

Manual Locking Hub Adapter Kit:

Instructions for replacing Toyota electric locking hubs with Aisin manual locking hubs



- 4x cone washers

Supplied Parts in Adapter Kit: (for 2 wheel hubs)

- 2x beige multi-hole gaskets
- 2x black multi-hole gaskets
- 2x adapter plates with dowel pins
- 8x M8 Allen head bolts (cap screws)
- 8x flat washers (8 mm)
- 2x 1.8 mm snap (lock) rings
- 4 Hub Stud Kits containing:
 - 4x M8 threaded hub studs
 - 4x M8 nuts
 - 4x split ring lock washers

Tools & Supplies Required:

- 3/8" drive ratchet & a 3" extension
- T40 3/8" drive socket
- 10mm & 12 mm 3/8" drive sockets
- 6 mm Allen/Hex key 3/8" drive socket
- 3/8" drive torque wrench
- Flat Tip Lock Ring pliers
- Brass drift & ball-peen hammer
- Vice grips or expanding pliers
- Gasket scraper (or box knife, or single edge razor blade)
- Multi-Purpose (MP) grease

Before you begin:

- Ensure your vehicle is parked safely on flat ground, and that you have set the parking brake or put the vehicle in Park and chocked the rear wheels.
- Raise the front end of the vehicle off the ground and set it on proper jack stands.
- Check the front wheel bearings for looseness by following the directions on service manual pages. Adjust wheel bearings before installing the hub adapters and manual hubs.

Instructions (for each wheel hub):

Note: For additional details and illustrations relating to these instructions, refer to Pages SA-6 to SA-14 of the Factory Service Manual (attached to the end of this document).

1. Remove the six T40 bolts in the electric hub cover.
2. Remove the electric hub cover.
3. Use Lock ring pliers to remove the Lock ring (Toyota calls this a snap ring) from the end of the birfield. Save the Lock ring for re-installation in step #23.
4. Remove the four 12 mm acorn nuts and associated lock washers. Save these parts for re-use in step #21.
5. Loosen the 4 cone washers with the brass drift and ball-peen hammer. To do this, place the drift against the stud and apply a sharp 'rap' to the drift with the hammer. This should loosen the cone washer.
6. Remove cone washers with your fingers or by gently grabbing them by the edges with expanding pliers and pulling them off the studs. Save the cone washers for re-use in step #18.

