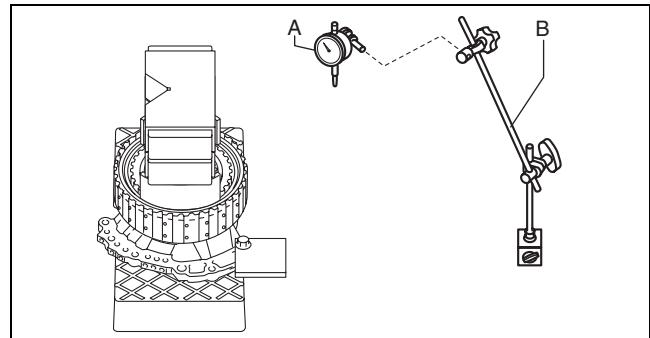
# AUTOMATIC TRANSAXLE

## Low Clutch Clearance Adjustment

1. Remove the dial gauge and magnetic stand.

A : Dial gauge

B : Magnetic stand

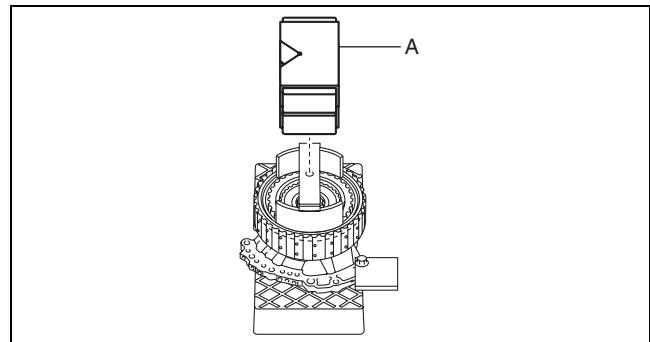


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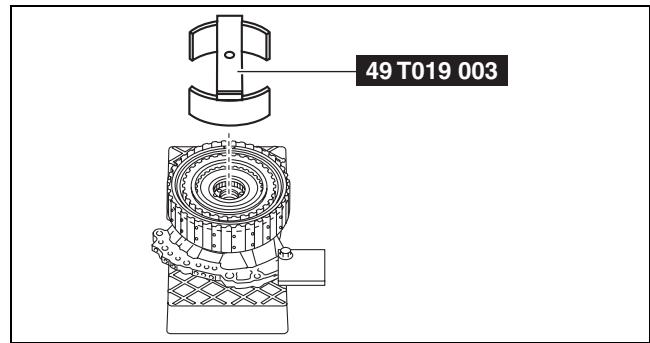
2. Remove the weight on the SST.

A : Weight (V-block)



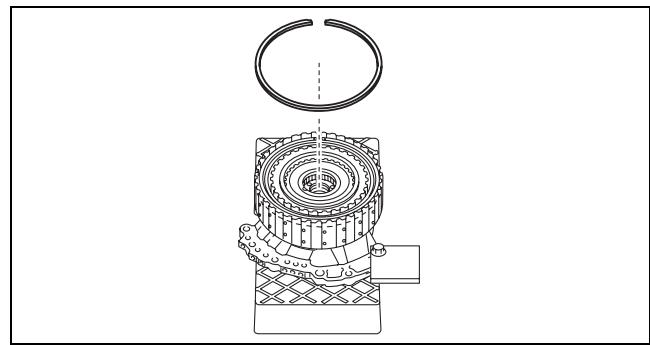
azzjw00001096

3. Remove the SST.



azzjw00001097

4. Remove the snap ring.



azzjw00001098

5. Measure the thickness of the removed snap ring.

### Note

- Recommended measuring instrument: Micrometer

6. Input the measured snap ring thickness into the measurement/adjustment value input sheet.

## AUTOMATIC TRANSAXLE

7. Select the appropriate snap ring from the following table:

Range*	Selected snap ring thickness
Exceeds 3.650 mm {0.14370 in}, 3.750 mm {0.14764 in} or less	2.2 mm {0.087 in}
Exceeds 3.550 mm {0.13976 in}, 3.650 mm {0.14370 in} or less	2.1 mm {0.083 in}
Exceeds 3.450 mm {0.13583 in}, 3.550 mm {0.13976 in} or less	2.0 mm {0.079 in}
Exceeds 3.350 mm {0.13189 in}, 3.450 mm {0.13583 in} or less	1.9 mm {0.075 in}
Exceeds 3.250 mm {0.12795 in}, 3.350 mm {0.13189 in} or less	1.8 mm {0.071 in}
Exceeds 3.150 mm {0.12402 in}, 3.250 mm {0.12795 in} or less	1.7 mm {0.067 in}
Exceeds 3.050 mm {0.12008 in}, 3.150 mm {0.12402 in} or less	1.6 mm {0.063 in}
Exceeds 2.950 mm {0.11614 in}, 3.050 mm {0.12008 in} or less	1.5 mm {0.059 in}
Exceeds 2.850 mm {0.11220 in}, 2.950 mm {0.11614 in} or less	1.4 mm {0.055 in}
Exceeds 2.750 mm {0.10827 in}, 2.850 mm {0.11220 in} or less	1.3 mm {0.051 in}

\* : The range is the sum of the low clutch clearance and the thickness value of the removed snap ring.

**Range = E + H**

E: Low clutch clearance

H: Thickness of removed snap ring

**Note**

**Example**

E: Low clutch clearance is 1.6308 mm {0.06420 in}

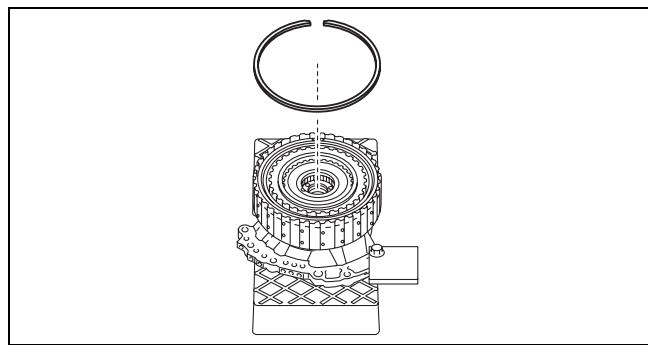
H: Thickness of removed snap ring is 1.705 mm {0.06713 in}

Range = 1.6308 mm {0.06420 in} + 1.705 mm {0.06713 in} = 3.3358 mm {0.13133 in}, the selected snap ring has a thickness of 1.8 mm {0.071 in}.

8. Assemble the selected snap ring to the position shown in the figure.

**Caution**

- **Assemble so that the end gap of the snap ring is positioned diagonally opposed to the end gap of the snap ring for the high clutch.**
- **After assembling the snap ring, verify that the snap ring is securely inserted into the bottom of the snap ring groove.**



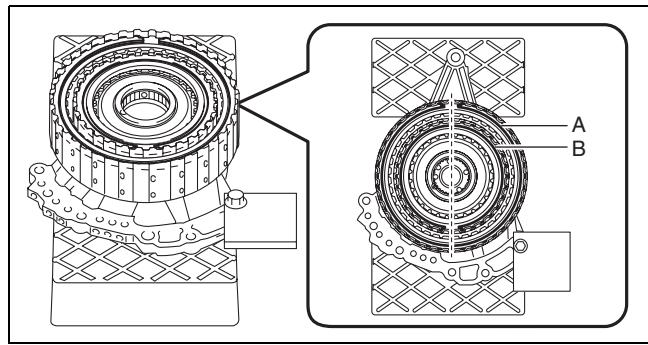
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**Note**

- Snap ring size: Outer diameter approx. 169.3 mm {6.665 in}

A : Snap ring (low clutch)

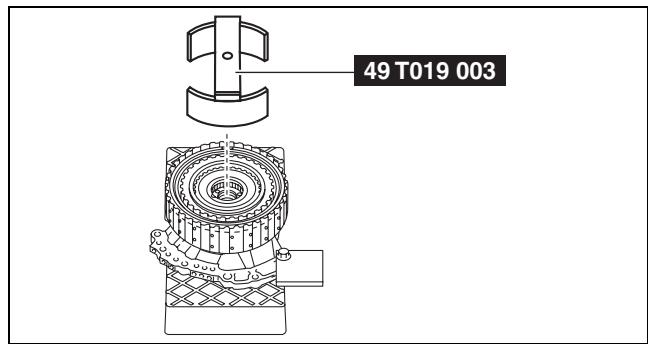
B : Snap ring (high clutch)



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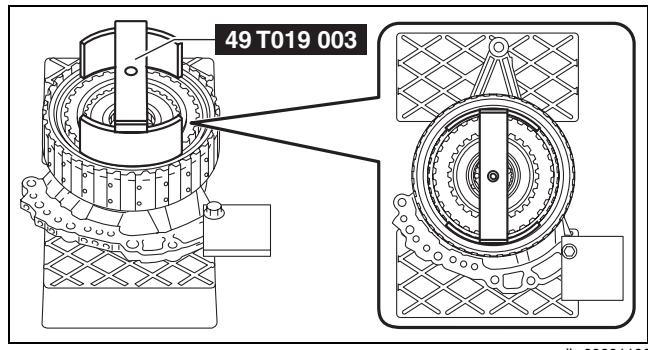
## AUTOMATIC TRANSAXLE

9. Install the SST.



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10. Place a 98—196 N {10.0—19.9 kgf, 23.0—44.0 lbf} weight on the SST using the following procedure:

### Note

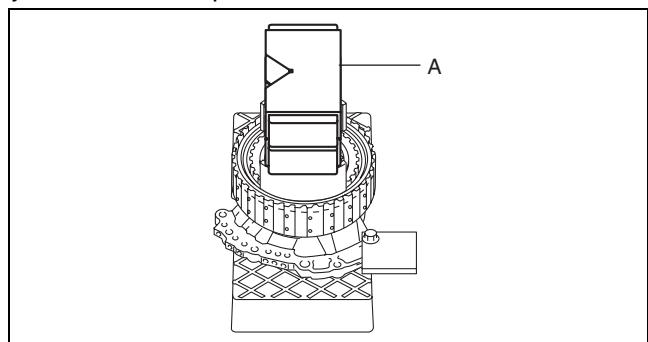
- Use a V-block as a weight.

- (1) Measure the weight of the weight placed on the SST.
- (2) Input the measured weight into the measurement/adjustment value input sheet.
- (3) Place the measured weight on the SST.

A : Weight (V-block)

### Caution

- To reduce error during the low clutch clearance measurement, place the weight near the center of the SST.



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## AUTOMATIC TRANSAXLE

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11. Perform the following calculation to calculate the correction value for the low clutch clearance.

**Note**

- Because a wave spring is included in the low clutch, a correction value is required for the low clutch clearance according to the weight of the weight used during the low clutch clearance measurement.

**Correction value of low clutch clearance (weight of unit is N) =  $(A - 90 \text{ N}) \times 0.00157 \text{ mm} \{0.0000618 \text{ in}\}$**

A: Weight of weight

**Note**

**Example**

A: Weight of weight is 150 N

Correction value of low clutch clearance =  $(150 \text{ N} - 90 \text{ N}) \times 0.00157 \text{ mm} \{0.0000618 \text{ in}\} = 0.0942 \text{ mm} \{0.00371 \text{ in}\}$

**Correction value of low clutch clearance (weight of unit is kgf) =  $(A - 9.18 \text{ kgf}) \times 0.01540 \text{ mm} \{0.0006063 \text{ in}\}$**

A: Weight of weight

**Note**

**Example**

A: Weight of weight is 15.30 kgf

Correction value of low clutch clearance =  $(15.30 \text{ kgf} - 9.18 \text{ kgf}) \times 0.01540 \text{ mm} \{0.0006063 \text{ in}\} = 0.0942 \text{ mm} \{0.00371 \text{ in}\}$

**Correction value of low clutch clearance (weight of unit is lbf) =  $(A - 20.23 \text{ lbf}) \times 0.00698 \text{ mm} \{0.0002748 \text{ in}\}$**

A: Weight of weight

**Note**

**Example**

A: Weight of weight is 33.72 lbf

Correction value of low clutch clearance =  $(33.72 \text{ lbf} - 20.23 \text{ lbf}) \times 0.00698 \text{ mm} \{0.0002748 \text{ in}\} = 0.0942 \text{ mm} \{0.00371 \text{ in}\}$

12. Perform the low clutch clearance measurement from Step 9 (2). (See 05-17-327 Low Clutch Clearance Measurement.)

**R-3-5 BRAKE CLEARANCE MEASUREMENT/ADJUSTMENT**

id051700664900

**Preparation Before Servicing**

1. Print out the measurement/adjustment value input sheet. (See 05-17-295 MEASUREMENT/ADJUSTMENT VALUE INPUT SHEET.)

**Note**

- When performing the measurement/adjustment, input the measured and calculated values into the measurement/adjustment value input sheet.
- When performing the other measurements/adjustments, if the measurement/adjustment value input sheet has been printed out, use the printed sheet.

05-17

**R-3-5 Brake Clearance Measurement/Adjustment**

1. Measure the retainer thickness of the springs and retainer component.

**Note**

- Recommended measuring instrument:  
Micrometer
- Springs and retainer component size: Inner diameter approx. 148.8 mm {5.858 in}

2. Input the measured retainer thickness of the springs and retainer component into the measurement/adjustment value input sheet.

3. Assemble the drive plates and driven plates.

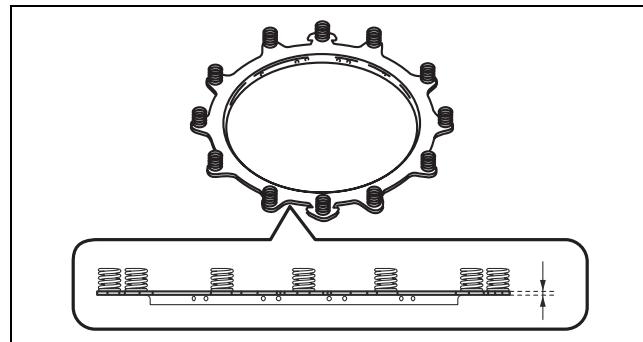
A : Drive plate  
 B : Driven plate

**Note**

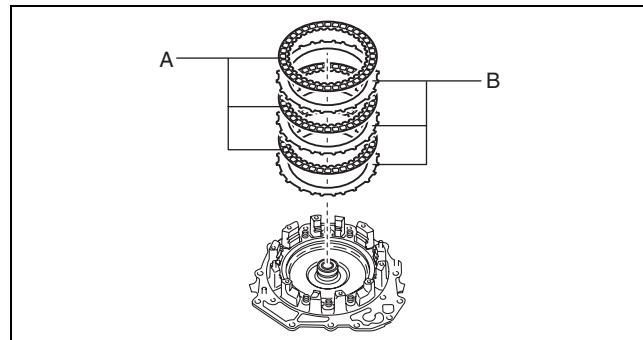
- Drive plate size: Outer diameter approx. 169.4 mm {6.669 in}
- Driven plate size: Inner diameter approx. 141.8 mm {5.583 in}

**Assembly order**

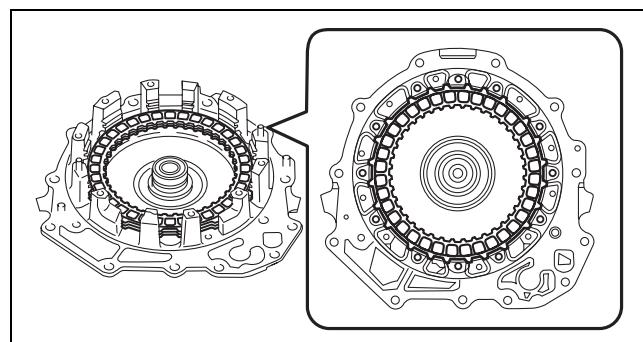
Driven plate—drive plate—driven plate—drive plate—driven plate—drive plate



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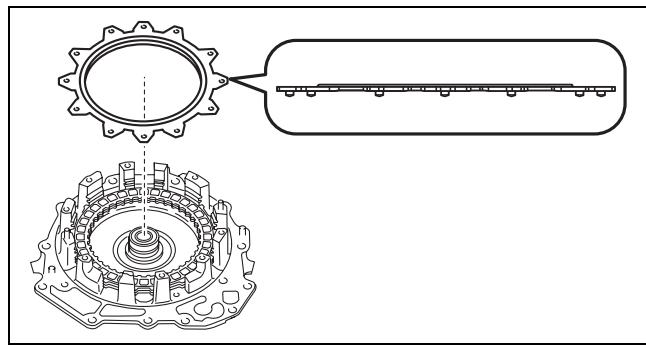
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## AUTOMATIC TRANSAXLE

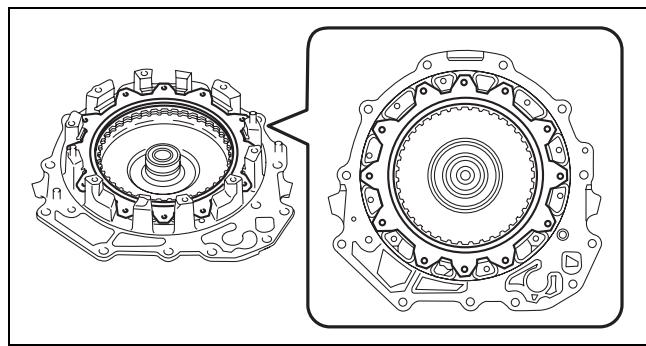
### 4. Assemble the retaining plate.

#### Note

- Retaining plate size: Inner diameter approx. 141.8 mm {5.583 in}



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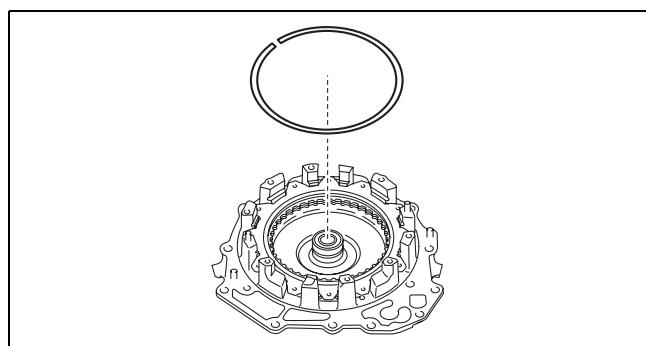


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### 5. Assemble the snap ring (FZ01 19 469) for the R-3-5 brake clearance measurement/adjustment to the position shown in the figure.

#### Caution

- Assemble the snap ring so that the end gap of the snap ring is in the area shown in the figure.
- After assembling the snap ring, verify that the snap ring is securely inserted into the bottom of the snap ring groove.

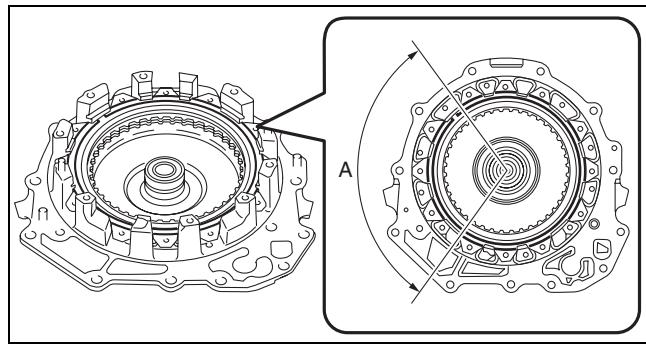


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#### Note

- Snap ring size: Outer diameter approx. 186.2 mm {7.331 in}

A : End gap of snap ring assembly area



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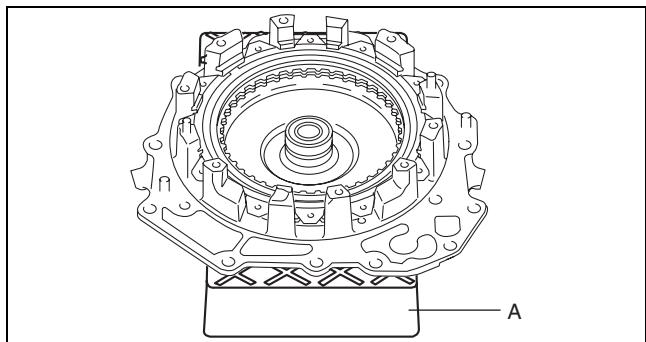
## AUTOMATIC TRANSAXLE

6. Set the end cover for the assembled part on the workbench as shown in the figure.

A : Rubber plate

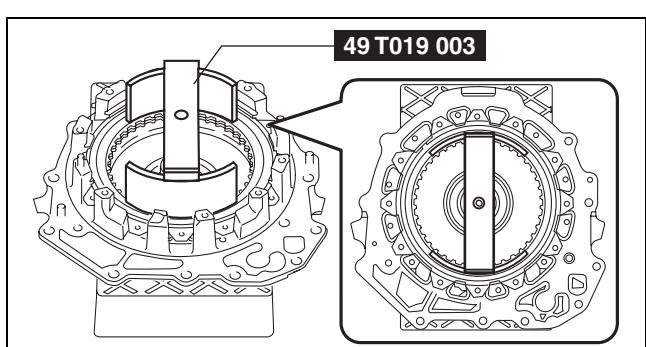
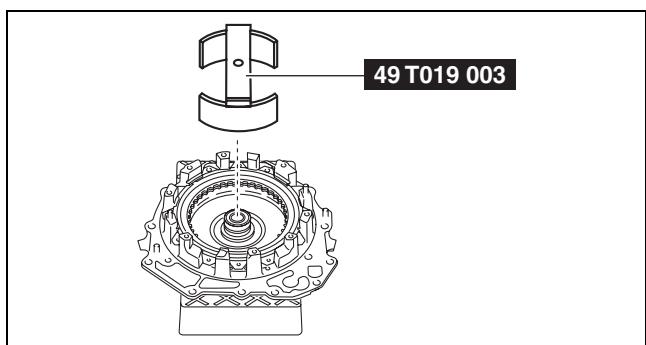
### Caution

- To reduce error during the R-3-5 brake clearance adjustment value measurement, use the rubber plates to adjust the alignment surface of the end cover with the transaxle case so that it is level.



05-17

7. Install the SST.



8. Place a 98—196 N {10.0—19.9 kgf, 23.0—44.0 lbf} weight on the SST.

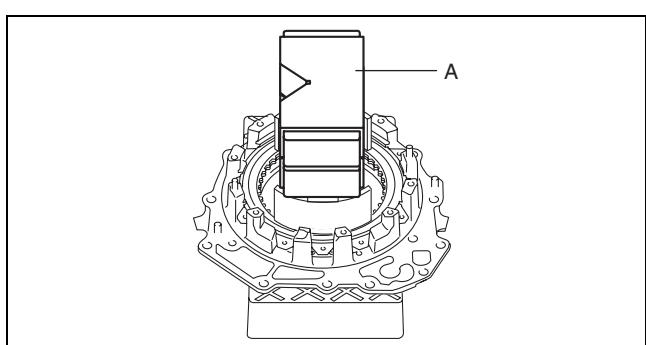
A : Weight (V-block)

### Caution

- To reduce error during the R-3-5 brake clearance adjustment value measurement, place the weight near the center of the SST.

