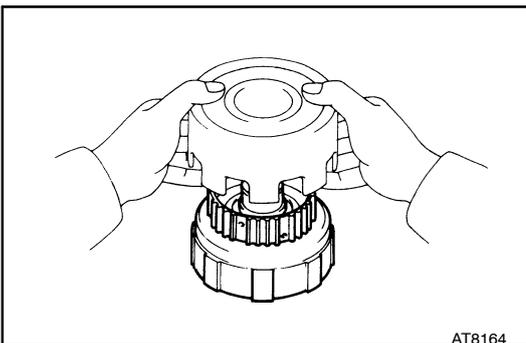
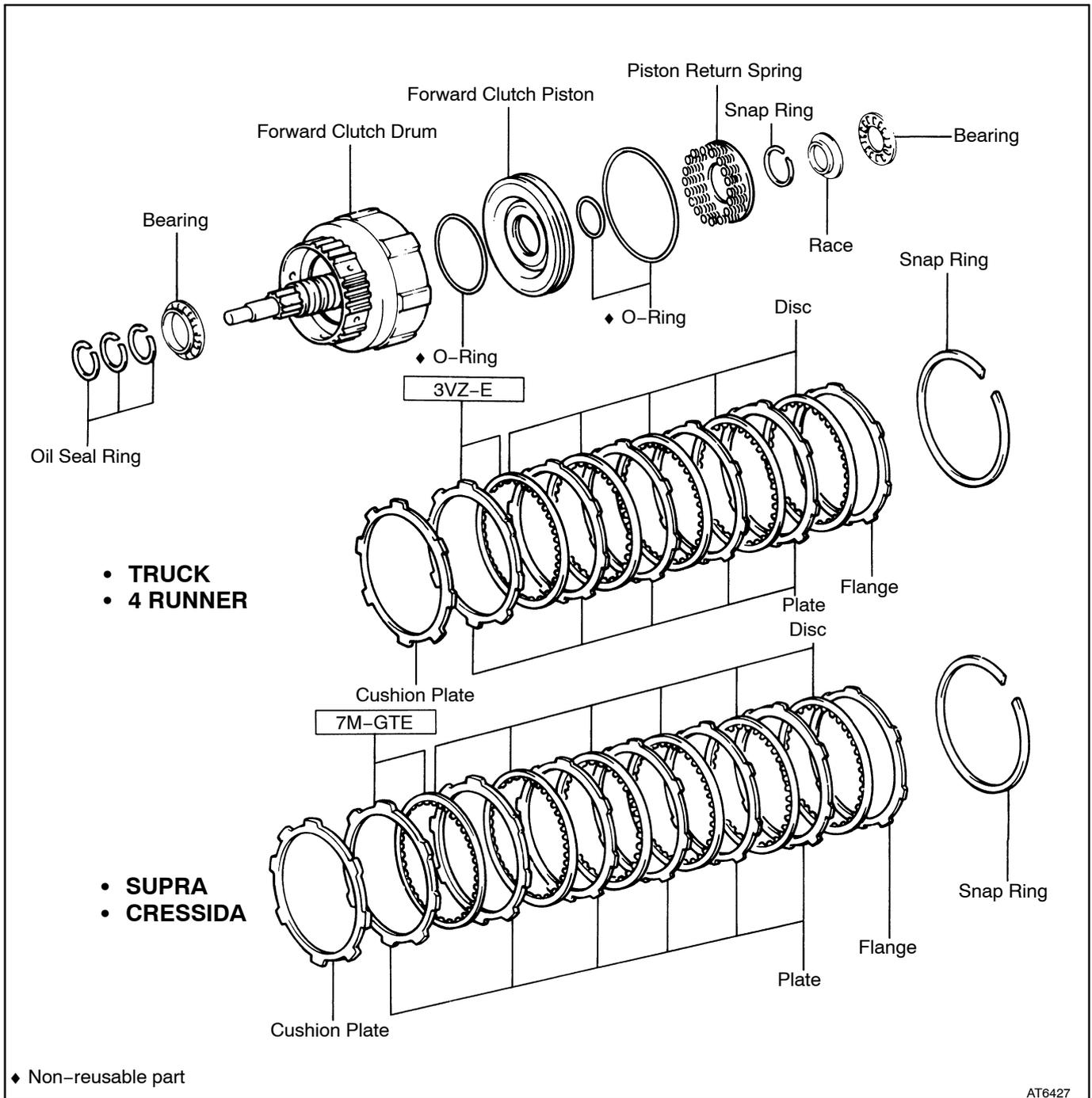
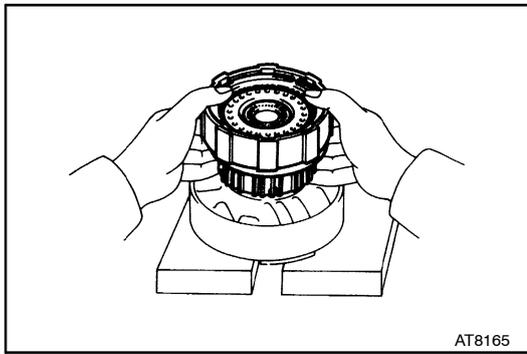


