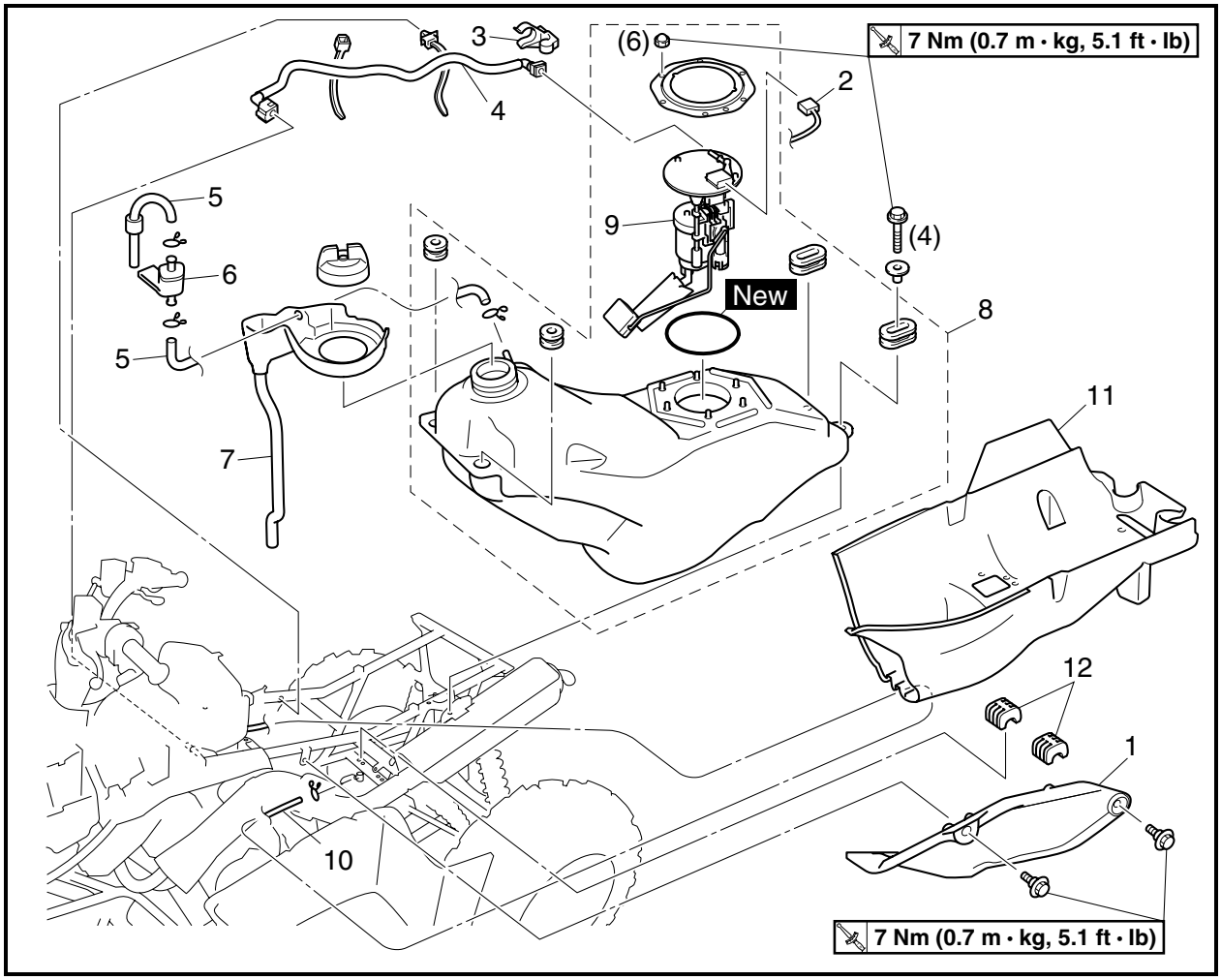
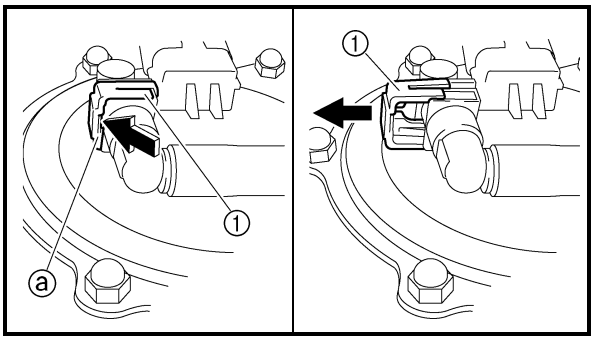
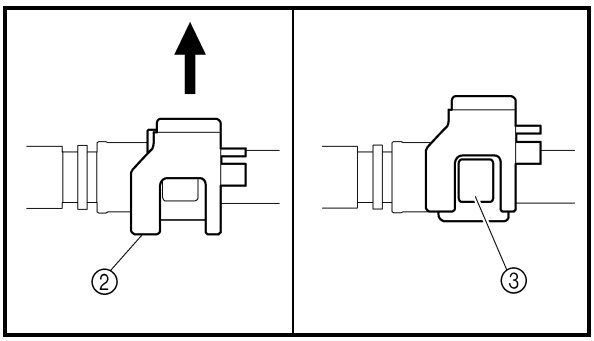


Order	Job/Part	Q'ty	Remarks
11	Fuel tank shield	1	
12	Damper	2	
			For installation, reverse the removal procedure.





REMOVING THE FUEL TANK

1. Extract the fuel in the fuel tank through the fuel tank cap with a pump.
2. Remove:
   - fuel hose connector holder
   - fuel hose

CAUTION:

- **Be sure to disconnect the fuel hose by hand. Do not forcefully disconnect the hose with tools.**
- **Although the fuel has been removed from the fuel tank be careful when removing the fuel hose, since there may be fuel remaining in it.**

NOTE:

- When removing the fuel hose from the fuel pump, remove the fuel hose connector holder first, and next, insert a slotted head screwdriver etc. in the slot part ⓐ of the fuel hose connector cover ①, then slide it in the direction of the arrow, and remove the fuel hose.
- To remove the fuel hose from the throttle body, slide the fuel hose connector cover ② on the end of the hose in direction of the arrow shown, press the two buttons ③ on the sides of the connector, and then remove the hose.
- Before removing the hose, place a few rags in the area under where it will be removed.

3. Remove:
   - fuel tank

NOTE:

Do not set the fuel tank down on the installation surface of the fuel pump. Be sure to lean the fuel tank against a wall or like.

REMOVING THE FUEL PUMP

1. Remove:
   - fuel pump bracket
   - fuel pump
   - fuel pump gasket

CAUTION:

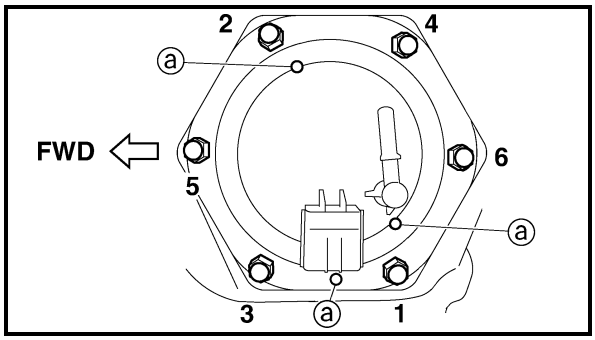
- **Do not drop the fuel pump or give it a strong shock.**
- **Do not touch the base section of the fuel sender.**

CHECKING THE FUEL PUMP BODY

1. Check:
   - fuel pump body
     Obstruction → Clean.
     Cracks/damage → Replace the fuel pump assembly.

CHECKING THE ROLLOVER VALVE

1. Check:
   - rollover valve
     Damage/faulty → Replace.



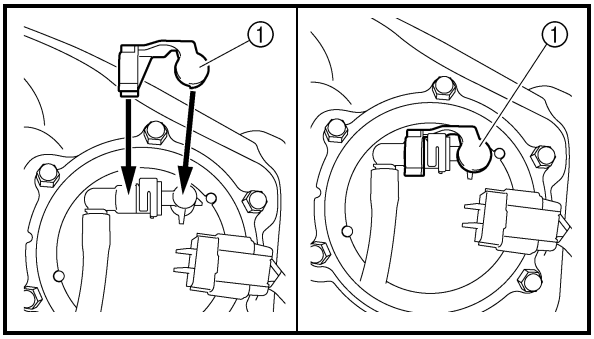
INSTALLING THE FUEL PUMP

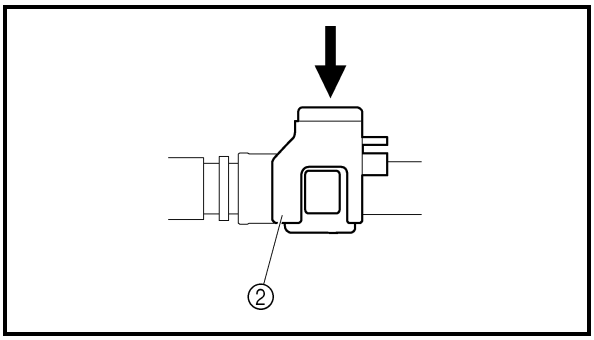
1. Install:
   - fuel pump gasket New
   - fuel pump
   - fuel pump bracket

7 Nm (0.7 m · kg, 5.1 ft · lb)

NOTE:

- Do not damage the installation surface of the fuel tank when installing the fuel pump.
- Always use a new fuel pump gasket.
- Install the fuel pump in the direction shown in the illustration.
- Install the fuel pump bracket by aligning the projection ⓐ on the fuel pump with the projection on the fuel tank.
- Tighten the nuts to the specified torque in the proper tightening sequence as shown.





INSTALLING THE FUEL HOSE

1. Install:
   - fuel hose
   - fuel hose connector holder ①
   - fuel pump coupler

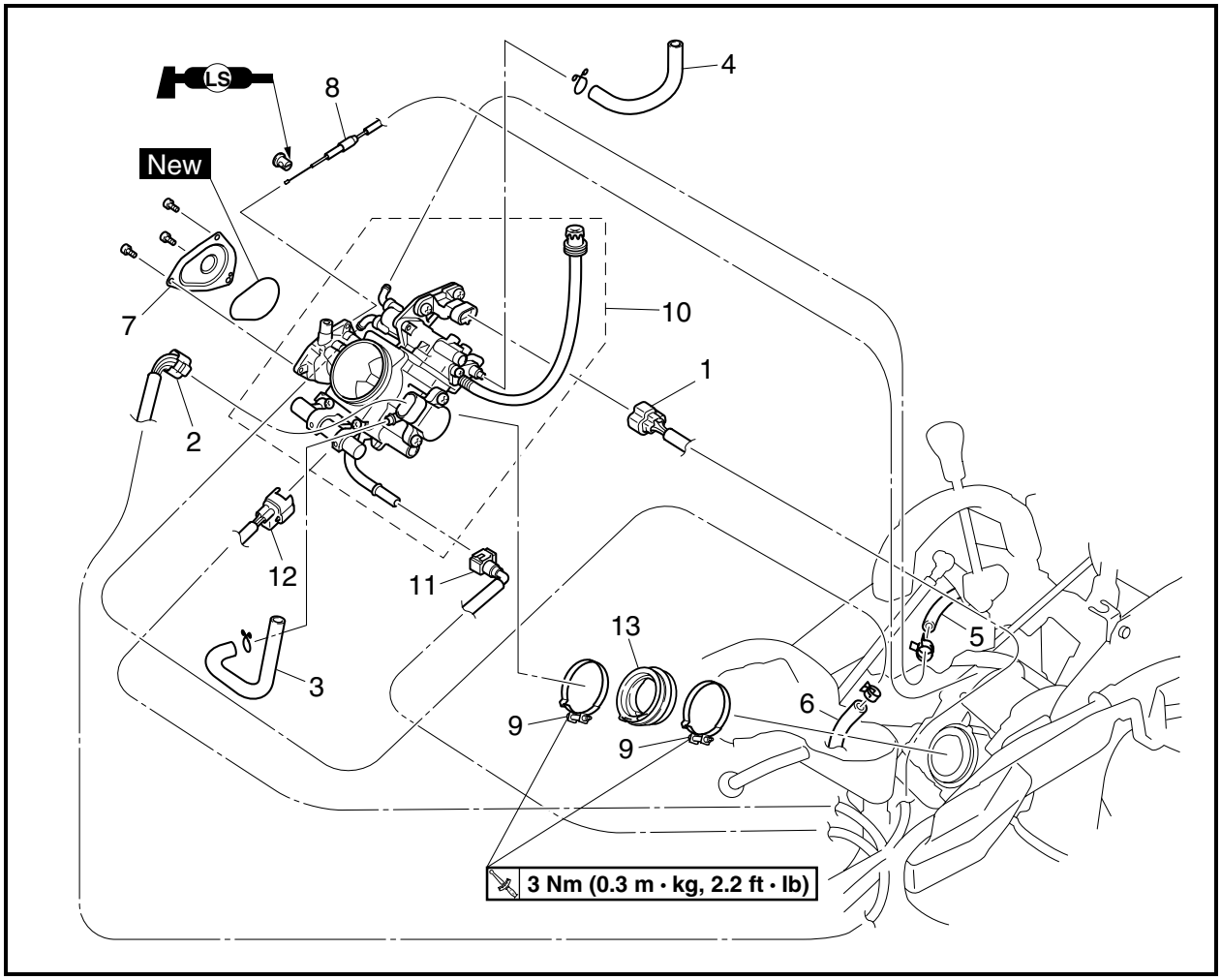
CAUTION:

When installing the fuel hose, make sure that it is securely connected, and that the fuel hose holder is in the correct position, otherwise the fuel hose will not be properly installed.

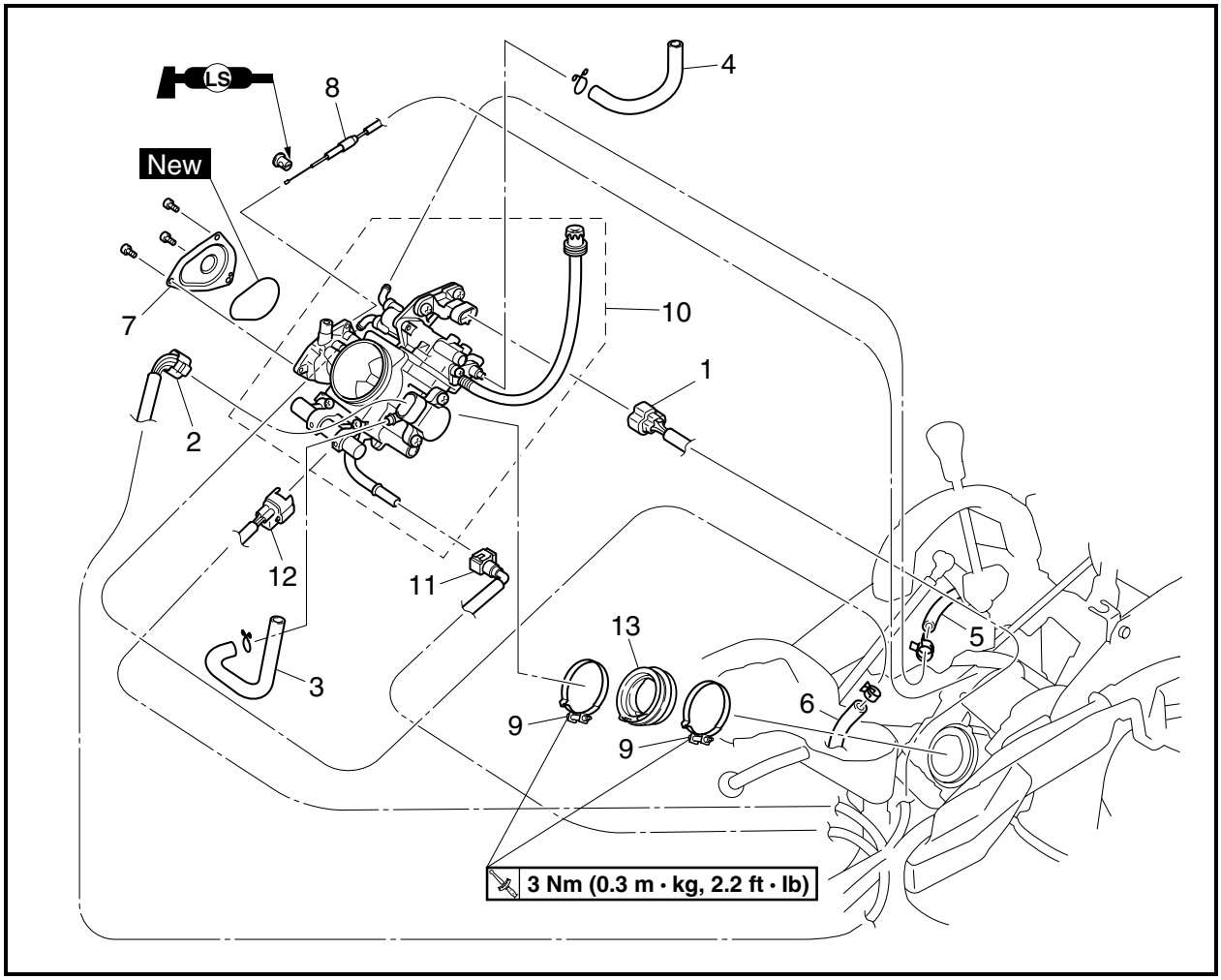
NOTE:

- Install the fuel hose connector holder ① securely onto the fuel pump until a distinct "click" is heard, and then make sure that it does not come loose.
- To install the fuel hose onto the throttle body, slide the fuel hose connector cover ② on the end of the hose in direction of the arrow shown.

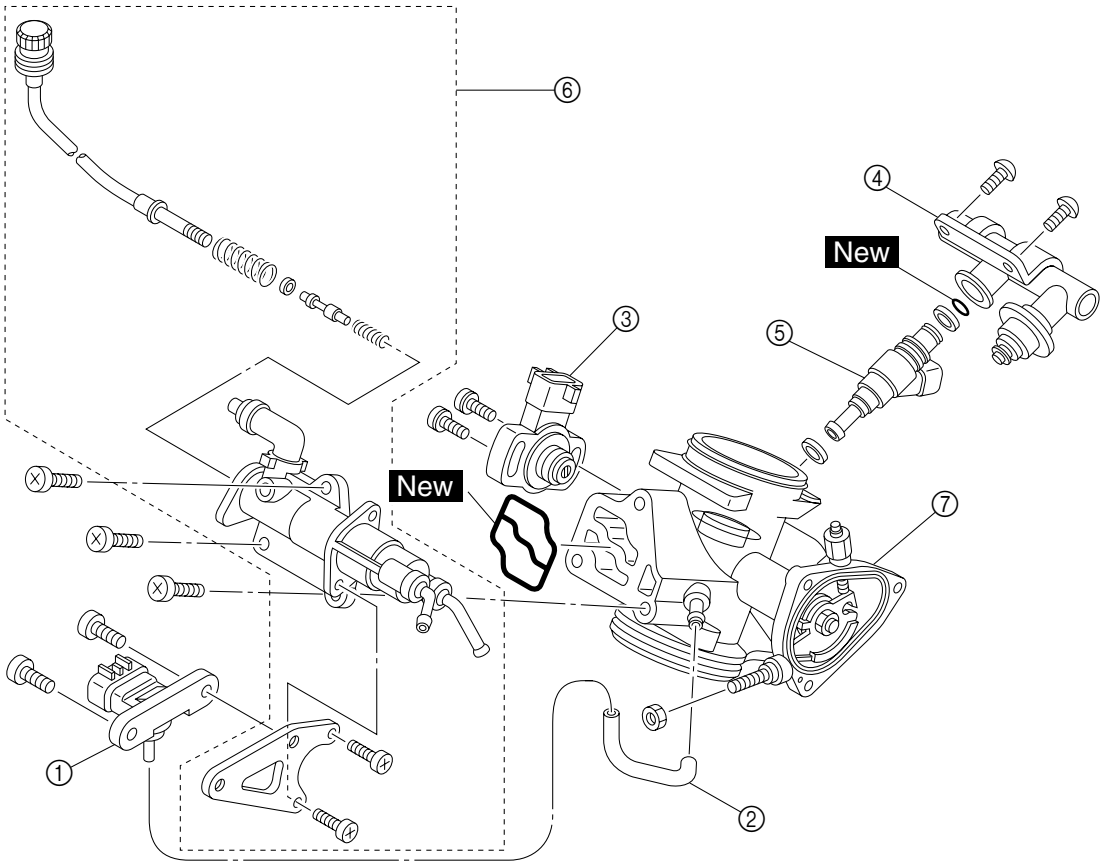
EAS00909
THROTTLE BODY



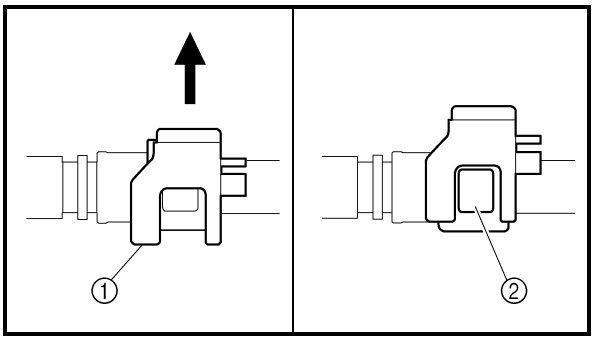
Order	Job/Part	Q'ty	Remarks
	Removing the throttle body		Remove the parts in the order listed.
	Air filter case		Refer to "AIR FILTER CASE" in chapter 3.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
1	Intake air pressure sensor coupler	1	Disconnect.
2	Throttle position sensor coupler	1	Disconnect.
3	Breather hose (air filter case to throttle body)	1	
4	Breather hose (air filter case to fast idle plunger unit)	1	
5	Fast idle plunger outlet hose	1	Disconnect.
6	Fast idle plunger inlet hose	1	Disconnect.
7	Throttle cable housing cover	1	
8	Throttle cable	1	Disconnect.



Order	Job/Part	Q'ty	Remarks
9	Throttle body joint clamp screw	2	Loosen. Refer to "INSTALLING THE THROTTLE BODY ASSEMBLY".
10	Throttle body assembly	1	
11	Fuel hose	1	Disconnect. Refer to "REMOVING THE THROTTLE BODY ASSEMBLY" and "INSTALLING THE THROTTLE BODY ASSEMBLY".
12	Fuel injector coupler	1	Disconnect.
13	Throttle body joint	1	Refer to "INSTALLING THE THROTTLE BODY ASSEMBLY". For installation, reverse the removal procedure.



Order	Job/Part	Q'ty	Remarks
	Disassembling the throttle body assembly		Remove the parts in the order listed.
①	Intake air pressure sensor	1	
②	Intake air pressure sensor hose	1	
③	Throttle position sensor	1	
④	Injector fuel rail	1	
⑤	Fuel injector	1	
⑥	Fast idle plunger unit	1	
⑦	Throttle body	1	**CAUTION:** **The throttle body should not be disassembled.** For assembly, reverse the disassembly procedure.



REMOVING THE THROTTLE BODY ASSEMBLY

1. Disconnect:
   - fuel hose

CAUTION:

- **Be sure to disconnect the fuel hose by hand. Do not forcefully disconnect the hose with tools.**
- **Although the fuel has been removed from the fuel tank be careful when disconnecting the fuel hose, since there may be fuel remaining in it.**

NOTE:

- To disconnect the fuel hose from the throttle body, slide the fuel hose connector cover ① on the end of the hose in direction of the arrow shown, press the two buttons ② on the sides of the connector, and then disconnect the hose.
- Before disconnecting the hose, place a few rags in the area under where it will be disconnected.

EAS00912

CHECKING THE FUEL INJECTOR

1. Check:
   - fuel injector
     Damage → Replace.

EAS00913

CHECKING THE THROTTLE BODY

1. Check:
   - throttle body
     Cracks/damage → Replace the throttle body.
2. Check:
   - fuel passages
     Obstructions → Clean.

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a. Wash the throttle body in a petroleum-based solvent.
   Do not use any caustic carburetor cleaning solution.
b. Blow out all of the passages with compressed air.

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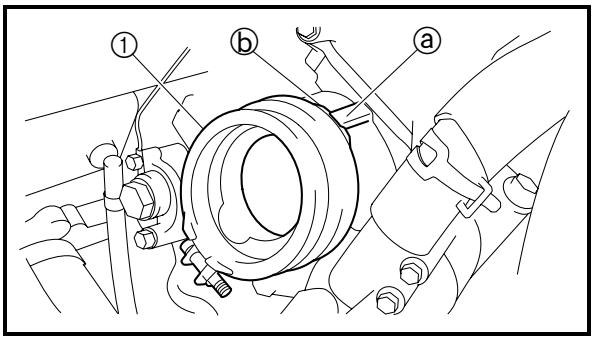
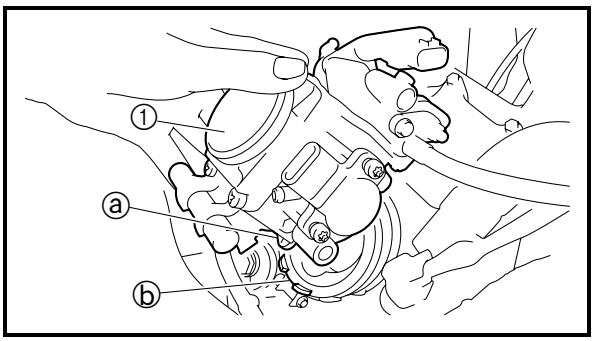


INSTALLING THE THROTTLE BODY ASSEMBLY

1. Install:
   • throttle body joint ①

NOTE:

Align the projection ⓐ on the cylinder head with the slot ⓑ in the throttle body joint.



2. Install:
   • throttle body assembly ①

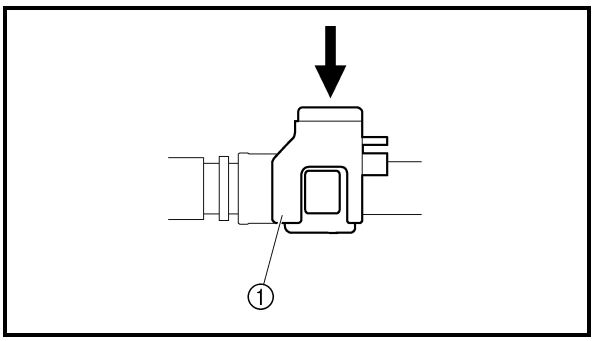
NOTE:

Align the projection ⓐ on the throttle body assembly with the slot ⓑ in the throttle body joint.

3. Connect:
   • fuel hose

CAUTION:

When connecting the fuel hose, make sure that it is securely connected, and that the fuel hose connector cover is in the correct position, otherwise the fuel hose will not be properly connected.



NOTE:

To connect the fuel hose onto the throttle body, slide the fuel hose connector cover ① on the end of the hose in direction of the arrow shown.

4. Install:
   • throttle cable
5. Check:
   • throttle position sensor
   Refer to “CHECKING AND ADJUSTING THE THROTTLE POSITION SENSOR”.
6. Adjust:
   • throttle lever free play
   Refer to “ADJUSTING THE THROTTLE LEVER FREE PLAY” in chapter 3.
7. Adjust:
   • engine idling speed
   Refer to “ADJUSTING THE ENGINE IDLING SPEED” in chapter 3.

EAS00915
CHECKING THE FUEL PUMP AND PRESSURE REGULATOR OPERATION

1. Check:
   • pressure regulator operation

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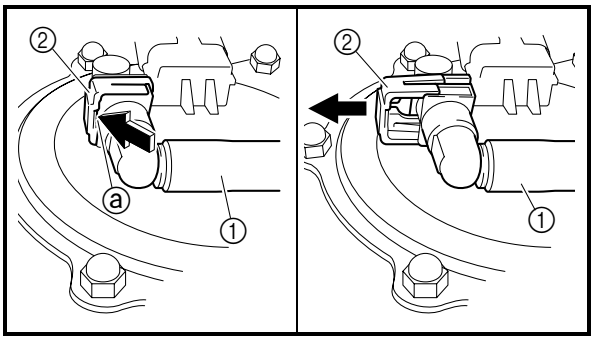
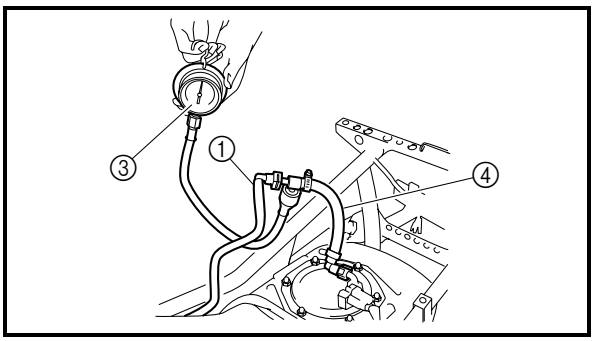
a. Remove the rear fender.
   Refer to “REAR CARRIER AND REAR FENDER” in chapter 3.
b. Remove the fuel hose connector holder.
c. Disconnect the fuel hose ① from the fuel pump.



NOTE:
• When removing the fuel hose from the fuel pump, remove the fuel hose connector holder first, and next, insert a slotted head screw driver etc. in the slot part ⓐ of the fuel hose connector cover ②, then slide it in the direction of the arrow, and remove the fuel hose.
• Before removing the hose, place a few rags in the area under where it will be removed.

d. Connect the pressure gauge ③ and adapter ④ to the fuel pump and fuel hose.



Pressure gauge
90890-03153, YU-03153
Fuel pressure adapter
90890-03176, YM-03176

e. Start the engine.
f. Measure the fuel pressure.

Fuel pressure
324 kPa (3.24 kg/cm^2, 46.1 psi)

Out of specification → Replace the fuel pump.

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EAS00916
CHECKING AND ADJUSTING THE THROTTLE POSITION SENSOR

1. Check:
   • throttle position sensor

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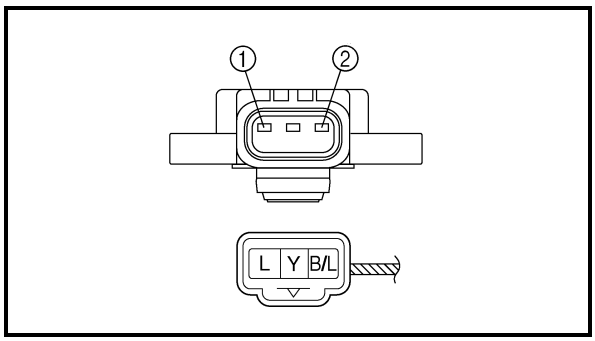
a. Disconnect the throttle position sensor coupler from the throttle position sensor.
b. Remove the throttle position sensor from the throttle body.
c. Connect the pocket tester (Ω × 1k) to the terminals of the throttle position sensor.



Positive tester probe → blue ①
Negative tester probe → black/blue ②

d. Measure the maximum throttle position sensor resistance.
   Out of specification → Replace the throttle position sensor.

Maximum throttle position sensor resistance
4.0 ~ 6.0 kΩ at 20 °C (68 °F)
(blue-black/blue)

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2. Adjust:
   • throttle position sensor angle

NOTE:
Before adjusting the throttle position sensor, the engine idling speed should be properly adjusted.

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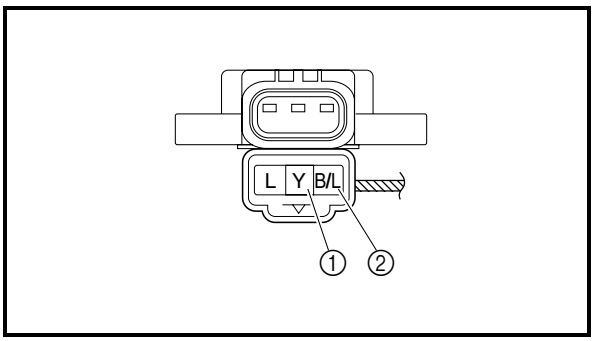
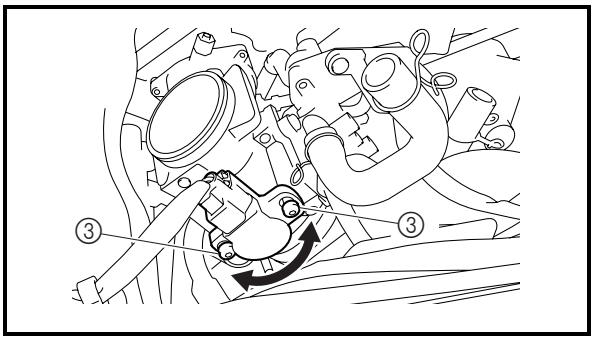
a. Connect the throttle position sensor coupler to the throttle position sensor.





b. Connect the digital circuit tester to the throttle position sensor coupler.

Positive digital circuit tester probe → yellow ①
Negative digital circuit tester probe → black/blue ②

Digital circuit tester
90890-03174
Model 88 Multimeter with tachometer
YU-A1927

c. Measure the throttle position sensor voltage.
d. Adjust the throttle position sensor angle so that the voltage is within the specified range.

Throttle position sensor voltage
0.63 ~ 0.73 V (yellow-black/blue)

e. After adjusting the throttle position sensor angle, tighten the throttle position sensor screws ③.

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EBS00155

DRIVE TRAIN

TROUBLESHOOTING

The following conditions may indicate damaged shaft drive components:

Symptoms	Possible Causes
1. A pronounced hesitation or “jerky” movement during acceleration, deceleration or sustained speed. (This must not be confused with engine surging or transmission characteristics.) 2. A “rolling rumble” noticeable at low speed; a high-pitched whine; a “clunk” from a shaft drive component or area. 3. A locked-up condition of the shaft drive train mechanism, no power transmitted from the engine to the front and/or rear wheel.	A. Bearing damage. B. Improper gear lash. C. Gear tooth damage. D. Broken drive shaft. E. Broken gear teeth. F. Seizure due to lack of lubrication. G. Small foreign objects lodged between the moving parts.

NOTE:

Areas A, B, and C above may be extremely difficult to diagnose. The symptoms are quite subtle and difficult to distinguish from normal vehicle operating noise. If there is reason to believe these components are damaged, remove the components and check them.

EBS00156

CHECKING NOISES

1. Investigate any unusual noises.

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a. A “rolling rumble” noise during coasting, acceleration, or deceleration. The noise increases with front and/or rear wheel speed, but it does not increase with higher engine or transmission speeds.
   Diagnosis: Possible wheel bearing damage.
b. A “whining” noise that varies with acceleration and deceleration.
   Diagnosis: Possible incorrect reassembly, too-little gear lash.

CAUTION:

Too little gear lash is extremely destructive to the gear teeth. If a test ride following reassembly indicates this condition, stop riding immediately to minimize gear damage.

c. A slight “thunk” evident at low speed operation. This noise must be distinguished from normal vehicle operation.
Diagnosis: Possible broken gear teeth.

