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AUTOMATIC TRANSMISSION SERVICE GROUP



Technical Service Information

INTRODUCTION

TOYOTA A-340 E H

The Toyota A-340 E and A-340 H automatic overdrive unit was designed for use in trucks. The unit comes with either computer controls (E) or hydraulic controls (H).

This unit was introduced in 1985 vehicles. This booklet covers teardown and assembly of both the 340 E and 340 H models.

We thank Toyota Motor Company for the illustrations and information that made this booklet possible.

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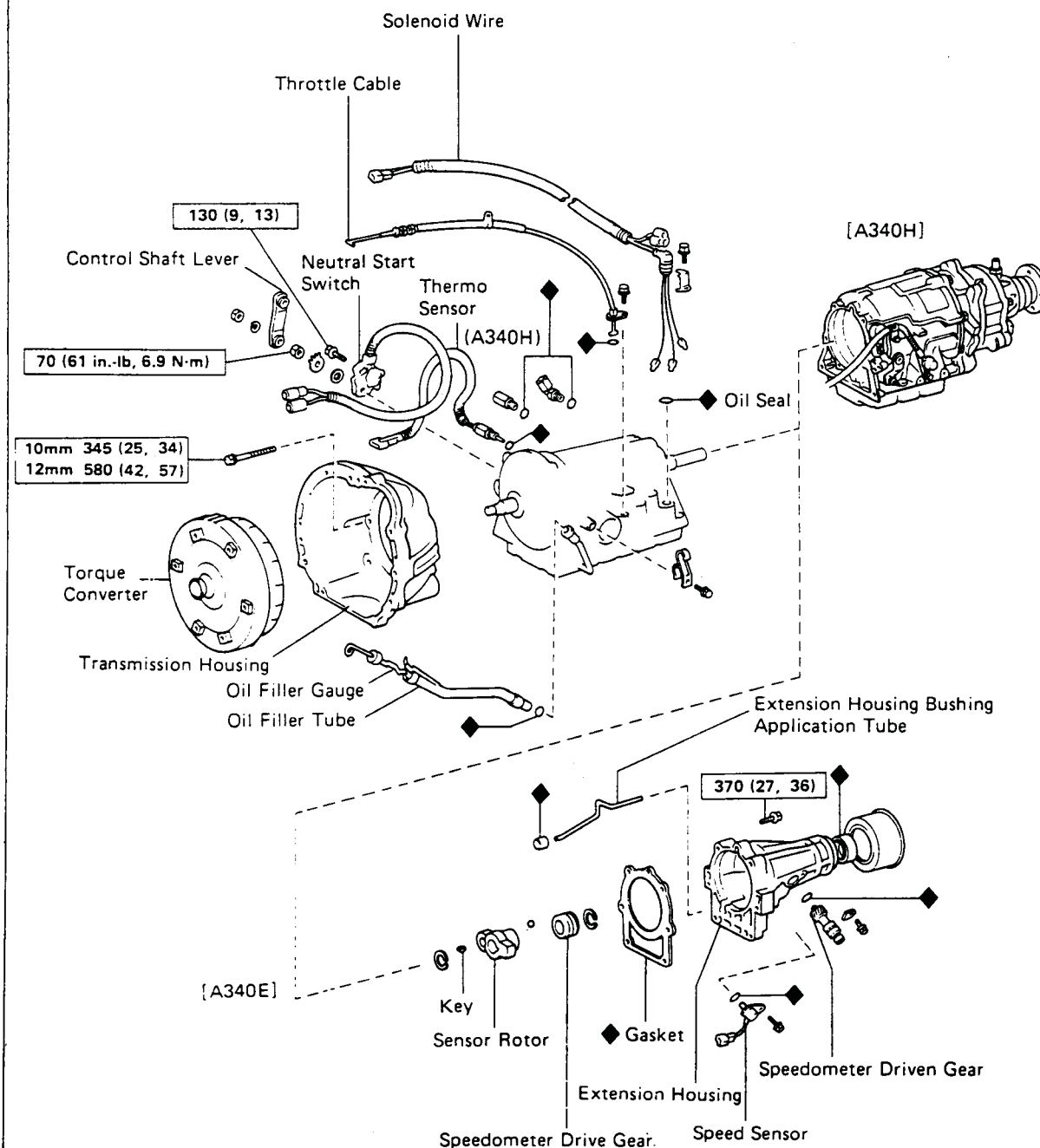
ED KRUSE
LAY OUT

AUTOMATIC TRANSMISSION SERVICE GROUP
9200 SOUTH DADELAND BLVD.
SUITE 720
MIAMI, FLORIDA 33156
(305) 661-4161



COMPONENTS

DISASSEMBLY OF TRANSMISSION

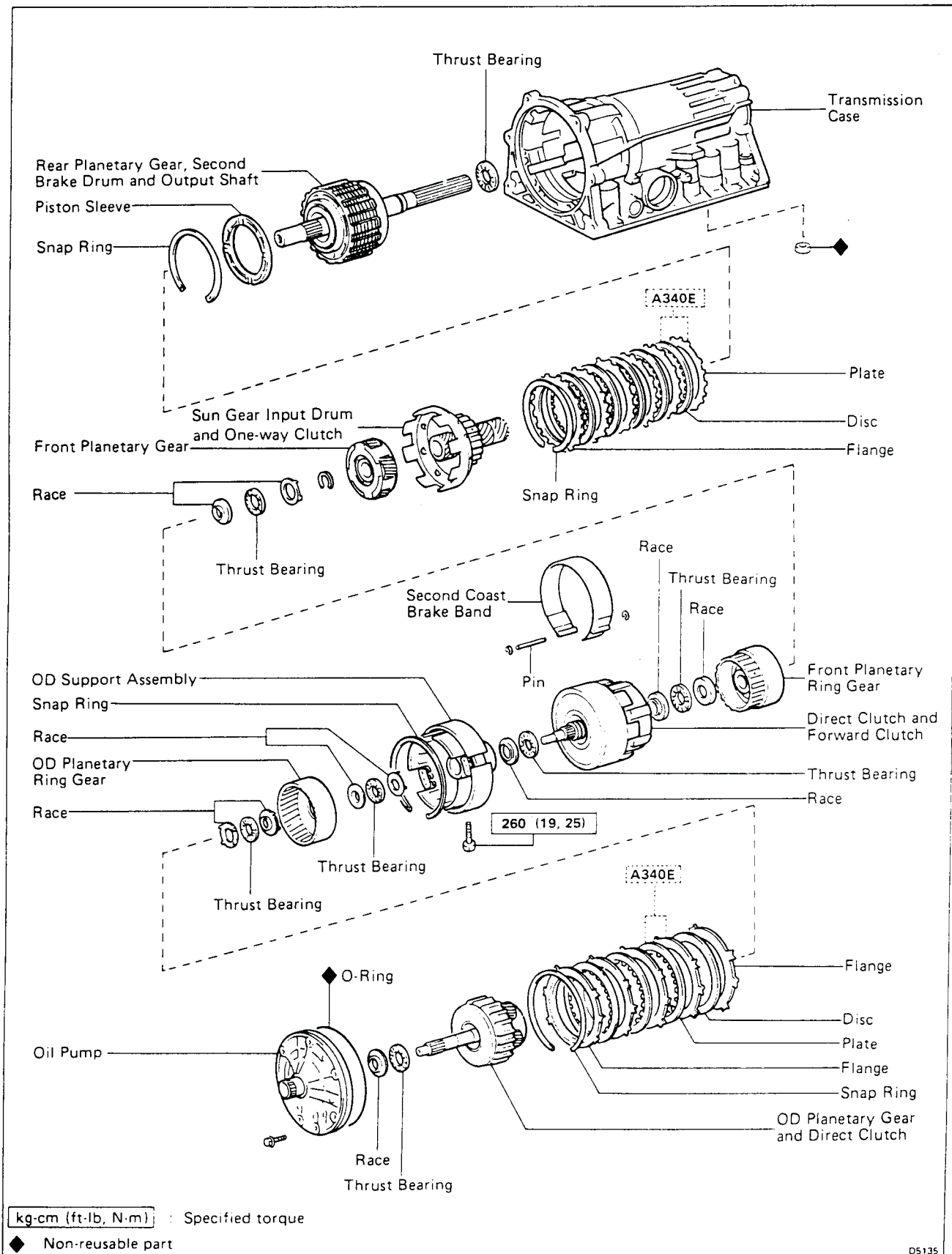


kg-cm (ft-lb, N·m) : Specified torque

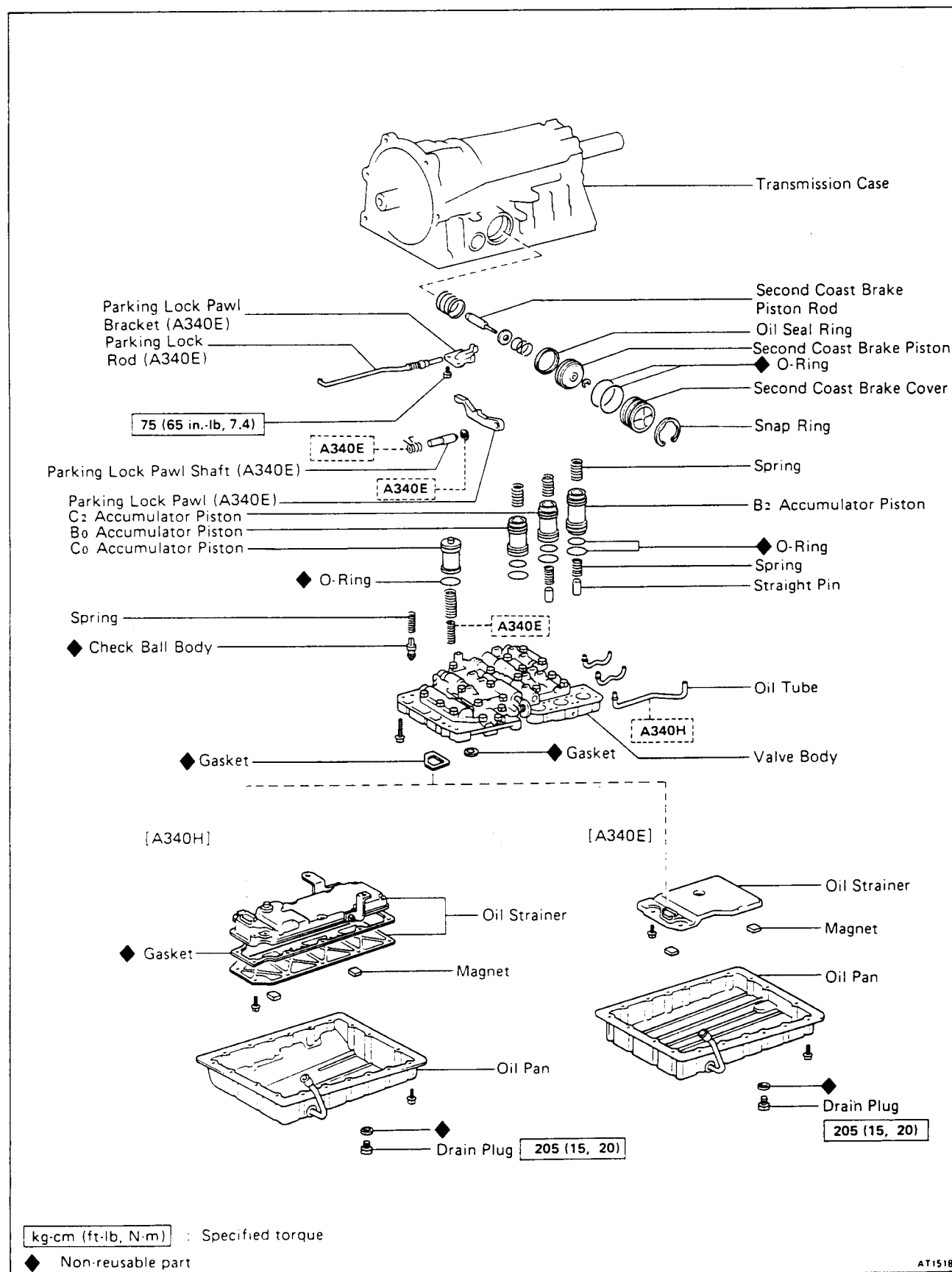
◆ Non-reusable part

AT1517

COMPONENTS (Cont'd)



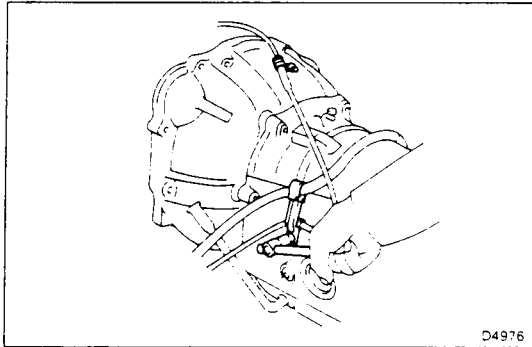
COMPONENTS (Cont'd)



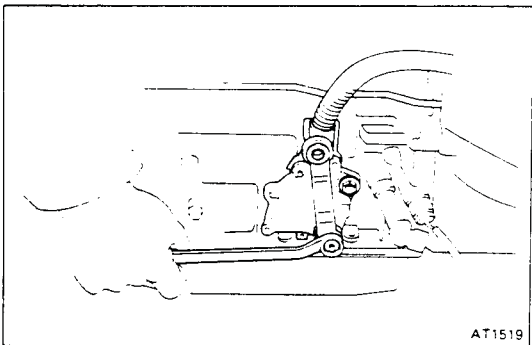


Technical Service Information

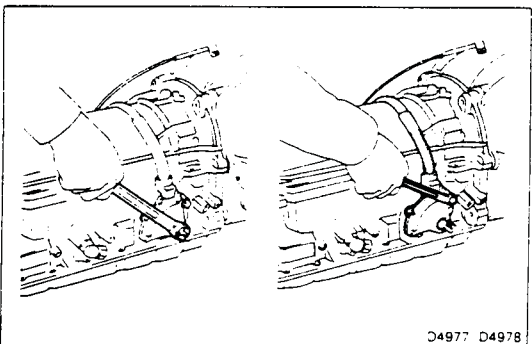
SEPARATE BASIC SUBASSEMBLY



REMOVE WIRE HARNESS CLAMP AND THROTTLE
CABLE CLAMP

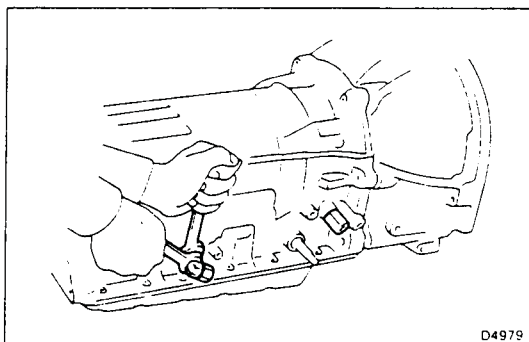


REMOVE CONTROL SHAFT LEVER



REMOVE NEUTRAL START SWITCH

- (a) Unstake the lock washer.
- (b) Remove the nut and bolts, and then remove the neutral start switch.
- (c) Remove the lock washer and grommet.

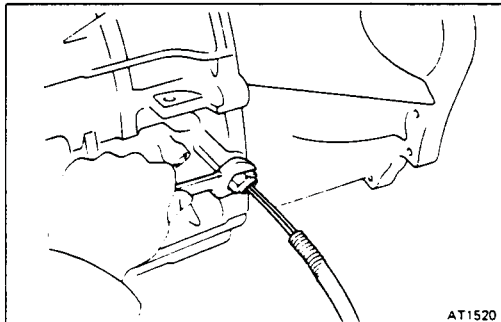


REMOVE TWO UNIONS

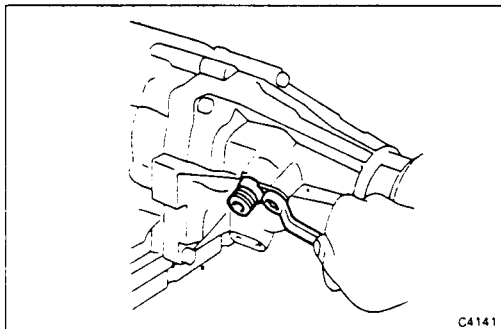
AUTOMATIC TRANSMISSION SERVICE GROUP



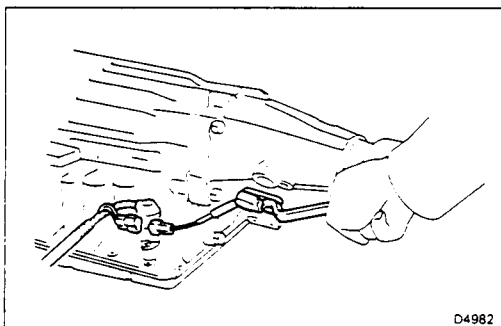
Technical Service Information



REMOVE THERMO SENSOR (A340H)

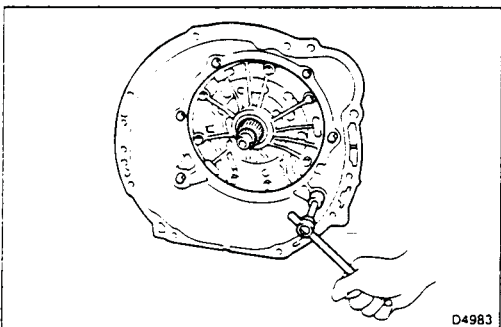


REMOVE SPEEDOMETER DRIVEN GEAR (A340E)



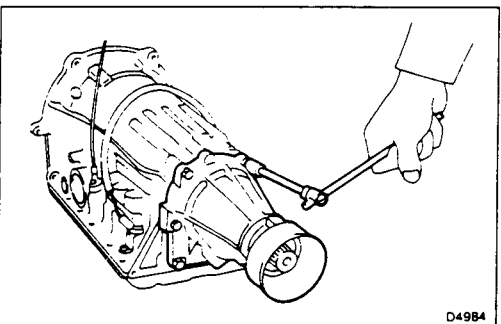
REMOVE SPEED SENSOR (A340E)

- (a) Disconnect the connector.
- (b) Remove the speed sensor.



REMOVE TRANSMISSION HOUSING

- (a) Remove the six bolts.
- (b) Remove the transmission housing.

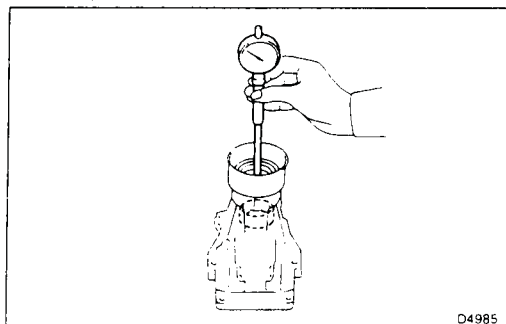


REMOVE EXTENSION HOUSING (A340E)

- (a) Remove the six bolts.
- (b) Remove the extension housing and gasket.



Technical Service Information

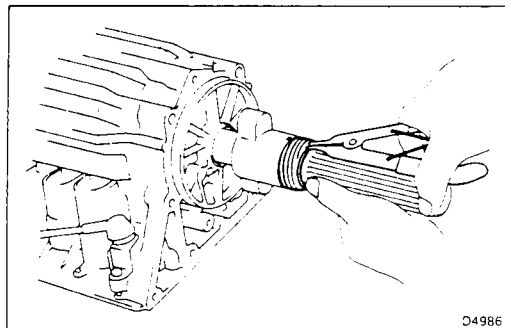


INSPECT EXTENSION HOUSING BUSHING (A340E)

Using a cylinder gauge, measure the inside diameter of the extension housing bushing.

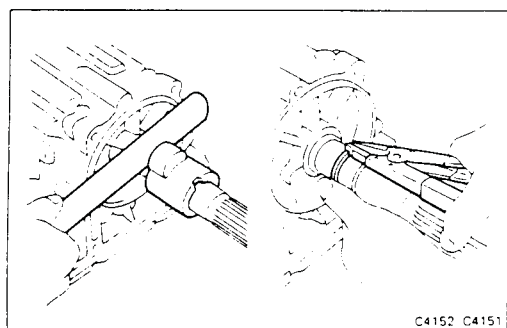
Maximum inside diameter: 40.09 mm (1.5783 in.)

If the inside diameter is greater than the maximum, replace the extension housing.



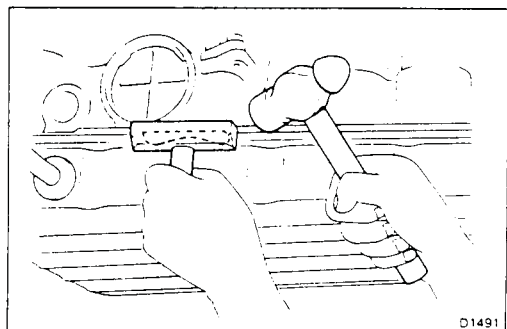
REMOVE SPEEDOMETER DRIVE GEAR (A340E)

- (a) Using snap ring pliers, remove the snap ring.
- (b) Remove the speedometer drive gear and ball.



REMOVE SENSOR ROTOR (A340E)

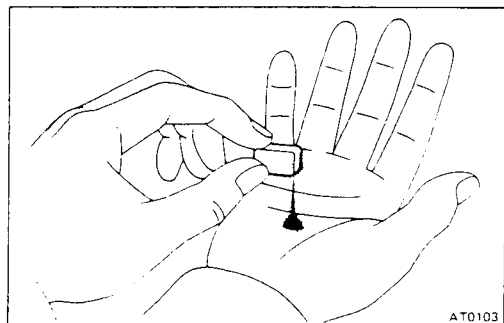
- (a) Remove the sensor rotor and key.
- (b) Using snap ring pliers, remove the snap ring.



REMOVE OIL PAN

CAUTION: Do not turn over the transmission as this will contaminate the valve body with foreign materials in the bottom of the pan.

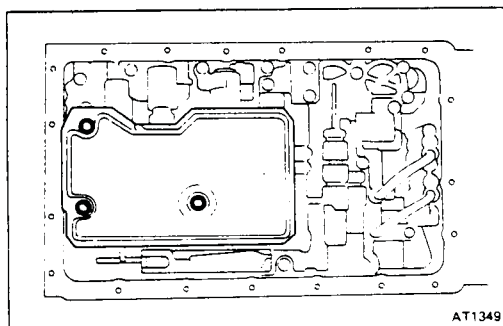
- (a) Remove the nineteen bolts.
- (b) Remove pan by lifting the transmission case.



EXAMINE PARTICLES IN PAN

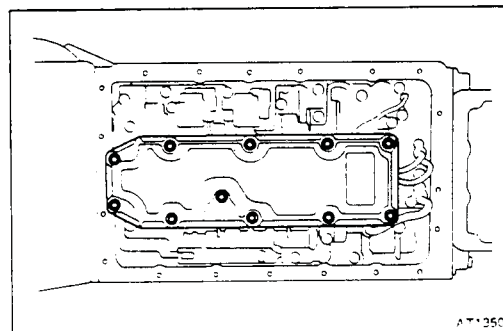
Remove the magnet and use it to collect any steel chips. Look carefully at the chips and particles in the pan and on the magnet to anticipate what type of wear you will find in the transmission:

Steel (magnetic) bearing, gear and clutch plate wear
Brass (non-magnetic) bushing wear



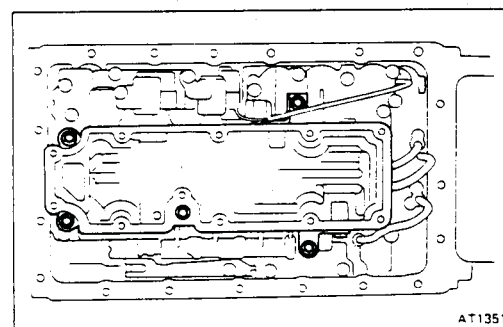
(A340E) TURN OVER TRANSMISSION AND REMOVE OIL STRAINER

- Remove three bolts holding the oil strainer to the valve body.
- Remove the oil strainer and two gaskets.

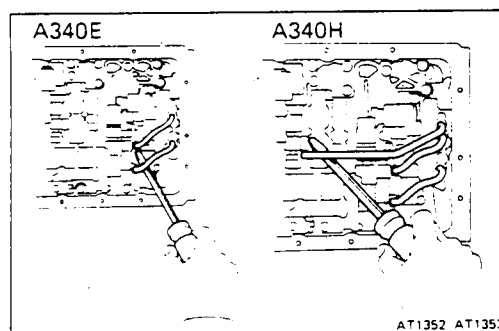


(A340H) TURN OVER TRANSMISSION AND REMOVE OIL STRAINER

- Remove eleven bolts holding the lower oil strainer to the upper oil strainer.
- Remove the lower oil strainer and gasket.



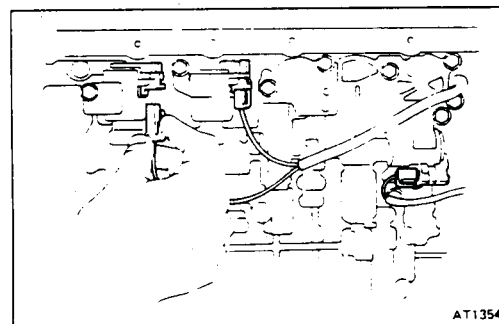
- Remove five bolts holding the upper oil strainer to the valve body.
- Remove the upper oil strainer and two gaskets.



REMOVE OIL TUBES

Pry up both tube ends with a large screwdriver and remove the tubes.

A340E : Two tubes
A340H : Three tubes

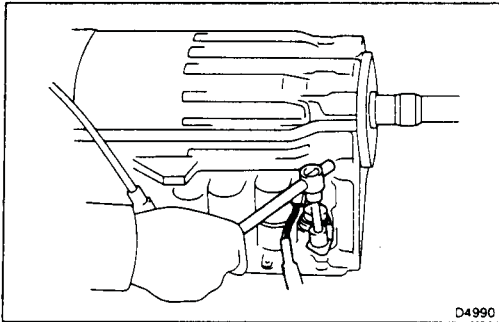


REMOVE SOLENOID WIRING

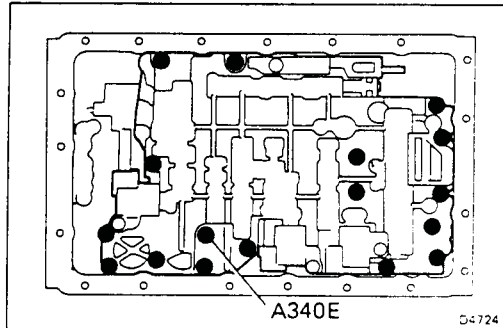
- Disconnect the connectors from the No. 1, No. 2 and No. 3 solenoids.



Technical Service Information

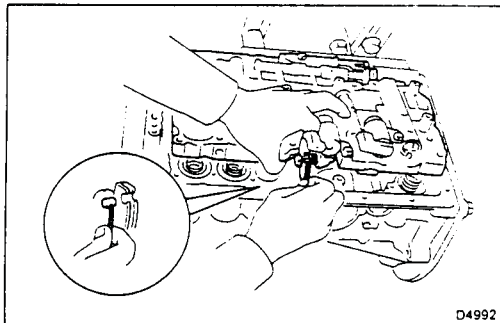


- (b) Turn over transmission, remove the stopper plate from the case.
- (c) Pull the wiring out of the transmission case.

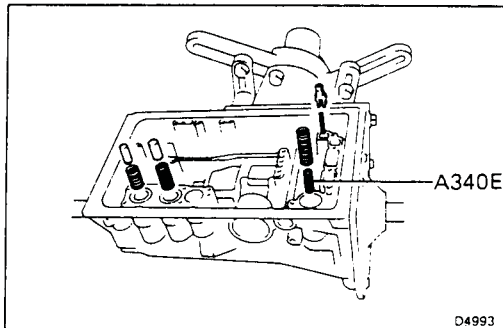


REMOVE VALVE BODY

- (a) Remove the bolts.
 - A340E : Seventeen bolts
 - A340H : Sixteen bolts

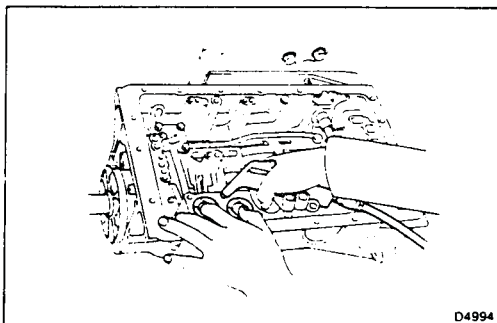


- (b) Disconnect the throttle cable from the cam.



REMOVE CHECK BALL BODY, FOUR SPRINGS AND TWO PINS

- (a) Remove the check ball body and spring.
- (b) Remove springs and two pins from accumulator piston.
 - A340E : Four springs
 - A340H : Three springs

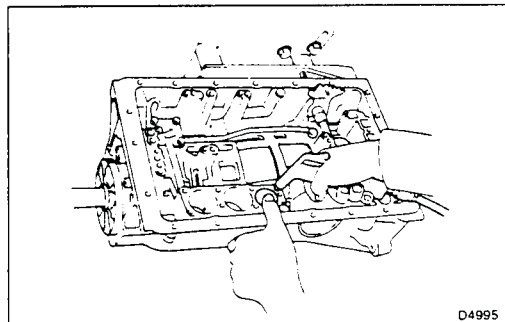


REMOVE ACCUMULATOR PISTONS AND SPRINGS

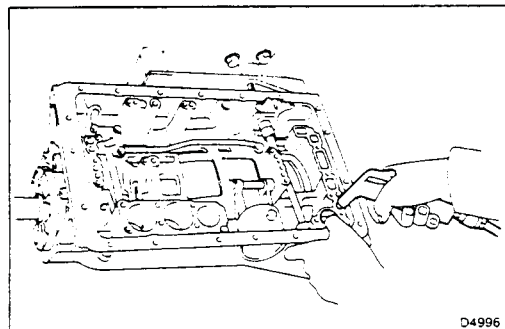
- (a) Applying compressed air to the oil hole, remove the B₂ and C₂ accumulator pistons and two springs.



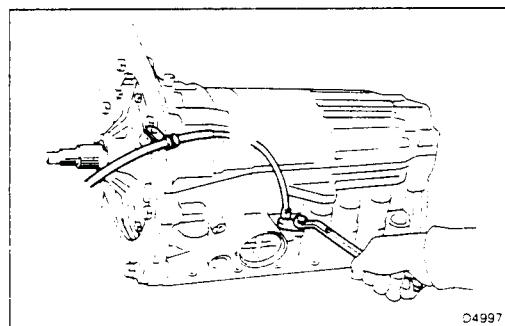
Technical Service Information



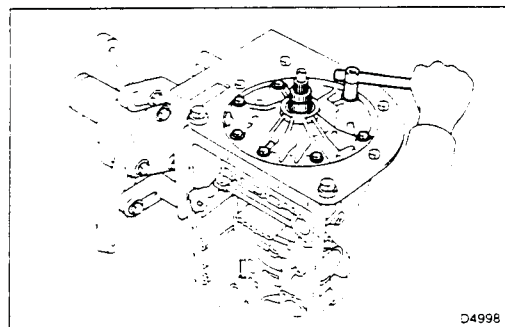
- (b) Applying compressed air to the oil hole, remove the B₀ accumulator piston and spring.



- (c) Applying compressed air to the oil hole, remove the C₀ accumulator piston.

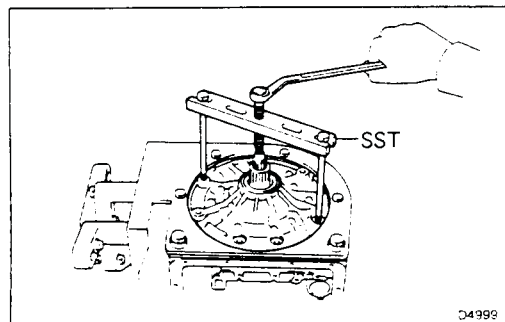


TURN OVER TRANSMISSION AND REMOVE THROTTLE CABLE



STAND UP TRANSMISSION AND REMOVE OIL PUMP

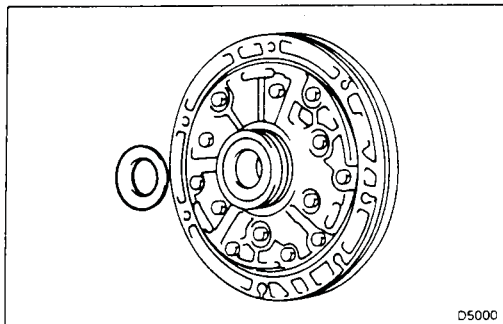
- (a) Remove seven bolts holding the oil pump to the transmission case.



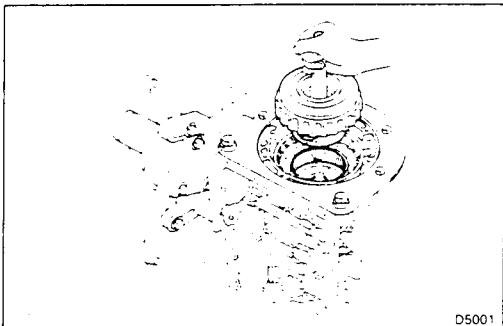
- (b) Using SST, remove the oil pump.
SST 09350-30020 (09350-07020)



Technical Service Information

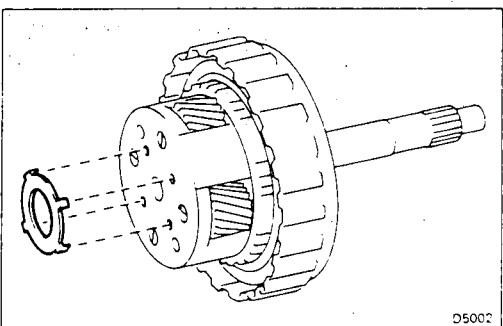


REMOVE RACE FROM OIL PUMP

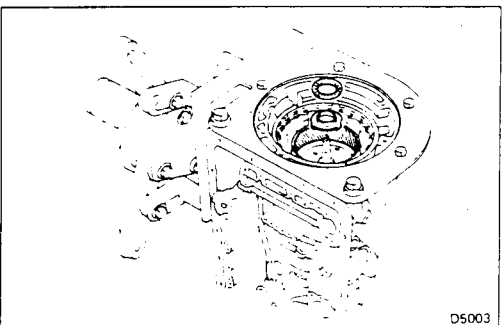


REMOVE OVERDRIVE PLANETARY GEAR AND OVERDRIVE DIRECT CLUTCH

- (a) Remove the overdrive planetary gear and overdrive direct clutch from the transmission case.

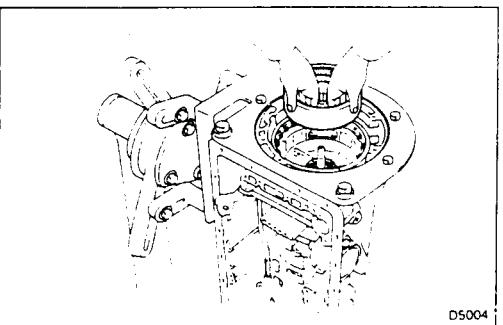


- (b) Remove the race.

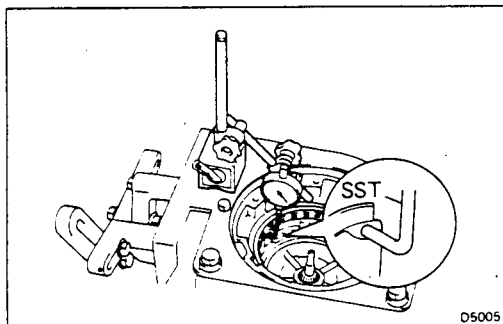


REMOVE OVERDRIVE PLANETARY RING GEAR

- (a) Remove the bearing and race.



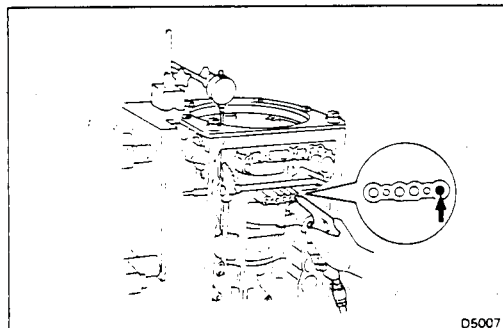
- (b) Remove the overdrive planetary ring gear from the transmission case.



CHECK PISTON STROKE OF OVERDRIVE BRAKE

- (a) Place SST and a dial indicator onto the overdrive brake piston as shown in the figure.

SST 09350-30020 (09350-06120)



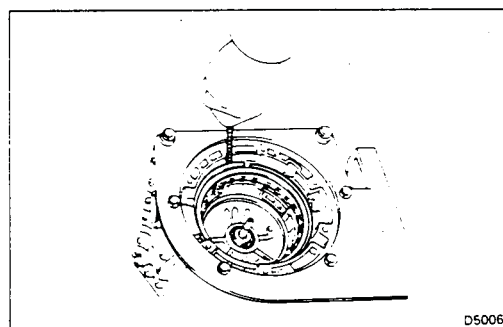
- (b) Measure the stroke applying and releasing the compressed air (4 – 8 kg/cm², 57 – 114 psi or 392 – 785 kPa) as shown in the figure.

Piston stroke:

A340E 1.40 – 1.70 mm (0.0551 – 0.0669 in.)

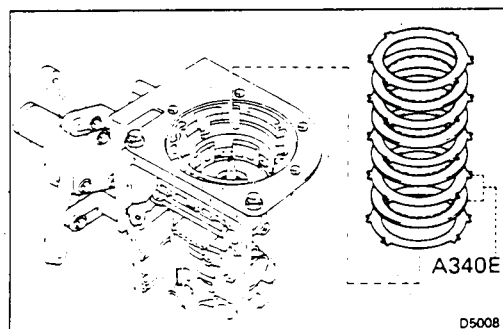
A340H 1.32 – 1.62 mm (0.0520 – 0.0638 in.)

If the values are nonstandard, replace the disc or flange.



REMOVE FLANGES, PLATES AND DISCS

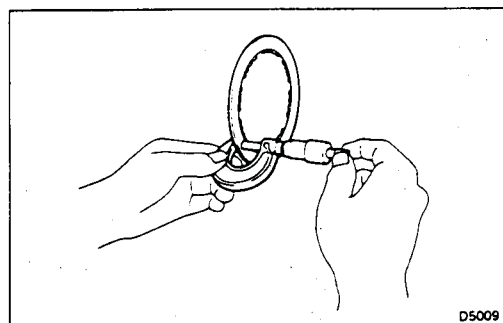
- (a) Remove the snap ring.



- (b) Remove flanges, plates and discs.

A340E : Two flanges
Three plates
Four discs

A340H : Two flanges
Two plates
Three discs



DISC INSPECTION

Using a micrometer, measure the thicknesses of the discs.

Minimum thickness: 1.84 mm (0.0724 in.)



Technical Service Information

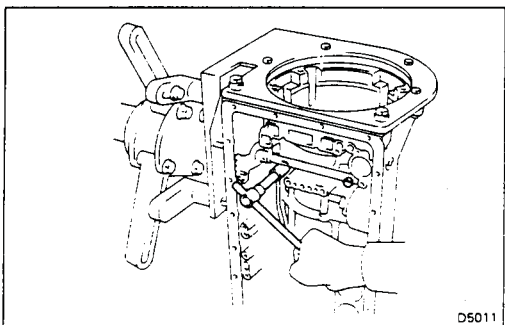
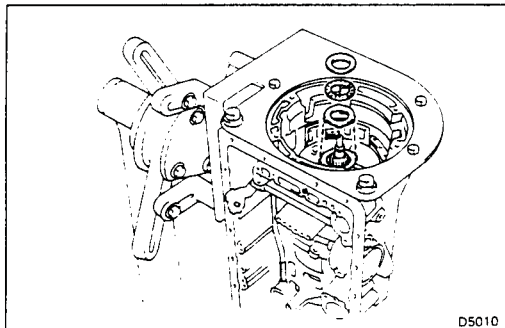
If thickness exceeds limits, replace it and recheck piston stroke. If piston stroke is nonstandard, select another flange.

NOTE: There are seven flanges.

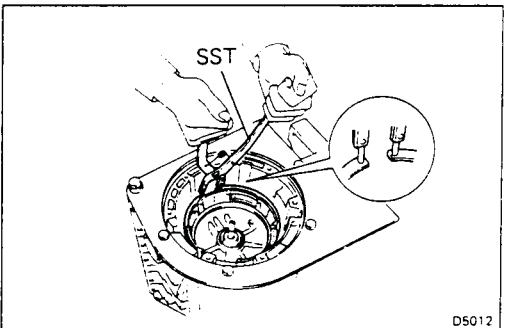
Flange thickness		mm (in.)	
No.	Thickness	No.	Thickness
26	3.3 (0.130)	11	3.8 (0.150)
25	3.5 (0.138)	23	3.9 (0.154)
12	3.6 (0.142)	None	4.0 (0.157)
24	3.7 (0.146)		—

REMOVE OVERDRIVE SUPPORT ASSEMBLY

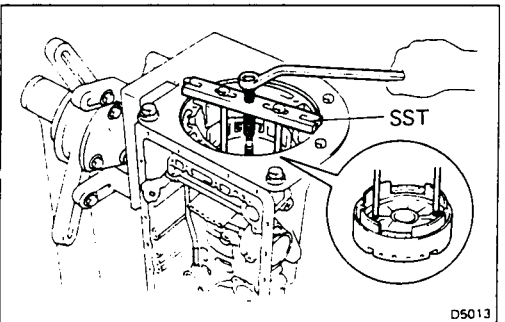
(a) Remove the thrust bearing and two races.



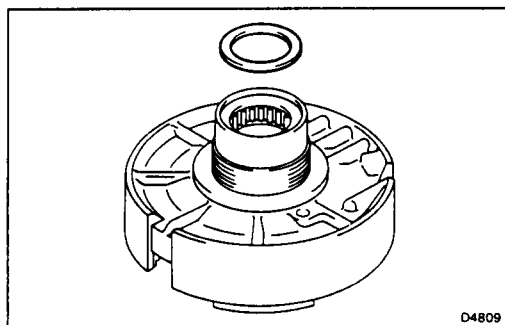
(b) Remove two bolts holding the overdrive support assembly to the case.



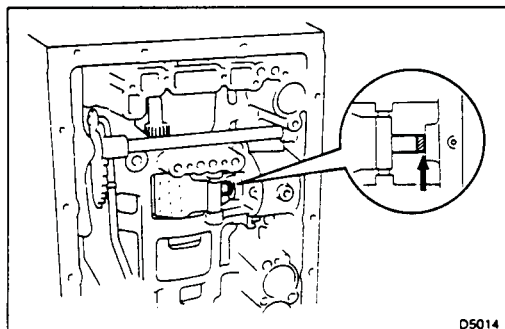
(c) Using SST, remove the snap ring.
SST 09350-30020 (09350-07060)



(d) Using SST, remove the overdrive support assembly.
SST 09350-30020 (09350-07020)

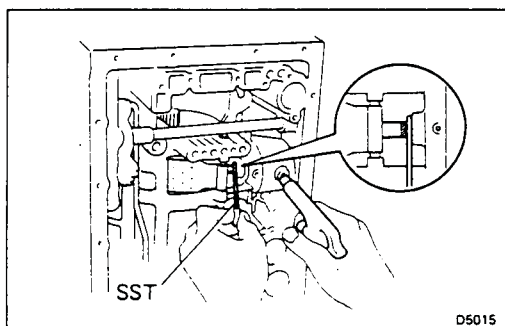


(e) Remove the race.



CHECK PISTON STROKE OF SECOND COAST BRAKE

(a) Place a mark on the second coast brake piston rod as shown in the figure.



(b) Using SST, measure the stroke applying the compressed air (4 – 8 kg/cm², 57 – 114 psi or 392 – 785 kPa) as shown in the figure.

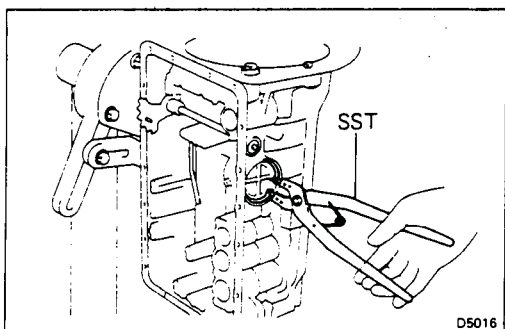
SST 09240-00020

Piston stroke: 1.5 – 3.0 mm (0.059 – 0.118 in.)

If the values are nonstandard, replace piston rod and re-check piston stroke. If piston stroke is nonstandard, replace brake band.

NOTE: There are two piston rods.

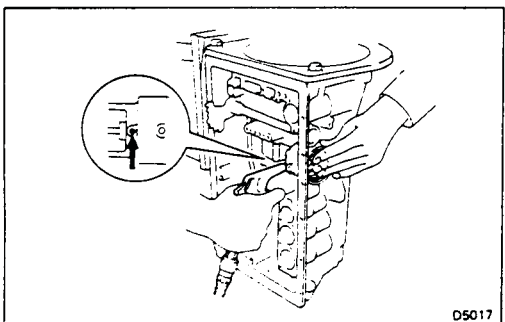
Rod length	71.4 mm (2.811 in.)
	72.9 mm (2.870 in.)



REMOVE SECOND COAST BRAKE PISTON

(a) Using SST, remove the snap ring.

