

SUSPENSION AND AXLE

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TROUBLESHOOTING

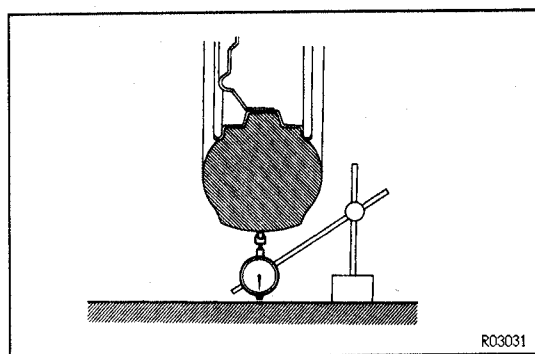
Use the table below to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, replace these parts.

SA06G-07

See Page Parts Name Trouble													
	Tires	Cold tire inflation pressure	Wheel alignment	Springs	Stabilizer bar	Shock absorber	Ball joint	Hub bearings	Steering linkage	Steering gear	Suspension parts	Overloaded	Wheel balance
	1		2					4	3	5	6		
				2		3						1	
Wander/pulls	1		2					4	3	5	6		
Bottoming				2		3						1	
Sways/pitches	1				2	3							
Front wheel shimmy	1		4			3	5	6	7	8			2
Abnormal tire wear		1	2			4					3		

SA

V00313



GENERAL INSPECTION

SA27F-01

1. INSPECT TIRE

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

Cold tire inflation pressure

Tire size	Front kPa (kgf/cm ² , psi)	Rear kPa (kgf/cm ² , psi)
P195/75R14	200 (2.0, 29)	240 (2.4, 35)
P215/70R14	200 (2.0, 29)	200 (2.0, 29)
P225/75R15 31 x 10.5R 15LT	180 (1.8, 26)	200 (2.0, 29)

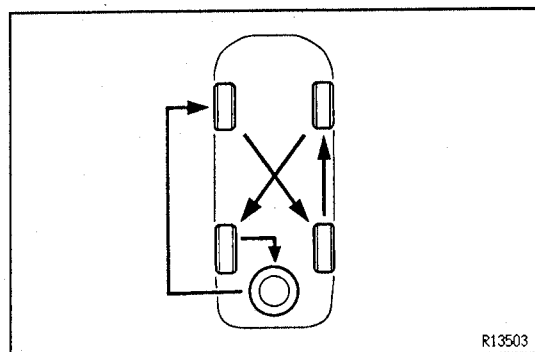
- (b) Check the tire runout.

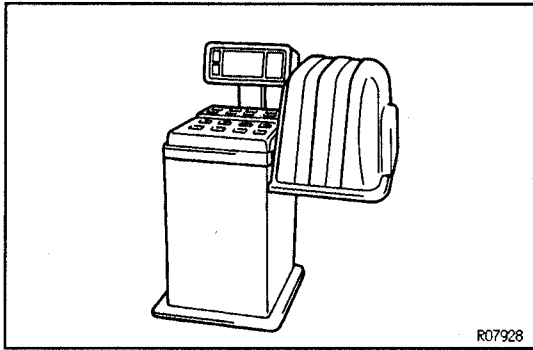
Tire runout:

Less than 3.0 mm (0.118 in.)

2. ROTATE TIRE

HINT: See the illustration for where to rotate each tire when you include the spare tire in rotation.





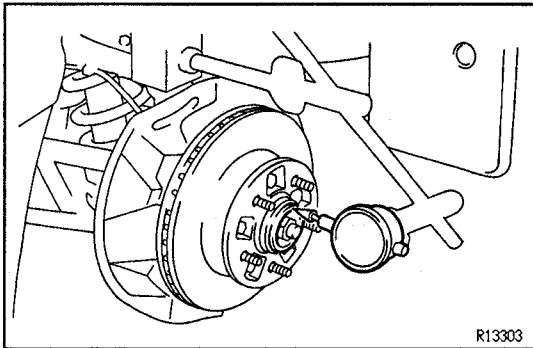
3. INSPECT WHEEL BALANCE

- Check and adjust the Off—the—car balance.
- If necessary, check and adjust the On—the—car balance.

Unbalance after adjustment:

2WD 11.0 g (0.024 lb) or less

4WD 14.0 g (0.031 lb) or less



4. 2WD:

CHECK WHEEL BEARING LOOSENESS

Check the backlash in bearing shaft direction.

Maximum: 0.05 mm (0.0020 in.)

- CHECK FRONT SUSPENSION FOR LOOSENESS
- CHECK STEERING LINKAGE FOR LOOSENESS
- CHECK BALL JOINT FOR LOOSENESS
- CHECK SHOCK ABSORBER WORKS PROPERLY

- Check for oil leak.
- Check the mounting bushings for wear.
- Bounce front and rear of the vehicle.

WHEEL ALIGNMENT (2WD)

HINT: With non—loaded vehicles, there is a difference in the vehicle height according to the model. SA1RS-04

Although the wheel alignment standard value changes according to the vehicle height, by setting the vehicle height to the standard height the standard alignment value becomes the same for all models.

For the vehicle height of non—loaded vehicles for each model and the alignment standard values, refer to page SA—161.

1. MEASURE VEHICLE HEIGHT

Vehicle height:

Front: A—B=56 mm (2.205 in.)

Rear: C—D=108 mm (4.252 in.)

Measuring points:

A: Ground clearance of spindle center.

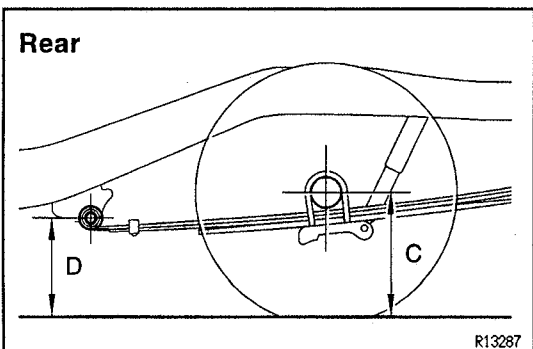
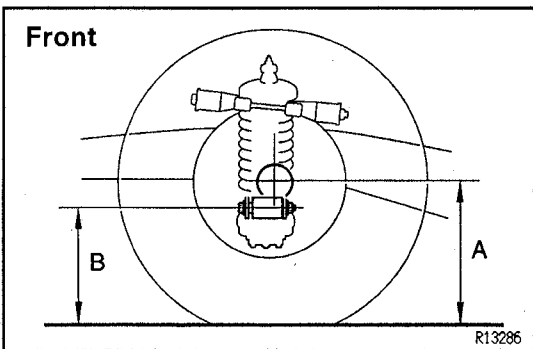
B: Ground clearance of lower suspension arm bolt center.

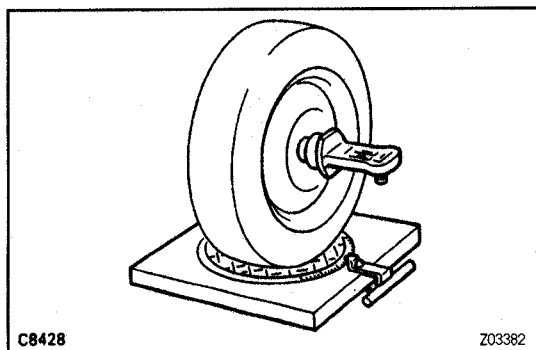
C: Ground clearance of rear axle shaft center.

D: Ground clearance of leaf spring front hanger pin center.

NOTICE: Before inspecting the wheel alignment, adjust the vehicle height to specification.

If the vehicle height is not within the specification, try to adjust it by pushing down on or lifting the body.





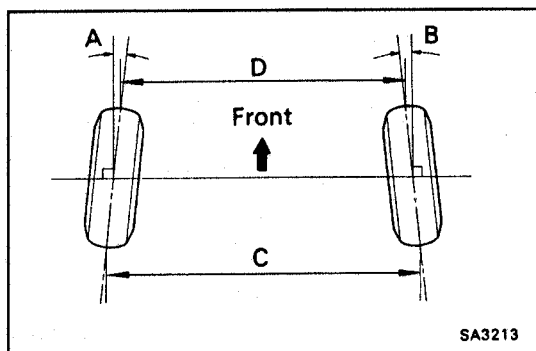
2. INSTALL CAMBER—CASTER—KINGPIN GAUGE OR ONTO WHEEL ALIGNMENT TESTER

Follow the specific instructions of the equipment manufacturer.

3. INSPECT CAMBER, CASTER AND STEERING AXIS INCLINATION

Camber	$0^{\circ}00' \pm 45'$
Left—right error	30' or less
Caster	$1^{\circ}50' \pm 45'$
Left—right error	30' or less
Steering axis inclination	$10^{\circ}00' \pm 45'$
Left—right error	30' or less

If the steering axis inclination is not within the specification, after camber and caster have correctly adjusted, recheck the steering knuckle front wheel for bearing or looseness.



4. INSPECT TOE—IN

Toe—in	$A+B= 0^{\circ} \pm 0.2^{\circ}$
(Total)	$C-D= 0 \pm 2 \text{ mm } (0 \pm 0.08 \text{ in.})$

If the toe—in is not within the specification, adjust the rack ends.

5. ADJUST CAMBER AND CASTER

Camber	$0^{\circ}00' \pm 30'$
Left—right error	30' or less
Caster	$1^{\circ}50' \pm 30'$
Left—right error	30' or less

- Loosen the upper suspension arm set bolts.
- Adjust the camber and caster by adding or removing shims.

(See adjustment chart)

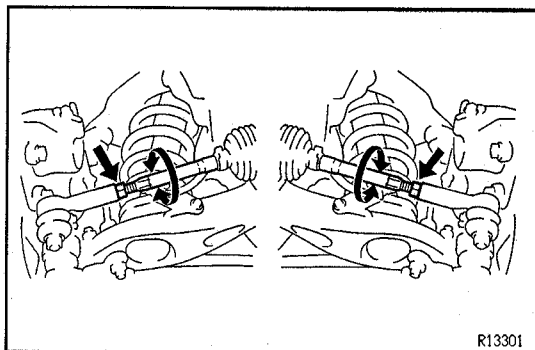
Shim thickness

4.0 mm (0.157 in.)	1.6 mm (0.063 in.)	1.2 mm (0.047 in.)
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- Torque the upper suspension arm set bolts

Torque: 130 N·m (1,300 kgf·cm, 94 ft·lbf)

NOTICE: Adjust the shim thickness to 7 mm (+4, -3), and adjust the difference between the front and rear of the upper suspension arm shaft to within 4 mm.

**6. ADJUST TOE-IN**

- (a) Remove the boot clamps.
- (b) Loosen the rack end lock nuts.
- (c) Turn the left and right rack ends an amount to adjust the toe-in.

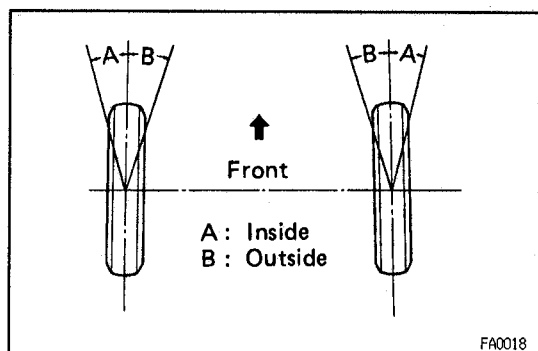
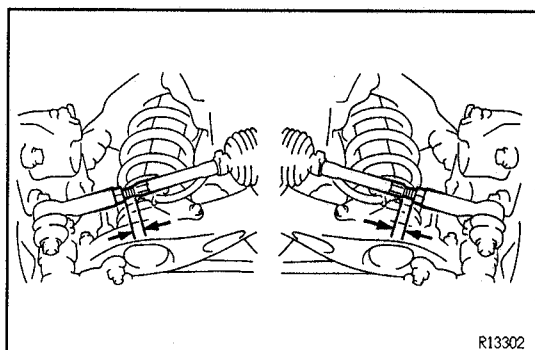
Toe-in	$A+B = 0^\circ \pm 0.1^\circ$
(Total)	$C-D = 0 \pm 1 \text{ mm } (0 \pm 0.04 \text{ in.})$

HINT: Ensure that the lengths of the left and right tie rods are the same.

Tie rod end length left-right error:

Less than 1.5 mm (0.059 in.)

- (d) Tighten the rack end lock nut.
Torque: 54 N·m (550 kgf·cm, 40 ft-lbf)
 - (e) Place the boot on the seat and clip it.
- HINT:** Ensure that the boots are not twisted.

**7. INSPECT WHEEL ANGLE**

Wheel angle

Item	Inside wheel	Outside wheel (reference)
Max.	$36^\circ 00'$ ($33^\circ 00' \sim 36^\circ 00'$)	$30^\circ 45'$ ($27^\circ 45' \sim 30^\circ 45'$)

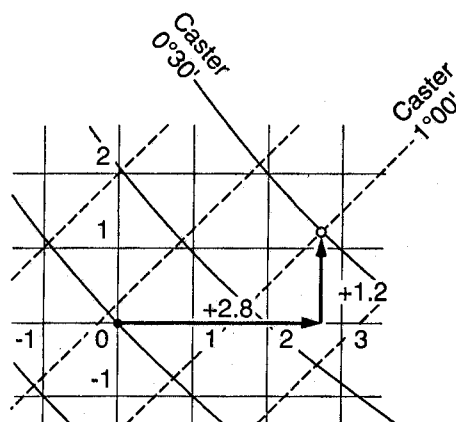
If the wheel angle differ from the standard specifications, check to see if the lengths of the left and right tie rods are the same.

HINT: If the tie rods lengths are not equal, the wheel angle can not be adjusted properly.

Reinspect the toe-in after adjusting the tie rods lengths.

Example:

○ = Measurement Point



Y R13382

ADJUSTMENT CHART**HOW TO READ ADJUSTMENT CHART****Standard loaded vehicle:**

- (a) Mark on the graph the measurements taken from the vehicle.

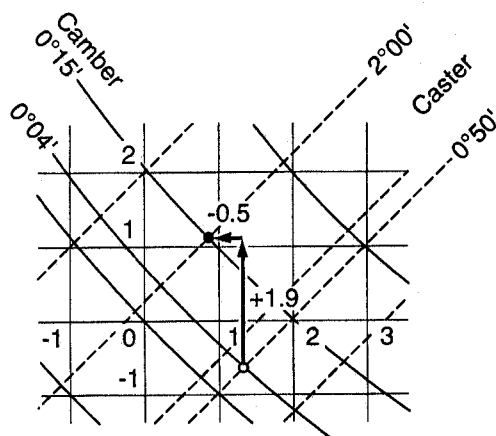
Example:**Camber** 0°30'**Caster** 1°00'

- (b) As shown in the illustration, read from the graph the amounts by which the front and/or rear cams are to be adjusted.

Example:**Front shim thickness** + 1.2 mm (0.047 in.)**Rear shim thickness** + 2.8 mm (0.110 in.)**Example (RZN150L):**

● = Standard value point

○ = Measurement point



Y R13383

Non-loaded vehicle:

- (a) Find the wheel alignment standard value applicable for the particular model in non-loaded condition. (See page SA-161)
- (b) Mark the selected standard value on the adjustment chart.

Example (RZN150L):**Camber** 0°04'**Caster** 0°50'

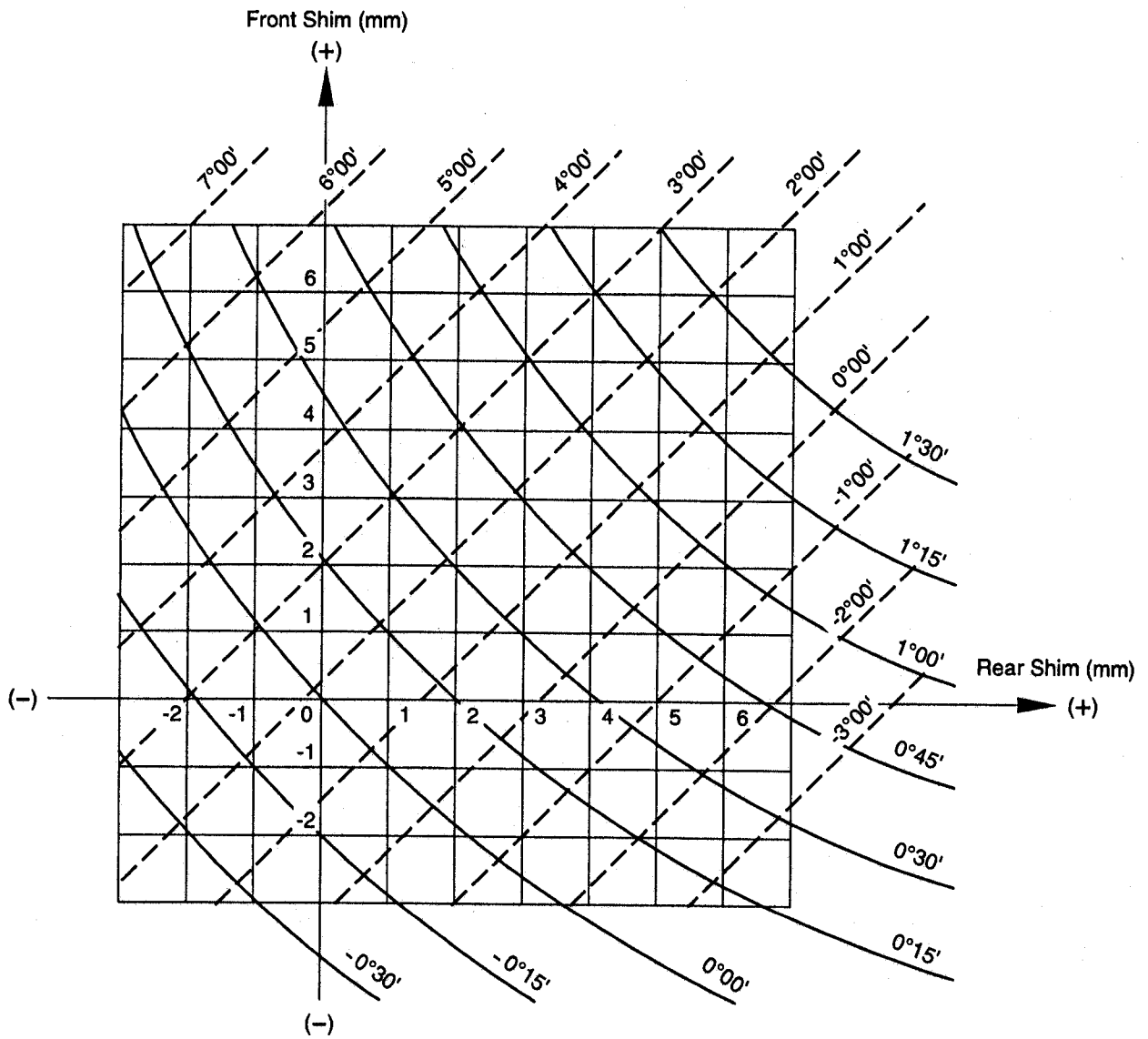
- (c) Mark on the adjustment chart the alignment values measured at the non-loaded vehicle height.

Example:**Camber** 0°15'**Caster** 2°00'

- (d) As shown in the illustration, read the distance from the standard value to the measured value, and adjust the front and/or rear shim thickness accordingly.

Example:**Front shim thickness** + 1.9 mm (0.075 in.)**Rear shim thickness** - 0.5 mm (0.020 in.)

————— Camber
 - - - - - Caster



SA

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R13388

WHEEL ALIGNMENT (4WD)

SA1WA-02

HINT: With non-loaded vehicles, there is a difference in the vehicle height according to the model.

Although the wheel alignment standard value changes according to the vehicle height, by setting the vehicle height to the standard height the standard alignment value becomes the same for all models.

For the vehicle height of non-loaded vehicles for each model and the alignment standard values, refer to page SA-162, 163.

1. MEASURE VEHICLE HEIGHT

Vehicle height:

Front: $A - B = 57 \text{ mm (2.244 in.)}$

Rear: $C - D = -5 \text{ mm (-0.197 in.)}$

Measuring points:

A: Ground clearance of spindle center.

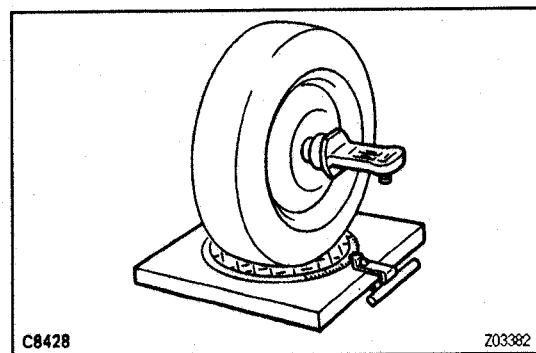
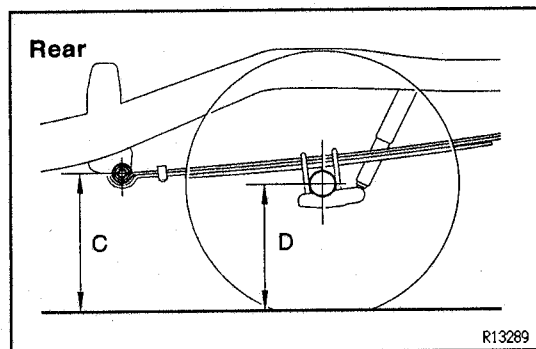
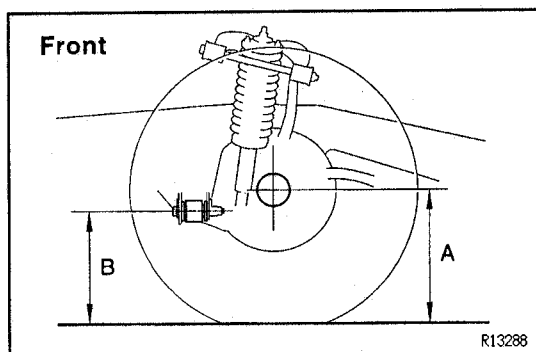
B: Ground clearance of front adjusting cam bolt center.

C: Ground clearance of leaf spring front hanger pin center.

D: Ground clearance of rear axle shaft center.

NOTICE: Before inspecting the wheel alignment, adjust the vehicle height to specification.

If the vehicle height is not within the specification, try to adjust it by pushing down on or lifting the body.



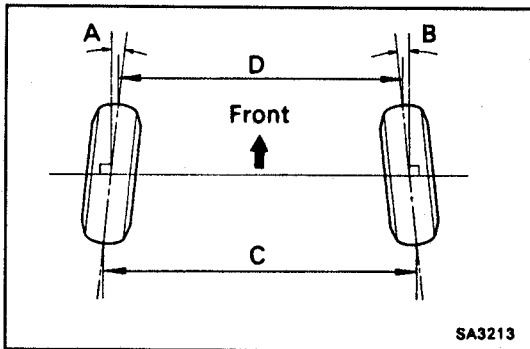
2. INSTALL CAMBER—CASTER—KINGPIN GAUGE OR ONTO WHEEL ALIGNMENT TESTER

Follow the specific instructions of the equipment manufacturer.

3. INSPECT CAMBER, CASTER AND STEERING AXIS INCLINATION

Camber		$0^{\circ}00' \pm 45'$
	Left-right error	30' or less
Caster		$2^{\circ}50' \pm 45'$
	Left-right error	30' or less
Steering axis inclination		$10^{\circ}45' \pm 45'$
	Left-right error	30' or less

If the steering axis inclination is not within the specification, after camber and caster have correctly adjusted, recheck the steering knuckle front wheel for bearing or looseness.

**4. INSPECT TOE-IN**

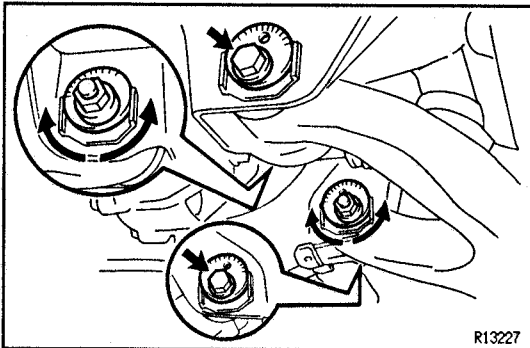
Toe-in	$A+B = 0^\circ \pm 0.2^\circ$
(Total)	$C-D = 0 \pm 2 \text{ mm } (0 \pm 0.08 \text{ in.})$

If the toe-in is not within the specification, adjust the rack ends.

5. ADJUST CAMBER AND CASTER

Camber	$0^\circ 00' \pm 30'$
Left-right error	30' or less
Caster	$2^\circ 50' \pm 30'$
Left-right error	30' or less

- Loosen the front and/or rear adjusting cam nuts.
- Adjust the camber and caster by front and/or rear adjusting cams.
(See adjustment chart)
- Torque the front and/or rear adjusting cam nuts.
Torque: 130 N·m (1,325 kgf·cm, 96 ft·lbf)

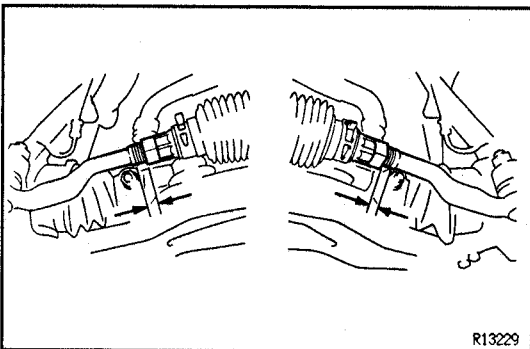
**6. ADJUST TOE-IN AND WHEEL ANGLE**

HINT: First, check or adjust the lengths of the tie rod ends, then adjust the toe-in.

Tie rod end length left-right error:

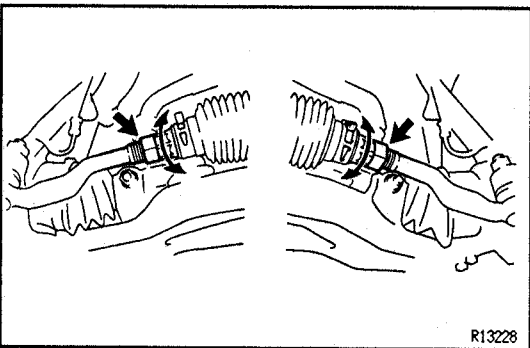
Less than 1.5 mm (0.059 in.)

- Remove the boot clamps.
- Loosen the rack end lock nuts.
- Turn the left and right rack ends an amount to adjust the toe-in.



Toe-in	$A+B = 0^\circ \pm 0.1^\circ$
(Total)	$C-D = 0 \pm 1 \text{ mm } (0 \pm 0.04 \text{ in.})$

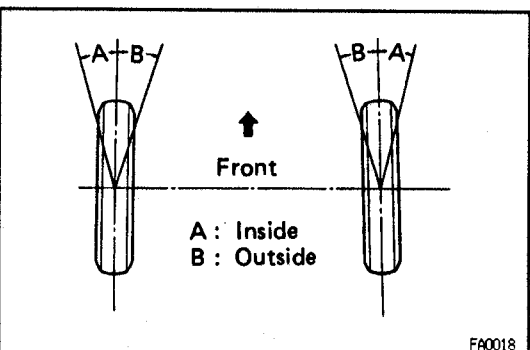
- Tighten the rack end lock nuts.
Torque: 55 N·m (560 kgf·cm, 41 ft·lbf)
- Place the boot on the seat and clip it.
HINT: Ensure that the boots are not twisted.



- Inspect the wheel angle.
Wheel angle

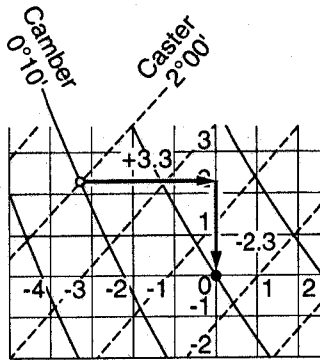
Item	Inside wheel	Outside wheel (reference)
Max.	$37^\circ 05'$ ($35^\circ 05' \sim 38^\circ 05'$)	$32^\circ 20'$

If wheel angle deviates from the specifications, readjust the toe-in and wheel angle within the specifications. At this time, the lengths of the tie rod end may be within less than 1.5 mm (0.059 in.).



Example :

o = Measurement point



Y R13385

ADJUSTMENT CHART**HOW TO READ ADJUSTMENT CHART****Standard loaded vehicle:**

- (a) Mark on the graph the measurements taken from the vehicle.

Example:

Camber 0°10'

Caster 2°00'

- (b) As shown in the illustration, read from the graph the amounts by which the front and/or rear cams are to be adjusted.

Amount to turn adjusting cam (by graduation):

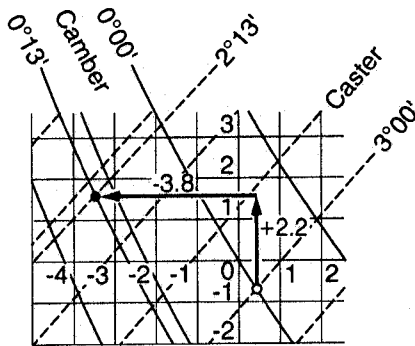
Front cam —(Shorter) 2.3

Rear cam +(Longer) 3.3

Example (VZN170L-CRMDKAB):

● = Standard value point

o = Measurement point



Y R13384

Non-loaded vehicle:

- (a) Find the wheel alignment standard value applicable for the particular model in non-loaded condition.
(See page SA-162, 163)
- (b) Mark the selected standard value on the adjustment chart.

Example (RZN171L-CRMDKAB):

Camber 0°13'

Caster 2°13'

- (c) Mark on the adjustment chart the alignment values measured at the non-loaded vehicle height.

Example:

Camber 0°00'

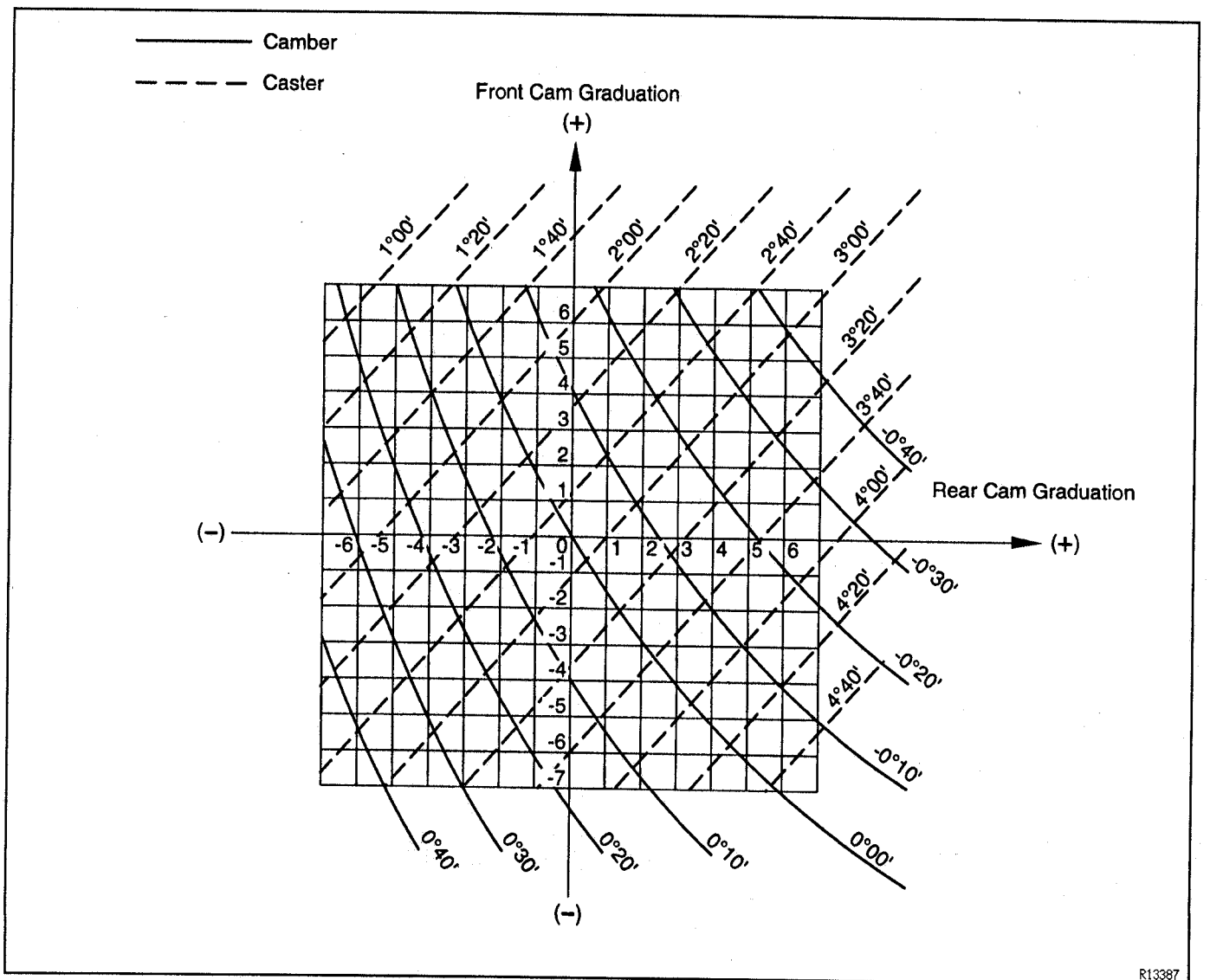
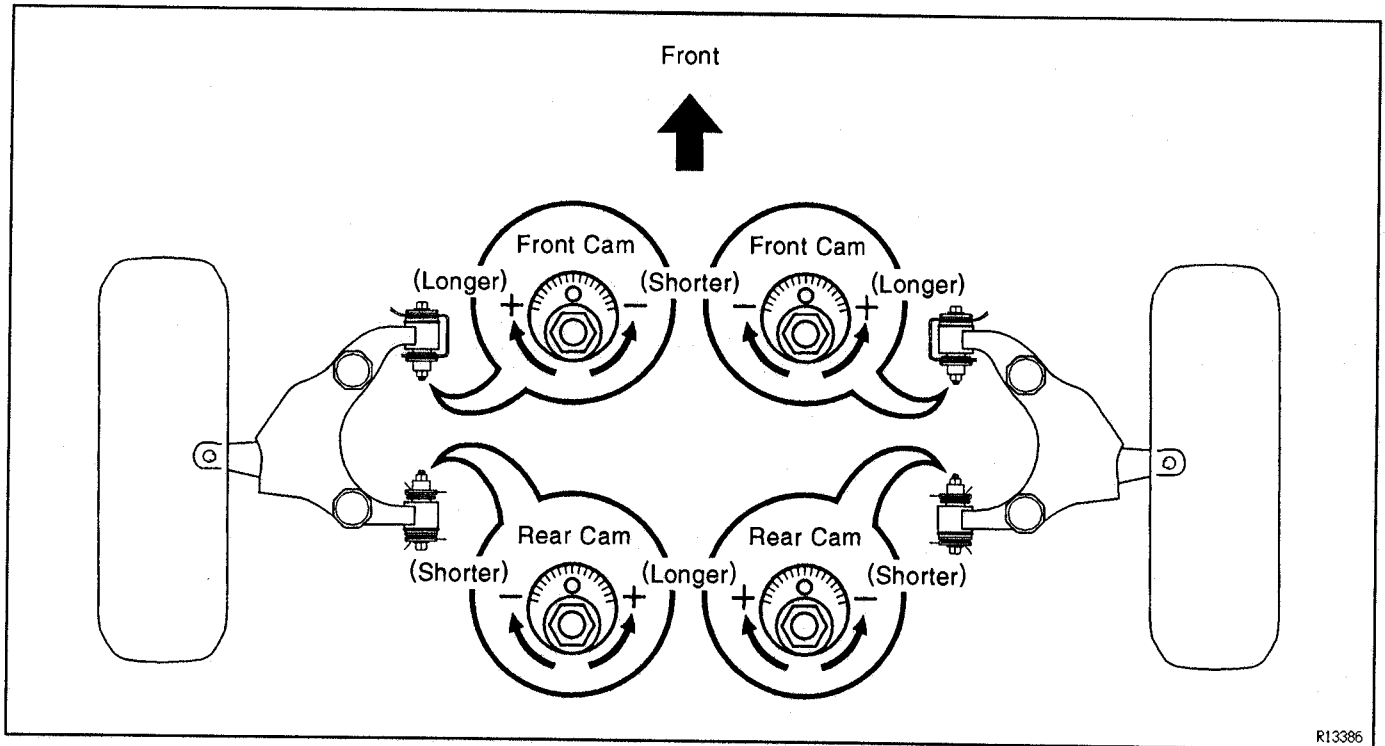
Caster 3°00'

- (d) As shown in the illustration, read the distance from the standard value to the measured value, and adjust the front and/or rear adjusting cams accordingly.

Example:

Front cam +(Longer) 2.2

Rear cam —(Shorter) 3.8

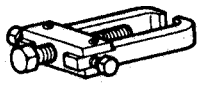
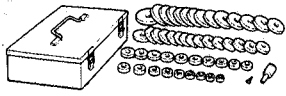
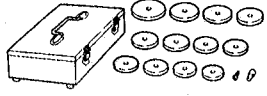
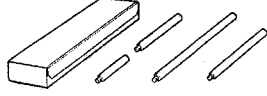


FRONT AXLE (2WD)

PREPARATION

SST (SPECIAL SERVICE TOOLS)

SA0J7-06

	09527-17011 Rear Axle Shaft Bearing Remover	Bearing outer race removal and installation
	09628-62011 Ball Joint Puller	Steering knuckle disconnection
	09950-60010 Replacer Set	Bearing outer race installation
	(09951-00490) Replacer 49	Outside bearing race installation
	(09951-00640) Replacer 64	Inside bearing race installation
	09950-60020 Replacer Set No.2	Oil seal installation
	(09951-00710) Replacer 71	
	09950-70010 Handle Set	Bearing races installation
	(09951-07150) Handle 150	

SA

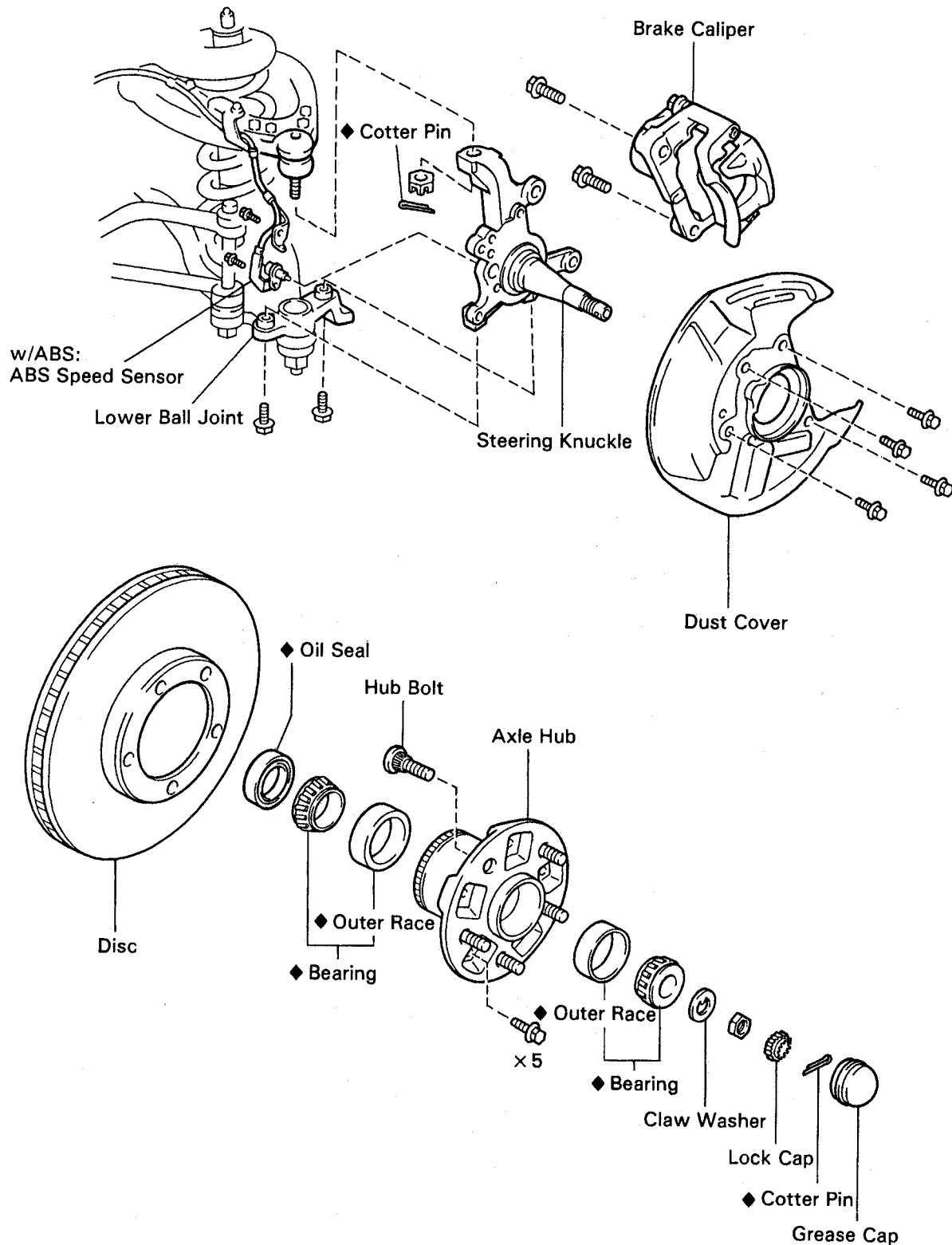
EQUIPMENT

SA0J8-07

Dial indicator	
Torque wrench	
Spring tension gauge	

FRONT AXLE HUB AND STEERING KNUCKLE COMPONENTS

8A0JA-06

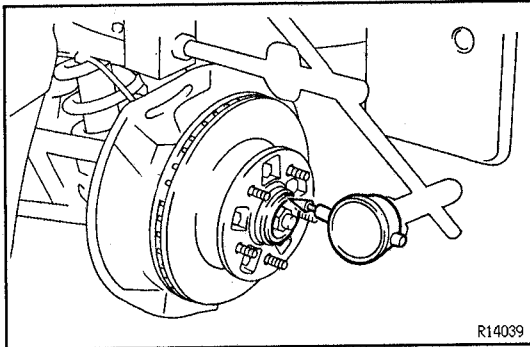


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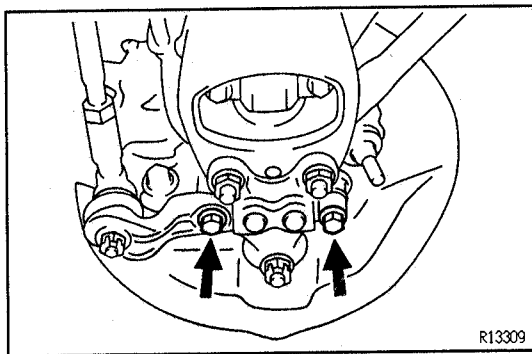
FRONT AXLE HUB AND STEERING KNUCKLE REMOVAL

1. REMOVE FRONT WHEEL
2. w/ ABS:
REMOVE ABS SPEED SENSOR AND WIRE HARNESS CLAMP FROM STEERING KNUCKLE
3. REMOVE BRAKE CALIPER
 - (a) Remove the 2 bolts and brake caliper.
 - (b) Support the brake caliper securely.
4. CHECK AXLE HUB BEARING BACKLASH
 - (a) Using a screwdriver, remove the grease cap.
 - (b) Place the dial indicator near the center of the axle hub and check the backlash in the bearing shaft direction.
Maximum:
0.05 mm (0.0020 in.)

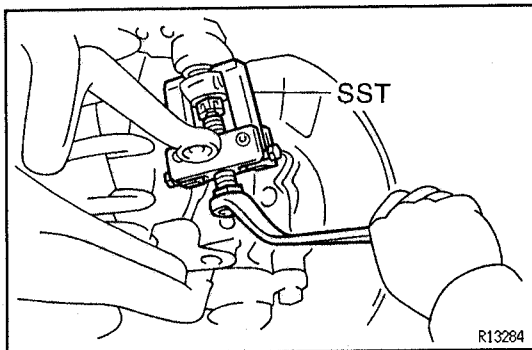
If it is greater than the maximum, replace the axle hub bearing.

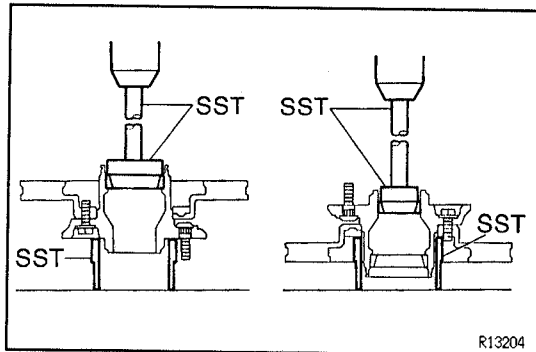
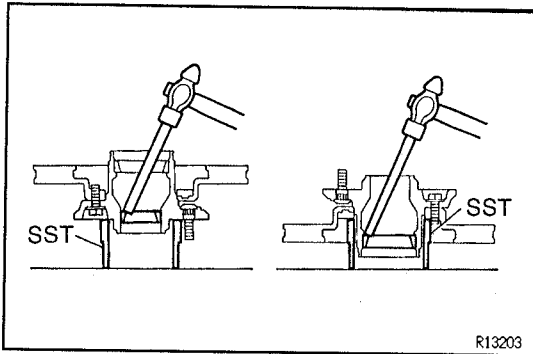


5. REMOVE AXLE HUB WITH DISC
 - (a) Remove the cotter pin and lock cap.
 - (b) Using a 30 mm socket, remove the nut.
 - (c) Remove the axle hub with the disc from the steering knuckle.
NOTICE: Be careful not to drop the outer bearing.
6. REMOVE OIL SEAL AND INNER BEARING
 - (a) Using a screwdriver, pry out the oil seal.
NOTICE: Be careful not to damage the ABS speed sensor rotor.



- (b) Remove the inner bearing from the hub.
7. REMOVE DUST COVER
Remove the 4 bolts and dust cover.
8. REMOVE STABILIZER BAR LINK
(See page SA-73)
9. REMOVE STEERING KNUCKLE
 - (a) Support the lower suspension arm with a jack.
 - (b) Loosen the 2 lower ball joint set bolts.
 - (c) Remove the cotter pin and loosen the nut.
 - (d) Using SST, disconnect the steering knuckle from the upper ball joint.
SST 09628-62011
 - (e) Remove the 2 lower ball joint set bolts.
 - (f) Remove the nut and steering knuckle.
NOTICE: Do not remove the jack.





FRONT AXLE HUB BEARING INSPECTION AND REPAIR

1. CHECK HUB BEARINGS

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

2. REMOVE BEARING OUTER RACES

Using SST, a brass bar and a hammer, remove the bearing outer races.

SST 09527-17011

NOTICE: Be careful not to damage the ABS speed sensor rotor.

3. INSTALL NEW BEARING OUTER RACES

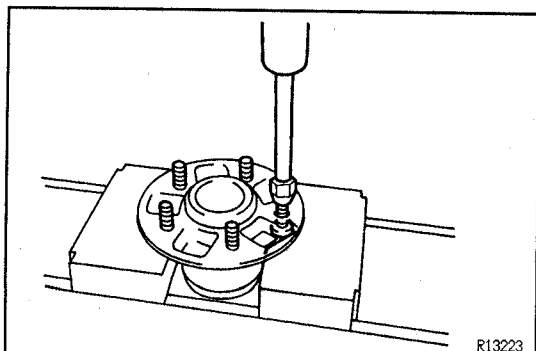
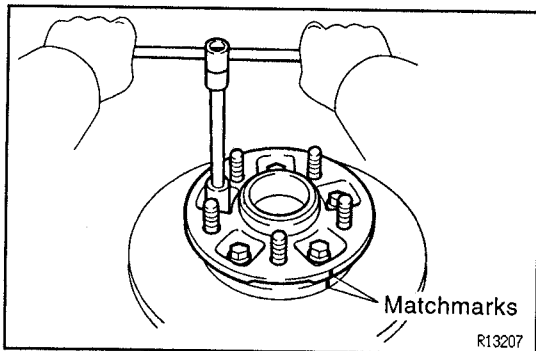
- (a) Using SST and a press, install a new inside bearing race.

SST 09527-17011, 09950-60010 (09951-00640),
09950-70010 (09951-07150)

- (b) Using SST and a press, install a new outside bearing race.

SST 09527-17011, 09950-60010 (09951-00490),
09950-70010 (09951-07150)

NOTICE: Be careful not to damage the ABS speed sensor rotor.



HUB BOLT REPLACEMENT

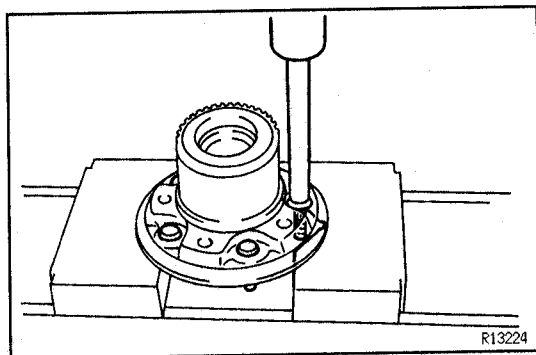
1. REMOVE HUB BOLT

- (a) Place matchmarks on the disc and axle hub.

- (b) Remove the 5 bolts and separate the disc and axle hub.

- (c) Install the nut to the hub bolt.

- (d) Using a brass bar and a press, remove the hub bolt.



2. INSTALL HUB BOLT

- Using a brass bar and a press, install the hub bolt.
- Align the matchmarks and install the axle hub to the disc with the 5 bolts.

Torque: 64 N·m (650 kgf·cm, 47 ft·lbf)

FRONT AXLE HUB AND STEERING KNUCKLE INSTALLATION

SA270-01

1. INSTALL STEERING KNUCKLE

- Support the lower suspension arm with a jack.
- Place the steering knuckle to the lower ball joint and temporarily install the 2 bolts.
- Push down the upper suspension arm and connect the upper ball joint to the steering knuckle and install the nut.

Torque: 110 N·m (1,100 kgf·cm, 80 ft·lbf)

- Install a new cotter pin.

- Torque the 2 lower ball joint bolts.

Torque: 160 N·m (1,600 kgf·cm, 116 ft·lbf)

2. INSTALL DUST COVER

Install the dust cover with the 4 bolts.

Torque: 8.3 N·m (85 kgf·cm, 74 in·lbf)

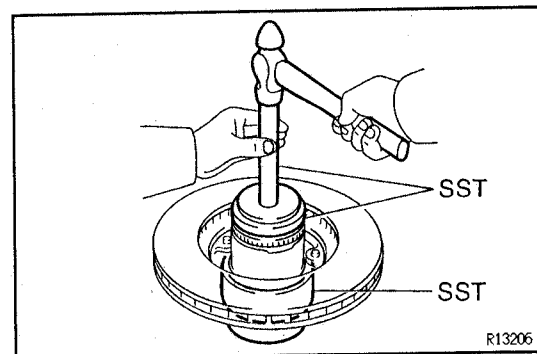
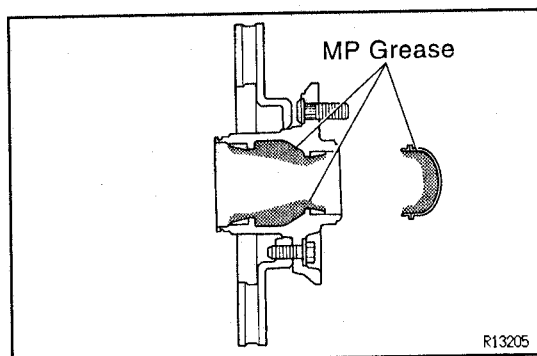
3. INSTALL STABILIZER BAR LINK

(See page SA-73)

4. PACK BEARINGS WITH MP GREASE

- Place MP grease in the palm of your hand.
- Pack grease into the bearing, continuing until the grease oozes out from the other side.
- Do the same around the bearing circumference.

5. COAT INSIDE OF HUB AND CAP WITH MP GREASE



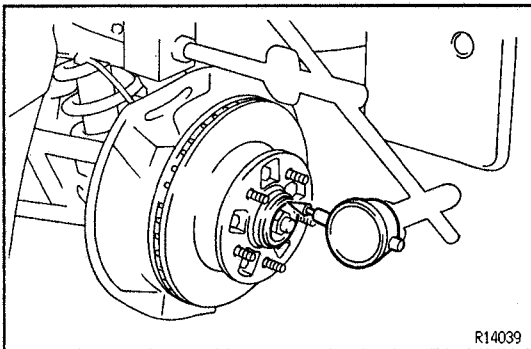
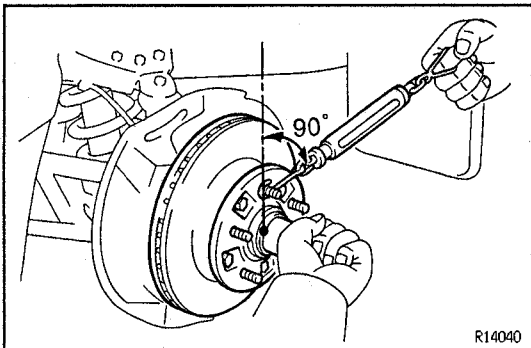
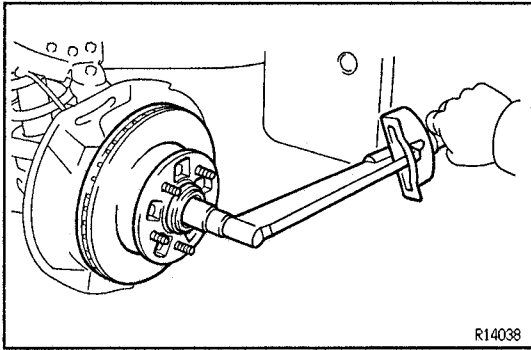
6. INSTALL INNER BEARING AND OIL SEAL

- Place inner bearing into the hub.
- Using SST and a hammer, install a new oil seal into the hub.

SST 09527-17011, 09950-60020 (09951-00710),
09950-70010 (09951-07150)

NOTICE: Be careful not to damage the ABS speed sensor rotor.

- Coat the oil seal lip with MP grease.

**7. INSTALL AXLE HUB WITH DISC**

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

8. ADJUST PRELOAD

- (a) Install and torque the nut.
Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)
- (b) Make the bearing smooth by turning the hub several times.
- (c) Loosen the nut until it can be turned by hand.

- (d) Using a spring tension gauge, measure and make a note of the frictional force of the oil seal.
HINT: Make sure to check preload in the direction of rotation.

- (e) Tighten the nut until the preload is within the specification.

Preload (at starting) :

Frictional force plus

6–18 N (0.6–1.8 kgf, 1.3–4.0 lbf)

HINT: Make sure to check preload in the direction of rotation.

- (f) Measure the hub axial play.

Axial play:

0.05 mm (0.0020 in.) or less

9. INSTALL LOCK CAP, COTTER PIN AND GREASE CAP

- (a) Install the lock cap and a new cotter pin.
- (b) Install the grease cap.

10. INSTALL BRAKE CALIPER

Install the 2 brake caliper set bolts.

Torque: 108 N·m (1,100 kgf·cm, 80 ft·lbf)

11. w/ ABS:

CONNECT ABS SPEED SENSOR AND WIRE HARNESS CLAMP TO STEERING KNUCKLE

Torque: 8 N·m (82 kgf·cm, 71 in·lbf)

12. INSTALL FRONT WHEEL

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

13. CHECK FRONT WHEEL ALIGNMENT

(See page SA-3)

14. w/ ABS:

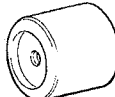
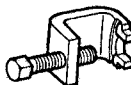
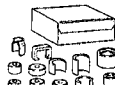
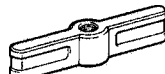
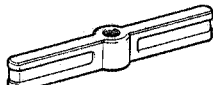
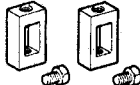
CHECK ABS SPEED SENSOR SIGNAL

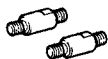
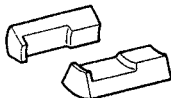
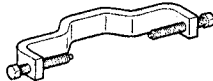
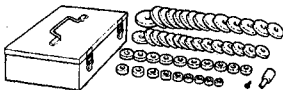
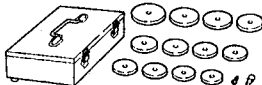
(See page BR-51)

FRONT AXLE (4WD)

PREPARATION SST (SPECIAL SERVICE TOOLS)

SA096-04

	09223-15030 Oil Seal & Bearing Replacer	Oil seal (outside) installation
	09318-12010 Transfer Bearing Adjusting Nut Wrench	w/ Free wheel hub: Hub lock nut
	09527-17011 Rear Axle Shaft Bearing Remover	Hub bearing installation Oil seals installation
	09649-17010 Steering Knuckle Tool	Axle hub installation
	09650-17011 Hub Bolt Remover	Hub bolt replacement
	09710-30021 Suspension Bushing Tool Set	Axle hub removal
	(09710-03051) Bushing Replacer	
	09950-40010 Puller B Set	Upper ball joint disconnection Axle hub removal
	(09951-04010) Hanger 150	Upper ball joint disconnection
	(09951-04020) Hanger 200	Axle hub removal
	(09952-04010) Slide Arm	
	(09953-04020) Center Bolt 150	

	(09954-04010) Arm 25	
	(09955-04030) Claw No.3	
	(09957-04010) Attachment	Axle hub removal
	(09958-04010) Holder	
	09950-60010 Replacer Set	w/o Free wheel hub: Bearing spacer installation
	(09951-00650) Replacer 65	
	09950-60020 Replacer Set No.2	
	(09951-00810) Replacer 81	Hub bearing removal
	(09951-00910) Replacer 91	Hub bearing installation
	09950-70010 Handle Set	Hub bearing removal and installation w/o Free wheel hub: Bearing spacer installation
	(09951-07150) Handle 150	

RECOMMENDED TOOLS

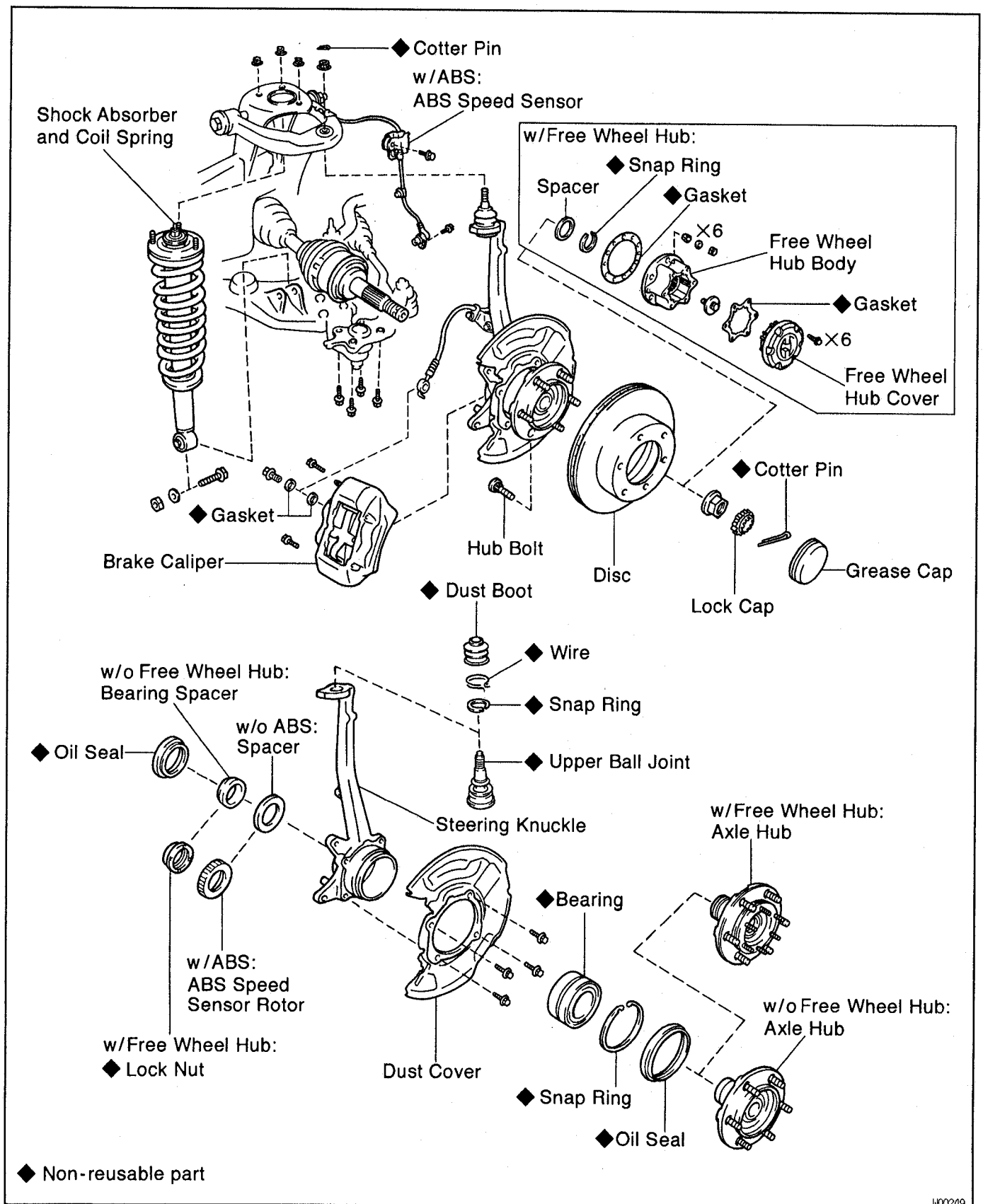
	09905-00012 Snap Ring No.1 Expander .	
	09905-00013 Snap Ring Pliers .	

EQUIPMENT

Torque wrench	
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FRONT AXLE HUB COMPONENTS

BA09S-04



SA

STEERING KNUCKLE WITH AXLE HUB REMOVAL

1. REMOVE FRONT WHEEL

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

2. REMOVE SHOCK ABSORBER

(See page SA-77)

3. DISCONNECT DRIVE SHAFT

w/o Free wheel hub:

- Using a screwdriver, remove the grease cap.
- Remove the cotter pin and lock cap.
- While apply the brakes, remove the lock nut.

Torque: 235 N·m (2,400 kgf·cm, 174 ft·lbf)

w/ Free wheel hub:

- Remove the free wheel hub.
(See page SA-26)
- Using a snap ring expander, remove the snap ring.
- Remove the spacer.

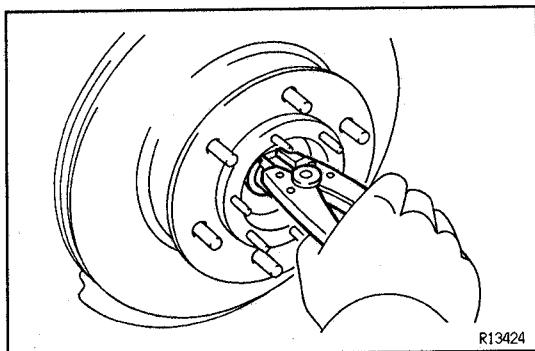
4. w/ABS:

REMOVE ABS SPEED SENSOR AND WIRE HARNESS CLAMP FROM STEERING KNUCKLE

Torque: 8 N·m (82 kgf·cm, 71 in·lbf)

5. REMOVE FRONT BRAKE CALIPER AND DISC

(See page BR-17)

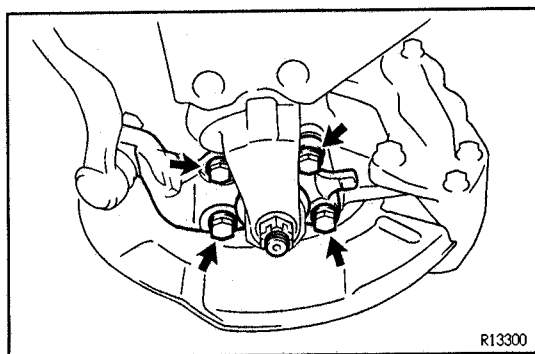


R13424

6. DISCONNECT LOWER BALL JOINT

Remove the 4 bolts and disconnect the lower ball joint.

Torque: 80 N·m (820 kgf·cm, 59 ft·lbf)



R13300

7. REMOVE STEERING KNUCKLE

- Remove the cotter pin and loosen the nut.

Torque: 105 N·m (1,100 kgf·cm, 80 ft·lbf)

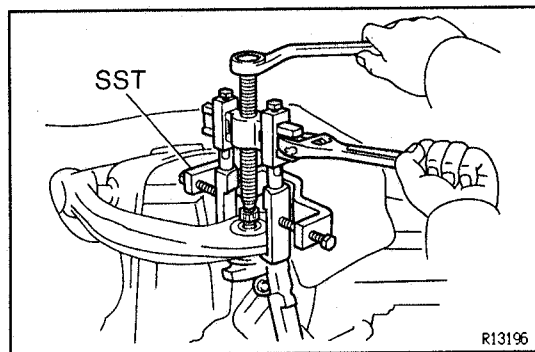
- Using SST, disconnect the steering knuckle.

SST 09950-40010 (09951-04010, 09952-04010, 09553-04020, 09554-04010, 09955-04030, 09958-04010)

- Remove the nut and steering knuckle.

NOTICE: Be careful not to damage the oil seal and drive shaft boot.

REMOVAL HINT: When it is difficult to disconnect the drive shaft, tap the drive shaft with a plastic hammer.



R13196

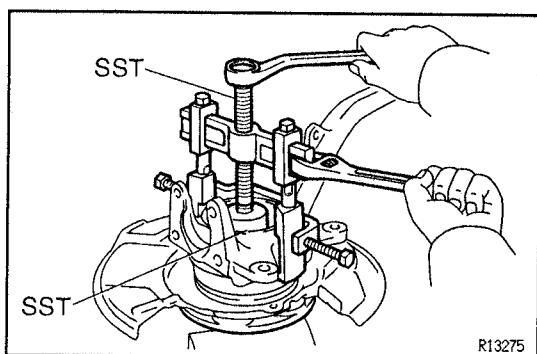
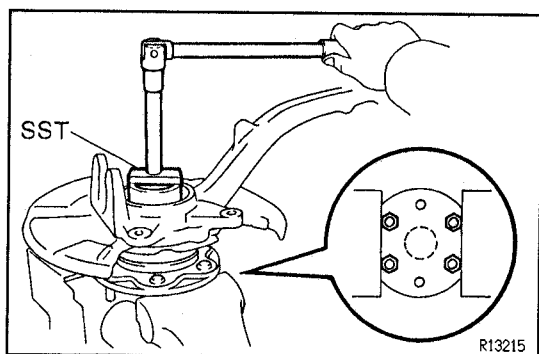
FRONT AXLE HUB DISASSEMBLY

1. REMOVE OIL SEAL (INSIDE)

- (a) Clamp the axle hub in a soft jaw vise.

HINT: Close vise until it holds hub bolts. Do not tighten further.

- (b) Using a screwdriver, remove the oil seal (inside).



2. w/ Free wheel hub:

REMOVE LOCK NUT AND ABS SPEED SENSOR ROTOR/SPACER

- (a) Using a hammer and a chisel, loosen the staked part of the lock nut.

NOTICE: Be careful not to damage the bushing.

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

SST 09318-12010

- (c) Remove the ABS speed sensor rotor/spacer.

NOTICE: Take care not to scratch the serration of the speed sensor rotor.

3. REMOVE AXLE HUB FROM STEERING KNUCKLE

- (a) Remove the 4 bolts and shift the brake dust cover towards the hub side (outside).

- (b) Using SST, remove the axle hub from the steering knuckle.

SST 09710-30020 (09710-03050),

09950-40010 (09951-04020, 09952-04010,

09953-04020, 09954-04010, 09955-04030,

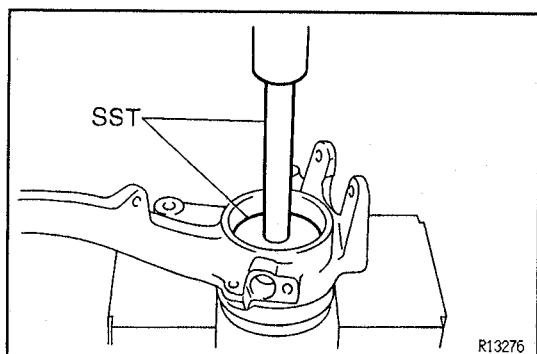
09957-04010, 09958-04010)

- (c) w/o Free wheel hub:

Remove the bearing spacer and ABS speed sensor rotor/spacer.

4. REMOVE OIL SEAL (OUTSIDE)

Using a screwdriver, remove the oil seal (outside) from the steering knuckle.



5. REMOVE BEARING FROM STEERING KNUCKLE

- (a) Using snap ring pliers, remove the snap ring.

- (b) Using SST and a press, remove the bearing from the steering knuckle.

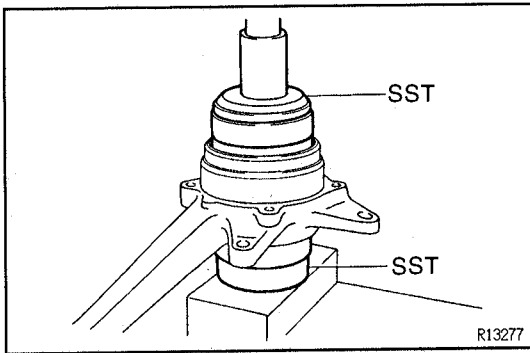
SST 09950-60020 (09951-00810),

09950-70010 (09951-07150)

FRONT AXLE HUB ASSEMBLY

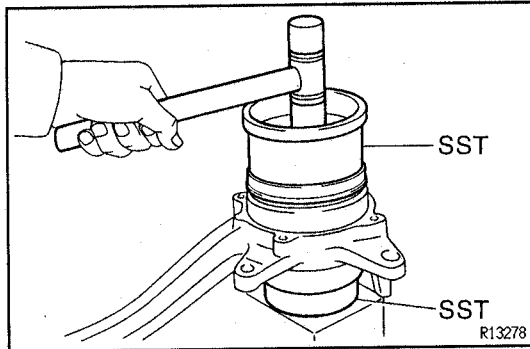
1. INSTALL NEW BEARING

- (a) Using SST and a press, install a new bearing to the steering knuckle.
SST 09527-17011, 09950-60020 (09951-00910)
- (b) Using snap ring pliers, install the snap ring.



2. INSTALL NEW OIL SEAL (OUTSIDE)

- (a) Using SST and a plastic hammer, install a new oil seal (outside).
SST 09223-15030, 09527-17011
- (b) Coat MP grease to the oil seal lip.



3. INSTALL AXLE HUB TO STEERING KNUCKLE

- (a) Install the brake dust cover to the steering knuckle with the 4 bolts.

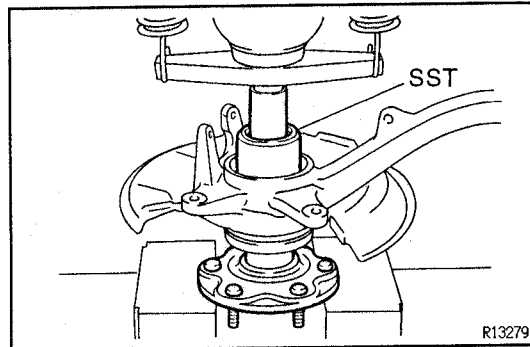
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

- (b) Using SST and a press, install the axle hub to the steering knuckle.

SST 09649-17010

4. INSTALL ABS SPEED SENSOR ROTOR/SPACER

NOTICE: Do not scratch the serration of the speed sensor rotor.



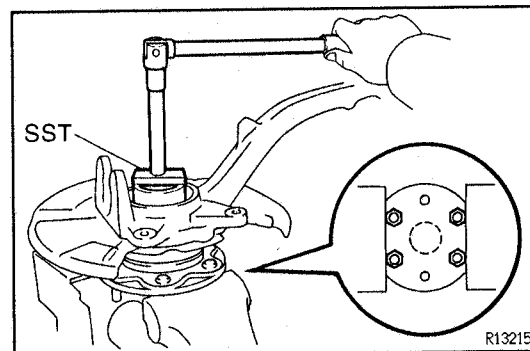
5. w/ Free wheel hub: INSTALL NEW LOCK NUT

- (a) Using SST, install and torque a new nut to the axle hub.

SST 09318-12010

Torque: 274 N·m (2,800 kgf·cm, 203 ft·lbf)

- (b) Using a chisel and hammer, stake the nut.