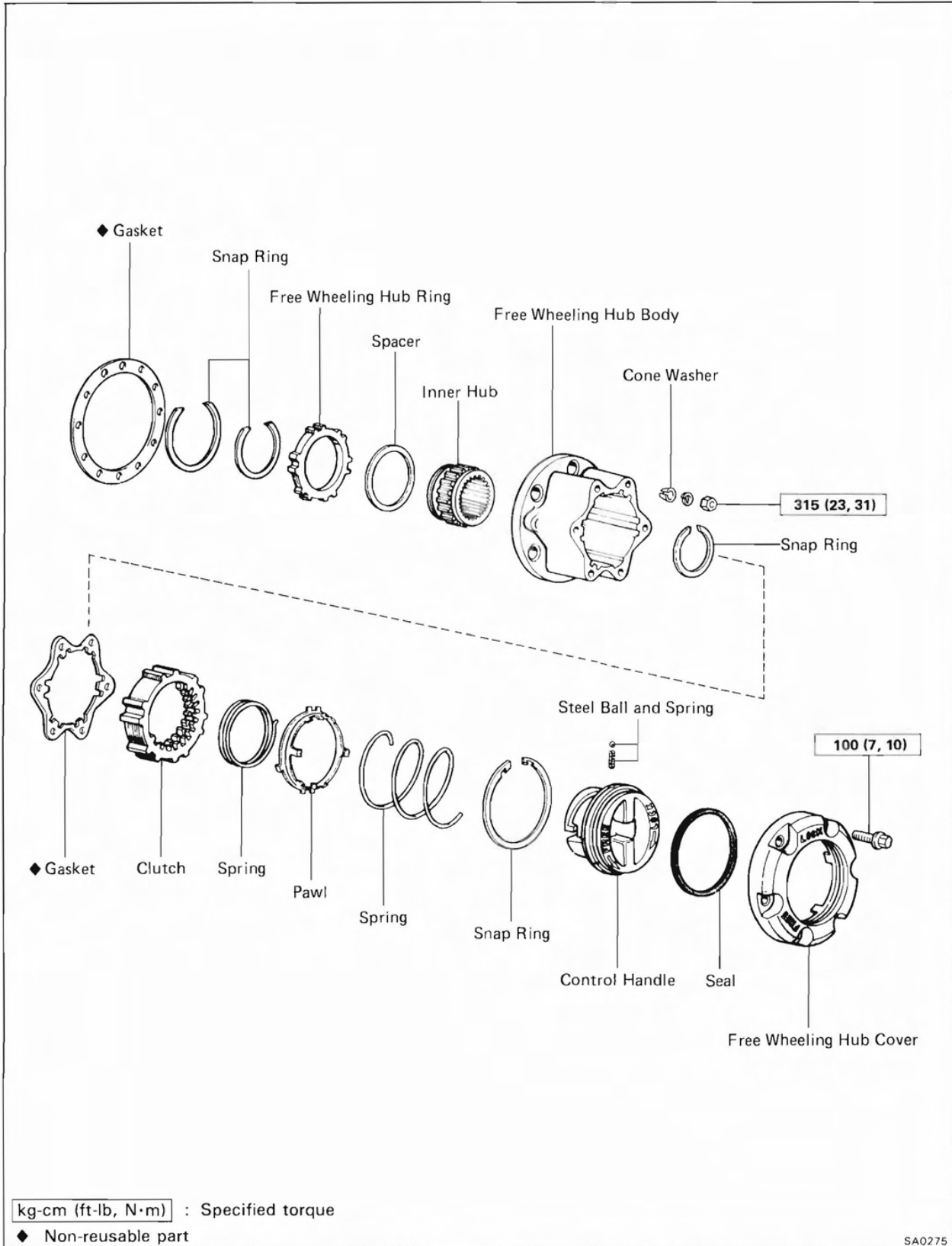
7. Remove the body of the hub. If it is sticking, gently tap the side of the hub body with the hammer to free it up.
8. Remove the old gasket (beige paper) from the wheel hub. Clean the surfaces of the wheel hub with the gasket scraper (or box knife, or razor blade), removing all remnants of the old gasket.
9. Place a new beige gasket (supplied) on the wheel hub, paying attention to the alignment of the holes in the gasket to the holes in the hub and the dowel pins.
10. Place adapter plate (supplied) on the hub, aligning the holes with the protruding studs and dowel pins.
11. Insert 4 Allen head bolts (supplied) into the 4 recessed holes in the adapter plate, ensuring that the bolts are threaded into the wheel hub. **Note:** Do not use washers for this step.
12. Use torque wrench and 6 mm Allen socket to tighten the 4 Allen head bolts to spec (**23 ft-lbs**).
13. Insert the shorter threaded ends of two M8 threaded hub studs (supplied) into the 2 threaded holes in the adapter plate.
14. Firmly tighten the 2 hub studs using vice grips or expanding pliers, grasping only the non-threaded portion of the studs.
15. Place a new black multi-hole gasket (supplied) over the studs.
16. Apply a *thin coating* of MP grease to the base of the locking hub where the Freewheeling Hub Ring and Inner Hub (splined clutch) meet and turn in the hub body. Do not get grease on the gasket surfaces. See the exploded diagram on p. SA-6 of the Factory Service Manual (attached) for the part names.
17. Place the Aisin manual locking hub body over the studs, and aligning with the dowel pin holes.
18. Place 1 cone washer on each of the 6 studs so that it sits into the recess in the locking hub, with the split facing outward (can make for easier removal later on). Note: you will be using 2 new cone washers (supplied) and re-using 4 old cone washers (from step #6).
19. Place 1 split ring lock washer (supplied) on each of the 2 black studs you installed in step #13. Place 1 nut (supplied) onto each of the 2 black studs, and thread them on finger tight.
20. Place 1 flat washer (supplied) on each of the 4 original longer studs. This step corrects for the slight additional length of these studs.
21. Re-using the 4 old lock washers (from step #4), place 1 lock washer on each of the 4 original longer studs. Thread 1 acorn nut (re-use from step #4) onto each of the 4 longer studs.
22. Use torque wrench and 12 mm socket to tighten all 6 nuts to spec (**23 ft-lbs**).
23. Install Lock ring (from step #3) onto the end of the birfield using the Lock Ring pliers. It is easier to do this if you first partially thread one of the T40 bolts into the end of birfield and pull the birfield outwards. Once the lock ring is installed, remove the T40 bolt.
24. (New instruction as of December 2021) 2 new Toyota 1.8 mm lock ring (snap rings) have been supplied in the kit to address occasional difficulties experienced by owners of later models, that used lock rings of varying thickness, in getting the original lock rings to fit into place.
25. Apply a *very thin coating* of MP grease to the inner hub splines. See illustration on p. SA-13, Step 3, of the Factory Service Manual (attached).
26. Place the hub cover “star” gasket (supplied with your Aisin manual hubs) on the new hub cover.

