

GENERAL INFORMATION

00-00

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.

Procedure

"Removal/Installation" Portion

"Inspection After Installation" Portion

INSTALL THE PARTS BY PERFORMING STEPS 1—3 IN REVERSE ORDER

SHOWS SERVICE ITEM (S)

INDICATES ANY RELEVANT REFERENCES WHICH NEED TO BE FOLLOWED DURING INSTALLATION

SHOWS SPECIAL SERVICE TOOL (SST) FOR SERVICE OPERATION

SHOWS APPLICATION POINTS OF GREASE, ETC.

SHOWS TIGHTENING TORQUE SPECIFICATIONS

SHOWS NON-REUSEABLE PARTS

SHOWS DETAILS

SHOWS TIGHTENING TORQUE UNITS

SHOWS THERE ARE REFERRAL NOTES FOR SERVICE

SHOWS REFERRAL NOTES FOR SERVICE

LOWER TRAILING LINK, UPPER TRAILING LINK REMOVAL/INSTALLATION

1. Jack up the rear of the vehicle and support it with safety stands.
2. Remove the undercover. (See 01-10-4 Undercover Removal)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.
5. Inspect the rear wheel alignment and adjust it if necessary.

SHOWS PROCEDURE ORDER FOR SERVICE

SHOWS TIGHTENING TORQUE SPECIFICATIONS

SHOWS SPECIAL SERVICE TOOL (SST) FOR SERVICE OPERATION

SHOWS APPLICATION POINTS OF GREASE, ETC.

SHOWS NON-REUSEABLE PARTS

SHOWS DETAILS

SHOWS TIGHTENING TORQUE UNITS

SHOWS THERE ARE REFERRAL NOTES FOR SERVICE

1	Split pin
2	Nut
3	Lower trailing link ball joint (See 02-14-5 Lower Trailing Link Ball Joint Removal Note)
4	Bolt
5	Lower trailing link
6	Dust boot (lower trailing link)

7	Split pin
8	Nut
9	Upper trailing link ball joint (See 02-14-5 Upper Trailing Link Ball Joint Removal Note)
10	Nut
11	Upper trailing link
12	Dust boot (upper trailing link)

Lower Trailing Link Ball Joint, Upper Trailing Link Ball Joint Removal Note

- Remove the ball joint using the SSTs.

SHOWS SPECIAL SERVICE TOOL (SST) NO.

UPPER TRAILING LINK

LOWER TRAILING LINK

KNUCKLE

49 T028 304

49 T028 305

49 T028 303

N-m (kgf-m, ft-lbf)

bpe2ue00000001

TRANSMISSION/TRANSAXLE

05
SECTION

05-17

AUTOMATIC TRANSAXLE	
[EW6A-EL]	05-17
TECHNICAL DATA	
[EW6A-EL]	05-50

SERVICE TOOLS	
[EW6A-EL]	05-60

05-17 AUTOMATIC TRANSAXLE [EW6A-EL]

FOREWORD [EW6A-EL]	05-17-4
Operation Cautions	05-17-4
Required SSTs, Measuring Instruments, and Parts for Servicing	05-17-6
After Service Precaution	05-17-6
AUTOMATIC TRANSAXLE LOCATION	
INDEX [EW6A-EL]	05-17-7
Automatic Transaxle 1	05-17-7
Automatic Transaxle 2	05-17-9
Automatic Transaxle 3	05-17-10
Automatic Transaxle 4	05-17-12
Automatic Transaxle 5	05-17-14
Oil Pump	05-17-16
Clutch Component	05-17-17
Rear Planetary Gear	05-17-18
Secondary Gear and Output Gear	05-17-19
Ring Gear and Differential	05-17-20
End Cover Component	05-17-21
Reduction Planetary Gear	05-17-23
Control Valve Body	05-17-24
AUTOMATIC TRANSAXLE CLEANING	
[EW6A-EL]	05-17-25
Cleaning Before Disassembly	05-17-25
Cleaning After Disassembly	05-17-26
Cleaning After Assembly	05-17-27
OIL SEAL (OIL PUMP) REPLACEMENT	
[EW6A-EL]	05-17-28
OIL SEAL (PARKING SHIFT LEVER)	
REPLACEMENT [EW6A-EL]	05-17-39
AUTOMATIC TRANSAXLE	
DISASSEMBLY [EW6A-EL]	05-17-61
Structural View	05-17-61
Disassembly Procedure	05-17-67
CLUTCH COMPONENT	
DISASSEMBLY [EW6A-EL]	05-17-99
Structural View	05-17-99
Disassembly Procedure	05-17-100
OIL PUMP DISASSEMBLY	
[EW6A-EL]	05-17-109
Structural View	05-17-109
Disassembly Procedure	05-17-109
REAR PLANETARY GEAR	
DISASSEMBLY [EW6A-EL]	05-17-111
Structural View	05-17-111
Disassembly Procedure	05-17-112

SECONDARY GEAR AND OUTPUT	
GEAR DISASSEMBLY [EW6A-EL]	05-17-113
Structural View	05-17-113
Disassembly Procedure	05-17-114
RING GEAR AND DIFFERENTIAL	
DISASSEMBLY [EW6A-EL]	05-17-115
Structural View	05-17-115
Disassembly Procedure	05-17-116
END COVER COMPONENT	
DISASSEMBLY [EW6A-EL]	05-17-122
Structural View	05-17-122
Disassembly Procedure	05-17-123
REDUCTION PLANETARY GEAR	
DISASSEMBLY [EW6A-EL]	05-17-130
Structural View	05-17-130
Disassembly Procedure	05-17-130
CONTROL VALVE BODY	
DISASSEMBLY [EW6A-EL]	05-17-131
Structural View	05-17-131
Disassembly Procedure	05-17-132
TORQUE CONVERTER CLEANING	
[EW6A-EL]	05-17-137
Cleaning Outside of Torque Converter	05-17-137
Torque Converter Flushing	05-17-138
OIL COOLER CLEANING	
[EW6A-EL]	05-17-139
Cleaning Outside of Oil Cooler	05-17-139
Oil Cooler Flushing (Water Passage)	05-17-139
Oil Cooler Flushing (Oil Passage)	05-17-141
VISUAL INSPECTION OF PARTS	
[EW6A-EL]	05-17-143
TORQUE CONVERTER INSPECTION	
[EW6A-EL]	05-17-145
THRUST NEEDLE BEARING	
INSPECTION [EW6A-EL]	05-17-146
FRONT PLANETARY GEAR	
INSPECTION [EW6A-EL]	05-17-147
Radial Needle Bearing Inspection (In Pinion Gear)	05-17-147
Thrust Needle Bearing Inspection	05-17-147
Pinion Washer Inspection	05-17-148
REAR PLANETARY GEAR	
INSPECTION [EW6A-EL]	05-17-149

