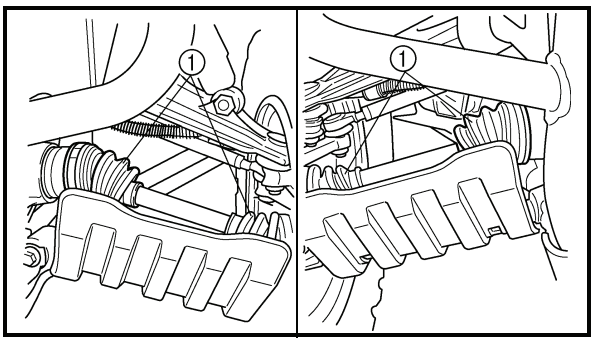
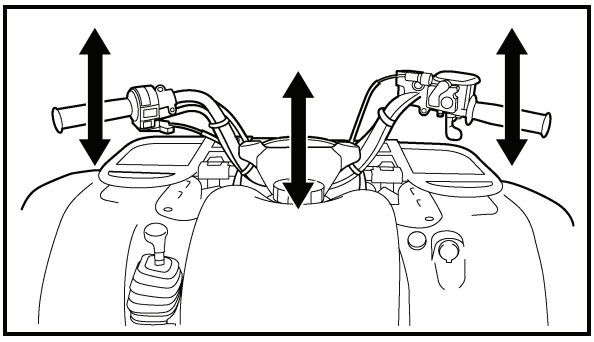


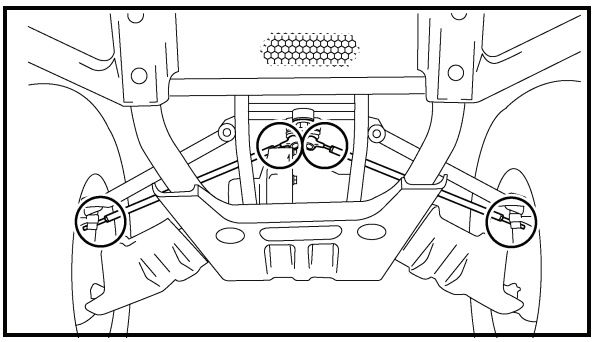
CHECKING THE CONSTANT VELOCITY JOINT DUST BOOT

1.Check:
- Dust boots ①
  Damage → Replace.
  Refer to "FRONT CONSTANT VELOCITY JOINTS AND DIFFERENTIAL GEAR" in CHAPTER 7.

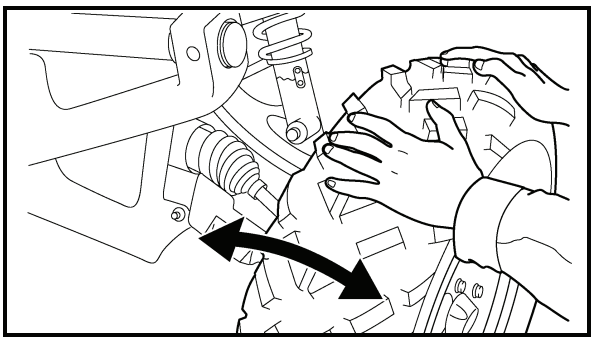


CHECKING THE STEERING SYSTEM

1.Place the machine on a level surface.
2.Check:
- Steering assembly bushings
  Move the handlebar up and down, and/or back and forth.
  Excessive play → Replace the steering stem bushings.



3.Check:
- Tie-rod ends
  Turn the handlebar to the left and/or right until it stops completely, then move the handlebar from the left to the right slightly. Tie-rod end has any vertical play → Replace the tie-rod end(s).



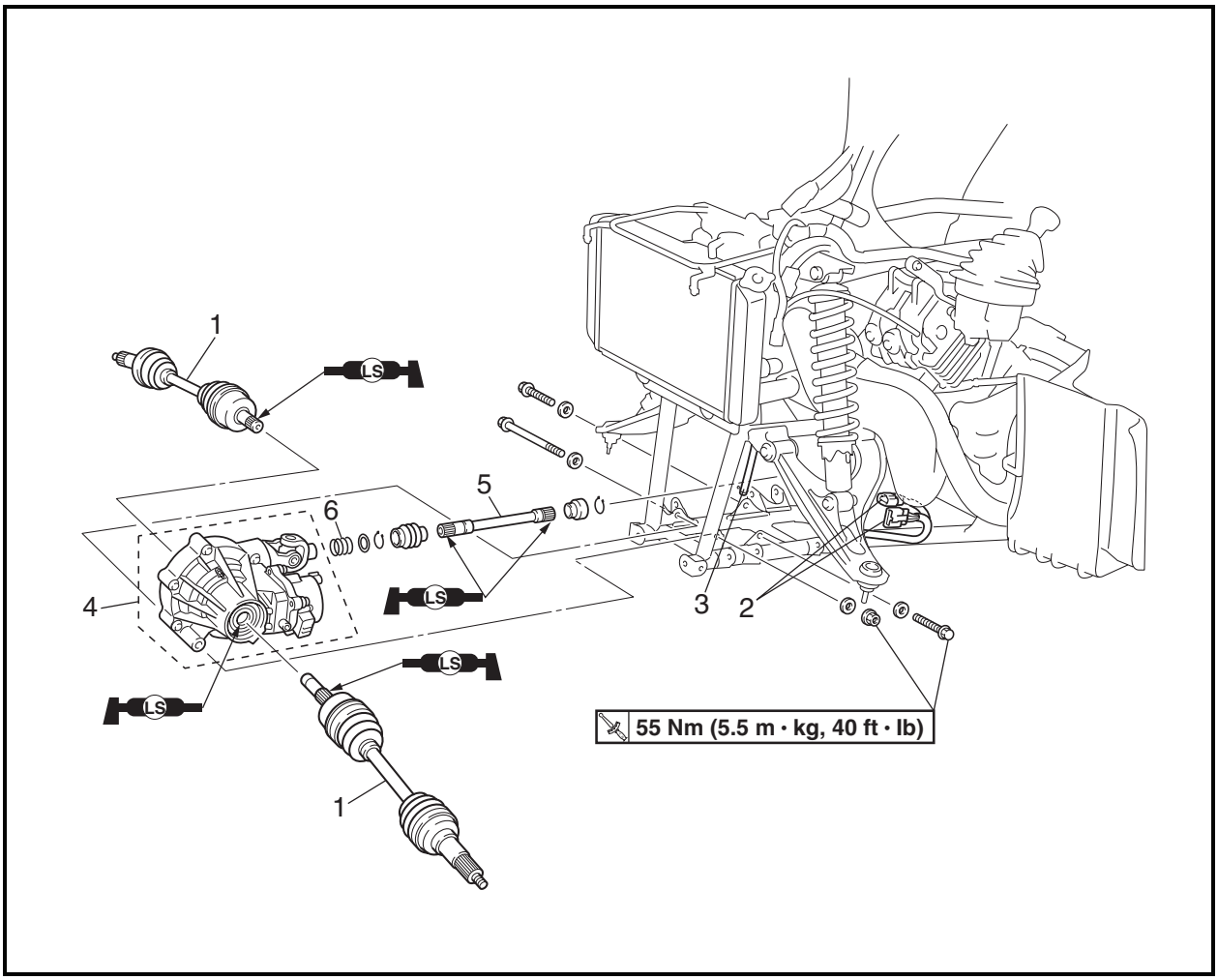
4.Raise the front end of the machine so that there is no weight on the front wheels.
5.Check:
- Ball joints and/or wheel bearings
  Move the wheels laterally back and forth.
  Excessive free play → Replace the front arms (upper and lower) and/or wheel bearings.

