

FRONT AXLE AND SUSPENSION

	Page
TROUBLESHOOTING	FA-2
FRONT WHEEL ALIGNMENT	FA-3
FREE WHEEL HUB	FA-6
FRONT AXLE HUB	FA-12
STEERING KNUCKLE AND AXLE SHAFT	FA-17
FRONT DIFFERENTIAL	FA-28
FRONT SUSPENSION	FA-32
Coil Spring and Shock Absorber	FA-32
Lateral Control Rod	FA-33
Leading Arm	FA-35

TROUBLESHOOTING

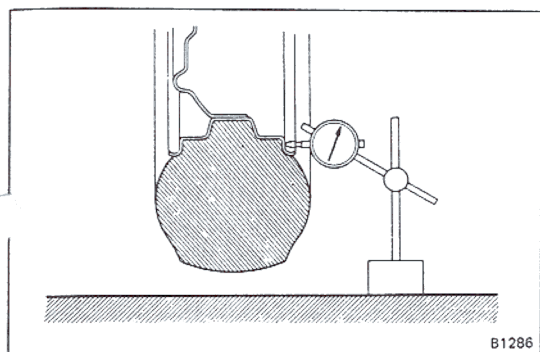
Problem	Possible cause	Remedy	Page
Oil leak at front axle	Oil seals damaged or worn Front axle housing cracked	Replace oil seal Repair as necessary	FA-13
Oil leak at pinion shaft	Oil level too high or wrong grade Oil seal worn or damaged Companion flange loose or damaged	Drain and replace oil Replace oil seal Tighten or replace flange	A-19 FA-28 RA-8
Noises in front axle	Oil level low or wrong grade Excessive backlash between pinion and ring or side gear Ring, pinion or side gears worn or chipped Pinion shaft bearing worn Wheel bearing worn Differential bearing loose or worn	Drain and replace oil Check backlash Inspect gears Replace bearing Replace bearing Tighten or replace bearings	A-19 RA-10 RA-13 RA-13 FA-13 RA-13
Wanders/pulls	Tires worn or improperly inflated Alignment incorrect Wheel bearing adjusted too tightly Front or rear suspension parts loose or broken Steering linkage loose or worn Steering gear out of adjustment or broken	Replace tire or inflate tires to proper pressure Check front end alignment Adjust wheel bearing Tighten or replace suspension part Tighten or replace steering linkage Adjust or repair steering gear	A-7 FA-3 FA-13 FA-32 SR-61 SR-3,20,46
Bottoming	Vehicle overloaded Shock absorber worn out Springs weak	Check loading Replace shock absorber Replace spring	FA-32 FA-32
Sways/pitches	Tires improperly inflated Shock absorber worn out	Inflate tires to proper pressure Replace shock absorber	A-7 FA-32
Front wheel shimmy	Tires worn or improperly inflated Wheels out of balance Steering damper worn out Shock absorber worn out Alignment incorrect Wheel bearings worn or improperly adjusted Steering knuckle bearing worn Steering linkage loose or worn Steering gear out of adjustment or broken	Replace tire or inflate tires to proper pressure Balance wheels Replace steering damper Replace shock absorber Check front end alignment Replace or adjust wheel bearings Replace bearing Tighten or replace steering linkage Adjust or repair steering gear	A-19 SR-63 FA-32 FA-3 FA-13 FA-18 SR-61 SR-3,20,46
Abnormal tire wear	Tires improperly inflated Shock absorbers worn out Alignment incorrect	Inflate tire to proper pressure Replace shock absorber Check toe-in	A-7 FA-32 FA-3

FRONT WHEEL ALIGNMENT

1. MAKE FOLLOWING CHECKS AND CORRECT ANY PROBLEMS

(a) Check the tires for wear and proper inflation.

Correct tire pressure: See page A-7.



(b) Check the wheel runout.

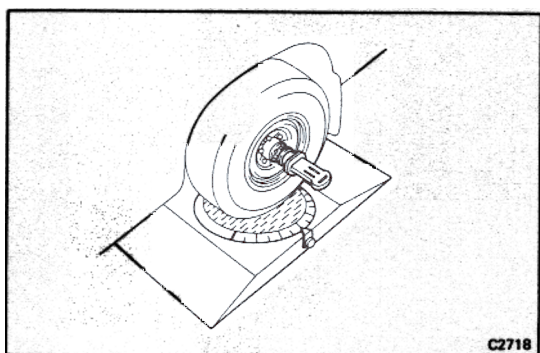
Lateral runout: Less than 1.2 mm (0.05 in.)

(c) Check the front wheel bearings for looseness.

(d) Check the front suspension for looseness.

(e) Check the steering linkage for looseness.

(f) Use the standard bounce test to check that the front absorbers work properly.



2. INSTALL WHEEL ALIGNMENT EQUIPMENT

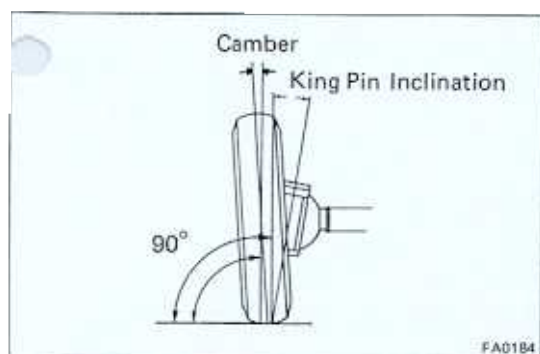
Follow the specific instructions of the equipment manufacturer.

3. CHECK CAMBER AND KING PIN INCLINATION

Camber: $1^{\circ} \pm 45'$

King pin inclination: $9^{\circ}30' \pm 45'$

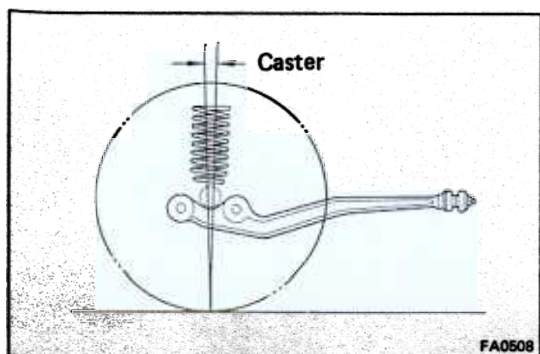
If camber or king pin inclination checks are not within specification, recheck the steering knuckle parts and the front wheel for bending or looseness.

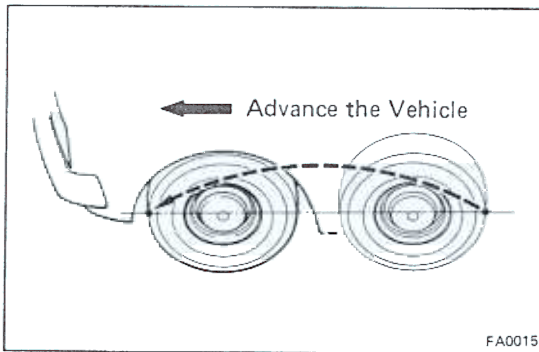


4. CHECK CASTER

Caster: $4^{\circ}05' \pm 1^{\circ}$

If caster is not as specified, inspect and replace damaged or worn suspension parts.

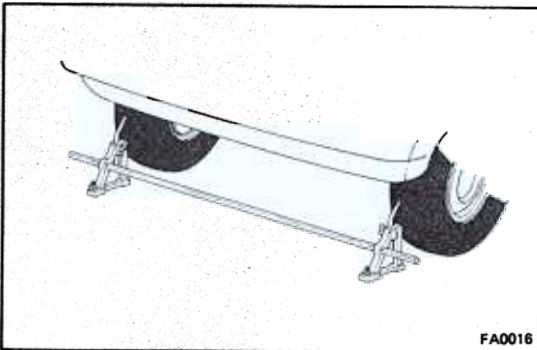




5. ADJUST TOE-IN

- Make sure the wheels are positioned straight ahead.
- Mark the center of each rear tread at spindle height and measure the distance between the marks of the right and left tires.
- Advance the vehicle until the marks on the rear side of the tires come to the front.

NOTE: The toe-in should be measured at the same point on the tire and at the same level.



- Measure the distance between the marks on the front side of the tires.

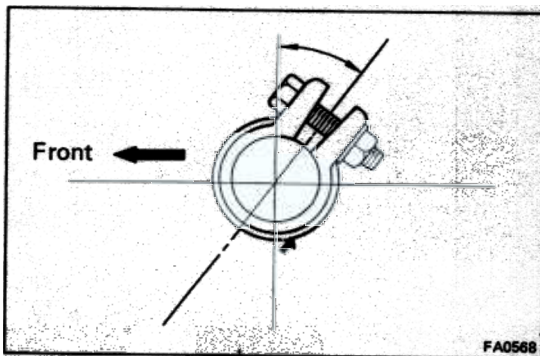
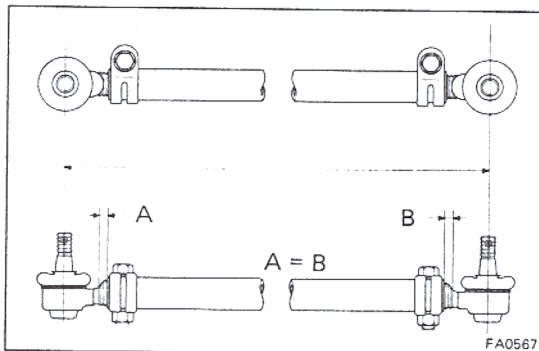
Tire		Toe-in mm(in.)	
		Inspection STD	Adjustment STD
Radial	10R-15	-1 ± 2 (-0.04 ± 0.08)	-1 ± 1 (-0.04 ± 0.04)
	Other	1 ± 2 (0.04 ± 0.08)	1 ± 1 (0.04 ± 0.04)
Bias		4 ± 2 (0.16 ± 0.08)	4 ± 1 (0.16 ± 0.04)

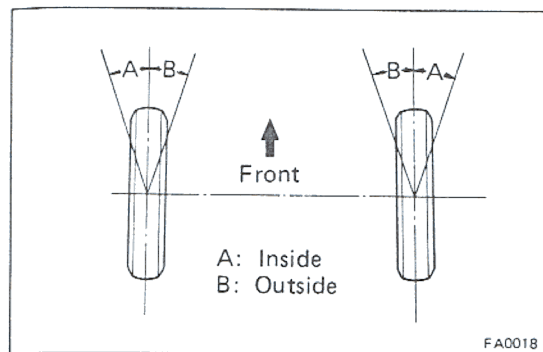
- Make sure the steering gear is centered
- Loosen the nuts holding the clamps to the tie rod.
- Adjust toe-in to the correct value by turning the tie rod.
- Torque the nuts holding the clamps.

Torque: 375 kg-cm (27 ft-lb, 37 N·m)

NOTE:

- Insure that the lengths of the tie rod ends are the same.
- The clamps opening must be positioned at the rear of the tie rod and face within 45° from the verticle axis.





6. ADJUST WHEEL ANGLE

Remove the caps of the knuckle stopper bolts and check the steering angles.

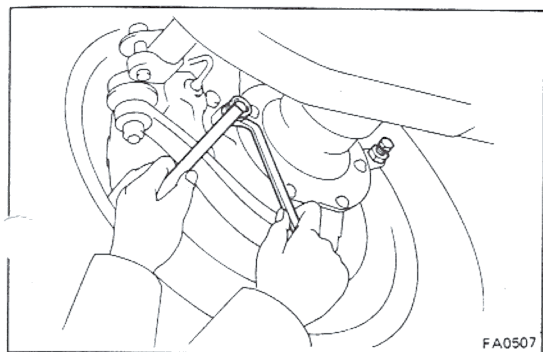
	Wheel angle	
Max.	Inside wheel	$32^{\circ} +0^{\circ} -3^{\circ}$
	Outside wheel	30°
at 20° (Outside wheel)	Inside wheel	$20^{\circ} 30'$

NOTE: When the steering wheel is fully turned, make sure that the wheel is not touching the body or brake flexible hose.

If maximum steering angles differ from the standard value, adjust the wheel angle with the knuckle stopper bolts.

Torque: 450 kg-cm (33 ft-lb, 44 N-m)

If the wheel angle still cannot be adjusted within limits, inspect and replace damaged or worn steering parts.

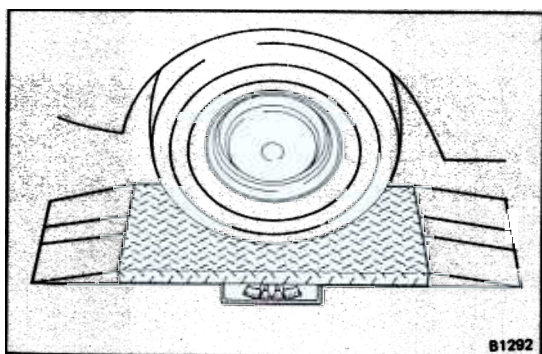


7. INSPECT SIDE SLIP WITH SIDE SLIP TESTER

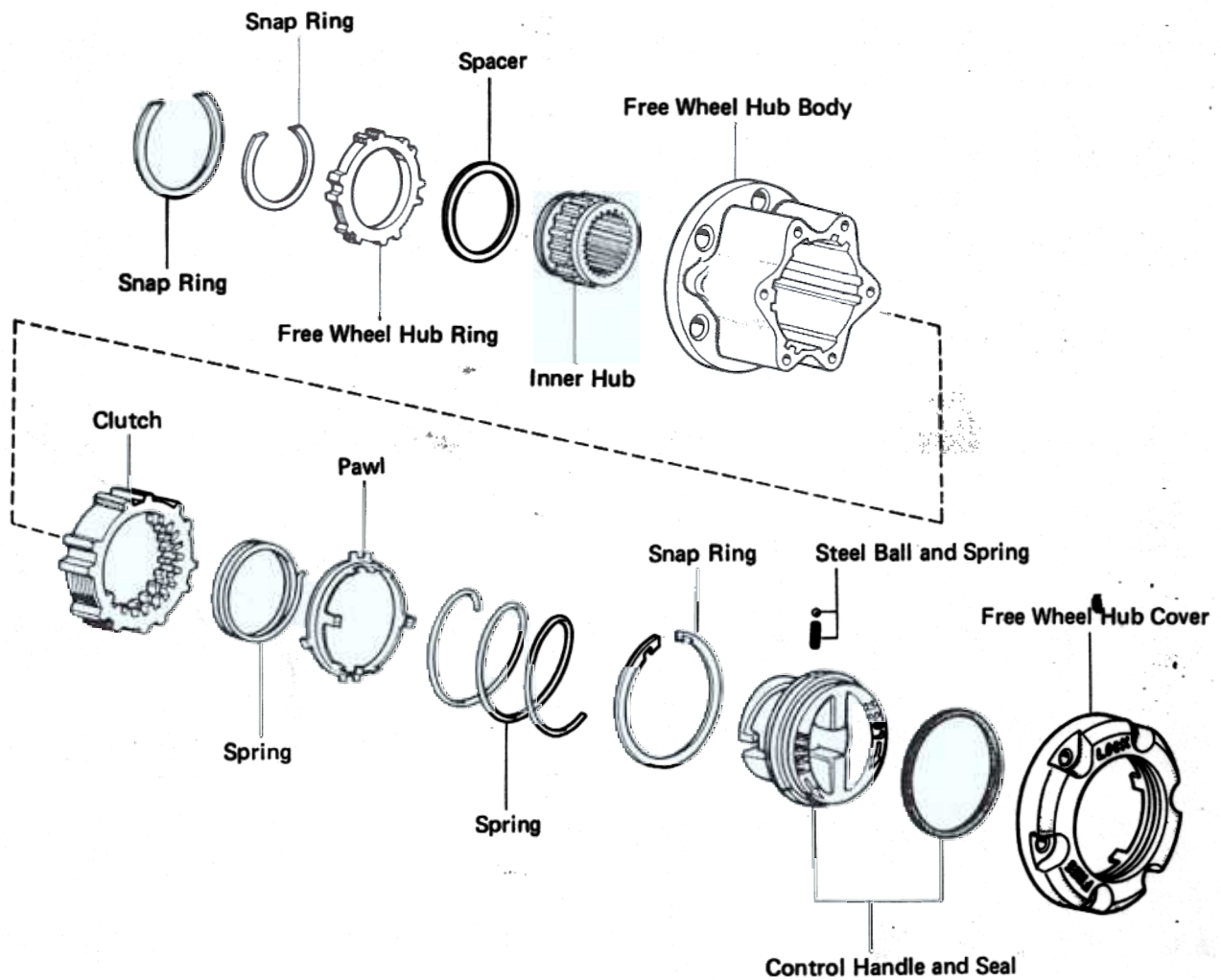
Side slip limit:

Less than 3.0 mm/m (0.118 in./3.3 ft)

If the side slip exceeds the limit, the toe-in or other front wheel alignment may not be correct.