05-17-1

AUTOMATIC TRANSAXLE [EW6A-EL]

Radial Needle Bearing Inspection (In Pinion Gear)	05-17-149	Assembly Procedure	05-17-180
Thrust Needle Bearing Inspection	05-17-150	OIL PUMP ASSEMBLY [EW6A-EL]	05-17-237
Pinion Washer Inspection	05-17-151	Structural View	05-17-237
REDUCTION PLANETARY GEAR		Assembly Procedure	05-17-237
INSPECTION [EW6A-EL]	05-17-152	CLUTCH COMPONENT ASSEMBLY	
Radial Needle Bearing Inspection (In Pinion Gear)	05-17-152	[EW6A-EL]	05-17-241
Pinion Washer Inspection	05-17-153	Structural View	05-17-241
Bush Inner Diameter Inspection	05-17-154	Assembly Procedure	05-17-242
SECONDARY GEAR AND OUTPUT		REAR PLANETARY GEAR ASSEMBLY	
GEAR INSPECTION [EW6A-EL]	05-17-154	[EW6A-EL]	05-17-254
Taper Roller Bearing Inspection	05-17-154	Structural View	05-17-254
RING GEAR AND DIFFERENTIAL		Assembly Procedure	05-17-254
INSPECTION [EW6A-EL]	05-17-157	REDUCTION PLANETARY GEAR	
Taper Roller Bearing Inspection	05-17-157	ASSEMBLY [EW6A-EL]	05-17-257
Differential Journal Inspection	05-17-159	Structural View	05-17-257
Differential Backlash Inspection	05-17-160	Assembly Procedure	05-17-257
DRIVE SHAFT JOURNAL INSPECTION		SECONDARY GEAR AND OUTPUT	
[EW6A-EL]	05-17-160	GEAR ASSEMBLY [EW6A-EL]	05-17-259
Drive Shaft (LH)	05-17-160	Structural View	05-17-259
Drive Shaft (RH)	05-17-161	Assembly Procedure	05-17-259
LOW CLUTCH INSPECTION		RING GEAR AND DIFFERENTIAL	
[EW6A-EL]	05-17-161	ASSEMBLY [EW6A-EL]	05-17-261
Drive Plate Inspection	05-17-161	Structural View	05-17-261
HIGH CLUTCH INSPECTION		Assembly Procedure	05-17-262
[EW6A-EL]	05-17-162	END COVER COMPONENT ASSEMBLY	
Drive Plate Inspection	05-17-162	[EW6A-EL]	05-17-269
Springs and Retainer Component Inspection	05-17-162	Structural View	05-17-269
Radial Needle Bearing Inspection (In High Clutch Drum Component)	05-17-162	Assembly Procedure	05-17-270
LOW AND REVERSE BRAKE		CONTROL VALVE BODY ASSEMBLY	
INSPECTION [EW6A-EL]	05-17-163	[EW6A-EL]	05-17-285
Drive Plate Inspection	05-17-163	Structural View	05-17-285
2-6 BRAKE INSPECTION		Assembly Procedure	05-17-286
[EW6A-EL]	05-17-163	MEASUREMENT/ADJUSTMENT VALUE	
Drive plate inspection	05-17-163	INPUT SHEET [EW6A-EL]	05-17-291
R-3-5 BRAKE INSPECTION		Differential Backlash Measurement/Adjustment	05-17-291
[EW6A-EL]	05-17-164	High Clutch Clearance Measurement/Adjustment	05-17-292
Drive Plate Inspection	05-17-164	Low Clutch Clearance Measurement/Adjustment	05-17-293
ONE-WAY CLUTCH INSPECTION		R-3-5 Brake Clearance Measurement/Adjustment	05-17-293
[EW6A-EL]	05-17-164	2-6 Brake Clearance Measurement/Adjustment	05-17-294
LOW CLUTCH HUB INSPECTION		Low and Reverse Brake Clearance Measurement/Adjustment	05-17-295
[EW6A-EL]	05-17-165	Secondary Gear and Output Gear Preload Measurement/Adjustment	05-17-296
Bush Inner Diameter Inspection	05-17-165	Ring Gear and Differential Preload Measurement/Adjustment	05-17-297
HIGH CLUTCH HUB INSPECTION		Total End Play Measurement/Adjustment	05-17-297
[EW6A-EL]	05-17-166	DIFFERENTIAL BACKLASH MEASUREMENT/ADJUSTMENT	
Bush Inner Diameter Inspection (In Oil Pump Cover)	05-17-169	[EW6A-EL]	05-17-298
Radial Needle Bearing Inspection (In Oil Pump Housing)	05-17-169	Preparation Before Servicing	05-17-298
END COVER INSPECTION		Differential Backlash Measurement	05-17-298
[EW6A-EL]	05-17-169	Differential Backlash Adjustment	05-17-305
Radial Needle Bearing Inspection	05-17-169	HIGH CLUTCH CLEARANCE MEASUREMENT/ADJUSTMENT	
OIL COOLER INSPECTION		[EW6A-EL]	05-17-313
[EW6A-EL]	05-17-170	Preparation Before Servicing	05-17-313
AUTOMATIC TRANSAXLE ASSEMBLY			
[EW6A-EL]	05-17-173		
Structural View	05-17-173		

AUTOMATIC TRANSAXLE [EW6A-EL]