ADJUSTING THE TOE-IN

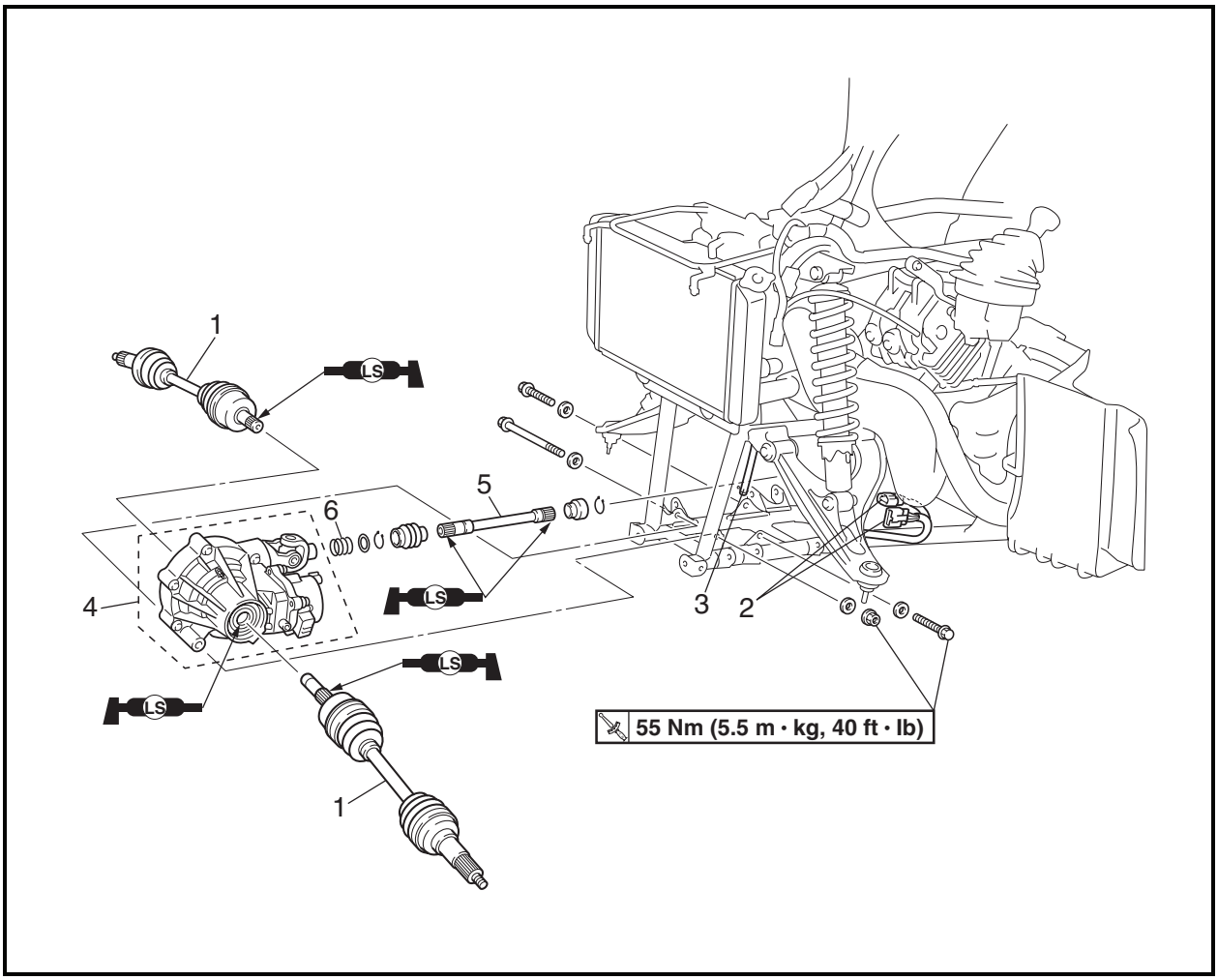
1.Place the machine on a level surface.
2.Measure:
- Toe-in
  Out of specification → Adjust.

Toe-in:
0 ~ 10 mm (0.00 ~ 0.39 in)
(with tire touching the ground)