⚠ WARNING

Stop riding immediately if broken gear teeth are suspected. This condition could result in the shaft drive assembly locking up, causing loss of control of the vehicle and possible injury to the rider.

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2. Check:
• drained oil
Drained oil shows large amounts of metal particles → Check the bearing for seizure.

NOTE:

A small amount of metal particles in the oil is normal.

3. Check:
• oil leakage

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a. Clean the entire vehicle thoroughly, then dry it.
b. Apply a leak-localizing compound or dry powder spray to the shaft drive.
c. Road test the vehicle for the distance necessary to locate the leak.
Leakage → Check the component housing, gasket, and/or seal for damage.
Damage → Replace the component.

NOTE:

- An apparent oil leak on a new or nearly new vehicle may be the result of a rust preventative coating or excessive seal lubrication.
- Always clean the vehicle and recheck the suspected location of an apparent leakage.

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EBS00157

TROUBLESHOOTING CHART

When basic condition “a” and “b” exist, check the following points:

Elevate and spin both wheels. Feel for wheel bearing damage.
YES → Replace the wheel bearing. (Refer to “STEERING SYSTEM” and “REAR KNUCKLES AND STABILIZER” in chapter 8.)
NO ↓

Check the wheel nuts and hub nuts for tightness.
NO → Torque to specification. (Refer to “FRONT AND REAR WHEELS” in chapter 8.)
YES ↓

Check the front constant velocity joints. Feel for bearing damage.
NO → Constant velocity joint bearings and differential gear bearings are probably not damaged. Repeat the test or remove the individual components.
YES ↓

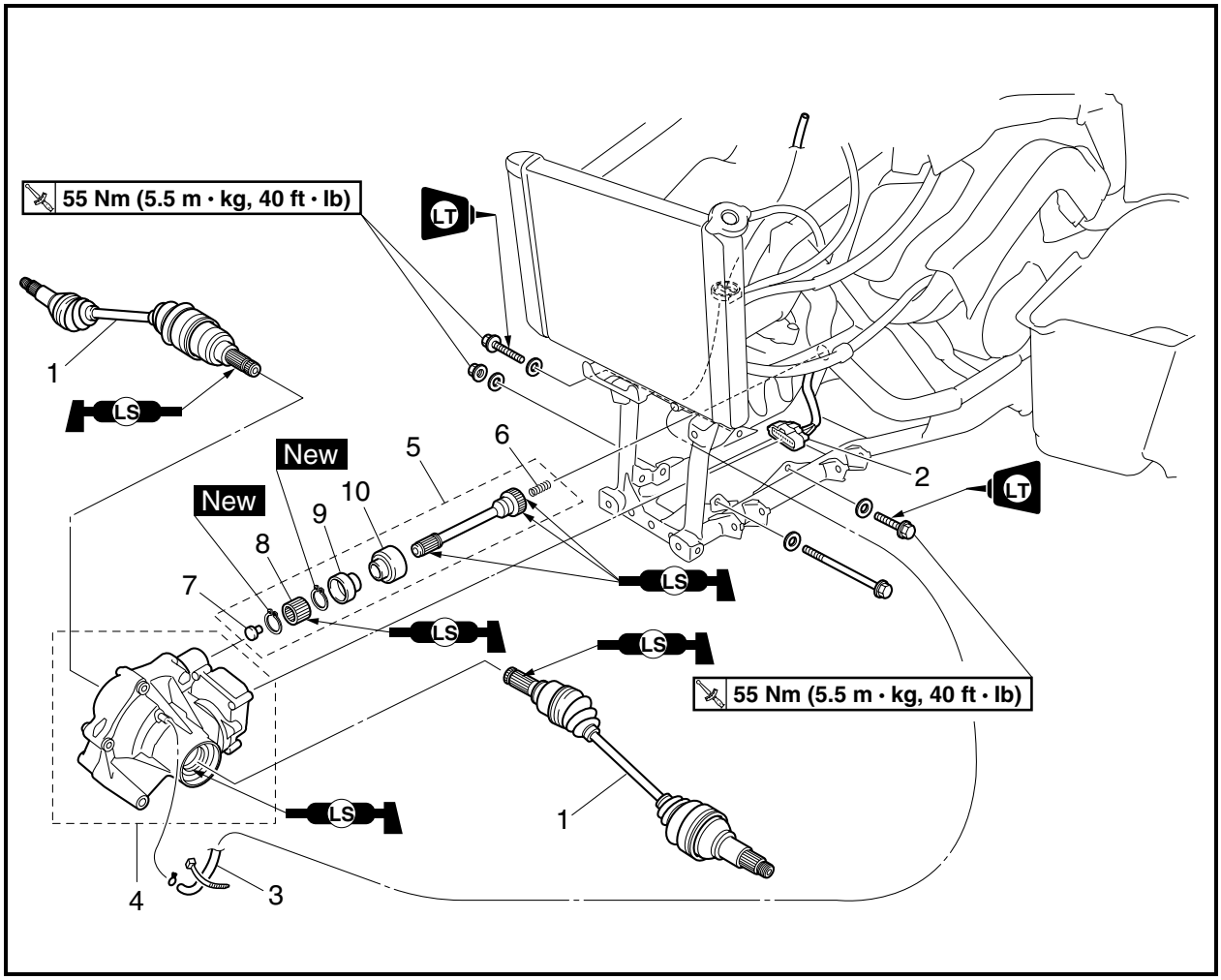
Check the rear brake adjustment.
NO → Adjust per instructions. (Refer to “ADJUSTING THE REAR BRAKE” in chapter 3.)
YES ↓

Check the rear constant velocity joints. Feel for bearing damage.
NO → Constant velocity joint bearings and final drive gear bearings are probably not damaged. Repeat the test or remove the individual components.
YES ↓

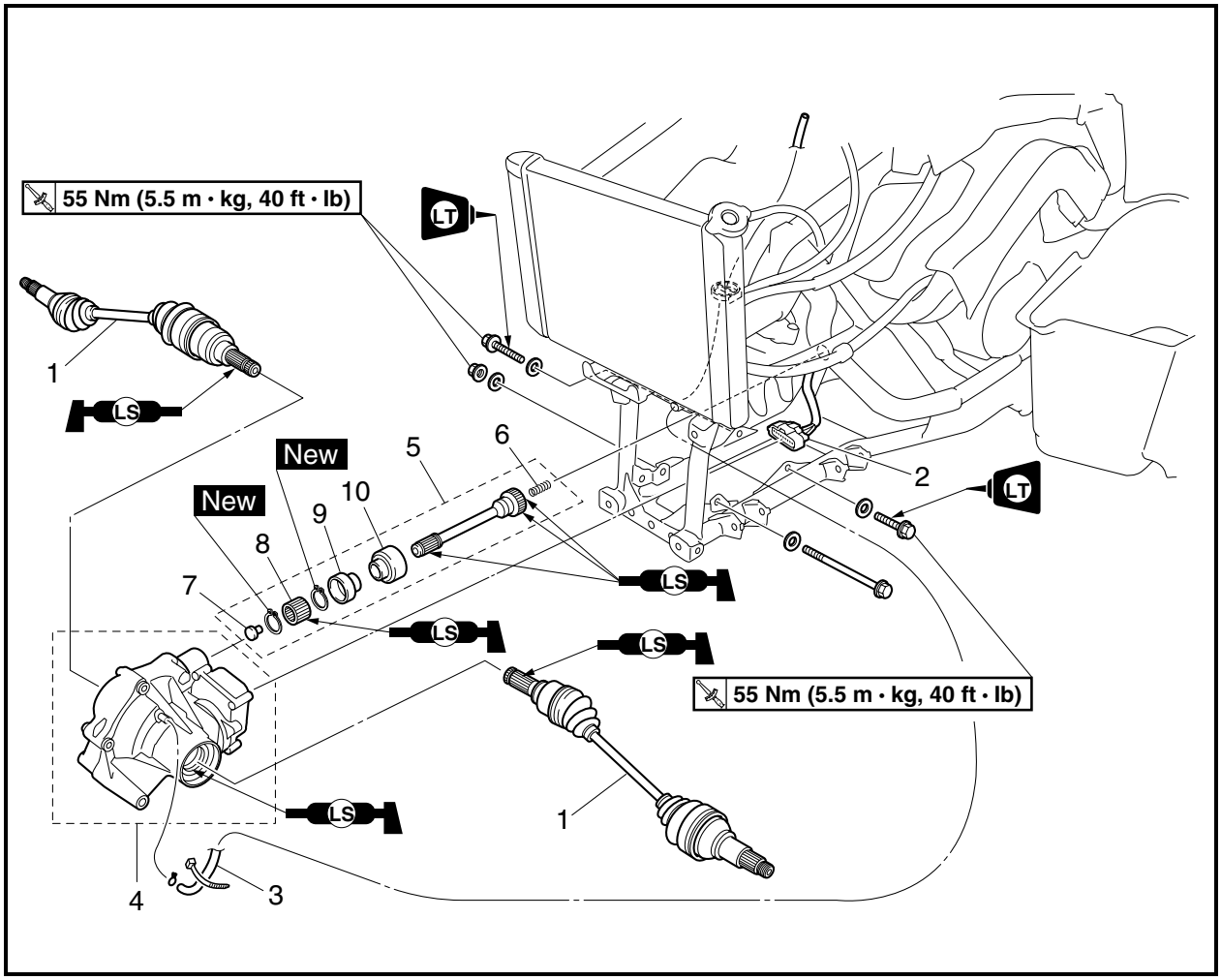
Remove the drive shaft components.

EBS00158

FRONT CONSTANT VELOCITY JOINTS AND DIFFERENTIAL GEAR

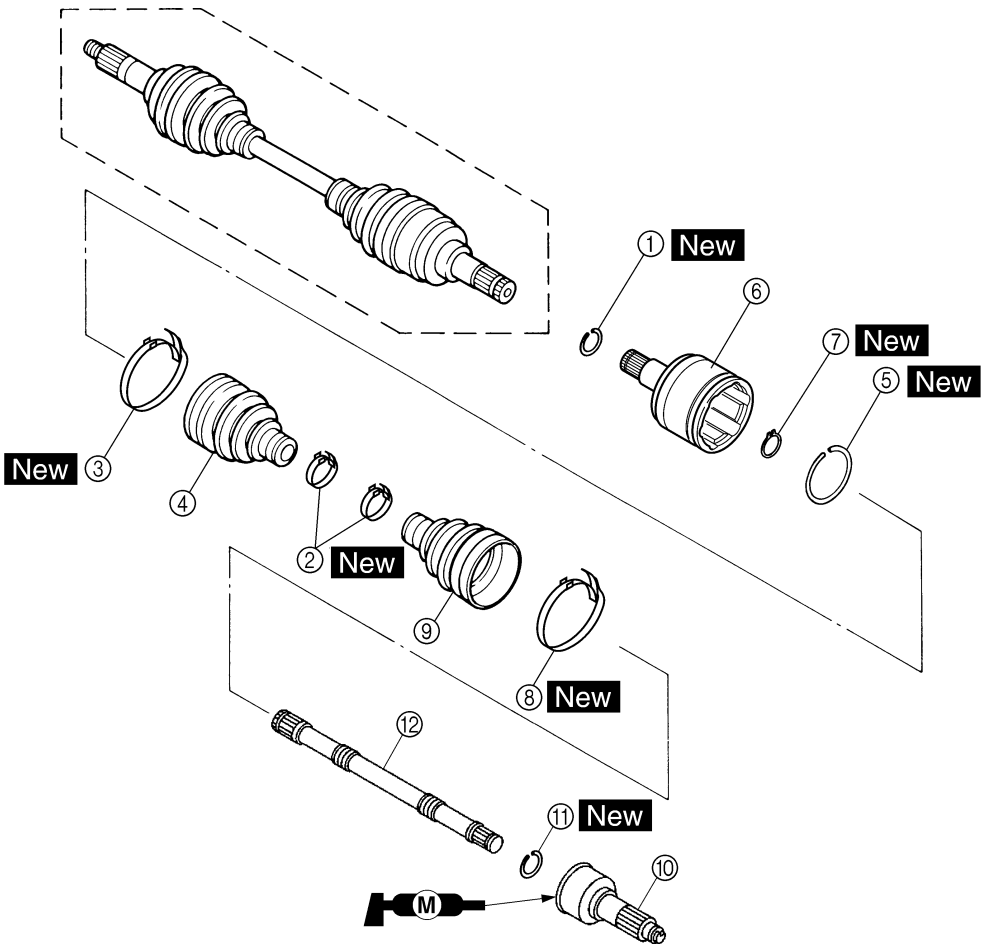


Order	Job/Part	Q'ty	Remarks
	Removing the front constant velocity joints and differential gear		Remove the parts in the order listed.
	Front engine skid plate/front fender		Refer to "ENGINE SKID PLATES, SEAT, CARRIERS AND FENDERS" in chapter 3.
	Steering knuckles		Refer to "STEERING SYSTEM" in chapter 8.
	Front arms		Refer to "FRONT ARMS AND FRONT SHOCK ABSORBER ASSEMBLIES" in chapter 8.
	Differential gear oil		Drain. Refer to "CHANGING THE DIFFERENTIAL GEAR OIL" in chapter 3.
1	Front constant velocity joint	2	
2	Differential gear motor coupler	1	Disconnect.
3	Differential gear case breather hose	1	Disconnect.

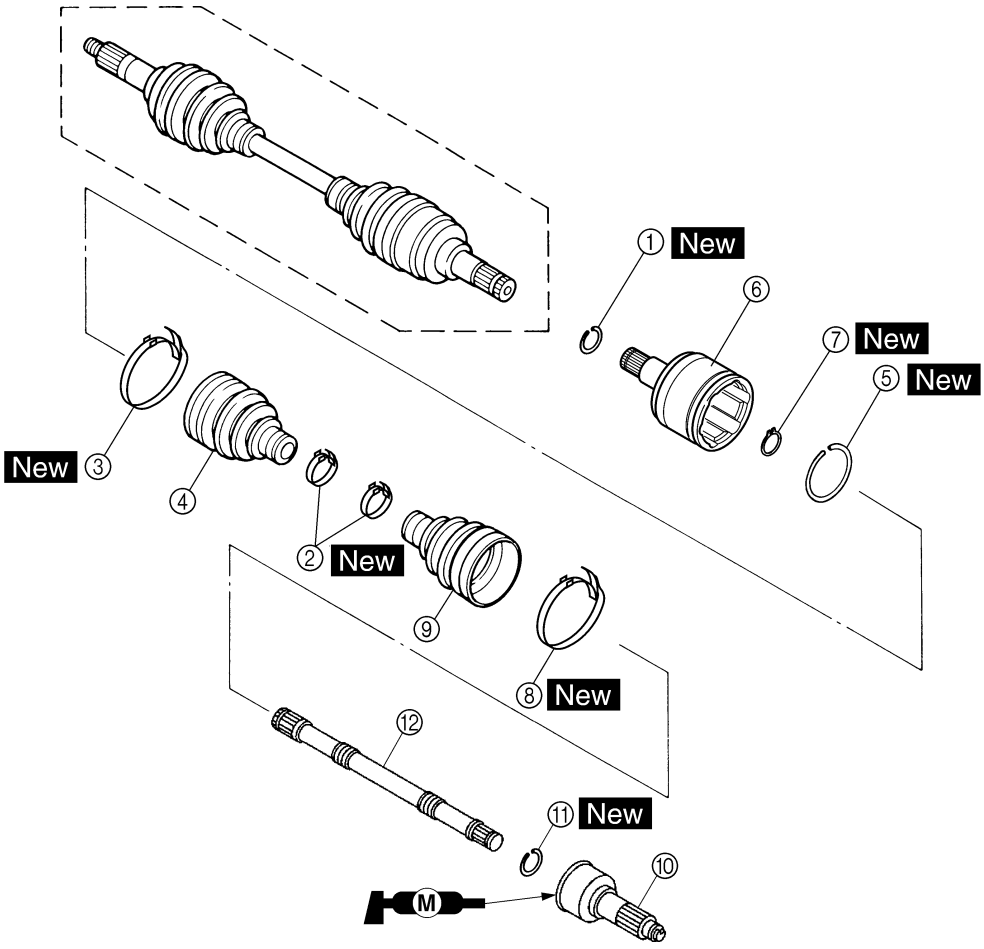


Order	Job/Part	Q'ty	Remarks
4	Differential gear case assembly	1	
5	Front drive shaft	1	
6	Spring	1	
7	Damper	1	
8	Coupling gear	1	
9	Dust seal	1	
10	Dust seal	1	
			For installation, reverse the removal procedure.

EBS00159

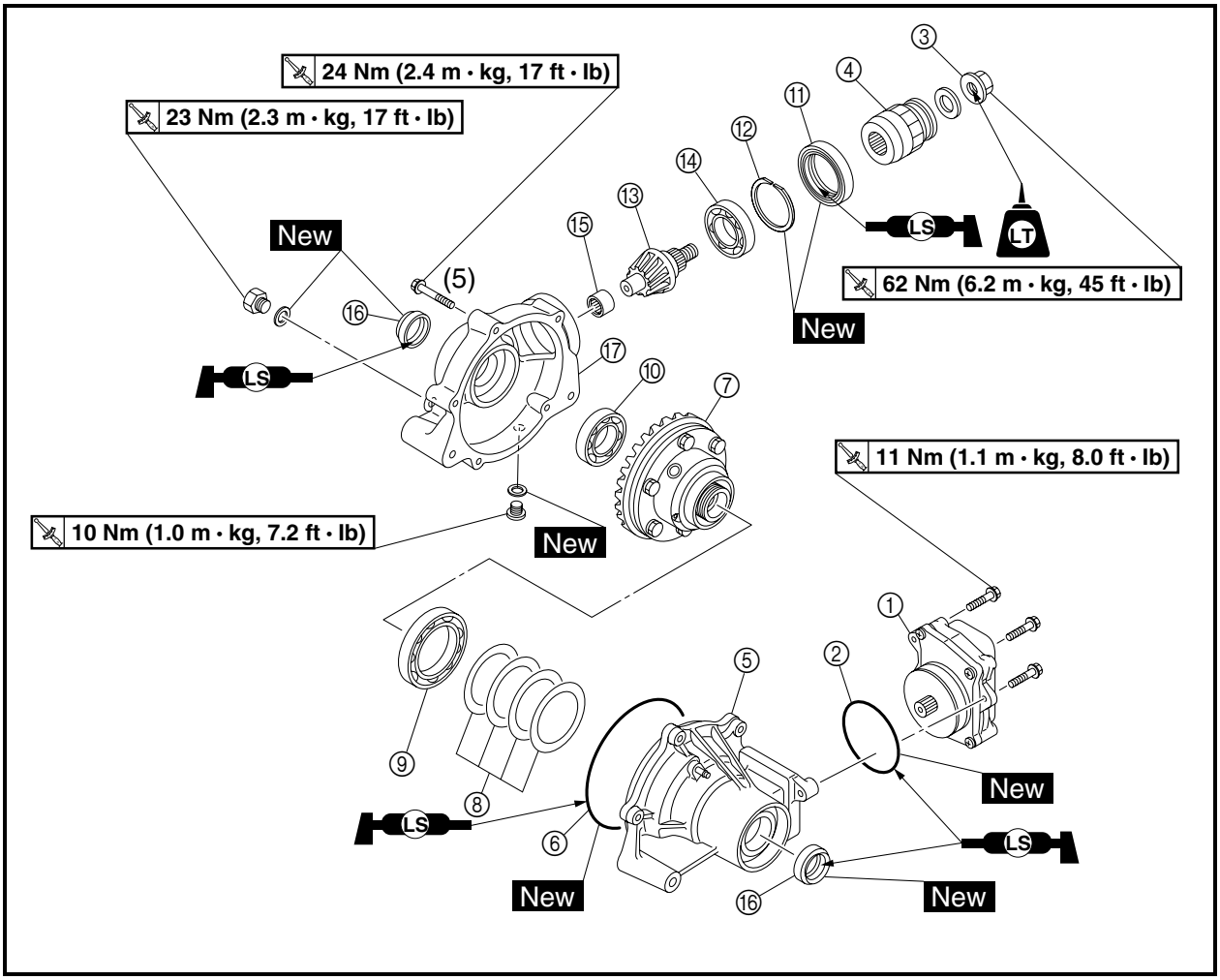


Order	Job/Part	Q'ty	Remarks
	Disassembling the front constant velocity joints		Remove the parts in the order listed. The following procedure applies to both of the front constant velocity joints.
①	Clip	1	
②	Boot band	2	Refer to "ASSEMBLING THE FRONT CONSTANT VELOCITY JOINTS".
③	Boot band	1	
④	Dust boot	1	
⑤	Clip	1	
⑥	Double off-set joint	1	
⑦	Circlip	1	
⑧	Boot band	1	
⑨	Dust boot	1	
⑩	Off-set joint	1	

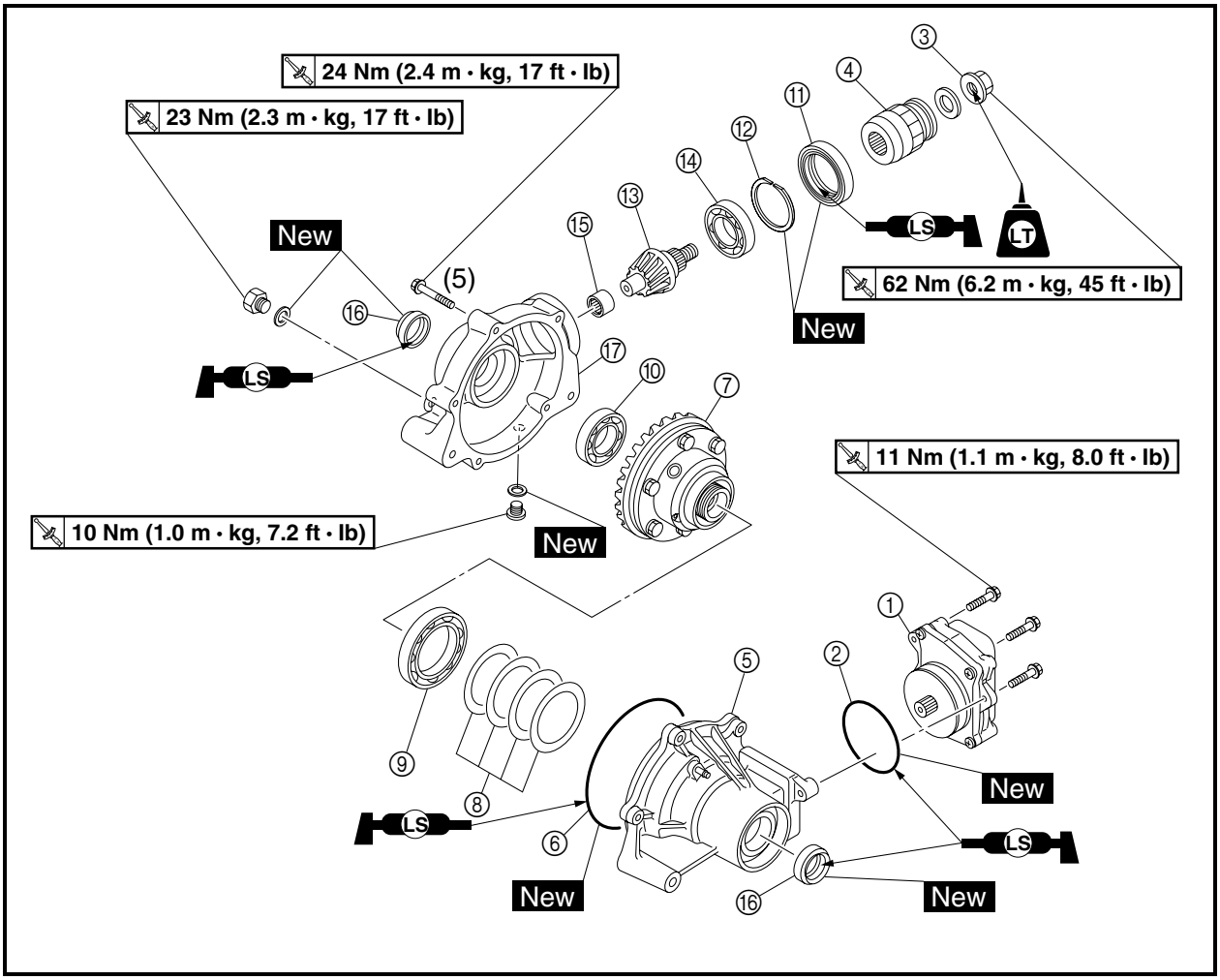


Order	Job/Part	Q'ty	Remarks
⑪	Clip	1	Refer to "ASSEMBLING THE FRONT CONSTANT VELOCITY JOINTS".
⑫	Joint shaft	1	
			For assembly, reverse the disassembly procedure.

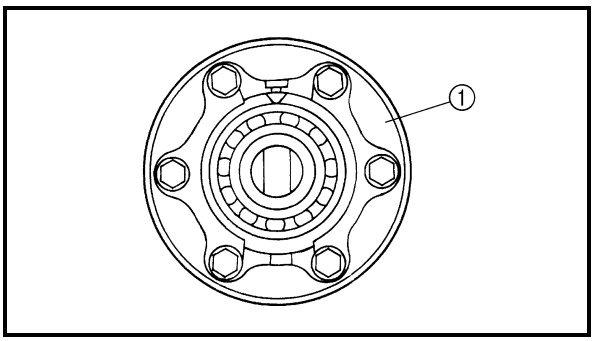
EBS00160



Order	Job/Part	Q'ty	Remarks
	Disassembling the differential gear case assembly		Remove the parts in the order listed.
①	Differential gear motor	1	Refer to "ASSEMBLING THE DIFFERENTIAL GEARS".
②	O-ring	1	
③	Front drive shaft coupling gear nut	1	
④	Front drive shaft coupling gear (differential gear case side)	1	
⑤	Differential gear case cover	1	
⑥	O-ring	1	
⑦	Differential gear assembly	1	
⑧	Differential drive pinion gear shim	*	
⑨	Bearing	1	
⑩	Bearing	1	
⑪	Oil seal	1	



Order	Job/Part	Q'ty	Remarks
⑫	Clip	1	
⑬	Differential drive pinion gear	1	
⑭	Bearing	1	
⑮	Bearing	1	
⑯	Oil seal	2	
⑰	Differential gear case	1	
			For assembly, reverse the disassembly procedure.



EBS00163

REMOVING THE DIFFERENTIAL GEAR ASSEMBLY

1. Remove:
   - differential gear assembly ①

NOTE:

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

CAUTION:

The differential gear 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.

EBS00165

CHECKING THE FRONT CONSTANT VELOCITY JOINTS

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.

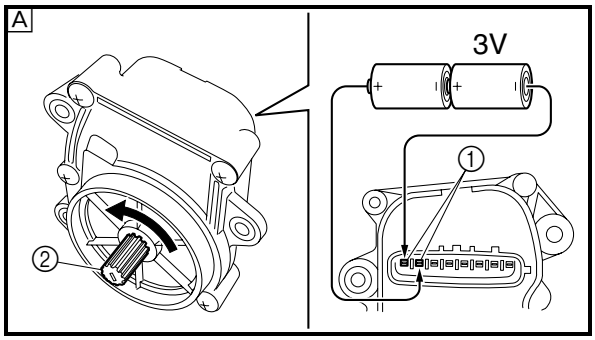
EBS00166

CHECKING THE DIFFERENTIAL GEARS

1. Check:
   - gear teeth
     Pitting/galling/wear → Replace.
   - bearing
     Pitting/damage → Replace.
   - oil seal
   - O-ring
     Damage → Replace.
2. Check:
   - front drive shaft splines
   - differential drive pinion 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 DIFFERENTIAL GEAR MOTOR

1. Check:
   - differential gear motor

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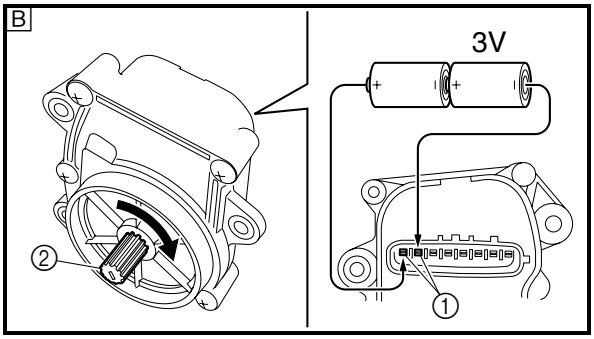
a. Connect two C size batteries to the gear motor terminals ① (as shown in illustration).

CAUTION:

- **Be sure to check the motor operation after removing it from the differential gear case assembly.**
- **Do not use a 12 V battery to operate the pinion gear.**

Ⓐ Check that the pinion gear ② turns counterclockwise.



B Check that the pinion gear ② turns clockwise.

NOTE:

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

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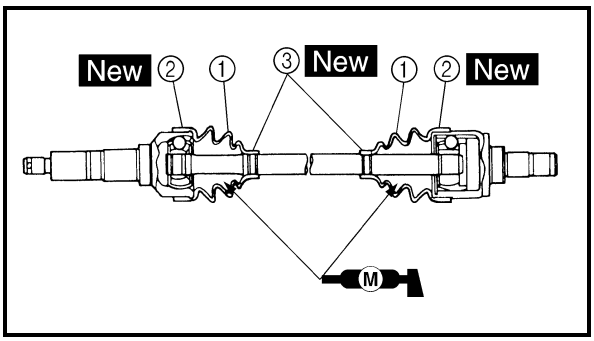
EBS00167

ASSEMBLING THE FRONT CONSTANT VELOCITY JOINTS

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

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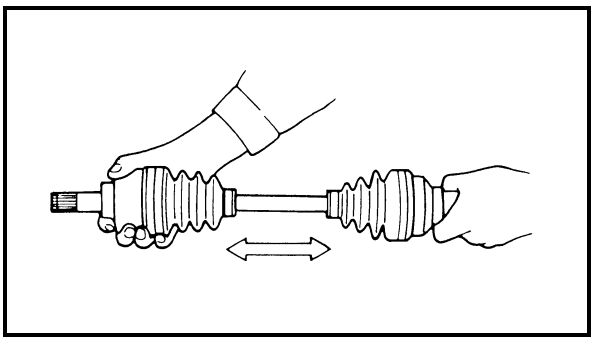
a. Apply molybdenum disulfide grease into the dust boots.

	Molybdenum disulfide grease **40 g (1.4 oz) per dust boot (front wheel side)** **55 g (1.9 oz) per dust boot (differential gear case side)**

b. Install the dust boots ①.
c. 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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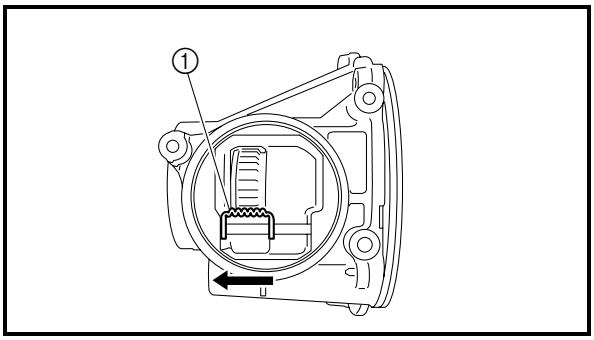
3. Check:
   - thrust movement free play
     Excessive play → Replace the joint assembly.

EBS01009
ASSEMBLING THE DIFFERENTIAL GEARS

1. Measure:
   - gear lash
     Refer to “MEASURING THE DIFFERENTIAL GEAR LASH”.



2. Install:
   - differential gear motor

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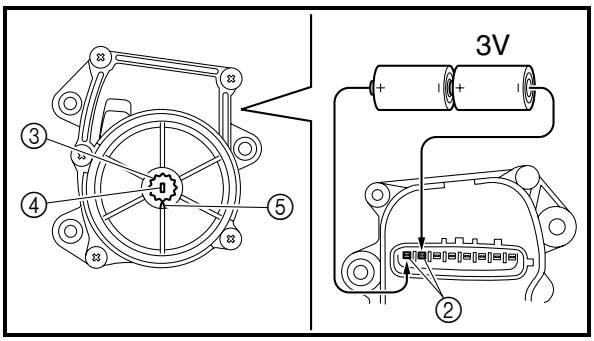
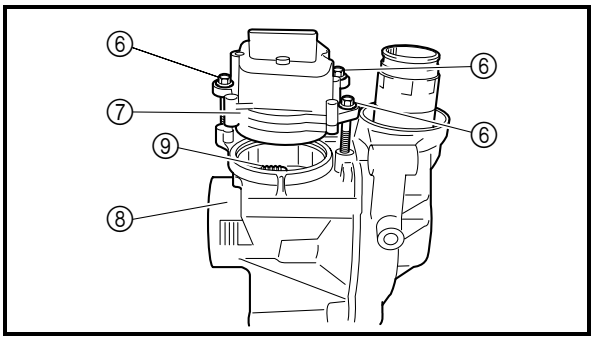
a. Slide the shift fork sliding gear ①, which is installed to the differential gear, to the left to put it into the 2WD mode.



b. Connect two C size batteries to the gear motor terminal ② to operate the pinion gear ③, and operate it until the mark ④ on the gear is aligned with the mark ⑤ on the gear motor case.

CAUTION:

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



c. Insert 6 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.

d. Remove the 6 mm bolts, and then install the motor with the gear motor bolts.

	Differential gear motor bolt **11 Nm (1.1 m · kg, 8.0 ft · lb)**

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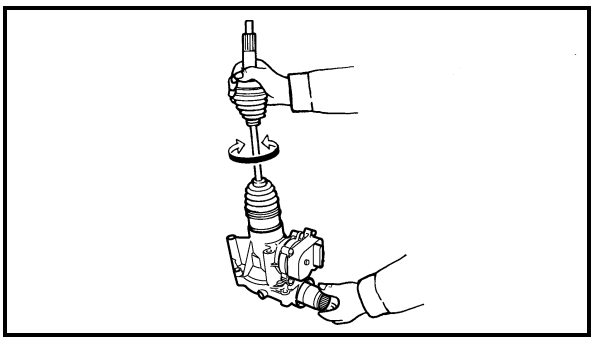
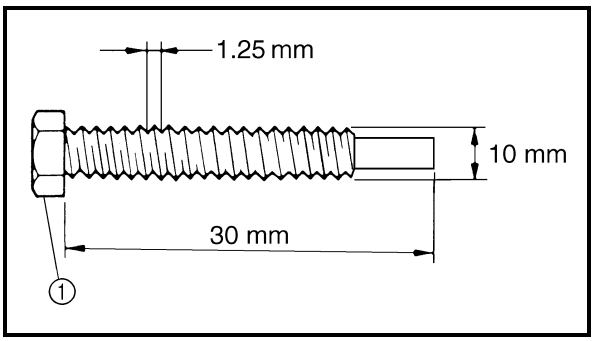


3. Check:
   - differential gear operation
     Unsmooth operation → Replace the differential gear assembly.
     Insert the double off-set joint into the differential gear, and turn the gear back and forth.