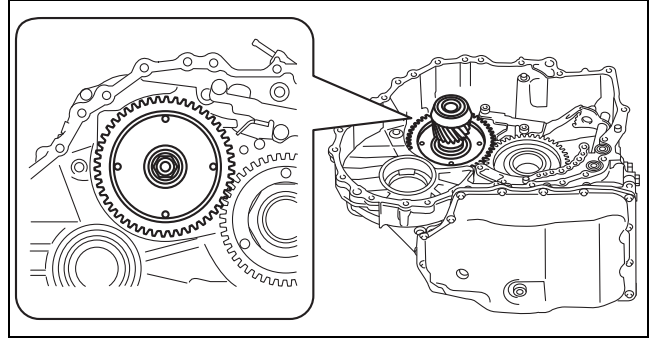
High Clutch Clearance Measurement.....	05-17-313	Low and Reverse Brake Clearance Adjustment.....	05-17-356
High Clutch Clearance Adjustment ...	05-17-320	SECONDARY GEAR AND OUTPUT GEAR PRELOAD	
LOW CLUTCH CLEARANCE MEASUREMENT/ADJUSTMENT		MEASUREMENT/ADJUSTMENT	
[EW6A-EL]	05-17-323	[EW6A-EL]	05-17-360
Preparation Before Servicing.....	05-17-323	Preparation Before Servicing	05-17-360
Low Clutch Clearance Measurement.....	05-17-323	Secondary Gear and Output Gear Preload Measurement.....	05-17-360
Low Clutch Clearance Adjustment.....	05-17-331	Secondary Gear and Output Gear Preload Adjustment.....	05-17-369
R-3-5 BRAKE CLEARANCE MEASUREMENT/ADJUSTMENT		RING GEAR AND DIFFERENTIAL PRELOAD	
[EW6A-EL]	05-17-335	MEASUREMENT/ADJUSTMENT	
Preparation Before Servicing.....	05-17-335	[EW6A-EL]	05-17-371
R-3-5 Brake Clearance Measurement/Adjustment	05-17-335	Preparation Before Servicing	05-17-371
2-6 BRAKE CLEARANCE MEASUREMENT/ADJUSTMENT		Ring Gear and Differential Preload Measurement.....	05-17-371
[EW6A-EL]	05-17-344	Ring Gear and Differential Preload Adjustment.....	05-17-378
Preparation Before Servicing.....	05-17-344	TOTAL END PLAY	
2-6 Brake Clearance Measurement ...	05-17-344	MEASUREMENT/ADJUSTMENT	
2-6 Brake Clearance Adjustment.....	05-17-347	[EW6A-EL]	05-17-382
LOW AND REVERSE BRAKE CLEARANCE MEASUREMENT/ADJUSTMENT		Preparation Before Servicing	05-17-382
[EW6A-EL]	05-17-349	Total End Play Measurement/Adjustment	05-17-382
Preparation Before Servicing.....	05-17-349		
Low and Reverse Brake Clearance Measurement	05-17-349		

05-17

27. Assemble the oil pipe.

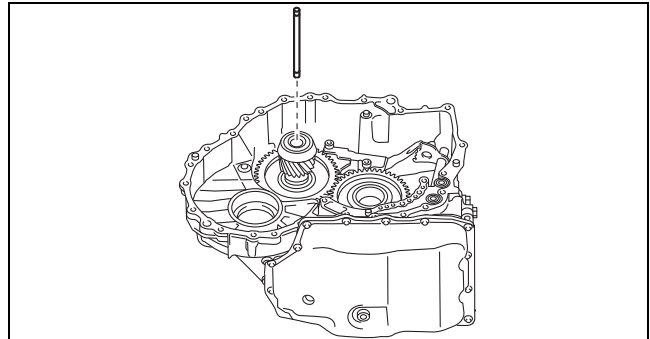
Caution

- 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.



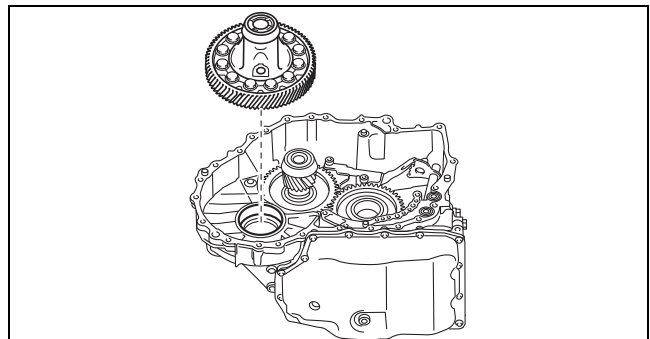
azzjiw00000383

05-17



azzjiw00000361

28. Assemble the ring gear and differential.

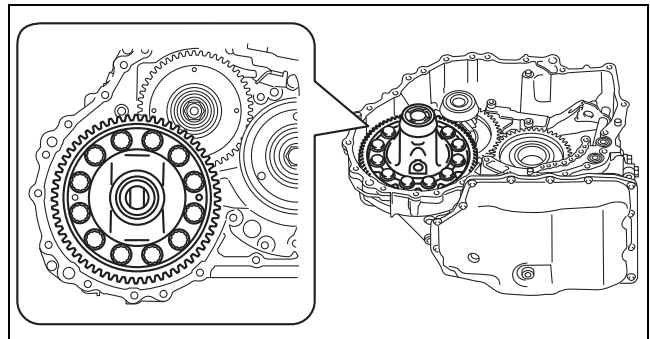


bfw2za00000077

29. Assemble the thrust needle bearing.

Note

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



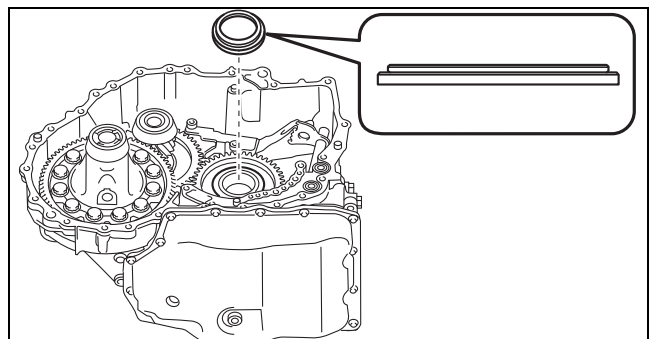
azzjiw00000384

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.