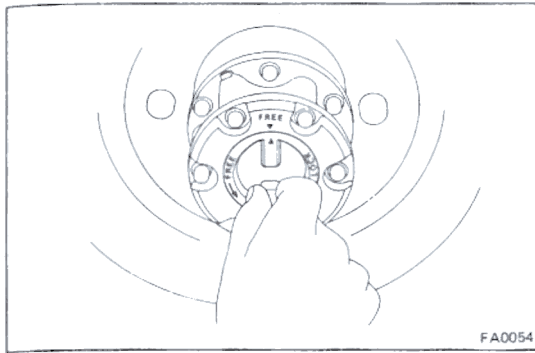
FREE WHEEL HUB COMPONENTS



REMOVAL OF FREE WHEEL HUB

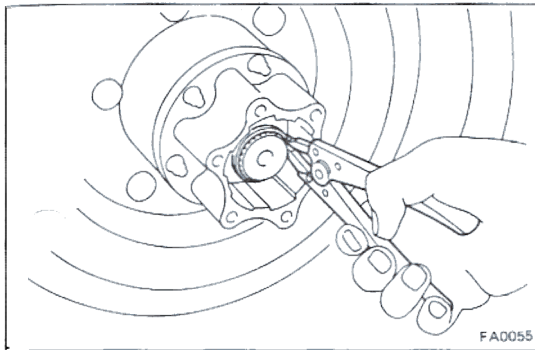
1 REMOVE FREE WHEEL HUB COVER

- (a) Set the control handle to FREE.
- (b) Remove the cover mounting bolts and pull off the cover.



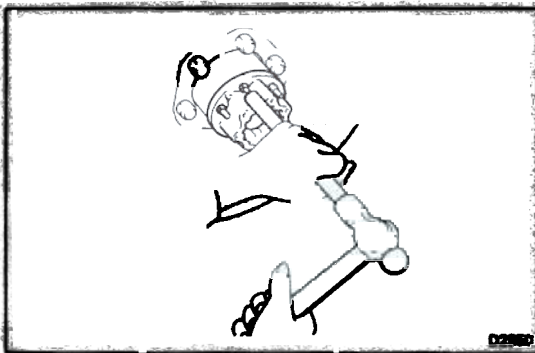
2. REMOVE SNAP RING

Using snap ring pliers, remove the snap ring.



3. REMOVE FREE WHEEL HUB BODY

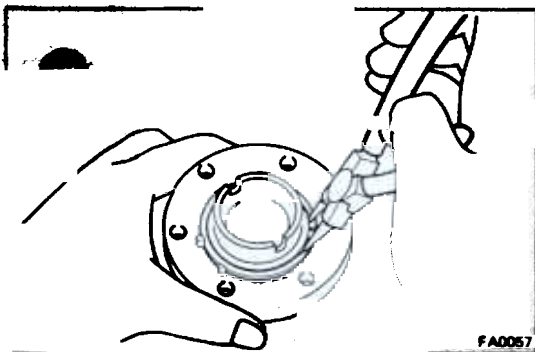
- (a) Remove the mounting nuts.
- (b) Using a brass bar and a hammer, tap the bolt heads and remove the cone washers.
- (c) Pull off the free wheel hub body.



DISASSEMBLY OF FREE WHEEL HUB

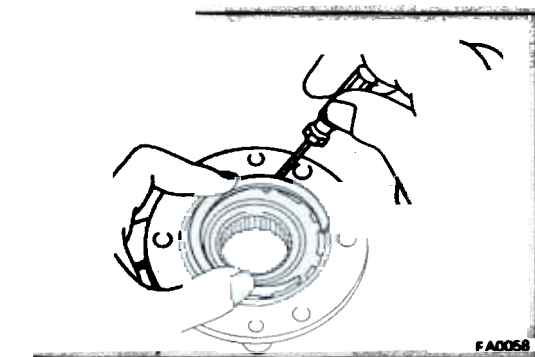
1. REMOVE CONTROL HANDLE FROM FREE WHEEL HUB COVER

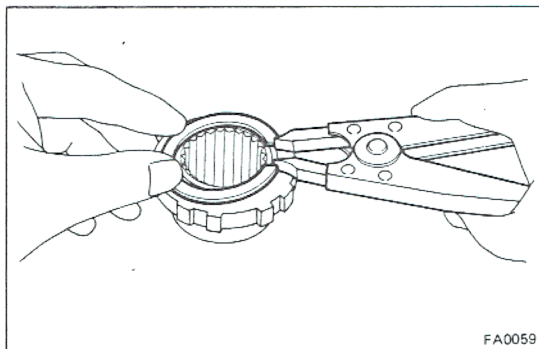
- (a) Using snap ring pliers, remove the snap ring.
- (b) Remove the control handle.
- (c) Remove the steel ball and spring from the control handle.



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

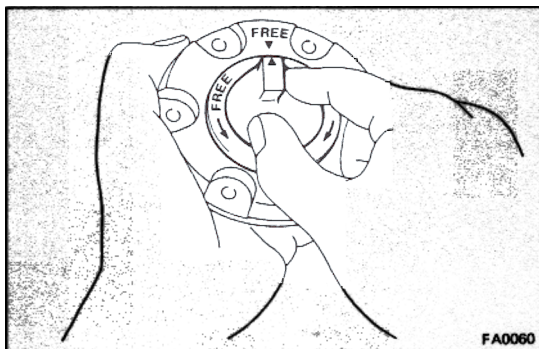
- (a) Using a screwdriver, remove the snap ring.
- (b) Remove the inner hub and free wheel hub ring.





3. REMOVE FREE WHEEL HUB RING FROM INNER HUB

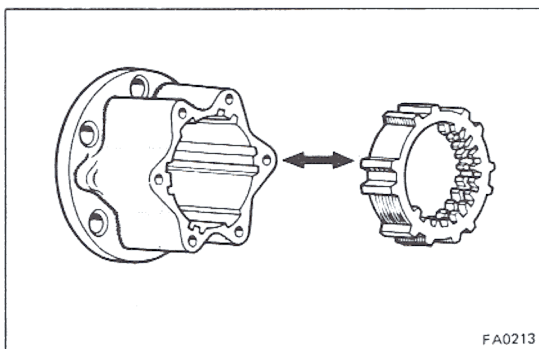
- (a) Using snap ring pliers, remove the snap ring.
- (b) Remove the free wheel hub ring and spacer.



INSPECTION OF FREE WHEEL HUB

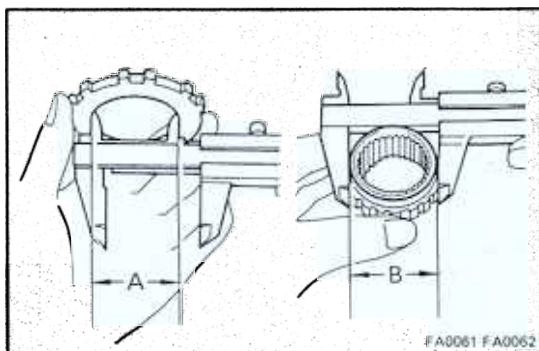
1. INSPECT COVER, HANDLE AND SEAL

Temporarily install the handle 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.



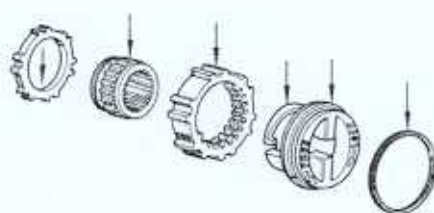
3. MEASURE THE OIL CLEARANCE BETWEEN THE INNER HUB AND FREE WHEEL HUB RING

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

ASSEMBLY OF FREE WHEEL HUB

(See page FA-6)

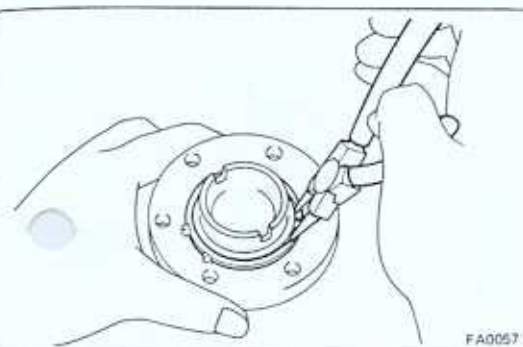
1. APPLY MP GREASE TO SLIDING SURFACE OF PARTS



FA0210

2. INSTALL CONTROL HANDLE TO COVER

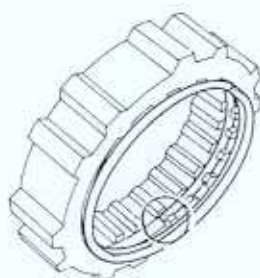
- (a) Install the seal, spring and steel ball to the handle.
- (b) Insert the handle in the cover and install the snap ring with snap ring pliers.



FA0057

3. INSTALL TENSION SPRING IN CLUTCH

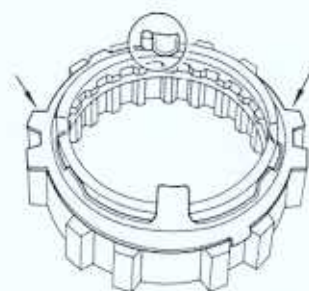
Install the tension spring in the clutch with the spring end aligned with the initial groove.



FA0063

4. INSTALL FOLLOWER PAWL TO CLUTCH

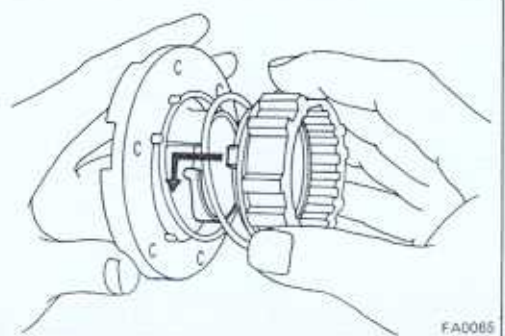
- (a) Place the follower pawl on the tension spring with one of the large tabs against the bent spring end.
- (b) Place the top ring of the spring on the small tabs.



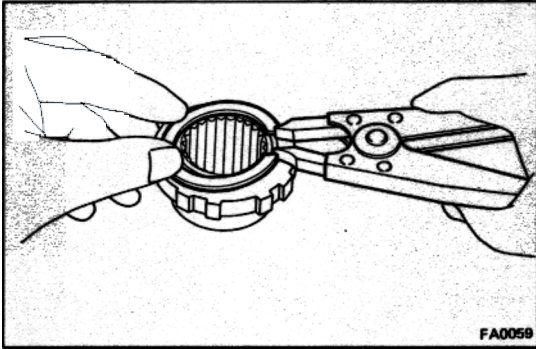
FA0064

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.

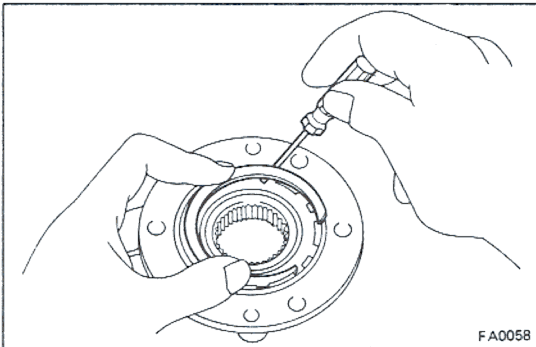


FA0065



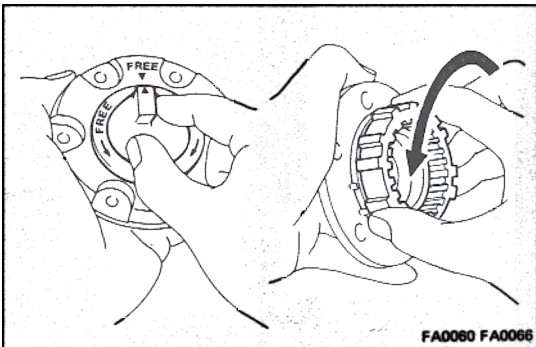
6. INSTALL SPACER AND FREE WHEEL HUB RING TO INNER HUB

- (a) Install the spacer and free wheel hub ring to the inner hub.
- (b) Using snap ring pliers, install the snap ring.



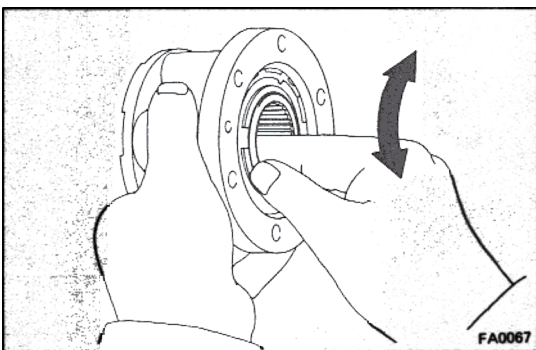
7. INSTALL INNER HUB AND FREE WHEEL HUB RING IN FREE WHEEL HUB BODY

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



8. TEMPORARILY INSTALL COVER TO BODY AND CHECK FREE WHEEL HUB

- (a) Set the control handle and clutch to the free position.



- (b) Insert the cover in the body and verify that the inner hub turns smoothly.
- (c) Remove the cover from the body.

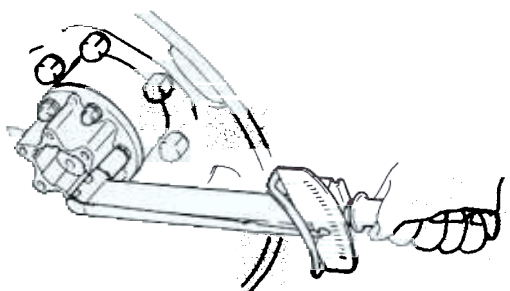
INSTALLATION OF FREE WHEEL HUB

(See page FA-6)

1. INSTALL FREE WHEEL HUB BODY

- (a) Place the gasket in position on the front axle hub.
- (b) Install the free wheel hub body with six cone washes and nuts. Tighten the nuts.