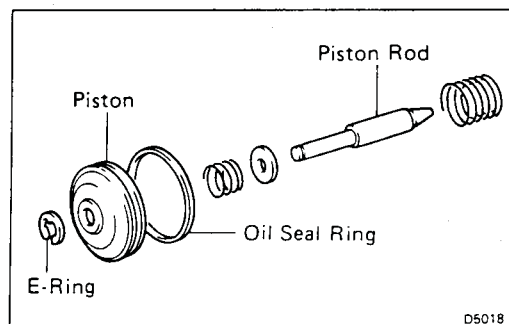
SST 09350-30020 (09350-07060)



(b) Applying compressed air to the oil hole, remove the second coast brake piston assembly.

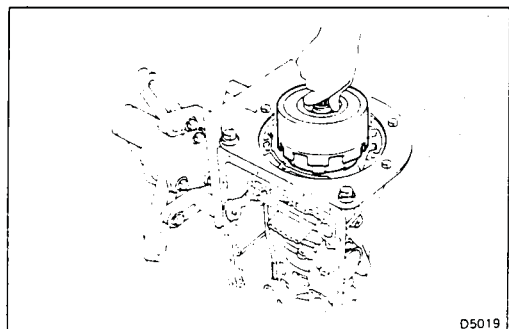


Technical Service Information



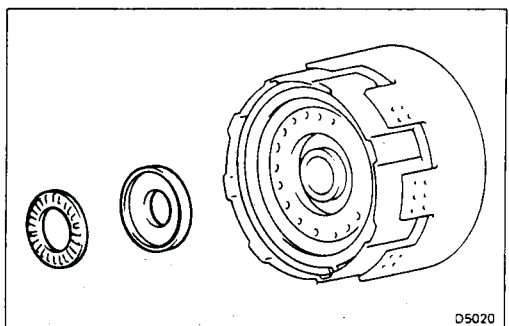
DISASSEMBLE SECOND COAST BRAKE PISTON

- (a) Remove the E-ring.
- (b) Remove the piston, spring and retainer from the piston rod.
- (c) Remove the oil seal from the piston.

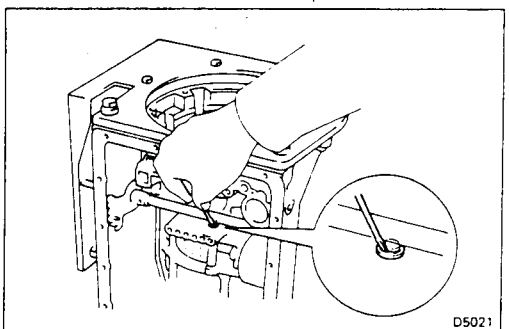


REMOVE DIRECT CLUTCH AND FORWARD CLUTCH

- (a) Remove the direct clutch and forward clutch from the case.

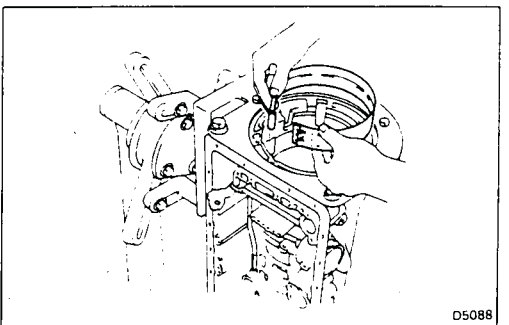


- (b) Remove the bearing and race.

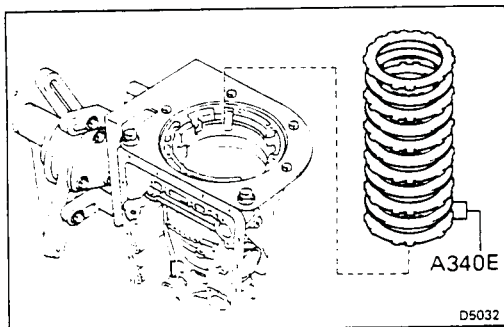


REMOVE SECOND COAST BRAKE BAND

- (a) Remove the E-ring from the pin.
- (b) Remove the pin from the brake band.



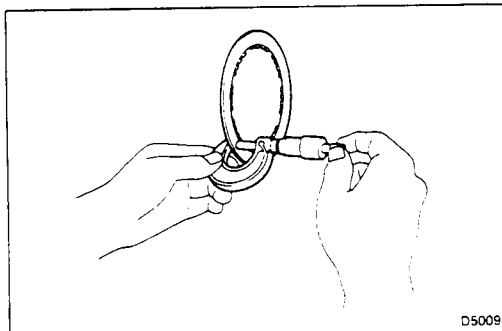
- (c) Remove the second coast brake band from the case.



(b) Remove the flange, discs and plates.

A340E : One flange
Five discs
Five plates

A340H : One flange
Four discs
Four plates

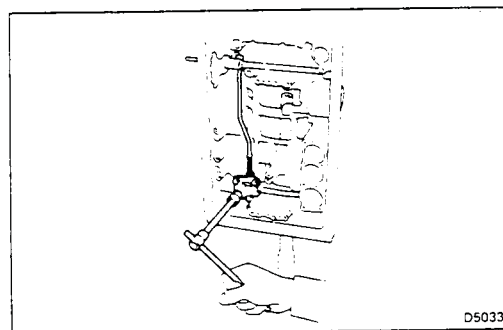


DISC INSPECTION

Using a micrometer, measure the thicknesses of the discs.

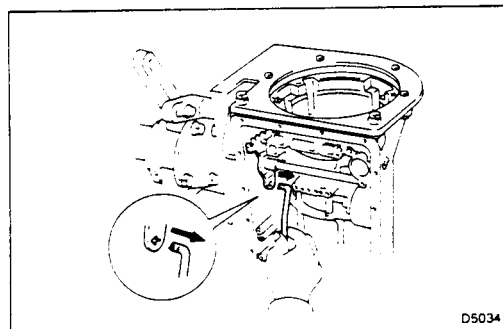
Minimum thickness: 1.84 mm (0.0724 in.)

If the thickness is less than minimum, replace the disc.

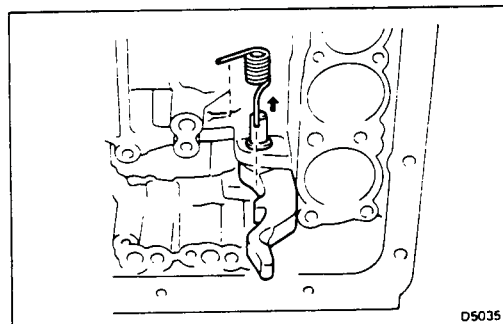


REMOVE PARKING LOCK ROD

(a) Remove the parking lock pawl bracket. (A340E)



(b) Remove the parking lock rod from the manual valve lever.

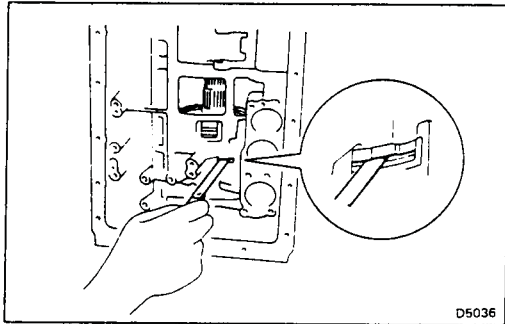


REMOVE PARKING LOCK PAWL AND SHAFT (A340E)

Remove the spring, parking lock pawl and shaft.



Technical Service Information



CHECK PACK CLEARANCE OF FIRST AND REVERSE BRAKE

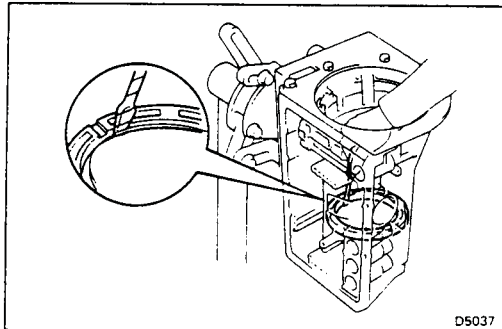
Using a thickness gauge, measure the clearance between the plate and second brake drum as shown in the figure.

Clearance:

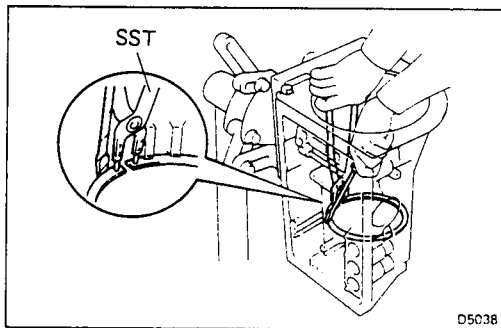
A340E 0.73 – 2.25 mm (0.0287 – 0.0886 in.)

A340H 0.63 – 2.03 mm (0.0248 – 0.0799 in.)

If the values are nonstandard, replace the discs.



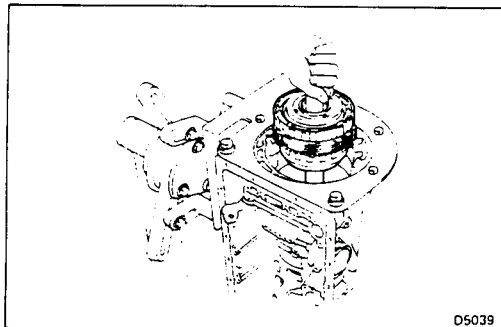
REMOVE SECOND BRAKE PISTON SLEEVE



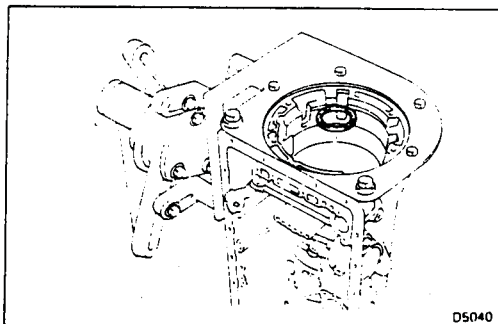
REMOVE REAR PLANETARY GEAR, SECOND BRAKE DRUM AND OUTPUT SHAFT

(a) Using SST, remove the snap ring.

SST 09350-30020 (09350-07060)



(b) Remove the rear planetary gear, second brake drum and output shaft as an assembly.



(c) Remove the assembled thrust bearing and race from the case.



Technical Service Information

COMPONENT GROUP DISASSEMBLY, INSPECTION AND ASSEMBLY NOTES:

The instructions here are organized so that you work on only one component group at a time. This will help avoid confusion from similar-looking parts of different subassemblies being on your workbench at the same time.

The component groups are inspected and repaired from the converter housing side.

As much as possible, complete the inspection, repair and assembly before proceeding to the next component group. If a component group cannot be assembled because parts are being ordered, be sure to keep all parts of that group in a separate container while proceeding with disassembly, inspection, repair and assembly of other component groups.

Recommended ATF type DEXRON® II.

GENERAL CLEANING NOTES:

1. All disassembled parts should be washed clean with any fluid passages and holes blown through with compressed air.
2. When using compressed air to dry parts, always aim away from yourself to prevent accidentally spraying automatic transmission fluid or kerosene in your face.
3. The recommended automatic transmission fluid or kerosene should be used for cleaning.

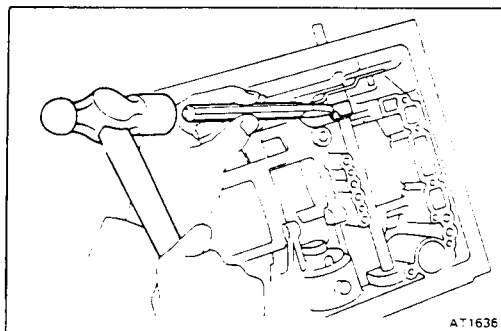
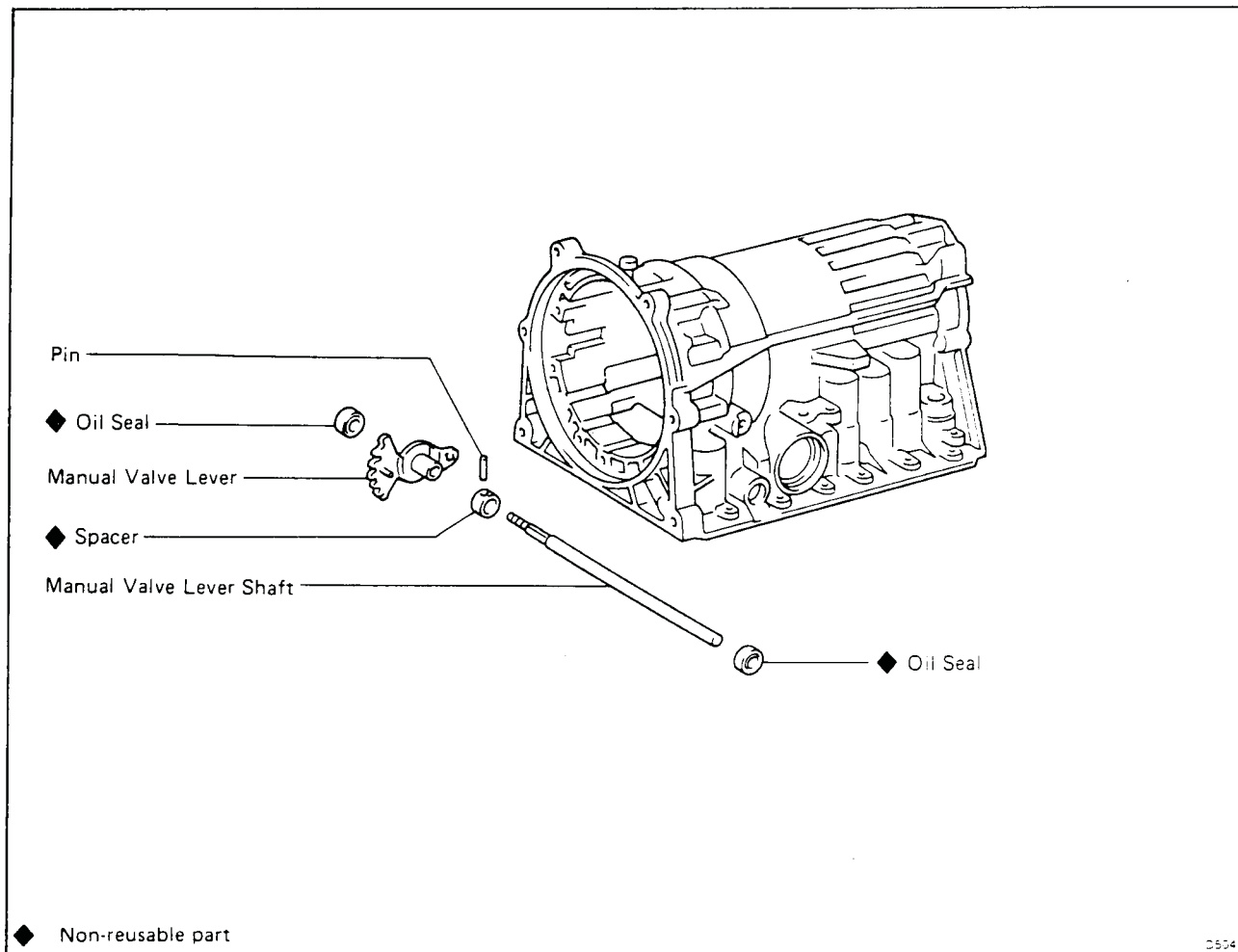
PARTS ARRANGEMENT:

1. After cleaning, the parts should be arranged in proper order to allow performing inspection, repairs, and reassembly with efficiency.
2. When disassembling a valve body, be sure to keep each valve together with the corresponding spring.
3. New brakes and clutches that are to be used for replacement must be soaked in transmission fluid for at least thirty minutes before assembly.

GENERAL ASSEMBLY:

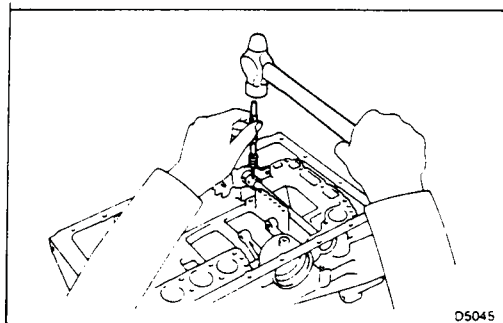
1. All oil seal rings, clutch discs, clutch plates, rotating parts, and sliding surfaces should be coated with transmission fluid prior to re-assembly.
2. All gaskets and rubber O-rings should be replaced.
3. Make sure that the ends of a snap ring are not aligned with one of the cutouts and are installed in the groove correctly.
4. If a worn bushing is to be replaced, the sub-assembly containing that bushing must be replaced.
5. Check thrust bearings and races for wear or damage. Replace if necessary.
6. Use petroleum jelly to keep parts in place.

MANUAL VALVE LEVER AND SHAFT



REMOVE MANUAL VALVE LEVER AND SHAFT

(a) Using a chisel, cut off the spacer and remove it from the shaft.

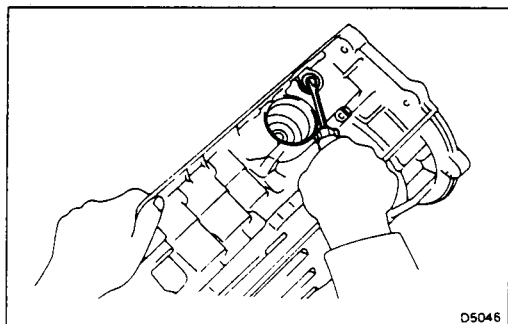


(b) Using a punch, drive out the pin.

(c) Pull the manual valve lever shaft out through the case by the threads.

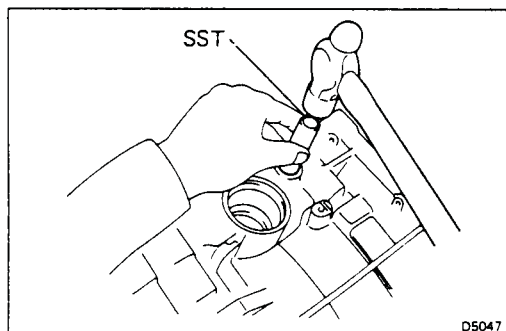


Technical Service Information



REMOVE OIL SEAL

Using a screwdriver, remove the oil seal.

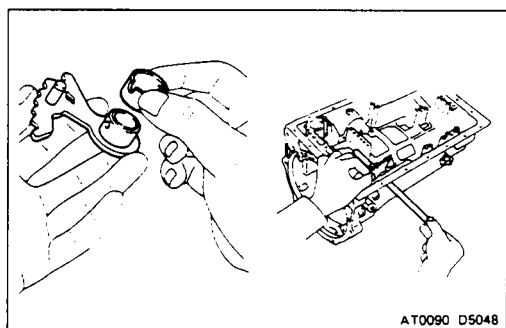


INSTALL NEW OIL SEAL

(a) Coat a new oil seal lip with MP grease.

(b) Using SST, drive in the oil seal.

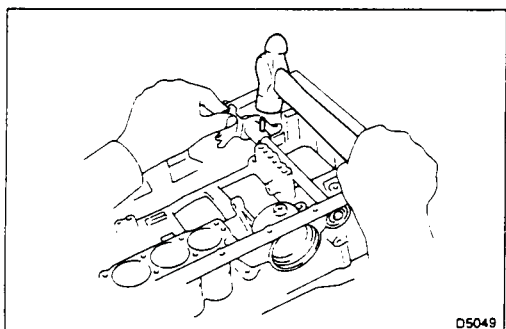
SST 09350-30020 (09350-07110)



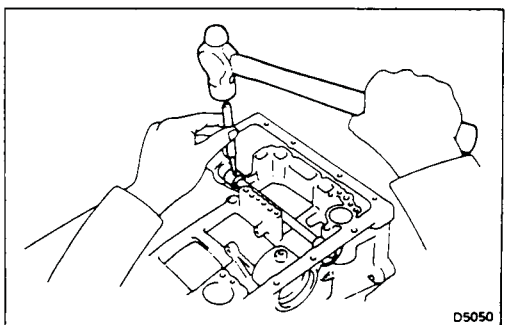
INSTALL MANUAL VALVE LEVER AND SHAFT

(a) Assemble a new spacer to the manual valve lever.

(b) Install the manual valve lever shaft to the transmission case through the manual valve lever by the threads.



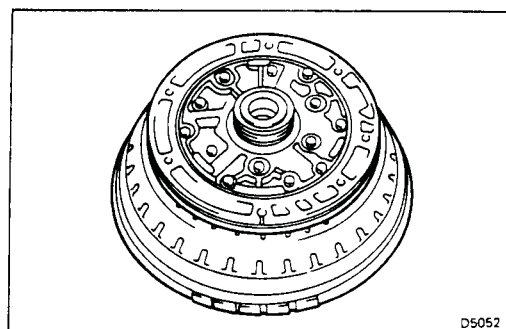
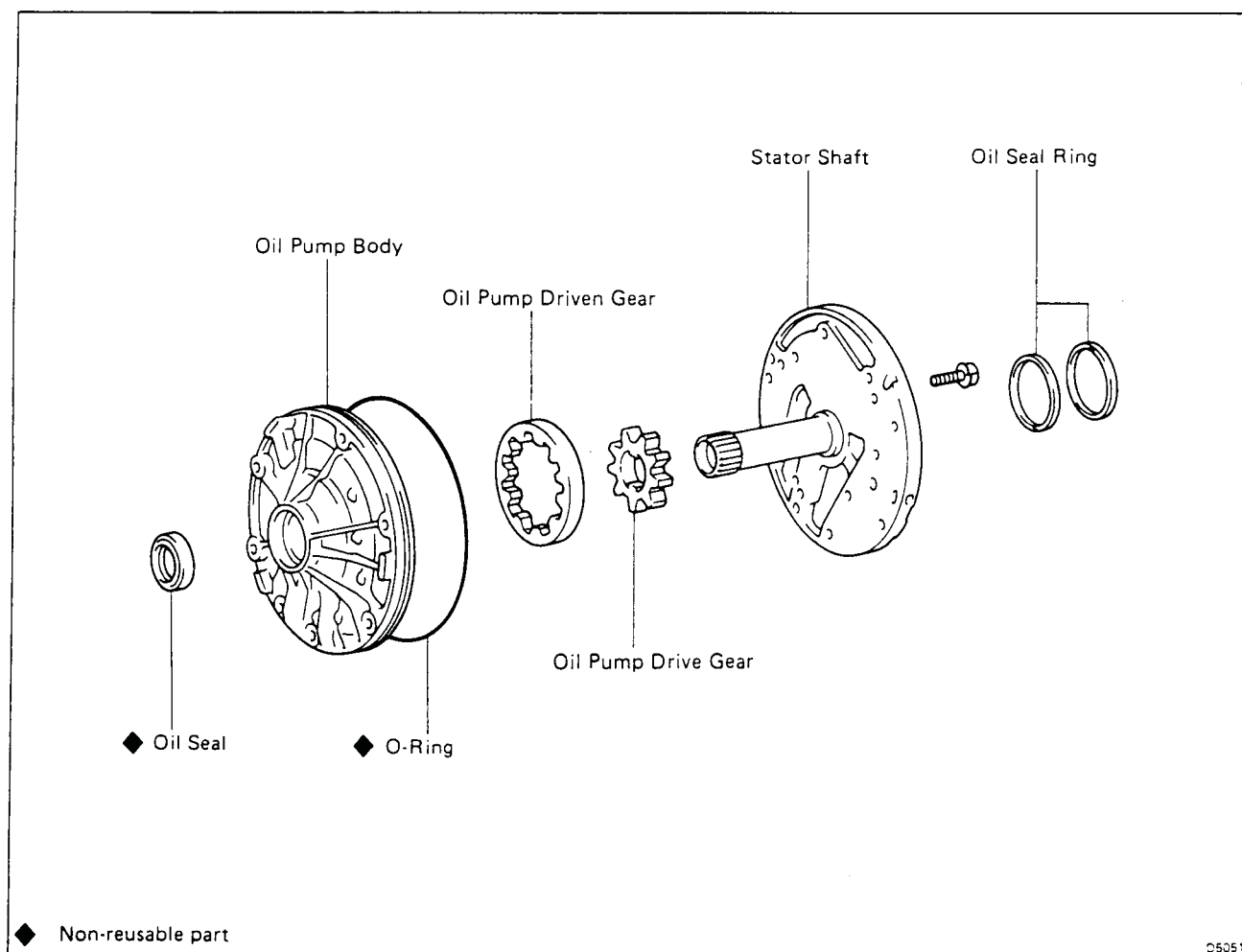
(c) Drive in the pin with the slot at a right angle to the shaft.



(d) Match the spacer hole to the lever calking hollow and calk the spacer to the lever.

(e) Make sure the manual valve lever shaft turns smoothly.

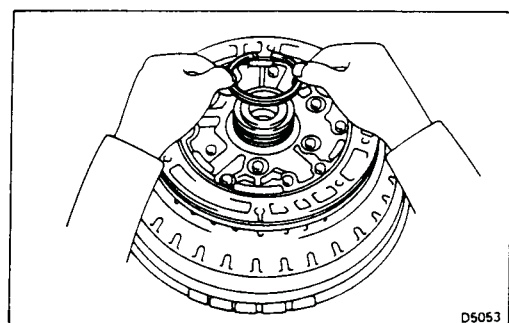
OIL PUMP



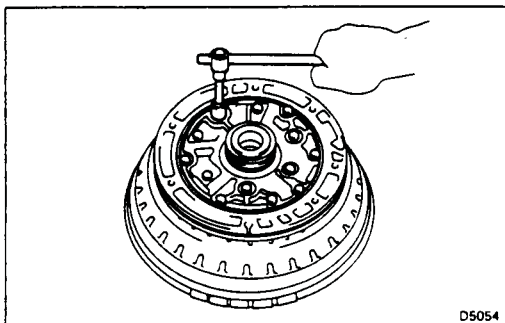
DISASSEMBLY OF OIL PUMP

USE TORQUE CONVERTER AS WORK STAND

REMOVE O-RING

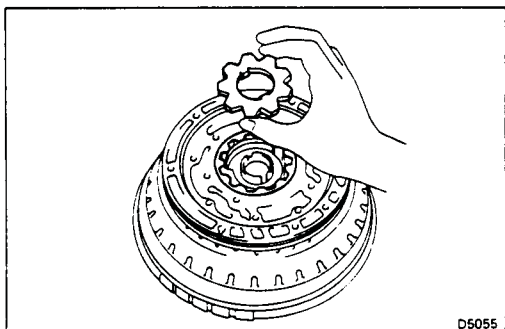


REMOVE TWO OIL SEAL RINGS

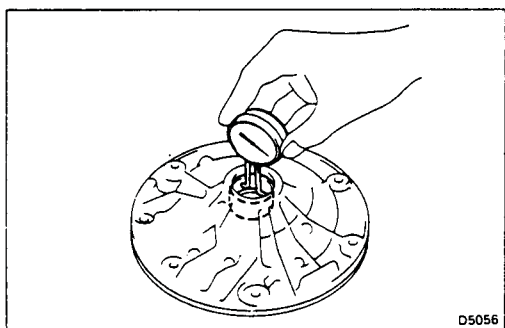


REMOVE STATOR SHAFT

Remove the thirteen bolts, and then remove the stator shaft from the oil pump body.



REMOVE OIL PUMP DRIVE GEAR AND DRIVEN GEAR



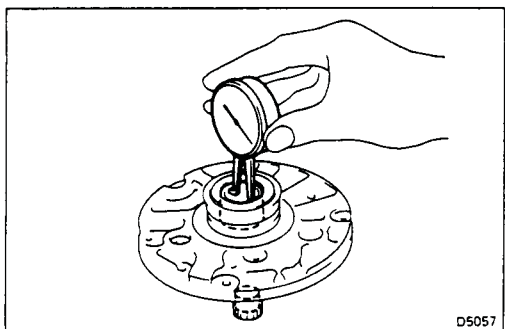
INSPECTION OF OIL PUMP

CHECK OIL PUMP BODY BUSHING

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

Maximum inside diameter: 38.19 mm (1.5035 in.)

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



CHECK STATOR SHAFT BUSHING

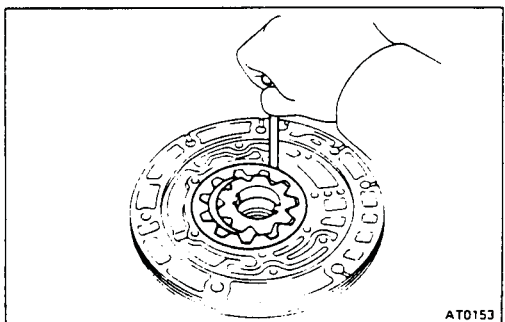
Using a dial indicator, measure the inside diameter of the stator shaft bushing.

Maximum inside diameter:

Front side 21.58 mm (0.8496 in.)

Rear side 27.08 mm (1.0661 in.)

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



CHECK BODY CLEARANCE OF DRIVEN GEAR

Push the driven gear to one side of the body.

Using a feeler gauge, measure the clearance.

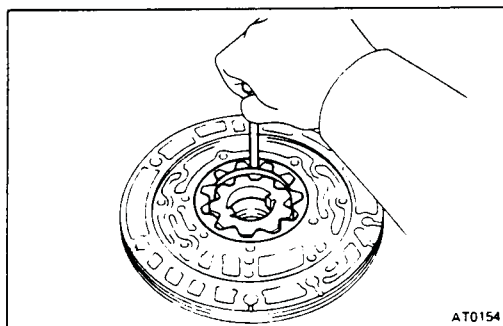
Standard body clearance: 0.07 – 0.15 mm
(0.0028 – 0.0059 in.)

Maximum body clearance: 0.3 mm (0.012 in.)

If the body clearance is greater than the maximum, replace the drive gear, driven gear or pump body.



Technical Service Information



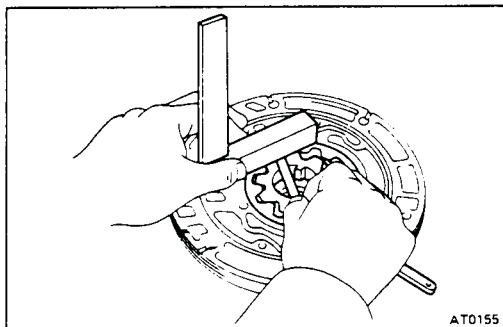
CHECK TIP CLEARANCE OF BOTH GEARS

Measure between the gear teeth and the crescent-shaped part of the pump body.

Standard tip clearance: 0.11 – 0.14 mm
(0.0043 – 0.0055 in.)

Maximum tip clearance: 0.3 mm (0.012 in.)

If the tip clearance is greater than the maximum, replace the drive gear, driven gear or pump body.



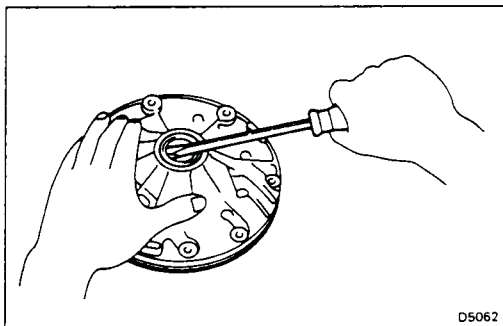
CHECK SIDE CLEARANCE OF BOTH GEARS

Using a steel straightedge and a feeler gauge, measure the side clearance of both gears.

Standard side clearance: 0.02 – 0.05 mm
(0.0008 – 0.0020 in.)

Maximum side clearance: 0.1 mm (0.004 in.)

If the side clearance is greater than the maximum, replace the drive gear, driven gear or pump body.

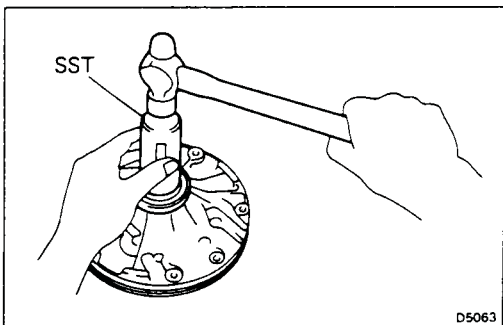


CHECK OIL SEAL

Check for wear, damage or cracks.

IF NECESSARY, REPLACE OIL SEAL

(a) Pry off the oil seal with a screwdriver.



(b) Using SST, install a new oil seal.

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

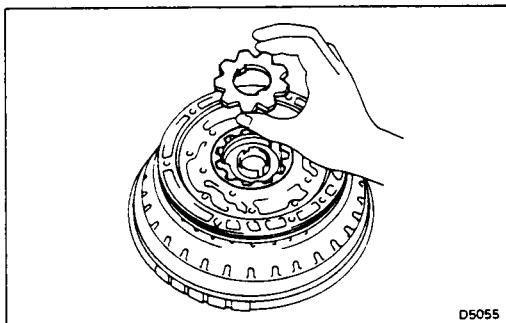
SST 09350-30020 (09351-32140)

(c) Coat the oil seal lip with MP grease.

ASSEMBLY OF OIL PUMP

INSTALL DRIVEN GEAR AND DRIVE GEAR TO OIL PUMP BODY

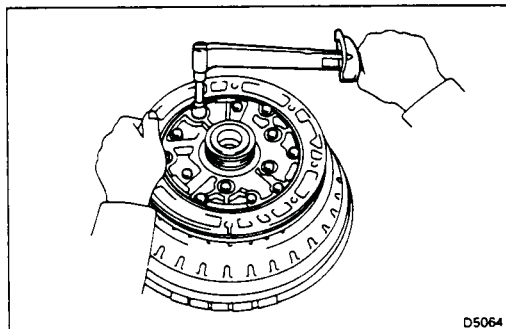
- Place the oil pump body on the torque converter.
- Coat the driven gear and drive gear with ATF.
- Install the driven gear and drive gear.



INSTALL STATOR SHAFT TO OIL PUMP BODY

- Align the stator shaft with each bolt holes.
- Tighten the thirteen bolts.

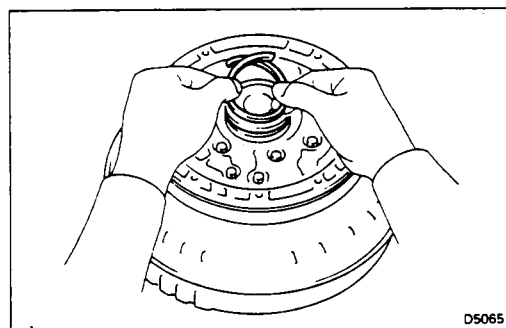
Torque: 100 kg-cm (7 ft-lb, 10 N-m)



INSTALL TWO OIL SEAL RINGS

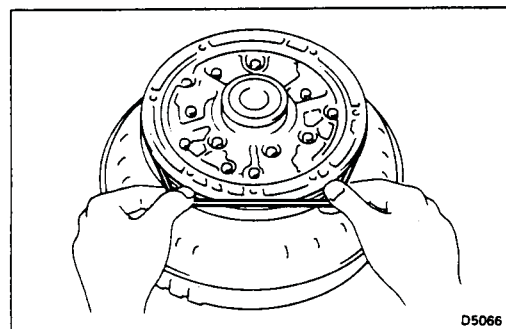
- Coat the oil seal rings with ATF.
- Contract the oil seal rings as shown, and install them onto the stator shaft.

CAUTION: Do not spread the ring ends too much.



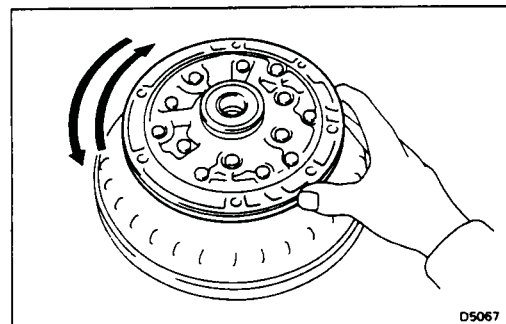
INSTALL NEW O-RING

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



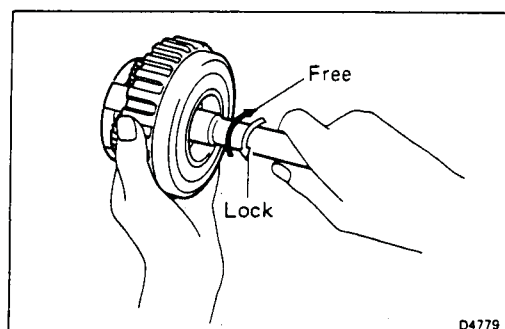
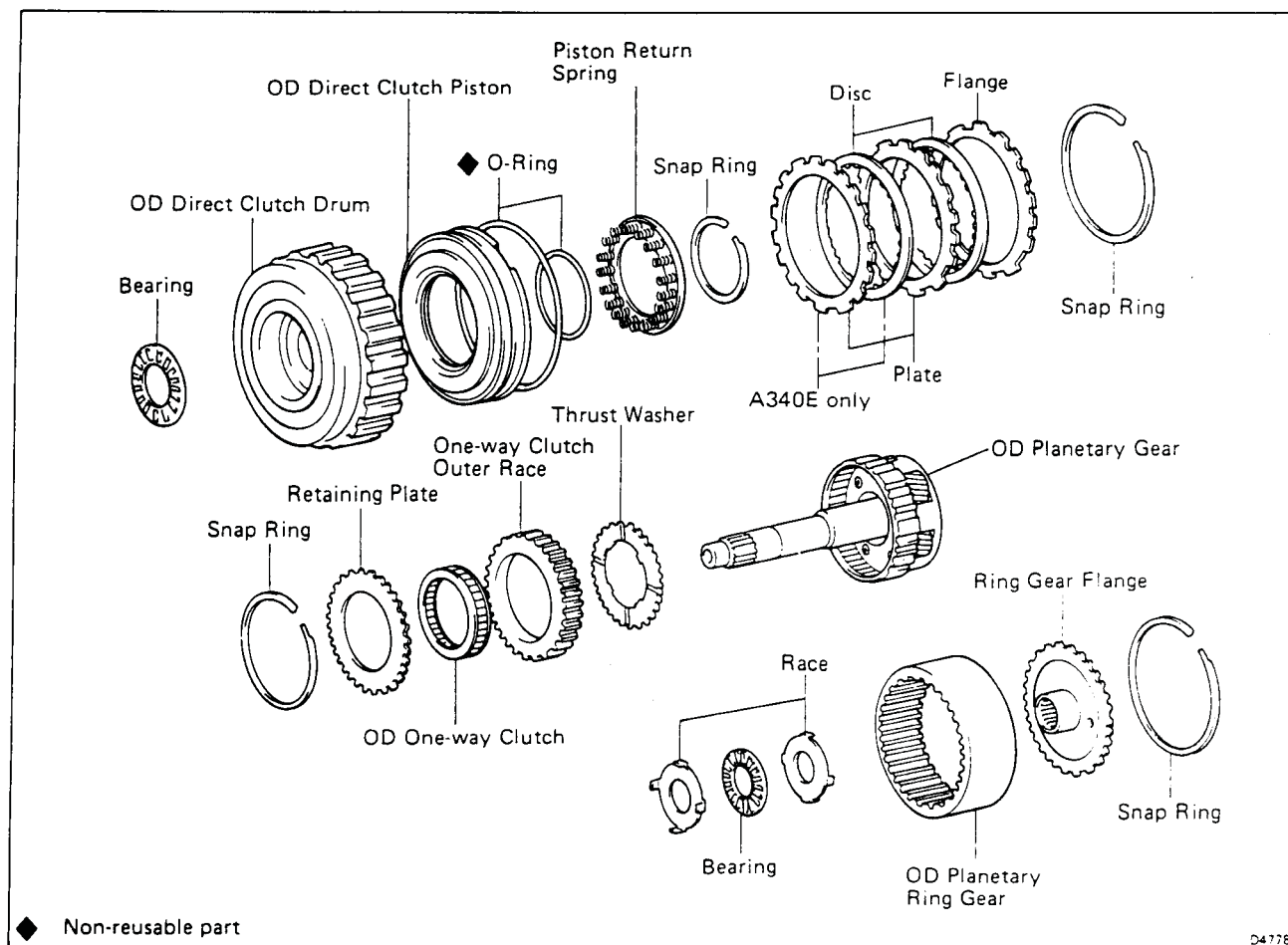
CHECK OIL PUMP DRIVE GEAR ROTATION

Make sure the drive gear rotates smoothly when installed to the torque converter.



Technical Service Information

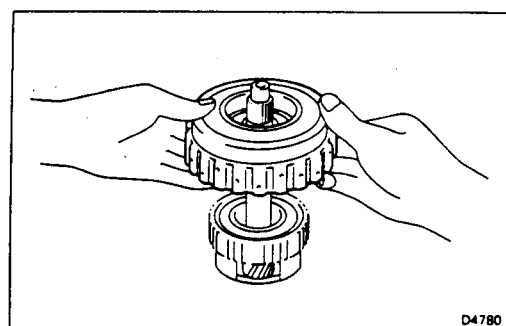
OVERDRIVE PLANETARY GEAR AND OVERDRIVE DIRECT CLUTCH (C0)



DISASSEMBLY OF OVERDRIVE PLANETARY GEAR AND OVERDRIVE DIRECT CLUTCH

CHECK OPERATION OF ONE-WAY CLUTCH

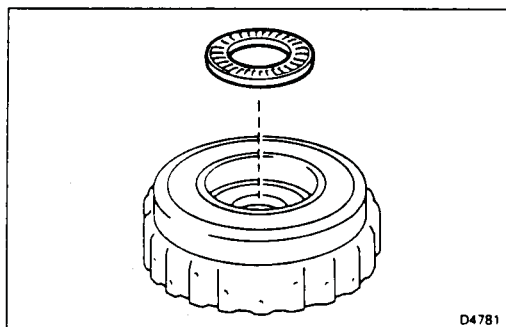
Hold the OD direct clutch drum and turn the input shaft. The input shaft should turn freely clockwise and should lock counterclockwise.



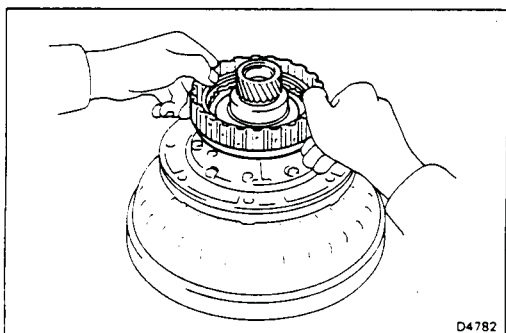
REMOVE OVERDRIVE DIRECT CLUTCH ASSEMBLY FROM OVERDRIVE PLANETARY GEAR



Technical Service Information

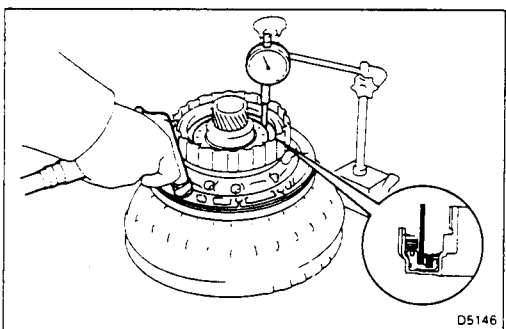


REMOVE ASSEMBLED BEARING AND RACE FROM OVERDRIVE DIRECT CLUTCH



CHECK PISTON STROKE OF OVERDRIVE DIRECT CLUTCH (C_o)

- (a) Place the oil pump onto the torque converter, and then place the OD direct clutch assembly onto the oil pump.

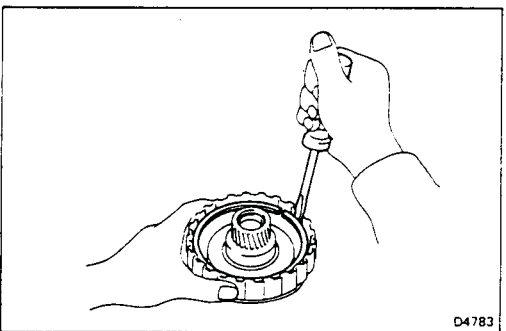


- (b) Using a dial indicator, measure the overdrive direct clutch piston stroke applying and releasing the compressed air (4 – 8 kg/cm², 57 – 114 psi or 392 – 785 kPa) as shown.

Piston stroke:

A340E 1.40 – 1.70 mm (0.0551 – 0.0669 in.)

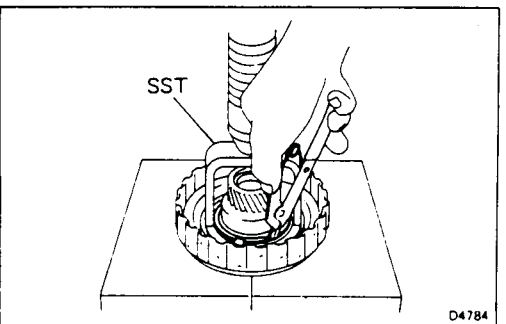
A340H 1.77 – 2.07 mm (0.0697 – 0.0815 in.)



REMOVE SNAP RING FROM CLUTCH DRUM

REMOVE FLANGE, DISCS AND PLATES

NOTE: A340E — Two discs and two plates
A340H — One disc and one plate



COMPRESS PISTON RETURN SPRING AND REMOVE SNAP RING

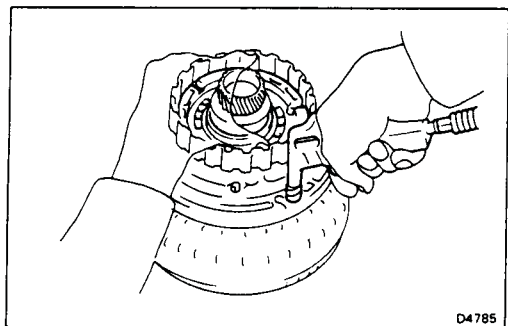
Place SST on the spring retainer and compress the return spring with a shop press. Using snap ring pliers, remove the snap ring.