EBS00174
MEASURING THE DIFFERENTIAL GEAR LASH

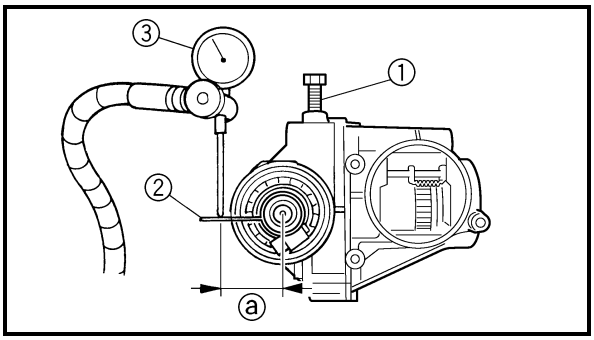
1. Secure the gear case in a vise or another supporting device.
2. Remove:
   - drain plug
   - gasket



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 ②
   - dial gauge ③

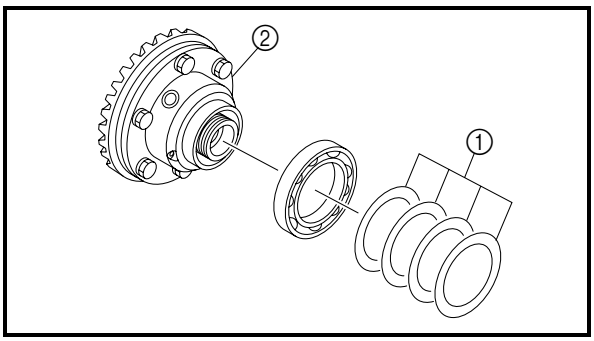
Gear lash measurement tool
90890-01475
Middle drive gear lash tool
YM-01475

ⓐ Measuring point is 22.5 mm (0.86 in)

5. Measure:
   • gear lash
   Gently rotate the coupling gear 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.



EBS00176
ADJUSTING THE DIFFERENTIAL GEAR LASH

1. Remove:
   • differential drive pinion gear shim(s) ①
   • differential gear assembly ②
2. Adjust:
   • gear lash

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a. Select the suitable shims using the following chart.

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

	Ring gear shim
Thickness (mm)	**0.1** **0.2** **0.3** **0.4**

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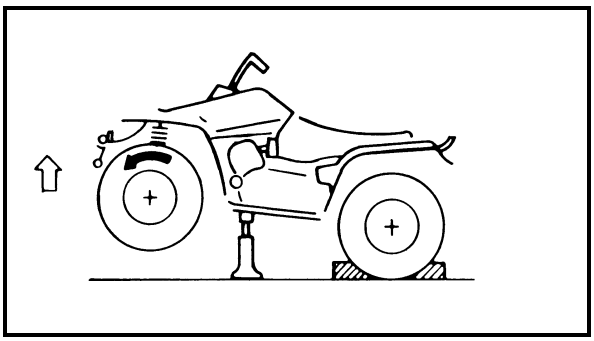


EBS00177

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 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:

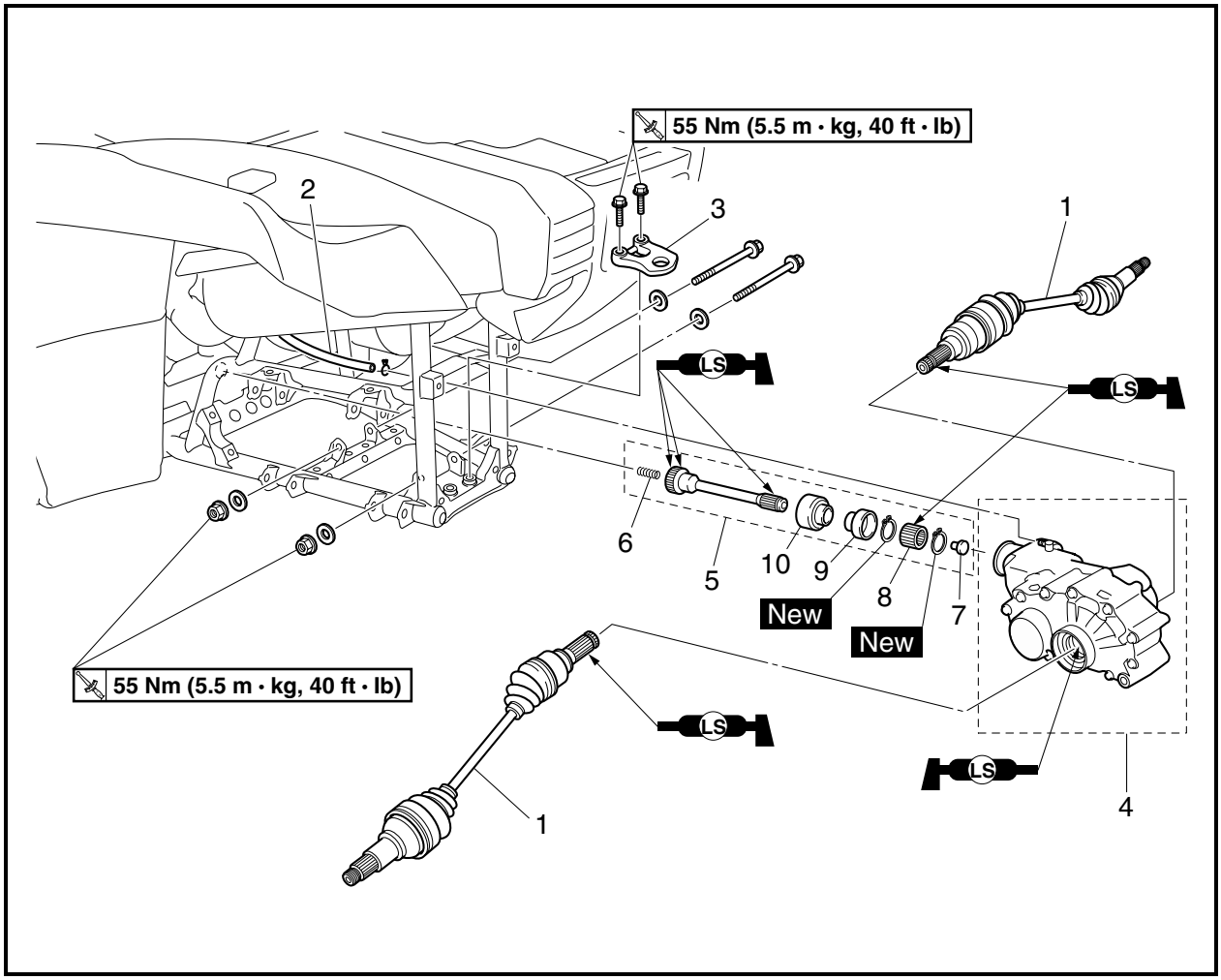
- Repeat this step several times to obtain an average figure.
- During this test, the other front wheel will turn in the opposite direction.

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)

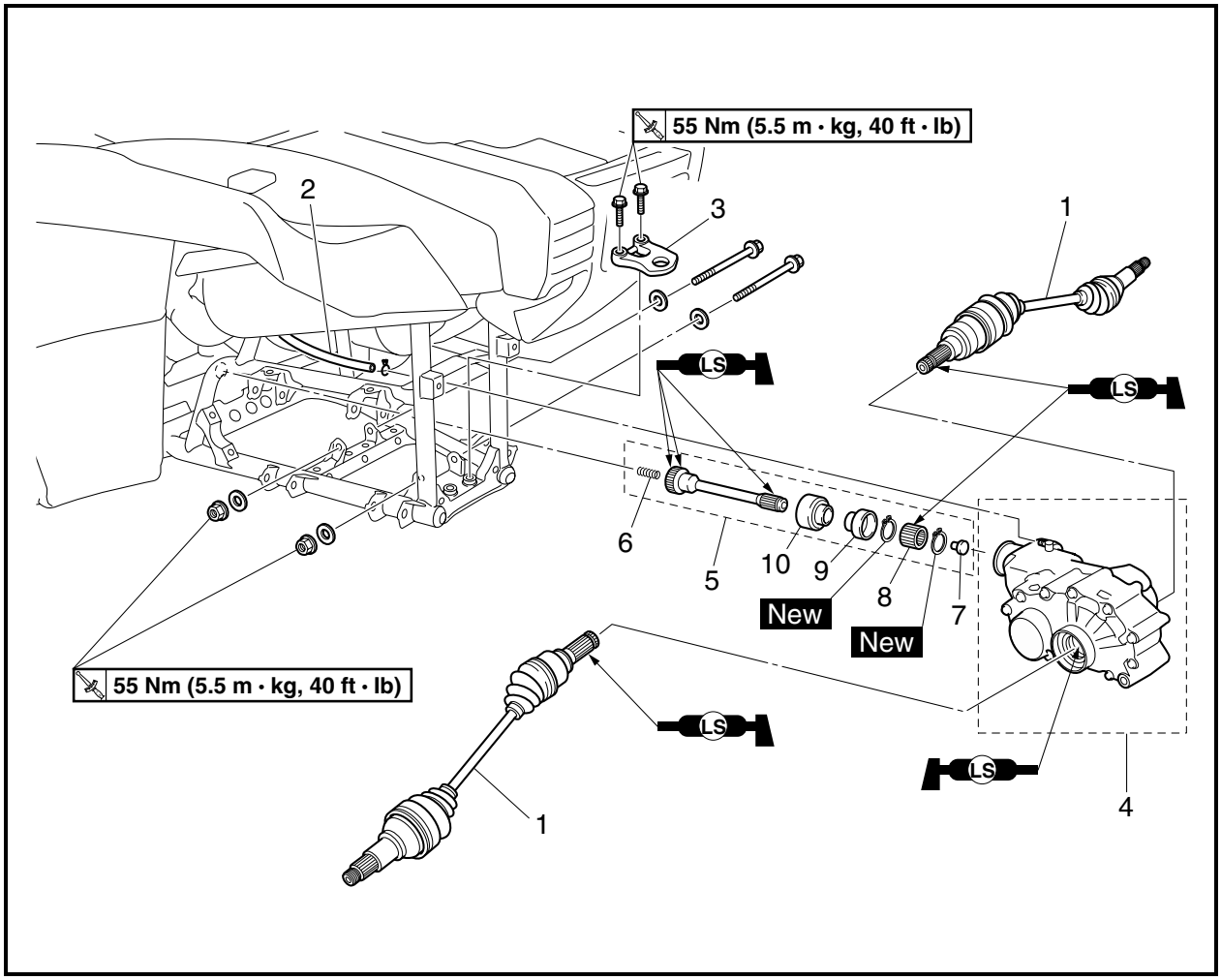
4. Out of specification → Replace the differential gear assembly.
5. Within specification → Install the new cotter pin and wheel cap.

EBS00178

REAR CONSTANT VELOCITY JOINTS AND FINAL DRIVE GEAR

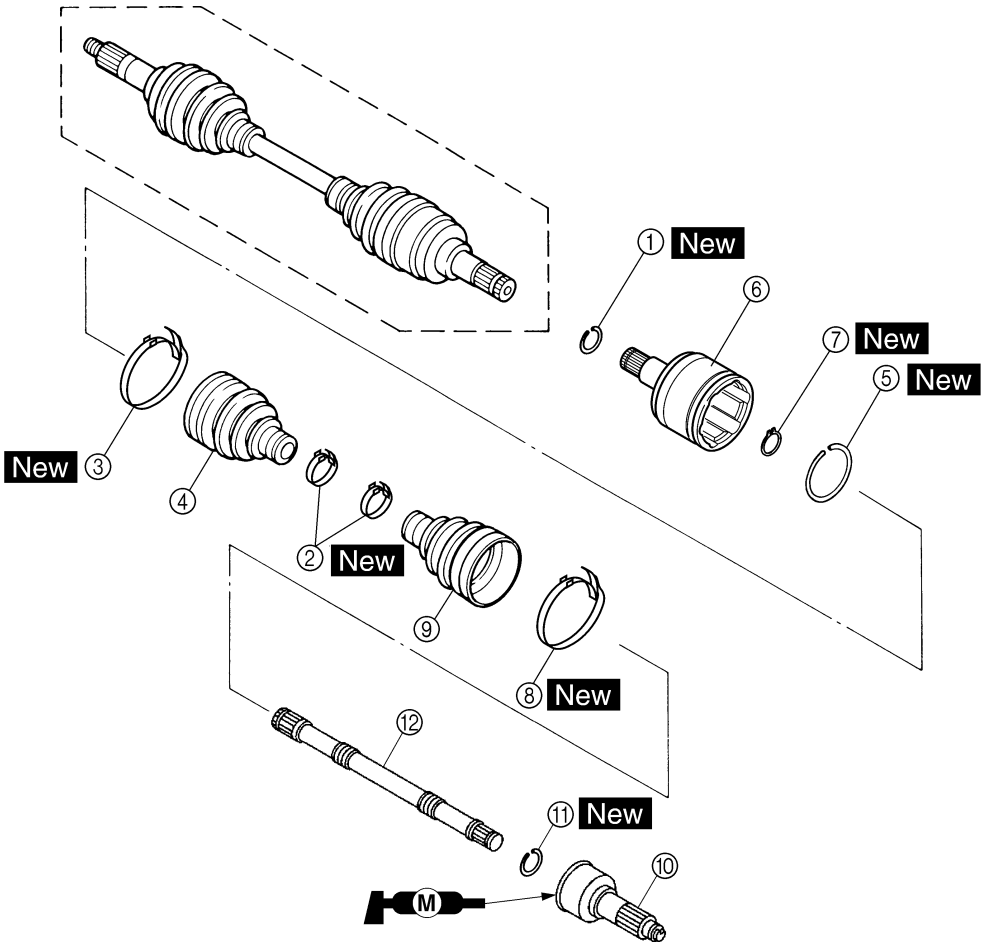


Order	Job/Part	Q'ty	Remarks
	Removing the rear constant velocity joints and final drive gear		Remove the parts in the order listed.
	Rear engine skid plate/rear fender		Refer to "ENGINE SKID PLATES, SEAT, CARRIERS AND FENDERS" in chapter 3.
	Rear arms		Refer to "REAR ARMS AND REAR SHOCK ABSORBER ASSEMBLIES" in chapter 8.
	Final gear oil		Drain. Refer to "CHANGING THE FINAL GEAR OIL" in chapter 3.
1	Rear constant velocity joint	2	
2	Final gear case breather hose	1	Disconnect.
3	Trailer hitch	1	
4	Final gear case assembly	1	
5	Rear drive shaft	1	

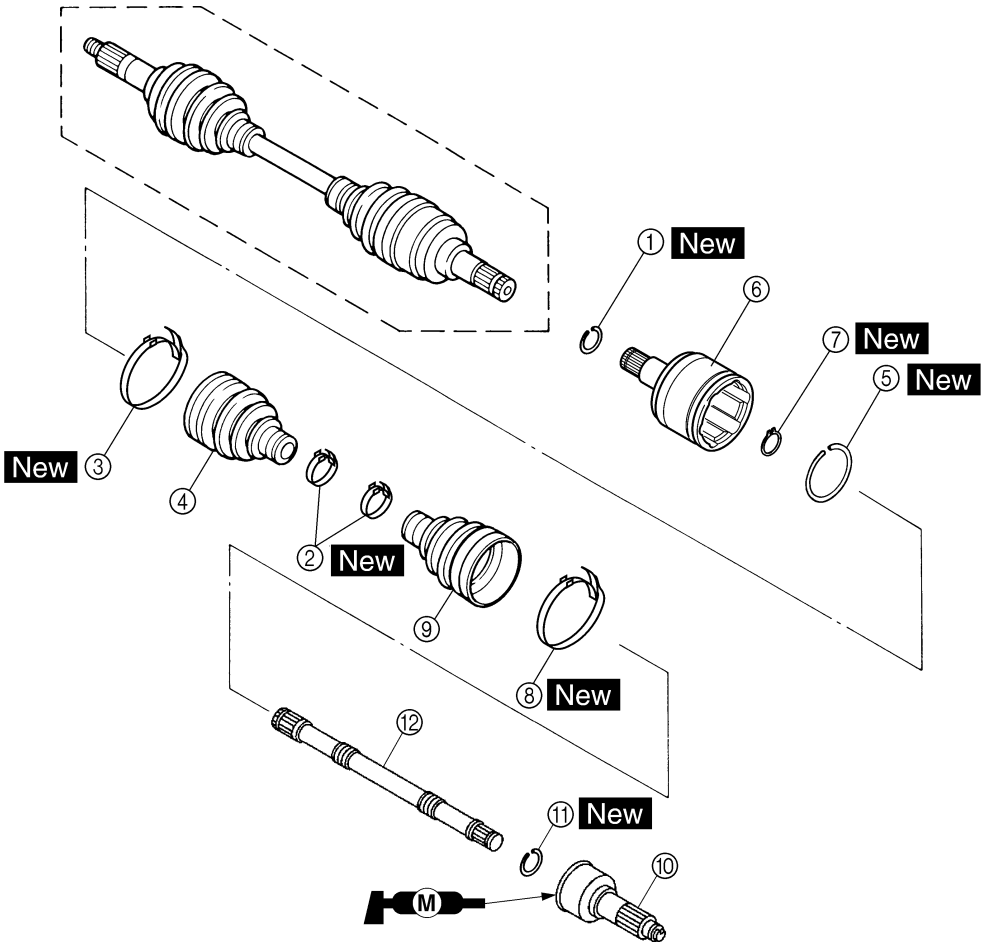


Order	Job/Part	Q'ty	Remarks
6	Spring	1	
7	Damper	1	
8	Coupling gear	1	
9	Dust seal	1	
10	Dust seal	1	
			For installation, reverse the removal procedure.

EBS01011

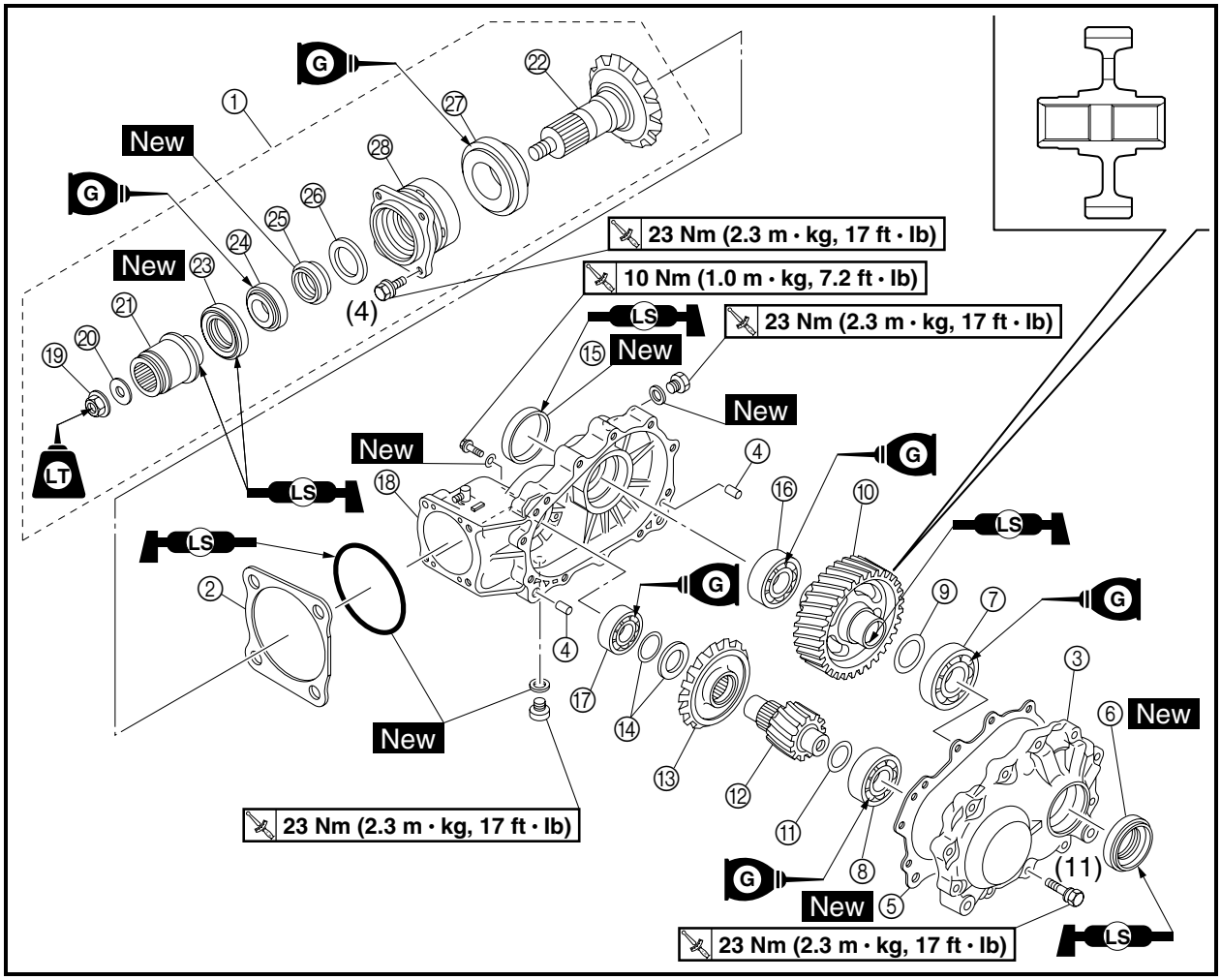


Order	Job/Part	Q'ty	Remarks
	Disassembling the rear constant velocity joints		Remove the parts in the order listed. The following procedure applies to both of the rear constant velocity joints.
①	Clip	1	
②	Boot band	2	Refer to "ASSEMBLING THE REAR CONSTANT VELOCITY JOINTS".
③	Boot band	1	
④	Dust boot	1	
⑤	Clip	1	
⑥	Double off-set joint	1	
⑦	Circlip	1	
⑧	Boot band	1	
⑨	Dust boot	1	
⑩	Off-set joint	1	

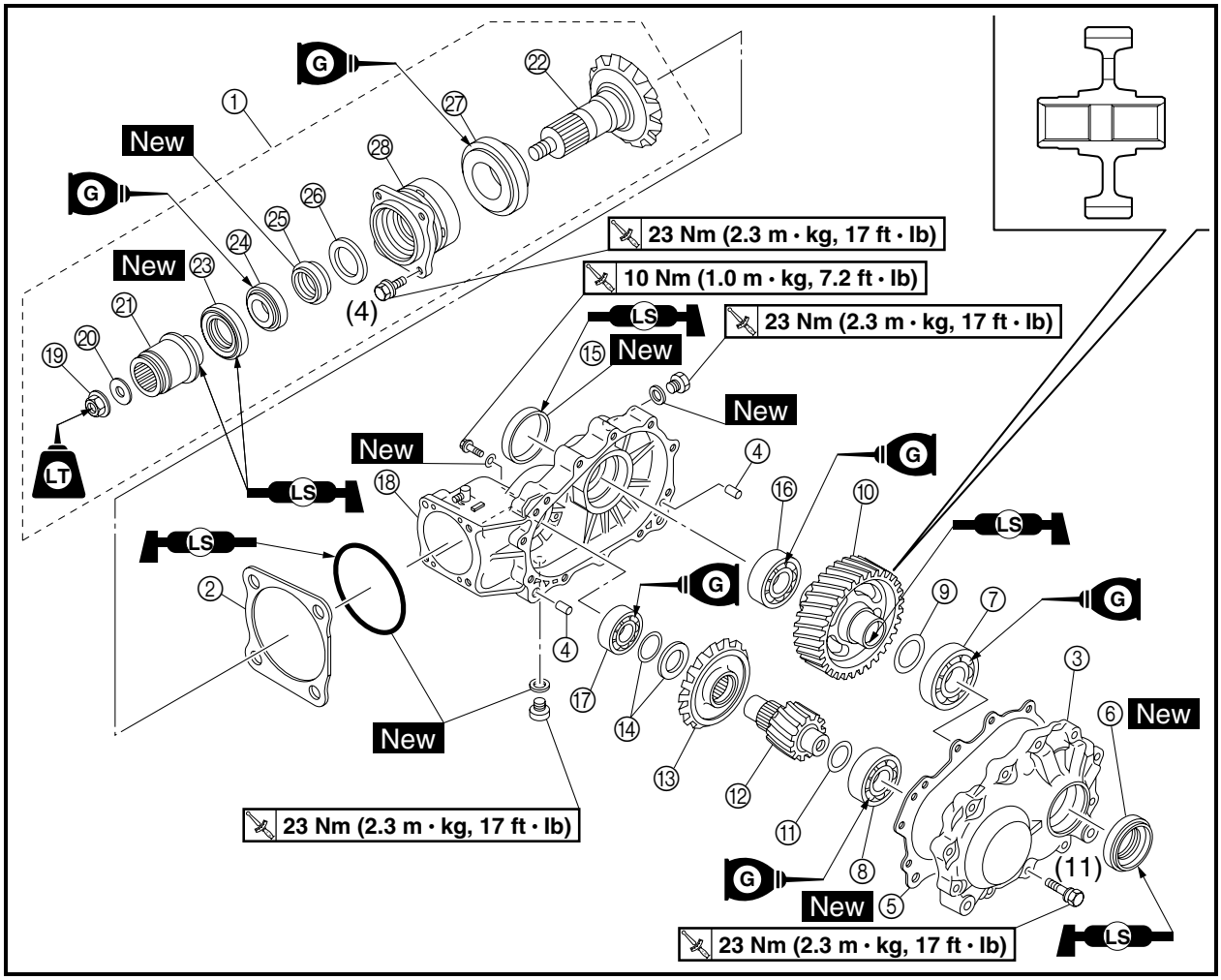


Order	Job/Part	Q'ty	Remarks
⑪	Clip	1	Refer to "ASSEMBLING THE REAR CONSTANT VELOCITY JOINTS".
⑫	Joint shaft	1	
			For assembly, reverse the disassembly procedure.

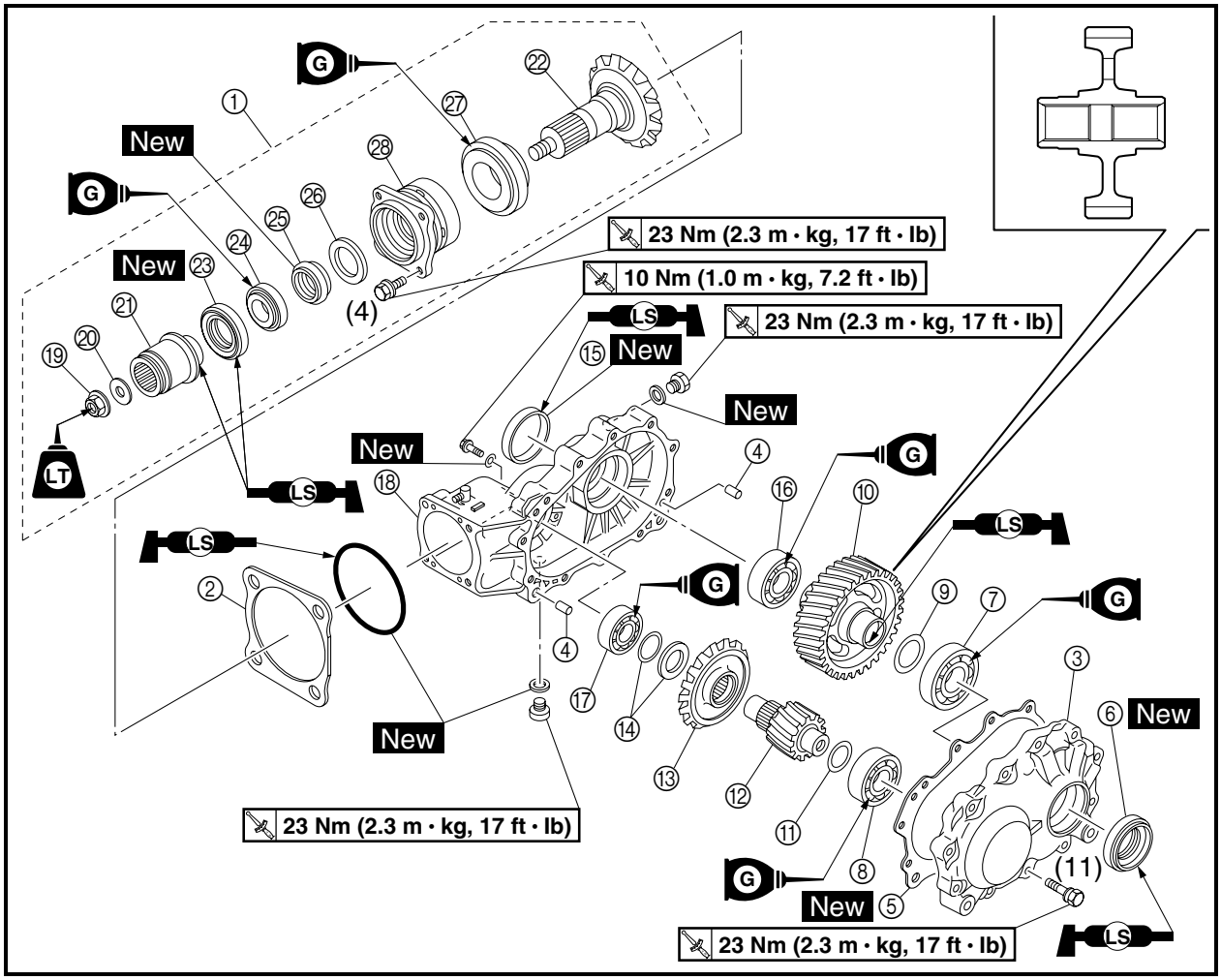
EBS00179



Order	Job/Part	Q'ty	Remarks
	Disassembling the final gear case assembly		Remove the parts in the order listed.
①	Final drive pinion gear assembly	1	
②	Final drive pinion gear shim	*	
③	Final gear case cover	1	**NOTE:** Working in a crisscross pattern, loosen each bolt 1/4 of a turn. After all the bolts are loosened, remove them.
④	Dowel pin	2	
⑤	Gasket	1	
⑥	Oil seal	1	
⑦	Bearing	1	
⑧	Bearing	1	
⑨	Wheel gear shim	*	
⑩	Wheel gear	1	



Order	Job/Part	Q'ty	Remarks
⑪	Thrust washer	*	
⑫	Pinion gear	1	
⑬	Final driven pinion gear	1	
⑭	Final driven pinion gear shim	*	
⑮	Oil seal	1	
⑯	Bearing	1	
⑰	Bearing	1	
⑱	Final gear case	1	
⑲	Rear drive shaft coupling gear nut	1	Refer to "DISASSEMBLING THE FINAL DRIVE PINION GEAR ASSEMBLY" and "ASSEMBLING THE FINAL DRIVE PINION GEAR ASSEMBLY".
⑳	Washer	1	
㉑	Rear drive shaft coupling gear (final gear case side)	1	
㉒	Final drive pinion gear	1	
㉓	Oil seal	1	
㉔	Bearing	1	



Order	Job/Part	Q'ty	Remarks
㉕	Expander	1	Refer to "DISASSEMBLING THE FINAL DRIVE PINION GEAR ASSEMBLY" and "ASSEMBLING THE FINAL DRIVE PINION GEAR ASSEMBLY".
㉖	Washer	1	
㉗	Bearing	1	
㉘	Final drive pinion gear bearing housing	1	
			For assembly, reverse the disassembly procedure.

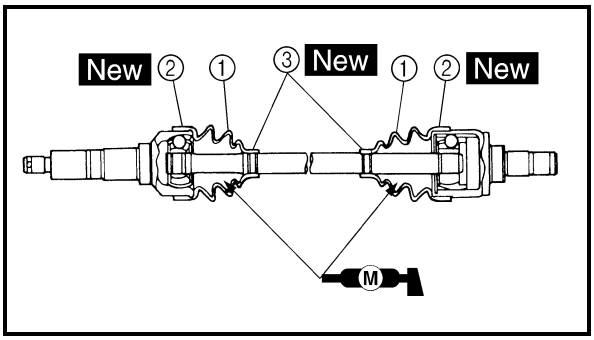
EBS00167

ASSEMBLING THE REAR CONSTANT VELOCITY JOINTS

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

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a. Apply molybdenum disulfide grease into the dust boots.

Molybdenum disulfide grease
40 g (1.4 oz) per dust boot (rear wheel side)
60 g (2.1 oz) per dust boot (final gear case side)

b. Install the dust boots ①.
c. 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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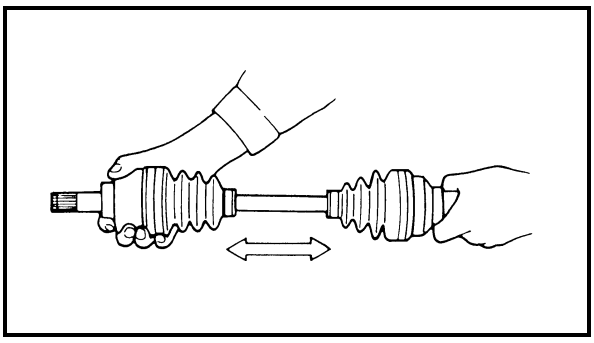
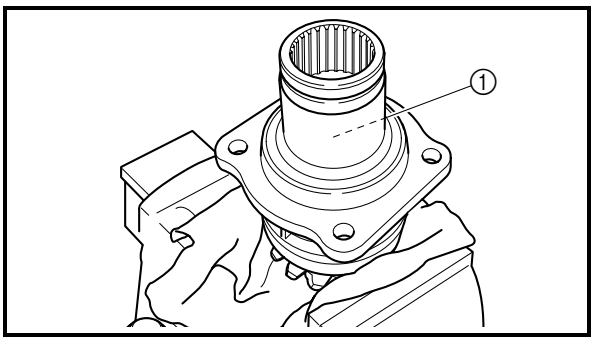


3. Check:
   - thrust movement free play
     Excessive play → Replace the joint assembly.



DISASSEMBLING THE FINAL DRIVE PINION GEAR ASSEMBLY

1. Loosen:
   - rear drive shaft coupling gear (final gear side) nut ①

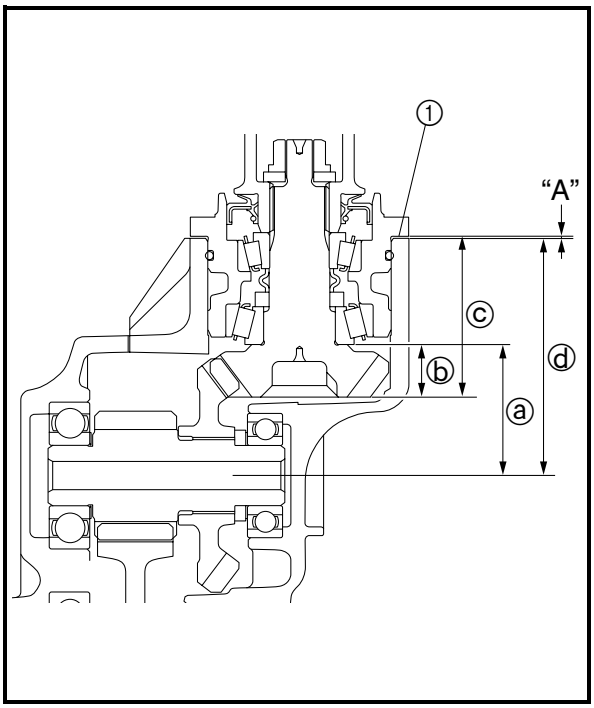
NOTE:

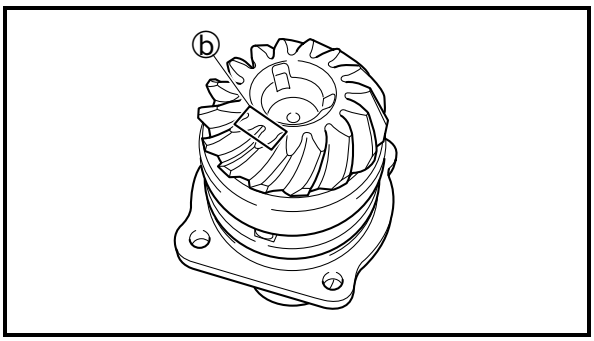
Secure the final drive pinion gear teeth in the vise with a clean rag.