### Note

- Use a V-block as a weight.



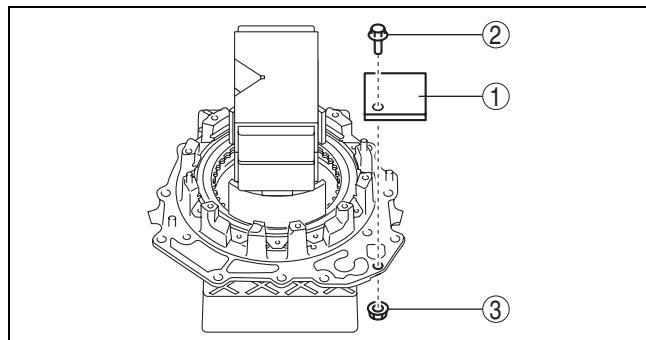
05-17-341

## AUTOMATIC TRANSAXLE

9. Set the measuring instrument to the end cover using the following procedure.

- (1) Install an appropriate steel plate for securing the magnetic stand used in the procedure shown in the figure..

1	Steel plate (for securing magnetic stand)
2	Bolt (M8)
3	Nut (M8)



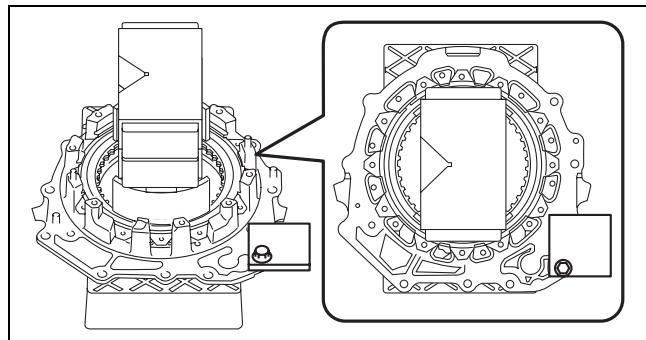
azzjjw00001189

### Caution

- If the bolt and nut are tightened with excessive force when installing the steel plate, the alignment surface of the end cover with the transaxle case could be damaged. Tighten the bolt and nut so that the steel plate does not move during the R-3-5 brake clearance adjustment value measurement.

### Note

- When installing the steel plate to the end cover, use an M8 bolt and nut.



azzjjw00001190

### Steel plate installation bolt tightening torque

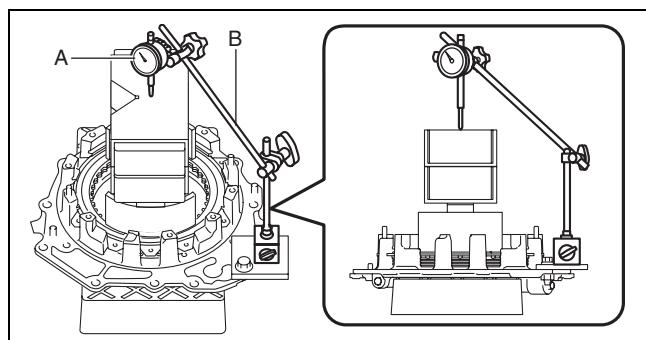
15 N·m {1.5 kgf·m, 11 ft·lbf} or less (tighten so that steel plate does not move during R-3-5 brake clearance adjustment value measurement)

- (2) Set the dial gauge and magnetic stand as shown in the figure.

A : Dial gauge  
B : Magnetic stand

### Caution

- To reduce error during the R-3-5 brake clearance adjustment value measurement, set the dial gauge so that it is perpendicular to alignment surface of the end cover with the transaxle case.



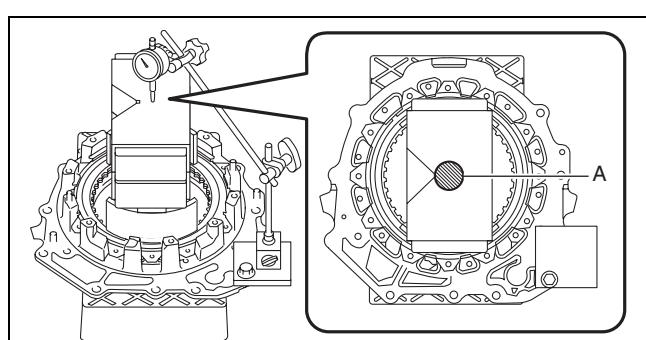
azzjjw00001191

- (3) Set the dial gauge end near the center of the weight.

A : Area in which dial gauge end is set

### Caution

- To reduce error during the R-3-5 brake clearance adjustment value measurement, set the dial gauge end to within the area shown in the figure.



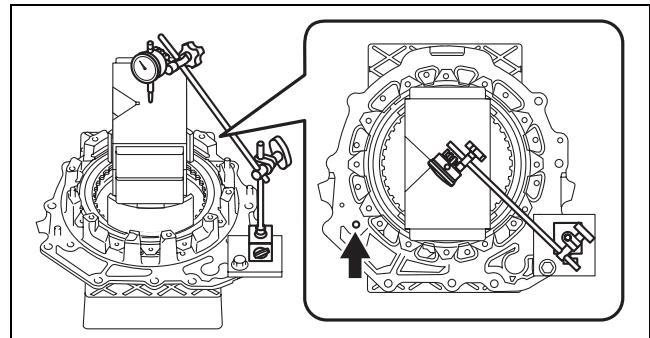
azzjjw00001192

10. Measure the R-3-5 brake clearance adjustment value using the following procedure:

- (1) Blow compressed air into the oil passage shown in the figure and verify the operation condition of the R-3-5 brake piston (approx. 3 times).

**Warning**

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.



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**Caution**

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

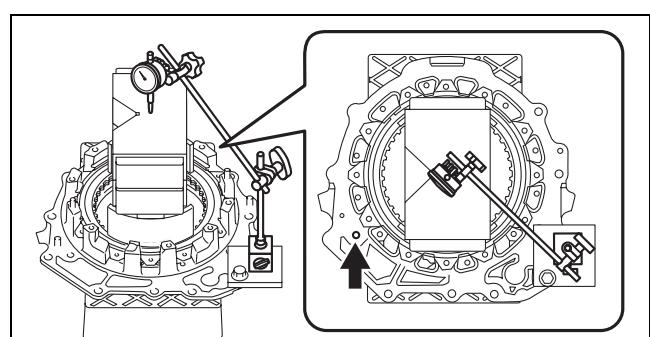
**Compressed air pressure**

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

- (2) Blow compressed air into the oil passage shown in the figure and operate the R-3-5 brake piston to read the value when the dial gauge is stabilized.

**Warning**

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.



azzjw00001193

**Caution**

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

**Compressed air pressure**

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>, 57—63 psi}

- (3) Input the dial gauge value, which was read while the R-3-5 brake piston was operating, into the measurement/adjustment value input sheet.
- (4) Release the compressed air and read the dial gauge value without the R-3-5 brake piston operating.
- (5) Input the dial gauge value, which was read without the R-3-5 brake piston operating, into the measurement/adjustment value input sheet.
- (6) Perform the following calculation to calculate the R-3-5 brake clearance adjustment value.

**R-3-5 brake clearance adjustment value = B - C**

B: Dial gauge value with R-3-5 brake piston operated

C: Dial gauge value without R-3-5 brake piston operated

**Note**

**Example**

B: Dial gauge value with R-3-5 brake piston operating is 2.280 mm {0.08976 in}

C: Dial gauge value without R-3-5 brake piston operated is 0.205 mm {0.00807 in}

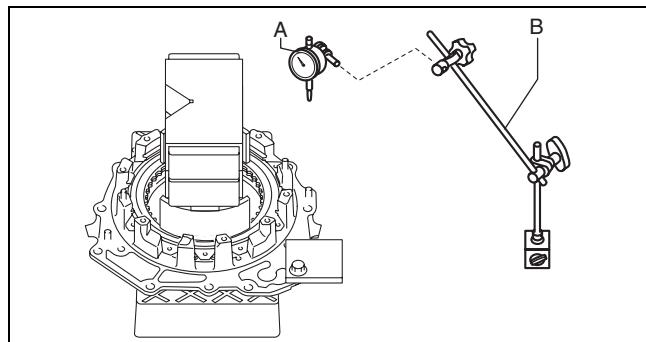
R-3-5 brake clearance adjustment value = 2.280 mm {0.08976 in} - 0.205 mm {0.00807 in} = 2.075 mm {0.08169 in}

- (7) Input the calculated R-3-5 brake clearance adjustment value into the measurement/adjustment value input sheet.

## AUTOMATIC TRANSAXLE

11. Remove the dial gauge and magnetic stand.

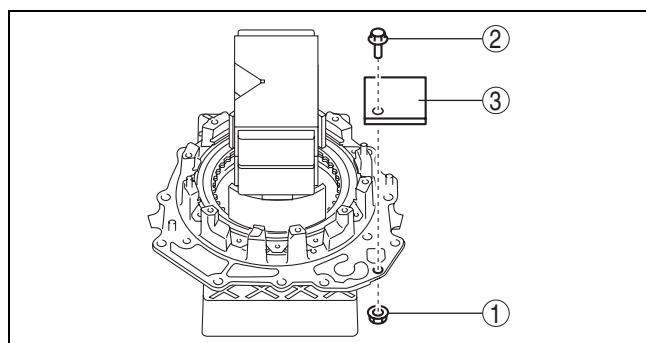
A : Dial gauge  
B : Magnetic stand



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12. Remove the steel plate for securing the magnetic stand using the procedure shown in the figure.

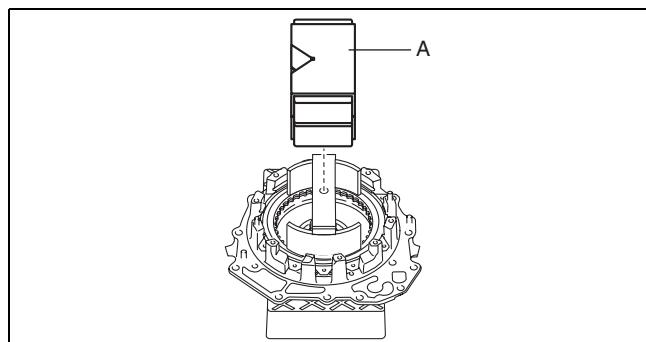
1	Nut (M8)
2	Bolt (M8)
3	Steel plate (for securing magnetic stand)



azzjjw00001195

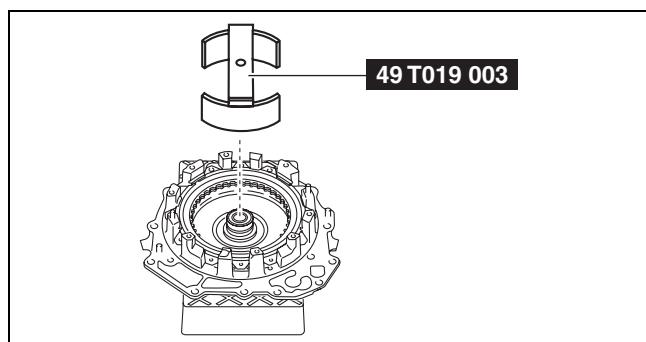
13. Remove the weight on the SST.

A : Weight (V-block)



azzjjw00001196

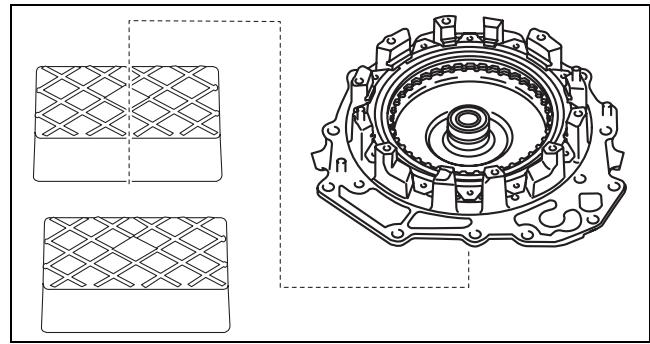
14. Remove the SST.



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## AUTOMATIC TRANSAXLE

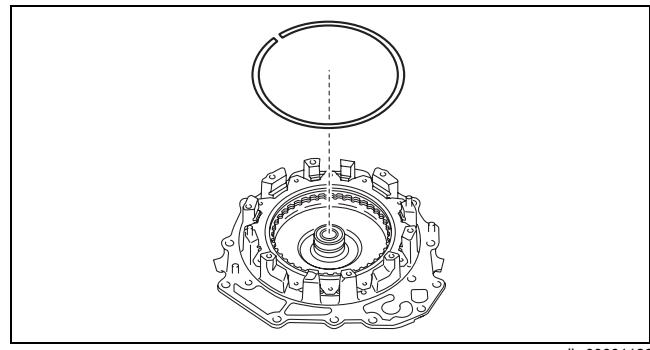
- Take the end cover off the rubber plates.



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- Remove the snap ring (FZ01 19 469) for the R-3-5 brake clearance measurement/adjustment.



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- Measure the thickness of the removed snap ring (FZ01 19 469) for the R-3-5 brake clearance measurement/adjustment.

**Note**

- Recommended measuring instrument: Micrometer

- Input the measured snap ring (FZ01 19 469) thickness for the R-3-5 brake clearance measurement/adjustment into the measurement/adjustment value input sheet.

# AUTOMATIC TRANSAXLE

19. Select the appropriate snap ring from the following table:

Range*	Selected snap ring thickness
Exceeds 3.830 mm {0.1508 in}, 3.930 mm {0.1547 in} or less	2.6 mm {0.102 in}
Exceeds 3.730 mm {0.1469 in}, 3.830 mm {0.1508 in} or less	2.5 mm {0.098 in}
Exceeds 3.630 mm {0.1429 in}, 3.730 mm {0.1469 in} or less	2.4 mm {0.094 in}
Exceeds 3.530 mm {0.1390 in}, 3.630 mm {0.1429 in} or less	2.3 mm {0.091 in}
Exceeds 3.430 mm {0.1350 in}, 3.530 mm {0.1390 in} or less	2.2 mm {0.087 in}
Exceeds 3.330 mm {0.1311 in}, 3.430 mm {0.1350 in} or less	2.1 mm {0.083 in}
Exceeds 3.230 mm {0.1272 in}, 3.330 mm {0.1311 in} or less	2.0 mm {0.079 in}
Exceeds 3.130 mm {0.1232 in}, 3.230 mm {0.1272 in} or less	1.9 mm {0.075 in}
Exceeds 3.030 mm {0.1193 in}, 3.130 mm {0.1232 in} or less	1.8 mm {0.071 in}
Exceeds 2.930 mm {0.1154 in}, 3.030 mm {0.1193 in} or less	1.7 mm {0.067 in}

\* : The range is the thickness of the removed snap ring (FZ01 19 469) used for the R-3-5 brake clearance measurement/adjustment added to the R-3-5 brake clearance adjustment value, from which the retainer thickness of the springs and retainer component is subtracted.

**Range = D + E - A**

A: Retainer thickness of springs and retainer component

D: R-3-5 brake clearance adjustment value

E: Thickness of snap ring (FZ01 19 469) for R-3-5 brake clearance measurement/adjustment

**Note**

**Example**

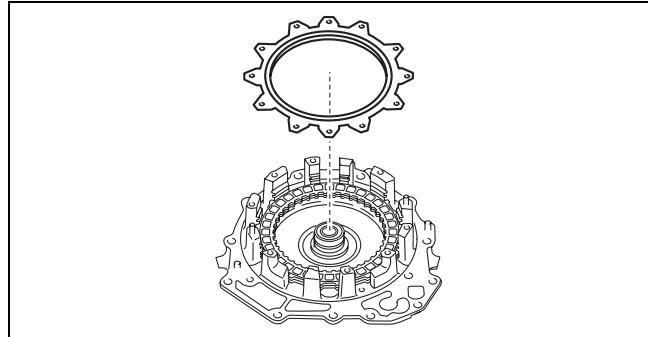
A: Retainer thickness of springs and retainer component is 1.225 mm {0.04823 in}

D: R-3-5 brake clearance adjustment value is 2.075 mm {0.08169 in}

E: Thickness of snap ring (FZ01 19 469) for R-3-5 brake clearance measurement/adjustment is 2.625 mm {0.10335 in}

Range = 2.075 mm {0.08169 in} + 2.625 mm {0.10335 in} - 1.225 mm {0.04823 in} = 3.475 mm {0.13681 in}, the selected snap ring has a thickness of 2.2 mm {0.087 in}.

20. Remove the retaining plate.

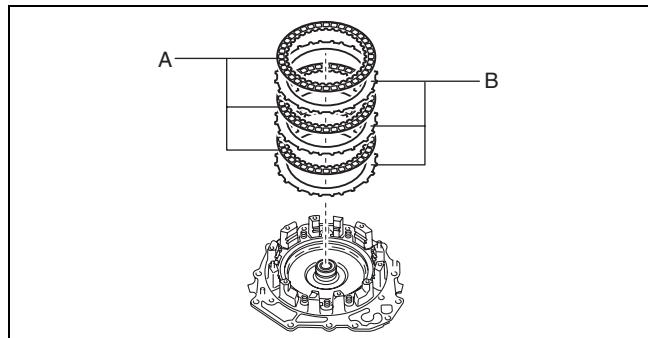


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21. Remove the drive plates and driven plates.

A : Drive plate

B : Driven plate



azzjw00001179

**2-6 BRAKE CLEARANCE MEASUREMENT/ADJUSTMENT**

id051700664800

**Preparation Before Servicing**

1. Print out the measurement/adjustment value input sheet. (See 05-17-295 MEASUREMENT/ADJUSTMENT VALUE INPUT SHEET.)

**Note**

- When performing the measurement/adjustment, input the measured and calculated values into the measurement/adjustment value input sheet.
- When performing the other measurements/adjustments, if the measurement/adjustment value input sheet has been printed out, use the printed sheet.

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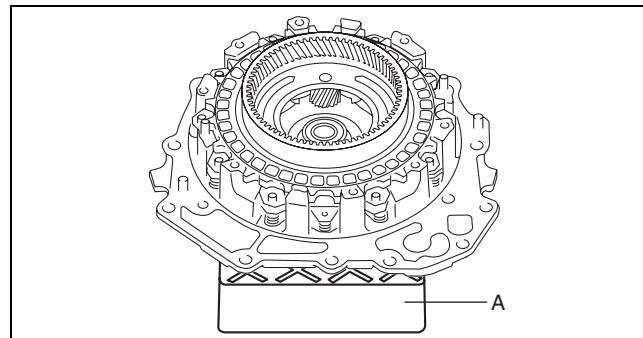
**2-6 Brake Clearance Measurement**

1. Set the end cover for the assembled part on the workbench as shown in the figure.

A : Rubber plate

**Caution**

- To reduce error during the 2-6 brake clearance measurement, use the rubber plates to adjust the alignment surface of the end cover with the transaxle case so that it is level.

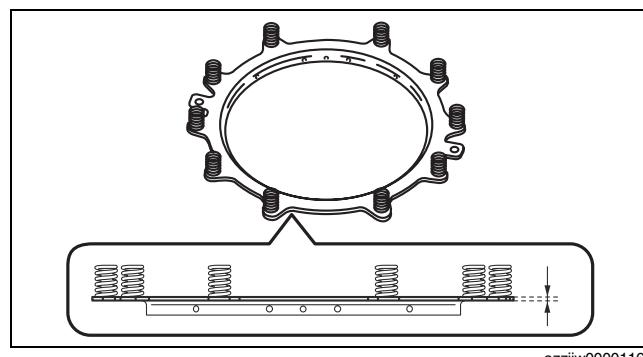


azzjw00001168

2. Measure the retainer thickness of the springs and retainer component.

**Note**

- Recommended measuring instrument:  
Micrometer
- Springs and retainer component size: Inner diameter approx. 150.6 mm {5.929 in}



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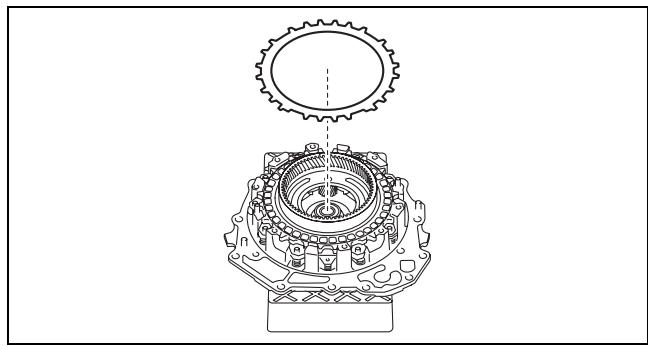
3. Input the measured retainer thickness of the springs and retainer component into the measurement/adjustment value input sheet.

## AUTOMATIC TRANSAXLE

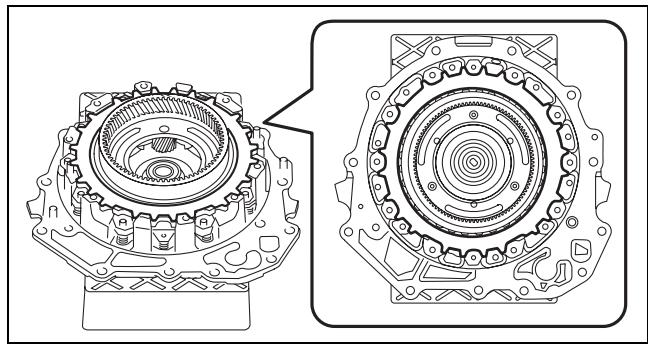
### 4. Assemble the retaining plate.

#### Note

- Retaining plate size: Inner diameter approx. 148 mm {5.83 in}

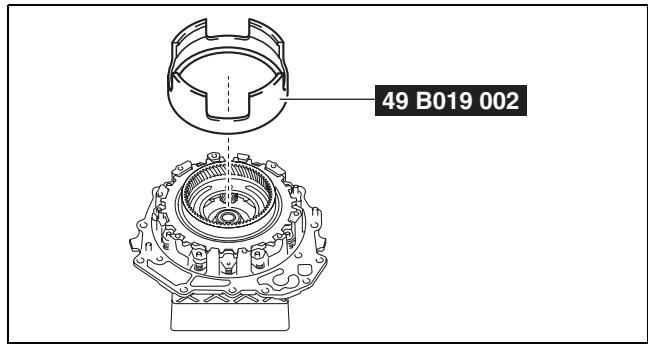


azzjw00001170

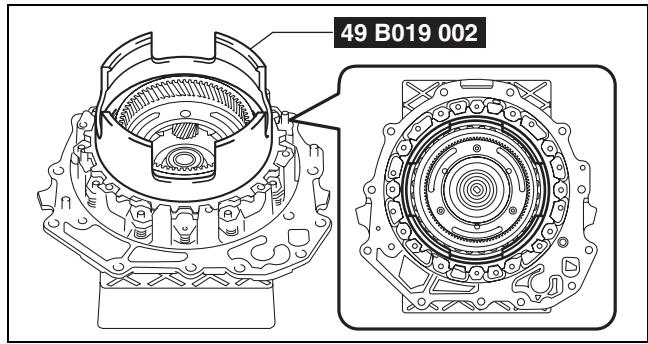


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### 5. Install the SST.