SST 09350-30020 (09350-07040)

REMOVE PISTON RETURN SPRING



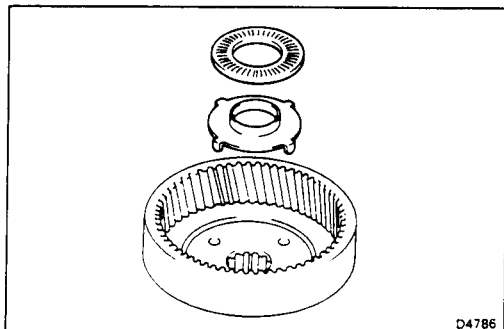
Technical Service Information



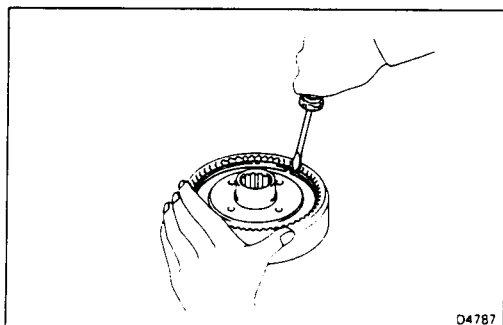
REMOVE OVERDRIVE DIRECT CLUTCH PISTON

- Place the oil pump onto the torque converter and then place the OD direct clutch onto the oil pump.
- Hold the OD direct clutch piston by hand, apply compressed air to the oil pump to remove the OD direct clutch piston.
- Remove the OD direct clutch piston.

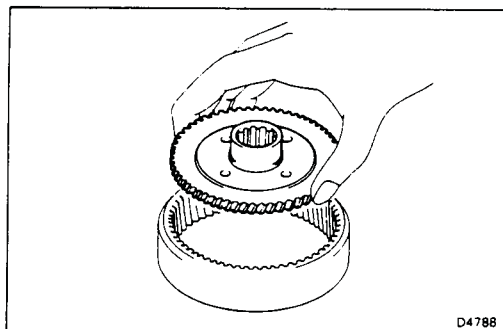
REMOVE TWO O-RINGS FROM PISTON



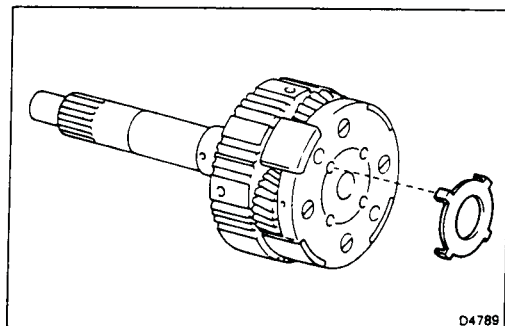
REMOVE BEARING AND RACE FROM OVERDRIVE PLANETARY RING GEAR



REMOVE SNAP RING



REMOVE RING GEAR FLANGE

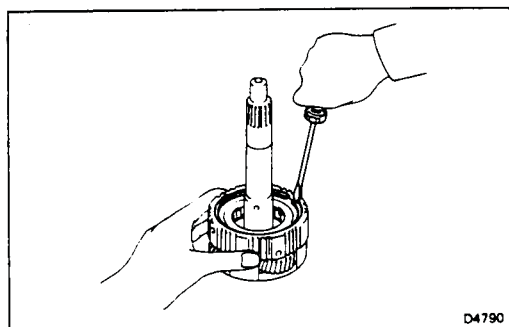


REMOVE RACE FROM OVERDRIVE PLANETARY GEAR

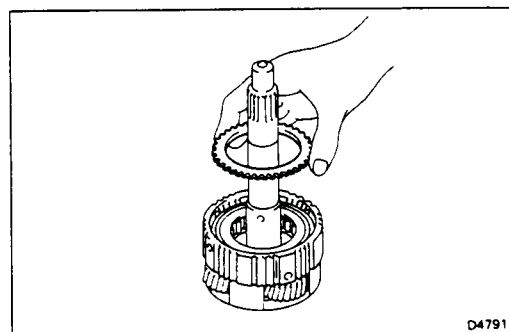


Technical Service Information

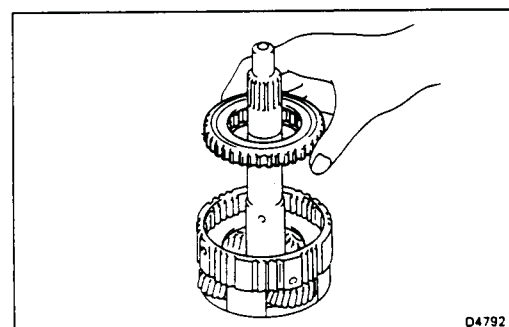
REMOVE SNAP RING



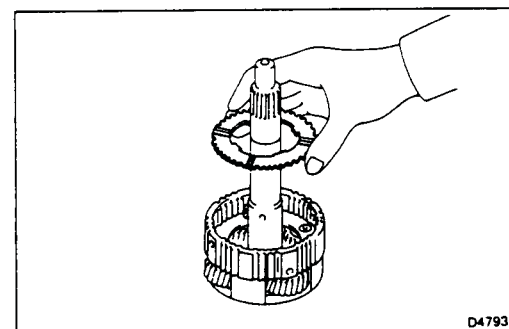
REMOVE RETAINING PLATE



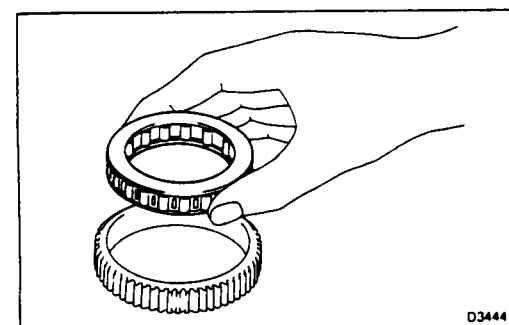
REMOVE OVERDRIVE ONE-WAY CLUTCH WITH
OUTER RACE

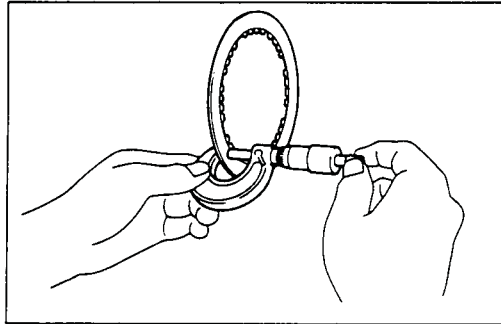


REMOVE THRUST WASHER



REMOVE ONE-WAY CLUTCH FROM OUTER RACE





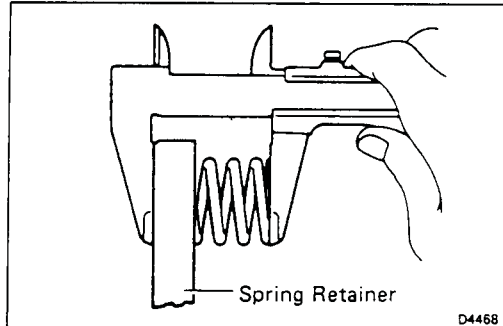
INSPECTION OF OVERDRIVE PLANETARY GEAR AND OVERDRIVE DIRECT CLUTCH

CHECK DISCS

Using a micrometer, measure the thickness of the discs.

Minimum thickness: 1.84 mm (0.0724 in.)

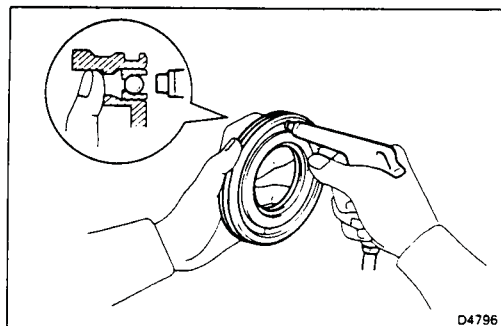
If the thickness is less than the minimum, replace the disc.



CHECK PISTON RETURN SPRING

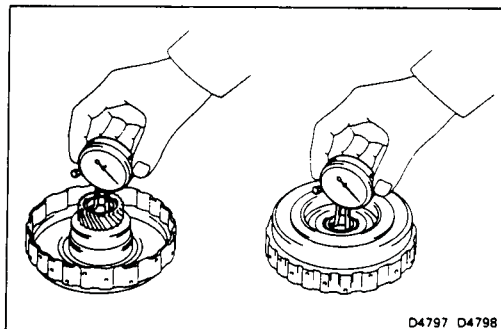
Using calipers, measure the free length of the return spring.

Standard length: 15.8 mm (0.622 in.)



CHECK OVERDRIVE DIRECT CLUTCH PISTON

- (a) Check that check ball is free by shaking the piston.
- (b) Check that the valve does not leak by applying low-pressure compressed air.

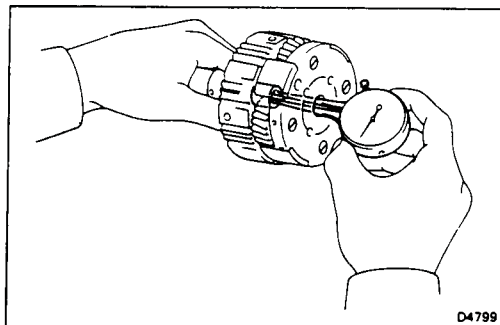


CHECK OVERDRIVE DIRECT CLUTCH DRUM BUSHINGS

Using a dial indicator, measure the inside diameter of the clutch drum bushings.

Maximum inside diameter: 27.11 mm (1.0673 in.)

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



CHECK OVERDRIVE PLANETARY GEAR BUSHING

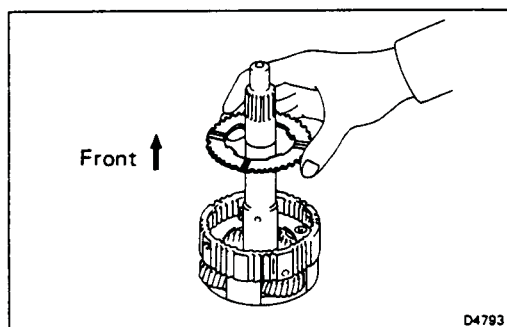
Using a dial indicator, measure the inside diameter of the planetary gear bushing.

Maximum inside diameter: 11.27 mm (0.4437 in.)

If the inside diameter is greater than the maximum, replace the planetary gear.



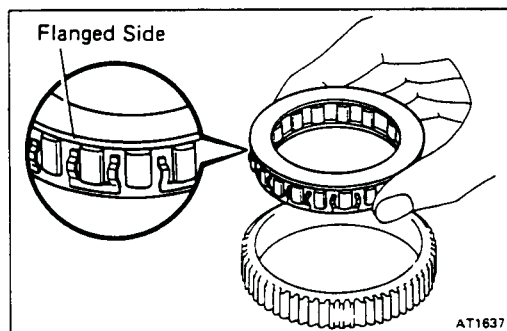
Technical Service Information



ASSEMBLY OF OVERDRIVE PLANETARY GEAR AND OVERDRIVE DIRECT CLUTCH

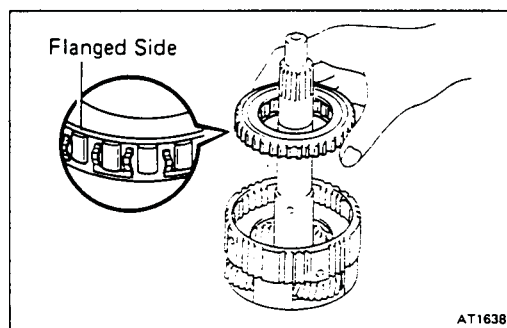
INSTALL THRUST WASHER TO OVERDRIVE PLANETARY GEAR

Install the thrust washer to the overdrive planetary gear, facing the grooved side upward.

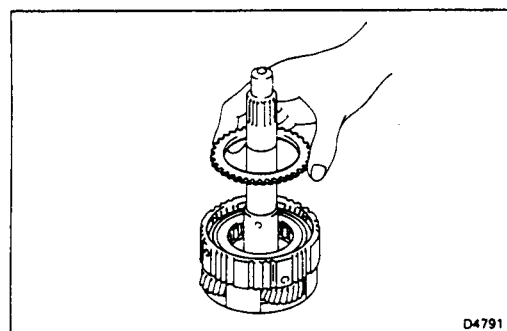


INSTALL OVERDRIVE ONE-WAY CLUTCH TO OUTER RACE

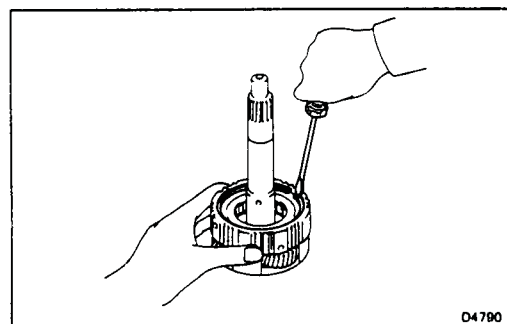
Install the one-way clutch into the outer race, facing the flanged side of the one-way clutch upward.



INSTALL OVERDRIVE ONE-WAY CLUTCH WITH OUTER RACE TO OVERDRIVE PLANETARY GEAR



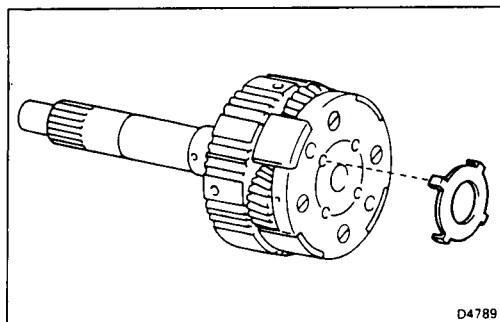
INSTALL RETAINING PLATE



INSTALL SNAP RING



Technical Service Information



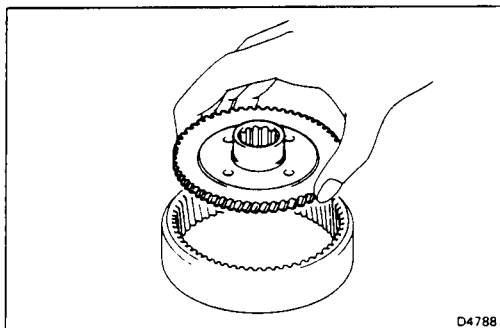
INSTALL RACE

Coat the race with petroleum jelly and install it to the planetary gear.

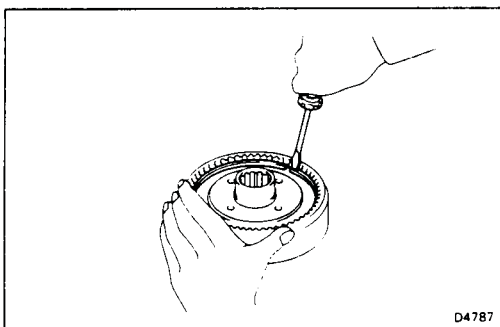
NOTE: Race diameter

Inside diameter 27.1 mm (1.067 in.)

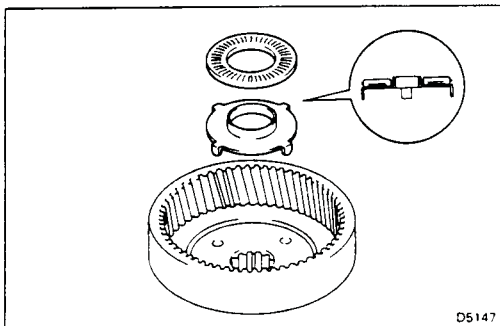
Outside diameter 41.8 mm (1.646 in.)



INSTALL RING GEAR FLANGE TO OVERDRIVE PLANETARY RING GEAR



INSTALL SNAP RING

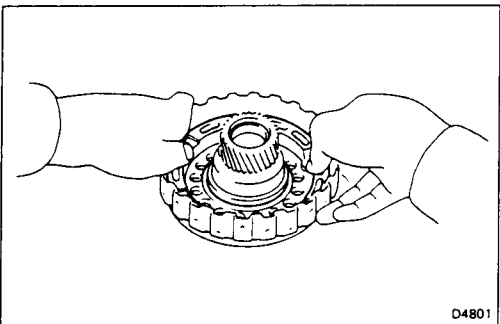


INSTALL RACE AND BEARING

Coat the race and bearing with petroleum jelly and install them onto the planetary ring gear.

NOTE: Race and bearing diameter. mm (in.)

	Inside	Outside
Race	24.2 (0.953)	47.8 (1.882)
Bearing	26.0 (1.024)	46.8 (1.843)



INSTALL NEW O-RINGS ON OVERDRIVE DIRECT CLUTCH PISTON

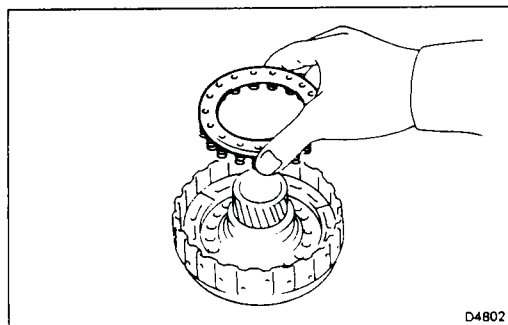
Coat new O-rings with ATF and install them on the OD direct clutch piston.

INSTALL OVERDRIVE DIRECT CLUTCH PISTON TO OVERDRIVE DIRECT CLUTCH DRUM

Being careful not to damage the O-rings, press in the direct clutch piston into the clutch drum by both hands.

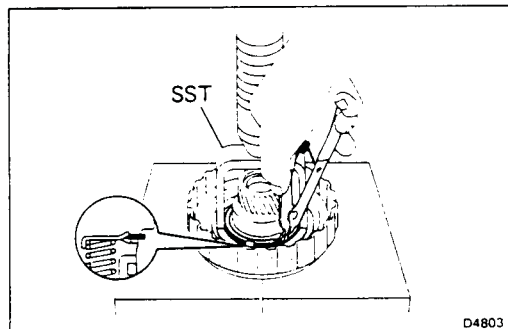


Technical Service Information



D4802

INSTALL PISTON RETURN SPRING



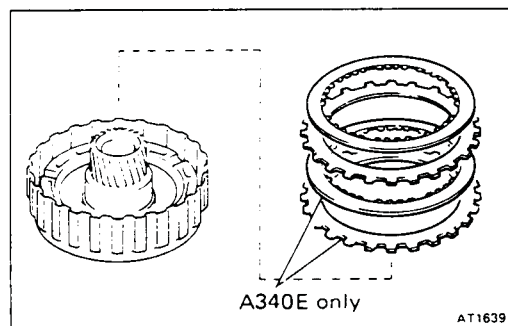
D4803

COMPRESS PISTON RETURN SPRING AND INSTALL SNAP RING IN GROOVE

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

SST 09350-30020 (09350-07040)

- (b) Install the snap ring with snap ring pliers. Be sure the end gap of the snap ring is not aligned with the spring retainer claw.



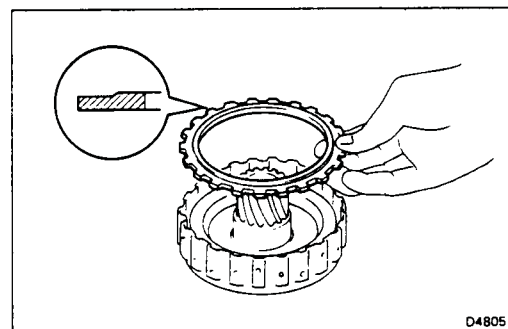
AT1639

INSTALL PLATES AND DISCS

Install in order:

A340E — P — D — P — D

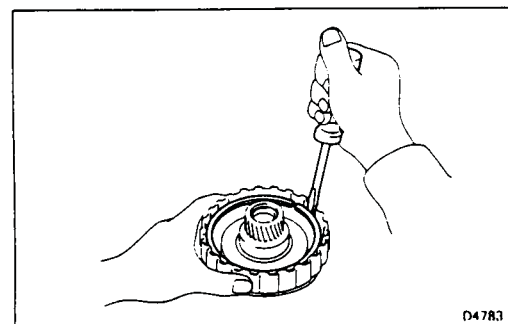
A340H — P — D



D4805

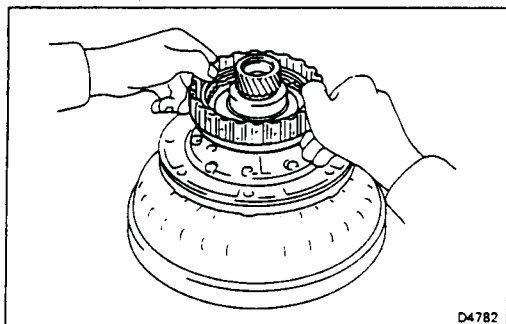
INSTALL FLANGE

Install the flange, facing the flat end downward.



D4783

INSTALL SNAP RING



CHECK PISTON STROKE OF OVERDRIVE DIRECT CLUTCH (Co)

- Place the oil pump onto the torque converter, and then place the OD direct clutch assembly onto the oil pump.
- Using a dial indicator, measure the overdrive direct clutch piston stroke applying and releasing the compressed air (4 – 8 kg/cm², 57 – 114 psi or 392 – 785 kPa) as shown.

Piston stroke:

A340E 1.40 – 1.70 mm (0.0551 – 0.0669 in.)

A340H 1.77 – 2.07 mm (0.0697 – 0.0815 in.)

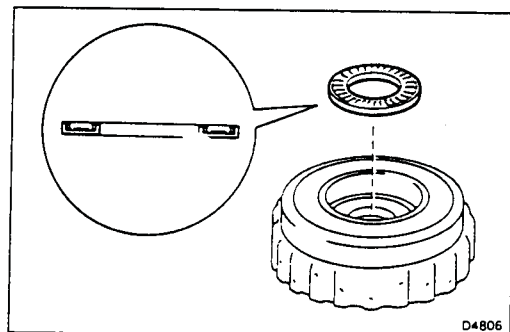
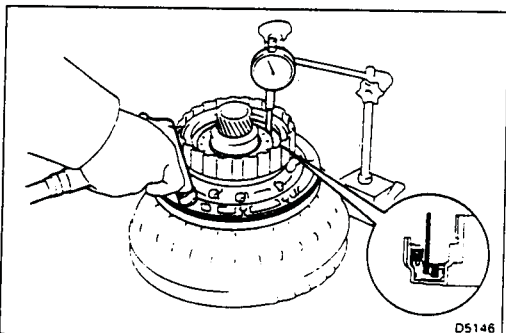
If the piston stroke is not within specification, replace the discs and recheck the piston stroke.

If the piston stroke is nonstandard, select another flange.

NOTE: There are six flanges.

Flange thickness mm (in.)

No.	Thickness	No.	Thickness
16	3.6 (0.142)	19	3.3 (0.130)
17	3.5 (0.138)	20	3.2 (0.126)
18	3.4 (0.134)	21	3.1 (0.122)



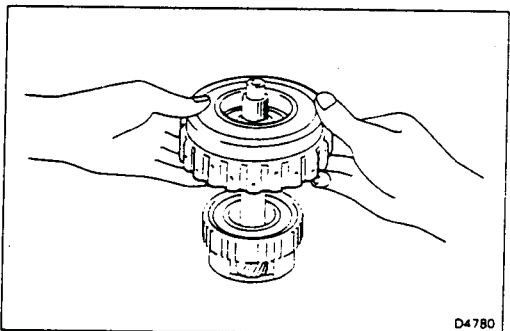
INSTALL ASSEMBLED BEARING AND RACE

Coat the assembled bearing and race with petroleum jelly and install it facing the race side downward.

NOTE: Assembled bearing and race.

Inside diameter 28.9 mm (1.138 in.)

Outside diameter 50.2 mm (1.976 in.)

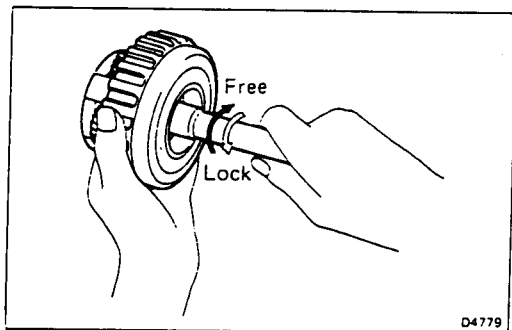


INSTALL OVERDRIVE DIRECT CLUTCH ASSEMBLY

- Align the flukes of discs in the direct clutch.
- Install the direct clutch assembly onto the OD planetary gear.

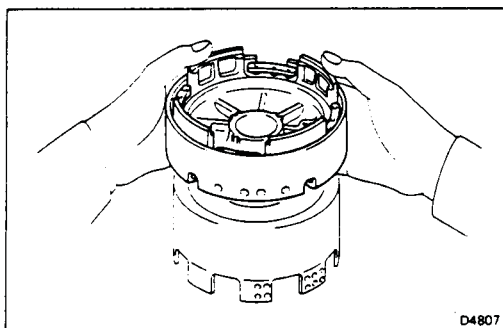
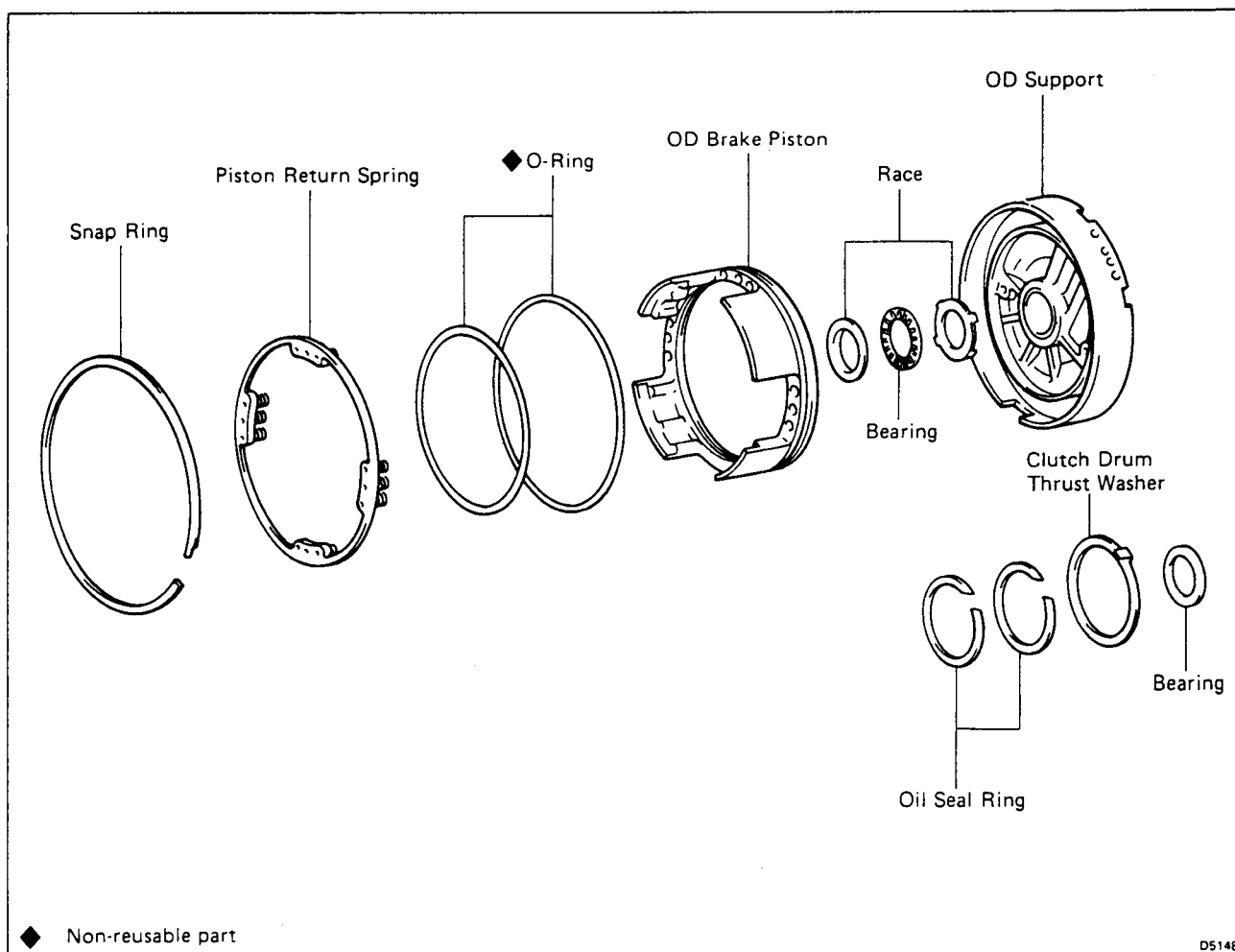
CHECK OPERATION OF ONE-WAY CLUTCH

Hold the OD direct clutch drum and turn the input shaft. The input shaft should turn freely clockwise and should lock counterclockwise.



Technical Service Information

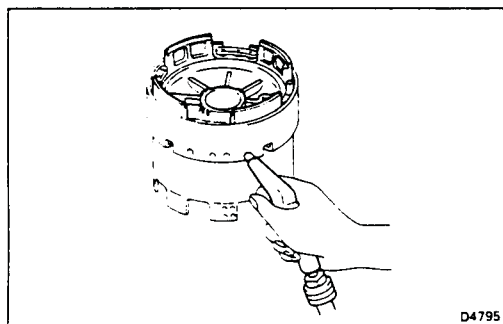
OVERDRIVE SUPPORT



DISASSEMBLY OF OVERDRIVE SUPPORT ASSEMBLY

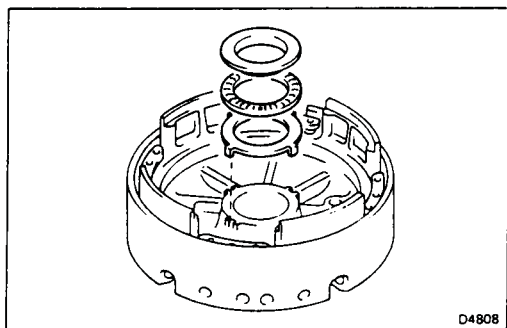
CHECK OVERDRIVE BRAKE PISTON

- Place the OD support assembly onto the direct clutch assembly.
- Apply compressed air into the oil passage as shown, and be sure that the OD brake piston moves smoothly.





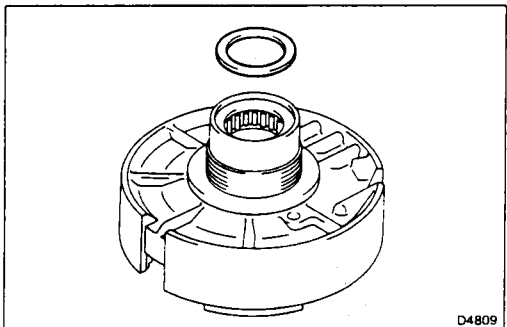
Technical Service Information



D4808

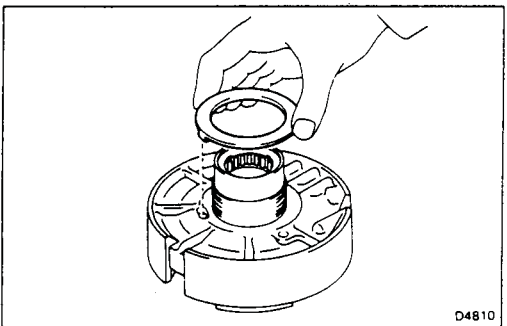
REMOVE BEARING AND RACES

- (a) Remove the two races and bearing from the OD support.



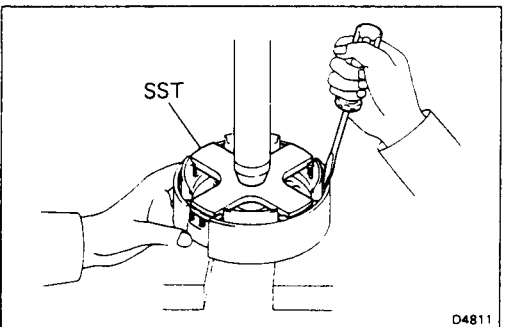
D4809

- (b) Turn over the OD support, remove the race.



D4810

REMOVE CLUTCH DRUM THRUST WASHER FROM OVERDRIVE SUPPORT



D4811

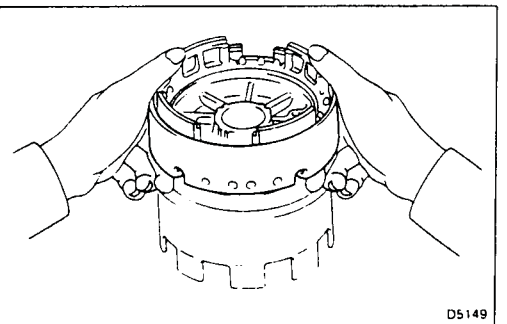
COMPRESS PISTON RETURN SPRING AND REMOVE SNAP RING

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

SST 09350-30020 (09350-07030)

- (b) Remove the snap ring with a screwdriver.

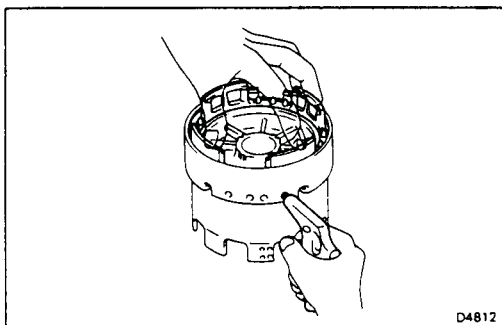
REMOVE PISTON RETURN SPRING



D5149

REMOVE OVERDRIVE BRAKE PISTON

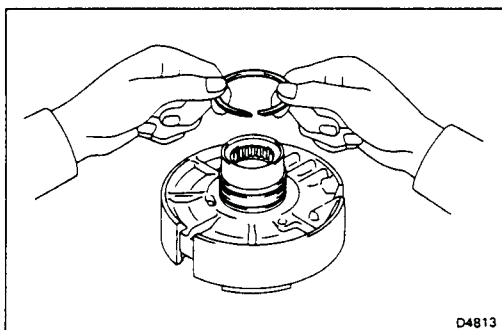
- (a) Place the OD support onto the direct clutch assembly.



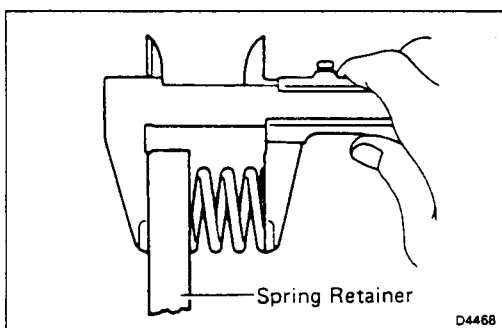
(b) Hold the OD brake piston so it is not slanted and apply compressed air into the passage to remove the OD brake piston.

(c) Remove the OD brake piston.

REMOVE O-RINGS FROM OVERDRIVE BRAKE PISTON



REMOVE TWO OIL SEAL RINGS

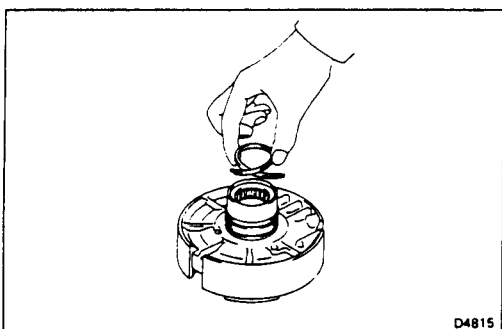


INSPECTION OF OVERDRIVE SUPPORT

CHECK PISTON RETURN SPRING

Using calipers, measure the free length of the return spring.

Standard length: 18.6 mm (0.732 in.)



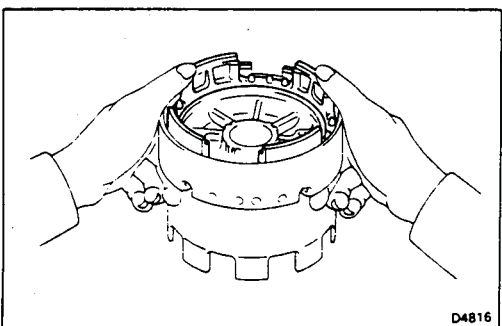
ASSEMBLY OF OVERDRIVE SUPPORT

INSTALL TWO OIL SEAL RINGS

(a) Coat the two oil seal rings with ATF.

(b) Contract the oil seals as shown, and install them onto the OD support.

CAUTION: Do not spread the ring ends more than necessary.



INSTALL NEW O-RINGS ON OVERDRIVE BRAKE PISTON

Coat two new O-rings with ATF and install them on the OD brake piston.

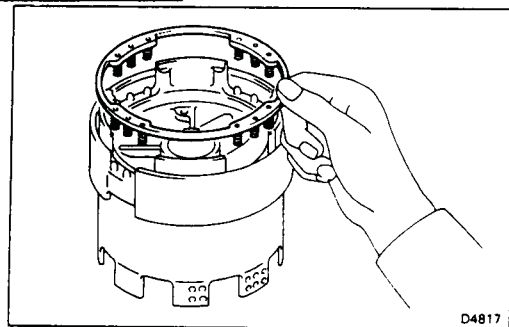
INSTALL OVERDRIVE BRAKE PISTON

Being careful not to damage the O-rings, press in the brake piston into the OD support by both hands.



Technical Service Information

INSTALL PISTON RETURN SPRING

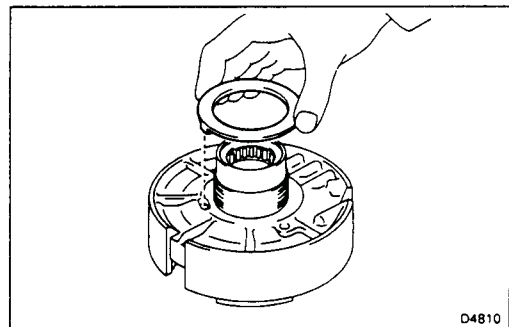


D4817

INSTALL CLUTCH DRUM THRUST WASHER

Coat the thrust washer with petroleum jelly and install it onto the OD support.

NOTE: Make sure that the lug shapes match the hole on the OD support.



D4810

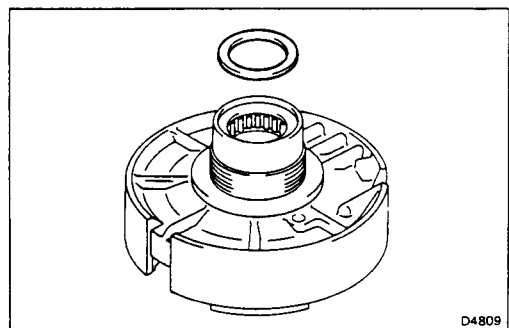
INSTALL RACE

Coat the race with petroleum jelly, and install it onto the OD support.

NOTE: Race diameter

Inside diameter 36.2 mm (1.425 in.)

Outside diameter 50.4 mm (1.984 in.)



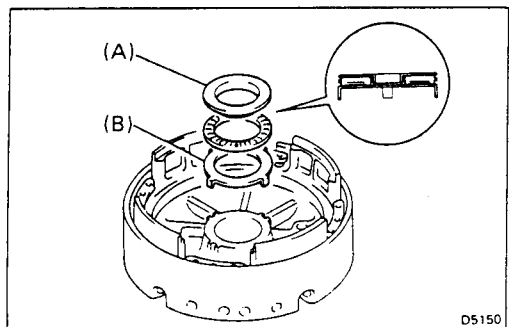
D4809

TURN OVER OVERDRIVE SUPPORT, INSTALL RACES AND BEARING

Coat the two races with petroleum jelly, and install them onto the OD support.

NOTE: Race and bearing diameter mm (in.)

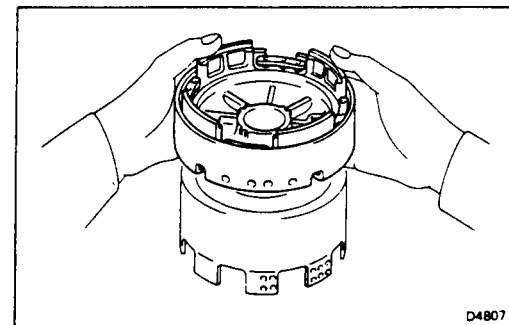
	Inside	Outside
Race (A)	30.7 (1.209)	47.8 (1.882)
Bearing	32.7 (1.287)	47.7 (1.878)
Race (B)	34.3 (1.350)	47.8 (1.882)



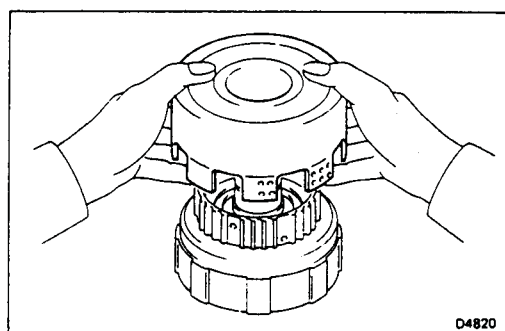
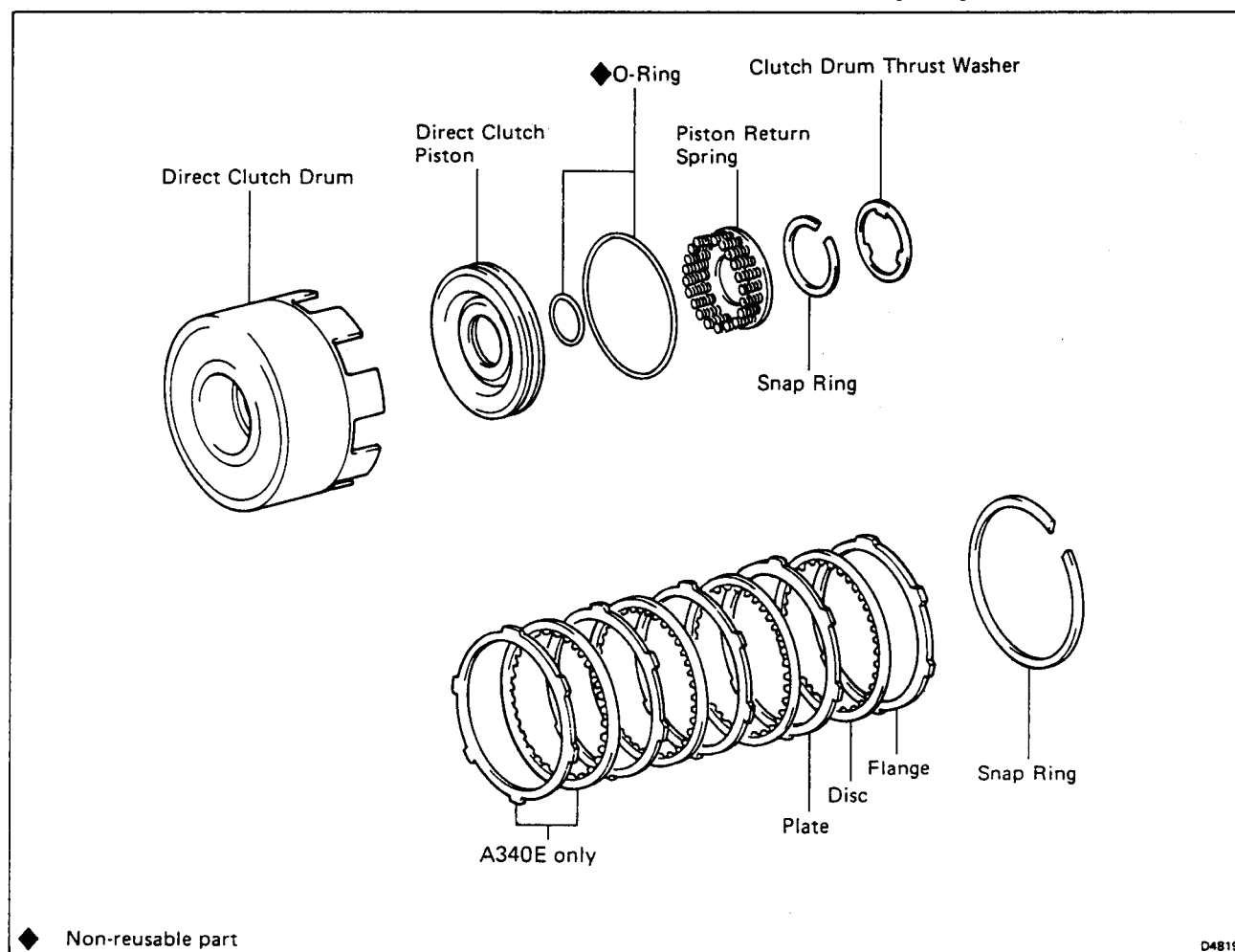
D5150

CHECK OVERDRIVE BRAKE PISTON

- (a) Place the OD support assembly onto the direct clutch assembly.