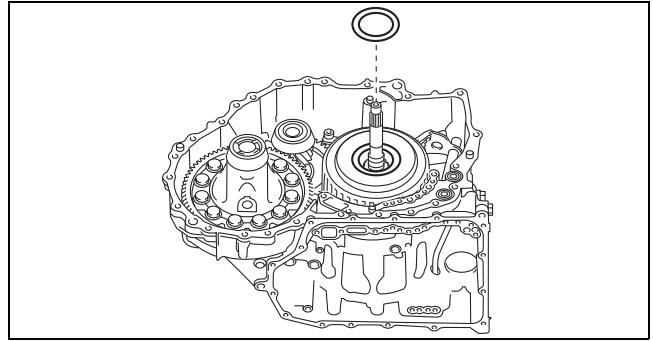
- (1) Apply ATF (ATF FZ) to the new D-ring and new seal rings.



azzjiw00000385

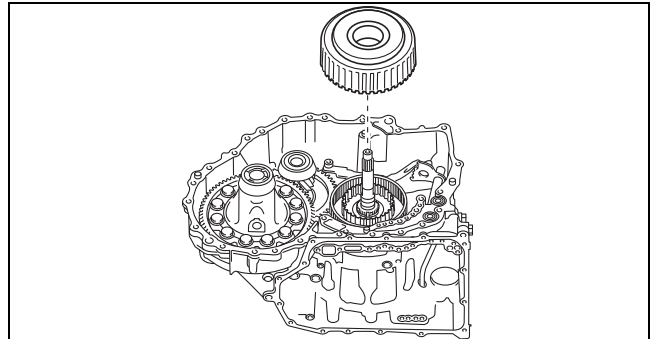
AUTOMATIC TRANSAXLE [EW6A-EL]

16. Remove the thrust needle bearing.



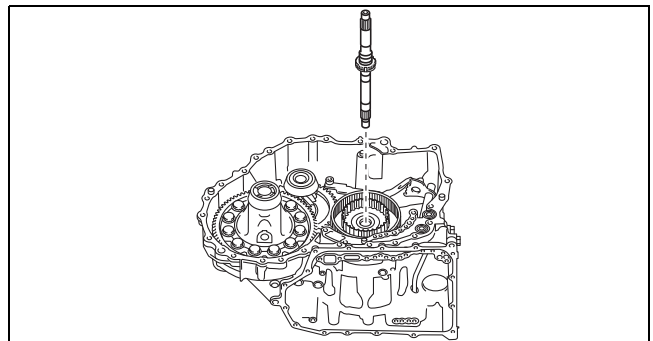
azzjjw00000451

17. Remove the clutch component.



azzjjw00000452

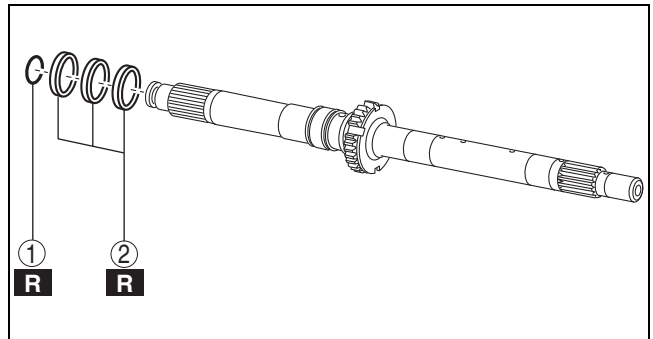
18. Remove the turbine shaft.



azzjjw00000453

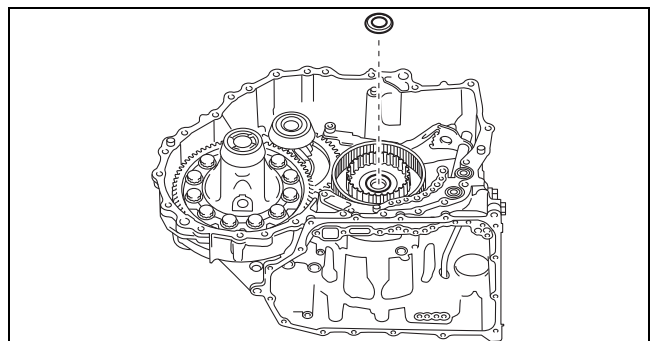
19. Remove the D-ring and seal rings from the turbine shaft using the procedure in the figure:

1	D-ring
2	Seal ring



azzjjw00000454

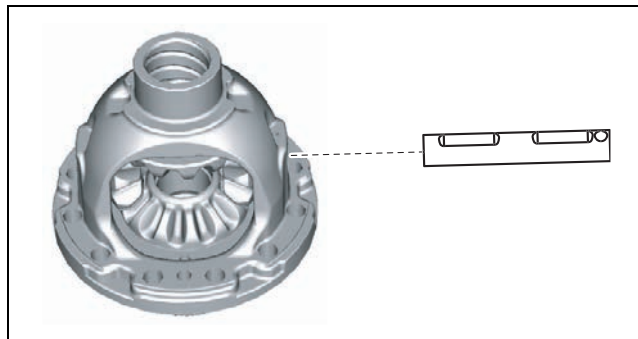
20. Remove the thrust needle bearing.



azzjjw00000455

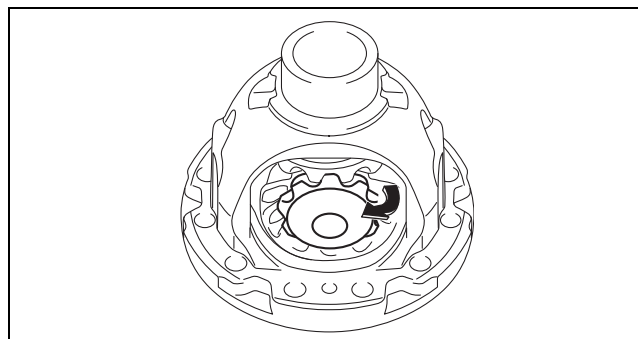
AUTOMATIC TRANSAXLE [EW6A-EL]

6. Remove the pinion shaft.



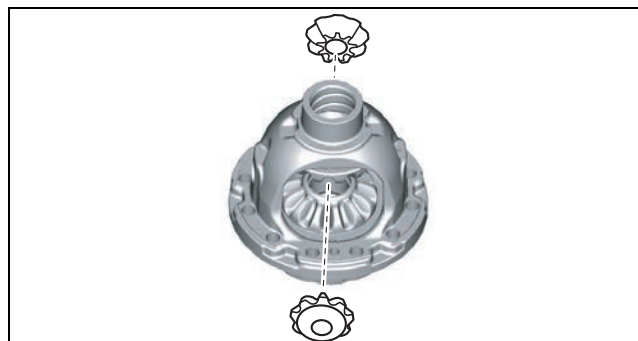
bfw2za00000108

7. Remove the pinion gears using the following procedure:
(1) Rotate the pinion gears as shown in the figure.



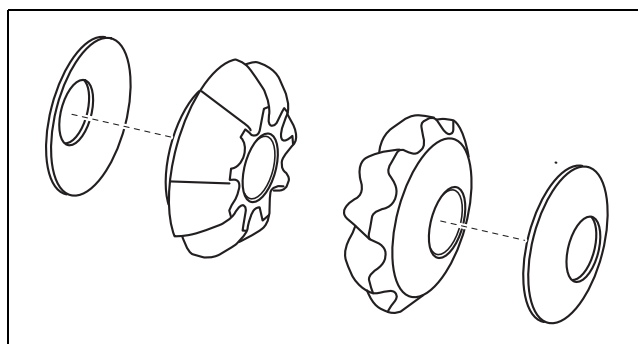
bfw2za00000109

(2) Remove the pinion gears.