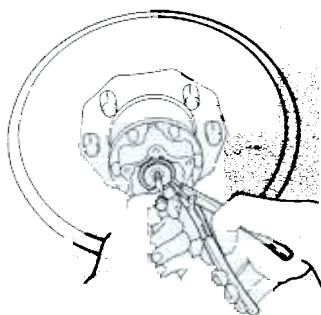
Torque: 315 kg-cm (23 ft-lb, 31 N-m)



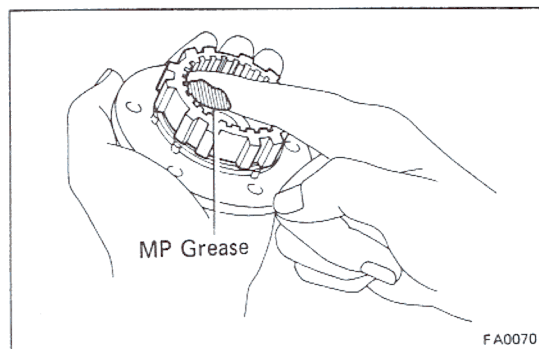
D2881

2. INSTALL SNAP RING

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



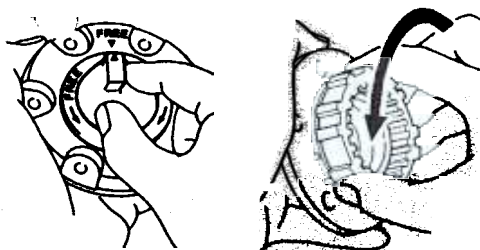
D2882

3. APPLY MP GREASE TO INNER HUB SPLINES

FA0070

4. INSTALL FREE WHEEL HUB COVER WITH NEW GASKET

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

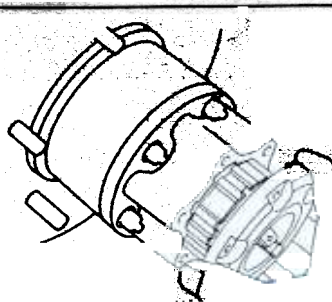


FA0080 FA0066

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

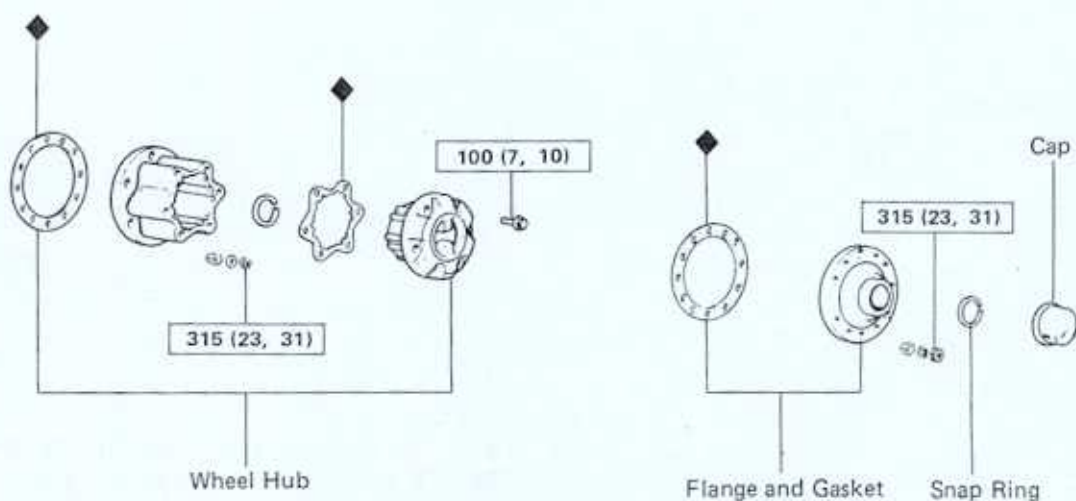
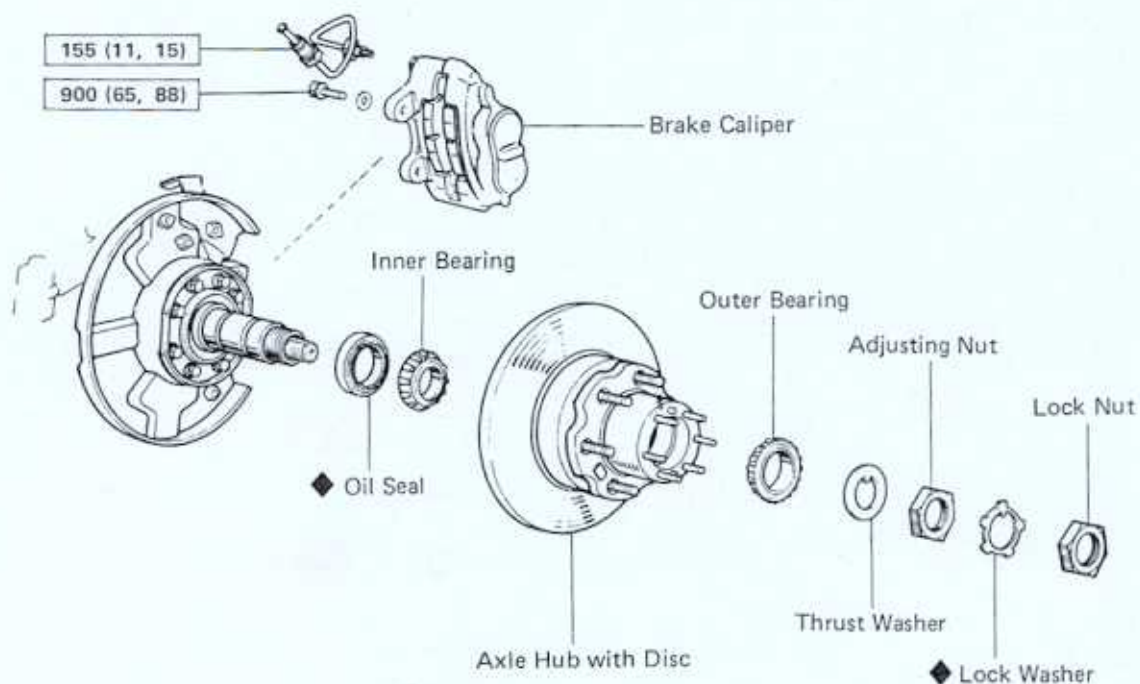
- (d) Tighten the cover mounting bolts.

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



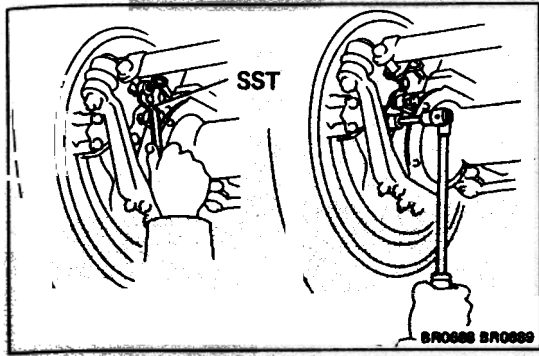
FA0071

FRONT AXLE HUB COMPONENTS



kg-cm (ft-lb, N-m) : Specified torque

◆ : Non-reusable part

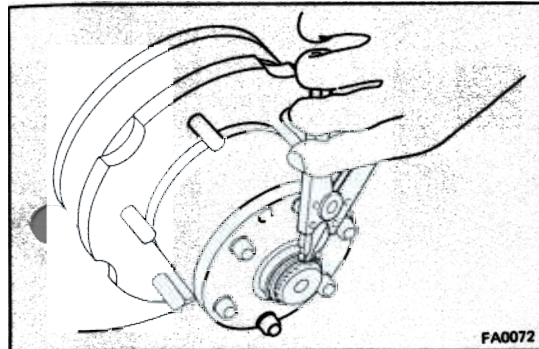


Front Axle Hub

DISASSEMBLY OF FRONT AXLE HUB

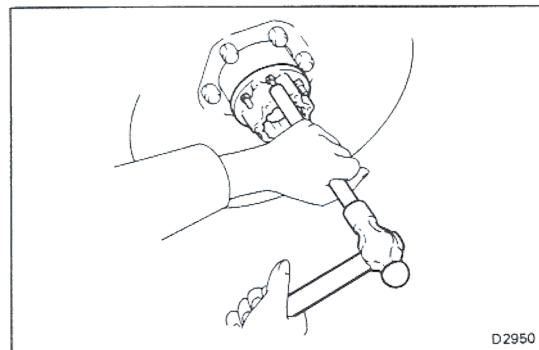
1. REMOVE DISC BRAKE CYLINDER

- (a) Using SST, disconnect the brake tube.
SST 09751-36011
- (b) Remove the brake caliper.

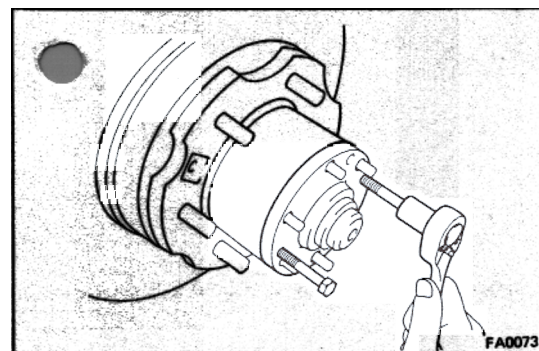


2. REMOVE FLANGE OR FREE WHEEL HUB NOTE: For the free wheel hub. (See page FA-7)

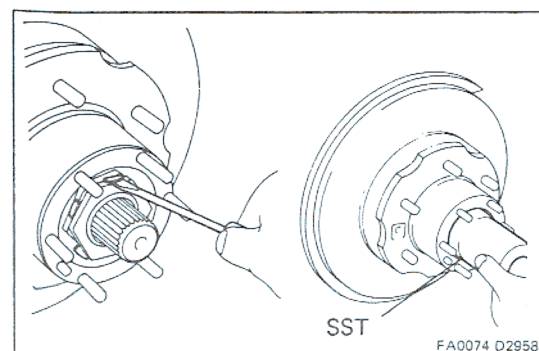
- (a) Remove the cap from the flange.
- (b) Using snap ring pliers, remove the snap ring.
- (c) Remove the mounting nuts.



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

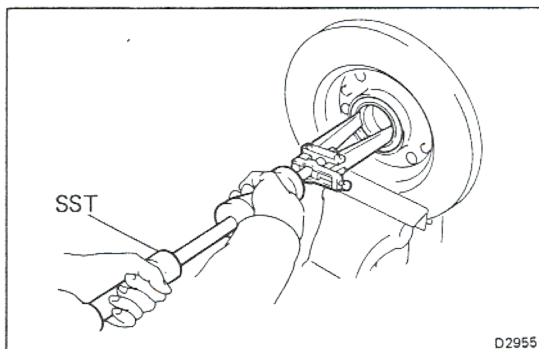


- (e) Install and tighten the two bolts, and remove the flange.



3. REMOVE AXLE HUB WITH DISC

- (a) Using a screwdriver, release the lock washer.
- (b) Using SST, remove the lock nut.
SST 09607-60020
- (c) Remove the lock washer and adjusting nut.
- (d) Remove the axle hub with the disc.

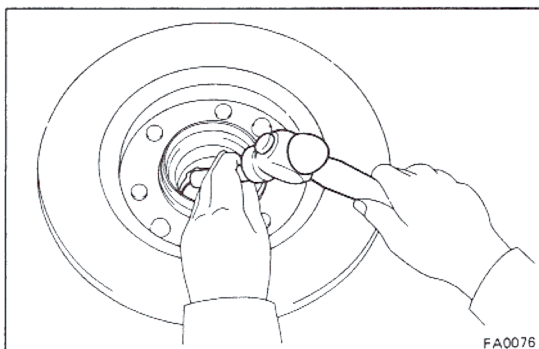


4. REMOVE INNER BEARING AND OIL SEAL

(a) Using SST, remove the oil seal.

SST 09308-00010

(b) Remove the inner bearing from the hub.



INSPECTION AND REPAIR OF FRONT AXLE HUB

1 INSPECT BEARING

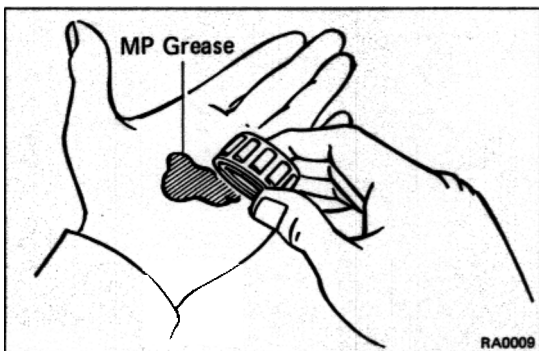
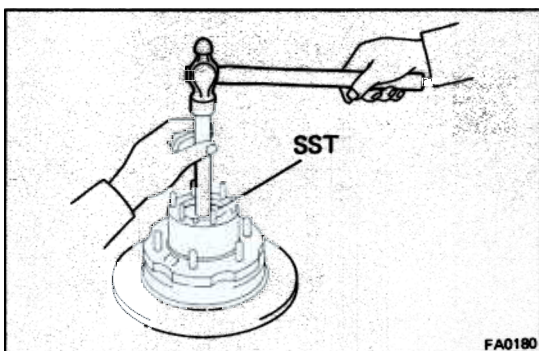
Clean the bearings and outer races and inspect them for wear or damage.

2. REPLACE BEARING OUTER RACE

(a) Using a brass bar and hammer, drive out the bearing outer race.

(b) Using SST, carefully drive in the new bearing outer race.

SST 09608-35013



ASSEMBLY OF FRONT AXLE HUB

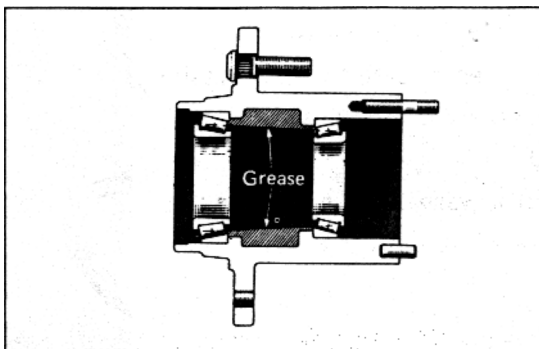
(See page FA-12)

1. PACK BEARINGS WITH MP GREASE

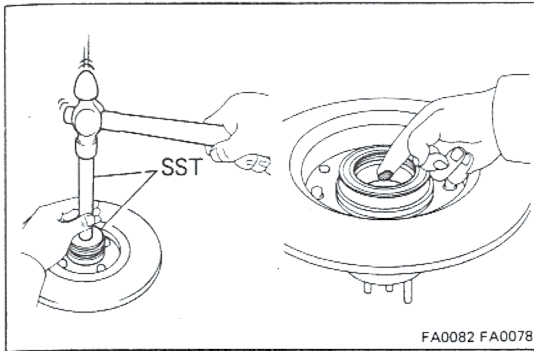
(a) Place MP grease in the palm of your hand.

(b) Pack grease into the bearing, continuing until the grease oozes out from the other side.

(c) Do the same around the bearing circumference.



2. COAT INSIDE OF HUB AND CAP WITH MP GREASE



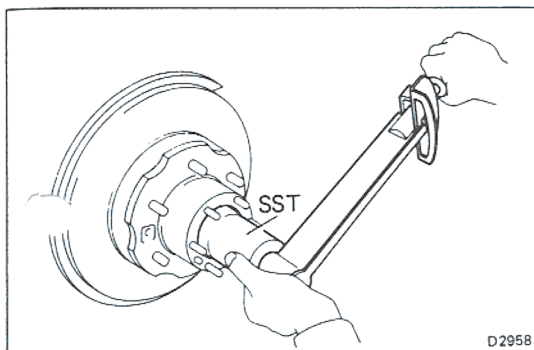
3. INSTALL INNER BEARING AND OIL SEAL

Place inner bearing into the hub. Using SST, drive the oil seal into the hub. Coat the oil seal with MP grease.

SST 09608-35013

4. INSTALL AXLE HUB ON SPINDLE

- (a) Place the axle hub on the spindle.
- (b) Install the outer bearing and thrust washer.



5. ADJUST PRELOAD

- (a) Using SST, torque the bearing adjusting nut.

SST 09607-60020

Torque: 600 kg-cm (43 ft-lb, 59 N-m)

- (b) Turn the hub right and left two or three times.

- (c) Using SST, retighten the bearing adjusting nut.

SST 09607-60020

Torque: 600 kg-cm (43 ft-lb, 59 N-m)

- (d) Loosen the nut until it can be turned by hand.

- (e) Using a spring tension gauge, measure the frictional force of the oil seal at the hub bolt.

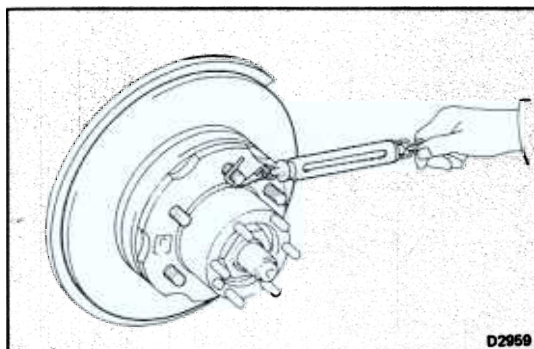
- (f) Retighten the adjusting nut.

Torque: 40 – 70 kg-cm (35 – 61 in.-lb, 4.0 – 6.8 N-m)

- (g) Using a spring tension gauge, measure the preload.

Preload (starting)

Frictional force plus 0.4 – 3.3 kg
(0.9 – 7.3 lb, 4 – 32 N)



6. INSTALL LOCK WASHER AND LOCK NUT

- (a) Install the lock washer and lock nut.

- (b) Using SST, torque the lock nut.

SST 09607-60020

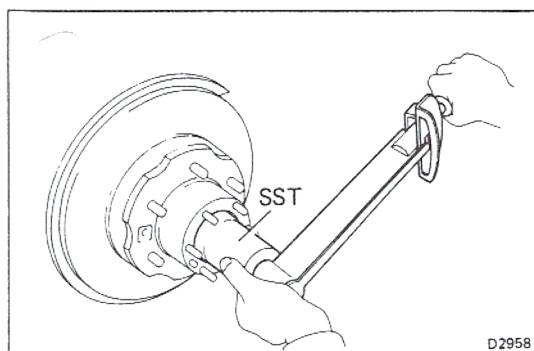
Torque: 800 kg-cm (58 ft-lb, 78 N-m)

- (c) Check that the bearing has no play.

- (d) Using a spring tension gauge, check the preload.