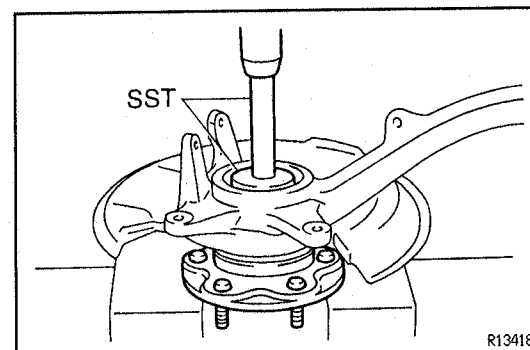


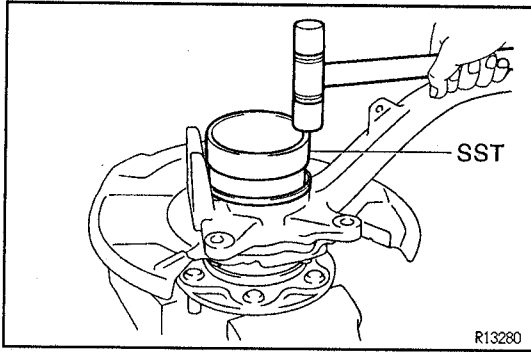
6. w/o Free wheel hub: INSTALL BEARING SPACER

Using SST and a press, install the bearing spacer.

SST 09950-60010 (09951-00650),

09950-70010 (09951-07150)





7. INSTALL NEW OIL SEAL (INSIDE)

- (a) Using SST and a plastic hammer, install a new oil seal (inside).

SST 09527-17011

HINT: Strike the SST on its circumference evenly.

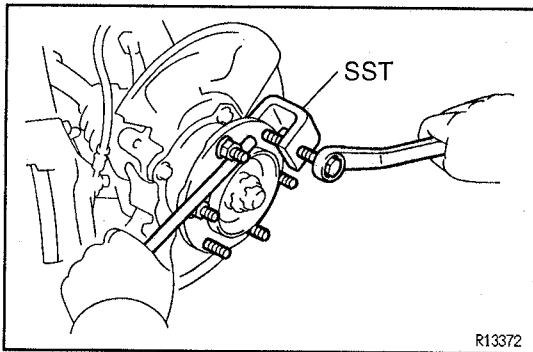
- (b) Coat MP grease to the oil seal lip.

STEERING KNUCKLE WITH AXLE HUB INSTALLATION

SA27J-01

Installation is in the reverse order of removal.

HINT: After installation, bleed brake system, check ABS speed sensor signal and front wheel alignment.
(See page BR-5, 51 and SA-8)

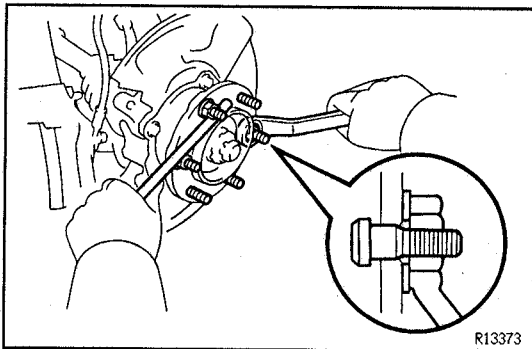


HUB BOLT REPLACEMENT

SA18M-03

1. REMOVE FRONT WHEEL
2. REMOVE BRAKE CALIPER AND DISC
(See page BR-17)
3. REMOVE HUB BOLT

Using SST, remove hub bolt.
SST 09650-17011



4. INSTALL HUB BOLT

Install a washer and nut to the hub bolt as shown in the illustration, and install the hub bolt with torquing the nut.

5. INSTALL BRAKE DISC AND CALIPER
(See page BR-17)

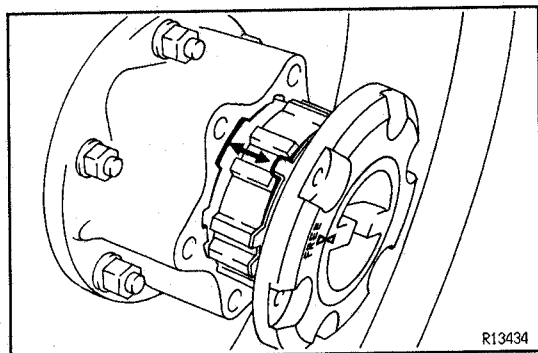
6. INSTALL FRONT WHEEL

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

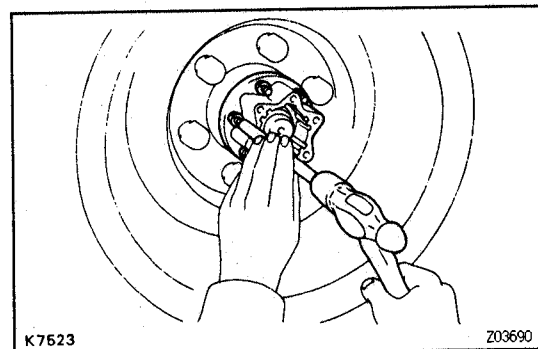
FREE WHEEL HUB COMPONENTS

(See page SA-21)

SA27K-01



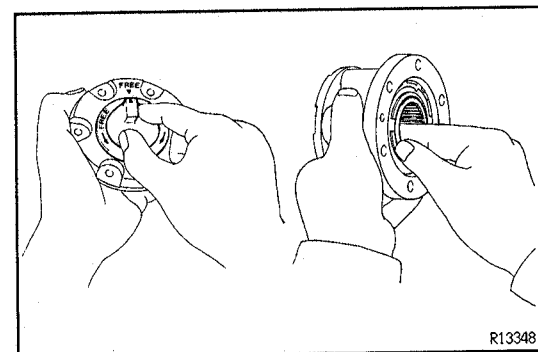
R13434



K7523

Z03690

SA



R13348

FREE WHEEL HUB REMOVAL

SA1WQ-02

1. REMOVE FREE WHEEL HUB COVER

- (a) Set the control handle to FREE.
- (b) Remove the 6 cover mounting bolts and pull off the cover.

Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)

INSTALLATION HINT: Before install the hub cover, apply MP grease to the clutch splines.

- (c) Remove the gasket.

2. REMOVE BOLT WITH WASHER

Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

3. REMOVE FREE WHEEL HUB BODY

- (a) Remove the 6 mounting nuts and washers.
Torque: 31 N·m (315 kgf·cm, 23 ft·lbf)
- (b) Using a brass bar and a hammer, tap on the bolts head and remove the cone washers.
- (c) Pull off the free wheel hub body.
- (d) Remove the gasket.

FREE WHEEL HUB INSPECTION

SAQJZ-05

1. INSPECT COVER, HANDLE AND SEAL

Check the handle moves smoothly.

2. INSPECT INNER HUB

Place the cover in the body and check that the inner hub turns smoothly.

FREE WHEEL HUB INSTALLATION

SA27L-01

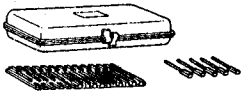
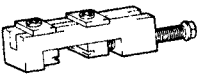
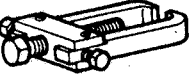
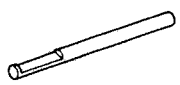
Installation is in the reverse order of removal.

FRONT DRIVE SHAFT

PREPARATION

SST (SPECIAL SERVICE TOOLS)

SA1WR-02

	09240-00020 Wire Gauge Set	Boot clamp clearance adjustment
	09521-24010 Drive Shaft Boot Clamping Tool	Boot clamp installation
	09628-62011 Ball Joint Puller	Lower ball joint removal
	09631-10030 Oil Seal Remover	Drive shaft installation

RECOMMENDED TOOLS

SA02F-0C

	09905-00012 Snap Ring No.1 Expander .	
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EQUIPMENT

SA02G-0M

Torque wrench	
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LUBRICANT

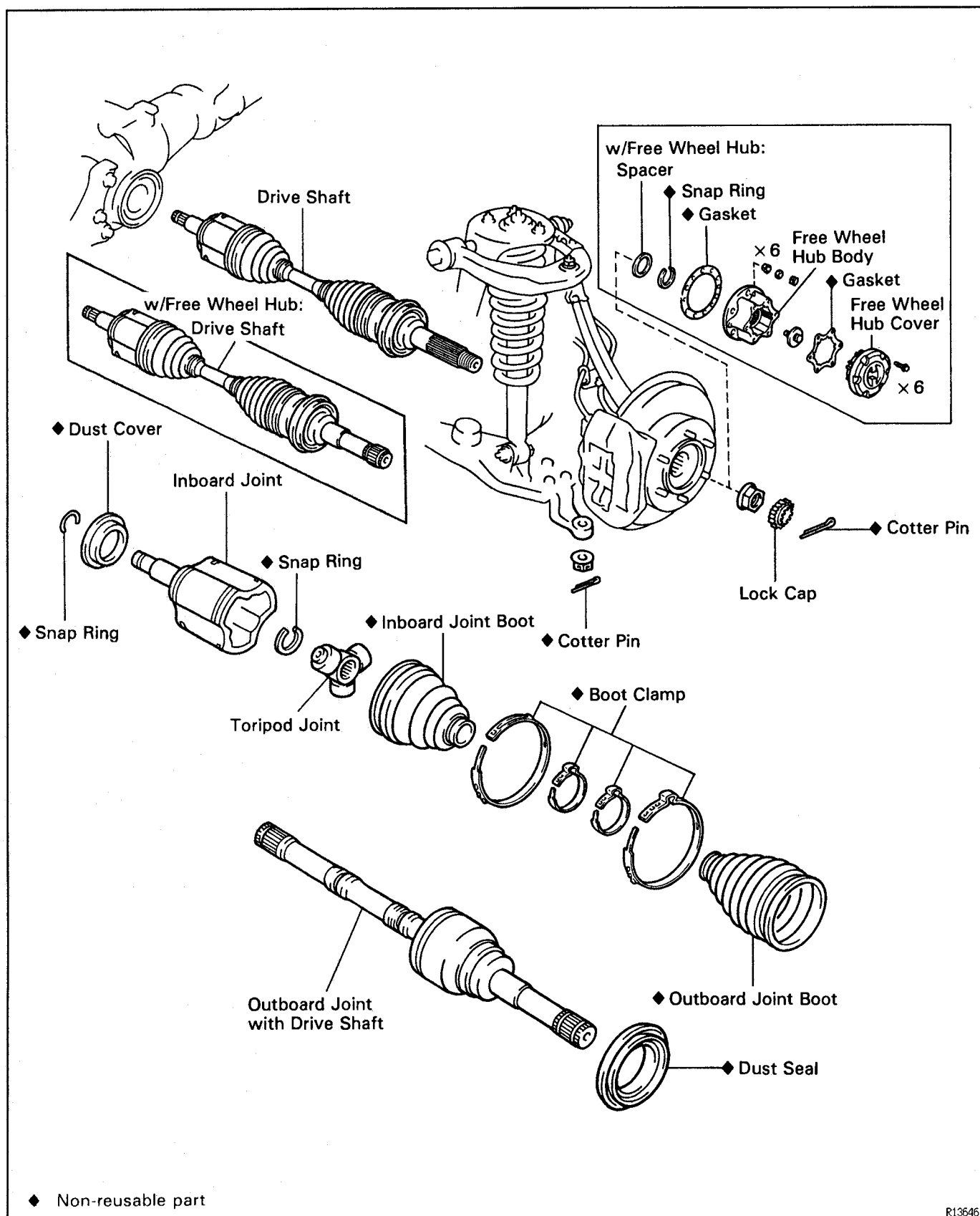
SA02H-0U

Item	Capacity	Classification
Outboard joint grease	215-235 g (7.58-8.29 oz.)	
Inboard joint grease	230-250 g (8.11-8.82 oz.)	

SA

FRONT DRIVE SHAFT COMPONENTS

BA0K3-06



FRONT DRIVE SHAFT REMOVAL

1. REMOVE FRONT WHEEL

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

2. DRAIN DIFFERENTIAL OIL

3. w/o FREE WHEEL HUB:

REMOVE DRIVE SHAFT LOCK NUT

- Using a screwdriver, remove the grease cap.
- Remove the cotter pin and lock cap.
- While apply the brakes, remove the lock nut.

Torque: 235 N·m (2,400 kgf·cm, 174 ft·lbf)

4. w/ FREE WHEEL HUB:

REMOVE FREE WHEEL HUB

- Remove the free wheel hub.
(See page SA-26)
- Using a snap ring expander, remove the snap ring.
- Remove the spacer.

5. DISCONNECT DRIVE SHAFT

Using a brass bar and hammer, disconnect the drive shaft.

REMOVAL HINT: When it is difficult to disconnect the drive shaft, tap in a screwdriver between differential tube/differential carrier and drive shaft.

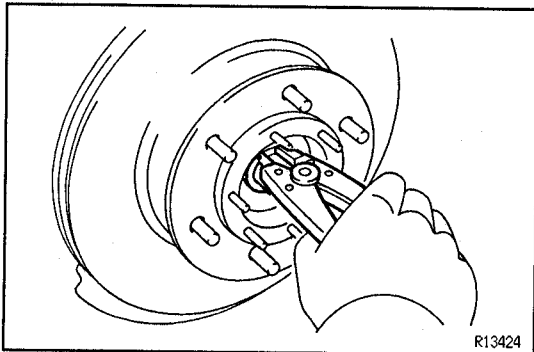
INSTALLATION HINT:

- Before installation, set the snap ring opening side facing downward.
- Using SST and a hammer, strike the inboard joint into the differential. At that time, strike the snags evenly to avoid snags deformation.

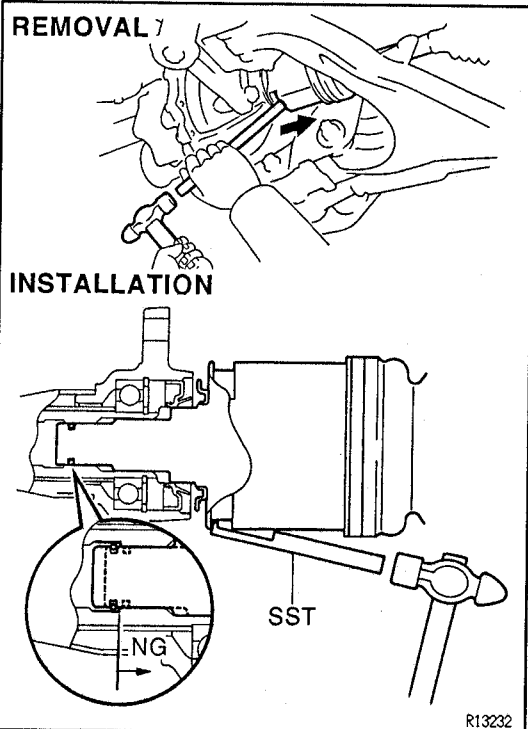
SST 09631-10030

- After installation, check that the drive shaft cannot be pull out by hand.

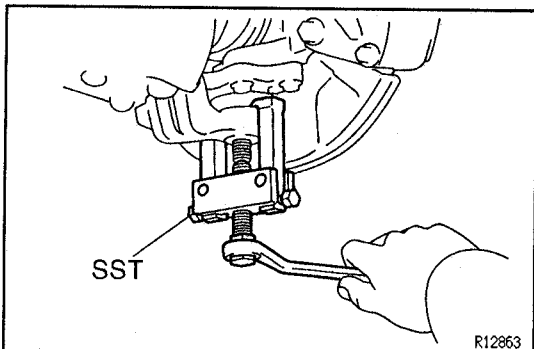
NOTICE: Be careful not to damage the dust cover of the drive shaft.



R13424



R13232



R12863

6. DISCONNECT LOWER SUSPENSION ARM

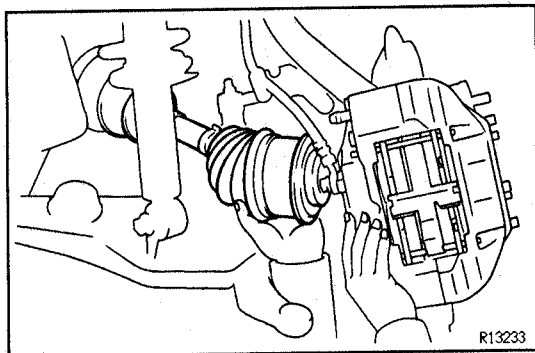
- Remove the cotter pin and nut.

Torque: 152 N·m (1,550 kgf·cm, 112 ft·lbf)

- Using SST, disconnect the lower suspension arm.

SST 09628-62011

INSTALLATION HINT: Face the cotter pin hole of the lower ball joint forward.



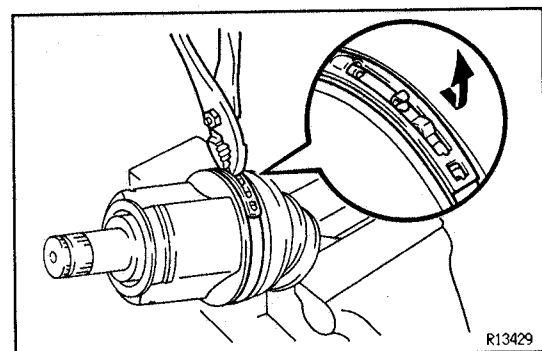
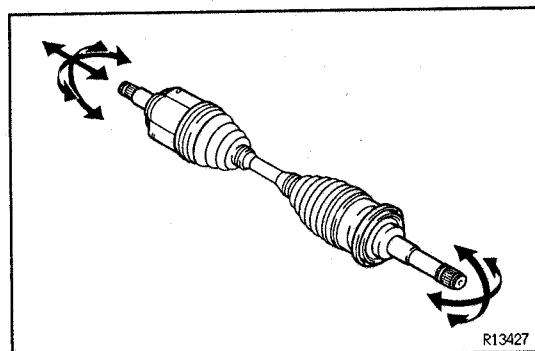
7. REMOVE DRIVE SHAFT

Push the steering knuckle outward and remove the drive shaft.

REMOVAL HINT: When it is difficult to disconnect the drive shaft, tap the drive shaft with a plastic hammer.

NOTICE: Be careful not to damage the oil seal, boots and dust seal.

8. REMOVE SNAP RING FROM INBOARD SHAFT



FRONT DRIVE SHAFT DISASSEMBLY

1. CHECK DRIVE SHAFT

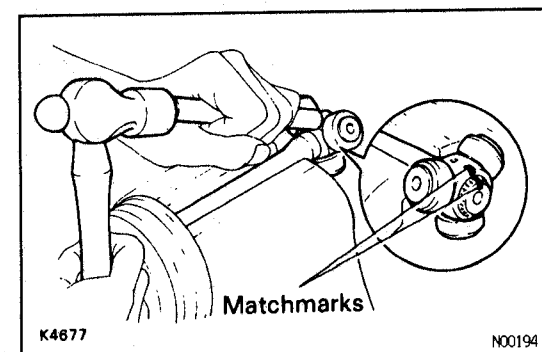
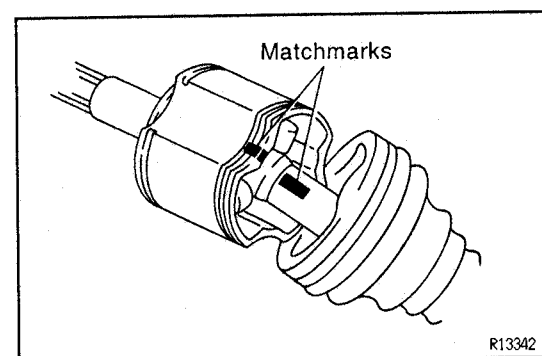
- Check to see that there is no play in the inboard and outboard joints.
- Check to see that the inboard joint slides smoothly in the thrust direction.
- Check to see that there is no significant play in the radial direction of the inboard joint.
- Check the boot for damage.

2. REMOVE INBOARD JOINT BOOT CLAMPS

- Using pliers, draw hooks together and remove the large clamp.
- Using a side cutter, cut the small boot clamp.
- Slide the inboard joint boot toward the outboard joint.

3. REMOVE INBOARD JOINT TULIP

- Place matchmarks on the inboard joint and drive shaft.
- Remove the inboard joint tulip from the drive shaft.



4. REMOVE TRIPOD JOINT FROM DRIVE SHAFT

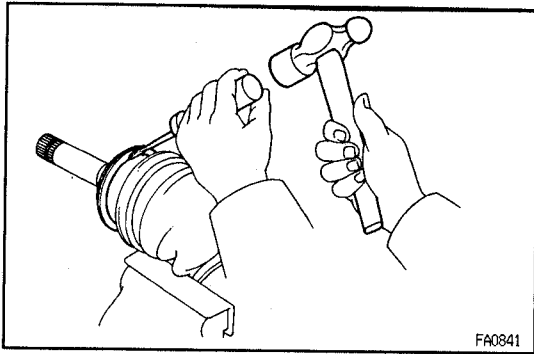
- Using a snap ring expander, remove the snap ring.
- Place matchmarks on the shaft and tripod.
- Using a brass bar and hammer, remove the tripod joint.

NOTICE: Do not tap the roller.

5. REMOVE INBOARD AND OUTBOARD JOINT BOOTS

- Remove the inboard joint boot from the drive shaft.
- Using a side cutter, cut the outboard boot clamps.
- Remove the outboard joint boot from the drive shaft.

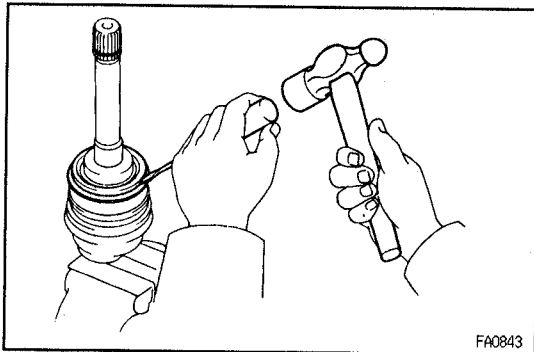
NOTICE: Do not disassemble the outboard joint.

**6. REMOVE DUST COVER**

Using a screwdriver, remove the dust cover from the inboard joint tulip.

7. REMOVE DUST SEAL

Using a screwdriver and hammer, remove the dust seal from the drive shaft.

**FRONT DRIVE SHAFT ASSEMBLY**

SA27M-01

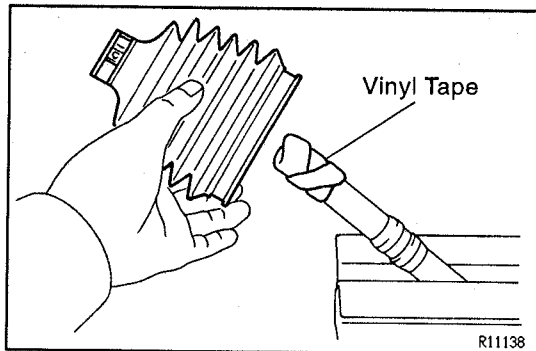
1. INSTALL DUST COVER

Using a screwdriver and hammer, install a new dust cover.

2. INSTALL DUST SEAL

Using a screwdriver and hammer, install a new dust seal.

SST 09613-26010

**3. TEMPORARILY INSTALL NEW BOOTS TO DRIVE SHAFT****HINT:**

- Before installing the boots, wrap vinyl tape around the spline of the shaft to prevent damaging the boot.
- Place new clamps to boot's small ends and install its to the drive shaft.

4. ASSEMBLE TRIPOD JOINT

- Place the beveled side of the tripod axial spline toward the outboard joint.
- Align the matchmarks placed before disassembly.
- Using a brass bar and a hammer, install the tripod joint onto the drive shaft.

NOTICE: Do not tap the roller.

- Using a snap ring expander, install a new snap ring.

5. ASSEMBLE BOOT TO OUTBOARD JOINT

Before assembling the boot, pack in grease.

HINT: Use the grease supplied in the boot kit.

Grease capacity:

215-235 g (7.58-8.29 oz.)

6. ASSEMBLE BOOT AND INBOARD JOINT TULIP

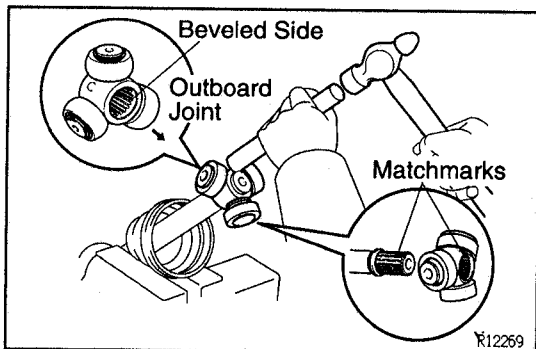
- Pack the inboard joint and boot with grease.

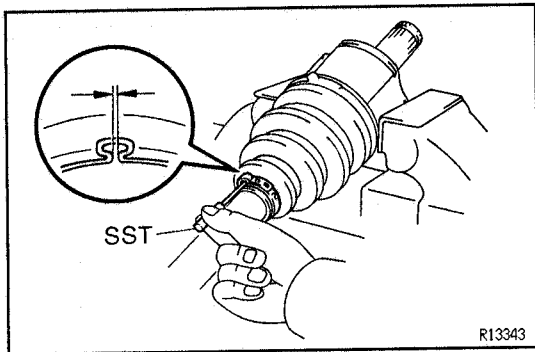
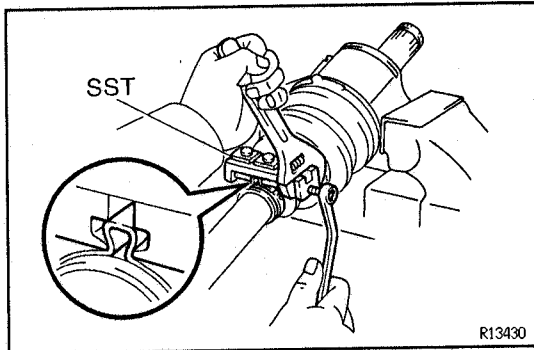
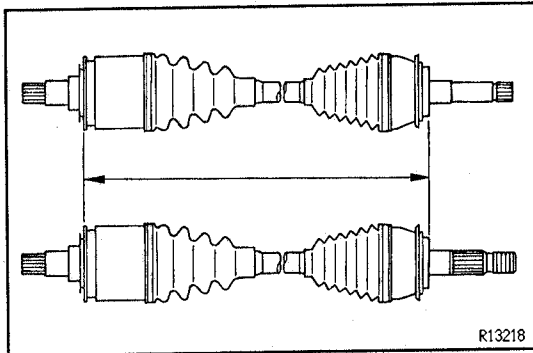
HINT: Use the grease supplied in the boot kit.

Grease capacity:

230-250 g (8.11-8.82 oz.)

- Align the matchmarks placed before assembly.
- Install the inboard joint tulip to the drive shaft.
- Temporarily install the boot to the inboard joint tulip.





7. ASSEMBLE NEW BOOT CLAMPS TO BOTH BOOTS

- (a) Ensure that the boots are in the shaft groove.
- (b) Ensure that the boots are not stretched or contracted when the drive shaft is at standard length.

Drive shaft standard length:

436.2 ± 2.0 mm (17.173 ± 0.079 in.)

- (c) Place a new inboard joint large boot clamp.
- (d) Holding the clamp near the closing hooks, position the holes in the clamp's free end over the closing hooks with pliers.
- (e) Secure clamps by drawing the closing hooks together.
- (f) To assemble the other boot clamps, pinch the clamps and adjust clearance with SST.

NOTICE: Do not overtighten the SST.

SST 09521-24010

Clearance:

1.0–1.5 mm (0.039–0.059 in.)

- (g) Measure the clearance of the boot clamps with SST.
- SST 09240-00020

8. CHECK DRIVE SHAFT

(See page SA-30)

FRONT DRIVE SHAFT INSTALLATION

SA27N-01

Installation is in the reverse order of removal.

HINT: After installation, fill differential with gear oil.

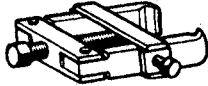
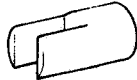
(See page SA-40)

FRONT DIFFERENTIAL

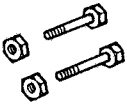
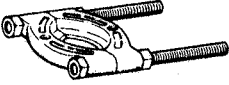
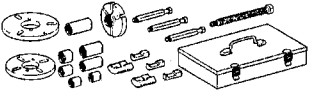
PREPARATION

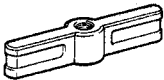
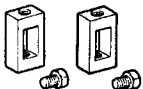
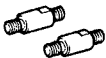
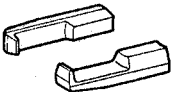
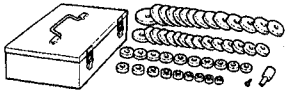
SST (SPECIAL SERVICE TOOLS)

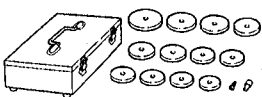
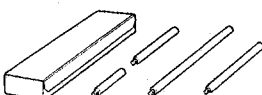
SA08N-06

	09223-15020 Oil Seal & Bearing Replacer	Side gear shaft tube oil seal installation
	09226-10010 Crankshaft Front & Rear Bearing Replacer	Side bearing installation
	09308-00010 Oil Seal Puller	Side gear shaft tube oil seal Side oil seal
	09308-10010 Oil Seal Puller	Rear oil seal removal
	09309-37010 Transmission Bearing Replacer	Side gear shaft bearing installation
	09330-00021 Companion Flange Holding Tool	Companion flange removal Rear bearing installation
	09350-20015 TOYOTA Automatic Transmission Tool Set	Intermediate shaft removal
	09502-12010 Differential Bearing Replacer	Rear bearing outer race removal
	09506-30012 Differential Drive Pinion Rear Bearing Cone Replacer	Rear bearing installation
	09554-22010 Differential Oil Seal Replacer	Rear oil seal installation
	09556-22010 Drive Pinion Front Bearing Remover	Rear bearing removal
	09564-32011 Differential Preload Adaptor	Ring gear backlash inspection

SA

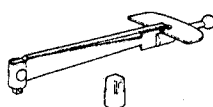
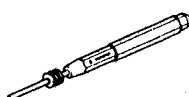
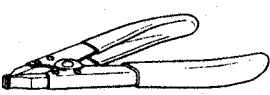
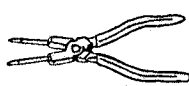
	09570-22011	Differential Mounting Cushion Remover & Replacer	Drive pinion bearing race installation
	09608-32010	Steering Knuckle Oil Seal Replacer	Side oil seal installation
	09612-65014	Steering Worm Bearing Puller	Rear bearing outer race removal
	(09612-01020)	Claw "B"	
	(09612-01050)	Hanger Pin with Nut	
	09636-20010	Upper Ball Joint Dust Cover Replacer	Dust deflector installation
	09950-00020	Bearing Remover	Front bearing removal Dust deflector installation
	09950-30010	Puller A Set	Companion flange removal Front bearing installation
	(09951-03010)	Upper Plate	
	(09953-03010)	Center Bolt	
	(09954-03010)	Arm	
	(09955-03030)	Lower Plate 130	
	(09956-03020)	Adapter 18	
	09950-40010	Puller B Set	Side bearing removal Intermediate shaft removal

	(09951-04010) Hanger 150	
	(09952-04010) Slide Arm	
	(09953-04020) Center Bolt 150	
	(09954-04010) Arm 25	
	(09955-04010) Claw No.1	Intermediate shaft removal
	(09955-04060) Claw No.6	Side bearing removal
	(09957-04010) Attachment	
	(09958-04010) Holder	
	09950-60010 Replacer Set	
	(09951-00380) Replacer 38	Needle bearing installation
	(09951-00480) Replacer 48	Side bearing removal
	(09951-00540) Replacer 54	Side bearing outer race removal (retainer side)
	(09951-00600) Replacer 60	Oil deflector removal
	(09951-00650) Replacer 65	Side bearing outer race removal (carrier side)

	09950-60020 Replacer Set No.2	
	(09951-00710) Replacer 71	Oil deflector installation
	(09951-00790) Replacer 79	Side bearing outer race installation
	09950-70010 Handle Set	
	(09951-07150) Handle 150	

SA08P-07

RECOMMENDED TOOLS

	09025-00010 Torque Wrench (30 kgf-cm) .	
	09031-00030 Pin Punch .	
	09044-00010 Torx Socket E14 .	
	09905-00012 Snap Ring No.1 Expander .	
	09905-00013 Snap Ring Pliers .	

SA08Q-0C

EQUIPMENT

Dial indicator or dial indicator with magnetic base	
Micrometer	
Torque wrench	

SA08R-02

LUBRICANT

Item	Capacity	Classification
Differential oil (w/ A.D.D.)	1.15 liters (1.22 US qts, 1.01 Imp.qts)	Hypoid gear oil API GL-5 75W-90
Differential oil (w/o A.D.D.)	1.10 liters (1.16 US qts, 0.97 Imp.qts)	Hypoid gear oil API GL-5 [Above -18°C (0°F)] SAE 90 [Below -18°C (0°F)] SAE 80W or 80W-90

SA08S-0K

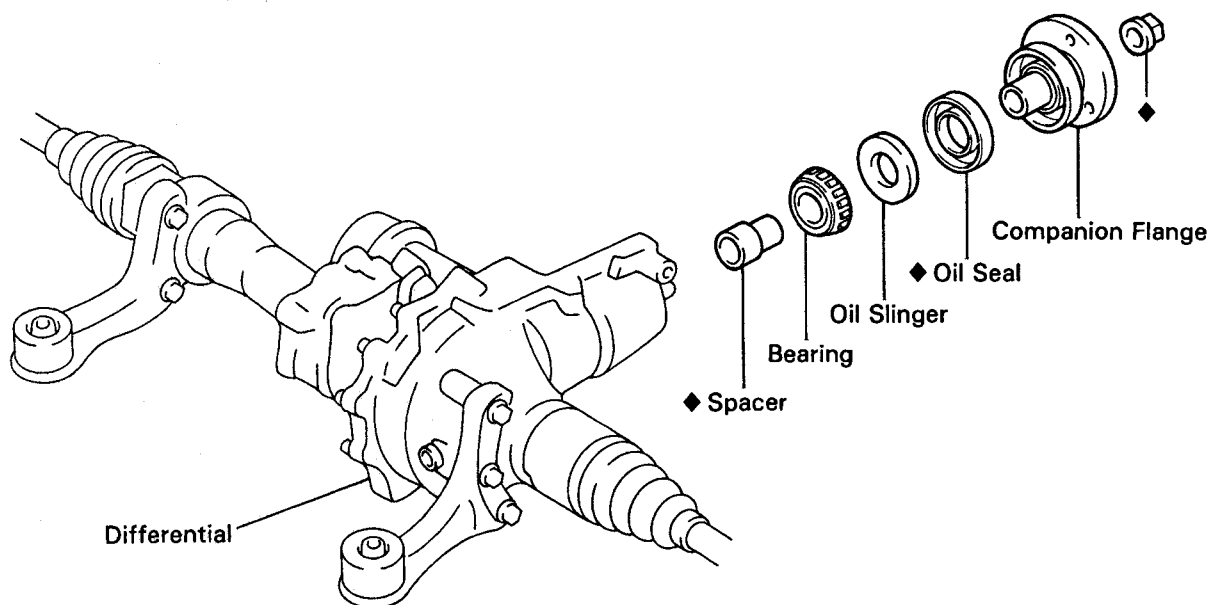
SSM (SPECIAL SERVICE MATERIALS)

08826-00090	Seal Packing 1281, THREE BOND 1281 or equivalent (FIPG)	Differential carrier x Side bearing retainer A.D.D.actuator x Clutch case Clutch case x Differential
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SA

ON-VEHICLE REPAIR COMPONENTS

8A048-08

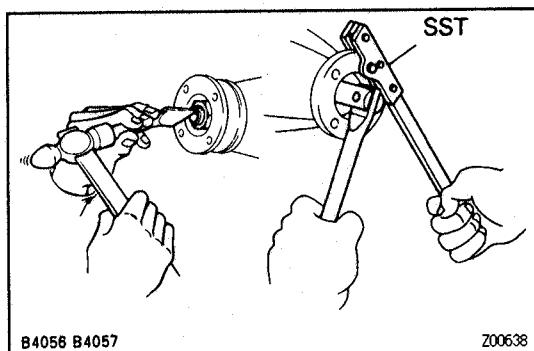


◆ Non-reusable part

R13389

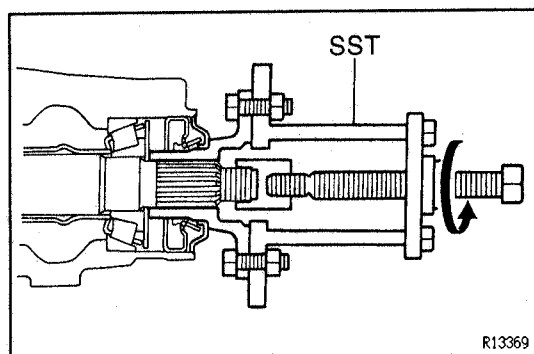
SA

8A1X8-02



B4056 B4057

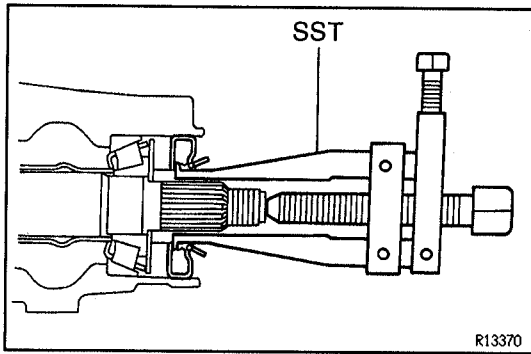
Z00638



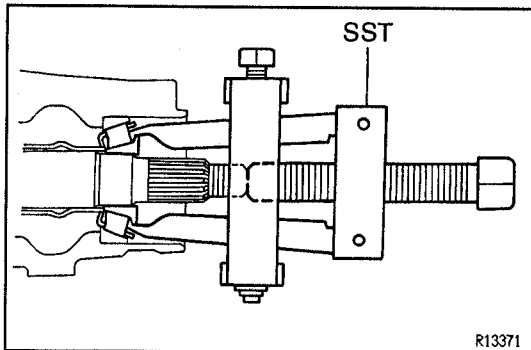
R13369

REAR OIL SEAL REPLACEMENT

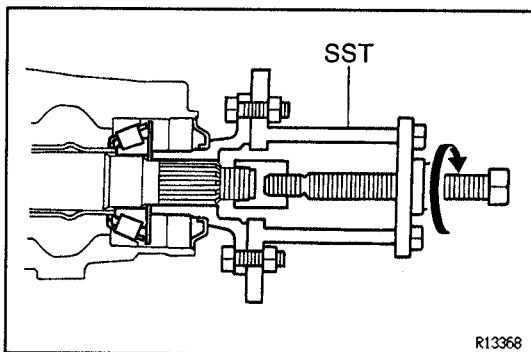
1. REMOVE UNDER COVER AND DRAIN DIFFERENTIAL OIL
2. REMOVE FRONT PROPELLER SHAFT
(See page PR-6)
3. REMOVE COMPANION FLANGE
 - (a) Using a chisel and hammer, unstake the nut.
 - (b) Using SST to hold the flange, remove the nut.
SST 09330-00021
 - (c) Using SST, remove the companion flange.
SST 09950-30010 (09951-03010, 09953-03010,
09954-03010, 09955-03030, 09956-03020)

**4. REMOVE OIL SEAL AND OIL SLINGER**

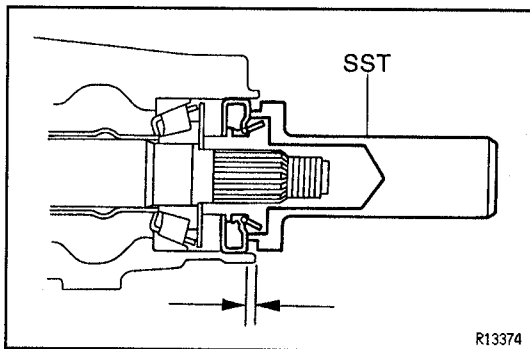
- (a) Using SST, remove the oil seal.
SST 09308-10010
- (b) Remove the oil slinger.

**5. REMOVE REAR BEARING AND BEARING SPACER**

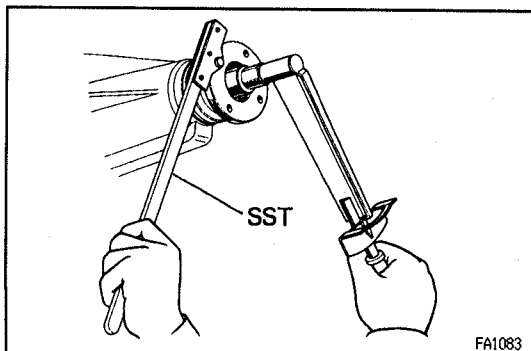
- (a) Using SST, remove the rear bearing from the drive pinion.
SST 09556-22010
- (b) Remove the bearing spacer.

**6. INSTALL BEARING SPACER, REAR BEARING AND OIL SLINGER**

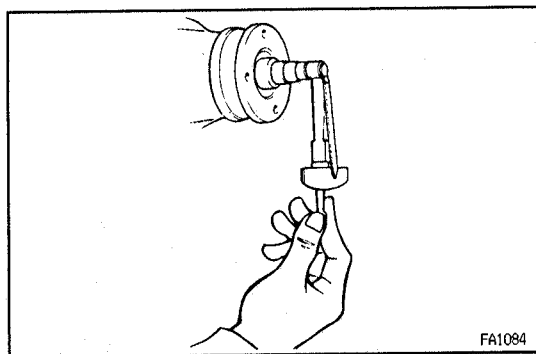
- (a) Install a new bearing spacer and place the rear bearing and oil slinger.
- (b) Using SST and the companion flange, install the rear bearing then remove the companion flange.
SST 09950-30010 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)

**7. INSTALL NEW OIL SEAL**

- (a) Coat a new oil seal lip with MP grease.
- (b) Using SST and a hammer, install the oil seal.
SST 09554-22010
Oil seal drive in depth:
4.5 mm (0.177 in.)

**8. INSTALL COMPANION FLANGE**

- (a) Place the companion flange on the drive pinion.
- (b) Coat the threads of a new nut with hypoid gear oil.
- (c) Using SST to hold the flange, torque the nut.
SST 09330-00021
Torque: 108 N·m (1,100 kgf·cm, 80 ft·lbf)



9. ADJUST DRIVE PINION PRELOAD

Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

Preload (at starting):

0.6–1.0 N·m (6–10 kgf·cm, 5.2–8.7 in·lbf)

If the preload is greater than the specification, replace the bearing spacer.

If the preload is less than the specification, retighten the nut 13 N·m (130 kgf·cm, 9 ft·lbf) a little at a time until the specified preload is reached.

Maximum torque:

223 N·m (2,275 kgf·cm, 165 ft·lbf)

If the maximum torque is exceeded while retightening the nut, replace the bearing spacer and repeat the preload procedure. Do not back off the pinion nut to reduce the preload.

10. STAKE DRIVE PINION NUT

11. INSTALL FRONT PROPELLER SHAFT

(See page PR-14)

12. FILL DIFFERENTIAL WITH GEAR OIL

Torque:

Filler plug 39 N·m (400 kgf·cm, 29 ft·lbf)

Drain plug 65 N·m (660 kgf·cm, 48 ft·lbf)

(w/ A.D.D.)

Oil type:

Hypoid gear oil API GL-5

Recommended oil viscosity:

SAE 75W-90

Capacity:

1.15 liters (1.22 US qts, 1.01 Imp.qts)

(w/o A.D.D.)

Oil type:

Hypoid gear oil API GL-5

Recommended oil viscosity:

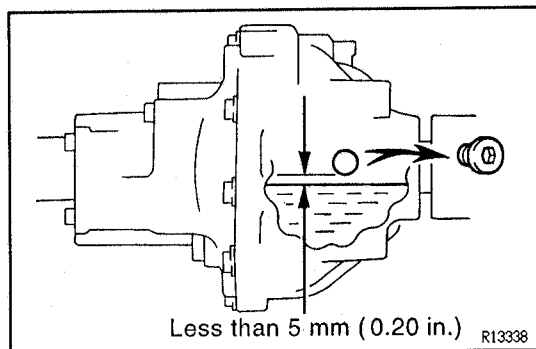
Above -18°C (0°F) SAE 90

Below -18°C (0°F) SAE 80W or 80W-90

Capacity:

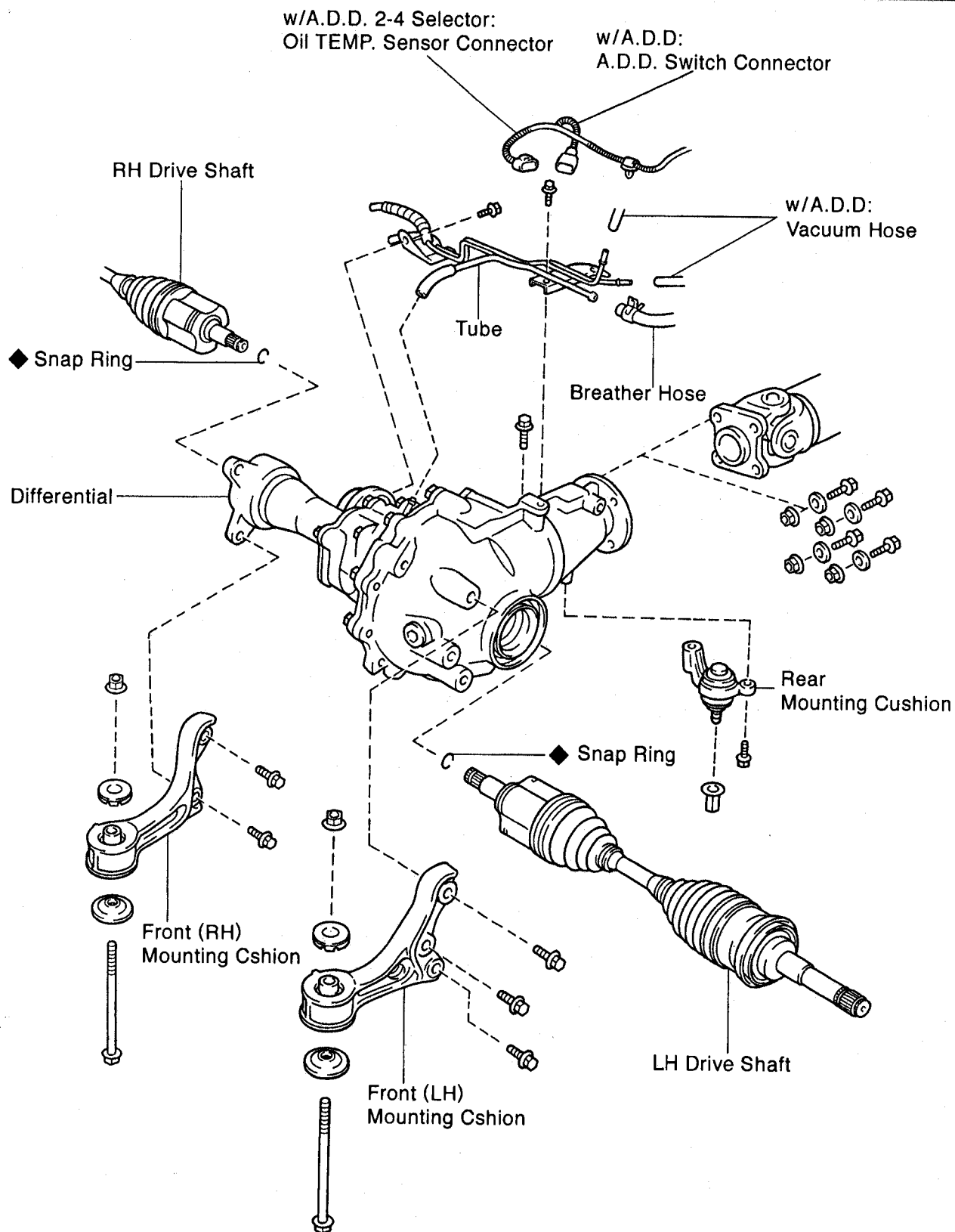
1.10 liters (1.16 US qts, 0.97 Imp.qts)

13. INSTALL UNDER COVER

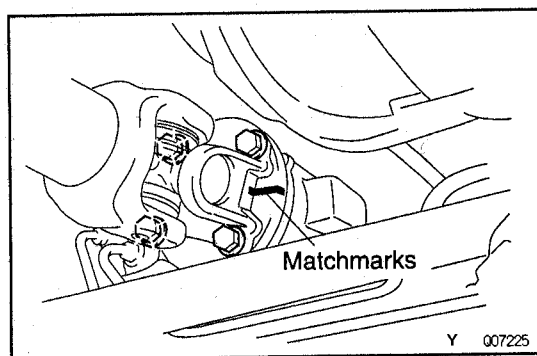


ASSEMBLY REMOVAL AND INSTALLATION COMPONENTS

8A04U-0A



SA



FRONT DIFFERENTIAL REMOVAL

1. REMOVE UNDER COVER AND DRAIN DIFFERENTIAL OIL

2. REMOVE DRIVE SHAFTS

(See page SA-18)

3. DISCONNECT FRONT PROPELLER SHAFT

(a) Place matchmarks on the flanges.

(b) Remove the 4 nuts, washers and bolts, then disconnect the propeller shaft.

Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)

4. REMOVE TUBE FROM DIFFERENTIAL

(a) w/ A.D.D.:

Disconnect the vacuum hoses, breather hose, A.D.D. switch connector and oil TEMP. sensor connector (w/ 2-4 selector).

w/o A.D.D.:

Disconnect the breather hose.

(b) Remove the 2 bolts and tube from the differential.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

5. REMOVE FRONT DIFFERENTIAL ASSEMBLY

(a) Support the front differential with a jack.

(b) Remove the rear mounting nut.

Torque: 87 N·m (890 kgf·cm, 64 ft·lbf)

(c) Remove the front mounting bolts.

Torque: 137 N·m (1,400 kgf·cm, 101 ft·lbf)

(d) Lower the jack and remove the front differential assembly.

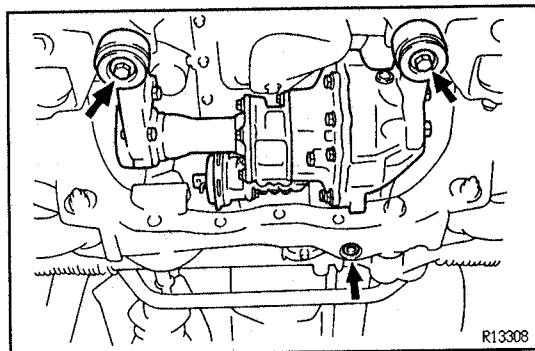
6. REMOVE DIFFERENTIAL MOUNTING CUSHIONS

(a) Remove the rear mounting cushion.

Torque: 108 N·m (1,100 kgf·cm, 80 ft·lbf)

(b) Remove the front mounting cushions.

Torque: 157 N·m (1,600 kgf·cm, 116 ft·lbf)



SA

FRONT DIFFERENTIAL INSTALLATION

SA27P-01

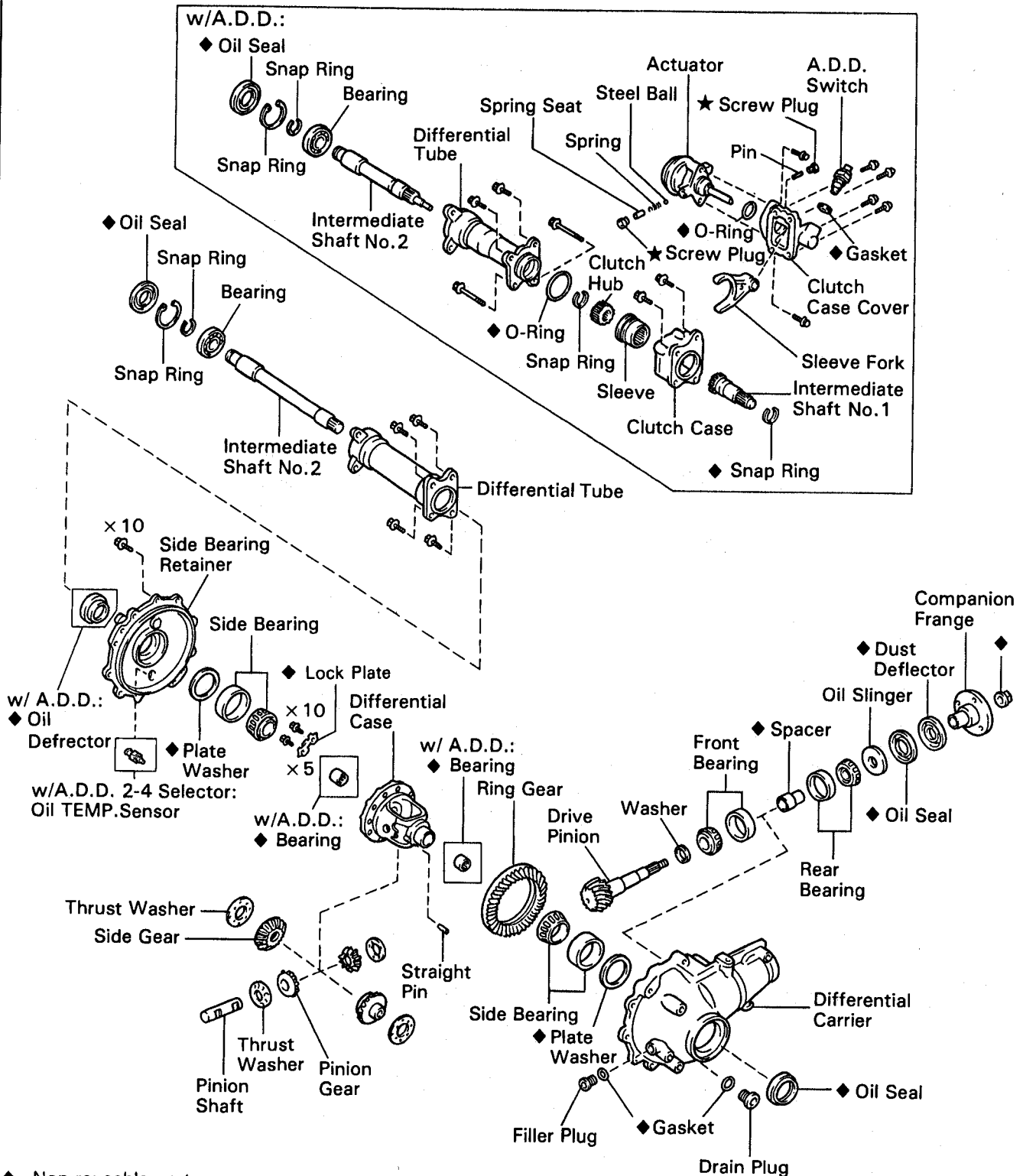
Installation is in the reverse order of removal.

HINT: After installation, fill differential with gear oil.

(See page SA-40)

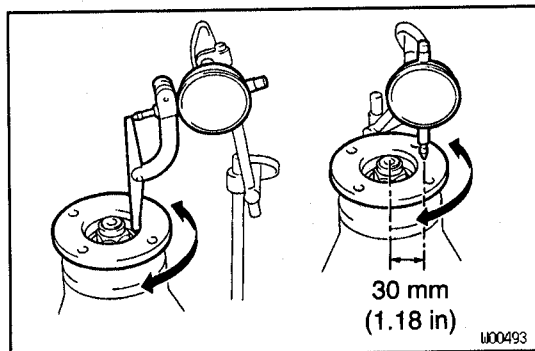
DIFFERENTIAL CARRIER COMPONENTS

SA04X-0C



◆ Non-reusable part

★ Precoated part



DIFFERENTIAL CARRIER INSPECTION

1. CHECK RUNOUT OF COMPANION FLANGE

Using a dial indicator, measure the vertical and lateral runout of the companion flange.

Maximum runout:

0.10 mm (0.0039 in.)

If the runout is greater than the maximum, replace the companion flange.

2. CHECK RING GEAR BACKLASH

Using SST and a dial indicator, measure the ring gear backlash.

SST 09564-32011

Backlash:

0.10-0.18 mm (0.0039-0.0071 in.)

If the backlash is not within the specification, adjust the side bearing preload or repair as necessary.

3. MEASURE DRIVE PINION PRELOAD

Using a torque wrench, measure the preload of backlash between the drive pinion and ring gear.

Preload (at starting):

0.6-1.0 N·m (6-10 kgf·cm, 5.2-8.7 in.-lbf)

4. CHECK TOTAL PRELOAD

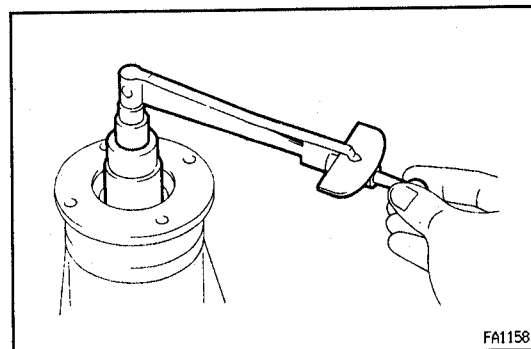
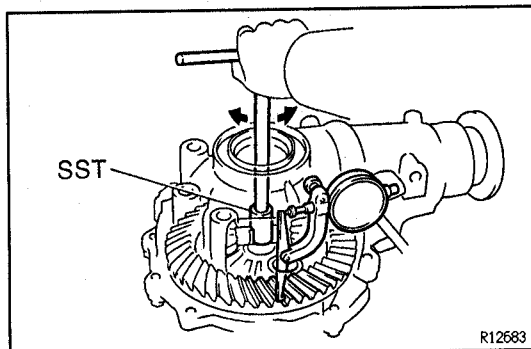
Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Total preload (at starting):

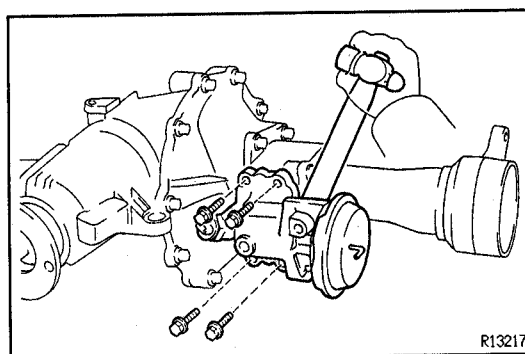
In addition to drive pinion preload.

0.4-0.6 N·m (4-6 kgf·cm, 3.5-5.2 in.-lbf)

If necessary, disassemble and inspect the differential.



SA



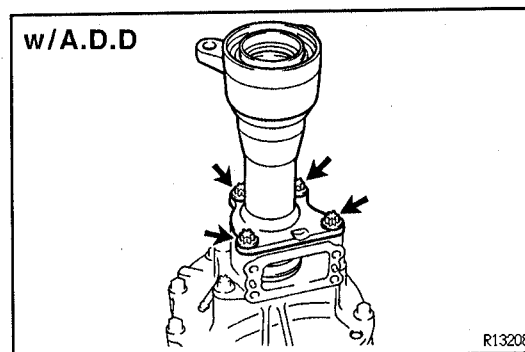
DIFFERENTIAL CARRIER DISASSEMBLY

8A1X2-02

1. w/ A.D.D.:

REMOVE A.D.D. ACTUATOR

- Remove the 4 bolts.
- Using a hammer handle, remove the actuator.



2. REMOVE DIFFERENTIAL TUBE

w/ A.D.D.:

- Remove the 4 torx bolts.
Torx socket E14 (Part No.09044-00010 or locally manufactured tool)
- Using a plastic hammer, tap on the differential tube to remove it.
- Remove the sleeve.
- Remove the O-ring from the differential tube.

w/o A.D.D.:

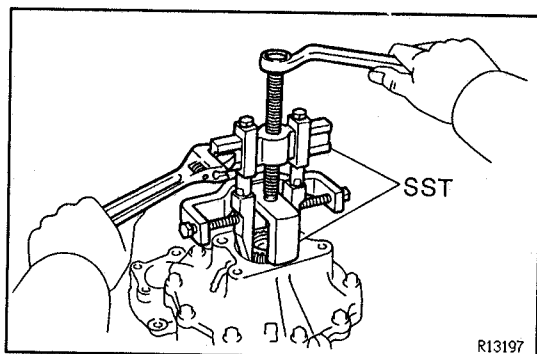
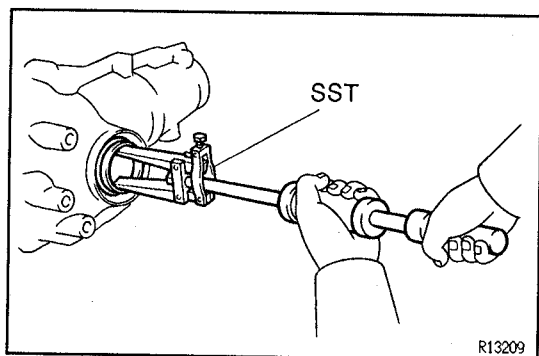
- (a) Remove the 4 bolts.
- (b) Using a plastic hammer, tap on the differential tube to remove it.

3. w/ A.D.D.:**REMOVE CLUTCH CASE**

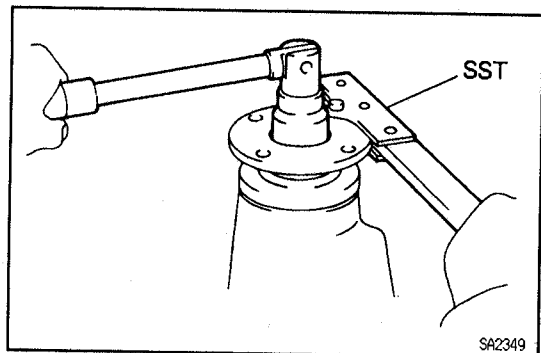
- (a) Remove the 2 torx bolts.
Torx socket E14 (Part No.09044-00010 or locally manufactured tool)
- (b) Using a plastic hammer, tap on the clutch case to remove it.

4. REMOVE SIDE OIL SEAL

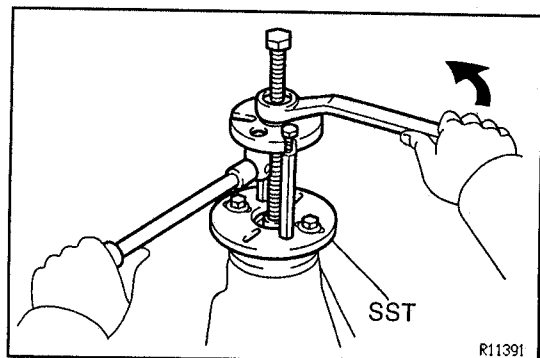
Using SST, remove the side oil seal.
SST 09308-00010

**5. w/ A.D.D.:****REMOVE INTERMEDIATE SHAFT NO.1**

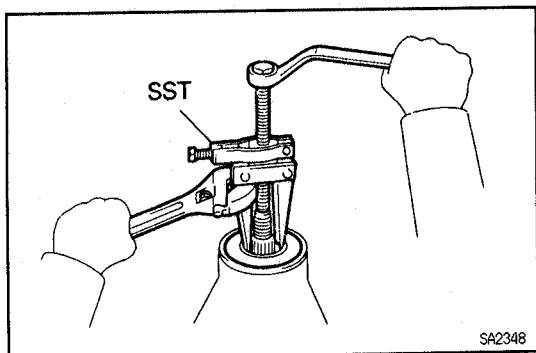
Using SST, remove the intermediate shaft No.1.
SST 09350-20015, 09950-40010 (09951-04010,
09952-04010, 09953-04020, 09954-04010,
09955-04010, 09957-04010, 09958-04010)

**6. REMOVE COMPANION FLANGE**

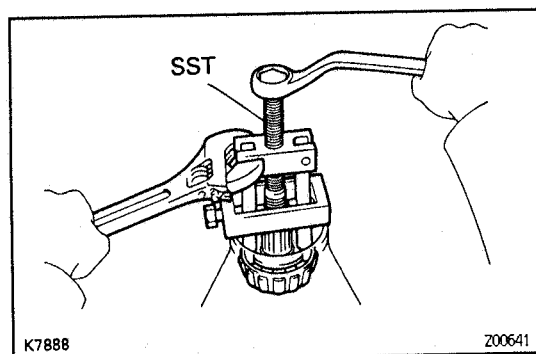
- (a) Using a chisel and a hammer, unstake the nut.
- (b) Using SST to hold the flange, remove the nut.
SST 09330-00021



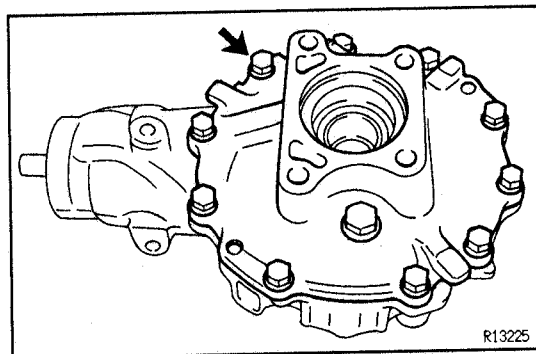
- (c) Using SST, remove the companion flange.
SST 09950-30010 (09951-03010, 09953-03010,
09954-03010, 09955-03030, 09956-03020)

**7. REMOVE OIL SEAL AND OIL SLINGER**

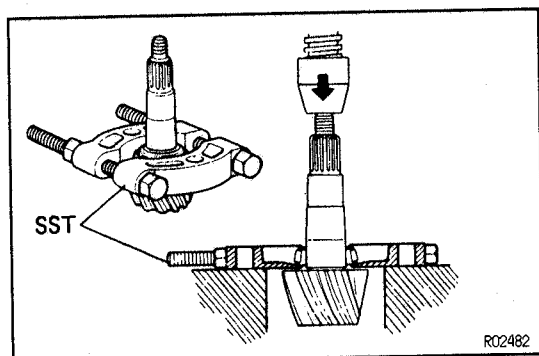
- (a) Using SST, remove the oil seal.
SST 09308-10010
- (b) Remove the oil slinger.

**8. REMOVE REAR BEARING AND BEARING SPACER**

- (a) Using SST, remove the rear bearing from the drive pinion.
SST 09556-22010
- (b) Remove the bearing spacer.

**9. w/ A.D.D. 2-4 selector:****REMOVE OIL TEMP. SENSOR****10. REMOVE SIDE BEARING RETAINER**

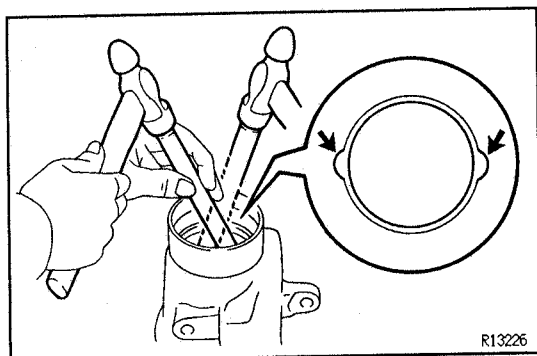
Remove the 10 bolts and tap out the retainer with a plastic hammer.

11. REMOVE DIFFERENTIAL CASE ASSEMBLY**12. REMOVE DRIVE PINION FROM DIFFERENTIAL CARRIER****13. REMOVE DRIVE PINION FRONT BEARING**

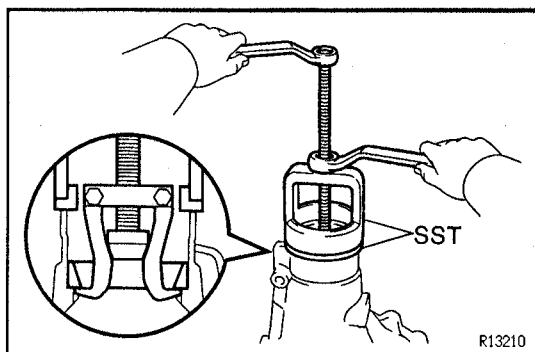
Using SST and a press, remove the bearing and washer from the drive pinion.

SST 09950-00020

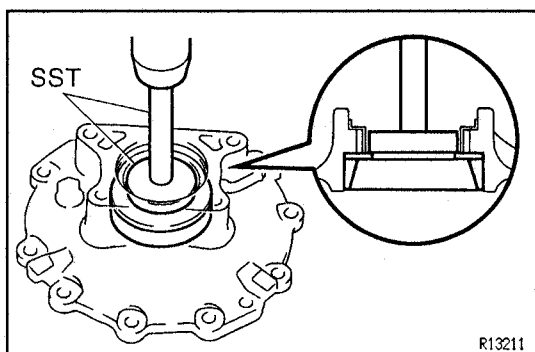
HINT: If the drive pinion or ring gear are damaged replace them as a set.

**14. REMOVE DRIVE PINION BEARING OUTER RACES**

- (a) Using a brass bar and a hammer, remove the front bearing outer race.



- (b) Using SST, remove the rear bearing outer race.
SST 09502-12010, 09612-65014 (09612-01020, 09612-01050)



15. REMOVE SIDE BEARING OUTER RACES

HINT:

- Measure the plate washer and note the thickness.
- Tag the bearing outer races to show the location for reassembly.

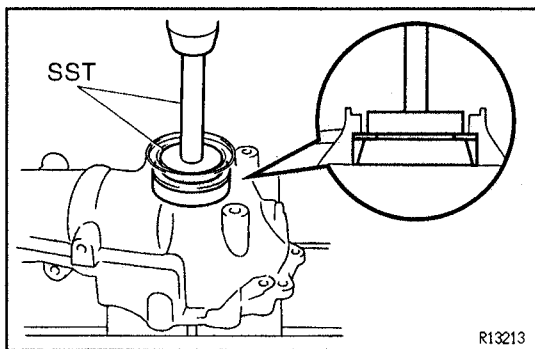
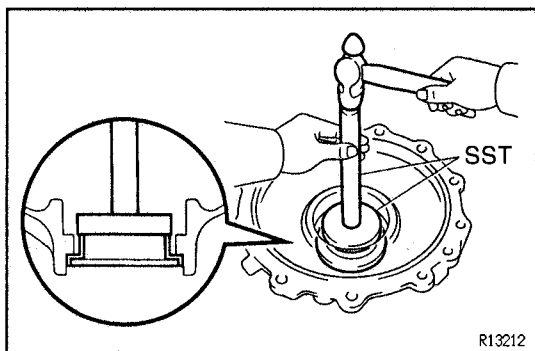
- (a) Using SST and a press, remove the plate washer and outer race from the bearing retainer.

SST 09950-60010 (09951-00540),
09550-70010 (09951-01500)

- (b) w/ A.D.D.:

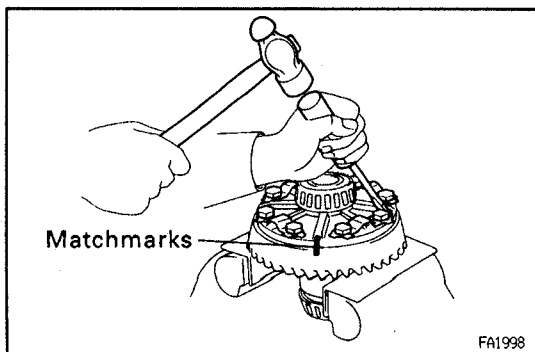
Using SST, remove the oil deflector from the bearing retainer.

SST 09950-60010 (09951-00600),
09950-70010 (09951-07150)



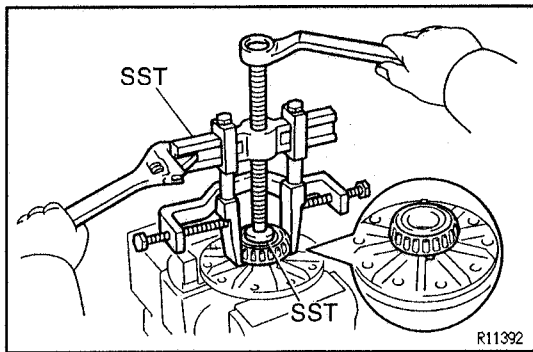
- (c) Using SST and a press, remove the plate washer and outer race from the differential carrier.

SST 09950-60010 (09951-00650),
09950-70010 (09951-07150)



16. REMOVE RING GEAR

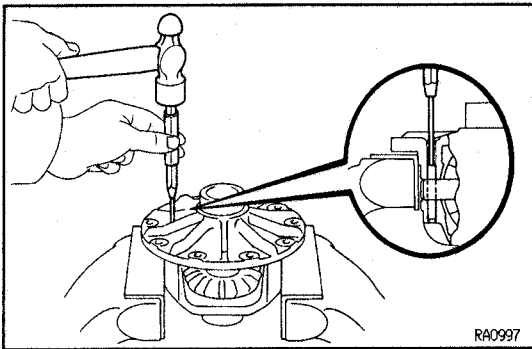
- (a) Place matchmarks on the ring gear and differential case.
(b) Using a screwdriver, unstake the lock plates.
(c) Remove the 10 bolts and 5 lock plates.
(d) Using a plastic hammer, tap on the ring gear to separate it from the differential case.

**17. REMOVE SIDE BEARINGS**

Using SST, remove the side bearings from the differential case.

SST 09950-40010 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09954-04010, 09955-04060, 09957-04010, 09958-04010), 09950-60010 (09951-00480)

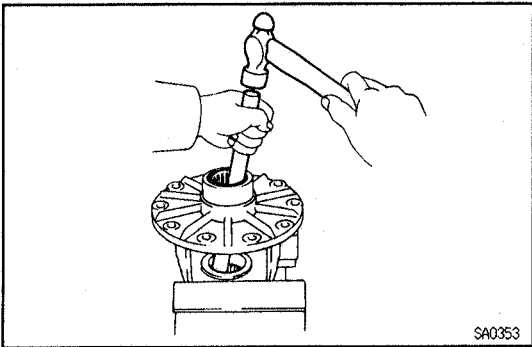
HINT: Fix the claws of SST to the notch in the differential case.