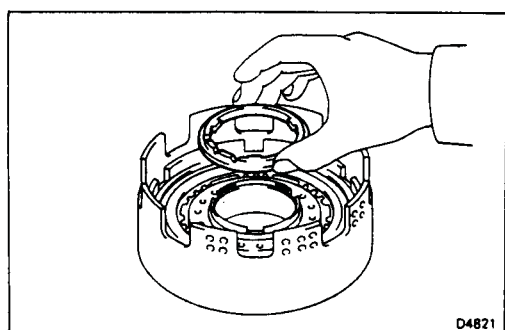


D4807



DISASSEMBLY OF DIRECT CLUTCH

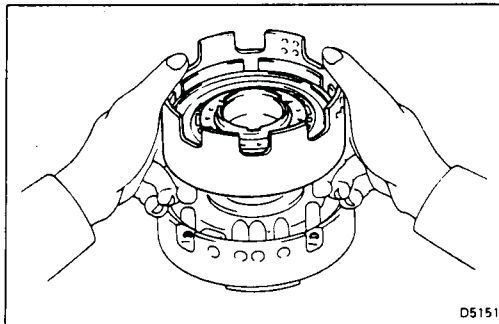
REMOVE DIRECT CLUTCH DRUM ASSEMBLY FROM
FORWARD CLUTCH ASSEMBLY



REMOVE CLUTCH DRUM THRUST WASHER FROM
DIRECT CLUTCH ASSEMBLY

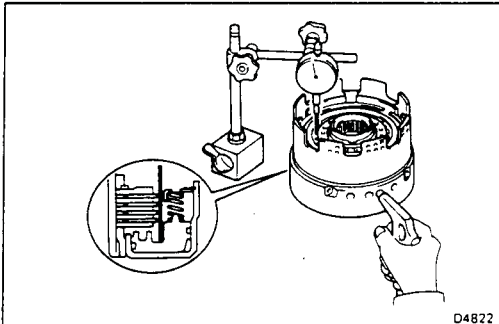


Technical Service Information



CHECK PISTON STROKE OF DIRECT CLUTCH (C₂)

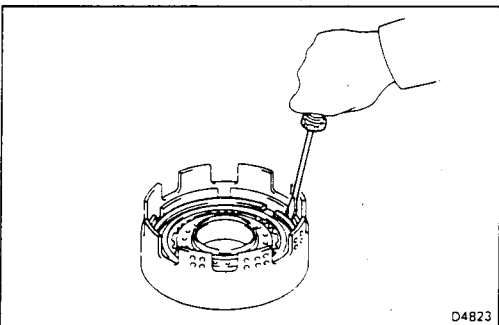
- (a) Place the direct clutch assembly onto the OD support assembly.



- (b) Using a dial indicator, measure the direct clutch piston stroke applying and releasing the compressed air (4 – 8 kg/cm², 57 – 114 psi or 392 – 785 kPa) as shown.

Piston stroke:

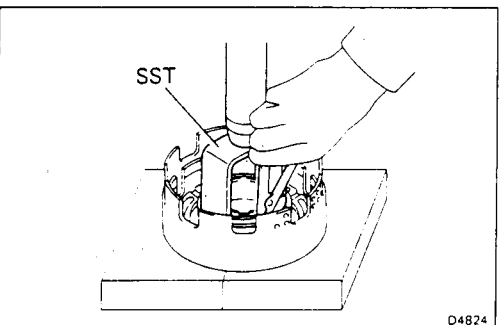
A340E	1.37 – 1.67 mm (0.0539 – 0.0657 in.)
A340H	1.03 – 1.33 mm (0.0406 – 0.0524 in.)



REMOVE SNAP RING FROM CLUTCH DRUM

REMOVE FLANGE, DISCS AND PLATES

NOTE: A340E — Four discs and four plates
A340H — Three discs and three plates

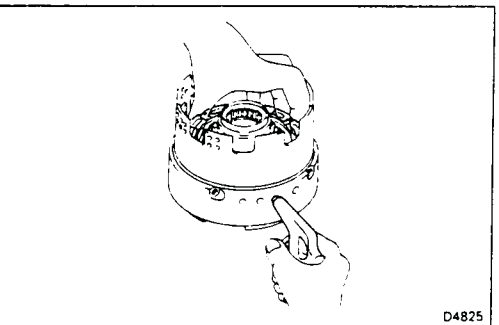


COMPRESS PISTON RETURN SPRING AND REMOVE SNAP RING

Place SST on the spring retainer and compress the return spring with a shop press. Using snap ring pliers, remove the snap ring.

SST 09350-30020 (09350-07040)

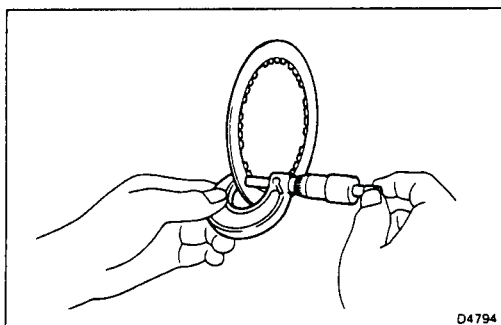
REMOVE PISTON RETURN SPRING



REMOVE DIRECT CLUTCH PISTON

- (a) Place the direct clutch drum onto the OD support.
(b) Hold the direct clutch piston by hand, apply compressed air to the OD support to remove the direct clutch piston.
(c) Remove the direct clutch piston.

REMOVE TWO O-RINGS FROM PISTON



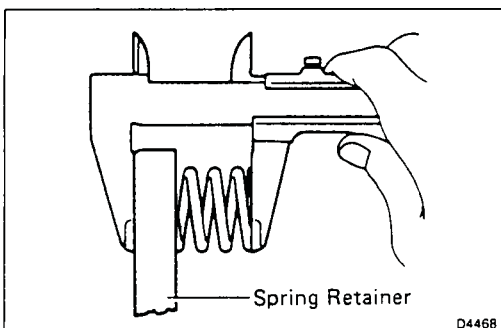
INSPECTION OF DIRECT CLUTCH

CHECK DISCS

Using a micrometer, measure the thickness of the discs.

Minimum thickness: 1.84 mm (0.0724 in.)

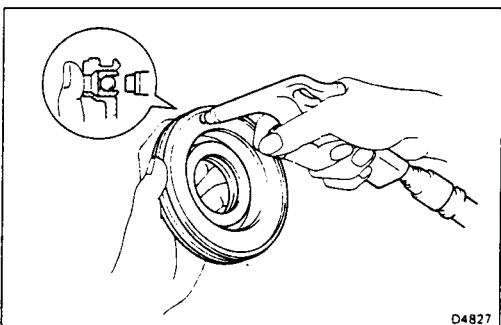
If the thickness is less than the minimum, replace the disc.



CHECK PISTON RETURN SPRING

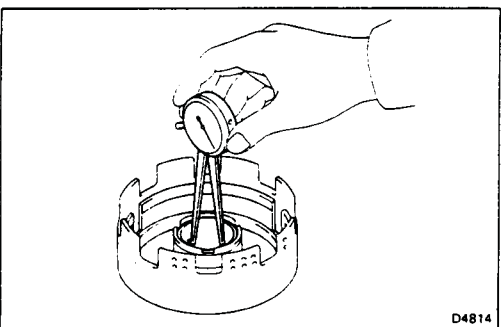
Using calipers, measure the free length of the return spring.

Standard length: 19.8 mm (0.780 in.)



CHECK DIRECT CLUTCH PISTON

- Check that check ball is free by shaking the piston
- Check that the valve does not leak by applying low-pressure compressed air.

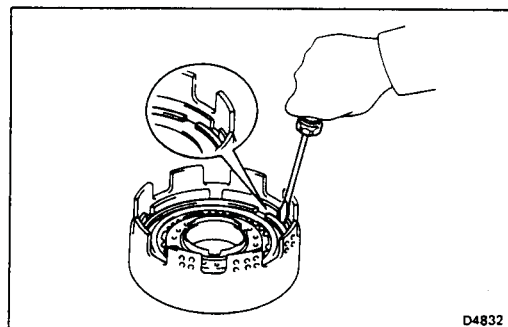


CHECK DIRECT CLUTCH DRUM BUSHING

Using a dial indicator, measure the inside diameter of the clutch drum bushing.

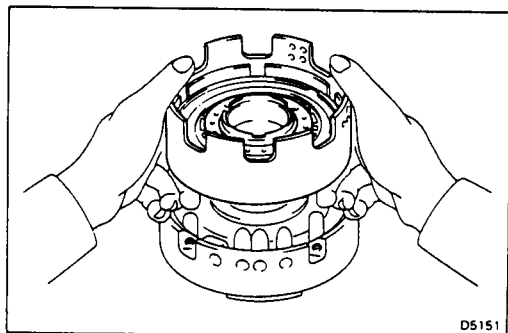
Maximum inside diameter: 53.97 mm (2.1248 in.)

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



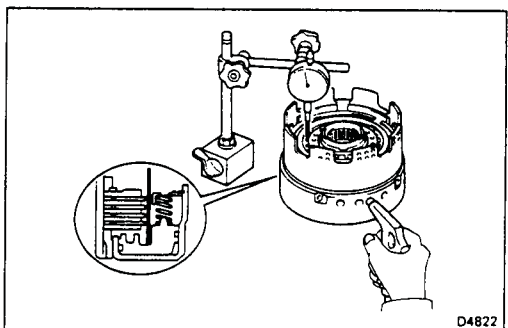
INSTALL SNAP RING

Install the snap ring with a screwdriver. Be sure the end gap of the snap ring is not aligned with the cutout portion of the direct clutch drum.



CHECK PISTON STROKE OF DIRECT CLUTCH (C₂)

(a) Place the direct clutch assembly onto the OD support assembly.



(b) Using a dial indicator, measure the direct clutch piston stroke applying and releasing the compressed air (4 – 8 kg/cm², 57 – 114 psi or 392 – 785 kPa) as shown.

Piston stroke:

A340E 1.37 – 1.67 mm (0.0539 – 0.0657)

A340H 1.03 – 1.33 mm (0.0406 – 0.0524)

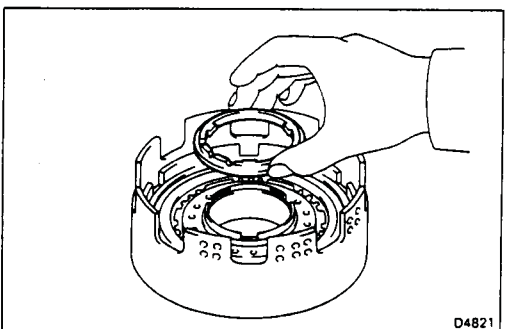
If the piston stroke is not within specification, replace the discs and recheck the piston stroke.

If the piston stroke is nonstandard, select another flange.

NOTE: There are seven flanges.

Flange thickness mm (in.)

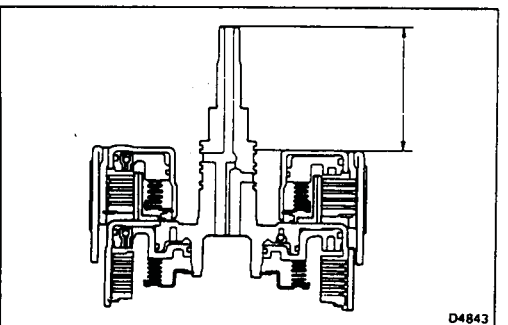
No.	Thickness	No.	Thickness
7	3.0 (0.118)	3	3.4 (0.134)
6	3.1 (0.122)	2	3.5 (0.138)
5	3.2 (0.126)	1	3.6 (0.142)
4	3.3 (0.130)		



INSTALL CLUTCH DRUM THRUST WASHER

Coat the thrust washer with petroleum jelly and install it onto the direct clutch.

NOTE: Make sure that the lugs shape match the cutout portions on the direct clutch.



INSTALL DIRECT CLUTCH ASSEMBLY

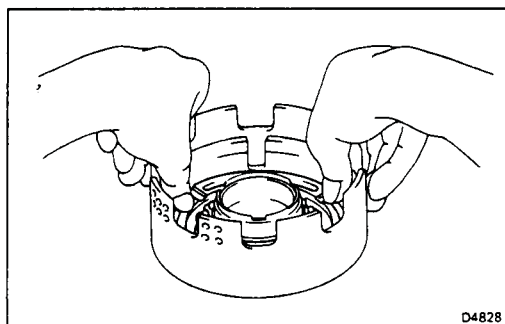
(a) Align the flukes of discs in the direct clutch.

(b) Install the direct clutch assembly onto the forward clutch assembly.

(c) Check that the distance from the direct clutch end to the forward clutch end should be 71.2 mm (2.803 in.).



Technical Service Information



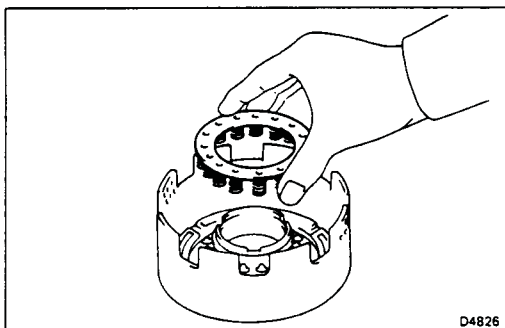
ASSEMBLY OF DIRECT CLUTCH

INSTALL NEW O-RINGS ON DIRECT CLUTCH PISTON

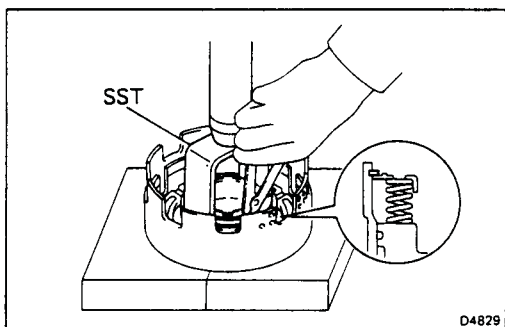
Coat new O-rings with ATF and install them on the direct clutch piston.

INSTALL DIRECT CLUTCH PISTON TO DIRECT CLUTCH DRUM

Being careful not to damage the O-rings, press in the direct clutch piston into the clutch drum by both hands.



INSTALL PISTON RETURN SPRING

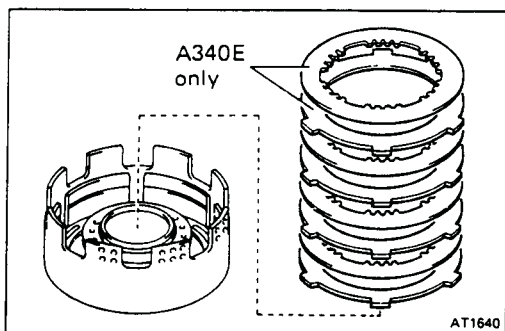


COMPRESS PISTON RETURN SPRING AND INSTALL SNAP RING IN GROOVE

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

SST 09350-30020 (09350-07040)

(b) Install the snap ring with snap ring pliers. Be sure the end gap of the snap ring is not aligned with the spring retainer claw.

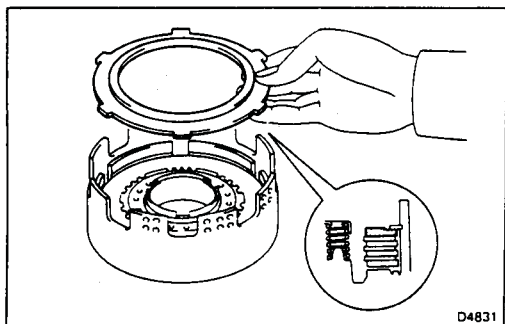


INSTALL PLATES AND DISCS

Install in order:

A340E — P — D — P — D — P — D — P — D

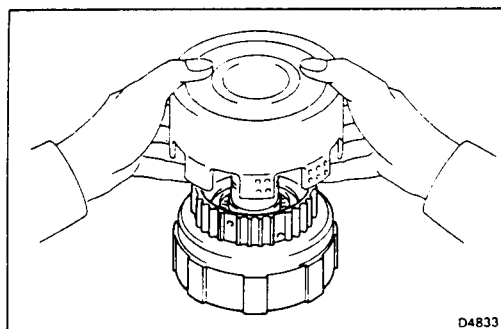
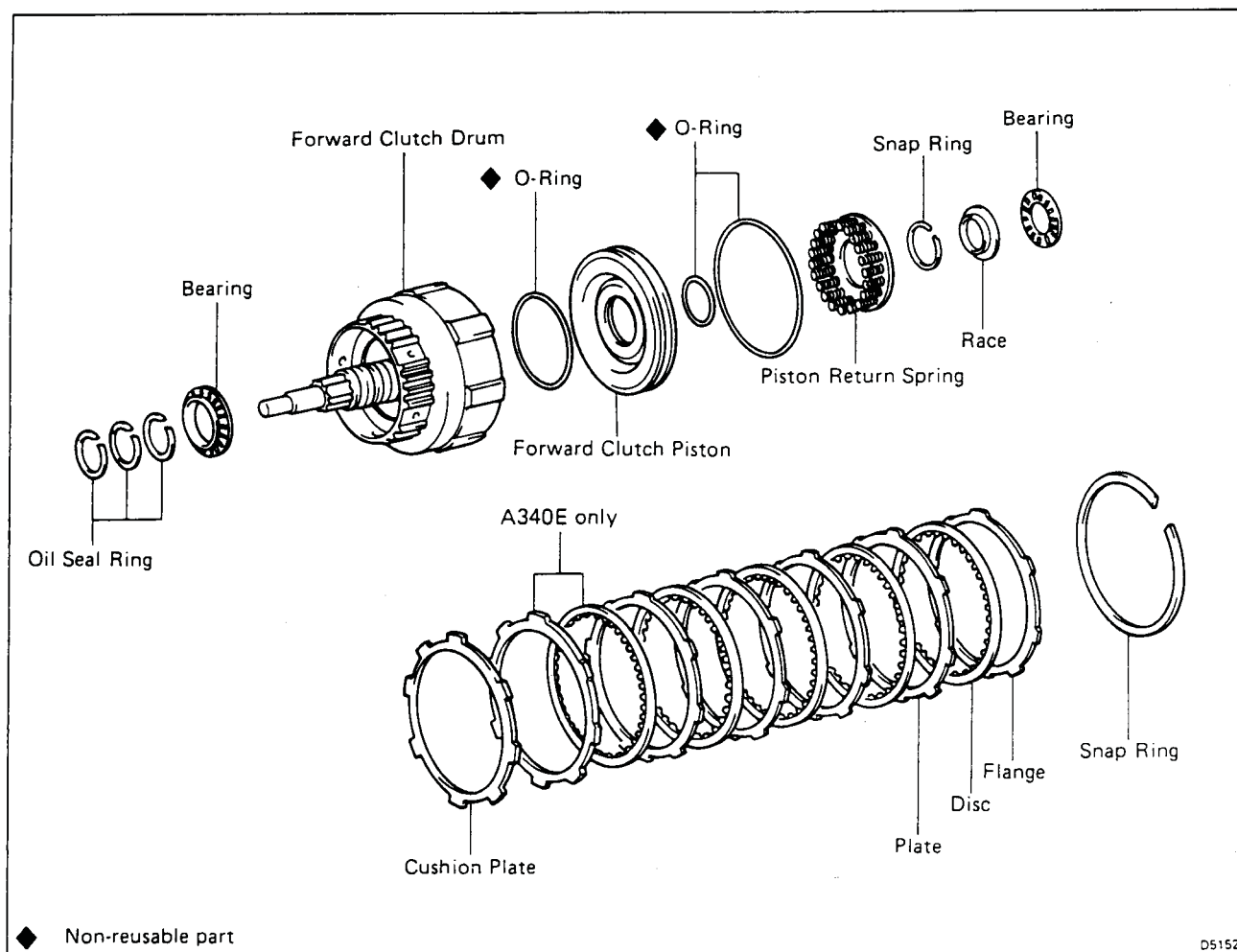
A340H — P — D — P — D — P — D



INSTALL FLANGE

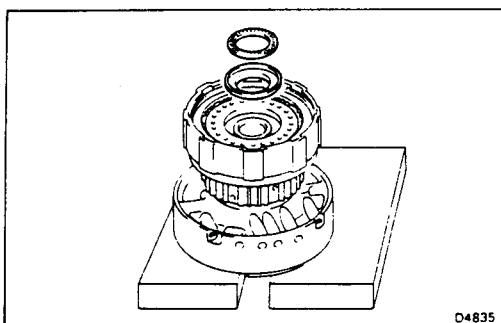
Install the flange, facing the flat end downward.

Technical Service Information **FORWARD CLUTCH (C1)**



DISASSEMBLY OF FORWARD CLUTCH

REMOVE FORWARD CLUTCH ASSEMBLY FROM
 DIRECT CLUTCH ASSEMBLY

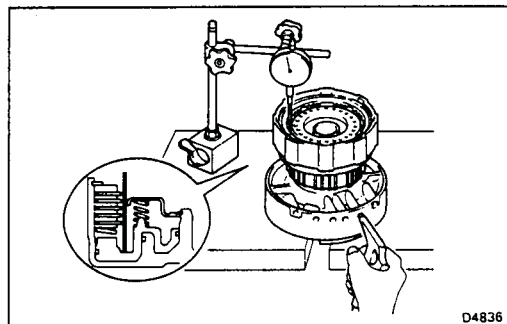


REMOVE BEARING AND RACE

- Place wooden blocks, etc. to prevent forward clutch shaft from touching the work stand, and place the OD support on them.
- Place the forward clutch onto the OD support and remove the bearing and race.



Technical Service Information



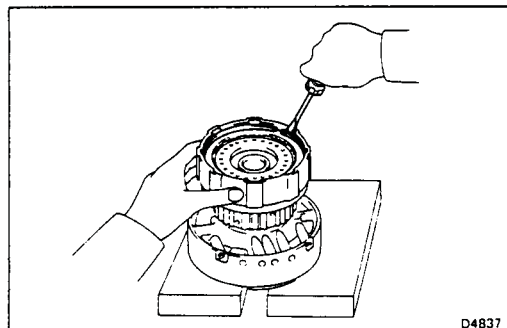
CHECK PISTON STROKE OF FORWARD CLUTCH (C₁)

Using a dial indicator, measure the forward clutch piston stroke applying and releasing the compressed air (4 – 8 kg/cm², 57 – 114 psi or 392 – 785 kPa) as shown.

Piston stroke:

A340E 3.06 – 3.87 mm (0.1205 – 0.1524 in.)

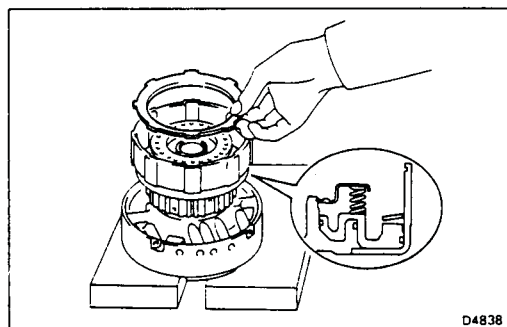
A340H 2.75 – 3.53 mm (0.1083 – 0.1390 in.)



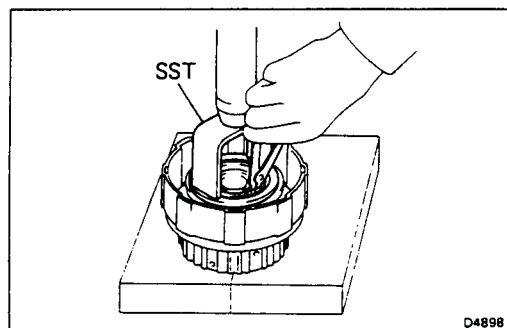
REMOVE SNAP RING FROM CLUTCH DRUM

REMOVE FLANGE, DISCS AND PLATES

NOTE: A340E — Five discs and five plates
A340H — Four discs and four plates



REMOVE CUSHION PLATE

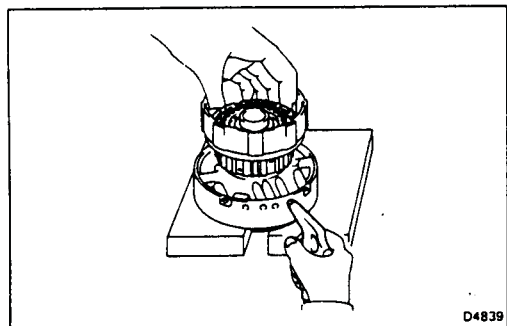


COMPRESS PISTON RETURN SPRING AND REMOVE SNAP RING

Place SST on the spring retainer and compress the return spring with a shop press. Using snap ring pliers, remove the snap ring.

SST 09350-30020 (09350-07040)

REMOVE PISTON RETURN SPRING



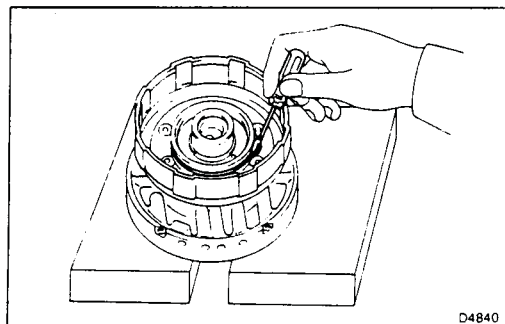
REMOVE FORWARD CLUTCH PISTON

- Place the forward clutch drum onto the OD support.
- Hold the forward clutch piston by hand, apply compressed air to the OD support to remove the forward clutch piston.
- Remove the forward clutch piston.

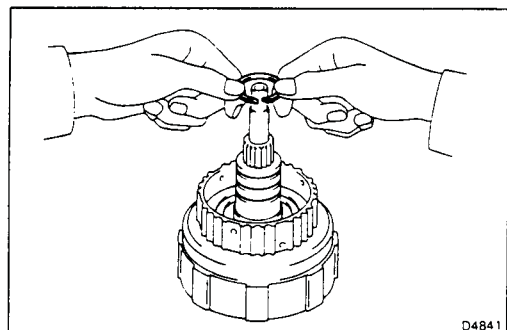
REMOVE TWO O-RINGS FROM PISTON



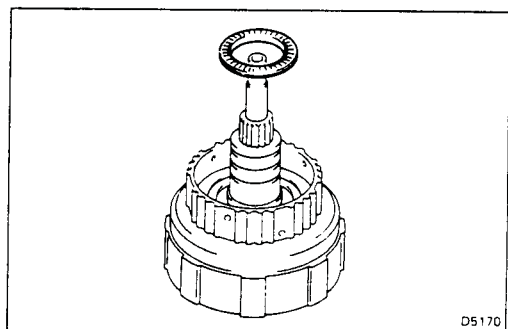
Technical Service Information



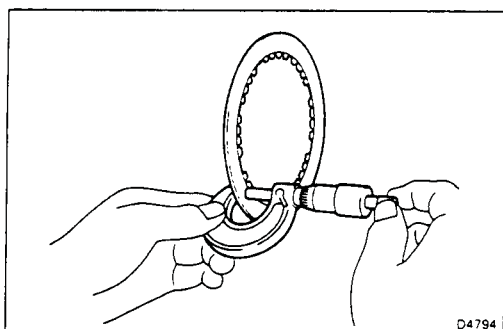
REMOVE O-RING FROM FORWARD CLUTCH DRUM



REMOVE THREE OIL SEAL RINGS



REMOVE ASSEMBLED BEARING AND RACE



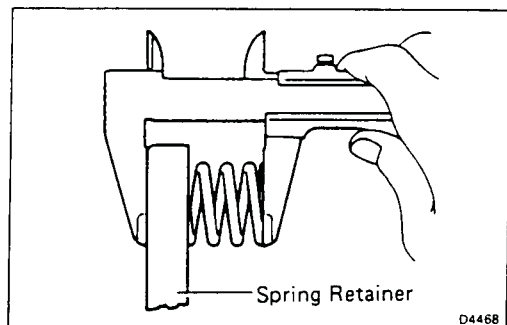
INSPECTION OF FORWARD CLUTCH

CHECK DISCS

Using a micrometer, measure the thicknesses of the discs.

Minimum thickness: 1.84 mm (0.0724 in.)

If the thickness is less than the minimum, replace the disc.



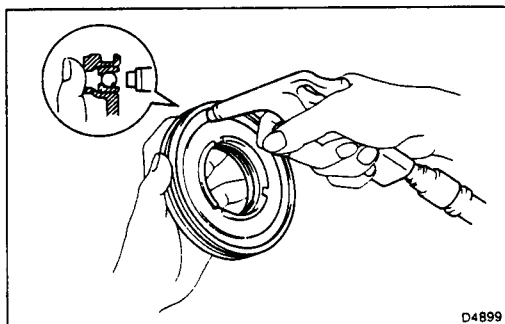
CHECK PISTON RETURN SPRING

Using calipers, measure the free length of the return spring.

Standard length: 11.55 mm (0.4547 in.)

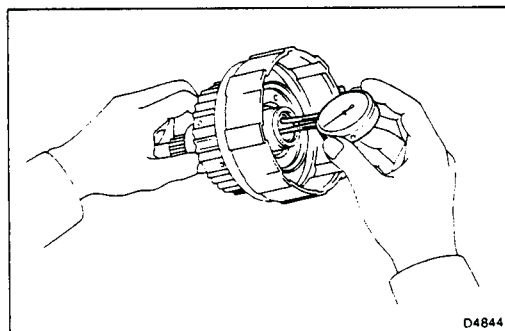


Technical Service Information



CHECK FORWARD CLUTCH PISTON

- Check that check ball is free by shaking the piston.
- Check that the valve does not leak by applying low-pressure compressed air.

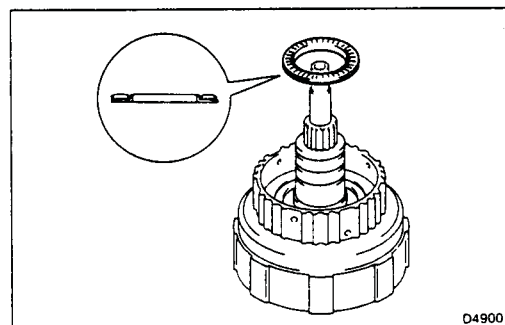


CHECK FORWARD CLUTCH DRUM BUSHING

Using a dial indicator, measure the inside diameter of the forward clutch drum bushing.

Maximum inside diameter: 24.08 mm (0.9480 in.)

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



ASSEMBLY OF FORWARD CLUTCH

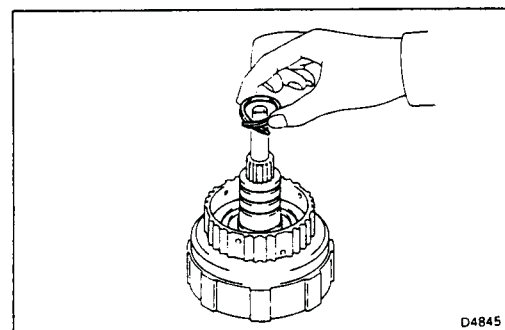
INSTALL ASSEMBLED BEARING AND RACE

Coat the assembled bearing and race with petroleum jelly and install it onto the forward clutch drum facing the race side downward.

NOTE: Assembled bearing and race

Inside diameter: 33.6 mm (1.323 in.)

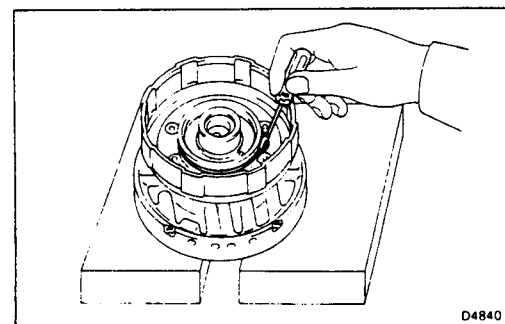
Outside diameter: 47.8 mm (1.882 in.)



INSTALL THREE OIL SEAL RINGS

- Coat the three oil seal rings with ATF.
- Contract the oil seal rings as shown, and install them onto the forward clutch drum.

CAUTION: Do not spread the ring ends more than necessary.



INSTALL NEW O-RING TO FORWARD CLUTCH DRUM

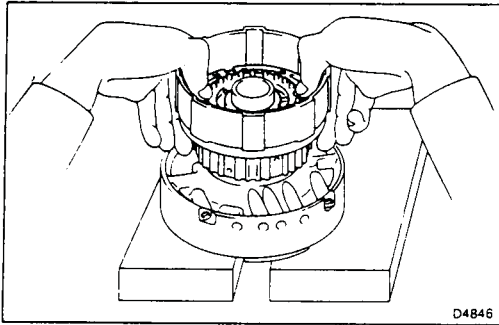
Coat a new O-ring with ATF and install it on the forward clutch drum.

INSTALL NEW O-RINGS TO FORWARD CLUTCH PISTON

Coat new O-rings with ATF and install them on the forward clutch piston.

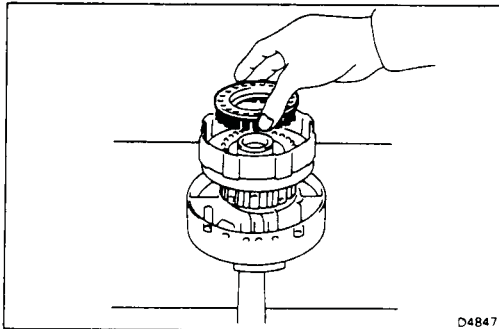


Technical Service Information

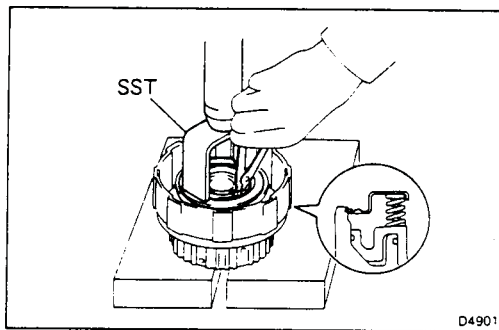


INSTALL FORWARD CLUTCH PISTON

Being careful not to damage the O-rings, press the clutch piston into the forward clutch drum.



INSTALL PISTON RETURN SPRING

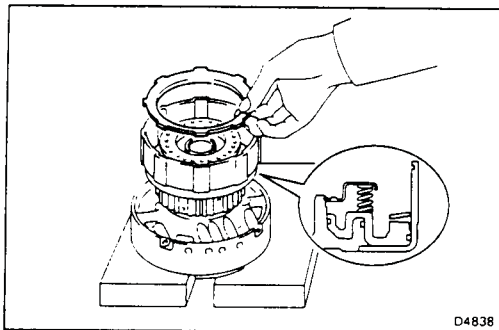


COMPRESS PISTON RETURN SPRING AND INSTALL SNAP RING IN GROOVE

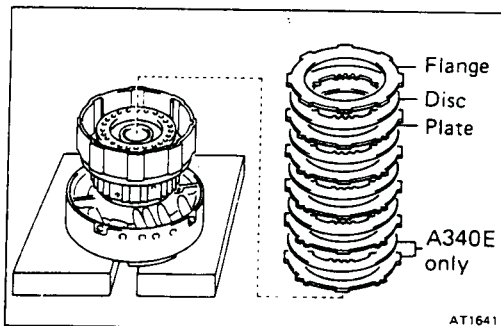
- (a) Place SST on the spring retainer, and compress the return spring with a shop press.

SST 09350-30020 (09350-07040)

- (b) Install the snap ring with snap ring pliers. Be sure the end gap of the snap ring is not aligned with the spring retainer claw.



INSTALL CUSHION PLATE ROUNDED END DOWN AS SHOWN



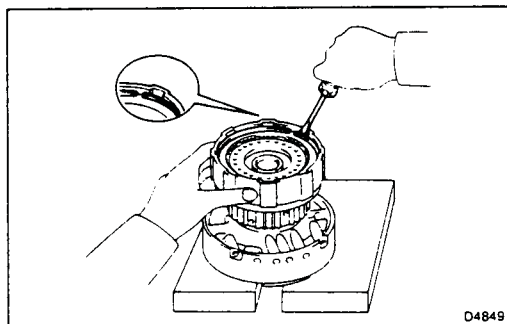
INSTALL DISCS, PLATES AND FLANGE

- (a) Install in order:

A340E — P-D-P-D-P-D-P-D-P-D

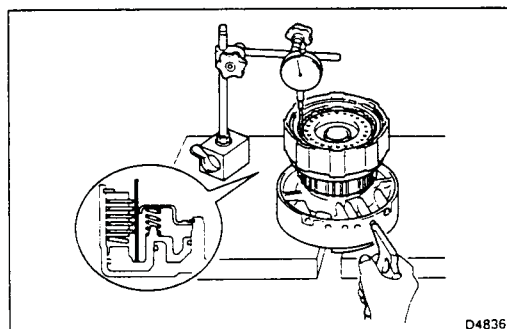
A340H — P-D-P-D-P-D-P-D

- (b) And then install the flange facing the rounded edge downward.



INSTALL SNAP RING

Install the snap ring with a screwdriver. Be sure the end gap of the snap ring is not aligned with the cutout portion of the forward clutch drum.



CHECK PISTON STROKE OF FORWARD CLUTCH (C₁)

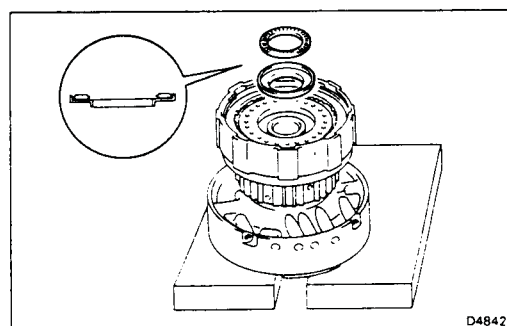
Using a dial indicator, measure the forward clutch piston stroke applying and releasing the compressed air (4 – 8 kg/cm², 57 – 114 psi or 392 – 785 kPa) as shown.

Piston stroke:

A340E 3.06 – 3.87 mm (0.1205 – 0.1524 in.)

A340H 2.75 – 3.53 mm (0.1083 – 0.1390 in.)

If the piston stroke is not within specification, replace the discs, and recheck the piston stroke.

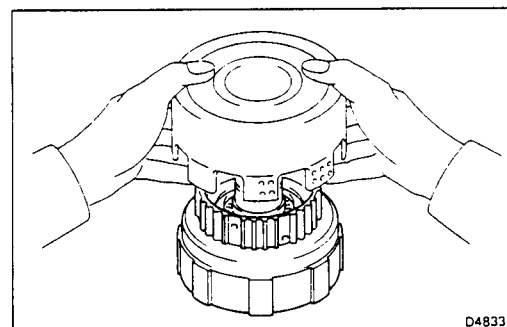


INSTALL RACE AND BEARING

Coat the race and bearing with petroleum jelly, and install them onto the forward clutch drum.

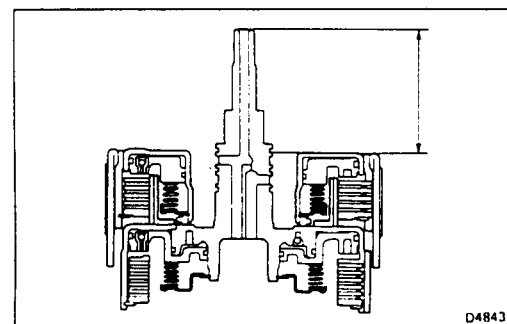
NOTE: Race and bearing diameter mm (in.)

	Inside	Outside
Race	26.0 (1.024)	48.9 (1.925)
Bearing	26.0 (1.024)	46.7 (1.839)



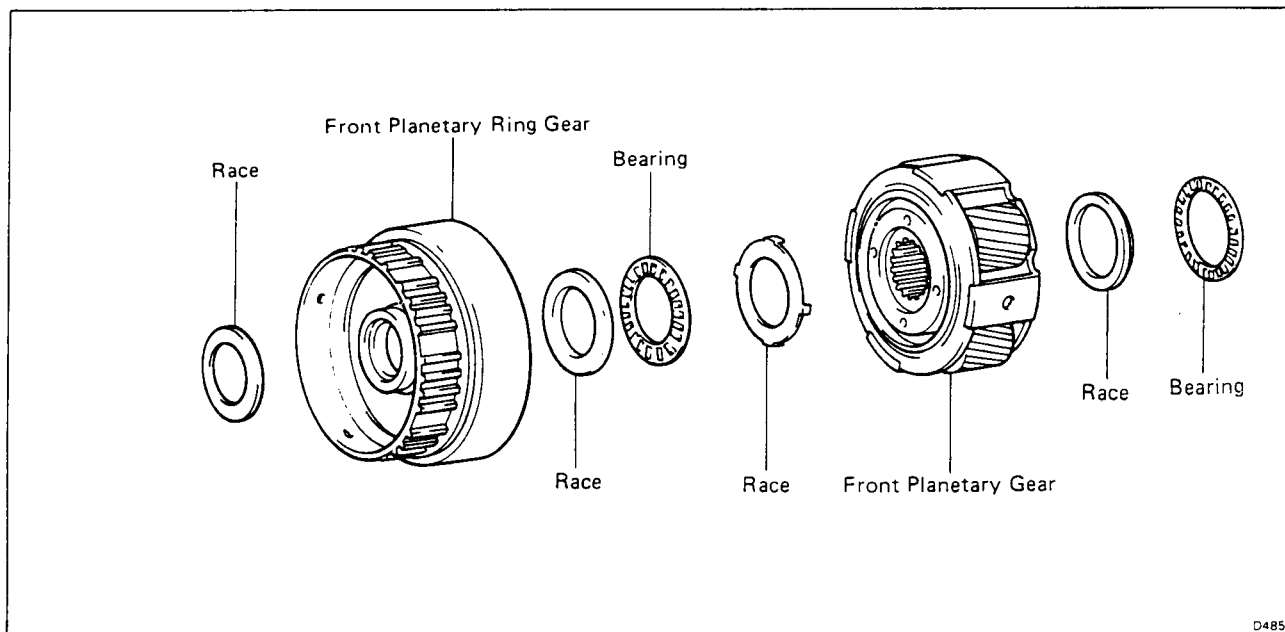
INSTALL DIRECT CLUTCH ASSEMBLY TO FORWARD CLUTCH ASSEMBLY

- Align the flukes of discs in the direct clutch.
- Install the direct clutch assembly onto the forward clutch assembly.

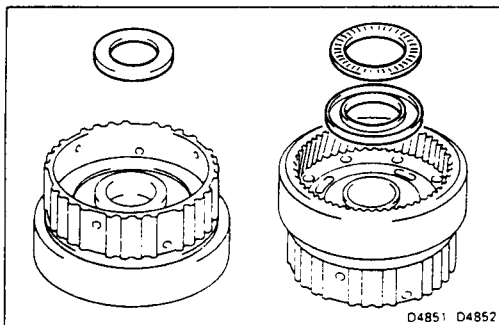


- Check that the distance from the direct clutch end to the forward clutch end should be 71.2 mm (2.803 in.).

FRONT PLANETARY GEAR



D4850

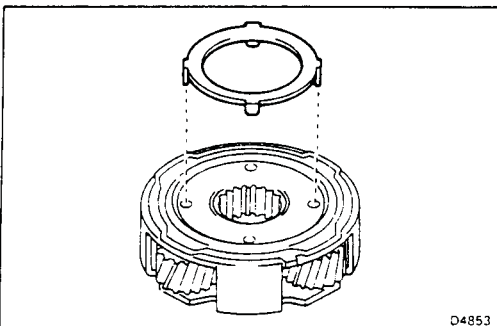


D4851 D4852

DISASSEMBLY OF FRONT PLANETARY GEAR

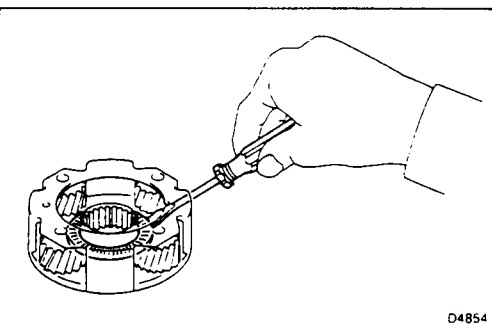
REMOVE BEARING AND RACES FROM FRONT PLANETARY RING GEAR

- Remove the race from the front planetary ring gear front side.
- Turn over planetary ring gear, remove the bearing and race.



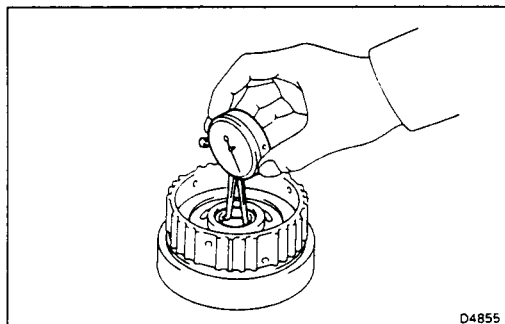
D4853

REMOVE RACE FROM FRONT PLANETARY GEAR



D4854

TURN OVER PLANETARY GEAR AND REMOVE BEARING AND RACE



D4855

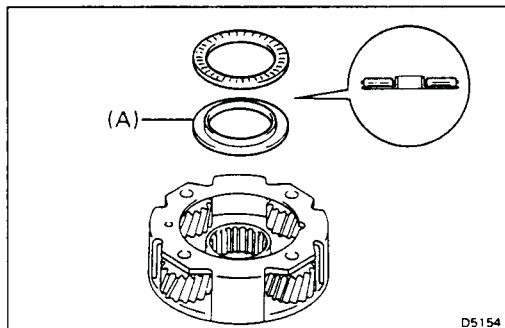
INSPECTION OF FRONT PLANETARY GEAR

CHECK FRONT PLANETARY RING GEAR BUSHING

Using a dial indicator, measure the inside diameter of the planetary ring gear bushing.

Maximum inside diameter: 24.08 mm (0.9480 in.)

If the inside diameter is greater than the maximum, replace the planetary ring gear.