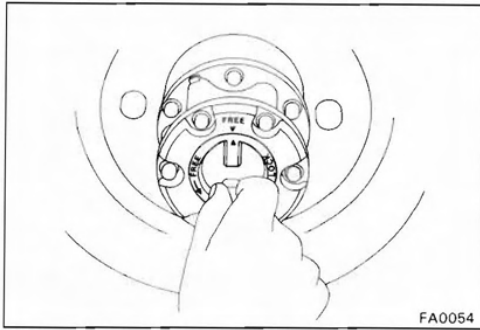
27. Install hub cover by aligning the 2 small tabs (“follower pawl tabs”) with the non-toothed portions of the body. **Note:** See illustration on p. SA-13, Step 4c, of the Factory Service Manual (attached).
28. Install the 6 hub cover M6 bolts, which are supplied with your Aisin manual hubs. Use torque wrench and 10 mm socket to tighten the bolts to spec (**7 ft-lbs**). **Do Not Over-Tighten** these or they will break off!
29. Test hub for proper operation: Turn the dial to lock position. Rotate the wheel hub assembly and listen for an audible ‘click’ indicating that the locking hub has engaged.

Leftover parts (per each wheel hub):

- 6x T40 bolts
- 1x Electric hub body
- 1x Electric hub cover

FREE WHEELING HUB COMPONENTS



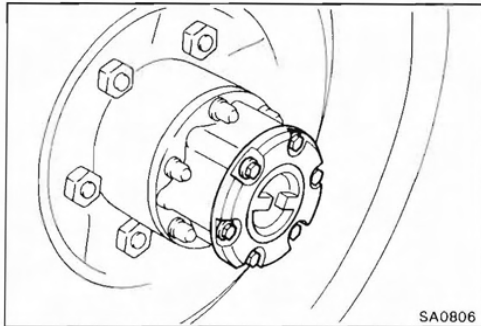


REMOVAL OF FREE WHEELING HUB

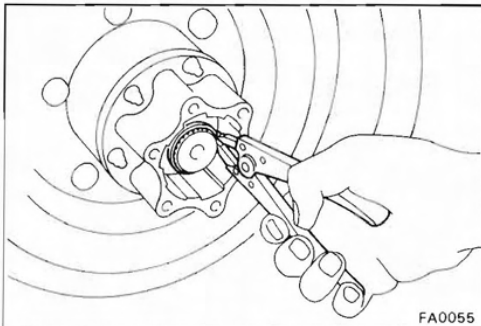
(See page SA-6)

1. REMOVE FREE WHEELING HUB COVER

(a) Set the control handle to FREE.

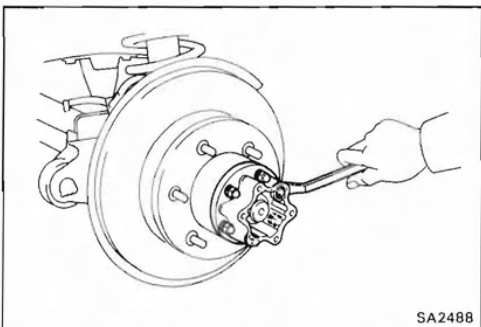


(b) Remove the six cover mounting bolts and pull off the cover.