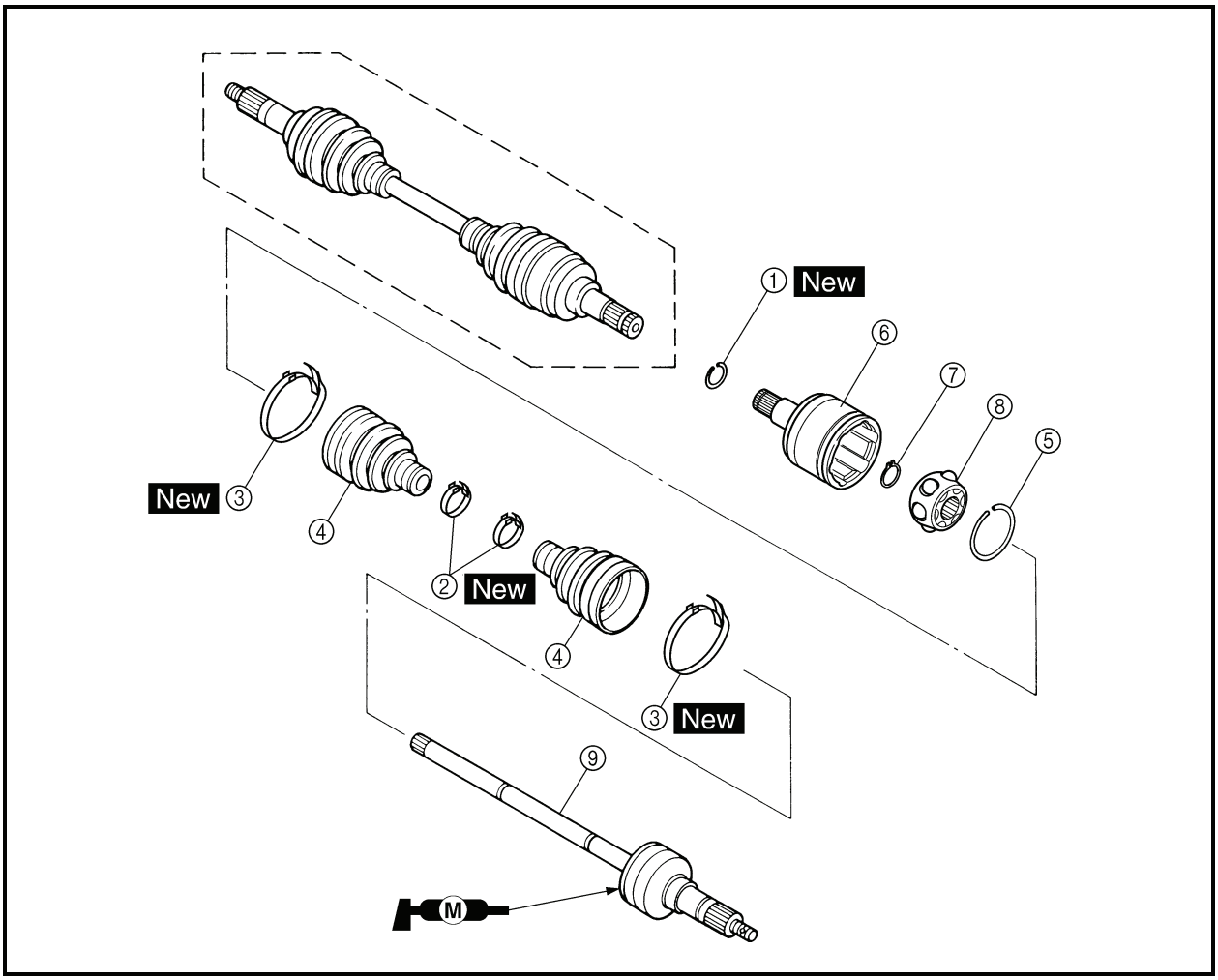
FRONT CONSTANT VELOCITY JOINTS AND DIFFERENTIAL GEAR



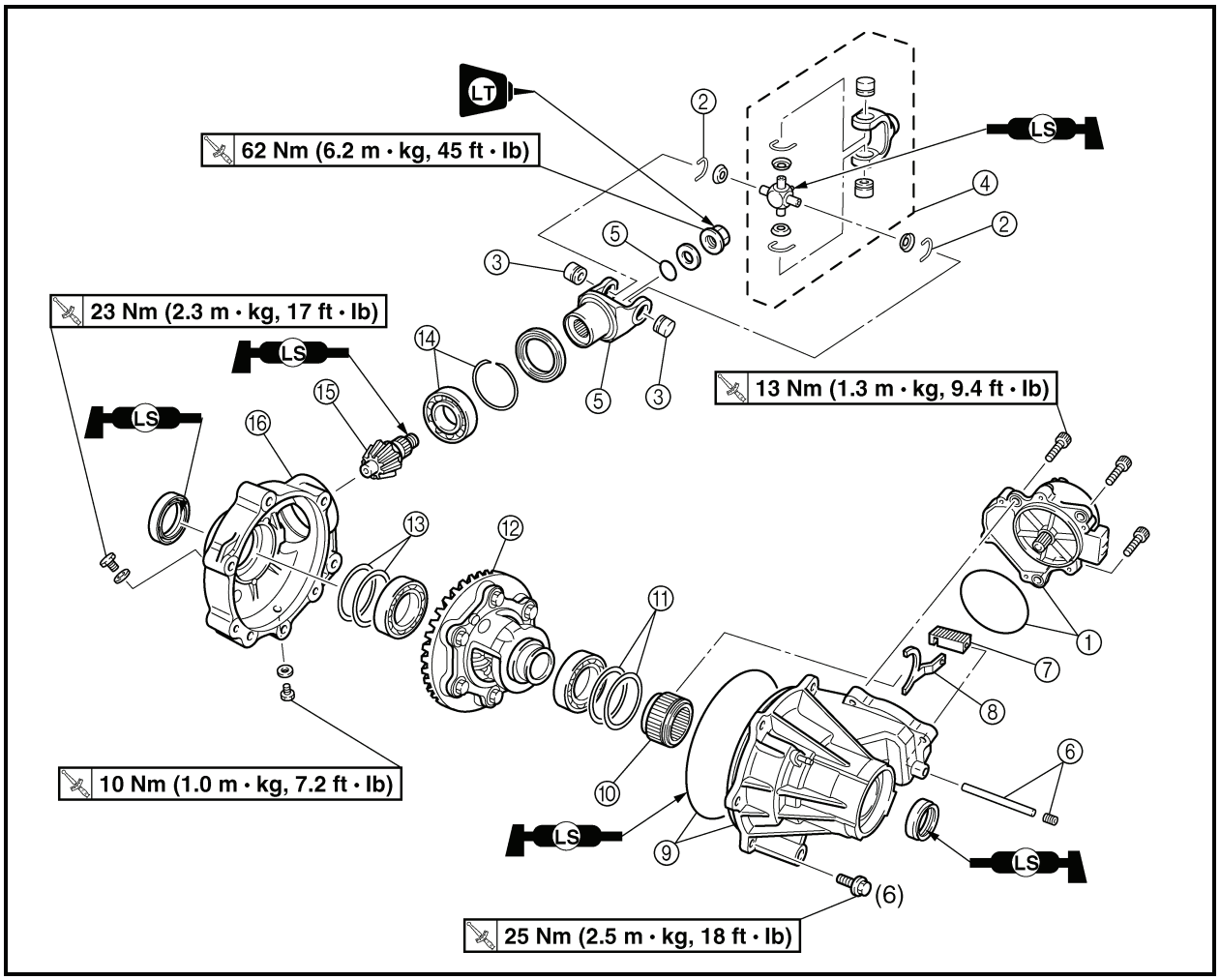
Order	Job name/Part name	Q'ty	Remarks
	Removing the front constant velocity joint and differential gear		Remove the parts in the order below.
	Engine skid plate (front)		Refer to "SEAT, CARRIERS, FENDERS AND FUEL TANK" in CHAPTER 3.
	Front fender		
	Differential gear oil		Drain.
	Steering knuckle		Refer to "STEERING SYSTEM" in CHAPTER 8.
	Front arms (lower)		Refer to "FRONT ARMS AND FRONT SHOCK ABSORBER" in CHAPTER 8.
	Brake master cylinder cover		Refer to "FRONT AND REAR BRAKES" in CHAPTER 8.
1	Constant velocity joint	2	
2	Gear motor coupler/on-command four-wheel drive switch and differential gear lock switch coupler	1/1	Disconnect.
3	Differential gear case breather hose	1	Disconnect.



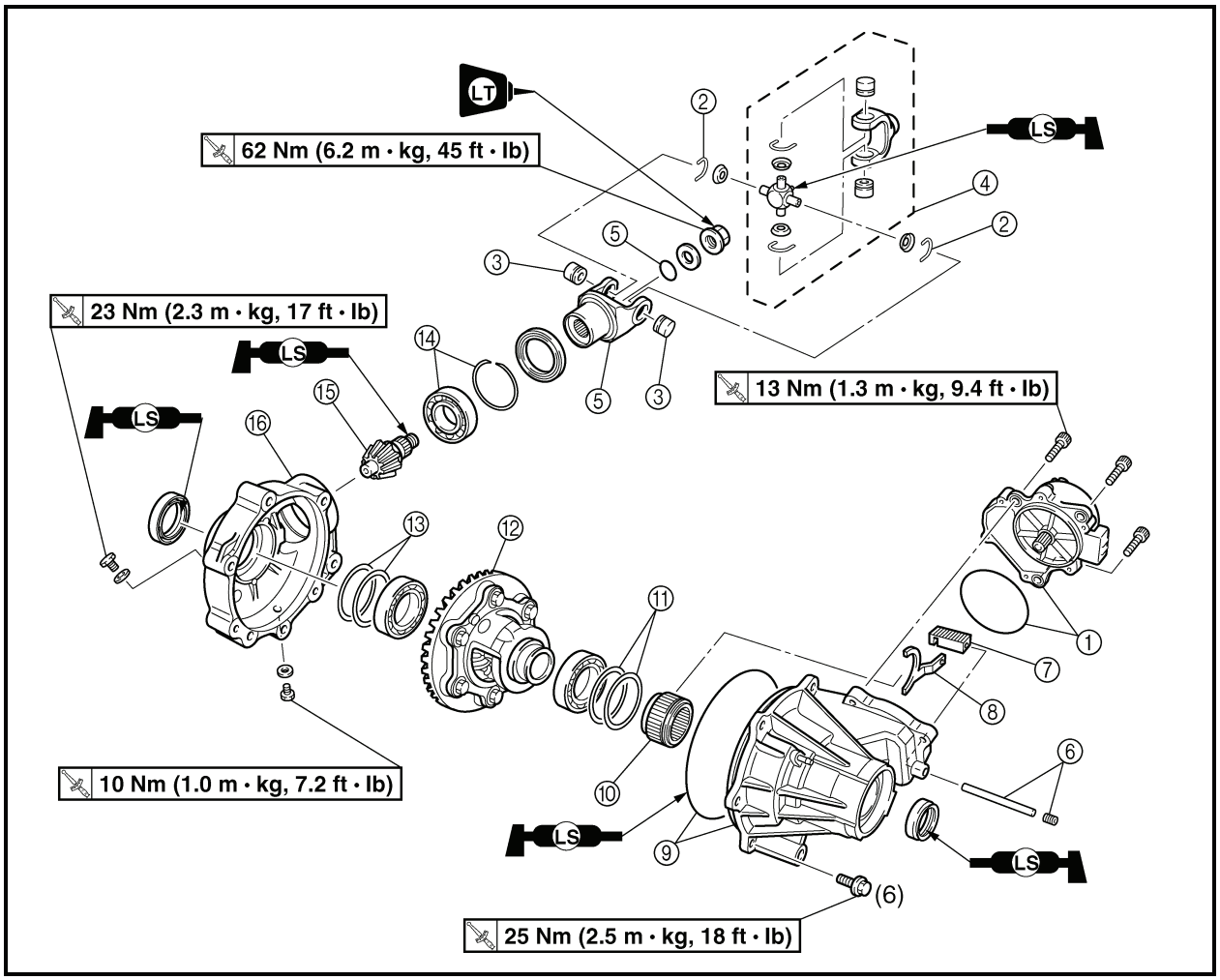
Order	Job name/Part name	Q'ty	Remarks
4	Differential gear	1	
5	Drive shaft	1	
6	Compression spring	1	
			For installation, reverse the removal procedure.



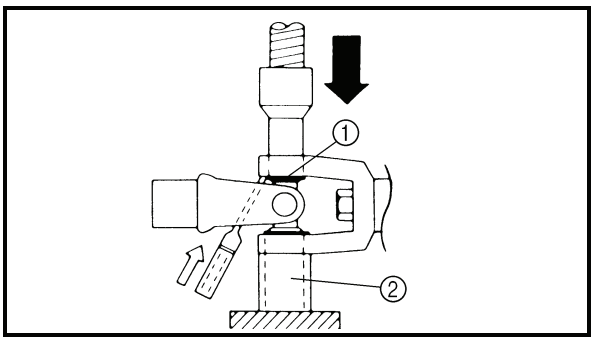
Order	Job name/Part name	Q'ty	Remarks
	Disassembling the constant velocity joint		Remove the parts in the order below.
①	Circlip	1	
②	Boot band	2	
③	Boot band	2	
④	Dust boot	2	
⑤	Circlip	1	Refer to "ASSEMBLING THE FRONT CONSTANT VELOCITY JOINT"
⑥	Double off-set joint	1	
⑦	Snap ring	1	
⑧	Ball bearing	1	
⑨	Joint shaft assembly	1	
			For assembly, reverse the disassembly procedure.