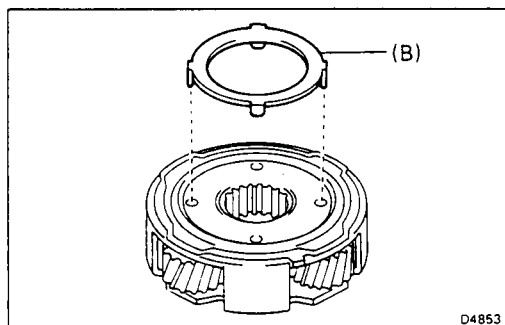


D5154

ASSEMBLY OF FRONT PLANETARY GEAR

INSTALL RACES AND BEARING FRONT PLANETARY GEAR

- Coat the races and bearing with petroleum jelly.
- Install the race and bearing to the rear side of the planetary gear.

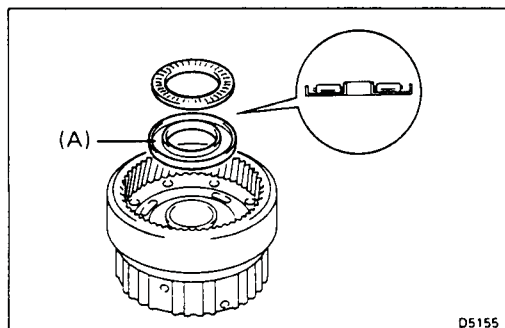


D4853

- Turn over the planetary gear and install the race. Make sure that the shape of the lugs match the holes on the planetary gear.

NOTE: Bearing and races diameter. mm (in.)

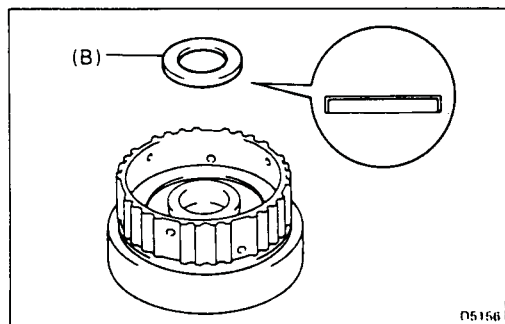
	Inside	Outside
Bearing	35.5 (1.398)	47.7 (1.878)
Race (A)	33.7 (1.327)	47.6 (1.874)
Race (B)	34.3 (1.350)	47.8 (1.882)



D5155

INSTALL RACES AND BEARING TO FRONT PLANETARY RING GEAR

- Coat the races and bearing with petroleum jelly.
- Install the race and bearing onto the rear side of the planetary ring gear.



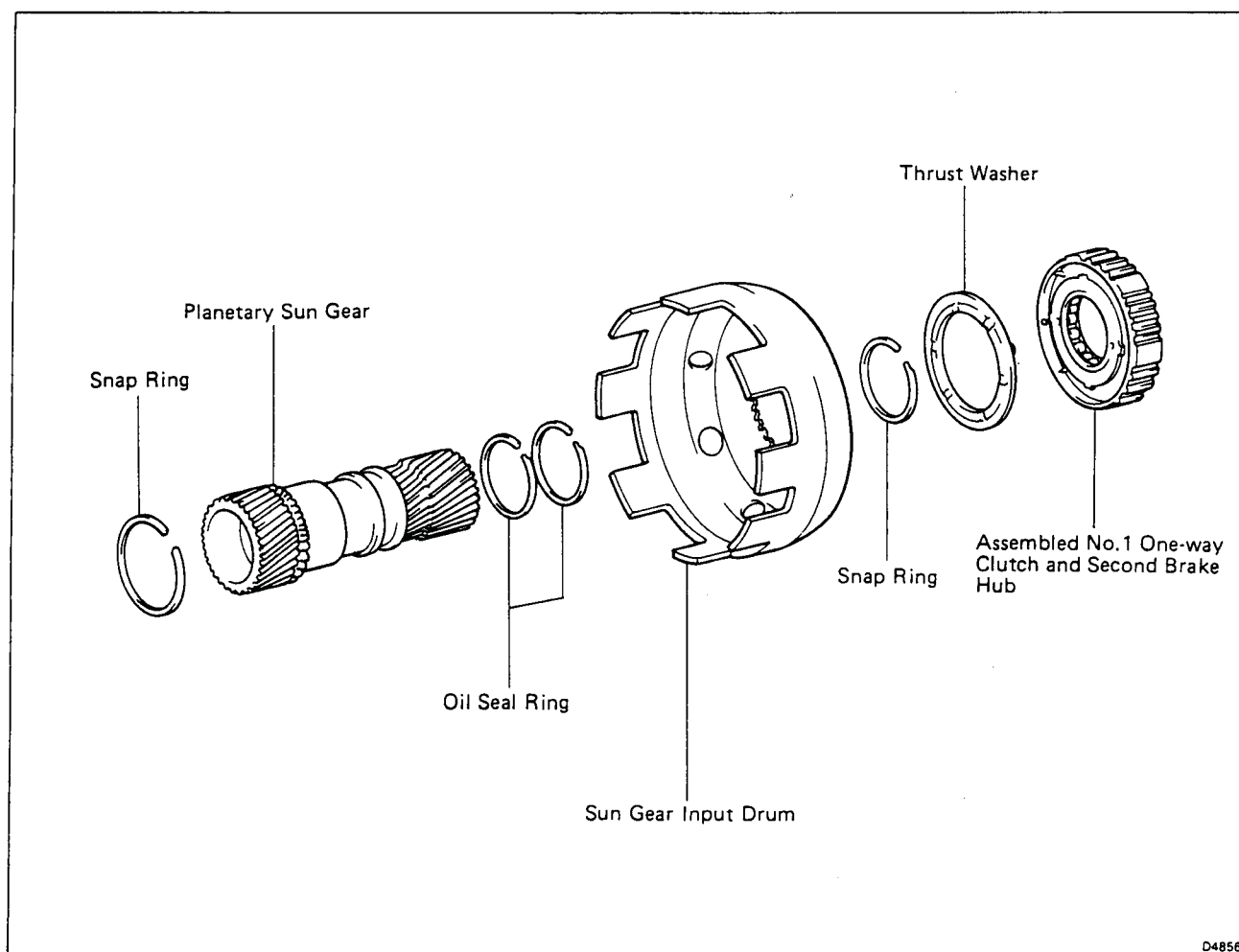
D5156

- Turn over the planetary ring gear and install the race onto the front side of the planetary ring gear.

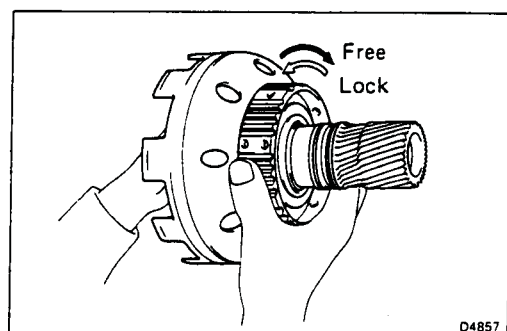
NOTE: Races and bearing diameter mm (in.)

	Inside	Outside
Race (A)	30.5 (1.201)	53.6 (2.110)
Bearing	32.6 (1.283)	47.7 (1.878)
Race (B)	26.5 (1.043)	47.0 (1.850)

PLANETARY SUN GEAR AND NO.1 ONE-WAY CLUTCH



D4856

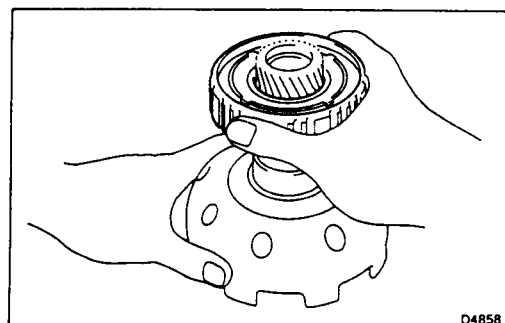


D4857

DISASSEMBLY OF PLANETARY SUN GEAR AND NO.1 ONE-WAY CLUTCH

CHECK OPERATION OF NO.1 ONE-WAY CLUTCH

Hold the planetary sun gear and turn the second brake hub. The second brake hub should turn freely clockwise and should lock counterclockwise.

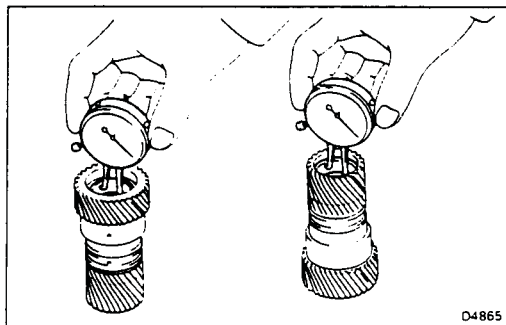


D4858

REMOVE ASSEMBLED NO.1 ONE-WAY CLUTCH AND SECOND BRAKE HUB



Technical Service Information



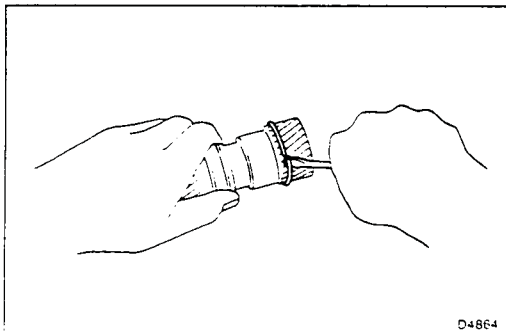
INSPECTION OF PLANETARY SUN GEAR AND NO.1 ONE-WAY CLUTCH

CHECK PLANETARY SUN GEAR BUSHING

Using a dial indicator, measure the inside diameter of the planetary sun gear bushing.

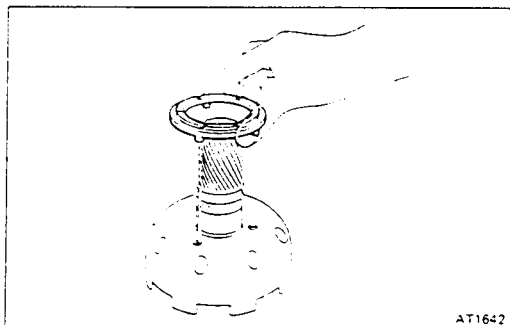
Maximum inside diameter: 27.08 mm (1.0661 in.)

If the inside diameter is greater than the maximum, replace the planetary sun gear.



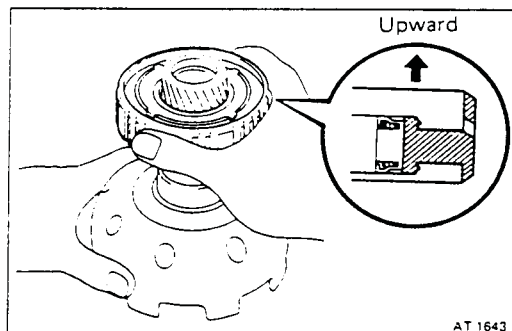
ASSEMBLY OF PLANETARY SUN GEAR AND NO.1 ONE-WAY CLUTCH

INSTALL SNAP RING TO PLANETARY SUN GEAR

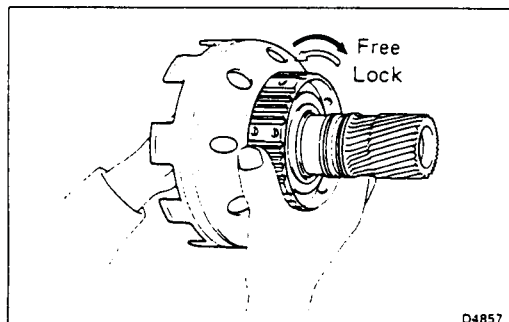


INSTALL THRUST WASHER

NOTE: Make sure that the lugs match the shape of the holes on the sun gear input drum.



INSTALL ASSEMBLED NO. 1 ONE-WAY CLUTCH AND SECOND BRAKE HUB ONTO PLANETARY SUN GEAR AS SHOWN

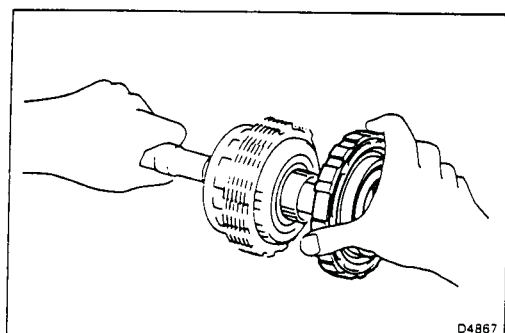
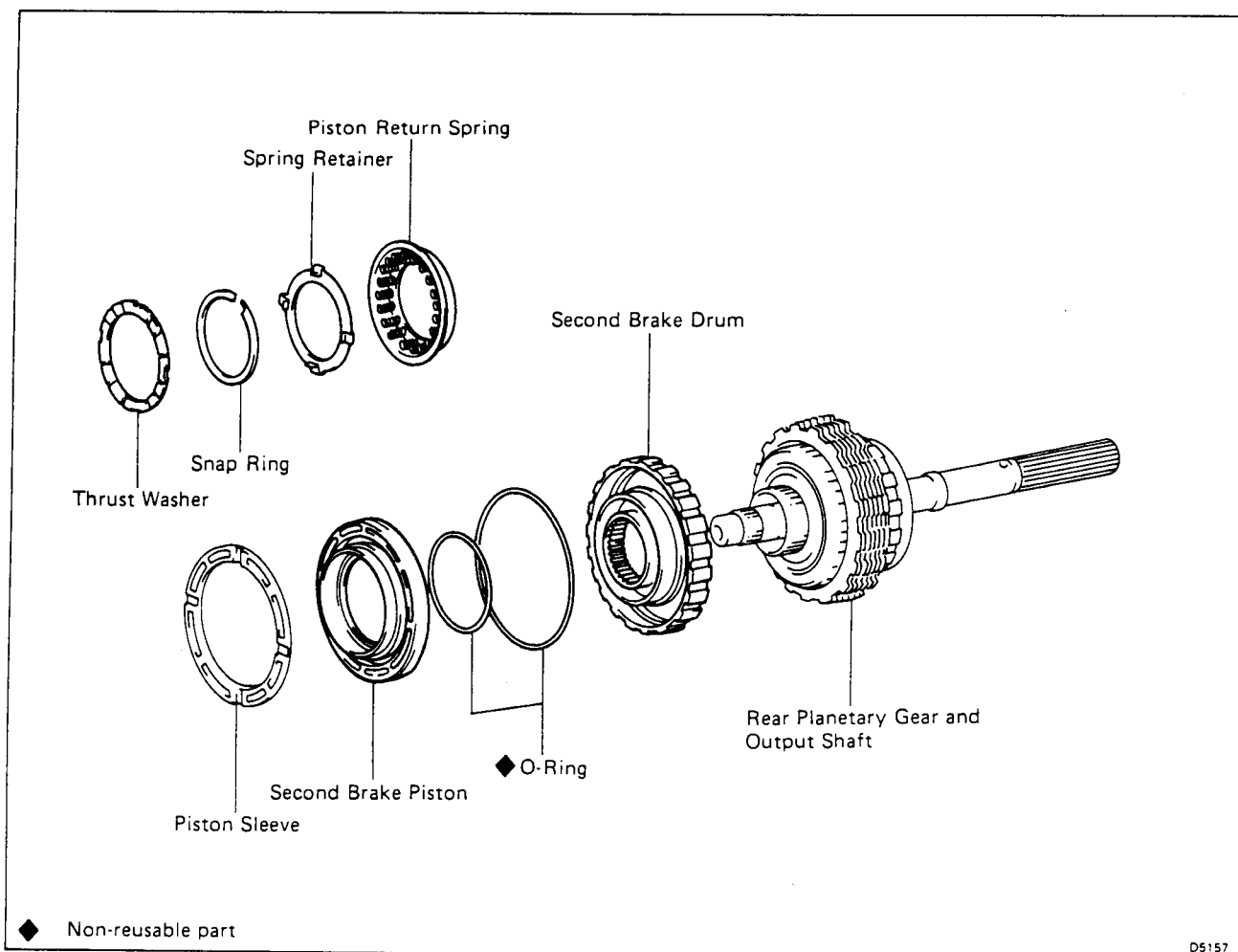


CHECK OPERATION OF NO. 1 ONE-WAY CLUTCH

Hold the planetary sun gear and turn the second brake hub. The second brake hub should turn freely clockwise and should lock counterclockwise.

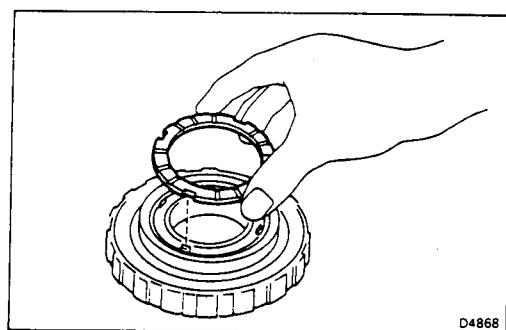
Technical Service Information

SECOND BRAKE (B₂)



DISASSEMBLY OF SECOND BRAKE

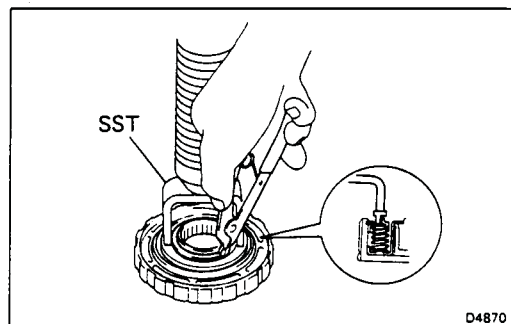
REMOVE SECOND BRAKE ASSEMBLY FROM
OUTPUT SHAFT



REMOVE THRUST WASHER



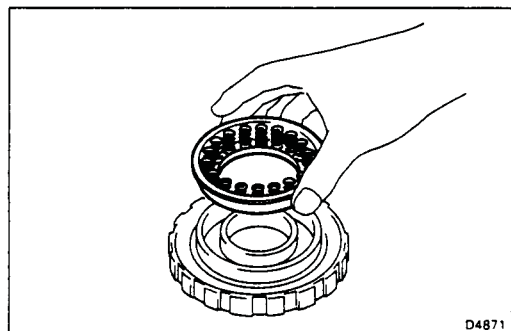
Technical Service Information



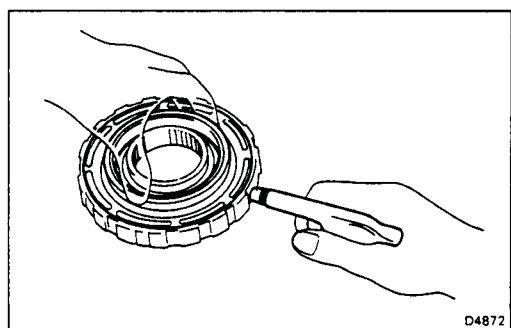
COMPRESS PISTON RETURN SPRING AND REMOVE SNAP RING

- Place SST on the spring retainer, and compress the return spring with a shop press.
- Remove the snap ring with snap ring pliers.

REMOVE SPRING RETAINER



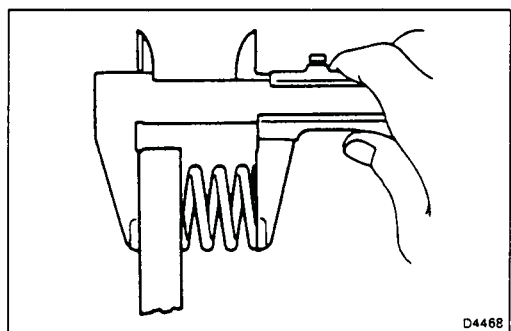
REMOVE PISTON RETURN SPRING



REMOVE SECOND BRAKE PISTON

- Hold the second brake piston by hand, apply compressed air to the second brake drum to remove the second brake piston.
- Remove the second brake piston.

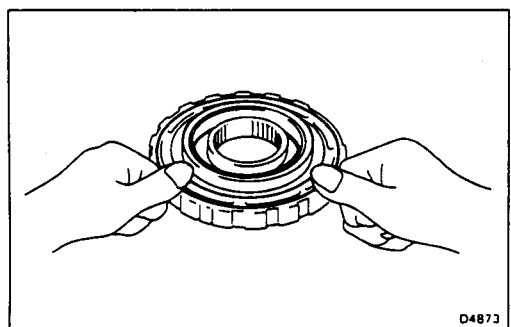
REMOVE O-RINGS FROM SECOND BRAKE PISTON



INSPECTION OF SECOND BRAKE

CHECK PISTON RETURN SPRING

Using calipers, measure the free length of the return spring.
Standard length: 15.05 mm (0.5925 in.)



ASSEMBLY OF SECOND BRAKE

INSTALL NEW O-RINGS TO SECOND BRAKE PISTON

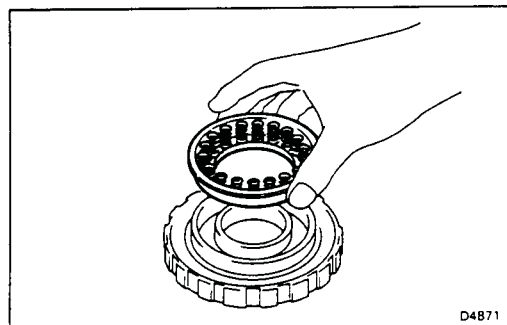
Coat new O-rings with ATF and install them on the second brake piston.

INSTALL SECOND BRAKE PISTON

Being careful not to damage the O-rings, press in the second brake piston into the second brake drum.

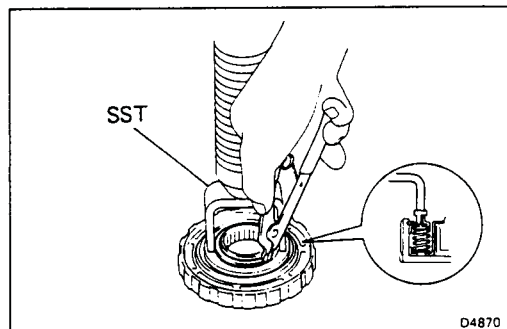


Technical Service Information



INSTALL PISTON RETURN SPRING

INSTALL SPRING RETAINER

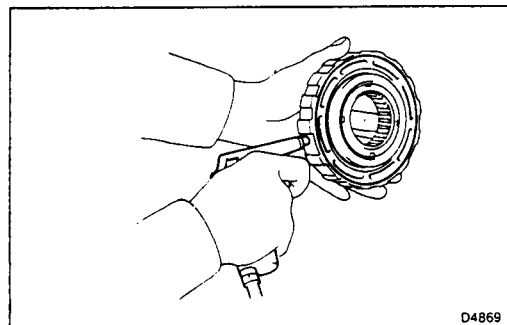


COMPRESS PISTON RETURN SPRING AND INSTALL SNAP RING IN GROOVE

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

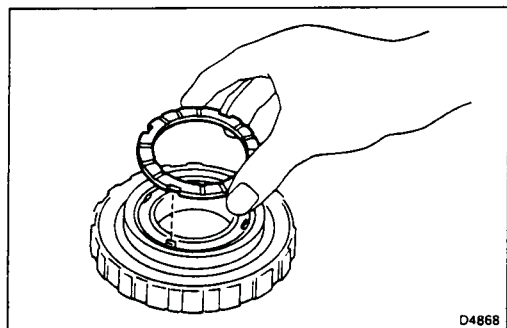
SST 09350-30020 (09350-07040)

- (b) Install the snap ring with snap ring pliers. Be sure the end gap of the snap ring is not aligned with the spring retainer claw.



CHECK SECOND BRAKE PISTON MOVING

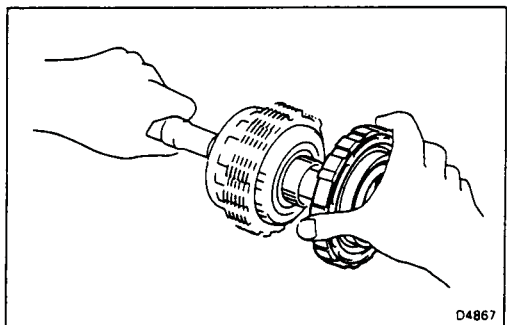
Make sure the second brake piston moves smoothly when applying and releasing the low compressed air to the second brake drum.



INSTALL THRUST WASHER

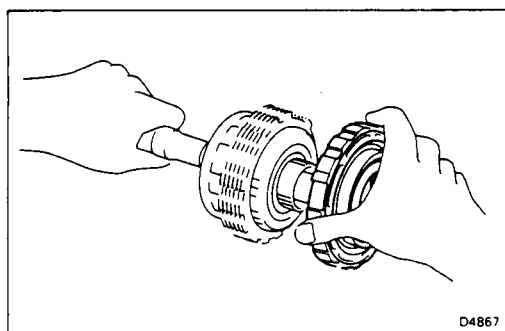
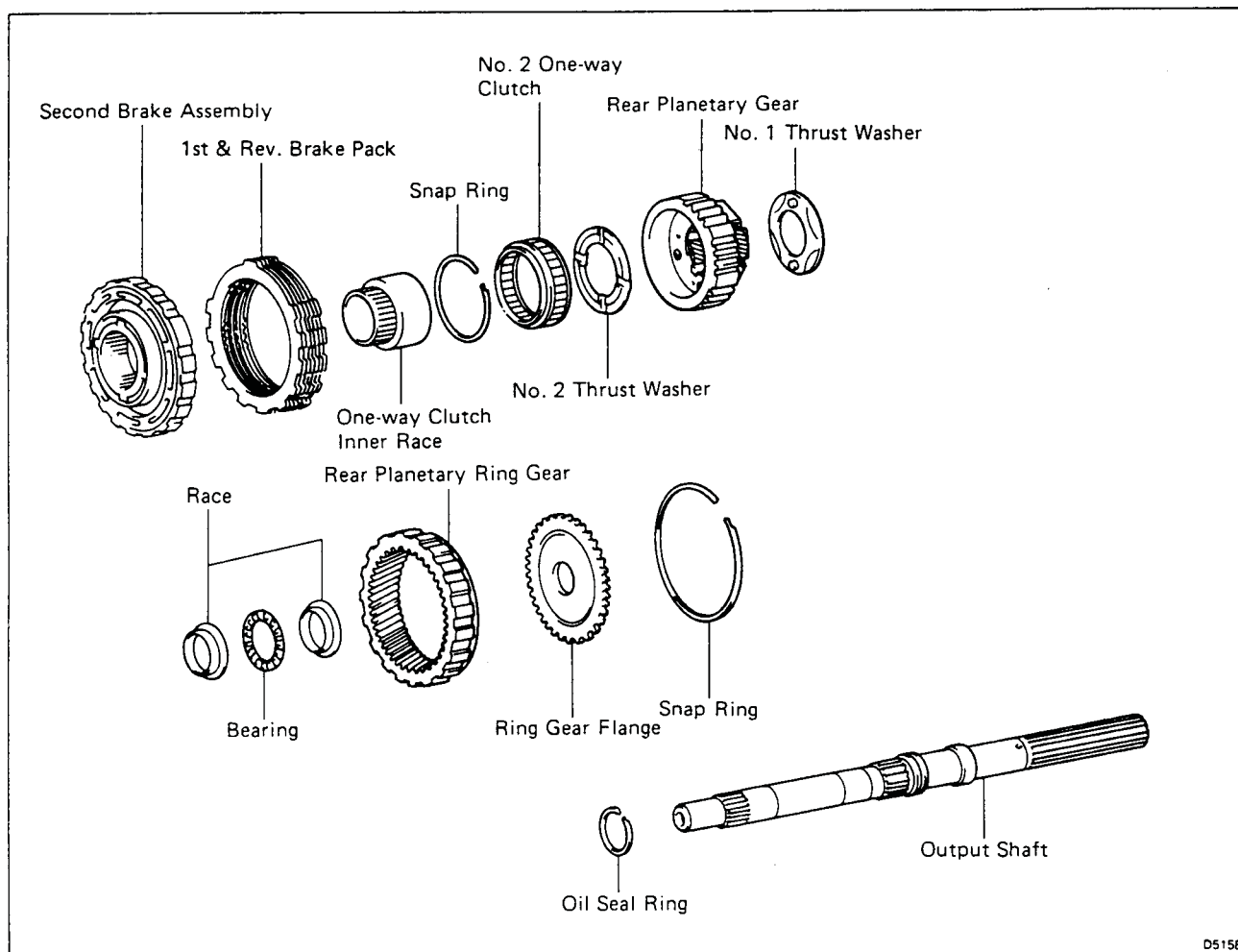
Coat the thrust washer with petroleum jelly and install it.

NOTE: Make sure that the cutout portions of thrust washers match teeth of the spring retainer.



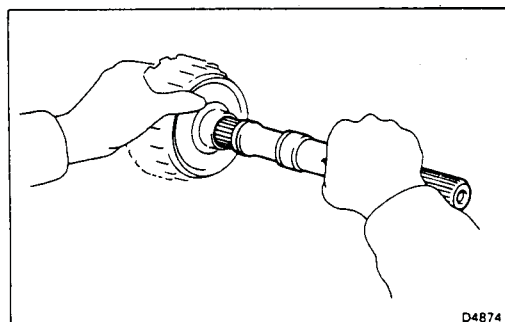
INSTALL SECOND BRAKE ASSEMBLY TO OUTPUT SHAFT

REAR PLANETARY GEAR AND OUTPUT SHAFT

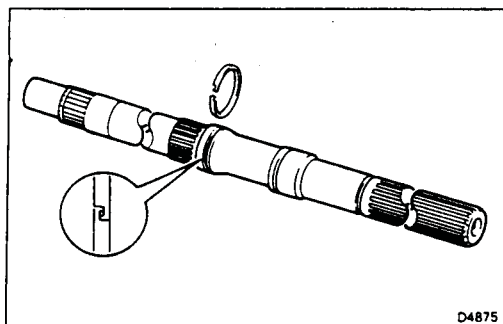


DISASSEMBLY OF REAR PLANETARY GEAR AND OUTPUT SHAFT

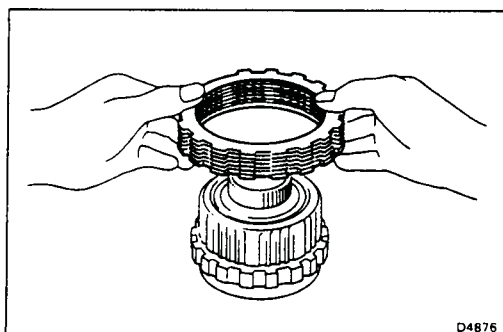
REMOVE SECOND BRAKE ASSEMBLY FROM OUTPUT SHAFT



REMOVE OUTPUT SHAFT FROM REAR PLANETARY GEAR ASSEMBLY

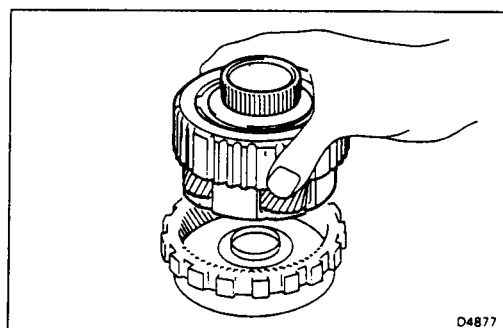


REMOVE OIL SEAL RING FROM OUTPUT SHAFT

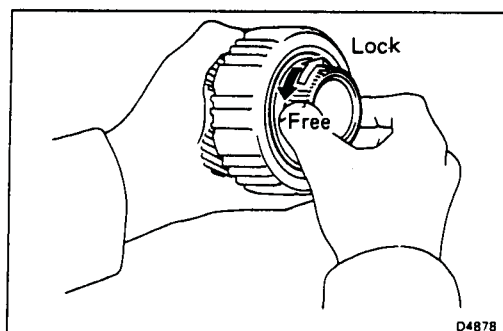


REMOVE FIRST AND REVERSE BRAKE DISCS, PLATES AND FLANGE

NOTE: A340E — Six discs and six plates
A340H — Five discs and five plates

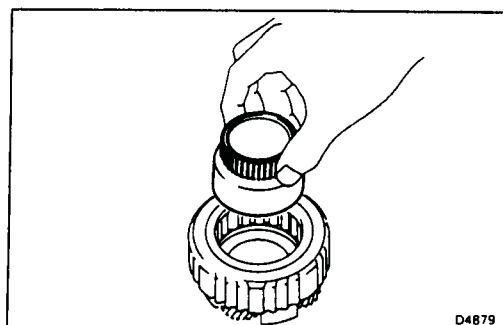


REMOVE REAR PLANETARY GEAR FROM REAR PLANETARY RING GEAR



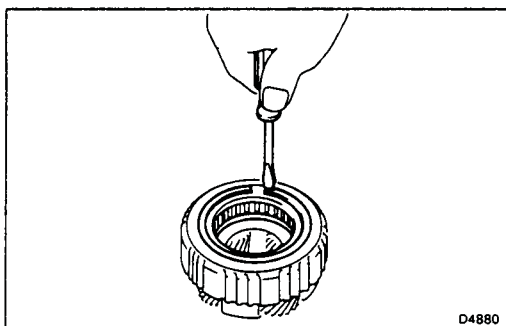
CHECK OPERATION OF NO. 2 ONE-WAY CLUTCH

Hold the planetary gear and turn the one-way clutch inner race. The one-way clutch inner race should turn freely counterclockwise and should lock clockwise.

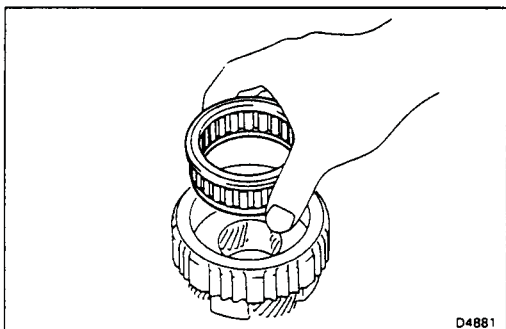


REMOVE NO. 2 ONE-WAY CLUTCH

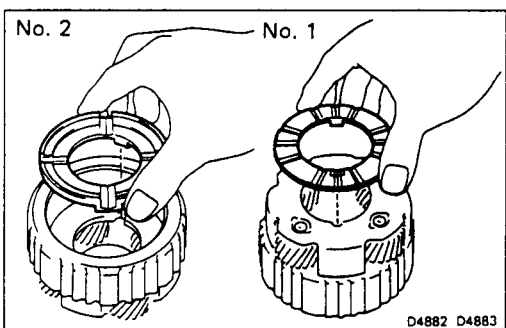
- (a) Remove the one-way clutch inner race from the rear planetary gear.



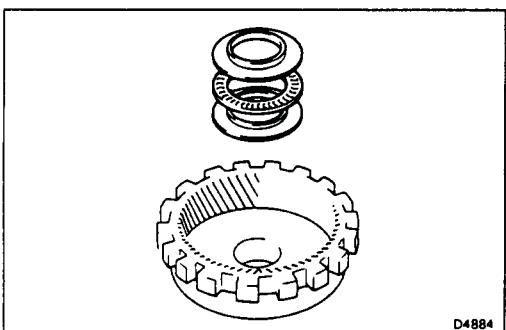
(b) Remove the snap ring with a screwdriver.



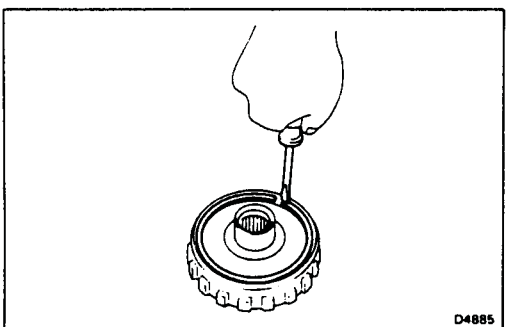
(c) Remove the No. 2 one-way clutch with retainers from the planetary gear.



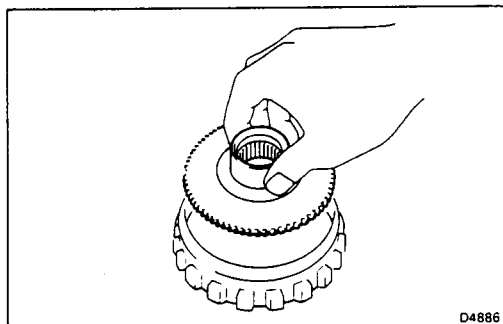
REMOVE NO. 2 AND NO. 1 THRUST WASHERS



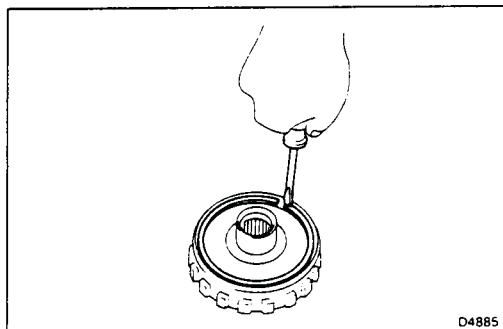
REMOVE RACES AND BEARING FROM REAR PLANETARY RING GEAR



REMOVE SNAP RING FROM REAR PLANETARY RING GEAR



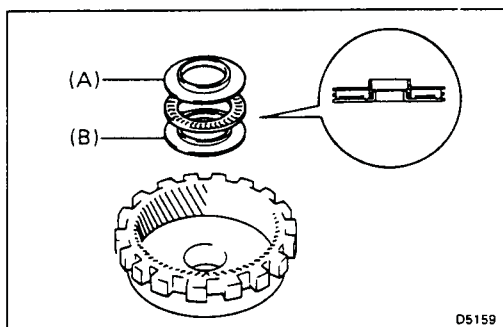
REMOVE RING GEAR FLANGE



ASSEMBLY OF REAR PLANETARY GEAR AND OUTPUT SHAFT

INSTALL RING GEAR FLANGE

INSTALL SNAP RING

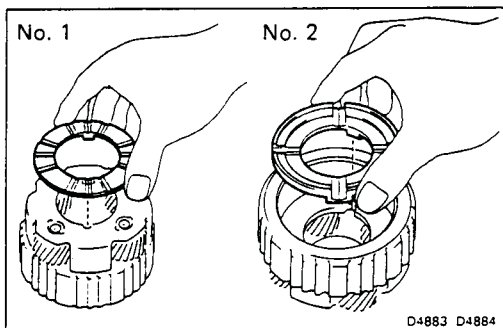


INSTALL RACES AND BEARING

Coat the races and bearing with petroleum jelly, and install them onto the rear planetary ring gear.

NOTE: Races and bearing diameter mm (in.)

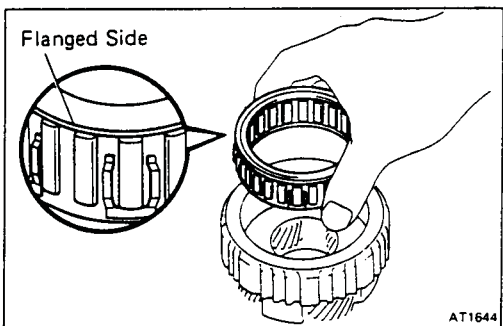
	Inside	Outside
Race (A)	28.8 (1.134)	44.8 (1.764)
Bearing	30.1 (1.185)	44.7 (1.760)
Race (B)	27.6 (1.087)	44.8 (1.764)



INSTALL NO. 1 AND NO. 2 THRUST WASHERS

- Coat the thrust washers with petroleum jelly.
- Install the thrust washers onto both sides of the rear planetary gear.

NOTE: Make sure that the lugs match the shape of the cutout portions on the rear planetary gear.

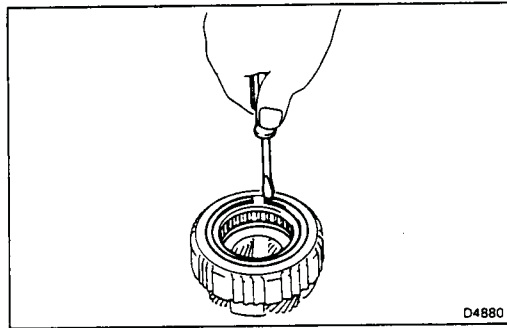


INSTALL NO. 2 ONE-WAY CLUTCH

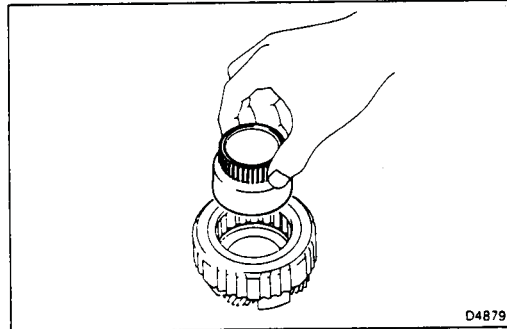
Install the one-way clutch with retainers facing the flanged side of the one-way clutch upward onto the rear planetary gear.



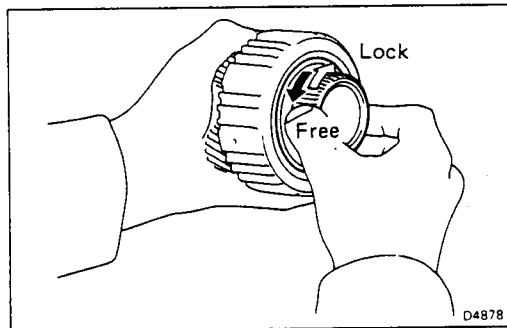
Technical Service Information



INSTALL SNAP RING

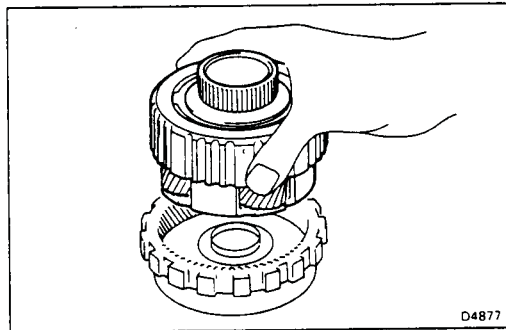


WHILE TURNING COUNTERCLOCKWISE, INSTALL ONE-WAY CLUTCH INNER RACE TO REAR PLANETARY GEAR

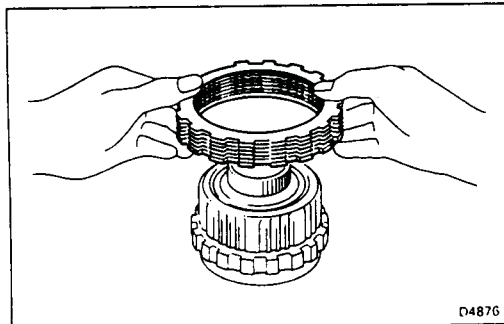


CHECK OPERATION OF NO. 2 ONE-WAY CLUTCH

Hold the planetary gear and turn the one-way clutch inner race. The one-way clutch inner race should turn freely counterclockwise and should lock clockwise.