bfw2za00000110

8. Remove the thrust washers from the pinion gears.

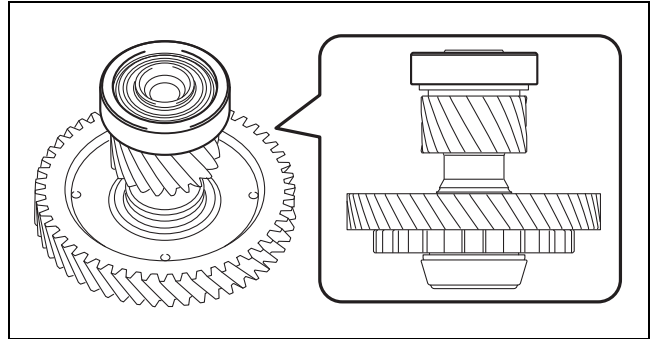


azzjjw00001492

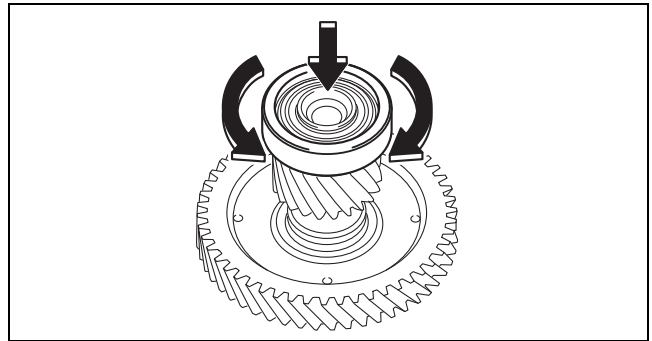
3. With a load applied by hand to the bearing race, rotate the bearing race and verify that there is no malfunction in the taper roller bearing (rotation sticking).
 - If there is a malfunction, disassemble the secondary gear and output gear and replace the taper roller bearing with a new one.
(See 05-17-113 SECONDARY GEAR AND OUTPUT GEAR DISASSEMBLY [EW6A-EL].)
(See 05-17-259 SECONDARY GEAR AND OUTPUT GEAR ASSEMBLY [EW6A-EL].)

4. Remove the bearing race.

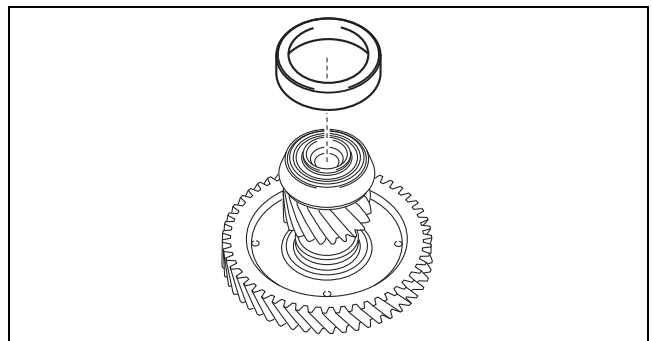
5. Place the secondary gear and output gear with the output gear side pointing downward on a workbench.