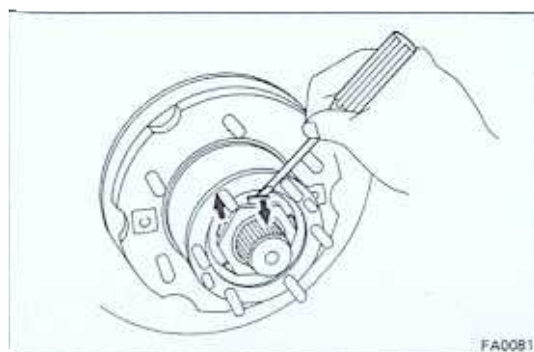
Preload (starting):

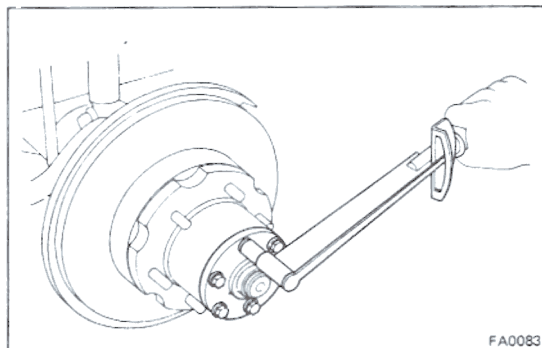
Frictional force plus 0.4 – 3.3 kg
(0.9 – 7.3 lb, 4 – 32 N)



If not within specification, adjust with the adjusting nut.

- (e) Secure the lock nut by bending one of the lock washer teeth inward and another lock washer tooth outward.

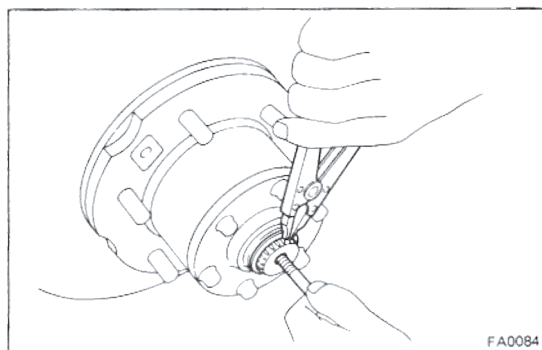


**7. INSTALL FLANGE OR FREE WHEEL HUB**

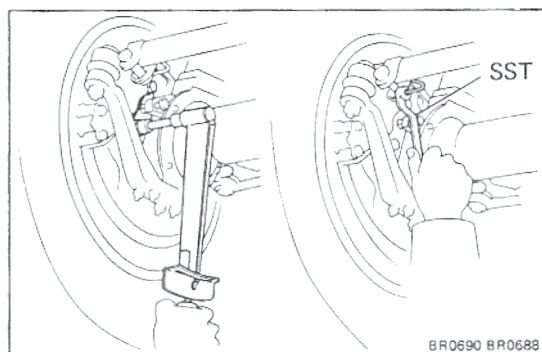
NOTE: In case of the free wheel hub, see page FA-9.

- (a) Place the gasket in position on the axle hub.
- (b) Install the flange to the axle hub.
- (c) Install six cone washers and nuts.
Torque the nuts.

Torque: 315 kg-cm (23 ft-lb, 31 N·m)



- (d) Install a bolt in the axle shaft and pull it out.
- (e) Using snap ring pliers, install the snap ring.
- (f) Remove the bolt.
- (g) Install the cap to the flange.

**8. INSTALL BRAKE CALIPER**

- (a) Install the brake caliper to the steering knuckle.
Torque the mounting bolts.

Torque: 900 kg-cm (65 ft-lb, 88 N·m)

- (b) Using a SST, connect the brake tube.

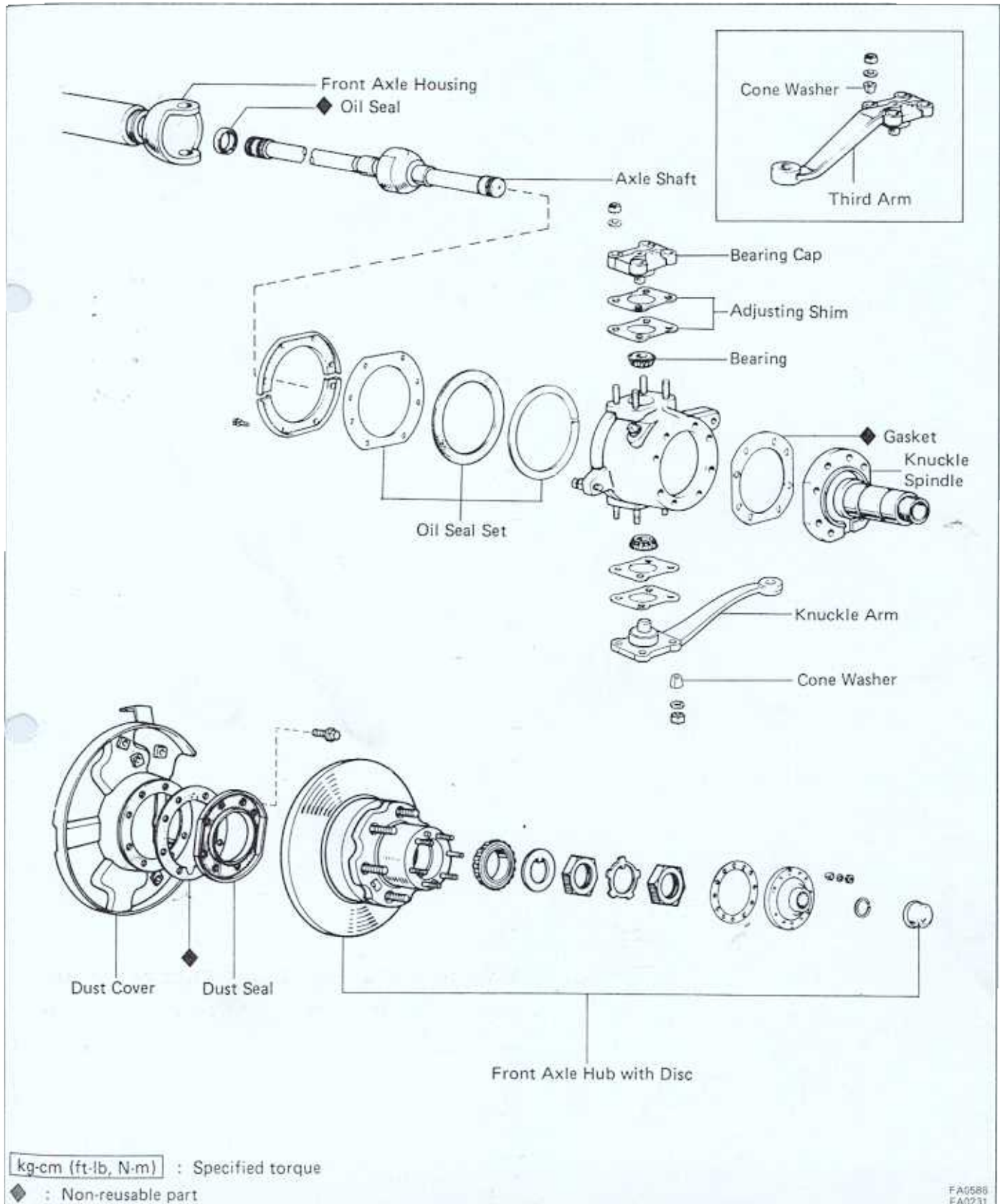
SST 09751-36011

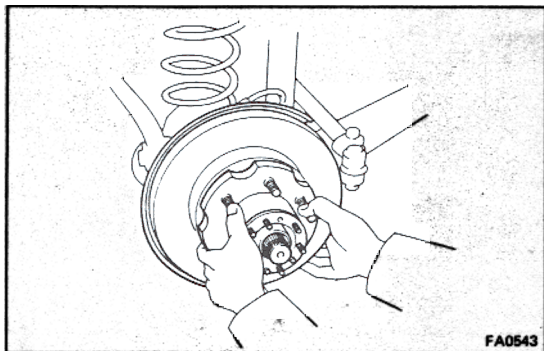
Torque: 155 kg-cm (11 ft-lb, 15 N·m)

9. BLEED BRAKE LINE

(See page BR-6)

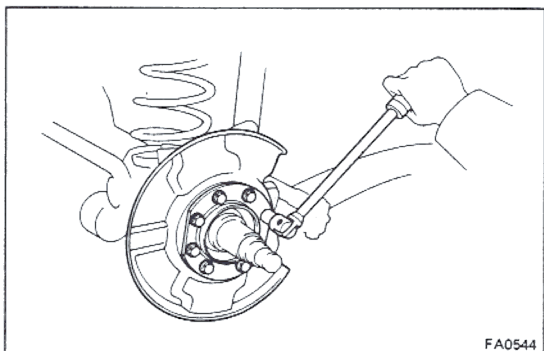
STEERING KNUCKLE AND AXLE SHAFT COMPONENTS



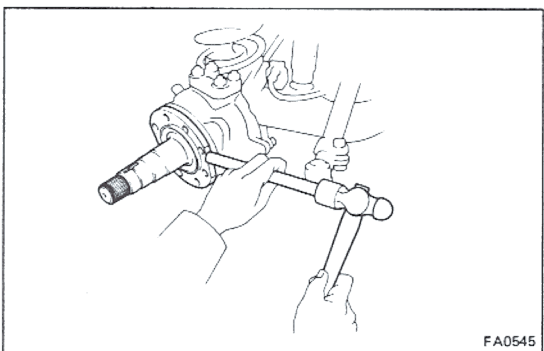


DISASSEMBLY OF STEERING KNUCKLE AND AXLE SHAFT

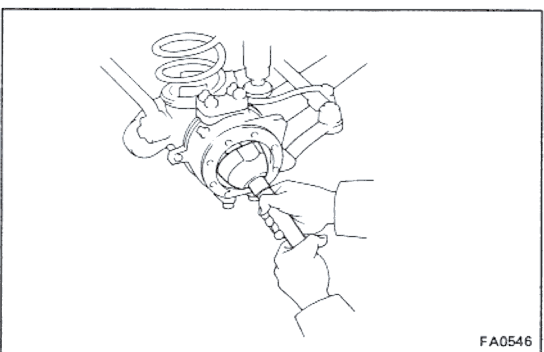
1. REMOVE FRONT AXLE HUB
(See page FA-13)



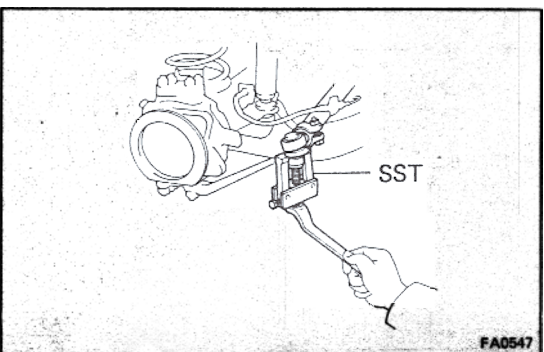
2. REMOVE KNUCKLE SPINDLE MOUNTING BOLTS
3. REMOVE DUST SEAL AND DUST COVER



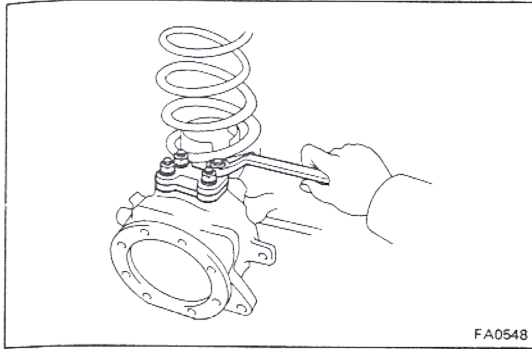
4. REMOVE KNUCKLE SPINDLE
Using a brass bar, tap the knuckle spindle off of the steering knuckle.



5. REMOVE AXLE SHAFT
Position one flat part of the outer shaft upward and pull out the axle shaft.
6. REMOVE OIL SEAL SET RETAINER

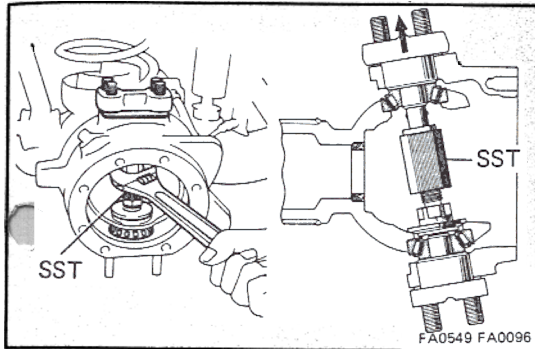


7. DISCONNECT TIE ROD FROM KNUCKLE ARM
Using SST, disconnect the tie rod from the knuckle arm.
SST 09628-62011



8. REMOVE KNUCKLE ARM AND BEARING CAP

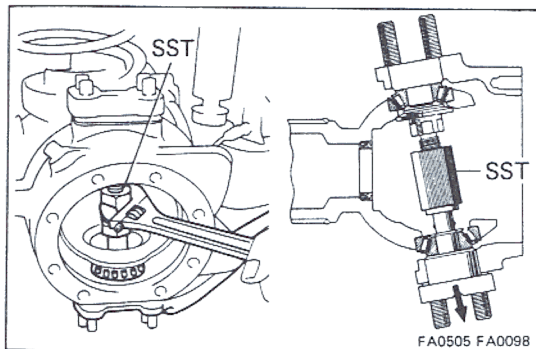
- (a) Remove the knuckle arm and bearing cap mounting nuts.



- (b) Using SST, push out the bearing cap or third arm and shims from the steering knuckle.

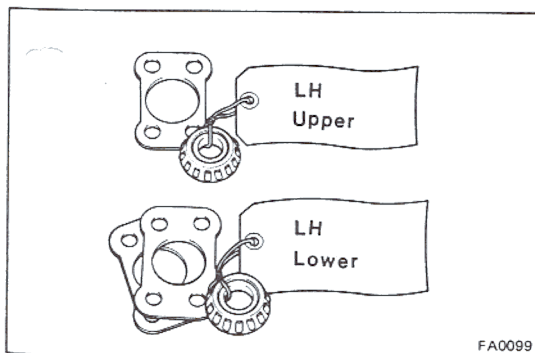
SST 09606-60020

NOTE: Use the SST without a collar.



- (c) Using SST, push out the knuckle arm and shims from the steering knuckle.

SST 09606-60020



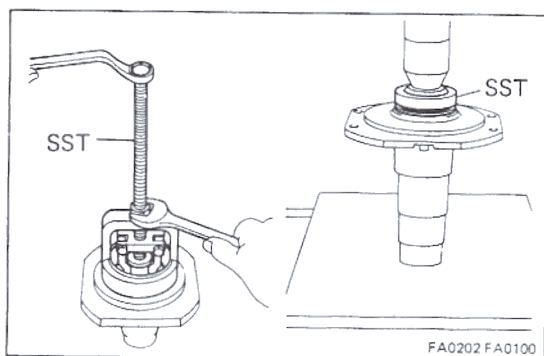
9. REMOVE STEERING KNUCKLE AND BEARINGS

NOTE: Mark the removed adjusting shims and bearings so as to enable reassembling them to their proper positions.

INSPECTION AND REPAIR OF STEERING KNUCKLE AND AXLE SHAFT

1. INSPECT KNUCKLE SPINDLE

Clean the knuckle spindle and inspect the bushing for wear or damage.



2. REPLACE BUSHING

(a) Using SST, remove the bushing.

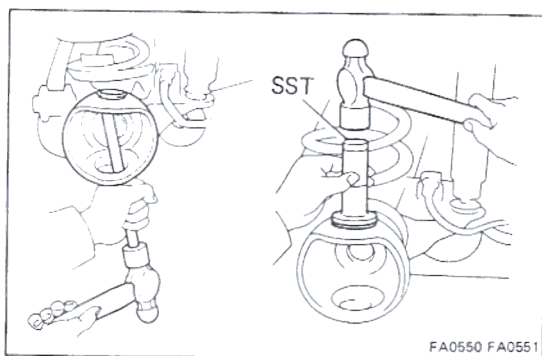
SST 09612-65013

(b) Using SST, press a new bushing into the spindle

SST 09608-35013

INSPECT BEARING

Clean the bearings and outer races and inspect them for wear or damage.