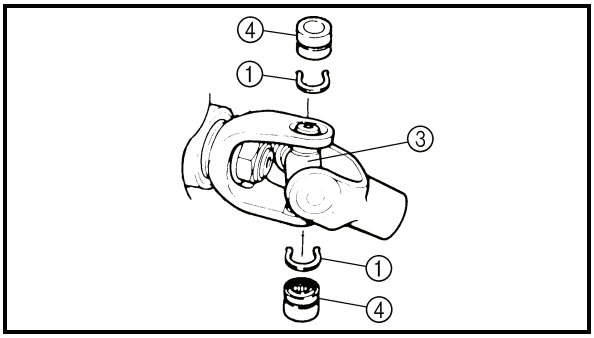


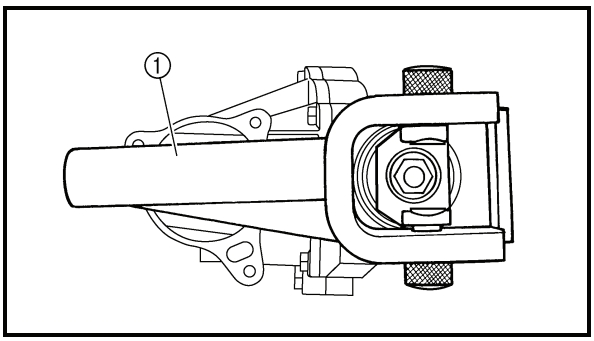
Order	Job name/Part name	Q'ty	Remarks
	Disassembling the differential gear		Remove the parts in the order below.
①	Gear motor/O-ring	1/1	**NOTE:** Be sure not to disassemble gear motor and remove the pinion gear.
②	Circlip	2	Refer to "DISASSEMBLING AND ASSEMBLING THE UNIVERSAL JOINT".
③	Bearing	2	
④	Universal joint	1	
⑤	Universal joint yoke/O-ring	1/1	
⑥	Stopper bolt/shaft	1/1	
⑦	Shift fork sliding gear	1	
⑧	Shift fork	1	
⑨	Differential gear case cover	1	
⑩	Drive clutch	1	
⑪	Shim (left)		



Order	Job name/Part name	Q'ty	Remarks
⑫	Differential gear assembly	1	
⑬	Shim (right)	1	
⑭	Circlip/bearing	1/1	
⑮	Drive pinion gear	1	
⑯	Differential gear case	1	
			For assembly, reverse the disassembly procedure.







DISASSEMBLING THE UNIVERSAL JOINT

1.Remove:
- Universal joint

****

Removal steps:
- Remove the circlips ①.
- Place the U-joint in a press.
- With a suitable diameter pipe ② beneath the yoke ③, press the bearing ④ into the pipe as shown.

NOTE:
It may be necessary to lightly tap the yoke with a punch.

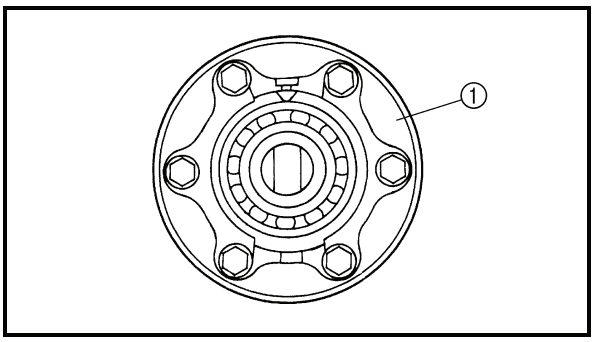
- Repeat the steps for the opposite bearing.
- Remove the yoke.

NOTE:
it may be necessary to lightly tap the yoke with a punch.

****

2.Remove:
- Universal joint yoke
  Use a universal joint holder ①.

	**Universal joint holder: P/N. YM-04062, 90890-04062**



REMOVING THE RING GEAR

1.Remove:
- Ring gear ①

NOTE:

The ring gear and the differential gear cover should be fastened together. Do not disassemble the differential gear.

CAUTION:

The differential gears are assembled into a proper unit at the factory by means of specialized equipment. Do not attempt to disassemble this unit. Disassembly will result in the malfunction of the unit.

CHECKING THE CONSTANT VELOCITY JOINT

1.Check:
- Double off-set joint spline
- Ball joint spline
- Shaft spline
  Wear/damage → Replace.

2.Check:
- Dust boots
  Cracks/damage → Replace.

CAUTION:

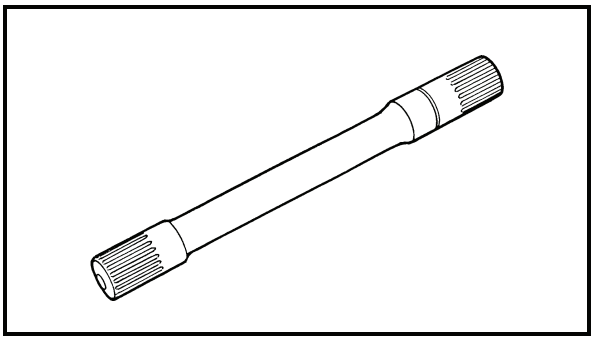
Always use a new boot band.

3.Check:
- Balls and ball races
- Inner surface of double off-set joint
  Pitting/wear/damage → Replace.

CHECKING THE DIFFERENTIAL GEAR

1.Check:
- Gear teeth
  Pitting/galling/wear → Replace drive pinion gear and ring gear as a set.
- Bearing
  Pitting/damage → Replace.
- Oil seal
- O-ring
  Damage → Replace.

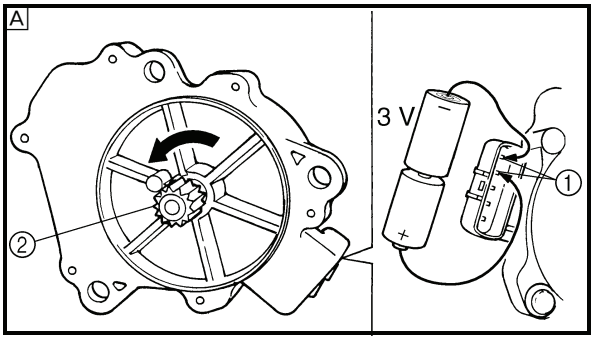
2.Check:
- Drive shaft splines
- Universal joints
- Front drive gear splines
  Wear/damage → Replace.
- Spring
  Fatigue → Replace.
  Move the spring up and down.

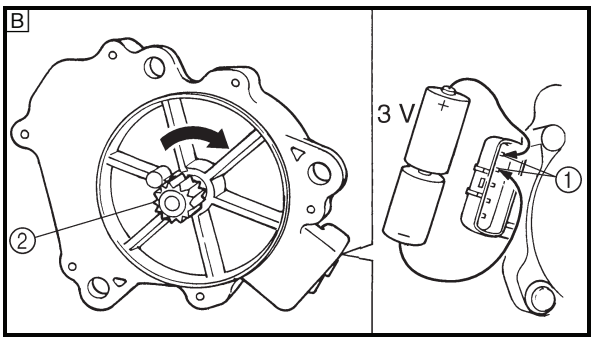


3.Check:
- Front drive shaft
  Bends → Replace.

⚠ WARNING

Do not attempt to straighten a bent shaft; this may dangerously weaken the shaft.





CHECKING THE GEAR MOTOR

1.Check:
- Gear motor

****

Checking steps:

- Connect two C size batteries to the gear motor terminals ①. (as shown illustration)

CAUTION:

Do not use a 12 V battery to operate the pinion gear.

Ⓐ Check that the pinion gear ② turns counter-clockwise.
Ⓑ Check that the pinion gear ② turns clockwise.

NOTE:

Be sure not to disassemble gear motor and remove the pinion gear.

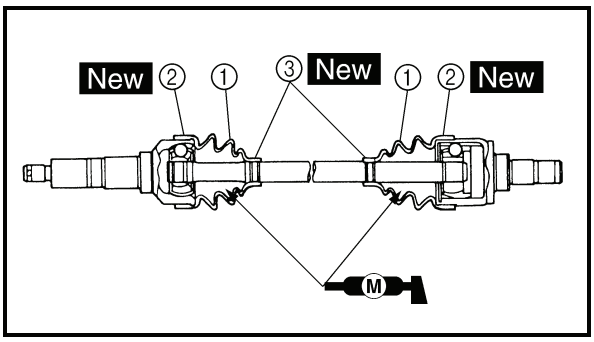
****

ASSEMBLING THE FRONT CONSTANT VELOCITY JOINT

1.Apply:
- Molybdenum disulfide grease
  (into the ball joint assembly)

NOTE:

Molybdenum disulfide grease is included in the repair kit.



2.Install:
- Dust boots ①
- Boot bands ②, ③ New

****

Installation steps:

- Apply molybdenum disulfide grease into the dust boots.

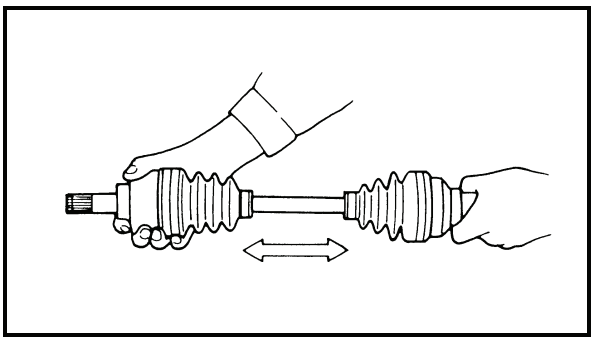
	Molybdenum disulfide grease: 40 g (1.4 oz) per dust boot

- Install the dust boots.
- Install the dust boot bands.