# Forward Clutch COMPONENTS



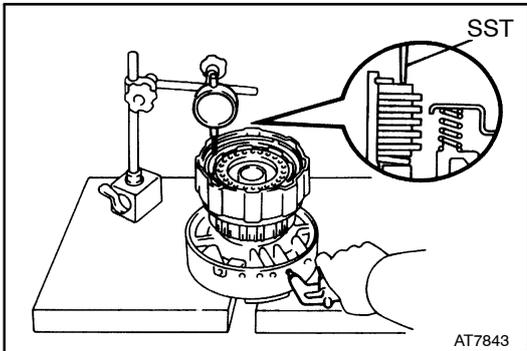
## DISASSEMBLY OF FORWARD CLUTCH

1. REMOVE FORWARD CLUTCH ASSEMBLY FROM DIRECT CLUTCH ASSEMBLY



## 2. PLACE FORWARD CLUTCH ONTO OVERDRIVE SUPPORT

- (a) Place wooden blocks, etc. to prevent forward clutch shaft from touching the work stand, and place the O/D support on them.
- (b) Place the forward clutch onto the O/D support.



## 3. CHECK PACK CLEARANCE OF FORWARD CLUTCH

Using SST and a dial indicator, measure the forward clutch piston stroke applying and releasing the compressed air (4–8 kg/cm<sup>2</sup>, 57 – 114 psi or 392 – 785 kPa) as shown.

SST 09350-30020 (09350-06120)

**Pack clearance:**

**(22R-E)**

**0.4 – 0.8 mm (0.016 – 0.031 in.)**

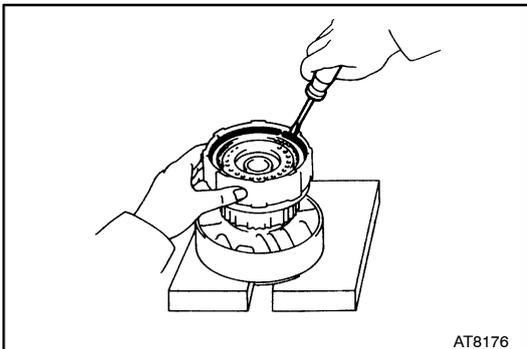
**(7M-GTE)**

**0.6 – 1.0 mm (0.024 – 0.039 in.)**

**(Others)**

**0.5 – 0.9 mm (0.020 – 0.035 in.)**

If the values are nonstandard, inspect the discs.



## 4. REMOVE FLANGE, PLATES AND DISCS

- (a) Remove the snap ring from the forward clutch drum.
- (b) Remove the flange, plates and discs.