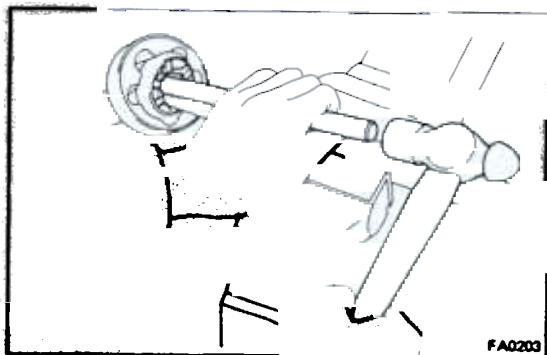


4 IF NECESSARY, REPLACE BEARING OUTER RACE

(a) Using a brass bar, drive out the bearing outer race.

(b) Using SST, carefully drive in a new bearing outer race.

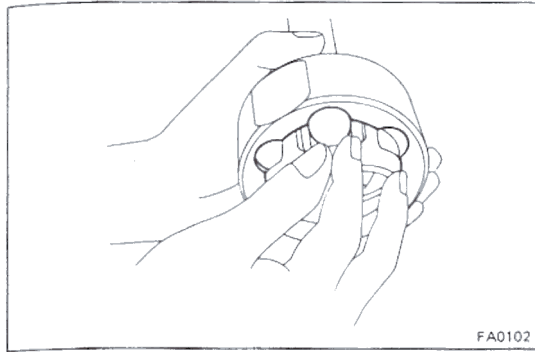
SST 09605-60010



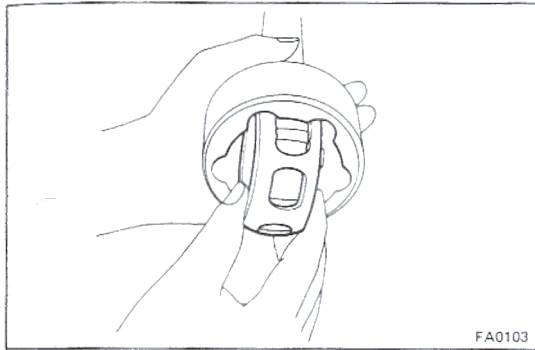
5 INSPECT BIRFIELD JOINT INNER PARTS

(a) Hold the inner shaft in a vise.

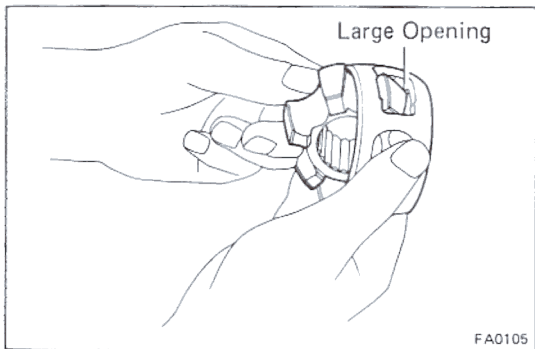
(b) Place a brass bar against the joint inner race and drive out the outer shaft.



- (c) Tilt the inner race and cage and take out the bearing balls one by one.

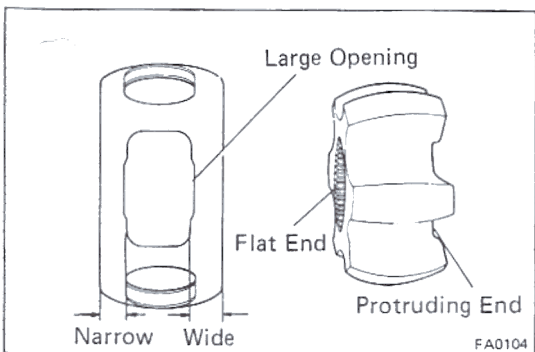


- (d) Fit the two large openings in the cage against the protruding parts of the outer shaft, and pull out the cage and inner race.



- (e) Take out the inner race from the cage through the large opening.

- (f) Clean and inspect the joint inner parts for wear or damage.



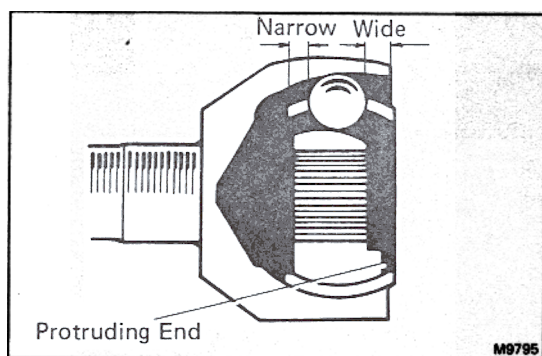
- (g) Coat the joint inner parts and outer shaft inside with Molybdenum disulphide lithium base grease.

- (h) Insert the inner race in the cage through the large opening.

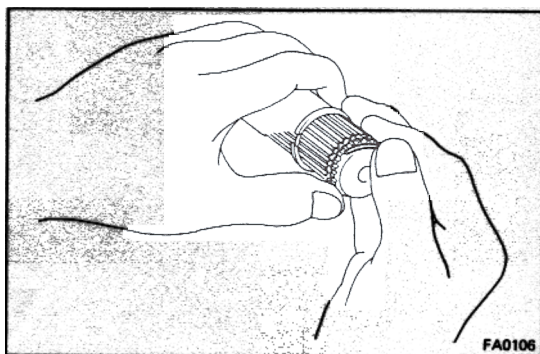
- (i) Position the protruding end of the inner race toward the wide side of the cage.



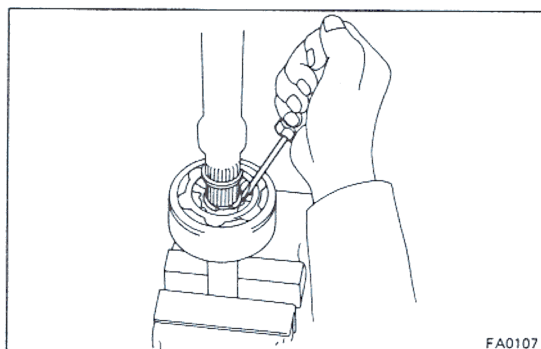
- (j) Assemble the cage and inner race to the outer shaft by fitting the two large openings in the cage against the protruding parts of the outer shaft.



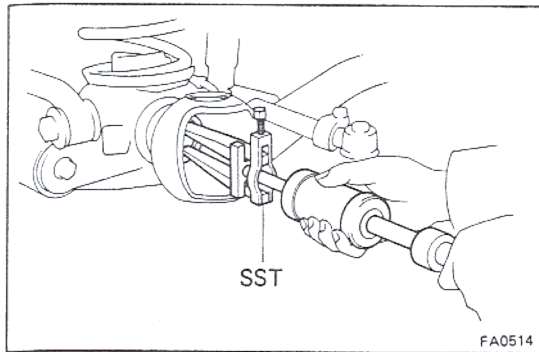
- (k) Make sure to position the wide side of the cage and the inner race protruding end outward.
- (l) Fit in the inner race and cage, and install the six bearing balls in the outer shaft. (See step (c))
- (m) Pack Molybdenum disulphide lithium base grease in the outer shaft.



- (n) Install the new snap rings on the inner shaft.



- (o) Hold the outer shaft in a vise and, while compressing the snap inner ring, install the inner shaft to the outer shaft.
- (p) Verify that the inner shaft cannot be pulled out.



ADJUSTMENT OF STEERING KNUCKLE ALIGNMENT AND BEARING PRELOAD

NOTE: Whenever the axle housing or the steering knuckle is replaced, the steering knuckle alignment and knuckle bearing preload are to be adjusted with the SST.

SST 09634-60013

1. ADJUST BEARING PRELOAD

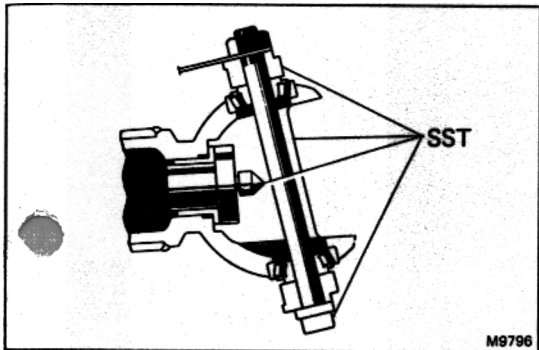
(a) Using SST, remove the oil seal.

SST 09308-00010

(b) Coat the knuckle bearings lightly with Molybdenum disulphide lithium base grease.

(c) Mount the SST on the housing with the bearings.

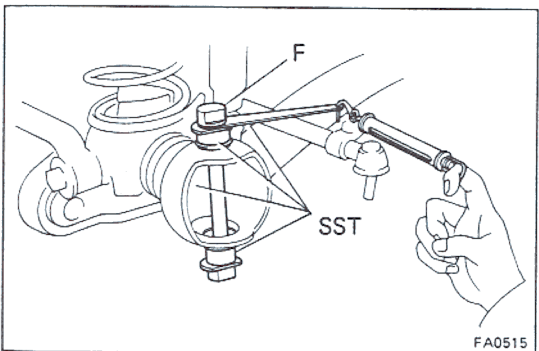
SST 09634-60013



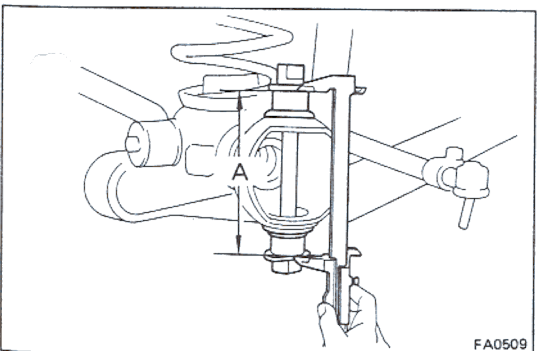
(d) Add preload to the bearings by tightening nut F.

Using a spring tension gauge, measure the preload.

Preload (starting): 3.0 – 6.0 kg
(6.6 – 13.2 lb)
(29 – 59 N)

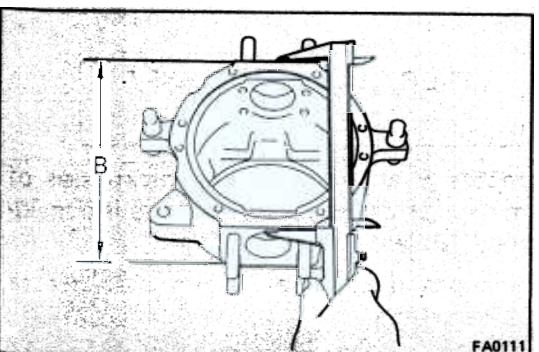


(e) Measure distance A.



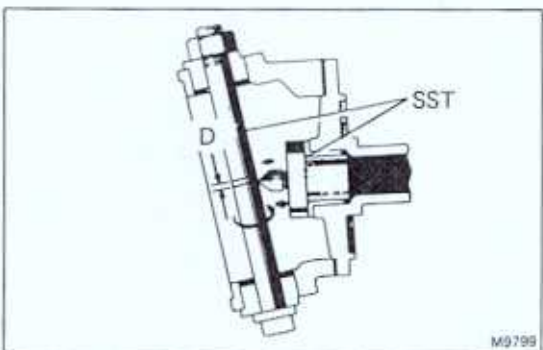
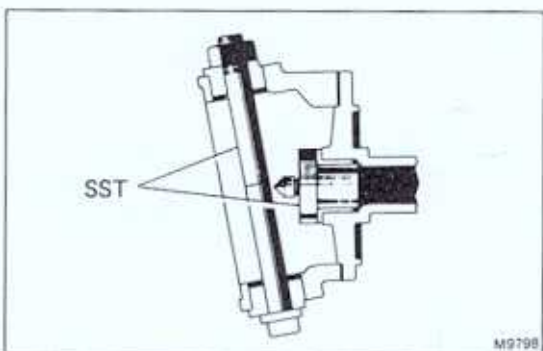
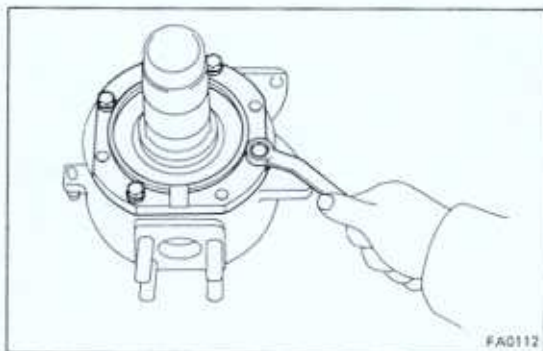
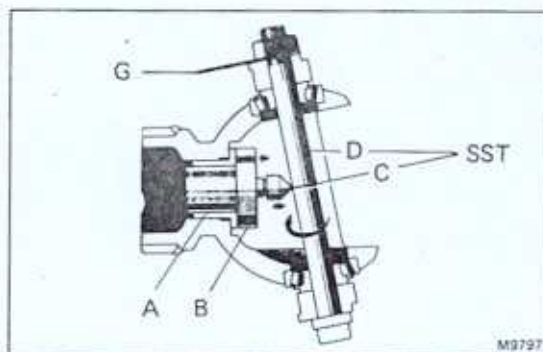
(f) Measure distance B.

The difference between A and B is the total adjusting shim thickness that is required to maintain the correct bearing preload.



TOTAL SHIM THICKNESS C

$$C = A - B$$



2. ADJUST STEERING KNUCKLE ALIGNMENT

- (a) Apply a light coat of red lead on the center part of rod D.
- (b) Press adapters A and B against the housing, press plug C against the rod D, and turn lever G so that a line will be described on rod D.

- (c) Temporarily install the spindle to the knuckle. Tighten the bolt with two washers.

- (d) Dismount the SST from the housing, and mount it on the knuckle.

SST 09634-60013

NOTE: Use care not to erase the scribed line when dismounting and remounting the SST.

Make sure the rod D is in the same vertical direction that it was when mounted on the housing.

- (e) Turn rod D and describe another line on it. Measure distance D between the two scribed lines. The thickness of the steering knuckle lower bearing shim E will be the distance D less 3 mm (0.12 in.)

LOWER SHIM THICKNESS E

$$E = D - 3 \text{ mm}$$

The thickness of the steering knuckle upper bearing shim F will be the difference between the total adjusting shim thickness C and shim thickness E.

UPPER SHIM THICKNESS F

$$F = C - E$$

NOTE: Compare E and F with the thicknesses of the shims removed at disassembly. If there is considerable difference, remeasure E and F.

- (f) Apply Molybdenum disulphide lithium base grease to the axle shaft bushing.

Adjusting shim thickness

Thickness mm (in.)
0.1 (0.004)
0.2 (0.008)
0.3 (0.012)
0.5 (0.020)
1.0 (0.039)

ASSEMBLY OF STEERING KNUCKLE AND AXLE SHAFT

(See page FA-17)

1. INSTALL OIL SEAL TO AXLE HOUSING

Using SST, drive the oil seal into the axle housing.

SST 09618-60010

2. INSTALL OIL SEAL SET

Install the parts in the following order:

- (a) Felt dust seal
- (b) Rubber seal
- (c) Steel ring

3. PACK BEARINGS WITH MOLYBDENUM DISULPHIDE LITHIUM BASE GREASE

- (a) Place Molybdenum disulphide lithium base grease in the palm of your hand.
- (b) Pack grease into the bearing, continuing until the grease oozes out from the other side.
- (c) Do the same around the bearing circumference.

4. INSTALL STEERING KNUCKLE AND BEARINGS

- (a) Place the bearings in positions on the knuckle and axle housing.
- (b) Insert the knuckle on the axle housing.