NOTE:

- The new boot bands may differ from the original ones.
- The dust boots should be fastened with the boot bands ③ at the grooves in the joint shaft.

****

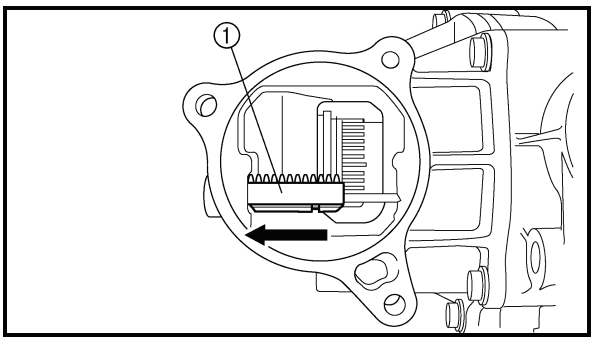


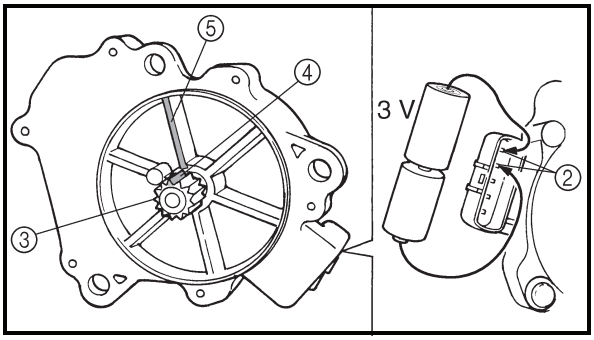
3.Check:
- Free play (thrust movement)
  Excessive play → Replace the joint assembly.

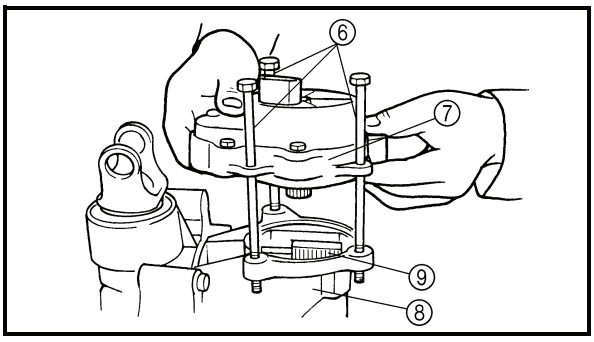
ASSEMBLING THE DIFFERENTIAL GEAR

1.Measure:
- Gear lash
  Refer to “MEASURING AND ADJUSTING THE DIFFERENTIAL GEAR LASH”.

2.Install:
- Gear motor







****

Installation steps:

- Slide the shift fork sliding gear ①, which is installed to the differential gear, to the left to put it into the 2WD mode.
- Connect two C size batteries to the gear motor terminal ② to operate the pinion gear ③, and operate it until the paint mark ④ on the gear is aligned with the paint mark ⑤ on the gear motor case.

CAUTION:

Do not use a 12 V battery to operate the pinion gear.

- Insert 8 mm bolts ⑥ into the gear motor ⑦ and use them as a guide to set the motor on the differential gear assembly ⑧ so that the shift fork sliding gear ⑨ does not move.

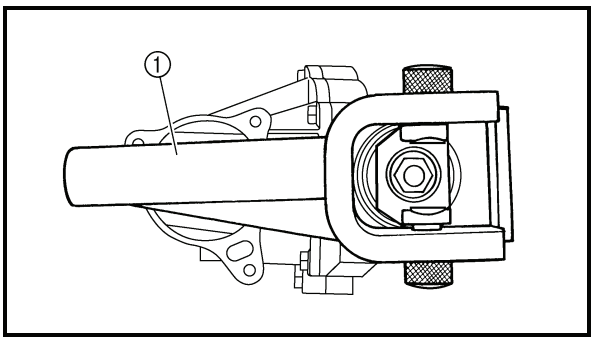
CAUTION:

If the position of the shift fork sliding gear is moved, the position of the differential gear and the indicator light display may differ, and the 2WD or differential lock mode may not be activated.

- Remove the 8 mm bolts, and then install the motor with the gear motor bolts.

	Bolts (gear motor) **13 Nm (1.3 m • kg, 9.4 ft • lb)**

****

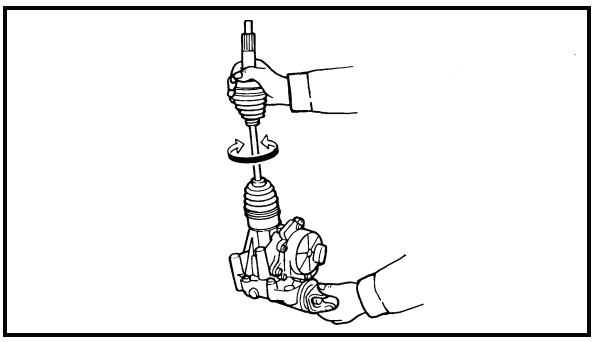


3.Install:

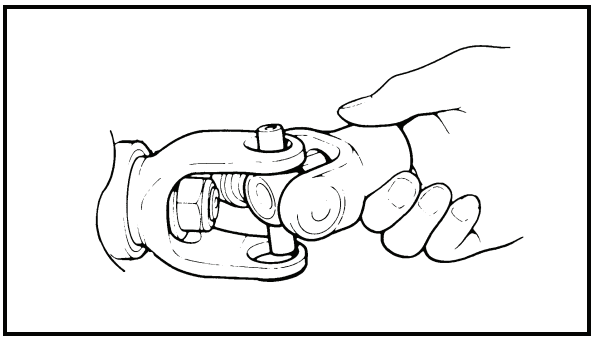
- Universal joint yoke
- O-ring
- Washer
- Nut LT **62 Nm (6.2 m • kg, 45 ft • lb)**

  Use a universal joint holder ①.

	Universal joint holder: **P/N. YM-04062, 90890-04062**



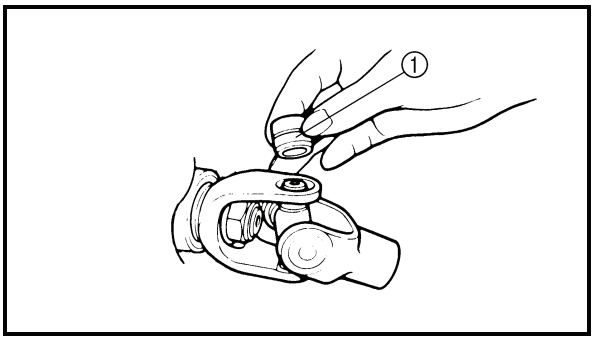
4.Check:
- Differential gear operation
  Unsmooth operation → Replace the differential gear assembly.
  Insert the double off-set joint into the differential gear, and turn the gear back and forth.



INSTALLING THE UNIVERSAL JOINT
1.Install:
- Universal joint

****

Installation steps:
- Install the opposite yoke into the U-joint.
- Apply wheel bearing grease to the bearings.
- Install the bearing ① onto the yoke.



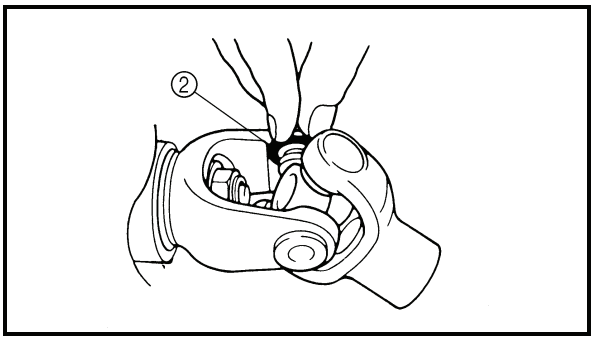
CAUTION:

Check each bearing. The needles can easily fall out of their races. Slide the yoke back and forth on the bearings; the yoke will not go all the way onto a bearing if a needle is out of plate.

- Press each bearing into the U-joint using a suitable socket.

NOTE:

The bearing must be inserted far enough into the U-joint so that the circlip can be installed.



- Install the circlips ② into the groove of each bearing.