**18. DISASSEMBLE DIFFERENTIAL CASE ASSEMBLY**

(a) Using a pin punch and a hammer, remove the straight pin.

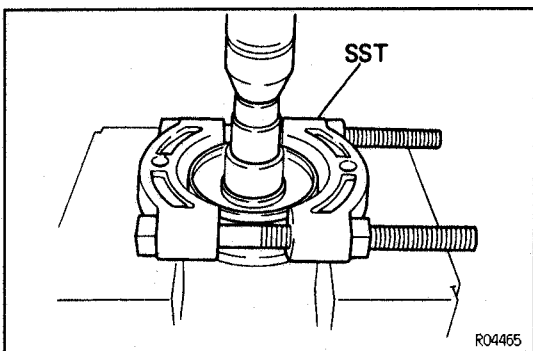
(b) Remove these parts:

- Pinion shaft
- Pinion gears
- Pinion gear thrust washers
- Side gears
- Side gear thrust washers

**19. w/ A.D.D.:****REMOVE BEARING**

Using a brass bar and a hammer, remove the 2 bearings.

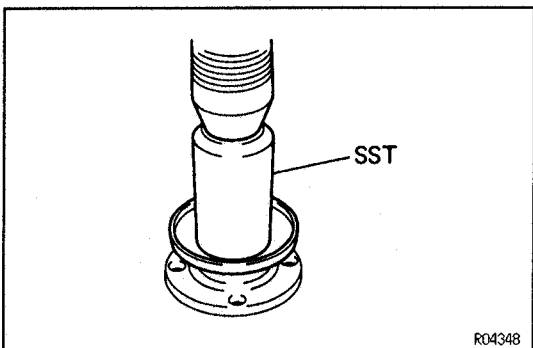
SA

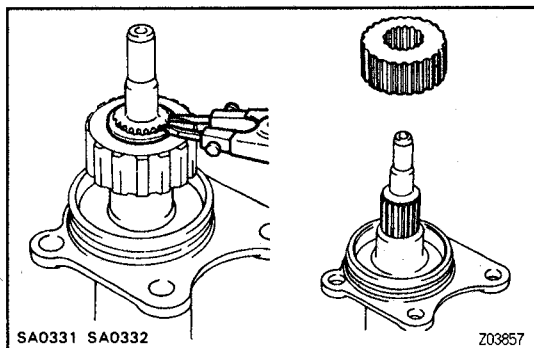
**COMPANION FLANGE DUST DEFLECTOR REPLACEMENT****1. REMOVE DUST DEFLECTOR**

Using SST and a press, remove the dust deflector.
SST 09950-00020

2. INSTALL NEW DUST DEFLECTOR

Using SST and a press, install a new dust deflector.
SST 09636-20010



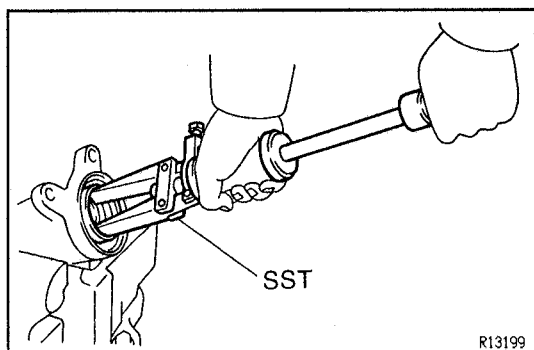


INTERMEDIATE SHAFT NO.2 REPLACEMENT

1. w/ A.D.D.:

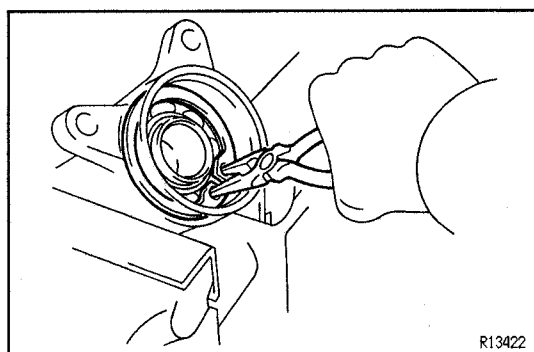
REMOVE CLUTCH HUB

- Using a snap ring expander, remove the snap ring.
- Remove the clutch hub from the intermediate shaft No.2.



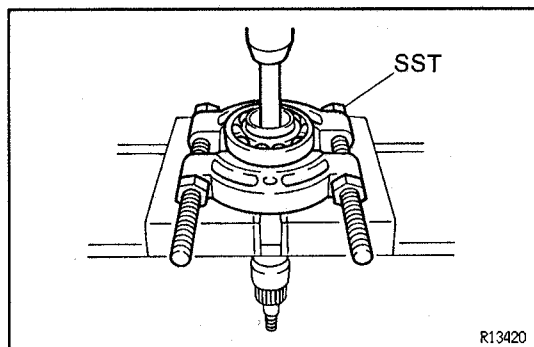
2. REMOVE OIL SEAL

Using SST, remove the oil seal from the tube.
SST 09308-00010



3. REMOVE INTERMEDIATE SHAFT NO.2 FROM TUBE

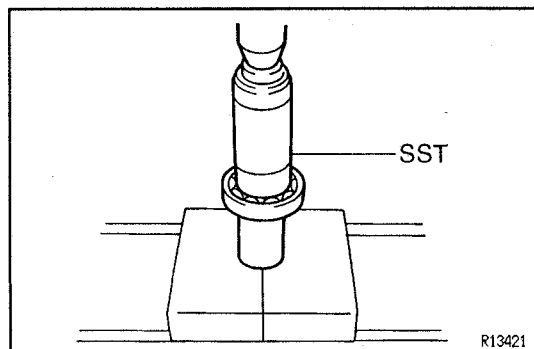
- Using needle nose pliers, remove the snap ring.
- Remove the shaft from the tube.



4. REMOVE INTERMEDIATE SHAFT NO.2 BEARING

- Using a snap ring expander, remove the snap ring.
- Using SST, a brass bar and a press, remove the bearing.

SST 09950-00020

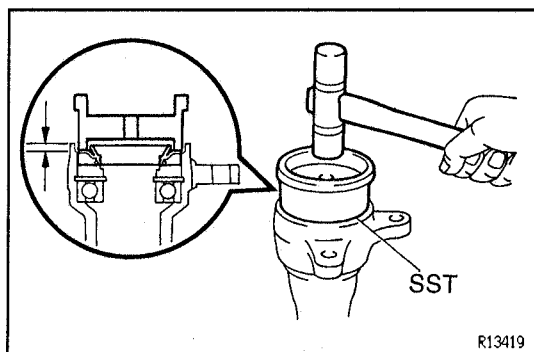


5. INSTALL NEW INTERMEDIATE SHAFT NO.2 BEARING

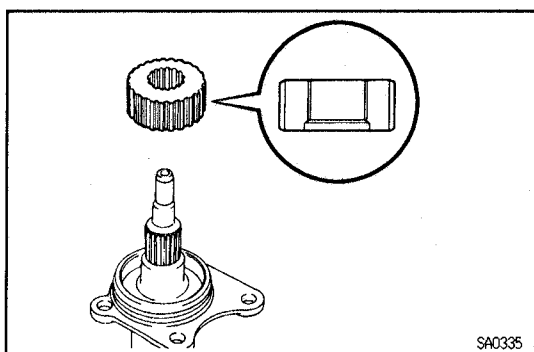
- Using SST and a press, install a new bearing.
SST 09309-37010
- Using a snap ring expander, install the snap ring.

6. INSTALL INTERMEDIATE SHAFT NO.2 TO TUBE

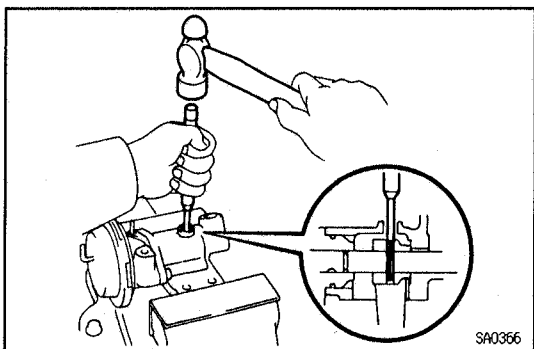
- Install the shaft into the tube.
- Using needle nose pliers, install the snap ring.

**7. INSTALL NEW OIL SEAL**

- (a) Using SST, install a new oil seal.
SST 09223-15020
Oil seal drive in depth:
5.5 mm (0.217 in.)
- (b) Coat the oil seal lip with MP grease.

**8. w/ A.D.D.:****INSTALL CLUTCH HUB**

- (a) Install the clutch hub to the shaft.
- (b) Using snap ring pliers, install the snap ring.

**A.D.D. ACTUATOR REPLACEMENT**

SA1X6-02

1. REMOVE A.D.D. SWITCH**2. REMOVE SLEEVE FORK PIN**

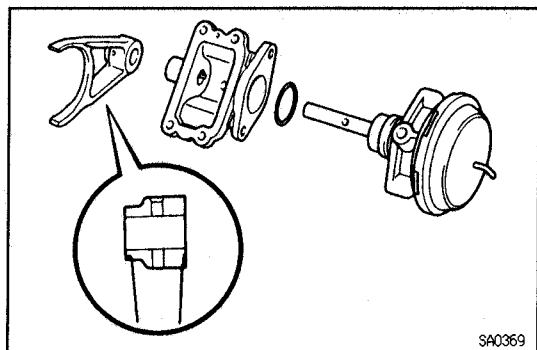
- (a) Using a hexagon wrench, remove the screw plug.
- (b) Using a pin punch and a hammer, remove the pin through the hole of clutch case cover.

3. SEPARATE ACTUATOR FROM CLUTCH CASE COVER AND REMOVE SLEEVE FORK

- (a) Using a hexagon wrench, remove the screw plug.
- (b) Remove the spring seat, spring and steel ball.
- (c) Remove the 2 bolts and actuator from the clutch case cover.
- (d) Separate the actuator from the clutch case cover and remove the sleeve fork.
- (e) Remove the O-ring from the actuator.

4. INSTALL SLEEVE FORK AND ACTUATOR INTO CLUTCH CASE COVER

- (a) Install a new O-ring to the actuator.
- (b) Coat the O-ring with MP grease.
- (c) Place the sleeve fork and install the actuator to the clutch case cover.
- (d) Torque the 2 bolts.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)
- (e) Install the steel ball, spring and spring seat.



- (f) Coat the threads of screw plug with FIGP.

FIGP:

Part No. 08826—00090, THREE BOND 1281 or equivalent

- (g) Using a hexagon wrench, install the screw plug.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

5. INSTALL SLEEVE FORK PIN

- (a) Using a pin punch and a hammer, install the pin through the hole of clutch case cover.
(b) Coat the threads of screw plug with FIGP.

FIGP:

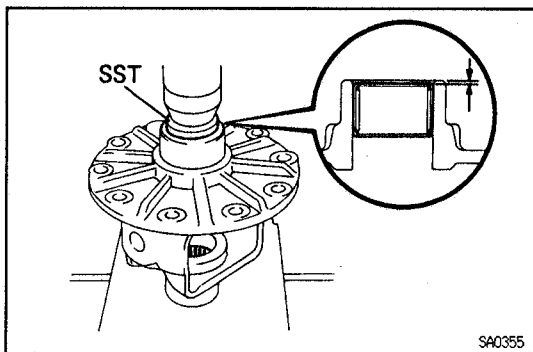
Part No. 08826—00090, THREE BOND 1281 or equivalent

- (c) Using a hexagon wrench, install the screw plug.
Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

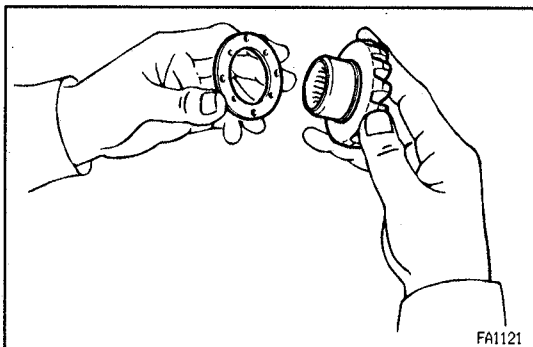
6. INSTALL A.D.D. SWITCH

Install a new gasket and indicator switch.

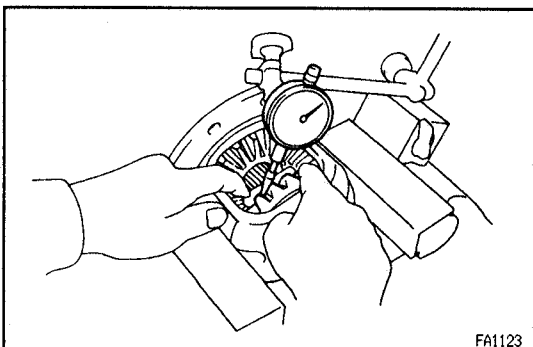
Torque: 40 N·m (410 kgf·cm, 30 ft·lbf)



SA0355



FA1121



FA1123

DIFFERENTIAL CARRIER ASSEMBLY

SA1X7-02

1. w/A.D.D.:

INSTALL NEW BEARINGS

Using SST and a press, install new bearings.

SST 09950—60010 (09951—00380)

Bearing press in depth:

0.3 ± 0.3 mm (0.012 ± 0.012 in.)

2. ASSEMBLE DIFFERENTIAL CASE

- (a) Install the proper thrust washers on the side gears.
HINT: Using the table below, select thrust washers which will ensure that the backlash is within the specifications.

Washer thickness

Thickness mm (in.)	Thickness mm (in.)
0.96—1.04 (0.0378—0.0409)	1.16—1.24 (0.0457—0.0488)
1.06—1.14 (0.0417—0.0449)	1.26—1.34 (0.0496—0.0528)

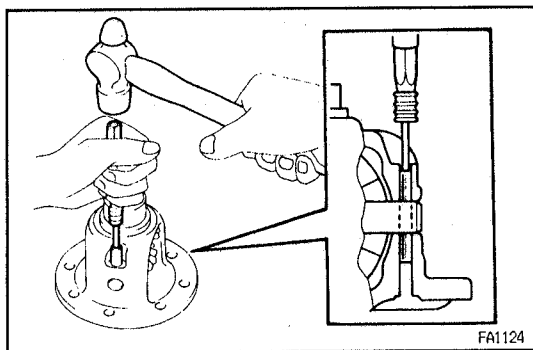
- (b) Install the side gears, pinion gears, pinion gear thrust washers and pinion shaft in the differential case.
HINT: Align the holes of the differential case and pinion shaft.
(c) Measure the side gear backlash while holding one pinion gear toward the differential case.

Backlash:

0—0.20 mm (0—0.0079 in.)

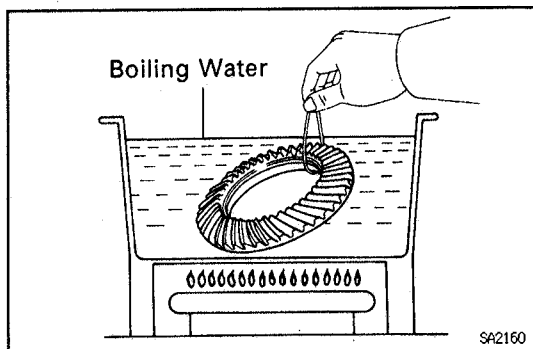
If the backlash is not within the specification, install side gear thrust washers with different thicknesses.

SA



3. INSTALL STRAIGHT PIN AND STAKE DIFFERENTIAL CASE

- (a) Using a pin punch and a hammer, install the straight pin through the differential case and hole of the pinion shaft.
- (b) Stake the differential case.



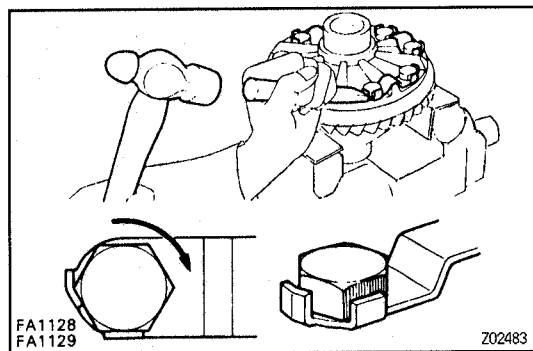
4. INSTALL RING GEAR ON DIFFERENTIAL CASE

- (a) Clean the contact surfaces of the differential case and ring gear.
- (b) Heat the ring gear to about 100°C (212°F) in boiling water.
- (c) Carefully remove the ring gear from the water.
- (d) After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.

HINT: Align the matchmarks on the ring gear and differential case.

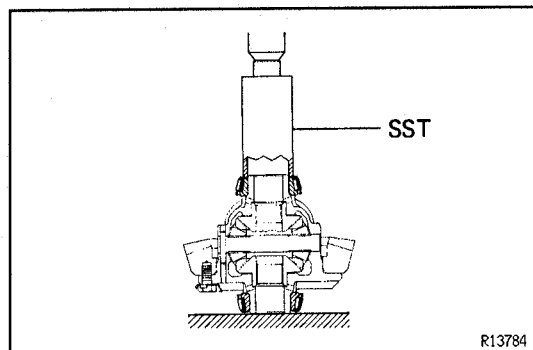
- (e) Temporarily install 5 new lock plates and 10 bolts so that the bolt holes in the ring gear and differential case are not misaligned.
- (f) After the ring gear has cooled sufficiently, torque the ring gear set bolts.

Torque: 97 N·m (985 kgf·cm, 71 ft·lbf)



- (g) Using a hammer and a drift punch, stake the lock plates.

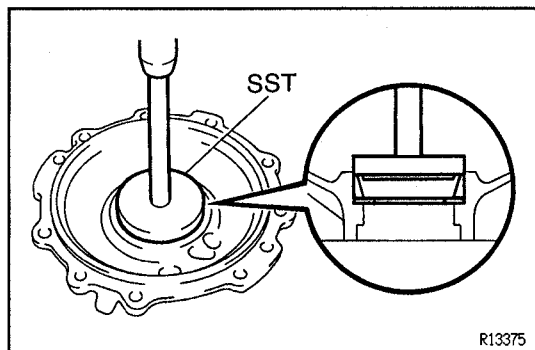
HINT: Stake one claw flush with the flat surface of the bolt. For the claw contacting the protruding portion of the bolt, stake only the half portion of the tightening side.



5. INSTALL SIDE BEARINGS

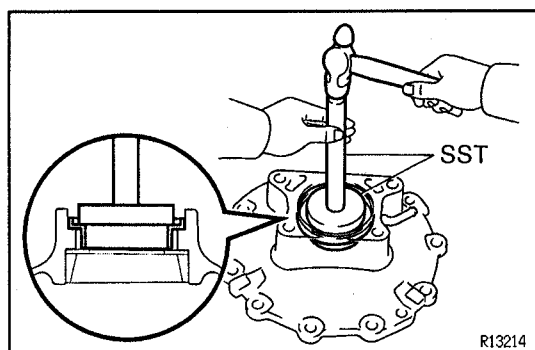
Using SST and a press, install the bearing into the differential case.

SST 09226-10010

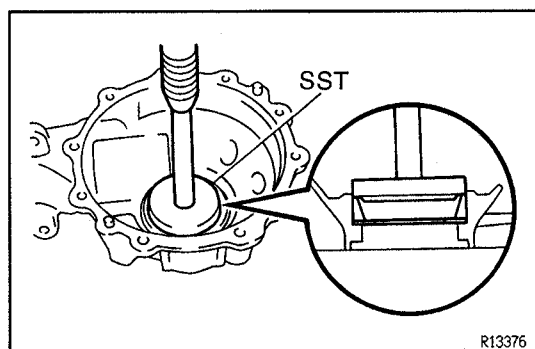
**6. INSTALL SIDE BEARING OUTER RACES**

HINT: When replacing the side bearings, fit the thinnest washers to each bearing and when reusing the bearings, fit the washers with the same thickness as removed.

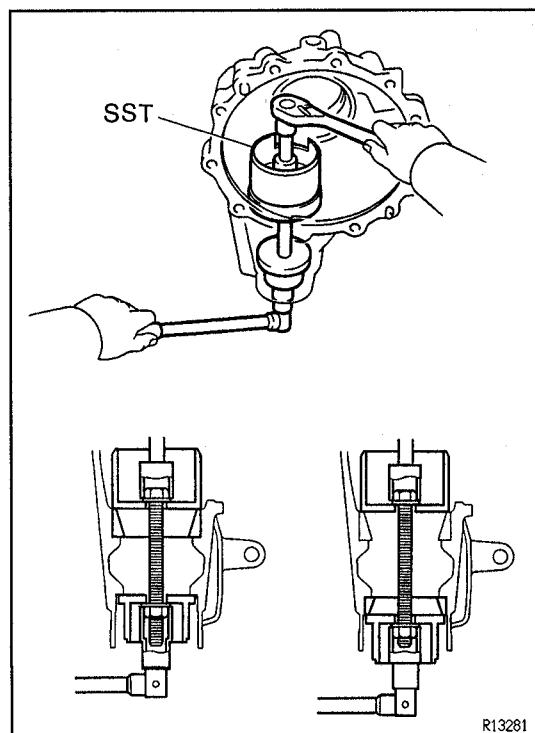
- (a) Install a new plate washer to the bearing retainer.
- (b) Using SST and a press, install the bearing outer race.
SST 09950-60020 (09951-00790),
09950-70010 (09951-07150)



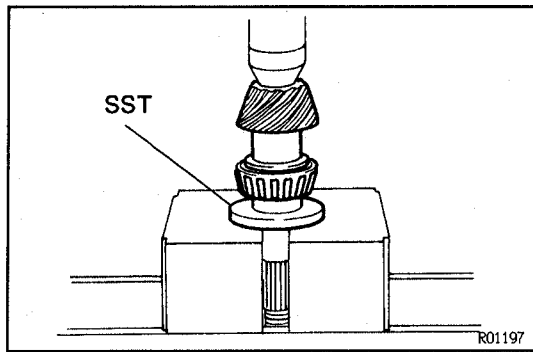
- (c) w/ A.D.D.:
Using SST, install a new oil deflector.
SST 09950-60020 (09951-00710),
09950-70010 (09951-07150)



- (d) Install a new plate washer to the differential carrier.
- (e) Using SST and a press, install the bearing outer race.
SST 09950-60020 (09951-00790),
09950-70010 (09951-07150)

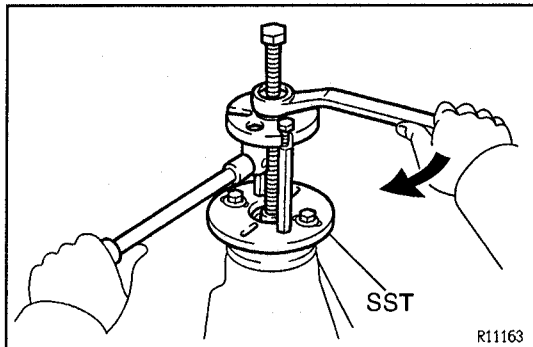
**7. INSTALL DRIVE PINION FRONT AND REAR BEARING OUTER RACES**

Using SST, install the outer races.
SST 09570-22011



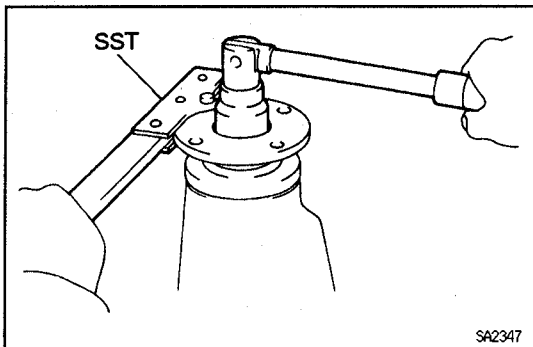
8. INSTALL DRIVE PINION FRONT BEARING

- (a) Install the washer on the drive pinion.
HINT: First fit a washer with the same thickness as the washer which was removed, then after checking the tooth contact pattern, replace the washer with one of a different thickness if necessary.
- (b) Using SST and a press, install the front bearing onto the drive pinion.
SST 09506-30012

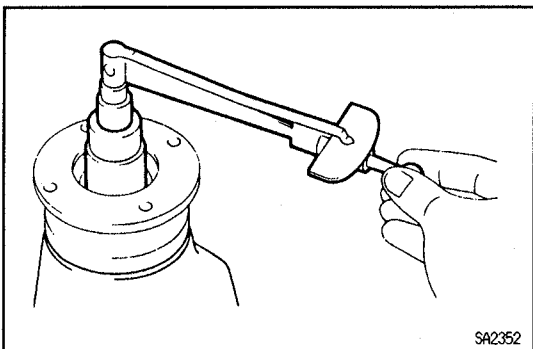


9. TEMPORARILY ADJUST DRIVE PINION PRELOAD

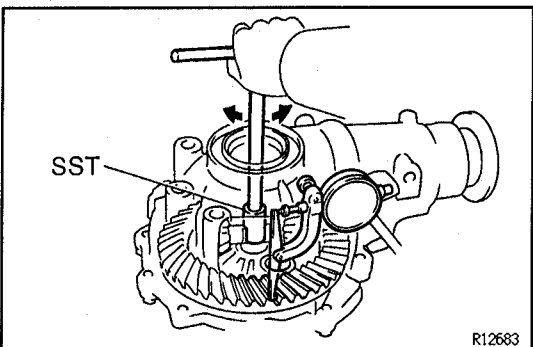
- (a) Install the drive pinion and oil slinger.
HINT: Assemble the spacer and oil seal after adjusting the ring gear tooth contact pattern.
- (b) Using SST, install the rear bearing, oil slinger and companion flange.
SST 09950-30010 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)
- (c) Coat the threads of the nut with hypoid gear oil.



- (d) Adjust the drive pinion preload by tightening the companion flange nut.
Using SST to hold the flange, tighten the nut.
SST 09330-00021
NOTICE: As there is no spacer, tighten the nut a little at a time, being careful not to overtighten it.



- (e) Using a torque wrench, measure the preload.
New bearing preload (at starting):
1.2-1.9 N·m (12-19 kgf·cm, 10.4-16.5 in.-lbf)
Reused bearing preload (at starting):
0.6-1.0 N·m (6-10 kgf·cm, 5.2-8.7 in.-lbf)



10. INSTALL DIFFERENTIAL CASE IN DIFFERENTIAL CARRIER

11. ADJUST RING GEAR BACKLASH

- (a) Install the side bearing retainer with the 10 bolts.
Torque: 69 N·m (700 kgf·cm, 51 ft-lbf)
- (b) Using SST and a dial indicator, measure the ring gear backlash.
SST 09564-32011
Backlash:
0.10-0.18 mm (0.0039-0.0070 in.)

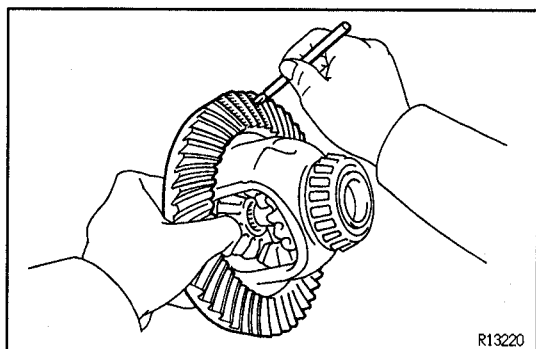
- (c) If it is not within the specification, adjust by either increasing or decreasing the washers on both sides by an equal amount.

HINT: There should be no clearance between the plate washer and case.

Ensure that there is ring gear backlash.

Washer thickness

Thickness mm (in.)	Thickness mm (in.)	Thickness mm (in.)
2.00–2.02 (0.0787–0.0795)	2.27–2.29 (0.0894–0.0902)	2.54–2.56 (0.1000–0.1008)
2.03–2.05 (0.0799–0.0807)	2.30–2.32 (0.0906–0.0913)	2.57–2.59 (0.1012–0.1020)
2.06–2.08 (0.0811–0.0819)	2.33–2.35 (0.0917–0.0925)	2.60–2.62 (0.1024–0.1031)
2.09–2.11 (0.0823–0.0831)	2.36–2.38 (0.0929–0.0937)	2.63–2.65 (0.1035–0.1043)
2.12–2.14 (0.0835–0.0843)	2.39–2.41 (0.0941–0.0949)	2.66–2.68 (0.1047–0.1055)
2.15–2.17 (0.0846–0.0854)	2.42–2.44 (0.0953–0.0961)	2.69–2.71 (0.1059–0.1067)
2.18–2.20 (0.0858–0.0866)	2.45–2.47 (0.0965–0.0972)	2.72–2.74 (0.1071–0.1079)
2.21–2.23 (0.0870–0.0878)	2.48–2.50 (0.0976–0.0984)	2.75–2.77 (0.1083–0.1091)
2.24–2.26 (0.0882–0.0890)	2.51–2.53 (0.0988–0.0996)	2.78–2.80 (0.1094–0.1102)



12. MEASURE TOTAL PRELOAD

Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

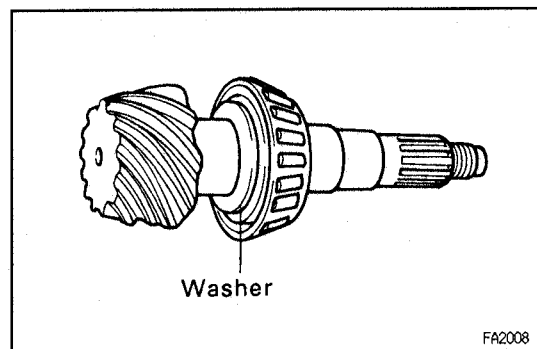
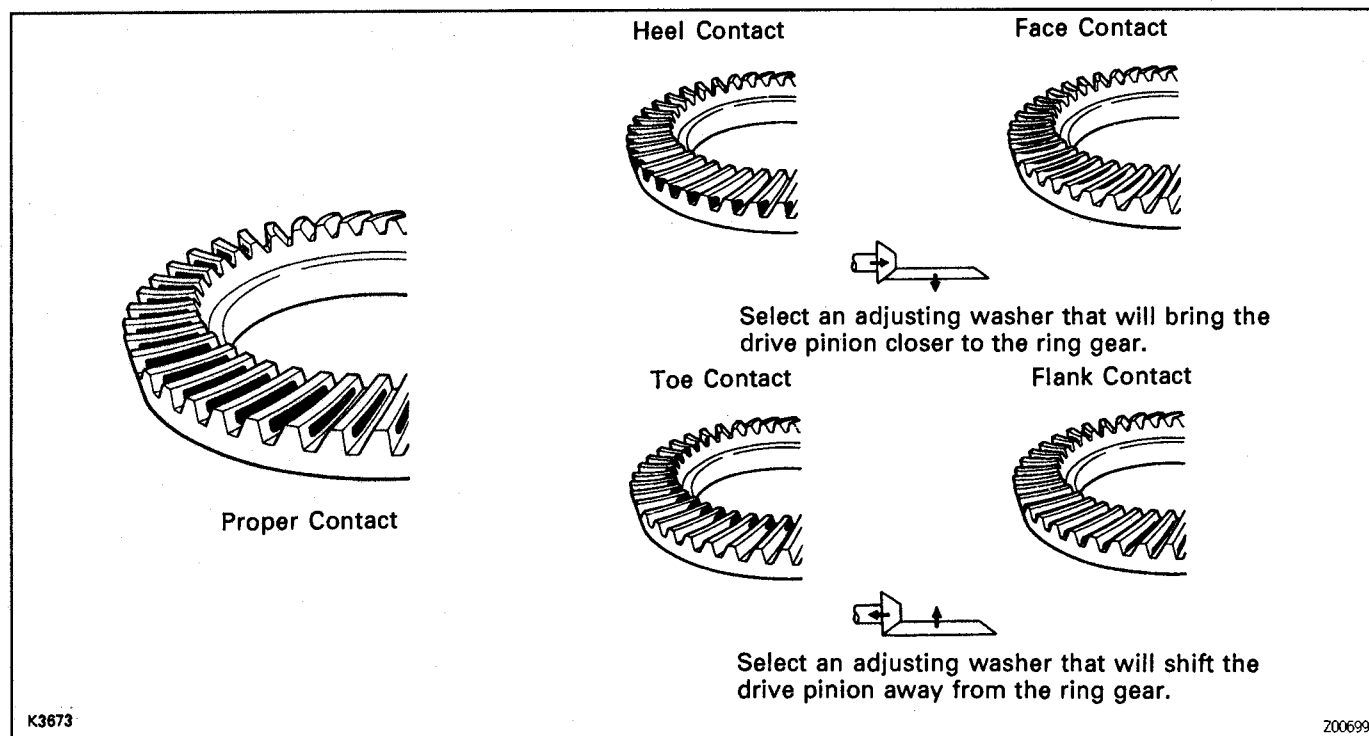
Total preload (at starting):

Add drive pinion preload

0.4–0.6 N·m (4–6 kgf·cm, 3.5–5.2 in.-lbf)

13. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

- Remove the side bearing retainer and differential case.
- Coat 3 or 4 teeth at three different positions on the ring gear with red lead.
- Install the differential case and side bearing retainer.
Torque: 69 N·m (700 kgf·cm, 51 ft-lbf)
- Hold the companion flange firmly and rotate the ring gear in both directions.
- Remove the side bearing retainer and differential case.
- Inspect the tooth contact pattern.

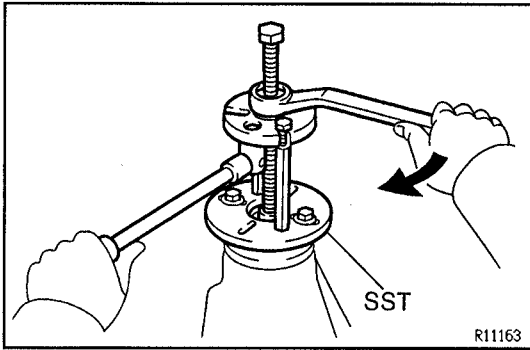


If the teeth are not contacting properly, use the following chart to select a proper washer for correction.

Washer thickness

Thickness mm (in.)	Thickness mm (in.)	Thickness mm (in.)
1.69–1.71 (0.0665–0.0673)	1.93–1.95 (0.0760–0.0768)	2.17–2.19 (0.0854–0.0862)
1.72–1.74 (0.0677–0.0685)	1.96–1.98 (0.0772–0.0780)	2.20–2.22 (0.0866–0.0874)
1.75–1.77 (0.0689–0.0697)	1.99–2.01 (0.0783–0.0791)	2.23–2.25 (0.0878–0.0886)
1.78–1.80 (0.0701–0.0709)	2.02–2.04 (0.0795–0.0803)	2.26–2.28 (0.0890–0.0898)
1.81–1.83 (0.0713–0.0720)	2.05–2.07 (0.0807–0.0815)	2.29–2.31 (0.0902–0.0909)
1.84–1.86 (0.0724–0.0732)	2.08–2.10 (0.0819–0.0827)	2.32–2.34 (0.0913–0.0921)
1.87–1.89 (0.0736–0.0744)	2.11–2.13 (0.0831–0.0839)	—
1.90–1.92 (0.0748–0.0756)	2.14–2.16 (0.0843–0.0850)	—

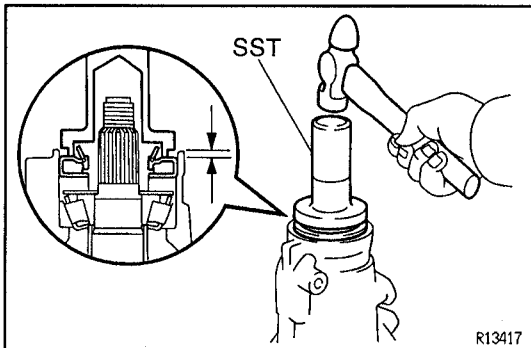
14. REMOVE COMPANION FLANGE AND OIL SLINGER
(See page SA–45, 46)
15. REMOVE REAR BEARING
(See page SA–46)



16. INSTALL NEW BEARING SPACER, REAR BEARING AND OIL SLINGER

- Install a new bearing spacer and place the rear bearing and oil slinger.
- Using SST and the companion flange, install the rear bearing then remove the companion flange.

SST 09950-30010 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)



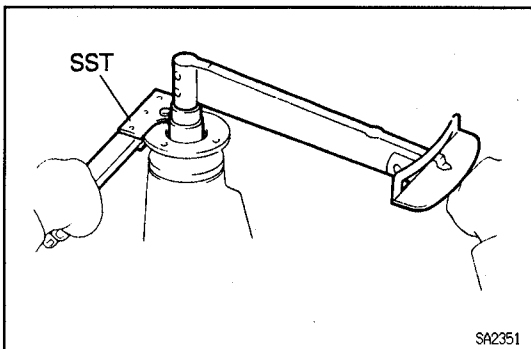
17. INSTALL OIL SEAL

- Coat a new oil seal lip with MP grease.
- Using SST and a hammer, install the oil seal.

SST 09554-22010

Oil seal drive in depth:

4.5 mm (0.177 in.)

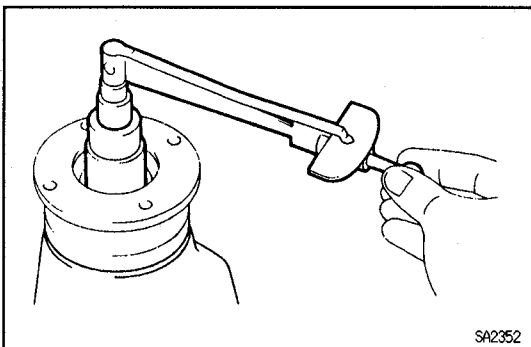


18. INSTALL COMPANION FLANGE

- Place the companion flange on the drive pinion.
- Coat the threads of a new nut with hypoid gear oil.
- Using SST to hold the flange, torque the nut.

SST 09330-00021

Torque: 108 N·m (1,100 kgf·cm, 80 ft·lbf)



19. ADJUST DRIVE PINION PRELOAD

Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

New bearing preload (at starting):

1.2–1.9 N·m (12–19 kgf·cm, 10.4–16.5 in·lbf)

Reused bearing preload (at starting):

0.6–1.0 N·m (6–10 kgf·cm, 5.2–8.7 in·lbf)

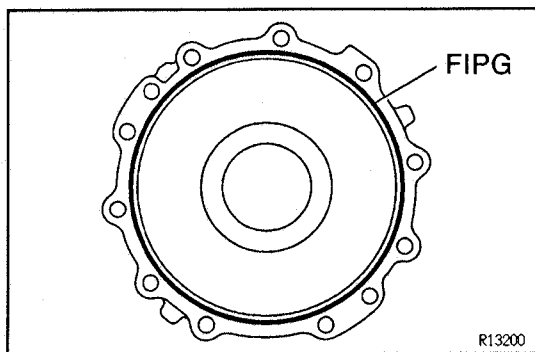
If the preload is greater than the specification, replace the bearing spacer.

If the preload is less than the specification, retighten the nut 13 N·m (130 kgf·cm, 9 ft·lbf) a little at a time until the specified preload is reached.

Maximum torque:

223 N·m (2,275 kgf·cm, 165 ft·lbf)

If the maximum torque is exceeded while retightening the nut, replace the bearing spacer and repeat the preload procedure. Do not back off the nut to reduce the preload.

**20. INSTALL DIFFERENTIAL CASE****21. INSTALL SIDE BEARING RETAINER**

- (a) Remove any old FIPG material and be careful not to drop oil on the contact surfaces of the differential carrier and side bearing retainer.
- (b) Clean contacting surfaces of any residual FIPG material using gasoline or alcohol.
- (c) Apply FIPG to the side bearing retainer, as shown.
FIPG: Part No. 08826-00090, THREE BOND 1281 or equivalent

HINT: Install the side bearing retainer within 10 minutes after applying FIPG.

- (d) Install the side bearing retainer with the 10 bolts.
Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)

22. w/ A.D.D. 2-4 selector:**INSTALL OIL TEMP. SENSOR**

Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

23. CHECK TOTAL PRELOAD**24. RECHECK RING GEAR BACKLASH**

(See page SA-44)

25. RECHECK TEETH CONTACT BETWEEN RING GEAR AND DRIVE PINION

(See page SA-55)

26. CHECK RUNOUT OF COMPANION FLANGE

(See page SA-44)

27. STAKE DRIVE PINION NUT**28. INSTALL SIDE OIL SEAL**

- (a) Using SST and a hammer, install a new oil seal until its surface is flush with the differential carrier end.
SST 09608-32010

- (b) Coat the oil seal lip with MP gease.

29. w/ A.D.D.:**INSTALL INTERMEDIATE SHAFT**

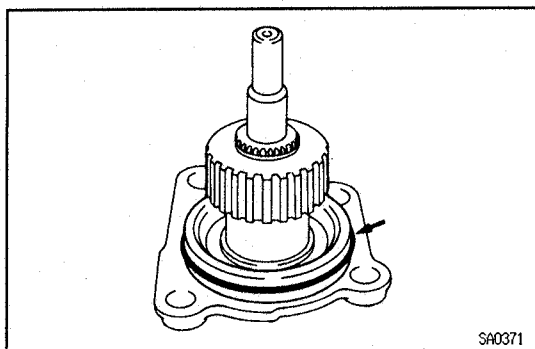
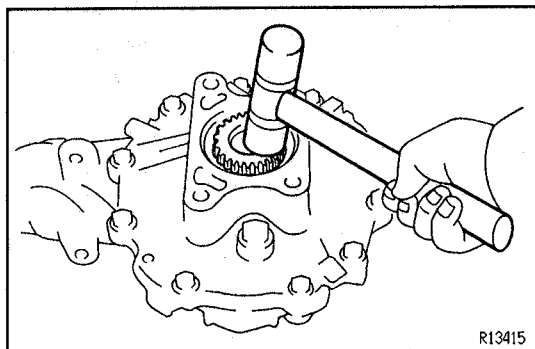
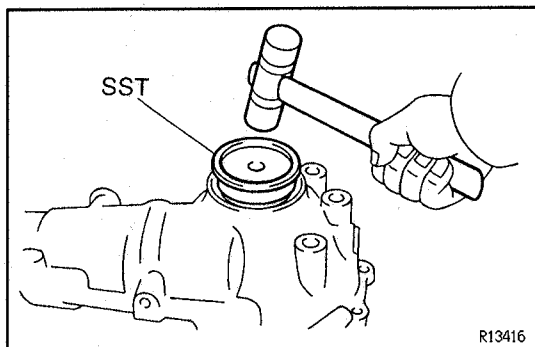
- (a) Install a new snap ring to the shaft.
- (b) Using a plastic-faced hammer, install the shaft to the differential case.
- (c) Check that there is 2-3 mm (0.08-0.12 in.) of play in axial direction.
- (d) Check that the intermediate shaft will not come out by trying to pull it completely out by hand.

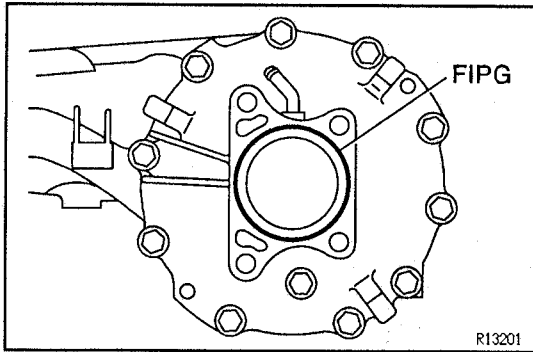
30. w/ A.D.D.:**INSTALL CLUTCH CASE TO DIFFERENTIAL TUBE**

- (a) Install a new O-ring to the tube.
- (b) Coat the O-ring with MP grease.
- (c) Install the clutch case to the tube.
- (d) Torque the 2 torx bolts.

Torx socket E14 (Part NO.09044-00010 or locally manufactured tool)

Torque: 78 N·m (800 kgf·cm, 58 ft·lbf)



**31. w/ A.D.D.:****INSTALL CLUTCH SLEEVE****32. INSTALL DIFFERENTIAL TUBE TO DIFFERENTIAL**

- (a) Remove any old FIPG material and be careful not to drop oil on the contact surfaces of the differential and clutch case.
- (b) Clean contacting surfaces of any residual FIPG material using gasoline or alcohol.
- (c) Apply FIPG to the differential, as shown.

FIPG: Part No. 08826-00090, THREE BOND 1281 or equivalent

HINT: Install the differential tube within 10 minutes after applying FIPG.

- (d) Install the differential tube to the differential.

(e) w/ A.D.D.:

Torque the 4 torx bolts.

Torx socket E14 (Part NO.09044-00010 or locally manufactured tool)

Torque: 78 N·m (800 kgf·cm, 58 ft·lbf)

(f) w/o A.D.D.:

Torque the 4 bolts.

Torque: 78 N·m (800 kgf·cm, 58 ft·lbf)

33. w/ A.D.D.:**INSTALL A.D.D. ACTUATOR**

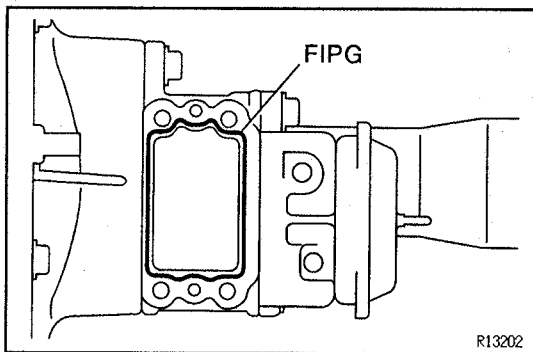
- (a) Remove any old FIPG material and be careful not to drop oil on the contact surfaces of the actuator and clutch case.
- (b) Clean contacting surfaces of any residual FIPG material using gasoline or alcohol.
- (c) Apply FIPG to the clutch case, as shown.

FIPG: Part No. 08826-00090, THREE BOND 1281 or equivalent

HINT: Install the actuator within 10 minutes after applying FIPG.

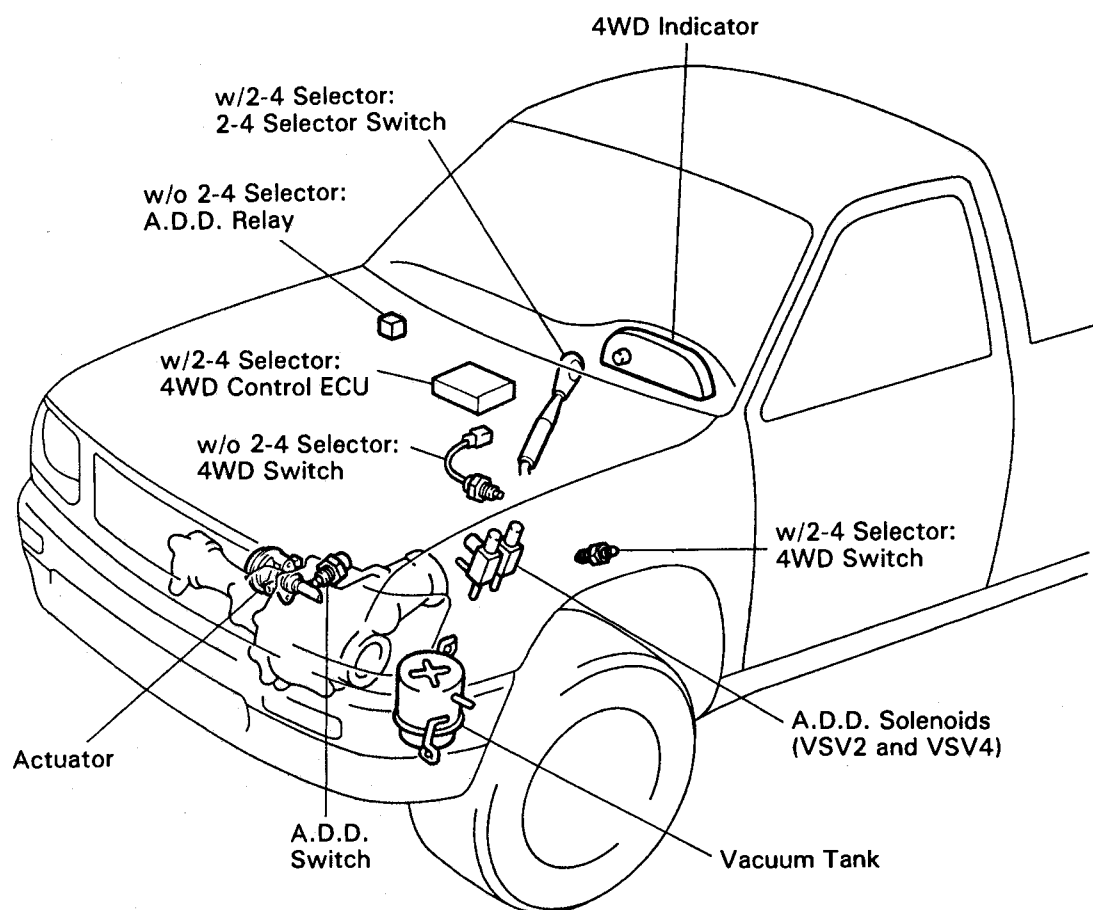
- (d) Torque the 4 bolts.

Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)



A.D.D. CONTROL SYSTEM PARTS LOCATION

BA0KE-09

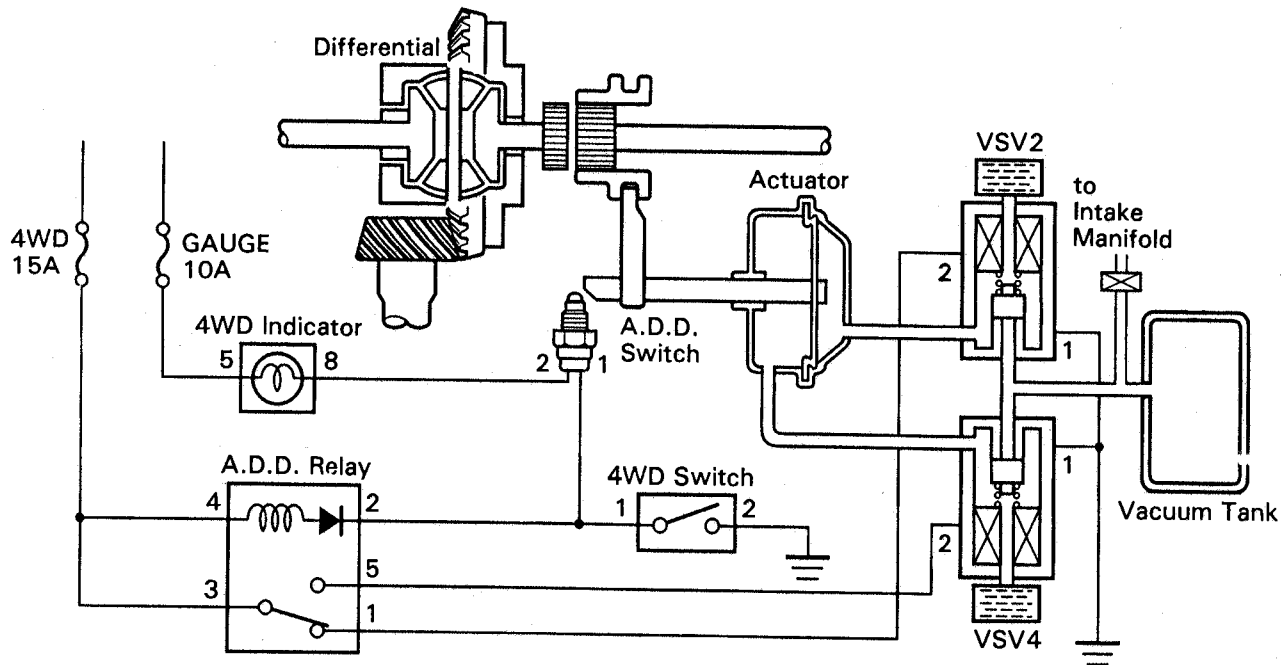


R13649

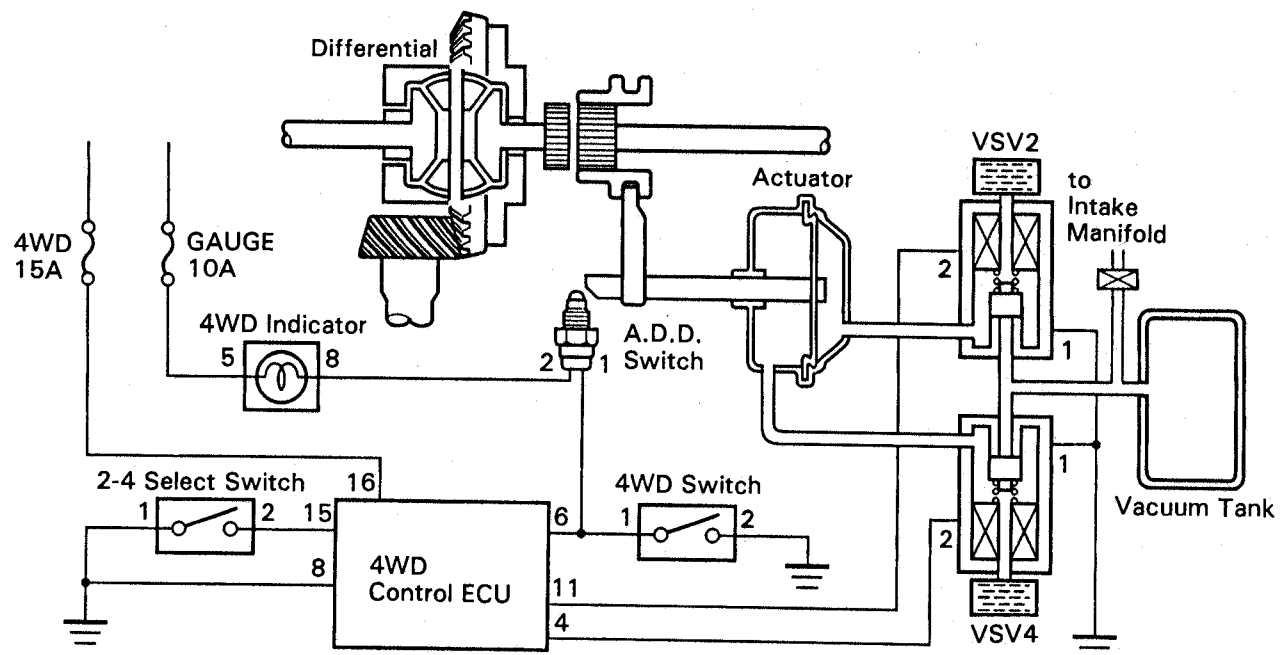
WIRING DIAGRAM

SA0KF-08

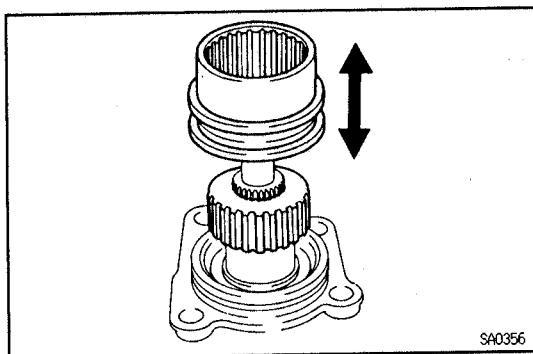
w/o 2-4 Selector:



w/2-4 Selector:

R13650
R13651

Z15335



A.D.D. COMPONENTS INSPECTION

HINT: First judge that the malfunction is found in A.D.D. control system or in 2 — 4 selector system. (See page TR-40)

1. INSPECT CLUTCH HUB AND CLUTCH SLEEVE

- Check the wear and damage of the clutch hub and clutch sleeve.
If necessary, replace them.
- Check that clutch sleeve slides smoothly on the clutch hub.

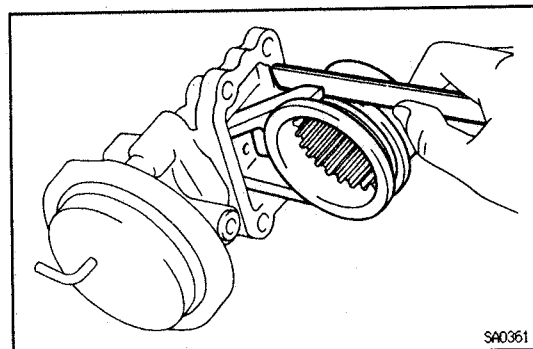
2. MEASURE CLEARANCE OF SLEEVE FORK AND CLUTCH SLEEVE

Using a feeler gauge, measure the clearance between the sleeve fork and clutch sleeve.

Maximum clearance:

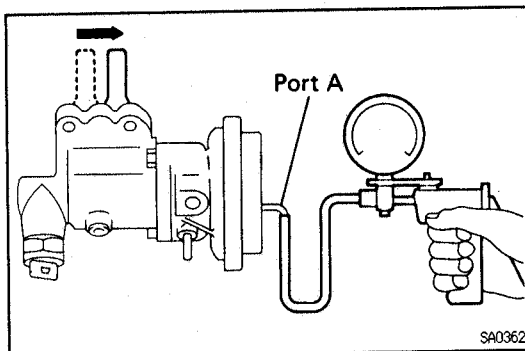
0.35 mm (0.0138 in.)

If the clearance exceeds the maximum, replace the fork or sleeve.

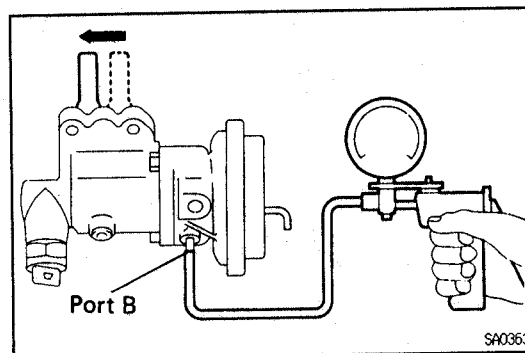


3. INSPECT A.D.D. ACTUATOR

- Check that the sleeve fork moves to the actuator side when a vacuum of 66.7 kPa (500 mmHg, 19.69 in.Hg) is applied to port A. Also check that the vacuum remains constant.
If it does not, replace the actuator.



- Check that the sleeve fork moves away from the actuator when a vacuum of 66.7 kPa (500 mmHg, 19.69 in.Hg) is applied to port B. Also check that the vacuum remains constant.
If it does not, replace the actuator.

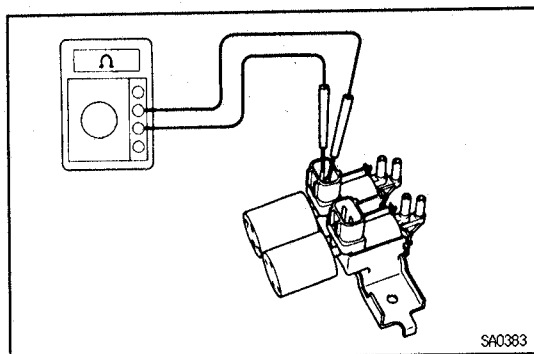


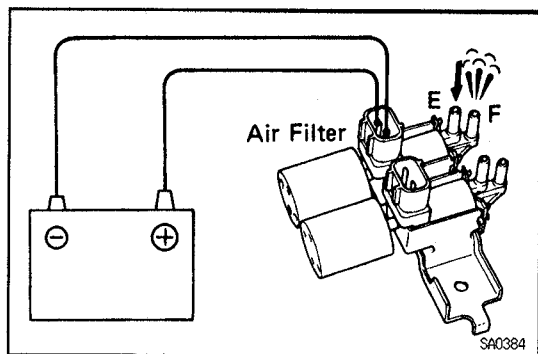
4. INSPECT A.D.D. SOLENOIDS

- Measure the resistance of the solenoids.

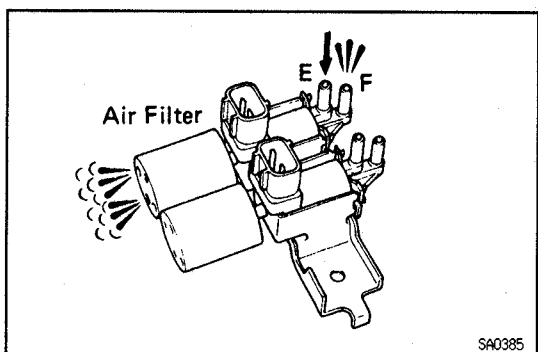
Resistance:

37 — 44 Ω

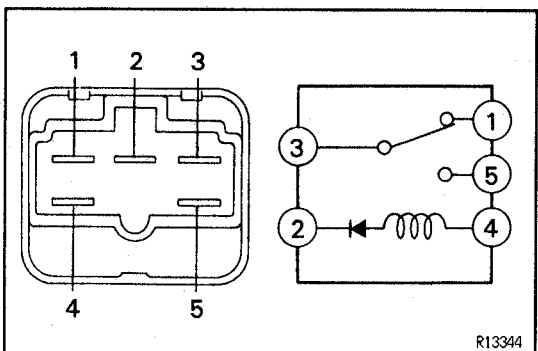




- (b) Connect the battery to the solenoid.
Check that air flows from the port E to port F.
Check that air does not flow from the port E to the air filter.



- (c) Disconnect the battery voltage from the solenoid.
Check that air flows from the port E to the air filter.
Check that air does not flow from the port E to port F.



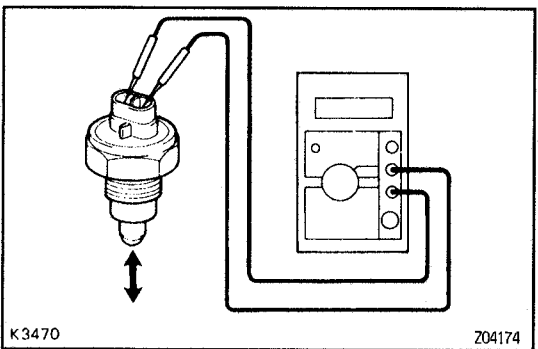
5. INSPECT A.D.D. RELAY

Continuity

Terminal Condition	1	2	3	4	5
Constant					

Connect

V06574



6. INSPECT A.D.D. SWITCH

- (a) Using an ohmmeter, check that there is continuity between terminals when the switch is pushed (differential connected position).
(b) Using an ohmmeter, check that there is no continuity when the switch is free (differential disconnected position).

7. INSPECT TRANSFER 4WD SWITCH

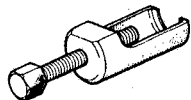
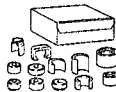
(See page TR-20)

FRONT SUSPENSION (2WD)

PREPARATION

SST (SPECIAL SERVICE TOOLS)

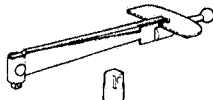
SA06W-06

	09610-20012 Pitman Arm Puller	Tie rod end
	09628-62011 Ball Joint Puller	Steering knuckle removal
	09710-30021 Suspension Bushing Tool Set	Upper and lower suspension arm bushing replacement
	(09710-03031) Bushing Remover	
	(09710-03071) Remover	
	(09710-03101) Bushing Replacer	
	(09710-03141) Bushing Remover Base	
	09727-22011 Front Spring Compressor	Coil spring removal and installation

SA

RECOMMENDED TOOLS

SA06X-00

	09025-00010 Torque Wrench (30 kgf-cm) .	
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EQUIPMENT

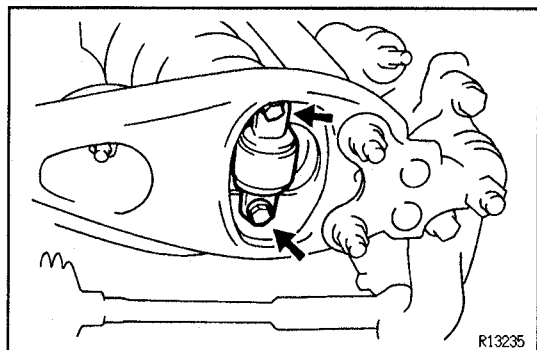
SA06Y-02

Torque wrench	
---------------	--

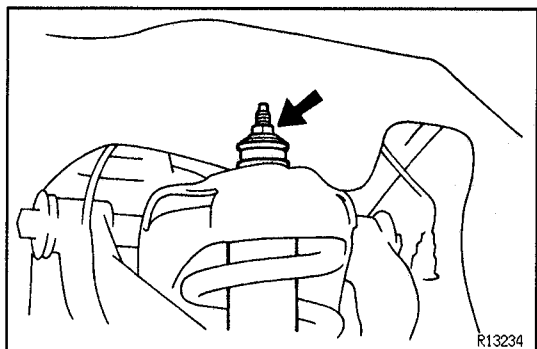
FRONT SHOCK ABSORBER COMPONENTS

SA27R-01

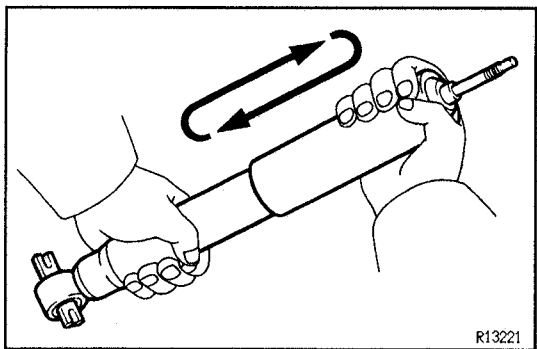
(See page SA-69)



R13235



R13234



R13221

FRONT SHOCK ABSORBER REMOVAL

SA070-09

1. REMOVE FRONT WHEEL

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

2. REMOVE SHOCK ABSORBER

- (a) Remove the 2 bolts and disconnect the shock absorber from the lower suspension arm.

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

- (b) Hold the shock absorber rod, then remove the nut, retainer, cushion and shock absorber.

Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

- (c) Remove the cushion and retainer from the shock absorber.

SA

FRONT SHOCK ABSORBER INSPECTION

SA071-02

INSPECT SHOCK ABSORBER

Compress and extend the shock absorber rod and check that there is no abnormal resistance or unusual operation sounds.

If there is any abnormality, replace the shock absorber with a new one.

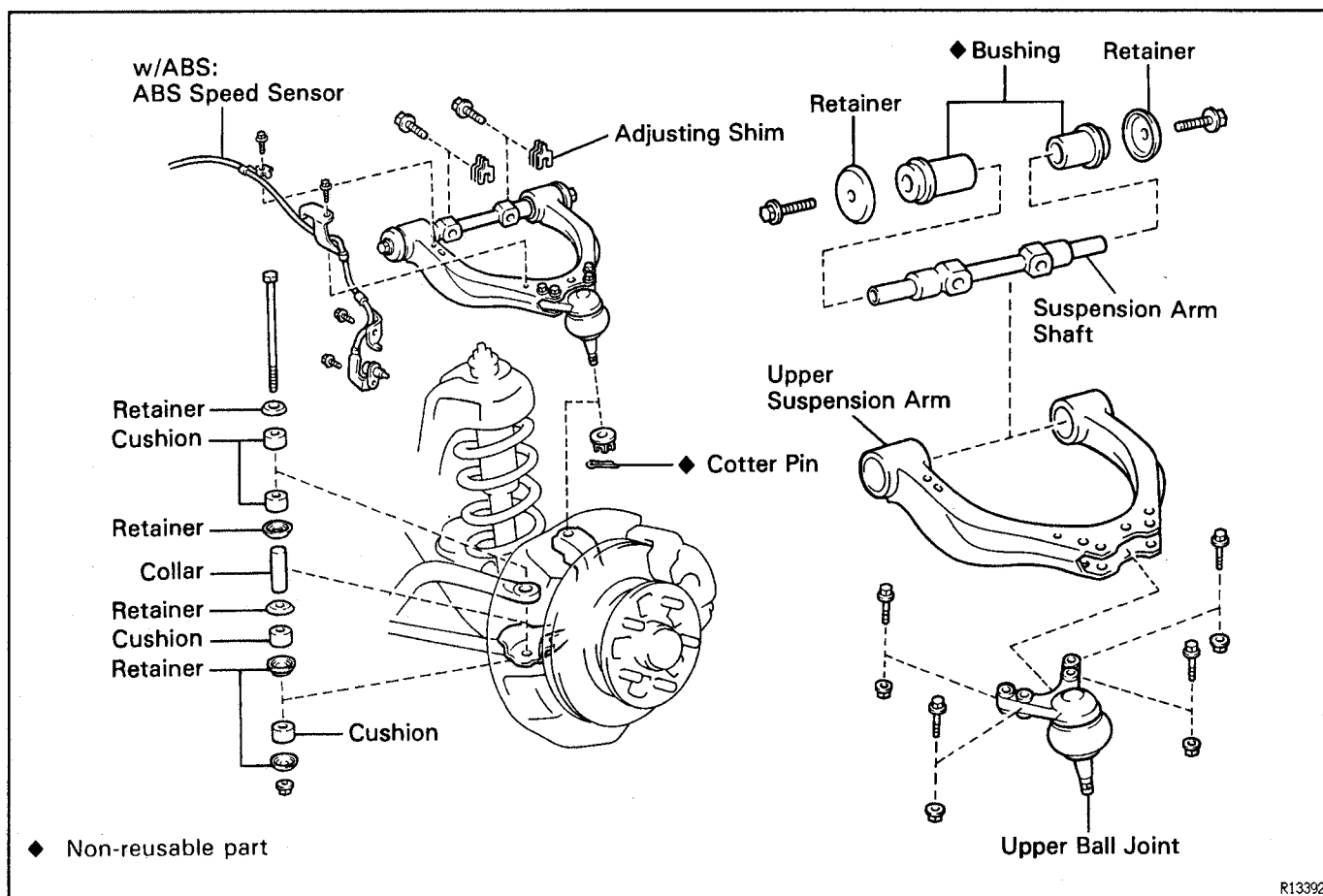
FRONT SHOCK ABSORBER INSTALLATION

SA27R-01

Installation is in the reverse order of removal.

UPPER SUSPENSION ARM COMPONENTS

9A074-09

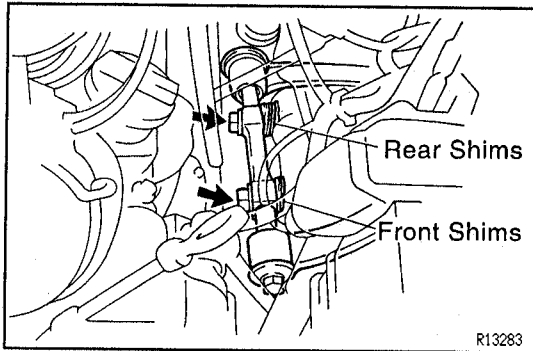


R133Q2

UPPER SUSPENSION ARM REMOVAL

241WE-02

- 1. REMOVE FRONT WHEEL**
Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)
- 2. w/ABS:**
REMOVE ABS SPEED SENSOR AND WIRE HARNESS CLAMP
Torque: 8 N·m (82 kgf·cm, 71 in·lbf)
- 3. REMOVE STABILIZER BAR LINK**
(See page SA-73)
- 4. DISCONNECT STEERING KNUCKLE FROM UPPER BALL JOINT**
(See page SA-14)



5. REMOVE UPPER SUSPENSION ARM

- (a) Loosen the 2 bolts and remove the front and rear alignment adjusting shims.

Torque: 130 N·m (1,300 kgf·cm, 94 ft·lbf)

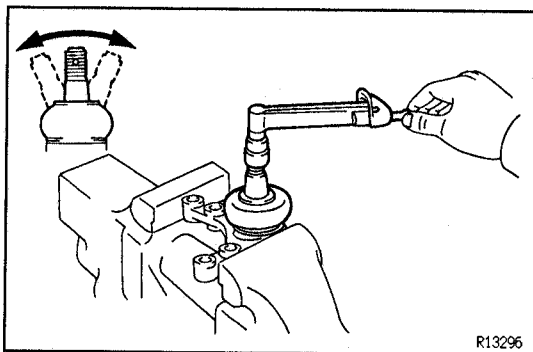
REMOVAL HINT: Make a note of the number and thickness of the front and rear shims.

- (b) Remove the 2 bolts and upper suspension arm.

6. REMOVE UPPER BALL JOINT

Remove the 4 bolts, nuts and upper ball joint from the upper suspension arm.

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)



UPPER BALL JOINT INSPECTION

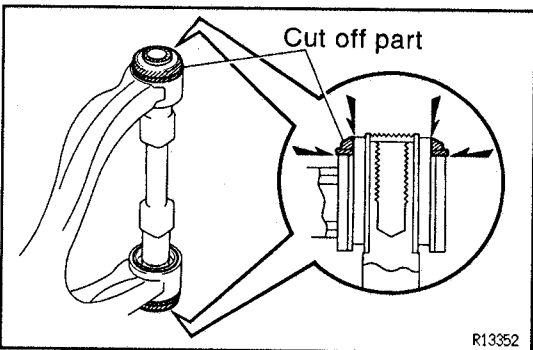
SA1WT-01

INSPECT BALL JOINT FOR ROTATION CONDITION

- (a) Flip the ball joint stud back and forth 5 times before installing the nut.
- (b) Using a torque wrench, turn the nut continuously one turn every 2–4 seconds and take the torque reading on the 5th turn.