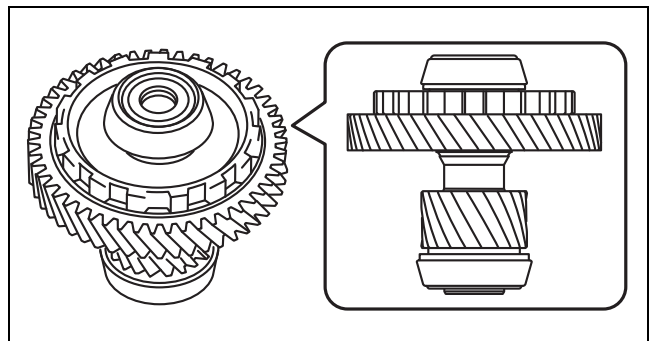
azzjjw00001281



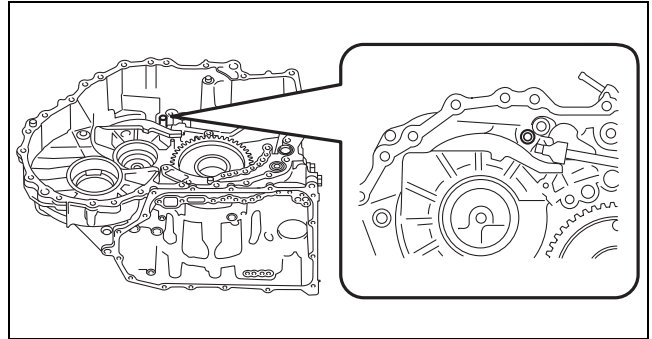
azzjjw00001282



azzjjw00001283

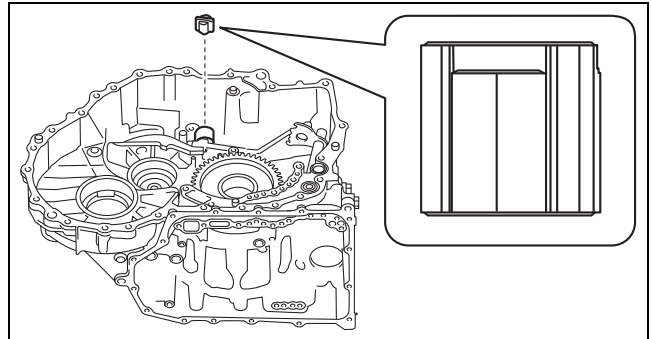


azzjjw00001284



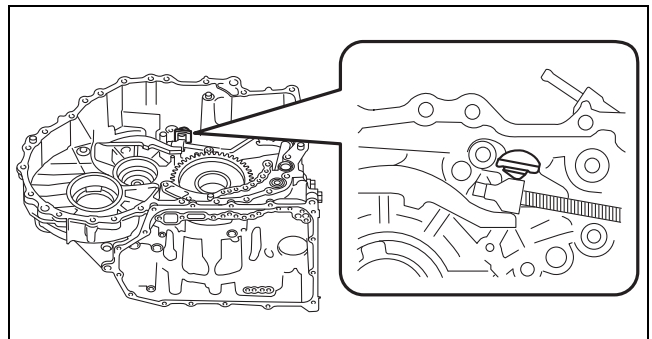
azzjiw00000572

15. Assemble the support actuator.



azzjiw00000573

16. Assemble the detent bracket component using the following procedure:

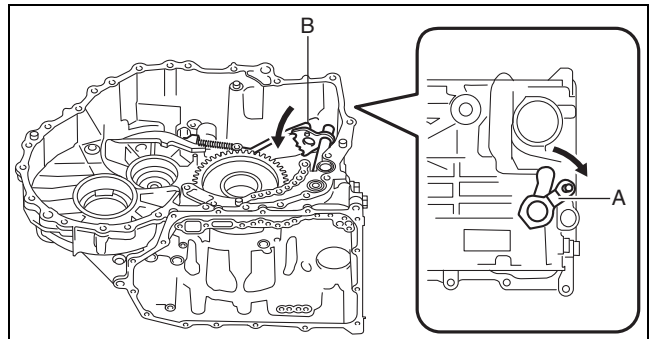


azzjiw00000574

(1) Rotate the parking shift lever component (manual plate component) as shown in the figure.

A : Parking shift lever component

B : Manual plate component



bfw2za00000046

- (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.

Note

- Recommended measuring instrument:
Depth gauge, straight edge ruler

A : Transaxle case end (alignment surface with end cover)

B : Rear planetary gear end

Specification

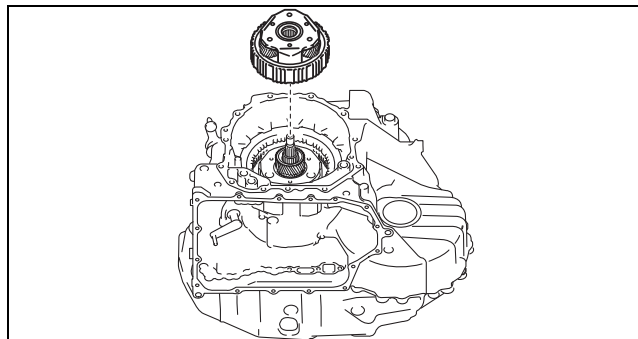
32.8—35.1 mm {1.30—1.38 in}

- If not within the specification, remove the rear planetary gear and reassemble.

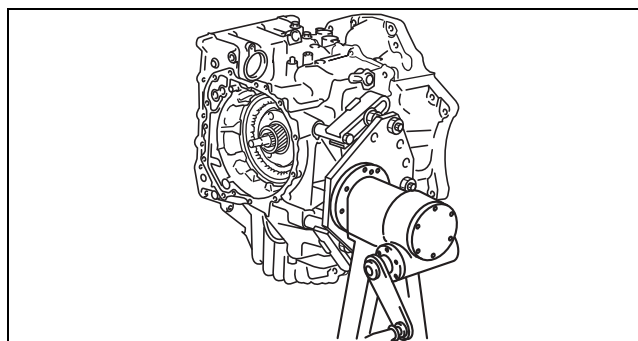
Note

- Measurement method

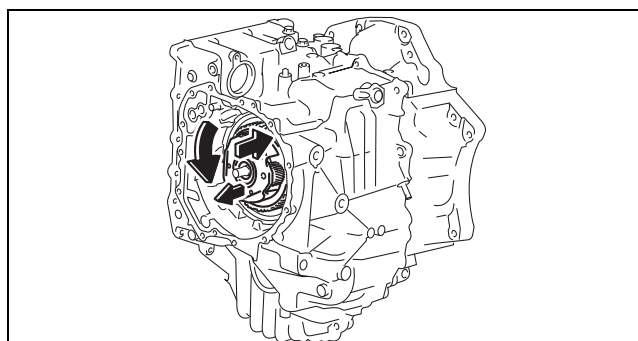
- 1) Set two straight edge rulers along the alignment surface of the transaxle case with the end cover as shown in the figure.



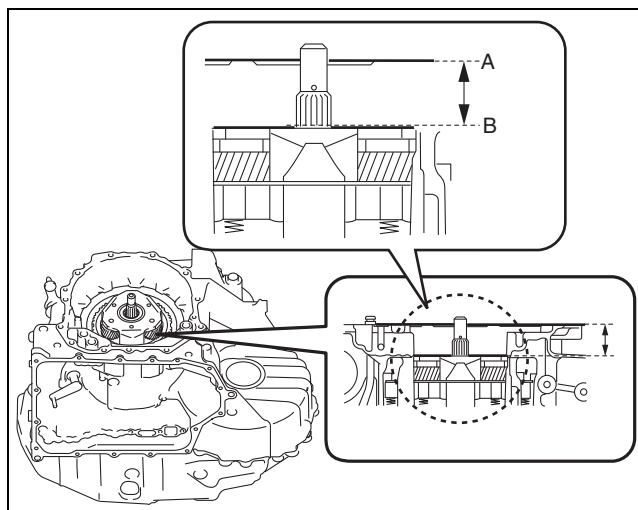
azzjiw00000663



azzjiw00000664

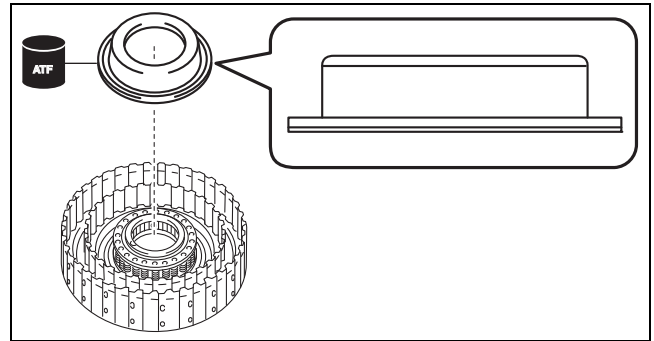


azzjiw00000665

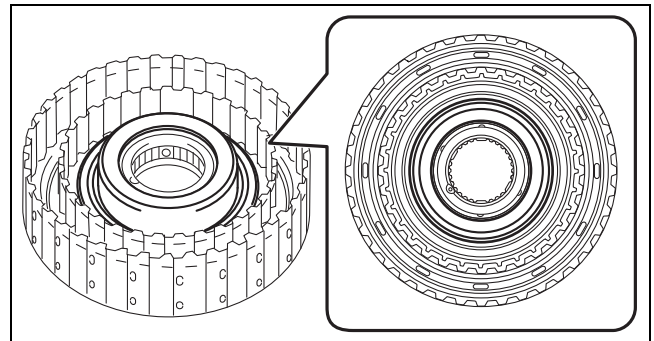


azzjiw00001606

(2) Assemble the seal plate.