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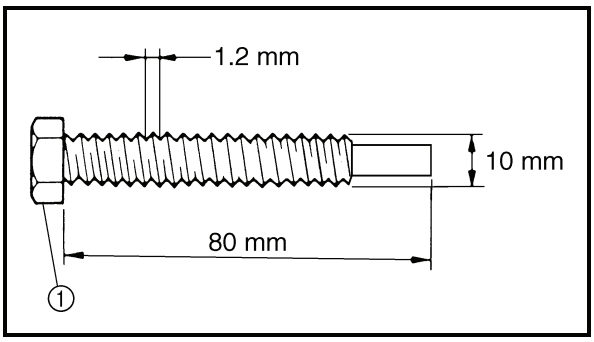
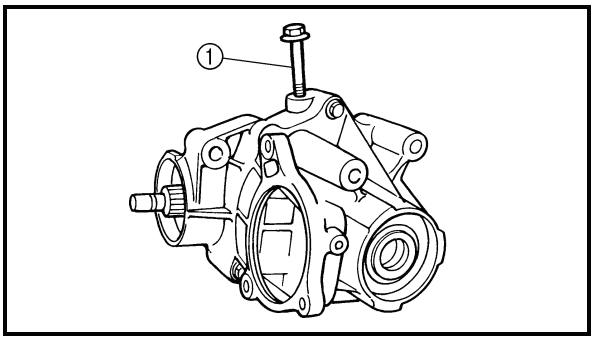
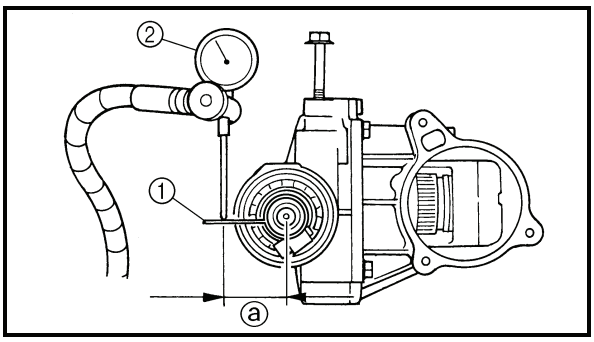






MEASURING AND ADJUSTING THE DIFFERENTIAL GEAR LASH

Measuring the differential gear lash

1.Secure the gear case in a vise or another supporting device.

2.Remove:

- Drain plug
- Gasket

3.Install:

- A bolt of the specified size ①
  (into the drain plug hole)

CAUTION:

Finger tighten the bolt until it holds the ring gear. Otherwise, the ring gear will be damaged.

4.Attach:

- Gear lash measurement tool ①
- Dial gauge ②

Gear lash measurement tool:
P/N. YM-01467, 90890-01467

ⓐ Measuring point is 21 mm (0.83 in)

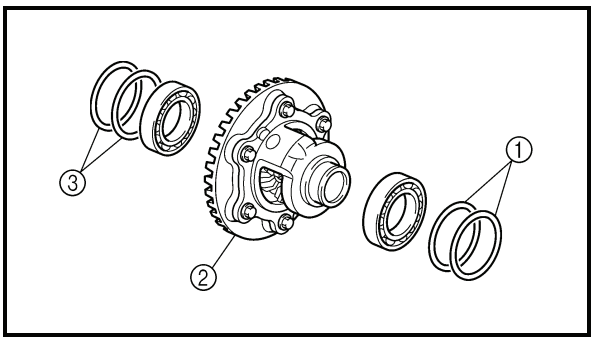
5.Measure:

- Gear lash
  Gently rotate the gear coupling from engagement to engagement.

Differential gear lash:
0.05 ~ 0.25 mm
(0.0020 ~ 0.0098 in)

NOTE:

Measure the gear lash at four positions. Rotate the shaft 90° each time.



Adjusting differential gear lash

1.Remove:
- Shim(s) (left) ①
- Differential gear assembly ②
- Shim(s) (right) ③

2.Adjust:
- Gear lash

****

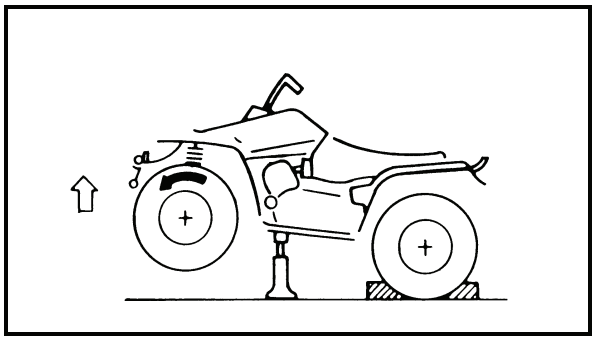
Adjustment steps:

- Select the suitable shims using the following chart.

Too little gear lash	**Reduce shim thickness.**
Too large gear lash	**Increase shim thickness.**

- If it is necessary to increase by more than 0.05 mm (0.002 in):
  Reduce right shim thickness by 0.1 mm (0.004 in) for every 0.1 mm (0.004 in) of left shim increase.
- If it is necessary to reduce by more than 0.1 mm (0.004 in):
  Increase right shim thickness by 0.1 mm (0.004 in) for every 0.1 mm of left shim decreased.

	Ring gear shim (left and right)	
Thickness (mm)	**0.1** **0.2** **0.3** **0.4** **0.5**	**1.0** **1.5** **2.0** **2.5**



CHECKING THE DIFFERENTIAL GEAR OPERATION

1. Block the rear wheels, and elevate the front wheels by placing a suitable stand under the frame.
2. Remove the wheel cap and cotter pin from the axle nut (right or left).
3. Measure the starting torque of the front wheel (i.e., differential gear preload) with the torque wrench.

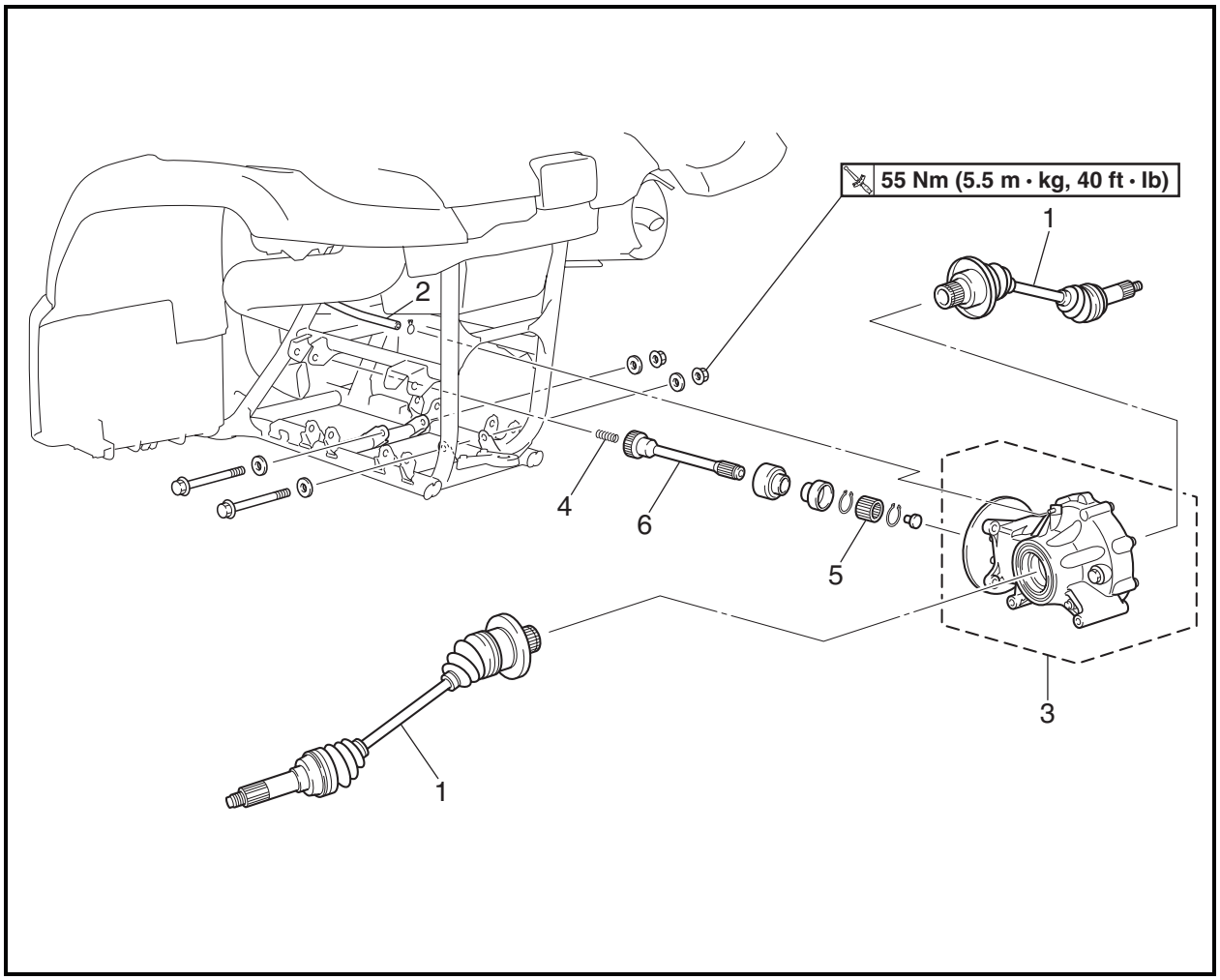
NOTE:

- Repeat this step several times to obtain an average figure.
- During this test, the other front wheel will turn in the opposite direction.