EBS00184

POSITIONING THE FINAL DRIVE PINION GEAR AND RING GEAR

When the final drive pinion gear, wheel gear, final gear case and/or final driven pinion gear are replaced, be sure to adjust the positions of the final drive pinion gear, wheel gear and final driven pinion gear using the shim(s).





EBS00185

ADJUSTING THE FINAL DRIVE PINION GEAR BACKLASH

1. Select:
   - final drive pinion gear shim(s) ①

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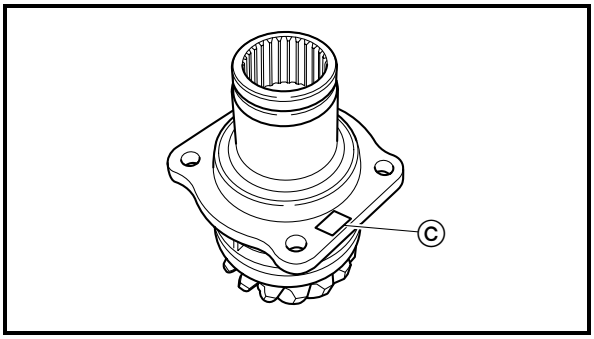
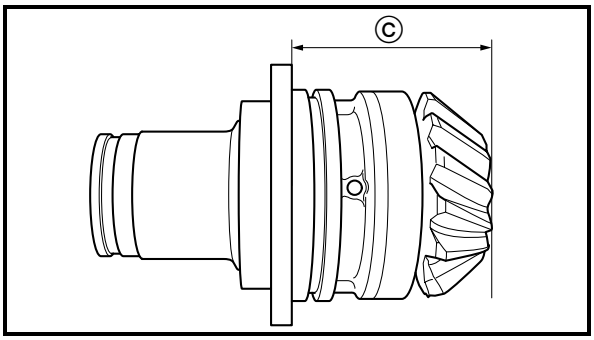
a. To find the final drive pinion gear shim thickness "A", use the following formula.

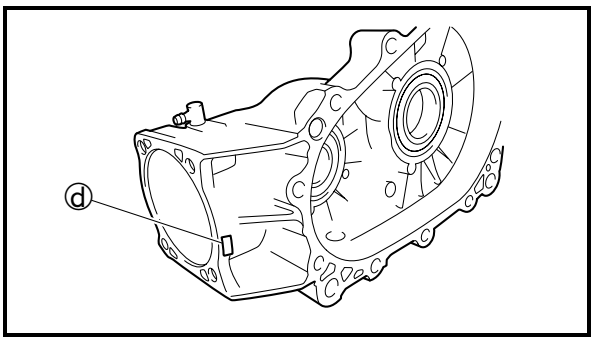
Final drive pinion gear shim thickness "A" = ⓐ + (ⓒ – ⓑ) – ⓓ

ⓐ = 55 mm (2.2 in).
ⓑ = a numeral (usually a decimal number) on the final drive pinion gear either added to or subtracted from "22.2".
ⓒ = a numeral (usually a decimal number) on the final drive pinion gear bearing housing either added to or subtracted from "67.8".
ⓓ = a numeral (usually a decimal number) on the final gear case either added to or subtracted from "100".

Example:
1) ⓐ = 55
2) If "–02" is stamped on the final drive pinion gear,
   ⓑ = 22.2 – 0.02
   = 22.18







3) If "–05" is stamped on the final drive pinion gear bearing housing,
   ⓒ = 67.8 – 0.05
   = 67.75

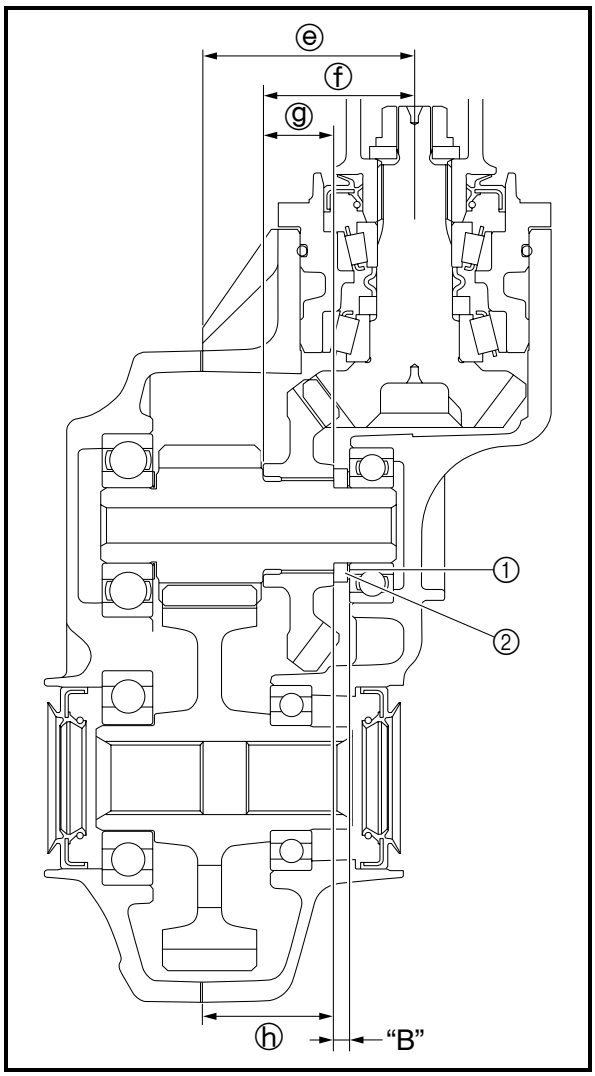
NOTE:
After replacing any part in the final drive pinion gear assembly, the overall length of the assembly will change. Therefore, be sure to measure distance ⓒ to select the correct final drive pinion gear shim thickness.

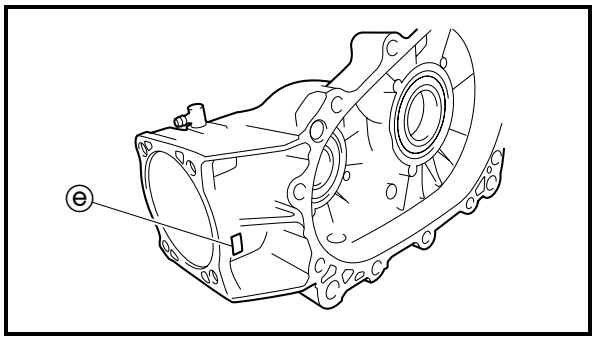
4) If "–01" is stamped on the final gear case,
   ⓓ = 100 – 0.01
   = 99.99
5) Therefore, "A" is 0.58
   "A" = 55 + (67.75 – 22.18) – 99.99
   = 0.58
6) Round off the hundredth digit and select the appropriate shim(s).
   In the example above, the calculated number is 0.58. The chart instructs you to round off 8 to 10 at the hundredth place. Thus, the shim thickness is 0.60 mm (0.024 in).

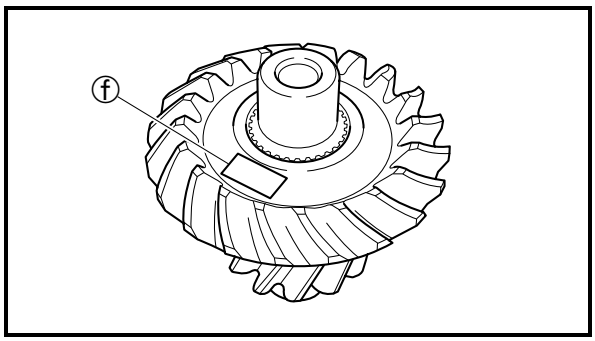
Hundredths	Rounded value
0, 1, 2	0
3, 4, 5, 6, 7	5
8, 9	10

Shims are supplied in the following thicknesses.

	Final drive pinion gear shim
Thickness (mm)	0.25 0.30 0.35 0.40 0.45 0.50







EBS00186

ADJUSTING THE FINAL DRIVEN PINION GEAR BACKLASH

1. Select:
   • final driven pinion gear shim(s) ①, ②

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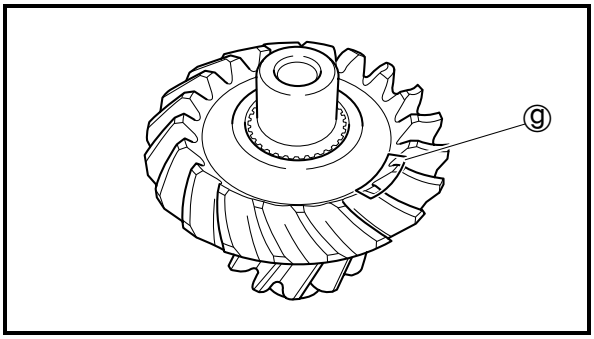
a. To find the final driven pinion gear shim thickness "B", use the following formula.

Final driven pinion gear shim thickness "B" = ⓗ – (ⓔ – ⓕ + ⓖ)

ⓔ = a numeral (usually a decimal number) on the final gear case either added to or subtracted from "71.6".
ⓕ = a numeral (usually a decimal number) on the outside of the final driven pinion gear either added to or subtracted from "51.0".
ⓖ = a numeral (usually a decimal number) on the outside of the final driven pinion gear either added to or subtracted from "24.0".
ⓗ = 49.8
Example:
1) If "–03" is stamped on the final gear case,
   ⓔ = 71.6 – 0.03
   = 71.57
2) If "–12" is stamped on the outside of the final driven pinion gear,
   ⓕ = 51.0 – 0.12
   = 50.88
3) If "–05" is stamped on the outside of the final driven pinion gear,
   ⓖ = 24.0 – 0.05
   = 23.95
4) ⓗ = 49.8
5) Therefore, shim thickness "B" is 5.16
   "B" = 49.8 – (71.57 – 50.88 + 23.95)
   = 5.16



6) Round off the hundredth digit and select the appropriate shim(s). In the example above, the calculated number is 5.16. The chart instructs you to round off 6 to 5 at the hundredth place.
Thus, the shim thickness is 5.15 mm.

Hundredths	Rounded value
0, 1, 2	0
3, 4, 5, 6, 7	5
8, 9	10

Shims are supplied in the following thicknesses.

	Final driven pinion gear shim ①
Thickness (mm)	0.25 0.30 0.35 0.40 0.45 0.50

	Final driven pinion gear shim ②
Thickness (mm)	4.5 4.8 5.1 5.4

NOTE:
Be sure to use one of each of the final driven pinion gear shims ① and ② to obtain the shim thickness.

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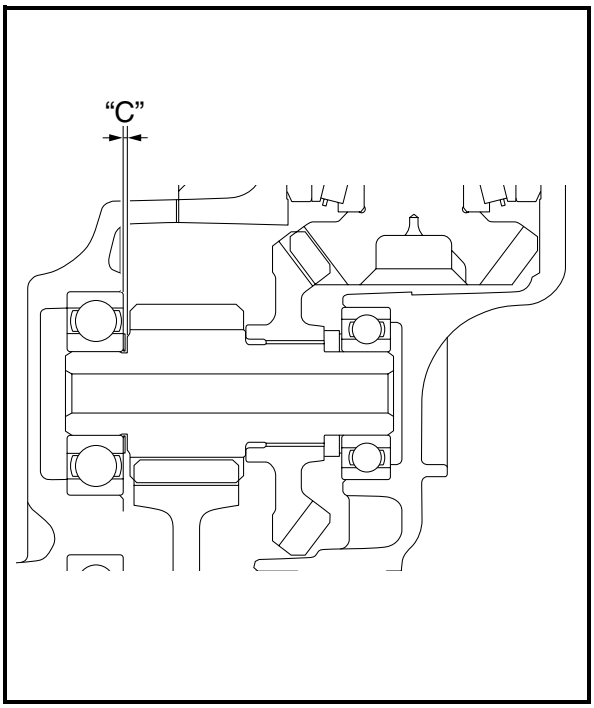

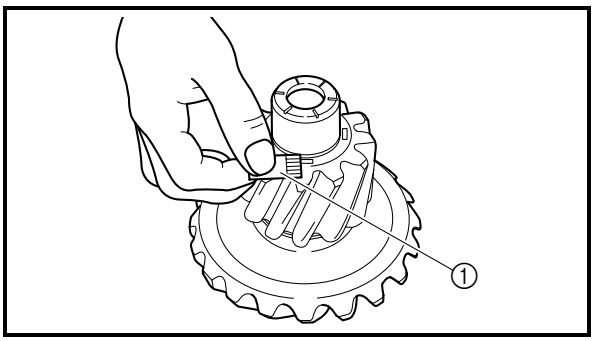

EBS00187

MEASURING THE FINAL DRIVEN PINION GEAR THRUST WASHER CLEARANCE

1. Measure:
   - final driven pinion gear thrust washer clearance “C”

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a. Place four pieces of Plastigauge® between the originally fitted thrust washer and the final driven pinion gear assembly.
b. Install the final driven pinion gear assembly and final driven pinion gear shim(s), and then tighten the bolts to specification.

	Final gear case cover bolt **23 Nm (2.3 m · kg, 17 ft · lb)**

NOTE:

Do not turn the drive pinion gear, wheel gear, and driven pinion gear when measuring the clearance with Plastigauge®.

c. Remove the final driven pinion gear assembly.
d. Measure the thrust clearance. Calculate the width of the flattened Plastigauge® ①.

	Final driven pinion gear thrust clearance **0.08 ~ 0.12 mm** **(0.0031 ~ 0.0047 in)**

e. If out of specification, select the correct washer.

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2. Select:
   - final driven pinion gear thrust washer

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a. Select a suitable thrust washer using the following chart.

	Thrust washer
Thickness (mm)	**0.25 0.30 0.35** **0.40 0.45 0.50**

b. Repeat the measurement steps until the final driven pinion gear thrust clearance is within the specified limits.

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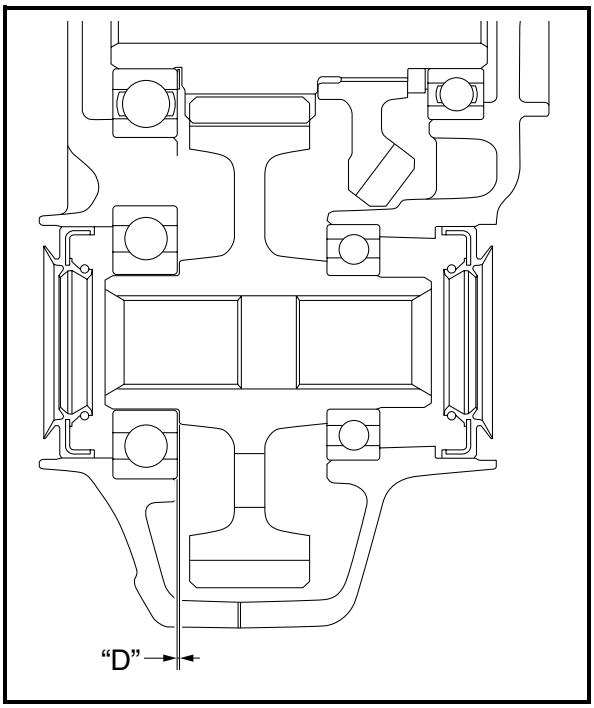

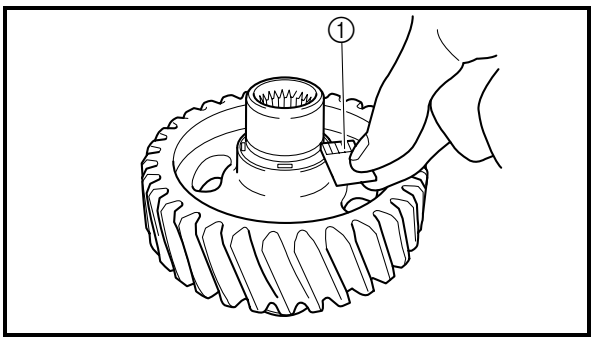

EBS00187

MEASURING THE WHEEL GEAR THRUST CLEARANCE

1. Measure:
   - wheel gear thrust clearance "D"

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a. Place four pieces of Plastigauge® between the originally fitted wheel gear shim(s) and the wheel gear.
b. Install the wheel gear and tighten the bolts to specification.

	Final gear case cover bolt **23 Nm (2.3 m · kg, 17 ft · lb)**

NOTE:

Do not turn the drive pinion gear, wheel gear, and driven pinion gear when measuring the clearance with Plastigauge®.

c. Remove the wheel gear.
d. Measure the thrust clearance. Calculate the width of the flattened Plastigauge® ①.

	Wheel gear thrust clearance **0.03 ~ 0.07 mm** **(0.0012 ~ 0.0028 in)**

e. If out of specification, select the correct shim(s).

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2. Select:
   - wheel gear thrust clearance "D"

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a. Select a suitable wheel gear shim(s) using the following chart.

	Wheel gear shim
Thickness (mm)	**0.25 0.30 0.35** **0.40 0.45 0.50**

b. Repeat the measurement steps until the wheel gear thrust clearance is within the specified limits.

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EBS00191
CHECKING THE REAR DRIVE SHAFT

1. Check:
   - rear drive shaft splines
   - coupling gear splines
     Wear/damage → Replace.

EBS00192
CHECKING THE FINAL DRIVE ASSEMBLY

1. Check:
   - final gear case
   - final gear case cover
     Cracks/damage → Replace.

NOTE:

When the final gear case and/or the final gear case cover are replaced, be sure to adjust the shim thickness of the final drive pinion gear, final driven pinion gear and/or wheel gear.

2. Check:
   - gear teeth
     Pitting/galling/wear → Replace the drive pinion gear and ring gear as a set.
   - oil seals
   - O-rings
     Damage → Replace.
3. Check:
   - bearings
     Damage → Replace.

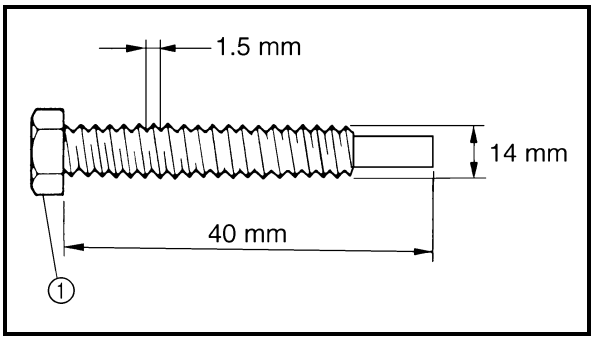
NOTE:

- Reusing roller bearings is acceptable, but Yamaha recommends installing new ones. Do not reuse the oil seal.
- When the final drive pinion gear, final driven pinion gear and/or wheel gear are replaced, be sure to adjust the shim thickness of the final drive pinion gear, final driven pinion gear and/or wheel gear.

EBS00193

MEASUREMENT THE FINAL GEAR LASH

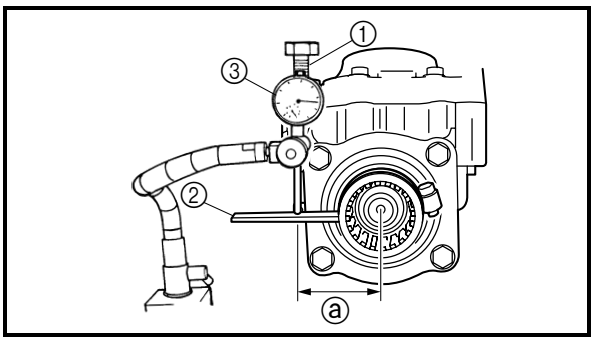
1. Secure the gear case in a vise or another supporting device.
2. Remove:
   - drain plug
   - gasket



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:
   - final gear backlash band ②
   - dial gauge ③

	Final gear backlash band **90890-01511**

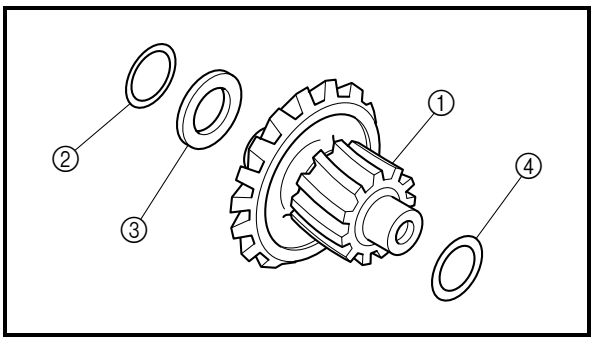
ⓐ Measuring point is 31.5 mm (1.24 in)

5. Measure:
   - gear lash
     Gently rotate the coupling gear from engagement to engagement.

	Final gear lash **0.10 ~ 0.20 mm** **(0.0039 ~ 0.0079 in)**

NOTE:

- When measuring the gear lash, be sure the right side (gear oil level check bolt side) of the final gear case assembly is facing downward.
- Measure the gear lash at four positions. Rotate the shaft 90° each time.



EBS00194
ADJUSTING THE FINAL GEAR LASH

1. Remove:
   - final driven pinion gear assembly ①
   - final driven pinion gear shim ②
   - final driven pinion gear shim ③
   - thrust washer ④
2. Adjust:
   - gear lash

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a. Select a suitable shim(s) and thrust washer using the following chart.

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

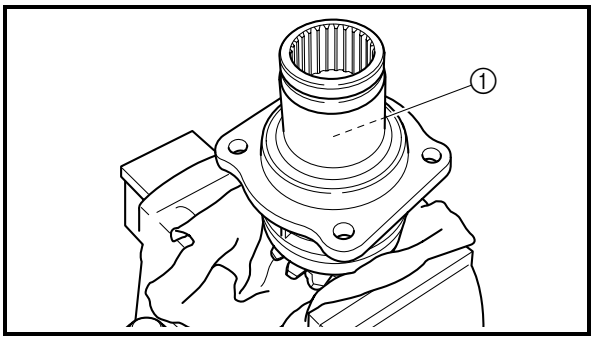
b. If increased by more than 0.2 mm (0.008 in):
   Reduce the thrust washer thickness by 0.2 mm (0.008 in) for every 0.2 mm (0.008 in) of final driven pinion gear shim increase.
c. If reduced by more than 0.2 mm (0.008 in):
   Increase the thrust washer thickness by 0.2 mm (0.008 in) for every 0.2 mm (0.008 in) that the final driven pinion gear shim is decreased.

	Final driven pinion gear shim ②
Thickness (mm)	**0.25 0.30 0.35 0.40 0.45 0.50**

	Final driven pinion gear shim ③
Thickness (mm)	**4.5 4.8 5.1 5.4**

NOTE:
Be sure to use one of each of the final driven pinion gear shims ② and ③ to obtain the shim thickness.

Thrust washer	
Thickness (mm)	0.25 0.30 0.35 0.40 0.45 0.50



ASSEMBLING THE FINAL DRIVE PINION GEAR ASSEMBLY

1. Tighten:
   - rear drive shaft coupling gear nut (final gear side) ① LT

NOTE:

Secure the final drive pinion gear teeth in the vise with a clean rag.

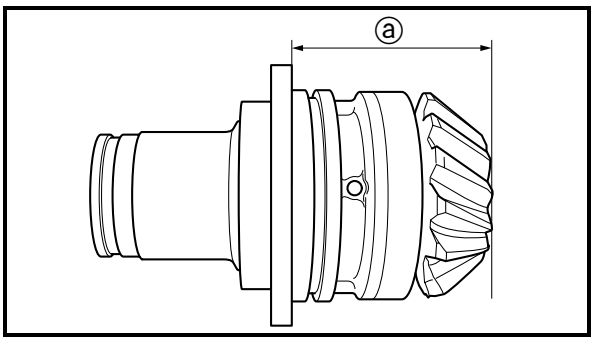
a. Tighten the nut to 80 Nm (8.0 m · kg, 58 ft · lb).
b. Secure the final drive pinion gear bearing housing in a vice, and then turn the nut with a torque wrench to check the starting torque.

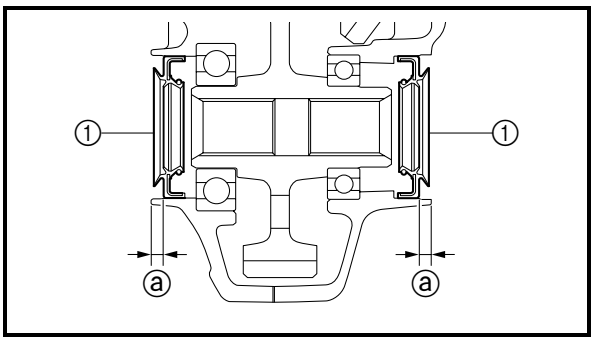
Final drive pinion gear starting torque (final drive pinion gear preload)
0.8 ~ 1.3 Nm (0.08 ~ 0.13 m · kg)

c. Out of specification → Tighten the nut further.
d. Repeat step (b).
e. Repeat steps (c) and (d) until the starting torque is within specification.

NOTE:

- Be careful not to exceed the specified starting torque.
- If the specified starting torque is exceeded, replace the expander with a new one and reassemble the final drive pinion gear assembly.
- Make sure that the distance ⓐ is 67.5 ~ 68.1 mm (2.66 ~ 2.68 in) as shown.





ASSEMBLING THE FINAL GEAR CASE

1. Install:
   - oil seals ①

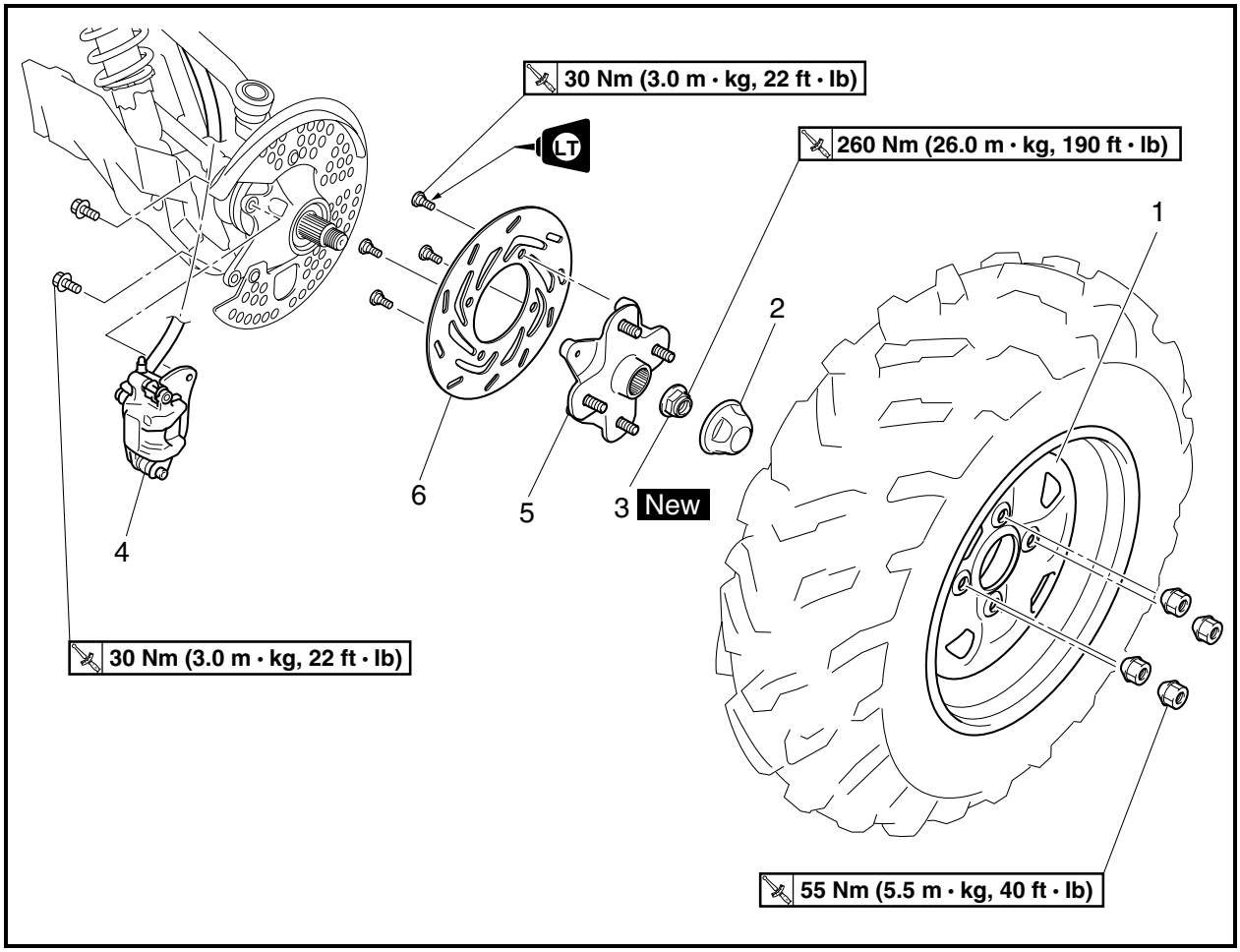
Installed depth of oil seal ⓐ
5.5 mm (0.22 in)

EBS00378

CHASSIS

FRONT AND REAR WHEELS

FRONT WHEELS



Order	Job/Part	Q'ty	Remarks
	Removing the front wheels		Remove the parts in the order listed. The following procedure applies to both of the front wheels. Place the vehicle on a level surface. **⚠ WARNING** **Securely support the vehicle so there is no danger of it falling over.**
1	Front wheel	1	Refer to "INSTALLING THE WHEELS".
2	Wheel cap	1	
3	Front wheel axle nut	1	Refer to "INSTALLING THE WHEEL HUBS".

