

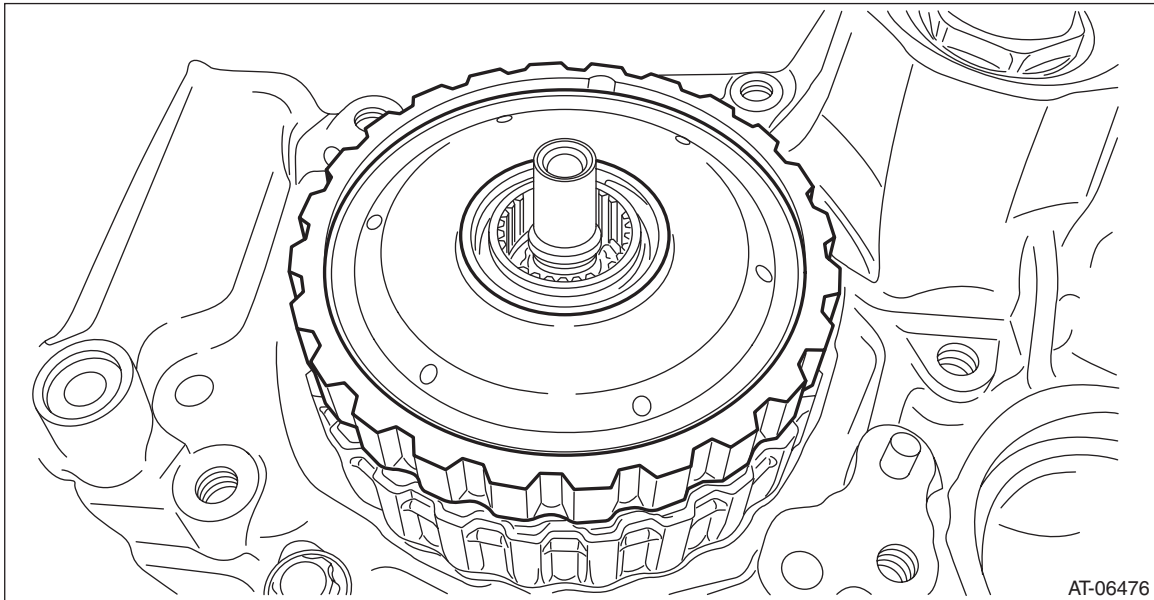
Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

40. Forward Clutch Assembly

A: REMOVAL

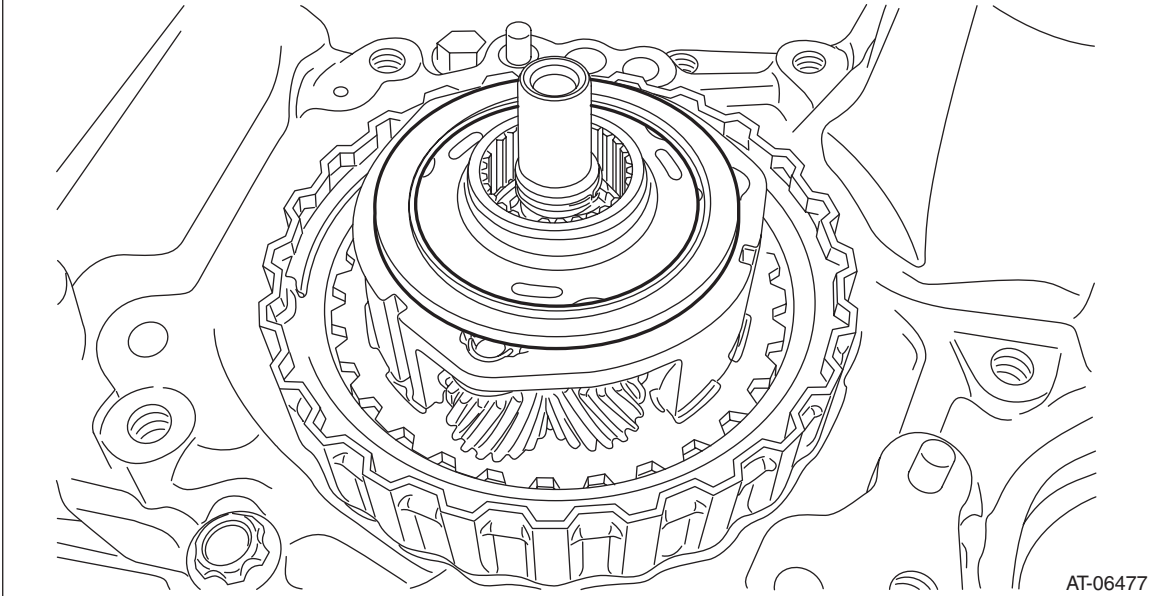
- 1) Remove the transmission assembly from the vehicle. <Ref. to CVT-56, REMOVAL, Automatic Transmission Assembly.>
- 2) Remove the air breather hose. <Ref. to CVT-148, REMOVAL, Air Breather Hose.>
- 3) Remove the control valve body. <Ref. to CVT-110, REMOVAL, Control Valve Body.>
- 4) Remove the transmission harness. <Ref. to CVT-124, REMOVAL, Transmission Harness.>
- 5) Remove the turbine speed sensor. <Ref. to CVT-97, REMOVAL, Turbine Speed Sensor.>
- 6) Remove the secondary speed sensor. <Ref. to CVT-99, REMOVAL, Secondary Speed Sensor.>
- 7) Remove the primary speed sensor. <Ref. to CVT-101, REMOVAL, Primary Speed Sensor.>
- 8) Remove the inhibitor switch. <Ref. to CVT-93, REMOVAL, Inhibitor Switch.>
- 9) Remove the extension case. <Ref. to CVT-156, REMOVAL, Extension Case.>
- 10) Remove the transfer clutch assembly. <Ref. to CVT-160, REMOVAL, Transfer Clutch.>
- 11) Remove the transfer driven gear assembly. <Ref. to CVT-174, REMOVAL, Transfer Driven Gear.>
- 12) Remove the parking pawl. <Ref. to CVT-177, REMOVAL, Parking Pawl.>
- 13) Remove the reduction driven gear assembly. <Ref. to CVT-179, REMOVAL, Reduction Driven Gear.>
- 14) Remove the oil pan and oil strainer. <Ref. to CVT-106, REMOVAL, Oil Pan and Strainer.>
- 15) Remove the transmission control device. <Ref. to CVT-187, REMOVAL, Transmission Control Device.>
- 16) Remove the transmission case. <Ref. to CVT-193, REMOVAL, Transmission Case.>
- 17) Remove the reduction drive gear. <Ref. to CVT-206, REMOVAL, Reduction Drive Gear.>
- 18) Remove the primary pulley, secondary pulley and variator chain. <Ref. to CVT-210, REMOVAL, Primary Pulley and Secondary Pulley.>
- 19) Remove the reverse brake assembly. <Ref. to CVT-231, REMOVAL, Reverse Brake Assembly.>
- 20) Remove the internal gear.



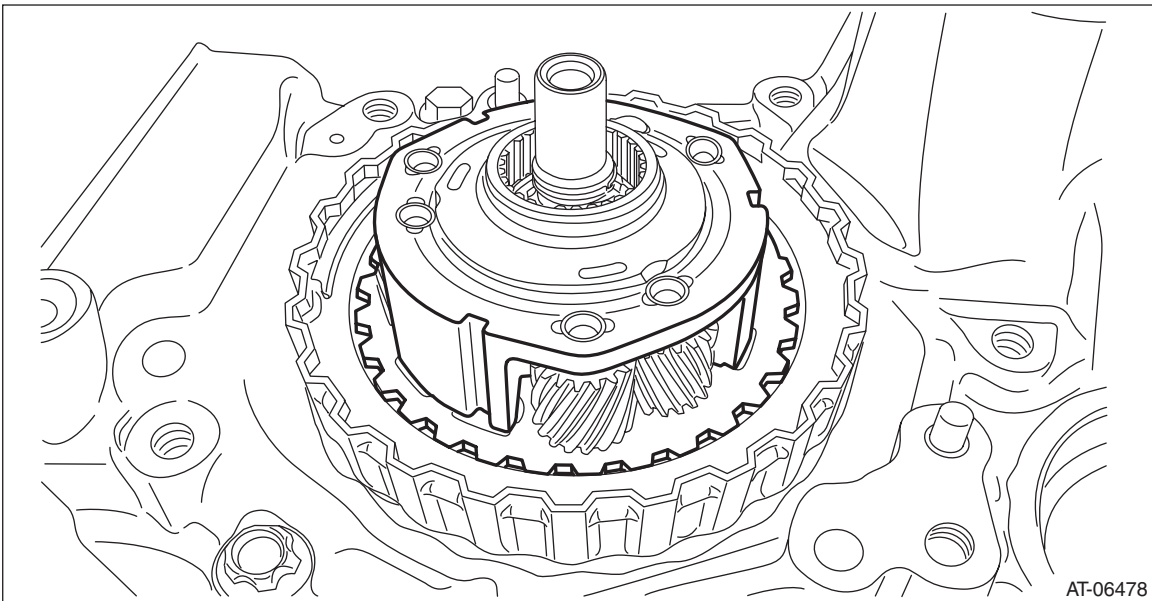
Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

21) Remove the thrust bearing.



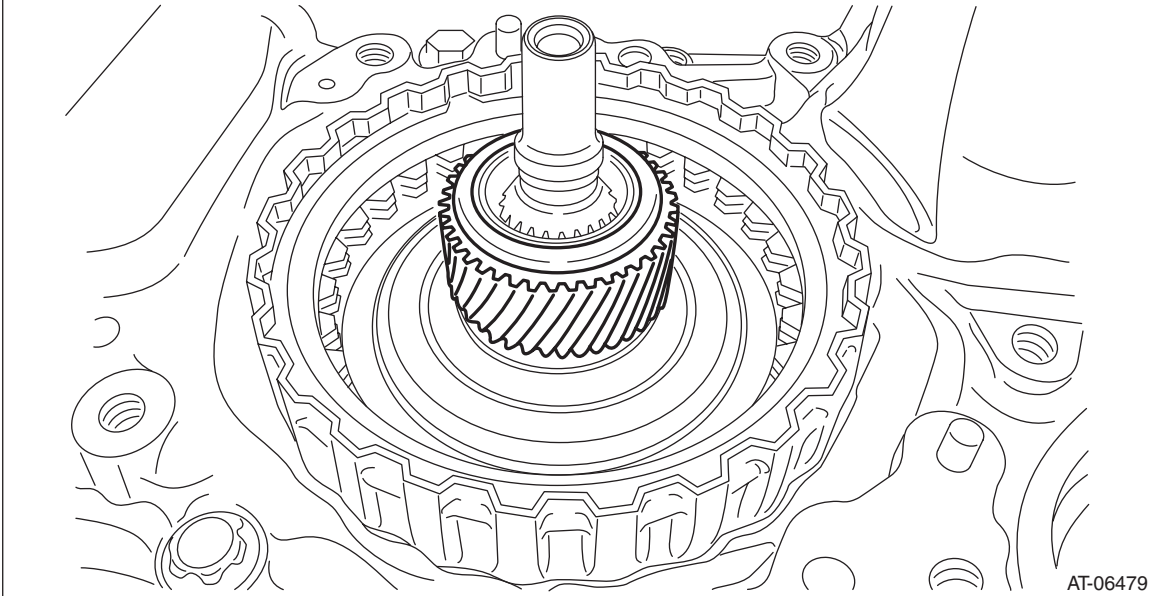
22) Remove the planetary carrier.