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azzjw00001173

6. Place a 98—196 N {10.0—19.9 kgf, 23.0—44.0 lbf} weight on the SST.

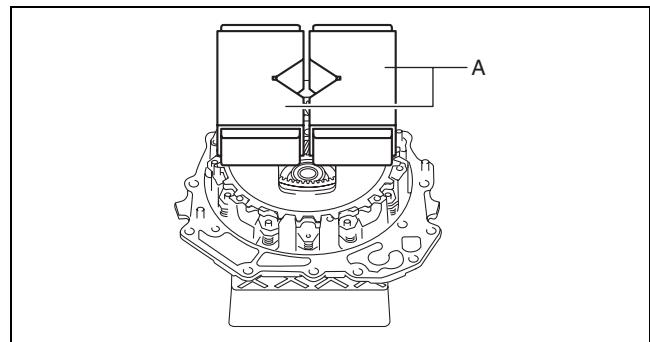
A : Weight (V-block)

**Caution**

- To reduce error during the 2-6 brake clearance measurement, place the weight near the center of the SST.

**Note**

- Use a V-block as a weight.



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7. Measure distance A shown in the figure in four locations (each separated by 90°) and calculate the average value of distance A.

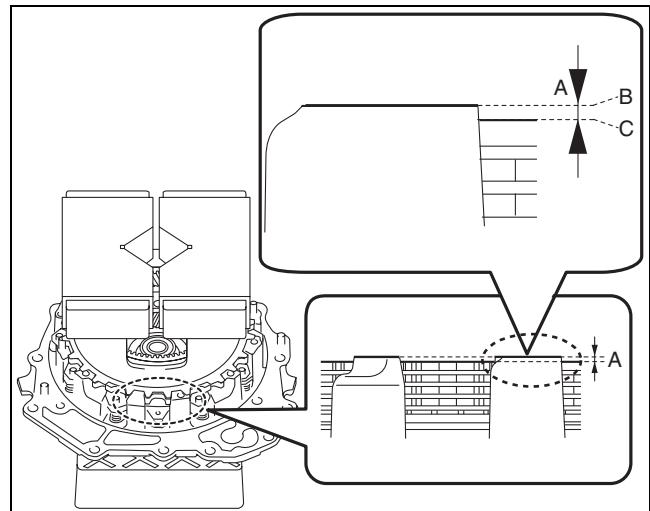
A : Distance A

B : End cover end (alignment surface with brake housing)

C : Retaining plate end

**Note**

- Recommended measuring instrument: Depth micrometer
- Measure the splines of the retaining plate using a depth micrometer.



azzjw00001575

8. Input the measured distance A and calculated distance A average value into the measurement/adjustment value input sheet.

9. Perform the following calculation to calculate the 2-6 brake clearance.

$$\text{2-6 brake clearance} = C - A$$

A: Retainer thickness of springs and retainer component

C: Average value of distance A

**Note**

**Example**

A: Retainer thickness of springs and retainer component is 1.425 mm {0.05610 in}

C: Average value of distance A is 2.665 mm {0.10492 in}

$$2-6 \text{ brake clearance} = 2.665 \text{ mm} \{0.10492 \text{ in}\} - 1.425 \text{ mm} \{0.05610 \text{ in}\} = 1.240 \text{ mm} \{0.04882 \text{ in}\}$$

10. Input the calculated 2-6 brake clearance into the measurement/adjustment value input sheet.

11. Verify that the 2-6 brake clearance satisfies the specification.

**Specification**

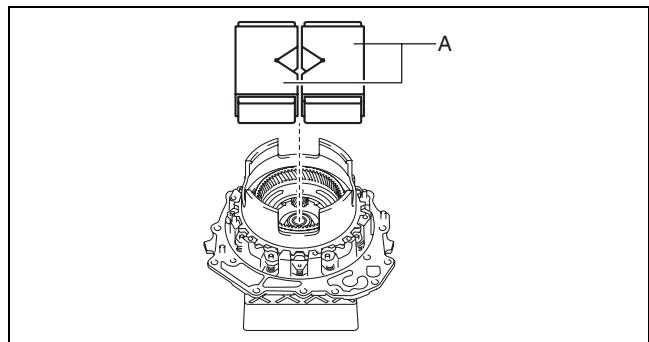
1.000—1.200 mm {0.03938—0.04724 in}

- If not within the specification, adjust the 2-6 brake clearance. (See 05-17-351 2-6 Brake Clearance Adjustment.)

## AUTOMATIC TRANSAXLE

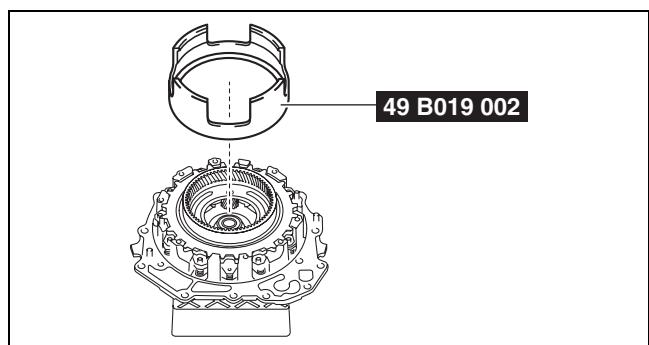
12. Remove the weight on the SST.

A : Weight (V-block)



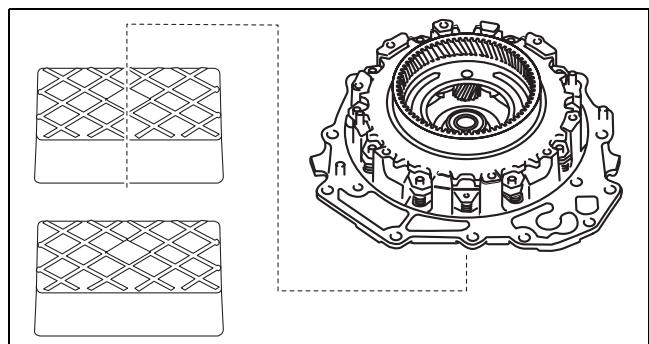
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13. Remove the SST.



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14. Take the end cover off the rubber plates.



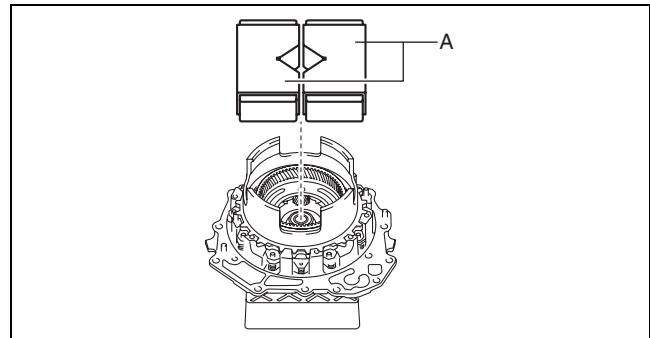
azzjjw00001177

## AUTOMATIC TRANSAXLE

### 2-6 Brake Clearance Adjustment

1. Remove the weight on the SST.

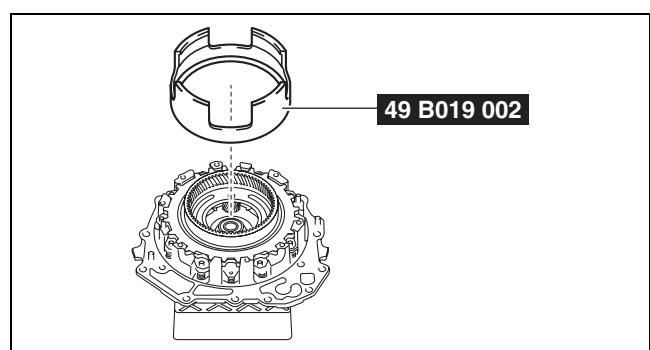
A : Weight (V-block)



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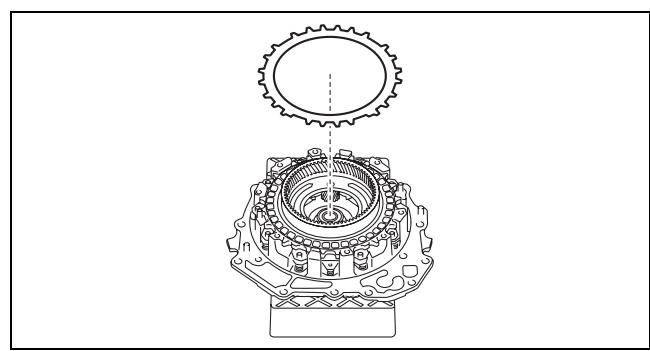
azzjw00001176

2. Remove the SST.



azzjw00001172

3. Remove the retaining plate.



azzjw00001170

4. Measure the thickness of the removed retaining plate.

#### Note

- Recommended measuring instrument: Micrometer

5. Input the measured retaining plate thickness into the measurement/adjustment value input sheet.

## AUTOMATIC TRANSAXLE

6. Select the appropriate retaining plate from the following table:

Range*	Selected retaining plate thickness
Exceeds 3.550 mm {0.1398 in}, 3.650 mm {0.1437 in} or less	2.5 mm {0.098 in}
Exceeds 3.450 mm {0.1358 in}, 3.550 mm {0.1398 in} or less	2.4 mm {0.094 in}
Exceeds 3.350 mm {0.1319 in}, 3.450 mm {0.1358 in} or less	2.3 mm {0.091 in}
Exceeds 3.250 mm {0.1280 in}, 3.350 mm {0.1319 in} or less	2.2 mm {0.087 in}
Exceeds 3.150 mm {0.1240 in}, 3.250 mm {0.1280 in} or less	2.1 mm {0.083 in}
Exceeds 3.050 mm {0.1201 in}, 3.150 mm {0.1240 in} or less	2.0 mm {0.079 in}
Exceeds 2.950 mm {0.1161 in}, 3.050 mm {0.1201 in} or less	1.9 mm {0.075 in}
Exceeds 2.850 mm {0.1122 in}, 2.950 mm {0.1161 in} or less	1.8 mm {0.071 in}
Exceeds 2.750 mm {0.1083 in}, 2.850 mm {0.1122 in} or less	1.7 mm {0.067 in}

\* : The range is the sum of the 2-6 brake clearance and the thickness value of the removed retaining plate.

**Range = D + G**

D: 2-6 brake clearance

G: Thickness of removed retaining plate

### Note

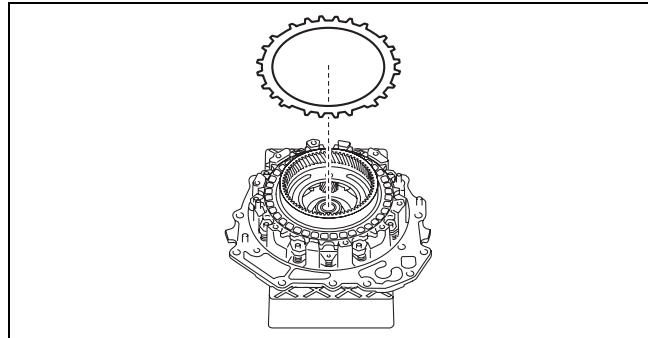
### Example

D: 2-6 brake clearance is 1.240 mm {0.04882 in}

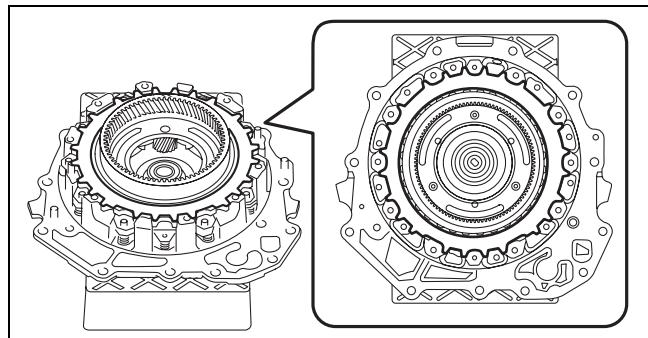
G: Thickness of removed retaining plate is 2.015 mm {0.07933 in}

Range = 1.240 mm {0.04882 in} + 2.015 mm {0.07933 in} = 3.255 mm {0.12815 in}, the selected retaining plate has a thickness of 2.2 mm {0.087 in}.

7. Assemble the selected retaining plate.



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8. Perform the 2-6 brake clearance measurement from Step 5. (See 05-17-347 2-6 Brake Clearance Measurement.)

## LOW AND REVERSE BRAKE CLEARANCE MEASUREMENT/ADJUSTMENT

id051700664700

### Preparation Before Servicing

1. Print out the measurement/adjustment value input sheet. (See 05-17-295 MEASUREMENT/ADJUSTMENT VALUE INPUT SHEET.)

#### Note

- When performing the measurement/adjustment, input the measured and calculated values into the measurement/adjustment value input sheet.
- When performing the other measurements/adjustments, if the measurement/adjustment value input sheet has been printed out, use the printed sheet.

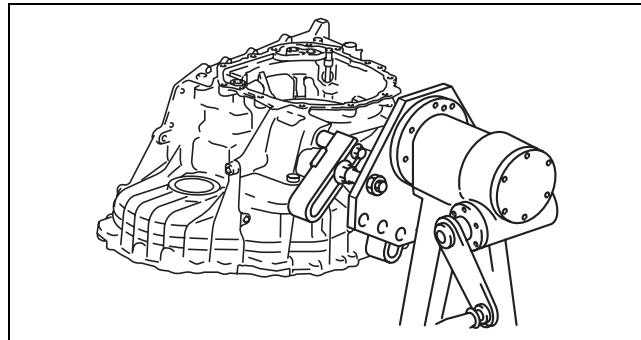
05-17

### Low and Reverse Brake Clearance Measurement

1. Rotate and adjust the rotation handle of the engine stand so that the end cover side is facing upward.

#### Caution

- To reduce error during the low and reverse brake clearance measurement, adjust so that the alignment surface of the transaxle case with the end cover is level.



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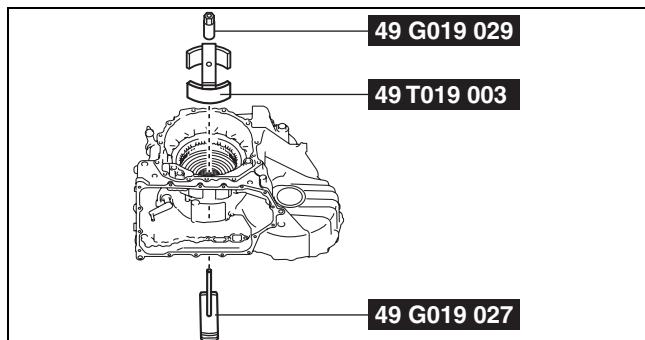
## AUTOMATIC TRANSAXLE

2. Assemble the snap ring using the following procedure:

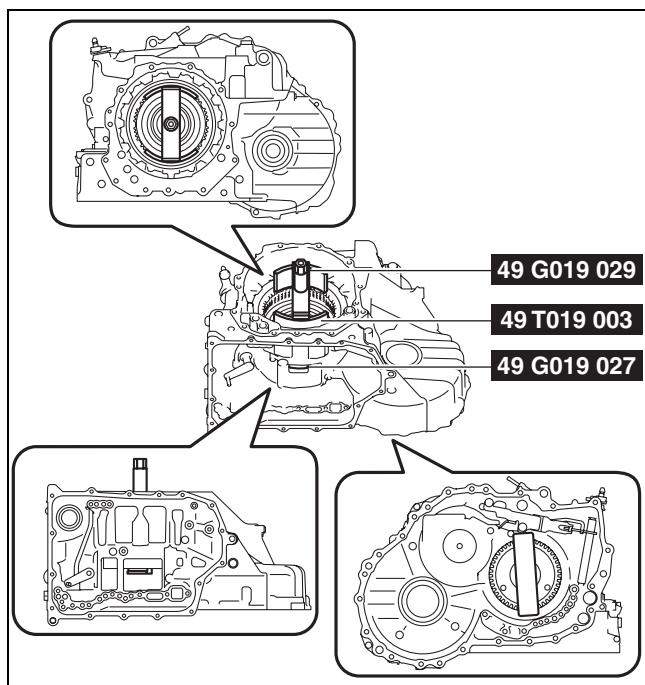
### Note

- Snap ring size: Outer diameter approx. 198.0 mm {7.795 in}

(1) Install the SSTs.



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(2) Tighten the SST (49 G019 029) until the snap ring groove of the transaxle case comes out.

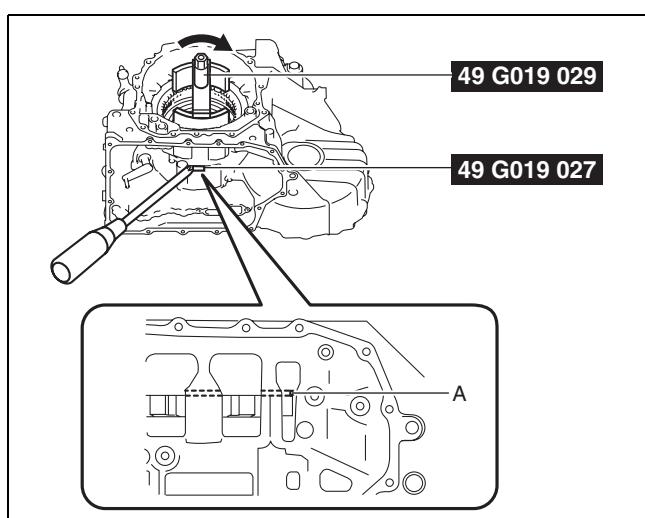
A : Snap ring groove

### Caution

- If the SST (49 G019 029) is tightened with excessive force, surrounding parts could be damaged. Stop tightening the SST when the snap ring groove of the transaxle case comes out.

### Note

- Lock the SST (49 G019 027) against rotation using a flathead screwdriver and tighten the SST (49 G019 029).



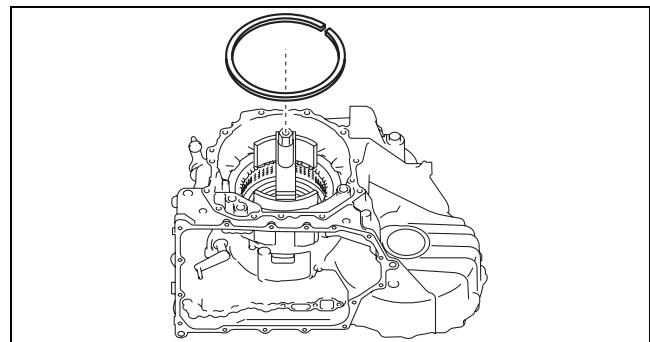
azzjjw00000737

## AUTOMATIC TRANSAXLE

- (3) Assemble the snap ring to the position shown in the figure.

### Caution

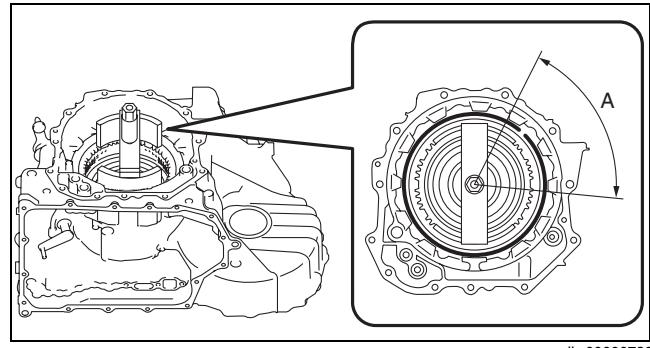
- Assemble the snap ring so that the end gap of the snap ring is in the area shown in the figure.
- After assembling the snap ring, verify that the snap ring is securely inserted into the bottom of the snap ring groove.



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azzjw00000738

A : End gap of snap ring assembly area

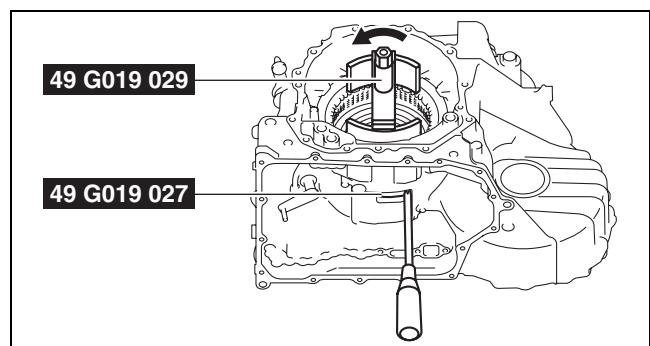


azzjw00000739

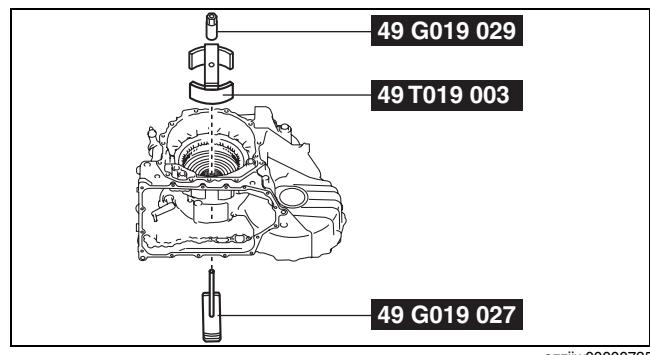
- (4) Loosen the SST (49 G019 029) and remove the SSTs.

### Note

- Lock the SST (49 G019 027) against rotation using a flathead screwdriver and loosen the SST (49 G019 029).



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## AUTOMATIC TRANSAXLE

3. Set the measuring instrument to the transaxle case using the following procedure.

(1) Install the steel plate for securing the magnetic stand using the procedure shown in the figure.

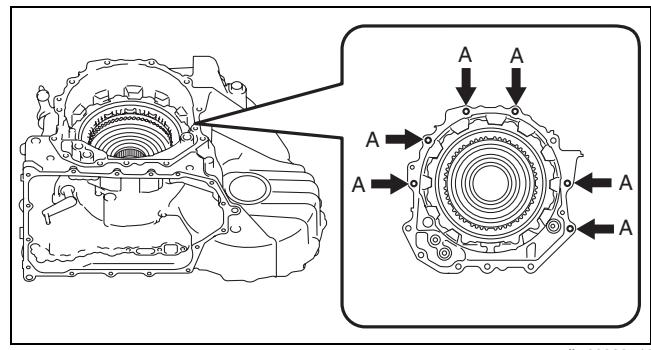
### Caution

- If the bolt is tightened with excessive force when installing the steel plate, the alignment surface of the end cover with the transaxle case could be damaged. Tighten the bolt so that the steel plate does not move during low and reverse brake clearance measurement.
- To prevent damage to the parts, the bolt holes in the transaxle case which are used for securing the steel plate are the penetrated bolt holes shown in the figure.