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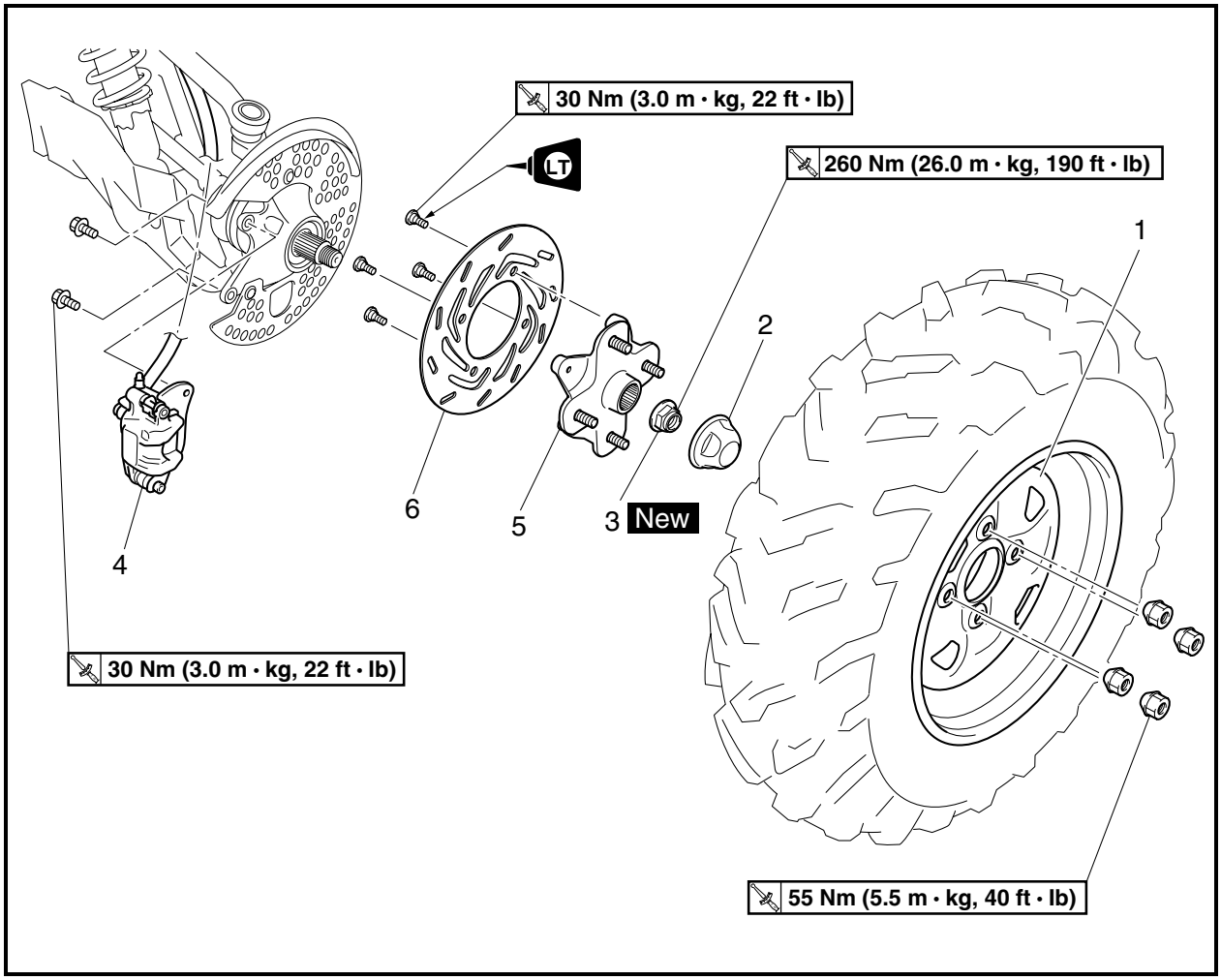
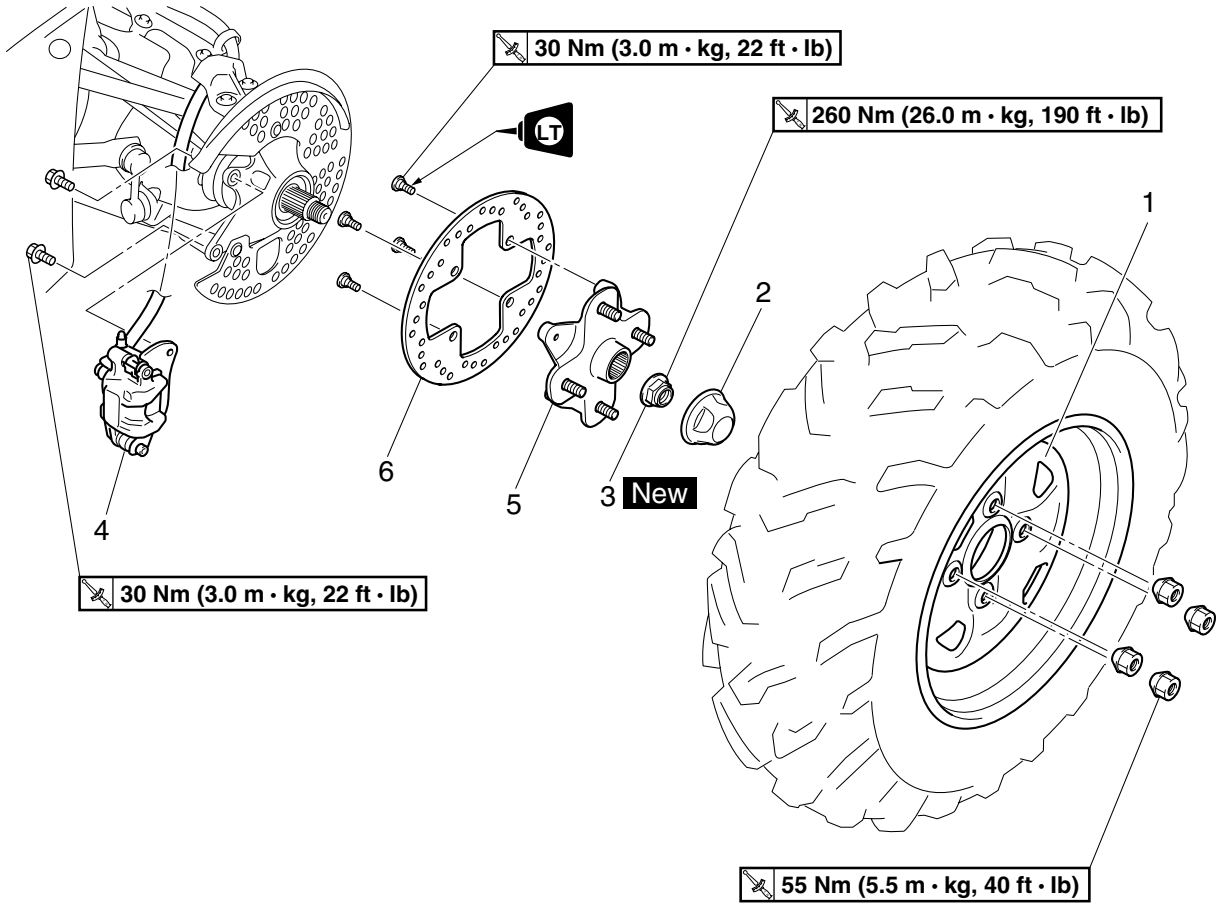


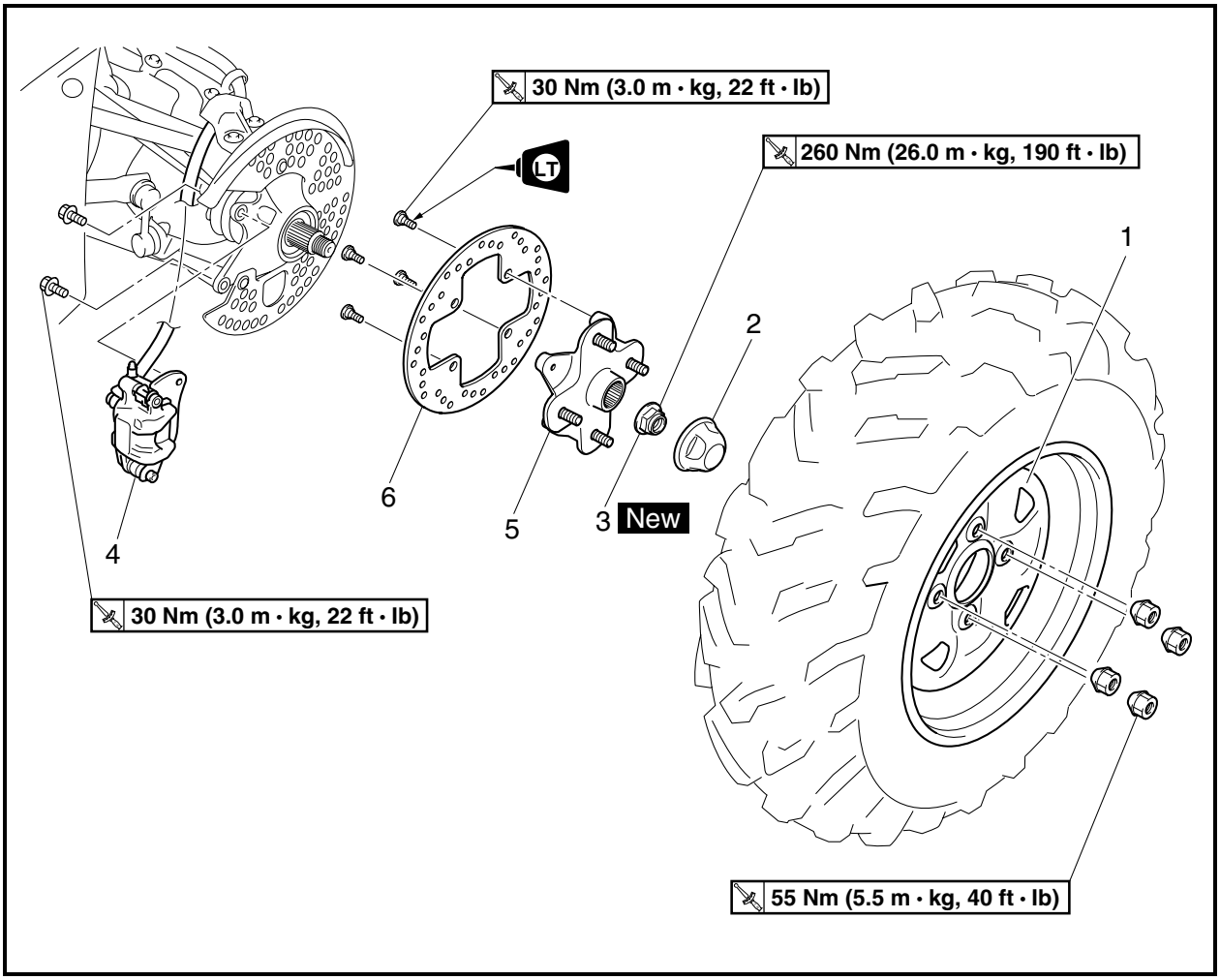
Order	Job/Part	Q'ty	Remarks
4	Front brake caliper assembly	1	**NOTE:** Do not squeeze the front brake lever when the brake caliper is off of the brake disc as the brake pads will be forced shut.
5	Front wheel hub	1	
6	Front brake disc	1	Refer to "INSTALLING THE BRAKE DISCS". For installation, reverse the removal procedure.

EBS00379

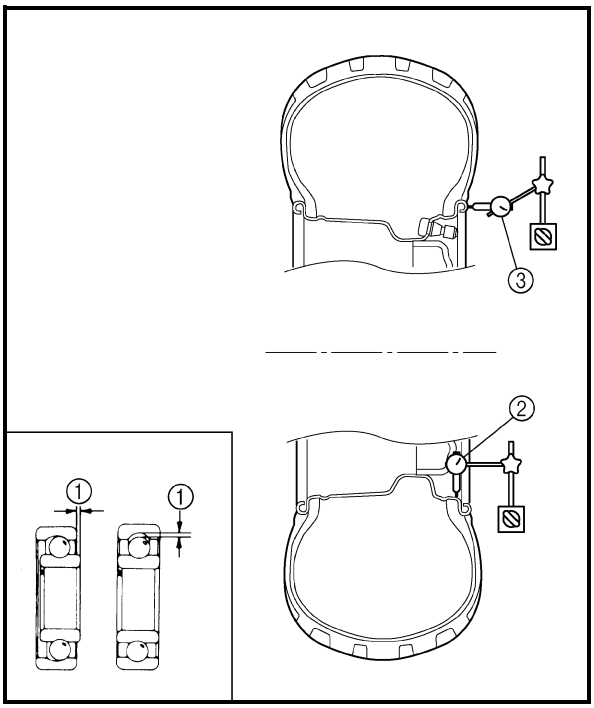
REAR WHEELS



Order	Job/Part	Q'ty	Remarks
	Removing the rear wheels		Remove the parts in the order listed. The following procedure applies to both of the rear wheels. Place the vehicle on a level surface. **⚠ WARNING** **Securely support the vehicle so there is no danger of it falling over.**
1	Rear wheel	1	Refer to "INSTALLING THE WHEELS".
2	Wheel cap	1	
3	Rear wheel axle nut	1	Refer to "INSTALLING THE WHEEL HUBS".



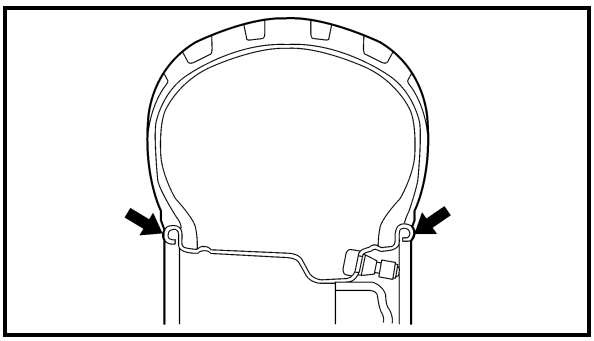
Order	Job/Part	Q'ty	Remarks
4	Rear brake caliper assembly	1	**NOTE:** Do not squeeze the rear brake lever and brake pedal when the brake caliper is off of the brake disc as the brake pads will be forced shut.
5	Rear wheel hub	1	
6	Rear brake disc	1	Refer to "INSTALLING THE BRAKE DISCS". For installation, reverse the removal procedure.



EBS00383
CHECKING THE WHEELS

1. Check:
   - wheels
2. Measure:
   - wheel runout
     Over the specified limit → Replace the wheel or check the wheel bearing play ①.

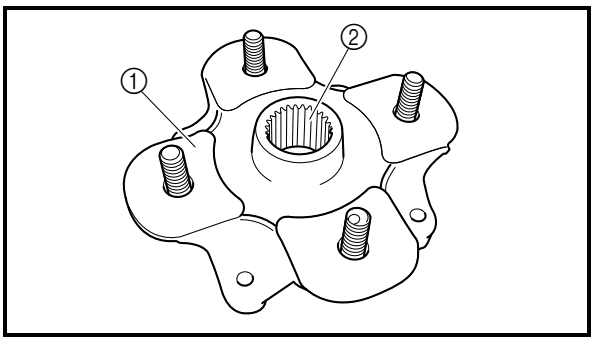
Wheel runout limit
Front
Radial ②: 2.0 mm (0.08 in)
Lateral ③: 2.0 mm (0.08 in)
Rear
Radial ②: 2.0 mm (0.08 in)
Lateral ③: 2.0 mm (0.08 in)



3. Check:
   - wheel balance
     Out of balance → Adjust.

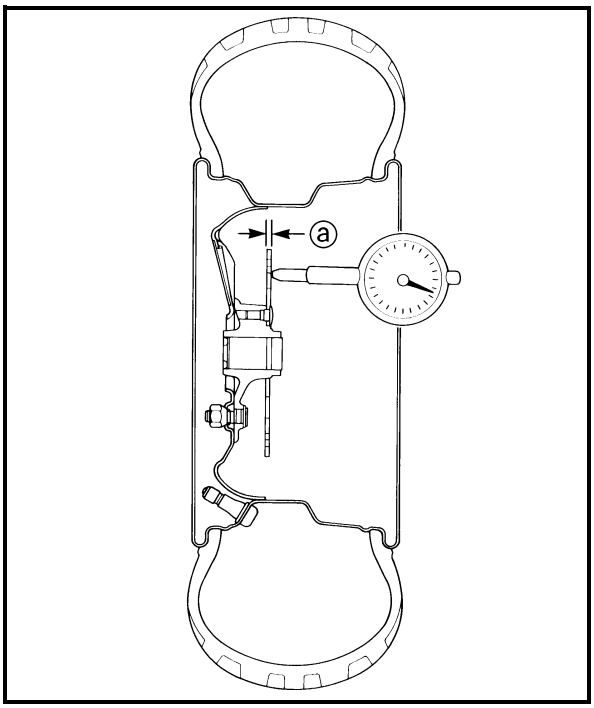
⚠ WARNING

After replacing the tire, ride conservatively to allow the tire to be properly seated in the rim. Failure to do so may cause an accident resulting in vehicle damage and possible operator injury.



EBS00385
CHECKING THE WHEEL HUBS

1. Check:
   - wheel hubs ①
     Cracks/damage → Replace.
   - splines (wheel hub) ②
     Wear/damage → Replace the wheel hub.



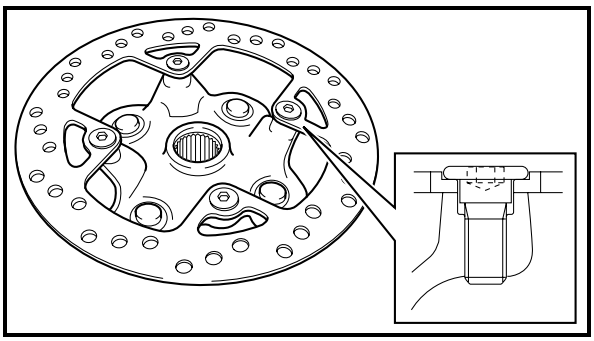
EBS00389
CHECKING THE BRAKE DISCS

1. Check:
   - brake discs
     Galling/damage → Replace.
2. Measure:
   - brake disc deflection
     Out of specification → Check the wheel runout.

Brake disc maximum deflection
Front: 0.1 mm (0.004 in)
Rear: 0.1 mm (0.004 in)

   - brake disc thickness ⓐ
     Out of specification → Replace.

Brake disc minimum thickness
Front: 3.0 mm (0.12 in)
Rear: 3.0 mm (0.12 in)

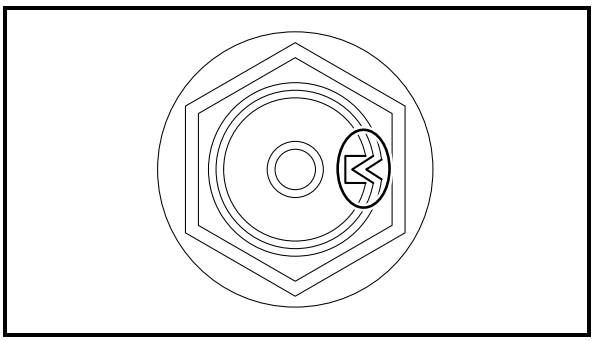


INSTALLING THE BRAKE DISCS

1. Install:
   - brake discs

Brake disc bolt
30 Nm (3.0 m · kg, 22 ft · lb)
LOCTITE®

NOTE:
Install the brake discs with their spot-faced side facing the bolt heads.

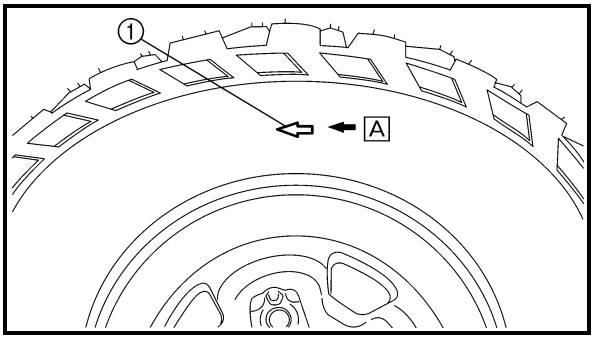


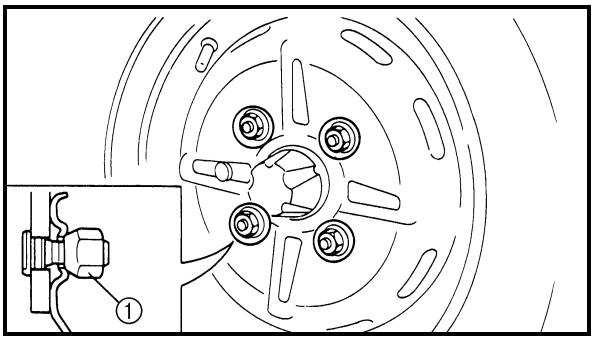
INSTALLING THE WHEEL HUBS

1. Install:
   - wheel axle nut New

260 Nm (26.0 m · kg, 190 ft · lb)

NOTE:
- Do not apply oil to the seat of the nut.
- After tightening the nut, stake the collar of the nut into the notch of the shaft.





EBS00392
INSTALLING THE WHEELS

1. Install:
   - wheels

NOTE:

The arrow mark ① on the tire must point in the direction of rotation A of the wheel.

2. Tighten:
   - wheel nuts ①

55 Nm (5.5 m · kg, 40 ft · lb)

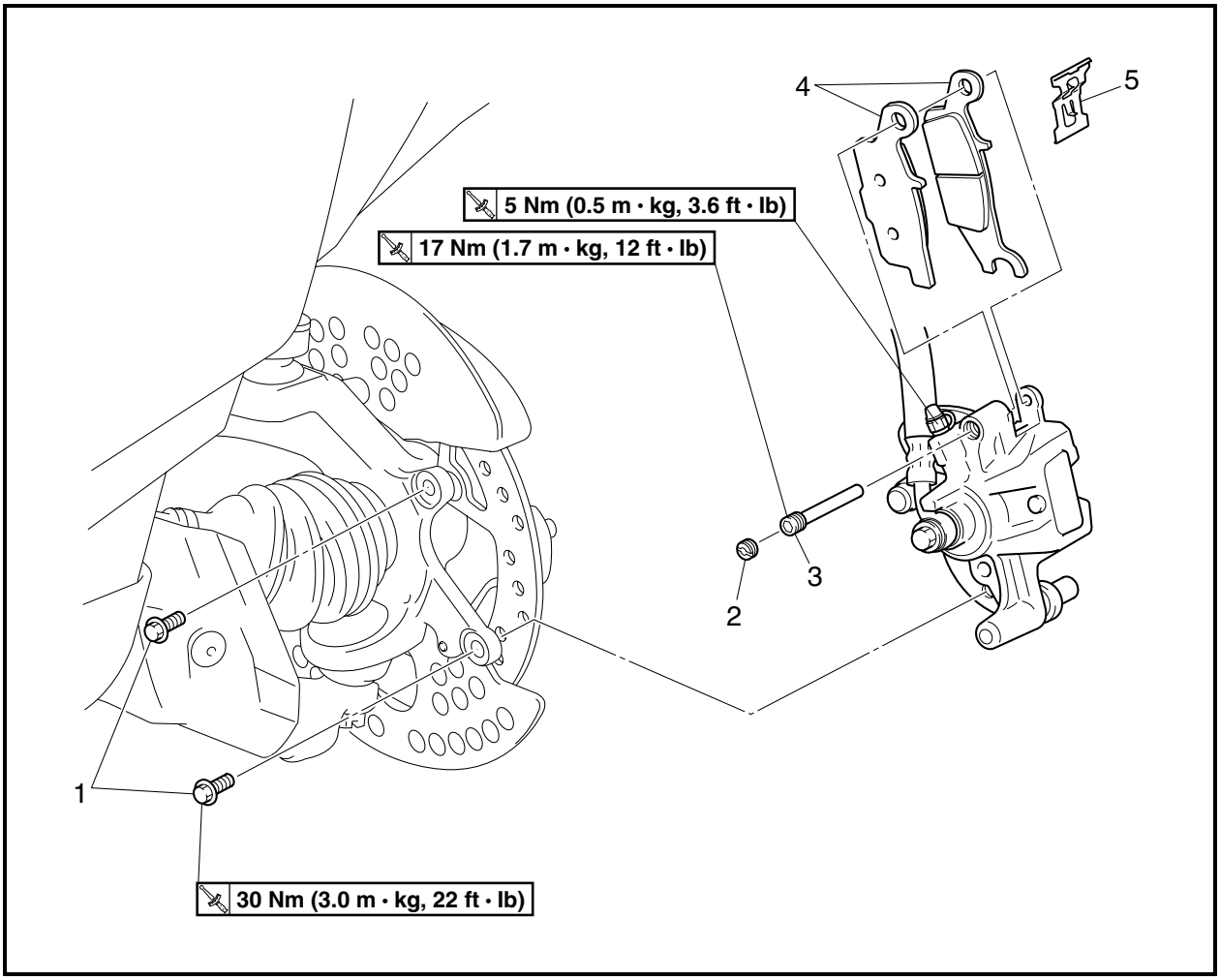
⚠ WARNING

Tapered wheel nuts ① are used for both the front and rear wheels. Install each nut with its tapered side towards the wheel.

EBS00400

FRONT AND REAR BRAKES

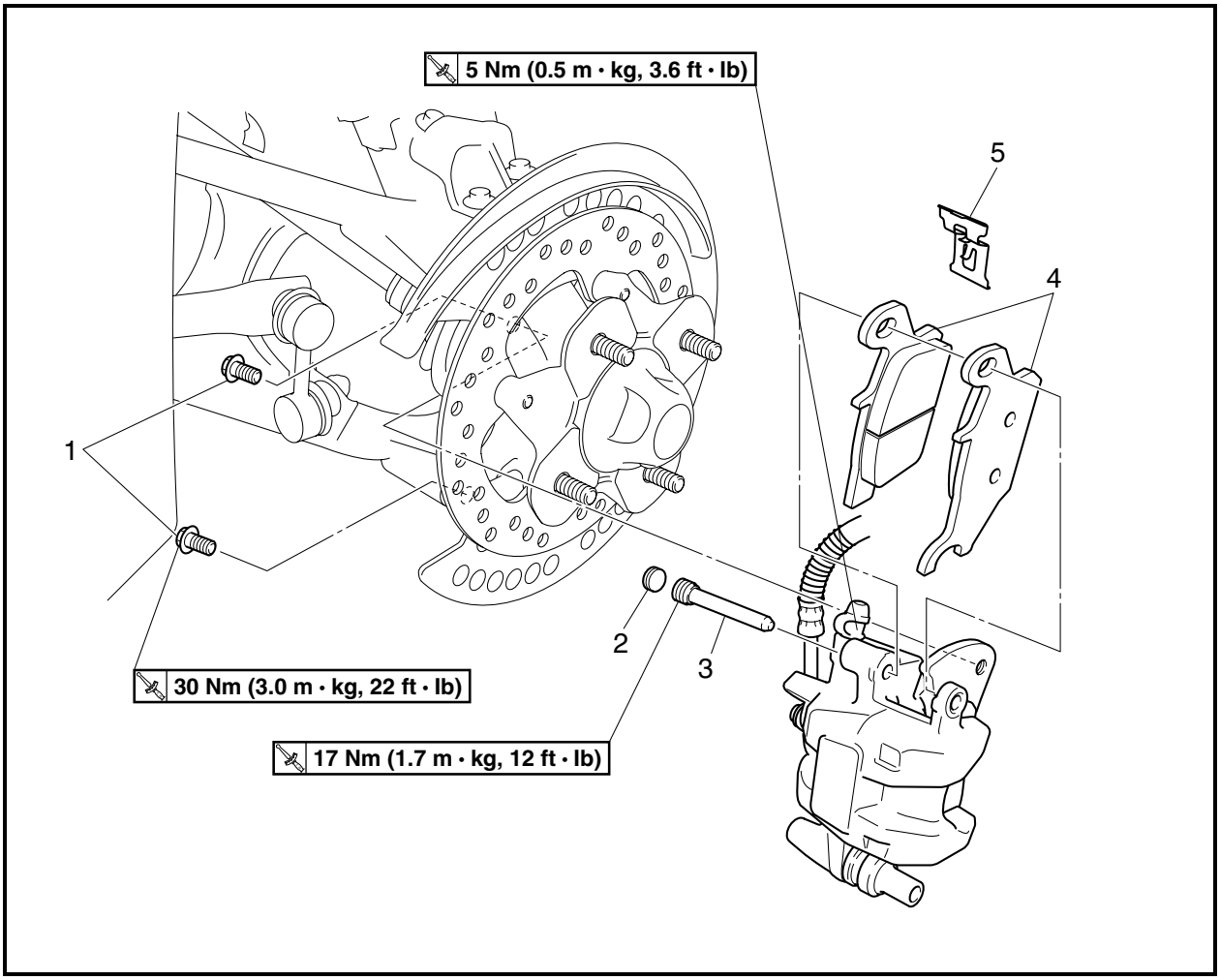
FRONT BRAKE PADS



Order	Job/Part	Q'ty	Remarks
	Removing the front brake pads		Remove the parts in the order listed. The following procedure applies to both of the front brake calipers.
	Front wheel		Refer to "FRONT AND REAR WHEELS".
1	Front brake caliper bolt	2	Refer to "REPLACING THE FRONT AND REAR BRAKE PADS".
2	Brake pad holding bolt plug	1	
3	Brake pad holding bolt	1	
4	Front brake pad	2	
5	Brake pad spring	1	
			For installation, reverse the removal procedure.

EBS00401

REAR BRAKE PADS



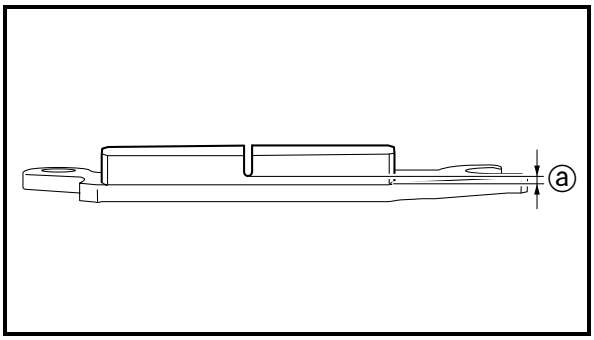
Order	Job/Part	Q'ty	Remarks
	Removing the rear brake pads		Remove the parts in the order listed. The following procedure applies to both of the rear brake calipers.
	Rear wheel		Refer to "FRONT AND REAR WHEELS".
1	Rear brake caliper bolt	2	
2	Brake pad holding bolt plug	1	Refer to "REPLACING THE FRONT AND REAR BRAKE PADS".
3	Brake pad holding bolt	1	
4	Rear brake pad	2	
5	Brake pad spring	1	
			For installation, reverse the removal procedure.

EBS00402

CAUTION:

Disc brake components rarely require disassembly.
DO NOT:

- **disassemble components unless absolutely necessary;**
- **use solvents on internal brake components;**
- **use spent brake fluid for cleaning; (use only clean brake fluid)**
- **allow brake fluid to come in contact with the eyes, as this may cause eye injury;**
- **splash brake fluid onto painted surfaces or plastic parts, as this may cause damage;**
- **disconnect any hydraulic connection, as this would require the entire brake system to be disassembled, drained, cleaned, properly filled and bled after reassembly.**



EBS00404

REPLACING THE FRONT AND REAR BRAKE PADS

NOTE:

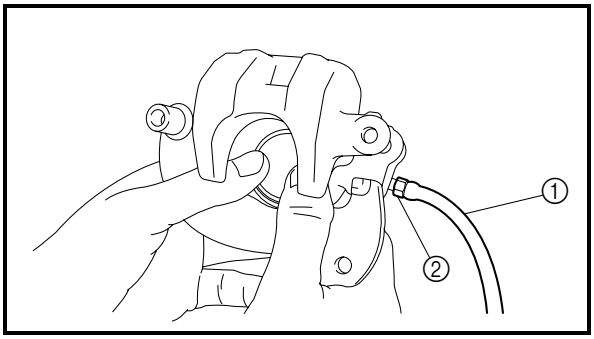
It is not necessary to disassemble the brake calipers and brake hoses to replace the brake pads.

1. Remove:
   - brake pads

Brake pad wear limit ⓐ
Front: 1.0 mm (0.04 in)
Rear: 1.0 mm (0.04 in)

NOTE:

Replace the brake pads as a set if either is found to be worn to the wear limit.



2. Install:
   - brake pad spring
   - brake pads

NOTE:
Always install new brake pads and brake pad spring as a set.

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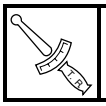
a. Connect a suitable hose ① tightly to the brake caliper bleed screw ②. Put the other end of this hose into an open container.
b. Loosen the brake caliper bleed screw and, using a finger, push the caliper piston into the brake caliper.
c. Tighten the brake caliper bleed screw.

	**Brake caliper bleed screw** **5 Nm (0.5 m · kg, 3.6 ft · lb)**

d. Install new brake pads and a new brake pad spring.
e. Install the holding bolt, holding bolt plug and brake caliper.

	**Brake pad holding bolt** **17 Nm (1.7 m · kg, 12 ft · lb)** **Brake caliper bolt** **30 Nm (3.0 m · kg, 22 ft · lb)**

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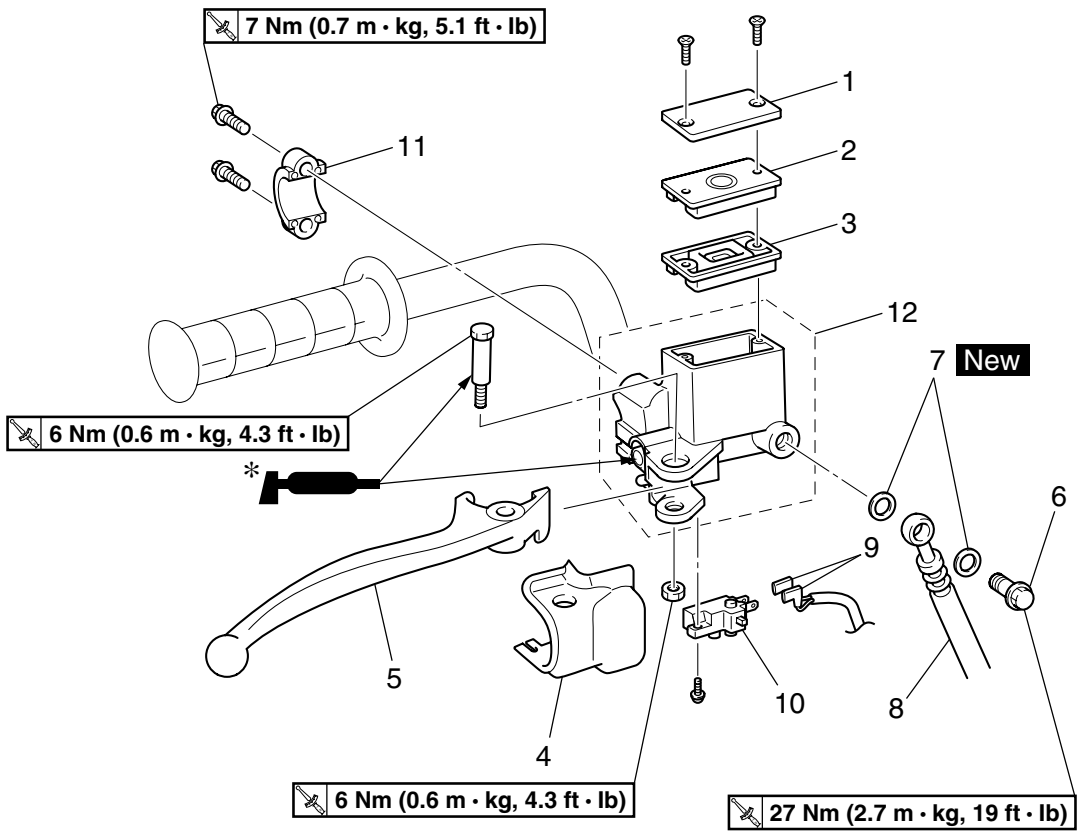
3. Check:
   - brake fluid level
     Refer to “CHECKING THE BRAKE FLUID LEVEL” in chapter 3.
4. Check:
   - brake lever operation
     Soft or spongy feeling → Bleed the brake system.
     Refer to “BLEEDING THE HYDRAULIC BRAKE SYSTEM” in chapter 3.

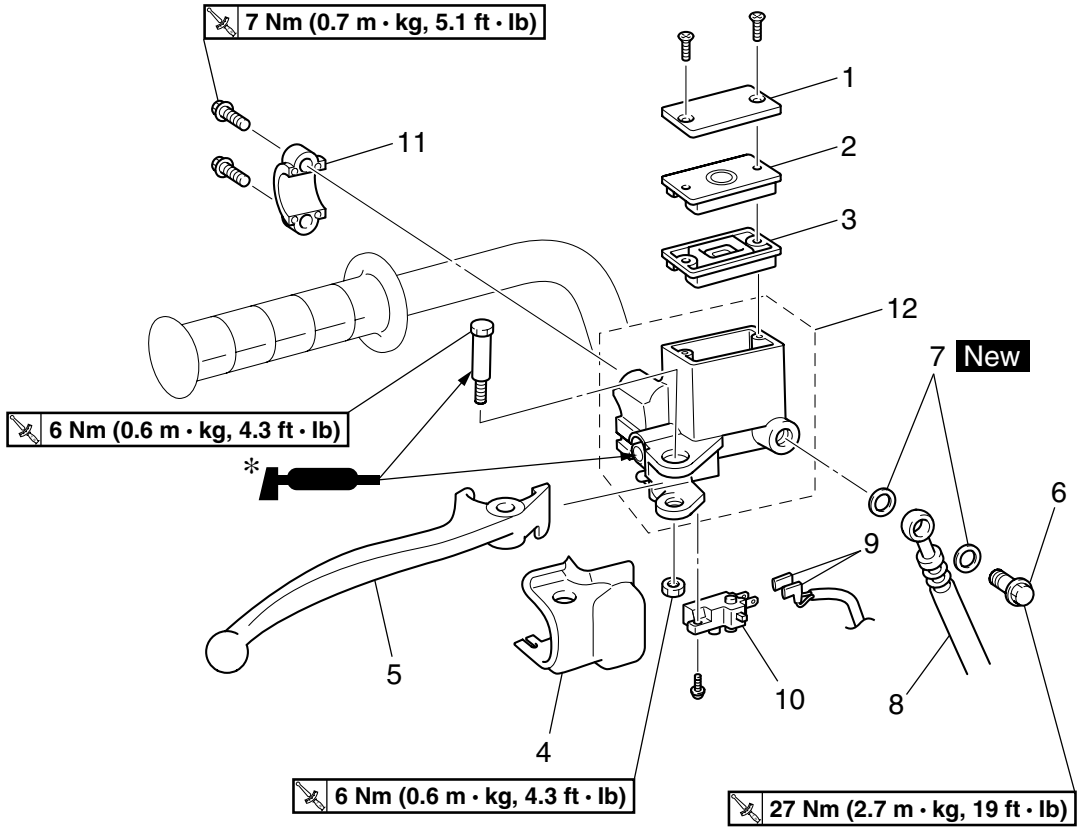
EBS00407

FRONT BRAKE MASTER CYLINDER



* Apply silicone grease.