Torque (turning):

0.5–3.5 N·m (5–35 kgf·cm, 4–30 in·lbf)



UPPER SUSPENSION ARM SHAFT AND BUSHING REPLACEMENT

SA076-03

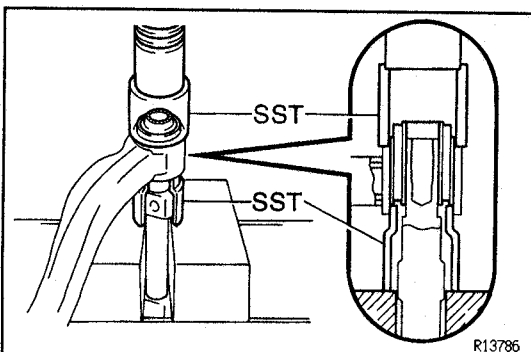
1. REMOVE LOCK BOLTS

Remove the 2 bolts and retainers from the arm shaft.

2. REMOVE BUSHINGS

- (a) Cut off the shaded portions shown in the illustration to expose the edge of the tubes.

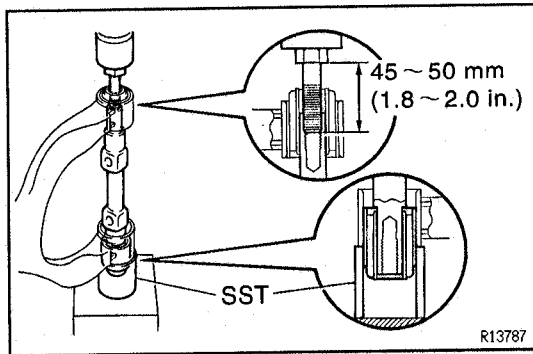
NOTICE: Be careful not to damage the edge of arm tubes.



- (b) Using SST and a press, press down the suspension arm tube until it touches SST.

SST 09710-30021 (09710-03031, 09710-03141)

NOTICE: Do not press the tube excessively.



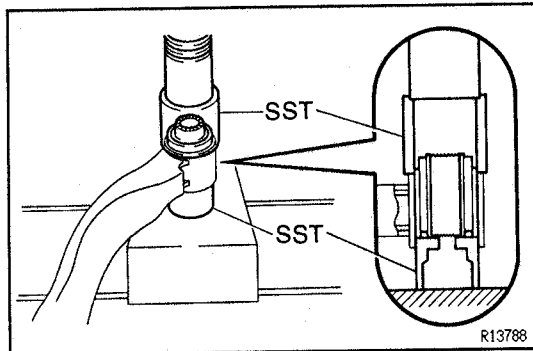
- (c) Temporarily install a bolt to the arm shaft on the other side.

Bolt length:

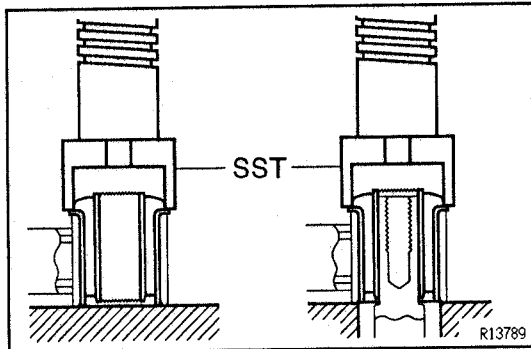
45 – 50 mm (1.8 – 2.0 in.)

- (d) Using SST and a press, remove the bushing and arm shaft.

SST 09710-30021 (09710-03141)



- (e) Using SST and a press, remove the other bushing.
SST 09710-30021 (09710-03071, 09710-03141)

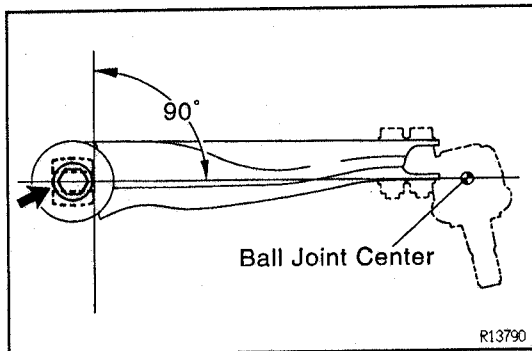


3. INSTALL NEW BUSHINGS

- (a) Using SST and a press, install a new bushing.
SST 09710-30021 (09710-03101)
(b) Place the arm shaft to the bushing.
(c) Using SST and a press, install a new other bushing.
SST 09710-30021 (09710-03101)

HINT: Pass the arm shaft through the bushing.

- (d) Check that the arm shaft turns easily, and check that there is no axial play in the arm shaft.



4. INSTALL LOCK BOLTS

Position the arm shaft so that the frame installation surface is at 90° to the suspension arm as shown, and torque the lock bolts.

Torque: 125 N·m (1,255 kgf·cm, 91 ft·lbf)

UPPER SUSPENSION ARM INSTALLATION

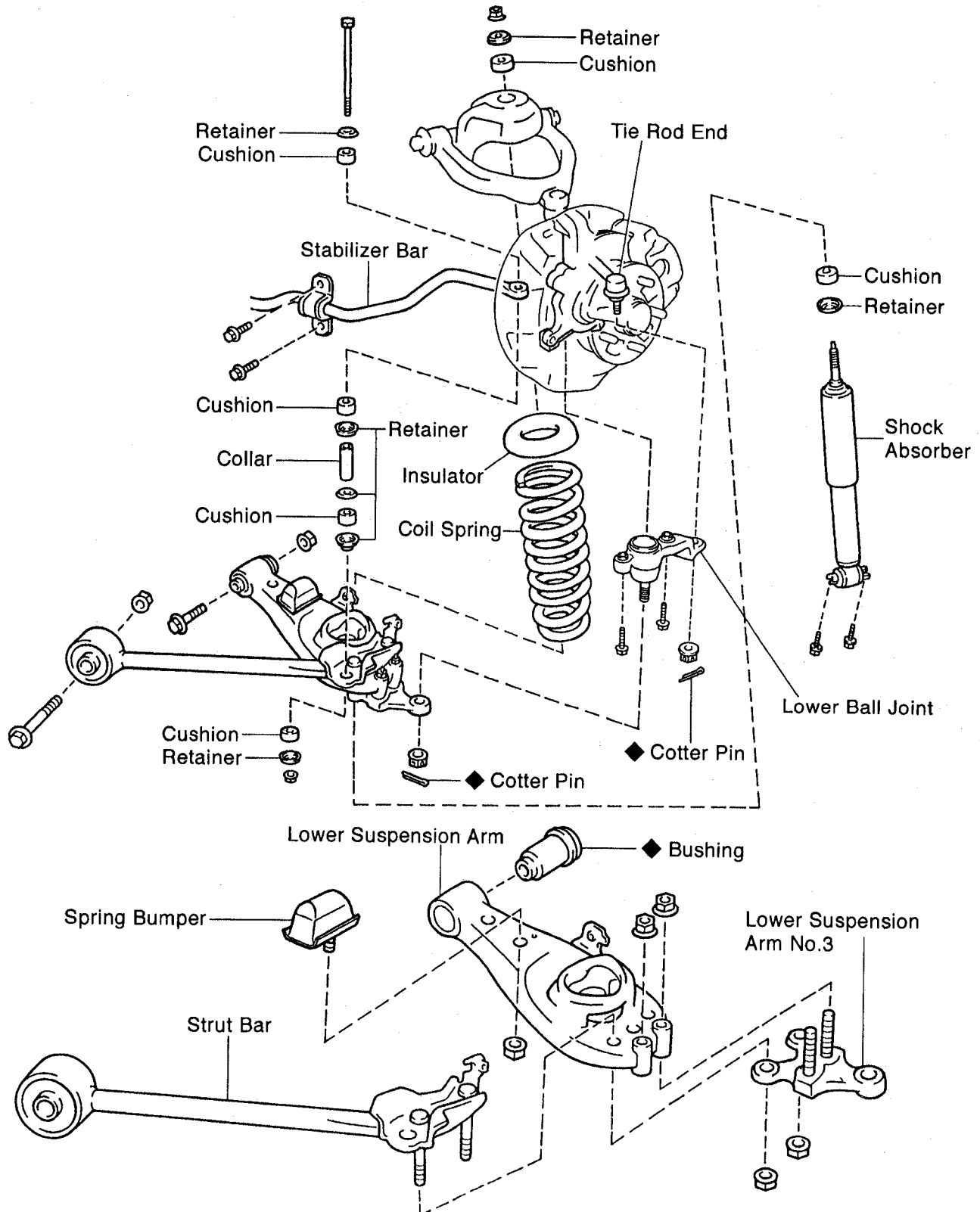
Installation is in the reverse order of removal.

HINT: After installation, check ABS speed sensor signal and front wheel alignment.

(See page BR-51 and SA-2)

LOWER SUSPENSION ARM AND COIL SPRING COMPONENTS

SA078-03



◆ Non-reusable part

W00250

LOWER SUSPENSION ARM AND COIL SPRING REMOVAL

1. REMOVE FRONT WHEEL

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

2. REMOVE SHOCK ABSORBER

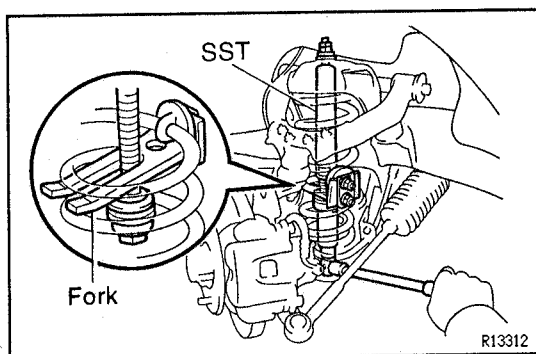
(See page SA-65)

3. COMPRESS COIL SPRING

Using SST, compress the coil spring.

SST 09727-22011 (09727-23010, 09727-23020, 09727-23030, 09727-23040)

HINT: When setting the fork, insert it to the center area of the coil spring and lower it by turning it along the coil spring.



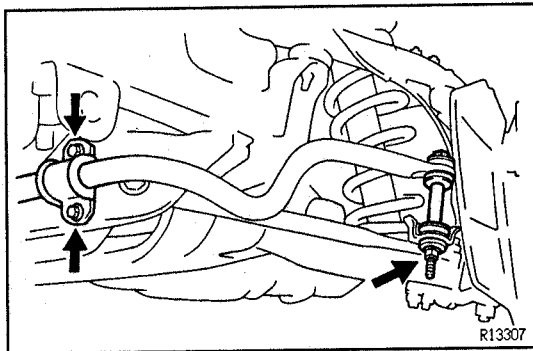
4. DISCONNECT STABILIZER BAR

- (a) Remove the nut and stabilizer bar link from the lower suspension arm.

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

- (b) Remove the 2 stabilizer bar bracket set bolts.

Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)



5. REMOVE LOWER SUSPENSION ARM AND STRUT BAR

- (a) Support the upper suspension arm and steering knuckle securely.

- (b) Remove the cotter pin and nut.

Torque: 110 N·m (1,100 kgf·cm, 80 ft·lbf)

- (c) Using SST, disconnect the lower ball joint from the lower suspension arm.

SST 09628-62011

NOTICE: Be careful not to damage the lower ball joint boot.

- (d) Loosen the lower suspension arm set bolt and remove the nut.

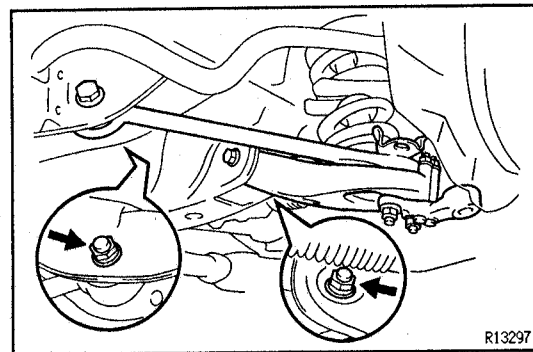
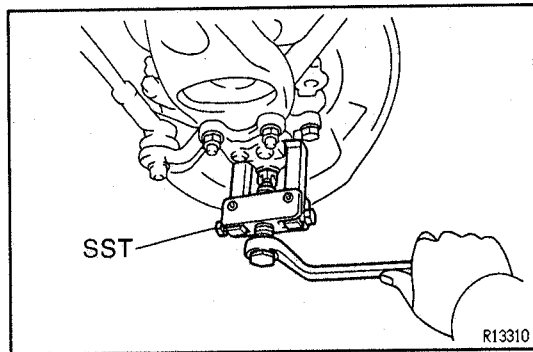
Torque: 200 N·m (2,050 kgf·cm, 148 ft·lbf)

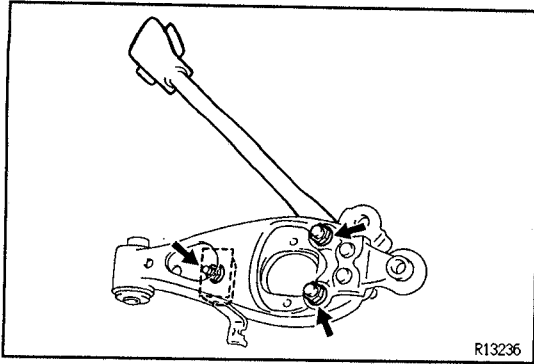
INSTALLATION HINT: After stabilizing the suspension, torque the bolt.

- (e) Loosen the strut bar front set bolt and remove the nut.

Torque: 300 N·m (3,050 kgf·cm, 221 ft·lbf)

INSTALLATION HINT: After stabilizing the suspension, torque the bolt.





- (f) Pull out the 2 bolts and remove the lower suspension arm and strut bar.

6. REMOVE SST AND COIL SPRING

INSTALLATION HINT: Place the end of the coil spring and lower suspension arm seat in contact.

7. REMOVE STRUT BAR AND SPRING BUMPER

- (a) Remove 2 nuts and strut bar from the lower suspension arm.

Torque: 150 N·m (1,530 kgf·cm, 111 ft·lbf)

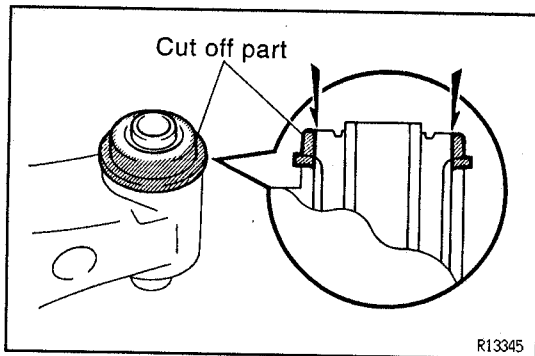
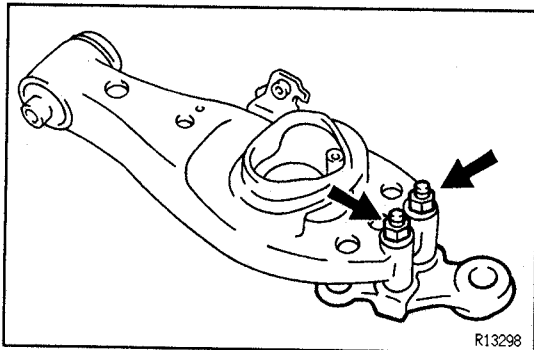
- (b) Remove the nut and spring bumper.

Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)

8. REMOVE LOWER SUSPENSION ARM NO.3

Remove the 2 nuts and lower suspension arm No.3.

Torque: 150 N·m (1,530 kgf·cm, 111 ft·lbf)



LOWER SUSPENSION ARM BUSHING REPLACEMENT

SA1WV-02

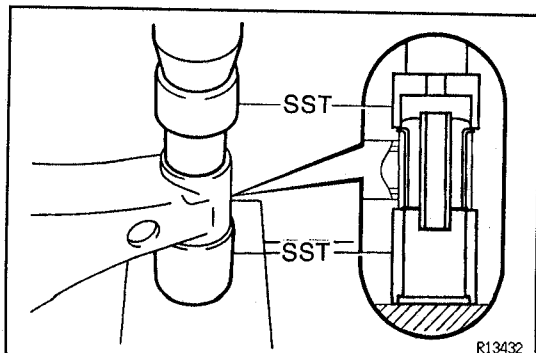
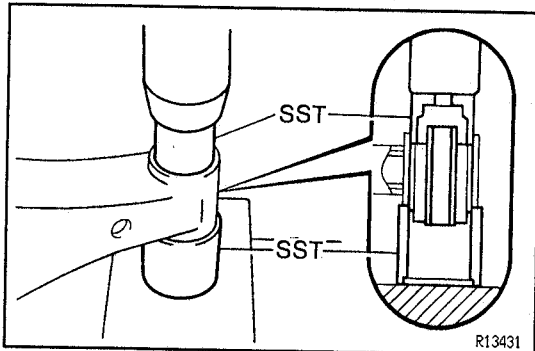
1. REMOVE LOWER SUSPENSION ARM BUSHING

- (a) Cut off the shaded portion shown in the illustration to expose the edge of the tube.

NOTICE: Be careful not to damage the edge of the arm tube.

- (b) Face the cut side downward and using SST and a press, remove the bushing.

SST 09710-30021 (09710-03071, 09710-03141)



2. INSTALL LOWER SUSPENSION ARM BUSHING

Using SST and a press, install a new bushing.

SST 09710-30021 (09710-03101, 09710-03141)

NOTICE: Press in the bushing from the rear side.

LOWER SUSPENSION ARM AND COIL SPRING INSTALLATION

Installation is in the reverse order of removal.

HINT: After installation, check front wheel alignment.
(See page SA-2)

LOWER BALL JOINT COMPONENTS

SA27W-01

(See page SA-69)

SA07H-03

LOWER BALL JOINT REMOVAL

1. REMOVE FRONT WHEEL
Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)
2. SUPPORT LOWER SUSPENSION ARM WITH JACK
3. DISCONNECT TIE ROD END
 - (a) Loosen the 2 lower ball joint set bolts.
Torque: 160 N·m (1,600 kgf·cm, 116 ft·lbf)

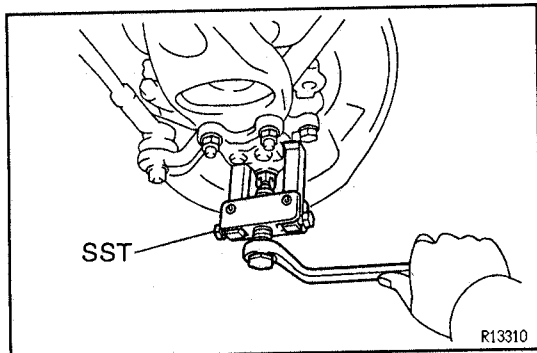
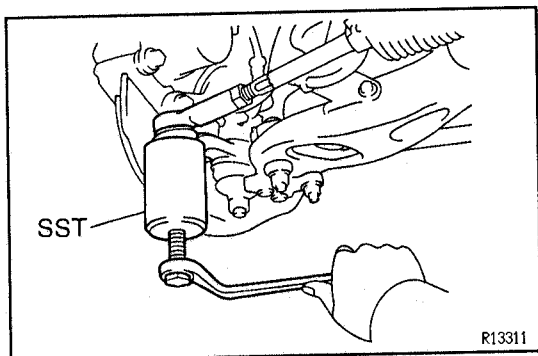
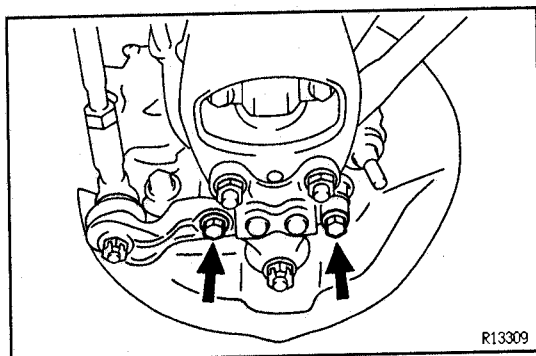
REMOVAL HINT: Do not remove the bolts.

- (b) Remove the cotter pin and nut.
Torque: 72 N·m (730 kgf·cm, 53 ft·lbf)
- (c) Using SST, disconnect the tie rod end.
SST 09628-62011

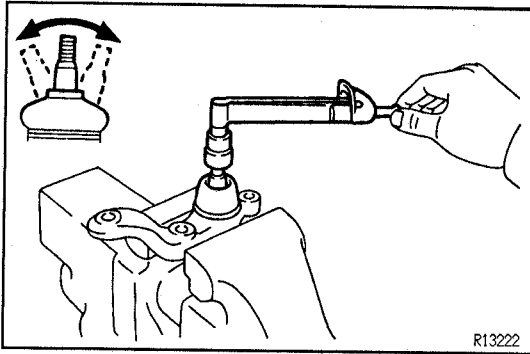
4. REMOVE LOWER BALL JOINT

- (a) Remove the cotter pin and loosen the nut.
Torque: 110 N·m (1,100 kgf·cm, 80 ft·lbf)
- (b) Using SST, disconnect the lower ball joint.
SST 09628-62011
- (c) Remove the nut, 2 bolts and lower ball joint.

SA



SA07J-0F



LOWER BALL JOINT INSPECTION

- INSPECT BALL JOINT FOR ROTATION CONDITION**
- Flip the ball joint stud back and forth 5 times before installing the nut.
 - Using a torque wrench, turn the nut continuously one turn every 2–4 seconds and take the torque reading on the 5th turn.

Torque (turning):

0.5–3.5 N·m (5–35 kgf·cm, 4–30 in.-lbf)

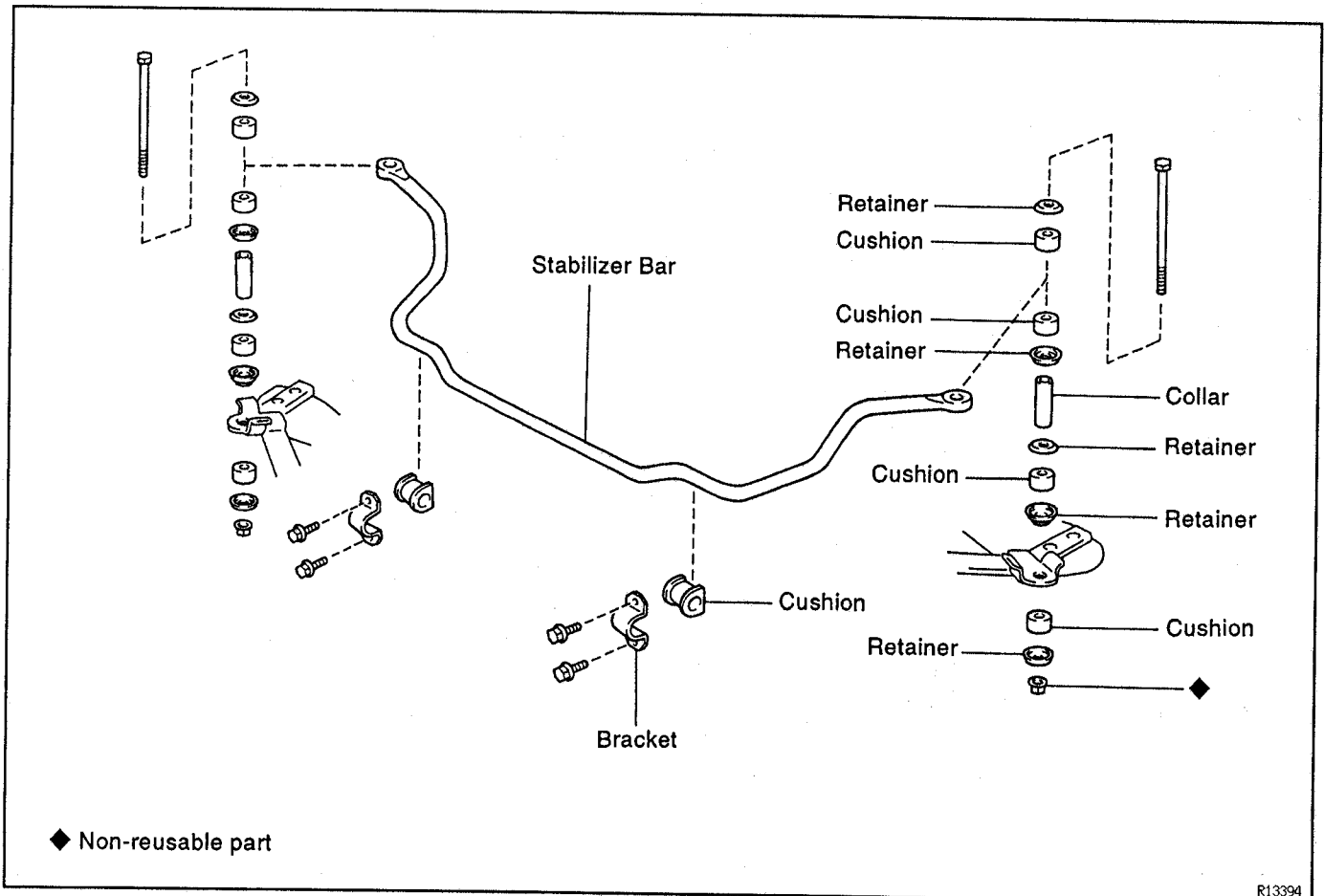
SA27X-01

LOWER BALL JOINT INSTALLATION

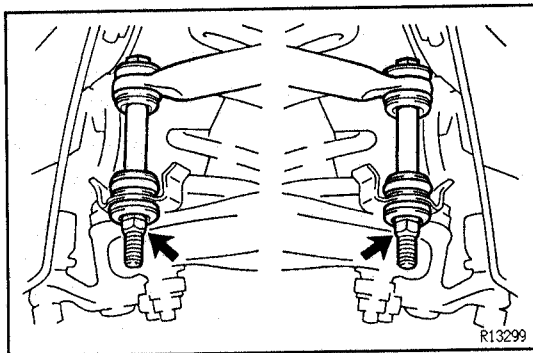
Installation is in the reverse order of removal.

STABILIZER BAR COMPONENTS

SA07G-02



R13394



STABILIZER BAR REMOVAL

1. REMOVE FRONT WHEELS

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

2. REMOVE STABILIZER BAR

- (a) Hold the bolt with a wrench, then remove the nut, retainer, collar and cushion from the lower suspension arm.

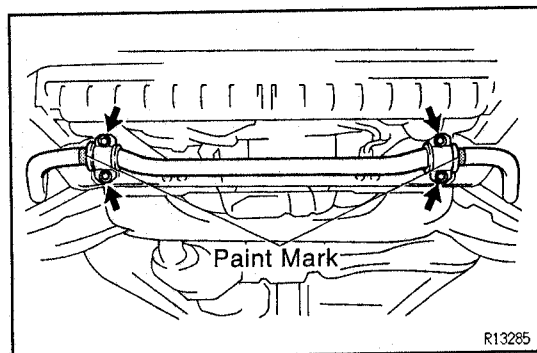
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

- (b) Remove the 4 bolts and stabilizer bar with the cushions and brackets.

Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

- (c) Remove the brackets and cushions from the stabilizer bar.

INSTALLATION HINT: Install the cushions to the inside of the paint mark.



STABILIZER BAR INSTALLATION

BA27Y-01

Installation is in the reverse order of removal.

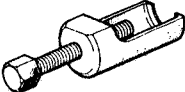
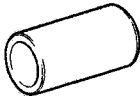
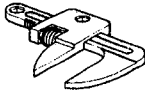
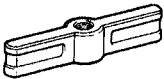
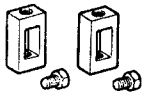
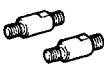
FRONT SUSPENSION

(4WD)

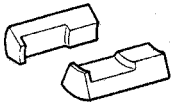
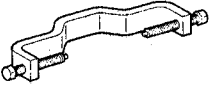
PREPARATION

SST (SPECIAL SERVICE TOOLS)

8A020-14

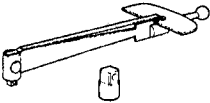
	09309-37010 Transmission Bearing Replacer	Upper ball joint installation
	09506-35010 Differential Drive Pinion Rear Bearing Replacer	Shock absorber bushing replacement
	09610-20012 Pitman Arm Puller	Tie rod end removal
	09628-62011 Ball Joint Puller	Lower ball joint removal
	09632-36010 Steering Vane Pump Bearing Replacer	Shock absorber bushing replacement
	09727-30030 Coil Spring Compressor	Coil spring removal and inspection
	09922-10010 Variable Open Wrench	No. 1 and No. 2 spring bumper removal and installation
	09950-40010 Puller B Set	Upper ball joint disconnection Upper ball joint removal
	(09951-04010) Hanger 150	
	(09952-04010) Slide Arm	
	(09953-04020) Center Bolt 150	
	(09954-04010) Arm 25	

SA

	(09955-04030) Claw No.3	
	(09957-04010) Attachment	Upper ball joint removal
	(09958-04010) Holder	

SA05X-08

RECOMMENDED TOOLS

	09025-00010 Torque Wrench (30 kgf-cm) .	
	09905-00012 Snap Ring No.1 Expander .	

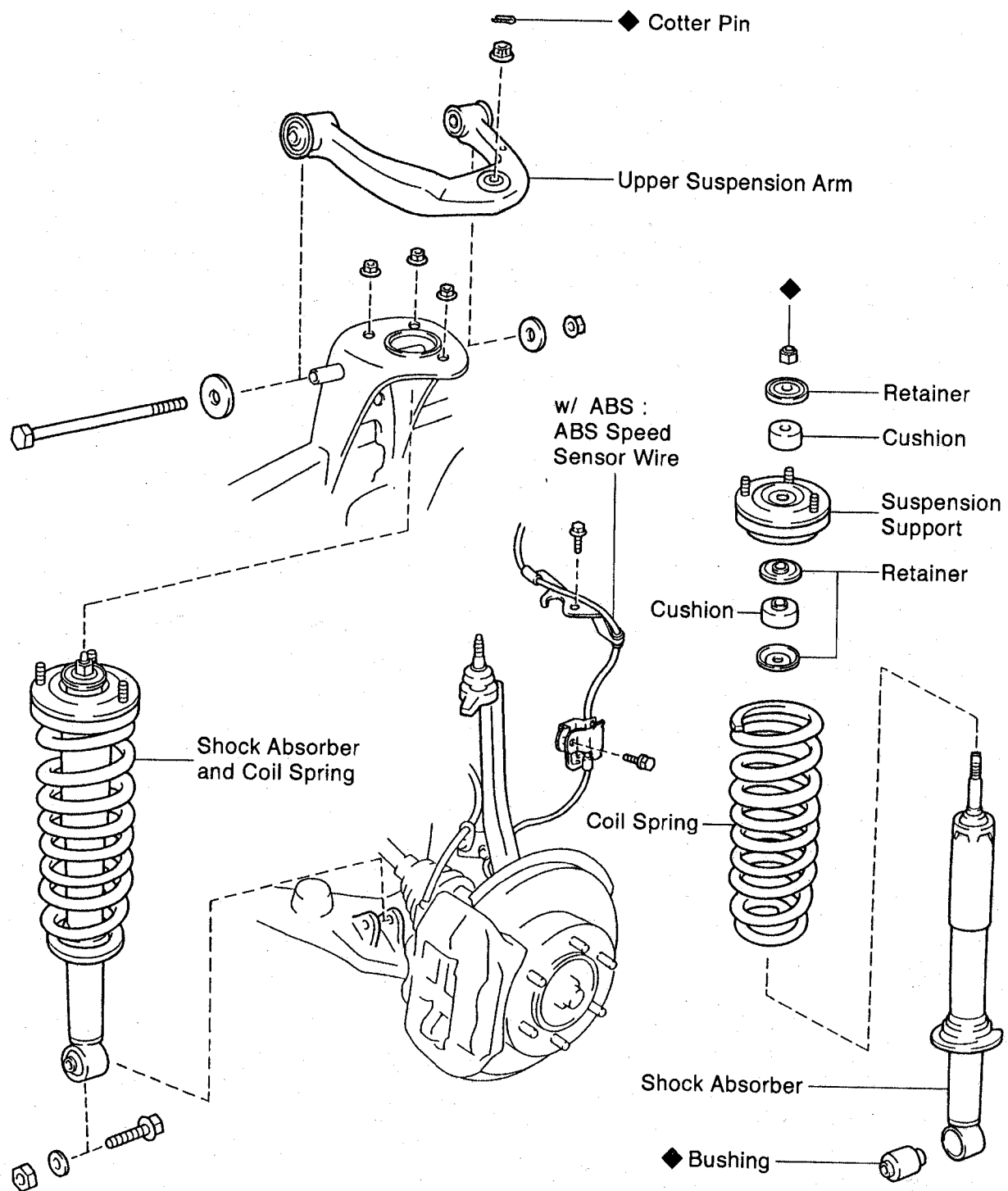
SA02B-08

EQUIPMENT

Torque wrench	
---------------	--

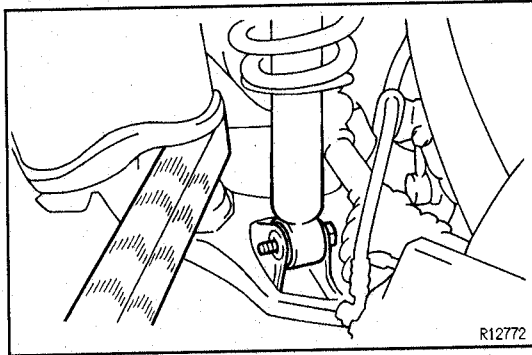
FRONT SHOCK ABSORBER COMPONENTS

SA0N1-06

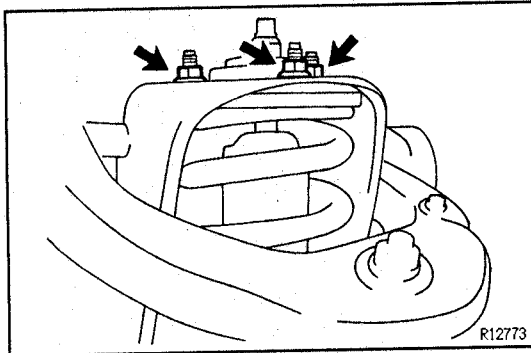


◆ Non-reusable part

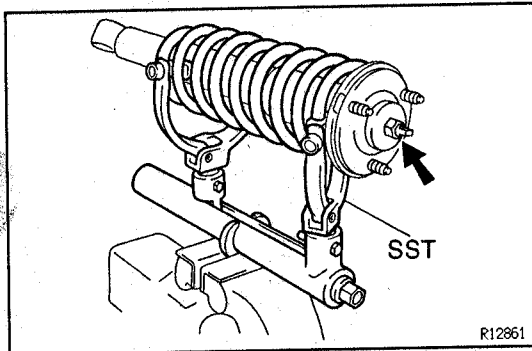
W00251



R12772



R12773



R12861

FRONT SHOCK ABSORBER REMOVAL

1. REMOVE FRONT WHEEL

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

2. DISCONNECT SHOCK ABSORBER FROM LOWER SUSPENSION ARM

- (a) Loosen the bolt and remove the shock absorber lower nut.

Torque: 135 N·m (1,400 kgf·cm, 101 ft·lbf)

INSTALLATION HINT: After stabilizing the suspension, torque the bolt.

- (b) While lowering the lower suspension arm, remove the bolt and disconnect the shock absorber.

3. REMOVE SHOCK ABSORBER AND COIL SPRING

Remove the 3 nuts and shock absorber and coil spring.

Torque: 64 N·m (650 kgf·cm, 47 ft·lbf)

FRONT SHOCK ABSORBER DISASSEMBLY

SA1BP-02

1. REMOVE SUSPENSION SUPPORT AND COIL SPRING

- (a) Using SST, compress the coil spring until there is a clearance on both ends.

SST 09727-30030

NOTICE:

To avoid damage to SST:

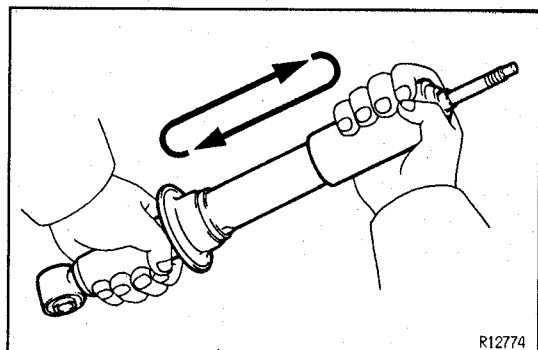
- Set SST arms to allow clearance to hold a 8-roll coil between them.
- Do not compress the coil spring more than necessary.
- Do not use an impact wrench.

- (b) Remove suspension support center nut.

- (c) Remove the suspension support and coil spring.

2. REMOVE INSULATOR FROM SUSPENSION SUPPORT

BA0HL-04



FRONT SHOCK ABSORBER INSPECTION

INSPECT SHOCK ABSORBER

Compress and extend the shock absorber rod and check that there is no abnormal resistance or unusual operation sounds.

If there is any abnormality, replace the shock absorber with a new one.

NOTICE: When discarding the shock absorber, use the following procedure.

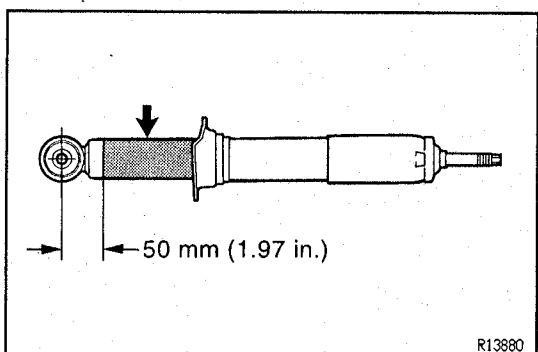
BA0HM-03

FRONT SHOCK ABSORBER DISPOSAL

1. FULLY EXTEND SHOCK ABSORBER ROD
2. DRILL HOLE TO REMOVE GAS FROM CYLINDER

Using a drill, make a hole in the cylinder as shown to remove the gas inside.

CAUTION: The gas coming out is harmless, but be careful of chips which may fly up when drilling.



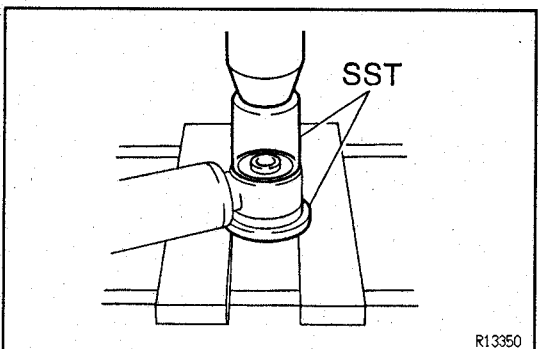
BA106-02

SHOCK ABSORBER BUSHING REPLACEMENT

1. REMOVE BUSHING

Using SST and a press, remove the bushing.

SST 09506-35010, 09632-36010

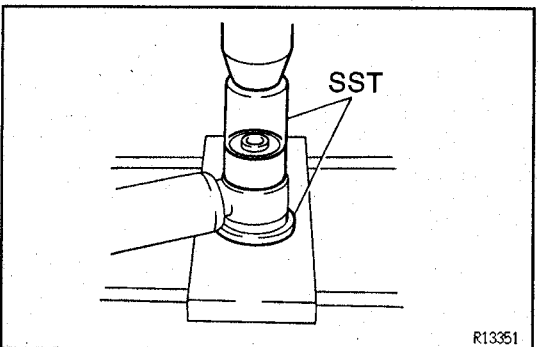


2. INSTALL NEW BUSHING

Using SST and a press, install a new bushing.

SST 09506-35010, 09632-36010

HINT: Do not apply grease or oil to the bushing.



SA

FRONT SHOCK ABSORBER ASSEMBLY

1. INSTALL INSULATOR TO SUSPENSION SUPPORT

HINT: Match the bolt of the suspension support with the cut-out part of the insulator.

2. INSTALL COIL SPRING TO SHOCK ABSORBER

(a) Using SST, compress the coil spring.

SST 09727-30030

NOTICE:

To avoid damage to SST:

- Set SST arms to allow clearance to hold a 8-roll coil between them.
- Do not compress the coil spring more than necessary.
- Do not use an impact wrench.

(b) Install the coil spring to the shock absorber.

HINT: Fit the lower end of the coil spring into the gap of the spring seat of the shock absorber.

3. INSTALL SUSPENSION SUPPORT

(a) Install the suspension support to the rod.

(b) Temporarily tighten a new suspension support center nut.

(c) Position the suspension support so that a line drawn between the 2 bolts would be parallel to the direction of the lower bushing.

(d) Remove the SST.

HINT: After removing the SST, again check the direction of the suspension support.

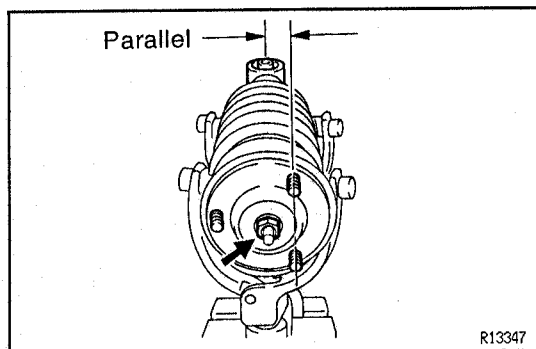
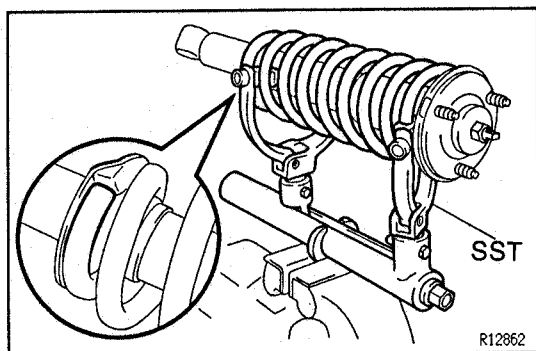
(e) Torque the suspension center nut.

Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

FRONT SHOCK ABSORBER INSTALLATION

SA272-01

Installation is in the reverse order of removal.



UPPER SUSPENSION ARM COMPONENTS

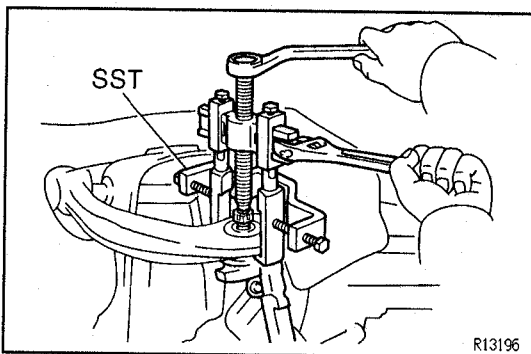
SA280-01

(See page SA-77)

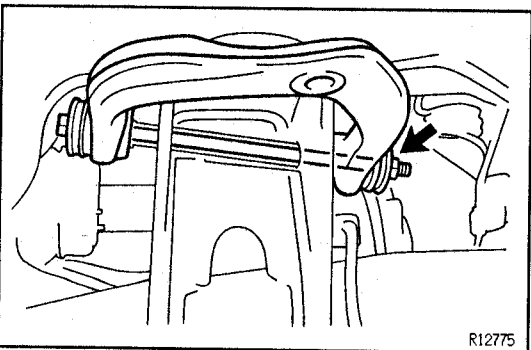
UPPER SUSPENSION ARM REMOVAL

SA1WD-02

1. REMOVE SHOCK ABSORBER AND COIL SPRING
(See page SA-77)
2. w/ABS:
DISCONNECT ABS SPEED SENSOR WIRE HARNESS CRAMP
Torque: 8 N·m (82 kgf·cm, 71 in·lbf)



3. DISCONNECT UPPER BALL JOINT
 - (a) Remove the cotter pin and loosen the nut.
Torque: 105 N·m (1,100 kgf·cm, 80 ft·lbf)
 - (b) Using SST, disconnect the upper ball joint.
SST 09950-40010 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04030, 09958-04010)
 - (c) Support the steering knuckle securely.
 - (d) Remove the nut.



4. REMOVE UPPER SUSPENSION ARM
Remove the nut, bolt and upper suspension arm.
Torque: 115 N·m (1,200 kgf·cm, 87 ft·lbf)
INSTALLATION HINT: After stabilizing the suspension, torque the nut.

UPPER SUSPENSION ARM INSTALLATION

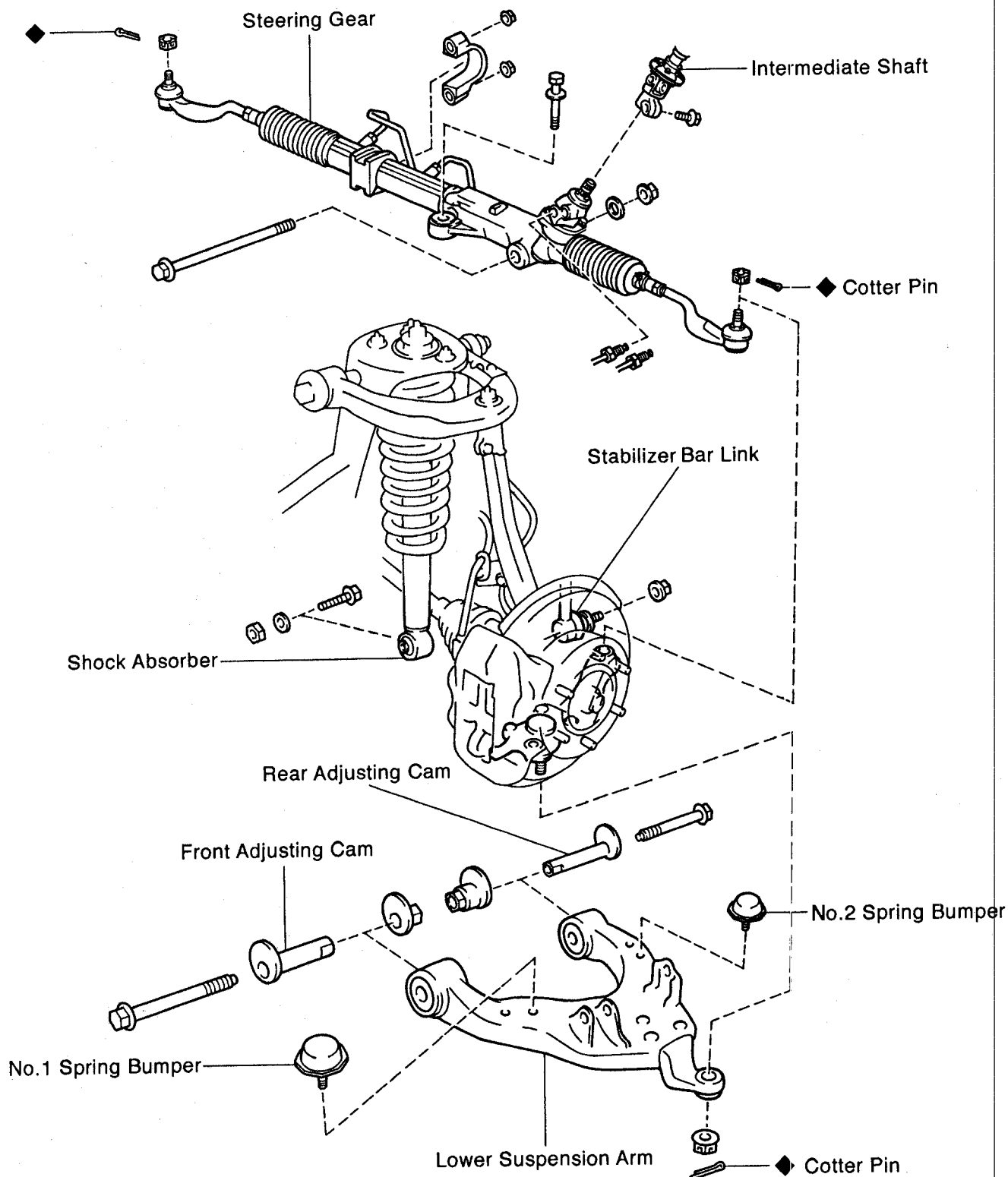
SA281-01

Installation is in the reverse order of removal.

HINT: After installation, check front wheel alignment.
(See page SA-8)

LOWER SUSPENSION ARM COMPONENTS

8A0P1-08



LOWER SUSPENSION ARM REMOVAL

1. REMOVE FRONT WHEEL

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

2. REMOVE STEERING GEAR ASSEMBLY

(See page SR-80)

3. DISCONNECT STABILIZER BAR LINK

(See page SA-87)

4. DISCONNECT SHOCK ABSORBER FROM LOWER SUSPENSION ARM

(See page SA-77)

5. DISCONNECT LOWER BALL JOINT

(a) Support the upper suspension arm and steering knuckle securely.

(b) Remove the cotter pin and nut from the lower ball joint.

Torque: 152 N·m (1,550 kgf·cm, 112 ft·lbf)

(b) Using SST, disconnect the lower ball joint from the lower suspension arm.

SST 09610-20012

NOTICE: Be careful not to damage the lower ball joint.

INSTALLATION HINT: Face the cotter pin hole of the lower ball joint forward.

6. REMOVE LOWER SUSPENSION ARM

(a) Place matchmarks on the front and rear adjusting cams.

(b) Remove the nuts, adjusting cams and lower suspension arm.

Torque: 130 N·m (1,325 kgf·cm, 96 ft·lbf)

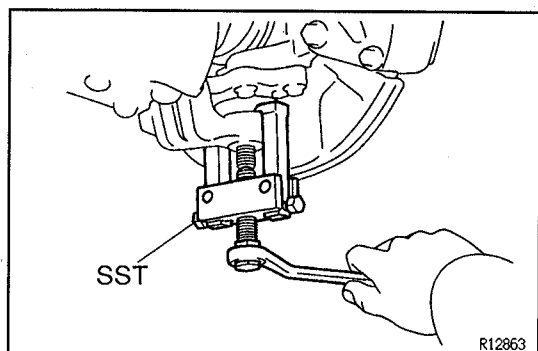
7. REMOVE NO.1 AND NO.2 SPRING BUMPERS

Using SST, remove the No. 1 and No. 2 spring bumpers.

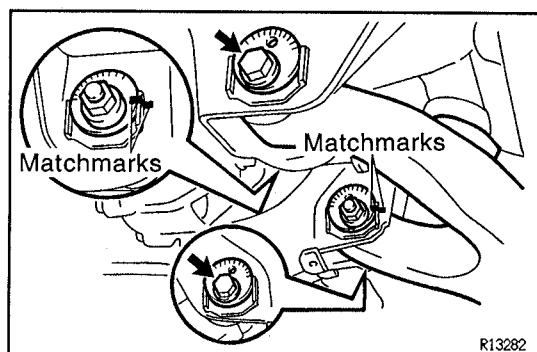
SST 09922-10010

Torque: 23 N·m (235 kgf·cm, 17 ft·lbf)

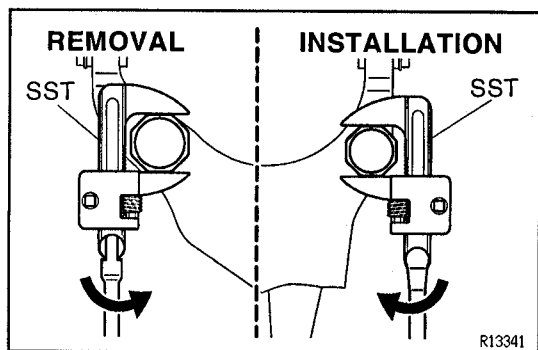
INSTALLATION HINT: Use a torque wrench with a fulcrum length of 34.5 cm (13.6 in.).



R1263



R13282



R13341

LOWER SUSPENSION ARM INSTALLATION

Installation is in the reverse order of removal.

HINT: After installation, check front wheel alignment.

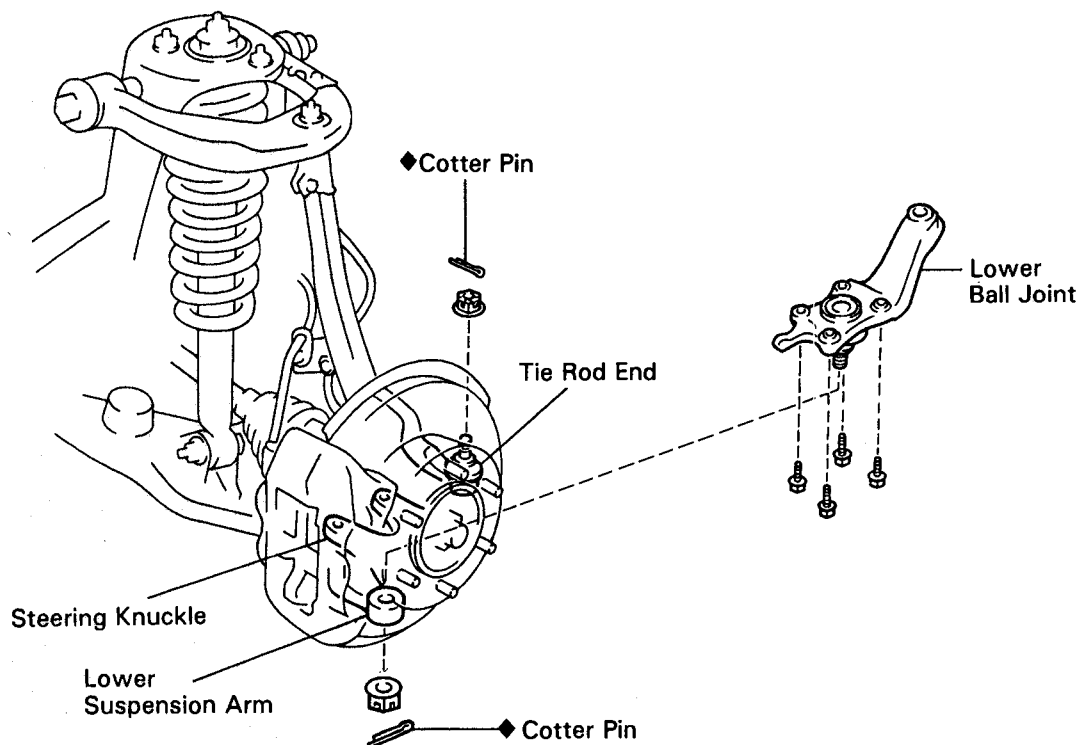
(See page SA-8)

UPPER AND LOWER BALL JOINT COMPONENTS

SA283-01

(Upper ball joint: See page SA-21)

Lower Ball Joint:



SA

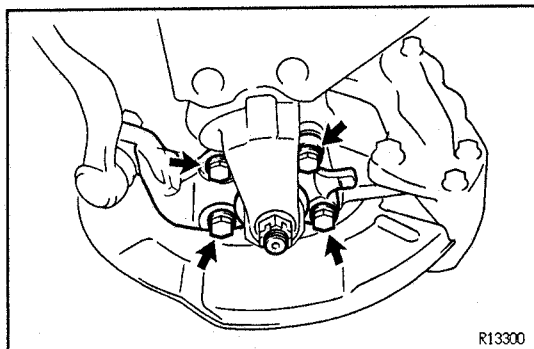
◆ Non-reusable part

R13647

UPPER BALL JOINT REMOVAL

SA1WH-02

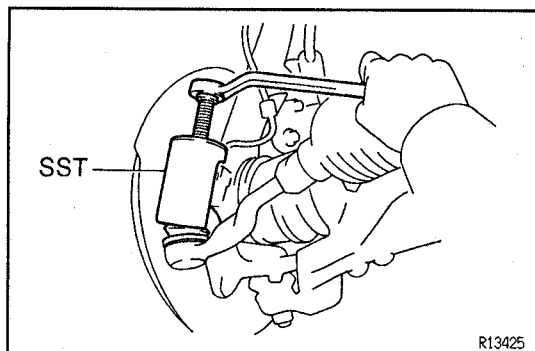
REMOVE STEERING KNUCKLE WITH AXLE HUB
(See page SA-21)



LOWER BALL JOINT REMOVAL

SA284-01

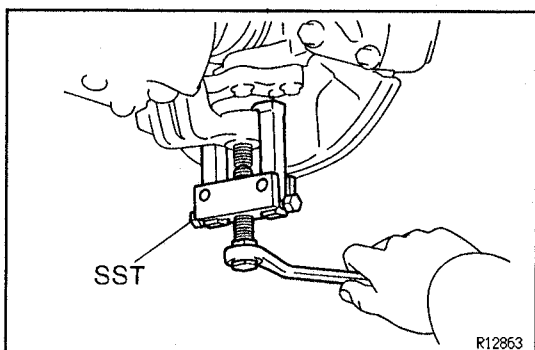
1. REMOVE FRONT WHEEL
Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)
 2. DISCONNECT TIE ROD END
 - (a) Loosen the 4 bolts.
Torque: 113 N·m (1,150 kgf·cm, 83 ft·lbf)
- REMOVAL HINT: Do not remove the bolts.



- (b) Remove the cotter pin and nut from the tie rod end.
Torque: 90 N·m (930 kgf·cm, 67 ft·lbf)
- (c) Using SST, disconnect the tie rod end from the steering knuckle.
SST 09610-20012

3. REMOVE LOWER BALL JOINT

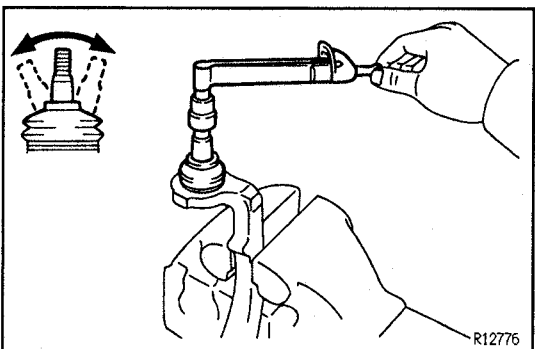
- (a) Remove the cotter pin and nut from the lower ball joint.
Torque: 152 N·m (1,550 kgf·cm, 112 ft·lbf)



- (b) Using SST, disconnect the lower ball joint from the lower suspension arm.
SST 09628-62011
INSTALLATION HINT: Face the cotter pin hole of the lower ball joint forward.

- (c) Remove the 4 bolts.
- (d) While lifting the upper suspension arm and steering knuckle, remove the lower ball joint.

REMOVAL HINT: After removing the lower ball joint, support the upper suspension arm and steering knuckle securely.



UPPER AND LOWER BALL JOINTS INSPECTION

SA1WK-02

INSPECT BALL JOINT FOR ROTATION CONDITION

- (a) Flip the ball joint stud back and forth 5 times before installing the nut.
- (b) Using a torque wrench, turn the nut continuously one turn every 2-4 seconds and take the torque reading on the 5th turn.

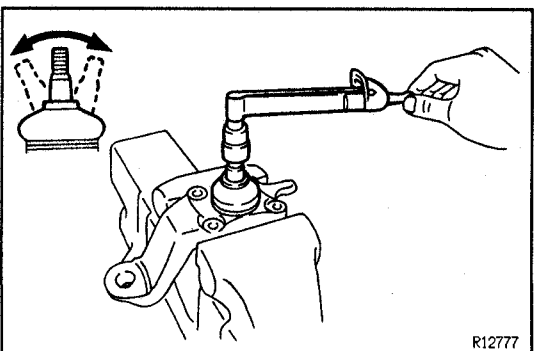
Torque (turning):

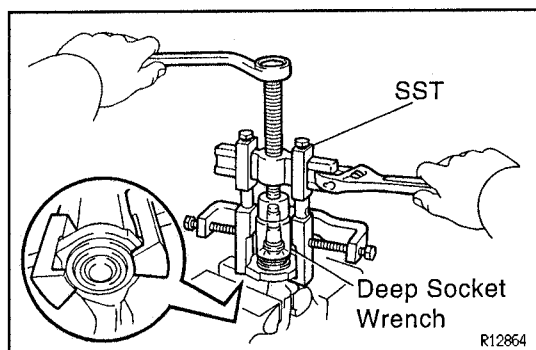
Upper ball joint

0.7 - 4.4 N·m (7 - 45 kgf·cm, 6 - 39 in·lbf)

Lower ball joint

0.5 - 3.9 N·m (5 - 40 kgf·cm, 4 - 35 in·lbf)





UPPER BALL JOINT REPLACEMENT

1. REMOVE UPPER BALL JOINT

- (a) Remove the wire and boot.
- (b) Using a snap ring expander, remove the snap ring.
- (c) Using SST and a deep socket wrench, remove the upper ball joint.

SST 09950-40010 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04030, 09957-04010, 09958-04010)

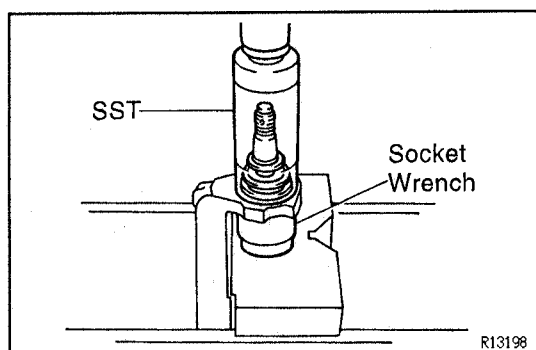
2. INSTALL UPPER BALL JOINT

- (a) Using SST and a socket wrench, press in a new upper ball joint.

SST 09309-37010

- (b) Using a snap ring expander, install a new snap ring.
- (c) Install a new boot and fix it with a new wire.

HINT: Use the grease supplied in the kit.



UPPER BALL JOINT INSTALLATION

INSTALL STEERING KNUCKLE WITH AXLE HUB
(See page SA-21)

LOWER BALL JOINT INSTALLATION

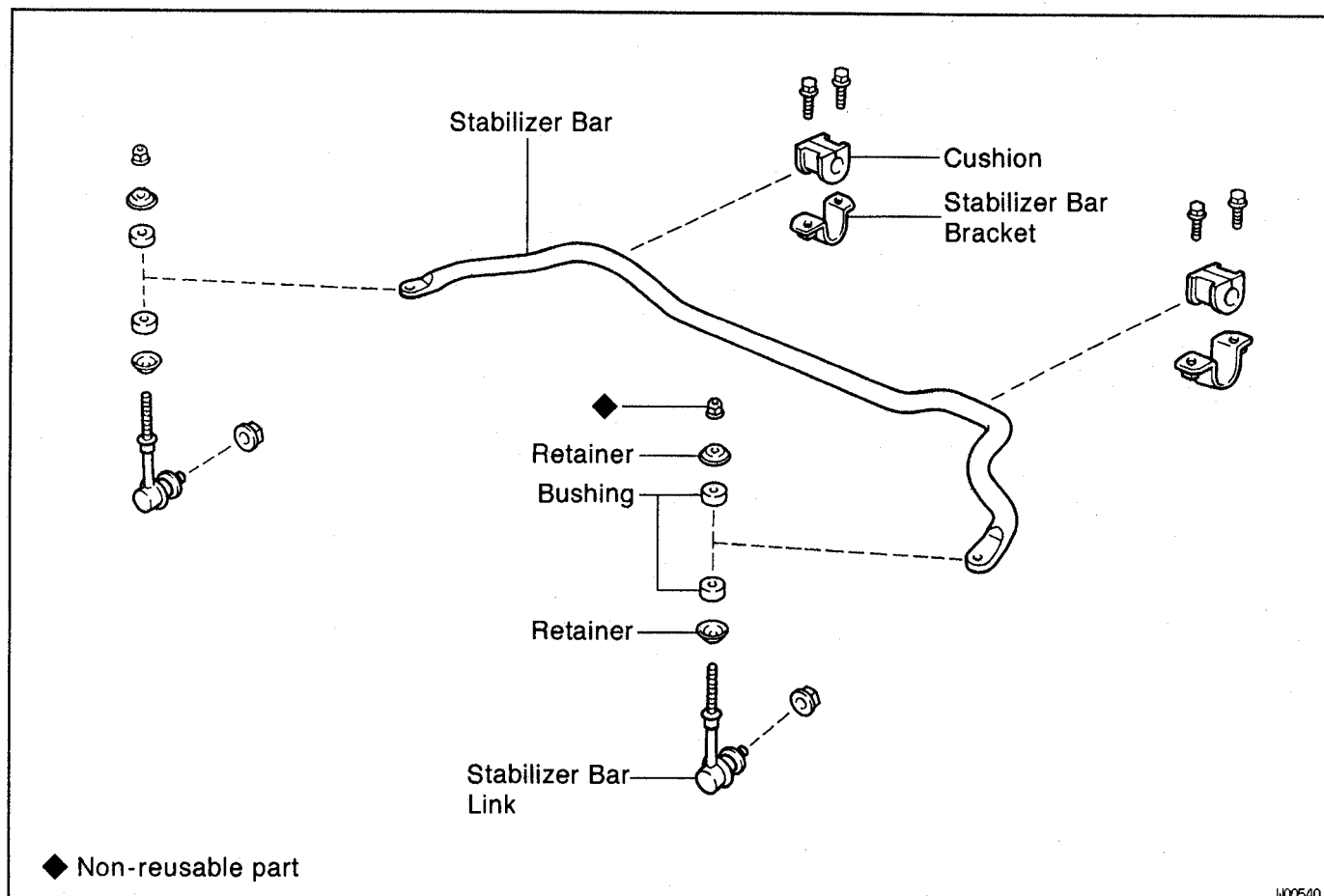
Installation is in the reverse order of removal.

HINT: After installation, check front wheel alignment.

(See page SA-8)

STABILIZER BAR COMPONENTS

SAOPA-06



W00540

SA1WM-02

STABILIZER BAR AND LINK REMOVAL

1. REMOVE FRONT WHEELS

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

2. DISCONNECT STABILIZER BAR LINKS

Remove the nuts and disconnect the stabilizer bar links from the lower suspension arm.

Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)

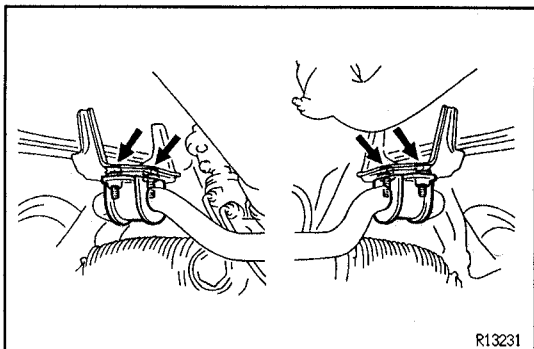
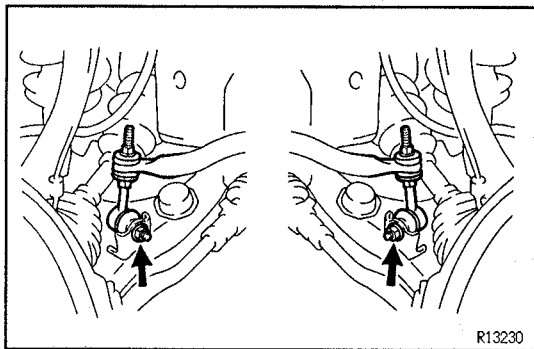
HINT: If the ball joint stud turns together with the nut, use a hexagon wrench to hold the stud.

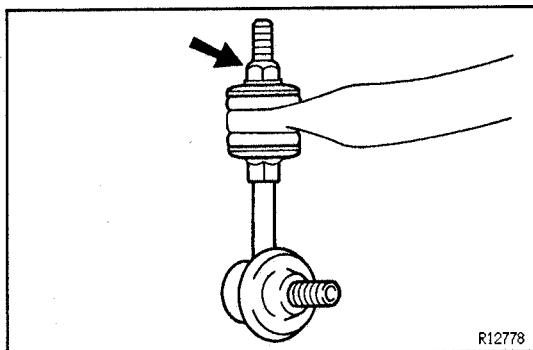
3. REMOVE STABILIZER BAR

(a) Remove the 4 bracket set bolts and stabilizer bar with the cushions and brackets.

Torque: 25 N·m (260 kgf·cm, 19 ft·lbf)

(b) Remove the brackets and cushions from the stabilizer bar.



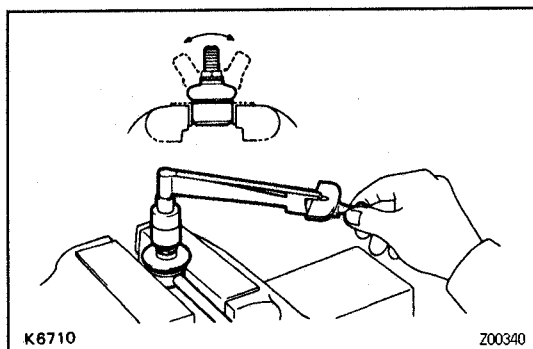


R12778

4. REMOVE STABILIZER BAR LINKS

Hold the stabilizer bar link, remove the nut retainers and bushings.

Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)



K6710

Z00340

STABILIZER BAR LINK INSPECTION

SA038-0T

INSPECT BALL JOINT FOR ROTATION CONDITION

- (a) Flip the ball joint stud back and forth 5 times before installing the nut.
- (b) Using a torque wrench, turn the stud continuously one turn every 2 — 4 seconds and take the torque reading on the 5th turn.

Torque (turning):

0.05 — 2.0 N·m (0.5 — 20 kgf·cm, 0.4 — 17 in.-lbf)

SA287-01

**STABILIZER BAR AND LINK
INSTALLATION**

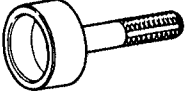
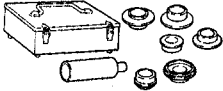
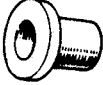
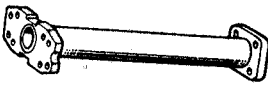
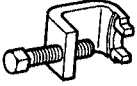
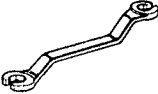
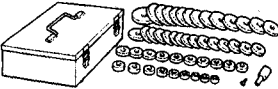
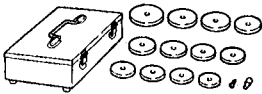
Installation is in the reverse order of removal.

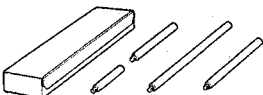
REAR AXLE

PREPARATION

SST (SPECIAL SERVICE TOOLS)

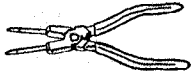
SAOMB-OC

	09223-56010 Crankshaft Rear Oil Seal Replacer	Rear axle bearing removal
	09308-00010 Oil Seal Puller	Oil seal removal
	09316-60011 Transmission & Transfer Bearing Replacer	Axle shaft installation Bearing retainer installation
	(09316-00051) Replacer "D"	
	09515-30010 Rear Wheel Bearing Replacer	Rear axle bearing installation
	09521-25011 Rear Axle Shaft Puller	Rear axle shaft removal
	09650-17011 Hub Bolt Remover	Hub bolt replacement
	09751-36011 Brake Line Union Nut 10 x 12 mm Wrench	Brake line disconnection
	09950-60010 Replacer Set	
	(09951-00560) Replacer 56	Axle bearing removal
	(09951-00610) Replacer 61	Outer oil seal installation
	09950-60020 Replacer Set No.2	

	(09951-00710) Replacer 71	Oil seal installation
	(09951-00890) Replacer 89	Rear axle bearing installation
	09950-70010 Handle Set	Outer oil seal installation
	(09951-07150) Handle 150	

SAOME-06

RECOMMENDED TOOLS

	09905-00012 Snap Ring No.1 Expander .	
	09905-00013 Snap Ring Pliers .	