**(22R-E)**

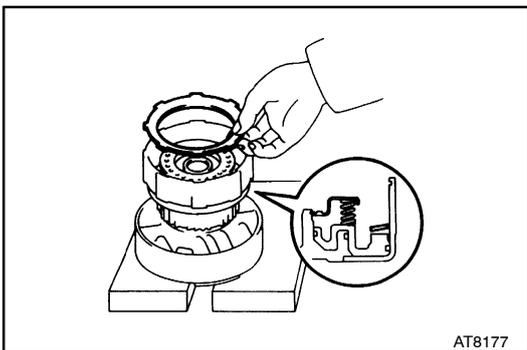
One flange, four plates and four discs

**(7M-GTE)**

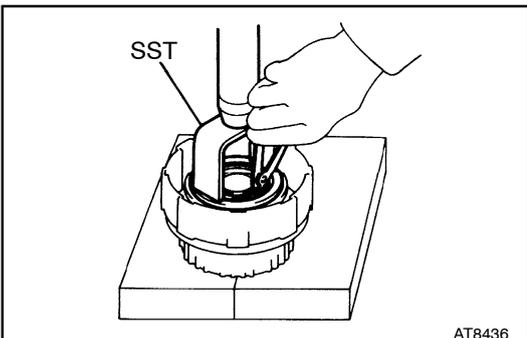
One flange, six plates and six discs

**(Others)**

One flange, five plates and five discs



## 5. REMOVE CUSHION PLATE

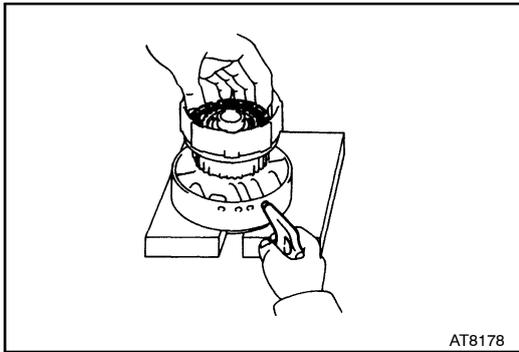


## 6. REMOVE PISTON RETURN SPRING

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

SST 09350-30020 (09350-07040)

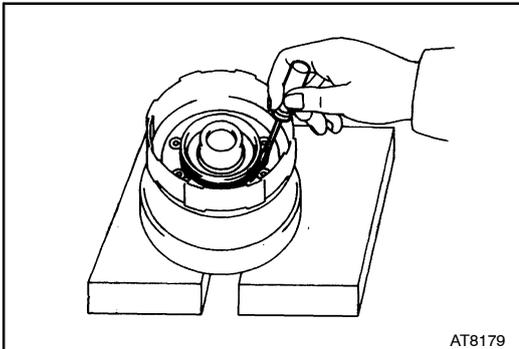
- (b) Using snap ring pliers, remove the snap ring.
- (c) Remove the piston return spring.



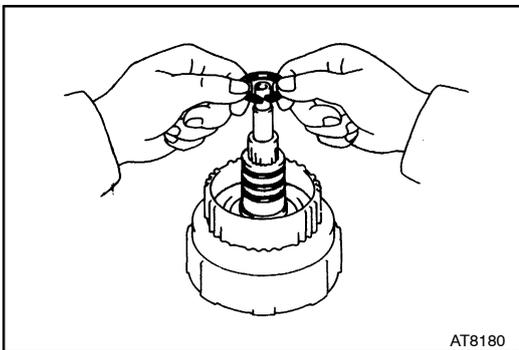
AT8178

**7. REMOVE FORWARD CLUTCH PISTON**

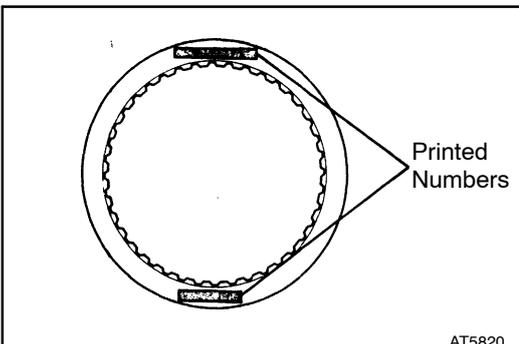
- (a) Place the forward clutch drum onto the O/D support.
- (b) Hold the forward clutch piston with hand, apply compressed air to the O/D support to remove the forward clutch piston.
- (c) Remove the forward clutch piston.
- (d) Remove the two O-rings from the piston.