Order	Job/Part	Q'ty	Remarks
	Removing the front brake master cylinder		Remove the parts in the order listed.
	Brake fluid		Drain.
	On-command four-wheel-drive motor switch and differential gear lock switch		Refer to "HANDLEBAR".
1	Brake fluid reservoir cap	1	
2	Brake fluid reservoir diaphragm holder	1	
3	Brake fluid reservoir diaphragm	1	
4	Front brake lever cover	1	
5	Brake lever	1	

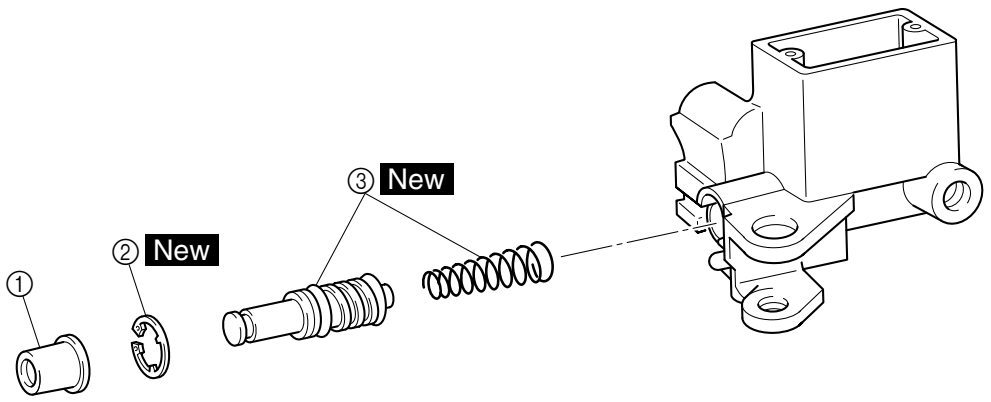


* Apply silicone grease.

Order	Job/Part	Q'ty	Remarks
6	Union bolt	1	
7	Copper washer	2	
8	Front brake hose	1	Disconnect.
9	Front brake light switch connector	2	Disconnect.
10	Front brake light switch	1	
11	Front brake master cylinder holder	1	
12	Front brake master cylinder	1	
			For installation, reverse the removal procedure.

Refer to "INSTALLING THE FRONT BRAKE MASTER CYLINDER".

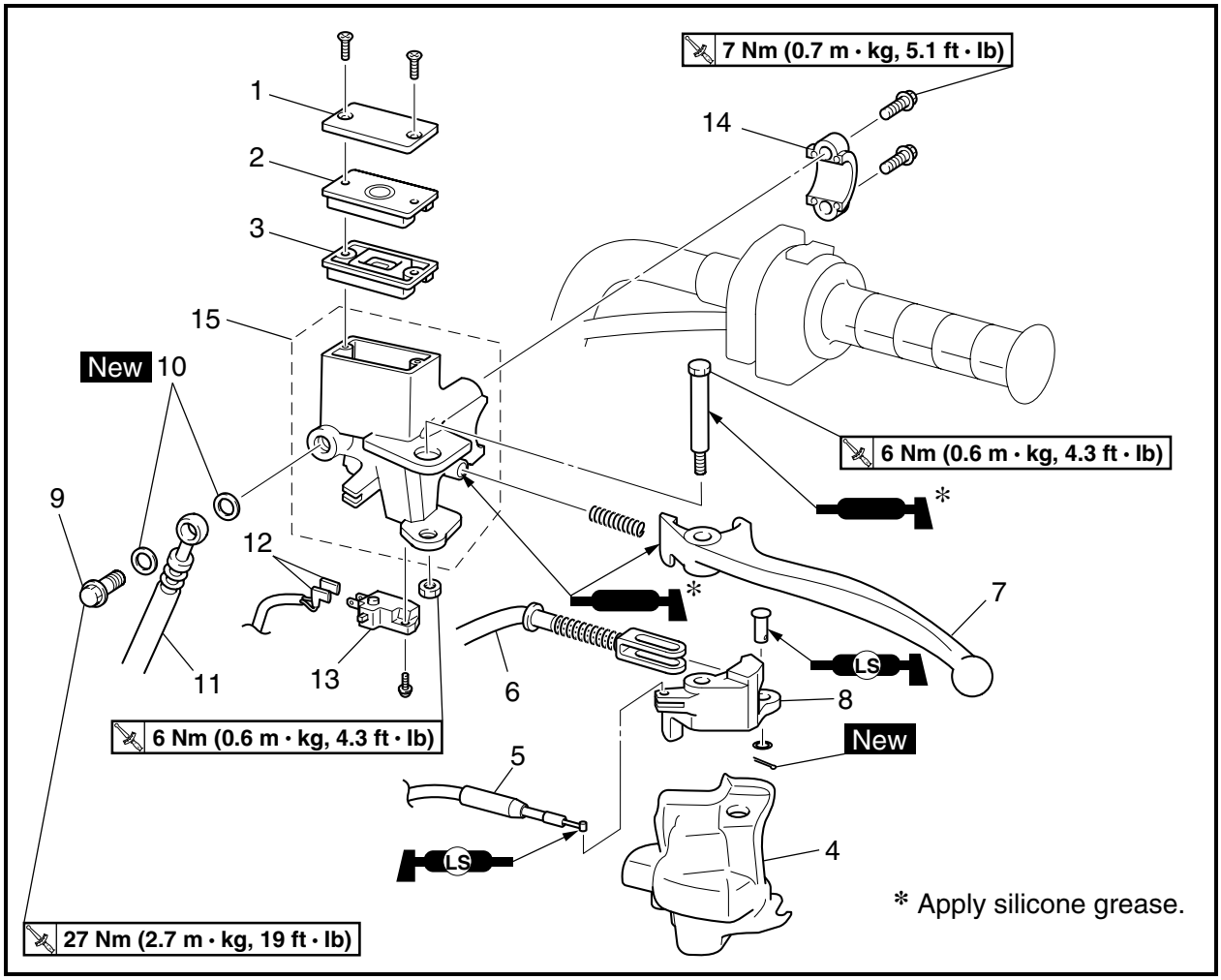
EBS00409



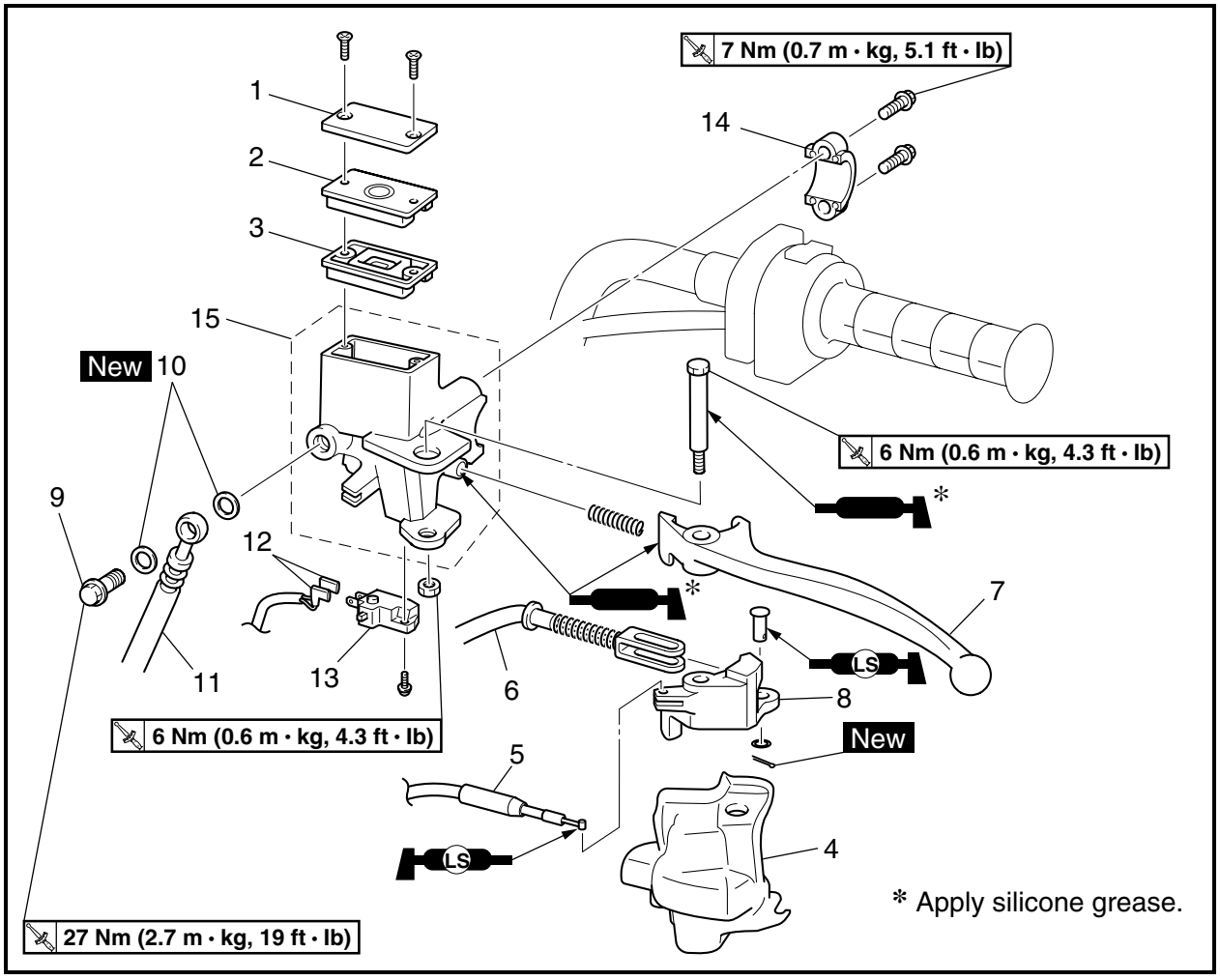
Order	Job/Part	Q'ty	Remarks
	Disassembling the front brake master cylinder		Remove the parts in the order listed.
①	Dust boot	1	Refer to "ASSEMBLING THE FRONT AND REAR BRAKE MASTER CYLINDERS".
②	Circlip	1	
③	Brake master cylinder kit	1	
			For assembly, reverse the disassembly procedure.

EBS00410

REAR BRAKE MASTER CYLINDER



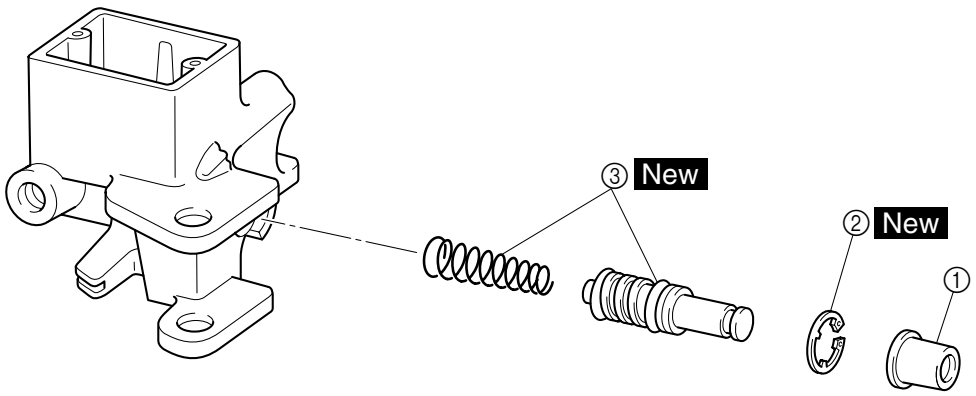
Order	Job/Part	Q'ty	Remarks
	Removing the rear brake master cylinder		Remove the parts in the order listed.
	Brake fluid		Drain.
1	Brake fluid reservoir cap	1	
2	Brake fluid reservoir diaphragm holder	1	
3	Brake fluid reservoir diaphragm	1	
4	Rear brake lever cover	1	
5	Shift control cable	1	Disconnect.
6	Rear brake cable	1	Disconnect.
7	Brake lever	1	
8	Brake lever bracket	1	



Order	Job/Part	Q'ty	Remarks
9	Union bolt	1	
10	Copper washer	2	
11	Rear brake hose	1	Disconnect.
12	Rear brake light switch connector	2	Disconnect.
13	Rear brake light switch	1	
14	Rear brake master cylinder holder	1	
15	Rear brake master cylinder	1	
			For installation, reverse the removal procedure.

Refer to "INSTALLING THE REAR BRAKE MASTER CYLINDER".

EBS00411



Order	Job/Part	Q'ty	Remarks
	Disassembling the rear brake master cylinder		Remove the parts in the order listed.
①	Dust boot	1	Refer to "ASSEMBLING THE FRONT AND REAR BRAKE MASTER CYLINDERS".
②	Circlip	1	
③	Brake master cylinder kit	1	
			For assembly, reverse the disassembly procedure.

EBS00413
CHECKING THE MASTER CYLINDERS

1. Check:
   - brake master cylinder
     Wear/scratches → Replace the brake master cylinder assembly.
   - brake master cylinder body
     Cracks/damage → Replace.
   - brake fluid delivery passage
     (brake master cylinder body)
     Blockage → Blow out with compressed air.
2. Check:
   - brake master cylinder kit
     Scratches/wear/damage → Replace as a set.
3. Check:
   - brake master cylinder reservoir
   - brake master cylinder reservoir diaphragm
     Cracks/damage → Replace.

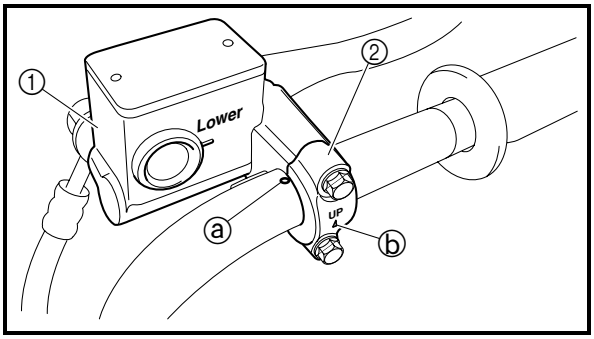
EBS00415
ASSEMBLING THE FRONT AND REAR BRAKE MASTER CYLINDERS

⚠ WARNING

- **All internal brake components should be cleaned and lubricated with new brake fluid only before installation.**

Recommended brake fluid
DOT 4

- **Whenever a master cylinder is disassembled, replace the piston seals and dust seals.**



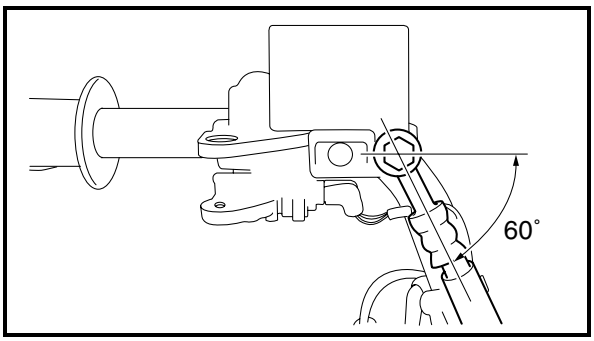
EBS00418
INSTALLING THE FRONT BRAKE MASTER CYLINDER

1. Install:
   - brake master cylinder ①
   - brake master cylinder holder ②

7 Nm (0.7 m · kg, 5.1 ft · lb)

NOTE:

- Align the end of the brake master cylinder holder with the punch mark ⓐ on the handlebar.
- The "UP" mark ⓑ on the brake master cylinder holder should face up.



2. Install:
   - brake hose
   - copper washers **New**
   - union bolt **27 Nm (2.7 m · kg, 19 ft · lb)**

NOTE:

- Tighten the union bolt while holding the brake hose as shown.
- Turn the handlebar to the left and to the right to check that the brake hose does not touch other parts (throttle cable, wire harness, leads, etc.). Correct if necessary.

⚠ WARNING

Proper brake hose routing is essential to insure safe vehicle operation. Refer to "CABLE ROUTING" in chapter 2.

3. Fill:
   • brake fluid reservoir

Recommended brake fluid
DOT 4

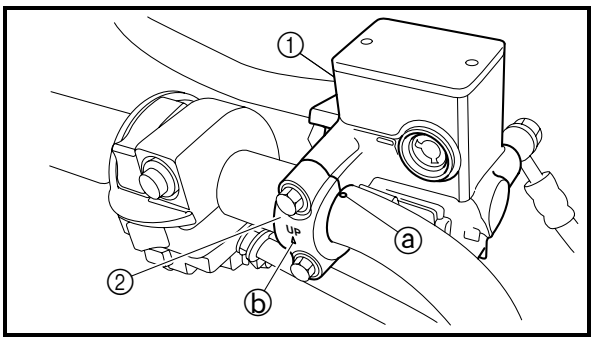
CAUTION:

Brake fluid may damage painted surfaces or plastic parts. Always clean up spilled brake fluid immediately.

⚠ WARNING

- **Use only the designated quality brake fluid: other brake fluids may deteriorate the rubber seals, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid: mixing brake fluids may result in a harmful reaction and lead to poor brake performance.**
- **Be careful that water does not enter the brake master cylinder when refilling. Water will significantly lower the boiling point of the brake fluid and may result in vapor lock.**

4. Air bleed:
   • brake system
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
5. Check:
   • brake fluid level
   Brake fluid level is under the "LOWER" level line → Fill up.
   Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.



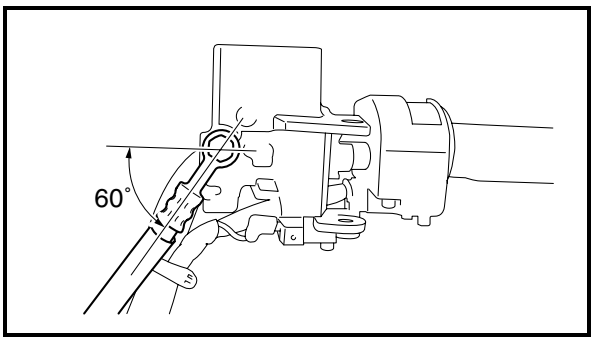
EBS00418
INSTALLING THE REAR BRAKE MASTER CYLINDER

1. Install:
   - brake master cylinder ①
   - brake master cylinder holder ②

7 Nm (0.7 m · kg, 5.1 ft · lb)

NOTE:

- Align the end of the brake master cylinder holder with the punch mark ⓐ on the handlebar.
- The "UP" mark ⓑ on the brake master cylinder holder should face up.



2. Install:
   - brake hose
   - copper washers **New**
   - union bolt **27 Nm (2.7 m · kg, 19 ft · lb)**

NOTE:

- Tighten the union bolt while holding the brake hose as shown.
- Turn the handlebar to the left and to the right to check that the brake hose does not touch other parts (throttle cable, wire harness, leads, etc.). Correct if necessary.

⚠ WARNING

Proper brake hose routing is essential to insure safe vehicle operation. Refer to "CABLE ROUTING" in chapter 2.

3. Fill:
   • brake fluid reservoir

Recommended brake fluid
DOT 4

CAUTION:

Brake fluid may damage painted surfaces or plastic parts. Always clean up spilled brake fluid immediately.

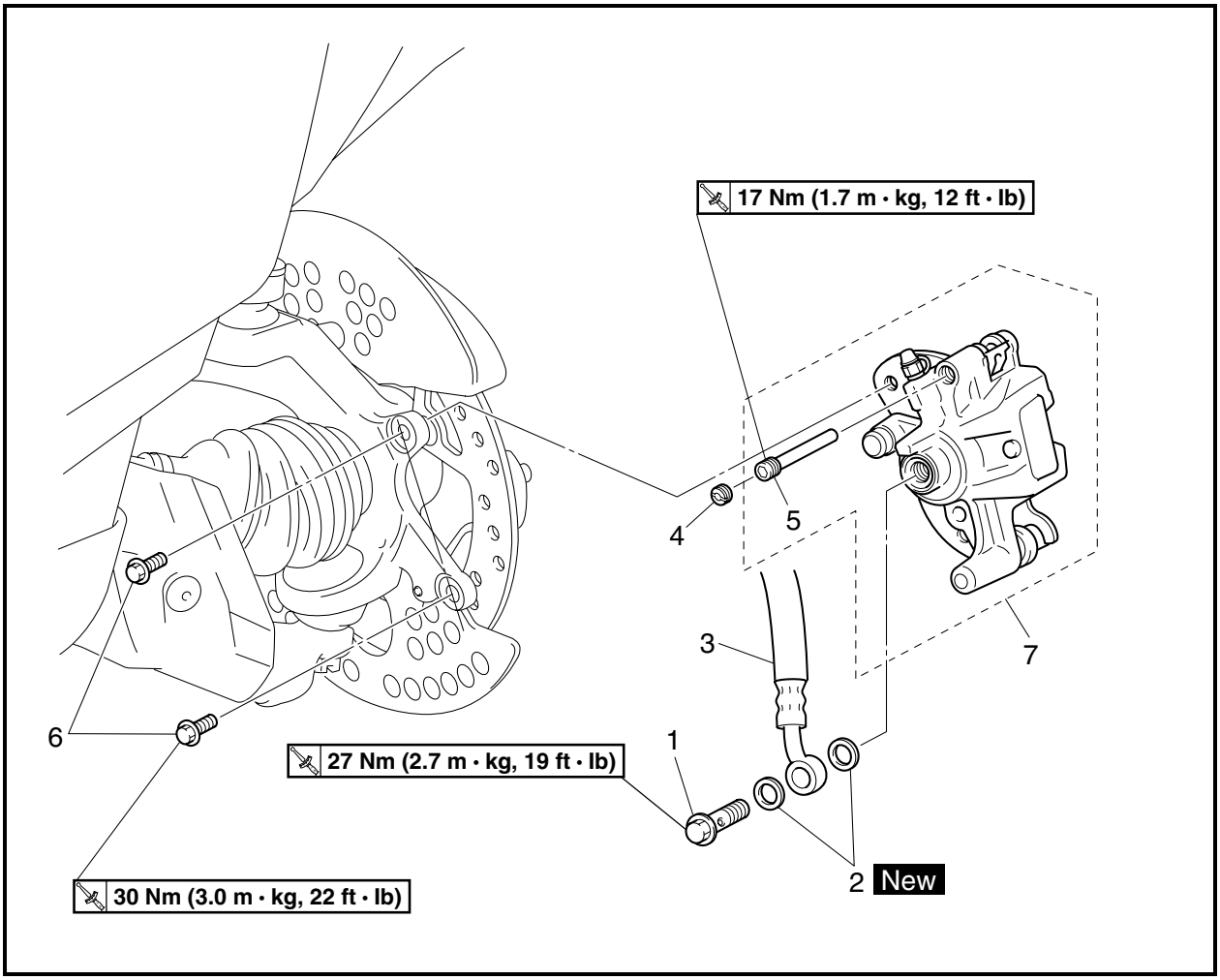
⚠ WARNING

- **Use only the designated quality brake fluid: other brake fluids may deteriorate the rubber seals, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid: mixing brake fluids may result in a harmful chemical reaction and lead to poor brake performance.**
- **Be careful that water does not enter the brake master cylinder when refilling. Water will significantly lower the boiling point of the brake fluid and may result in vapor lock.**

4. Air bleed:
   • brake system
   Refer to “BLEEDING THE HYDRAULIC BRAKE SYSTEM” in chapter 3.
5. Check:
   • brake fluid level
   Brake fluid level is under the “LOWER” level line → Fill up.
   Refer to “CHECKING THE BRAKE FLUID LEVEL” in chapter 3.
6. Check:
   • brake pedal free play
   Refer to “ADJUSTING THE REAR BRAKE” in chapter 3.
7. Check:
   • select lever movement
   Refer to “ADJUSTING THE SELECT LEVER CONTROL CABLE AND SHIFT ROD” in chapter 3.

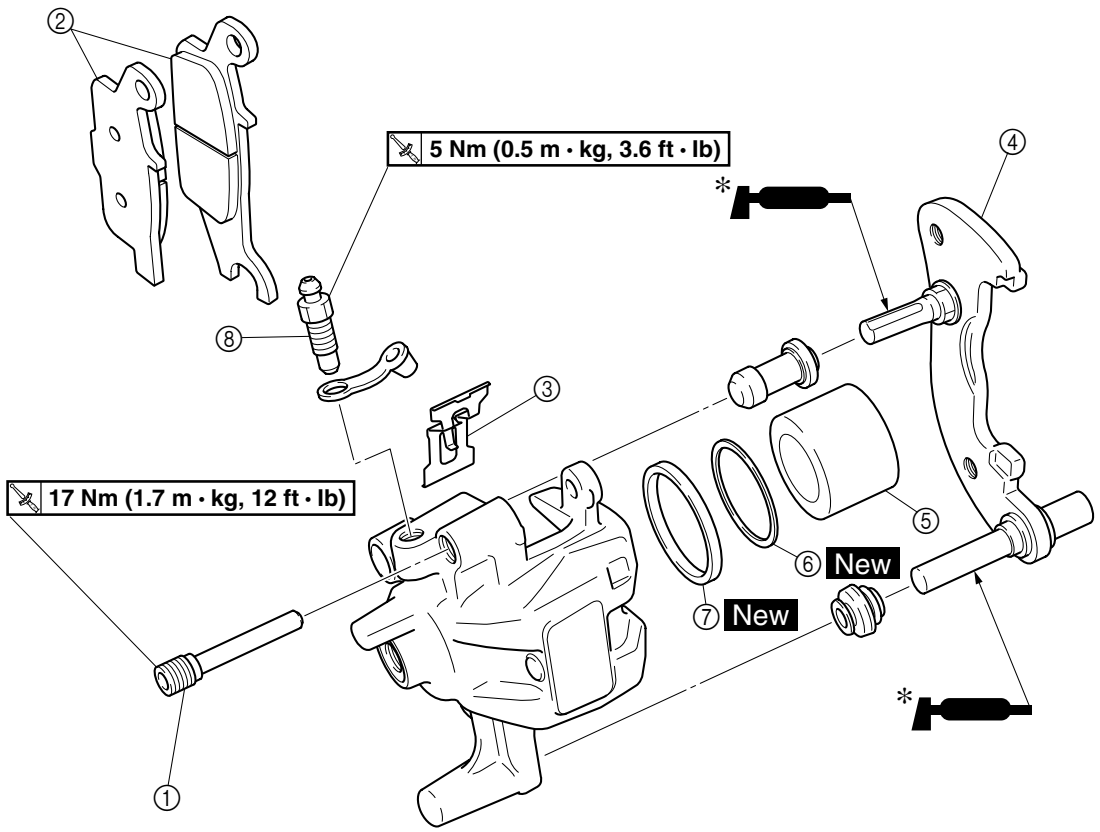
EBS00421

FRONT BRAKE CALIPERS



Order	Job/Part	Q'ty	Remarks
	Removing the front brake calipers		Remove the parts in the order listed. The following procedure applies to both of the front brake calipers.
	Brake fluid		Drain.
	Front wheel		Refer to "FRONT AND REAR WHEELS".
1	Union bolt	1	Refer to "INSTALLING THE FRONT AND REAR BRAKE CALIPERS".
2	Copper washer	2	
3	Front brake hose	1	Disconnect.
4	Brake pad holding bolt plug	1	
5	Brake pad holding bolt	1	Loosen.
6	Front brake caliper bolt	2	
7	Front brake caliper assembly	1	
			For installation, reverse the removal procedure.

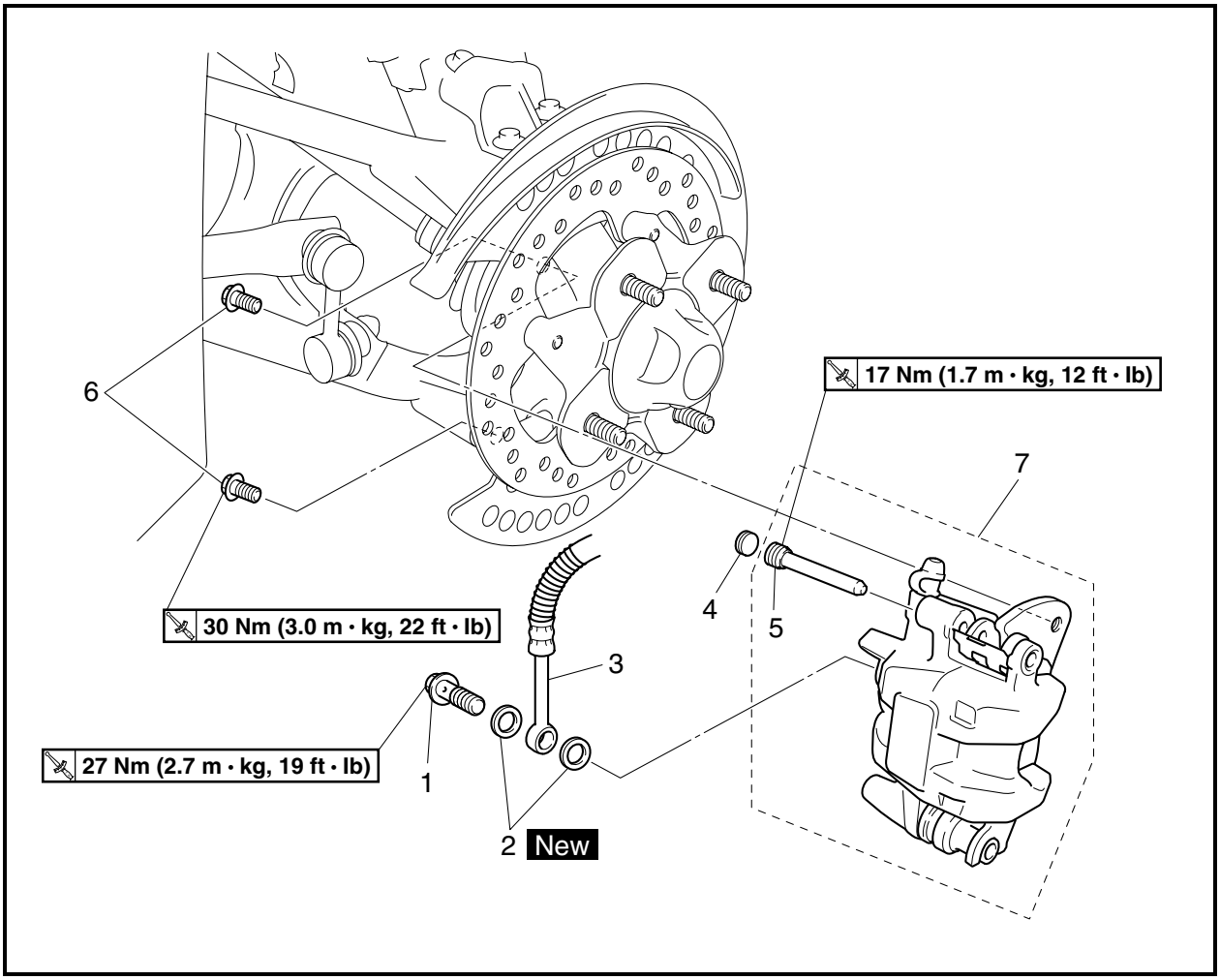
EBS00423



Order	Job/Part	Q'ty	Remarks
	Disassembling the front brake calipers		Remove the parts in the order listed. The following procedure applies to both of the front brake calipers.
①	Brake pad holding bolt	1	
②	Front brake pad	2	
③	Brake pad spring	1	
④	Front brake caliper bracket	1	
⑤	Caliper piston	1	Refer to "DISASSEMBLING THE FRONT AND REAR BRAKE CALIPERS" and "ASSEMBLING THE FRONT AND REAR BRAKE CALIPERS".
⑥	Dust seal	1	
⑦	Caliper piston seal	1	
⑧	Bleed screw	1	For assembly, reverse the disassembly procedure.

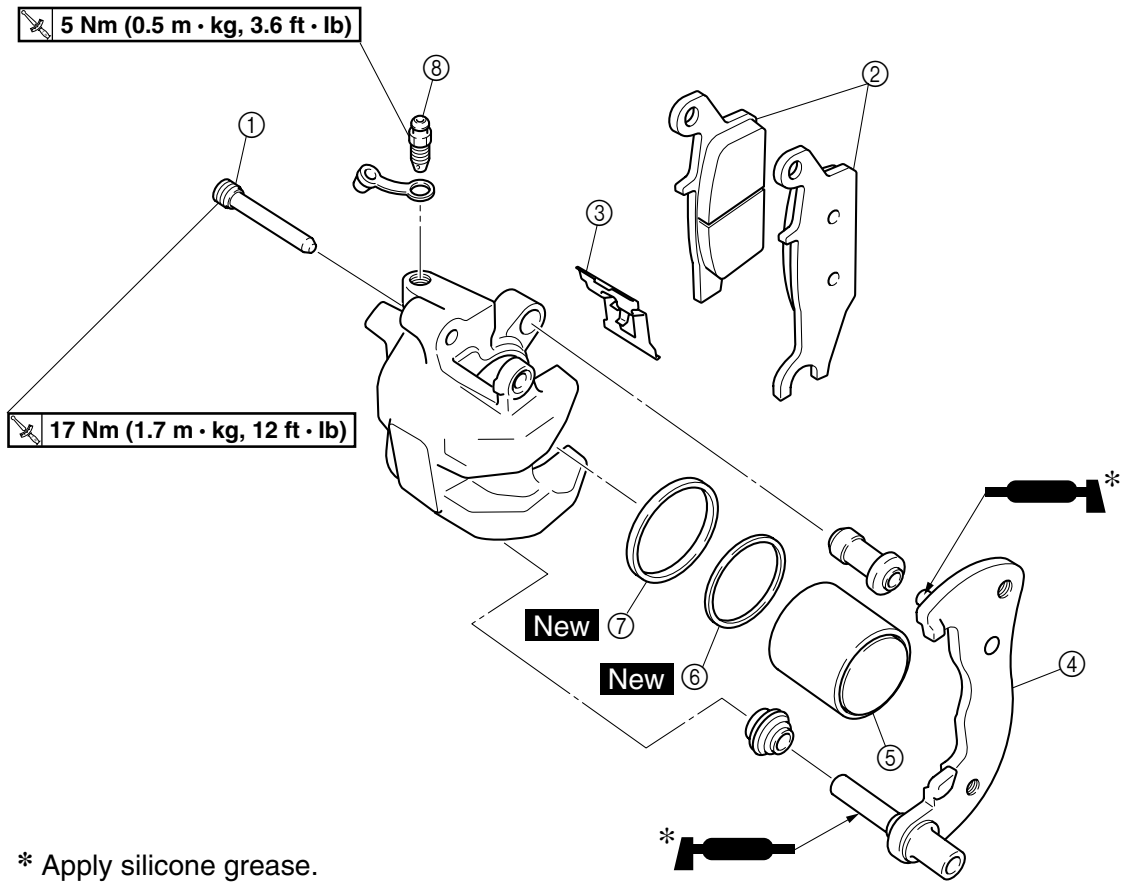
EBS00424

REAR BRAKE CALIPERS



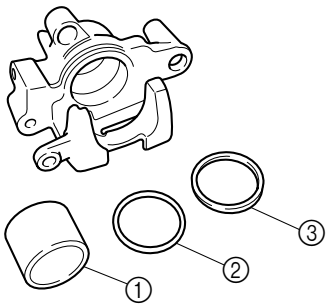
Order	Job/Part	Q'ty	Remarks
	Removing the rear brake calipers		Remove the parts in the order listed. The following procedure applies to both of the rear brake calipers.
	Brake fluid		Drain.
	Rear wheel		Refer to "FRONT AND REAR WHEELS".
1	Union bolt	1	
2	Copper washer	2	
3	Rear brake hose	1	Disconnect.
4	Brake pad holding bolt plug	1	
5	Brake pad holding bolt	1	Loosen.
6	Rear brake caliper bolt	2	
7	Rear brake caliper assembly	1	
			For installation, reverse the removal procedure.