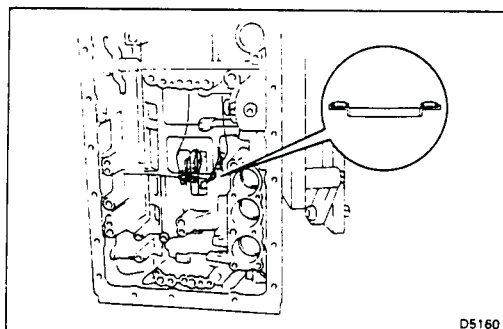
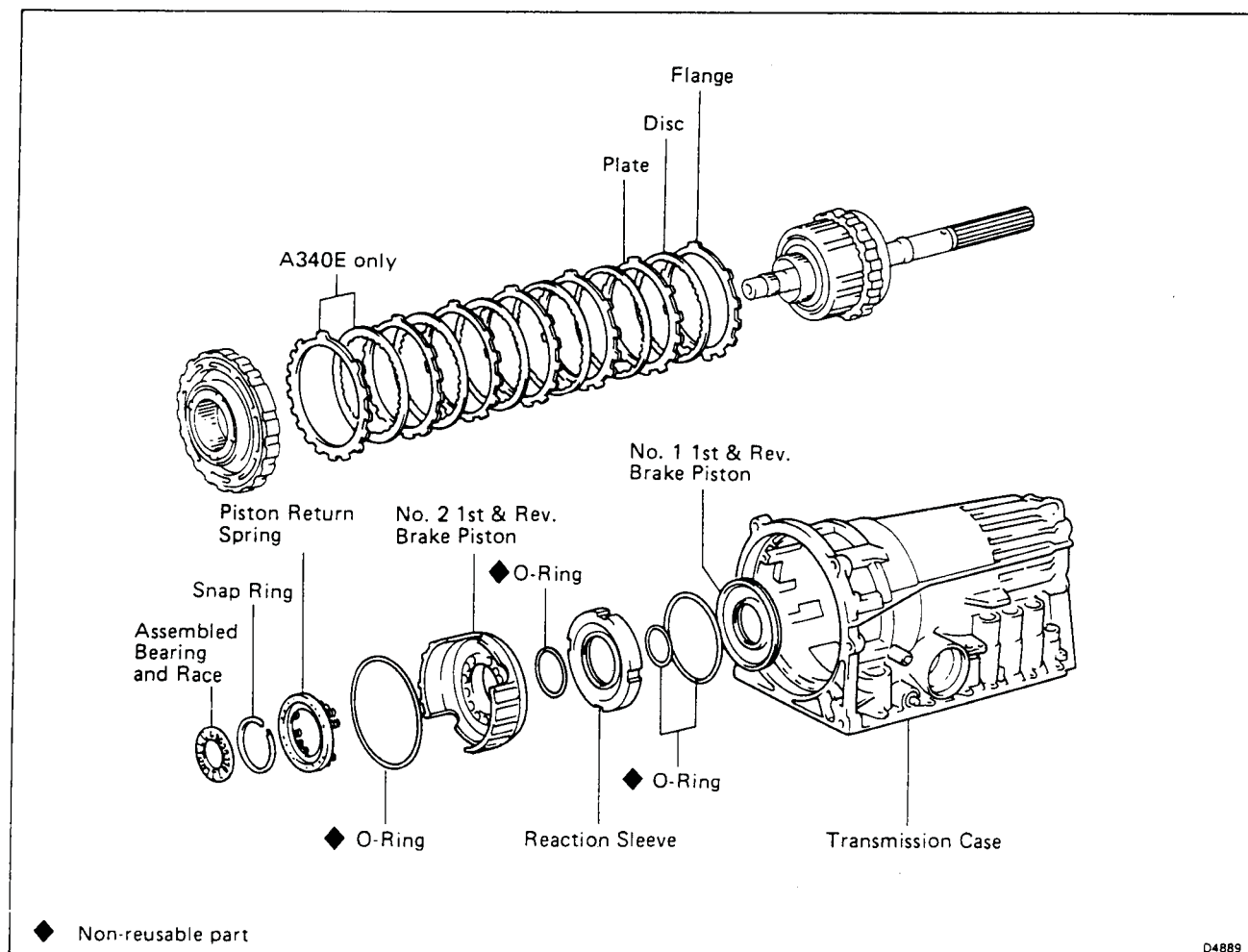
INSTALL REAR PLANETARY GEAR ONTO REAR PLANETARY RING GEAR



INSTALL FLANGE, DISCS AND PLATES

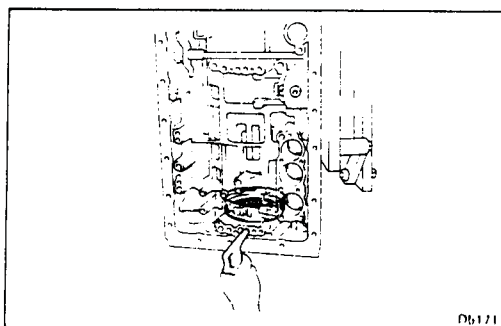
- (a) Install the flange facing the rounded edge downward.
- (b) Install in order:
 - A340E — D—P—D—P—D—P—D—P—D—P—D—P
 - A340H — D—P—D—P—D—P—D—P—D—P

FIRST AND REVERSE BRAKE (B₃)



DISASSEMBLY OF FIRST AND REVERSE BRAKE

REMOVE ASSEMBLED BEARING AND RACE FROM TRANSMISSION CASE

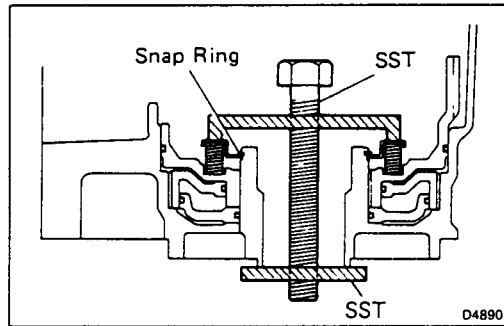


CHECK FIRST AND REVERSE BRAKE PISTON MOVING

Make sure the first and reverse brake piston moves smoothly when applying and releasing the compressed air into the transmission case.



Technical Service Information



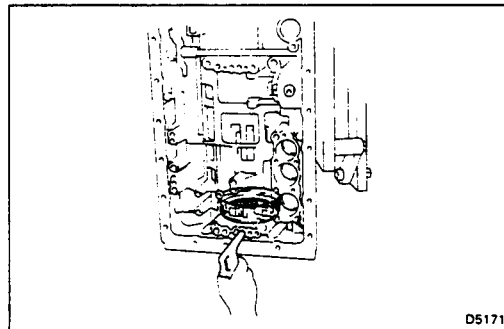
COMPRESS PISTON RETURN SPRING AND REMOVE SNAP RING

(a) Set SST on the spring retainer, and compress the return spring with a shop press.

SST 09350-30020 (09350-07050)

(b) Remove the snap ring with snap ring pliers.

REMOVE PISTON RETURN SPRING

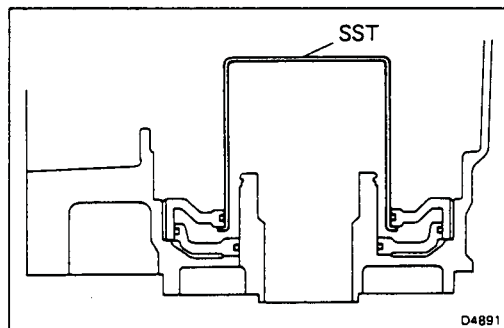


REMOVE NO. 2 FIRST AND REVERSE BRAKE PISTON

(a) Hold the No. 2 first and reverse brake piston by hand, apply compressed air to the transmission case to remove the No. 2 first and reverse brake piston.

(b) Remove the No. 2 first and reverse brake piston.

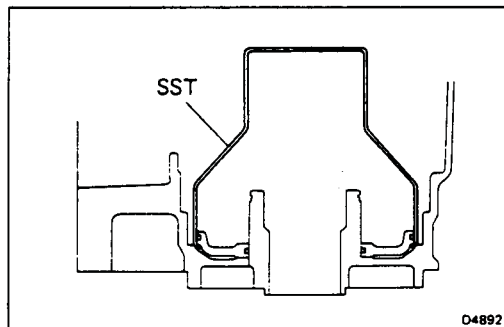
If the piston does not pop out with compressed air, lift the piston out with needle-nose pliers.



REMOVE REACTION SLEEVE

Insert SST behind the reaction sleeve and gradually lift it out of the transmission case.

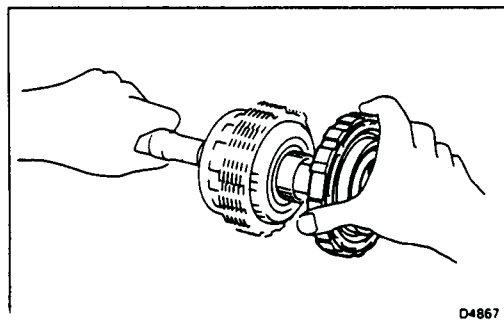
SST 09350-30020 (09350-07080)



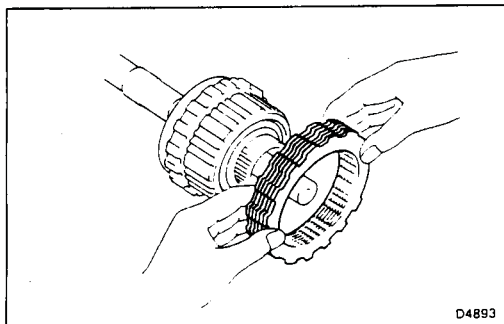
REMOVE NO. 1 FIRST AND REVERSE BRAKE PISTON

Insert SST behind the No. 1 brake piston and gradually lift it out of the transmission case.

SST 09350-30020 (09350-07090)

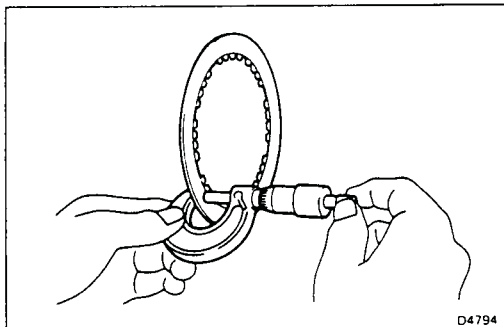


REMOVE SECOND BRAKE FROM OUTPUT SHAFT



REMOVE DISCS, PLATES AND FLANGE FROM OUTPUT SHAFT

NOTE: A340E — Six discs and six plates
A340H — Five discs and five plates



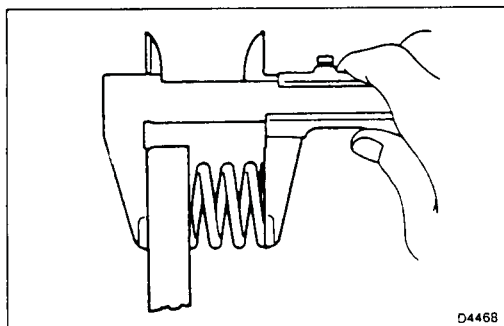
INSPECTION OF FIRST AND REVERSE BRAKE

CHECK DISCS

Using a micrometer, measure the thicknesses of the discs.

Minimum thickness: 1.51 mm (0.0594 in.)

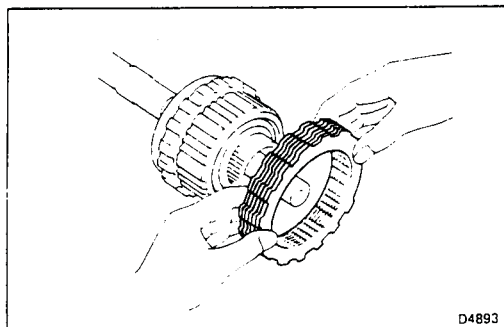
If the thickness is less than the minimum, replace the disc.



CHECK PISTON RETURN SPRING

Using calipers, measure the free length of the return spring.

Standard length: 13.09 mm (0.5154 in.)



ASSEMBLY OF FIRST AND REVERSE BRAKE

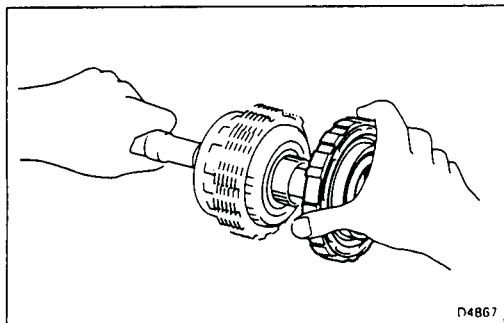
INSTALL FLANGE, DISCS AND PLATES

(a) Install the flange facing the rounded edge first.

(b) Install in order:

A340E — D-P-D-P-D-P-D-P-D-P-D-P

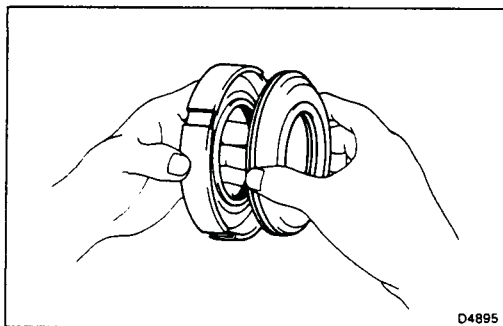
A340H — D-P-D-P-D-P-D-P-D-P



INSTALL SECOND BRAKE TO OUTPUT SHAFT

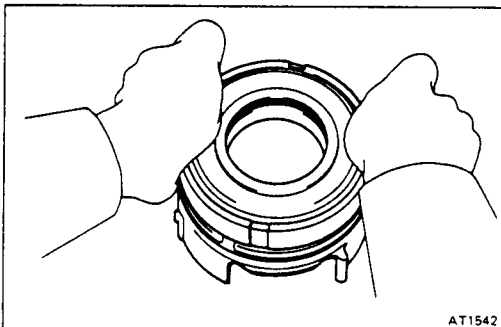


Technical Service Information



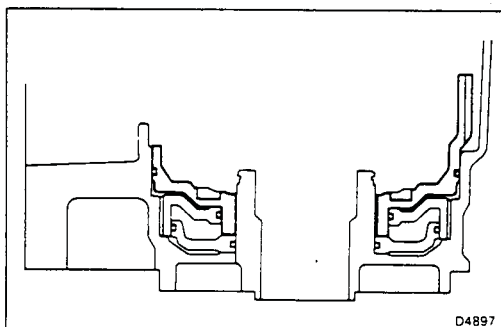
ASSEMBLE NO. 1 FIRST AND REVERSE BRAKE PISTON

- (a) Coat three new O-rings with ATF.
- (b) Install the two O-rings on the No. 1 piston.
- (c) Install the O-ring on the reaction sleeve.
- (d) Install the No. 1 piston to the reaction sleeve.



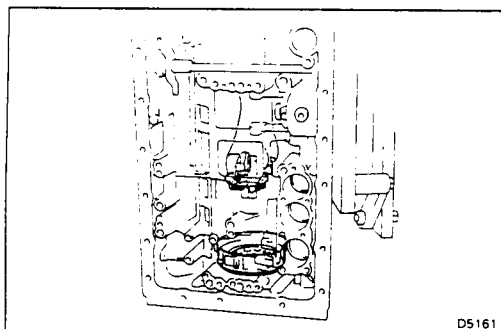
INSTALL NO. 1 FIRST AND REVERSE BRAKE PISTON WITH REACTION SLEEVE TO NO. 2 FIRST AND REVERSE BRAKE PISTON

- (a) Coat a new O-ring with ATF and install it on the No. 2 piston.
- (b) Install the No. 1 piston with reaction sleeve onto the No. 2 piston.

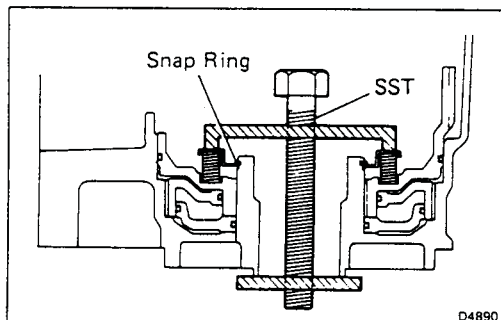


INSTALL NO. 2 WITH NO. 1 FIRST AND REVERSE BRAKE PISTONS INTO TRANSMISSION CASE

- (a) Align the teeth of the No. 2 piston into the proper grooves.
- (b) Being careful not to damage the O-rings, press in the No. 2 with No. 1 first and reverse brake pistons into the transmission case.



PLACE PISTON RETURN SPRING ONTO NO. 2 PISTON



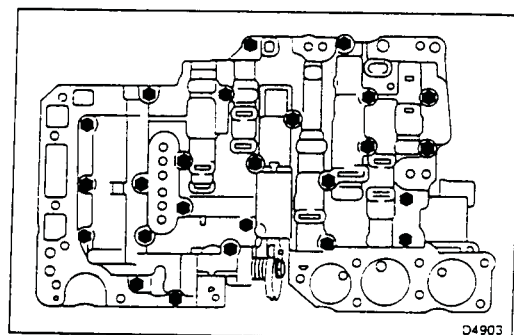
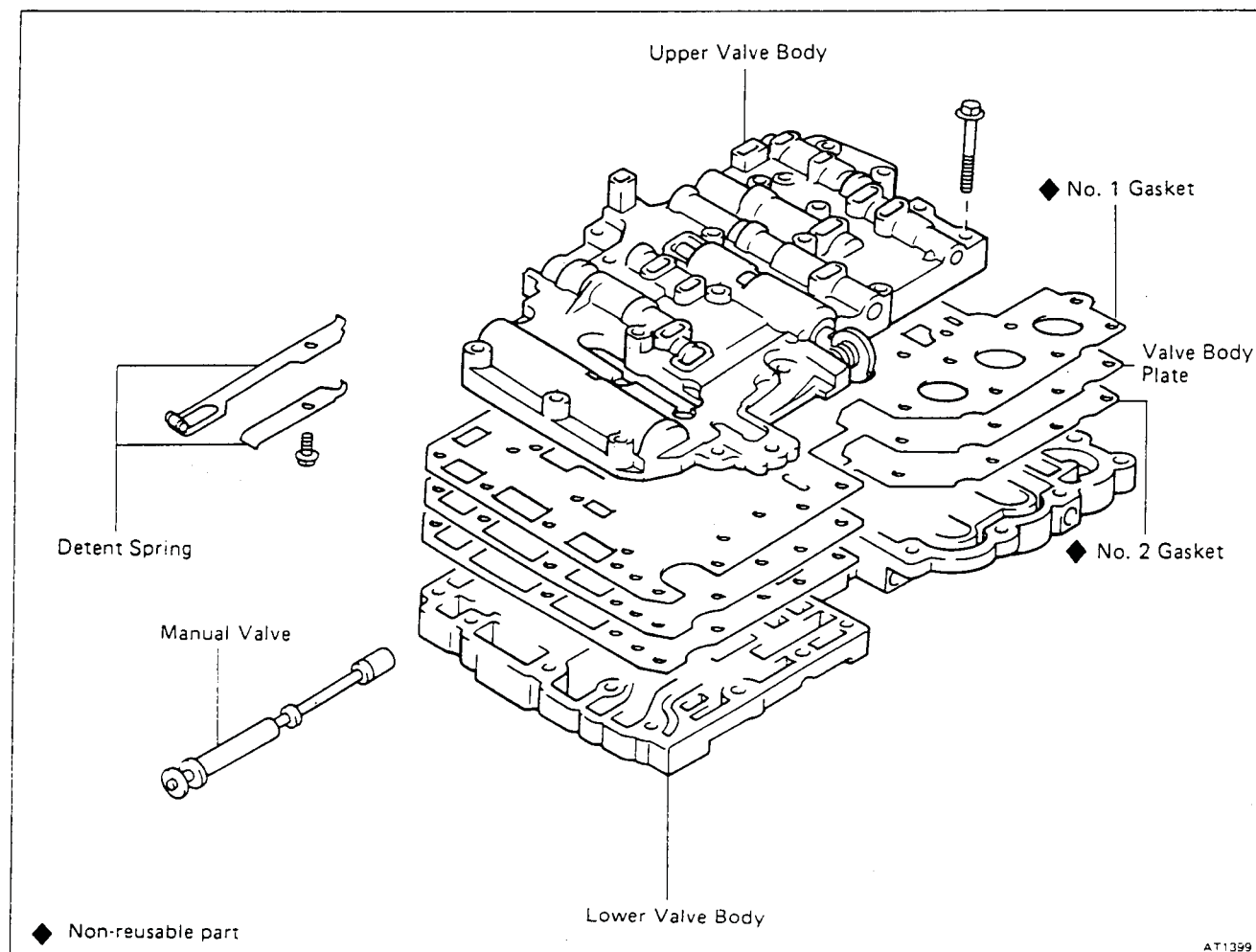
COMPRESS PISTON RETURN SPRING AND INSTALL SNAP RING IN GROOVE

- (a) Set SST as shown, and compress the return spring with SST.

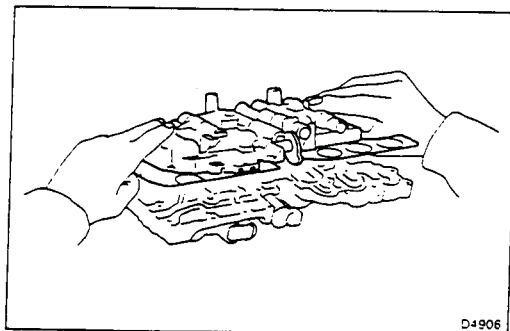
SST 09350-30020 (09350-07050)

- (b) Install the snap ring with snap ring pliers. Be sure the end gap of the snap ring is not aligned with the spring retainer claw.

VALVE BODY



TURN OVER ASSEMBLY AND REMOVE TWENTY-FIVE BOLTS

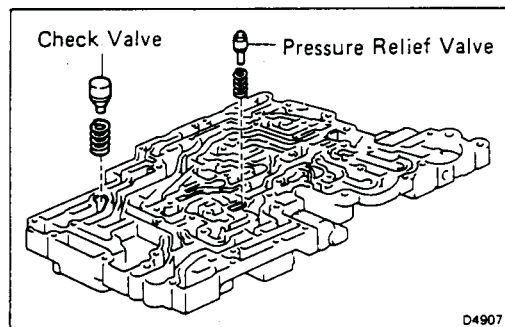
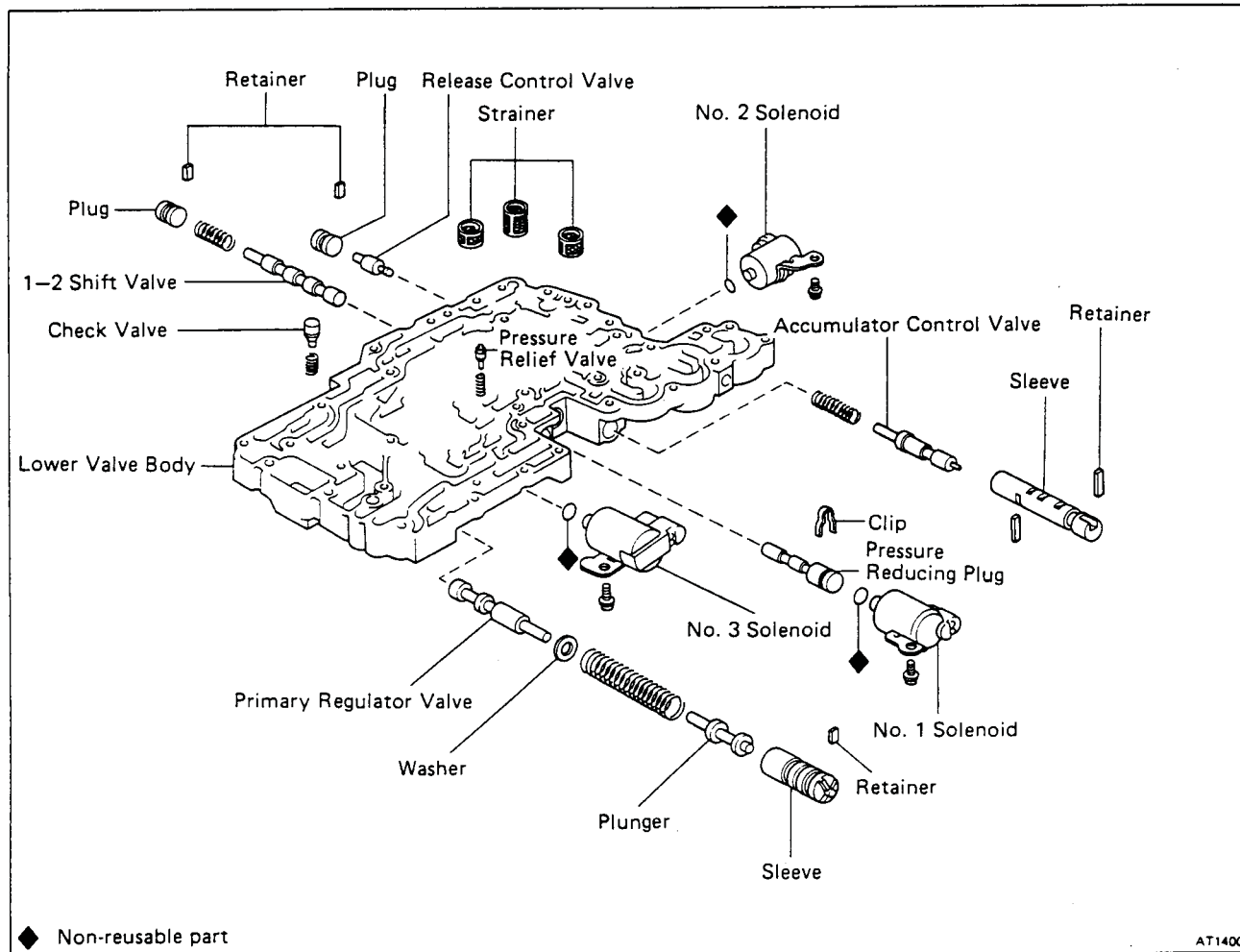


LIFT OFF UPPER VALVE BODY AND PLATE AS A SINGLE UNIT

Hold the valve body plate to the upper valve body.

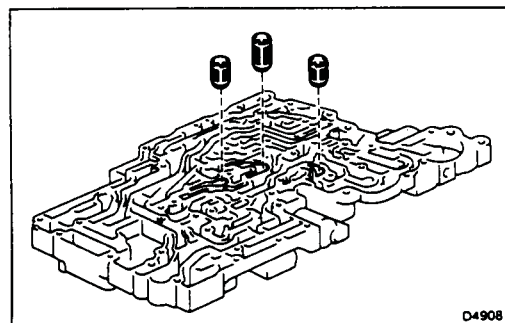
NOTE: Be careful that the check balls and strainer do not fall out.

Lower Valve Body

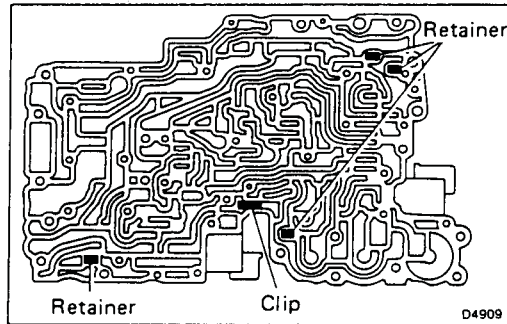


DISASSEMBLY OF LOWER VALVE BODY

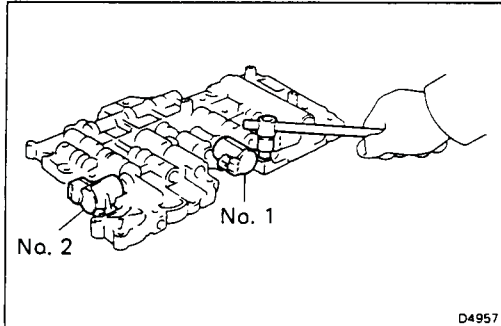
REMOVE CHECK VALVE, PRESSURE RELIEF VALVE AND SPRINGS



REMOVE THREE STRAINERS

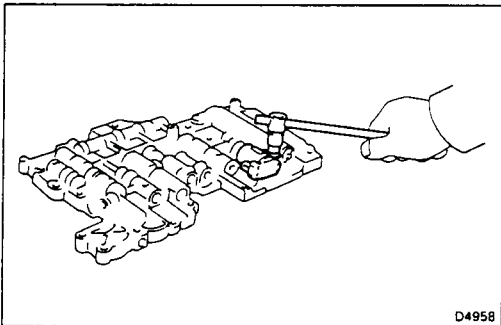


CONFIRM CLIP AND FOUR RETAINERS ARE INSTALLED CORRECTLY



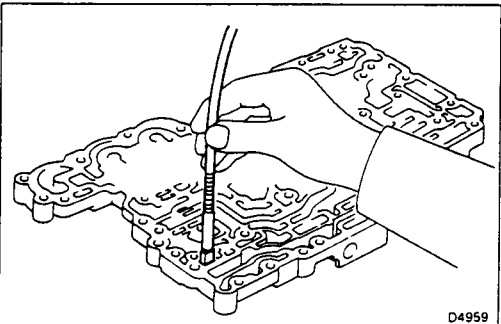
REMOVE NO. 1 AND NO. 2 SOLENOIDS

- Remove each bolt.
- Remove the No. 1 and No. 2 solenoids from each bore.
- Remove the O-rings.



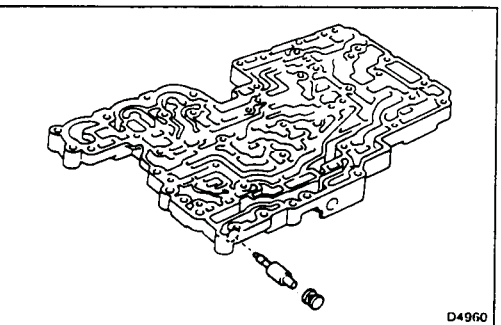
REMOVE NO. 3 SOLENOID

- Remove the bolt.
- Remove the solenoid from the bore.
- Remove the O-ring.



REMOVE RELEASE CONTROL VALVE

- Remove the retainer with a magnetic finger.



- Remove the plug and release control valve.

AW-4 CHECK BALL LOCATION

Prior to 1991 the AW-4 modles used 9 check balls with three different sizes and had a combination of both steel and rubber balls (figure 1). In 1991, they went to 8 checkballs all being rubber with two different sizes. The location of these balls are changed and they added an oil strainer (figure 2).

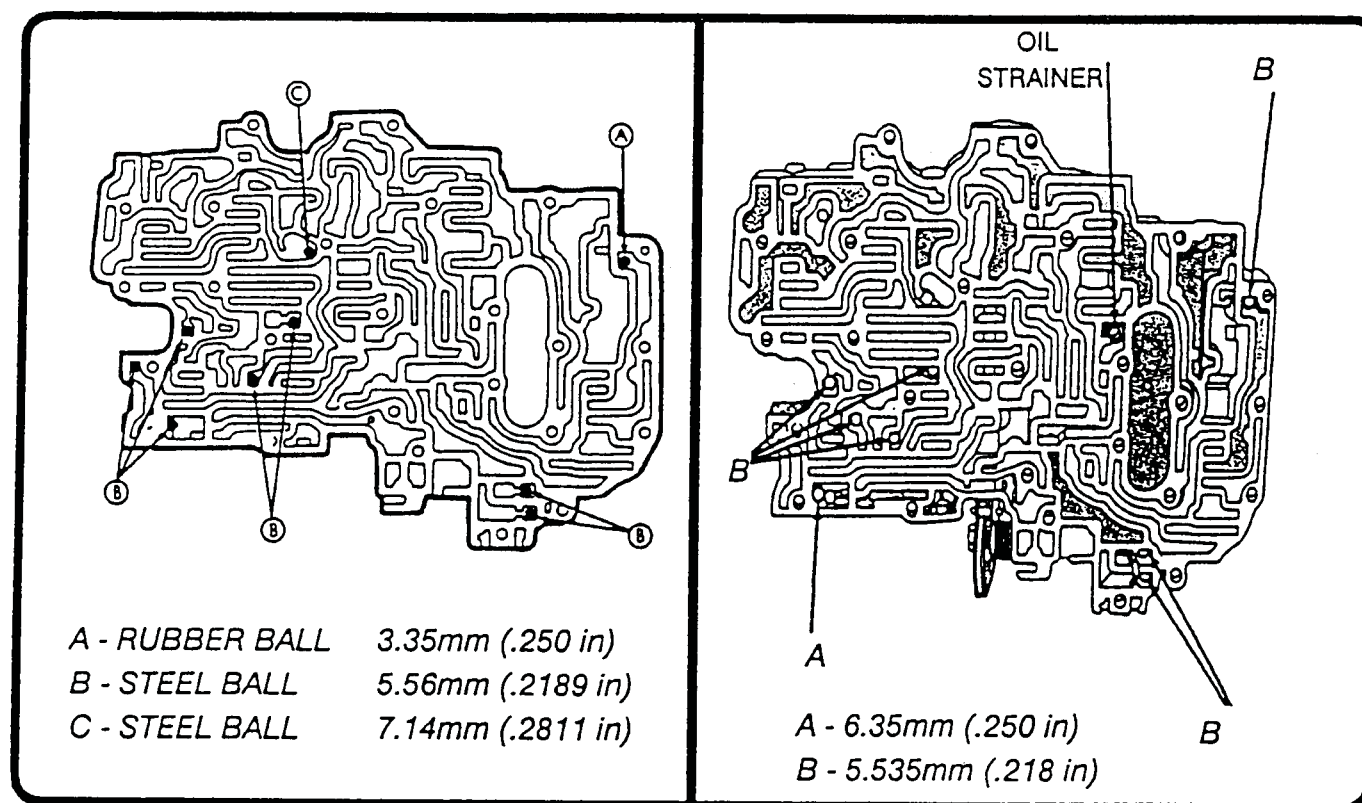
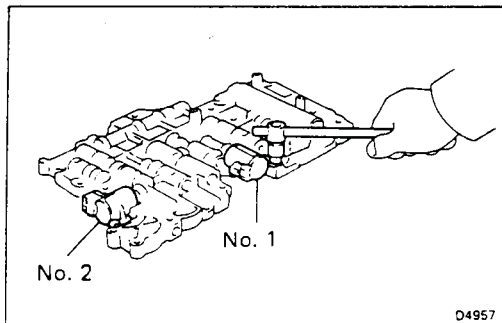


Figure 1

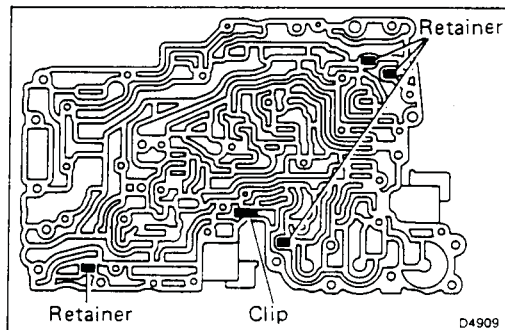
Figure 2



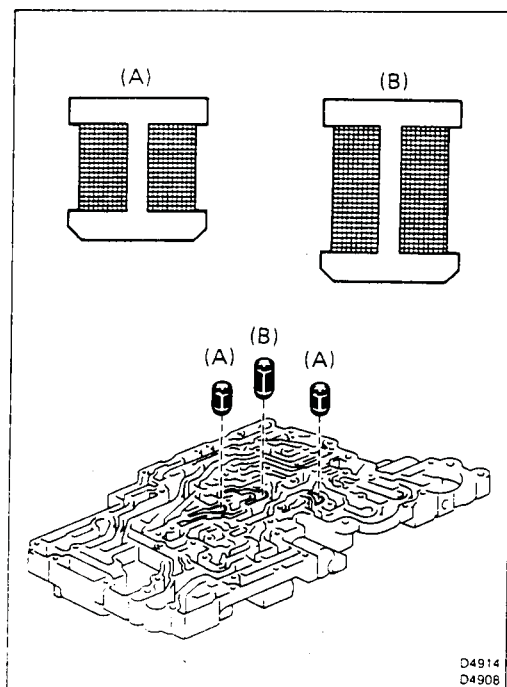
INSTALL NO. 1 AND NO. 2 SOLENOID

- (a) Install a new O-ring to the solenoid.
- (b) Install the solenoid to the valve body.
Torque the bolt.

Torque: 100 kg-cm (7 ft-lb, 10 N·m)



MAKE SURE CLIP AND FOUR RETAINERS ARE INSTALLED CORRECTLY

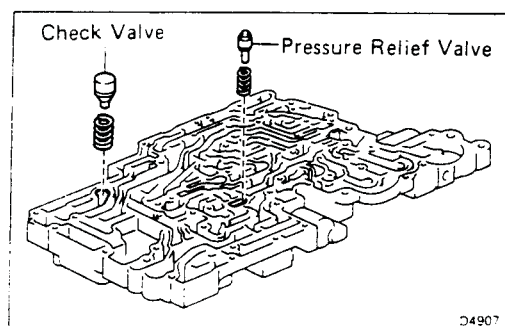


INSTALL THREE STRAINERS

Install the three strainers to the valve body as shown.

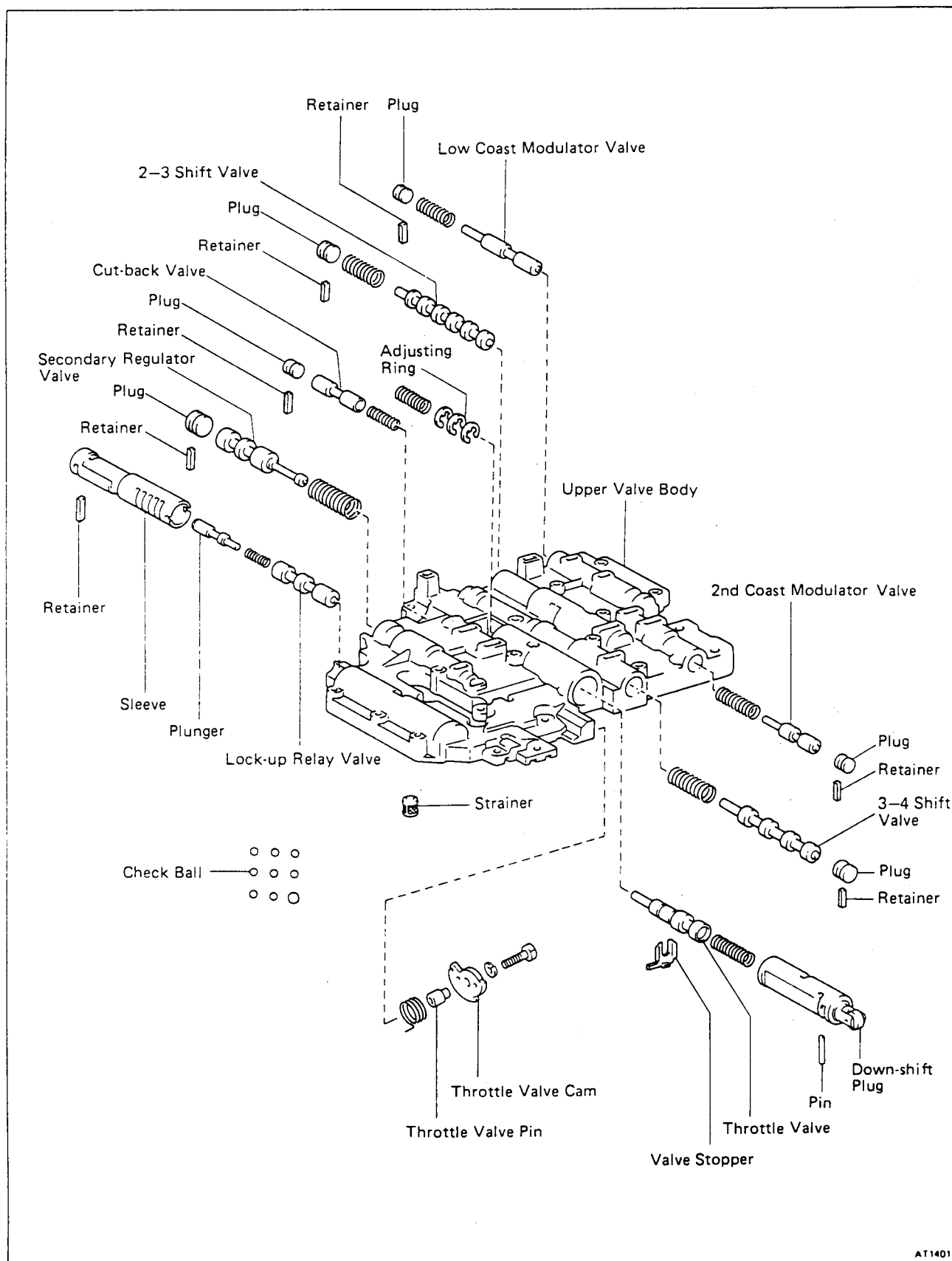
mm (in.)

Strainer	Height	Diameter
(A) Solenoid oil strainer	11.0 (0.433)	10.3 (0.406)
(B) Throttle oil strainer	19.5 (0.768)	10.3 (0.406)

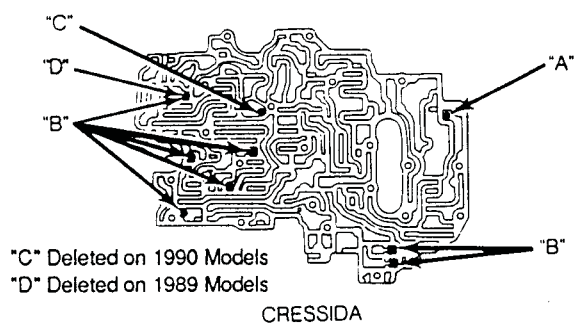
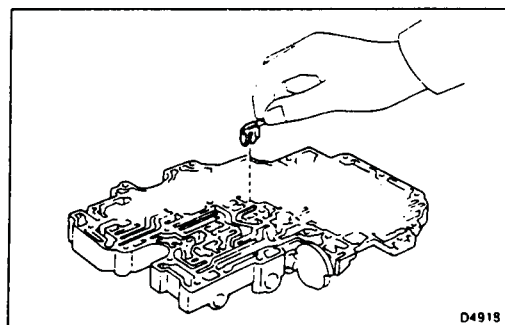
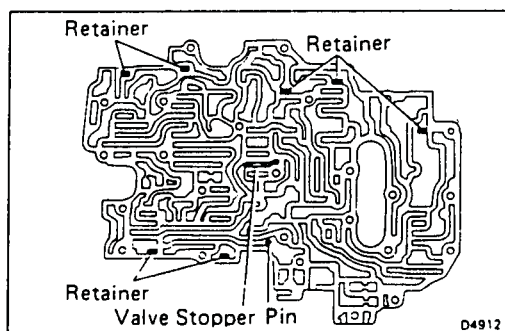
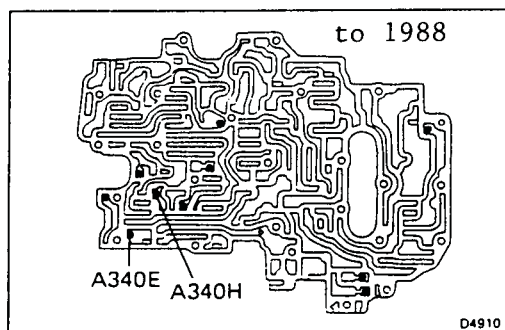
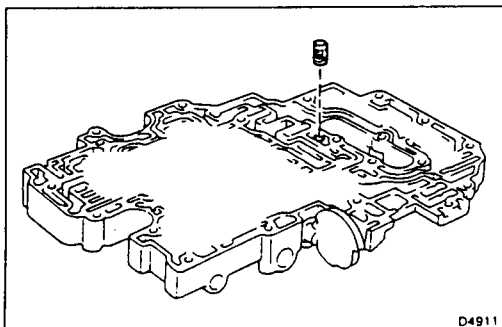
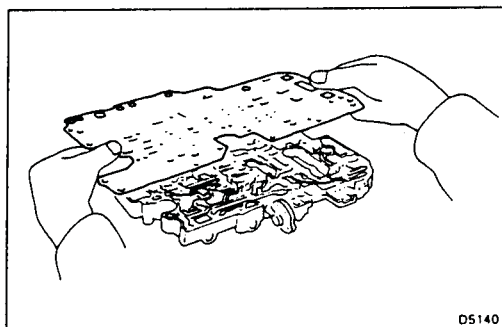


INSTALL CHECK VALVE, PRESSURE RELIEF VALVE AND SPRINGS

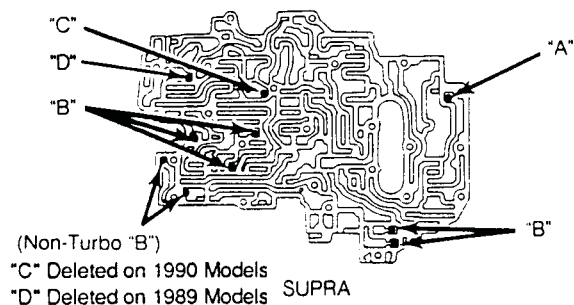
Upper Valve Body



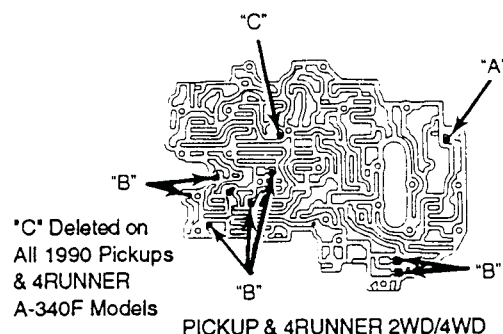
AT1401



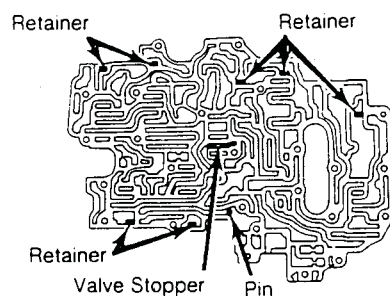
CRESSIDA



SUPRA



PICKUP & 4RUNNER 2WD/4WD

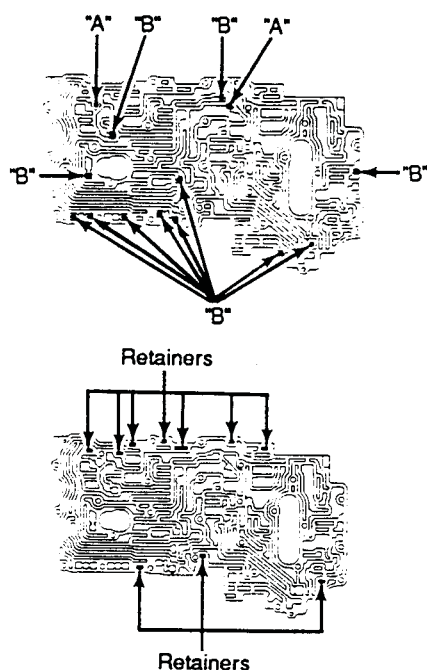


RETAINER & PIN
(CRESSIDA, SUPRA, PICKUPS & 4RUNNERS)

NOTE: Letter designates check ball size and material. See UPPER VALVE BODY CHECK BALL SPECIFICATIONS table.

Courtesy of Toyota Motor Sales, U.S.A., Inc.

**Locating Upper Valve Body Check Ball & Retainer
(A-340E, A-340F & A-340H)**



NOTE: Letter designates check ball size and material. See UPPER VALVE BODY CHECK BALL SPECIFICATIONS table.

Courtesy of Toyota Motor Sales, U.S.A., Inc.