5. INSTALL KNUCKLE ARM AND BEARING CAP

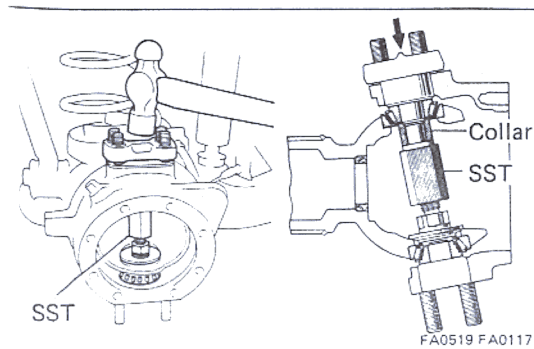
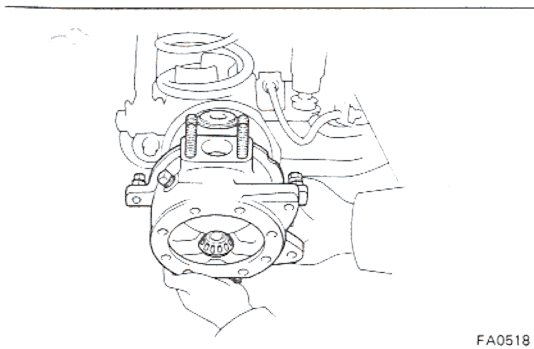
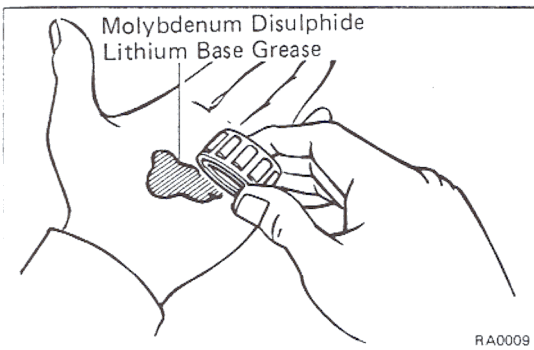
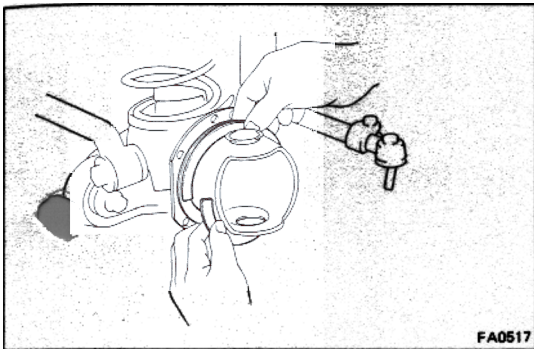
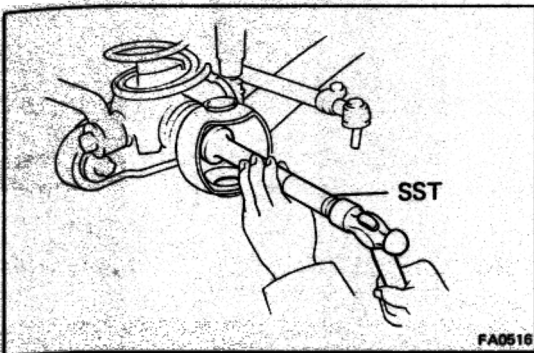
- (a) Using SST, support the upper bearing inner race.

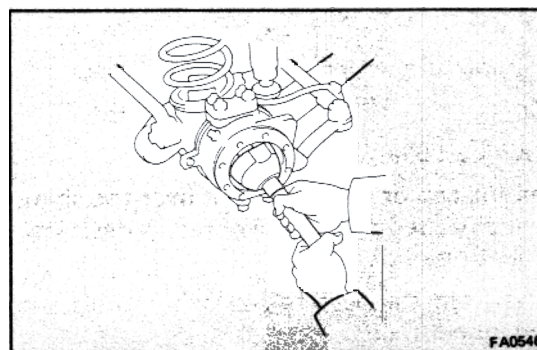
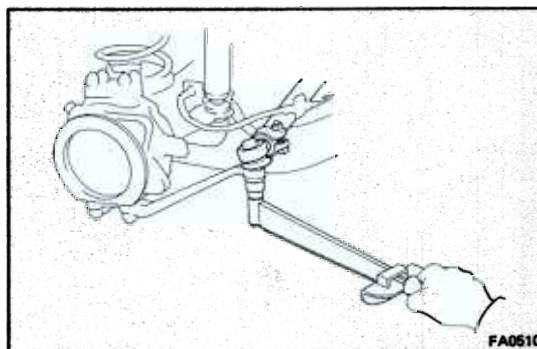
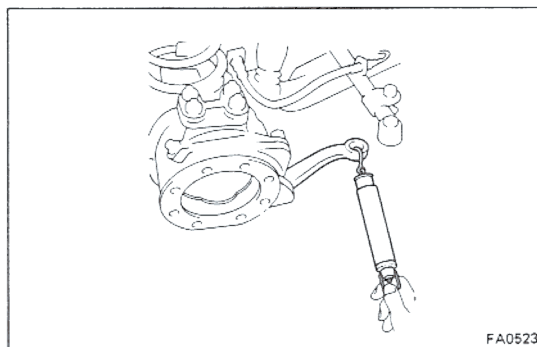
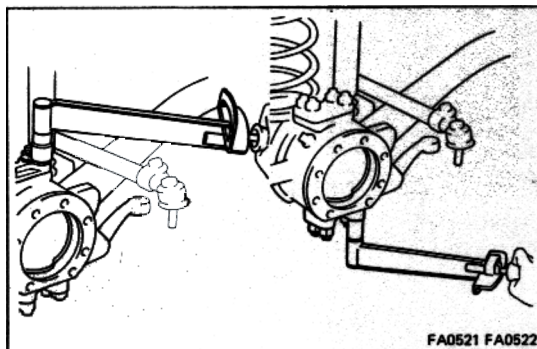
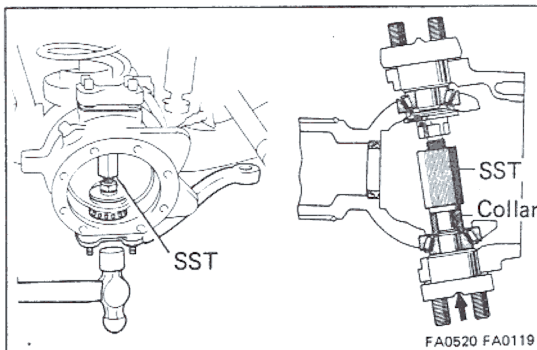
SST 09606-60020

NOTE: Use SST with a collar.

- (b) Install the bearing cap or the third arm over the shims that were originally used or were selected as described in the adjustment operations.

- (c) Using a hammer, tap the bearing cap or the third arm into the bearing inner race.





(d) Using SST, support the lower bearing inner race.

SST 09606-60020

NOTE: Use SST with a collar.

(e) Install the knuckle arm over the shims that were originally used or were selected in the adjustment operations.

(f) Using a hammer, tap the knuckle arm into the bearing inner race.

(g) Remove SST from the knuckle.

(h) Install and torque the nuts.

(Knuckle Arm)

Install the cone washers, plate washers and torque the nuts.

Torque: 975 kg-cm (71 ft-lb, 96 N·m)

(Third Arm)

Install the cone washers, plate washers and torque the nuts.

Torque: 1,170 kg-cm (85 ft-lb, 115 N·m)

(Bearing Cap)

Install the spring washers and torque the nuts.

Torque: 975 kg-cm (71 ft-lb, 96 N·m)

6. MEASURE BEARING PRELOAD

Using a spring tension gauge, measure the preload.

Preload (starting): 2.5 – 5.0 kg
(5.6 – 11.0 lb)
(25 – 49 N)

7. CONNECT TIE ROD TO KNUCKLE ARM

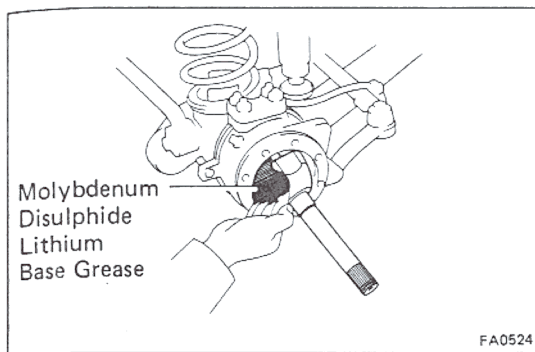
Torque the castle nut and secure it with a cotter pin.

Torque: 925 kg-cm (67 ft-lb, 91 N·m)

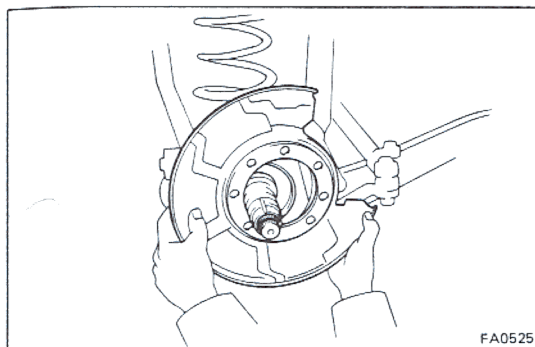
8. INSTALL OIL SEAL SET RETAINER TO KNUCKLE

9. INSTALL AXLE SHAFT

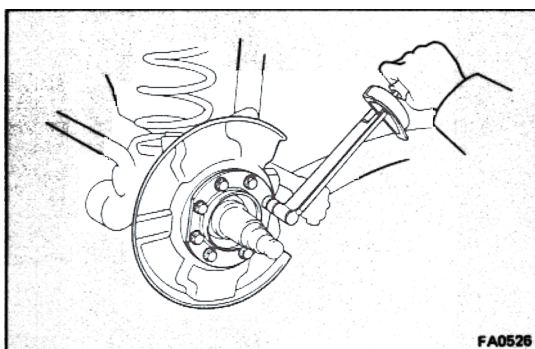
Position one flat part of the outer shaft upward, and install the shaft.

**10. PACK MOLYBDENUM DISULPHIDE LITHIUM BASE GREASE**

Pack Molybdenum disulphide lithium base grease into the knuckle to about three fourths of the knuckle.

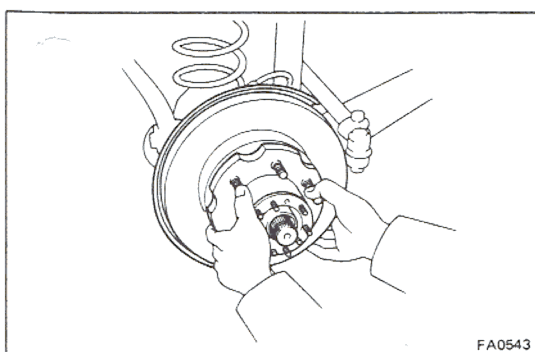
**11. INSTALL KNUCKLE SPINDLE, DUST COVER WITH NEW GASKETS AND DUST SEAL**

- (a) Place a new gasket in position on the knuckle and install the spindle.
- (b) Place the gasket, dust cover and dust seal on the spindle.

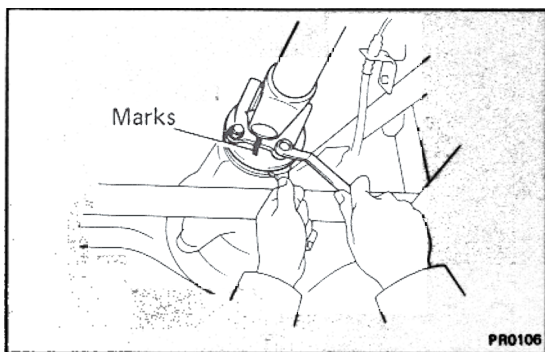
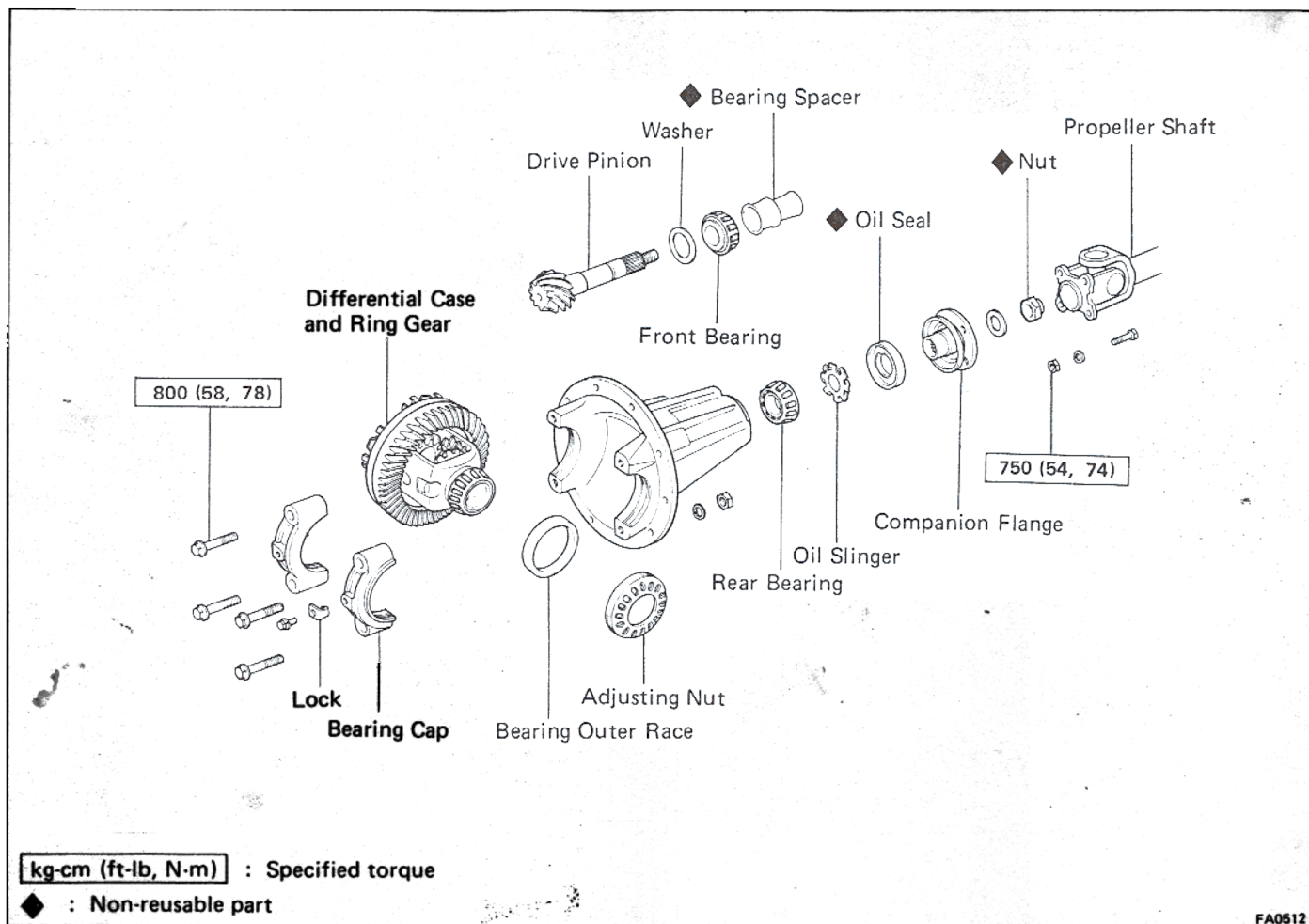


- (c) Torque the spindle mounting bolts.

Torque: 475 kg-cm (34 ft-lb, 47 N·m)

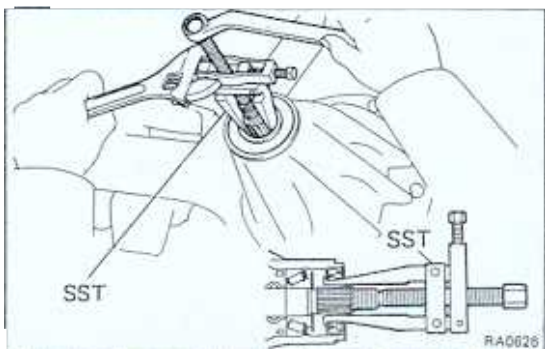
**12. INSTALL AXLE HUB (See page FA-14)**

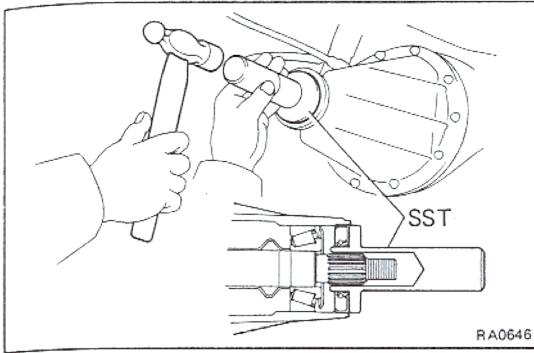
FRONT DIFFERENTIAL COMPONENTS



ON-VEHICLE REPLACEMENT OF OIL SEAL

1. **DISCONNECT PROPELLER SHAFT FROM DIFFERENTIAL**
 - (a) Place alignment marks on the flanges.
 - (b) Remove the four bolts and nuts.
2. **REMOVE COMPANION FLANGE**
(See step 2 on page RA-7)
3. **REMOVE OIL SEAL AND OIL SLINGER**
 - (a) Using SST, remove the oil seal from the housing.
SST 09308-10010
 - (b) Remove the oil slinger.
4. **REMOVE REAR BEARING AND BEARING SPACER** (See step 4 on page RA-8)
5. **INSTALL NEW BEARING SPACER AND FRONT BEARING**



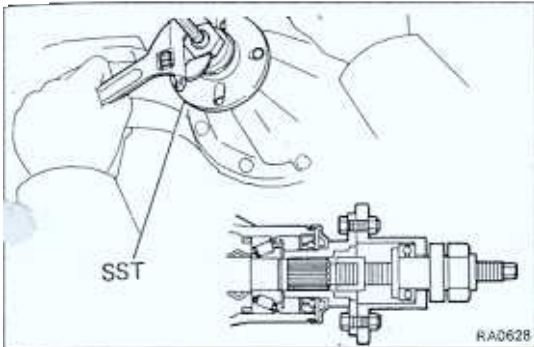
**6. INSTALL OIL SLINGER AND NEW OIL SEAL**

- (a) Install the oil slinger facing as shown.
- (b) Using SST, drive in a new oil seal as shown.