SA07V-0F

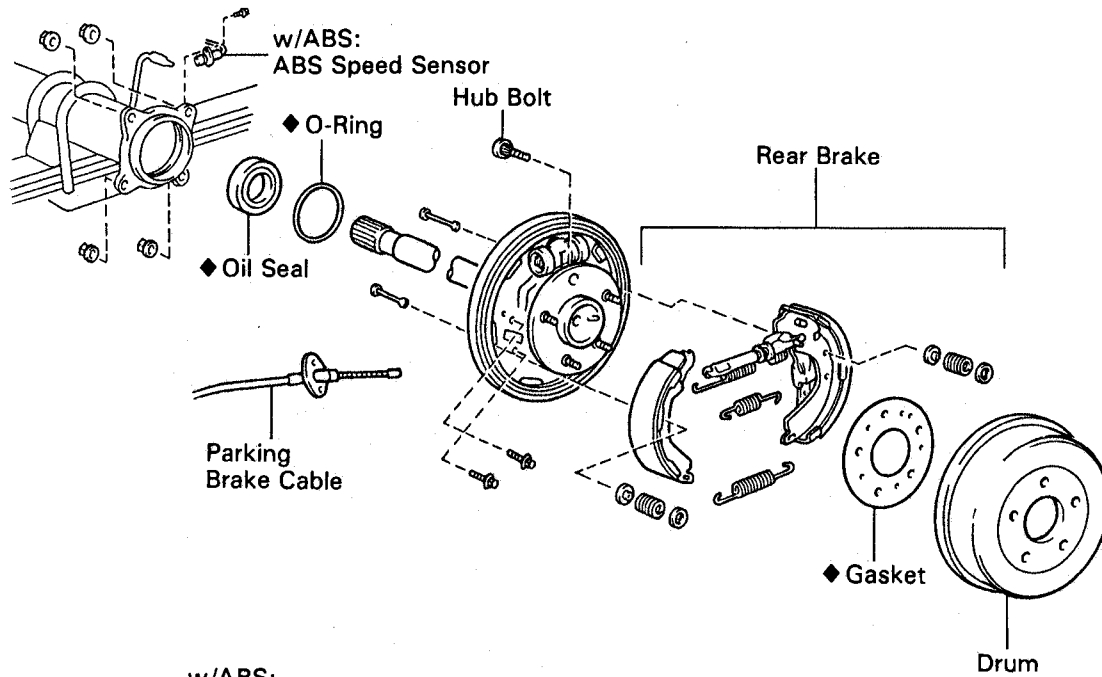
EQUIPMENT

Dial indicator	
Torque wrench	

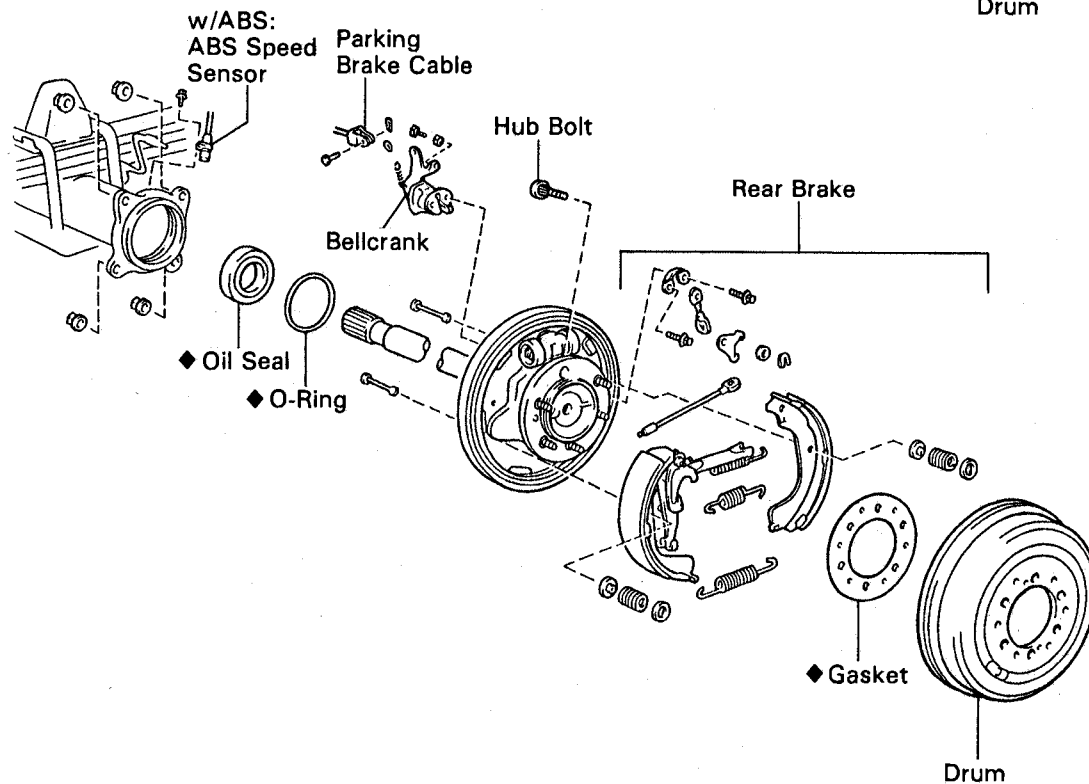
REAR AXLE SHAFT
COMPONENTS

SA182-02

2WD:



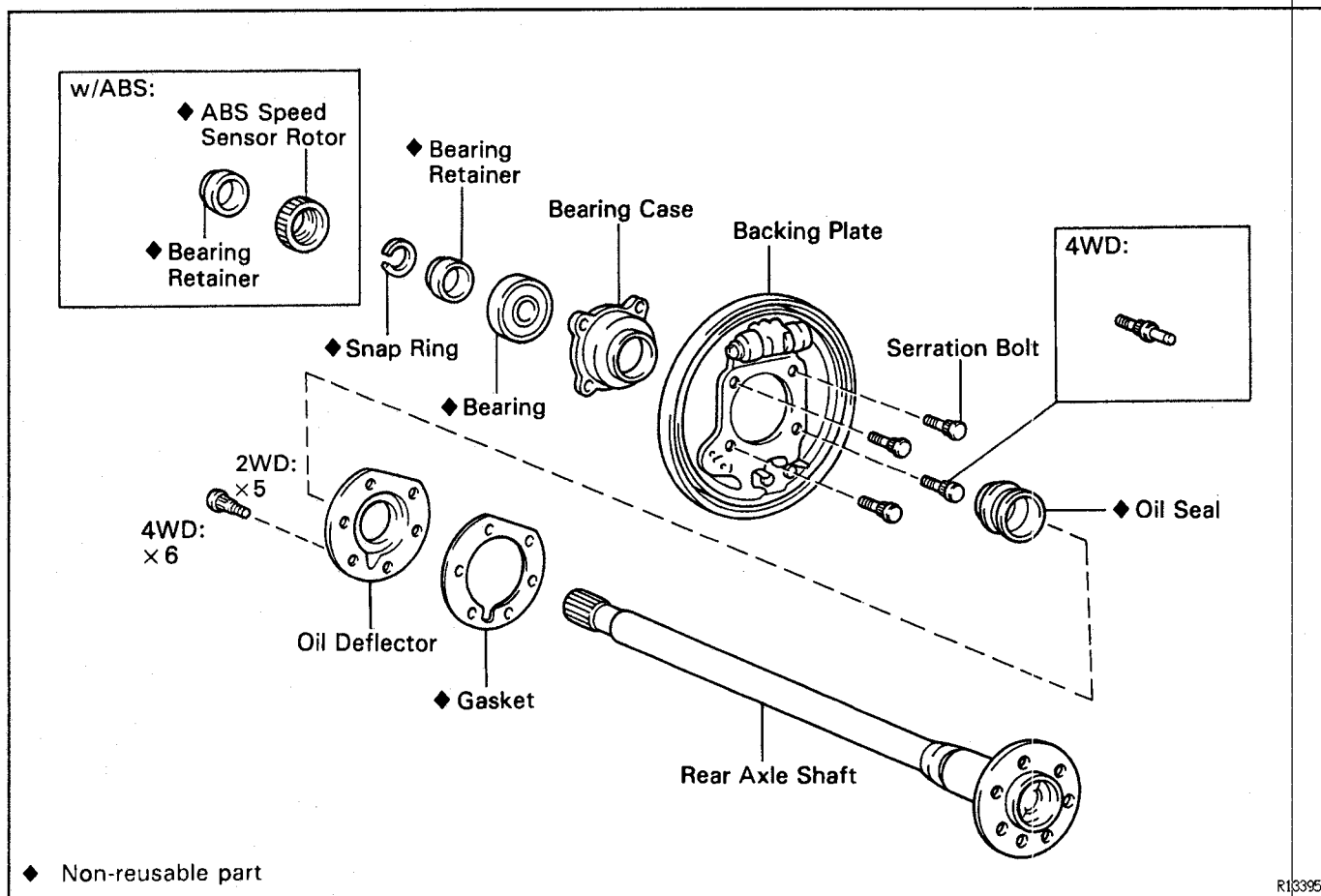
4WD:



◆ Non-reusable part

R13403

SA



R13395

SA

REAR AXLE SHAFT REMOVAL

SA1W9-03

1. REMOVE REAR WHEEL AND BRAKE DRUM

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

INSTALLATION HINT: After installation, bleed the brake system and check for leaks.

(See page BR-6)

2. CHECK BEARING BACKLASH AND AXLE SHAFT DEVIATION

- (a) Using a dial indicator, check the backlash in the bearing shaft direction.

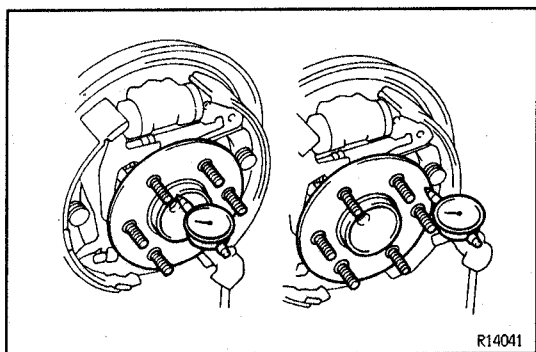
Maximum: 0.7 mm (0.027 in.)

If it is greater than the maximum, replace the bearing.

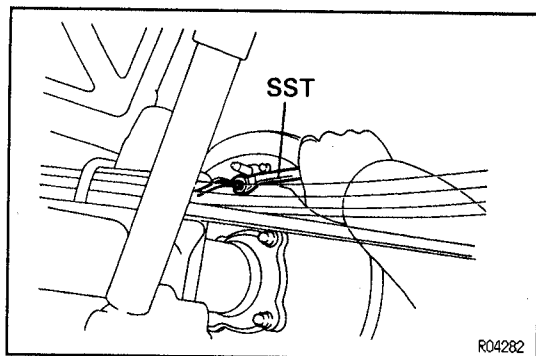
- (b) Using a dial indicator, check the deviation at the surface of the axle shaft outside the hub bolt.

Maximum: 0.1 mm (0.0039 in.)

If it is greater than the maximum, replace the axle shaft.



R14041



3. **w/ ABS:**
REMOVE ABS SPEED SENSOR FROM REAR AXLE HOUSING

Torque: 8 N·m (82 kgf·cm, 71 in·lbf)

4. **REMOVE REAR BRAKE ASSEMBLY**

(See page BR-21, 25)

5. **DISCONNECT BRAKE LINE AND PARKING BRAKE CABLE**

Using SST, disconnect the brake line from the wheel cylinder.

SST 09751-36011

Torque: 15 N·m (155 kgf·cm, 11 ft·lbf)

6. **REMOVE REAR AXLE SHAFT ASSEMBLY**

- (a) Remove the 4 backing plate mounting nuts.

Torque: 68 N·m (700 kgf·cm, 50 ft·lbf)

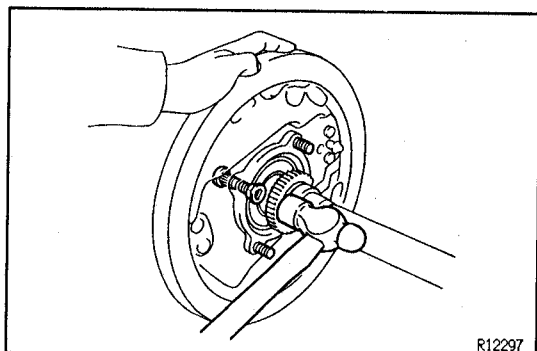
- (b) Pull out the rear axle shaft assembly from the rear axle housing.

NOTICE: Be careful not to damage the oil seal.

7. **REMOVE O-RING FROM REAR AXLE HOUSING**

REAR AXLE SHAFT COMPONENTS INSPECTION AND REPAIR

SA194-03



1. **w/ ABS:**

REMOVE BEARING RETAINER (DIFFERENTIAL SIDE) AND ABS SPEED SENSOR ROTOR

- (a) Attach 4 nuts to the serration bolts and remove the serration bolts from the backing plate using a hammer.

NOTICE: Do not reuse the nuts previously removed from the vehicle.

- (b) Grind the retainer and sensor rotor surfaces using a grinder, then chisel them out with a chisel.
- (c) Attach washers and nut to the serration bolts, then torque the nuts to install the serration bolts to the backing plate.
- (d) Remove the 4 nuts from the serration bolts.

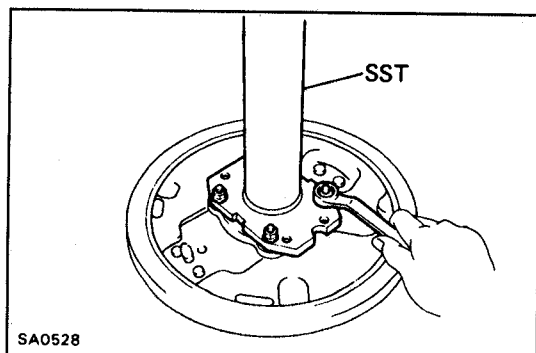
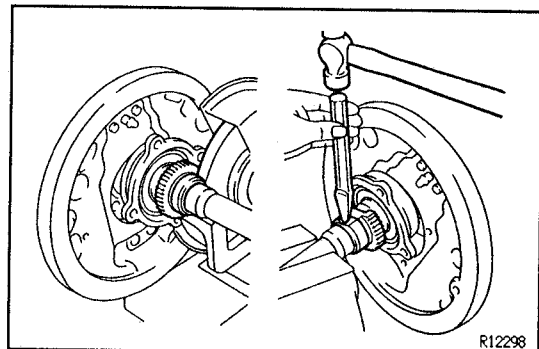
2. **REMOVE SNAP RING FROM AXLE SHAFT**

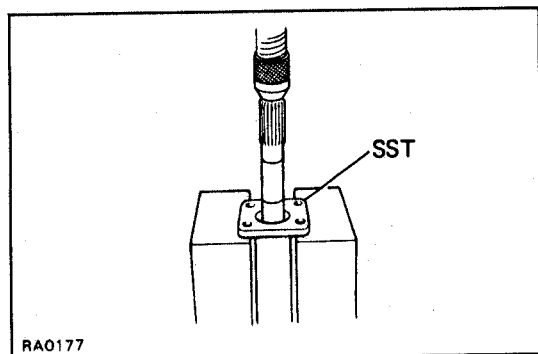
Using a snap ring expander, remove the snap ring.

3. **REMOVE REAR AXLE SHAFT FROM BACKING PLATE**

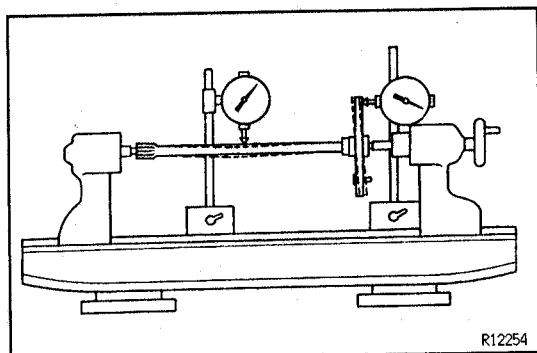
- (a) Position SST on the backing plate with 4 nuts.

SST 09521-25011





- (b) Using a press, remove the rear axle shaft with the bearing retainer from the backing plate.
- (c) Remove the SST.



4. INSPECT AXLE SHAFT

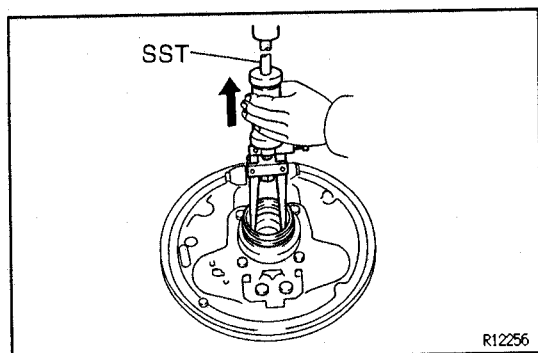
Maximum shaft runout:

2.0 mm (0.079 in.)

Maximum flange runout:

0.1 mm (0.004 in.)

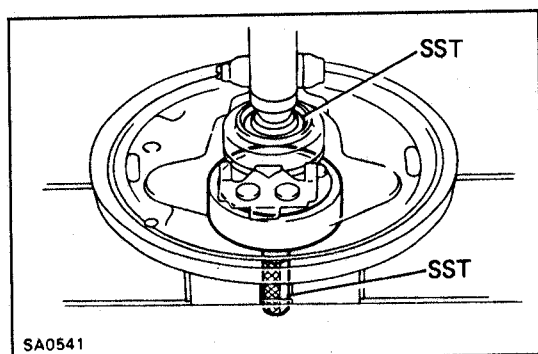
If the rear axle shaft or flange are damaged or worn, or if runout is greater than the maximum, replace the rear axle shaft.



5. REMOVE OUTER OIL SEAL

Using SST, remove the oil seal.

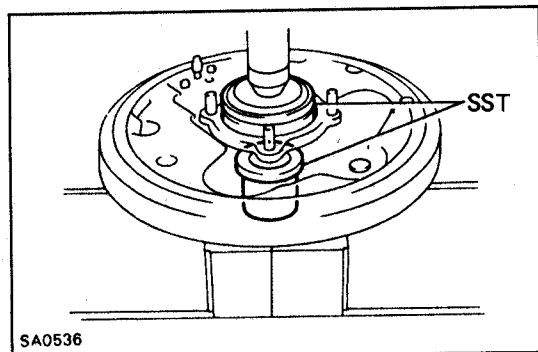
SST 09308-00010



6. REPLACE REAR AXLE BEARING

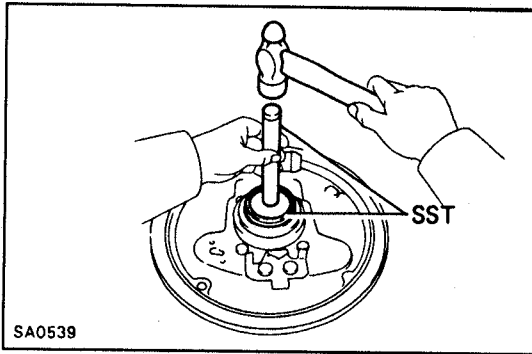
- (a) Using SST, remove the bearing.

SST 09223-56010, 09950-60010 (09951-00560)

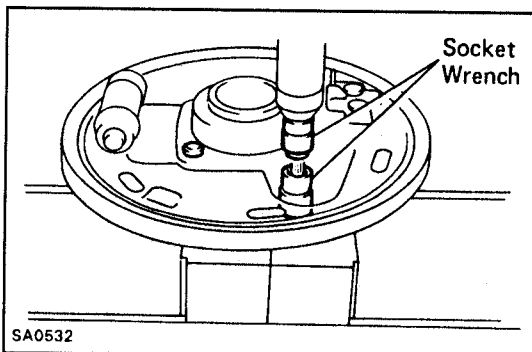


- (b) Using SST, install a new bearing.

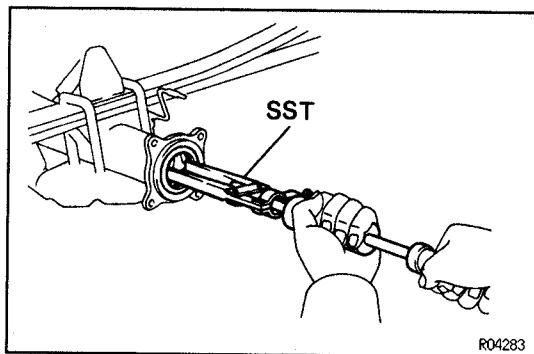
SST 09515-30010, 09950-60020 (09951-00890)

**7. INSTALL NEW OUTER OIL SEAL**

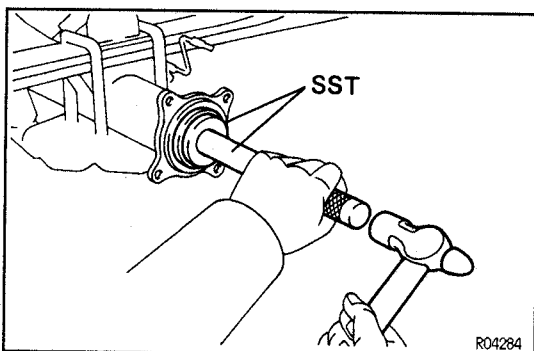
Using SST, install a new oil seal.
 SST 09950-60010 (09951-00610),
 09950-70010 (09951-07150)

**8. REPLACE BEARING CASE**

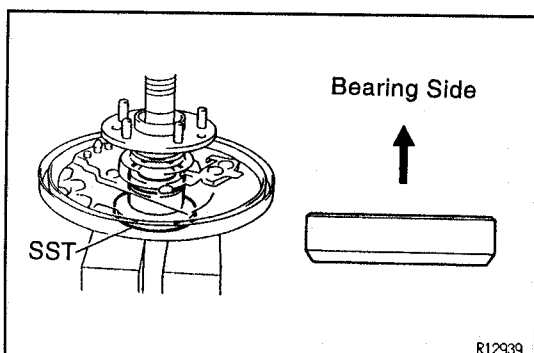
- Remove the oil seal (outer side) and bearing.
- Install 4 nuts to the serration bolts.
- Using a hammer, remove the serration bolts and remove the bearing case.
- Position the backing plate on a new bearing case and, using 2 socket wrenches, install the serration bolts.
- Install a new bearing and oil seal (outer side).

**9. REPLACE OIL SEAL (INNER SIDE)**

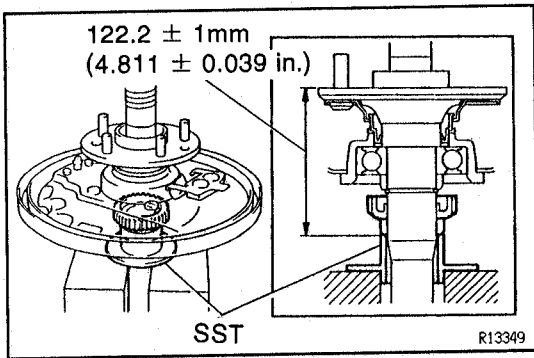
- Using SST, remove the oil seal.
 SST 09308-00010



- Using SST, install a new oil seal.
 SST 09950-60020 (09951-00710),
 09950-70010 (09951-07150)
- Apply MP grease to the oil seal lip.

**10. INSTALL REAR AXLE SHAFT IN BACKING PLATE**

- Apply MP grease to the oil seal lip.
- Install the backing plate and bearing retainer on the rear axle shaft.
- Using SST and a press, install the rear axle shaft into the backing plate.
 SST 09316-60010 (09316-00050)
- Using snap ring pliers, install a new snap ring.

**11. w/ ABS:****INSTALL ABS SPEED SENSOR ROTOR AND BEARING RETAINER (DIFFERENTIAL SIDE)**

Using SST and a press, install a new sensor rotor and new bearing retainer to the axle shaft.

SST 09316-60010 (09316-00050)

Standard length:

122.2 ± 1.0 mm (4.811 ± 0.039 in.)

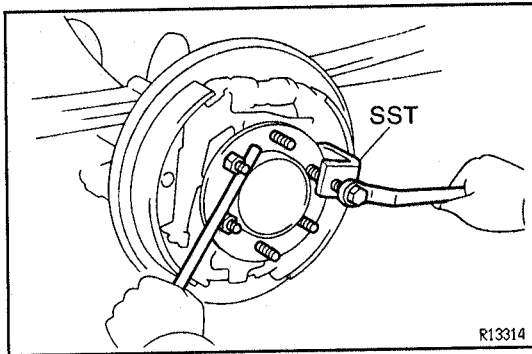
REAR AXLE SHAFT INSTALLATION

SA200-01

Installation is in the reverse order of removal.

HINT: After installation, bleed brake system and check ABS speed sensor signal.

(See page BR-5, 51)

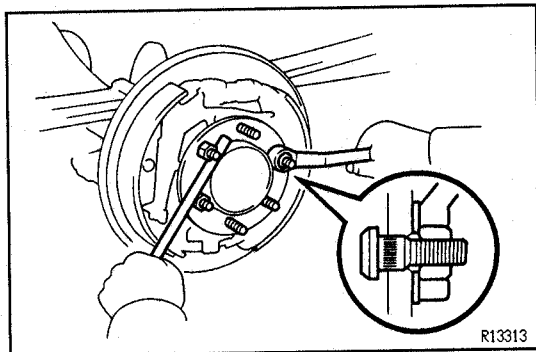
**HUB BOLT REPLACEMENT**

SA000-00

- 1. REMOVE WHEEL AND BRAKE DRUM**
- 2. REMOVE HUB BOLT**

Using SST, remove the hub bolt.

SST 09650-17011



- 3. INSTALL HUB BOLT**

Install a washer and nut to a new hub bolt as shown in the illustration, and install the hub bolt with torquing the nut.

- 4. INSTALL BRAKE DRUM AND WHEEL**

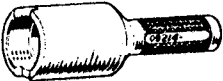
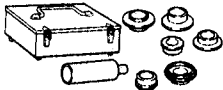
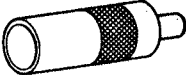
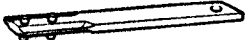
Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

REAR DIFFERENTIAL

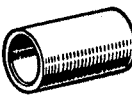
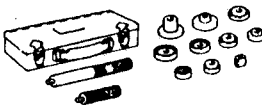
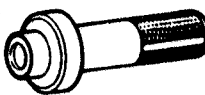
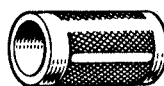
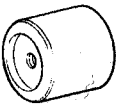
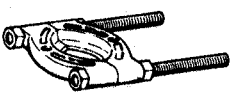
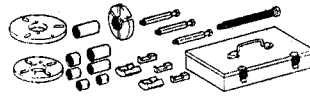
PREPARATION

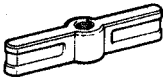
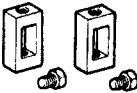
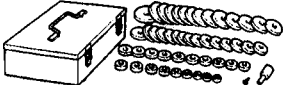
SST (SPECIAL SERVICE TOOLS)

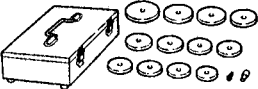
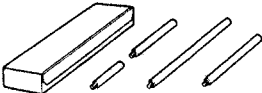
SALP-97

	09214-76011 Crankshaft Pulley Replacer	3RZ-FE, 5VZ-FE w/Diff. lock: Oil seal installation
	09223-15020 Oil Seal & Bearing Replacer	3RZ-FE, 5VZ-FE w/Diff. lock: Side bearing installation
	09308-00010 Oil Seal Puller	3RZ-FE, 5VZ-FE w/Diff. lock: Front bearing outer race removal
	09308-10010 Oil Seal Puller	Oil seal removal
	09316-12010 Transfer Bearing Replacer	3RZ-FE, 5VZ-FE w/o Diff. lock: Oil seal installation
	09316-60011 Transmission & Transfer Bearing Replacer	3RZ-FE, 5VZ-FE w/Diff. lock: Bearing outer race installation
	(09316-00011) Replacer Pipe	
	(09316-00021) Replacer "A"	
	(09316-00051) Replacer "D"	
	09330-00021 Companion Flange Holding Tool	Companion flange removal and installation
	09504-00011 Differential Side Bearing Adjusting Nut Wrench	3RZ-FE, 5VZ-FE w/Diff. lock: Side bearing adjustment
	09504-22011 Differential Side Bearing Replacer	3RZ-FE, 5VZ-FE w/Diff. lock: Side bearing plate washer removal

SA

	09506-30012	Differential Drive Pinion Rear Bearing Cone Replacer	2RZ-FE and 3RZ-FE, 5VZ-FE w/Diff. lock: Rear bearing installation
	09506-35010	Differential Drive Pinion Rear Bearing Replacer	3RZ-FE, 5VZ-FE w/Diff. lock: Rear bearing installation
	09523-36010	Rear Axle Hub Guide Tool	3RZ-FE, 5VZ-FE w/o Diff. lock: Dust deflector installation
	09550-10012	Replacer Set "B"	2RZ-FE: Side bearing installation
	(09252-10010)	No. 1 Replacer Handle—	
	(09557-10010)	Differential Drive Pinion Front Bearing Replacer	
	09554-30011	Differential Oil Seal Replacer	2RZ-FE: Oil seal installation
	09556-22010	Drive Pinion Front Bearing Remover	Front bearing removal
	09636-20010	Upper Ball Joint Dust Cover Replacer	2RZ-FE: Dust deflector installation
	09649-17010	Steering Knuckle Tool	3RZ-FE, 5VZ-FE w/Diff. lock: Front oil seal installation
	09726-40010	Lower Control Shaft Bearing Replacer	3RZ-FE, 5VZ-FE w/Diff. lock: Dust deflector installation
	09950-00020	Bearing Remover	Dust deflector removal Rear bearing removal
	09950-30010	Puller A Set	Companion flange removal Front bearing installation
	(09951-03010)	Upper Plate	

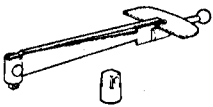
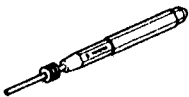
	(09953-03010) Center Bolt	
	(09954-03010) Arm	
	(09955-03030) Lower Plate 130	
	(09956-03020) Adapter 18	2RZ-FE and 3RZ-FE, 5VZ-FE w/Diff. lock:
	09956-03050 Adapter 24	3RZ-FE, 5VZ-FE w/o Diff. lock:
	09950-40010 Puller B Set	Side bearing removal
	(09951-04010) Hanger 150	
	(09952-04010) Slide Arm	
	(09953-04020) Center Bolt 150	
	(09954-04010) Arm 25	
	(09955-04060) Claw No.6	
	(09957-04010) Attachment	
	(09958-04010) Holder	
	09950-60010 Replacer Set	

	(09951-00450) Replacer 45	2RZ-FE: Side bearing removal and installation
	(09951-00480) Replacer 48	3RZ-FE, 5VZ-FE w/o Diff. lock: Side bearing removal and installation
	(09951-00640) Replacer 64	Side bearing installation
	09950-60020 Replacer Set No.2	
	(09951-00710) Replacer 71	2RZ-FE: Front bearing outer race installation
	(09951-00790) Replacer 79	2RZ-FE: Rear bearing outer race installation
	(09951-00910) Replacer 91	3RZ-FE, 5VZ-FE w/o Diff. lock: Rear bearing outer race installation
	09950-70010 Handle Set	3RZ-FE, 5VZ-FE w/o Diff. lock: Side bearing installation
	(09951-07150) Handle 150	

SA

SAGLO-06

RECOMMENDED TOOLS

	09025-00010 Torque Wrench (30 kgf-cm) .	
	09031-00030 Pin Punch .	
	09082-00050 TOYOTA Electrical Tester Set.	3RZ-FE, 5VZ-FE w/Diff. lock:

EQUIPMENT

SAOLR-06

Dial indicator or dial indicator with magnetic base	
Micrometer	3RZ—FE, 5VZ—FE w/Diff. lock:
Voltmeter	3RZ—FE, 5VZ—FE w/Diff. lock:
Torque wrench	
Ohmmeter	3RZ—FE, 5VZ—FE w/Diff. lock:

LUBRICANT

SAOLR-06

Item	Capacity	Classification
Differential oil (2RZ—FE)	1.35 liters (1.43 US qts., 1.19 Imp.qts)	Hypoid gear oil API GL—5 Above — 18°C (0°F) SAE 90 Below — 18°C (0°F) SAE 80W or 80W—90
Differential oil (3RZ—FE, 5VZ—FE)	4WD Extra long models: 2.05 liters (2.17 US qts., 1.80 Imp.qts) Other models: w/Diff. lock 2.65 liters (2.80 US qts., 2.33 Imp.qts) w/o Diff. lock 2.55 liters (2.69 US qts., 2.24 Imp.qts)	Hypoid gear oil API GL—5 Above — 18°C (0°F) SAE 90 Below — 18°C (0°F) SAE 80W or 80W—90

SSM (SPECIAL SERVICE MATERIALS)

SAOLT-03

08826—00090	Seal Packing 1281, THREE BOND 1281 or equivalent (FIG)	3RZ—FE, 5VZ—FE w/Diff. lock: Cover x Differential carrier Actuator x Differential carrier
08833—00070	Adhesive 1324, THREE BOND 1324 or equivalent	3RZ—FE, 5VZ—FE w/Diff. lock: Shift fork shaft set bolt Pinion shaft pin
08833—00100	THREE BOND 1360K or equivalent	Ring gear set bolts

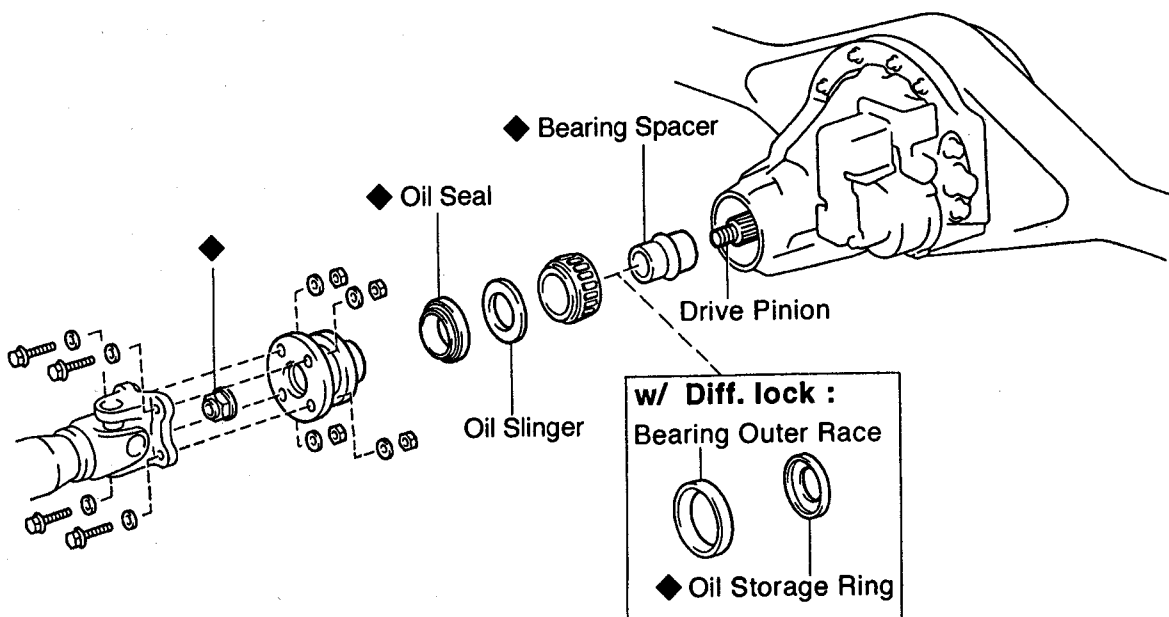
SA

ON — VEHICLE REPAIR COMPONENTS

SA05G-06

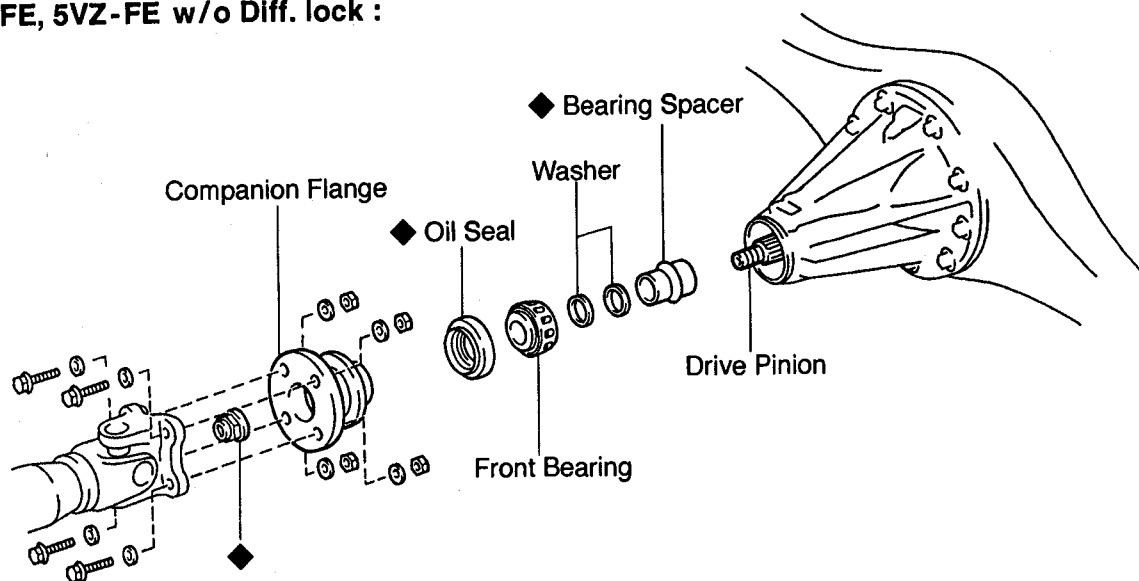
2RZ-FE

3RZ-FE, 5VZ-FE w/Diff. lock :



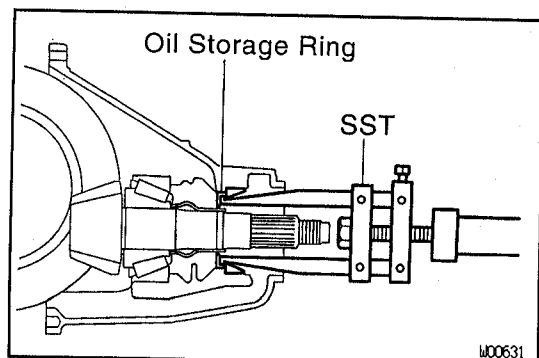
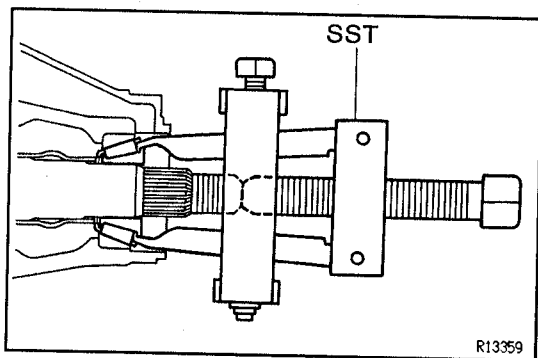
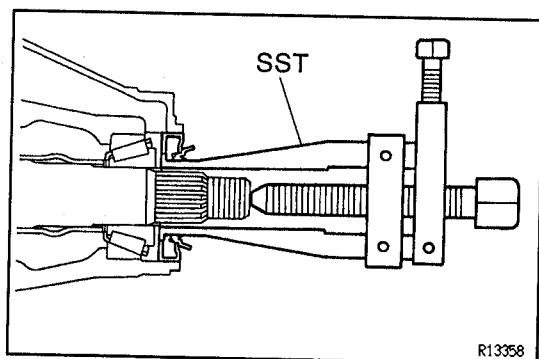
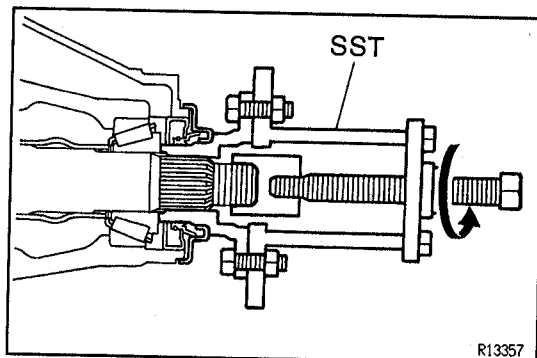
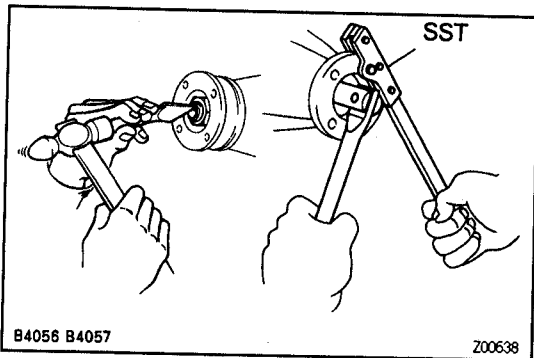
SA

3RZ-FE, 5VZ-FE w/o Diff. lock :



◆ Non-reusable part

R15883



FRONT OIL SEAL REPLACEMENT

1. DRAIN DIFFERENTIAL OIL
2. DISCONNECT REAR PROPELLER SHAFT
(See page PR-6)
3. REMOVE COMPANION FLANGE
 - (a) Using a chisel and a hammer, loosen the staked part of the nut.
 - (b) Using SST to hold the flange, remove the nut.
SST 09330-00021
 - (c) Using SST, remove the companion flange.
SST 09950-30010 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020, 09956-03050)
4. REMOVE OIL SEAL
Using SST, remove the oil seal.
SST 09308-10010
5. Except 3RZ-FE, 5VZ-FE w/o Diff. lock:
REMOVE OIL SLINGER
6. REMOVE FRONT BEARING
Using SST, remove the front bearing from the drive pinion.
SST 09556-22010
7. 3RZ-FE, 5VZ-FE w/Diff. lock:
REMOVE FRONT BEARING OUTER RACE AND OIL STORAGE RING
 - (a) Using SST, remove the front bearing outer race.
SST 09308-00010
 - (b) Using a screwdriver, bend the oil storage ring and remove it.

8. REMOVE BEARING SPACER

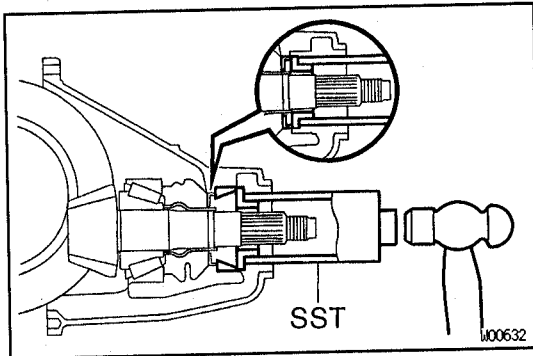
- (a) 3RZ—FE, 5VZ—FE w/o Diff. lock:
Remove the 2 washers.

- (b) Remove the bearing spacer.

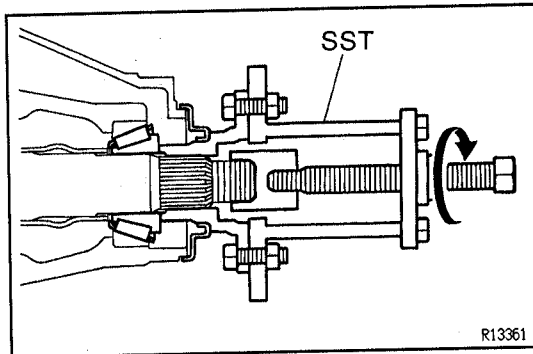
9. INSTALL NEW BEARING SPACER

- (a) Install a new bearing spacer.

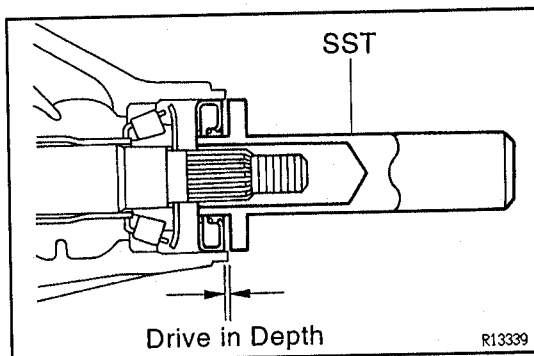
- (b) 3RZ—FE, 5VZ—FE w/o Diff. lock:
Install the 2 washers.

**10. 3RZ—FE, 5VZ—FE w/Diff. lock:
INSTALL OIL STORAGE RING AND FRONT BEARING OUTER RACE**

- (a) Using SST and a hammer, install a new oil storage ring.
SST 09316—60011 (09316—00011, 09316—00021)
- (b) Using SST and a hammer, install the front bearing outer race.
SST 09316—60011 (09316—00011, 09316—00021)

**11. INSTALL FRONT BEARING**

- (a) Place the front bearing.
- (b) Except 3RZ—FE, 5VZ—FE w/o Diff. lock:
Place the oil slinger.
- (c) Using SST and the companion flange, install the front bearing then remove the companion flange.
SST 09950—30010 (09951—03010, 09953—03010,
09954—03010, 09955—03030, 09956—03030,
09956—03040)

**12. INSTALL NEW OIL SEAL**

- (a) Apply MP grease to a new oil seal.
- (b) Using SST, install the oil seal.

2RZ—FE:

SST 09554—30011

Oil seal drive in depth:

1.5 mm (0.059 in.)

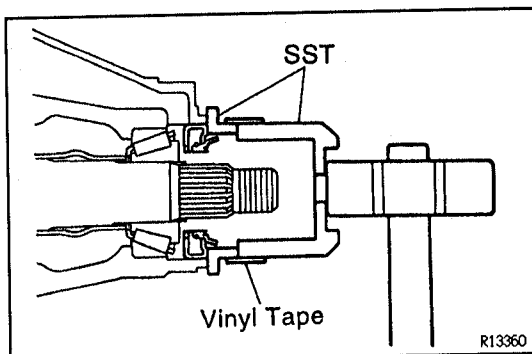
3RZ—FE, 5VZ—FE w/o Diff. lock:

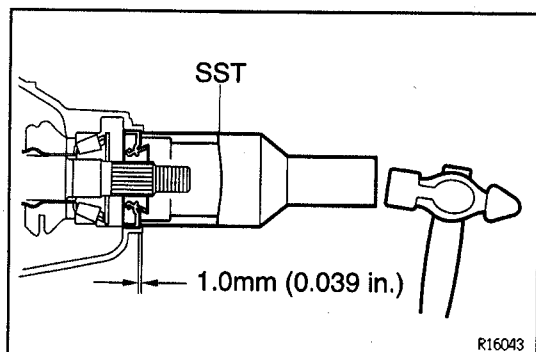
SST 09649—17010, 09316—12010

Oil seal drive in depth:

0.5 mm (0.020 in.)

HINT: Connect SST with vinyl tape.



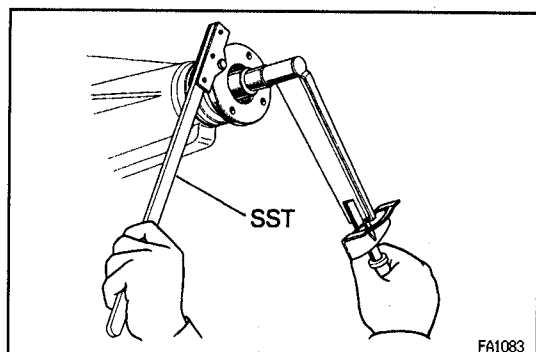


3RZ—FE, 5VZ—FE w/Diff. lock:

SST 09214—76011

Oil seal drive in depth:

1.0 mm (0.039 in.)



13. INSTALL COMPANION FLANGE

- Place the companion flange on the drive pinion.
- Apply light coat of hypoid gear oil on threads of a new companion flange nut.
- Using SST to hold the flange, torque the nut.
SST 09330—00021

2RZ—FE:

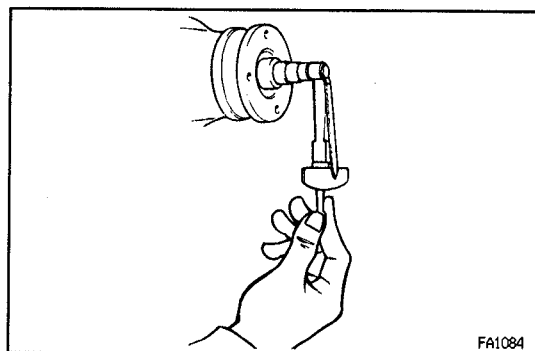
Torque: 108 N·m (1,100 kgf·cm, 80 ft·lbf)

3RZ—FE, 5VZ—FE w/o Diff. lock:

Torque: 147 N·m (1,500 kgf·cm, 109 ft·lbf)

3RZ—FE, 5VZ—FE w/Diff. lock:

Torque: 196 N·m (2,000 kgf·cm, 145 ft·lbf)



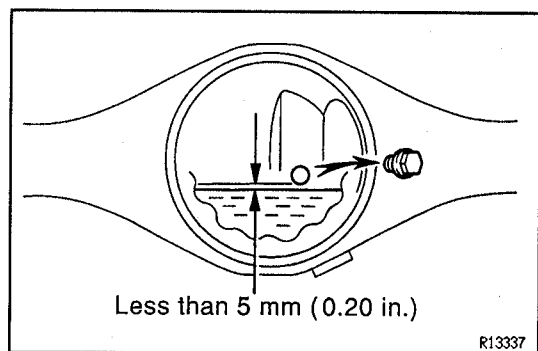
14. ADJUST DRIVE PINION PRELOAD

(See page SA—119, 132, 145)

15. STAKE DRIVE PINION NUT

16. CONNECT REAR PROPELLER SHAFT

(See page PR—14)



17. FILL DIFFERENTIAL WITH HYPOID GEAR OIL

Torque:

Drain plug: 49 N·m (500 kgf·cm, 39 ft·lbf)

Filler plug: 49 N·m (500 kgf·cm, 39 ft·lbf)

Oil type

Hypoid gear oil API GL—5

Recommended oil viscosity

Above — 18°C (0°F)	SAE 90
Below — 18°C (0°F)	SAE 80 W or 80 W — 90

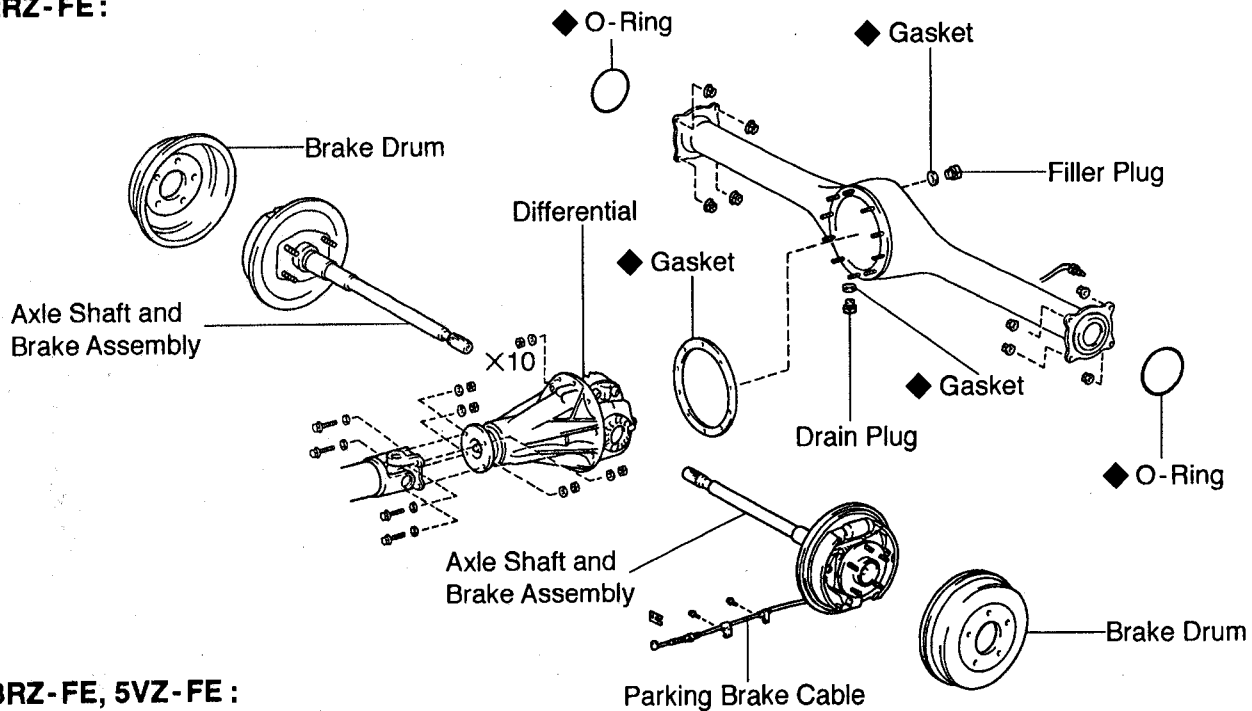
Capacity

2RZ—FE	1.35 liters (1.43 US qts, 1.19 Imp.qts)
3RZ—FE 5VZ—FE	4WD Extra long models: 2.05 liters (2.17 US qts., 1.80 Imp.qts) Other models: w/Diff. lock: 2.65 liters (2.80 US qts., 2.33 Imp.qts) w/o Diff. lock: 2.55 liters (2.69 US qts., 2.24 Imp.qts)

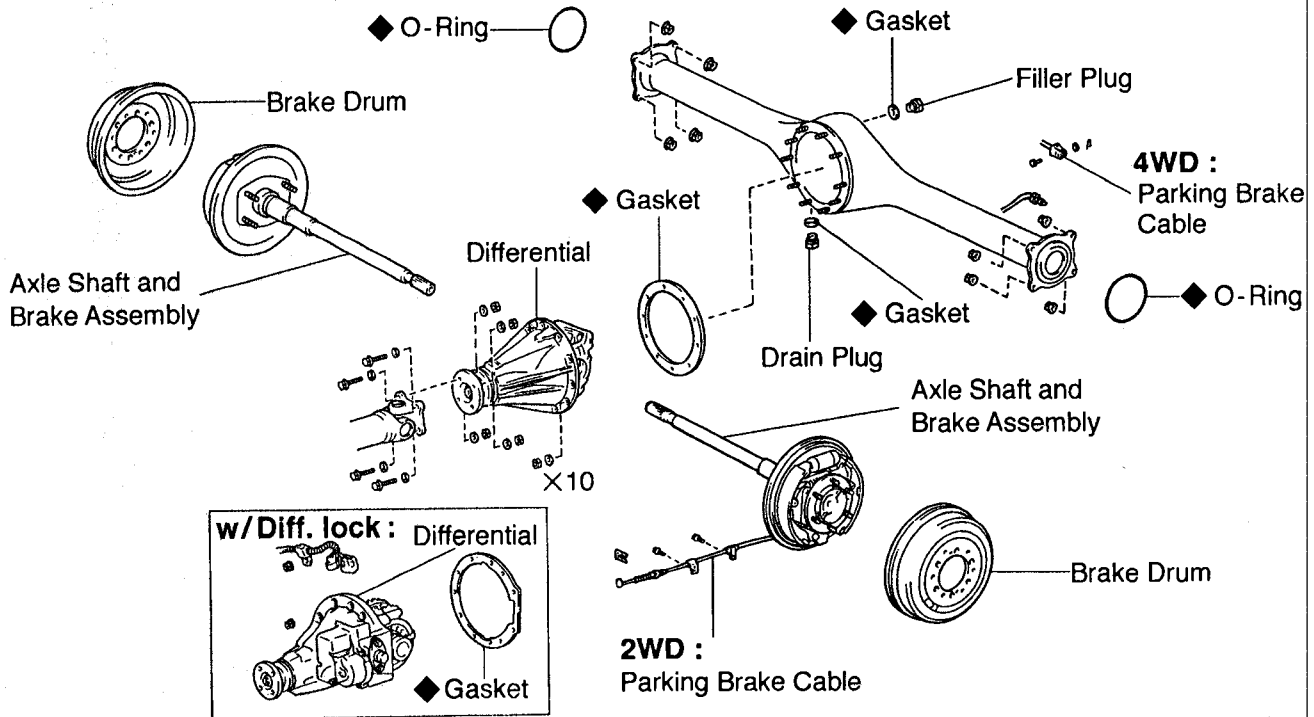
ASSEMBLY REMOVAL AND INSTALLATION COMPONENTS

SA08U-08

2RZ-FE:



3RZ-FE, 5VZ-FE:



◆ Non-reusable part

R13397
R15885

Z16460

DIFFERENTIAL REMOVAL**1. w/DIFF. LOCK:****SHIFTING DIFF. LOCK POSITION**

- (a) Turn the ignition switch to ON position.
- (b) Push the differential lock control switch to ON position and lock the rear differential.

Rotating the tires, check they are in the differential lock condition.

- (d) Disconnect the cable from the negative terminal of the battery.

INSTALLATION HINT (w/Diff. lock):

After installation, check that the breather plug at the end of the breather tube (inside of the LH frame) is not damaged or worn.

2. DRAIN DIFFERENTIAL OIL**3. REMOVE REAR AXLE SHAFTS**

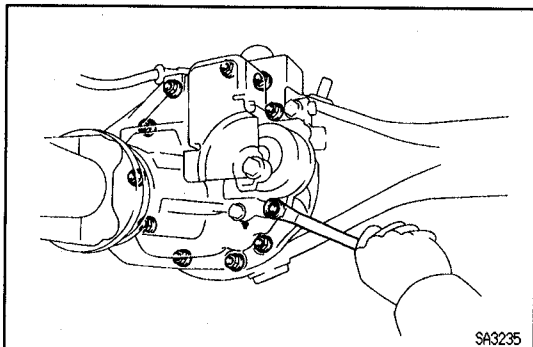
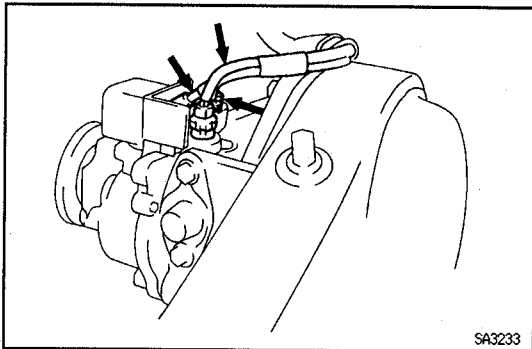
(See page SA-91)

4. DISCONNECT REAR PROPELLER SHAFT

(See page PR-6)

5. w/DIFF. LOCK:**DISCONNECT CONNECTORS AND TUBE****INSTALLATION HINT:**

- When connecting the tube of the harness side to the hose of the actuator side, its depth of insertion is 15 mm (0.59 in.).
- Take care that water or equivalent dose not adhere to the connector and hose.

**6. REMOVE DIFFERENTIAL CARRIER ASSEMBLY**

- (a) Remove the nuts, washers and differential carrier assembly.

NOTICE: Be careful not to damage the installation surface.

3RZ-FE, 5VZ-FE w/o Diff. lock:

Torque: 73 N·m (740 kgf·cm, 54 ft·lbf)

Others:

Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

- (b) Remove the gasket.

INSTALLATION HINT (w/Diff. lock):

- Before installation, check differential lock operation connect the connector of the actuator to the connector of the vehicle side.
- Before installation, check that the sleeves on work with switching over the differential lock control switch.

After checking, lock the rear differential.

DIFFERENTIAL INSTALLATION

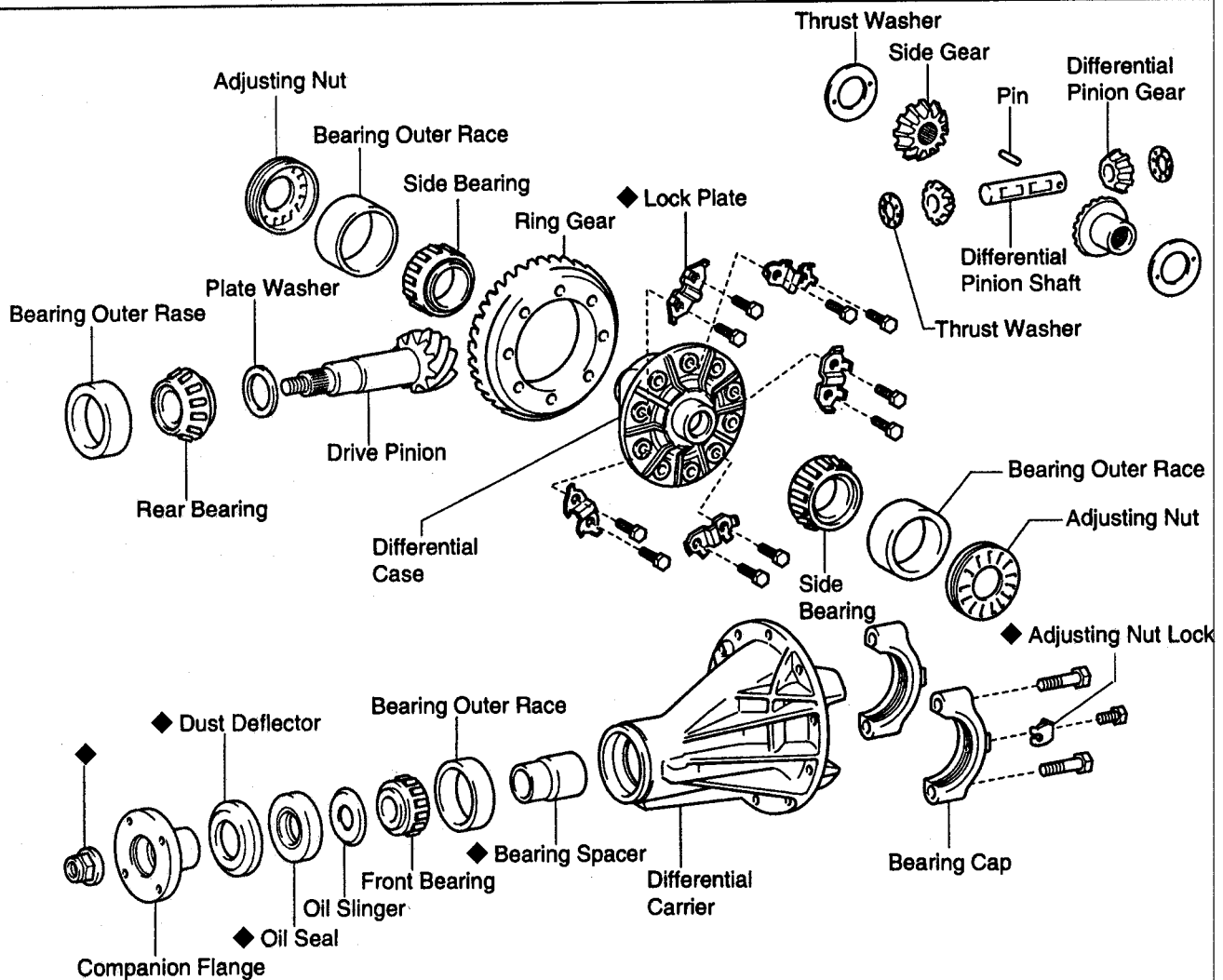
Installation is in the reverse order of removal.

HINT:

- After installation, fill the differential with gear oil.
(See page SA-105)
- w/Diff. lock:
After installation, Check the diff. lock operation.
(See page SA-151)

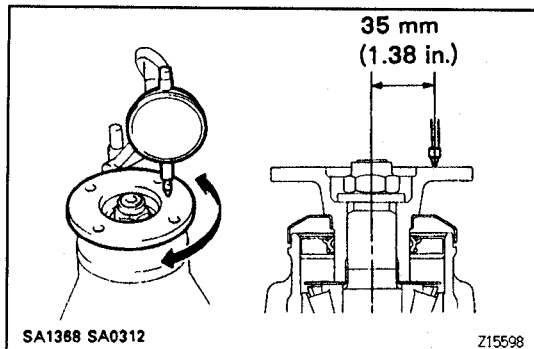
DIFFERENTIAL CARRIER (2RZ-FE) COMPONENTS

SA08M-03



◆ Non-reusable part

R13883

DIFFERENTIAL CARRIER INSPECTION**1. CHECK RUNOUT OF COMPANION FLANGE**

Using a dial indicator, measure the vertical and lateral runout of the companion flange.

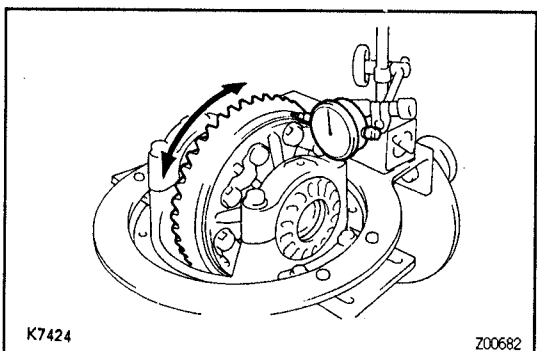
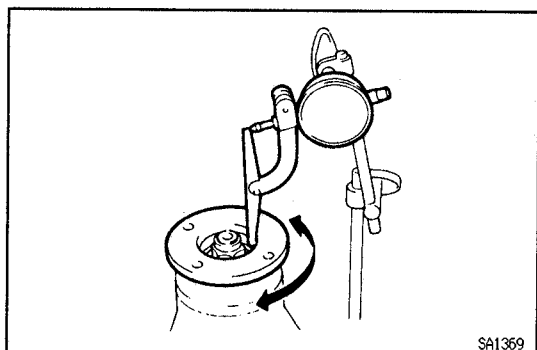
Maximum vertical runout:

0.10 mm (0.0039 in.)

Maximum lateral runout:

0.10 mm (0.0039 in.)

If the runout is not within the specification, replace the companion flange.

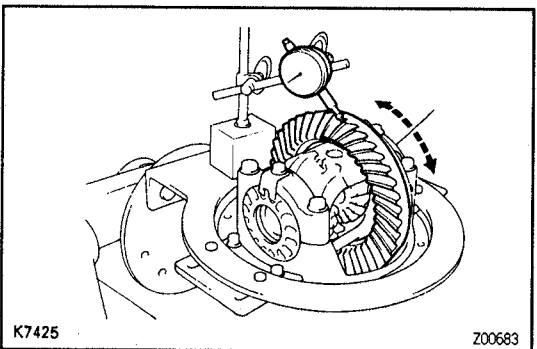
**2. CHECK RING GEAR RUNOUT**

Using a dial indicator, measure the ring gear runout.

Maximum runout:

0.07 mm (0.0028 in.)

If the runout is not within the specification, replace the ring gear.

**3. CHECK RING GEAR BACKLASH**

Using a dial indicator, measure the ring gear backlash.

Backlash:

0.13–0.18 mm (0.0051–0.0071 in.)

If the backlash is not within the specification, adjust the side bearing preload or repair as necessary.

4. MEASURE DRIVE PINION PRELOAD

Using a torque wrench, measure the drive pinion preload using the backlash of the drive pinion and ring gear.

Preload (at starting):

0.6–1.0 N·m (6–10 kgf·cm, 5.2–8.7 in.-lbf)

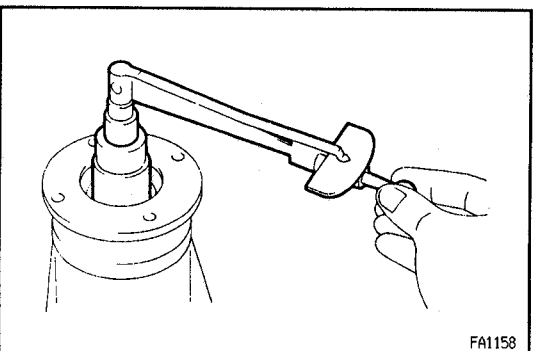
5. CHECK TOTAL PRELOAD

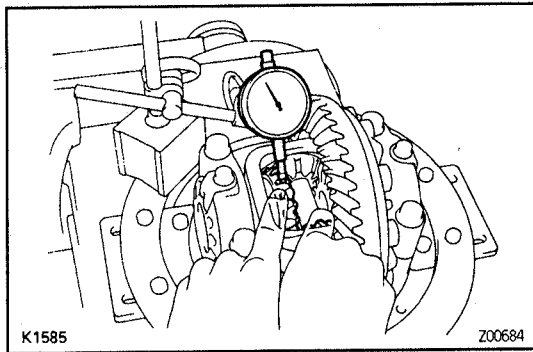
Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Total preload (at starting):

In addition to drive pinion preload

0.4–0.6 N·m (4–6 kgf·cm, 3.5–5.2 in.-lbf)





If necessary, disassemble and inspect a differential.

6. CHECK SIDE GEAR BACKLASH

Measure the side gear backlash while holding one pinion gear toward the case.

Standard backlash:

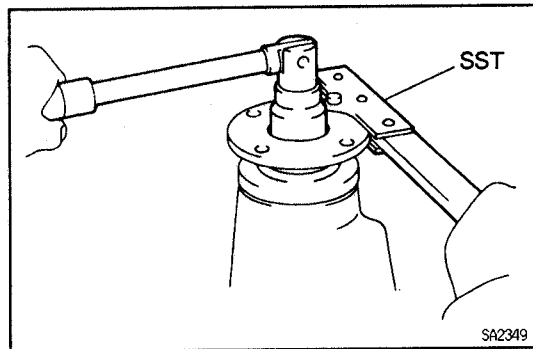
0.05–0.20 mm (0.0020–0.0079 in.)

If the backlash is not within the specification, install the correct thrust washers.

(See page SA-113)

7. CHECK TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

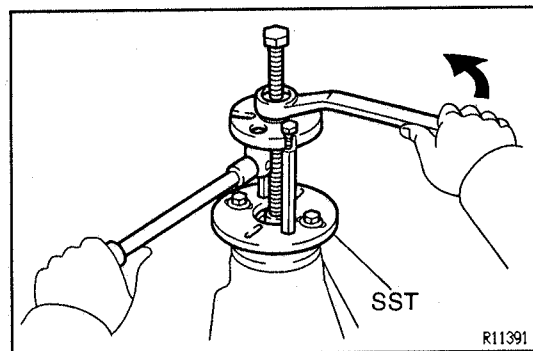
(See page SA-117)



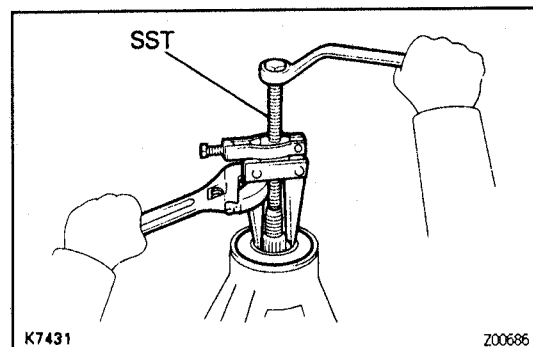
DIFFERENTIAL CARRIER DISASSEMBLY

1. REMOVE COMPANION FLANGE

- (a) Using a chisel and a hammer, unstake the nut.
- (b) Using SST to hold the flange, remove the nut.
SST 09330-00021

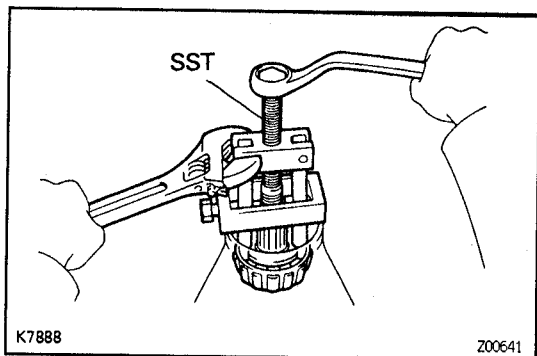


- (c) Using SST, remove the companion flange.
SST 09950-30010 (09951-03010, 09953-03010,
09954-03010, 09955-03030, 09956-03020)



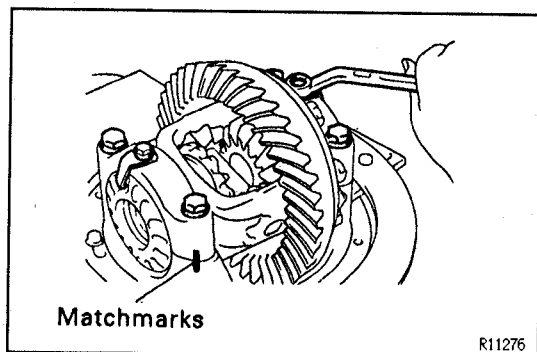
2. REMOVE FRONT OIL SEAL AND OIL SLINGER

- (a) Using SST, remove the oil seal from the differential carrier.
SST 09308-10010
- (b) Remove the oil slinger.



3. REMOVE FRONT BEARING AND BEARING SPACER

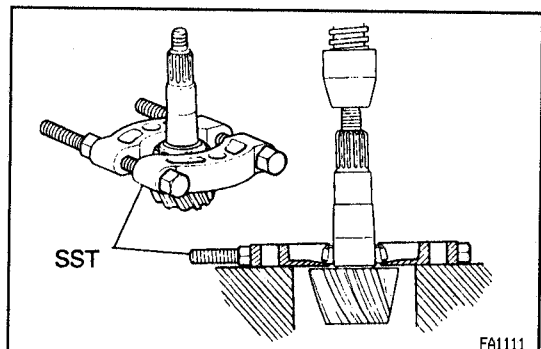
- (a) Using SST, remove the bearing from the drive pinion.
SST 09556-22010
- (b) Remove the bearing spacer.



4. REMOVE DIFFERENTIAL CASE

- (a) Place matchmarks on the bearing cap and differential carrier.
- (b) Remove the 2 adjusting nut locks.
- (c) Remove the 4 bolts and 2 bearing caps.
- (d) Remove the 2 adjusting nuts.
- (e) Remove the differential case with the side bearing outer races from the differential carrier.

HINT: Tag the disassembled parts to show the location for reassembly.



5. REMOVE DRIVE PINION

Remove the drive pinion with the rear bearing.

6. REMOVE DRIVE PINION REAR BEARING

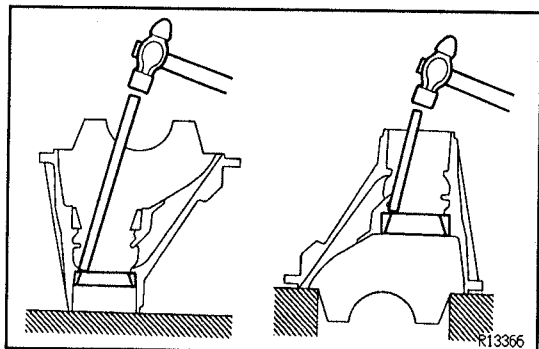
- (a) Using SST and a press, remove the bearing from the drive pinion.