### Note

- When installing the steel plate to the transaxle case, use a bolt (M8×1.25).
- Use a bolt length in which the bolt end comes out of the transaxle case bolt hole but does not contact the transaxle case.
- Because it is necessary to measure the low and reverse brake clearance in four locations (each separated by 90°), change the steel plate installation position to the area of the bolt installation position shown in the figure then install the steel plate to a position which facilitates measurement.

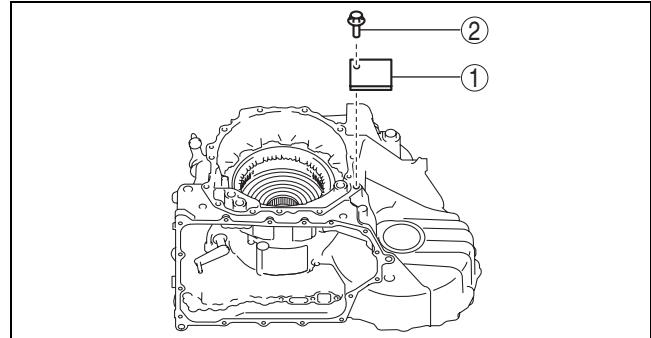
A : Bolt installation position for steel plate installation



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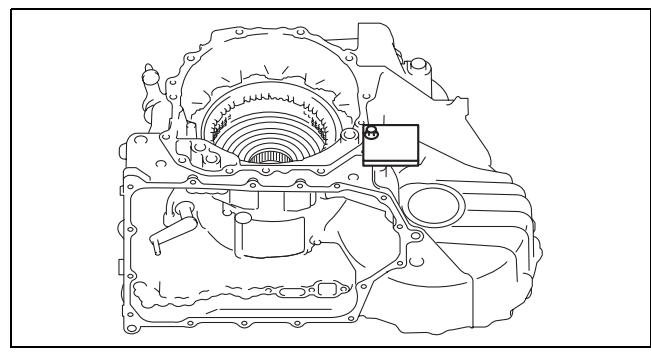
1	Steel plate (for securing magnetic stand)
2	Bolt (M8×1.25)*

\* : Use a bolt length in which the bolt end comes out of the transaxle case bolt hole but does not contact the transaxle case.



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**Steel plate installation bolt tightening torque  
15 N·m {1.5 kgf·m, 11 ft·lbf} or less (tighten  
so that steel plate does not move during  
low and reverse brake clearance  
measurement)**



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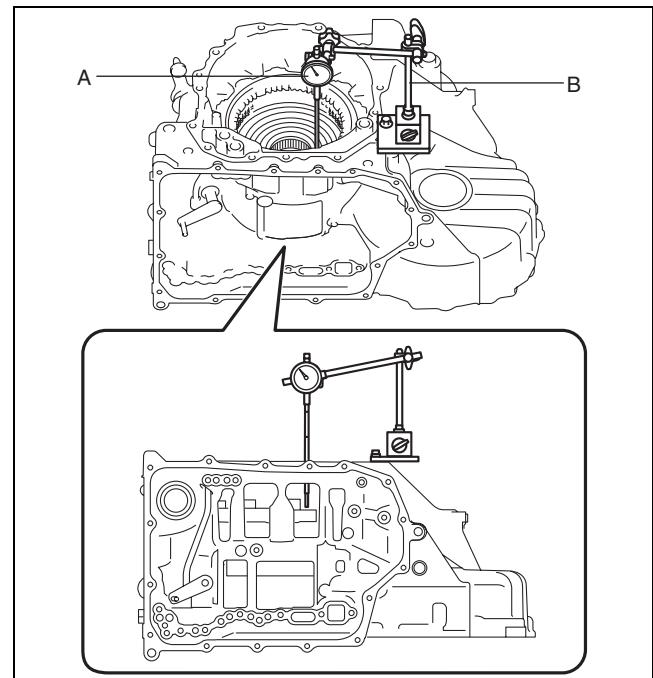
## AUTOMATIC TRANSAXLE

- (2) Set the dial gauge and magnetic stand as shown in the figure.

A : Dial gauge  
B : Magnetic stand

### Caution

- To reduce error during the low and reverse brake clearance measurement, set the dial gauge so that it is perpendicular to the alignment surface of the transaxle case with the end cover.



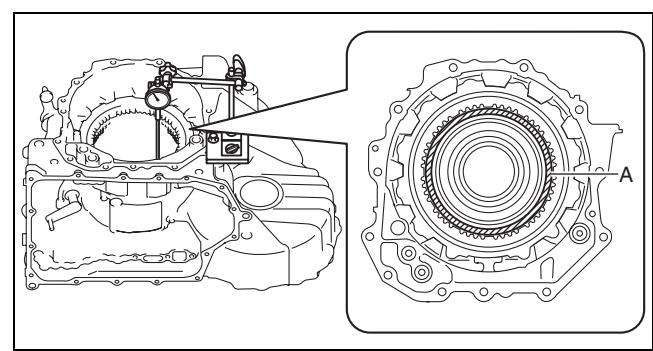
05-17

- (3) Set the dial gauge end to the low and reverse brake piston.

A : Area in which dial gauge end is set

### Note

- Measure the stroke amount of the low and reverse brake piston as the low and reverse brake clearance.



## AUTOMATIC TRANSAXLE

4. Measure the low and reverse brake clearance using the following procedure:

- (1) Blow compressed air into the oil passage shown in the figure and verify the operation condition of the low and reverse brake (approx. 3 times).

### Warning

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

### Caution

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

#### Compressed air pressure

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>,  
57—63 psi}

- (2) Blow compressed air into the oil passage shown in the figure and operate the low and reverse brake piston to read the value when the dial gauge is stabilized.

### Warning

- Always wear protective eye wear when using the air compressor. Otherwise, ATF or dirt particles blown off by the air compressor could get into the eyes.

### Caution

- To prevent damage to parts, always use an air compressor which is adjusted to the indicated pressure.

#### Compressed air pressure

0.39—0.44 MPa {4.0—4.4 kgf/cm<sup>2</sup>,  
57—63 psi}

- (3) Input the dial gauge value, which was read while the low and reverse brake piston was operating, into the measurement/adjustment value input sheet.
- (4) Release the compressed air and read the dial gauge value without the low and reverse brake piston operating.
- (5) Input the dial gauge value, which was read without the low and reverse brake piston operating, into the measurement/adjustment value sheet.
- (6) Perform the following calculation to calculate the low and reverse brake clearance.  
**Low and reverse brake clearance = A – B**

- A: Dial gauge value with low and reverse brake piston operating  
B: Dial gauge value without low and reverse brake piston operating

### Note

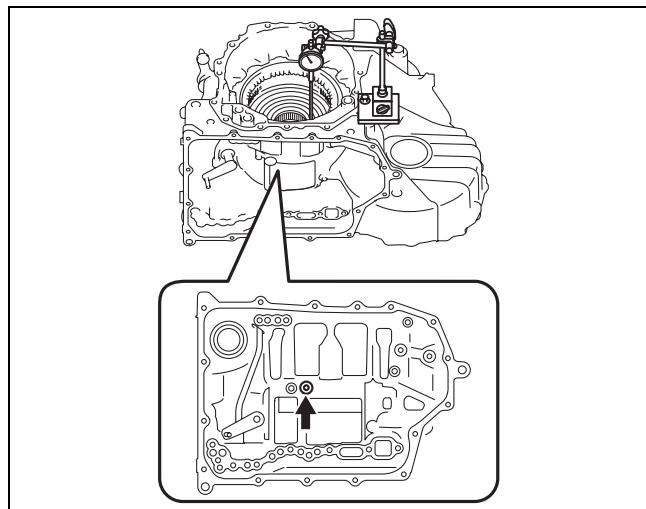
#### Example

A: Dial gauge value with low and reverse brake piston operating is 2.470 mm {0.09724 in}

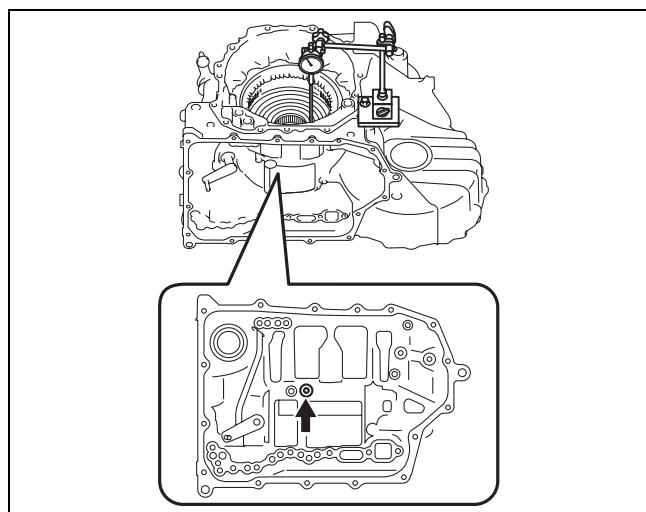
B: Dial gauge value without low and reverse brake piston operating is 0.595 mm {0.02343 in}

Low and reverse brake clearance = 2.470 mm {0.09724 in} – 0.595 mm {0.02343 in} = 1.875 mm {0.07382 in}

- (7) Input the calculated low and reverse brake clearance into the measurement/adjustment value sheet.



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## AUTOMATIC TRANSAXLE

- (8) Measure the low and reverse brake clearance in four locations (each separated by 90°) and calculate the average value of the low and reverse brake clearance.

### Note

- Change the set positions of the dial gauge and magnetic stand and measure the low and reverse brake clearance in four locations (each separated by 90°).

- (9) Input the average value of the calculated low and reverse brake clearance into the measurement/adjustment value sheet.

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- (10) Verify that the average value of the low and reverse brake clearance satisfies the specification.

### Specification

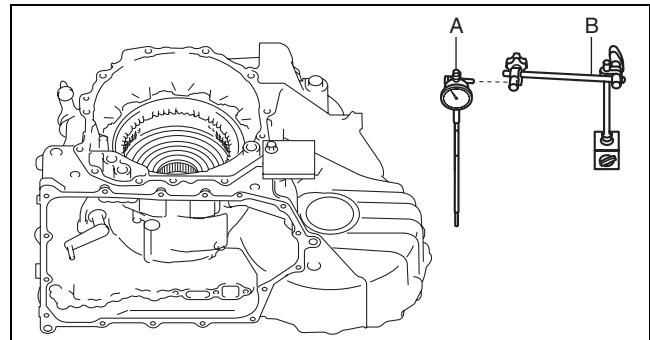
1.650—1.850 mm {0.06497—0.07283 in}

- If not within the specification, adjust the low and reverse brake clearance. (See 05-17-360 Low and Reverse Brake Clearance Adjustment.)

5. Remove the dial gauge and magnetic stand.

A : Dial gauge

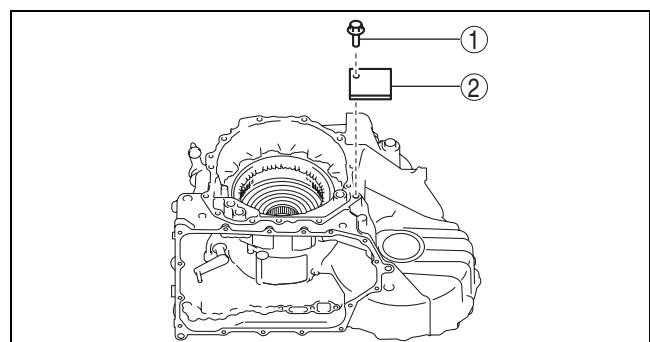
B : Magnetic stand



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6. Remove the steel plate for securing the magnetic stand using the procedure shown in the figure.

1	Bolt
2	Steel plate (for securing magnetic stand)



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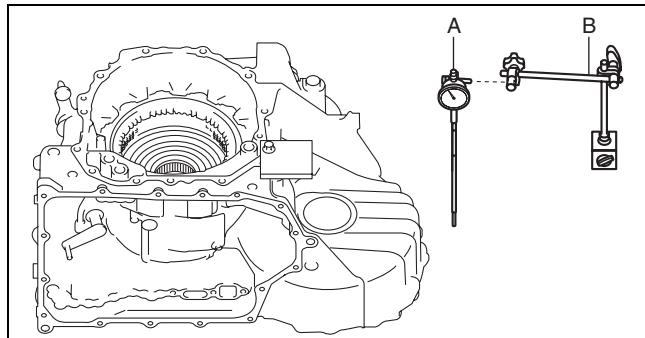
# AUTOMATIC TRANSAXLE

## Low and Reverse Brake Clearance Adjustment

1. Remove the dial gauge and magnetic stand.

A : Dial gauge

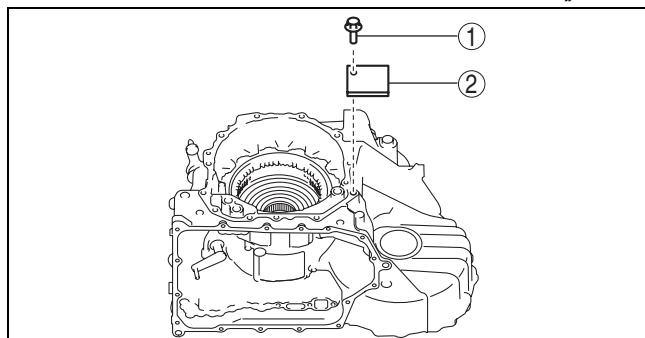
B : Magnetic stand



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2. Remove the steel plate for securing the magnetic stand using the procedure shown in the figure.

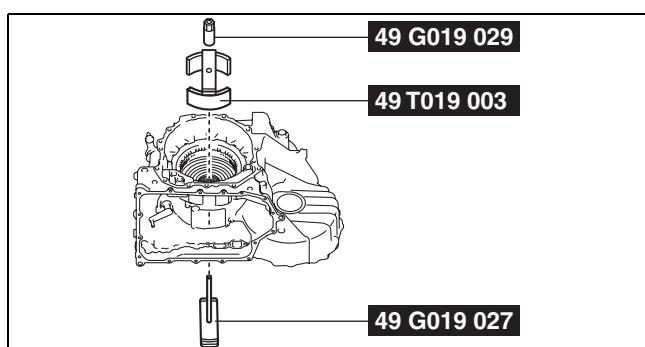
1	Bolt
2	Steel plate (for securing magnetic stand)



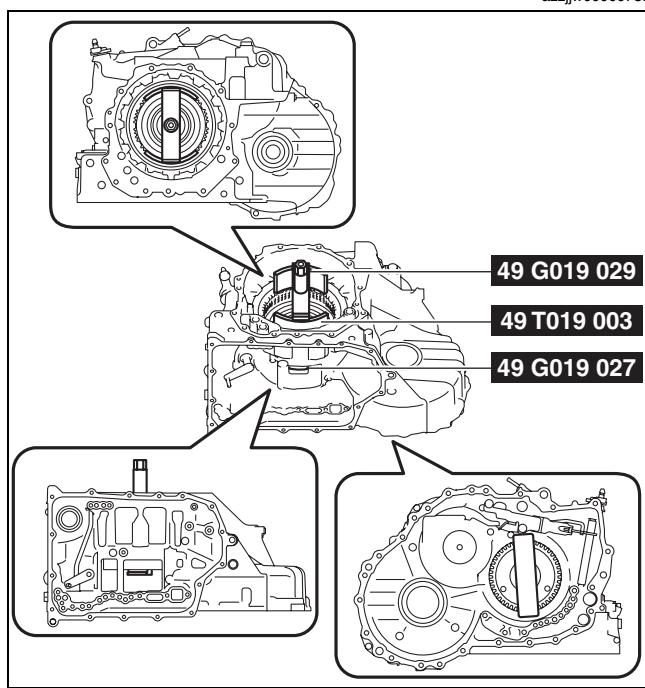
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3. Remove the snap ring using the following procedure:

(1) Install the SSTs.



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## AUTOMATIC TRANSAXLE

- (2) Tighten the SST (49 G019 029) until there is no longer any spring force from the springs and retainer component applied to the snap ring.

A : Snap ring  
B : One-way clutch  
C : Gap

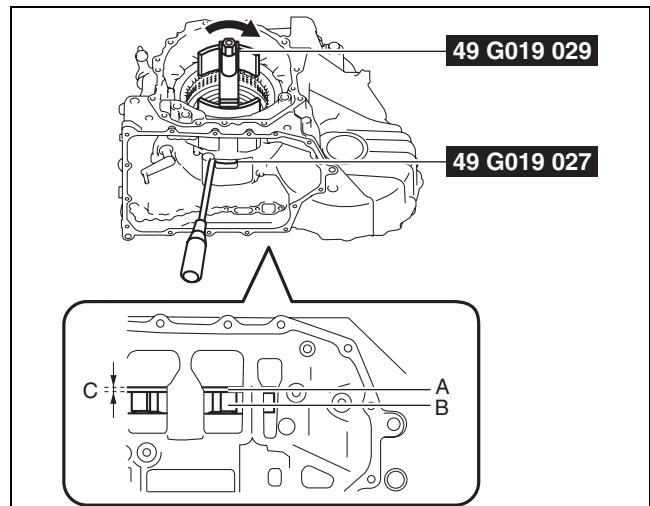
### Caution

- If the SST (49 G019 029) is tightened with excessive force, surrounding parts could be damaged. Stop tightening if a gap appears between the snap ring and one-way clutch

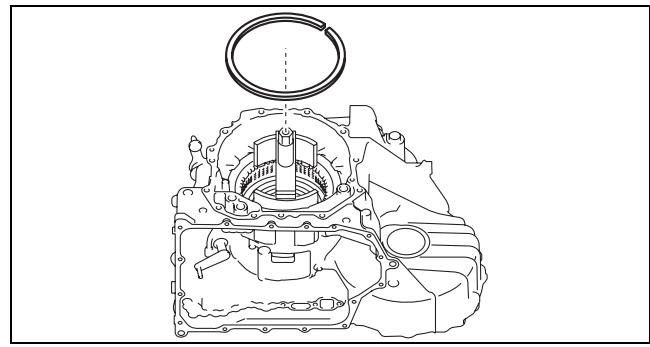
### Note

- Lock the SST (49 G019 027) against rotation using a flathead screwdriver and tighten the SST (49 G019 029).

- (3) Remove the snap ring.



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4. Measure the thickness of the removed snap ring.

### Note

- Recommended measuring instrument: Micrometer

5. Input the measured snap ring thickness into the measurement/adjustment value input sheet.

## AUTOMATIC TRANSAXLE

6. Select the appropriate snap ring from the following table:

Range*	Selected snap ring thickness
Exceeds 4.500 mm {0.1772 in}, 4.600 mm {0.1811 in} or less	2.8 mm {0.110 in}
Exceeds 4.400 mm {0.1732 in}, 4.500 mm {0.1772 in} or less	2.7 mm {0.106 in}
Exceeds 4.300 mm {0.1693 in}, 4.400 mm {0.1732 in} or less	2.6 mm {0.102 in}
Exceeds 4.200 mm {0.1654 in}, 4.300 mm {0.1693 in} or less	2.5 mm {0.098 in}
Exceeds 4.100 mm {0.1614 in}, 4.200 mm {0.1654 in} or less	2.4 mm {0.094 in}
Exceeds 4.000 mm {0.1575 in}, 4.100 mm {0.1614 in} or less	2.3 mm {0.091 in}
Exceeds 3.900 mm {0.1535 in}, 4.000 mm {0.1575 in} or less	2.2 mm {0.087 in}
Exceeds 3.800 mm {0.1496 in}, 3.900 mm {0.1535 in} or less	2.1 mm {0.083 in}
Exceeds 3.700 mm {0.1457 in}, 3.800 mm {0.1496 in} or less	2.0 mm {0.079 in}
Exceeds 3.600 mm {0.1417 in}, 3.700 mm {0.1457 in} or less	1.9 mm {0.075 in}
Exceeds 3.500 mm {0.1378 in}, 3.600 mm {0.1417 in} or less	1.8 mm {0.071 in}

\* : The range is the sum of the average value of the low and reverse brake clearance and the thickness value of the removed snap ring.

**Range = D + G**

D: Average value of low and reverse brake clearance

G: Thickness of removed snap ring

### Note

#### Example

D: Average value of low and reverse brake clearance is 1.879 mm {0.07398 in}

G: Thickness of removed snap ring is 2.305 mm {0.09075 in}

Range = 1.879 mm {0.07398 in} + 2.305 mm {0.09075 in} = 4.184 mm {0.16472 in}, the selected snap ring has a thickness of 2.4 mm {0.094 in}.

7. Assemble the selected snap ring using the following procedure:

### Note

- Snap ring size: Outer diameter approx. 198.0 mm {7.795 in}

(1) Tighten the SST (49 G019 029) until the snap ring groove of the transaxle case comes out.

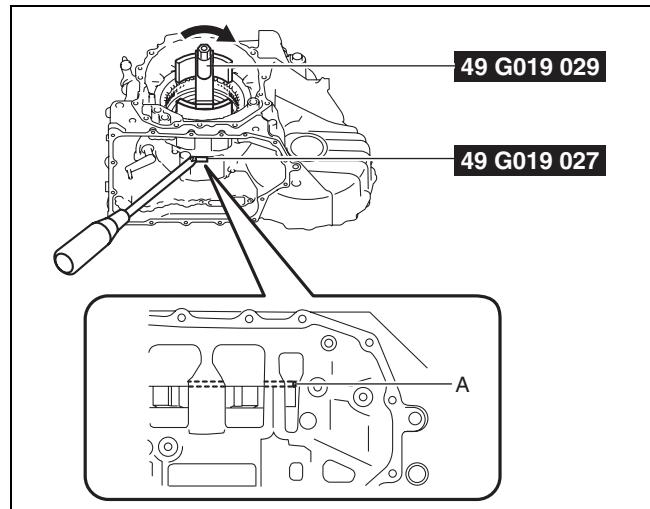
A : Snap ring groove

### Caution

- If the SST (49 G019 029) is tightened with excessive force, surrounding parts could be damaged. Stop tightening the SST when the snap ring groove of the transaxle case comes out.

### Note

- Lock the SST (49 G019 027) against rotation using a flathead screwdriver and tighten the SST (49 G019 029).

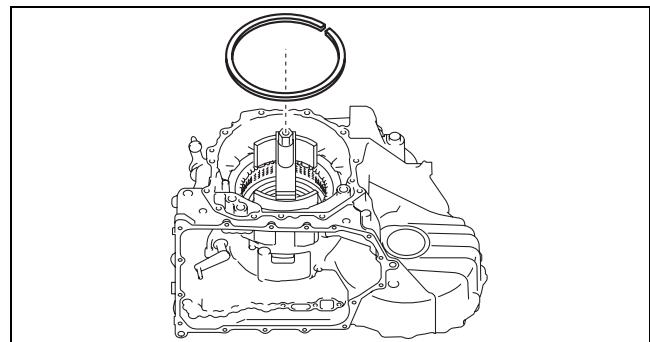


## AUTOMATIC TRANSAXLE

- (2) Assemble the snap ring to the position shown in the figure.