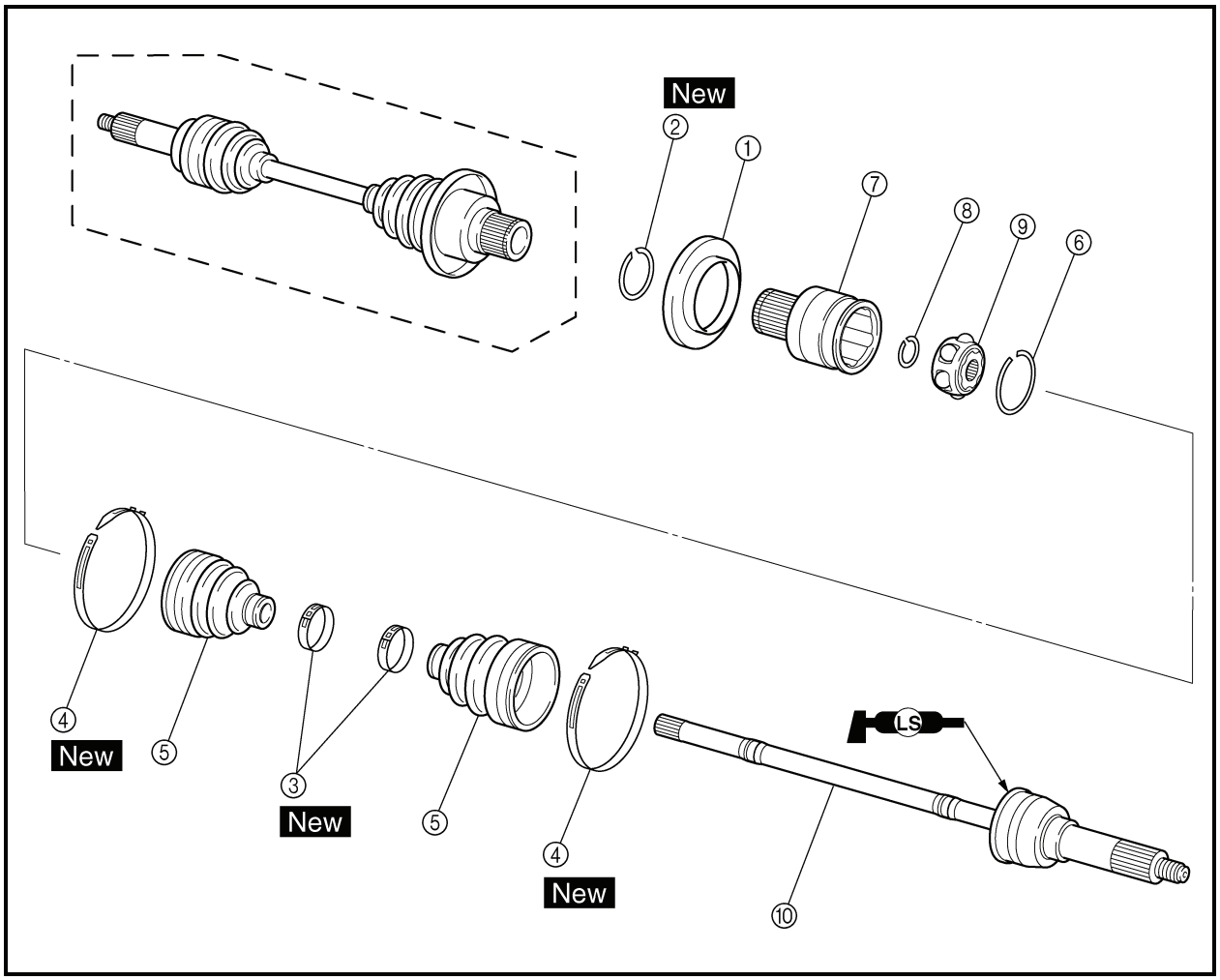
Front wheel starting torque:
(differential gear preload):
New unit:
17 ~ 25 Nm
(1.7 ~ 2.5 m • kg, 12 ~ 18 ft • lb)
Minimum:
10 Nm (1.0 m • kg, 7.2 ft • lb)

4. Out of specification → Replace the differential gear assembly.
5. Within specification → Install the new cotter pin and wheel cap.