SST 09950-00020

HINT: If the drive pinion or ring gear are damaged, replace them as a set.

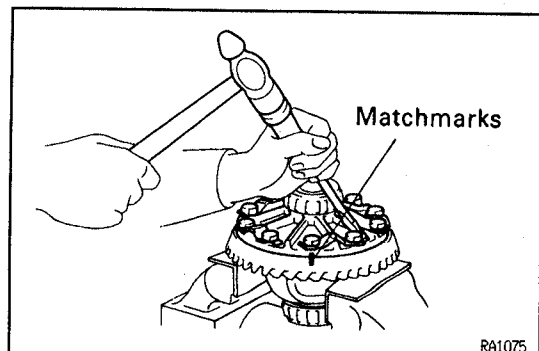
- (b) Remove the plate washer from the drive pinion.

SA



7. REMOVE FRONT AND REAR BEARING OUTER RACE

Using a brass bar and a hammer, remove the outer races from the carrier.

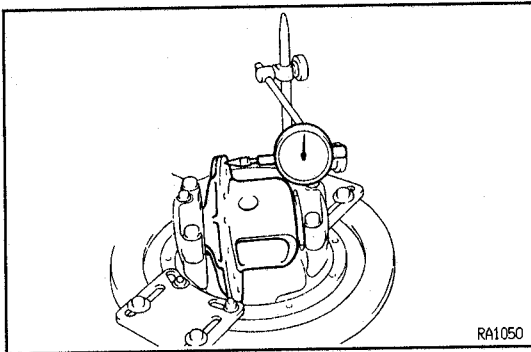


8. REMOVE RING GEAR

- (a) Place matchmarks on the ring gear and differential case.
- (b) Using a screwdriver and a hammer, unstake the lock plates.
- (c) Remove the 10 bolts and 5 lock plates.
- (d) Using a plastic hammer, tap on the ring gear to separate it from the differential case.

9. CHECK DIFFERENTIAL CASE RUNOUT

- Place the bearing outer races on their respective bearings. Check that the left and right outer races are not interchanged.
- Install the differential case in the differential carrier.
- When there is not play left in the side bearings, install the plate washers.
- Align the matchmarks on the bearing cap and differential carrier.



- Install and uniformly tighten the 4 bearing cap bolts in several passes.
- Using a dial indicator, measure the differential case runout.

Maximum runout:

0.07 mm (0.0028 in.)

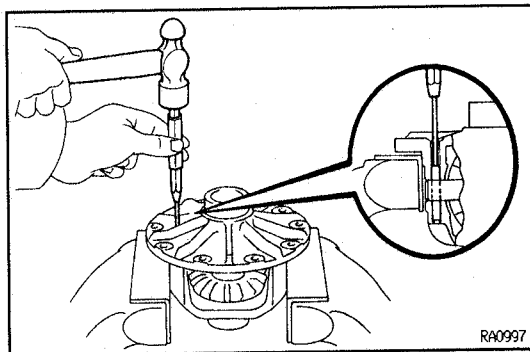
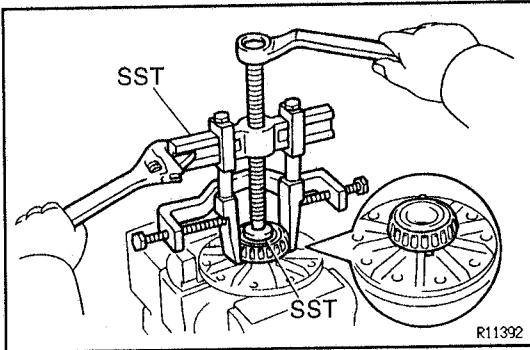
- Remove the differential case.

10. REMOVE SIDE BEARINGS

Using SST, remove the side bearing from the differential case.

SST 09950-40010 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04060, 09957-04010, 09958-04010), 09950-60010 (09951-00450)

HINT: Fix the claws of SST to the notch in the differential case.

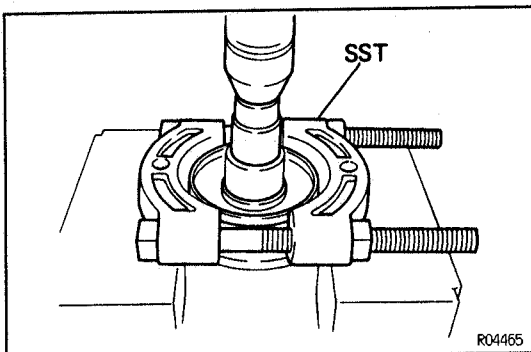
**11. DISASSEMBLE DIFFERENTIAL CASE ASSEMBLY**

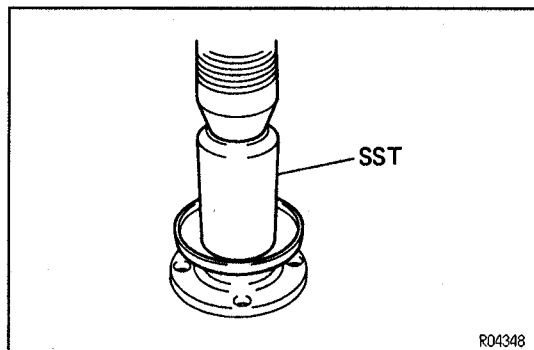
- Using a pin punch and a hammer, remove the straight pin.
- Remove these parts:
 - Pinion shaft
 - Pinion gears
 - Pinion gear thrust washers
 - Side gears
 - Side gear thrust washers

COMPANION FLANGE DUST DEFLECTOR REPLACEMENT**1. REMOVE DUST DEFLECTOR**

Using SST, a socket and a press, remove the dust deflector.

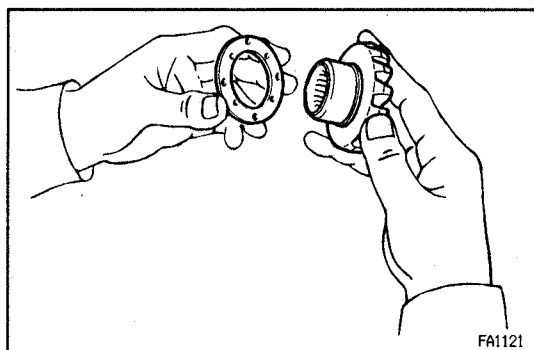
SST 09950-00020





2. INSTALL NEW DUST DEFLECTOR

Using SST and a press, install a new dust deflector.
SST 09636-20010



DIFFERENTIAL CARRIER ASSEMBLY

SA28D-01

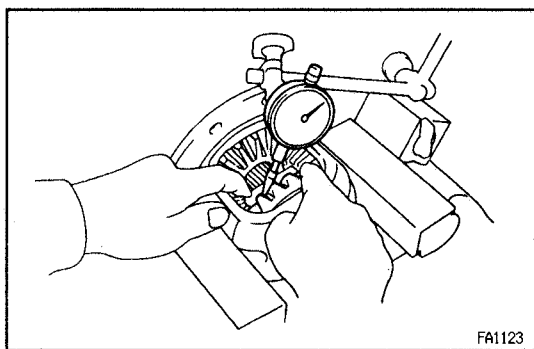
1. ASSEMBLE DIFFERENTIAL SIDE

- (a) Install the proper thrust washers on the side gears.
HINT: Using the table below, select thrust washers which will ensure that the backlash is within the specification.

Washer thickness

Thickness	Thickness
1.0 mm (0.039 in.)	1.2 mm (0.047 in.)
1.1 mm (0.043 in.)	1.3 mm (0.051 in.)

- (b) Install the side gears, pinion gears, pinion gear thrust washers and pinion shaft in the differential case.
HINT: Align the holes of the differential case and pinion shaft.

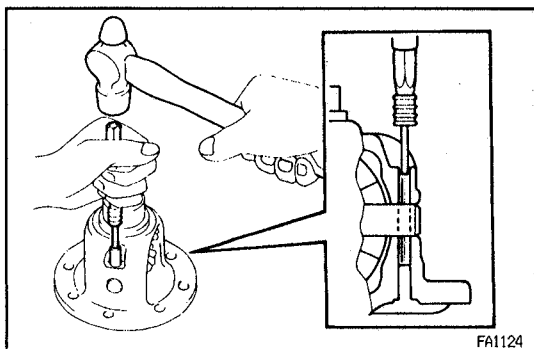


- (c) Measure the side gear backlash while holding one pinion gear toward the differential case.

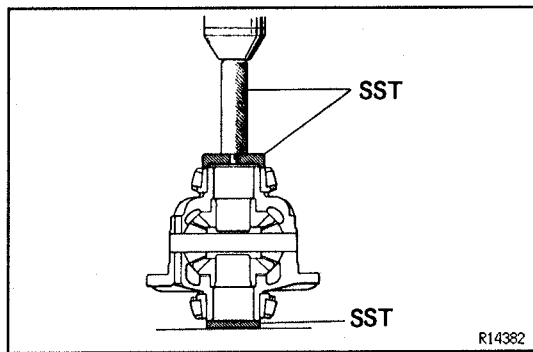
Backlash:

0.05–0.20 mm (0.0020–0.0079 in.)

If the backlash is not within the specification, select an appropriate thickness for the side gear thrust washer.



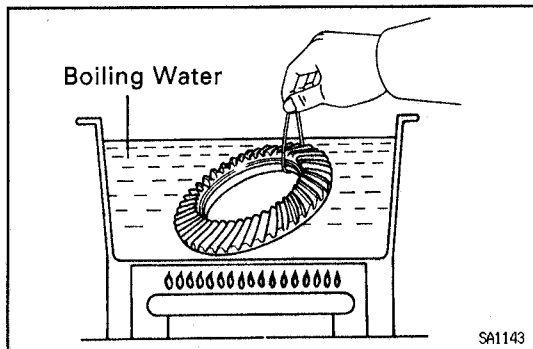
- (d) Using a pin punch and a hammer, install the straight pin through the differential case and hole of the pinion shaft.
(e) Using a chisel and a hammer, stake the outside of the differential case pin hole.



2. INSTALL SIDE BEARINGS

Using SST and a press, install the bearing into the differential case.

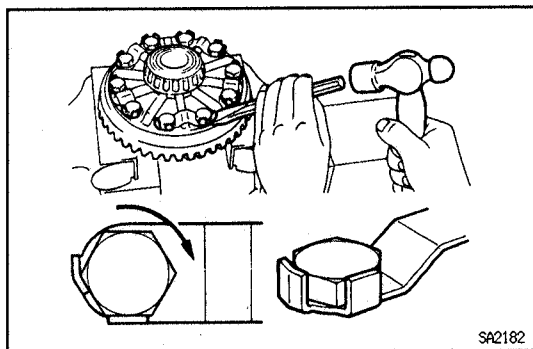
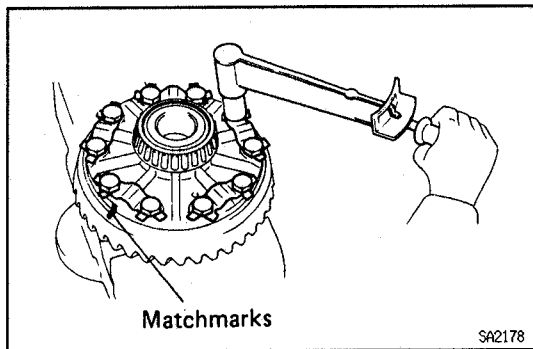
SST 09550-10012 (09252-10010, 09557-10010),
09950-60010 (09951-00450)



3. INSTALL RING GEAR ON DIFFERENTIAL CASE

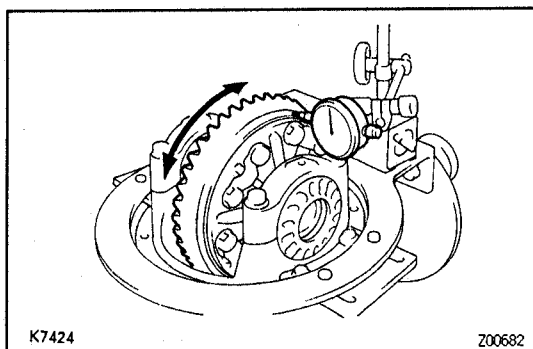
- Clean the contact surfaces of the differential case and ring gear.
- Heat the ring gear to about 100°C (212°F) in boiling water.
- Carefully remove the ring gear from the water.
- After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.
- Align the matchmarks on the ring gear and the differential case.
- Temporarily install 5 new lock plates and the 10 bolts so that the bolt holes in the ring gear and differential case are not misaligned.
- After the ring gear has cooled sufficiently, torque the ring gear set bolts.

Torque: 97 N·m (985 kgf·cm, 71 ft·lbf)



- Using a drift punch and a hammer, stake the lock plates.

HINT: Stake 1 claw flush with the flat surface of the bolt. For the claw contacting the protruding portion of the bolt, stake the half on the tightening side.

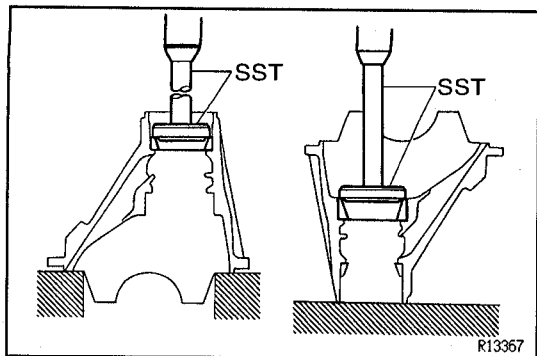


4. CHECK RING GEAR RUNOUT

- Install the differential case in the differential carrier and tighten the adjusting nut just to where there is no play in the bearing. (See page SA-116)
- Using a dial indicator, measure the runout of ring gear.

Maximum runout:

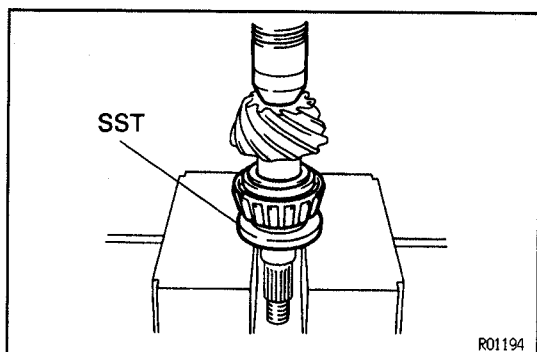
0.07 mm (0.0028 in.)



5. INSTALL DRIVE PINION BEARING OUTER RACES

Using SST and a press, install the outer races.

SST 09950-60010 (09951-00710, 09951-00790),
09950-70010 (09951-07150)



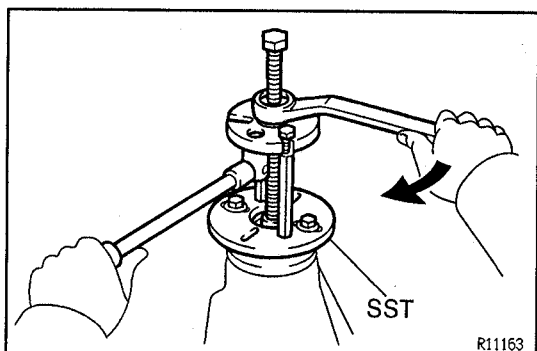
6. INSTALL DRIVE PINION REAR BEARING

- (a) Install the plate washer on the drive pinion.

HINT: First fit a washer with the same thickness as the washer which was removed, then after checking the tooth contact pattern, replace the washer with one of a different thickness if necessary.

- (b) Using SST and a press, install the rear bearing to the drive pinion.

SST 09506-30012



7. TEMPORARILY ADJUST DRIVE PINION PRELOAD

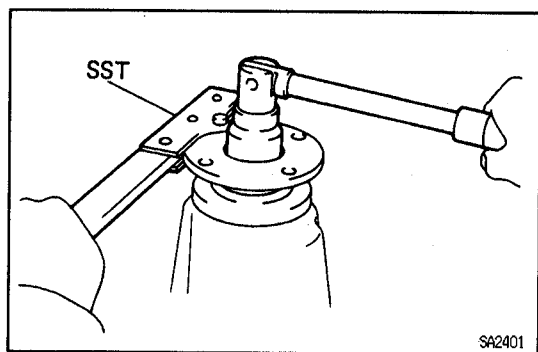
- (a) Place the drive pinion and front bearing.

HINT: Assemble the spacer and oil seal after adjusting the tooth contact pattern.

- (b) Install the oil slinger.

- (c) Using SST, install the companion flange.

SST 09950-30010 (09951-03010, 09953-03010,
09954-03010, 09955-03030, 09956-03020)



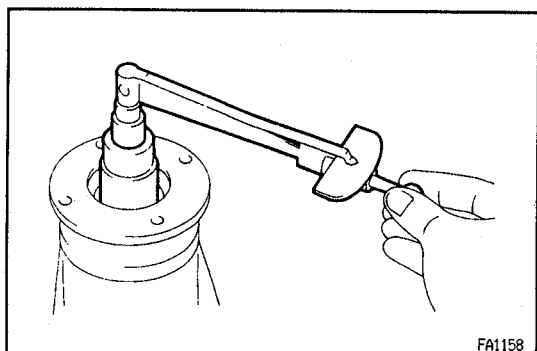
- (d) Coat the threads of the nut with hypoid gear oil.

- (e) Adjust the drive pinion preload by tighten the companion flange nut.

HINT: Using SST to hold the flange, tighten the nut.

SST 09330-00021

NOTICE: As there is no spacer, tighten the nut a little at a time, being careful not to overtighten it.



- (f) Using a torque wrench, measure the preload.

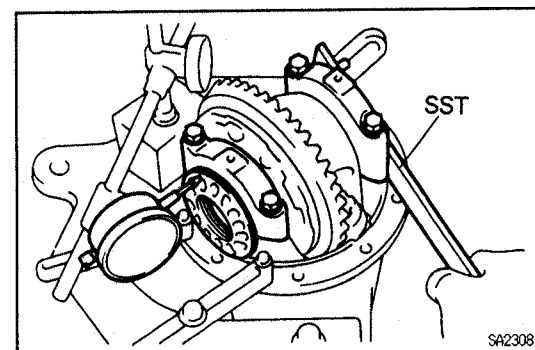
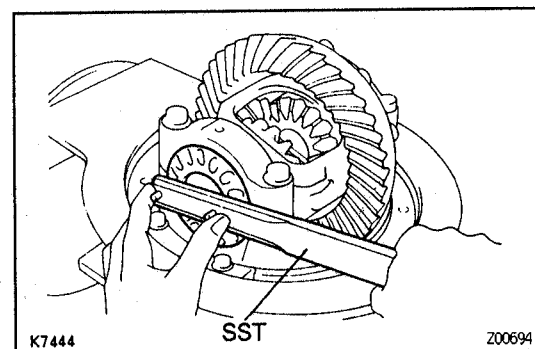
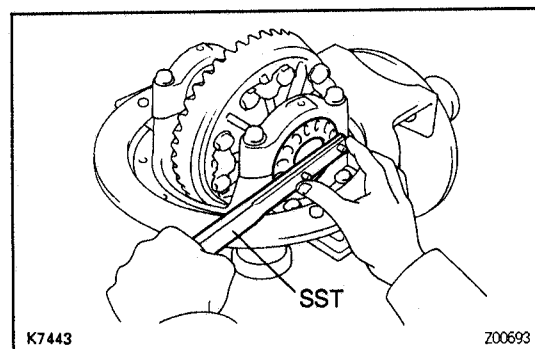
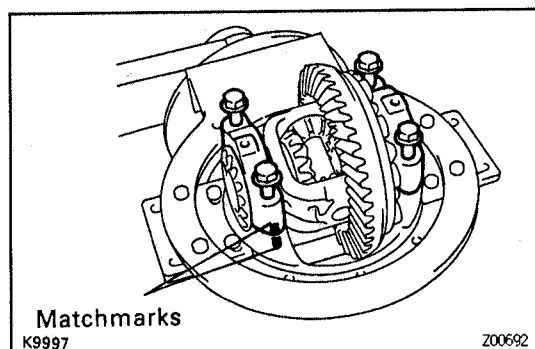
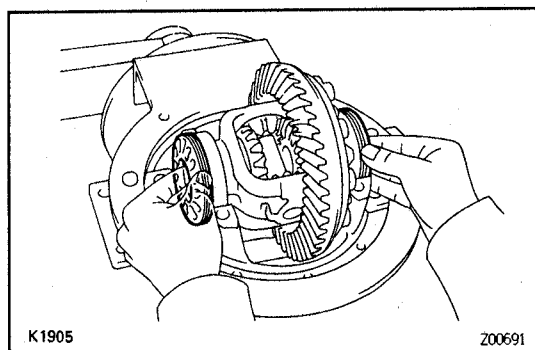
Preload (at starting):

New bearing

1.4-2.1 N·m (14-21 kgf·cm, 12.2-18.3 in.-lbf)

Reused bearing

0.6-1.0 N·m (6-10 kgf·cm, 5.2-8.7 in.-lbf)



8. INSTALL DIFFERENTIAL CASE IN CARRIER

- (a) Place the bearing outer races on their respective bearings. Make sure the left and right outer races are not interchanged.
- (b) Install the case in the carrier.
HINT: Make sure that there is a backlash between the ring gear and drive pinion.

9. INSTALL ADJUSTING NUTS

Install the adjusting nuts on the carrier, making sure the nuts are threaded properly.

10. INSTALL BEARING CAPS

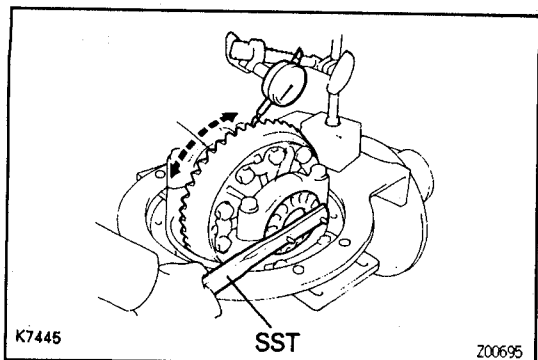
Align the matchmarks on the cap and carrier. Screw in the 2 bearing cap bolts 2 or 3 turns and press down the bearing cap by hand.

HINT: If the bearing cap does not fit tightly on the carrier, the adjusting nuts are not threaded properly. Reinstall the adjusting nuts if necessary.

11. ADJUST SIDE BEARING PRELOAD

- (a) Tighten the 4 bearing cap bolts to the specified torque, then loosen them to the point where they can be turned by hand.
Torque: 85 N·m (870 kgf·cm, 63 ft·lbf)
- (b) Fully tighten the 4 bearing cap bolts by hand.
- (c) Using SST, tighten the adjusting nut on the ring gear back side until the ring gear has a backlash of about 0.2 mm (0.008 in.).
SST 09504-00011
- (d) While turning the ring gear, use SST to fully tighten the adjusting nut on the ring gear teeth side.
After the bearings are settled, loosen the adjusting nut on the drive pinion side.
SST 09504-00011

- (e) Place a dial indicator on the top of the adjusting nut on the ring gear back side.
- (f) Adjust the side bearing for zero preload by tightening the other adjusting nut until the pointer on the indicator begins to move.
- (g) Tighten the adjusting nut 1 — 1.5 notches from the zero preload position.



- (h) Using a dial indicator, adjust the ring gear backlash until it is within the specification.

Backlash:

0.13–0.18 mm (0.0051–0.0071 in.)

HINT: The backlash is adjusted by turning the left and right adjusting nuts equal amounts. For example, loosen the nut of the left side one notch and tighten the nut on the right side one notch.

- (i) Torque the bearing cap bolts.

Torque: 85 N·m (870 kgf·cm, 63 ft·lbf)

- (j) Recheck the ring gear backlash.

Backlash:

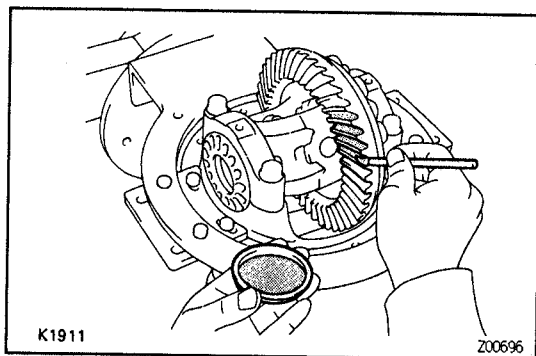
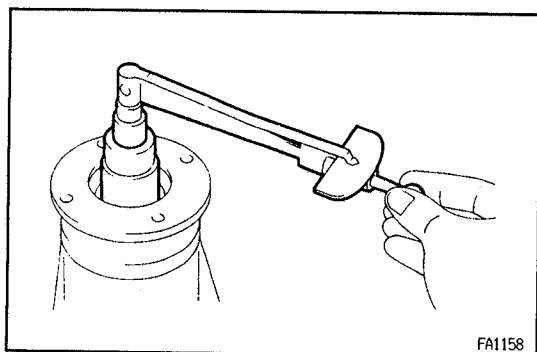
0.13–0.18 mm (0.0051–0.0071 in.)

- (k) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Total preload (at starting):

Drive pinion preload plus

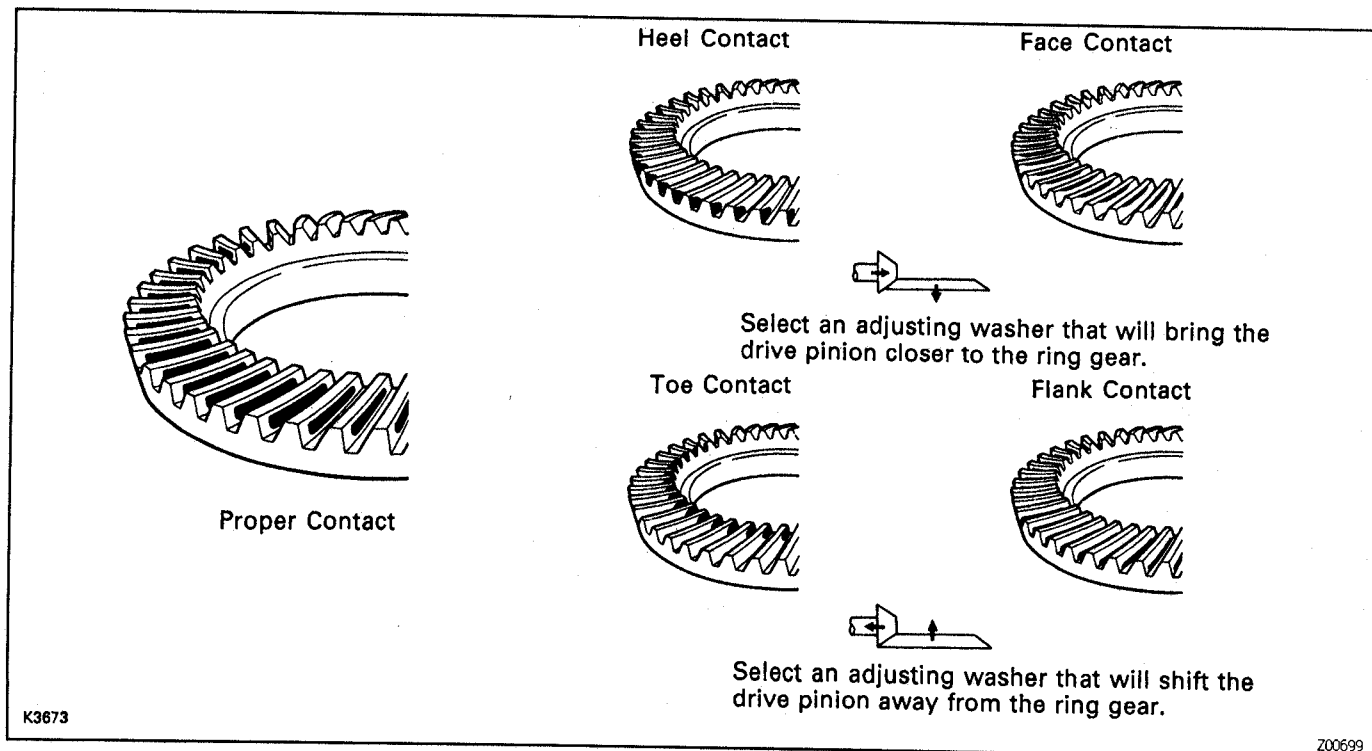
0.4–0.6 N·m (4–6 kgf·cm, 3.5–5.2 in·lbf)

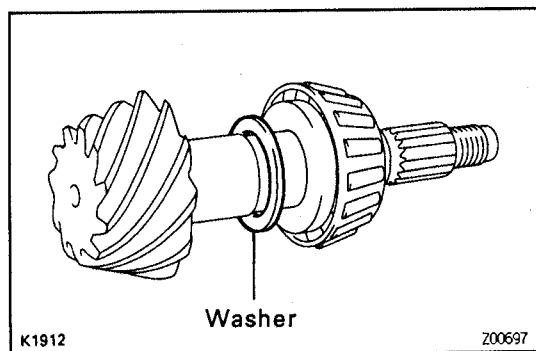


12. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

- Coat 3 or 4 teeth at 3 different positions on the ring gear with red lead.
- Hold the companion flange firmly and rotate the ring gear in both directions.
- Inspect the tooth pattern.

SA





If the teeth are not contacting properly, use the following chart to select a proper washer for correction.

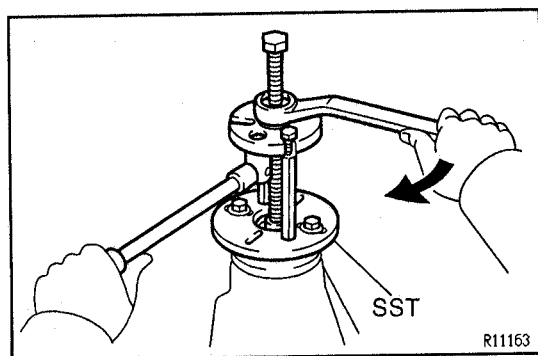
Washer thickness

Thickness mm (in.)	Thickness mm (in.)
2.24 (0.0882)	2.51 (0.0988)
2.27 (0.0894)	2.54 (0.1000)
2.30 (0.0906)	2.57 (0.1012)
2.33 (0.0917)	2.60 (0.1024)
2.36 (0.0929)	2.63 (0.1035)
2.39 (0.0941)	2.66 (0.1047)
2.42 (0.0953)	2.69 (0.1059)
2.45 (0.0965)	2.72 (0.1071)
2.48 (0.0976)	—

13. REMOVE COMPANION FLANGE AND OIL SLINGER (See page SA — 110)

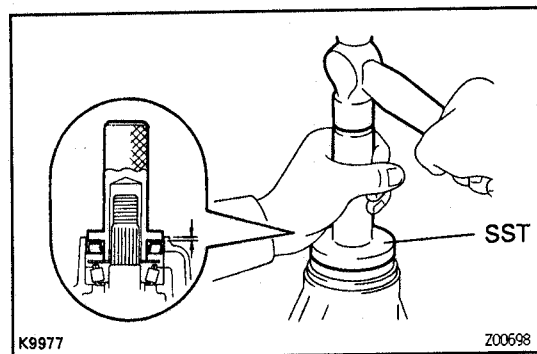
14. REMOVE FRONT BEARING (See page SA — 111)

SA



15. INSTALL NEW BEARING SPACER, FRONT BEARING AND OIL SLINGER

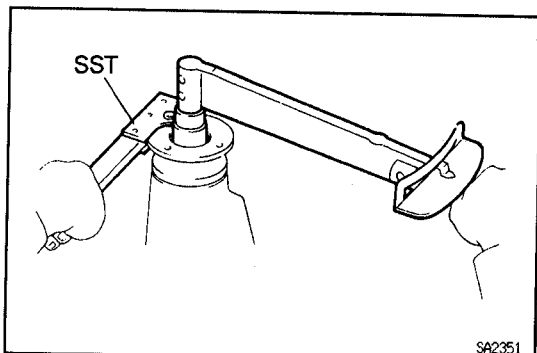
- Install a new bearing spacer and place the front bearing and oil slinger.
- Using SST and the companion flange, install the front bearing then remove the companion flange.
SST 09950—30010 (09951—03010, 09953—03010, 09954—03010, 09955—03030, 09956—03020)



16. INSTALL NEW OIL SEAL

- Coat a new oil seal lip with MP grease.
- Using SST and a hammer, install the oil seal.
SST 09554—30011

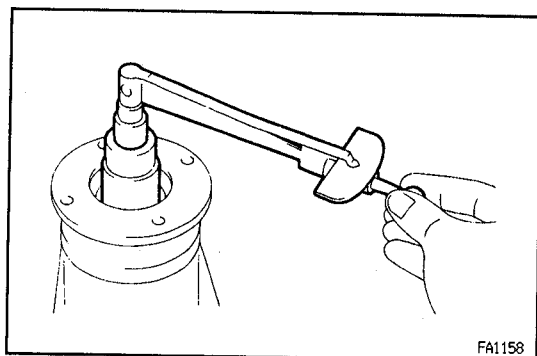
Oil seal drive in depth:
1.5 mm (0.059 in.)

**17. INSTALL COMPANION FLANGE**

- (a) Place the companion flange.
- (b) Coat the threads of a new nut with hypoid gear oil.
- (c) Using SST to hold the flange, torque the nut.

SST 09330-00021

Torque: 108 N·m (1,100 kgf·cm, 80 ft·lbf)

**18. ADJUST DRIVE PINION PRELOAD**

Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

Preload (at starting):

New bearing

1.4–2.1 N·m (14–21 kgf·cm, 12.2–18.3 in·lbf)

Reused bearing

0.6–1.0 N·m (6–10 kgf·cm, 5.2–8.7 in·lbf)

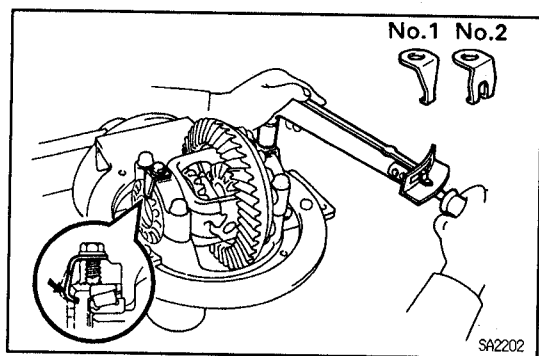
If the preload is greater than the specification, replace the bearing spacer.

If the preload is less than the specification, retighten the nut 13 N·m (130 kgf·cm, 9 ft·lbf) a little at a time until the specified preload is reached.

Maximum torque:

235 N·m (2,400 kgf·cm, 174 ft·lbf)

If the maximum torque is exceeded while retightening the nut, replace the bearing spacer and repeat the preload procedure. Do not back off the pinion nut to reduce the preload.

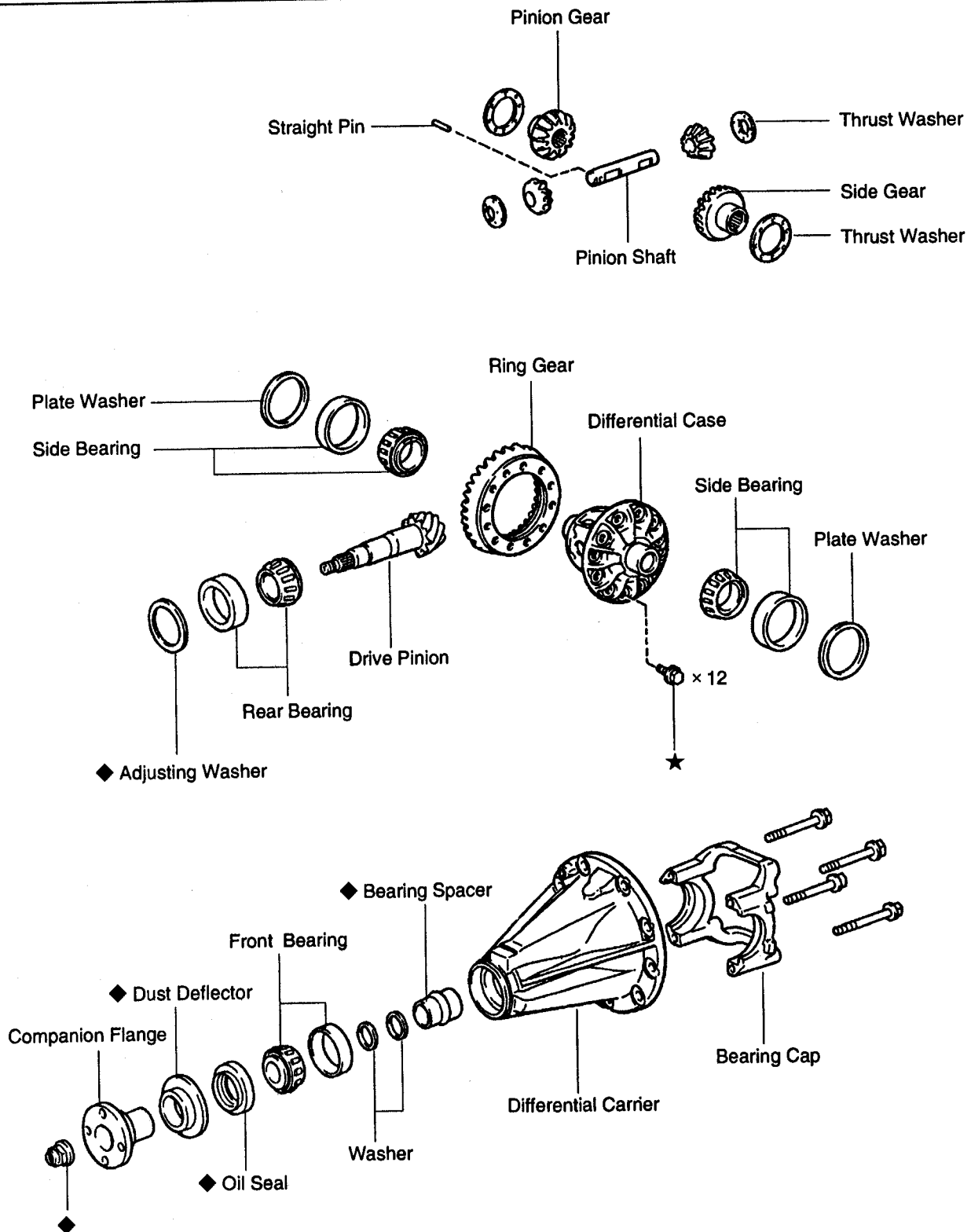
**19. CHECK RUNOUT OF COMPANION FLANGE**
(See page SA-109)**20. STAKE DRIVE PINION NUT****21. INSTALL ADJUSTING NUT LOCKS**

- (a) Select either a lock No.1 or No.2, whichever will fit the adjusting nuts.
- (b) Install new nut locks on the bearing caps.

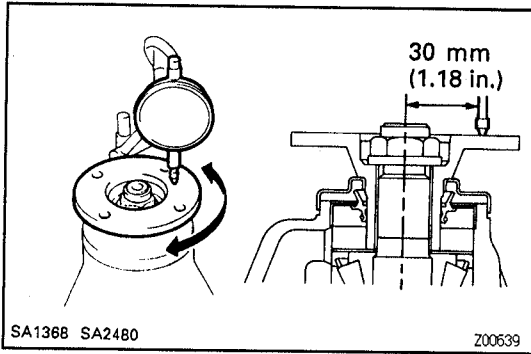
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

DIFFERENTIAL CARRIER (3RZ—FE, 5VZ—FE w/o Diff. Lock) COMPONENTS

SA09D-07



8A28E-01

DIFFERENTIAL CARRIER INSPECTION**1. CHECK RUNOUT OF COMPANION FLANGE**

Using a dial indicator, measure the vertical and lateral runout of the companion flange.

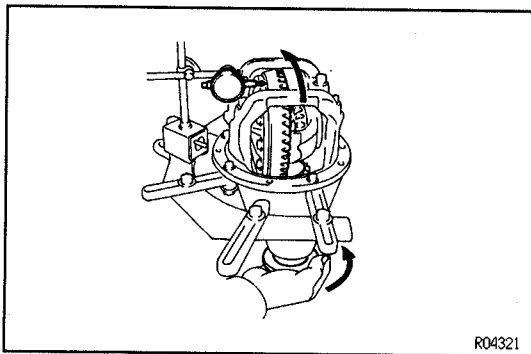
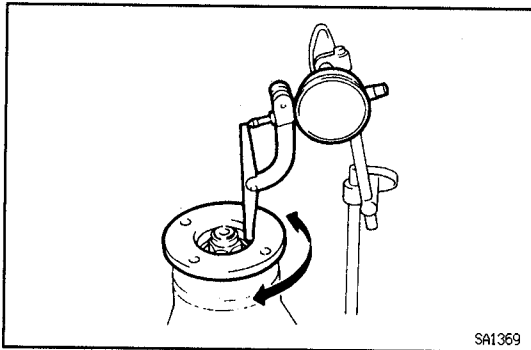
Maximum vertical runout:

0.09 mm (0.0035 in.)

Maximum lateral runout:

0.09 mm (0.0035 in.)

If the runout is not within the specification, replace the companion flange.

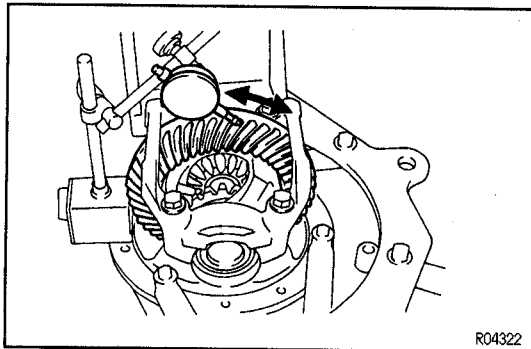
**2. CHECK RING GEAR RUNOUT**

Using a dial indicator, measure the ring gear runout.

Maximum runout:

0.05 mm (0.0020 in.)

If the runout is not within the specification, replace the ring gear.

**3. CHECK RING GEAR BACKLASH**

Using a dial indicator, measure the ring gear backlash.

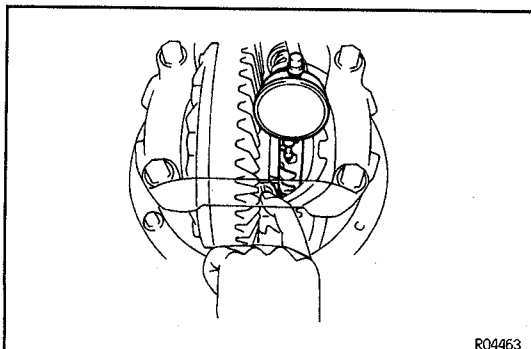
Backlash:

0.13–0.18 mm (0.0051–0.0071 in.)

If the backlash is not within the specification, adjust the side bearing preload or repair as necessary.

4. CHECK TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

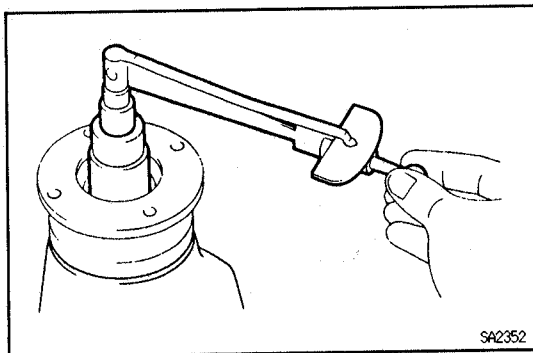
(See page SA-130)

**5. CHECK SIDE GEAR BACKLASH**

Measure the side gear backlash while holding one pinion gear toward the case.

Backlash:

0.05–0.20 mm (0.0020–0.0079 in.)

**6. CHECK DRIVE PINION PRELOAD**

Using a torque wrench, measure the preload of backlash between the drive pinion and ring gear.

Preload (at starting):

0.5–0.8 N·m (5–8 kgf·cm, 4.3–6.9 in.-lbf)

7. CHECK TOTAL PRELOAD

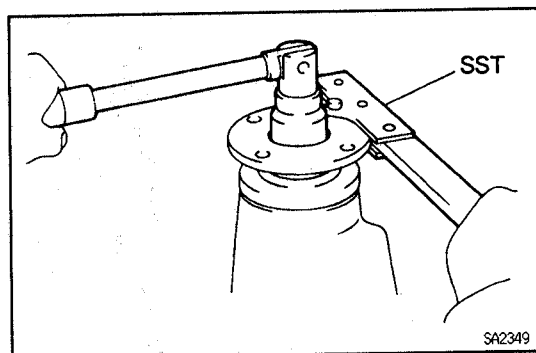
Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Total preload (at starting):

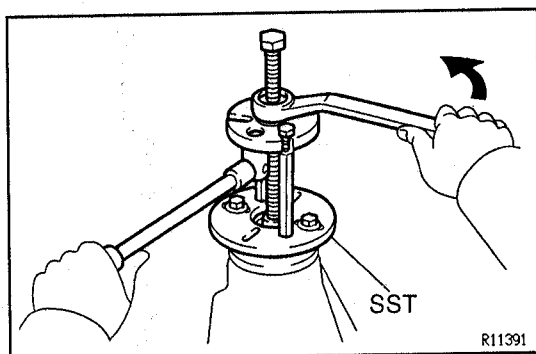
In addition to drive pinion preload.

0.4–0.6 N·m (4–6 kgf·cm, 3.5–5.2 in.-lbf)

If necessary, disassemble and inspect the differential.

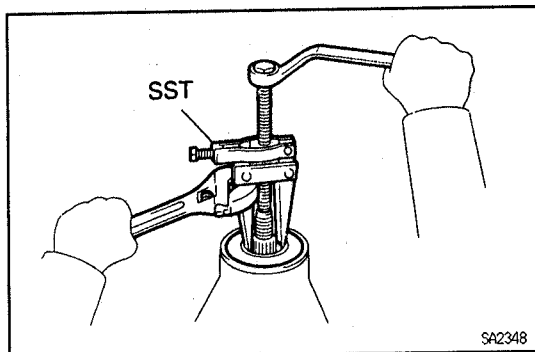
**DIFFERENTIAL CARRIER DISASSEMBLY****1. REMOVE COMPANION FLANGE**

- (a) Using a chisel and hammer, unstake the staked part of the nut.
- (b) Using SST to hold the flange, remove the nut.
SST 09330–00021



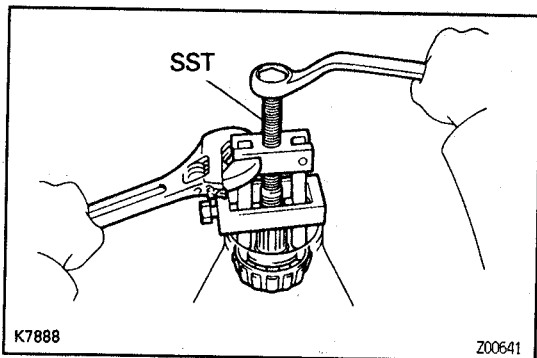
- (c) Using SST, remove the companion flange.

SST 09950–30010 (09951–03010, 09953–03010, 09954–03010, 09955–03030, 09956–03050)

**2. REMOVE FRONT OIL SEAL**

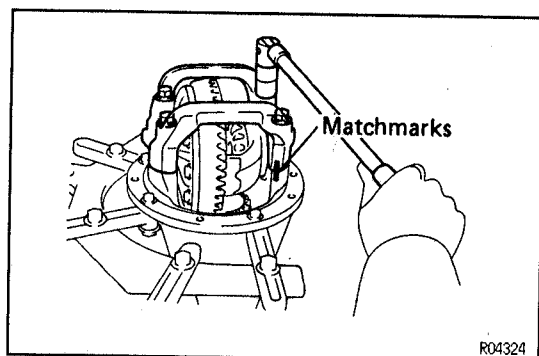
Using SST, remove the oil seal from the differential carrier.

SST 09308–10010



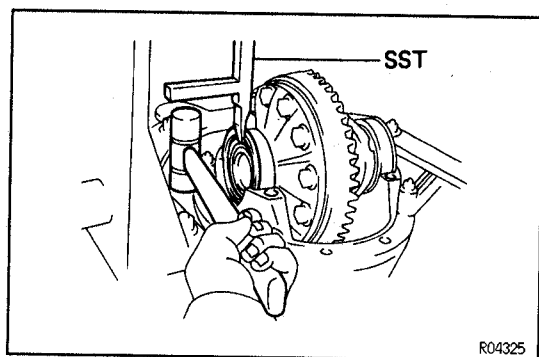
3. REMOVE FRONT BEARING AND BEARING SPACER

- Using SST, remove the bearing from the drive pinion.
SST 09556-22010
- Remove the 2 washers and bearing spacer.



4. REMOVE DIFFERENTIAL CASE

- Place matchmarks on the bearing cap and differential carrier.
- Remove the 4 bolts and bearing cap.



- Using SST and a hammer, remove the 2 side bearing plate washers.

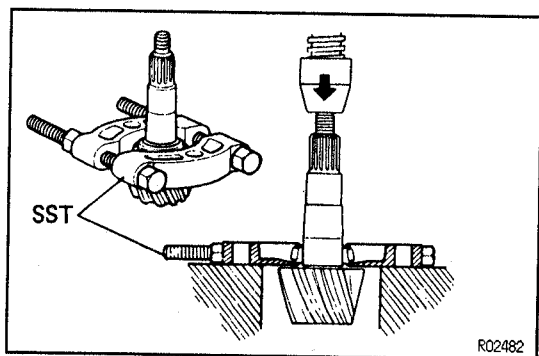
SST 09504-22011

HINT: Measure the plate washer and note the thickness.

- Remove the differential case and bearing outer race from the carrier.

HINT: Tag the bearing outer races to show the location for reassembly.

SA



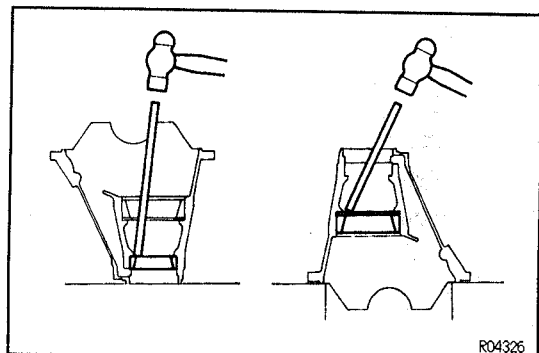
5. REMOVE DRIVE PINION

6. REMOVE DRIVE PINION REAR BEARING

Using SST and a press, remove the bearing from the drive pinion.

SST 09950-00020

HINT: If the drive pinion or ring gear are damaged, replace them as a set.

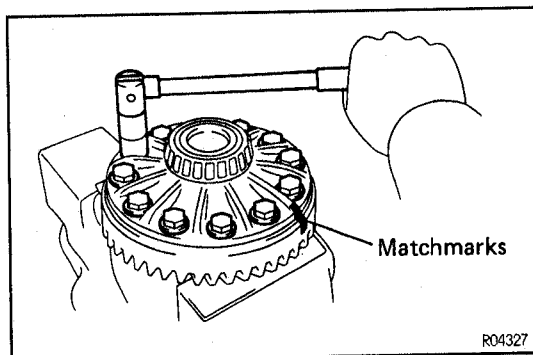


7. REMOVE FRONT AND REAR BEARING OUTER RACES

NOTICE: Do not remove the outer races except when replacing the bearings.

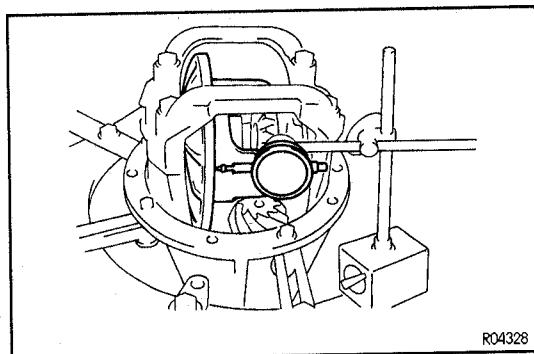
Using a brass bar and a hammer, remove the outer races and adjusting washer from the carrier.

HINT: Measure the adjusting washer and note the thickness.



8. REMOVE RING GEAR

- Place matchmarks on the ring gear and differential case.
- Remove the 12 ring gear set bolts.
- Using a plastic hammer, tap on the ring gear to separate it from the differential case.



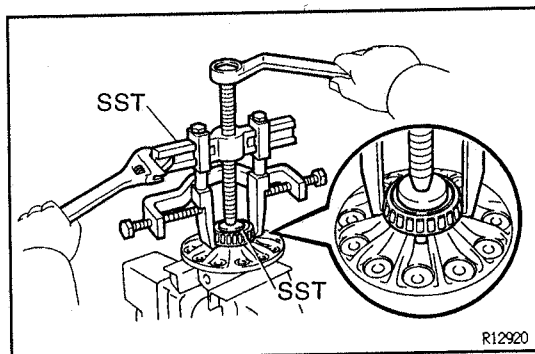
9. CHECK DIFFERENTIAL CASE RUNOUT

- Install the differential case in the differential carrier. (See page SA-127)
- Using a dial indicator, measure the differential case runout.

Maximum case runout:

0.04 mm (0.0016 in.)

- Remove the differential case.

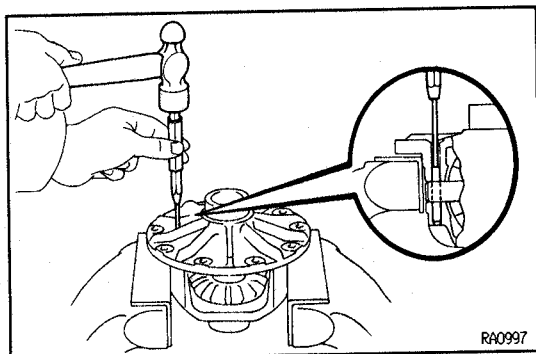


10. REMOVE SIDE BEARINGS

Using SST, remove the side bearings from the differential case.

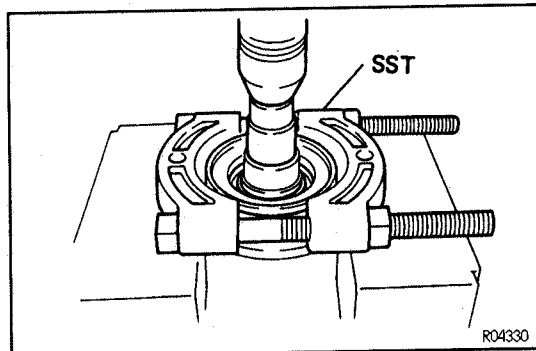
SST 09950-40010 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04060, 09957-04010, 09958-04010),
09950-60010 (09951-00480)

HINT: Fix the claws of SST to the notch in the differential case.



11. DISASSEMBLE DIFFERENTIAL CASE ASSEMBLY

- Using a pin punch and a hammer, remove the straight pin.
- Remove these parts:
 - Pinion shaft
 - Pinion gears
 - Pinion gear thrust washers
 - Side gears
 - Side gear thrust washers

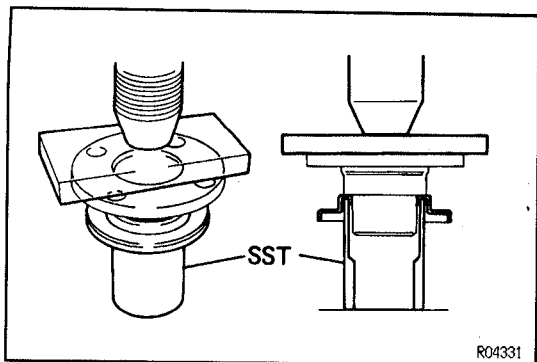


COMPANION FLANGE DUST DEFLECTOR REPLACEMENT

1. REMOVE DUST DEFLECTOR

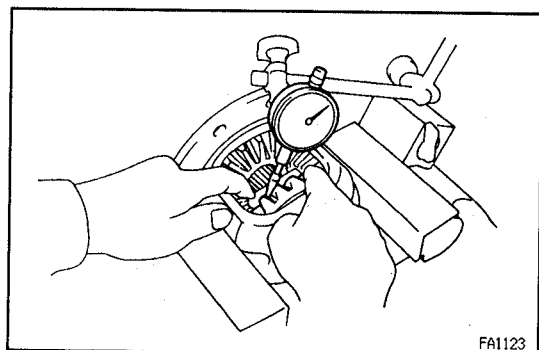
Using SST, a socket wrench and a press, remove the dust deflector.

SST 09950-00020



2. INSTALL NEW DUST DEFLECTOR

Using SST and a press, install a new dust deflector.
SST 09523-36010



DIFFERENTIAL CARRIER ASSEMBLY

SA28F-01

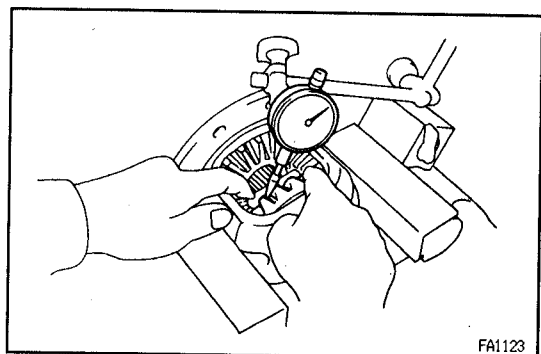
1. ASSEMBLE DIFFERENTIAL CASE

- (a) Install the proper thrust washer to the side gears.
HINT: Using the table below, select thrust washers which will ensure that the backlash is within the specifications.

Washer thickness

Thickness mm (in.)	Thickness mm (in.)
1.50 (0.0590)	1.75 (0.0689)
1.55 (0.0610)	1.80 (0.0709)
1.60 (0.0630)	1.85 (0.0728)
1.65 (0.0650)	1.90 (0.0748)
1.70 (0.0669)	—

- (b) Install the side gears with the thrust washers, pinion gears, pinion gear thrust washers and pinion shaft.
HINT: Align the holes of the differential case and pinion shaft.

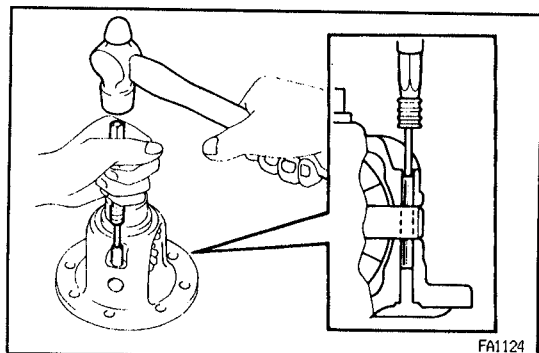


- (c) Using a dial indicator, measure the side gear backlash while holding one pinion gear toward the case.

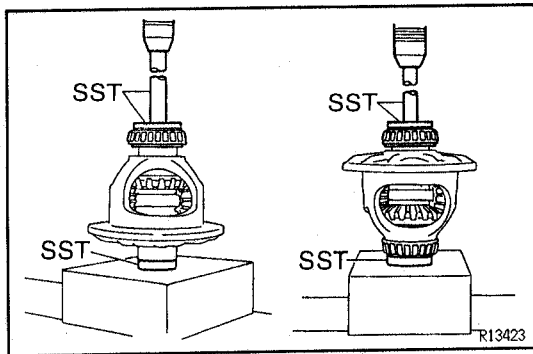
Backlash:

0.05–0.20 mm (0.0020–0.0079 in.)

If the backlash is not within the specification, replace the thrust washers.



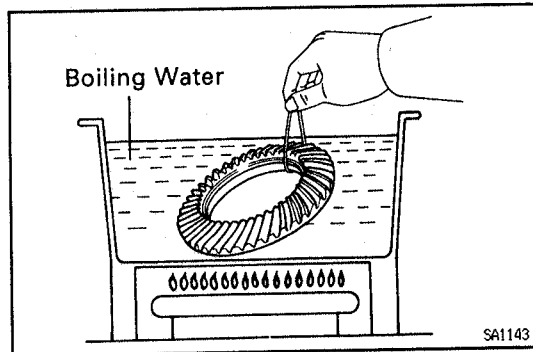
- (d) Using a pin punch and hammer, drive in the straight pin through the holes in the differential case and pinion shaft.
(e) Using a chisel and hammer, stake the out side of the differential case pin hole.



2. INSTALL SIDE BEARINGS

Using SST and a press, install the side bearings into the differential case.

SST 09950-60010 (09951-00480, 09951-00640)
09950-70010 (09951-07150)



3. INSTALL RING GEAR ON DIFFERENTIAL CASE

- Clean the contact surfaces of the differential case and ring gear.
- Heat the ring gear to about 100 °C (212 °F) in boiling water.
- Carefully remove the ring gear from the water.
- After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.

HINT: Align the matchmarks on the ring gear and differential case.

- After the ring gear cools down enough, torque the set bolts to which thread lock has been applied.

Thread lock:

Part No. 08833-00100, THREE BOND 1360K or equivalent.

Torque: 125 N·m (1,270 kgf·cm, 92 ft·lbf)

4. INSPECT RING GEAR RUNOUT

- Install the differential case into the carrier and install the plate washers to where there is no play in the bearing. (See page SA-127)
- Install the bearing cap. (See page SA-129)
- Using a dial indicator, measure the runout of ring gear.

Maximum runout:

0.05 mm (0.0020 in.)

5. INSTALL DRIVE PINION BEARING OUTER RACES AND ADJUSTING WASHER

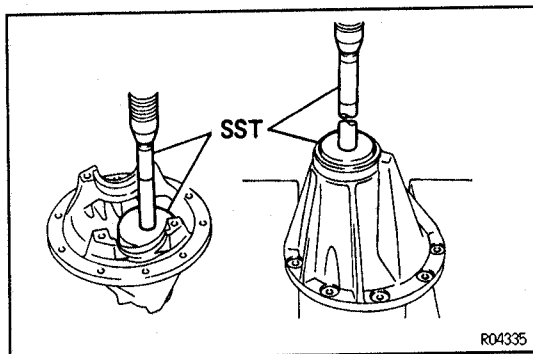
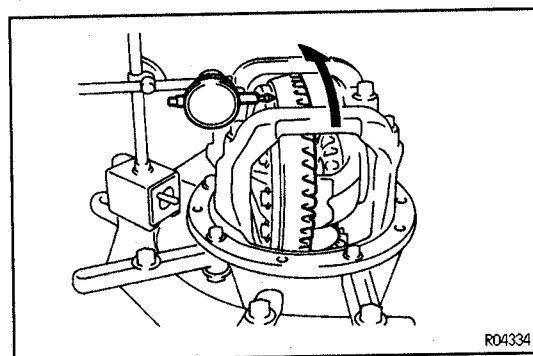
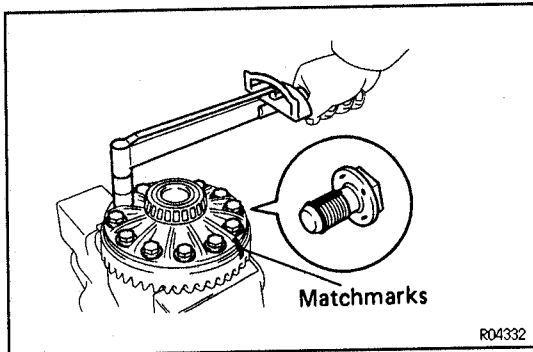
- Using SST and a press, install a new front bearing outer race to the carrier.

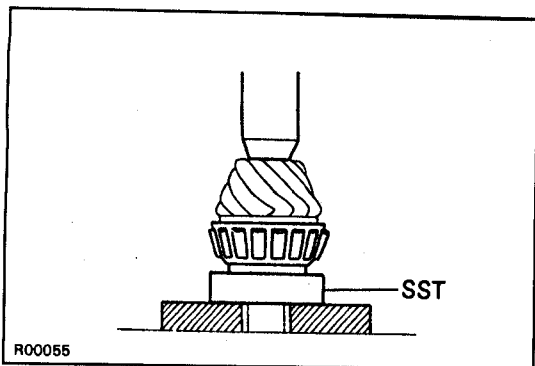
SST 09950-60010 (09951-00710),
09950-70010 (09951-07150)

- Using SST and a press, install a new adjusting washer and a new rear bearing outer race to the carrier.

SST 09950-60020 (09951-00910),
09950-70010 (09951-07150)

HINT: First fit a washer with the same thickness as the washer which was removed, then after checking the tooth contact pattern, replace the washer with one of a different thickness if necessary.

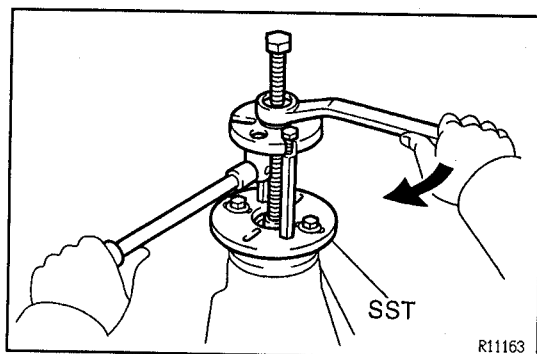




6. INSTALL DRIVE PINION REAR BEARING

Using SST and a press, install the rear bearing onto the drive pinion.

SST 09506-35010



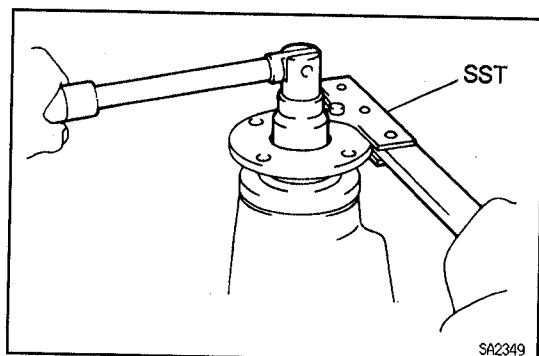
7. TEMPORARILY ADJUST DRIVE PINION PRELOAD

- (a) Install the drive pinion and front bearing.

HINT: Assemble the spacer, washers and oil seal after adjusting the gear contact pattern.

- (b) Using SST, install the companion flange.

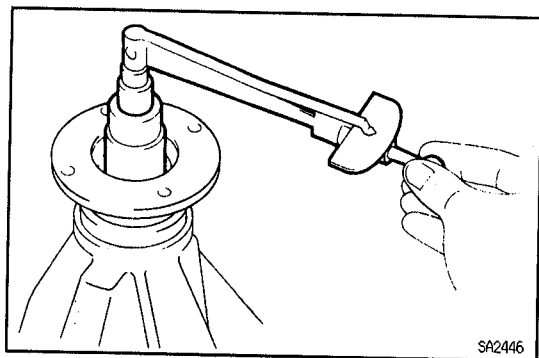
SST 09950-30010 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03050)



- (c) Coat the threads of the nut with hypoid gear oil.
(d) Adjust the drive pinion preload by tightening the companion flange nut.

Using SST to hold the flange, torque the nut.
SST 09330-00021

NOTICE: As there is no spacer, tighten the nut a little at a time, being careful not to overtighten it.



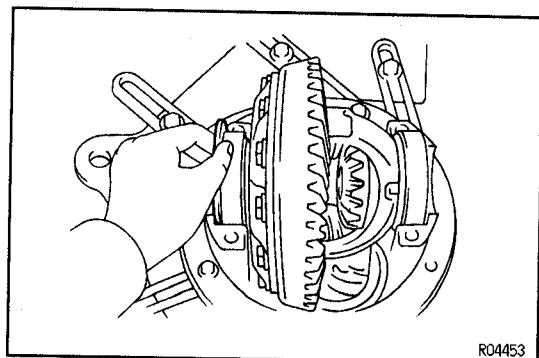
- (e) Using a torque wrench, measure the preload.
Preload (at starting):

New bearing

1.0–1.6 N·m (10–16 kgf·cm, 8.7–13.9 in.-lbf)

Reused bearing

0.5–0.8 N·m (5–8 kgf·cm, 4.3–6.9 in.-lbf)



8. INSTALL DIFFERENTIAL CASE IN CARRIER

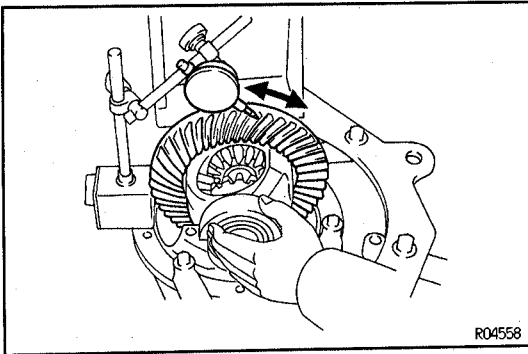
- (a) Place the bearing outer races on their respective bearings. Make sure the left and right races are not interchanged.

- (b) Install the differential case in the carrier.

9. ADJUST RING GEAR BACKLASH

- (a) Only install the plate washer on the ring gear back side.

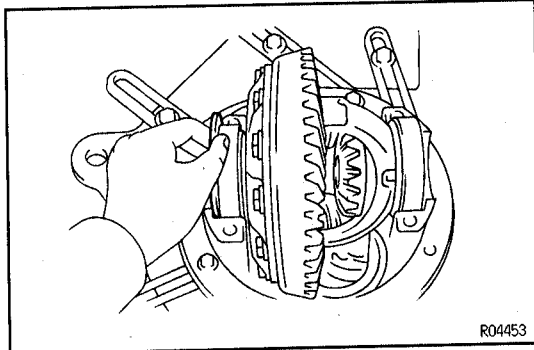
HINT: Ensure that the ring gear has a backlash.



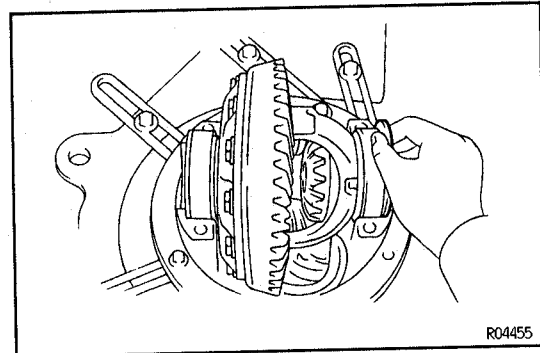
- (b) Using a plastic hammer, snug down the washer and bearing by tapping the ring gear.
- (c) Hold the side bearing boss on the teeth surface of the ring gear and measure the backlash.

Backlash (reference):

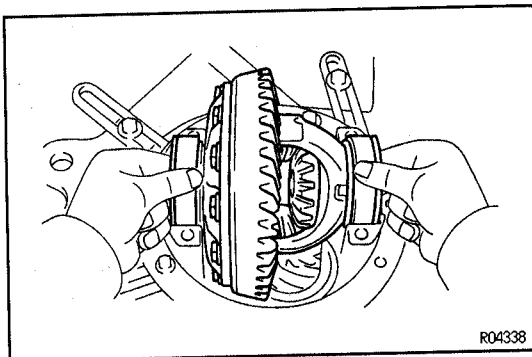
0.13–0.18 mm (0.0051–0.0071 in.)



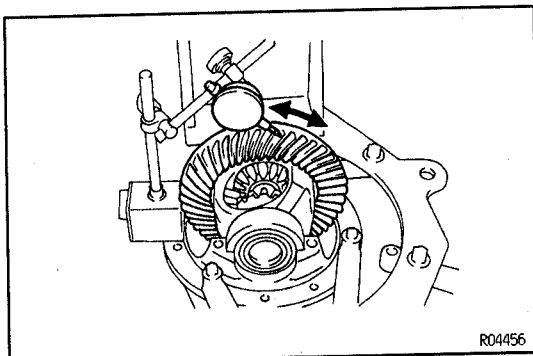
- (d) Select a ring gear back side plate washer, using the backlash as reference. (See page SA–129)



- (e) Select a ring gear teeth side plate washer of a thickness which eliminates any clearance between the outer race and case.



- (f) Remove the plate washers and differential case.
- (g) Install the plate washer into the ring gear back side of the carrier.
- (h) Place the other plate washer onto the differential case together with the outer race, and install the differential case with the outer race into the carrier.
- (i) Using a plastic hammer, snug down the washer and bearing by tapping the ring gear.



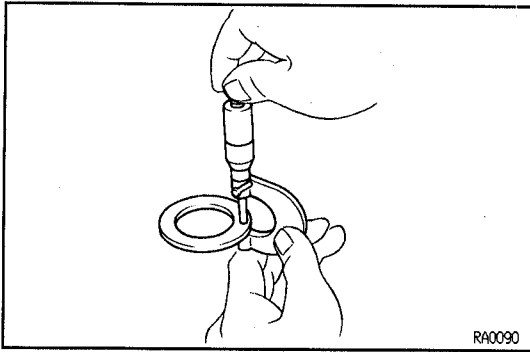
- (j) Using a dial indicator, measure the ring gear backlash.