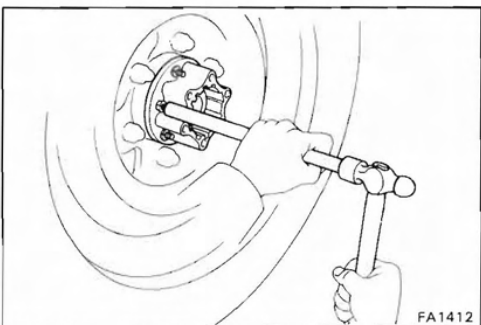
2. REMOVE SNAP RING

Using snap ring pliers, remove the snap ring.



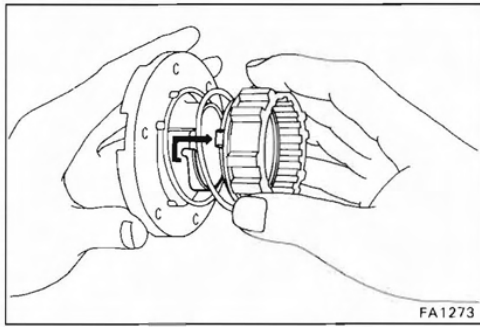
3. REMOVE FREE WHEELING HUB BODY

(a) Remove the six mounting nuts and washers.



(b) Using a brass bar and hammer, tap on the bolt heads and remove the cone washers.

(c) Pull off the free wheeling hub body.

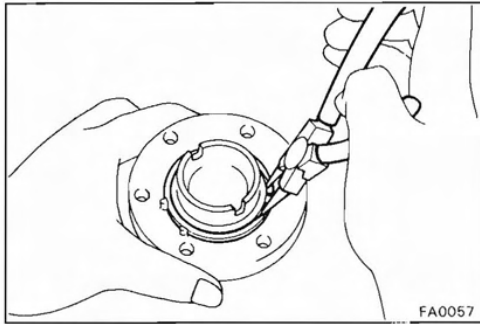


DISASSEMBLY OF FREE WHEELING HUB

(See page SA-6)

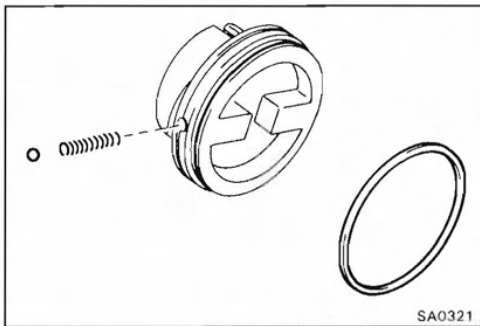
1. REMOVE CONTROL HANDLE FROM FREE WHEELING HUB COVER

- (a) Compressing the spring, remove the pawl tab from the handle cam, and remove the clutch with the two springs and pawl.



- (b) Using snap ring pliers, remove the snap ring from the free wheeling hub cover.

- (c) Remove the control handle from the free wheeling hub cover.

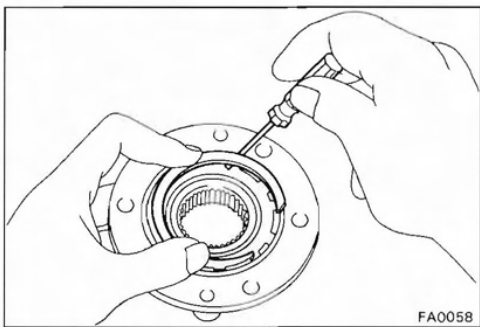


- (d) Remove the steel ball, spring and seal from the control handle.

2. REMOVE INNER HUB AND FREE WHEELING HUB RING FROM FREE WHEELING HUB BODY

- (a) Using a screwdriver, remove the snap ring from the free wheeling hub body.