EBS00425

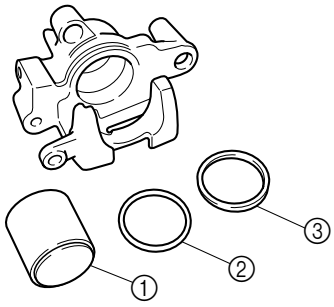


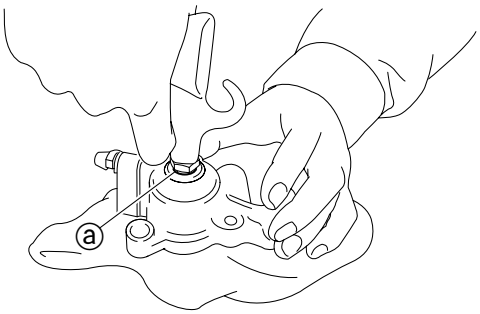
Order	Job/Part	Q'ty	Remarks
	Disassembling the rear brake calipers		Remove the parts in the order listed. The following procedure applies to both of the rear brake calipers.
①	Brake pad holding bolt	1	
②	Rear brake pad	2	
③	Brake pad spring	1	
④	Rear brake caliper bracket	1	
⑤	Caliper piston	1	Refer to "DISASSEMBLING THE FRONT AND REAR BRAKE CALIPERS" and "ASSEMBLING THE FRONT AND REAR BRAKE CALIPERS".
⑥	Dust seal	1	
⑦	Caliper piston seal	1	
⑧	Bleed screw	1	For assembly, reverse the disassembly procedure.

A



B





EBS00427

DISASSEMBLING THE FRONT AND REAR BRAKE CALIPERS

1. Remove:
   - brake caliper piston ①
   - dust seal ②
   - caliper piston seal ③

A Front
B Rear

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a. Blow compressed air into the hose joint opening ⓐ to force out the caliper piston from the brake caliper body.

⚠ WARNING

- **Never try to pry out the caliper piston.**
- **Cover the caliper piston with a rag. Be careful not to get injured when the piston is expelled from the caliper cylinder.**

b. Remove the dust seal and the caliper piston seal.

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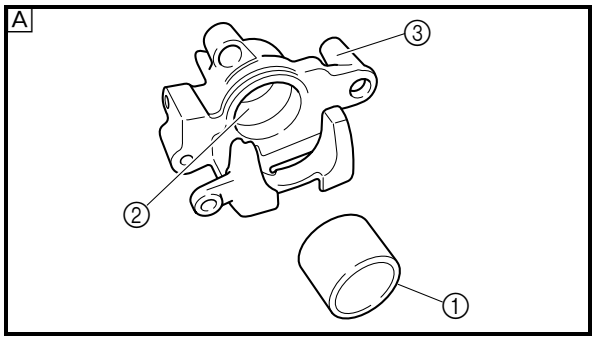
EBS00429

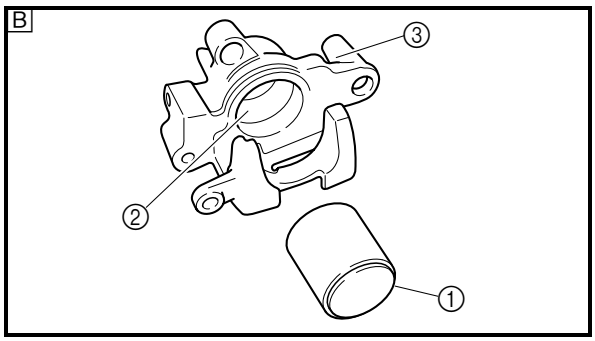
CHECKING THE FRONT AND REAR BRAKE CALIPERS

Recommended brake component replacement schedule:	
Brake pads	**As required**
Piston seals, dust seals	**Every two years**
Brake hoses	**Every four years**
Brake fluid	**Replace when brakes are disassembled.**

⚠ WARNING

All internal brake components should be cleaned in new brake fluid only. Do not use solvents as they will cause seals to swell and distort.





1. Check:
   - brake caliper piston ①
     Scratches/rust/wear → Replace the brake caliper assembly.
   - brake caliper cylinder ②
     Wear/scratches → Replace the brake caliper assembly.
   - brake caliper body ③
     Cracks/damage → Replace.
   - brake fluid delivery passage (brake caliper body)
     Blockage → Blow out with compressed air.

⚠ WARNING

Replace the caliper piston seal and dust seal whenever the brake caliper is disassembled.

A Front
B Rear

EBS00431

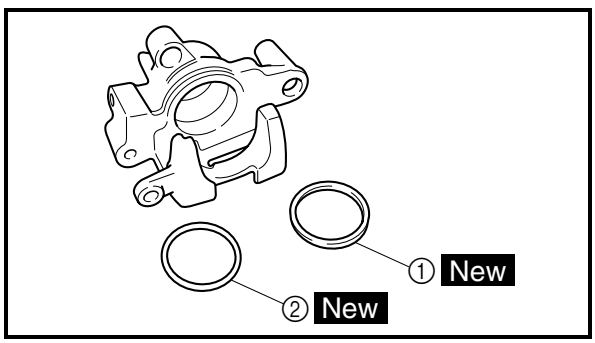
ASSEMBLING THE FRONT AND REAR BRAKE CALIPERS

⚠ WARNING

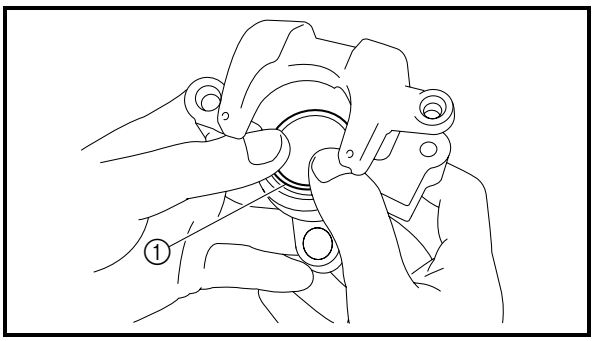
- **All internal brake components should be cleaned and lubricated with new brake fluid only before installation.**

Recommended brake fluid
DOT 4

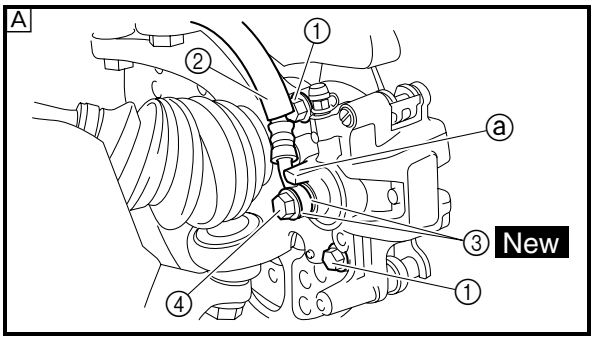
- **Replace the caliper piston seal whenever a brake caliper is disassembled.**

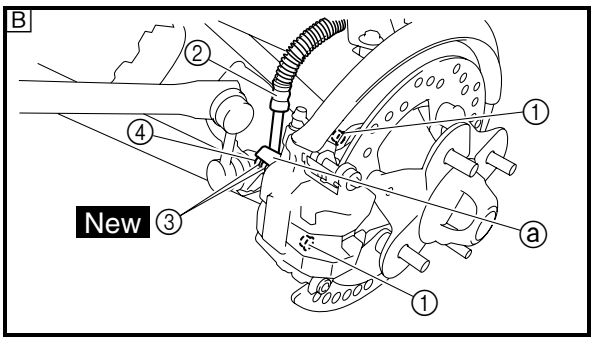


1. Install:
   - caliper piston seal ① New
   - dust seal ② New



2. Install:
   • brake caliper piston ①





EBS00434
INSTALLING THE FRONT AND REAR BRAKE CALIPERS

1. Install:
   • brake caliper assembly
   • brake caliper bolts ①
     30 Nm (3.0 m · kg, 22 ft · lb)
   • brake hose ②
   • copper washers ③ New
   • union bolt ④ **27 Nm (2.7 m · kg, 19 ft · lb)**

CAUTION:

When installing the brake hose on the brake caliper, make sure that the brake pipe touches the projection ⓐ on the brake caliper.

⚠ WARNING

Proper brake hose routing is essential to insure safe vehicle operation. Refer to "CABLE ROUTING" in chapter 2.

Ⓐ Front
Ⓑ Rear

2. Fill:
   • brake master cylinder reservoir

Recommended brake fluid
DOT 4

CAUTION:

Brake fluid may damage painted surfaces or plastic parts. Always clean up spilled brake fluid immediately.

⚠ WARNING

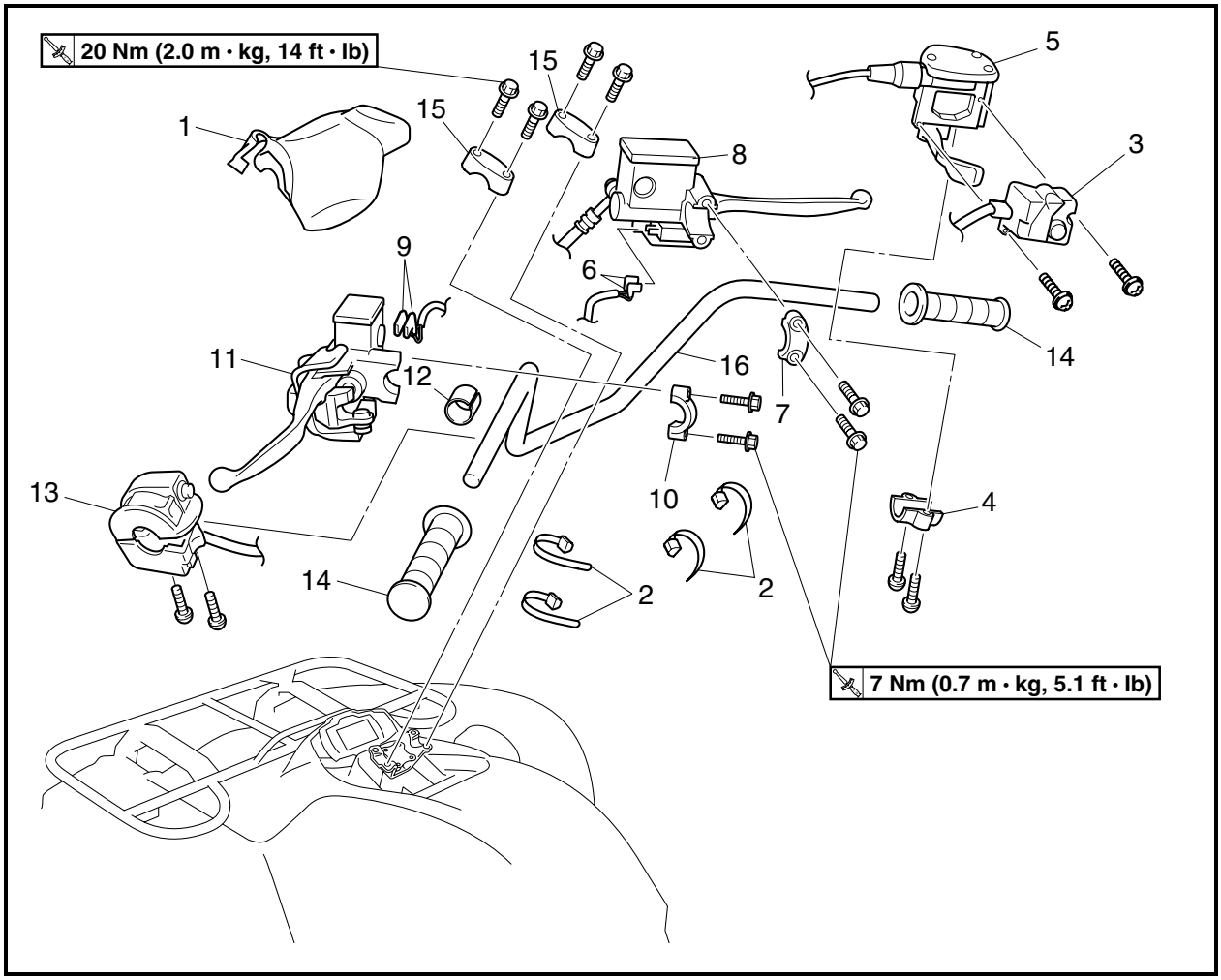
- **Use only the designated quality brake fluid: other brake fluids may deteriorate the rubber seals, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid: mixing brake fluids may result in a harmful chemical reaction and lead to poor brake performance.**
- **Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the brake fluid and may result in vapor lock.**

3. Air bleed:
   - brake system
     Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
4. Check:
   - brake fluid level
     Brake fluid level is below the "LOWER" level line → Add the recommended brake fluid to the proper level.
     Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.

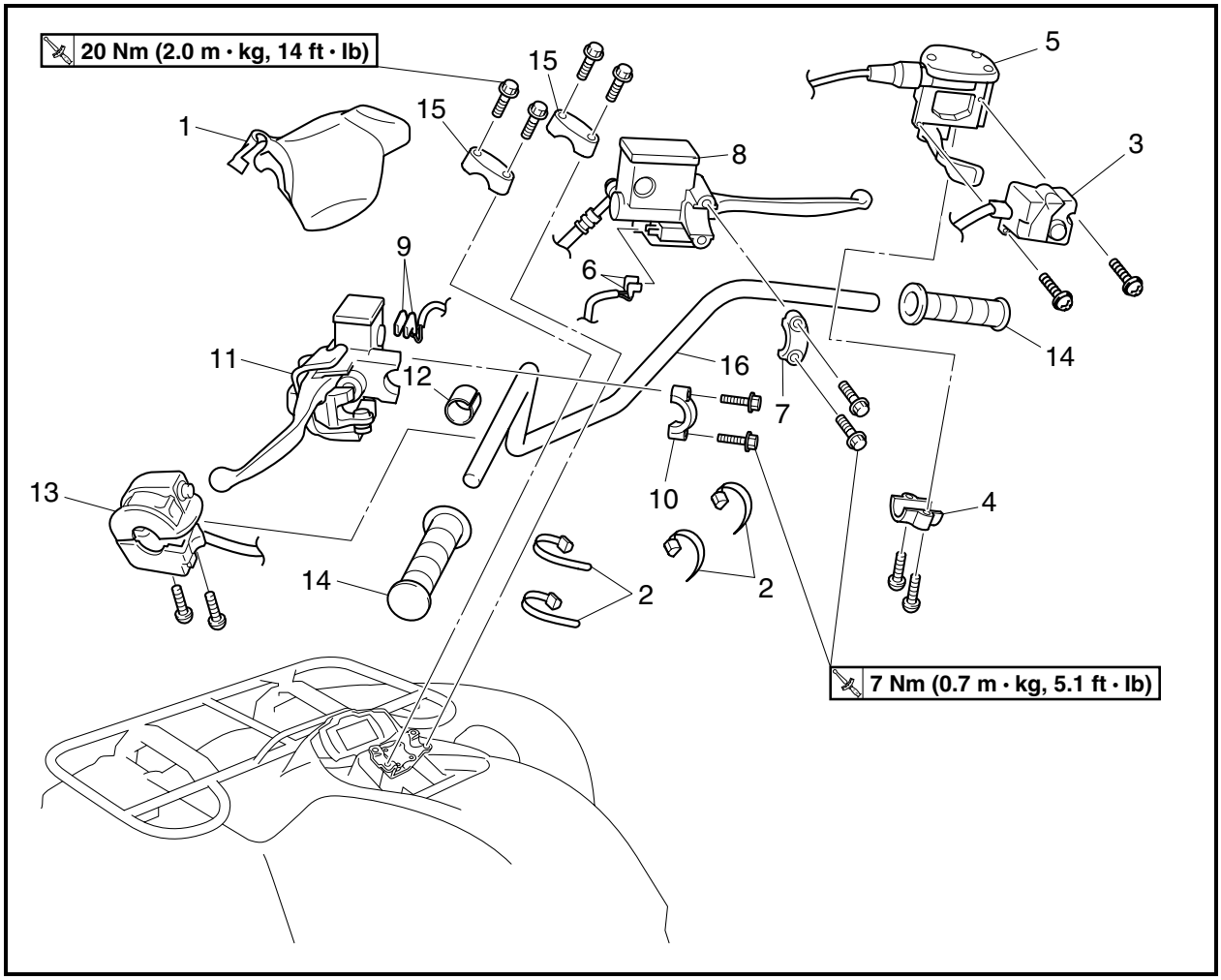
EBS00444

STEERING SYSTEM

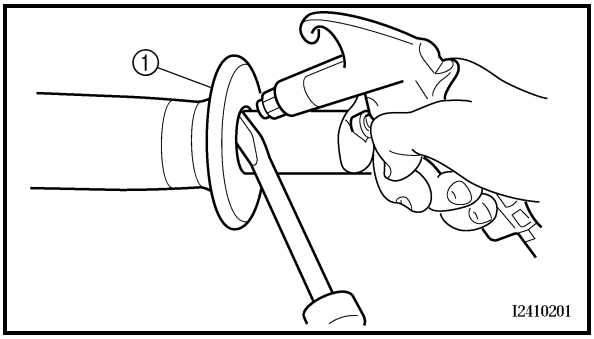
HANDLEBAR



Order	Job/Part	Q'ty	Remarks
	Removing the handlebar		Remove the parts in the order listed.
1	Handlebar cover	1	
2	Plastic band	4	
3	On-command four-wheel-drive motor switch and differential gear lock switch	1	
4	Throttle lever assembly holder	1	Refer to "INSTALLING THE THROTTLE LEVER ASSEMBLY".
5	Throttle lever assembly	1	
6	Front brake light switch connector	2	Disconnect.
7	Front brake master cylinder holder	1	Refer to "INSTALLING THE FRONT BRAKE MASTER CYLINDER".
8	Front brake master cylinder	1	
9	Rear brake light switch connector	2	Disconnect.



Order	Job/Part	Q'ty	Remarks
10	Rear brake master cylinder holder	1	
11	Rear brake master cylinder	1	Refer to "INSTALLING THE REAR BRAKE MASTER CYLINDER".
12	Spacer	1	
13	Left handlebar switch	1	
14	Handlebar grip	2	Refer to "REMOVING THE HANDLEBAR GRIPS" and "INSTALLING THE HANDLEBAR GRIPS".
15	Handlebar holder	2	Refer to "INSTALLING THE HANDLEBAR".
16	Handlebar	1	
			For installation, reverse the removal procedure.



EBS00447
REMOVING THE HANDLEBAR GRIPS

1. Remove:
   • handlebar grips ①

NOTE:

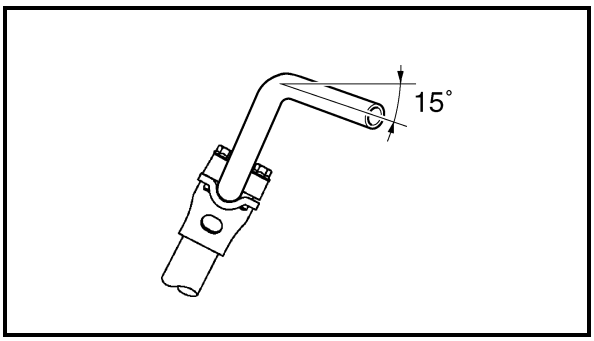
Blow compressed air between the handlebar and handlebar grip, and gradually push the grip off the handlebar.

EBS00448
CHECKING THE HANDLEBAR

1. Check:
   • handlebar
   Bends/cracks/damage → Replace.

⚠ WARNING

Do not attempt to straighten a bent handlebar as this may dangerously weaken the handlebar.



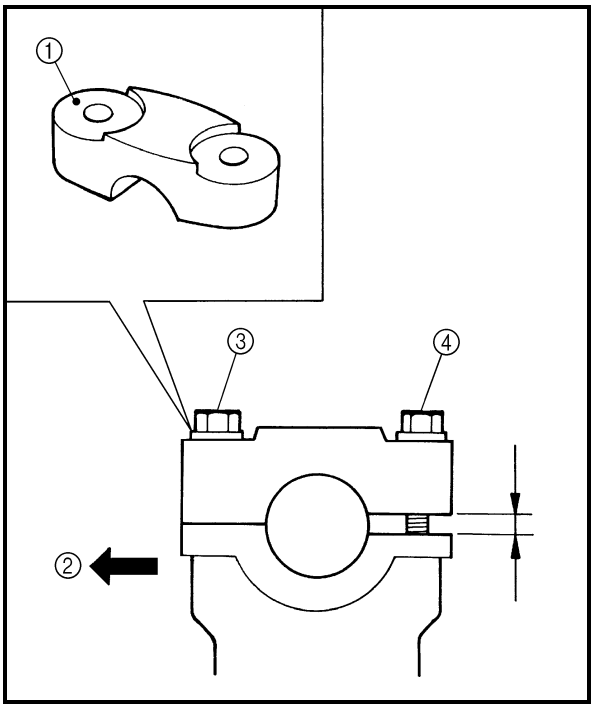
EBS00449
INSTALLING THE HANDLEBAR

1. Install:
   • handlebar
   • handlebar holders

	20 Nm (2.0 m · kg, 14 ft · lb)

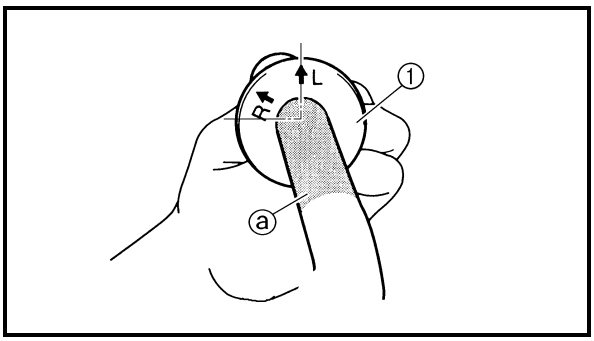
NOTE:

- Install the handlebar within 15° from the horizontal line shown in the illustration.
- The upper handlebar holders should be installed with the punched mark ① forward ②.



CAUTION:

First tighten the bolts ③ on the front side of the handlebar holders, and then tighten the bolts ④ on the rear side.

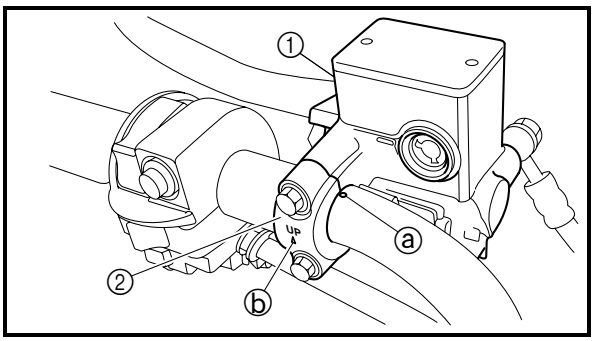


EBS00450
INSTALLING THE HANDLEBAR GRIPS

1. Install:
   - handlebar grip ①

NOTE:

- Before applying adhesive, wipe off grease or oil on the handlebar surface ⓐ with a lacquer thinner.
- Install the handlebar grips to the handlebar so that arrow mark L faces up on the left handlebar grip and the arrow mark R faces up on the right handlebar.



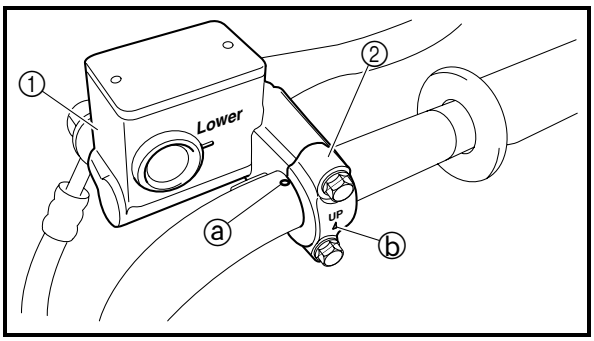
EBS00453
INSTALLING THE REAR BRAKE MASTER CYLINDER

1. Install:
   - left handlebar switch
   - spacer
   - rear brake master cylinder ①
   - rear brake master cylinder holder ②

	7 Nm (0.7 m · kg, 5.1 ft · lb)

NOTE:

- Align the end of the brake master cylinder holder with the punch mark ⓐ on the handlebar.
- The “UP” mark ⓑ on the brake master cylinder holder should face up.



EBS00453

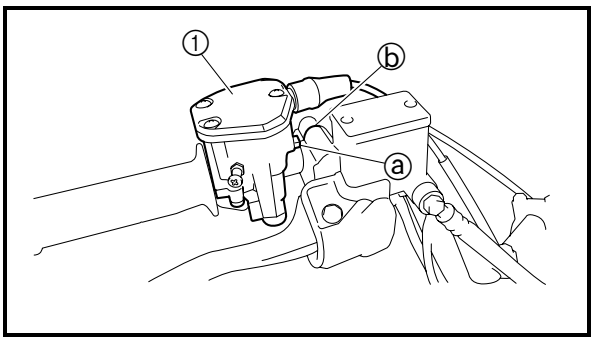
INSTALLING THE FRONT BRAKE MASTER CYLINDER

1. Install:
   - front brake master cylinder ①
   - front brake master cylinder holder ②

7 Nm (0.7 m · kg, 5.1 ft · lb)

NOTE:

- Align the end of the brake master cylinder holder with the punch mark ⓐ on the handlebar.
- The "UP" mark ⓑ on the brake master cylinder holder should face up.



INSTALLING THE THROTTLE LEVER ASSEMBLY

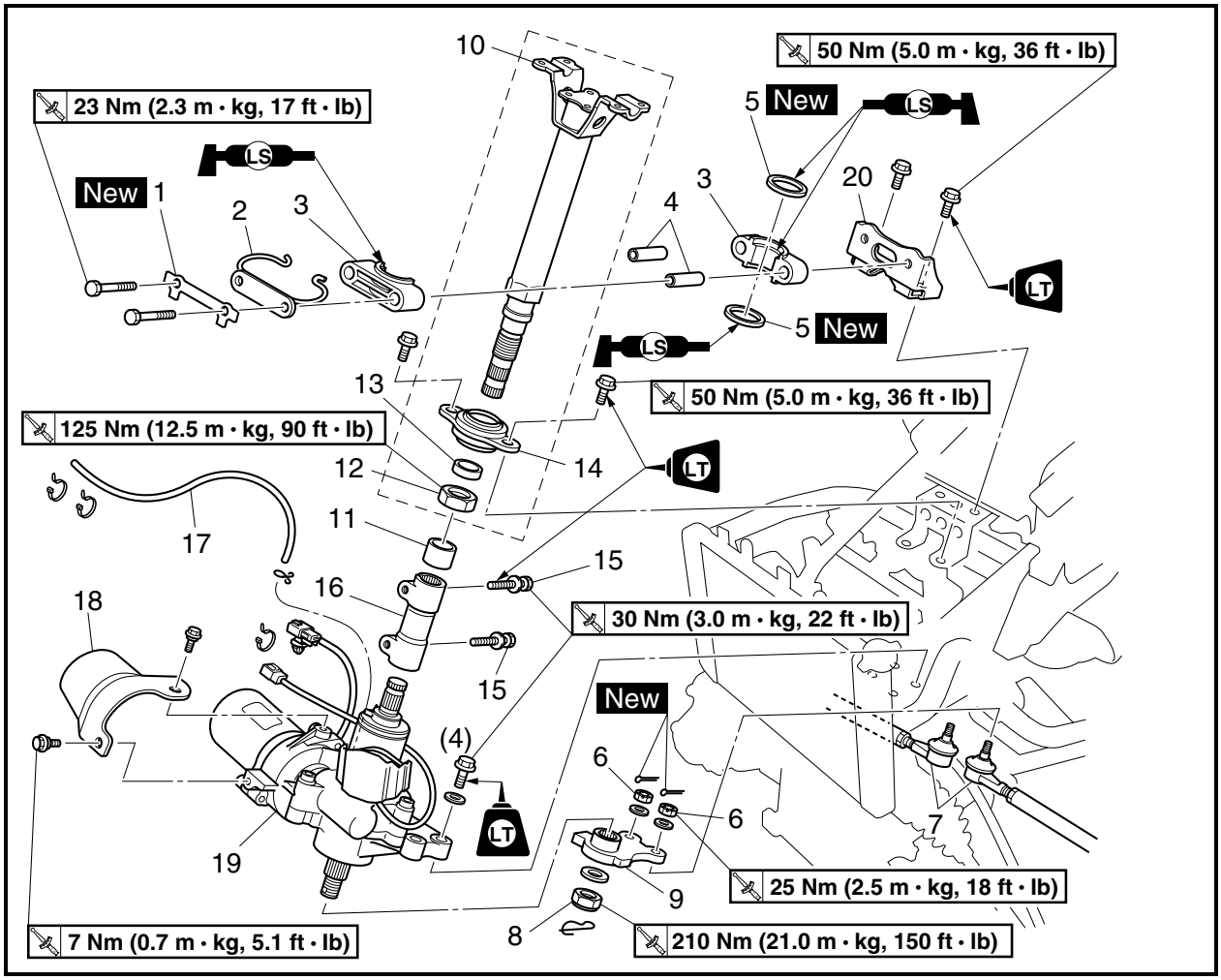
1. Install:
   - throttle lever assembly ①
   - throttle lever assembly holder

NOTE:

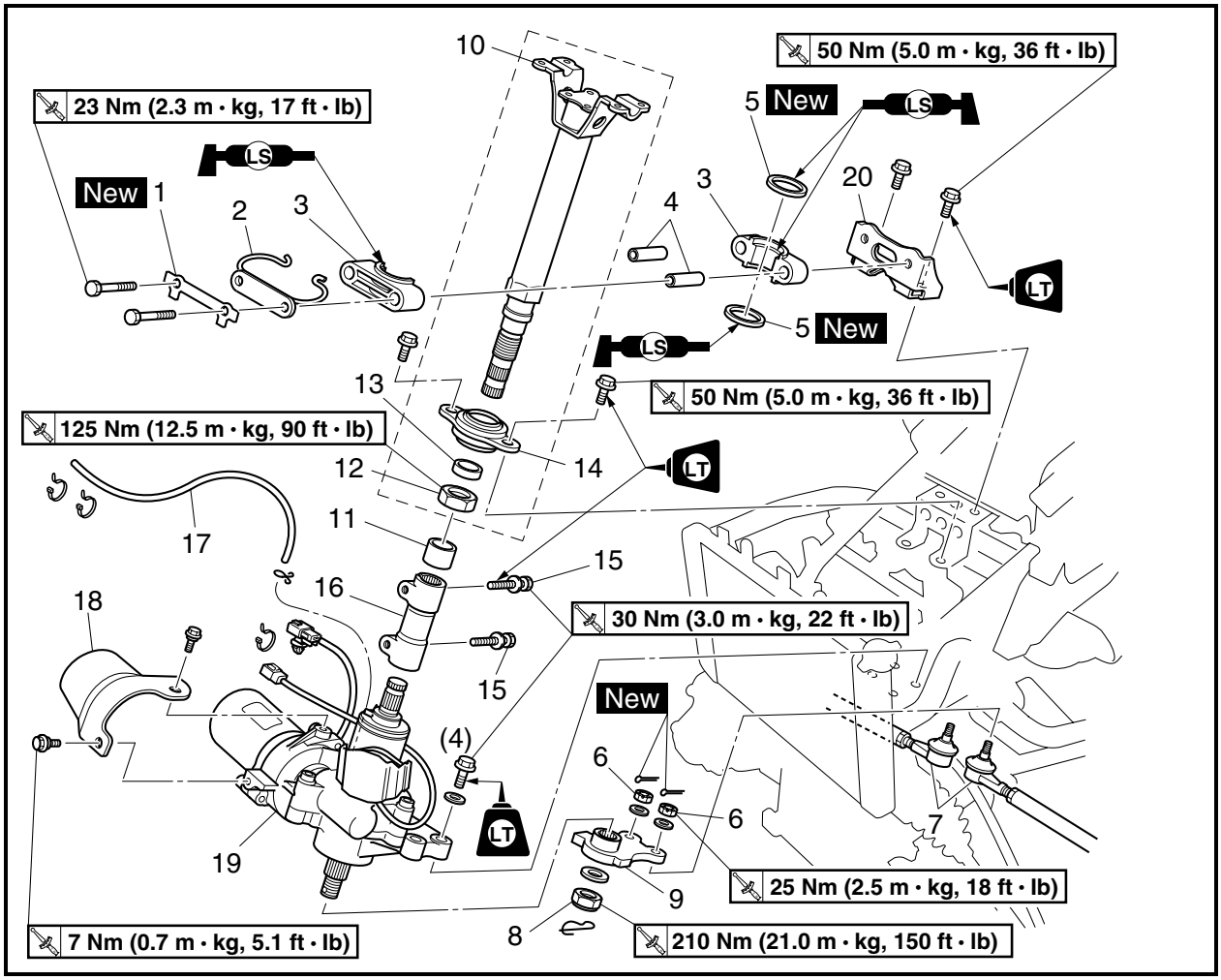
Align the projection ⓐ on the throttle lever assembly with the end of the brake master cylinder holder ⓑ.

EBS00454

STEERING STEM



Order	Job/Part	Q'ty	Remarks
	Removing the steering stem		Remove the parts in the order listed.
	Front fender		Refer to "ENGINE SKID PLATES, SEAT, CARRIERS AND FENDERS" in chapter 3.
	Air filter case		Refer to "AIR FILTER CASE" in chapter 3.
	Handlebar		Refer to "HANDLEBAR".
	Electrical components tray		Refer to "ELECTRICAL COMPONENTS TRAY" in chapter 3.
1	Lock washer	1	Refer to "INSTALLING THE STEERING STEM".
2	Cable guide	1	
3	Steering stem bushing	2	
4	Collar	2	
5	Oil seal	2	
6	Tie rod end nut	2	
7	Tie rod	2	Disconnect.