### Caution

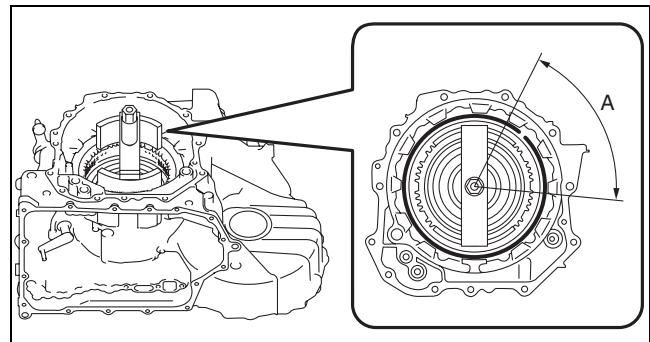
- Assemble the snap ring so that the end gap of the snap ring is in the area shown in the figure.
- After assembling the snap ring, verify that the snap ring is securely inserted into the bottom of the snap ring groove.



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A : End gap of snap ring assembly area

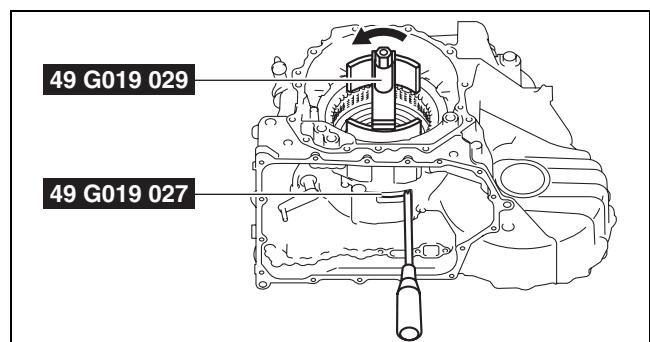


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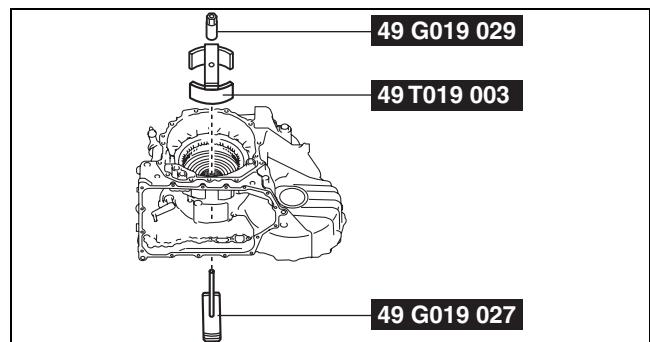
- (3) Loosen the SST (49 G019 029) and remove the SSTs.

### Note

- Lock the SST (49 G019 027) against rotation using a flathead screwdriver and loosen the SST (49 G019 029).



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8. Perform the low and reverse brake clearance measurement from Step 3. (See 05-17-353 Low and Reverse Brake Clearance Measurement.)

# AUTOMATIC TRANSAXLE

## SECONDARY GEAR AND OUTPUT GEAR PRELOAD MEASUREMENT/ADJUSTMENT

id051700665000

### Preparation Before Servicing

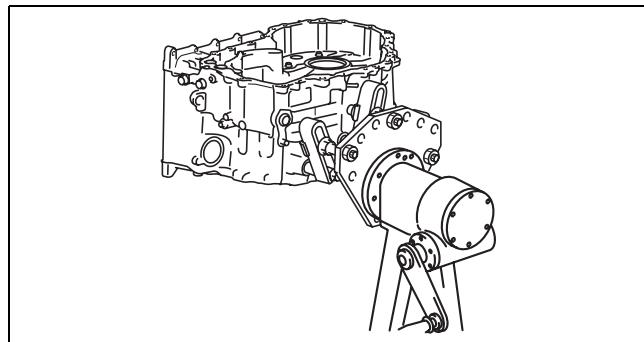
1. Print out the measurement/adjustment value input sheet. (See 05-17-295 MEASUREMENT/ADJUSTMENT VALUE INPUT SHEET.)

#### Note

- When performing the measurement/adjustment, input the measured and calculated values into the measurement/adjustment value input sheet.
- When performing the other measurements/adjustments, if the measurement/adjustment value input sheet has been printed out, use the printed sheet.

### Secondary Gear and Output Gear Preload Measurement

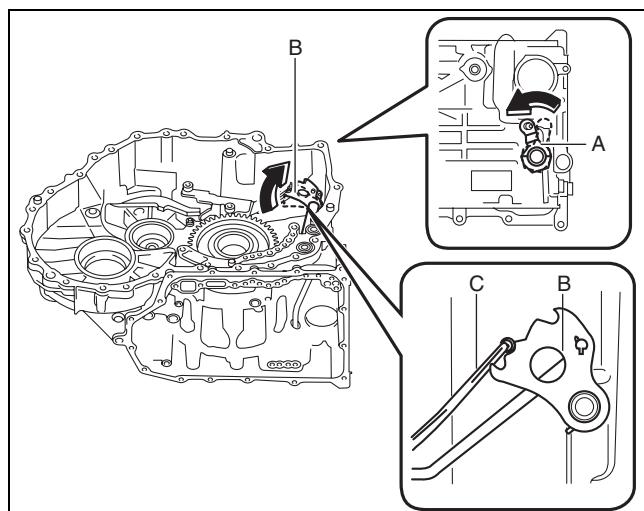
1. Rotate and adjust the rotation handle of the engine stand so that the converter housing side is facing upward.



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2. Rotate the parking shift lever component to the N position as shown in the figure.

A : Parking shift lever component  
B : Manual plate component  
C : Detent bracket component



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3. Remove any remaining old sealant on the contact surfaces of the transaxle case and converter housing.

## AUTOMATIC TRANSAXLE

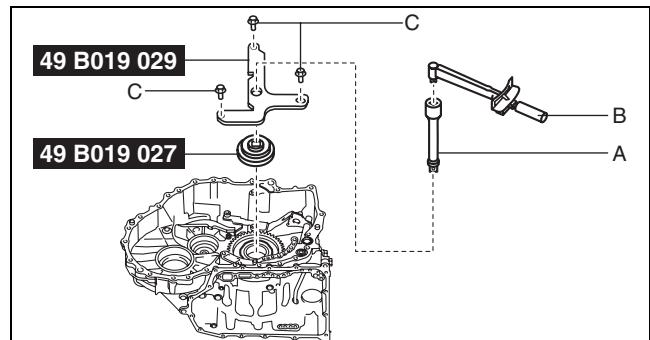
4. Measure the angular contact ball bearing preload using the following procedure:

- (1) Set the SSTs, extension bar, and torque wrench as shown in the figure.

A : Extension bar

B : Torque wrench

C : Bolt supplied with SST (49 B019 029) or M8×1.25, length to 18 mm {0.71 in}



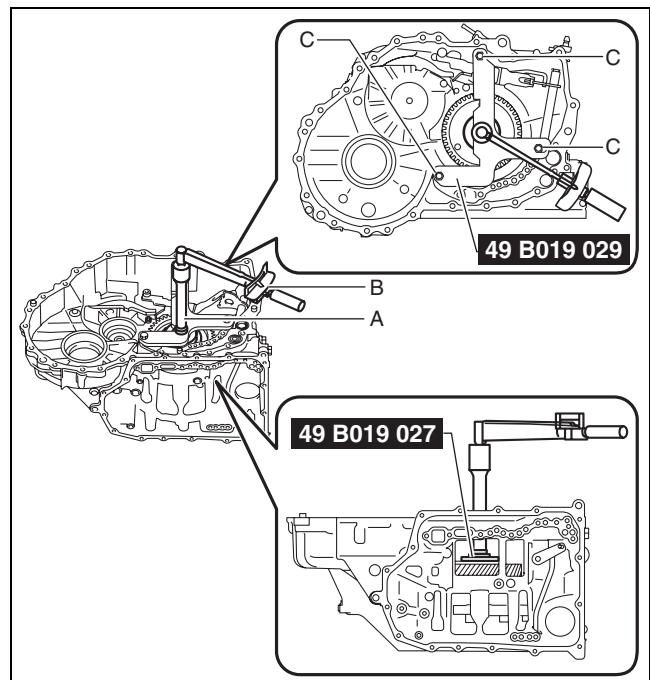
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A : Extension bar

B : Torque wrench

C : Bolt supplied with SST (49 B019 029) or M8×1.25, length to 18 mm {0.71 in}

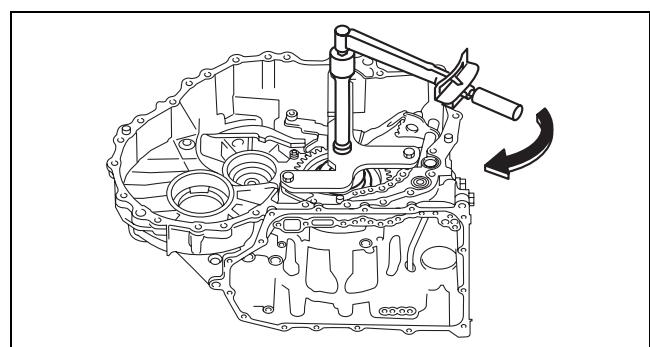


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- (2) Rotate the locknut (primary gear) in the direction of the arrow shown in the figure using a torque wrench and measure the angular contact ball bearing preload.

### Caution

- After rotating the locknut (primary gear) approx. 10 times in the direction of the arrow shown in the figure, measure the angular contact ball bearing preload to engage the angular contact ball bearing.
- When the locknut (primary gear) is rotated at approx. 20 rpm (speed of one rotation for 3 s), measure the rotational torque as the angular contact ball bearing preload.



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- (3) Input the measured angular contact ball bearing preload into the measurement/adjustment value sheet.

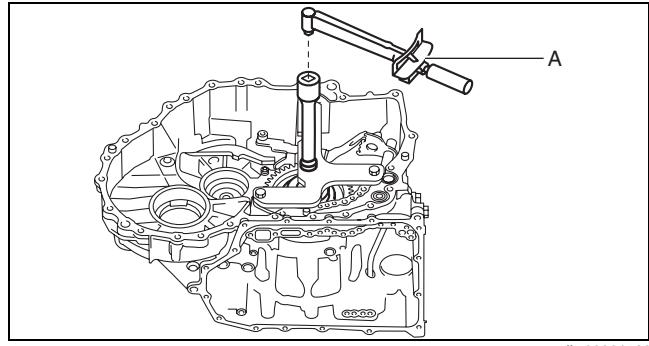
## AUTOMATIC TRANSAXLE

(4) Remove the torque wrench.

A : Torque wrench

### Note

- Because the SSTs and extension bar are used for secondary gear and output gear preload measurement/adjustment, do not remove them.



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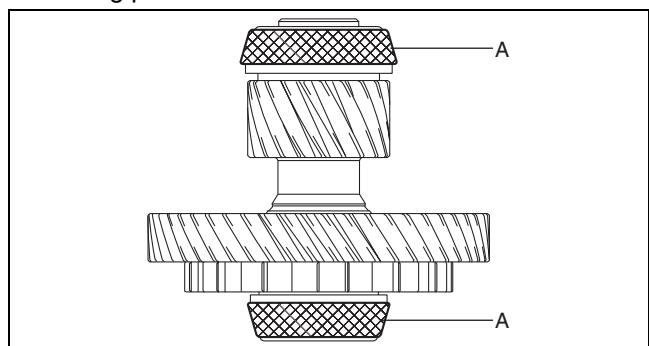
5. Assemble the secondary gear and output gear using the following procedure:

(1) Apply ATF (ATF FZ) to the taper roller bearing roller of the secondary gear and output gear.

A : ATF application area

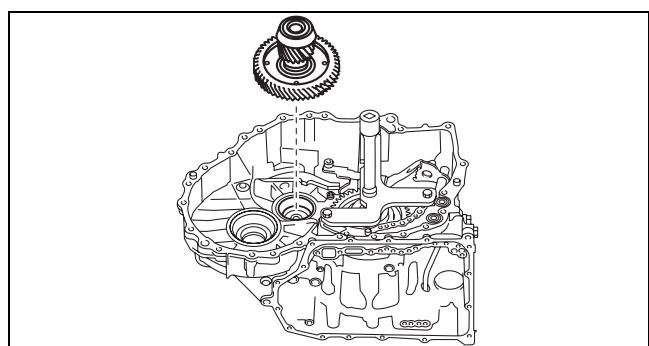
### Caution

- Accurately perform the procedure to reduce the error on the secondary gear and output gear preload measurement.

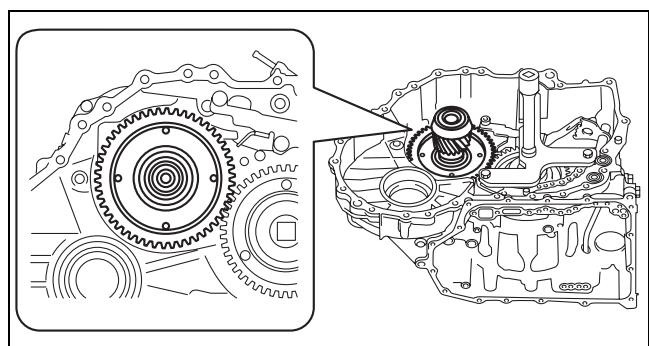


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(2) Assemble the secondary gear and output gear.



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## AUTOMATIC TRANSAXLE

6. Assemble the bearing race and a new shim with the same thickness as the removed shim to the converter housing using the following procedure:

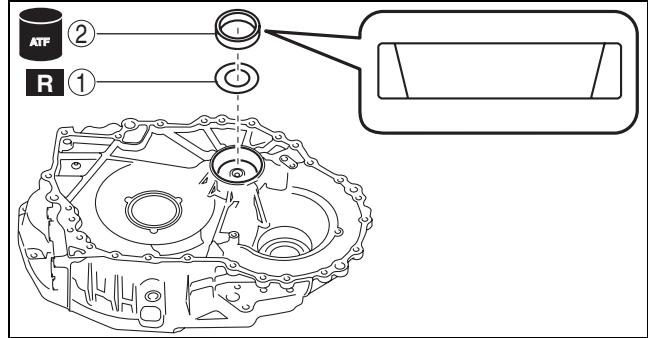
### Caution

- Always use a new shim. If a deformed shim is reused, it may cause a transaxle malfunction.

(1) Apply ATF (ATF FZ) to the engagement area of the bearing race and converter housing.

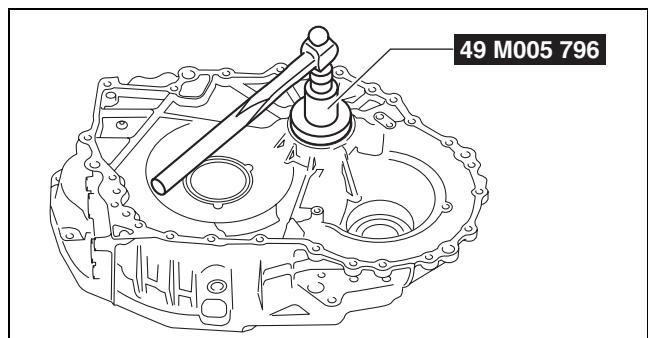
(2) Assemble the bearing race and a new shim with the same thickness as the removed shim using the following procedure and the SST:

1	Shim (outer diameter approx. 74 mm {2.9 in}) (new shim with same thickness of removed shim)
2	Bearing race (outer diameter approx. 75 mm {3.0 in})



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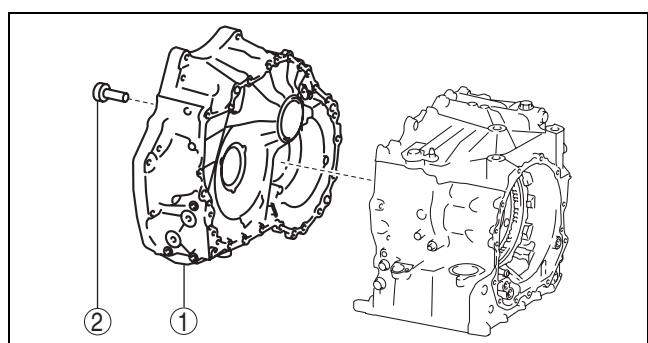
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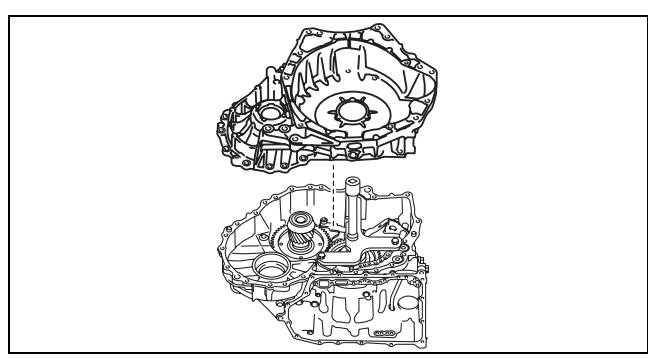
7. Assemble the converter housing using the following procedure:

1	Converter housing
2	24 bolts (M8×1.25 bolt, length to approx. 28 mm {1.1 in})



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(1) Assemble the converter housing.



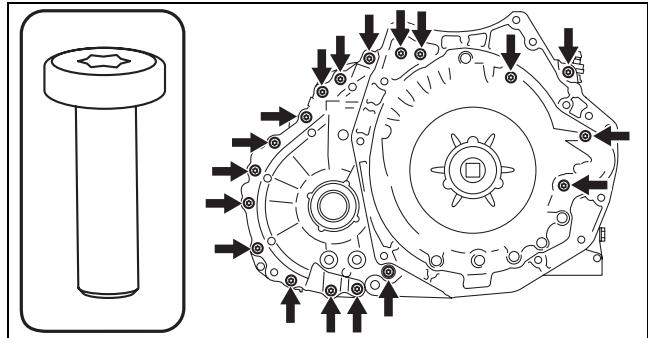
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## AUTOMATIC TRANSAXLE

- (2) Assemble and temporarily tighten the bolts to the positions shown in the figure.

### Note

- Bolt size: M8×1.25 bolt, length to approx. 28 mm {1.1 in}



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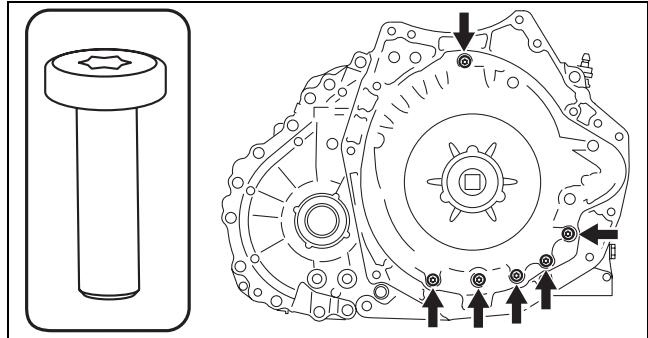
- (3) Assemble and temporarily tighten the bolts to the positions shown in the figure.

### Caution

- When performing the automatic transaxle assembly after the secondary gear and output gear preload measurement/adjustment, use new bolts, otherwise ATF leakage could occur.

### Note

- The bolts for the assembly are applied with sealant. However, the bolts are reused for removal after the secondary gear and output gear preload measurement/adjustment.
- Bolt size: M8×1.25 bolt, length to approx. 28 mm {1.1 in}

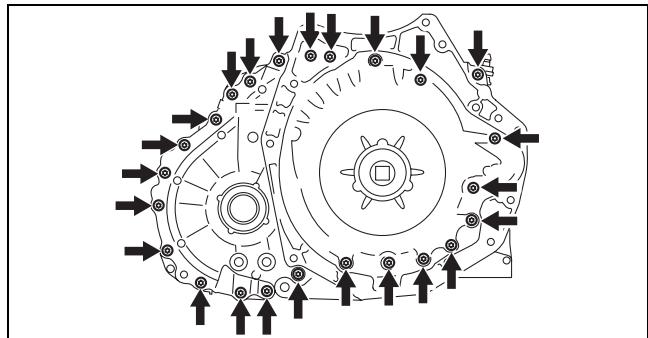


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- (4) Tighten the bolts shown in the figure.

### Tightening torque

19—25 N·m {2.0—2.5 kgf·m, 15—18 ft-lbf}



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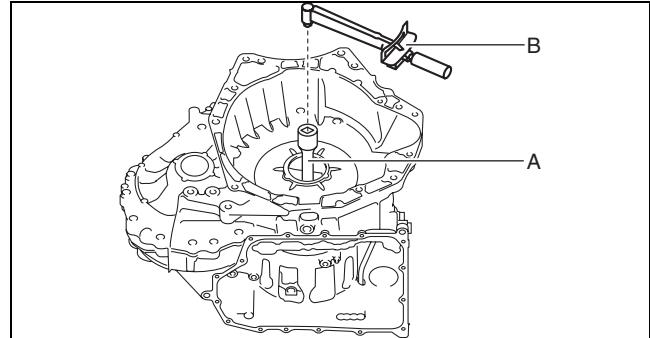
8. Measure the total preload using the following procedure:

**Note**

- The total preload is the combined preload of the angular contact ball bearing preload and secondary gear and output gear preload.

- Set the torque wrench to the extension bar as shown in the figure.

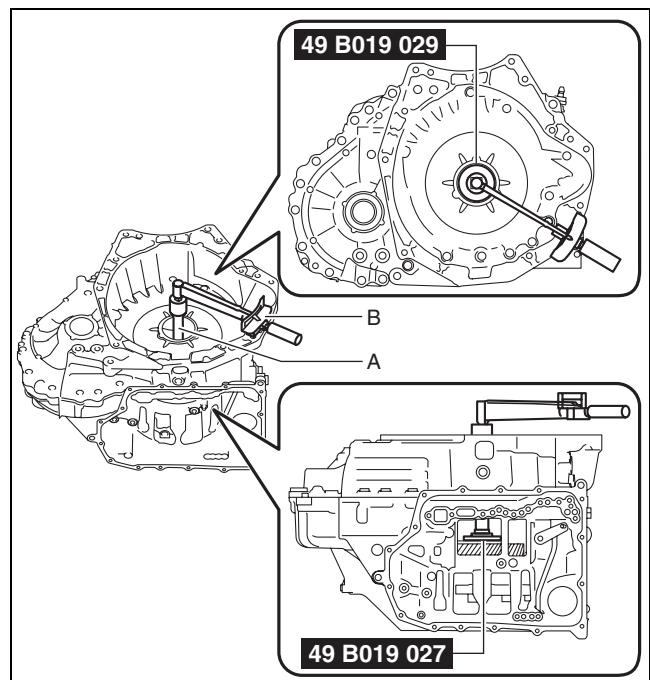
A : Extension bar  
B : Torque wrench



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A : Extension bar  
B : Torque wrench

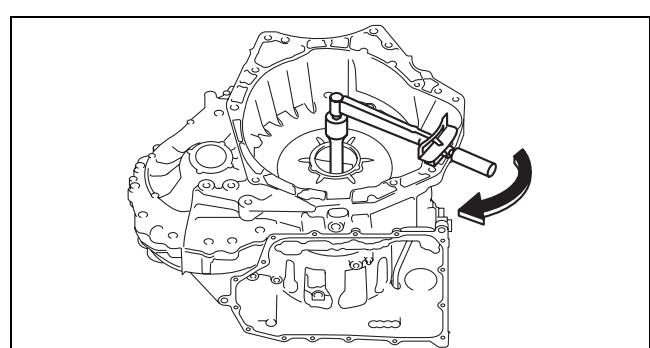


azzjw00001585

- Rotate the locknut (primary gear) in the direction of the arrow shown in the figure using a torque wrench and measure the total preload.