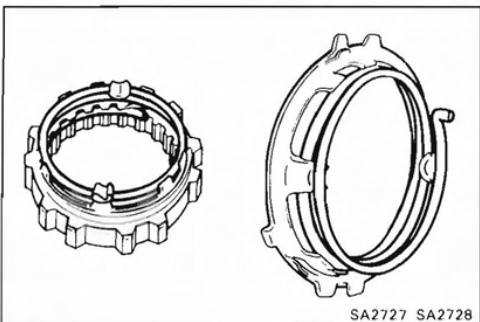
- (b) Remove the inner hub with spacer, snap ring and free wheeling hub ring.

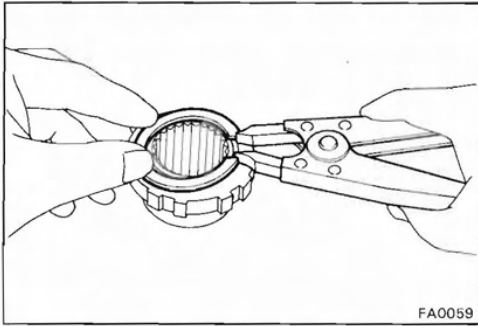


3. REMOVE PAWL FROM FREE WHEELING HUB CLUTCH

- (a) Remove the pawl with the spring from the clutch.

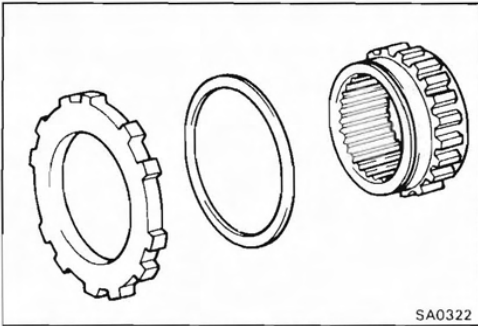
- (b) Remove the spring from the pawl.



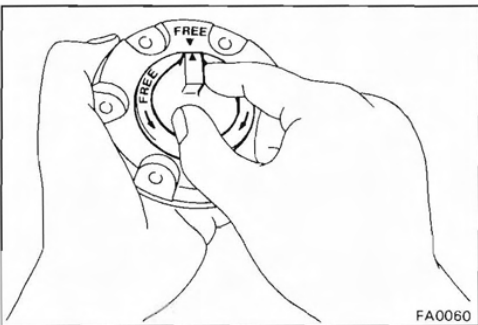


4. REMOVE FREE WHEELING HUB RING FROM INNER HUB

(a) Using snap ring pliers, remove the snap ring from the inner hub.



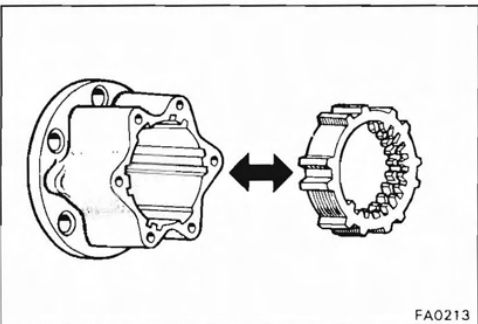
(b) Remove the free wheeling hub ring and spacer from the inner hub.



INSPECTION OF FREE WHEELING HUB

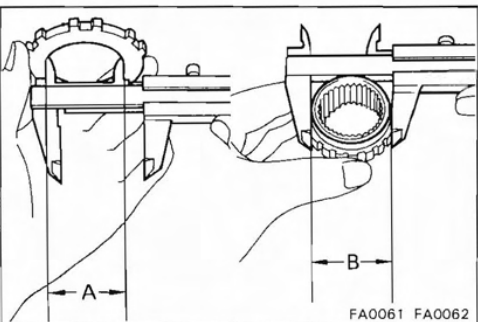
1. INSPECT COVER, HANDLE AND SEAL

Temporarily install the handle with seal in the cover and check that the handle moves smoothly and freely.



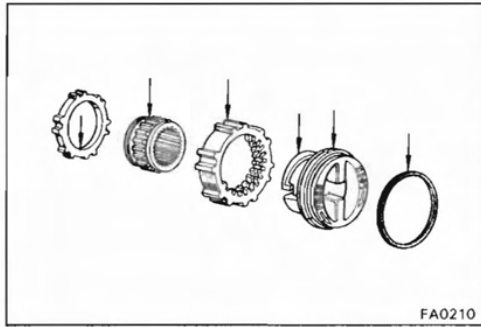
2. INSPECT BODY AND CLUTCH

Check that the clutch moves smoothly in the body.