azzjiw00000847



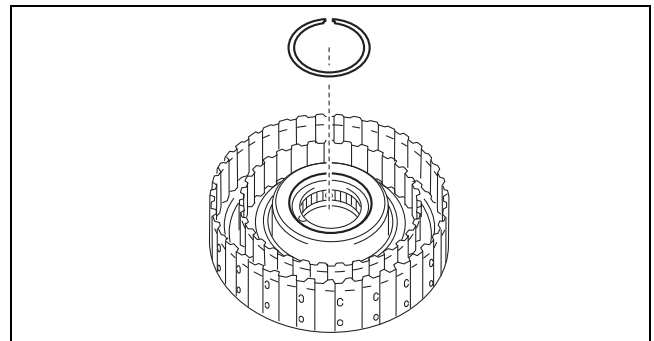
azzjiw00000848

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.

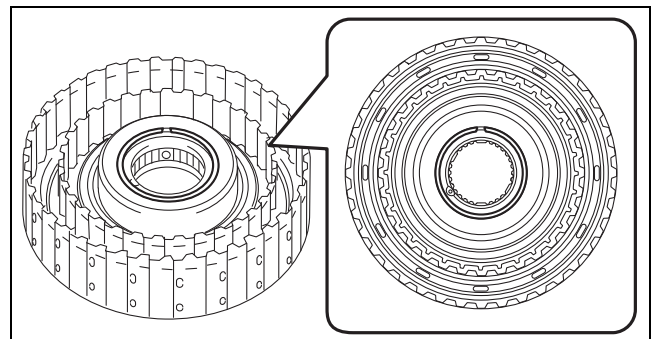


azzjiw00000849

(2) Install the **SSTs**.

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.



azzjiw00000850

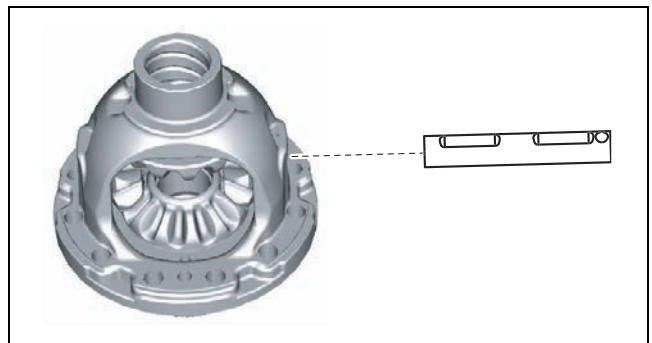


bfw2za00000129

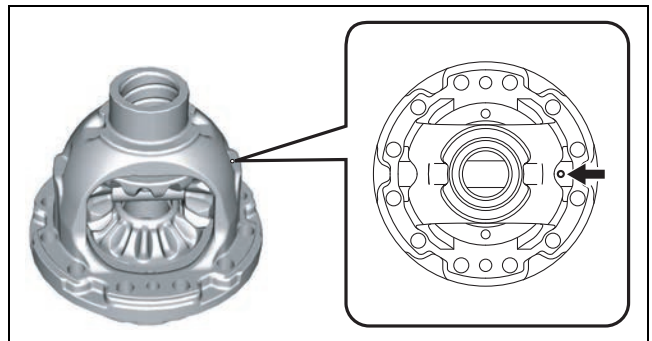
5. Assemble the pinion shaft.

Caution

- Assemble the pinion shaft so that the pin holes of the differential gear case and the pinion shaft are aligned.



bfw2za00000130



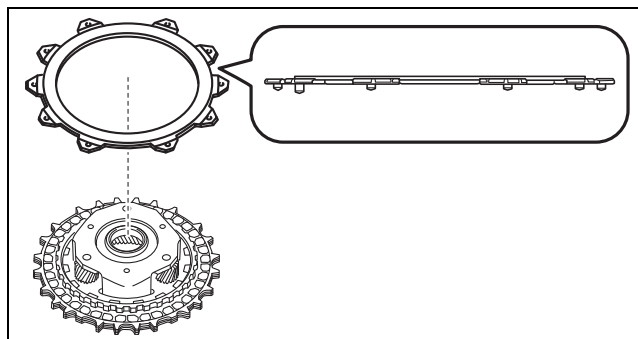
bfw2za00000131

AUTOMATIC TRANSAXLE [EW6A-EL]

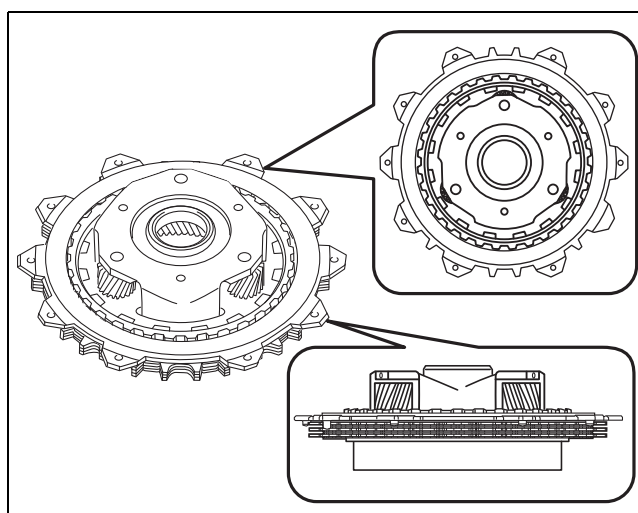
(4) Assemble the retaining plate to the reduction planetary gear as shown in the figure.

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.