Fig. 46: Locating Upper Valve Body Check Ball & Retainer (A-341E)

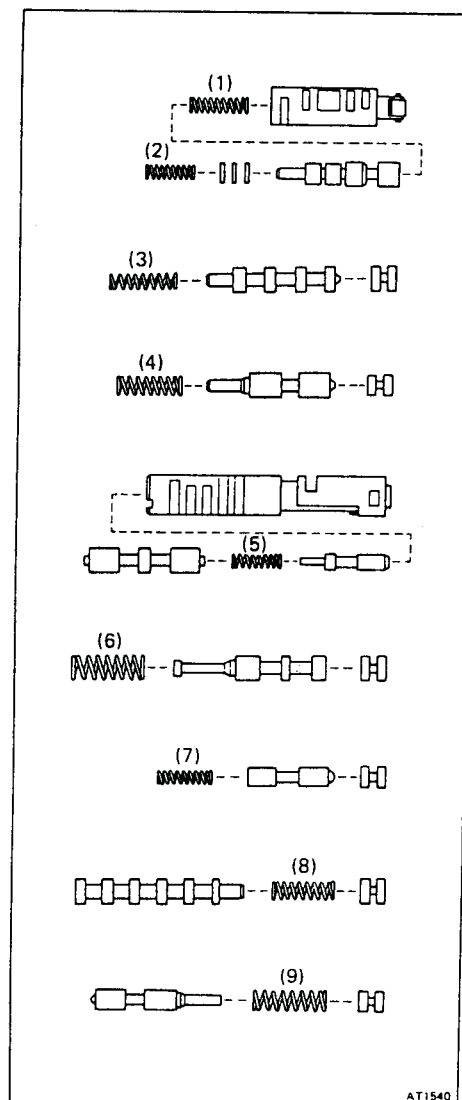
UPPER VALVE BODY CHECK BALL SPECIFICATIONS

Ball Identification	Ball Type	No. of Check Balls	Check Ball Diameter In. (mm)
1988			
"A"	Rubber	1	.2500 (6.350)
"B" (Cressida)	Steel	6	.2189 (5.560)
"B" (Supra 7M-GE)	Steel	7	.2189 (5.560)
"B" (Supra M-GTE)	Steel	5	.2189 (5.560)
"B" (Pickup & 4Runner)	Steel	8	.2189 (5.560)
"C"	Steel	1	.2811 (7.140)
"D" (Cressida & Supra)	Rubber	1	.2181 (5.540)
1989			
"A"	Rubber	1	.2500 (6.350)
"B" (Cressida)	Rubber	7	.2181 (5.540)
"B" (Supra 7M-GE)	Rubber	8	.2181 (5.540)
"B" (Supra 7M-GTE)	Rubber	6	.2181 (5.540)
"B" (Pickup & 4Runner)	Rubber	8	.2181 (5.540)
"C"	Steel	1	.2811 (7.140)
1990			
"A"	Rubber	1	.2500 (6.350)
"A" (Lexus LS400)	Rubber	2	.2500 (6.350)
"B" (Cressida)	Rubber	7	.2181 (5.540)
"B" (Supra 7M-GE)	Rubber	8	.2181 (5.540)
"B" (Supra 7M-GTE)	Rubber	6	.2181 (5.540)
"B" (Pickup & 4Runner)	Rubber	8	.2181 (5.540)
"B" (Lexus LS400)	Rubber	11	.2181 (5.540)
"C" (4Runner A-340E/H)	Steel	1	.2811 (7.140)

INSPECT VALVE SPRINGS

Check for damage, squareness, rust and distorted coils. Measure the spring free height and replace if less than that shown below.

Spring	Free length mm (in.)
(1) Down-shift plug	27.4 (1.079)
(2) Throttle valve	20.6 (0.811)
(3) 3-4 shift valve	30.8 (1.212)
(4) Second coast modulator valve	25.3 (0.996)
(5) Lock-up relay valve	21.4 (0.843)
(6) Secondary regulator valve	30.9 (1.217)
(7) Cut-back valve	21.8 (0.858)
(8) 2-3 shift valve	30.8 (1.212)
(9) Low coast modulator valve	27.8 (1.094)



AT1540

AW 30-80LE

VALVE BODY CHECKBALL LOCATIONS FOR 1988-1989 MODELS ONLY

CHECKBALL	DIAMETER	NO. REQUIRED
(A) RUBBER BALL	6.35 (.250")	1
(B) STEEL BALL	5.56 (.218")	7
(C) STEEL BALL	7.14 (.281")	1

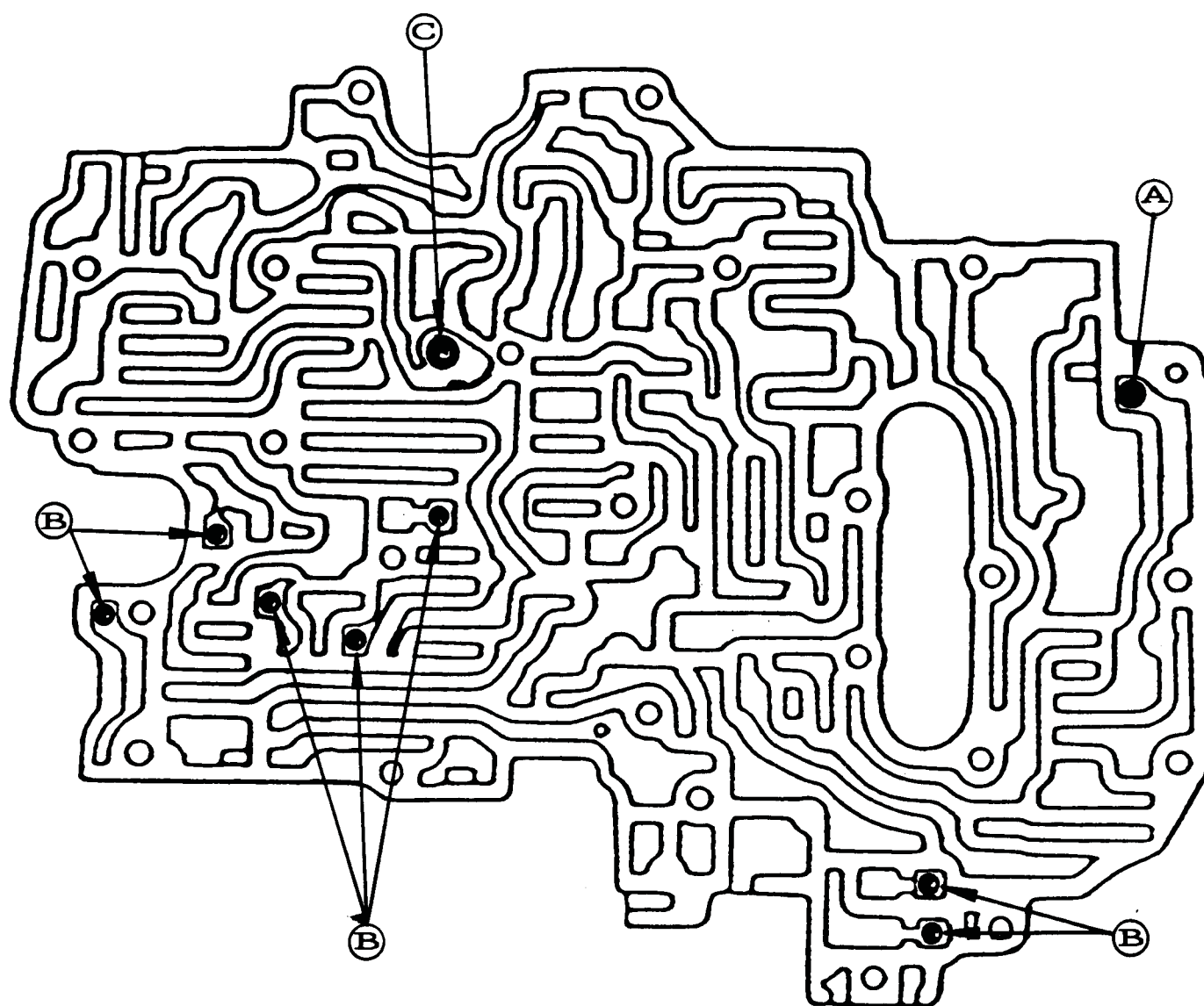


Figure 1

AUTOMATIC TRANSMISSION SERVICE GROUP

AW 30-80LE

VALVE BODY CHECKBALL LOCATIONS FOR 1990-1991 MODELS ONLY

CHECKBALL	DIAMETER	NO. REQUIRED
Ⓐ RUBBER BALL	6.35 (.250")	1
Ⓑ RUBBER BALL	5.56 (.218")	7

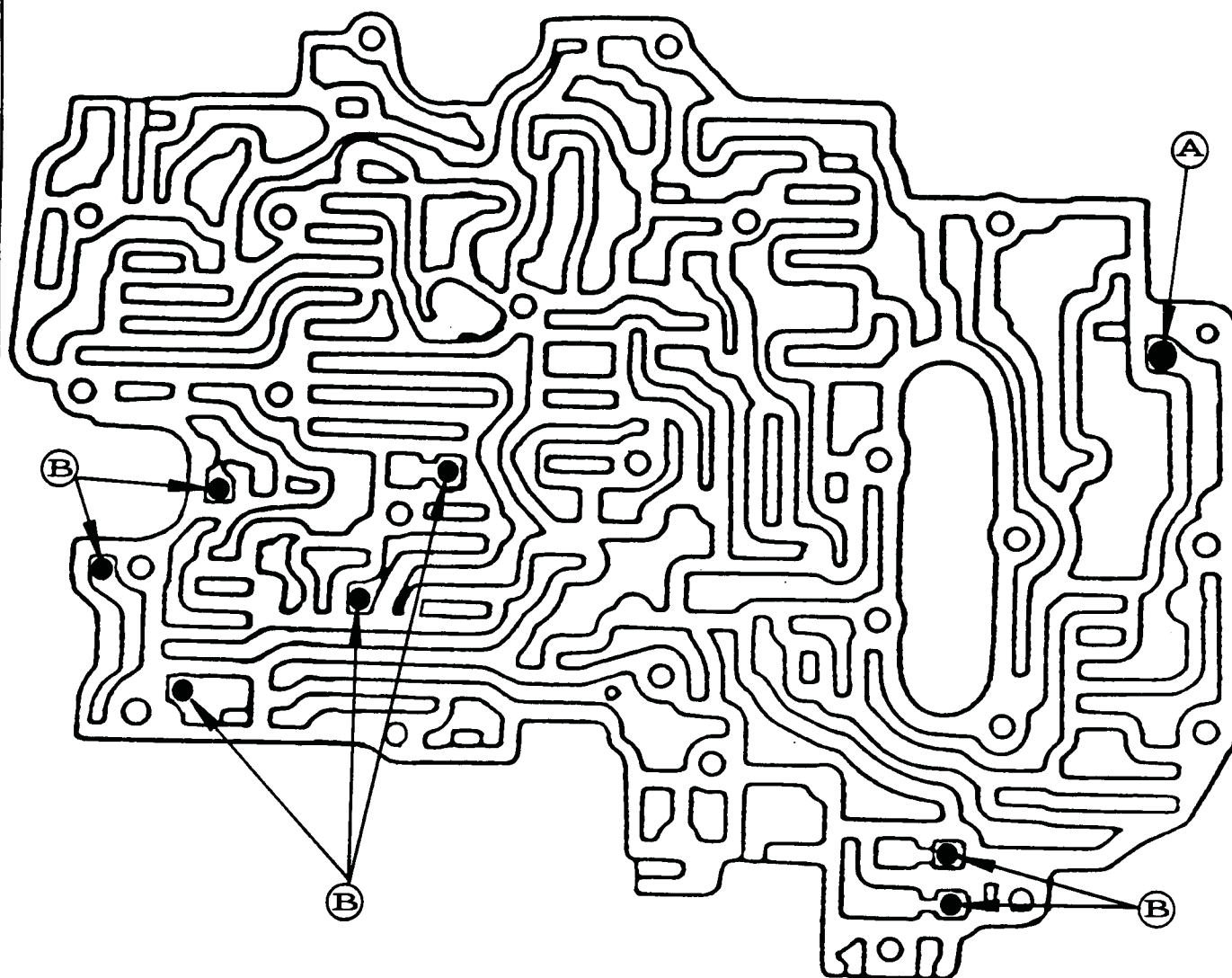


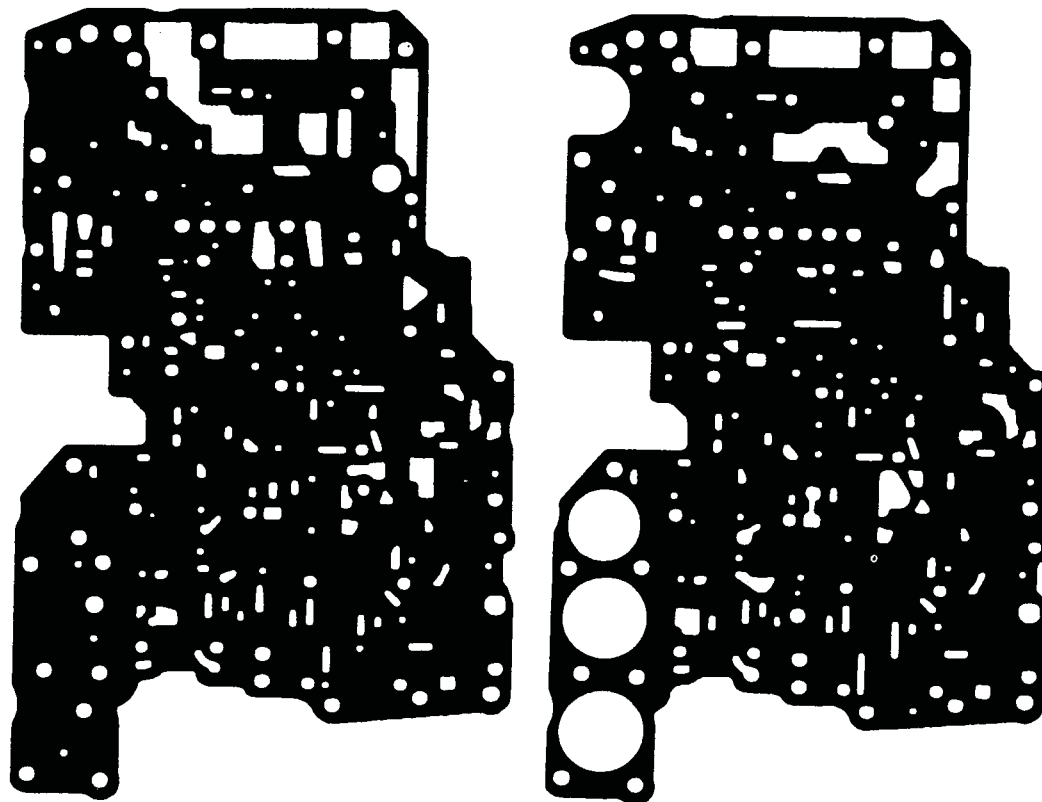
Figure 2

AUTOMATIC TRANSMISSION SERVICE GROUP

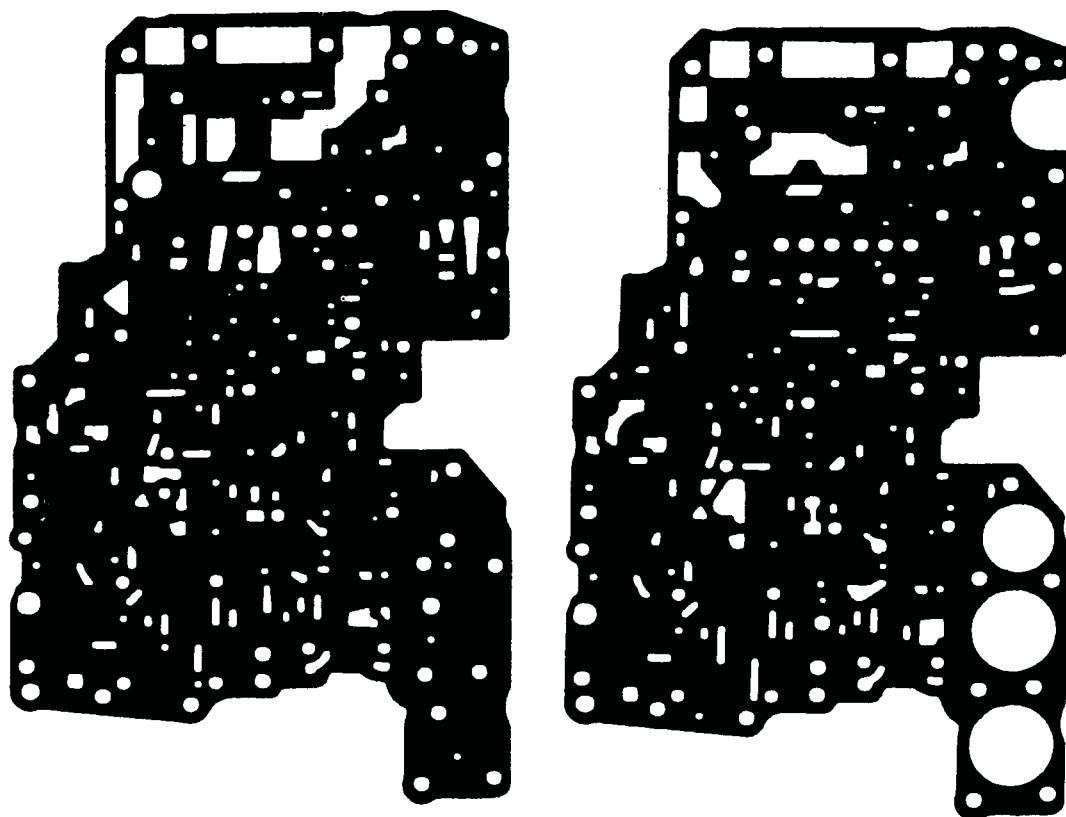


Technical Service Information

TOYOTA 340E
1985-UP



TOYOTA 340H
1985-UP

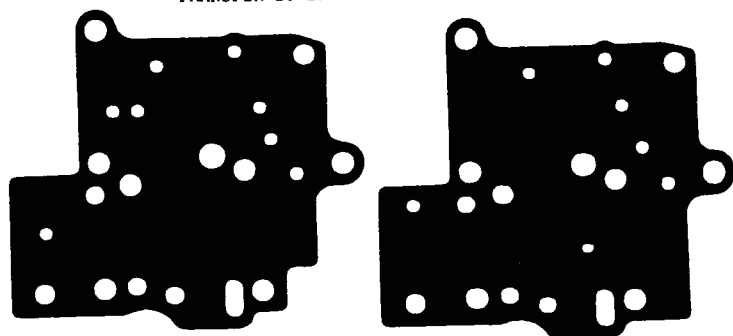




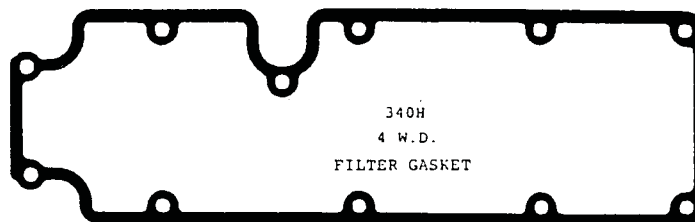
Technical Service Information

TOYOTA 340H/E

TRANSFER LOWER V.B. GASKETS



340E FILTER GASKETS



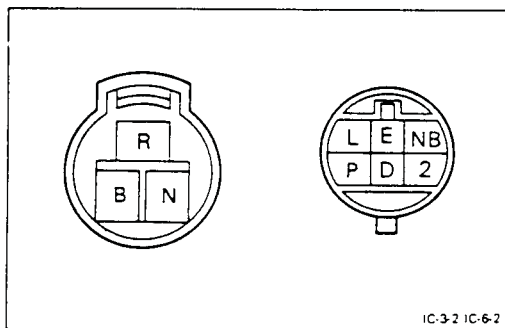
340H
4 W.D.
FILTER GASKET

ELECTRICAL PARTS

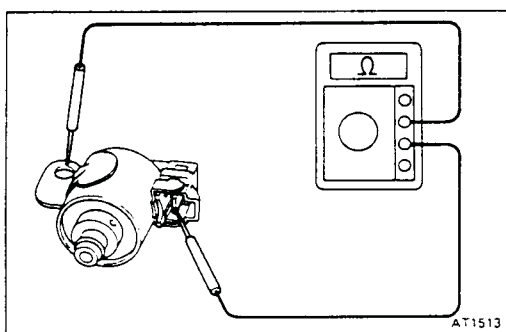
INSPECT NEUTRAL START SWITCH

Using an ohmmeter, check the continuity of the terminals for each switch position shown in the table below.

If continuity between the terminals is not as specified, replace the switch.



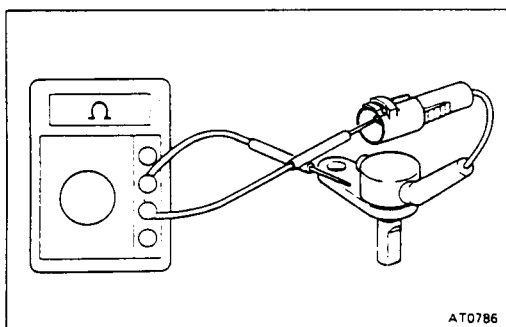
Terminal Range	B	N	E	R	D	2	L	P	NB
P	○—○		○—					○—	
R			○—○						
N	○—○		○—						○—
D			○—		○—				
2 (S)			○—			○—			
L			○—				○—		



INSPECT SOLENOID

Using an ohmmeter, check the resistance between terminal and body.

Standard resistance: 11 — 15 Ω .



INSPECT SPEED SENSOR

Connect an ohmmeter to the speed sensor and check that the meter deflects when the sensor is repeatedly brought close to the rotor sensor magnet and removed from it.



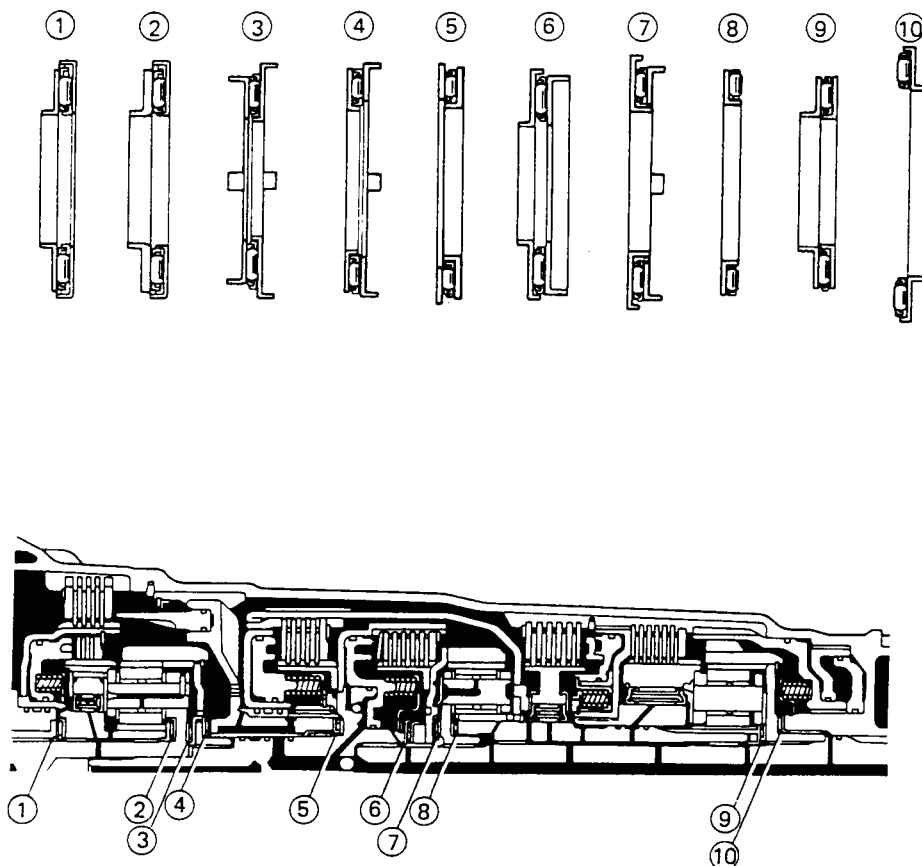
ASSEMBLY OF TRANSMISSION

Disassembly, inspection and assembly of each component group have been indicated in the preceding chapter. Before assembly, make sure, again, that all component groups are assembled correctly.

If something wrong is found in a certain component group during assembly, inspect and repair this group immediately. Recommended ATF: DEXRON® II.

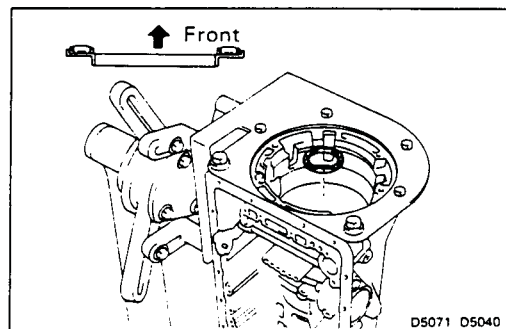
GENERAL ASSEMBLY NOTES:

1. The automatic transmission is composed of highly precision-finished parts, necessitating careful inspection before assembly because even a small nick could cause fluid leakage or affect performance.
2. Before assembling new clutch discs and brake bands, soak them in automatic transmission fluid for at least thirty minutes.
3. Apply automatic transmission fluid on the sliding or rotating surfaces of parts before assembly.
4. Use petroleum jelly to keep small parts in their places.
5. Do not use adhesive cements on gaskets and similar parts.
6. When assembling the transmission, be sure to use new gaskets and O-rings.
7. Dry all parts with compressed air — never use shop rags.
8. Be sure to install the thrust bearings and races in the correct direction and position.





Technical Service Information

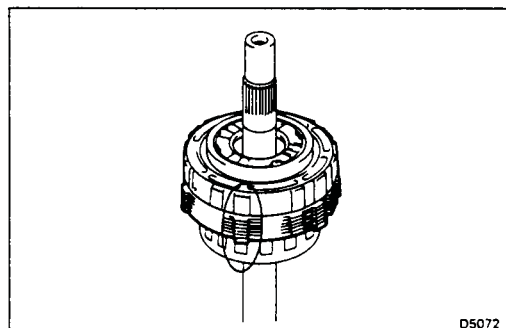


INSTALL REAR PLANETARY GEAR, SECOND BRAKE DRUM AND OUTPUT SHAFT

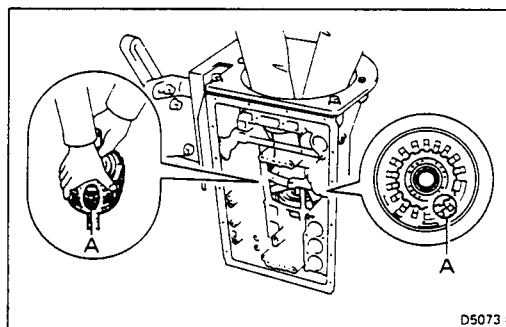
- (a) Coat the assembled bearing and race with petroleum jelly and install it onto the case.

NOTE: Assembled bearing and race diameter mm (in.)

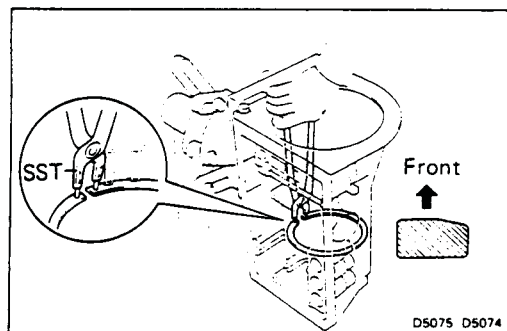
Bearing and race	Diameter
Inside	39.2 (1.543)
Outside	57.7 (2.272)



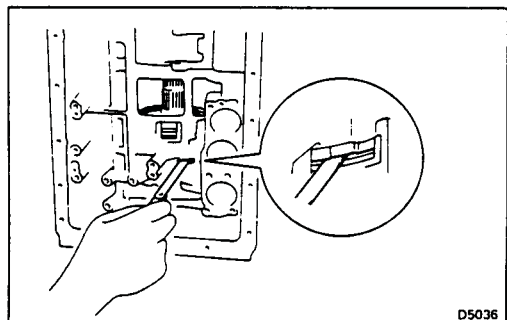
- (b) Align the teeth of the second brake drum, flanges, discs and plates as shown in the figure.



- (c) Align the splines of the transmission case and the assembled rear planetary gear, second brake drum and output shaft, indicated by A.



- (d) Using SST, install the snap ring.
SST 09350-30020 (09350-07060)



CHECK PACK CLEARANCE OF FIRST AND REVERSE BRAKE

Using a thickness gauge, measure the clearance between the plate and second brake drum as shown in the figure.

Clearance:

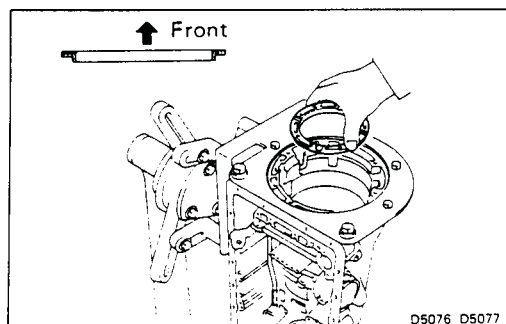
A340E 0.73 – 2.25 mm (0.0287 – 0.0886 in.)

A340H 0.63 – 2.03 mm (0.0248 – 0.0799 in.)

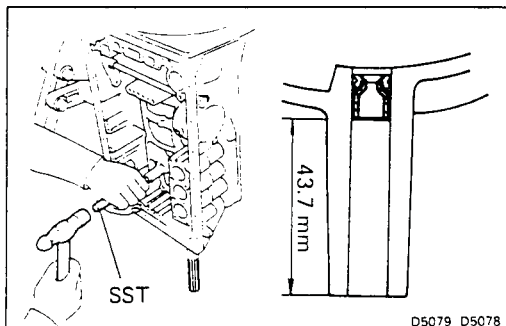
If the values are nonstandard, check for an improper installation.



Technical Service Information



INSTALL SECOND BRAKE PISTON SLEEVE

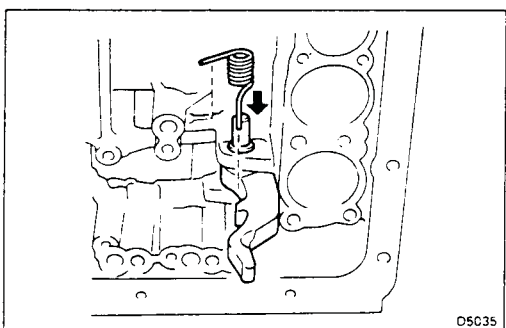


INSTALL BRAKE DRUM GASKET

Using SST, install the gasket.

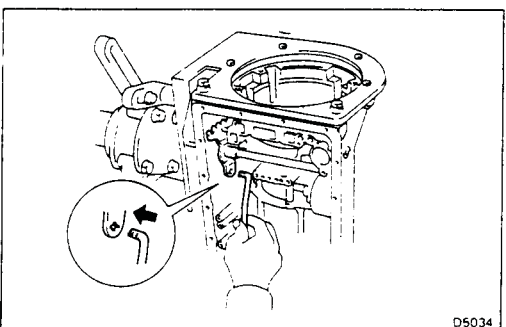
SST 09350-30020 (09350-07100)

Gasket depth: 43.7 mm (1.720 in.)



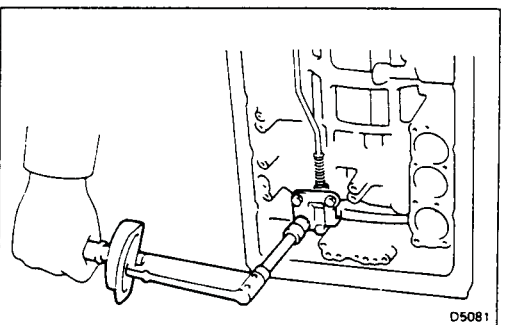
INSTALL PARKING LOCK PAWL AND SHAFT (A340E)

Install the spring, parking lock pawl and shaft.



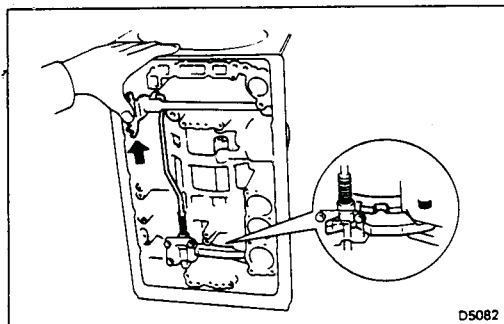
INSTALL PARKING LOCK ROD

- (a) Connect the parking lock rod to the manual valve lever.

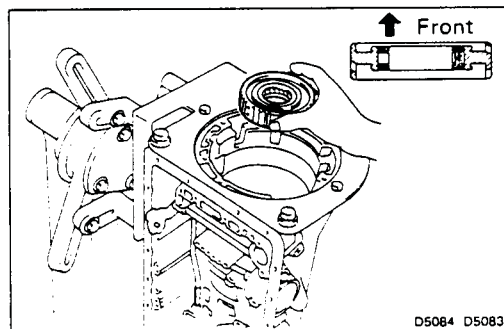


- (b) Install the parking lock pawl bracket.
Torque the bolts. (A340E)

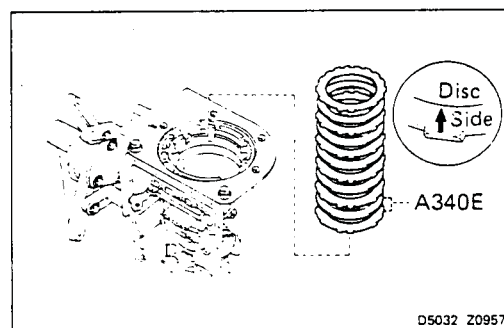
Torque: 100 kg-cm (7 ft-lb, 10 N·m)



- (c) Shift the manual valve lever to the "P" position, and confirm the planetary ring gear is locked up lock pawl correctly. (A340E)

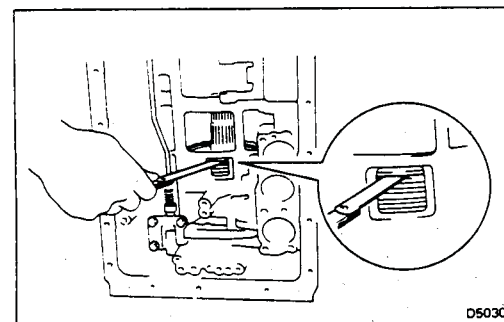
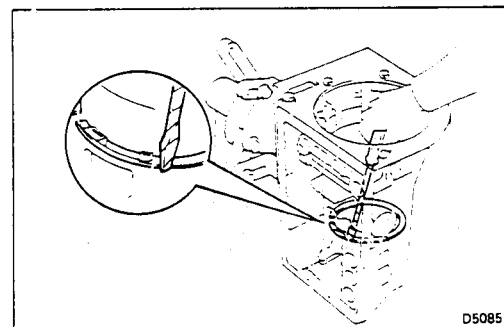


INSTALL ONE-WAY CLUTCH



INSTALL FLANGE, DISCS AND PLATES

- (a) (A340E)
Install the 1.8 mm (0.071 in.) thick plate with the rounded edge side of the plate facing the disc.
- (A340H)
Install the 2.5 mm (0.098 in.) thick plate with the rounded edge side of the plate facing the disc.
- (b) Alternately install discs and plates (Disc first)
- | | |
|---------|--------------|
| A340E : | Five discs |
| | Four plates |
| A340H : | Four discs |
| | Three plates |
- (c) Install the flange with the rounded edge of the flange facing the disc.
- (d) Install the snap ring.



CHECK PACK CLEARANCE OF SECOND BRAKE

Using a thickness gauge, measure the clearance between the snap ring and flange as shown in the figure.

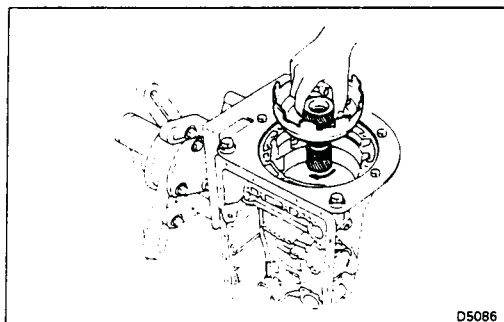
Clearance:

A340E	0.62 – 1.98 mm (0.0244 – 0.0780 in.)
A340H	0.50 – 1.76 mm (0.0197 – 0.0693 in.)

If the values are nonstandard, check for an improper installation.



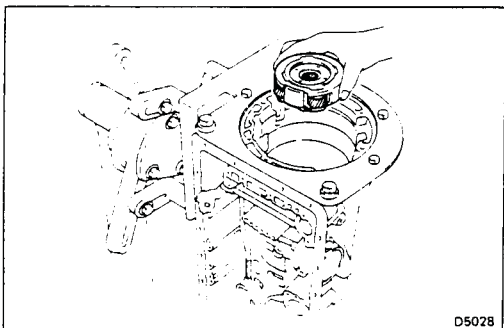
Technical Service Information



INSTALL SUN GEAR INPUT DRUM

While turning the sun gear input drum clockwise, install it into the one-way clutch.

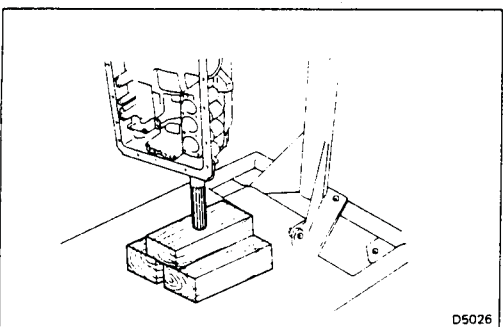
NOTE: Confirm the thrust washers are installed correctly. (See pages AT-59, 62)



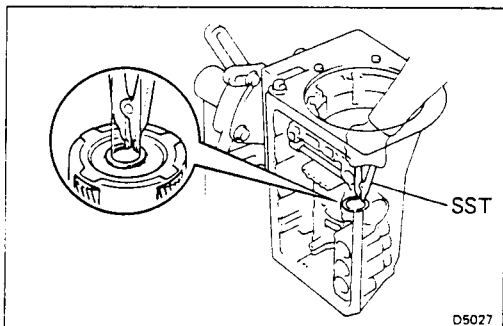
INSTALL FRONT PLANETARY GEAR TO SUN GEAR

(a) Install the front planetary gear to the sun gear.

NOTE: Confirm the bearing and race is installed correctly. (See page AT-55)

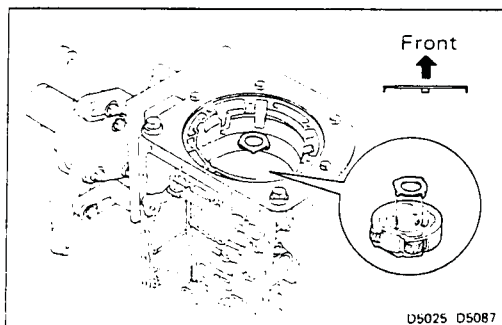


(b) With wooden blocks under the output shaft, stand the transmission on the output shaft.



(c) Using SST, install the snap ring.

SST 09350-30020 (09350-07070)



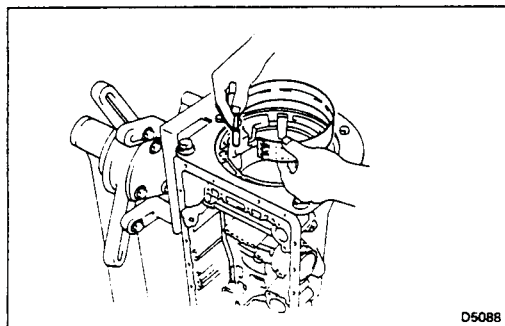
(d) Coat the bearing race with petroleum jelly and install it onto the front planetary gear.

NOTE: Bearing race diameter mm (in.)

Bearing race	Diameter
Inside	34.3 (1.350)
Outside	47.8 (1.882)

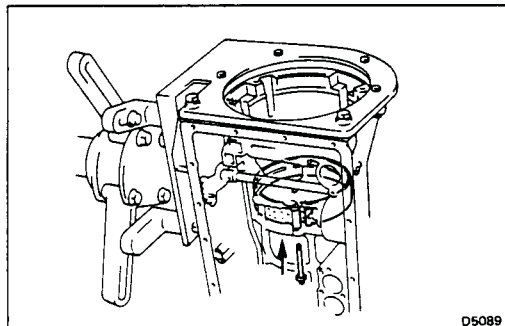


Technical Service Information

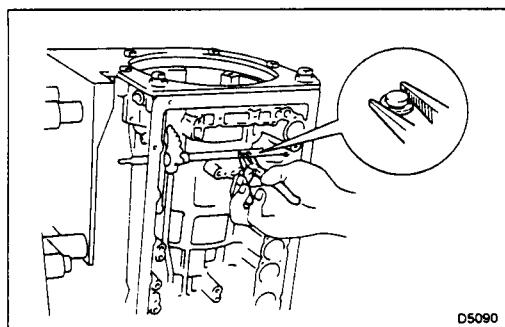


INSTALL SECOND COAST BRAKE BAND

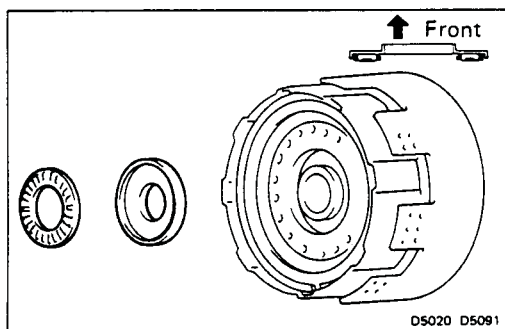
- (a) Insert the second coast brake band to the case.



- (b) Install the pin through the brake band.



- (c) Install the E-ring to the pin.

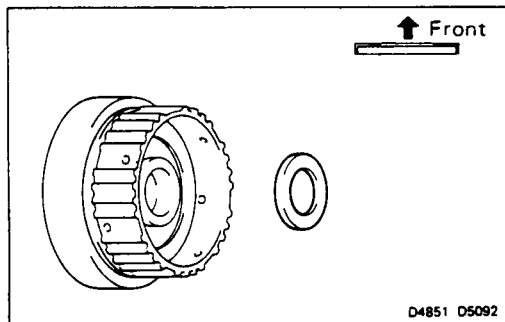


INSTALL FRONT PLANETARY RING GEAR TO FORWARD CLUTCH

- (a) Coat the bearing and race with petroleum jelly and install them onto the forward clutch.

NOTE: Bearing and race diameter mm (in.)

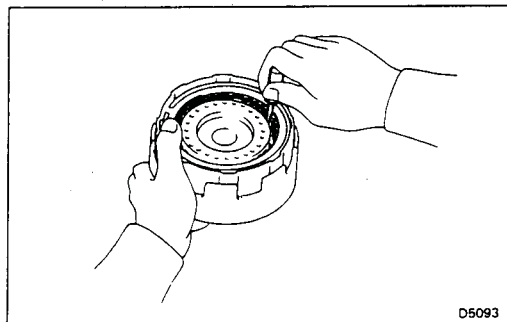
	Inside	Outside
Bearing	26.0 (1.024)	46.7 (1.839)
Race	26.0 (1.024)	48.9 (1.925)



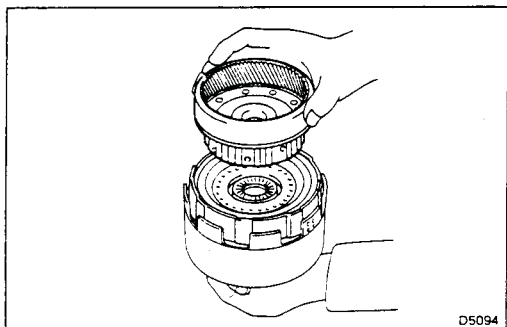
- (b) Coat the race with petroleum jelly and install it onto the front planetary ring gear.

NOTE: Race diameter mm (in.)

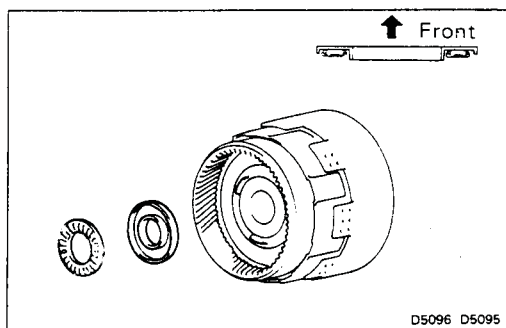
	Inside	Outside
Race	26.8 (1.055)	47.0 (1.850)



(c) Align the flukes of the discs in the forward clutch.



(d) Align the spline of the front planetary gear with the flukes of the discs and install the front planetary gear to the forward clutch.

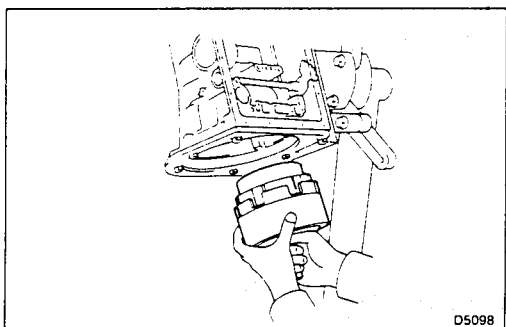


INSTALL ASSEMBLED DIRECT CLUTCH, FORWARD CLUTCH AND FRONT PLANETARY RING GEAR INTO CASE

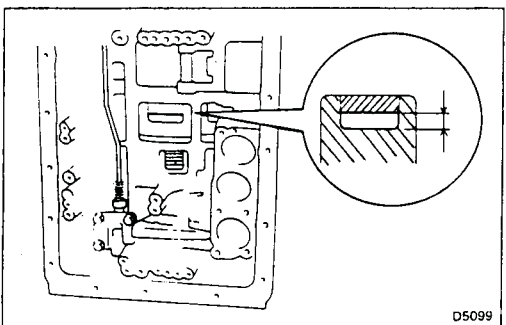
(a) Coat the bearing and race with petroleum jelly and install them onto the ring gear.

NOTE: Bearing and race diameter mm (in.)