3. MEASURE OIL CLEARANCE BETWEEN INNER HUB AND FREE WHEELING HUB RING

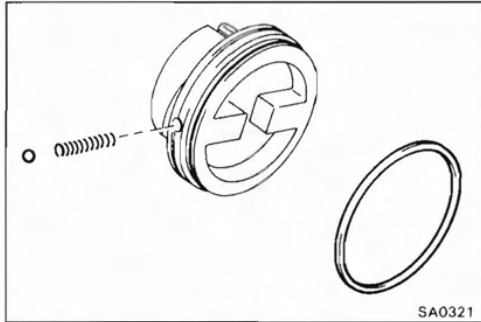
Oil clearance (A — B): 0.3 mm (0.012 in.)



ASSEMBLY OF FREE WHEELING HUB

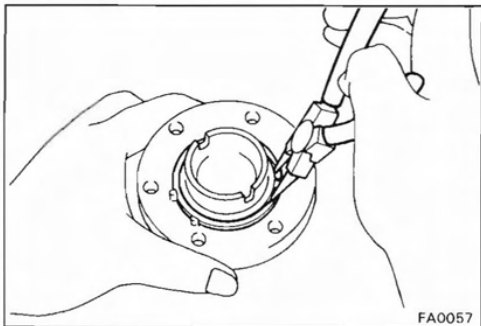
(See page SA-6)

1. APPLY MP GREASE TO SLIDING SURFACE OF PARTS

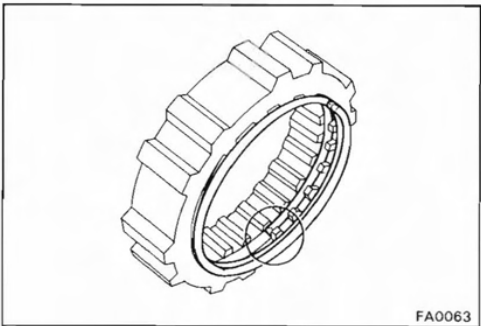


2. INSTALL CONTROL HANDLE TO COVER

- (a) Install the seal, spring and steel ball to the handle.
- (b) Insert the handle in the cover.

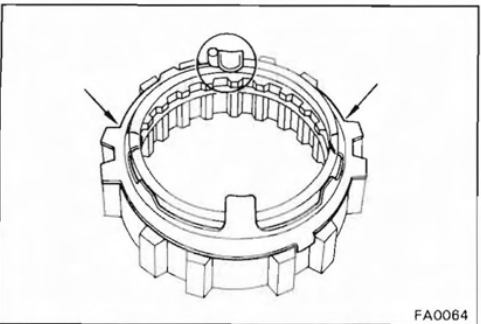


- (c) Using snap ring pliers, install the snap ring to the cover.



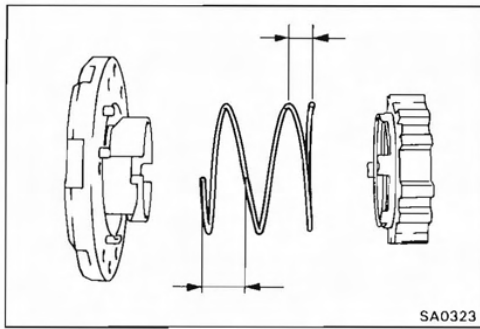
3. INSTALL SPRING ON CLUTCH

Install the tension spring to the clutch with the spring end aligned with the initial groove.



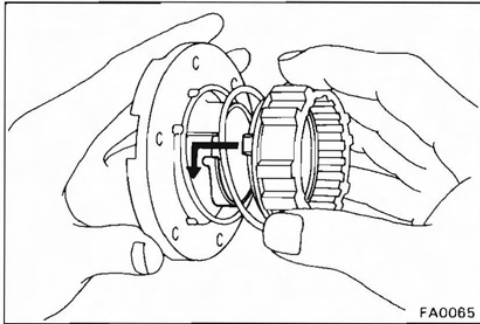
4. INSTALL PAWL TO CLUTCH

- (a) Place the pawl on the tension spring with one of the large tabs against the bent spring end.
- (b) Place the ring top of the spring on the small tabs.