AT8179

**8. REMOVE O-RING FROM FORWARD CLUTCH DRUM**

AT8180

**9. REMOVE OIL SEAL RINGS**

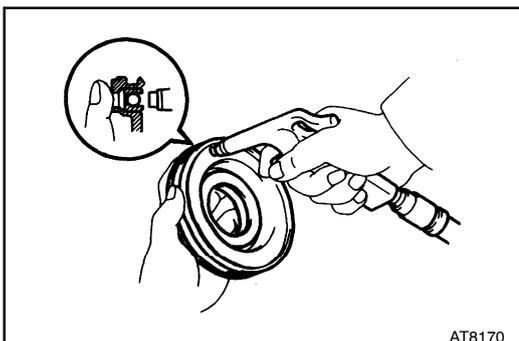
AT5820

**INSPECTION OF FORWARD CLUTCH****1. INSPECT DISC, PLATE AND FLANGE**

Check to see if the sliding surface of the disc, plate and flange are worn or burnt. If necessary, replace them.

**HINT:**

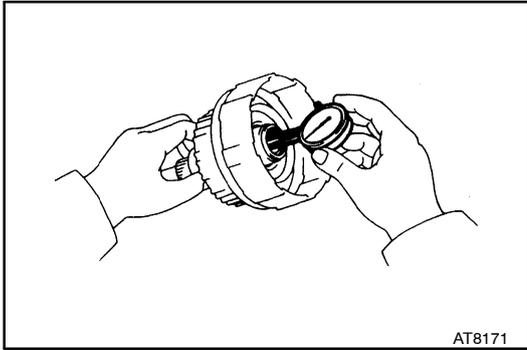
- If the lining of the disc is peeling off or discolored, or even if parts of the printed numbers are defaced, replace all discs.
- Before assembling new discs, soak them in ATF for at least fifteen minutes.



AT8170

**2. CHECK FORWARD CLUTCH PISTON**

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



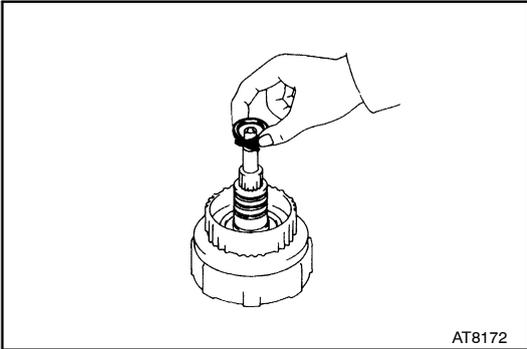
AT8171

### 3. 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.



AT8172

## ASSEMBLY OF FORWARD CLUTCH

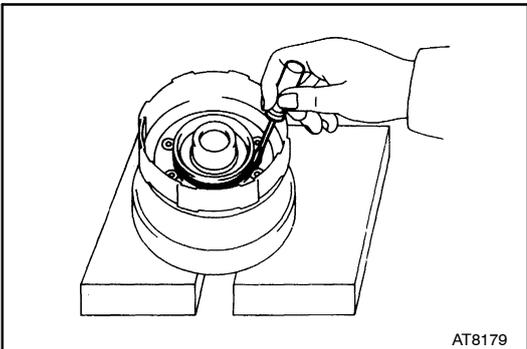
### 1. INSTALL OIL SEAL RINGS

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

(b) Contract the oil seal rings as shown, and install them onto the forward clutch drum.