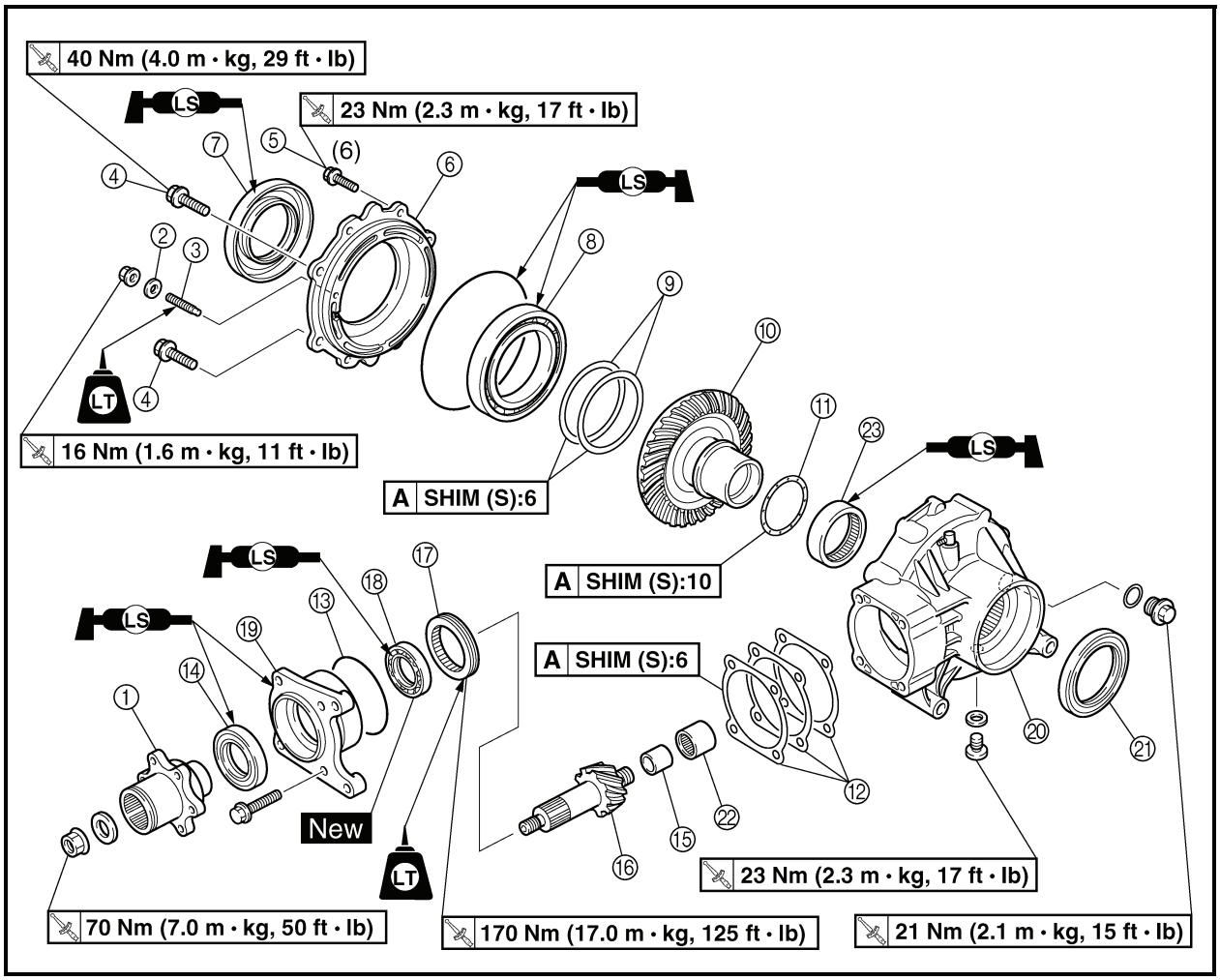
REAR CONSTANT VELOCITY JOINT/FINAL DRIVE GEAR AND DRIVE SHAFT



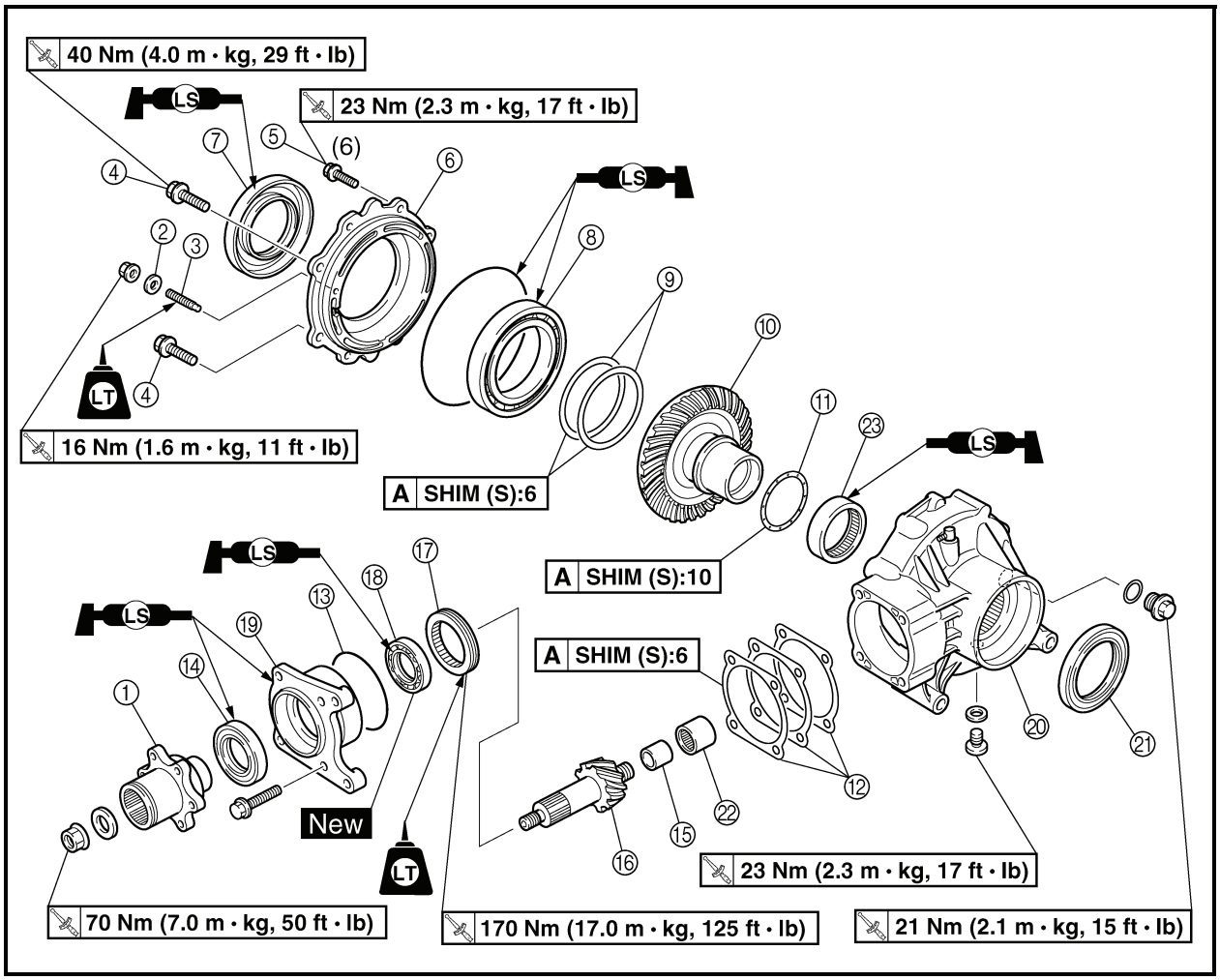
Order	Job name/Part name	Q'ty	Remarks
	Removing the rear constant velocity joint, final drive gear assembly and drive shaft		Remove the parts in the order below.
	Final gear oil		Drain.
	Rear arm (lower)		Refer to "REAR ARMS AND REAR SHOCK ABSORBER" in CHAPTER 8.
	Brake caliper assembly		Refer to "REAR BRAKE CALIPER" in CHAPTER 8.
1	Rear constant velocity joint	2	
2	Final drive gear case breather hose	1	Disconnect.
3	Final drive gear assembly	1	
4	Compression spring	1	
5	Coupling gear	1	
6	Drive shaft	1	
			For installation, reverse the removal procedure.



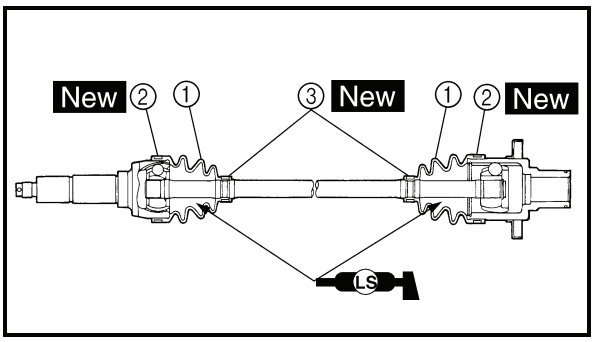
Order	Job name/Part name	Q'ty	Remarks
	Disassembling the rear constant velocity joint		Remove the parts in the order below.
①	Dust cover	1	
②	Circlip	1	
③	Boot band	2	
④	Boot band	2	
⑤	Dust boot	2	
⑥	Circlip	1	Refer to "CONSTANT VELOCITY JOINT ASSEMBLY".
⑦	Double off-set joint	1	
⑧	Snap ring	1	
⑨	Ball bearing	1	
⑩	Joint shaft assembly	1	
			For assembly, reverse the disassembly procedure.



Order	Job name/Part name	Q'ty	Remarks
	Disassembling the final drive gear		Remove the parts in the order below.
	Rear brake disc		Refer to "REAR WHEELS AND BRAKE DISC" in CHAPTER 8.
①	Boss	1	
②	Ring gear stopper shim	1	
③	Ring gear stopper	1	
④	Bolt	2	**NOTE:** Working in a crisscross pattern, loosen each bolt 1/4 of a turn. After all the bolts are loosened, remove them.
⑤	Bolt	6	
⑥	Ring gear bearing housing	1	
⑦	Oil seal	1	
⑧	Bearing	1	
⑨	Ring gear shim	1	
⑩	Ring gear	1	



Order	Job name/Part name	Q'ty	Remarks
⑪	Thrust washer	1	
⑫	Final drive pinion gear shim	1	
⑬	O-ring	1	
⑭	Oil seal	1	
⑮	Inner race	1	
⑯	Final drive pinion gear	1	Refer to "ASSEMBLING THE FINAL DRIVE GEAR".
⑰	Bearing retainer	1	
⑱	Bearing	1	
⑲	Pinion gear bearing housing	1	
⑳	Final drive gear case	1	
㉑	Oil seal	1	
㉒	Bearing	1	Refer to "REMOVING AND DISASSEMBLING THE FINAL DRIVE ROLLER BEARING".
㉓	Bearing	1	Refer to "REMOVING AND DISASSEMBLING THE FINAL DRIVE ROLLER BEARING". For assembly, reverse the disassembly procedure.



ASSEMBLING THE REAR CONSTANT VELOCITY JOINT

1.Apply:
- Lithium-soap base grease (into the ball joint assembly)

2.Install:
- Dust boots ①
- Boot bands ②, ③ New

****

Installation steps:

- Apply lithium-soap base grease into the dust boots.

Lithium-soap base grease:
50 g (1.8 oz) per dust boot (rear wheel side)
60 g (2.3 oz) per dust boot (final gear case side)

- Install the dust boots.
- Install the dust boot bands.

NOTE:
- The new boot bands may differ from the original ones.
- The dust boots should be fastened with the boot bands ③ at the grooves in the joint shaft.

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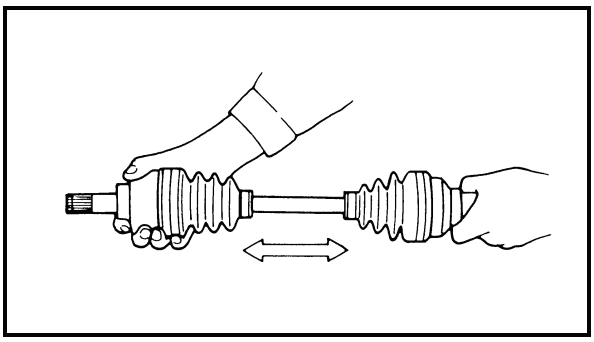

3.Check:
- Free play (thrust movement)
  Excessive play → Replace the joint assembly.