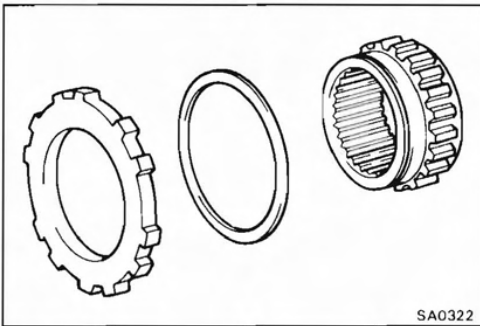


5. INSTALL CLUTCH AND SPRING INTO COVER

- (a) Place the spring between the cover and clutch with the large spring end toward the cover.

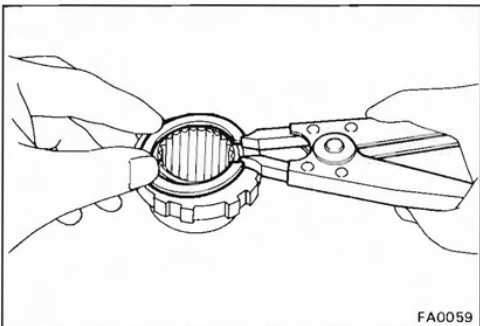


- (b) Compress the spring and install the clutch with the pawl tab fit to the handle cam.

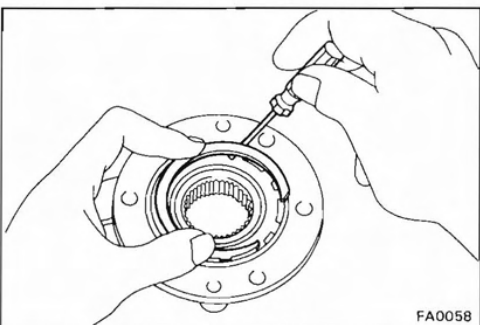


6. INSTALL SPACER AND FREE WHEELING HUB RING TO INNER HUB

- (a) Install the spacer and free wheeling hub ring to the inner hub.

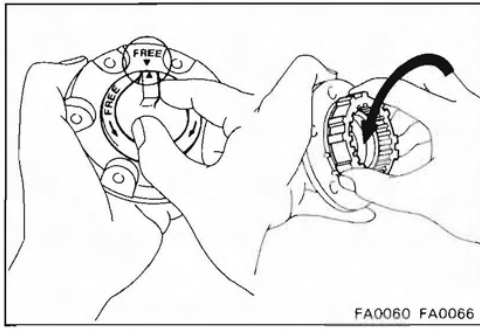


- (b) Using snap ring pliers, install the snap ring to the free wheeling hub ring.

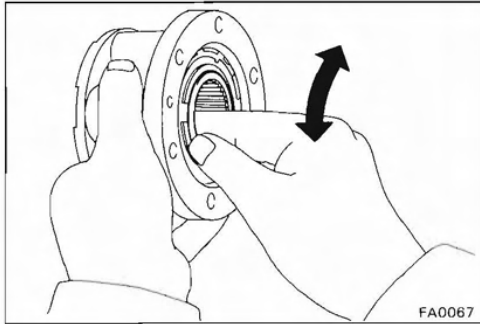


7. INSTALL INNER HUB AND FREE WHEELING HUB RING TO FREE WHEELING HUB BODY

- (a) Insert the inner hub and free hub ring to the body.
 (b) Using a screwdriver, install the snap ring.

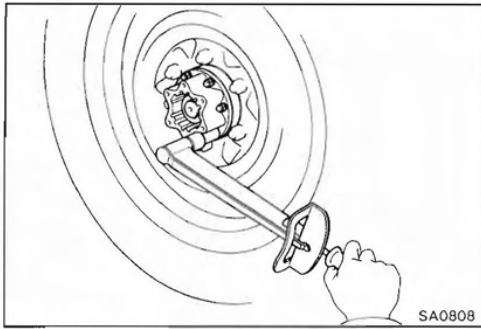
**8. TEMPORARILY INSTALL COVER TO BODY AND CHECK FREE WHEELING HUB**

(a) Set the control handle and clutch to the "FREE" position.