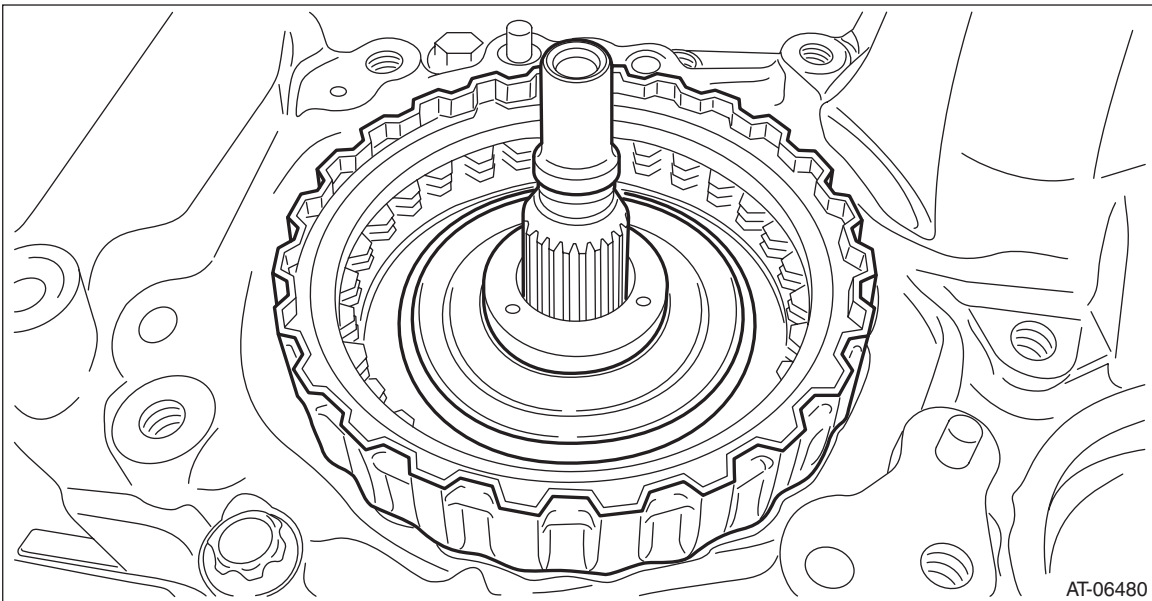
Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

23) Remove the thrust bearing and sun gear.



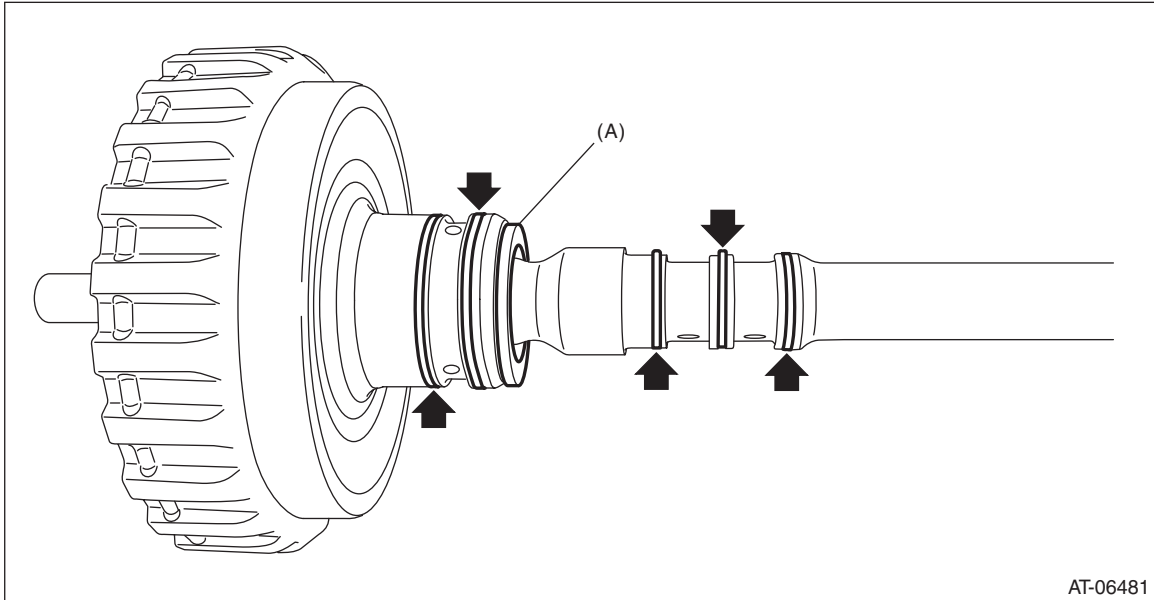
24) Remove the forward clutch assembly.



Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

25) Remove the thrust bearing and seal ring.



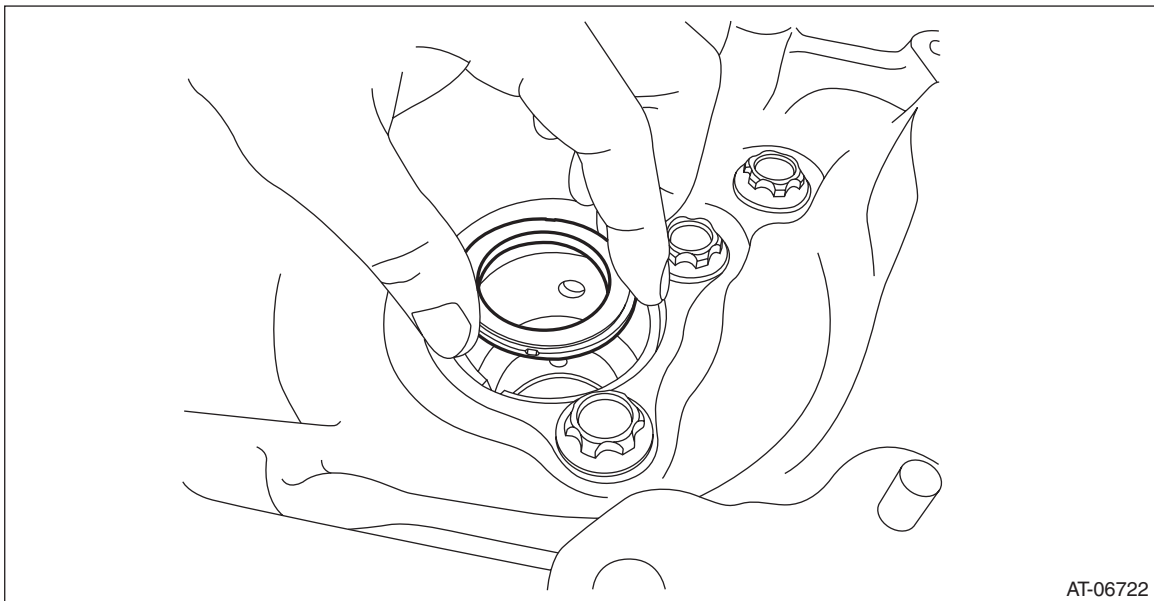
(A) Thrust bearing

B: INSTALLATION

1) Install the thrust bearing to the converter case.

NOTE:

Face the temper color surface to the converter case side.



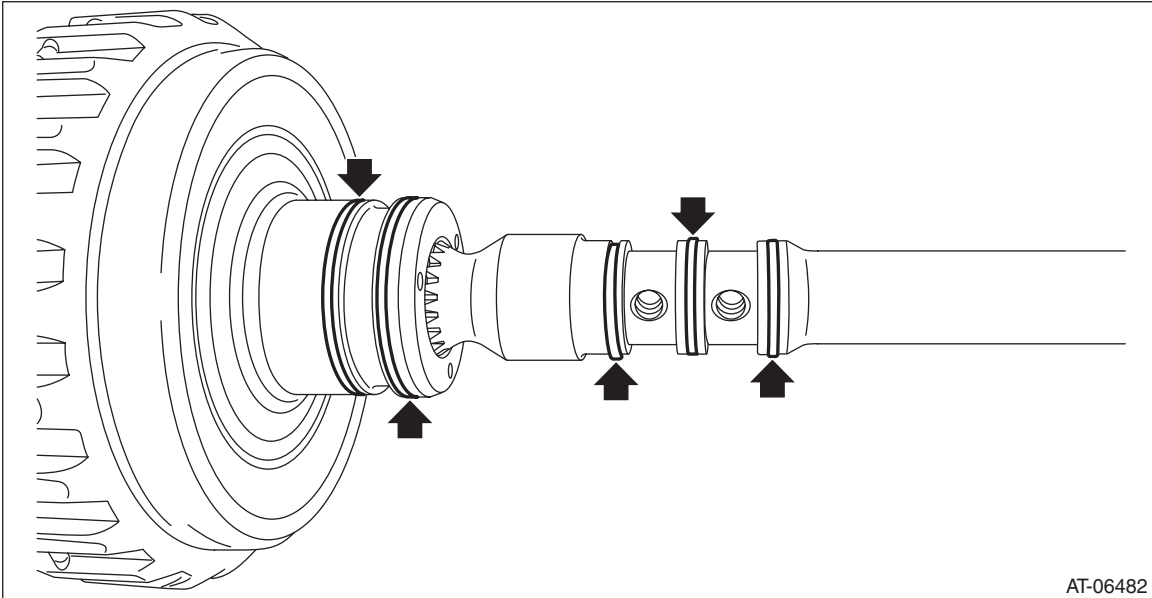
Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

2) Install the seal ring to the input shaft.

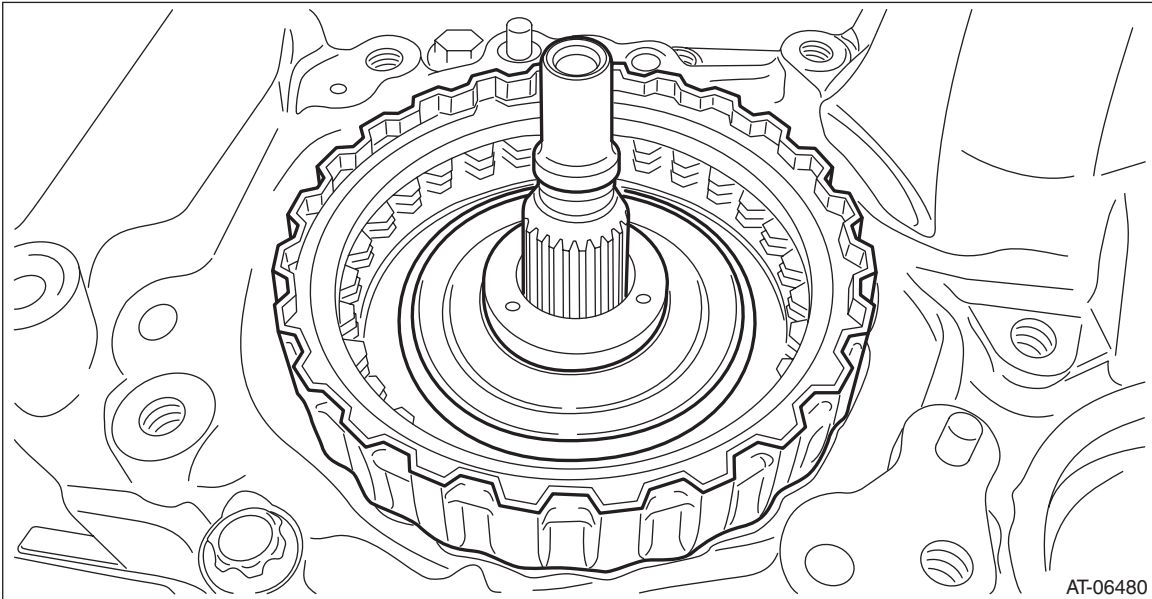
NOTE:

- Use a new seal ring.
- When installing the seal ring, do not expand the seal ring too much.
- Apply CVTF to the seal rings.