**Caution**

- Measure the total preload after rotating the locknut (primary gear) approx. 10 times in the direction of the arrow shown in the figure to engage the taper roller bearing.**
- When the locknut (primary gear) is rotated at approx. 20 rpm (speed of one rotation for 3 s), measure the rotational torque as the total preload.**



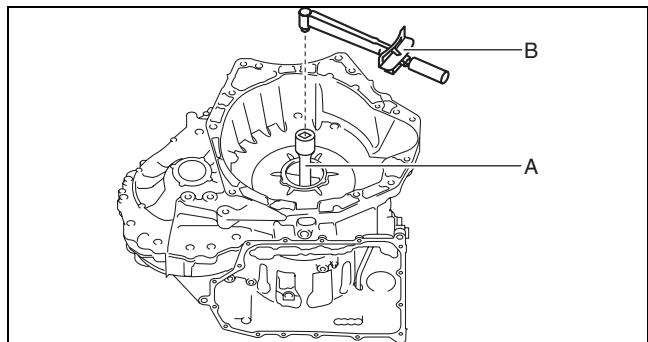
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- Input the measured total preload into the measurement/adjustment value sheet.

## AUTOMATIC TRANSAXLE

- (4) Remove the torque wrench from the extension bar.

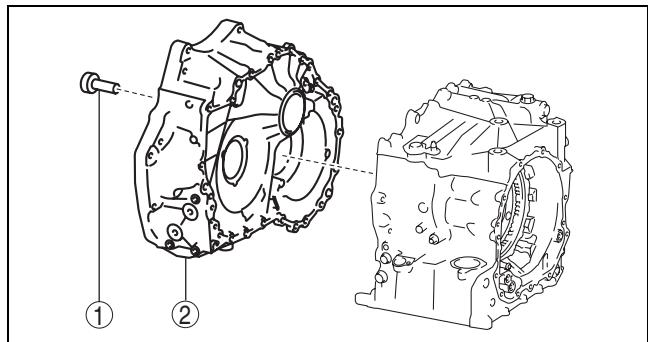
A : Extension bar  
B : Torque wrench



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9. Remove the converter housing using the following procedure:

1	24 bolts
2	Converter housing

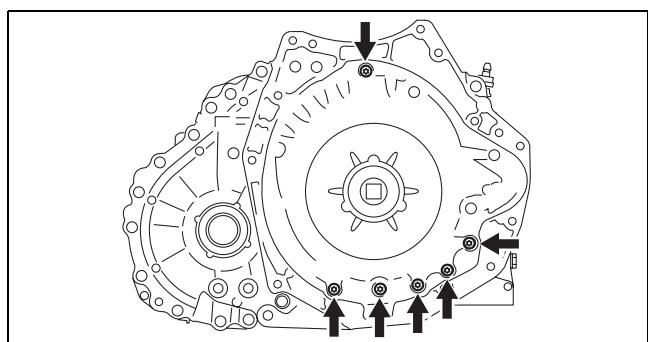


azjwjw00000769

- (1) Remove the bolts shown in the figure.

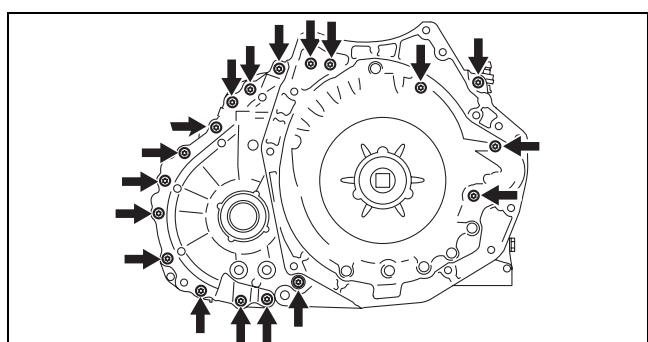
**Caution**

- Sealant has been applied to the removed bolts. If the bolts are reused it could cause ATF leakage, therefore when performing the automatic transaxle assembly, use new bolts.



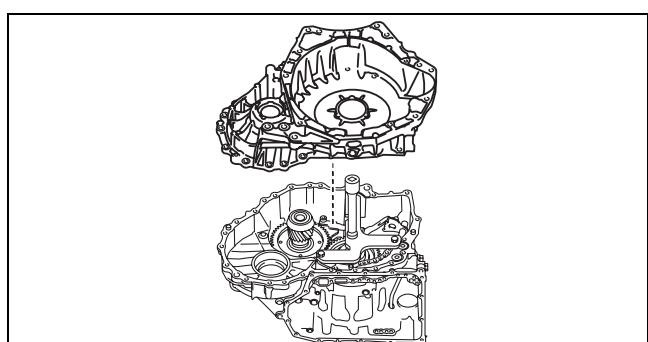
azjwjw00000770

- (2) Remove the bolts shown in the figure.



azjwjw00000771

- (3) Remove the converter housing.



azjwjw00001583

## AUTOMATIC TRANSAXLE

10. Perform the following calculation to calculate the secondary gear and output gear preload.

**Secondary gear and output gear preload = B - A**

A: Angular contact ball bearing preload

B: Total preload

### Note

### Example

A: Angular contact ball bearing preload is 1.2 N·m {12.2 kgf·cm, 10.6 in·lbf}

B: Total preload is 3.7 N·m {37.7 kgf·cm, 32.7 in·lbf}

Secondary gear and output gear preload = 3.7 N·m {37.7 kgf·cm, 32.7 in·lbf} - 1.2 N·m {12.2 kgf·cm, 10.6 in·lbf} = 2.5 N·m {25.5 kgf·cm, 22.1 in·lbf}

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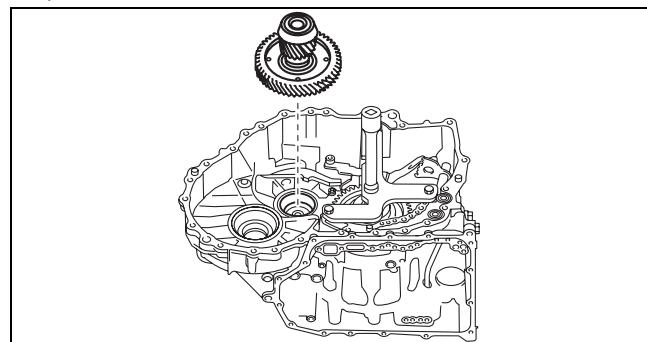
11. Input the calculated secondary gear and output gear preload into the measurement/adjustment value sheet.
12. Verify that the secondary gear and output gear preload satisfies the specification.

### Specification

**2.8—3.7 N·m {28.6—37.7 kgf·cm, 24.8—32.7 in·lbf}**

- If not within the specification, adjust the secondary gear and output gear preload. (See 05-17-372 Secondary Gear and Output Gear Preload Adjustment.)

13. Remove the secondary gear and output gear.

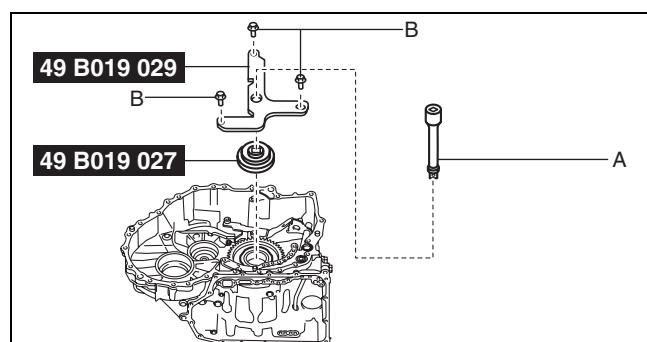


azzjw00001581

14. Remove the SST and extension bar.

A : Extension bar

B : Bolt supplied with SST (49 B019 029) or  
M8×1.25, length to 18 mm {0.71 in}



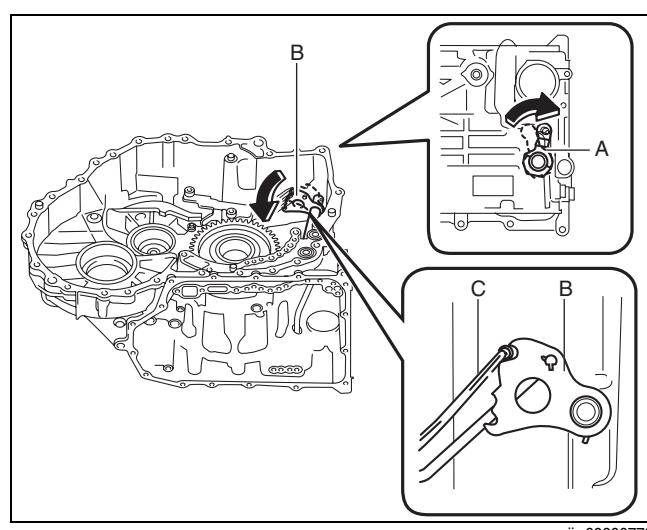
azzjw00001586

15. Rotate the parking shift lever component to the P position as shown in the figure.

A : Parking shift lever component

B : Manual plate component

C : Detent bracket component



azzjw00000773

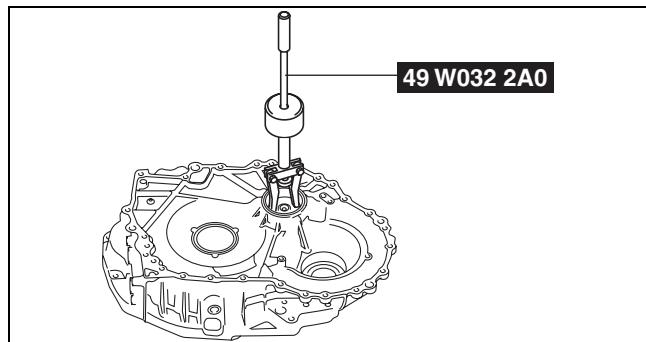
# AUTOMATIC TRANSAXLE

## Secondary Gear and Output Gear Preload Adjustment

1. Remove the bearing race and shim from the converter housing using the SST and procedure shown in the figure.

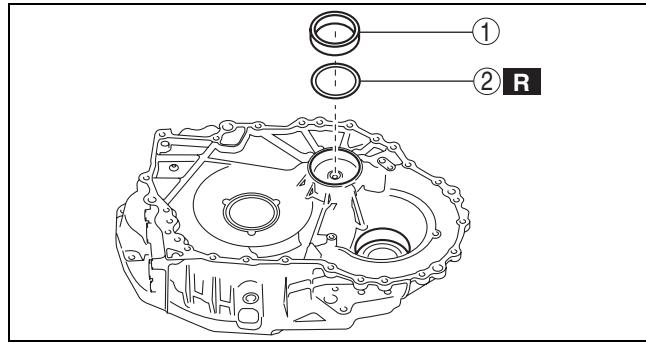
### Caution

- Because the shim will deform when removing the bearing race, use a new shim when performing the shim assembly.



azzjw00000774

1	Bearing race
2	Shim



azzjw00000775

2. Measure the thickness of the removed shim.

### Note

- Recommended measuring instrument: Micrometer

3. Input the measured shim thickness into the measurement/adjustment value sheet.

4. Perform the following calculation to calculate the preload gap.

### Note

- The preload gap is the difference between the secondary gear and output gear preload and the median value of the secondary gear and output gear preload specification.

### Preload gap = G - C

C: Secondary gear and output gear preload

G: Median value of secondary gear and output gear preload specification (3.25 N·m {33.1 kgf·cm, 28.7 in·lbf})

### Note

#### Example

C: Secondary gear and output gear preload is 2.5 N·m {25.5 kgf·cm, 22.1 in·lbf}

Preload gap = 3.25 N·m {33.1 kgf·cm, 28.7 in·lbf} - 2.5 N·m {25.5 kgf·cm, 22.1 in·lbf} = 0.75 N·m {7.6 kgf·cm, 6.6 in·lbf}

5. Input the calculated preload gap into the measurement/adjustment value sheet.

## AUTOMATIC TRANSAXLE

6. Perform the following calculation to calculate the gap in the shim thickness.

### Note

- The gap in the shim thickness is the difference between the removed shim thickness and the optimum shim thickness.
- If the shim thickness is thickened 0.1 mm {0.00394 in}, the secondary gear and output gear preload increases approx. 1.6 N·m {16.3 kgf·cm, 14.1 in·lbf}.

**Shim thickness gap =  $H \times 0.1 \text{ mm } \{0.00394 \text{ in}\} / 1.6 \text{ N}\cdot\text{m } \{16.3 \text{ kgf}\cdot\text{cm, 14.1 in}\cdot\text{lbf}\}$**

H: Preload gap

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### Note

### Example

H: Preload gap is 0.75 N·m {7.6 kgf·cm, 6.6 in·lbf}

Shim thickness gap =  $0.75 \text{ N}\cdot\text{m } \{7.6 \text{ kgf}\cdot\text{cm, 6.6 in}\cdot\text{lbf}\} \times 0.1 \text{ mm } \{0.00394 \text{ in}\} / 1.6 \text{ N}\cdot\text{m } \{16.3 \text{ kgf}\cdot\text{cm, 14.1 in}\cdot\text{lbf}\} = 0.047 \text{ mm } \{0.00185 \text{ in}\}$

7. Input the calculated shim thickness gap into the measurement/adjustment value sheet.

8. Perform the following calculation to calculate the optimum shim thickness.

**Optimum shim thickness =  $F + I$**

F: Thickness of removed shim

I: Shim thickness gap

### Note

### Example

F: Thickness of removed shim is 0.855 mm {0.03366 in}

I: Shim thickness gap is 0.047 mm {0.00185 in}

Thickness of optimum shim =  $0.855 \text{ mm } \{0.03366 \text{ in}\} + 0.047 \text{ mm } \{0.00185 \text{ in}\} = 0.902 \text{ mm } \{0.03551 \text{ in}\}$

9. Input the calculated optimum shim thickness into the measurement/adjustment value sheet.

10. Select the nearest new shim for the calculated optimum shim thickness from the following table:

Selected shim thickness
1.45 mm {0.0571 in}
1.40 mm {0.0551 in}
1.35 mm {0.0531 in}
1.30 mm {0.0512 in}
1.25 mm {0.0492 in}
1.20 mm {0.0472 in}
1.15 mm {0.0453 in}
1.10 mm {0.0433 in}
1.05 mm {0.0413 in}
1.00 mm {0.0394 in}
0.95 mm {0.0374 in}
0.90 mm {0.0354 in}
0.85 mm {0.0335 in}
0.80 mm {0.0315 in}
0.75 mm {0.0295 in}
0.70 mm {0.0276 in}
0.65 mm {0.0256 in}
0.60 mm {0.0236 in}
0.55 mm {0.0217 in}
0.50 mm {0.0197 in}

## AUTOMATIC TRANSAXLE

11. Assemble the bearing race and selected new shim to the converter housing using the following procedure:

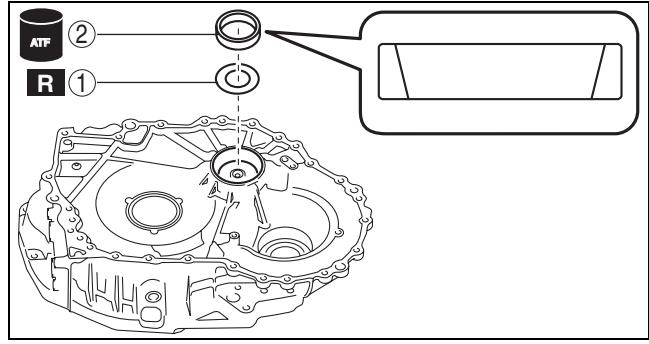
### Caution

- Always use a new shim. If a deformed shim is reused, it may cause a transaxle malfunction.

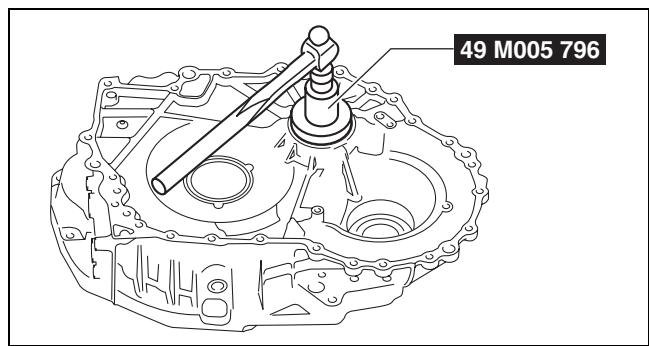
(1) Apply ATF (ATF FZ) to the engagement area of the bearing race and converter housing.

(2) Assemble the bearing race and selected new shim using the following procedure and SST:

1	Shim (outer diameter approx. 74 mm {2.9 in}) (selected new shim)
2	Bearing race (outer diameter approx. 75 mm {3.0 in})



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12. Perform the secondary gear and output gear preload measurement from Step 7. (See 05-17-364 Secondary Gear and Output Gear Preload Measurement.)

## RING GEAR AND DIFFERENTIAL PRELOAD MEASUREMENT/ADJUSTMENT

id051700665100

### Preparation Before Servicing

1. Print out the measurement/adjustment value input sheet. (See 05-17-295 MEASUREMENT/ADJUSTMENT VALUE INPUT SHEET.)

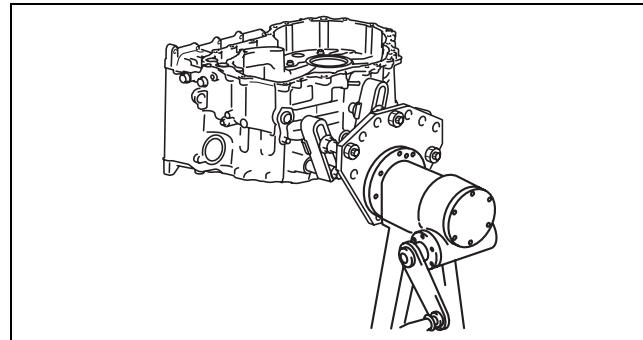
#### Note

- When performing the measurement/adjustment, input the measured and calculated values into the measurement/adjustment value input sheet.
- When performing the other measurements/adjustments, if the measurement/adjustment value input sheet has been printed out, use the printed sheet.

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### Ring Gear and Differential Preload Measurement

1. Rotate and adjust the rotation handle of the engine stand so that the converter housing side is facing upward.



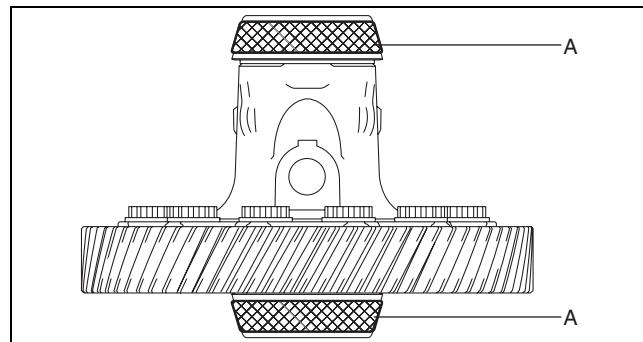
azzjw00000776

2. Remove any remaining old sealant on the contact surfaces of the transaxle case and converter housing.
3. Assemble the ring gear and differential.
  - (1) Apply ATF (ATF FZ) to the roller area of the taper roller bearing of the ring gear and differential.

A : ATF application area

#### Caution

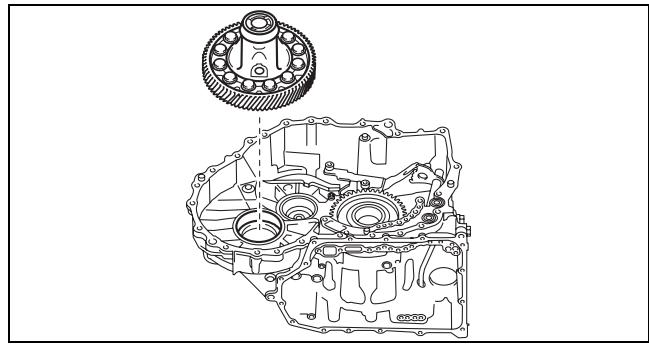
- Accurately perform the procedure to reduce the error on the ring gear and differential preload measurement.



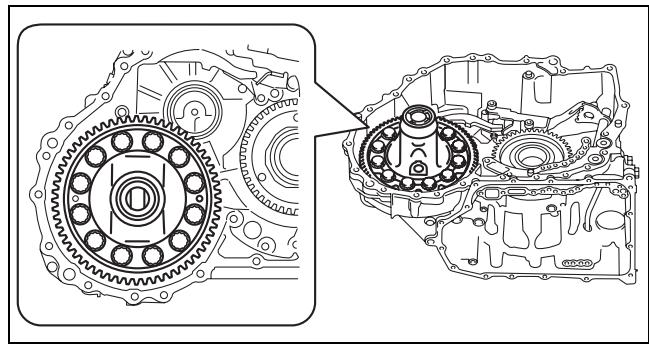
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## AUTOMATIC TRANSAXLE

(2) Assemble the ring gear and differential.



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azzjw00000779

4. Assemble the bearing race and a new shim with the same thickness as the removed shim to the converter housing using the following procedure:

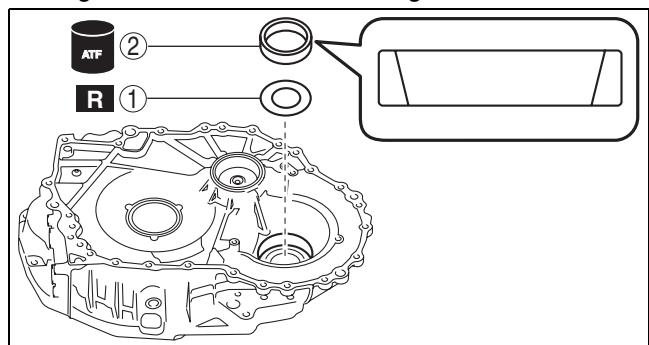
### Caution

- Always use a new shim. If a deformed shim is reused, it may cause a transaxle malfunction.