Backlash:

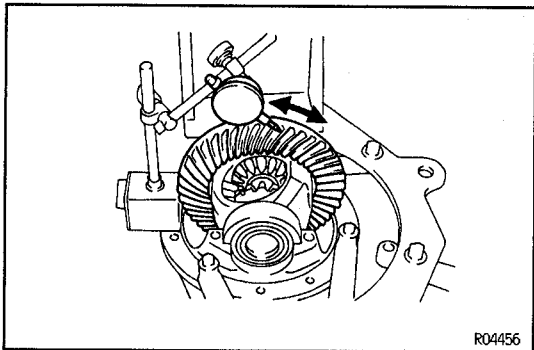
0.13–0.18 mm (0.0051–0.0071 in.)

- (k) If the backlash is not within the specification, adjust by either increasing or decreasing the number of washers on both sides by an equal amount.
- HINT:** There should be no clearance between the plate washer and case.

Ensure that there is ring gear backlash.



RA0090



R04456

10. ADJUST SIDE BEARING PRELOAD

- After adjustment with the backlash as reference, remove the ring gear teeth side plate washer and measure the thickness.
- Install a new washer of 0.06–0.09 mm (0.0024–0.0035 in.) thicker than the washer removed.
HINT: Select a washer which can be pressed in 2/3 of the way by finger.
- Using a plastic hammer, install the plate washer.

- Recheck the ring gear backlash.

Backlash:

0.13–0.18 mm (0.0051–0.0071 in.)

- If the backlash is not within the specification, adjust by either increasing or decreasing the washers on both sides by equal amounts.

HINT: The backlash will change about 0.20 mm (0.0079 in.) with 0.03 mm (0.0012 in.) alteration of the side washer.

Washer thickness

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
58	2.58 (0.1015)	90	2.90 (0.1142)	22	3.22 (0.1268)
60	2.60 (0.1024)	92	2.92 (0.1150)	24	3.24 (0.1276)
62	2.62 (0.1031)	94	2.94 (0.1157)	26	3.26 (0.1283)
64	2.64 (0.1039)	96	2.96 (0.1165)	28	3.28 (0.1291)
66	2.66 (0.1047)	98	2.98 (0.1173)	30	3.30 (0.1299)
68	2.68 (0.1055)	00	3.00 (0.1181)	32	3.32 (0.1307)
70	2.70 (0.1063)	02	3.02 (0.1189)	34	3.34 (0.1315)
72	2.72 (0.1071)	04	3.04 (0.1197)	36	3.36 (0.1323)
74	2.74 (0.1079)	06	3.06 (0.1205)	38	3.38 (0.1331)
76	2.76 (0.1087)	08	3.08 (0.1213)	40	3.40 (0.1339)
78	2.78 (0.1094)	10	3.10 (0.1220)	42	3.42 (0.1346)
80	2.80 (0.1102)	12	3.12 (0.1228)	44	3.44 (0.1354)
82	2.82 (0.1110)	14	3.14 (0.1236)	46	3.46 (0.1362)
84	2.84 (0.1118)	16	3.16 (0.1244)	48	3.48 (0.1370)
86	2.86 (0.1126)	18	3.18 (0.1252)		—
88	2.88 (0.1134)	20	3.20 (0.1260)		—

11. INSTALL SIDE BEARING CAP

- Align the matchmarks on the cap and carrier.
- Torque the 4 bolts.

Torque: 113 N·m (1,150 kgf·cm, 83 ft·lbf)

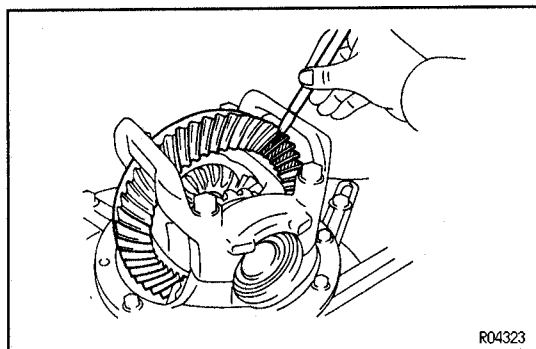
12. MEASURE TOTAL PRELOAD

Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Total preload (at starting):

In addition to drive pinion preload

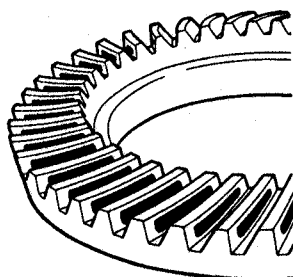
0.4–0.6 N·m (4–6 kgf·cm, 3.5–5.2 in.·lbf)



R04323

13. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

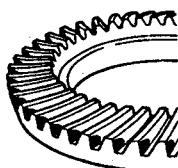
- Coat 3 or 4 teeth at three different position on the ring gear with red lead.
- Hold the companion flange firmly and rotate the ring gear in both directions.
- Inspect the teeth pattern.



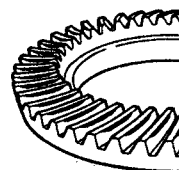
Proper Contact

K3873

Heel Contact

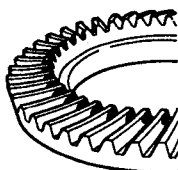


Face Contact

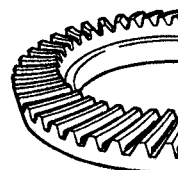


Select an adjusting washer that will bring the drive pinion closer to the ring gear.

Toe Contact

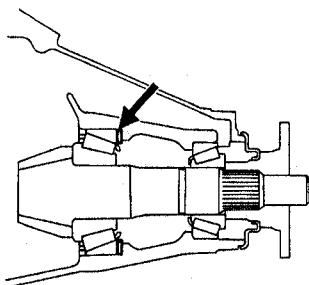


Flank Contact



Select an adjusting washer that will shift the drive pinion away from the ring gear.

Z00699

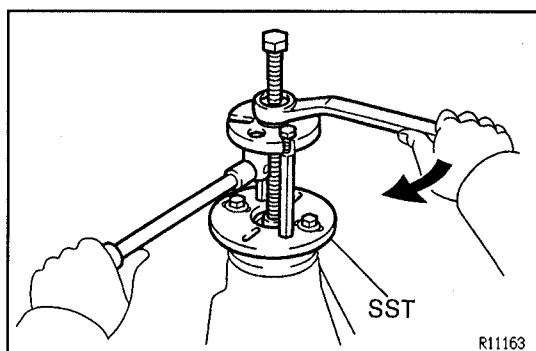


R04554

If the teeth are not contacting properly, use the following chart to select a proper washer for correction.

Washer thickness

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
87	1.87 (0.0736)	01	2.01 (0.0791)	15	2.15 (0.0846)
88	1.88 (0.0740)	02	2.02 (0.0795)	16	2.16 (0.0850)
89	1.89 (0.0744)	03	2.03 (0.0799)	17	2.17 (0.0854)
90	1.90 (0.0748)	04	2.04 (0.0803)	18	2.18 (0.0858)
91	1.91 (0.0752)	05	2.05 (0.0807)	19	2.19 (0.0862)
92	1.92 (0.0756)	06	2.06 (0.0811)	20	2.20 (0.0866)
93	1.93 (0.0760)	07	2.07 (0.0815)	21	2.21 (0.0870)
94	1.94 (0.0764)	08	2.08 (0.0819)	22	2.22 (0.0874)
95	1.95 (0.0768)	09	2.09 (0.0823)	23	2.23 (0.0878)
96	1.96 (0.0772)	10	2.10 (0.0827)	24	2.24 (0.0882)
97	1.97 (0.0776)	11	2.11 (0.0831)	25	2.25 (0.0886)
98	1.98 (0.0780)	12	2.12 (0.0835)	26	2.26 (0.0890)
99	1.99 (0.0783)	13	2.13 (0.0839)	27	2.27 (0.0894)
00	2.00 (0.0787)	14	2.14 (0.0843)	28	2.28 (0.0898)

**14. REMOVE COMPANION FLANGE**

(See page SA-122)

15. REMOVE FRONT BEARING

(See page SA-123)

16. INSTALL NEW BEARING SPACER, 2 WASHERS AND FRONT BEARING

(a) Install a new bearing spacer and 2 washers, and place the front bearing.

(b) Using SST and the companion flange, install the front bearing then remove the companion flange.

SST 09950-30010 (09951-03010, 09953-03010, 09954-03010, 09955-03030, 09956-03020)

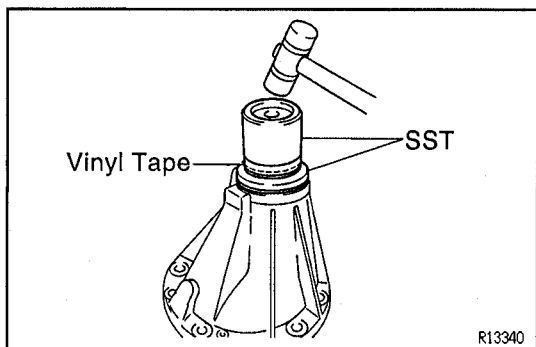
17. INSTALL NEW OIL SEAL

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

(b) Using SST, install the oil seal until its surface is flush with the differential carrier end.

SST 09649-17010, 09316-12010

HINT: Connect SST with vinyl tape.

**18. INSTALL COMPANION FLANGE**

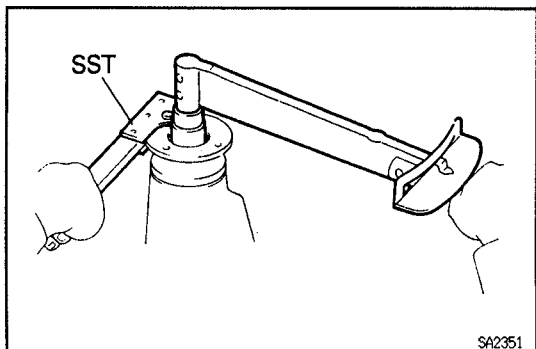
(a) Place the companion flange.

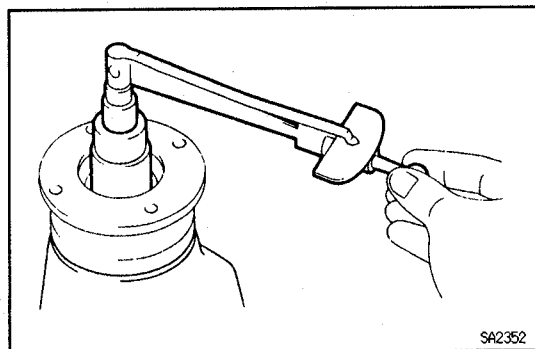
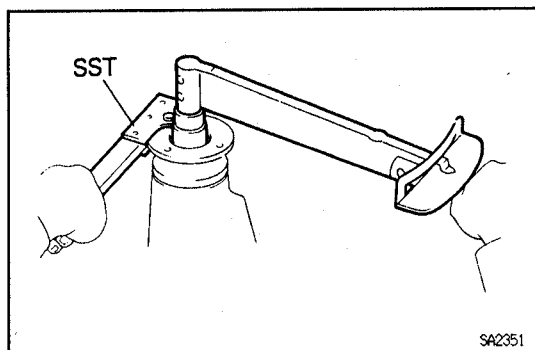
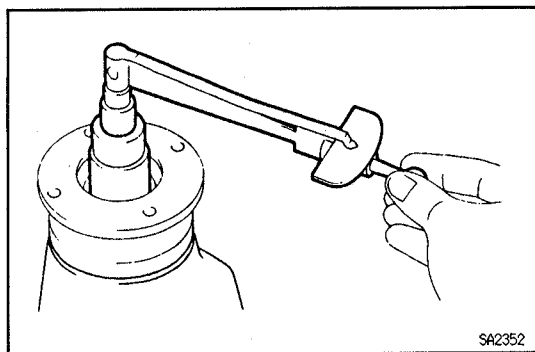
(b) Coat the threads of a new nut with hypoid gear oil.

(c) Using SST to hold the flange, torque the nut.

SST 09330-00021

Torque: 147 N·m (1,500 kgf·cm, 109 ft·lbf)





19. ADJUST DRIVE PINION PRELOAD

Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

Preload (at starting):

New bearing

1.0–1.6 N·m (10–16 kgf·cm, 8.7–13.9 in·lbf)

Reused bearing

0.5–0.8 N·m (5–8 kgf·cm, 4.3–6.9 in·lbf)

If the preload is greater than the specification, replace the bearing spacer.

If the preload is less than the specification, retighten the nut 13 N·m (130 kgf·cm, 9 ft·lbf) a little at a time until the specified preload is reached.

Maximum torque:

451 N·m (4,600 kgf·cm, 333 ft·lbf)

If the maximum torque is exceeded while retightening the nut, replace the bearing spacer and repeat the preload procedure. Do not back off the pinion nut to reduce the preload.

20. CHECK TOTAL PRELOAD

Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Total preload (at starting):

Add drive pinion preload

0.4–0.6 N·m (4–6 kgf·cm, 3.5–5.2 in·lbf)

21. CHECK RING GEAR BACKLASH

Using a dial indicator, measure the ring gear backlash.

Backlash:

0.13–0.18 mm (0.0051–0.0071 in.)

22. RECHECK TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

(See page SA–130)

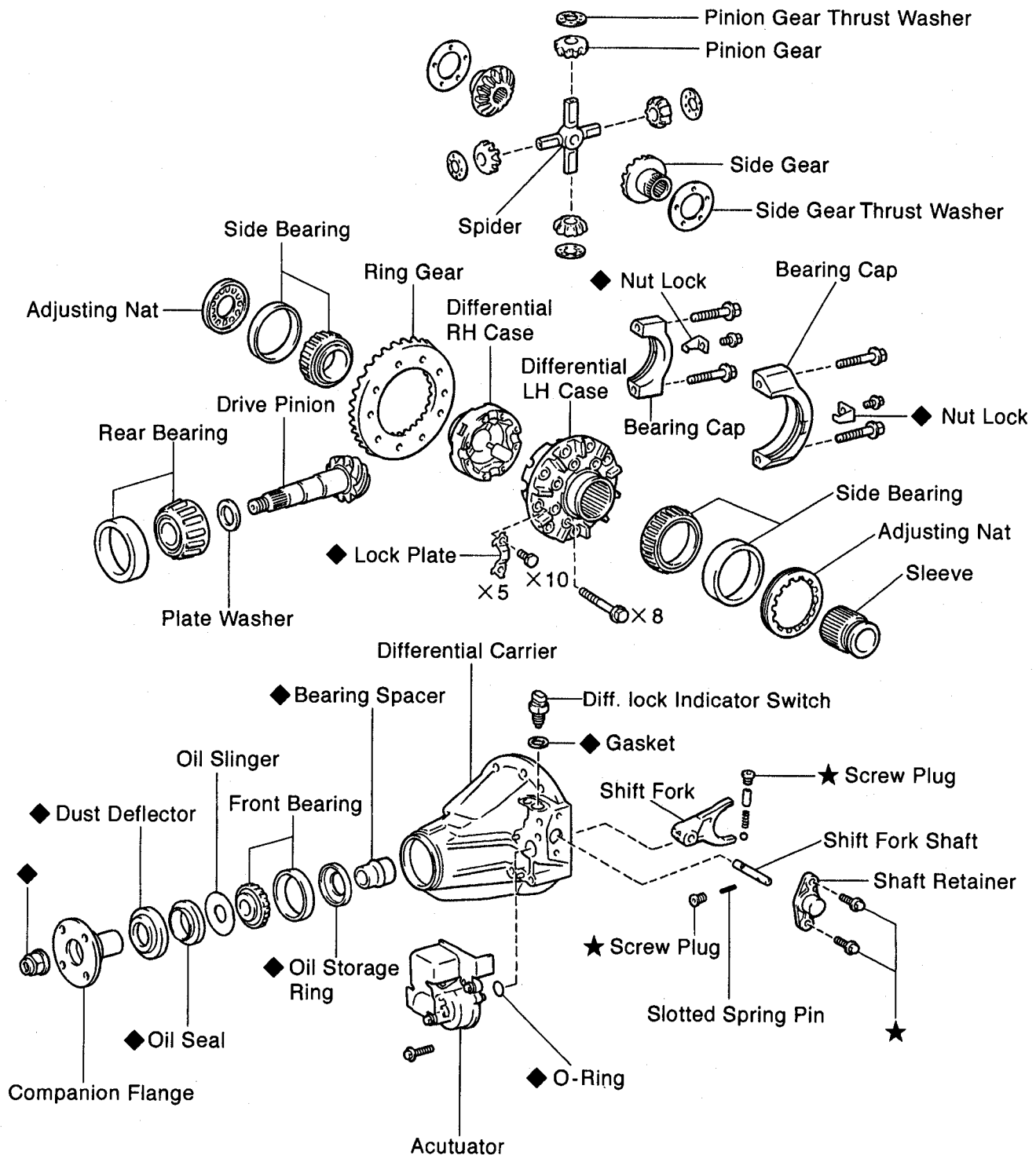
23. CHECK RUNOUT OF COMPANION FLANGE

(See page SA–121)

24. STAKE DRIVE PINION NUT

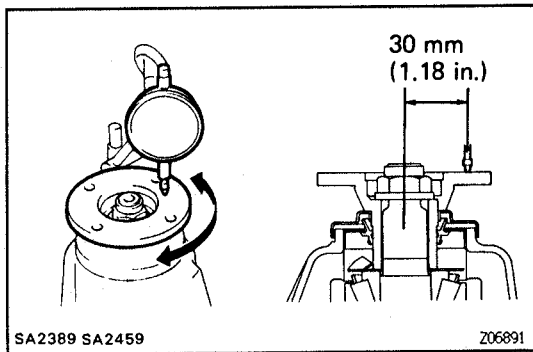
DIFFERENTIAL CARRIER (3RZ—FE, 5VZ—FE w/ Diff. Lock) COMPONENTS

8A38G-01



SA

- ◆ Non-reusable part
- ★ Precoated part



DIFFERENTIAL CARRIER INSPECTION

1. CHECK RUNOUT OF COMPANION FLANGE

Using a dial indicator, measure the vertical and lateral runout of the companion flange.

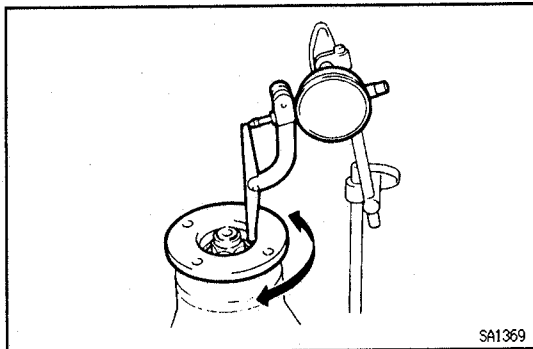
Maximum vertical runout:

0.10 mm (0.0039 in.)

Maximum lateral runout:

0.10 mm (0.0039 in.)

If the runout are not within the specification, replace the companion flange.



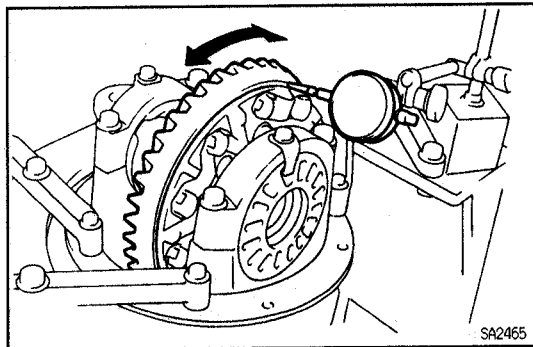
2. CHECK RING GEAR RUNOUT

Using a dial indicator, measure the ring gear runout.

Maximum runout:

0.10 mm (0.0039 in.)

If the runout is not within the specification, replace the ring gear.



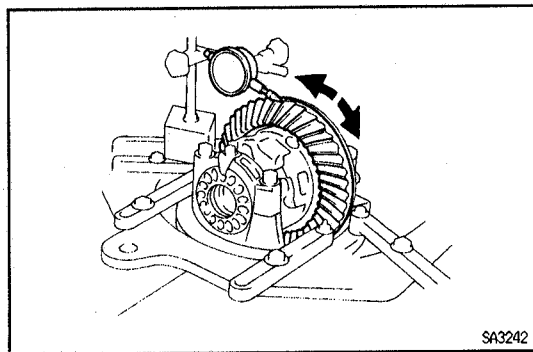
3. CHECK RING GEAR BACKLASH

Using a dial indicator, measure the ring gear backlash.

Backlash:

0.13–0.18 mm (0.0051–0.0071 in.)

If the backlash is not within the specification, adjust the side bearing preload or repair as necessary.

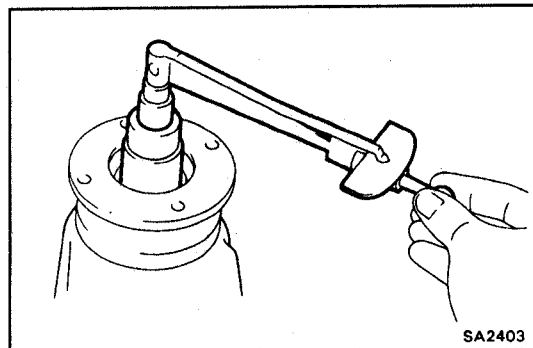


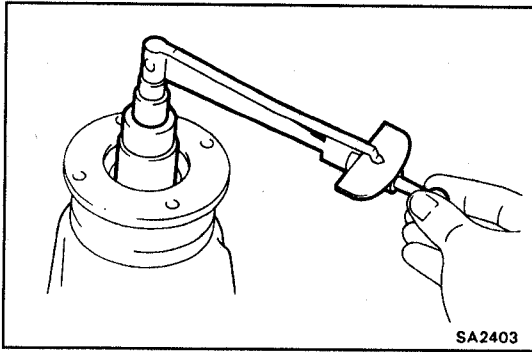
4. MEASURE DRIVE PINION PRELOAD

Using a torque wrench, measure the preload of backlash between the drive pinion and ring gear.

Preload (at starting):

0.5–0.8 N·m (5–8 kgf·cm, 4.3–6.9 in.·lbf)





5. CHECK TOTAL PRELOAD

Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Total preload (at starting):

In addition to drive pinion preload

0.4–0.6 N·m (4–6 kgf·cm, 3.5–5.2 in.-lbf)

If necessary, disassemble and inspect the differential.

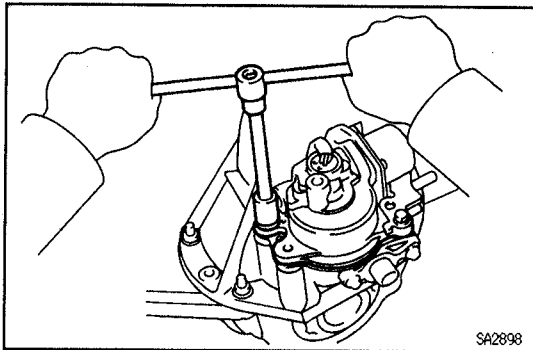
6. CHECK TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

(See page SA-144)

DIFFERENTIAL CARRIER DISASSEMBLY ^{SA1UF-02}

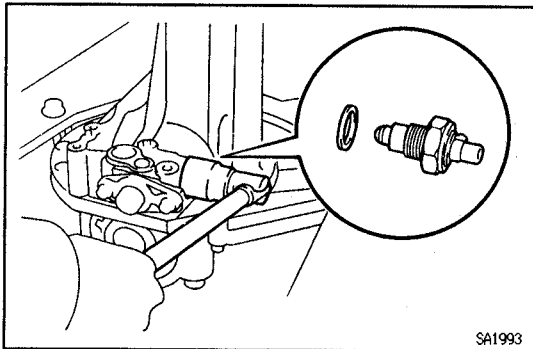
1. REMOVE ACTUATOR

- Remove the bolt and actuator from the differential carrier.
- Remove the O-ring.



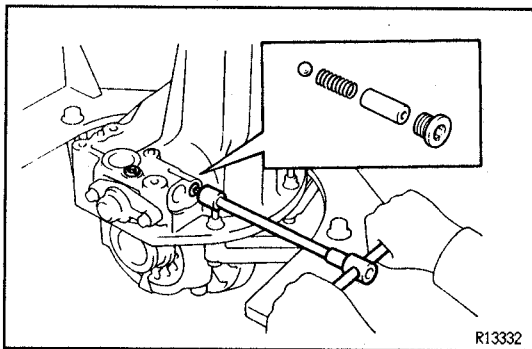
2. REMOVE INDICATOR SWITCH

Remove the indicator switch and gasket.

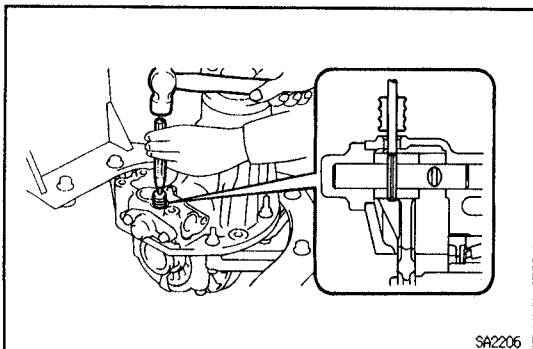


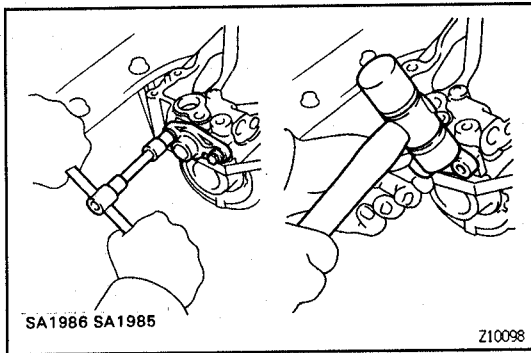
3. REMOVE SHIFT FORK SHAFT

- Using a hexagon wrench, remove the 2 straight screw plugs.
- Remove the spring seat, compression spring and ball.

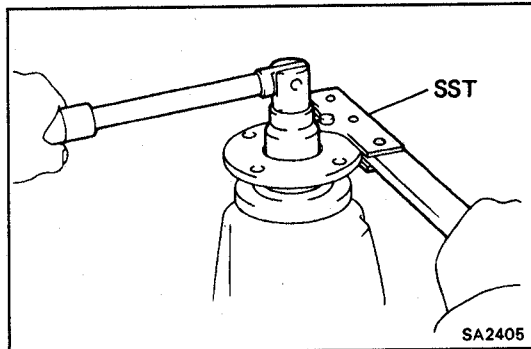


- Using a pin punch and a hammer, remove the slotted spring pin.



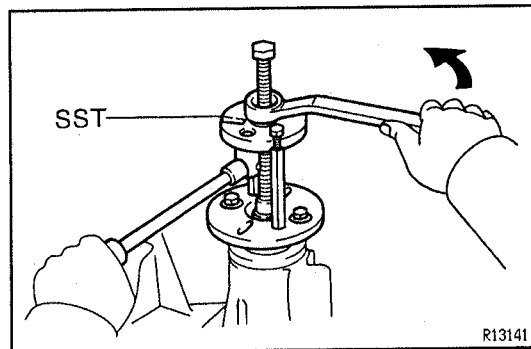


- (d) Remove the 2 bolts from the shaft retainer.
 - (e) Using a plastic hammer, remove the shaft retainer.
 - (f) Remove the shift fork shaft.
- HINT: Pull out the shift fork shaft with a screwdriver turned round.

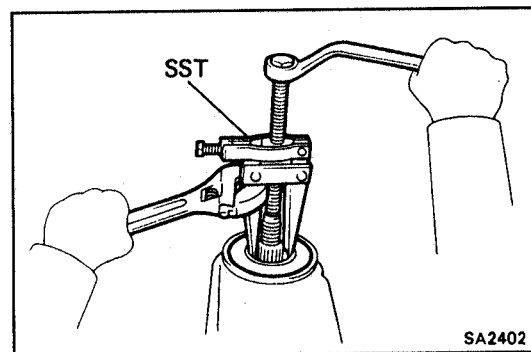


4. REMOVE COMPANION FLANGE

- (a) Using a chisel and a hammer, unseat the nut.
- (b) Using SST to hold the flange, remove the nut.
SST 09330-00021

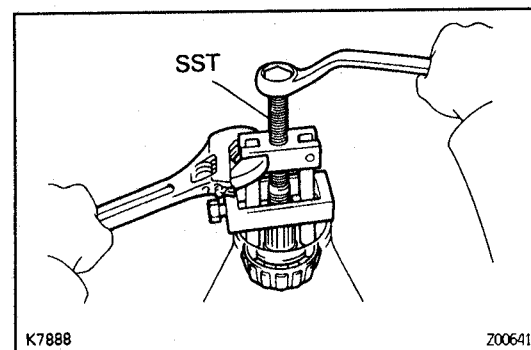


- (c) Using SST, remove the companion flange.
SST 09950-30010 (09951-03010, 09953-03010,
09954-03010, 09955-03030, 09956-03020)



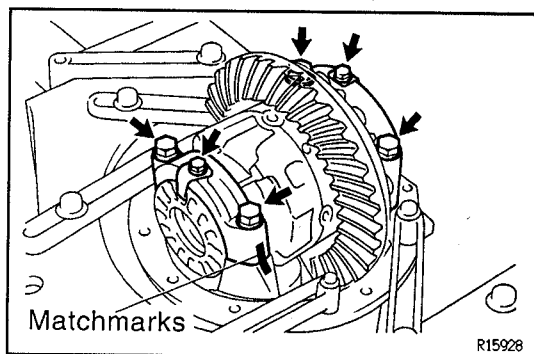
5. REMOVE OIL SEAL AND OIL SLINGER

- (a) Using SST, remove the oil seal from the differential carrier.
SST 09308-10010
- (b) Remove the oil slinger.

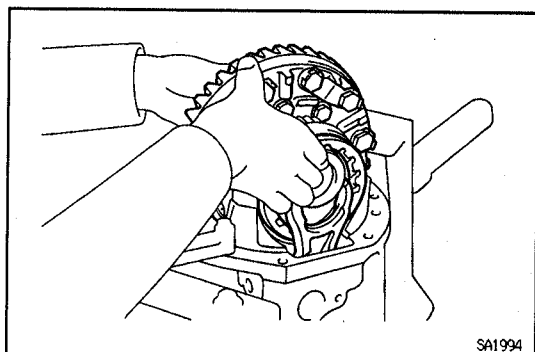


6. REMOVE FRONT BEARING

- Using SST, remove the front bearing from the drive pinion.
SST 09556-22010

**7. REMOVE DIFFERENTIAL CASE**

- (a) Place matchmarks on the bearing cap and differential carrier.
- (b) Remove the 2 adjusting nut locks.
- (c) Remove the 4 bolts and 2 bearing caps.

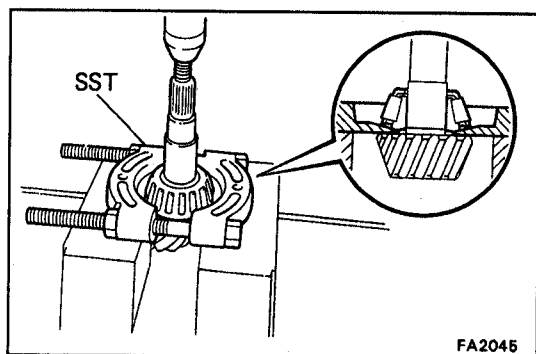


- (d) Remove the differential case with side bearing outer race, adjusting nuts and sleeve from the differential carrier.

- (e) Remove the shift fork.

8. REMOVE DRIVE PINION AND BEARING SPACER

- (a) Remove the drive pinion with the rear bearing.
- (b) Remove the bearing spacer.

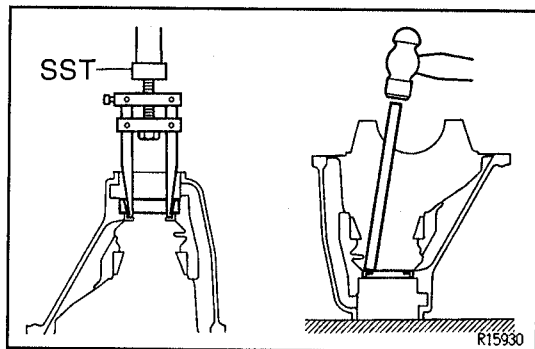
**9. REMOVE DRIVE PINION FRONT BEARING**

- (a) Using SST and a press, remove the bearing from the drive pinion.

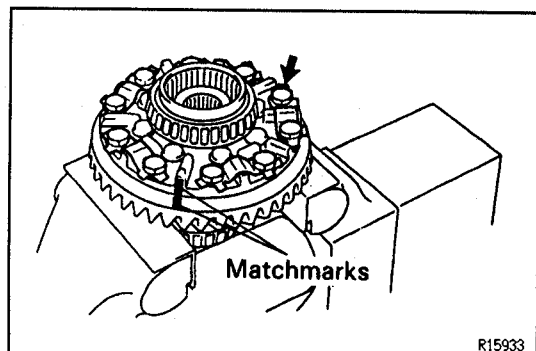
SST 09950-00020

HINT: If the drive pinion or ring gear are damaged, replace them as a set.

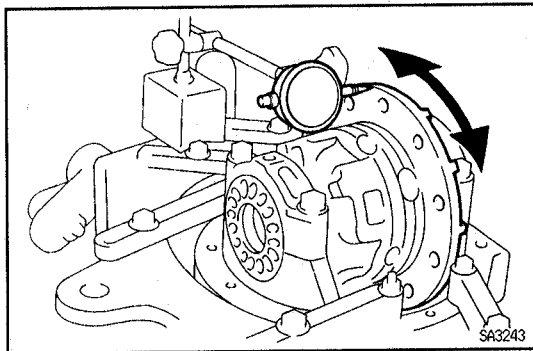
- (b) Remove the plate washer from the drive pinion.

**10. REMOVE FRONT AND REAR BEARING OUTER RACES AND OIL STRAGE RING**

- (a) Using SST, remove the front bearing outer race.
SST 09308-00010
- (b) Using a brass bar and a hammer, remove the oil strage ring.
- (c) Using a brass bar and a hammer, remove the bearing.

**11. REMOVE RING GEAR**

- (a) Place matchmarks on the ring gear and differential case.
- (b) Using a screwdriver and a hammer, unstake the lock plate.
- (c) Remove the ring gear set bolts and lock plates.
- (d) Using a plastic hammer, tap on the ring gear to separate it from the differential case.

**12. CHECK DIFFERENTIAL CASE RUNOUT**

- (a) Install the differential case in the differential carrier and tighten the adjusting nut just to where there is no play in the bearing.
- (b) Using a dial indicator, measure the differential case runout.

Maximum case runout:

0.07 mm (0.0028 in.)

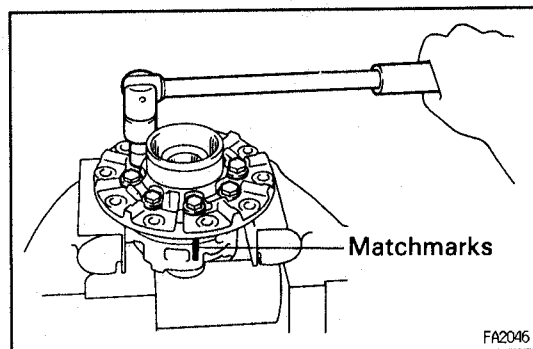
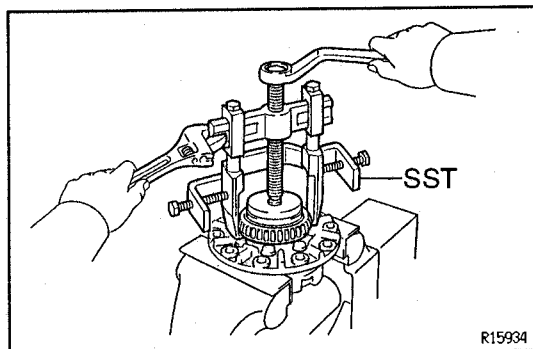
- (c) Remove the differential case.

13. REMOVE SIDE BEARING FROM DIFFERENTIAL CASE

Using SST, remove the side bearing from the differential case.

SST 09950-40010 (09951-04010, 09952-04010, 09953-04020, 09954-04010, 09955-04060, 09957-04010, 09958-04010),
09950-60010 (09951-00480),
09950-60020 (09951-00730)

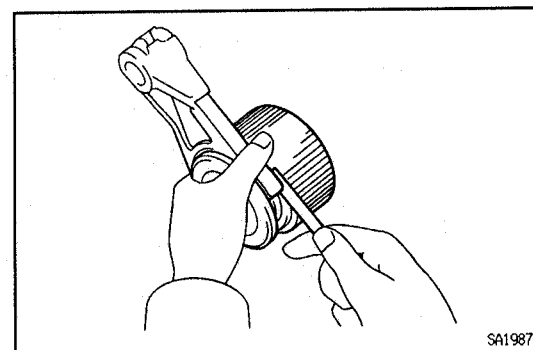
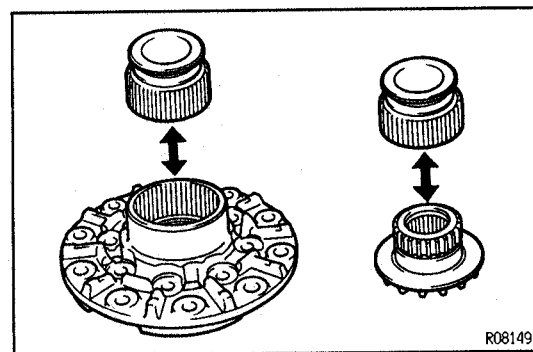
HINT: Fix the claws of SST to the notches in the differential case.

**14. DISASSEMBLE DIFFERENTIAL CASE**

- (a) Place matchmarks on the LH and RH cases.
- (b) Remove the 8 bolts uniformly, a little at a time.
- (c) Using a plastic hammer, separate the LH and RH cases.
- (d) Remove these parts:
 - Side gear (2 pieces)
 - Side gear thrust washer (2 pieces)
 - Spider
 - Pinion gear (4 pieces)
 - Pinion gear thrust washer (4 pieces)

15. INSPECT SLEEVE

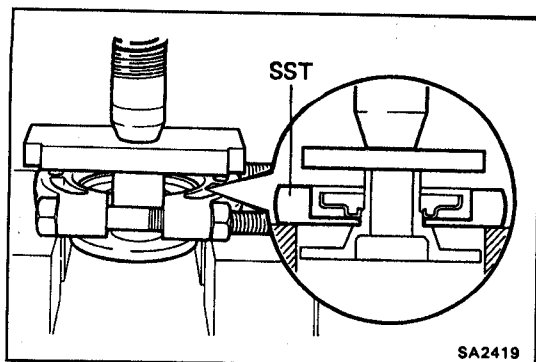
- (a) Install the sleeve to the differential case (LH) and check it moves smoothly.
- (b) Install the sleeve to the side gear and check it moves smoothly.

**16. MEASURE CLEARANCE OF SHIFT FORK AND SLEEVE**

Using a feeler gauge, measure the clearance between the shift fork and sleeve.

Clearance (Reference):

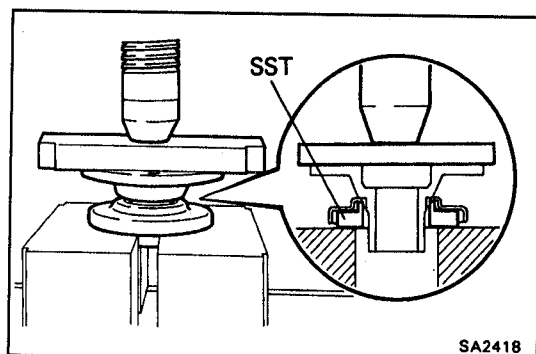
0.15 - 0.35 mm (0.006 - 0.014 in.)



COMPANION FLANGE DUST DEFLECTOR REPLACEMENT

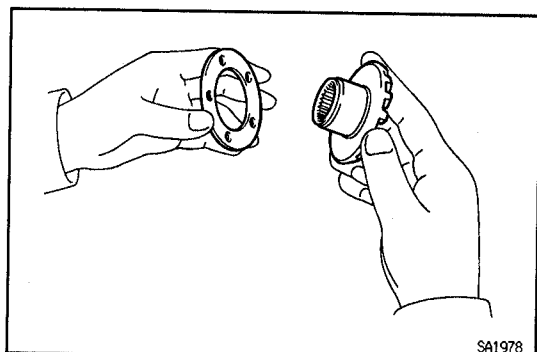
1. REMOVE DUST DEFLECTOR TO COMPANION FLANGE

Using SST and a press, remove the dust deflector.
SST 09950-00020



2. INSTALL DUST DEFLECTOR TO COMPANION FLANGE

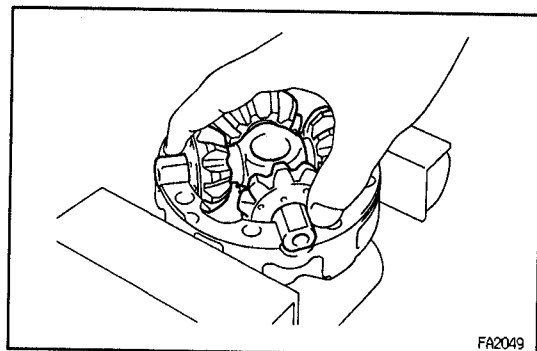
Using SST and a press, install a new dust deflector.
SST 09726-40010



DIFFERENTIAL CARRIER ASSEMBLY

1. ASSEMBLE DIFFERENTIAL CASE

- Apply all of the sliding and rotating surfaces with gear oil.
- Install the side gear thrust washer to the side gear.
- Install the side gear to the RH case.



- Install the 4 pinion gears and pinion gear thrust washers to the spider.
- Install the pinion gear with spider to the RH case.

- Using a dial indicator, hold the side gear and spider and measure the side gear backlash.

Standard backlash:

0.05 – 0.20 mm (0.0020 – 0.0079 in.)

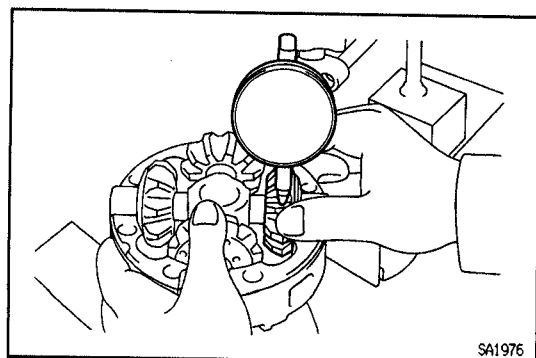
HINT:

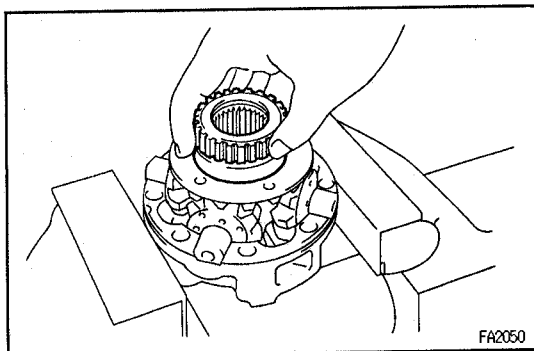
- Measure at all 4 locations.
- Measure the backlash at the RH case at the LH case.

If the backlash is not within the specification, install a thrust washer of a different thickness.

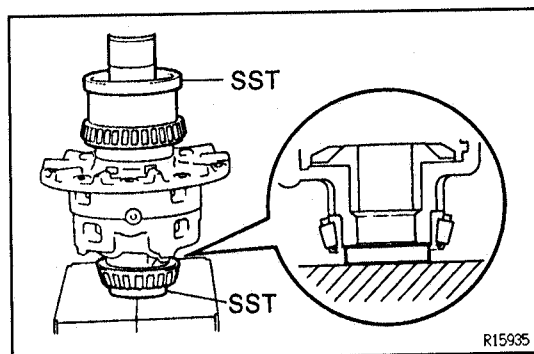
Thrust washer thickness

Thickness	mm (in.)	Thickness	mm (in.)
0.9	(0.035)	1.2	(0.047)
1.0	(0.039)	1.3	(0.051)
1.1	(0.043)	—	—





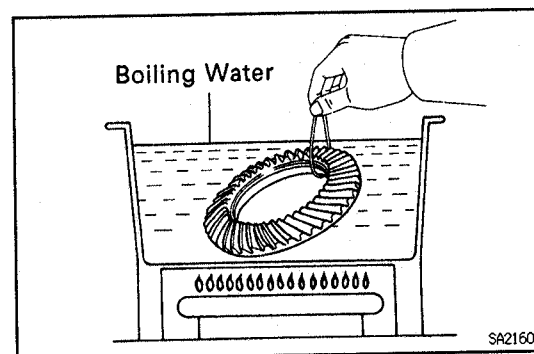
- (g) Install the side gear and side gear thrust washer to the RH case.
- (h) Install the pinion gears and spider to the RH case.
- (i) Install the side gear and side gear thrust washer to the RH case.
- (j) Align the matchmarks on the LH and RH cases.
- (k) Torque the 8 bolts uniformly, a little at a time.
Torque: 47 N·m (480 kgf·cm, 35 ft·lbf)



2. INSTALL SIDE BEARINGS

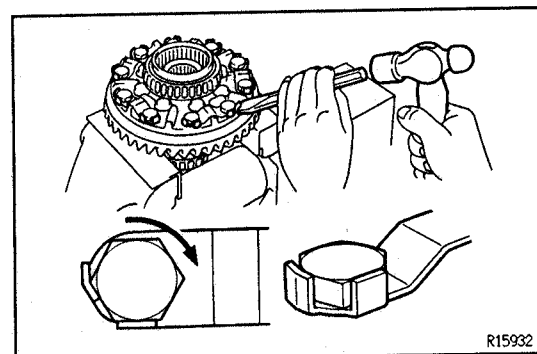
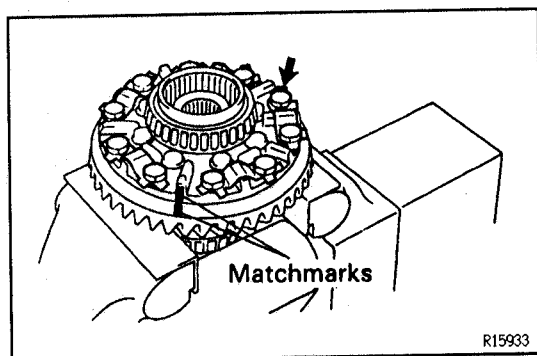
Using SST and a press, install the side bearings on the differential case.

SST 09950-60010 (09951-00480, 09951-00550),
09950-60020 (09951-00730)

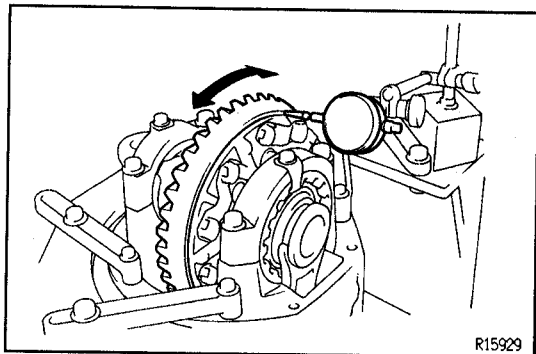


3. INSTALL RING GEAR ON DIFFERENTIAL CASE

- (a) Clean the contact surfaces of the differential case and ring gear.
- (b) Heat the ring gear to about 100 °C (212 °F) in boiling water.
- (c) Carefully remove the ring gear from the water.
- (d) After the moisture on the ring gear has completely evaporated, quickly install the ring gear to the differential case.
- (e) Align the matchmarks on the ring gear and differential case.
- (f) Temporarily install new lock plates and set bolts.
- (g) After the ring gear cools down enough, tighten the set bolts uniformly and a little at a time.
Torque: 97 N·m (985 kgf·cm, 71 ft·lbf)

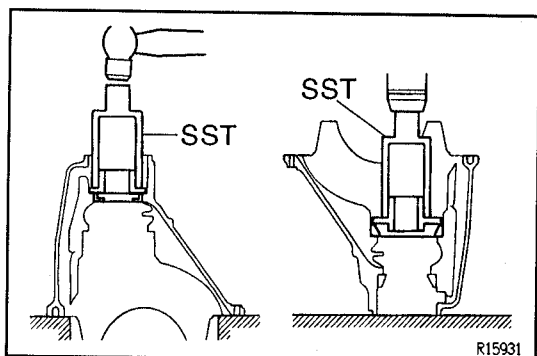


- (h) Using a drift punch and hammer, stake the lock plates.
HINT: Stake one claw flush with the flat surface of the bolt. For the claw contacting the protruding portion of the bolt, stake the half on the tightening side.



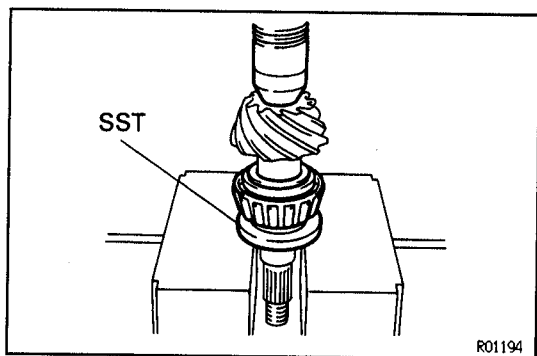
4. CHECK RING GEAR RUNOUT

- Install the differential case onto the carrier and tighten the adjusting nut just to where there is no play in the bearings.
- Using a dial indicator, check the ring gear runout.
Maximum runout:
0.10 mm (0.0039 in.)
- Remove the differential case.



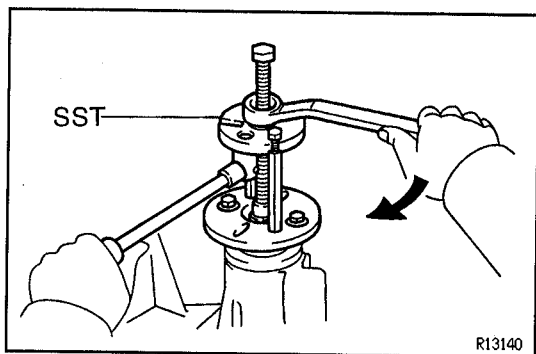
5. INSTALL NEW OIL STRAGE RING AND DRIVE PINION FRONT AND REAR BEARING OUTER RACES

- Using SST and a hammer, install new oil strage ring. SST 09316-60011 (09316-00011, 09316-00021)
- Using SST and a press, install the outer races. SST 09316-60011 (09316-00011, 09316-00021, 09316-00051)



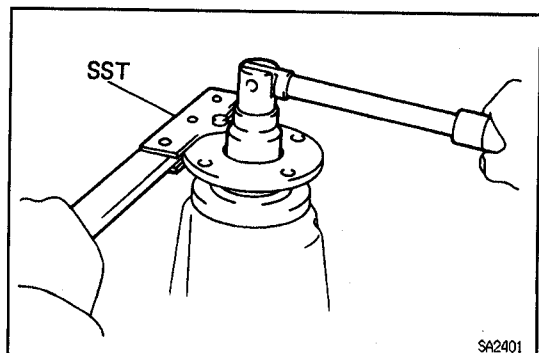
6. INSTALL DRIVE PINION FRONT BEARING

- Install the plate washer on the drive pinion.
- Using SST and a press, install the rear bearing onto the drive pinion. SST 09506-30012

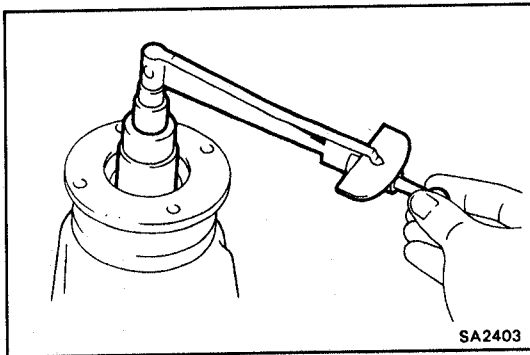


7. TEMPORARILY ADJUST DRIVE PINION PRELOAD

- Install the drive pinion, front bearing and oil slinger.
HINT: Assemble the spacer and oil seal after adjusting the gear contact pattern.
- Install the companion flange with SST. SST 09550-30010



- Adjust the drive pinion preload by tightening the companion flange nut.
Using SST to hold the flange, tighten the nut. SST 09330-00021
NOTICE: As there is no spacer, tighten a little at a time, being careful not to overtighten.



- (d) Using a torque wrench, measure the preload.

Preload (starting):

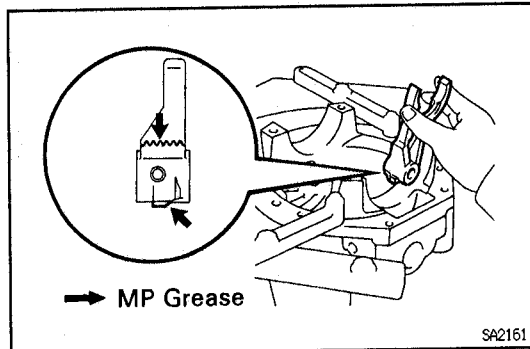
New bearing

0.9–1.6 N·m (10–16 kgf·cm, 8.7–13.9 in.-lbf)

Reused bearing

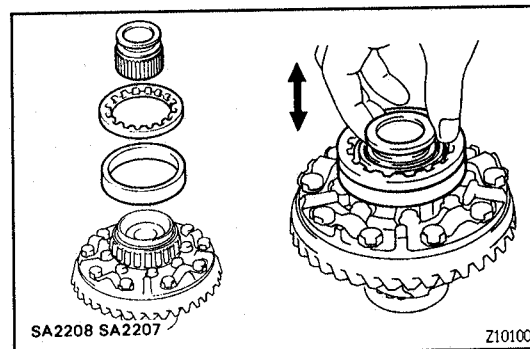
0.5–0.8 N·m (5–8 kgf·cm, 4.3–6.9 in.-lbf)

HINT: Measure the total preload after first turning the bearing clockwise and counterclockwise several times to mark the bearing smooth.



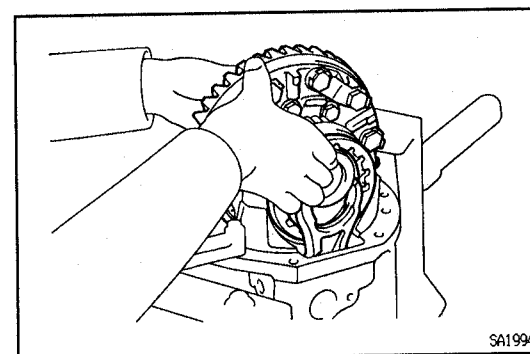
8. INSTALL DIFFERENTIAL CASE IN CARRIER

- (a) Apply MP grease on the rack of the shift fork and connecting part of the indicator switch.
- (b) Insert the shift fork into the differential carrier, as shown.



- (c) Place the outer races, adjusting nuts and left side to sleeve.

HINT: Check that the sleeve moves smoothly.

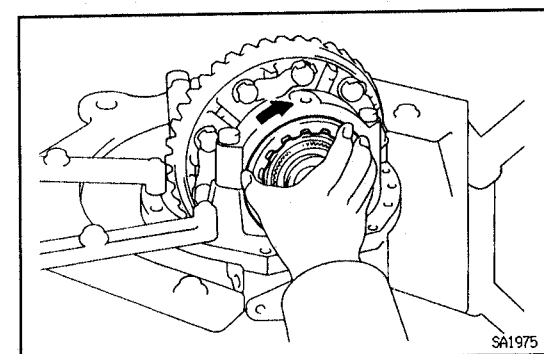


- (d) Install the shift fork in the groove of the sleeve holding it by hand and install the case in the carrier.

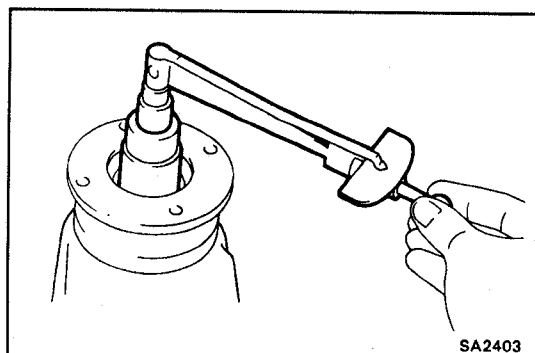
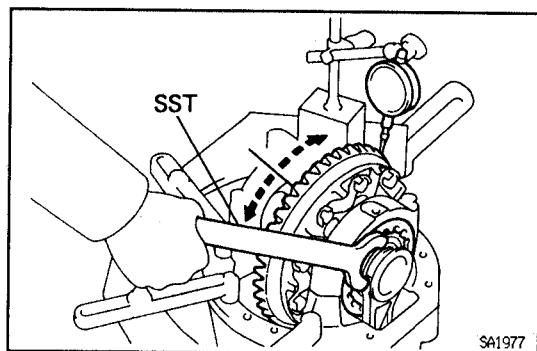
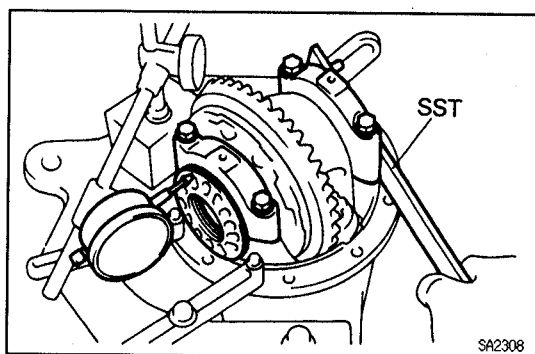
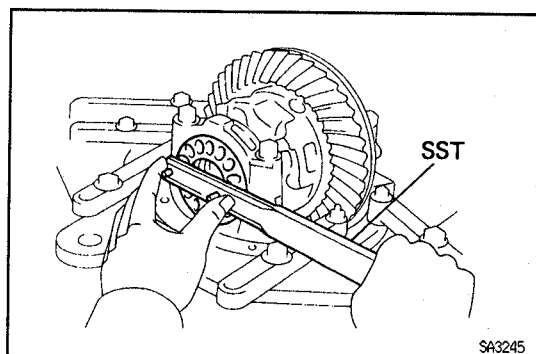
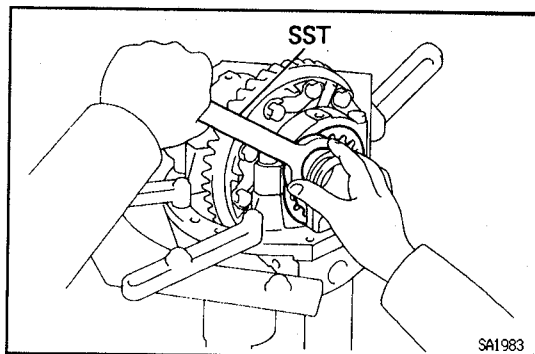
HINT: Make sure that there is backlash between the ring gear and drive pinion.

9. INSTALL BEARING CAPS

Align the matchmarks on the cap and carrier. Screw in the 2 bearing cap bolts 2 or 3 turns and press down the bearing cap by hand.



HINT: If the bearing cap does not fit tightly on the carrier, the adjusting nuts are not threaded properly. Reinstall the adjusting nuts if necessary.

**10. ADJUST SIDE BEARING PRELOAD**

- (a) Torque the 4 bearing cap bolts to the specified torque, then loosen them to the point where the adjusting nuts can be turned by hand.

Torque: 78 N·m (800 kgf·cm, 58 ft·lbf)

- (b) Fully tighten the 4 bearing cap bolts by hand.
 (c) Using the SST, torque the adjusting nut on the ring gear side until the ring has a backlash of about 0.2 mm (0.008 in.).

SST 09616-30020

- (d) While turning the ring gear, use the SST to fully tighten the adjusting nut on the drive pinion side. After the bearings are settled, loosen the adjusting nut on the drive pinion side.

SST 09616-30020

- (e) Place a dial indicator on the top of the adjusting nut on the ring gear side.
 (f) Adjust the side bearing for zero preload by tightening the other adjusting nut until the pointer on the indicator begins to move.
 (g) Torque the adjusting nut 1–1.5 notches from the zero preload position.

- (h) Using a dial indicator, adjust the ring gear backlash until it is within specification.

Backlash:

0.13–0.18 mm (0.0051–0.0071 in.)

HINT: The backlash is adjusted by turning the left and right adjusting nuts equal amounts. For example, loosen the nut on the left side one notch and torque the nut on the right side one notch.

- (i) Torque the bearing cap bolts.
Torque: 78 N·m (800 kgf·cm, 58 ft·lbf)
 (j) Recheck the ring gear backlash.

Backlash:

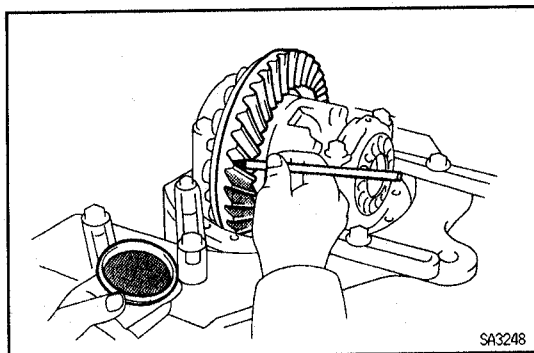
0.13–0.18 mm (0.0051–0.0071 in.)

- (k) Using a torque wrench, measure the preload with the teeth of the drive pinion and ring gear in contact.

Total preload (starting):

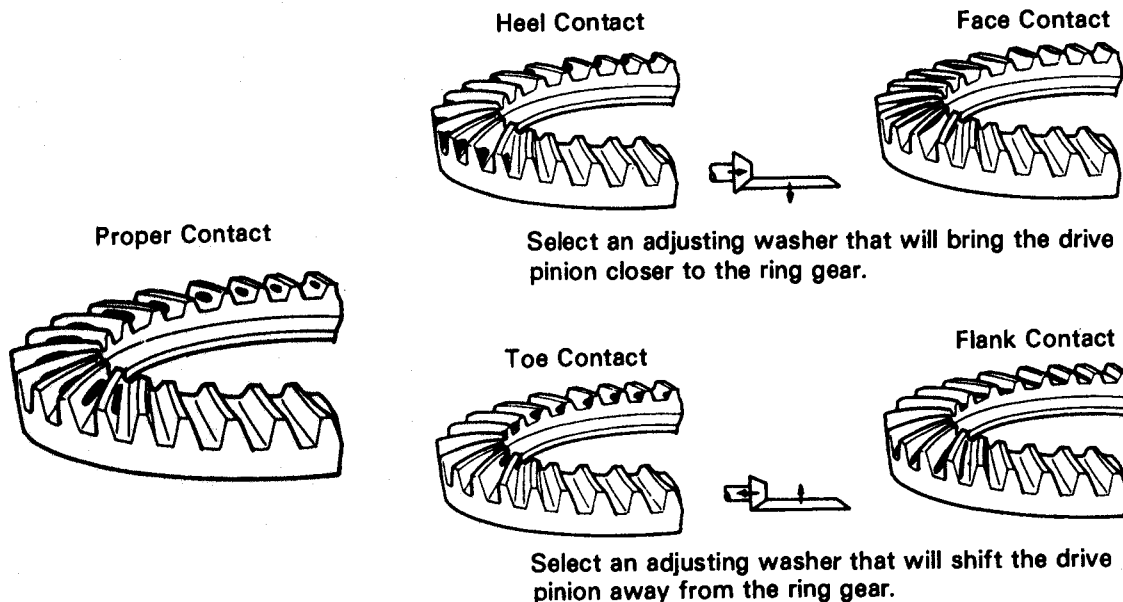
Add drive pinion preload

0.4–0.6 N·m (4–6 kgf·cm, 3.5–5.2 in·lbf)

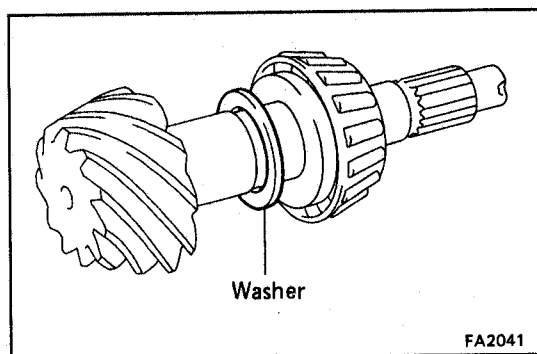


11. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

- Coat 3 or 4 teeth at 3 different positions on the ring gear with red lead.
- Hold the companion flange firmly and rotate the ring gear in both directions.
- Inspect the tooth pattern.



SA



If the teeth are not contacting properly, use the following chart to select a proper washer for correction.

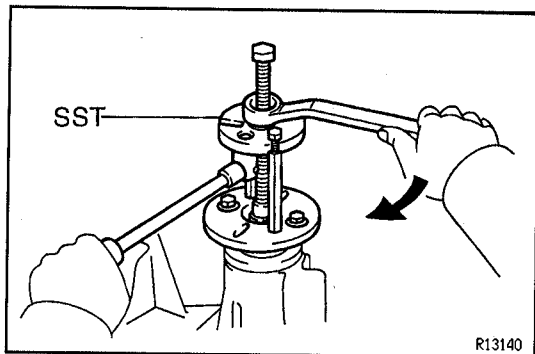
Thickness mm (in.)	Thickness mm (in.)
1.70 (0.0669)	2.03 (0.0799)
1.73 (0.0681)	2.06 (0.0811)
1.76 (0.0693)	2.09 (0.0823)
1.79 (0.0705)	2.12 (0.0835)
1.82 (0.0717)	2.15 (0.0846)
1.85 (0.0728)	2.18 (0.0858)
1.88 (0.0740)	2.21 (0.0870)
1.91 (0.0752)	2.24 (0.0882)
1.94 (0.0764)	2.27 (0.0894)
1.97 (0.0776)	2.30 (0.0906)
2.00 (0.0787)	2.33 (0.0917)

12. REMOVE COMPANION FLANGE

(See page SA – 136)

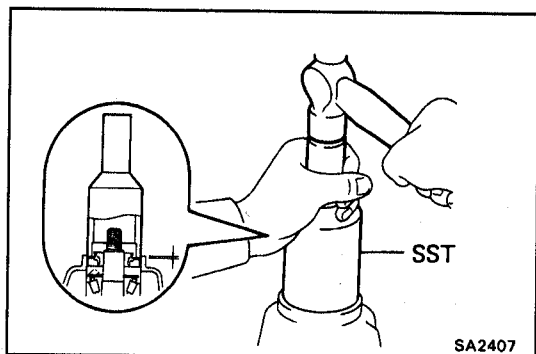
13. REMOVE OIL SLINGER AND FRONT BEARING

(See page SA – 136)

**14. INSTALL BEARING SPACER AND FRONT BEARING**

- Place a new bearing spacer on the shaft.
- Place the front bearing and oil slinger.
- Using SST and the companion flange, install the front bearing then remove the companion flange.

SST 09950-30010 (09951-06010, 09953-03010, 09954-03010, 09955-03030, 09956-03030)

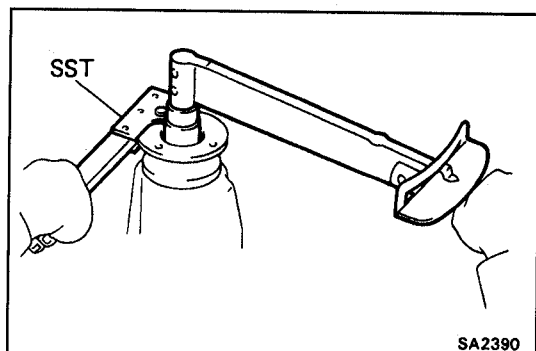
**15. INSTALL OIL SEAL**

- Apply MP grease to the oil seal lip.
- Using SST, install a new oil seal.

SST 09214-76011

Oil seal drive in depth:

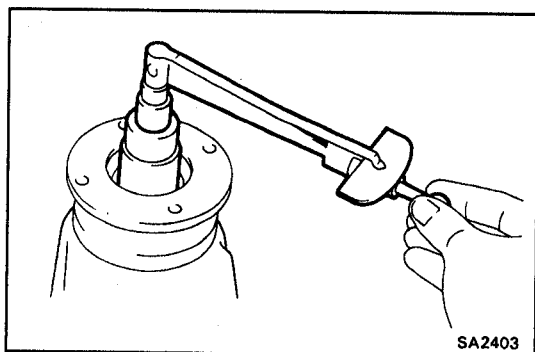
1.0 mm (0.039 in.)

**16. INSTALL COMPANION FLANGE**

- Place the companion flange on the drive pinion.
 - Install a new nut.
- HINT: Coat the threads of a new nut with hypoid gear oil.
- Using SST to hold the flange, tighten the nut.

SST 09330-00021

Torque: 196 N·m (2,000 kgf·cm, 145 ft·lbf)

**17. ADJUST DRIVE PINION PRELOAD**

Using a torque wrench, measure the preload of the backlash between the drive pinion and ring gear.

Preload (starting):

New bearing

0.9–1.6 N·m (10–16 kgf·cm, 8.7–13.9 in·lbf)

Reuse bearing

0.5–0.8 N·m (5–8 kgf·cm, 4.3–6.9 in·lbf)

If preload is greater than specification, replace the bearing spacer.

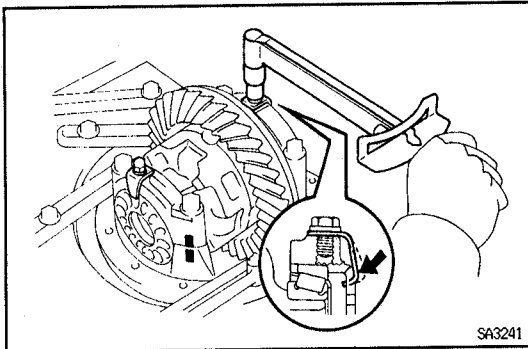
If preload is less than specification, retighten the nut a little at a time with a torque of 13 N·m (130 kgf·cm, 9 ft·lbf) until the specified preload is reached.

Maximum torque:

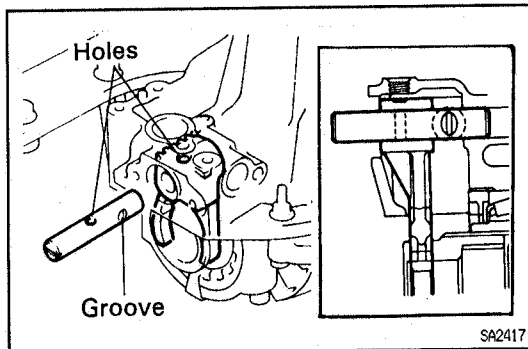
343 N·m (3,500 kgf·cm, 253 ft·lbf)

If the maximum torque is exceeded while retightening the nut, replace the bearing spacer and repeat the preload procedure. Do not back off the pinion nut to reduce the preload.

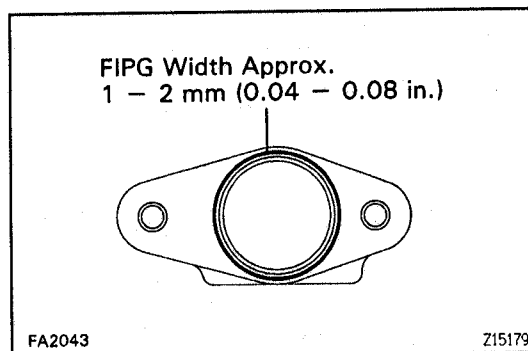
18. RECHECK RING GEAR BACKLASH
(See page SA-134)
19. RECHECK TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION
(See page SA-144)
20. CHECK RUNOUT OF COMPANION FLANGE
(See page SA-134)
21. STAKE DRIVE PINION NUT



22. INSTALL ADJUSTING NUT LOCKS
 - (a) Install 2 new nut locks on the bearing caps.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)
 - (b) After tightening bolts, bend the nut locks.



23. INSTALL SHIFT FORK SHAFT
 - (a) Apply MP grease onto the outer circuit of the fork shaft.
 - (b) Install the fork shaft to match the hole of the shift fork and that of the shift fork shaft.



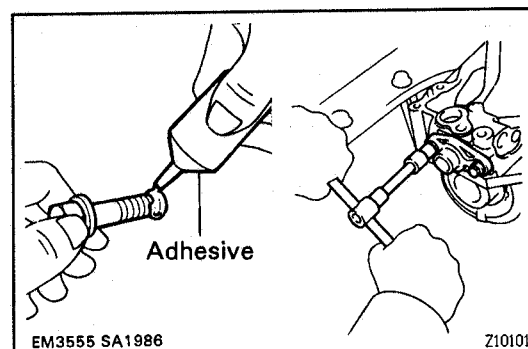
- (c) Remove any FIPG material and be careful not to drop oil on the contacting surface of the differential carrier and shaft retainer.

- (d) Apply FIPG to the carrier, as shown.

FIPG:

Part No. 08826-00090, THREE BOND 1281 or equivalent

HINT: Install the shaft retainer within 10 minutes after applying FIPG.