	Inside	Outside
Bearing	32.6 (1.283)	47.7 (1.878)
Race	30.6 (1.205)	53.6 (2.110)



(b) Install the assembled direct clutch, forward clutch and front planetary ring gear into the transmission case.



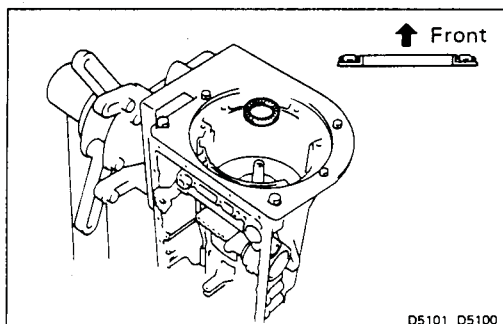
(c) Using vernier calipers, measure the distance between the sun gear input drum and direct clutch drum as shown in the figure.

Height: 9.8 – 11.8 mm (0.386 – 0.465 in.)

If the values are nonstandard, check for an improper installation.



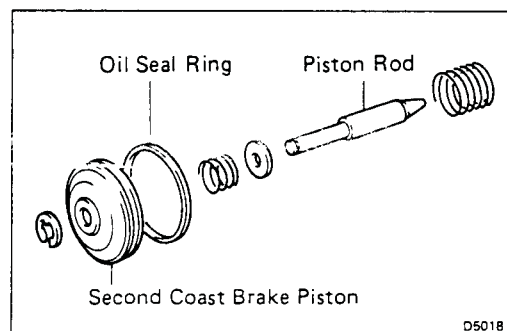
Technical Service Information



- (d) Coat the assembled bearing and race with petroleum jelly and install it onto the forward clutch.

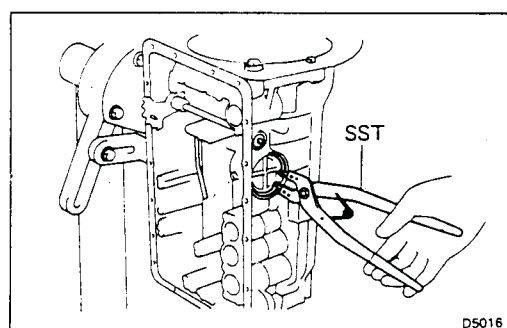
NOTE: Assembled bearing and race diameter mm (in.)

	Inside	Outside
Bearing and race	33.7 (1.327)	47.8 (1.882)



ASSEMBLE SECOND COAST BRAKE PISTON

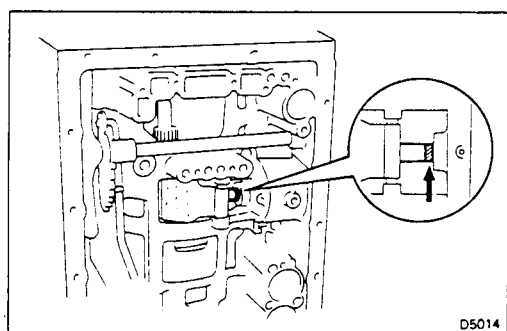
- Coat the oil seal ring with ATF and install it to the second coast brake piston.
- Install the washer, spring and piston to the piston rod.
- Install the E-ring.



INSTALL SECOND COAST BRAKE PISTON

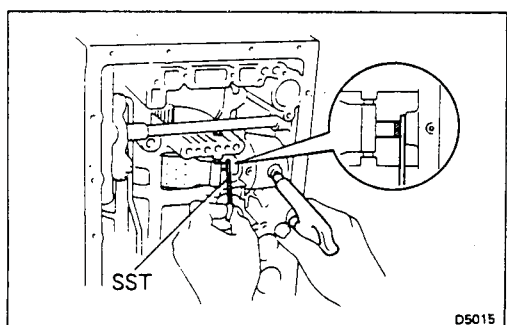
- Coat two new oil seals with ATF and install them to the piston cover.
- Install the spring, second coast brake piston assembly and piston cover to the case.
- Using SST, install the snap ring.

SST 09350-30020 (09350-07060)



CHECK PISTON STROKE OF SECOND COAST BRAKE

- Place a mark on the second coast brake piston rod as shown in the figure.

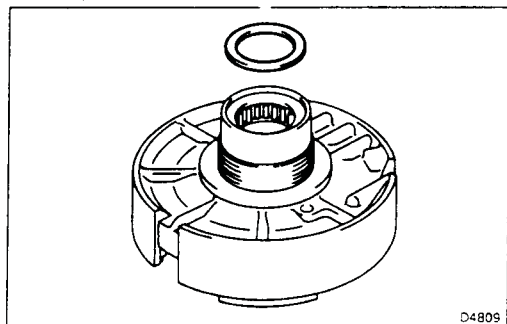


- Using SST, measure the stroke applying the compressed air (4 – 8 kg/cm², 57 – 114 psi or 392 – 785 kPa) as shown in the figure.

SST 09240-00020

Piston stroke: 1.5 – 3.0 mm (0.059 – 0.118 in.)

If the values are nonstandard, check for an improper installation.

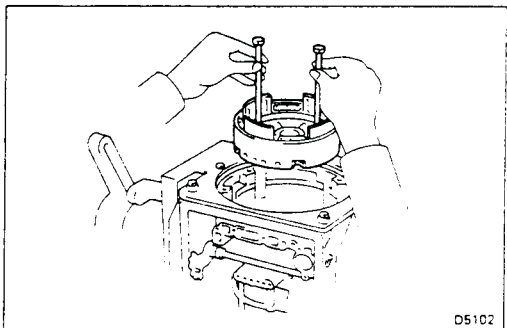


INSTALL OVERDRIVE SUPPORT ASSEMBLY

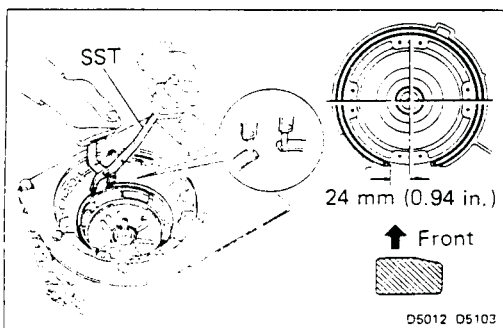
- (a) Coat the race with petroleum jelly and install it onto the overdrive support assembly.

NOTE: Race diameter mm (in.)

	Inside	Outside
Race	36.8 (1.449)	50.9 (2.004)

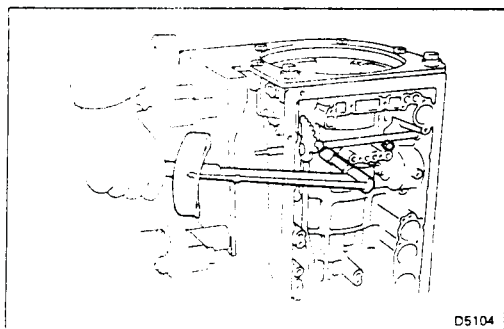


- (b) Aim the bolt and oil holes of the overdrive support toward the valve hole side, and align them with the bolt hole of the transmission case and insert.



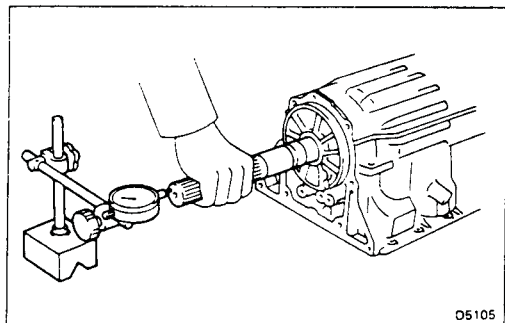
- (c) Using SST, install the snap ring as shown in the figure.

SST 09350-30020 (09350-07060)



- (d) Install and torque the two bolts.

Torque: 260 kg-cm (19 ft-lb, 25 N·m)



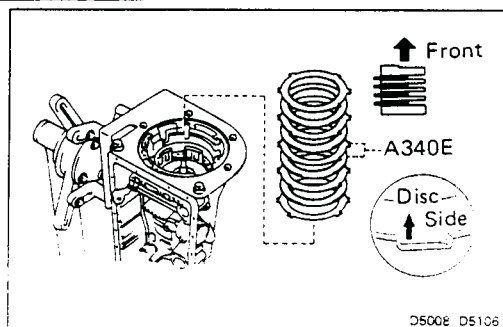
CHECK END OF OUTPUT SHAFT

Using a dial indicator, measure the end play of the output shaft by hand.

End play: 0.27 – 0.86 mm (0.0106 – 0.0339 in.)



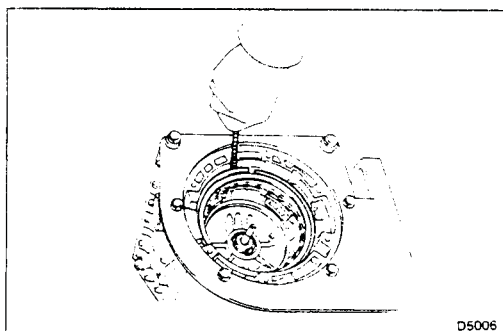
Technical Service Information



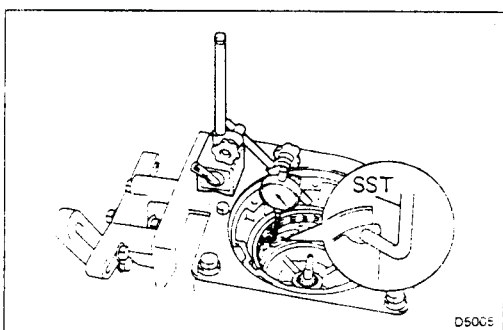
INSTALL FLANGES, DISCS AND PLATES

- Install the (flat ring) 4.0 mm (0.157 in.) thick flange with the rounded edge side of the flange facing the disc.
- Alternately install discs and plates. (Disc first)

A340E :	Four discs
	Three plates
A340H :	Three discs
	Two plates

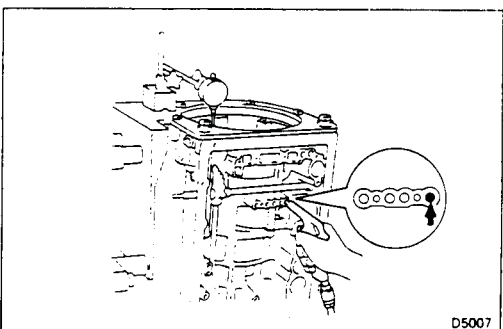


- Install the (stepped ring) flange with the flat side of the flange facing the disc.
- Install the snap ring.



CHECK PISTON STROKE OF OVERDRIVE BRAKE

- Place SST and a dial indicator onto the overdrive brake piston as shown in the figure.
SST 09350-30020 (09350-06120)

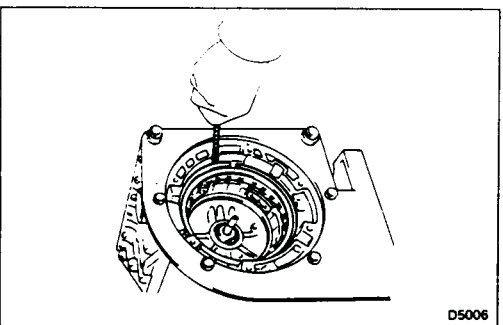


- Measure the stroke applying and releasing the compressed air (4 – 8 kg/cm², 57 – 114 psi or 392 – 785 kPa) as shown in the figure.

Piston stroke:

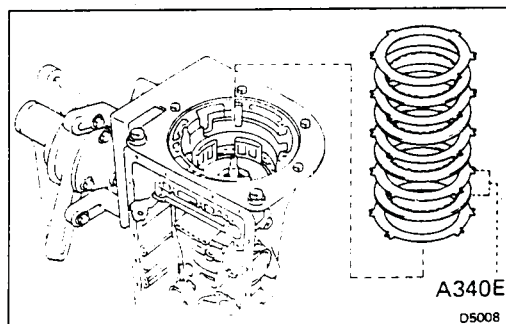
A340E : 1.40 – 1.70 mm (0.0551 – 0.0669 in.)
A340H : 1.32 – 1.62 mm (0.0520 – 0.0638 in.)

If the values are nonstandard, check for an improper installation.



REMOVE FLANGES, PLATES AND DISCS

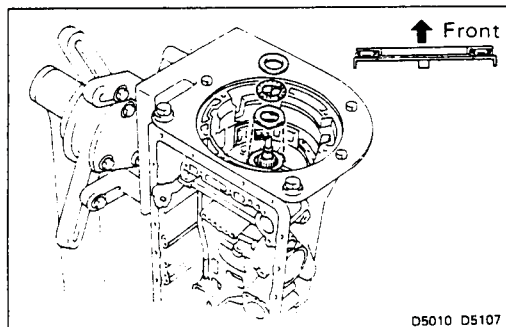
- Remove the snap ring.



(b) Remove flanges, plates and discs.

A340E : Two flanges
Three plates
Four discs

A340H : Two flanges
Two plates
Three discs

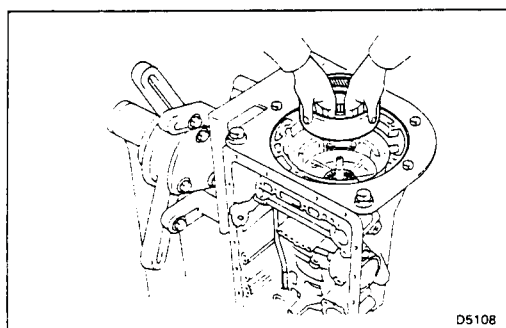


INSTALL OVERDRIVE PLANETARY RING GEAR

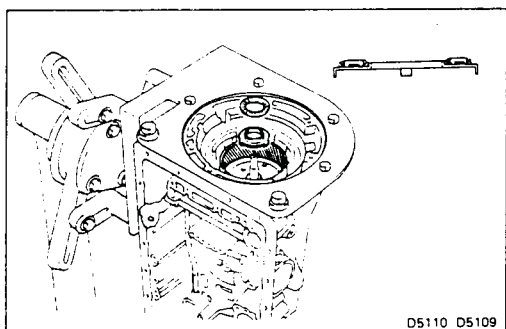
(a) Coat the bearing and races with petroleum jelly and install them onto the overdrive support.

NOTE: Bearing and races diameter mm (in.)

	Inside	Outside
Bearing	32.6 (1.283)	47.7 (1.878)
Race (Front)	30.7 (1.209)	47.7 (1.878)
Race (Rear)	34.3 (1.350)	47.8 (1.882)



(b) Install the overdrive planetary ring gear.

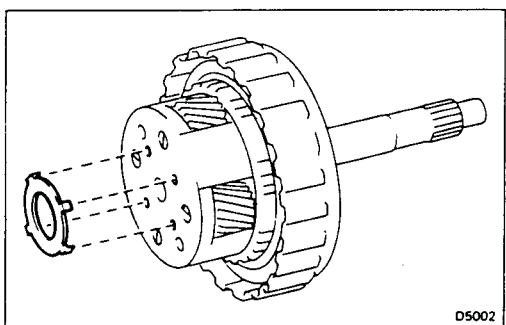


INSTALL OVERDRIVE PLANETARY GEAR AND DIRECT CLUTCH

(a) Coat the bearing and race with petroleum jelly and install them onto the planetary ring gear.

NOTE: Bearing and race diameter mm (in.)

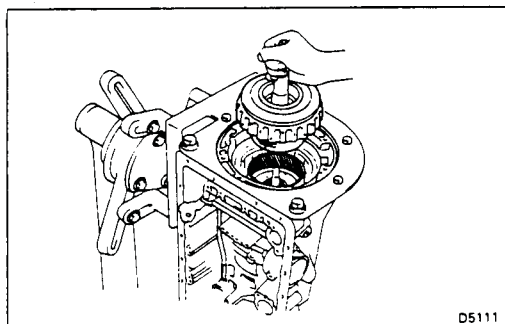
	Inside	Outside
Bearing	26.0 (1.024)	46.7 (1.839)
Race	24.2 (0.953)	47.8 (1.882)



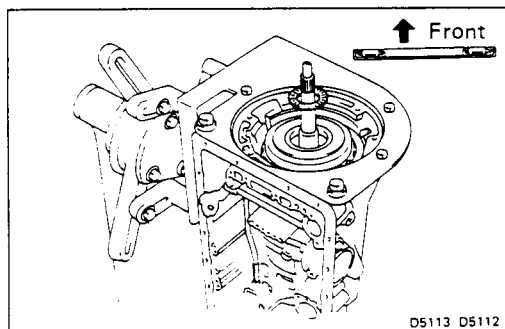
(b) Coat the race with petroleum jelly and install it onto the planetary gear.

NOTE: Race diameter mm (in.)

	Inside	Outside
Race	27.2 (1.071)	41.8 (1.646)



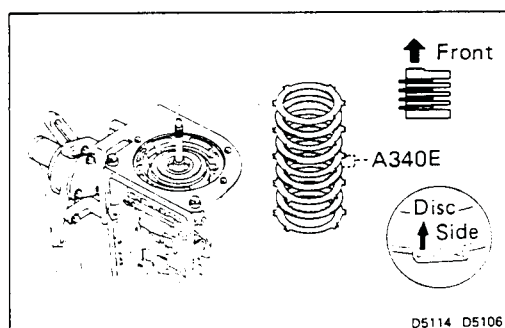
(c) Install the overdrive planetary gear and direct clutch.



(d) Coat the assembled bearing and race with petroleum jelly and install it onto the direct clutch.

NOTE: Bearing and race diameter mm (in.)

	Inside	Outside
Bearing and race	28.9 (1.138)	50.2 (1.976)



INSTALL FLANGES, DISCS AND PLATES

(a) Install the (flat ring) 4.0 mm (0.157 in.) thick flange with the rounded edge side of the flange facing the disc.

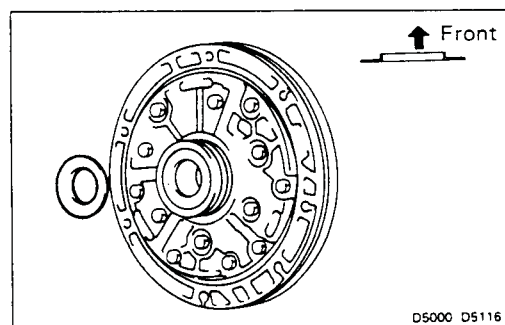
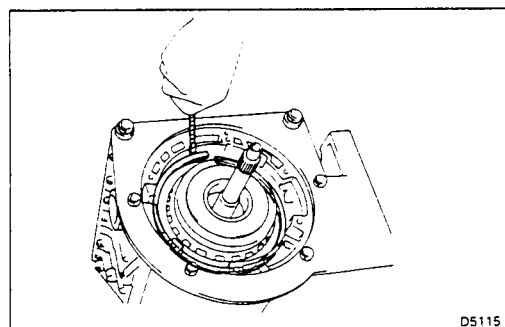
(b) Alternately install discs and plates. (Disc first)

A340E : Four discs
Three plates

A340H : Three discs
Two plates

(c) Install the (stepped ring) flange with the flat side of the flange facing the disc.

(d) Install the snap ring.

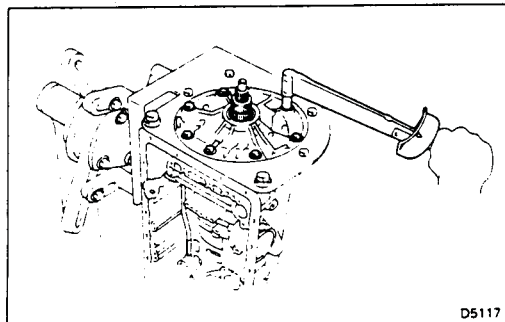


INSTALL OIL PUMP INTO CASE

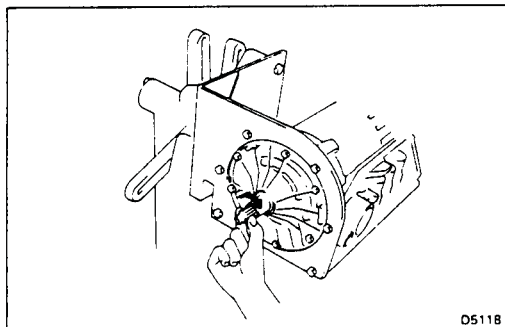
(a) Coat the race with petroleum jelly and install it onto the oil pump.

NOTE: Race diameter mm (in.)

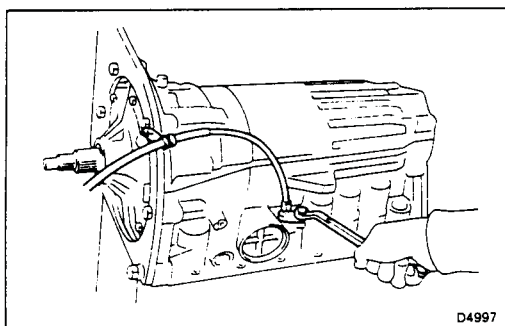
	Inside	Outside
Race	28.1 (1.106)	47.2 (1.858)



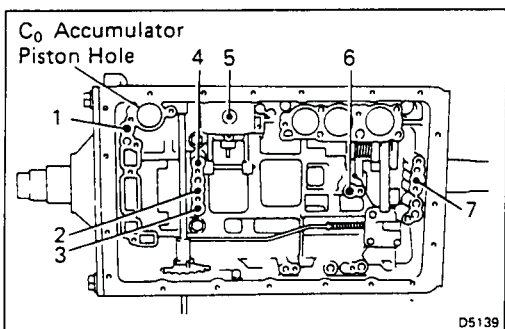
D5117



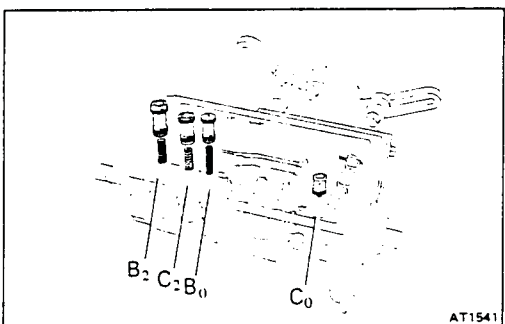
D5118



D4997



D5139



AT1541

- (b) Coat the O-ring with ATF and install it around the pump body.
- (c) Place the oil pump through the input shaft, and align the bolt holes of the pump body with the transmission case.
- (d) Hold the input shaft, and lightly press the oil pump body to slide the oil seal rings on the stator shaft through the direct clutch drum.

CAUTION: Do not push on the oil pump strongly or the oil seal ring will stick to the direct clutch drum.

- (e) Install the six bolts.

Torque: 220 kg-cm (16 ft-lb, 22 N-m)

CHECK INPUT SHAFT ROTATION

Make sure the input shaft rotates smoothly.

INSTALL THROTTLE CABLE

- (a) Coat a new O-ring with the ATF and install it to the cable.
- (b) Install the cable to the case.

INDIVIDUAL PISTON OPERATION INSPECTION

Check for the sound of operation while injecting compressed air into the oil hole indicated in the figure.

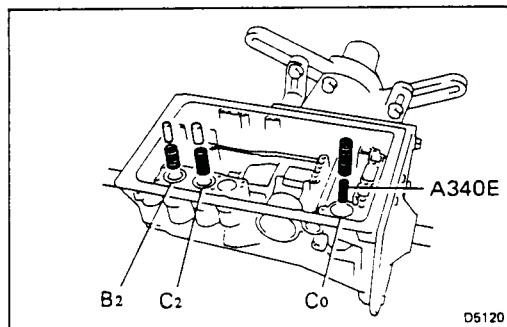
- (1) OD direct clutch
- (2) Direct clutch
- (3) Forward clutch
- (4) OD brake
- (5) Second coast brake
- (6) Second brake
- (7) First and reverse brake

NOTE: When inspecting the direct clutch, check with the C₀ accumulator piston hole closed.

If there is no noise, disassemble and check the condition of the parts.

INSTALL ACCUMULATOR PISTON

- (a) Coat the O-ring with ATF and install it to the piston.
- (b) Install the three springs and four accumulator pistons to the bore as shown in the figure.



(c) Install the two pins and springs.

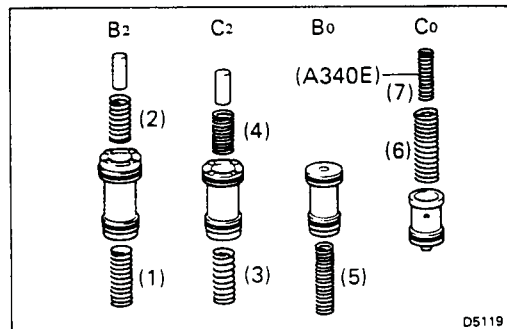
A340E : Four springs

A340H : Three springs

Accumulator Piston

mm (in.)

Piston	Outer diameter	Height
B ₂	36.9 (1.453)	68.5 (2.697)
C ₂	36.9 (1.453)	62.6 (2.465)
B ₀	31.9 (1.256)	52.0 (2.047)
C ₀	29.9 (1.177)	49.0 (1.929)



Pin

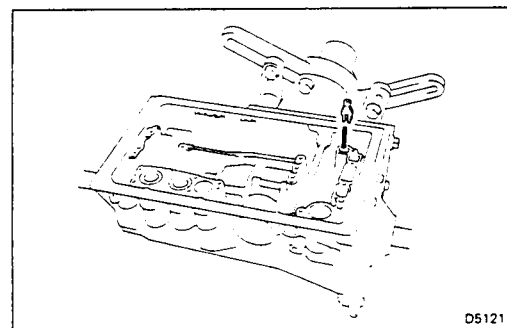
mm (in.)

Pin	Outer diameter	Height
B ₂	12.0 (0.472)	35.2 (1.386)
C ₂	13.7 (0.539)	33.2 (1.307)

Spring

mm (in.)

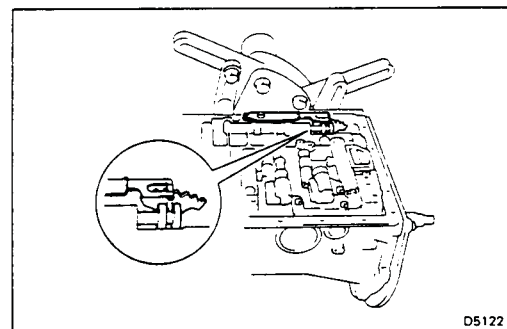
Spring	Free length	Outer diameter
(1) B ₂ (Inner)	53.5 (2.106)	19.7 (0.776)
(2) B ₂ (Outer)	A340E 38.0 (1.496) A340H 46.0 (1.811)	19.4 (0.764)
(3) C ₂ (Inner)	48.1 (1.894)	20.3 (0.799)
(4) C ₂ (Outer)	A340E 36.4 (1.433) A340H 44.0 (1.732)	A340E 21.1 (0.831) A340H 21.0 (0.827)
(5) B ₀	66.0 (2.598)	A340E 15.9 (0.626) A340H 16.5 (0.650)
(6) C ₀	A340E 74.6 (2.937) A340H 67.0 (2.638)	A340E 20.3 (0.799) A340H 17.8 (0.701)
(7) C ₀	46.0 (1.811)	14.0 (0.551)



INSTALL NEW CHECK BALL BODY AND SPRING

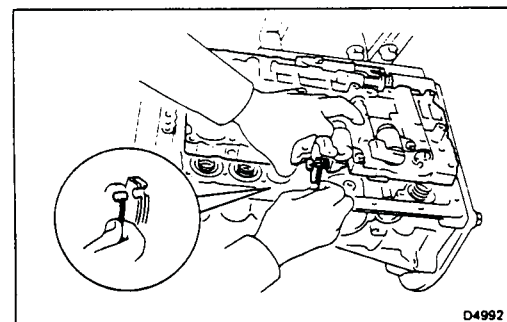
INSTALL VALVE BODY

(a) Align the groove of the manual valve to the pin of the lever.



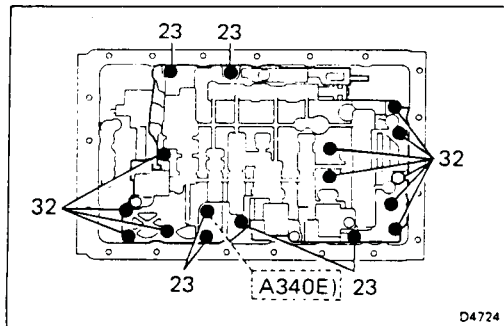
(b) Connect the throttle cable to the cam.

(c) Confirm the springs into the accumulator piston are installed correctly.





Technical Service Information



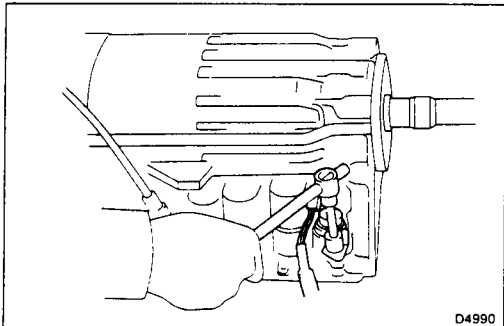
(d) Install the bolts.

A340E : Seventeen bolts

A340H : Sixteen bolts

NOTE: Each bolt length (mm) is indicated in the figure.

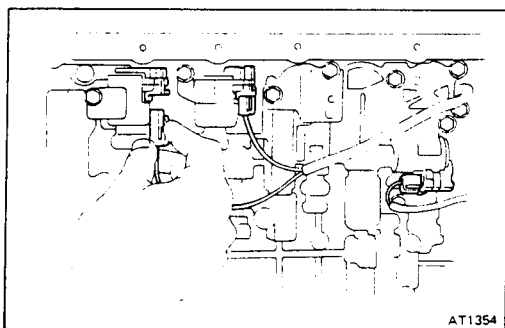
Torque: 100 kg-cm (7 ft-lb, 10 N·m)



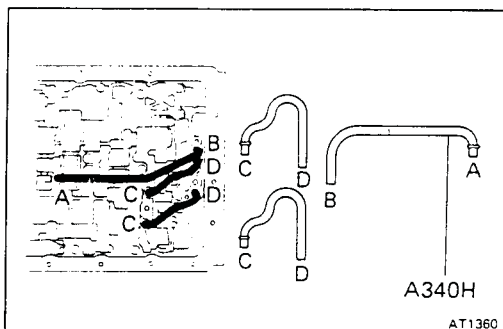
INSTALL SOLENOID WIRING

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

(b) Insert the solenoid wiring to the case and install the stopper plate.



(c) Connect the connectors to the No. 1, No. 2 and No. 3 solenoids.



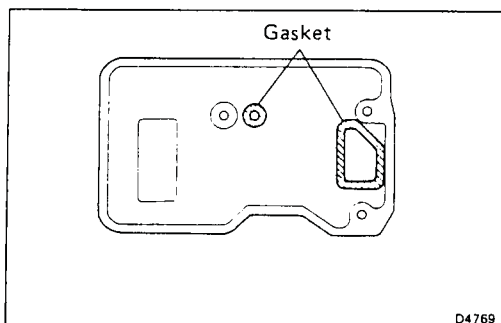
INSTALL OIL TUBES

Using a plastic hammer, install the tubes into the positions shown in the figure.

A340E : Two tubes

A340H : Three tubes

CAUTION: Be careful not to bend or damage the tubes.



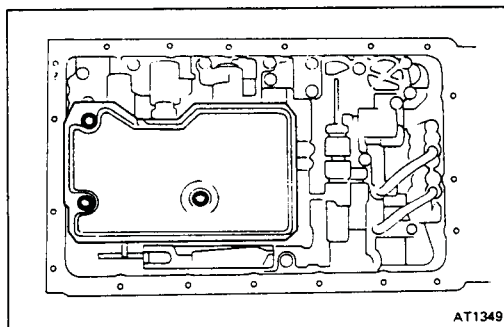
35-1 (A340E)

INSTALL OIL STRAINER

(a) Install two new gaskets to the oil strainer.

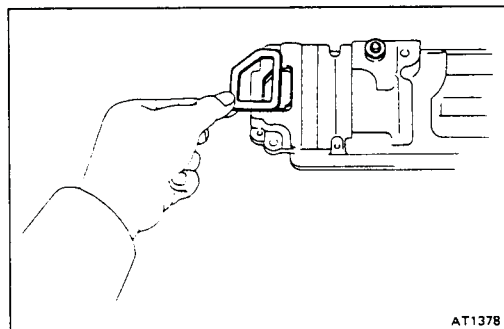


Technical Service Information



(b) Install and torque the three bolts.

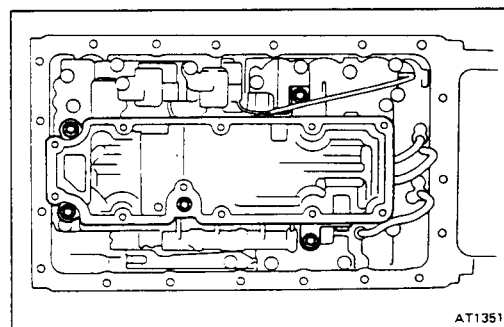
Torque: 100 kg-cm (7 ft-lb, 10 N-m)



(A340H)

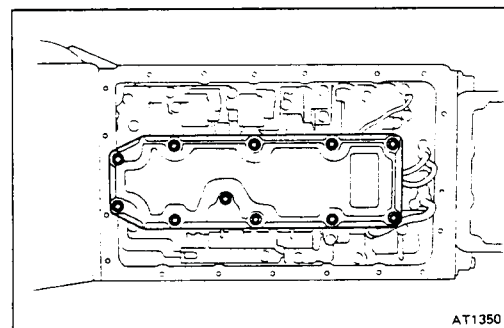
INSTALL OIL STRAINER

(a) Install two new gaskets to the oil strainer.



(b) Install the upper oil strainer with the gaskets to the valve body. Torque the five bolts.

Torque: 100 kg-cm (7 ft-lb, 10 N-m)



(c) Install the lower oil strainer with a new gasket to the upper oil strainer. Torque the eleven bolts.

Torque: 70 kg-cm (60 in.-lb, 6.9 N-m)

INSTALL MAGNET IN PAN

CAUTION: Make sure that the magnet does not interfere with the oil tubes.

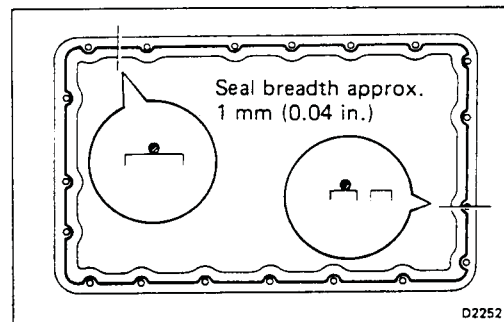
INSTALL OIL PAN

(a) Remove any packing material and be careful not to drop oil on the contacting surfaces of the transmission case and oil pan.

(b) Apply seal packing equivalent to the oil pan as shown in the figure.

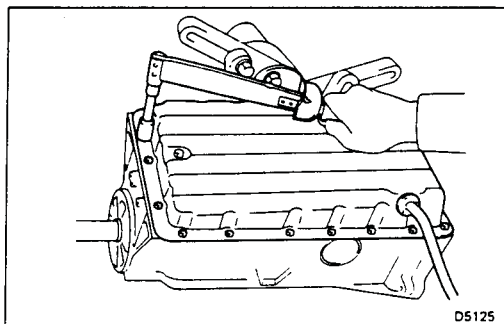
Packing part No. 08826-00090 or THREE BOND TB1281

NOTE: Install the oil pan as soon as the seal packing is applied.



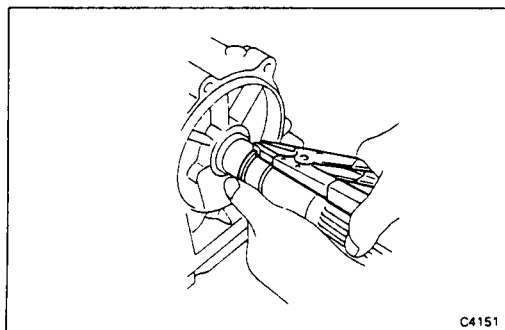


Technical Service Information



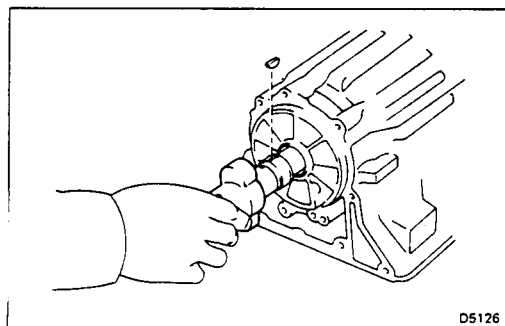
(c) Install and torque the nineteen bolts.

Torque: 75 kg-cm (65 in.-lb, 7.4 N-m)

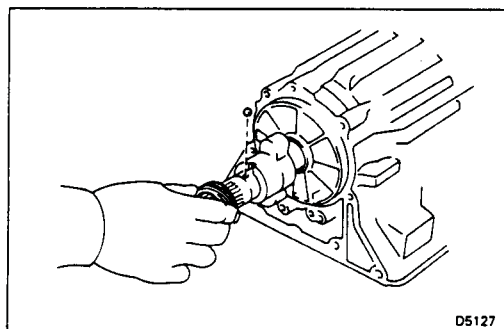


INSTALL SENSOR ROTOR (A340E)

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

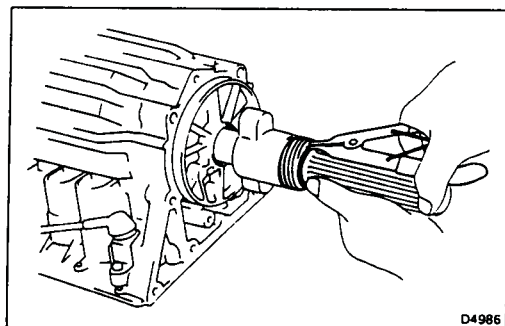


(b) Install the sensor rotor and key.



INSTALL SPEEDOMETER DRIVE GEAR (A340E)

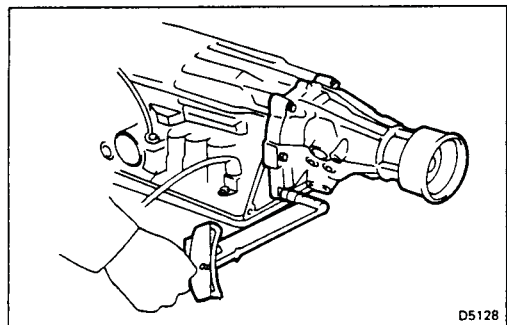
(a) Install the speedometer drive gear and lock ball.



(b) Using snap ring pliers, install the snap ring.



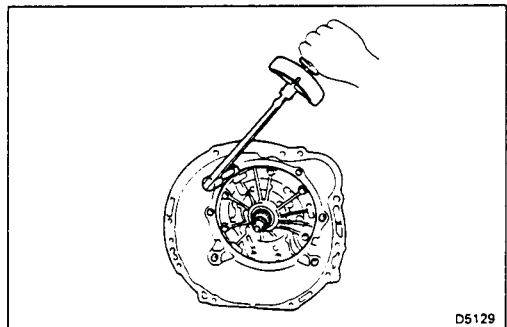
Technical Service Information



INSTALL EXTENSION HOUSING (A340E)

Install the extension housing with a new gasket to the case. Torque the six bolts.

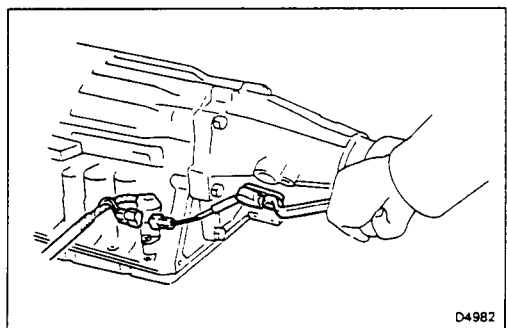
Torque: 370 kg-cm (27 ft-lb, 36 N·m)



INSTALL TRANSMISSION HOUSING

Install and torque the six bolts.

Torque: 10 mm 345 kg-cm (25 ft-lb, 34 N·m)
12 mm 580 kg-cm (42 ft-lb, 57 N·m)

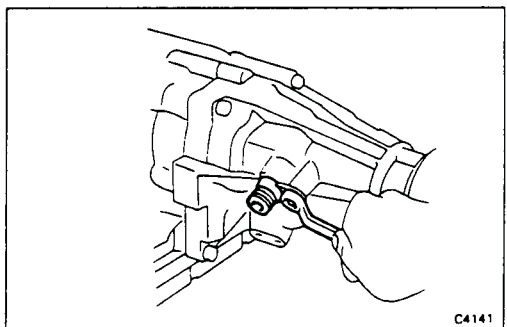


INSTALL SPEED SENSOR (A340E)

(a) Install the speed sensor.

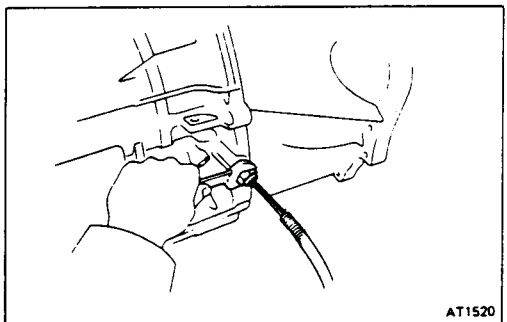
Torque: 75 kg-cm (65 in.-lb, 7.4 N·m)

(b) Connect the connector.



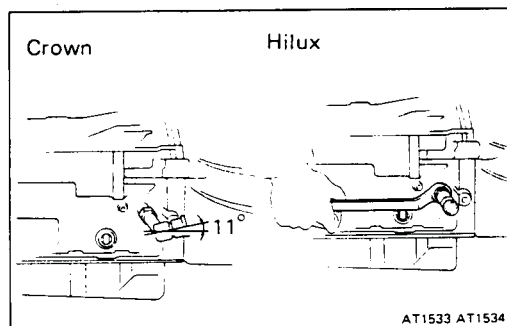
INSTALL SPEEDOMETER DRIVEN GEAR (A340E)

Torque: 160 kg-cm (12 ft-lb, 16 N·m)



INSTALL THERMO SENSOR (A340H)

Torque: 300 kg-cm (22 ft-lb, 29 N·m)

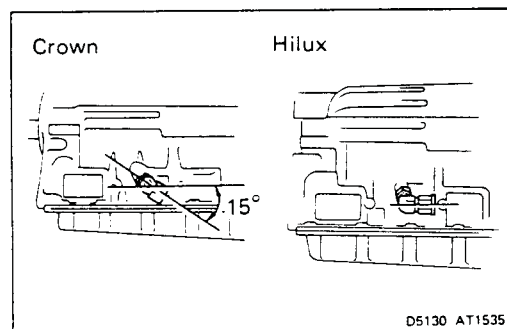


INSTALL TWO UNIONS

(a) Coat new O-rings with ATF, install them to the two unions.

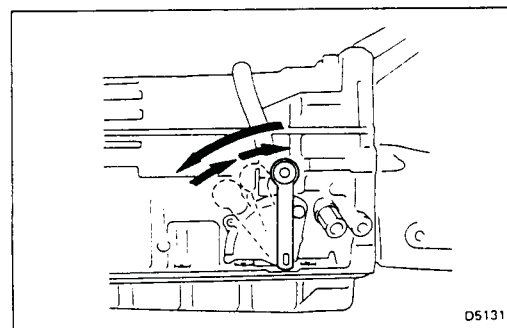
(b) Install the front union as shown in the figure.

Torque: 300 kg-cm (22 ft-lb, 29 N·m)



(c) Install the rear union as shown in the figure.

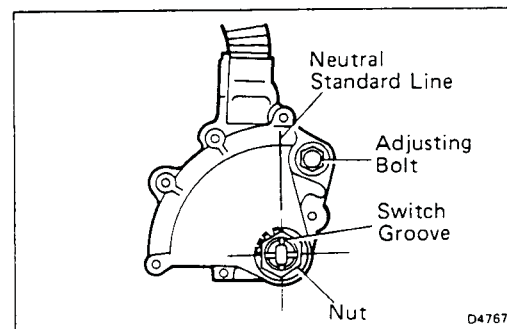
Torque: 300 kg-cm (22 ft-lb, 29 N·m)



INSTALL NEUTRAL START SWITCH

(a) Using the control shaft lever, fully turn the manual lever shaft back and return two notches. It is now in neutral.

(b) Insert the neutral start switch onto the manual valve shaft and temporarily tighten the adjusting bolt.



(c) Install the lock washer and install and torque the nut.

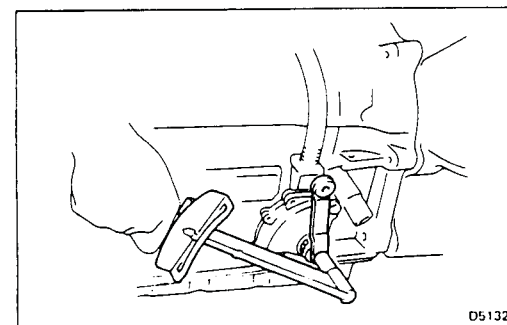
Torque: 70 kg-cm (61 in.-lb, 6.9 N·m)

(d) Align the neutral standard line and the switch groove and tighten the adjusting bolt.

Torque: 130 kg-cm (9 ft-lb, 13 N·m)

(e) Bend the tabs of the lock washer.

NOTE: Bend at least two of the lock washer tabs.



INSTALL CONTROL SHAFT LEVER

Torque: 160 kg-cm (12 ft-lb, 16 N·m)