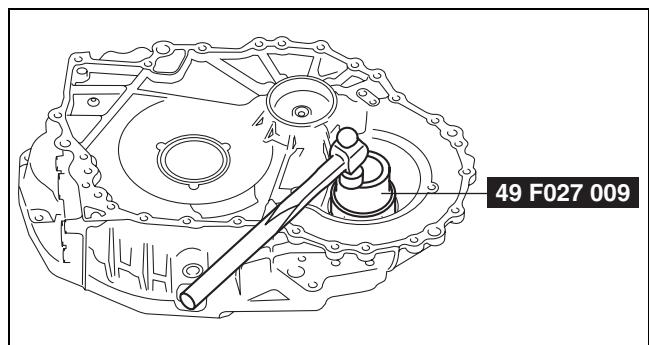
(1) Apply ATF (ATF FZ) to the engagement area of the bearing race and converter housing.

(2) Assemble the bearing race and a new shim with the same thickness as the removed shim using the following procedure and the SST:

1	Shim (outer diameter approx. 79 mm {3.1 in}) (new shim with same thickness of removed shim)
2	Bearing race (outer diameter approx. 80 mm {3.1 in})



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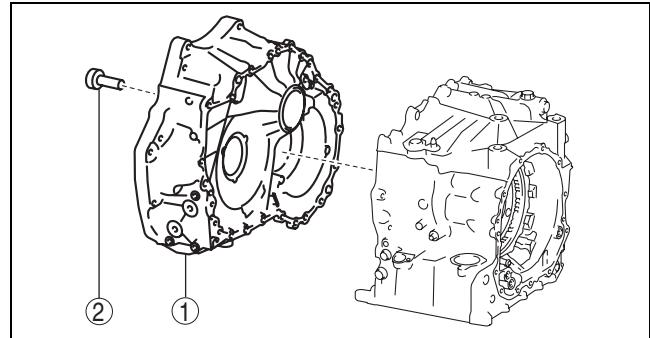


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## AUTOMATIC TRANSAXLE

5. Assemble the converter housing using the following procedure:

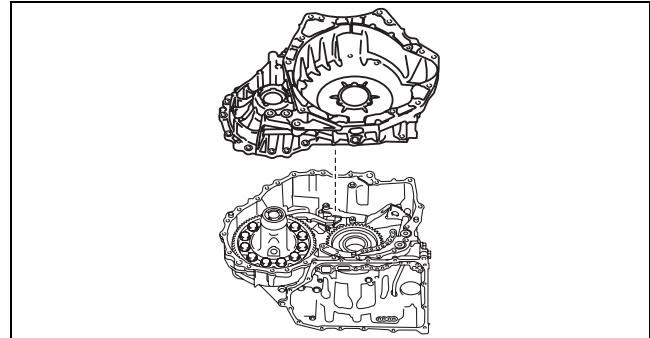
1	Converter housing
2	24 bolts (M8×1.25 bolt, length to approx. 28 mm {1.1 in})



azzjw00000782

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(1) Assemble the converter housing.

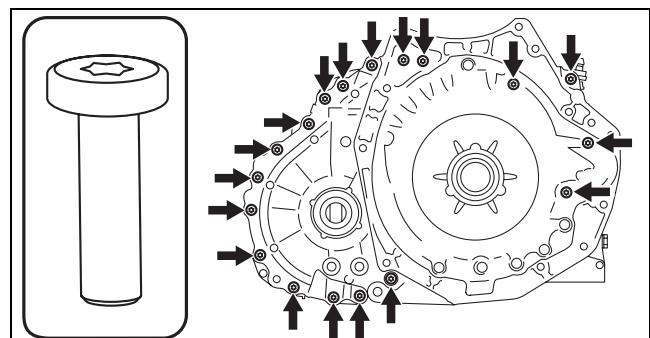


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(2) Assemble and temporarily tighten the bolts to the positions shown in the figure.

**Note**

- Bolt size: M8×1.25 bolt, length to approx. 28 mm {1.1 in}



azzjw00000784

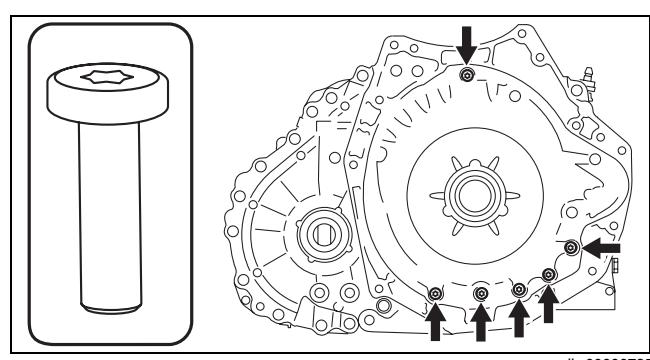
(3) Assemble and temporarily tighten the bolts to the positions shown in the figure.

**Caution**

- When performing the automatic transaxle assembly after the ring gear and differential preload measurement/adjustment, use new bolts, otherwise ATF leakage could occur.

**Note**

- The bolts for the assembly are applied with sealant. However, the bolts are reused for removal after the ring gear and differential preload measurement/adjustment.
- Bolt size: M8×1.25 bolt, length to approx. 28 mm {1.1 in}



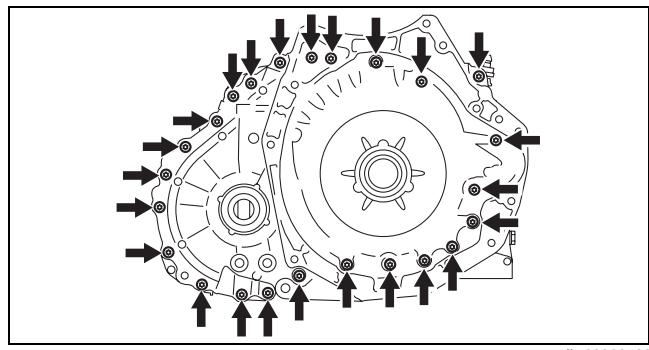
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## AUTOMATIC TRANSAXLE

(4) Tighten the bolts shown in the figure.

### Tightening torque

19—25 N·m {2.0—2.5 kgf·m, 15—18 ft·lbf}



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6. Measure the ring gear and differential preload using the following procedure.

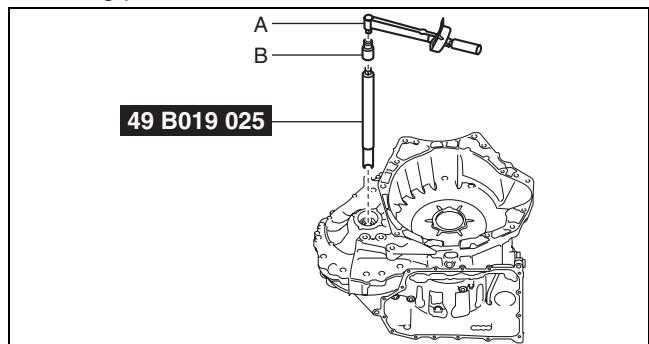
(1) Set the SST, torque wrench, and socket (14 mm {9/16 in}) as shown in the figure.

A : Torque wrench

B : Socket (14 mm {9/16 in})

#### Note

- Engage the groove on the end of the SST with the pinion shaft.

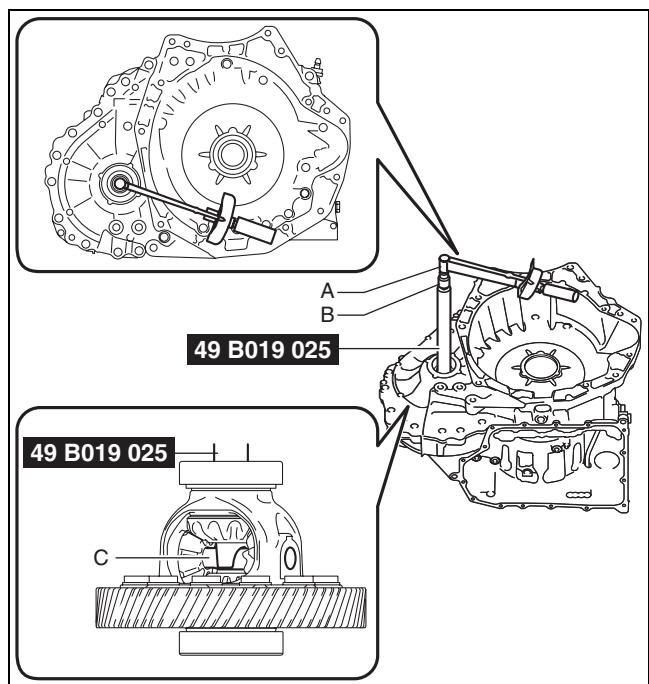


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A : Torque wrench

B : Socket (14 mm {9/16 in})

C : Pinion shaft

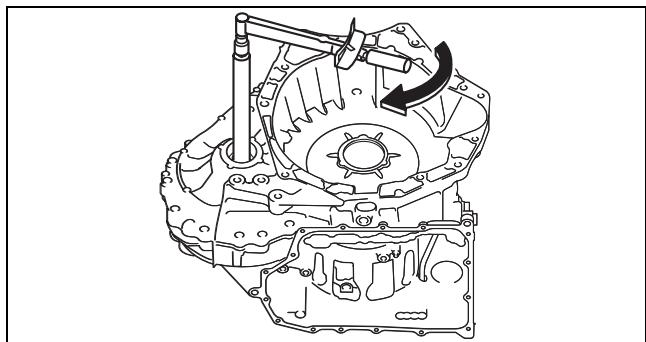


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- (2) Rotate the ring gear and differential in the direction of the arrow shown in the figure using a torque wrench and measure the ring gear and differential preload.

**Caution**

- Measure the ring gear and differential preload after rotating the ring gear and differential approx. 10 times in the direction of the arrow shown in the figure to engage the taper roller bearing.
- When the ring gear and differential is rotated at approx. 20 rpm (speed of one rotation for 3 s), measure the rotational torque as a ring gear and differential preload.



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- (3) Input the measured ring gear and differential preload into the measurement/adjustment value sheet.  
 (4) Verify that the ring gear and differential preload satisfies the specification.

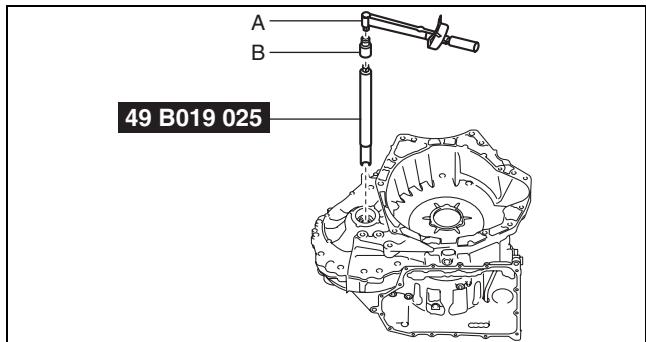
**Specification****2.8—4.1 N·m {28.6—41.8 kgf·cm, 24.8—36.2 in·lbf}**

- If not within the specification, perform adjustment of the ring gear and differential preload. (See 05-17-381 Ring Gear and Differential Preload Adjustment.)

- (5) Remove the SST, torque wrench, and socket (14 mm {9/16 in}).

A : Torque wrench

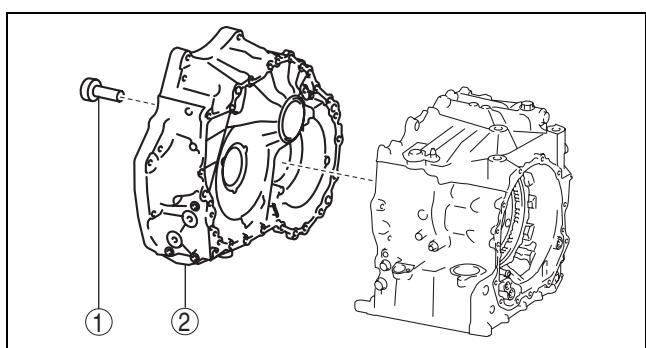
B : Socket (14 mm {9/16 in})



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7. Remove the converter housing using the following procedure:

1	24 bolts
2	Converter housing



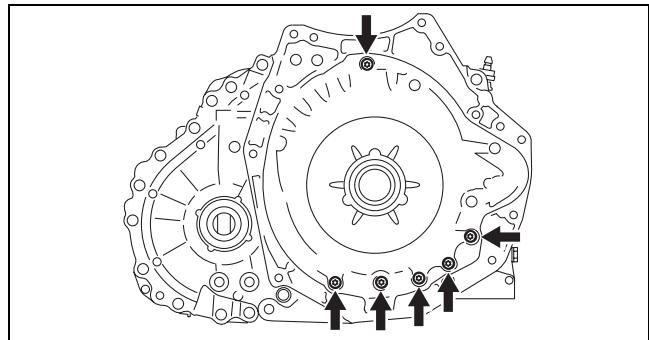
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## AUTOMATIC TRANSAXLE

(1) Remove the bolts shown in the figure.

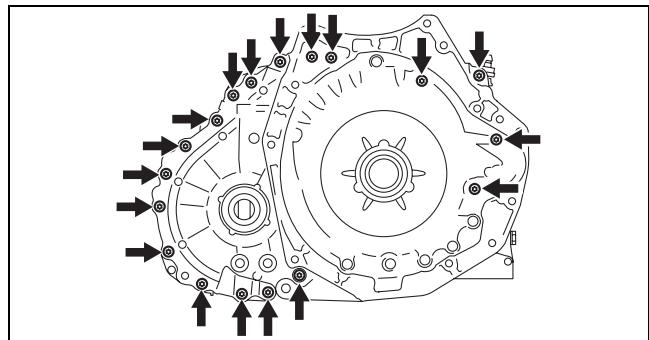
### Caution

- Sealant has been applied to the removed bolts. If the bolts are reused it could cause ATF leakage, therefore when performing the automatic transaxle assembly, use new bolts.



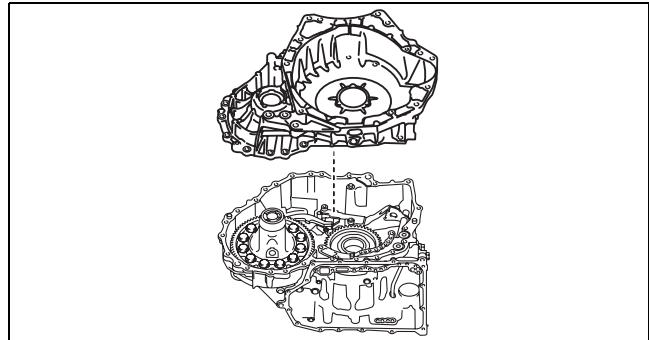
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(2) Remove the bolts shown in the figure.



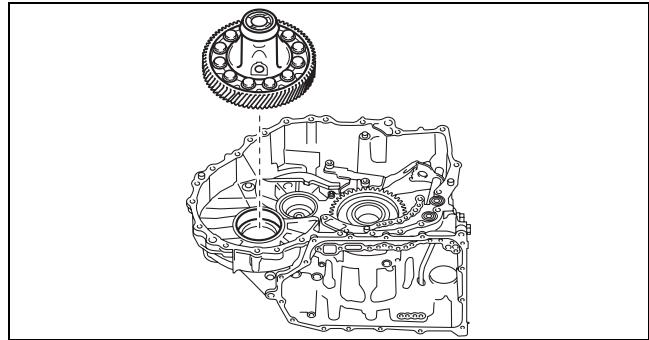
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(3) Remove the converter housing.



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8. Remove the ring gear and differential.



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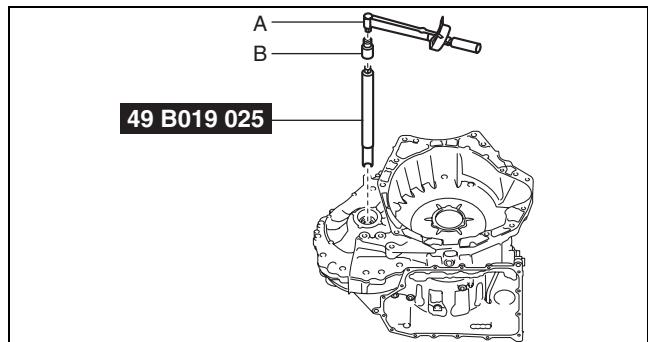
# AUTOMATIC TRANSAXLE

## Ring Gear and Differential Preload Adjustment

1. Remove the SST, torque wrench, and socket (14 mm {9/16 in}).

A : Torque wrench

B : Socket (14 mm {9/16 in})

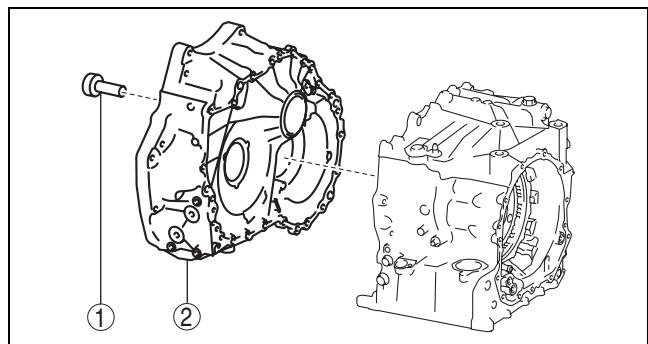


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2. Remove the converter housing using the following procedure:

1	24 bolts
2	Converter housing

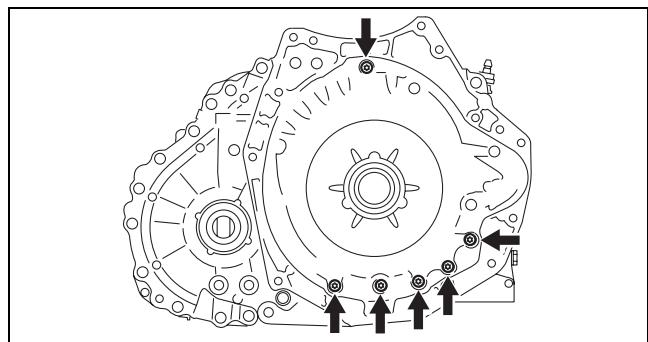


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- (1) Remove the bolts shown in the figure.

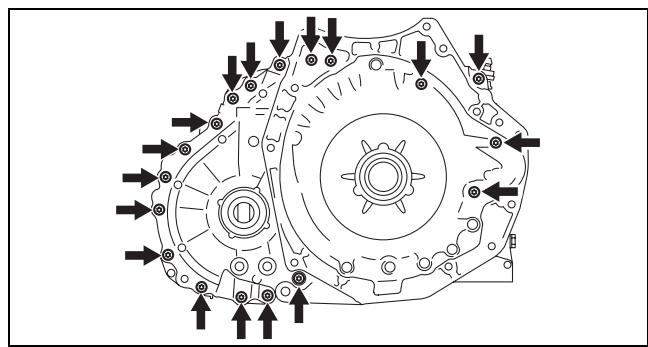
### Caution

- Sealant has been applied to the removed bolts. If the bolts are reused it could cause ATF leakage, therefore when performing the automatic transaxle assembly, use new bolts.



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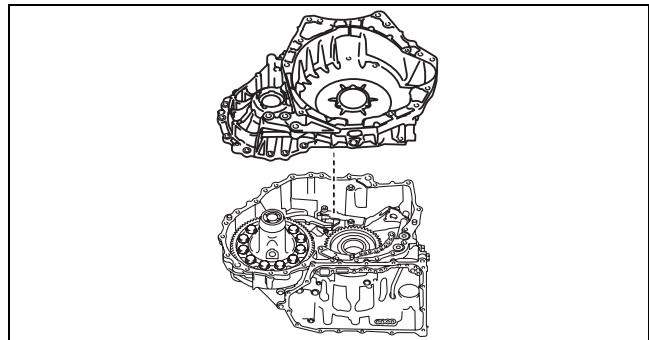
- (2) Remove the bolts shown in the figure.



azzjw00000792

# AUTOMATIC TRANSAXLE

(3) Remove the converter housing.

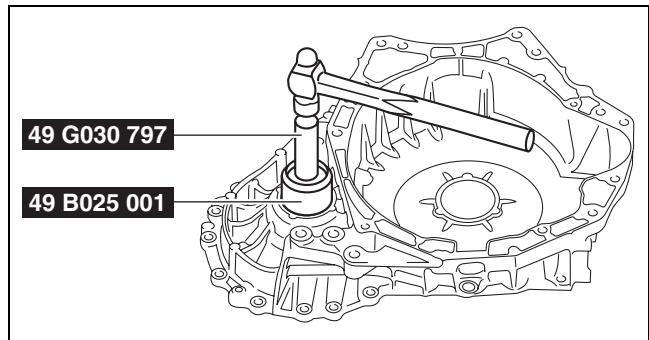


azzjjw00000783

3. Remove the bearing race and shim from the converter housing using the SSTs and procedure shown in the figure.

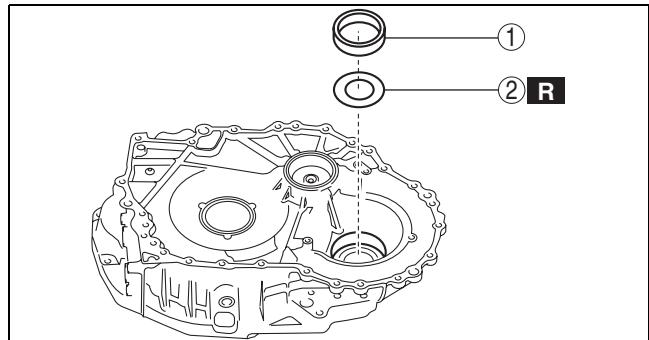
#### Caution

- Because the shim will deform when removing the bearing race, use a new shim when performing the shim assembly.



azzjjw00000793

1	Bearing race
2	Shim



azzjjw00000794

4. Measure the thickness of the removed shim.

#### Note

- Recommended measuring instrument: Micrometer

5. Input the measured shim thickness into the measurement/adjustment value sheet.

6. Perform the following calculation to calculate the preload gap.

#### Note

- The preload gap is the difference between the ring gear and differential preload and the median value of the ring gear and differential preload specification.

#### Preload gap = E – A

A: Ring gear and differential preload

E: Median value of ring gear and differential preload specification (3.45 N·m {35.2 kgf·cm, 30.5 in·lbf})

#### Note

#### Example

A: Ring gear and differential preload is 2.5 N·m {25.5 kgf·cm, 22.1 in·lbf}

Preload gap = 3.45 N·m {35.2 kgf·cm, 30.5 in·lbf} - 2.5 N·m {25.5 kgf·cm, 22.1 in·lbf} = 0.95 N·m {9.7 kgf·cm, 8.4 in·lbf}

7. Input the calculated preload gap into the measurement/adjustment value sheet.

8. Perform the following calculation to calculate the gap in the shim thickness.

**Note**

- The gap in the shim thickness is the difference between the removed shim thickness and the optimum shim thickness.
- If the shim thickness is thickened 0.1 mm {0.00394 in}, the ring gear and differential preload increases approx. 1.5 N·m {15.3 kgf·cm, 13.3 in·lbf}.