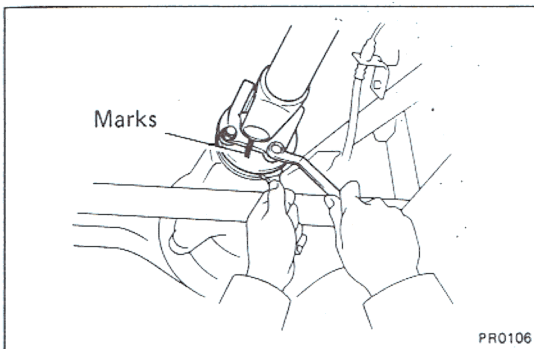
SST 09554-30011

Oil seal drive in depth: 1.0 mm (0.039 in.)

- (c) Apply MP grease to the oil seal lip.

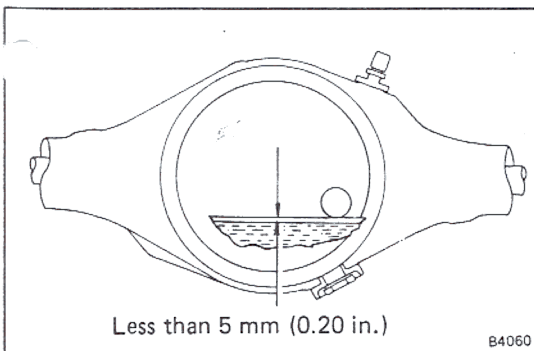
**7. INSTALL COMPANION FLANGE**

(See step 7 on page RA-8)

8. STAKE DRIVE PINION NUT**9. CONNECT PROPELLER SHAFT FLANGE TO COMPANION FLANGE**

- (a) Align the marks on the flanges and connect the flanges with four bolts and nuts.
- (b) Torque the four bolts and nuts.

Torque: 750 kg-cm (54 ft-lb, 74 N·m)

**10. CHECK DIFFERENTIAL OIL LEVEL**

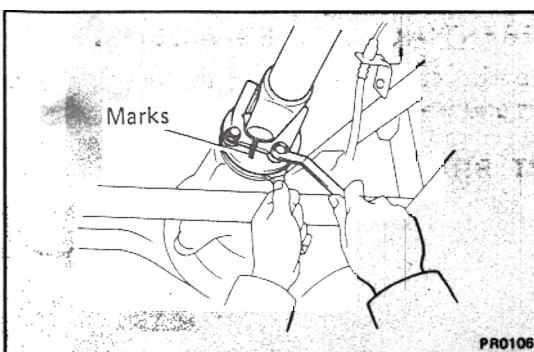
Fill with hypoid gear oil if necessary.

Hypoid gear oil: API GL-5

Above -18°C (0°F) SAE 90Below -18°C (0°F)

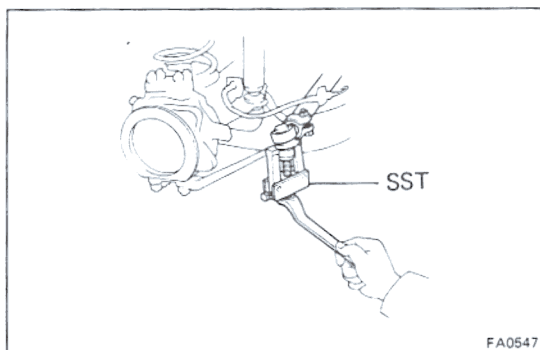
SAE 80W or 80W-90

Capacity: 1.98 liters (2.1 US qts, 1.7 Imp. qts)

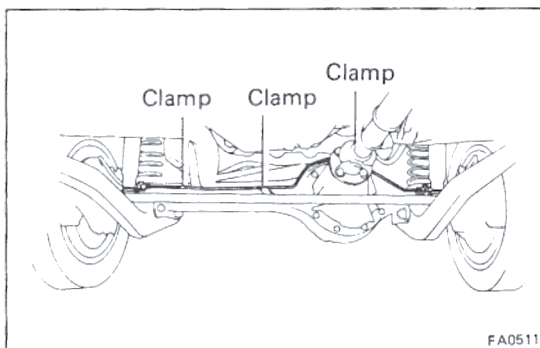
**REMOVAL OF DIFFERENTIAL**

(See page FA-28)

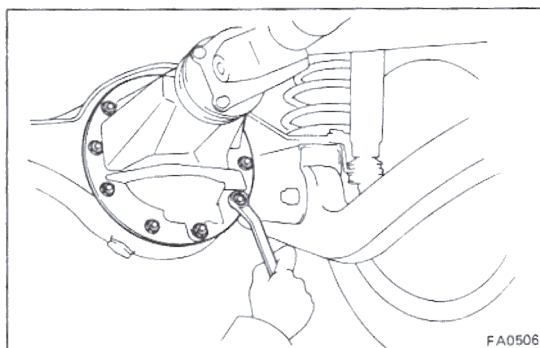
1. REMOVE DRAIN PLUG AND DRAIN DIFFERENTIAL OIL
2. REMOVE FRONT AXLE SHAFTS (See page FA-18)
3. DISCONNECT PROPELLER SHAFT FROM DIFFERENTIAL



4. **DISCONNECT TIE ROD FROM KNUCKLE ARM**
Using SST, disconnect the tie rod from the knuckle arm.
SST 09611-22012



5. **REMOVE FRONT BRAKE TUBE**
Remove the three clamp bolts and nut



6. **REMOVE DIFFERENTIAL CARRIER ASSEMBLY**



DISASSEMBLY OF DIFFERENTIAL

(See page RA-13)

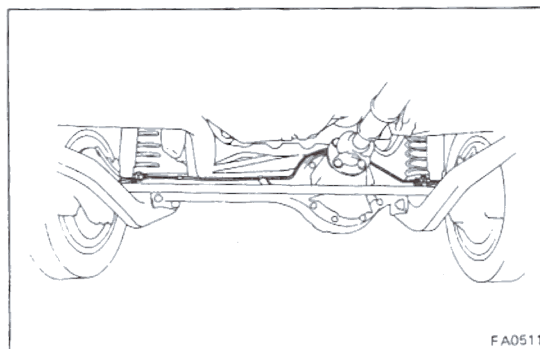
ASSEMBLY OF DIFFERENTIAL

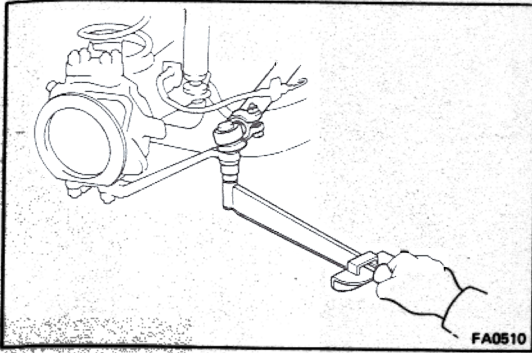
(See page RA-18)

INSTALLATION OF DIFFERENTIAL

(See page FA-28)

1. **INSTALL A NEW GASKET**
Install a new gasket onto the axle housing.
2. **INSTALL DIFFERENTIAL CARRIER ASSEMBLY**
Install the differential carrier assembly in the axle and install the ten nuts and washers.
3. **INSTALL FRONT BRAKE TUBE**

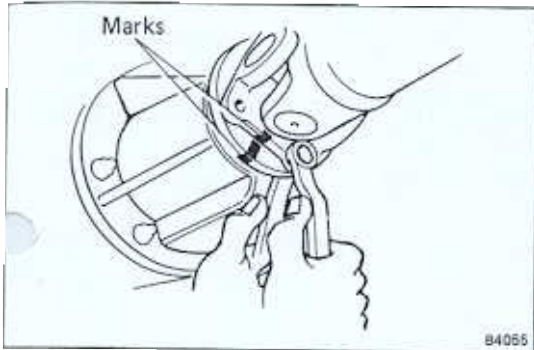




4. CONNECT TIE ROD TO KNUCKLE ARM

Torque the castle nut and secure it with a new cotter pin.

Torque: 925 kg-cm (67 ft-lb, 91 N·m)



5. CONNECT PROPELLER SHAFT FLANGE TO COMPANION FLANGE

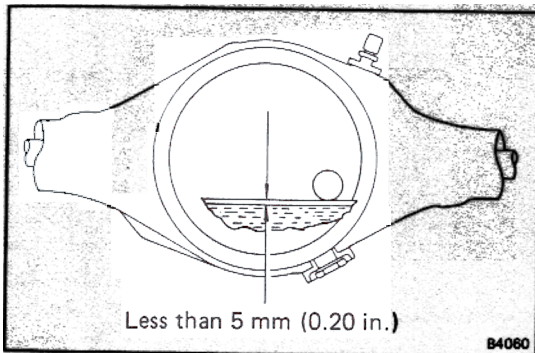
(a) Align the marks on the flanges and connect the flanges with the four bolts and nuts.

(b) Torque the bolts and nuts.

Torque: 750 kg-cm (54 ft-lb, 74 N·m)

6. INSTALL FRONT AXLE SHAFT

(See page FA-23)



7. INSTALL DRAIN PLUG AND FILL DIFFERENTIAL WITH GEAR OIL

Differential oil:

API GL-5 hypoid gear oil

Above -18°C (0°F) SAE 90

Below -18°C (0°F) SAE 80W or 80W-90

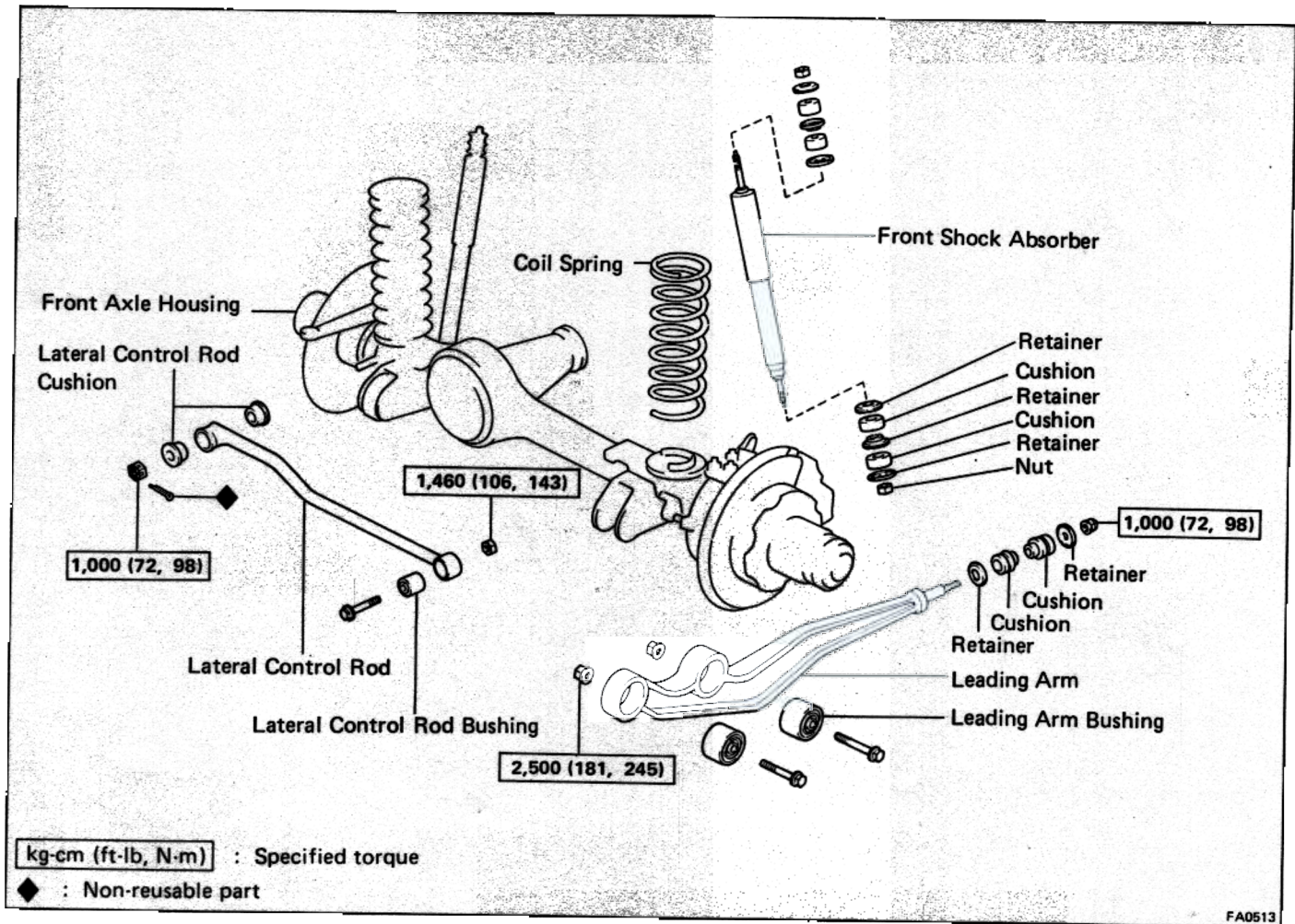
Capacity: 1.98 liters (2.1 US qts, 1.7 Imp. qts)

Install a filler plug.

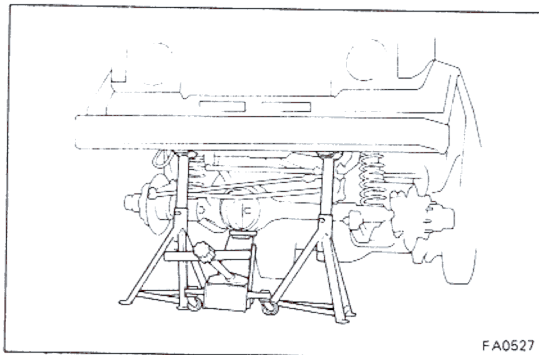
8. BLEED BRAKE LINE

(See page BR-6)

FRONT SUSPENSION COMPONENTS



FA0513



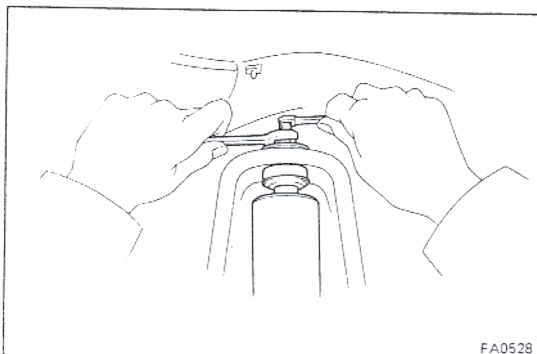
FA0527

Coil Spring and Shock Absorber REMOVAL OF COIL SPRING AND SHOCK ABSORBER

REMOVAL OF COIL SPRING AND SHOCK ABSORBER

1. JACK UP AND SUPPORT BODY

Jack up and support the body on stands.



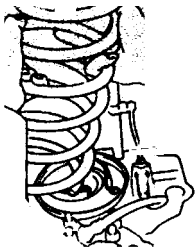
FA0528

2. REMOVE FRONT SHOCK ABSORBER

- Jack up and support the axle housing.
- Remove the shock absorber.