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3) Install the forward clutch assembly to the converter case.



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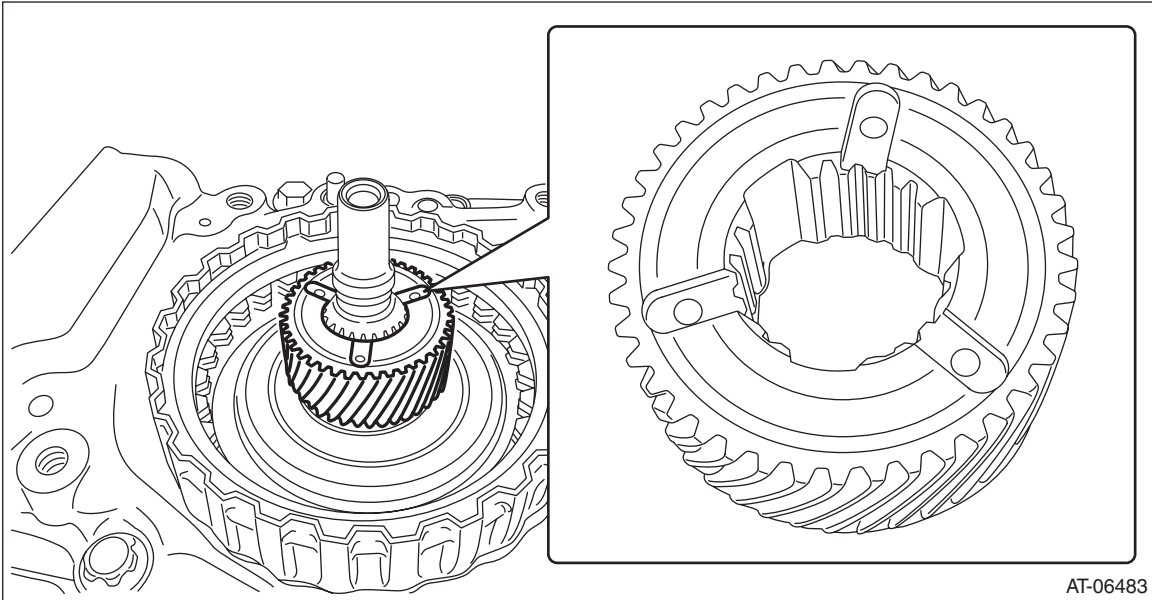
Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

4) Install the sun gear.

NOTE:

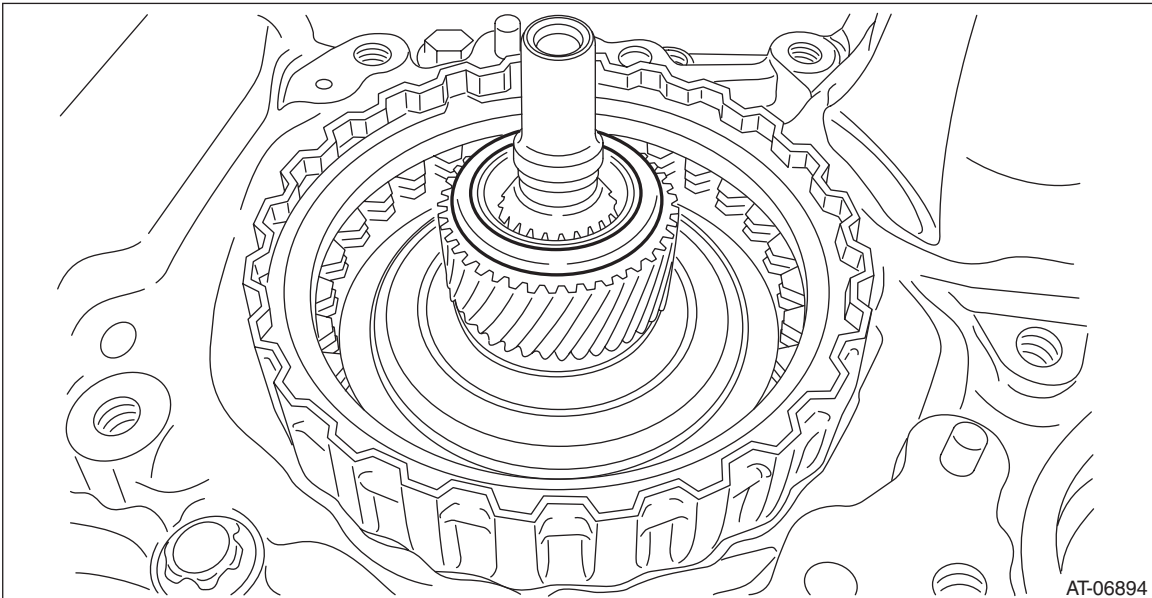
Face the end face of the sun gear to the reverse brake side as shown in the figure.



5) Install the thrust bearing to the sun gear.

NOTE:

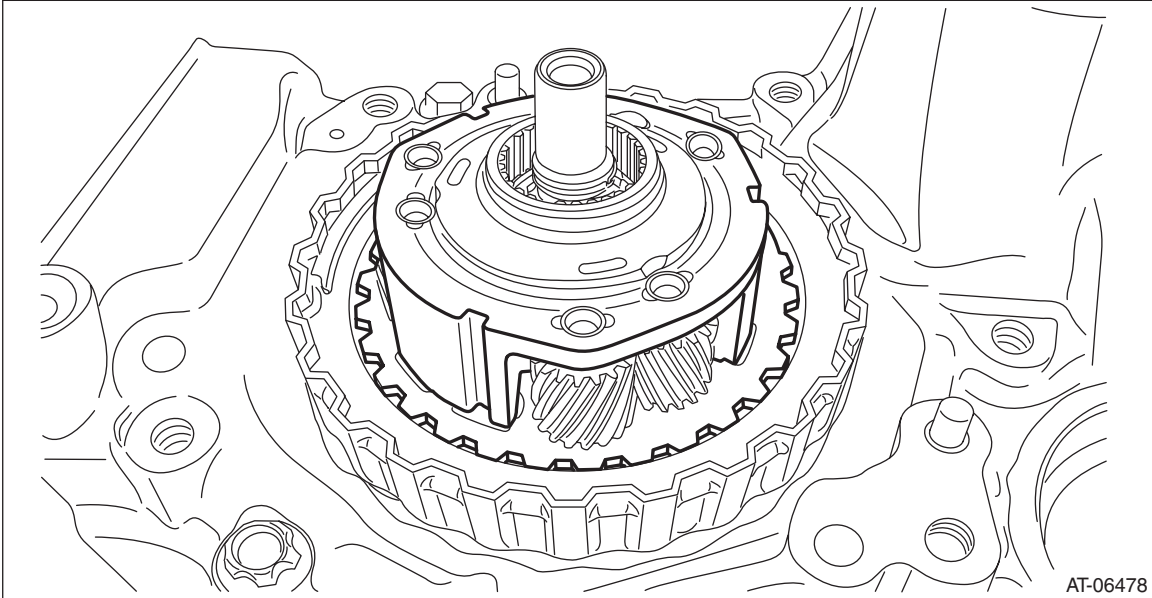
Face the temper color surface to the reverse brake side.



Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

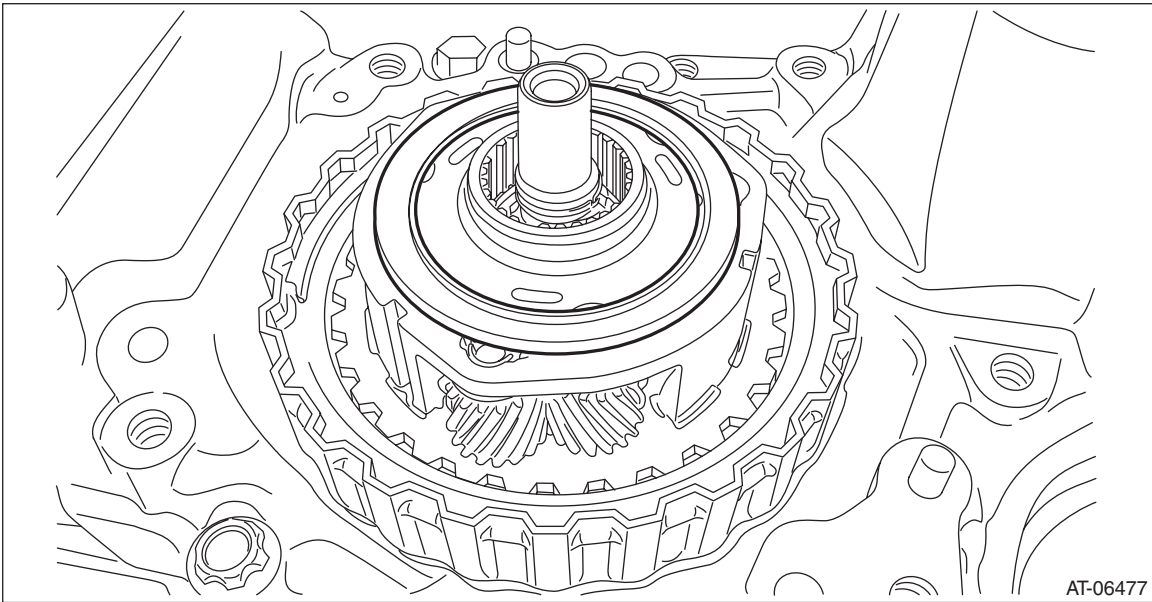
6) Install the planetary carrier.



7) Install the thrust bearing.

NOTE:

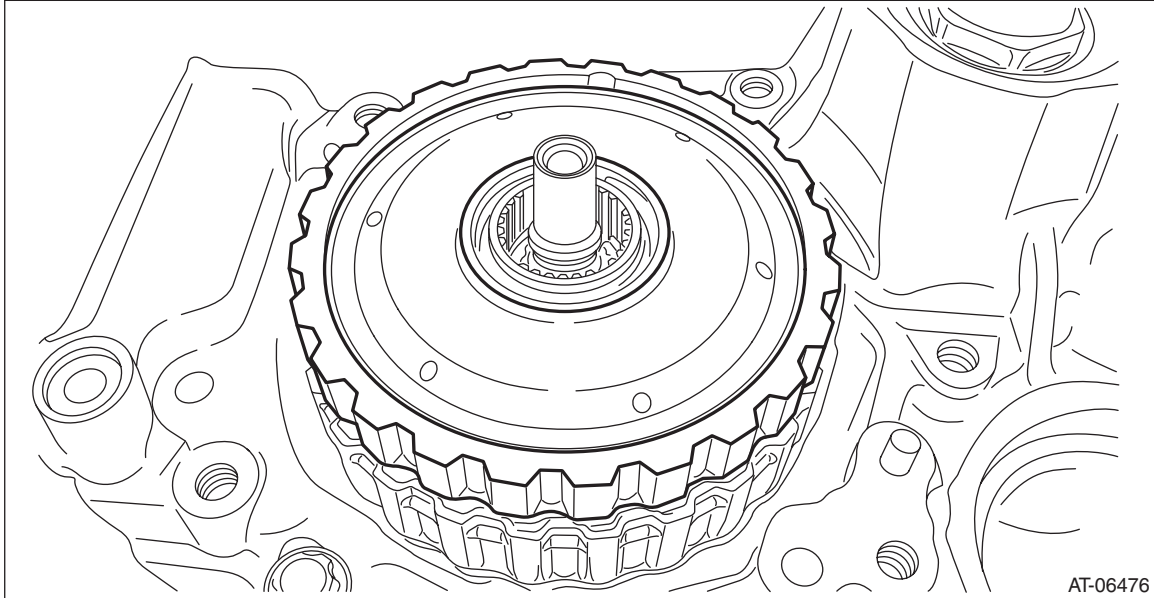
Face the temper color surface to the reverse brake side.



Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

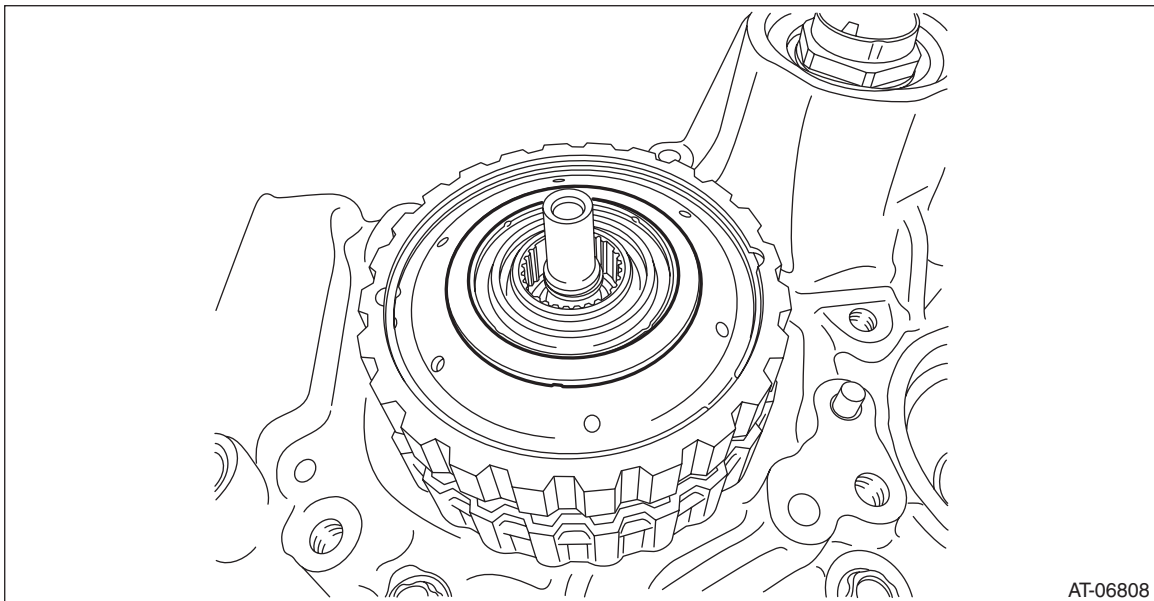
8) Install the internal gear.



9) Install the thrust bearing to the internal gear.

NOTE:

Face the temper color surface to the reverse brake side.



- 10) Select a washer. <Ref. to CVT-263, ADJUSTMENT, Forward Clutch Assembly.>
- 11) Install the reverse brake assembly. <Ref. to CVT-234, INSTALLATION, Reverse Brake Assembly.>
- 12) Install the primary pulley, secondary pulley and variator chain. <Ref. to CVT-217, INSTALLATION, Primary Pulley and Secondary Pulley.>
- 13) Install the reduction drive gear. <Ref. to CVT-207, INSTALLATION, Reduction Drive Gear.>
- 14) Install the transmission case. <Ref. to CVT-196, INSTALLATION, Transmission Case.>
- 15) Install the transmission control device. <Ref. to CVT-190, INSTALLATION, Transmission Control Device.>
- 16) Install the oil strainer and oil pan. <Ref. to CVT-107, INSTALLATION, Oil Pan and Strainer.>
- 17) Install the reduction driven gear assembly. <Ref. to CVT-179, INSTALLATION, Reduction Driven Gear.>
- 18) Install the transfer driven gear assembly. <Ref. to CVT-175, INSTALLATION, Transfer Driven Gear.>
- 19) Install the transfer clutch assembly. <Ref. to CVT-162, INSTALLATION, Transfer Clutch.>
- 20) Install the parking pawl. <Ref. to CVT-178, INSTALLATION, Parking Pawl.>
- 21) Install the extension case. <Ref. to CVT-157, INSTALLATION, Extension Case.>

Forward Clutch Assembly

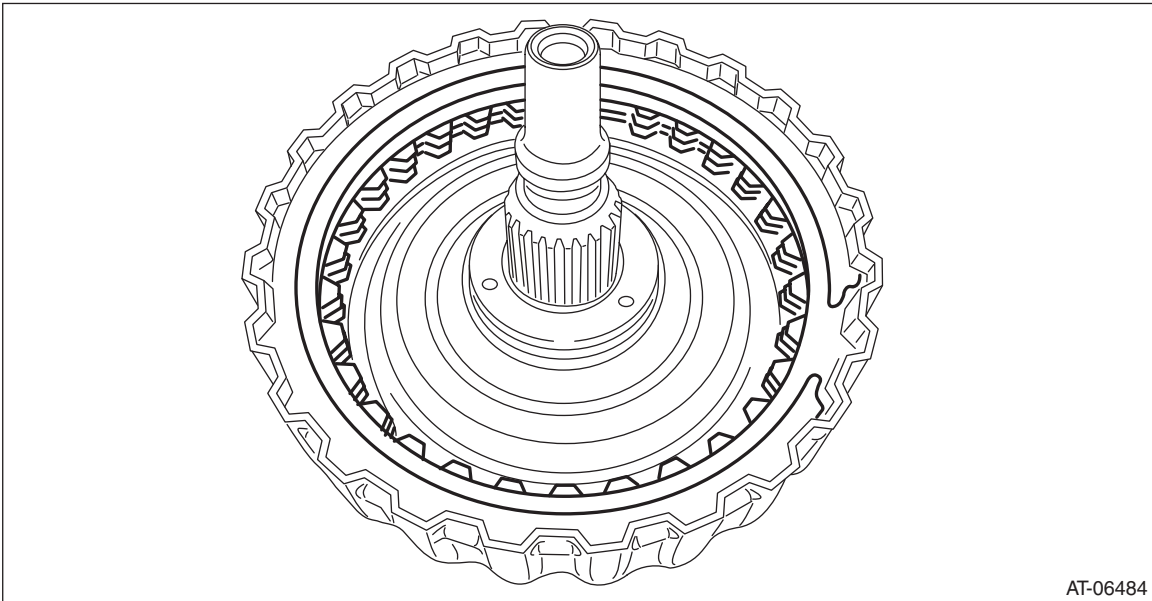
CONTINUOUSLY VARIABLE TRANSMISSION

- 22) Install the inhibitor switch. <Ref. to CVT-95, INSTALLATION, Inhibitor Switch.>
- 23) Install the secondary speed sensor. <Ref. to CVT-99, INSTALLATION, Secondary Speed Sensor.>
- 24) Install the primary speed sensor. <Ref. to CVT-102, INSTALLATION, Primary Speed Sensor.>
- 25) Install the turbine speed sensor. <Ref. to CVT-97, INSTALLATION, Turbine Speed Sensor.>
- 26) Install the transmission harness. <Ref. to CVT-130, INSTALLATION, Transmission Harness.>
- 27) Install the control valve body. <Ref. to CVT-116, INSTALLATION, Control Valve Body.>
- 28) Install the air breather hose. <Ref. to CVT-149, INSTALLATION, Air Breather Hose.>
- 29) Install the transmission assembly to the vehicle. <Ref. to CVT-67, INSTALLATION, Automatic Transmission Assembly.>

C: DISASSEMBLY

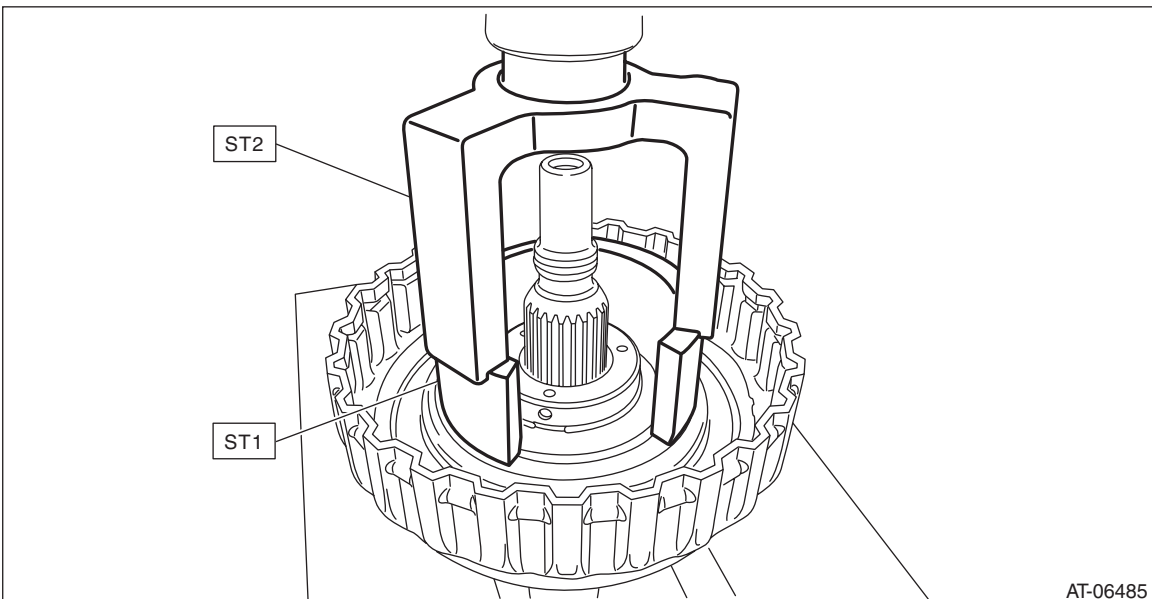
1. FORWARD CLUTCH ASSEMBLY

- 1) Remove the snap ring.
- 2) Remove the retaining plate, drive plate, driven plate and dish plate.



- 3) Compress the return spring using the ST to remove the snap ring.