(b) Insert the cover to the body and check that the inner hub turns smoothly.

(c) Remove the cover from the body.



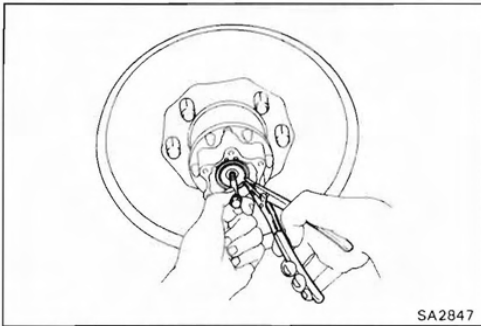
INSTALLATION OF FREE WHEELING HUB

(See page SA-6)

1. INSTALL FREE WHEELING HUB BODY

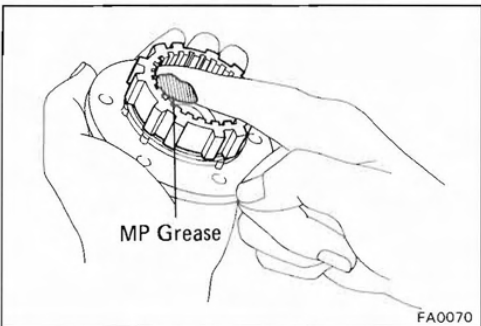
- (a) Place a new gasket on the front axle hub.
- (b) Install the free wheeling hub body with the six cone washers, washers and nuts. Torque the nuts.

Torque: 315 kg-cm (23 ft-lb, 31 N·m)

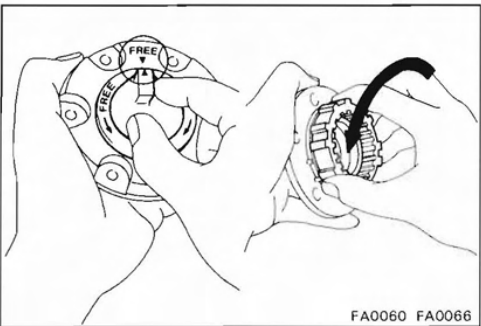


2. INSTALL SNAP RING

- (a) Install a bolt to the axle shaft and pull it out.
- (b) Using snap ring pliers, install the snap ring.
- (c) Remove the bolt.

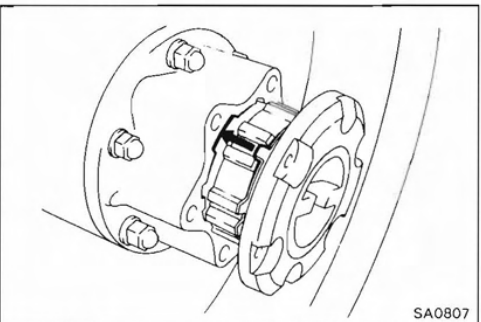


3. APPLY MP GREASE TO INNER HUB SPLINES

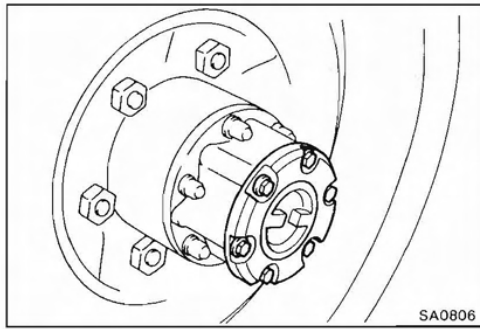


4. INSTALL FREE WHEELING HUB COVER WITH NEW GASKET

- (a) Set the control handle and clutch to the "FREE" position.
- (b) Place a new gasket on the cover.



- (c) Install the cover to the body with the follower pawl tabs aligned with the non-toothed portions of the body.



(d) Install and torque the cover mounting bolts.

Torque: 100 kg-cm (7 ft-lb, 10 N·m)