**NOTICE: Do not spread the ring ends more than necessary.**

**HINT:** After installing the oil seal rings, check that they rotate smoothly.



AT8179

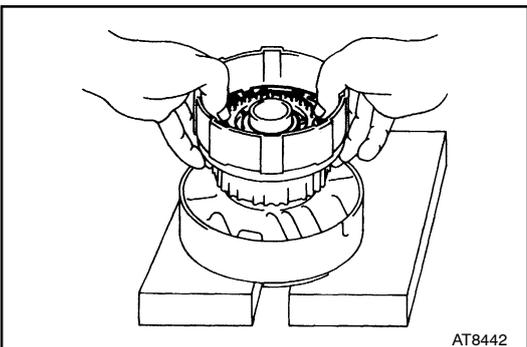
### 2. INSTALL NEW O-RING TO FORWARD CLUTCH DRUM

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

### 3. INSTALL FORWARD CLUTCH PISTON

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

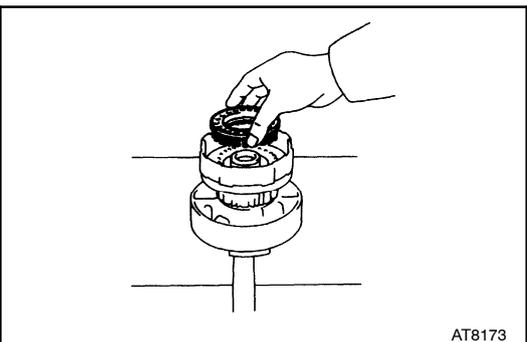
(b) Being careful not to damage the O-rings, press the clutch piston into the forward clutch drum with both hands.



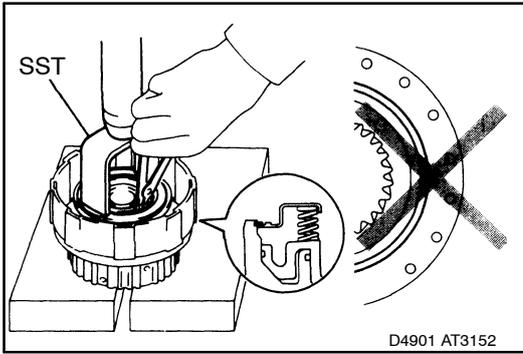
AT8442

### 4. INSTALL PISTON RETURN SPRING

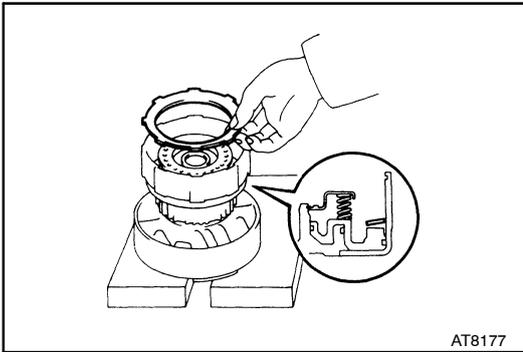
(a) Install the piston return spring.



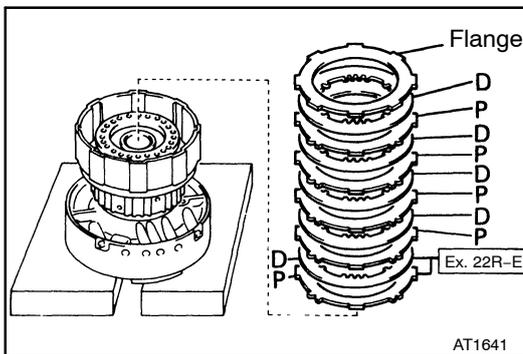
AT8173



- (b) Place SST on the spring retainer, and compress the return spring with a shop press.
- SST 09350-30020 (09350-07040)
- (c) 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.