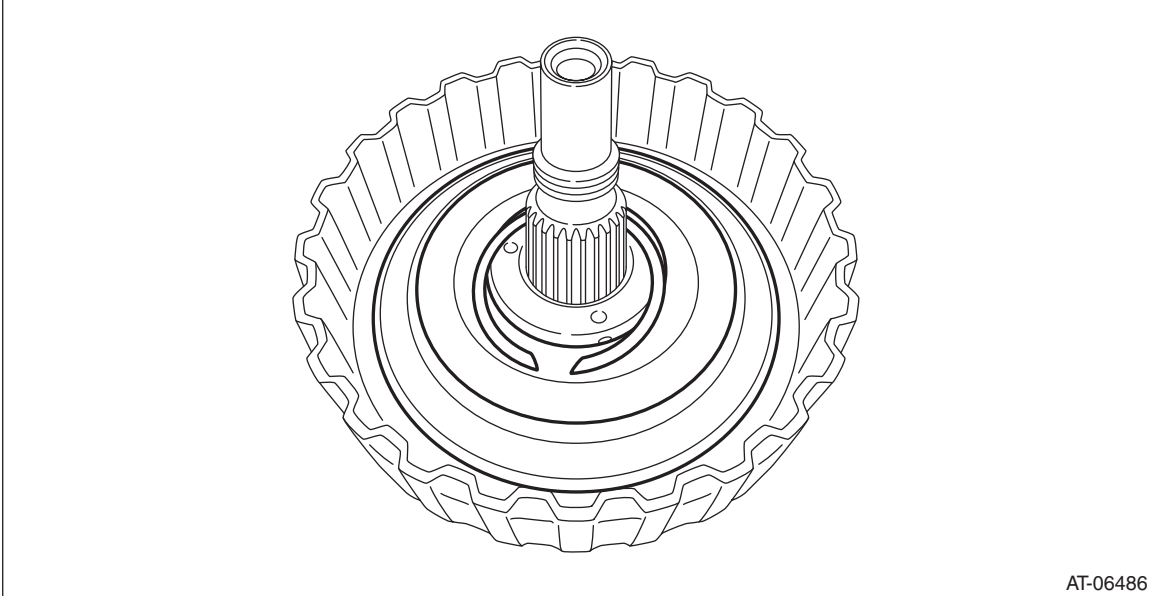
ST1 18762AA010 COMPRESSOR SPECIAL TOOL
ST2 398673600 COMPRESSOR



Forward Clutch Assembly

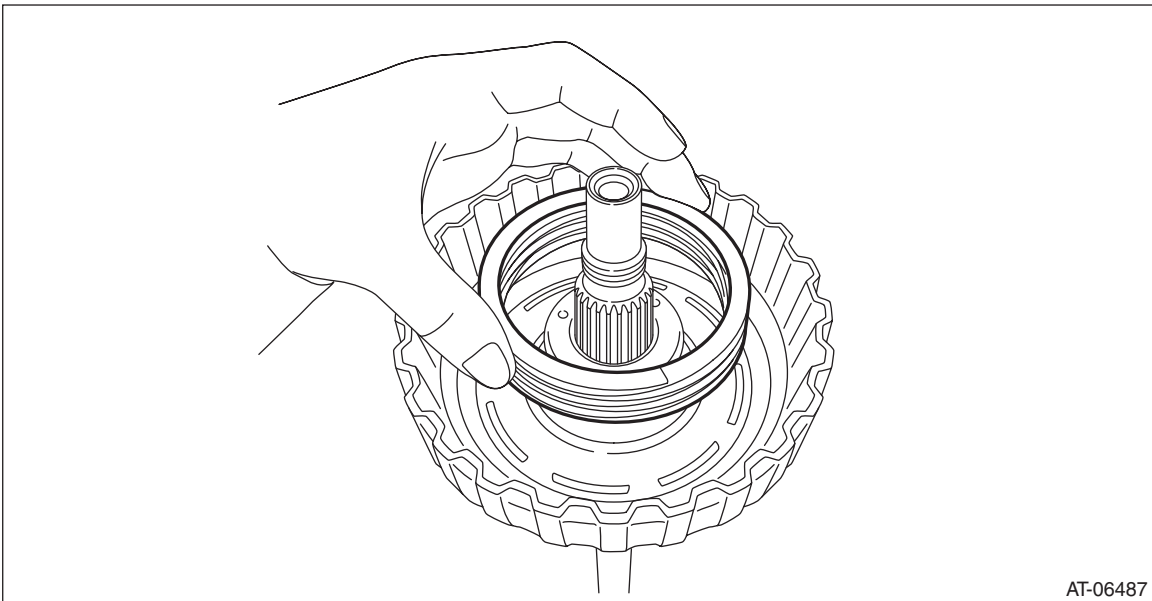
CONTINUOUSLY VARIABLE TRANSMISSION

4) Remove the chamber COMPL and snap ring.



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5) Remove the return spring.

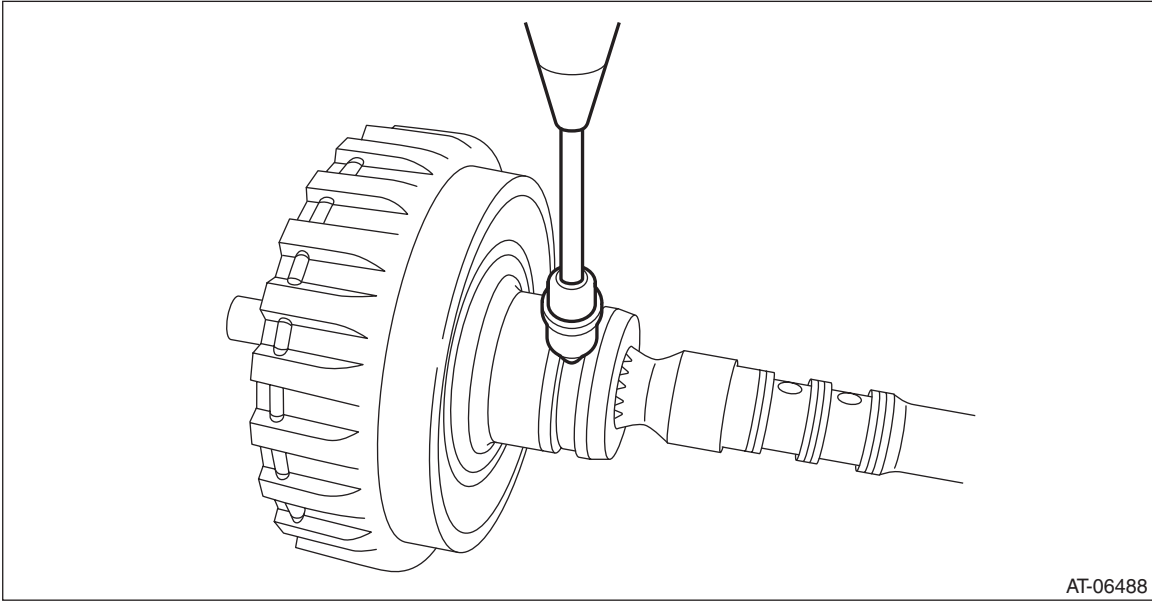


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Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

6) Remove the forward clutch piston by blowing compressed air intermittently from the forward clutch carrier hole.

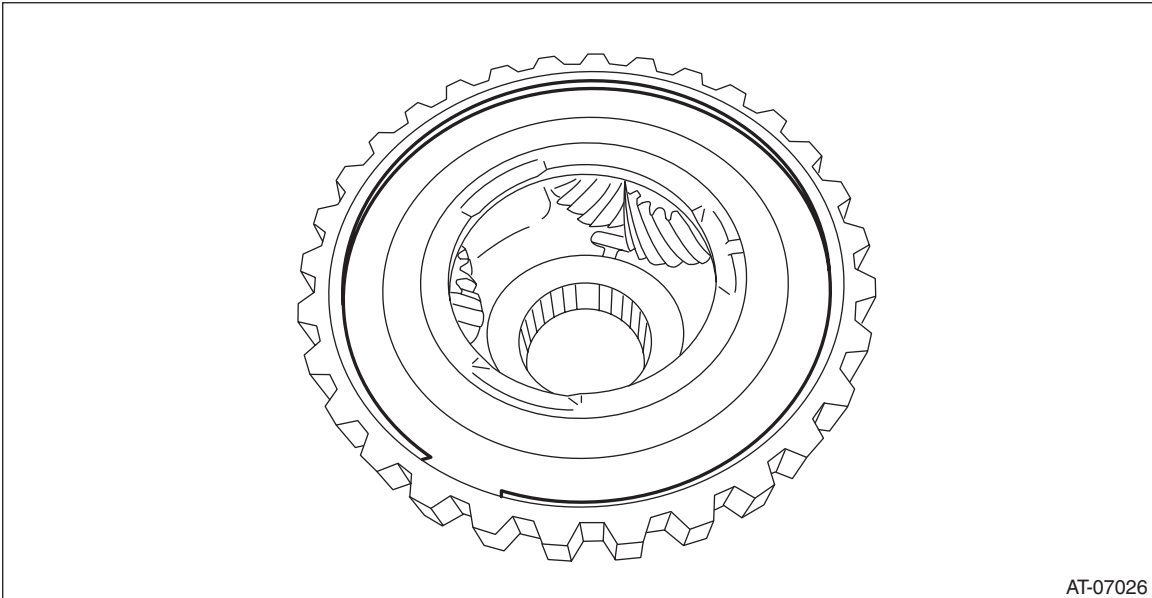


2. PLANETARY CARRIER ASSY

NOTE:

Disassemble the balance oil guide only.

1) Remove the snap ring.



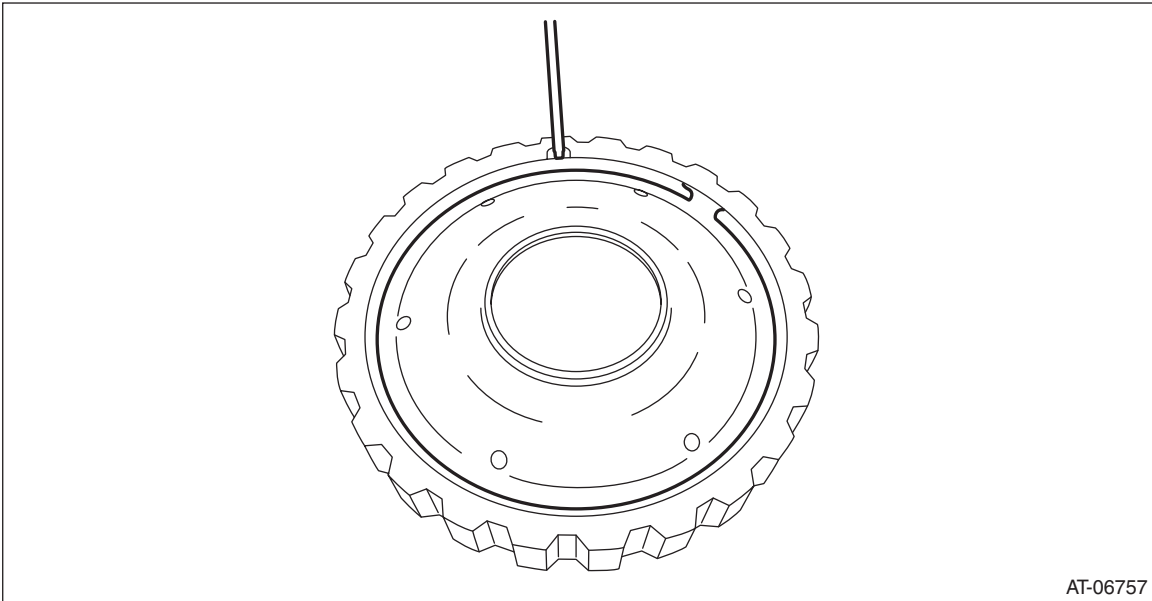
2) Remove the balance oil guide.

Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

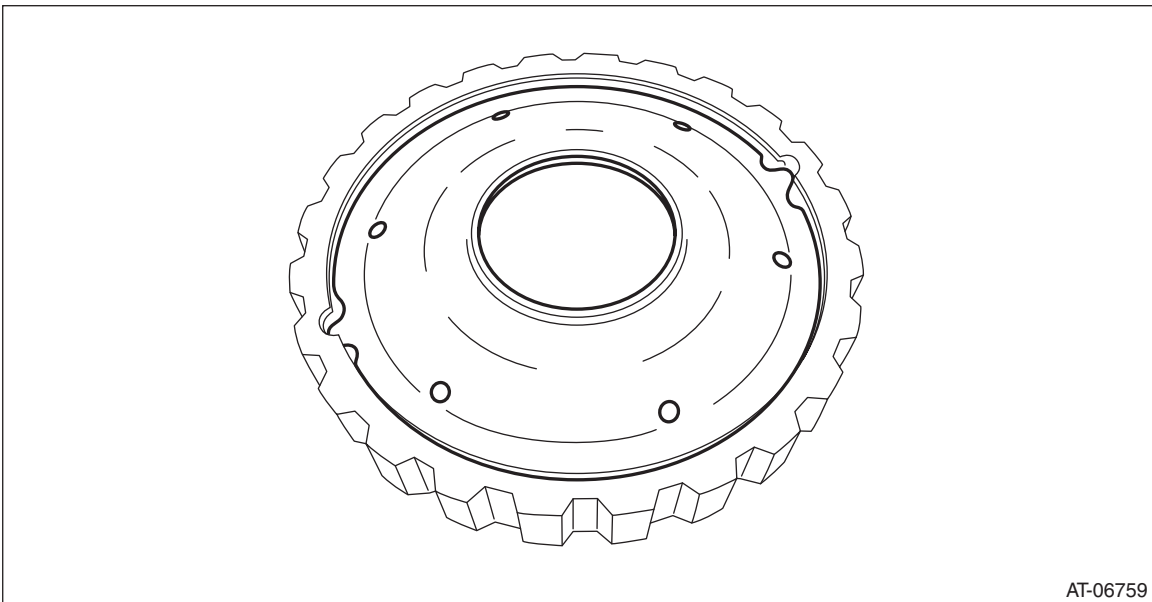
3. INTERNAL GEAR

1) Remove the snap ring.



AT-06757

2) Remove the thrust gear plate.



AT-06759

Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

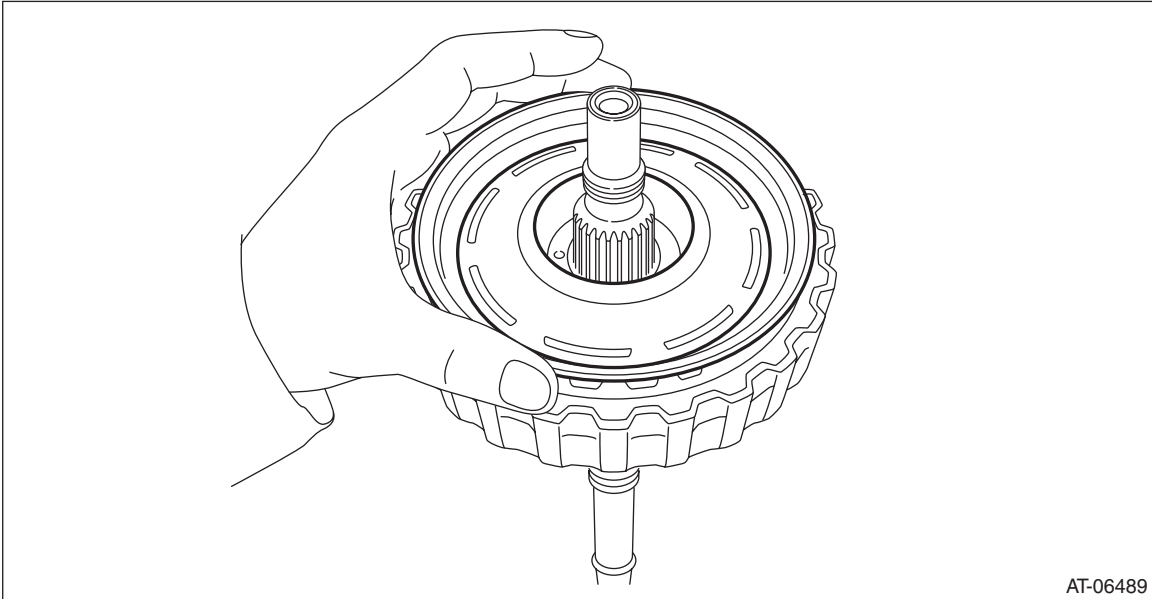
D: ASSEMBLY

1. FORWARD CLUTCH ASSEMBLY

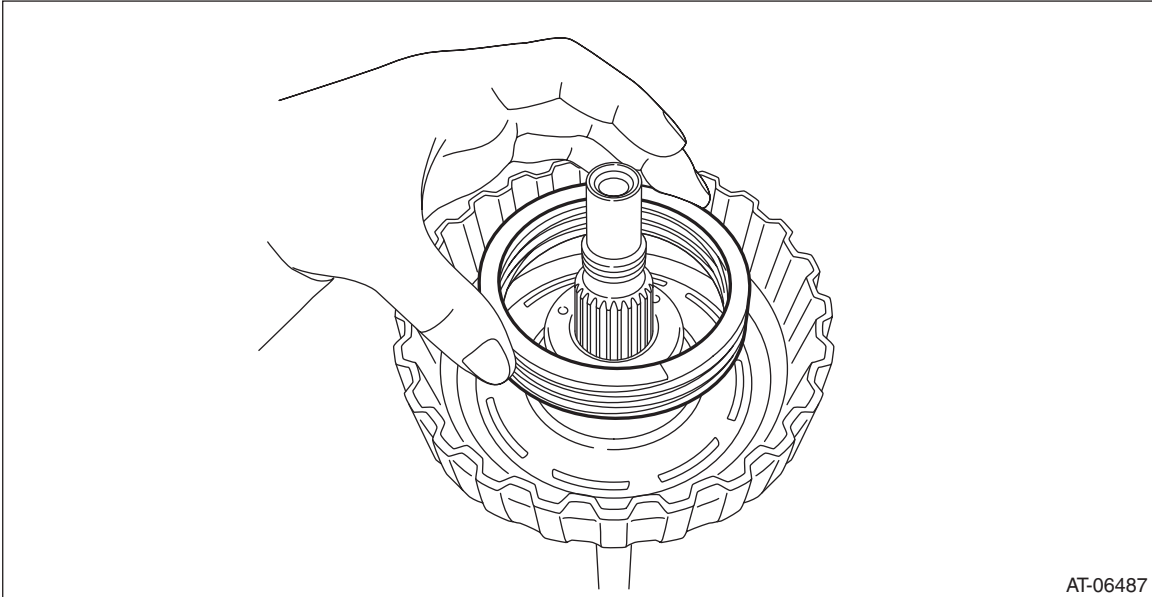
1) Install the forward clutch piston to forward clutch drum.

NOTE:

- Apply CVTF to the seal of forward clutch piston.
- Insert it all the way to the end.



2) Install the return spring.



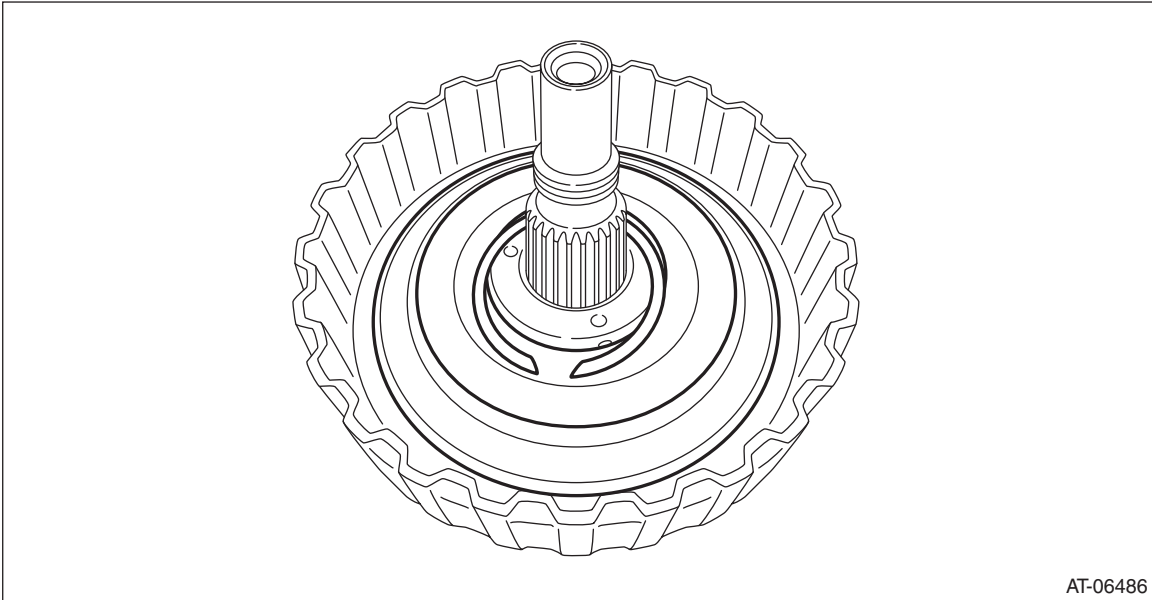
Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

3) Install the chamber COMPL.

NOTE:

Apply CVTF to the sealing area of chamber COMPL.

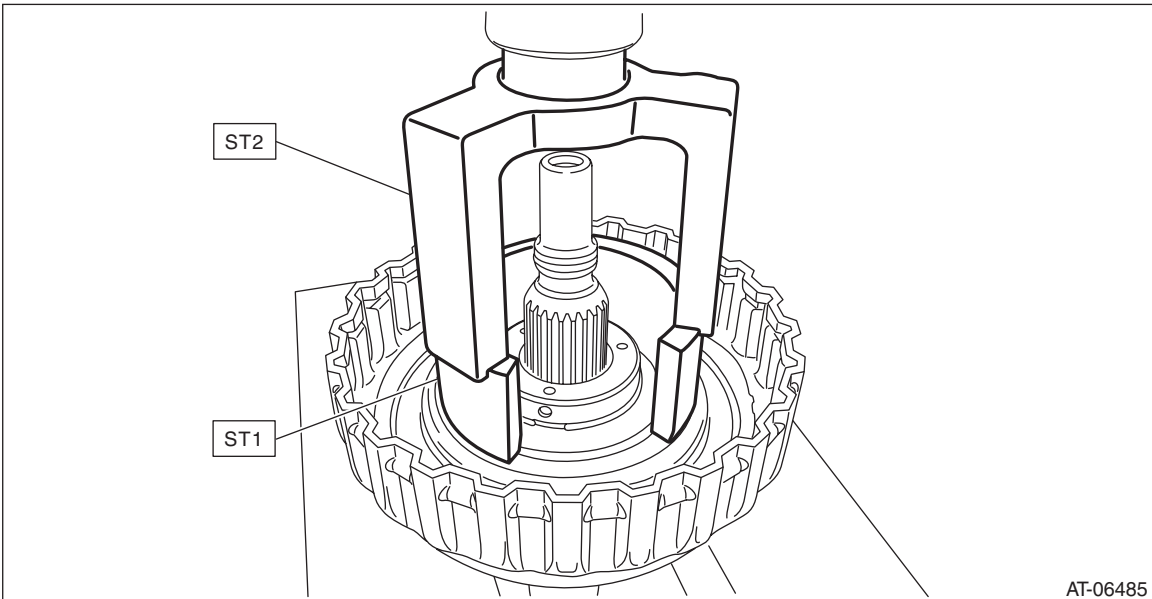


AT-06486

4) Compress the return spring using the ST to install the snap ring.