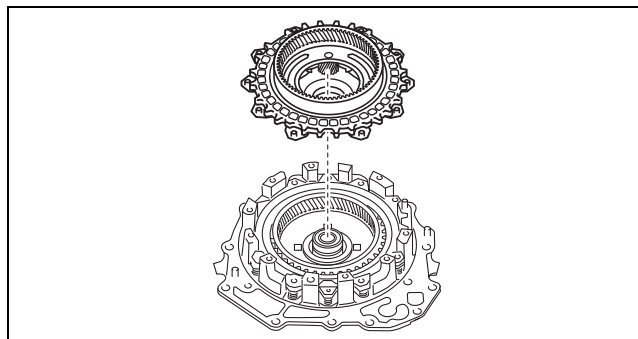


azzijw00001045

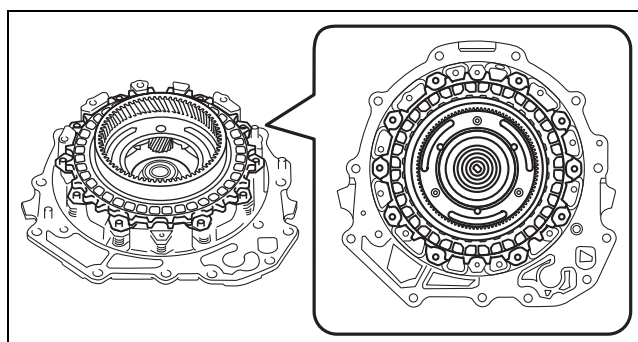


azzijw00001046

(5) Assemble the parts assembled together in Steps (3) and (4).



azzijw00001047



azzijw00001048

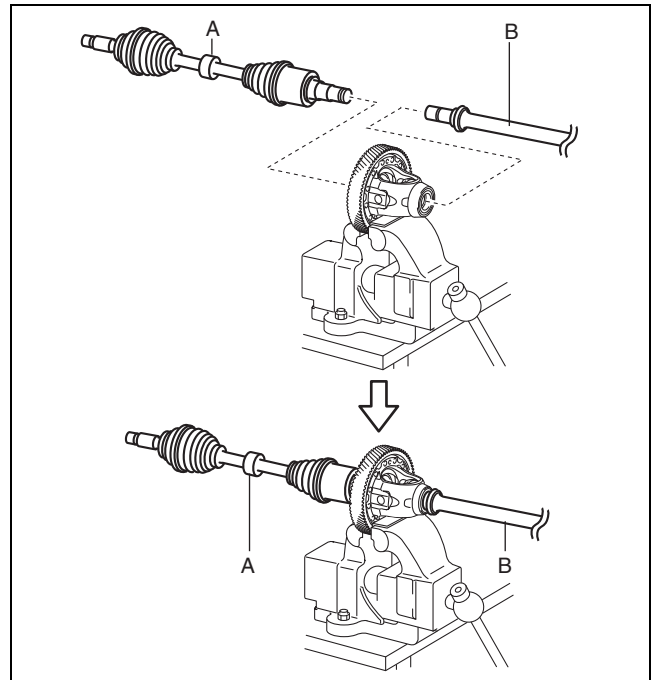
2. Assemble the drive shaft to the ring gear and differential.

Caution

- Because the drive shaft (LH) clip is not required for the differential backlash measurement, do not assemble it.

A : Drive shaft (LH)

B : Drive shaft (RH)



bew1ua00000018

05-17

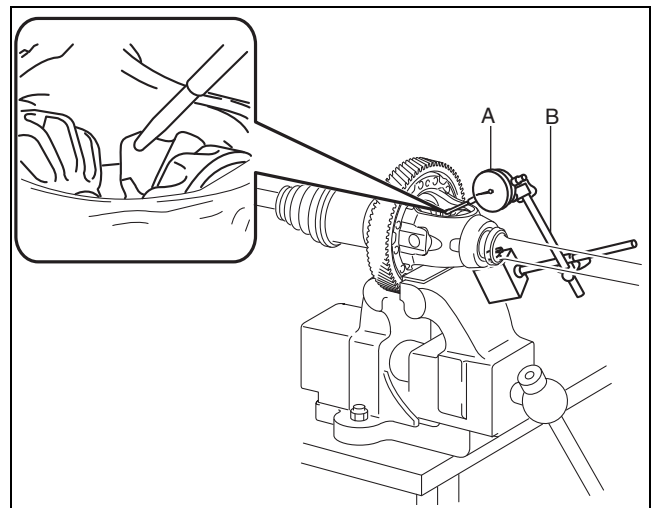
3. Set the dial gauge and magnetic stand as shown in the figure.

Caution

- To reduce error during the backlash measurement, set the dial gauge so that it is perpendicular to the teeth of the pinion gear.

A : Dial gauge

B : Magnetic stand



bew1ua00000019

AUTOMATIC TRANSAXLE [EW6A-EL]

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**.

Caution

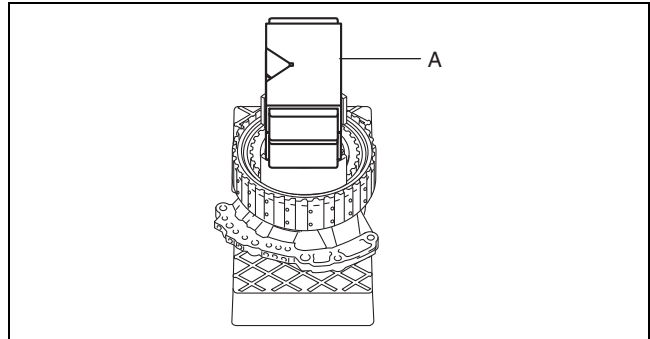
- To reduce error during the low clutch clearance measurement, place the weight near the center of the **SST**.

A : Weight (V-block)

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.



azzjjw00001084

Correction value of low clutch clearance
(weight of unit is N) = (A - 98 N) × 0.00157
mm {0.0000618 in}

A: Weight of weight

Note

Example

A: Weight of weight is 150 N

Correction value of low clutch clearance = (150 N - 98 N) × 0.00157 mm {0.0000618 in} = 0.0816 mm {0.00321 in}

Correction value of low clutch clearance (weight of unit is kgf) = (A - 9.99 kgf) × 0.01537 mm {0.0006051 in}

A: Weight of weight

Note

Example

A: Weight of weight is 15.30 kgf

Correction value of low clutch clearance = (15.30 kgf - 9.99 kgf) × 0.01537 mm {0.0006051 in} = 0.0816 mm {0.00321 in}

Correction value of low clutch clearance (weight of unit is lbf) = (A - 22.03 lbf) × 0.00698 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 lbf - 22.03 lbf) × 0.00698 mm {0.0002748 in} = 0.0816 mm {0.00321 in}

8. Input the calculated correction value of the low clutch clearance into the measurement/adjustment value input sheet.