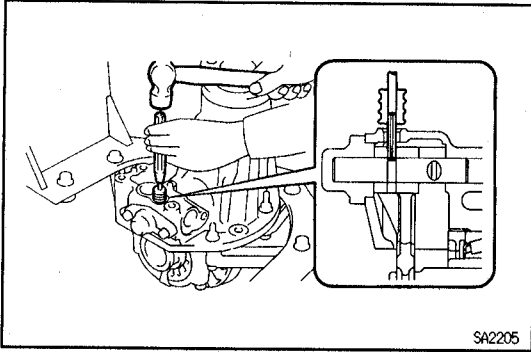


- (e) Clean the threads of the bolts and retainer bolts holes with toluene or trichlorethylene.
- (f) Apply adhesive to 2 or 3 threads of the mount bolt end.

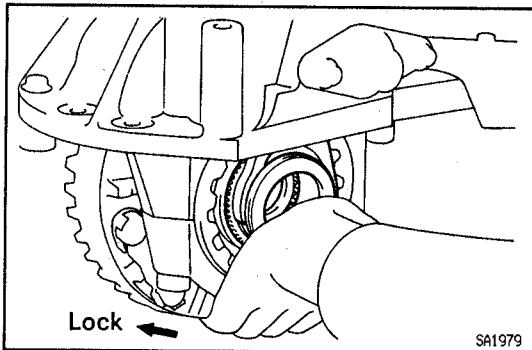
Adhesive:

Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

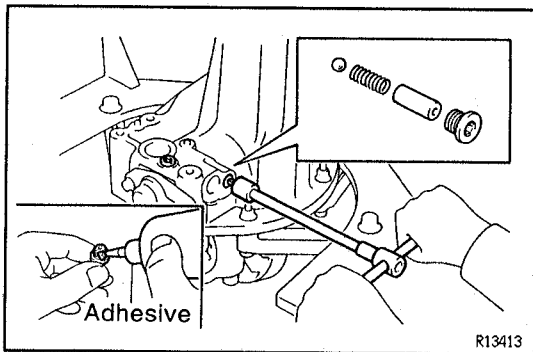
- (g) Tighten the shaft retainer with the 2 bolts.
Torque: 24 N·m (240 kgf·cm, 17 ft·lbf)



- (h) Using a pin punch and hammer, install the slotted spring pin to the shift fork.



- (i) Shift the fork deeply and keep the differential lock condition.



- (j) Install the ball, compression spring and spring seat.
 (k) Clean the threads of 2 plugs and plug holes with toluene or trichloroethylene.
 (l) Apply adhesive to the plug threads.

Adhesive:

PartNo. 08833-00080, THREE BOND 1344, LOC-TITE 242 or equivalent

- (m) Using a hexagon wrench, install and tighten the screw plugs.

Torque: 22 N·m (220 kgf·cm, 16 ft·lbf)

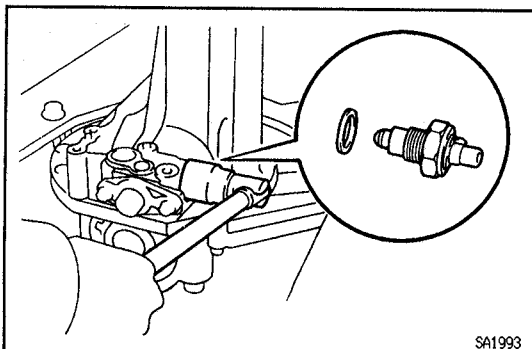
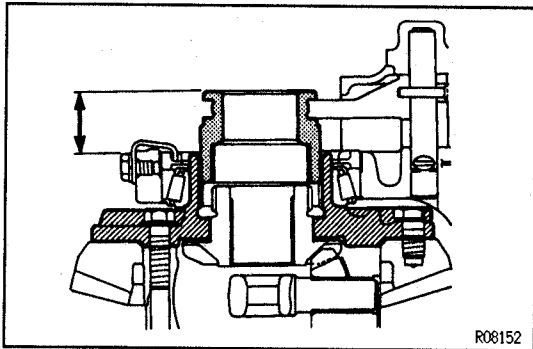
24. MEASURE DISTANCE BETWEEN SLEEVE AND DIFFERENTIAL CASE END SIDE

Measure distance between the sleeve and tip of the differential case when differential is free and locked.

Standard distance:

LOCK: 17.44 — 18.86 mm (0.6866 — 0.7425 in.)

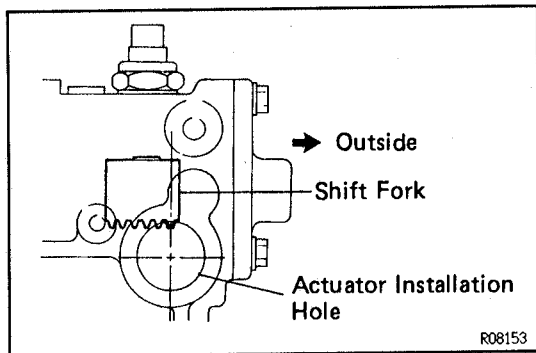
FREE: 32.40 — 33.90 mm (1.2756 — 1.3346 in.)



25. INSTALL INDICATOR SWITCH

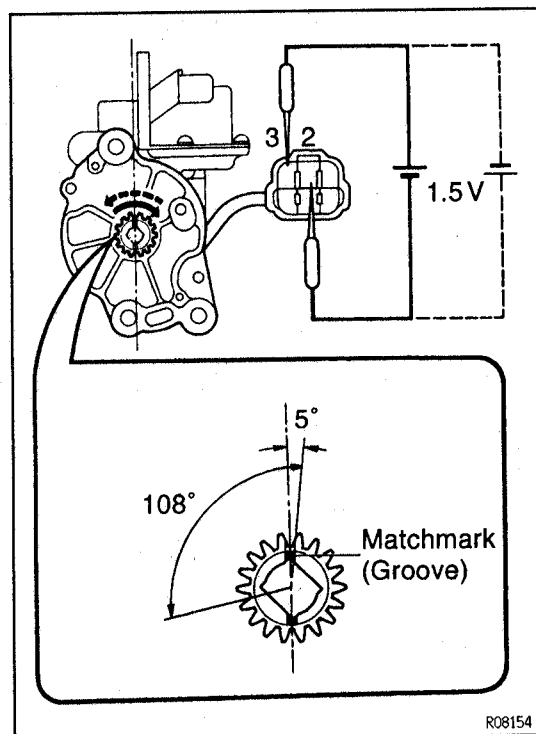
Install the indicator switch with a new gasket.

Torque: 40 N·m (410 kgf·cm, 30 ft·lbf)



26. INSTALL ACTUATOR

- (a) Check that the outermost rack tooth of the shift fork is virtually above the center line of the actuator installation hole.

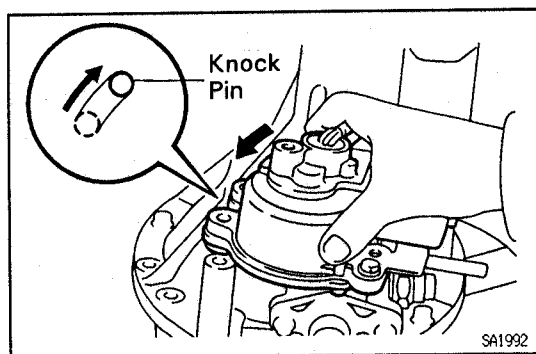


- (b) Ensure that the matchmarks of the pinion of the actuator is in the extent between zero and 5 degrees clockwise above the center line of the actuator.

NOTICE:

- If the matchmarks is not in this extent, rotate the pinion to be matched.
- Don't supply the battery positive voltage directly between terminals.
- If the matchmarks come to the extension limit of the rotation, don't electrify moreover.

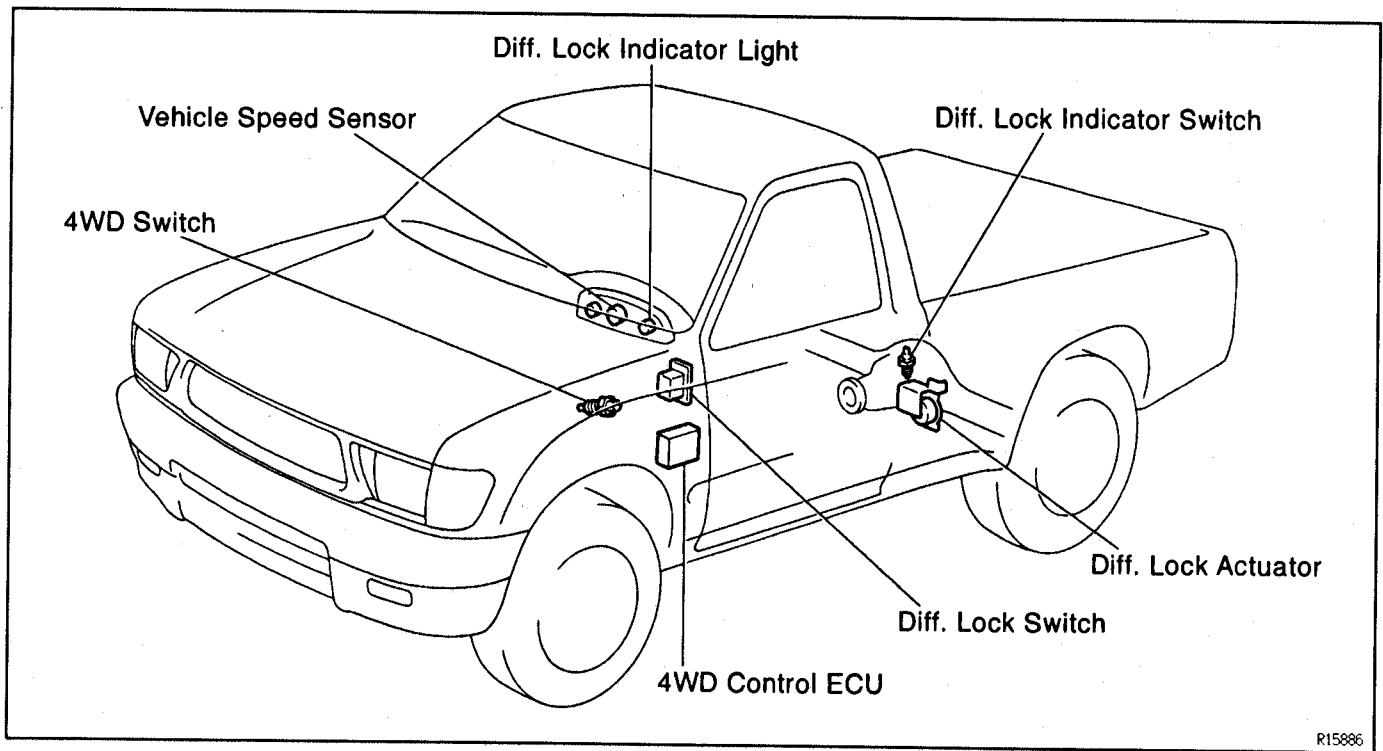
- (c) Install a new O—ring to the actuator.
 (d) Apply a light coat of gear oil on the O—ring.
 (e) Apply MP grease to the gear part.



- (f) Insert the actuator so that the long hole on the actuator side fits with the knock pin on the carrier side. **HINT:** Don't damage the O—ring of the actuator.
 (g) Align the actuator with the long hole and rotate the actuator counterclockwise when the knock pin reaches the right—hand side.
 (h) Install the actuator to the differential carrier with the bolt so that the outermost rack tooth of the shift fork will fit the matchmarks of the pinion of the actuator.
Torque: 26 N·m (270 kgf·cm, 20 ft·lbf)

DIFFERENTIAL LOCKING SYSTEM PARTS LOCATION

SA288-01

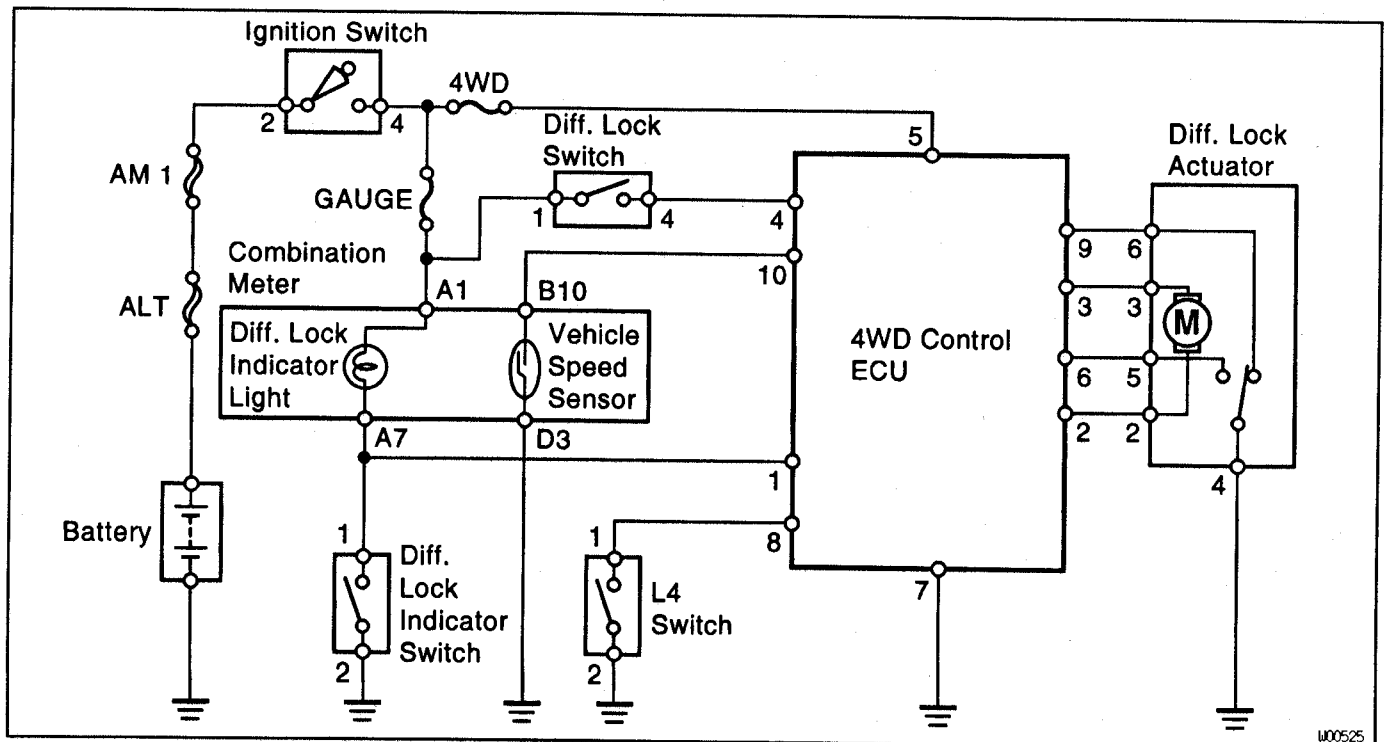


R15886

WIRING DIAGRAM

SA288-01

SA

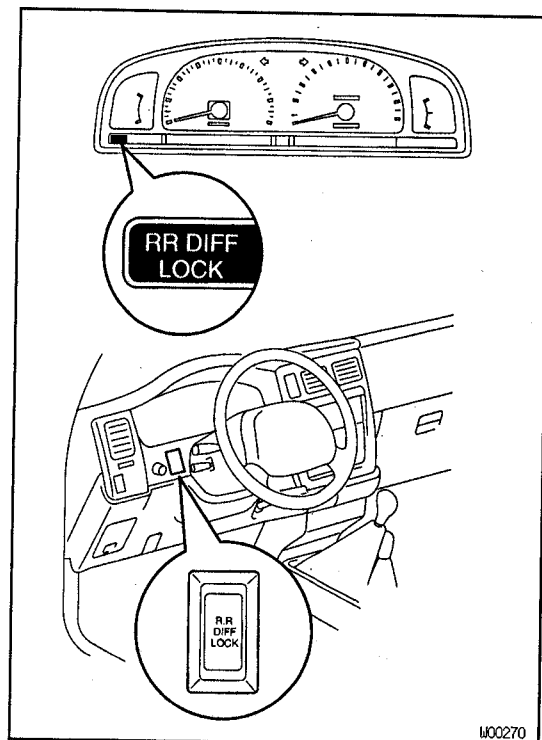


W00525

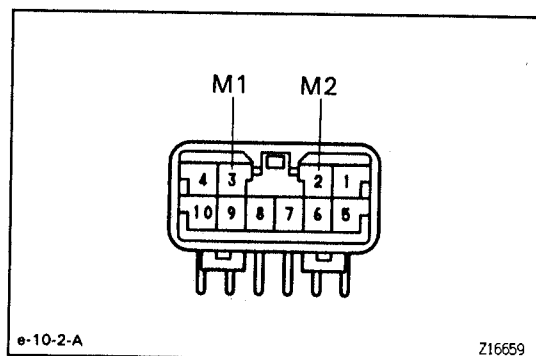
TROUBLESHOOTING

- Check that the 4WD mode is set.
- When switching differential Free↔Lock, the indicator lamp will blink if the gears of the differential lock sleeve are not meshed. If this occurs, when the tires are rotated to apply differential power to the differential, the differential locks and the indicator lamp light up.

Problem	Possible cause	Remedy	Page
Indicator lights do not light up.	Fusible link blown	Replace fusible link	
	GAUGE fuse blown	Replace fuse and check for short	
	Bulb burned out	Replace bulb	
	Wiring or ground faulty	Repair as necessary	
Indicator lights do not light up (Differential lock control switch ON)	4WD fuse blown	Replace fuse and check for short	
	Differential lock control switch	Check switch	SA-153
	4WD control ECU faulty	Check ECU	SA-152
	Wiring or ground faulty	Repair as necessary	
DIFF LOCK does not operate	Differential lock indicator switch faulty	Check switch	SA-153
	Differential lock actuator faulty	Check actuator	SA-153
	4WD control ECU faulty	Check ECU	SA-152
	Differential carrier faulty	Repair as necessary	
	Wiring or ground faulty	Repair as necessary	
After DIFF LOCK, lock not released when vehicle speed higher than approx. 8 km/h (5 mph).	Speed sensor faulty	Check sensor	BE-36
	4WD control ECU faulty	Check ECU	SA-152
	Wiring or ground faulty	Repair as necessary	



W00270



e-10-2-A

Z16659

SYSTEM INSPECTION

1. INSPECT INDICATOR LIGHT

Check that the indicator light light up for approx. 1 second when the ignition switch is turned ON.

2. INSPECT DIFFERENTIAL LOCK OPERATION

- Jack up the vehicle then start the engine.
- Shift the transfer shift lever to 4WD position.
- When the Diff. lock control switch is set to ON position, the indicator light is turned on.

Differential lock is applied to the rear wheel at this time.

HINT: If the gears of the differential lock system are not meshed, the indicator light remains blinking, so rotate the tires to mesh the gear.

- When the Diff. lock control switch is at OFF position, the indicator light goes off.

Differential lock is released for the rear wheel at this time.

- Check the voltage between the terminals of the 4WD control ECU when switching the Diff. lock control switch with the speedometer, registering approx. 8 km/h (5 mph) or more.

Switch position	Terminal	Specified value
ON	M1 - M2	0.5V or less (No change)

- Check that the indicator lights blink when 2WD mode is set.

Diff. lock is released for both the rear wheels at this time.

- Return the Diff. lock control switch to OFF.
- Stop the engine and lower the vehicle.

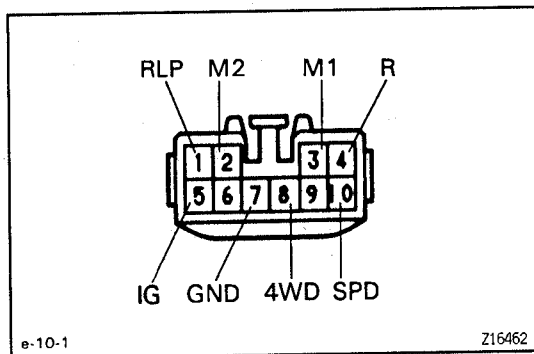
SA

DIFF. LOCK SYSTEM CIRCUIT INSPECTION

1. INSPECT BATTERY POSITIVE VOLTAGE

Battery positive voltage:

10 - 14 V



2. INSPECT SYSTEM CIRCUIT WITH CONNECTOR DISCONNECTED

Disconnect the connector from the 4WD control ECU and inspect the connector on the wire harness side, as shown in the chart.

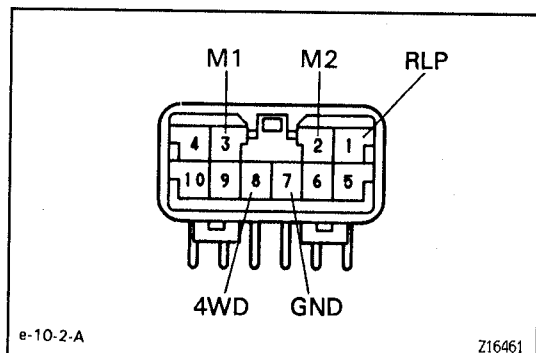
Trouble Part	Tester Connection	Check Item	Condition		Specified Valve
RR Differential Lock Actuator	M1 — M2	Resistance	—		Less than 100 Ω
Body Ground	GND — Body ground	Cotinuity			Continuity
Speed Sensor	SPD — Body ground		Vehicle moves slowly	1 pulse each 40 cm (15.75 in.)	
4WD Fuse	IG — Body ground	Voltage	Ignition Switch ON	—	10 -14 V
Rear Differential Lock Indicator Switch	RLP — Body ground			Indicator light ON	About 0 V
				Indicator light OFF	10 -14 V
4WD Indicator Switch	4WD — Body ground			Indicator light ON	About 0 V
				Indicator light OFF	10 -14 V
Differential Lock Control Switch	R — Body ground			Differential lock Control Switch OFF	10 -14 V
				Differential lock Control Switch OFF	About 0 V

V07042

HINT: If the circuit is not as specified, check and repair or replace the trouble part shown in the table above.

3. INSPECT SYSTEM CIRCUIT WITH CONNECTOR CONNECTED

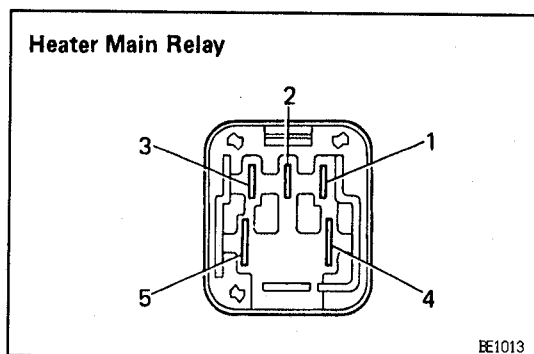
- Turn the ignition switch to ON position.
- Keep the center Diff. lock condition.
- Remove the Diff. lock ECU.
- Using a voltmeter, measure the voltage when the differential lock control switch is in the position, as shown below.



Tester Connection ⊕ — ⊖	Switch position	Specified valve
4WD — GND	—	
RLP — GND	ON	0.5 V or less
M1 — M2	OFF — ON	10 - 14 V (Approx. 1 sec.)
M2 — M1	ON — OFF	0.5 V or less

V07044

- If the circuit is not as specified, replace the ECU.
(e) Install the ECU in place.



DIFF. LOCK COMPONENTS INSPECTION

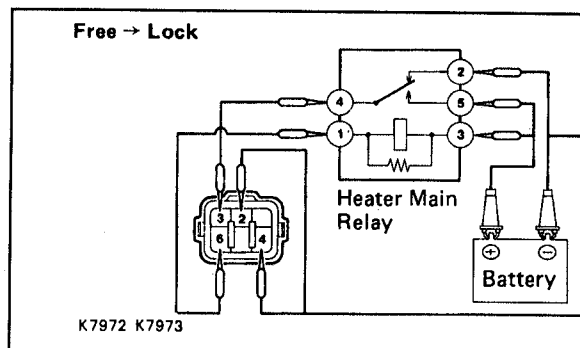
8A329W-01

1. INSPECT RELAY OPERATION

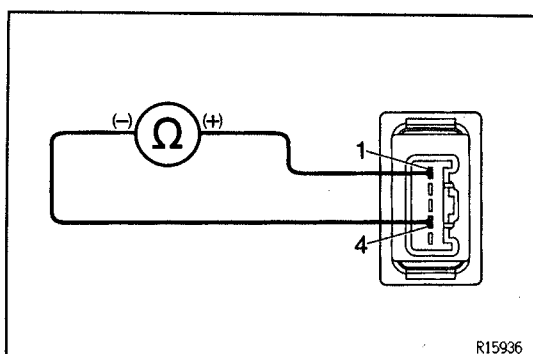
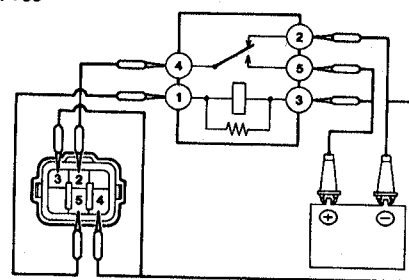
- Jack up the vehicle.
- Use a heater main relay and connect it, as shown below.
- Rotate the tire and check that differential lock has occurred.

If operation is not as specified, replace the actuator.

SA



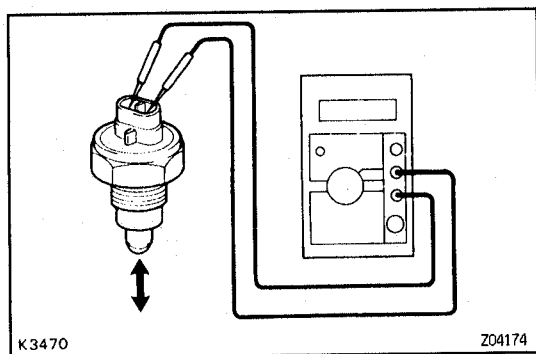
Lock → Free



2. INSPECT DIFF. LOCK CONTROL SWITCH CONTINUITY

Inspect the switch continuity between terminal 1 to terminal 4.

HINT: If it is not continuity, replace the switch.

**3. INSPECT DIFF. LOCK POSITION SWITCH**

- (a) Check that there is continuity between terminals when the switch is pushed (differential connected position).
 - (b) Check that there is no continuity when the switch is free (differential disconnected position).
- HINT: If operation is not as specified, replace the switch.

4. INSPECT TRANSFER 4WD SWITCH

(See page TR—20)

5. INSPECT VEHICLE SPEED SENSOR

(See page BE—36)

DIFF. LOCK ACTUATOR REMOVAL AND INSTALLATION

(See page SA—135, 148)

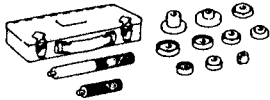
8A28X-01

REAR SUSPENSION

PREPARATION

SST (SPECIAL SERVICE TOOLS)

SA1VZ-01

	09550-10012 Replacer Set "B"	Eye bushing replacement
	(09252-10010) No. 1 Replacer Handle—	
	(09553-10010) Differential Side Bearing Replacer	

SA0L4-07

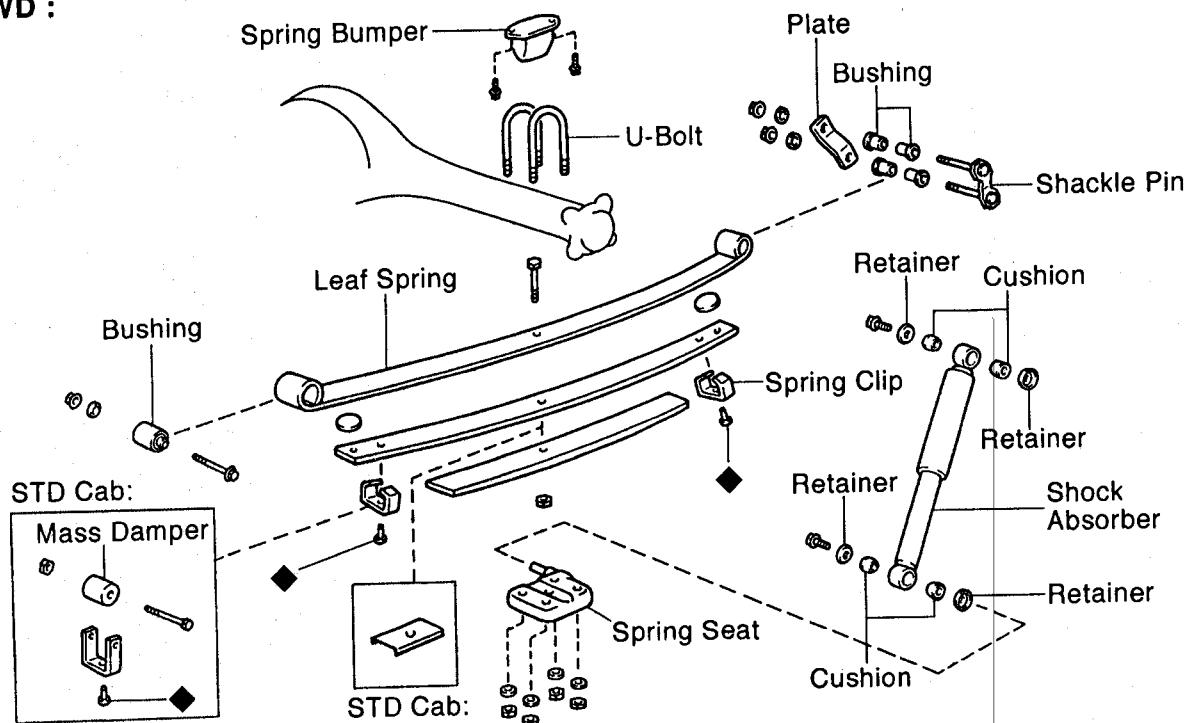
EQUIPMENT

Torque wrench	
---------------	--

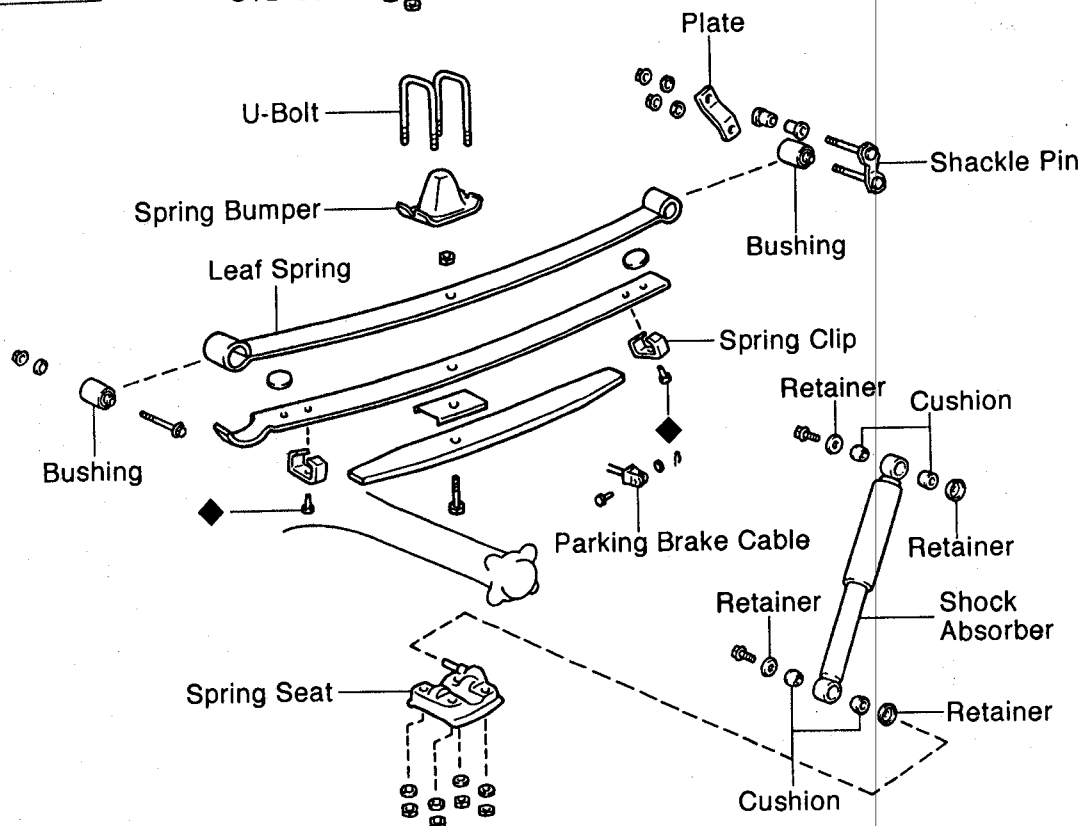
REAR SHOCK ABSORBER COMPONENTS

SA0L7-00

2WD :



4WD :



◆ Non-reusable part

W00252

REAR SHOCK ABSORBER REMOVAL

1. SUPPORT BODY WITH STANDS

- (a) Jack up and support the body on stands.
- (b) Lower the axle housing until the leaf spring tension is free, and keep it at this position.

2. REMOVE REAR SHOCK ABSORBER

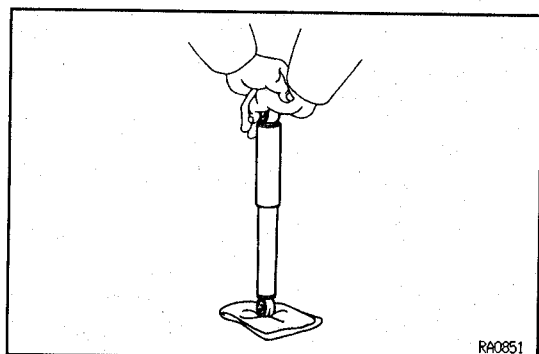
- (a) Remove the 2 rear shock absorber set bolts.

Torque:

2WD 26 N·m (260 kgf·cm, 19 ft·lbf)

4WD 71 N·m (730 kgf·cm, 53 ft·lbf)

- (b) Remove the rear shock absorber.



REAR SHOCK ABSORBER INSPECTION

SA091-06

INSPECT SHOCK ABSORBER

Compress and extend the shock absorber rod and check that there is no abnormal resistance or unusual operation sounds.

If there is any abnormality, replace the shock absorber with a new one.

NOTICE: When discarding the shock absorber, use the following procedure.

SA

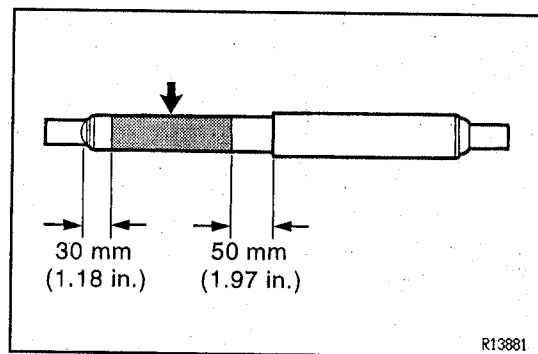
REAR SHOCK ABSORBER DISPOSAL

SA09U-06

1. FULLY EXTEND SHOCK ABSORBER ROD
2. DRILL HOLE TO REMOVE GAS FROM CYLINDER

Using a drill, make a hole in the cylinder, as shown to remove the gas inside.

CAUTION: The gas coming out is harmless, but be careful of chips which may fly up when drilling.



REAR SHOCK ABSORBER INSTALLATION

SA28L-01

Installation is in the reverse order of removal.

REAR LEAF SPRING COMPONENTS

(See page SA—156)

SA28M-01

REAR LEAF SPRING REMOVAL

SA28N-01

1. SUPPORT BODY

- (a) Jack up and support the body on stands.
- (b) Lower the axle housing until the leaf spring tension is free, and keep it at this position.

2. REMOVE REAR WHEEL

Torque: 110 N·m (1,150 kgf·cm, 83 ft·lbf)

3. 4WD:

DISCONNECT PARKING BRAKE CABLE

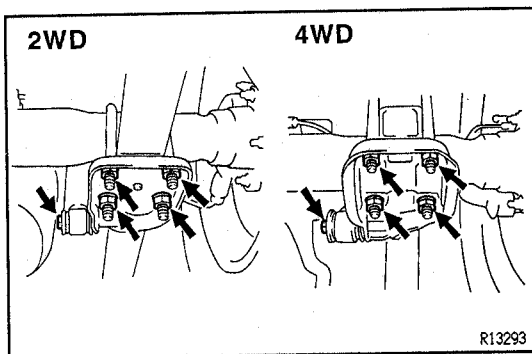
4. DISCONNECT REAR SHOCK ABSORBER

Remove the bolt and disconnect the shock absorber from the spring seat.

Torque:

2WD 26 N·m (260 kgf·cm, 19 ft·lbf)

4WD 71 N·m (730 kgf·cm, 53 ft·lbf)



R13293

5. REMOVE U—BOLTS

- (a) Remove the 4 U—bolt mounting nuts.
- (b) Remove the spring seat, pads and pad retainer.
- (c) Remove the U—bolts.

Torque: 120 N·m (1,250 kgf·cm, 90 ft·lbf)

INSTALLATION HINT: Tighten the U—bolts so that the length of all the U—bolts under the spring seat are the same.

(d) 4WD:

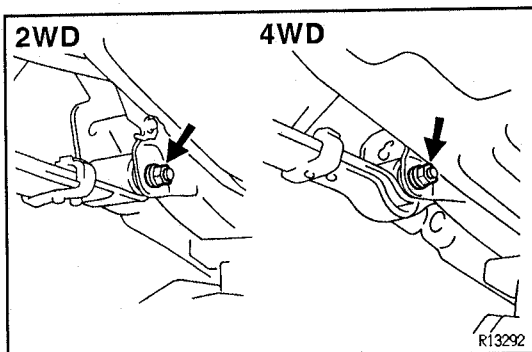
Remove the spring bumper.

6. REMOVE LEAF SPRING

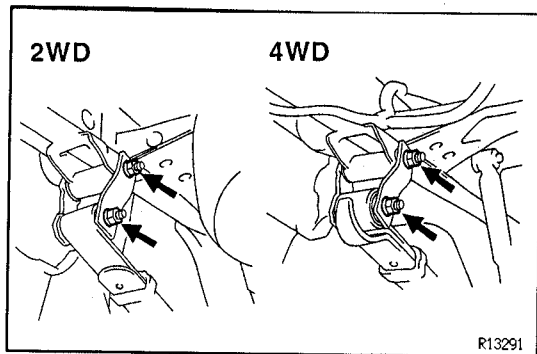
- (a) Remove the nut, washer and hanger pin bolt.

Torque: 155 N·m (1,600 kgf·cm, 115 ft·lbf)

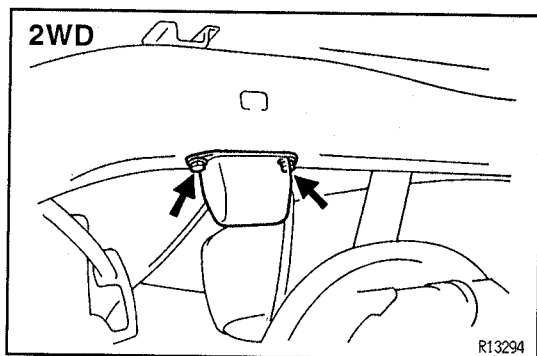
INSTALLATION HINT: After stabilizing the suspension, torque the nut.



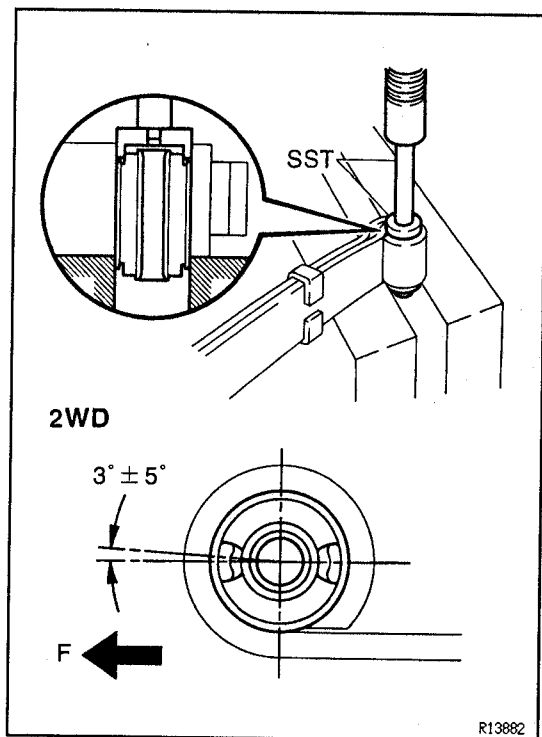
R13292



- (b) Remove the 2 shackle pin mounting nuts.
Torque: 91 N·m (930 kgf·cm, 67 ft·lbf)
INSTALLATION HINT: After stabilizing the suspension, torque the nut.
- (c) Remove the shackle pin and plate, and remove the rear leaf spring.



7. 2WD:
REMOVE SPRING BUMPER
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)



EYE BUSHING REPLACEMENT

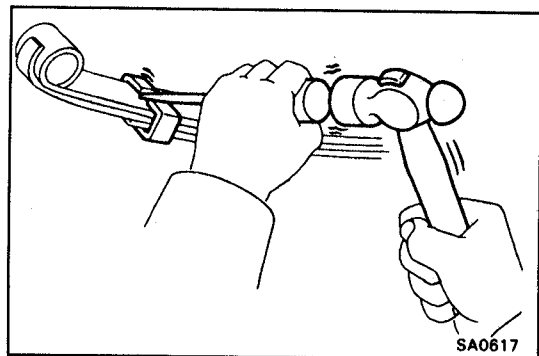
SA06-08

REPLACE BUSHING

Using SST and a press, replace the eye bushing.
SST 09550-10012 (09252-10010, 09553-10010)

2WD:
When installing the bushing, as shown in the illustration.

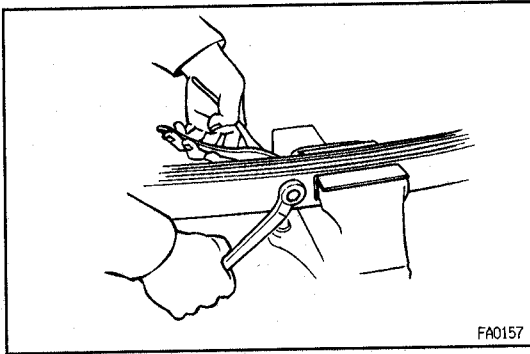
SA



LEAF SPRING REPLACEMENT

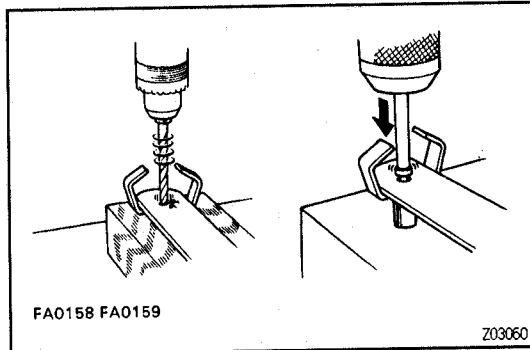
SA06V-08

1. BEND OPEN SPRING CLIP
Using a chisel and a hammer, pry up the spring clip.



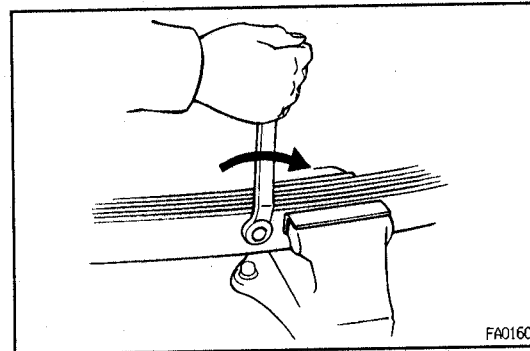
2. REMOVE CENTER BOLT

Hold the spring near the center bolt in a vise and remove the center bolt.



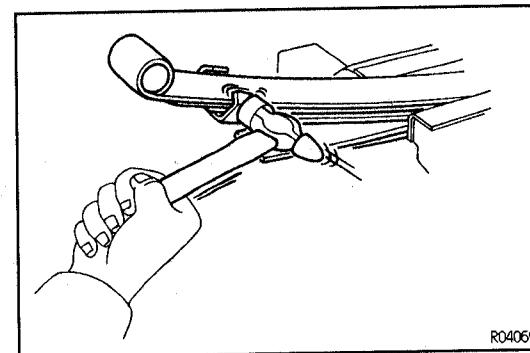
3. REPLACE SPRING CLIP

- Drill off the head of the rivet and drive it out.
- Install a new rivet into the holes of the spring leaf and clip. Then rivet with a press.



4. INSTALL SPRING CENTER BOLT

- Align the leaf holes and secure the leaves with a vise.
 - Install the spring center bolt.
- Torque: 44 N·m (450 kgf·cm, 33 ft·lbf)



5. BEND SPRING CLIP

Using a hammer, bend the spring clip into the position.

REAR LEAF SPRING INSTALLATION

Installation is in the reverse order of removal.

SERVICE SPECIFICATIONS

SERVICE DATA

8A1VY-02

2WD:

Cold tire inflation pressure	Tire size		Front		Rear	
	P195/75R14		200 kPa (2.0 kgf/cm ² , 29 psi)		240 kPa (2.4 kgf/cm ² , 35psi)	
	P215/70R14				200 kPa (2.0 kgf/cm ² , 29psi)	
Wheel alignment (Standard loaded vehicle condition)	Vehicle height mm (in.)				Front A-B	Rear C-D
	A: Ground clearance of spindle center.				56 (2.205)	108 (4.252)
	B: Ground clearance of lower suspensiom arm bolt center.					
	C: Ground clearance of rear axle shaft center.					
	D: Ground clearance of leaf spring front hanger pin center.					
	Camber		0°00' ± 45'			
	Left-right error		30' or less			
	Caster		1°50' ± 45'			
	Left-right error		30' or less			
	Steering axis inclination		10°00' ± 45'			
	Left-right error		30' or less			
	Toe-in (total)		0° ± 0.2° (0 ± 2 mm, 0 ± 0.08 in.)			
	Tie rod end left-right error		1.5 mm (0.059 in.)			
	Wheel angle (Max.)		Inside wheel 36°00' ^{+0°} / _{-3°}			
			Outside wheel 30°45' ^{+0°} / _{-3°}			
Wheel alignment (Non-loaded vehicle condition)	Vehicle height mm (in.)		Model	Front A-B		Rear C-D
	A: Ground crearance of spindle center.		RZN140L	44 mm (1.732 in.)		61 mm (2.402 in.)
	B: Ground clearance of lower suspension arm bolt center.		RZN150L	43 mm (1.693 in.)		68 mm (2.677 in.)
	C: Ground clearance of rear axle shaft center.		VZN150	43 mm (1.693 in.)		61 mm (2.402 in.)
	D: Ground clearance of leaf spring front hanger pin center.					
	Camber		0°04' ± 45'			
	Left-right error		30' or less			
	Caster		Model	Caster		
			RZN140L	0°33' ± 45'		
			RZN150L	0°50' ± 45'		
			VZN150L	0°42' ± 45'		
	Left-right error		30' or less			
	Steering axis inclination		9°56' ± 45'			
	Left-right error		30' or less			
	Toe-in (total)		0.2° ± 0.2° (2 ± 2 mm, 0.08 ± 0.08 in.)			
	Tie rod end left-right error		1.5 mm (0.059 in.)			
	Wheel angle (Max.)		Inside wheel 36°14' ^{+0°} / _{-3°} (reference)			
			Outside wheel 31°03' ^{+0°} / _{-3°} (reference)			
Front axle	Axle hub axial play		Maximum 0.05 mm (0.0020 in.)			
	Axle hub preload (at starting)		Oil seal frictional force plus 6 - 18 N (0.6 - 1.8 kgf, 1.3 - 4.0 lbf)			

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2WD:

Front suspension	Upper ball joint turning torque	0.5 - 3.5 N·m (5 - 35 kgf·cm, 4 - 30 in.-lbf)
	Lower ball joint turning torque	0.5 - 3.5 N·m (5 - 35 kgf·cm, 4 - 30 in.-lbf)
Rear axle	Shaft runout	Maximum 2.0 mm (0.079 in.)
	Flange runout	Maximum 0.1 mm (0.004 in.)

4WD:

4WD:

Cold tire inflation pressure	Tire size	Front		Rear	
	P225/75R15 31 x 10.5R15LT	180 kPa (1.8 kgf/cm ² , 26 psi)		200 kPa (2.0 kgf/cm ² , 29 psi)	
Wheel alignment (Standard loaded vehicle condition)	Vehicle height mm (in.)			Front A-B	Rear C-D
	A: Ground clearance of spindle center.			56.9 (2.240)	-5 (-0.197)
	B: Ground clearance of front adjusting cam bolt center.				
	C: Ground clearance of leaf spring front hanger pin center.				
	D: Ground clearance of rear axle shaft center.				
	Camber		0°00' ± 45'		
	Left-right error		30' or less		
	Caster		2°50' ± 45'		
	Left-right error		30' or less		
	Steering axis inclination		10°45' ± 45'		
Left-right error		30' or less			
Toe-in (total)		0° ± 0.2° (0 ± 2 mm, 0 ± 0.08 in.)			
Wheel angle (Max.)	Inside wheel	37° 05' ^{+0°} _{-2°}			
	Outside wheel	32° 20'			
Wheel alignment (Non-loaded vehicle condition)	Vehicle height mm (in.)		Model	Front A-B	Rear C-D
	A: Ground clearance of spindle center.		RZN161L-TRMDKAB	50.1 (1.972)	36 (1.417)
	B: Ground clearance of front adjusting cam bolt center.		-TRPDKAB	48.4 (1.906)	36 (1.417)
	C: Ground clearance of leaf spring front hanger pin center.		VZN160L-TRMDKAB	50.0 (1.969)	37 (1.457)
	D: Ground clearance of rear axle shaft center.		RZN171L-CRMDKAB	46.0 (1.811)	29 (1.142)
			-CRPDKAB	44.4 (1.748)	29 (1.142)
			VZN170L-CRMDKAB	45.3 (1.783)	30 (1.181)
			-CRPDKAB	46.1 (1.815)	30 (1.181)
			-CRMGKAB	44.9 (1.768)	30 (1.181)
			-CRPGKAB	42.8 (1.685)	30 (1.181)
	Camber		Model	Camber	
			RZN161L-TRMDKAB	0°10'±45'	
			-TRPDKAB	0°11'±45'	
			VZN160L-TRMDKAB	0°10'±45'	
			RZN171L-CRMDKAB	0°13'±45'	
			-CRPDKAB	0°14'±45'	
			VZN170L-CRMDKAB	0°13'±45'	
			-CRPDKAB	0°12'±45'	
			-CRMGKAB	0°13'±45'	
			-CMPGKAB	0°15'±45'	
	Left-right error		30' or less		

4WD:

Wheel alignment (Non-loaded vehicle condition)	Caster		Model		Caster			
			RZN161L-TRMDKAB		1°57'±45'			
			-TRPDKAB		1°57'±45'			
			VZN160L-TRMDKAB		1°59'±45'			
			RZN171L-CRMDKAB		2°13'±45'			
			-CRPDKAB		2°13'±45'			
			VZN170L-CRMDKAB		2°19'±45'			
			-CRPDKAB		2°20'±45'			
			-CRMGKAB		2°18'±45'			
			-CRPGKAB		2°17'±45'			
			Left-right error		30' or less			
	Steering axis inclination		Model		Steering axis inclination			
			RZN161L-TRMDKAB		10°35'±45'			
			-TRPDKAB		10°34'±45'			
			VZN160L-TRMDKAB		10°35'±45'			
			RZN171L-CRMDKAB		10°32'±45'			
			-CRPDKAB		10°31'±45'			
			VZN170L-CRMDKAB		10°32'±45'			
			-CRPDKAB		10°33'±45'			
			-CRMGKAB		10°32'±45'			
			-CRPGKAB		10°30'±45'			
			Left-right error		30' or less			
	Toe-in (total)		Model		Tire size		Toe-in (total)	
			RZN161L-TRMDKAB		P225/75R15		0.1°±0.2°(1.4±2mm,0.055±0.079in.)	
					31 x 10.5R15		0.1°±0.15°(1.5±2mm,0.059±0.079in.)	
			-TRPDKAB		P225/75R15		0.1°±0.2°(1.6±2mm,0.063±0.079in.)	
					31 x 10.5R15		0.1°±0.15°(1.8±2mm,0.071±0.079in.)	
VZN160L-TRMDKAB			P225/75R15		0.1°±0.2°(1.4±2mm,0.055±0.079in.)			
			31 x 10.5R15		0.1°±0.15°(1.5±2mm,0.059±0.079in.)			
RZN171L-CRMDKAB			P225/75R15		0.1°±0.2°(1.7±2mm,0.067±0.079in.)			
			31 x 10.5R15		0.1°±0.15°(1.9±2mm,0.075±0.079in.)			
-CRPDKAB			P225/75R15		0.2°±0.2°(1.9±2mm,0.075±0.079in.)			
			31 x 10.5R15		0.2°±0.15°(2.2±2mm,0.087±0.079in.)			
VZN170L-CRMDKAB			P225/75R15		0.1°±0.2°(1.8±2mm,0.071±0.079in.)			
			31 x 10.5R15		0.15°±0.15°(2.0±2mm,0.079±0.079in.)			
-CRPDKAB			P225/75R15		0.1°±0.2°(1.7±2mm,0.067±0.079in.)			
			31 x 10.5R15		0.1°±0.15°(1.8±2mm,0.071±0.079in.)			
-CRMGKAB			P225/75R15		0.1°±0.2°(1.8±2mm,0.071±0.079in.)			
			31 x 10.5R15		0.15°±0.15°(2.0±2mm,0.079±0.079in.)			
-CRPGKAB			P225/75R15		0.2°±0.2°(2.1±2mm,0.083±0.079in.)			
			31 x 10.5R15		0.2°±0.15°(2.3±2mm,0.079±0.079in.)			

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4WD:

Wheel alignment (Non-loaded vehicle condition)	Wheel angle (Max.)	Model	Inside wheel	Outside wheel
		RZN161L-TRMDKAB	37°16'	32°35'
		-TRPDKAB	37°18'	32°34'
		VZN160L-TRMDKAB	37°16'	32°35'
		RZN171L-CRMDKAB	37°19'	32°32'
		-CRPDKAB	37°21'	32°31'
		VAN170L-CRMDKAB	37°20'	32°32'
		-CRPDKAB	37°19'	32°33'
		-CRMKGAB	37°20'	32°32'
		-CRPGKAB	37°23'	32°29'
Drive shaft	Drive shaft length		436.4 ± 2 mm (17.182 ± 0.079 in)	
Front suspension	Upper ball joint turning torque		0.7 - 4.4 N·m (7 - 45 kgf·cm, 6 - 39 in.·lbf)	
	Lower ball joint turning torque		0.5 - 3.9 N·m (5 - 40 kgf·cm, 4 - 35 in.·lbf)	
Rear axle	Shaft runout		Maximum 2.0 mm (0.079 in.)	
	Flange runout		Maximum 0.1 mm (0.004 in.)	

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Front differential:

Front differential	Companion flange vertical runout		Maximum 0.10 mm (0.0039 in.)
	Companion flange lateral runout		Maximum 0.10 mm (0.0039 in.)
	Drive pinion preload (at starting)	New bearing	1.2 – 1.9 N·m (12 – 19 kgf·cm, 10.4 – 16.5 in.-lbf)
		Reused bearing	0.6 – 1.0 N·m (6 – 10 kgf·cm, 5.2 – 8.7 in.-lbf)
	Total preload (at starting)		In addition to drive pinion preload 0.4 – 0.6 N·m (6 – 10 kgf·cm, 10.4 – 16.5 in.-lbf)
	Drive pinion to ring gear backlash		0.10 – 0.18 mm (0.0039 – 0.0071 in.)
	Side gear backlash		0 – 0.20 mm (0 – 0.0079 in.)
	Rear oil seal drive in depth		4.5 ± 0.3 mm (0.177 ± 0.012 in.)
	Side oil seal drive in depth		0 ± 0.3 mm (0 ± 0.012 in.)
	Side tube oil seal drive in depth		5.5 ± 0.3 mm (0.217 ± 0.012 in.)
	Side gear thrust washer thickness mm (in.)		
	0.96 – 1.04 (0.0378 – 0.0409)		1.16 – 1.24 (0.0457 – 0.0488)
	1.06 – 1.14 (0.0417 – 0.0449)		1.26 – 1.34 (0.0496 – 0.0528)
	Side bearing adjusting washer thickness mm (in.)		
	2.00 – 2.02 (0.0787 – 0.0795)	2.27 – 2.29 (0.0894 – 0.0902)	2.54 – 2.56 (0.1000 – 0.1008)
	2.03 – 2.05 (0.0799 – 0.0807)	2.30 – 2.32 (0.0906 – 0.0913)	2.57 – 2.59 (0.1012 – 0.1020)
	2.06 – 2.08 (0.0811 – 0.0819)	2.33 – 2.35 (0.0917 – 0.0925)	2.60 – 2.62 (0.1024 – 0.1031)
	2.09 – 2.11 (0.0823 – 0.0831)	2.36 – 2.38 (0.0929 – 0.0937)	2.63 – 2.65 (0.1035 – 0.1043)
	2.12 – 2.14 (0.0835 – 0.0843)	2.39 – 2.41 (0.0941 – 0.0949)	2.66 – 2.68 (0.1047 – 0.1055)
	2.15 – 2.17 (0.0846 – 0.0854)	2.42 – 2.44 (0.0953 – 0.0961)	2.69 – 2.71 (0.1059 – 0.1067)
	2.18 – 2.20 (0.0858 – 0.0866)	2.45 – 2.47 (0.0965 – 0.0972)	2.72 – 2.74 (0.1071 – 0.1079)
	2.21 – 2.23 (0.0870 – 0.0878)	2.48 – 2.50 (0.0976 – 0.0984)	2.75 – 2.77 (0.1083 – 0.1091)
	2.24 – 2.26 (0.0882 – 0.0890)	2.51 – 2.53 (0.0988 – 0.0996)	2.78 – 2.80 (0.1094 – 0.1102)
	Drive pinion bearing adjusting washer thickness mm (in.)		
	1.69 – 1.71 (0.0665 – 0.0673)	1.93 – 1.95 (0.0760 – 0.0768)	2.17 – 2.19 (0.0854 – 0.0862)
	1.72 – 1.74 (0.0677 – 0.0685)	1.96 – 1.98 (0.0772 – 0.0780)	2.20 – 2.22 (0.0866 – 0.0874)
	1.75 – 1.77 (0.0689 – 0.0697)	1.99 – 2.01 (0.0783 – 0.0791)	2.23 – 2.25 (0.0878 – 0.0886)
	1.78 – 1.80 (0.0701 – 0.0709)	2.02 – 2.04 (0.0795 – 0.0803)	2.26 – 2.28 (0.0890 – 0.0898)
	1.81 – 1.83 (0.0713 – 0.0720)	2.05 – 2.07 (0.0807 – 0.0815)	2.29 – 2.31 (0.0902 – 0.0909)
	1.84 – 1.86 (0.0724 – 0.0732)	2.08 – 2.10 (0.0819 – 0.0827)	2.32 – 2.34 (0.0913 – 0.0921)
	1.87 – 1.89 (0.0736 – 0.0744)	2.11 – 2.13 (0.0831 – 0.0839)	–
	1.90 – 1.92 (0.0748 – 0.0756)	2.14 – 2.16 (0.0843 – 0.0850)	–
	w/A.D.D.	A.D.D. sleeve fork to clutch sleeve clearance	0.35 mm (0.0138 in.)
		Differential case needle bearing press in depth	0.3 ± 0.3 mm (0.012 ± 0.012 in.)

Rear differential (2RZ-FE):

Differential	Drive pinion preload (at starting)	New bearing	1.4 - 2.1 N·m (14 - 21 kgf·cm, 12.2 - 18.3 in.·lbf)	
		Reused bearing	0.6 - 1.0 N·m (6 - 10 kgf·cm, 5.2 - 8.7 in.·lbf)	
	Total preload (at starting)		(Add drive pinion preload) 0.4 - 0.6 N·m (4 - 6 kgf·cm, 3.5 - 5.2 in.·lbf)	
	Drive pinion to ring gear backlash		0.13 - 0.18 mm (0.0051 - 0.0071 in.)	
	Side gear backlash		0.05 - 0.20 mm (0.0020 - 0.0079 in.)	
	Ring gear runout		Maximum 0.07 mm (0.0028 in.)	
	Differential case runout		Maximum 0.07 mm (0.0028 in.)	
	Companion flange vertical runout		Maximum 0.10 mm (0.0039 in.)	
	Companion flange lateral runout		Maximum 0.10 mm (0.0039 in.)	
	Drive pinion oil seal drive in depth		1.5 mm (0.059 in.)	
	Side gear thrust washer thickness			
	1.0 mm (0.039 in.)		1.2 mm (0.047 in.)	
	1.1 mm (0.043 in.)		1.3 mm (0.051 in.)	
	Drive pinion bearing washer thickness			
	2.24 mm (0.0882 in.)		2.51 mm (0.0988 in.)	
	2.27 mm (0.0894 in.)		2.54 mm (0.1000 in.)	
	2.30 mm (0.0906 in.)		2.57 mm (0.1012 in.)	
	2.33 mm (0.0917 in.)		2.60 mm (0.1024 in.)	
	2.36 mm (0.0929 in.)		2.63 mm (0.1035 in.)	
	2.39 mm (0.0941 in.)		2.66 mm (0.1047 in.)	
	2.42 mm (0.0953 in.)		2.69 mm (0.1059 in.)	
	2.45 mm (0.0965 in.)		2.72 mm (0.1071 in.)	
	2.48 mm (0.0976 in.)		—	

Rear differential (3RZ-FE, 5VZ-FE w/ Diff. lock):

Differential	Companion flange vertical runout		Maximum 0.10 mm (0.0039 in.)	
	Companion flange lateral runout		Maximum 0.10 mm (0.0039 in.)	
	Drive pinion preload (at starting)	New bearing	0.9 - 1.6 N·m (10 - 16 kgf·cm, 8.7 - 13.9 in.·lbf)	
		Reused bearing	0.5 - 0.8 N·m (5 - 8 kgf·cm, 4.3 - 6.9 in.·lbf)	
	Total preload (at starting)		In addition to drive pinion preload 0.4 - 0.6 N·m (4 - 6 kgf·cm, 3.5 - 5.2 in.·lbf)	
	Drive pinion to ring gear backlash		0.13 - 0.18 mm (0.0051 - 0.0071 in.)	
	Side gear backlash		0.05 - 0.20 mm (0.0020 - 0.0080 in.)	
	Oil seal drive in depth		1.0 mm (0.039 in.)	
	Side gear thrust washer thickness			
	0.9 (0.035)		1.1 (0.043)	
	1.0 (0.039)			
	Drive pinion bearing adjusting washer thickness			
	1.70 (0.0669)		1.88 (0.0740)	
	1.73 (0.0681)		1.91 (0.0752)	
	1.76 (0.0693)		1.94 (0.0764)	
1.79 (0.0705)		1.97 (0.0776)		
1.82 (0.0717)		2.00 (0.0787)		
1.85 (0.0728)		2.03 (0.0799)		
		2.06 (0.0811)		
		2.09 (0.0823)		
		2.12 (0.0835)		
		2.15 (0.0846)		
		2.18 (0.0858)		
		2.21 (0.0870)		
		2.24 (0.0882)		
		2.27 (0.0894)		
		2.30 (0.0906)		
		2.33 (0.0917)		

Rear differential (3RZ – FE, 5VZ – FE w/o Diff. lock):

Differential	Companion flange vertical runout		Maximum 0.09 mm (0.0035 in.)			
	Companion flange lateral runout		Maximum 0.09 mm (0.0035 in.)			
	Ring gear runout		Maximum 0.05 mm (0.0020 in.)			
	Differential case runout		Maximum 0.04 mm (0.0016 in.)			
	Drive pinion to ring gear backlash		0.13 – 0.18 mm (0.0051 – 0.0709 in.)			
	Side gear backlash		0.05 – 0.20 mm (0.0020 – 0.0079 in.)			
	Drive pinion preload (at starting)	New bearing	1.0 – 1.6 N·m (10 – 16 kgf·cm, 8.7 – 13.9 in.-lbf)			
		Reused bearing	0.5 – 0.8 N·m (5 – 8 kgf·cm, 4.3 – 6.9 in.-lbf)			
	Total preload (at starting)		(Add drive pinion preload) 0.4 – 0.6 N·m (4 – 6 kgf·cm, 3.5 – 5.2 in.-lbf)			
	Side gear thrust washer thickness				mm (in.)	
	1.50 (0.0590)		1.65 (0.0650)		1.80 (0.0709)	
	1.55 (0.0610)		1.70 (0.0669)		1.85 (0.0728)	
	1.60 (0.0630)		1.75 (0.0689)		1.90 (0.0748)	
	Side bearing adjusting washer thickness				mm (in.)	
	58	2.58 (0.1015)	90	2.90 (0.1142)	22	3.22 (0.1268)
	60	2.60 (0.1024)	92	2.92 (0.1150)	24	3.24 (0.1276)
	62	2.62 (0.1031)	94	2.94 (0.1157)	26	3.26 (0.1283)
	64	2.64 (0.1039)	96	2.96 (0.1165)	28	3.28 (0.1291)
	66	2.66 (0.1047)	98	2.98 (0.1173)	30	3.30 (0.1299)
	68	2.68 (0.1055)	00	3.00 (0.1181)	32	3.32 (0.1307)
	70	2.70 (0.1063)	02	3.02 (0.1189)	34	3.34 (0.1315)
	72	2.72 (0.1071)	04	3.04 (0.1197)	36	3.36 (0.1323)
	74	2.74 (0.1079)	06	3.06 (0.1205)	38	3.38 (0.1331)
	76	2.76 (0.1087)	08	3.08 (0.1213)	40	3.40 (0.1339)
	78	2.78 (0.1094)	10	3.10 (0.1220)	42	3.42 (0.1346)
	80	2.80 (0.1102)	12	3.12 (0.1228)	44	3.44 (0.1354)
	82	2.82 (0.1110)	14	3.14 (0.1236)	46	3.46 (0.1362)
84	2.84 (0.1118)	16	3.16 (0.1244)	48	3.48 (0.1370)	
86	2.86 (0.1126)	18	3.18 (0.1252)	–		
88	2.88 (0.1134)	20	3.20 (0.1260)	–		
Drive pinion bearing adjusting washer thickness				mm (in.)		
87	1.87 (0.0736)	01	2.01 (0.0791)	15	2.15 (0.0846)	
88	1.88 (0.0740)	02	2.02 (0.0795)	16	2.16 (0.0850)	
89	1.89 (0.0744)	03	2.03 (0.0799)	17	2.17 (0.0854)	
90	1.90 (0.0748)	04	2.04 (0.0803)	18	2.18 (0.0858)	
91	1.91 (0.0752)	05	2.05 (0.0807)	19	2.19 (0.0862)	
92	1.92 (0.0756)	06	2.06 (0.0811)	20	2.20 (0.0866)	
93	1.93 (0.0760)	07	2.07 (0.0815)	21	2.21 (0.0870)	
94	1.94 (0.0764)	08	2.08 (0.0819)	22	2.22 (0.0874)	
95	1.95 (0.0768)	09	2.09 (0.0823)	23	2.23 (0.0878)	
96	1.96 (0.0772)	10	2.10 (0.0827)	24	2.24 (0.0882)	
97	1.97 (0.0776)	11	2.11 (0.0831)	25	2.25 (0.0886)	
98	1.98 (0.0780)	12	2.12 (0.0835)	26	2.26 (0.0890)	
99	1.99 (0.0783)	13	2.13 (0.0839)	27	2.27 (0.0894)	
00	2.00 (0.0787)	14	2.14 (0.0843)	28	2.28 (0.0898)	

TORQUE SPECIFICATION

FRONT (2WD):

Part tightened	N-m	kgf-cm	ft.-lbf
Hub nut	110	1,150	83
Rack end lock nut	54	550	40
Steering knuckle x Upper ball joint	110	1,100	80
Steering knuckle x Lower ball joint	160	1,600	116
Tie rod end x Lower ball joint	72	730	53
Steering knuckle x Brake caliper	108	1,100	80
Steering knuckle x Knuckle arm	183	1,870	135
Upper suspension arm x Upper ball joint	39	400	29
Lower suspension arm x Spring bumper	43	440	32
Lower suspension arm x Lower suspension arm No. 3	150	1,530	111
Shock absorber x Frame	39	400	29
Lower suspension arm x Shock absorber	25	250	18
Lower suspension arm x Stabilizer bar link	39	400	29
Lower suspension arm x Frame	200	2,050	148
Upper suspension arm shaft x Frame	130	1,300	94
Upper suspension arm shaft x Upper suspension arm	126	1,280	93
Lower suspension arm x Strut bar	150	1,530	111
Strut bar x Frame	300	3,050	221
Stabilizer bar bracket x Frame	29	300	22
ABS speed sensor x Steering knuckle	8	82	71 in.-lbf
ABS speed sensor wire clamp x Steering knuckle	8	82	71 in.-lbf
ABS speed sensor wire clamp x Upper suspension arm	8	82	71 in.-lbf

FRONT (4WD):

Part tightened	N-m	kgf-cm	ft.-lbf
Hub nut	110	1,150	83
Rack end lock nut	55	560	41
Steering knuckle x Lower ball joint	80	820	59
Tie rod end x Lower ball joint	90	930	67
Steering knuckle x Brake caliper	123	1,250	90
Drive shaft x Free wheeling hub inner hub (w/ Free wheeling hub)	18	185	13
Drive shaft x Axle hub (w/o Free wheeling hub)	235	2,400	174
Axle hub bearing lock nut (w/ Free wheeling hub)	274	2,800	203
Free wheeling hub cover x Free wheeling hub body	10	100	7
Free wheeling hub body x Axle hub	31	315	23
Upper suspension arm x Upper ball joint	105	1,100	80
Lower suspension arm x Frame	130	1,325	96
Upper suspension arm x Frame	115	1,200	87
Lower suspension arm x Lower ball joint	152	1,550	112
Lower suspension arm x No. 1, No. 2 spring bumper	See page SA-83		
Upper suspension arm x Frame	115	1,200	87
Frame x Suspension support	64	650	47
Lower suspension arm x Shock absorber	135	1,400	101
Lower suspension arm x Stabilizer bar link	69	700	51
Stabilizer bar x Stabilizer bar link	29	300	22

Stabilizer bar bracket x Frame	25	260	19
ABS speed sensor x Steering knuckle	8	82	71 in.-lbf
ABS speed sensor wire clamp x Steering knuckle	8	82	71 in.-lbf
ABS speed sensor wire clamp x Upper suspension arm	8	82	71 in.-lbf
Differential			
Differential front mounting cushion x Frame	137	1,400	101
Differential rear mounting cushion x Frame	87	890	64
Differential front mounting cushion x Differential	157	1,600	116
Differential rear mounting cushion x Differential	108	1,100	80
Ring gear x Differential case	97	985	71
Differential carrier x Differential tube	78	800	58
Differential carrier x Side bearing retainer	69	700	51
A.D.D. clutch case x Differential	78	800	58
A.D.D. clutch case x Differential tube	78	800	58
A.D.D. actuator x A.D.D. clutch case	21	210	15
Screw plug x clutch case cover	20	200	14
Screw plug x A.D.D. actuator	13	130	9
A.D.D. switch x clutch case cover	40	410	30
Oil TEMP. sensor x Differential (w/2-4 selector)	29	300	22
Drain plug	65	660	48
Filler plug	39	400	29

REAR:

Part tightened	N-m	kgf-cm	ft-lbf
Hub nut	110	1,150	83
Axle housing x Backing plate	68	700	50
Shock absorber x Spring seat			
2WD	26	260	19
4WD	71	730	53
Shock absorber x Frame			
2WD	26	260	19
4WD	71	730	53
U-bolt x Spring seat	120	1,250	90
Leaf spring hanger pin bolt x Frame	155	1,600	115
Shackle pin x Leaf spring	91	930	67
Shackle pin x Frame	91	930	67
Leaf spring center bolt	44	450	33
Spring bumper x Frame	2WD only	300	22
ABS speed sensor x Axle housing	8	82	71 in.-lbf
Differential (2RZ-FE)			
Differential carrier x Axle housing	25	250	18
Differential carrier x Bearing cap	85	870	63
Differential case x Ring gear	97	985	71
Adjusting nut lock x Bearing cap	13	130	9
Drain plug, Filler plug	49	500	36

Differential (3RZ—FE, 5VZ—FE w/Diff. lock)			
Differential carrier x Axle housing	25	250	18
Differential carrier x Bearing cap	78	800	58
Differential case x Ring gear	97	985	71
Adjusting nut lock x Bearing cap	13	130	9
Differential RH case x Differential LH case	47	480	35
Differential carrier x Diff. lock indicator swith	40	410	31
Differential carrier x Shaft retainer	24	240	17
Differential carrier x Screw plug	22	220	16
Differential carrier x Acuator	26	270	20
Drain plug, Filler plug	49	500	36
Differential (3RZ—FE, 5VZ—FE w/o Diff. lock)			
Differential carrier x Axle housing	73	740	54
Differential carrier x Bearing cap	113	1,150	83
Differential case x Ring gear	125	1,270	92
Drain plug, Filler plug	49	500	36