**5. INSTALL CUSHION PLATE ROUNDED END DOWN AS SHOWN**



**6. INSTALL PLATES, DISCS AND FLANGE**

- (a) Install in order: P= Plate D= Disc

**(22R-E)**

P-D-P-D-P-D-P-D

**(7M-GTE)**

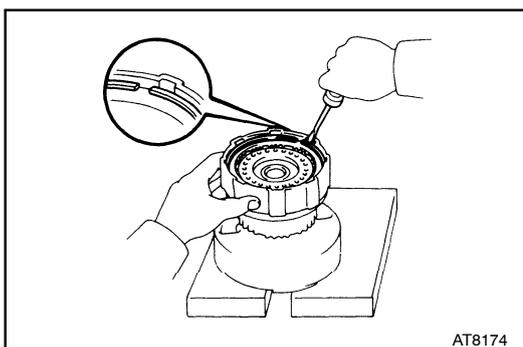
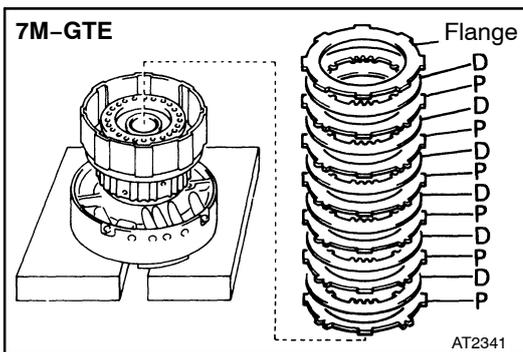
P-D-P-D-P-D-P-D-P-D-P-D

**(Others)**

P-D-P-D-P-D-P-D-P-D

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

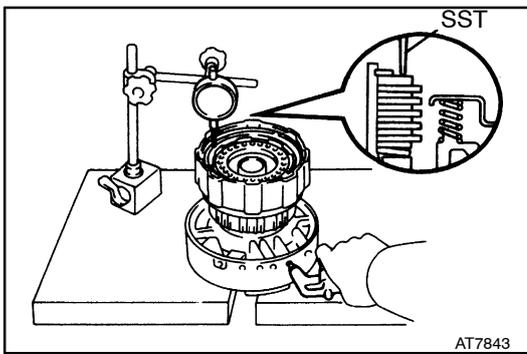
HINT: There are eight different thickness for the flange.



- (c) 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.

Flange Thickness mm (in.)

No.	Thickness	No.	Thickness
61	3.0 (0.118)	44	3.8 (0.150)
60	3.2 (0.126)	42	4.0 (0.157)
45	3.4 (0.134)	63	4.2 (0.165)
62	3.6 (0.142)	64	4.4 (0.173)



- 7. CHECK PACK CLEARANCE OF FORWARD CLUTCH**  
 Using SST and a dial indicator, measure the forward clutch piston stroke applying and releasing the compressed air (4–8 kg/cm<sup>2</sup>, 57 – 114 psi or 392 – 785 kPa) as shown.

SST 09350-30020 (09350-06120)

**Pack clearance:**

**(22R-E)**

**0.4 – 0.8 mm (0.016 – 0.031 in.)**

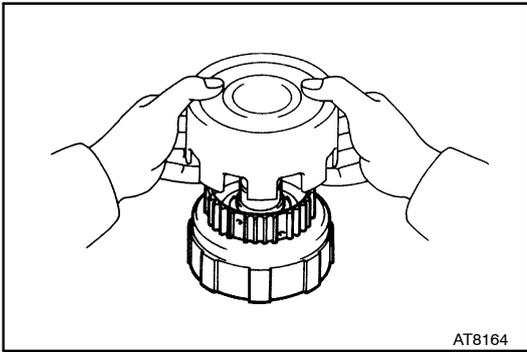
**(7M-GTE)**

**0.6 – 1.0 mm (0.024 – 0.039 in.)**

**(Others)**

**0.5 – 0.9 mm (0.020 – 0.035 in.)**

If the values are nonstandard, inspect the discs.



- 8. INSTALL DIRECT CLUTCH ASSEMBLY TO FORWARD CLUTCH ASSEMBLY**

- (a) Make sure that the thrust washer is installed to the direct clutch drum.
- (b) Align the flukes of discs in the direct clutch.
- (c) Install the direct clutch assembly onto the forward clutch assembly.
- (d) Check that the distance from the direct clutch end to the forward clutch end is 71.2 mm (2.803 in.).

If the distance is less than the above value, parts may have been assembled incorrectly, check and reassemble again.