3. REMOVE COIL SPRING

Lower the jack until the coil spring is free and remove it



FA0529

INSPECTION OF FRONT SHOCK ABSORBER

INSPECT OPERATION OF FRONT SHOCK ABSORBER

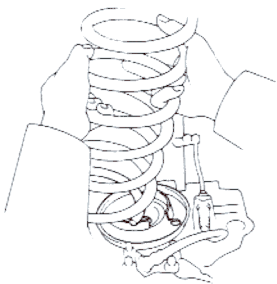


FA0530

INSTALLATION OF COIL SPRING AND SHOCK ABSORBER

1. INSTALL COIL SPRING

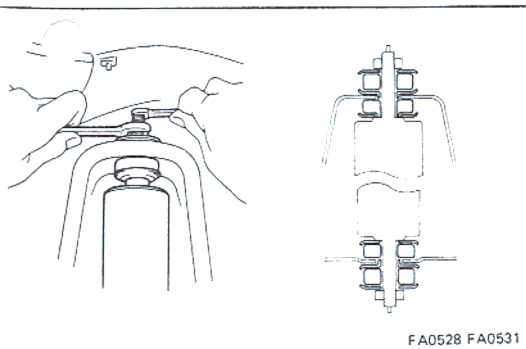
Assemble the spring so its end catches in the hole of the lower seat.



FA0529

2. INSTALL SHOCK ABSORBER

Raise the jack, and paying attention to the assembly sequence of the retainers and cushions, install the shock absorber.



FA0528 FA0531

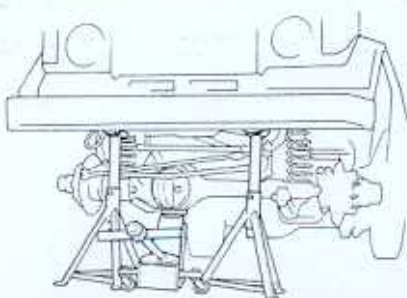
Lateral Control Rod

(See page FA-32)

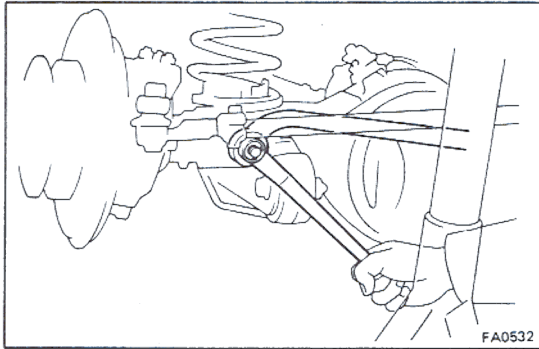
REMOVAL OF LATERAL CONTROL ROD

1. JACK UP AND SUPPORT BODY

Jack up and support the body on the stands.

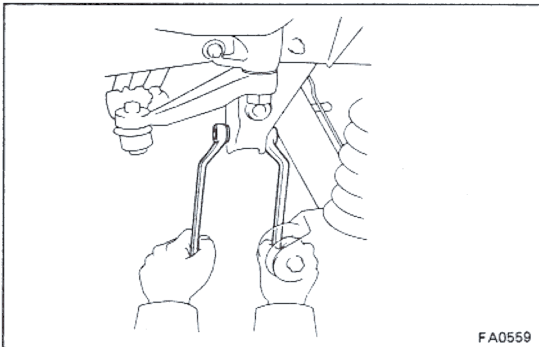


FA0527



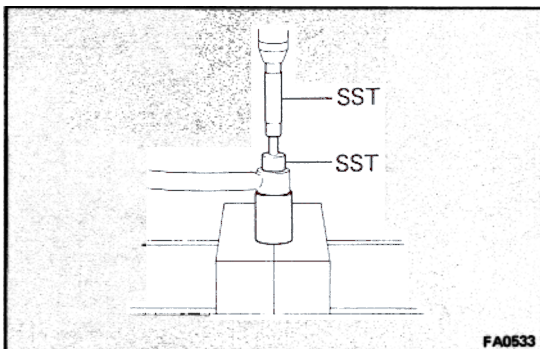
2. DISCONNECT LATERAL CONTROL ROD FROM AXLE HOUSING

Remove the cotter pin and castle nut, and disconnect the lateral control rod from the front axle housing.



3. DISCONNECT LATERAL CONTROL ROD FROM FRAME

Remove the bolt, nut and the lateral control rod.

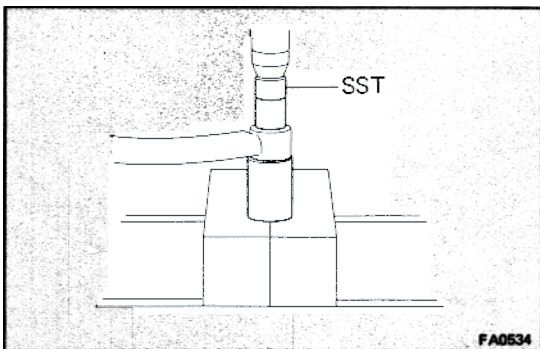


REPLACEMENT OF LATERAL CONTROL ROD BUSHING

1. REMOVE BUSHING

Using SST and a press, press out the bushing from the lateral control rod.

SST 09710-22041

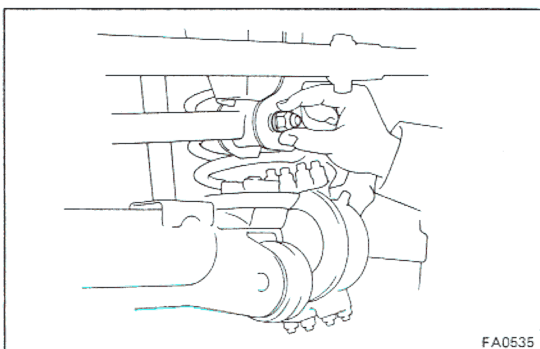


2. INSTALL BUSHING

Using SST and a press, press a new bushing into the lateral control rod.

SST 09710-22041

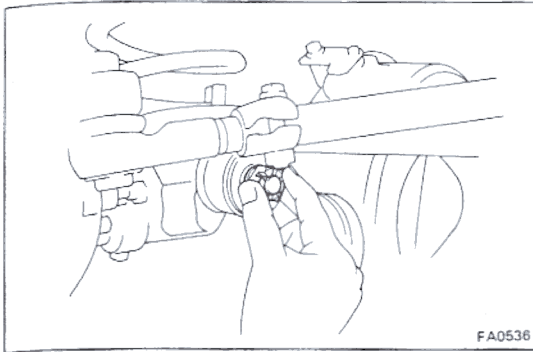
NOTE: Do not use a lubricant when pressing in the bushing.



INSTALLATION OF LATERAL CONTROL ROD

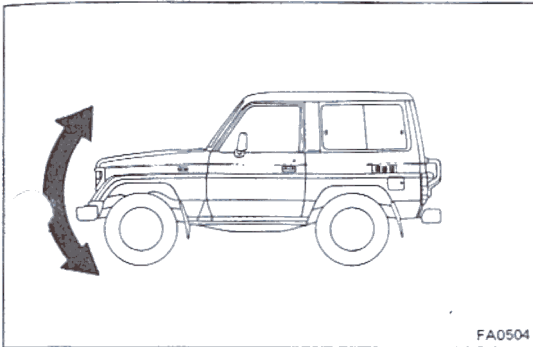
1. INSTALL LATERAL CONTROL ROD TO FRAME

Install the lateral control rod to the frame with the bolt and nut.

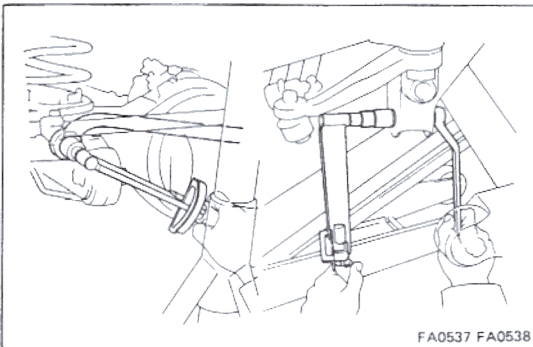


2. INSTALL LATERAL CONTROL ROD TO FRONT AXLE HOUSING

- (a) In this order, install the washer, cushion, lateral control rod, cushion, washer, and castle nut on the front axle housing.



- (b) Remove the stands and rock the body up and down to stabilize the suspension.



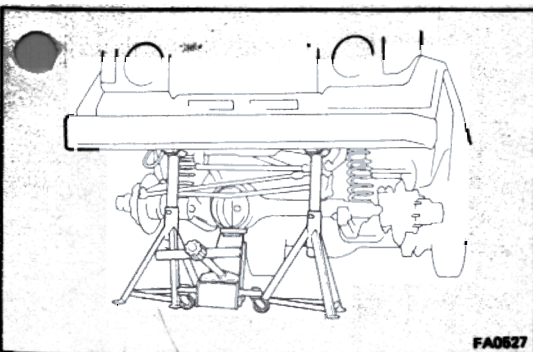
- (c) Jack up the axle housing.

- (d) Torque the nuts

Torque: Body side 1,460 kg-cm (106 ft-lb, 143 N-m)
 Axle housing side 1,000 kg-cm (72 ft-lb, 98 N-m)

NOTE: When tightening the lateral control rod set nut and bolt, lower the vehicle load until the lateral control rod is horizontal.

- (e) Install a new cotter pin into the front axle housing.



Leading Arm

(See page FA-32)

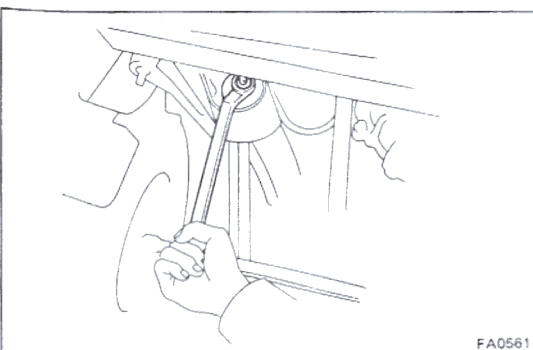
REMOVAL OF LEADING ARM

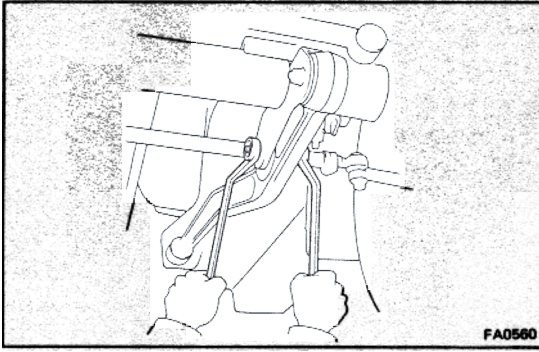
1. JACK UP VEHICLE

Jack up the vehicle and support the frame with stands. Hold the front axle housing with a jack.

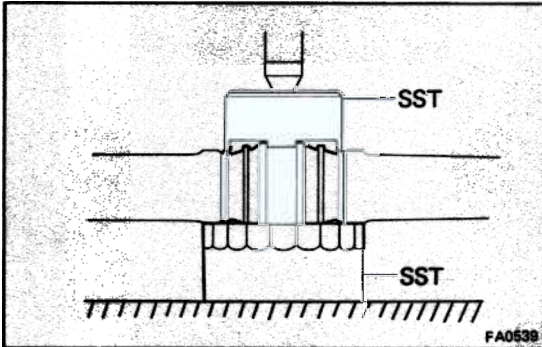
2 REMOVE LEADING ARM

- (a) Remove the nut, retainer and cushion from the leading arm frame side.





- (b) Remove the two bolts and nuts from the leading arm axle housing side.
- (c) Remove the leading arm from body.

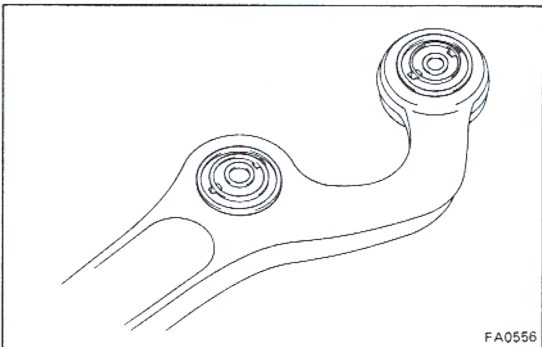


REPLACEMENT OF LEADING ARM BUSHING

1. REMOVE BUSHINGS

Using SST and a press, press out the bushings from the leading arm.

SST 09710-30030 and 09228-22020

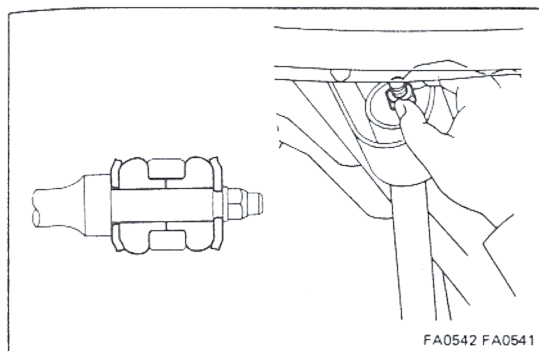


2. INSTALL BUSHINGS

Using SST and a press, press new bushings into the leading arm.

SST 09710-30030 and 09228-22020

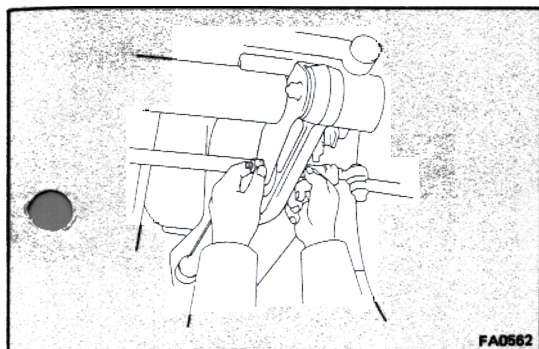
NOTE: When assembling the bushing, assemble it so its holes are aligned horizontally.



INSTALLATION OF LEADING ARM

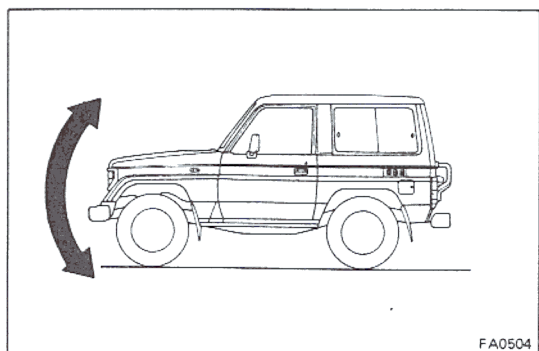
1. INSTALL LEADING ARM TO FRAME

Install the cushion, retainer and nut.



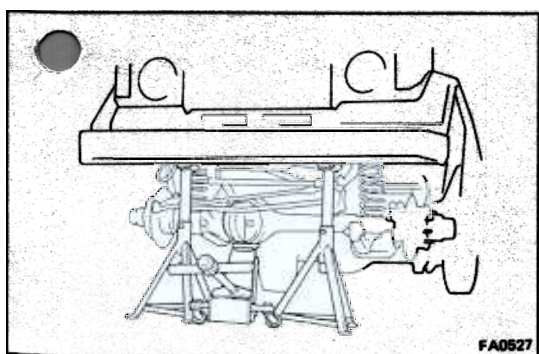
2. INSTALL LEADING ARM TO FRONT AXLE HOUSING

Install the leading arm to the front axle with the two bolts and nuts.



3. STABILIZE SUSPENSION

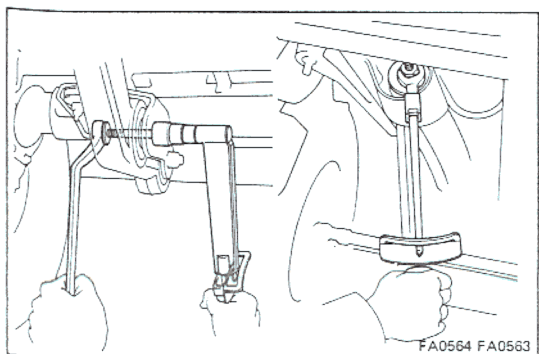
Remove the stands and rock the body up and down to stabilize the suspension.



4. TIGHTEN NUTS

(a) Jack up the axle housing.

NOTE: For safety, place stands under either side of the vehicle's frame. The stands should come up to but not contact the frame.



(b) Torque the nuts.

Torque:	Body side	1,000 kg-cm
		(72 ft-lb, 98 N·m)
	Axle housing side	2,500 kg-cm
		(181 ft-lb, 245 N·m)

NOTE: When tightening the nuts, tighten with the vehicle's full weight applied to the axle housing.