ST1 18762AA010 COMPRESSOR SPECIAL TOOL

ST2 398673600 COMPRESSOR

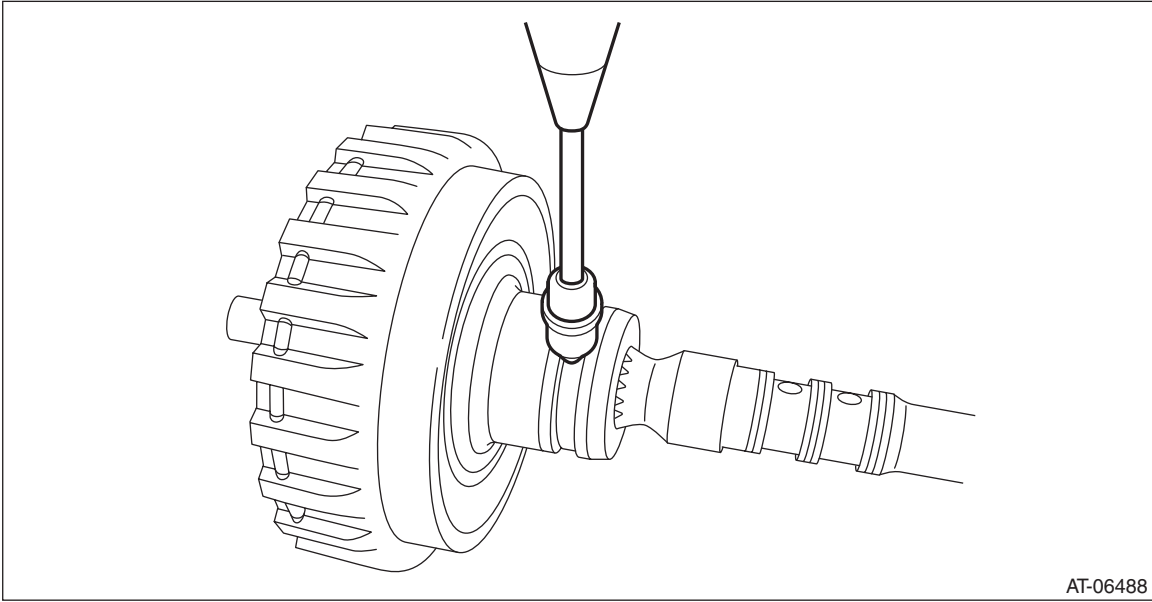


AT-06485

Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

5) Check the operation of forward clutch piston by blowing compressed air intermittently from forward clutch carrier hole.



AT-06488

6) Place the driven plate, drive plate and retaining plate neatly in this order on surface table.

7) Set the dial gauge to retaining plate, and read its scale.

NOTE:

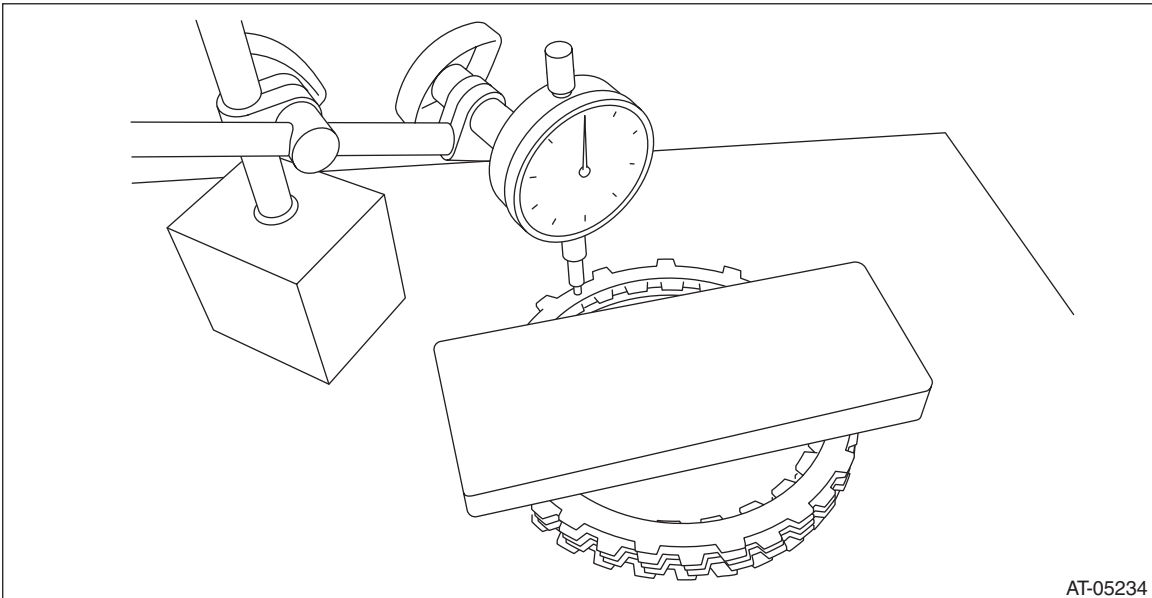
The value, which is read in the gauge at this time, is zero point.

8) Scale and record the weight "Z" of a flat board which will be put on retaining plate.

NOTE:

- The value, which is read in the gauge at this time, is zero point.
- Use a flat board weighing less than 52 N (5.3 kgf, 11.7 lb).

9) Put the flat board on retaining plate.



AT-05234

Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

10) Using the following formula, read the push/pull gauge and calculate "N".

$$N = 52 \text{ N (5.3 kgf, 11.7 lb)} - Z$$

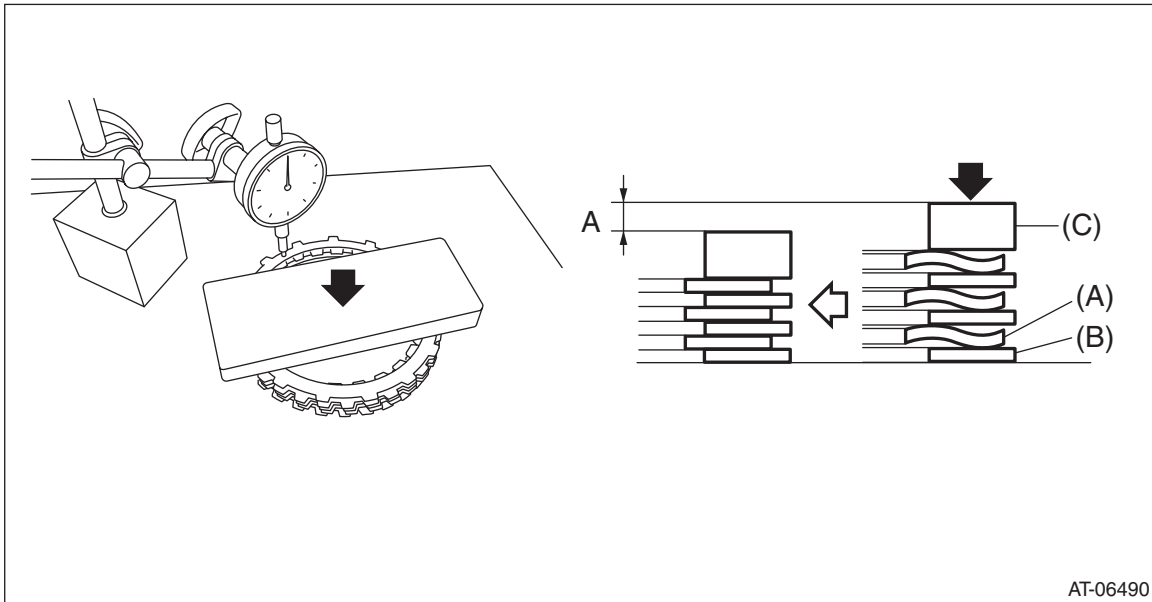
52 N (5.3 kgf, 11.7 lb) : Load applied to clutch plate

Z: Flat board weight

11) Press the center of retaining plate by applying a force of "N" using push/pull gauge, and then measure and record the compression amount "A".

NOTE:

Measure at four points with a 90° interval and calculate the average.

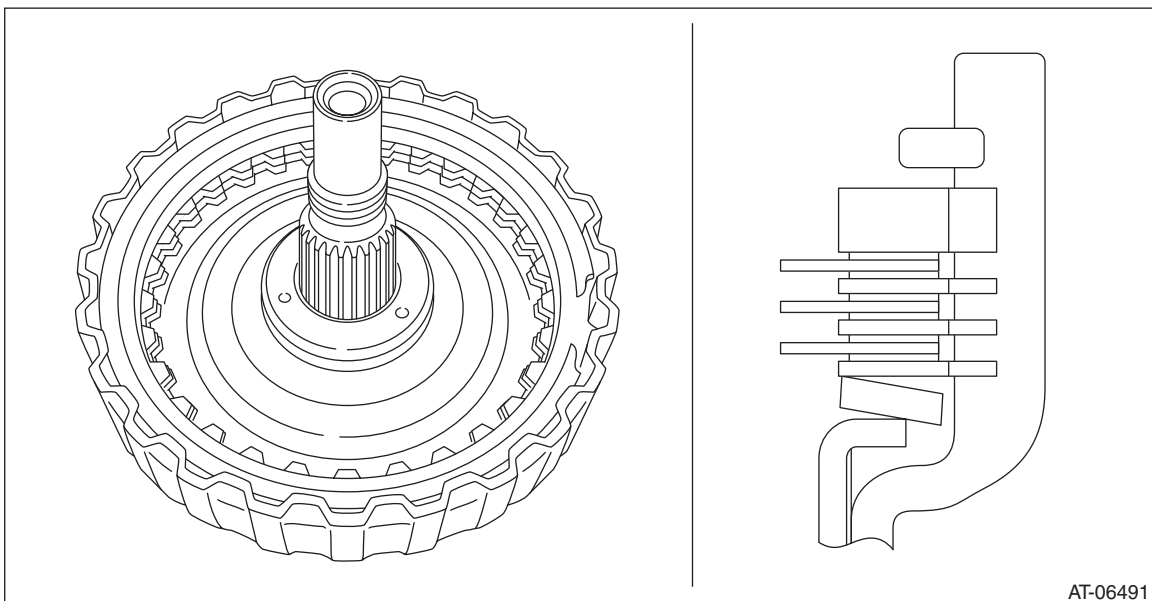


- (A) Driven plate
- (B) Drive plate
- (C) Retaining plate

12) Install the dish plate, drive plate, driven plate, retaining plate and snap ring to the forward clutch carrier.