**Shim thickness gap =  $F \times 0.1 \text{ mm } \{0.00394 \text{ in}\} / 1.5 \text{ N}\cdot\text{m } \{15.3 \text{ kgf}\cdot\text{cm, 13.3 in}\cdot\text{lbf}\}$**

F: Preload gap

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**Note**

**Example**

F: Preload gap is 0.95 N·m {9.7 kgf·cm, 8.4 in·lbf}

Shim thickness gap =  $0.95 \text{ N}\cdot\text{m } \{9.7 \text{ kgf}\cdot\text{cm, 8.4 in}\cdot\text{lbf}\} \times 0.1 \text{ mm } \{0.00394 \text{ in}\} / 1.5 \text{ N}\cdot\text{m } \{15.3 \text{ kgf}\cdot\text{cm, 13.3 in}\cdot\text{lbf}\} = 0.063 \text{ mm } \{0.00248 \text{ in}\}$

9. Input the calculated shim thickness gap into the measurement/adjustment value sheet.

10. Perform the following calculation to calculate the optimum shim thickness.

**Optimum shim thickness = D + G**

D: Thickness of removed shim

G: Shim thickness gap

**Note**

**Example**

D: Thickness of removed shim is 0.905 mm {0.03563 in}

G: Shim thickness gap is 0.063 mm {0.00248 in}

Thickness of optimum shim =  $0.905 \text{ mm } \{0.03563 \text{ in}\} + 0.063 \text{ mm } \{0.00248 \text{ in}\} = 0.968 \text{ mm } \{0.03811 \text{ in}\}$

11. Input the calculated optimum shim thickness into the measurement/adjustment value sheet.

12. Select the nearest new shim for the calculated optimum shim thickness from the following table:

Selected shim thickness
1.55 mm {0.0610 in}
1.50 mm {0.0591 in}
1.45 mm {0.0571 in}
1.40 mm {0.0551 in}
1.35 mm {0.0531 in}
1.30 mm {0.0512 in}
1.25 mm {0.0492 in}
1.20 mm {0.0472 in}
1.15 mm {0.0453 in}
1.10 mm {0.0433 in}
1.05 mm {0.0413 in}
1.00 mm {0.0394 in}
0.95 mm {0.0374 in}
0.90 mm {0.0354 in}
0.85 mm {0.0335 in}
0.80 mm {0.0315 in}
0.75 mm {0.0295 in}
0.70 mm {0.0276 in}
0.65 mm {0.0256 in}
0.60 mm {0.0236 in}
0.55 mm {0.0217 in}

## AUTOMATIC TRANSAXLE

13. Assemble the bearing race and selected new shim to the converter housing using the following procedure:

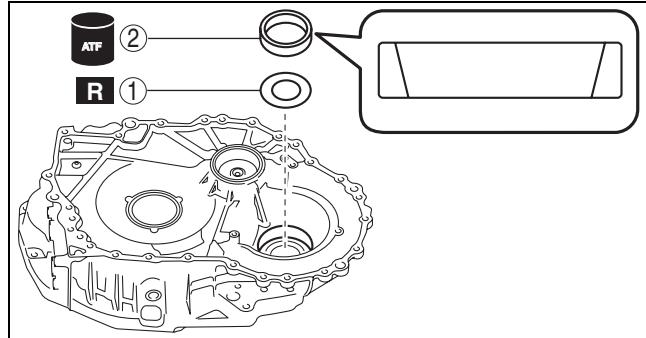
**Caution**

- Always use a new shim. If a deformed shim is reused, it may cause a transaxle malfunction.

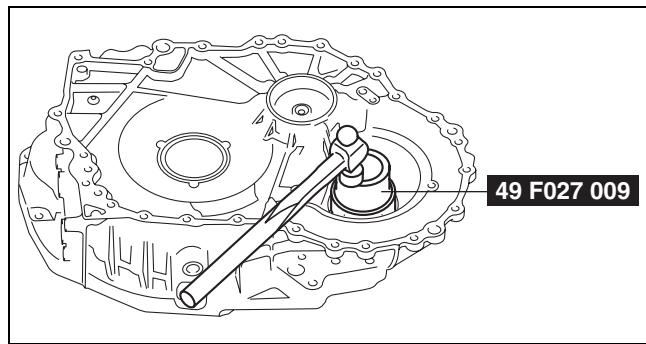
(1) Apply ATF (ATF FZ) to the engagement area of the bearing race and converter housing.

(2) Assemble the bearing race and selected new shim using the following procedure and SST:

1	Shim (outer diameter approx. 79 mm {3.1 in}) (selected new shim)
2	Bearing race (outer diameter approx. 80 mm {3.1 in})



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14. Perform ring gear and differential preload measurement from Step 5. (See 05-17-375 Ring Gear and Differential Preload Measurement.)

## TOTAL END PLAY MEASUREMENT/ADJUSTMENT

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### Caution

- The total end play is the play (gap) in the axial direction of each planetary gear.
- If the total end play adjustment is not performed, it may cause damage to the thrust needle bearing between each planetary gear or other parts. Accurately perform the following servicing.

05-17

### Preparation Before Servicing

1. Print out the measurement/adjustment value input sheet. (See 05-17-295 MEASUREMENT/ADJUSTMENT VALUE INPUT SHEET.)

### Note

- When performing the measurement/adjustment, input the measured and calculated values into the measurement/adjustment value input sheet.
- When performing the other measurements/adjustments, if the measurement/adjustment value input sheet has been printed out, use the printed sheet.

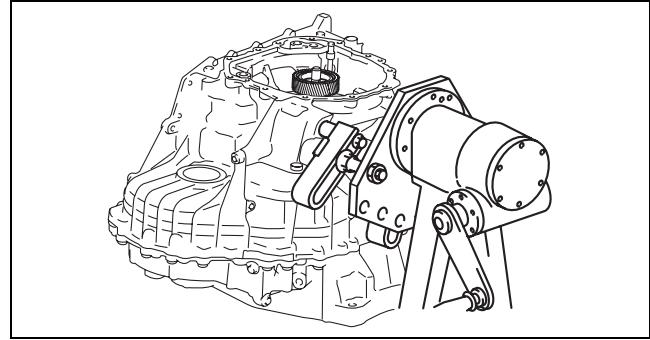
### Total End Play Measurement/Adjustment

1. Rotate and adjust the rotation handle of the engine stand so that the end cover side is facing upward.

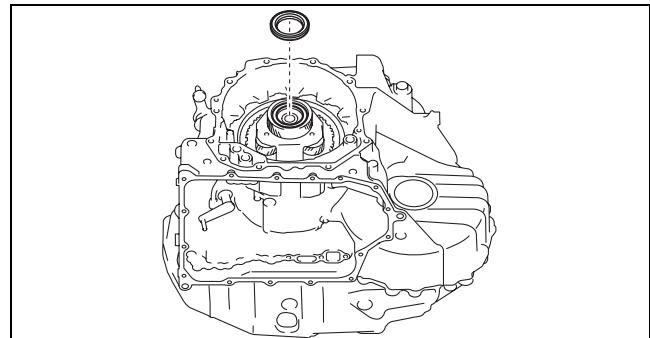
### Caution

- To reduce error during the total end play measurement, adjust so that the alignment surface of the transaxle case with the end cover is level.

2. Remove any remaining old sealant on the contact surfaces of the transaxle case and end cover.
3. Assemble the shim (FZ01 19 2L1) for the total end play measurement/adjustment.



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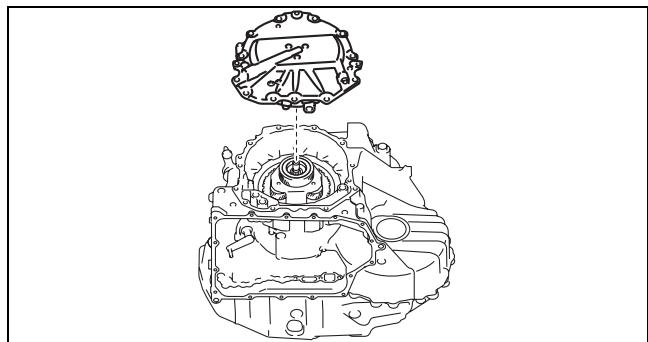
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## AUTOMATIC TRANSAXLE

### 4. Assemble the end cover component.

#### Note

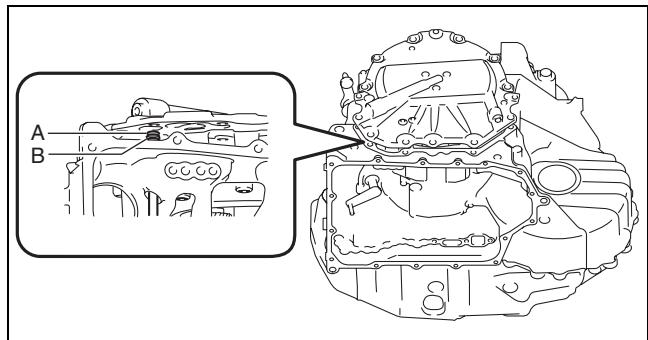
- Adjust the oil pipe and assemble the end cover component so that the oil pipe is assembled to the end cover oil passage.



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A : End cover oil passage

B : Oil pipe



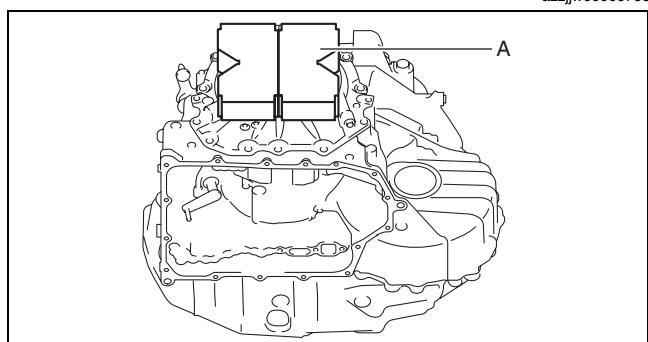
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### 5. Place a 98—196 N {10.0—19.9 kgf, 23.0—44.0 lbf} weight on the end cover.

A : Weight (V-block)

#### Note

- Use a V-block as a weight.
- To reduce error during the total end play measurement, place the weight near the center of the end cover.



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### 6. Measure the total end play adjustment value using the following procedure:

#### Note

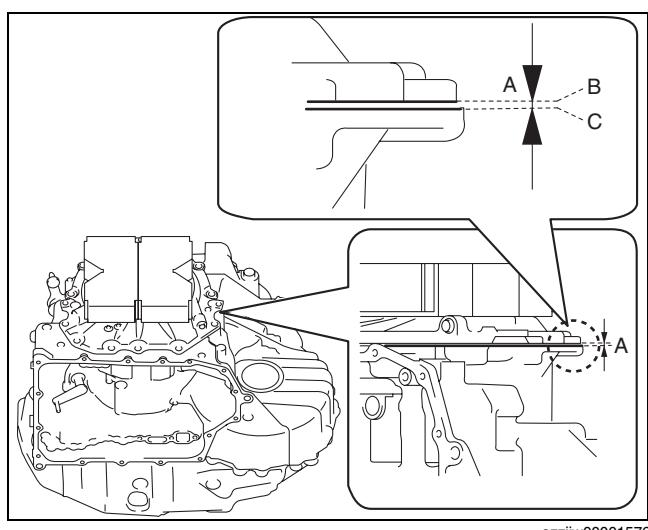
- The total end play adjustment value is the gap between the transaxle case and end cover with the shim (FZ01 19 2L1) for the total end play measurement/adjustment assembled.
- Recommended measuring instrument: Thickness gauge

#### (1) Measure the total end play adjustment value (gap between the transaxle case and end cover) in four locations (each separated by 90°) and calculate the average of the total end play adjustment value.

A : Total end play adjustment value

B : End cover end (alignment surface with transaxle case)

C : Transaxle case end (alignment surface with end cover)



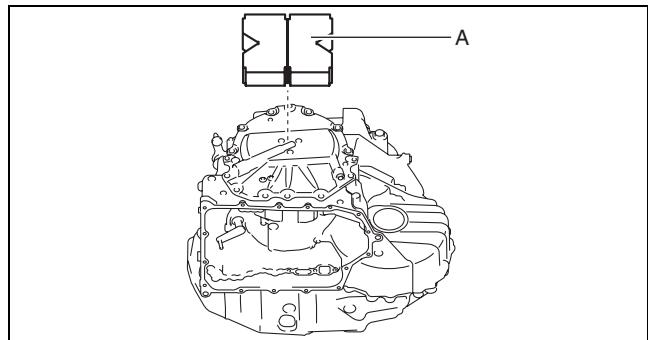
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## AUTOMATIC TRANSAXLE

(2) Input the measured total end play adjustment value and calculated average of the total end play adjustment value into the measurement/adjustment value sheet.

7. Remove the weight on the end cover.

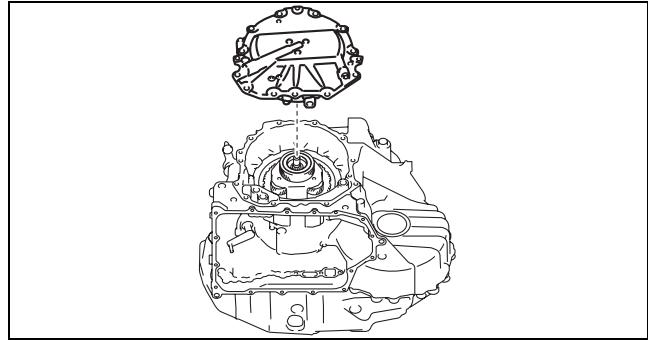
A : Weight (V-block)



05-17

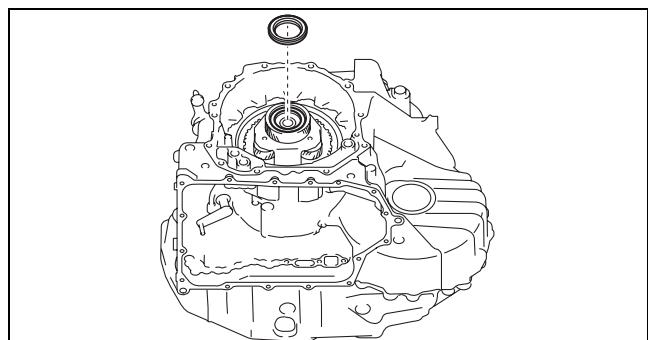
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8. Remove the end cover component.



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9. Remove the shim (FZ01 19 2L1) for the total end play measurement/adjustment.



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10. Measure the thickness of the removed shim (FZ01 19 2L1) for the total end play measurement/adjustment.

### Note

- Recommended measuring instrument: Micrometer

11. Input the measured shim thickness into the measurement/adjustment value sheet.

## AUTOMATIC TRANSAXLE

12. Select the appropriate shim from the following table.

Range*	Selected shim thickness
Exceeds 3.545 mm {0.1396 in}, 3.645 mm {0.1435 in} or less	3.0 mm {0.118 in}
Exceeds 3.445 mm {0.1356 in}, 3.545 mm {0.1396 in} or less	2.9 mm {0.114 in}
Exceeds 3.345 mm {0.1317 in}, 3.445 mm {0.1356 in} or less	2.8 mm {0.110 in}
Exceeds 3.245 mm {0.1278 in}, 3.345 mm {0.1317 in} or less	2.7 mm {0.106 in}
Exceeds 3.145 mm {0.1238 in}, 3.245 mm {0.1278 in} or less	2.6 mm {0.102 in}
Exceeds 3.045 mm {0.1199 in}, 3.145 mm {0.1238 in} or less	2.5 mm {0.098 in}
Exceeds 2.945 mm {0.1159 in}, 3.045 mm {0.1199 in} or less	2.4 mm {0.094 in}
Exceeds 2.845 mm {0.1120 in}, 2.945 mm {0.1159 in} or less	2.3 mm {0.091 in}
Exceeds 2.745 mm {0.1081 in}, 2.845 mm {0.1120 in} or less	2.2 mm {0.087 in}
Exceeds 2.645 mm {0.1041 in}, 2.745 mm {0.1081 in} or less	2.1 mm {0.083 in}

\* : The range is the average value of the total end play adjustment value and the added thickness value of the removed shim (FZ01 19 2L1) for the total end play measurement/adjustment.

**Range = B + C**

B: Average adjustment of total end play

C: Thickness of shim (FZ01 19 2L1) for total end play measurement/adjustment

### Note

### Example

B: If the average of total end play adjustment value is 0.115 mm {0.00453 in}

C: If the thickness of the shim (FZ01 19 2L1) for the total end play measurement/adjustment is 3.010 mm {0.11850 in}

Range = 0.115 mm {0.00453 in} + 3.010 mm {0.11850 in} = 3.125 mm {0.12303 in}, the selected shim has a thickness of 2.5 mm {0.098 in}.

# TECHNICAL DATA

## 05-50 TECHNICAL DATA

TECHNICAL DATA ..... 05-50-1

### TECHNICAL DATA

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05-50

Item	Specification	Comment
Gap between front planetary gear pinion washer and planetary carrier	Maximum: 0.879 mm {0.0346 in}	—
Gap between rear planetary gear pinion washer and planetary carrier	Maximum: 0.879 mm {0.0346 in}	—
Gap between reduction planetary gear pinion washer and planetary carrier	Maximum: 0.820 mm {0.0322 in}	—
Inner diameter of reduction planetary gear bush	Maximum: 35.095 mm {1.3816 in}	—
Inner diameter of differential journal	Maximum: 30.046 mm {1.1829 in}	—
Outer diameter of drive shaft (LH) journal	Minimum 29.959 mm {1.1795 in}	—
Outer diameter of joint shaft journal	Minimum 29.944 mm {1.1789 in}	—
Thickness of low clutch drive plate	Minimum 1.475 mm {0.05808 in}	Drive plate size: Outer diameter approx. 159.1 mm {6.264 in}
Thickness of high clutch drive plate	Minimum 1.375 mm {0.05414 in}	Drive plate size: Outer diameter approx. 116.8 mm {4.598 in}
Free length of high clutch springs and retainer component	Minimum 25.4 mm {1.01 in}	Springs and retainer component size: Outer diameter approx. 79.5 mm {3.13 in}
Thickness of low and reverse brake drive plate	Minimum 1.475 mm {0.05808 in}	Drive plate size: Outer diameter approx. 174.1 mm {6.854 in}
Thickness of 2-6 brake drive plate	Minimum 1.475 mm {0.05808 in}	Drive plate size: Outer diameter approx. 171.9 mm {6.768 in}
Thickness of R-3-5 brake drive plate	Minimum 1.635 mm {0.06438 in}	Drive plate size: Outer diameter approx. 169.4 mm {6.669 in}
Inner diameter of low clutch hub bush	Maximum: 31.270 mm {1.2311 in}	—
Inner diameter of high clutch hub bush	Maximum: 18.038 mm {0.71015 in}	—
Oil pump side clearance (inner rotor)	Maximum: 0.045 mm {0.0017 in}	—
Oil pump side clearance (outer rotor)	Maximum: 0.050 mm {0.0019 in}	—
Inner diameter of oil pump (oil pump cover) bush	Maximum: 44.006 mm {1.7325 in}	—
Low clutch clearance	Specification 1.400—1.600 mm {0.05512—0.06299 in}	—
High clutch clearance	Specification 1.300—1.500 mm {0.05119—0.05905 in}	—
Low and reverse brake clearance	Specification 1.650—1.850 mm {0.06497—0.07283 in}	—
2-6 brake clearance	Specification 1.000—1.200 mm {0.03938—0.04724 in}	—
R-3-5 brake clearance	Specification 1.000—1.200 mm {0.03938—0.04724 in}	—
Differential backlash	Specification 0.030—0.150 mm {0.0012—0.0059 in}	—
Secondary gear and output gear preload	Specification 2.8—3.7 N·m {28.6—37.7 kgf·cm, 24.8—32.7 in·lbf}	—
Ring gear and differential preload	Specification 2.8—4.1 N·m {28.6—41.8 kgf·cm, 24.8—36.2 in·lbf}	—
Total end play	Specification 0.520—0.670 mm {0.0205—0.0263 in}	—



## 05-60 SERVICE TOOLS

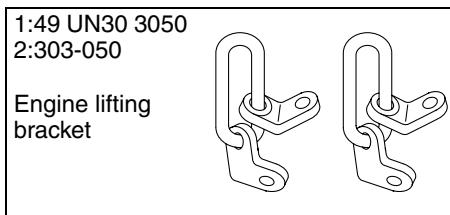
SERVICE TOOLS ..... 05-60-1

## SERVICE TOOLS

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05-60

Example of description

Ford manufactured **SSTs** are as follows: Mazda and Ford **SST** numbers can be referenced.1: Mazda **SST** number2: Ford **SST** number

1:49 0107 680A 2:- Engine stand	1:49 0839 425C 2:- Bearing puller set	1:49 B019 002 2:- Body
1:49 B019 025 2:- Preload adopter (component part for 49 B019 0A3)	1:49 B019 0A4 2:- Locknut wrench set	1:49 B019 027 2:- Socket (component part for 49 B019 0A4)
1:49 B019 028 2:- Holder (component part for 49 B019 0A4)	1:49 B019 029 2:- Plate (component part for 49 B019 0A4)	1:49 B025 001 2:- Body
1:49 D034 201 2:- Dust boot installer	1:49 F011 104 2:- Installer	1:49 F027 005 2:- Attachment for 62 bearing (component part for 49 F027 0A1)
1:49 F027 009 2:- Attachment for 68 and 77 bearing	1:49 G019 025 2:- Body B	1:49 G019 026 2:- Plate
1:49 G019 027 2:- Attachment A	1:49 G019 029 2:- Nut	1:49 G026 102 2:- Bearing replacer

## SERVICE TOOLS

1:49 G027 002 2:- Removing plate	1:49 G028 201 2:- Support block	1:49 G030 728 2:- Attachment B
1:49 G030 797 2:- Handle	1:49 G032 308 2:- Oil seal installer	1:49 G033 102 2:- Handle
1:49 L010 1A0 2:- Engine hanger set	1:49 L010 101 2:- Plate (component part for 49 L010 1A0)	1:49 L010 102 2:- Arm (component part for 49 L010 1A0)
1:49 L010 103 2:- Hook (component part for 49 L010 1A0)	1:49 L010 104 2:- Nut (component part for 49 L010 1A0)	1:49 L010 105 2:- Bolt (component part for 49 L010 1A0)
1:49 M005 796 2:- Body	1:49 T019 003 2:- Body	1:49 UN30 3050 2:303-050 Engine lifting bracket
1:49 UB71 525 2:- Bearing installer	1:49 U027 003 2:- Oil seal installer	1:49 U034 204 2:- Dust boot installer
1:49 V001 525 2:- Bearing installer	1:49 W032 2A0 2:- Bearing remover set	1:49 W033 105 2:- Oil seal installer