NOTE:

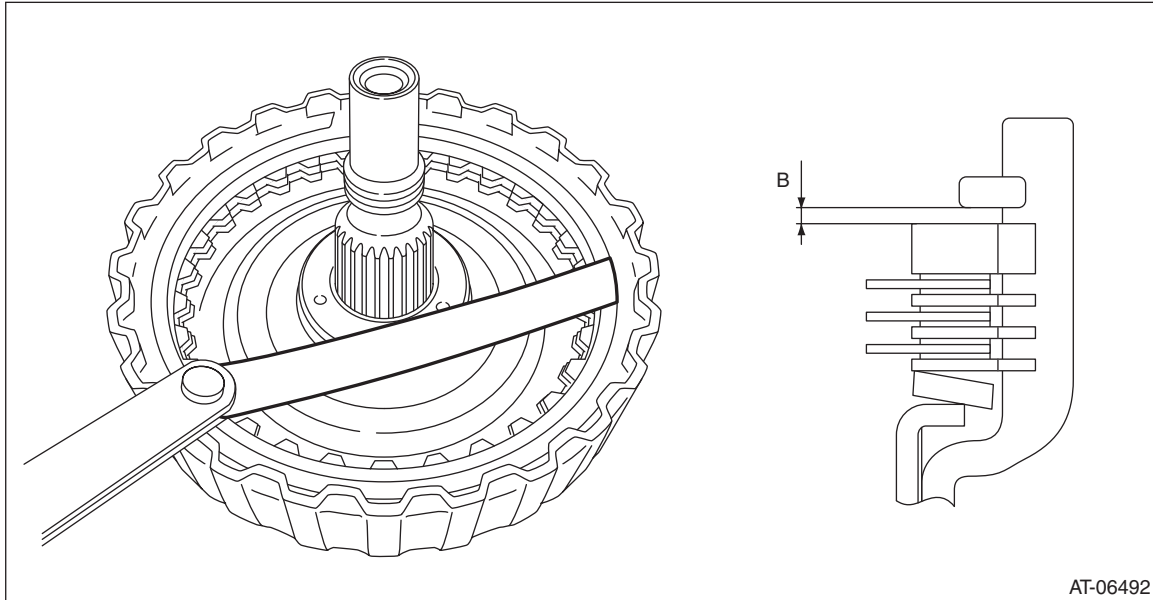
Install the dish plate in the correct direction.



Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

13) Measure and record the clearance “B” between the retaining plate and snap ring.



14) Piston stroke calculation

Calculate with A and B dimensions recorded before.

If it exceeds the limit, replace with a new drive plate and adjust within the initial standard value.

$$S \text{ mm (in)} = A + B$$

S: Piston stroke

A: Compression amount of drive plate and dish plate

B: Clearance between retaining plate and snap ring

Initial standard:

1.0 — 1.4 mm (0.040 — 0.055 in)

Limit thickness:

1.6 mm (0.063 in)

Retaining plate	
Item number	Thickness mm (in)
31567AB760	4.2 (0.165)
31567AB770	4.4 (0.173)
31567AB780	4.6 (0.181)
31567AB790	4.8 (0.189)
31567AB830	5.0 (0.197)

2. PLANETARY CARRIER ASSY

NOTE:

Assemble in the reverse order of disassembly.

3. INTERNAL GEAR

NOTE:

Assemble in the reverse order of disassembly.

Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

E: INSPECTION

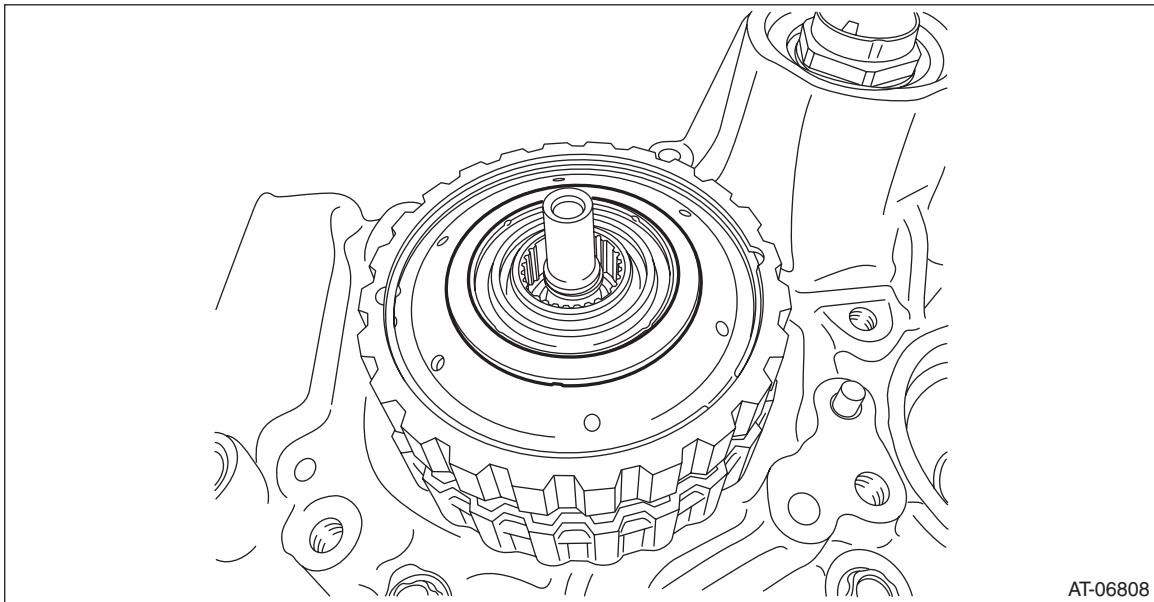
- Check the forward clutch drum, internal gear, sun gear and forward clutch piston lip for wear or damage.
- Inspect the drive plate facing for wear and damage.
- Check the driven plate for discoloration (burnt color).
- Check for worn snap ring, fatigue or damaged return spring or deformed spring retainer.
- Make sure the clearance between retaining plate and internal gear of forward clutch is within the limit. If it exceeds the standard, replace the forward clutch. <Ref. to CVT-258, ASSEMBLY, Forward Clutch Assembly.>

F: ADJUSTMENT

- 1) Install the thrust bearing to the internal gear.

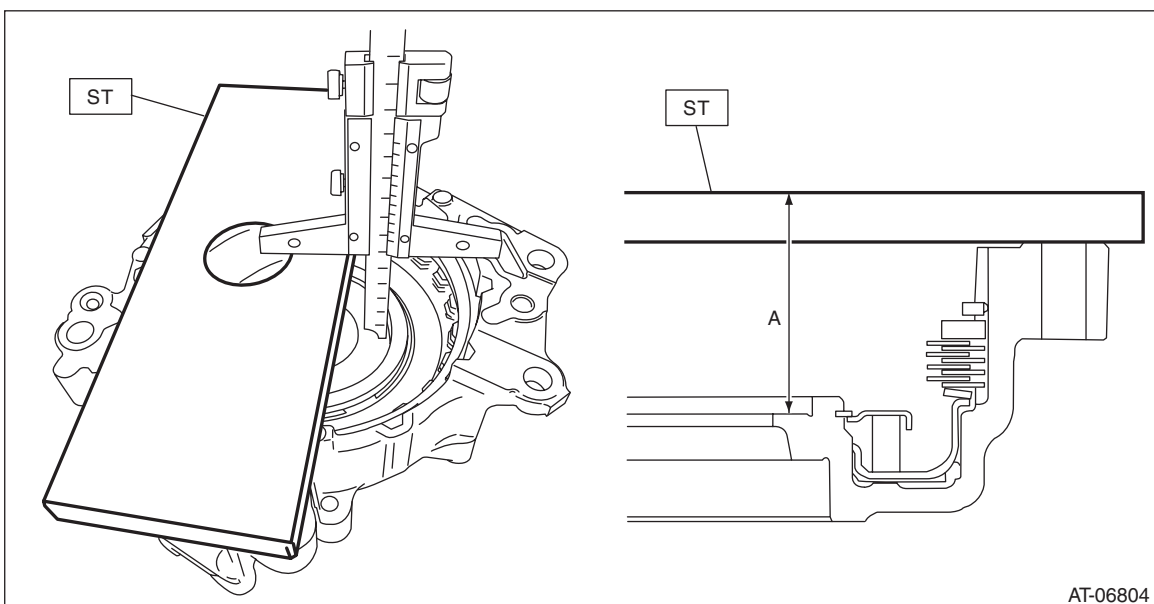
NOTE:

Face the temper color surface to the reverse brake side.



- 2) Measure depth "A" from the ST upper face to the washer mounting surface.

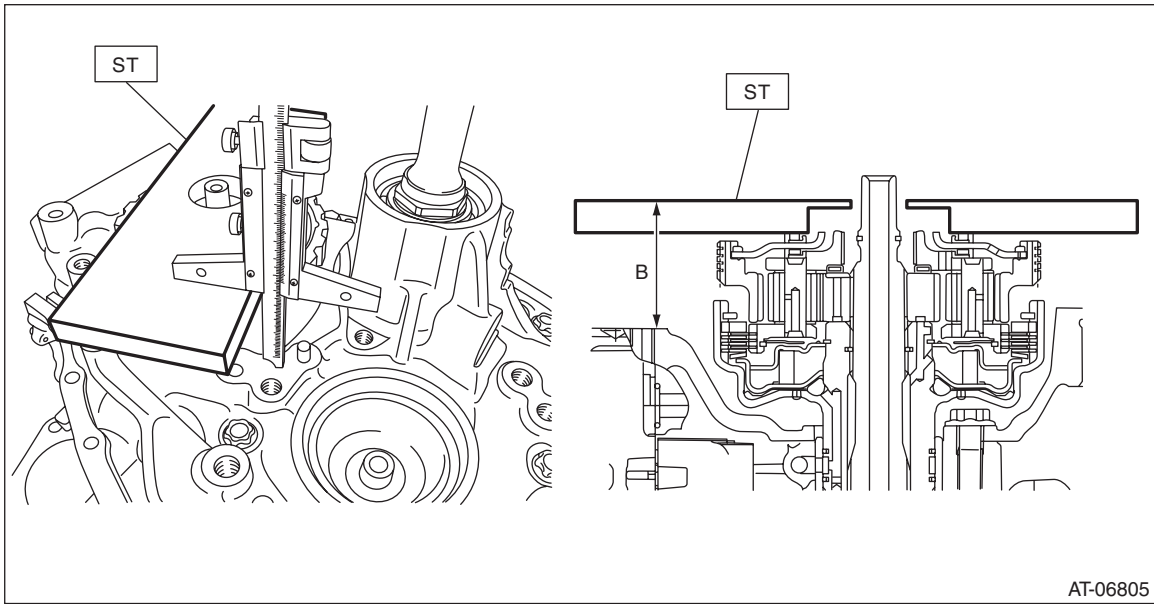
ST 499575600 GAUGE



Forward Clutch Assembly

CONTINUOUSLY VARIABLE TRANSMISSION

3) Measure the height "B" from the ST upper face to the mating surface of the drive pinion retainer.
ST 499575600 GAUGE



AT-06805

4) Obtain the thickness of washer using the following formula to select the washer.

$$T \text{ (mm)} = A - B - (0.35 - 0.70)$$

$$[T \text{ (in)} = A - B - (0.014 - 0.028)]$$

T: Shim thickness

A: Depth from the ST upper face to the washer mounting surface

B: Height from ST upper face to the drive pinion retainer mating surface

0.35 — 0.70 mm (0.014 — 0.028 in): Clearance

Washer	
Part No.	Thickness mm (in)
803064020	1.3 (0.051)
803064021	1.55 (0.061)
803064022	1.8 (0.071)
803064023	2.05 (0.081)
803064024	2.3 (0.091)
803064025	2.55 (0.100)