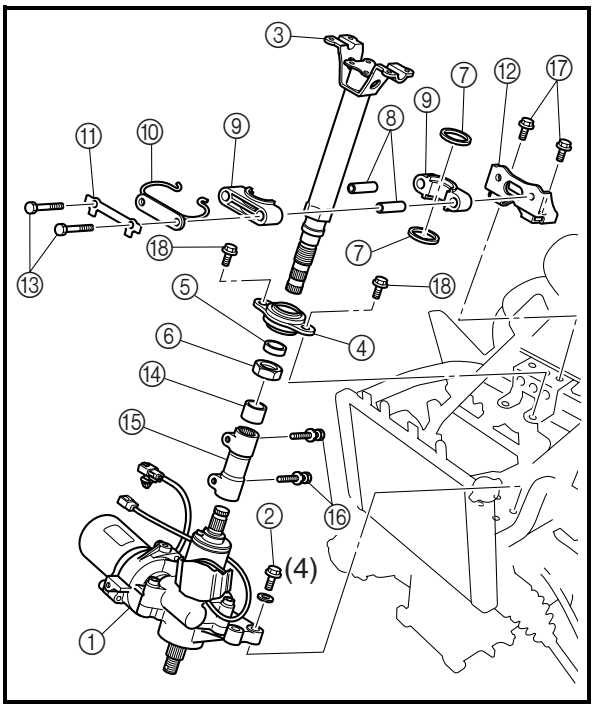
Order	Job/Part	Q'ty	Remarks
8	Pitman arm nut	1	Refer to "INSTALLING THE PITMAN ARM".
9	Pitman arm	1	
10	Steering stem	1	Refer to "INSTALLING THE STEERING STEM".
11	Collar	1	
12	Bearing nut	1	
13	Collar	1	
14	Steering stem bearing	1	
15	Steering stem joint bolt	2	
16	Steering stem joint	1	
17	EPS breather hose	1	
18	EPS motor cover	1	
19	EPS unit	1	Refer to "INSTALLING THE STEERING STEM".
20	Steering stem bracket	1	
			For installation, reverse the removal procedure.

EBS00456
CHECKING THE STEERING STEM
1. Check:
   - steering stem
     Bends → Replace.

⚠ WARNING

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

2. Check:
   - oil seals
   - steering stem bushings
     Wear/damage → Replace.
3. Check:
   - steering stem joint
     Cracks/damage → Replace.



INSTALLING THE STEERING STEM
1. Install:
   - EPS unit ①
   - washers
   - EPS unit bolts ②

	EPS unit bolt **30 Nm (3.0 m · kg, 22 ft · lb)** **LOCTITE®**

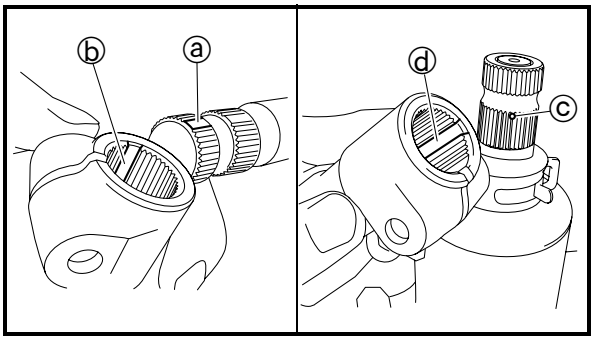
2. Install:
   - steering stem ③
   - steering stem bearing ④
   - collar ⑤
   - bearing nut ⑥

125 Nm (12.5 m · kg, 90 ft · lb)

3. Install:
   - oil seals ⑦ New
   - collars ⑧
   - steering stem bushings ⑨
   - cable guide ⑩
   - lock washer ⑪ New
   - steering stem bracket ⑫
   - steering stem bolts ⑬
     (temporarily tighten)

NOTE:

Apply lithium-soap-based grease to the oil seals and steering stem bushings.



4. Install:
   - collar ⑭
   - steering stem joint ⑮
   - steering stem joint bolts ⑯ (temporarily tighten)

NOTE:
- Apply LOCTITE® to the steering stem joint bolts.
- Align the spline ⓐ on the steering stem with the groove ⓑ in the steering stem joint.
- Align the punch mark ⓒ on the EPS unit with the groove ⓓ in the steering stem joint.

5. Tighten:
   - steering stem bracket bolts ⑰

50 Nm (5.0 m · kg, 36 ft · lb)

NOTE:
Apply LOCTITE® to the steering stem bracket bolts.

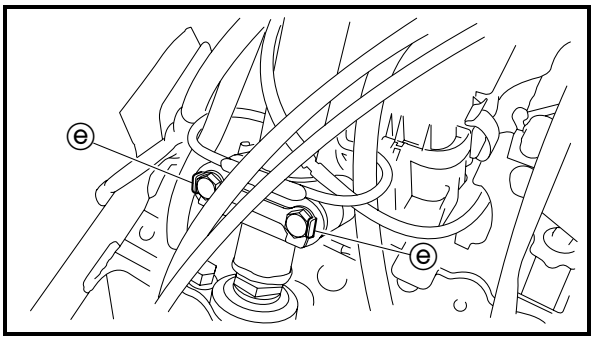
   - steering stem bearing bolts ⑱

50 Nm (5.0 m · kg, 36 ft · lb)

NOTE:
Apply LOCTITE® to the steering stem bearing bolts.

   - steering stem joint bolts ⑯

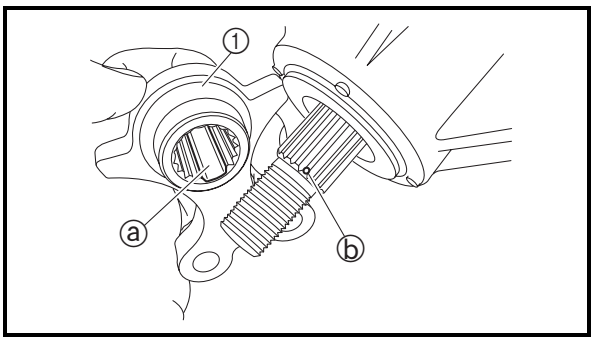
30 Nm (3.0 m · kg, 22 ft · lb)



6. Tighten:
   - steering stem bolts ⑬

23 Nm (2.3 m · kg, 17 ft · lb)

NOTE:
- Bend the lock washer tab ⓔ along a flat side of the bolt.
- Pass the cable and hoses through the cable guide. Refer to “CABLE ROUTING” in chapter 2.



INSTALLING THE PITMAN ARM

1. Install:
   - pitman arm ①
   - washer
   - pitman arm nut

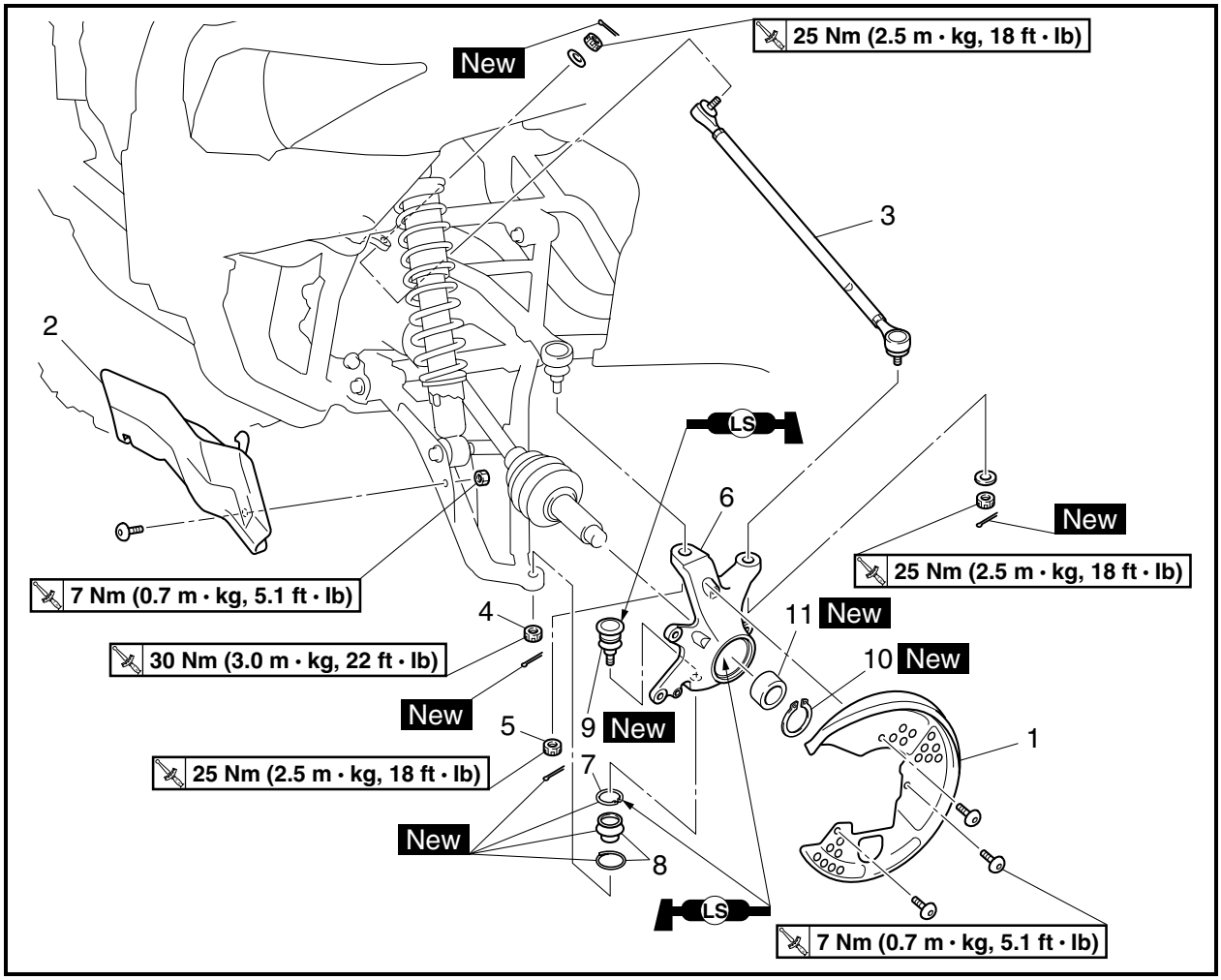
     210 Nm (21.0 m · kg, 150 ft · lb)
   - clip

NOTE:

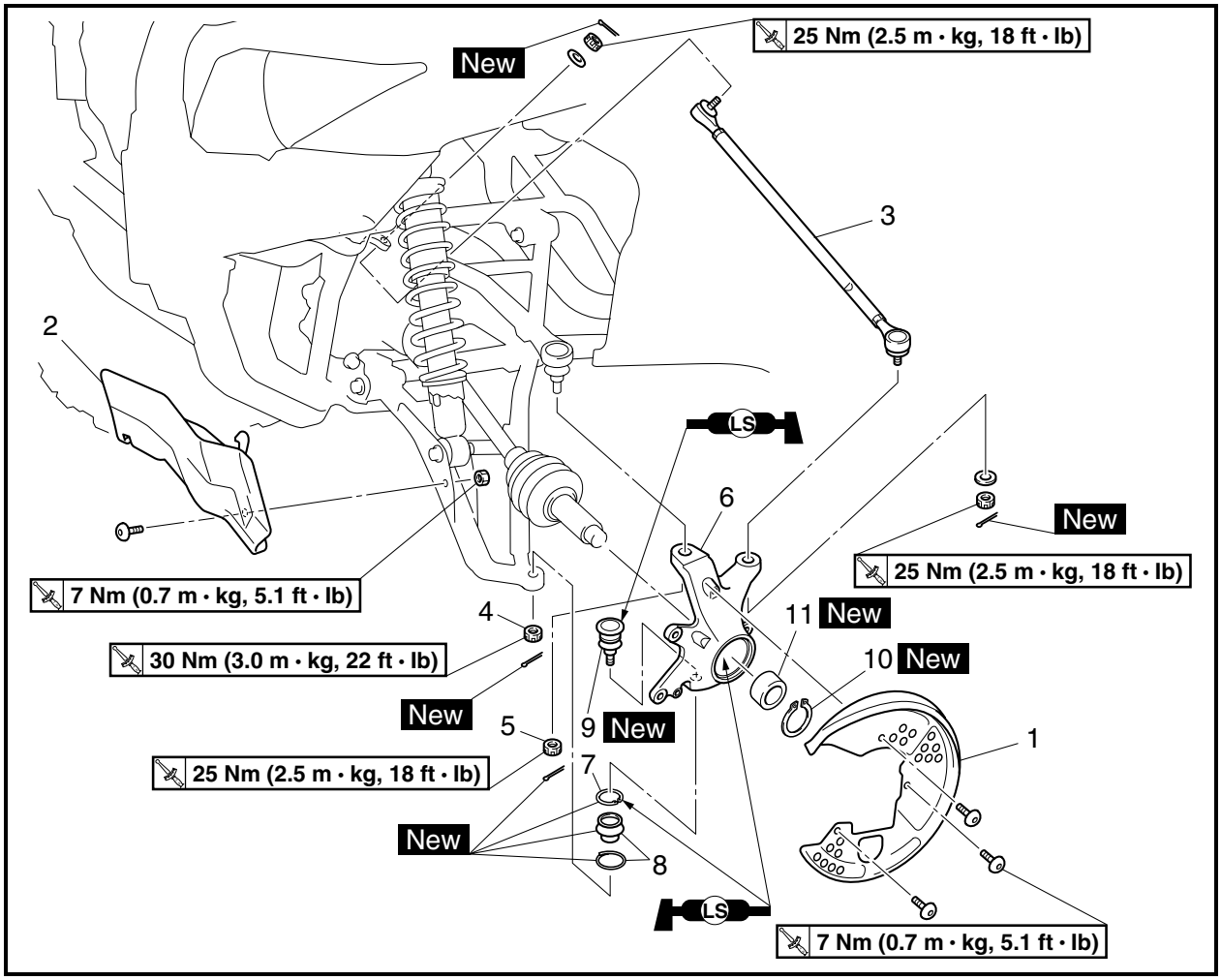
Align the punch mark ⓑ on the EPS unit with the groove ⓐ in the pitman arm.

EBS00460

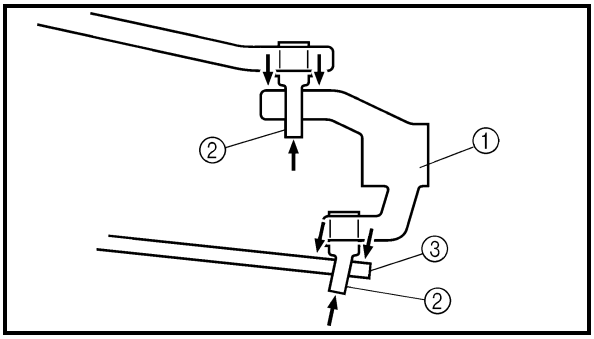
TIE-RODS AND STEERING KNUCKLES



Order	Job/Part	Q'ty	Remarks
	Removing the tie-rods and steering knuckles		Remove the parts in the order listed. The following procedure applies to both of the tie-rods and steering knuckles.
	Front wheel/brake disc		Refer to "FRONT WHEELS".
1	Brake disc guard	1	
2	Front arm protector	1	
3	Tie-rod	1	Refer to "INSTALLING THE TIE-RODS".
4	Nut	1	
5	Nut	1	
6	Steering knuckle	1	Refer to "REMOVING THE STEERING KNUCKLES".
7	Circlip	1	
8	Rubber boot	1	
9	Ball joint	1	



Order	Job/Part	Q'ty	Remarks
10	Circlip	1	
11	Bearing	1	
			For installation, reverse the removal procedure.

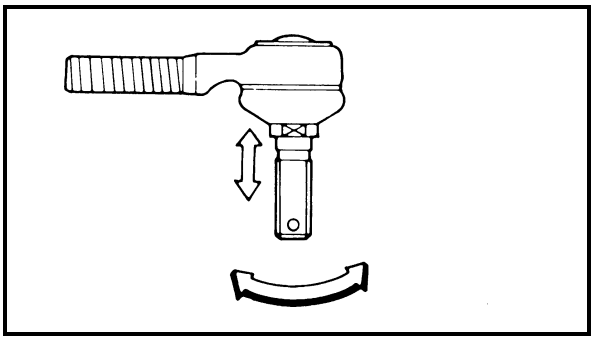


EBS00461
REMOVING THE STEERING KNUCKLES

1. Remove:
   • steering knuckle ①

NOTE:

Use a general puller to separate the ball joint ② from the steering knuckle ① or the front lower arm ③.

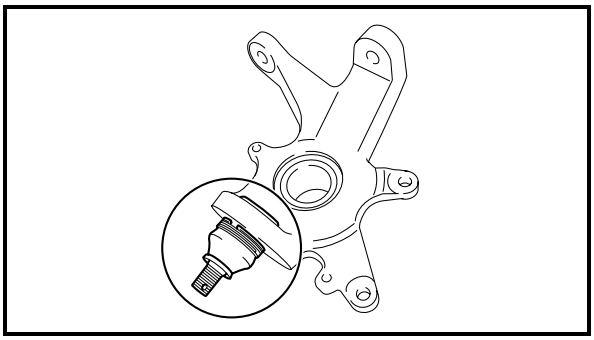


EBS00462
CHECKING THE TIE-RODS

1. Check:
   • tie-rod free play and movement
     Free play → Replace the tie-rod end.
     Turns roughly → Replace the tie-rod end.
2. Check:
   • tie-rod
     Bends/damage → Replace.

EBS00463
CHECKING THE STEERING KNUCKLES

1. Check:
   • steering knuckle
     Damage/pitting → Replace.



2. Check:
   • ball joints
     Damage/pitting → Replace the ball joint.
     Free play → Replace the ball joint.
     Turns roughly → Replace the ball joint.

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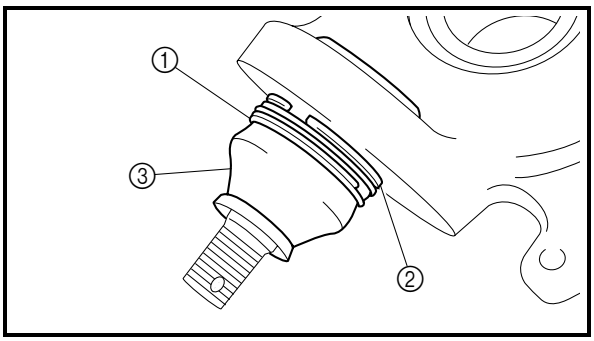
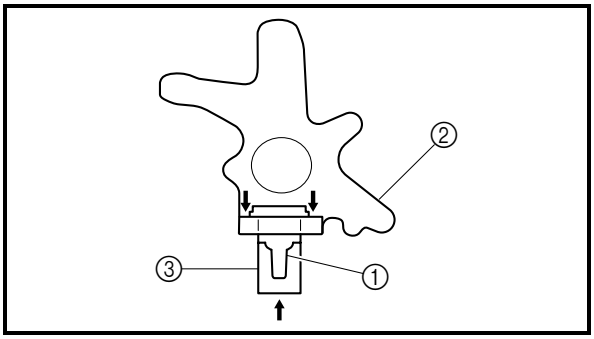
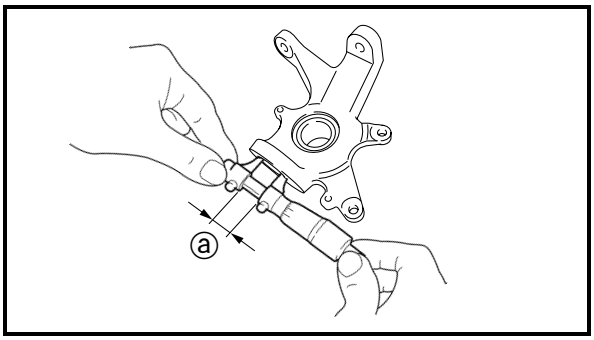
a. Clean the outside of the steering knuckle.
b. Remove the clip ①, circlip ② and rubber boot ③.





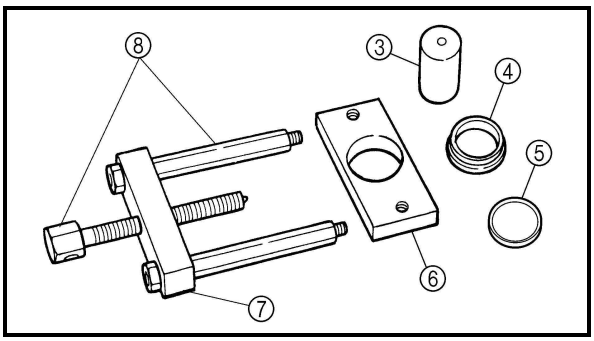
c. Remove the ball joint.

NOTE:
Use a remover attachment ③ to separate the ball joint ① from the steering knuckle ②.



d. Measure the ball joint bore inside diameter ⓐ.
Out of specification → Replace the steering knuckle.

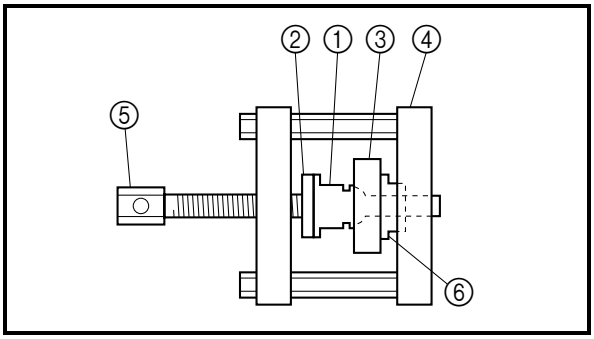
Ball joint bore inside diameter
32.00 ~ 32.05 mm
(1.260 ~ 1.280 in)



e. Install the new ball joint.
Use the ball joint remover/installer set.

Ball joint remover
90890-01474, YM-01474
Ball joint remover attachment set
90890-01480
Ball joint adapter set
YM-01480
Ball joint remover short shaft set
90890-01514

③	**Remover attachment**	**90890-01474 YM-01474**
④	**Installer spacer**	**90890-01480 YM-01480**
⑤	**Installer washer**	**90890-01474 YM-01474**
⑥	**Base**	**90890-01480 YM-01480**
⑦	**Body**	**90890-01480 YM-01480**
⑧	**Ball joint remover short shaft set**	**90890-01514**



f. Attach the ball joint remover/installer, new ball joint (with rubber boot and retaining ring) ①, installer spacer ⑥ and installer washer ② to the steering knuckle ③.

NOTE:
Do not tap or damage the top of the ball joint.

g. Hold the body ④ in place while turning in the bolt ⑤ to install the new ball joint ① into the steering knuckle ③.
h. Remove the ball joint remover/installer.
i. Install a new ball joint.

NOTE:
Always use a new ball joint set.

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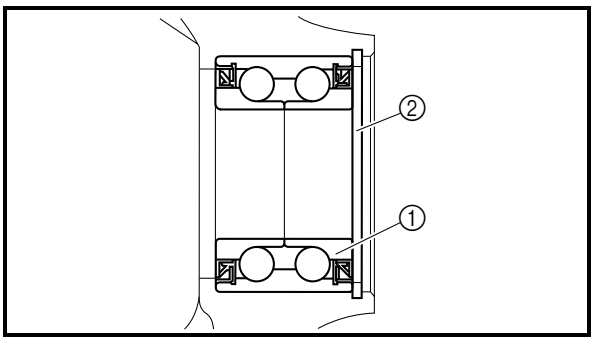

3. Check:
   • front wheel bearing ①
   Bearings allow play in the wheel hubs or the wheel turns roughly → Replace.

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a. Clean the outside of the steering knuckle.
b. Remove the circlip ②.
c. Drive out the bearing.

⚠ WARNING
Eye protection is recommended when using striking tools.

d. Apply lithium-soap-based grease to the outer side of the bearing.
e. Install the new bearing.

CAUTION:
Do not strike the center race or balls of the bearing. Should be made only with the outer race.

f. Install the new circlip.

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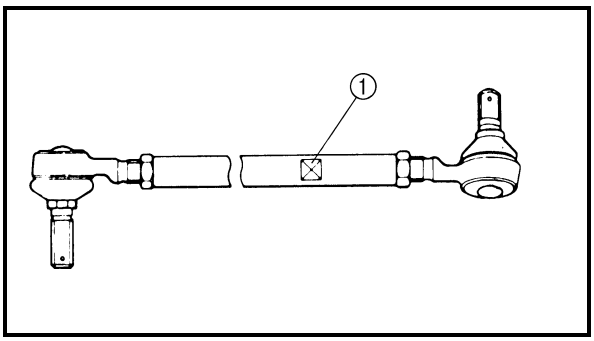


EBS00465
INSTALLING THE TIE-RODS

1. Install:
   - tie-rods (left and right)

25 Nm (2.5 m · kg, 18 ft · lb)

NOTE:

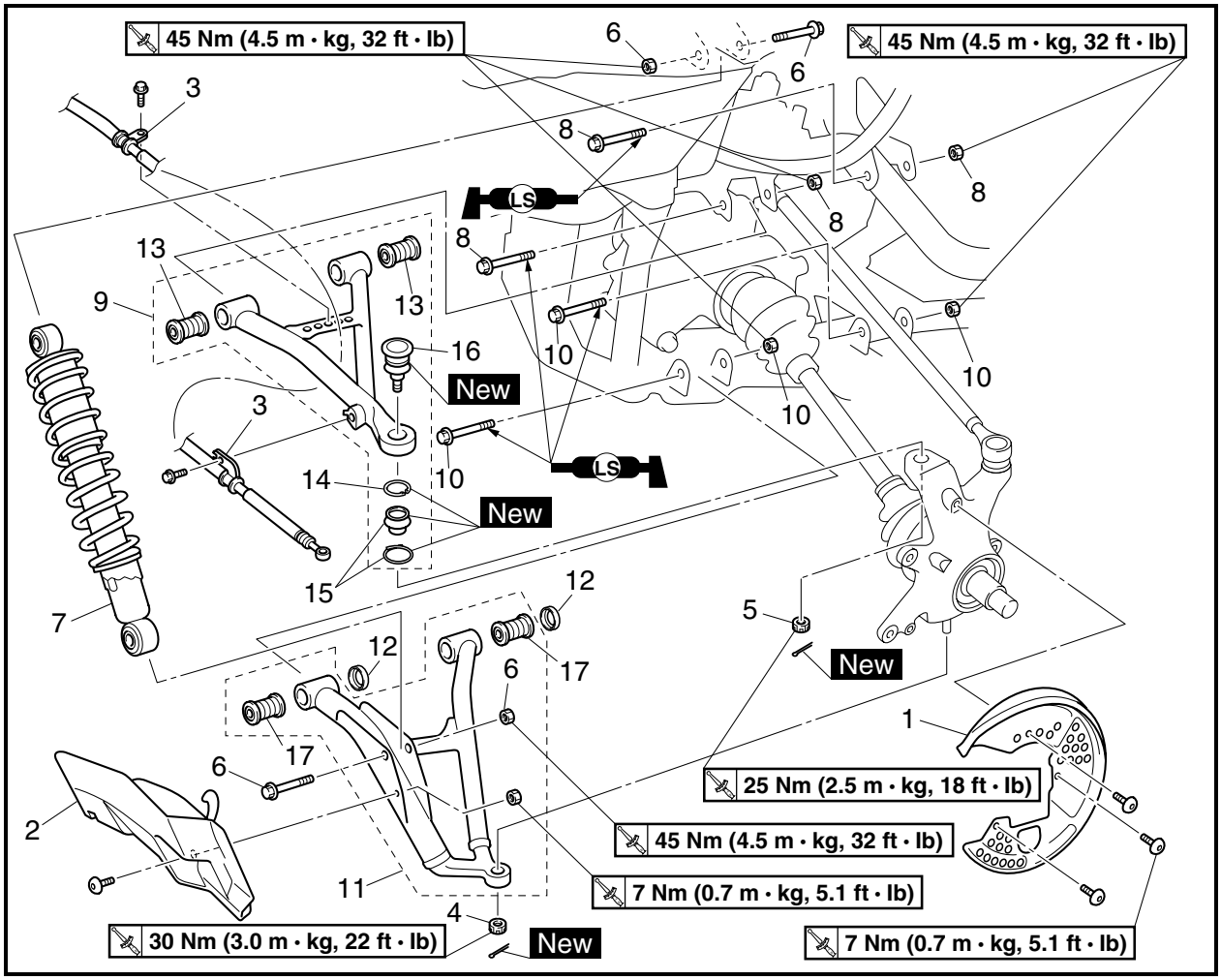
The tie-rod side which must be installed on the out side has grooves ①.

2. Adjust:
   - toe-in

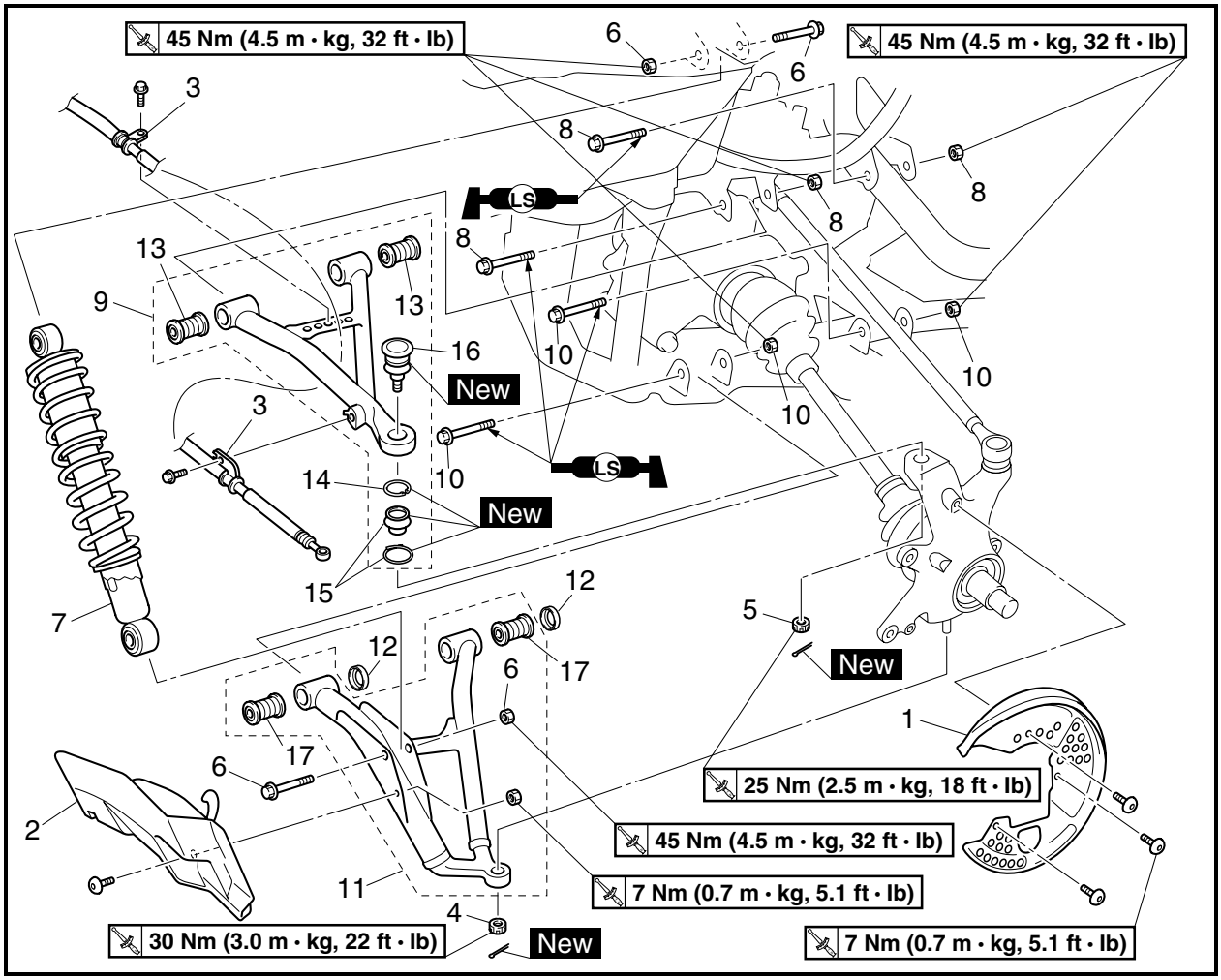
   Refer to “ADJUSTING THE TOE-IN” in chapter 3.

EBS00468

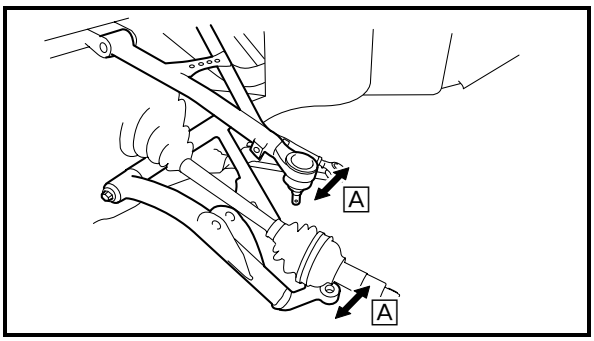
FRONT ARMS AND FRONT SHOCK ABSORBER ASSEMBLIES

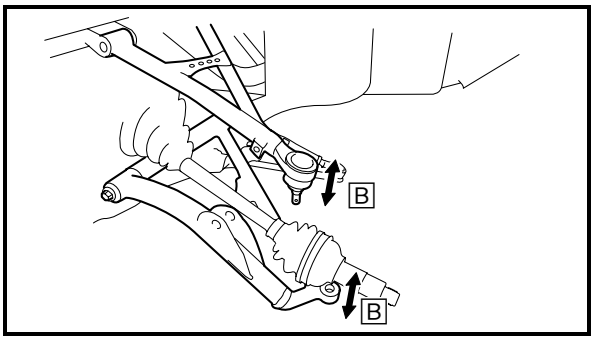


Order	Job/Part	Q'ty	Remarks
	Removing the front arms and front shock absorber assemblies		Remove the parts in the order listed. The following procedure applies to both of the front arms and front shock absorber assemblies.
	Front wheel/brake disc		Refer to "FRONT AND REAR WHEELS".
	Front brake caliper assembly		Refer to "FRONT AND REAR BRAKES".
1	Brake disc guard	1	
2	Front arm protector	1	
3	Front brake hose holder	2	
4	Nut	1	
5	Nut	1	Refer to "REMOVING THE FRONT ARMS" and "INSTALLING THE FRONT ARMS AND FRONT SHOCK ABSORBERS".
6	Nut/bolt	2/2	
7	Front shock absorber assembly	1	
8	Nut/bolt	2/2	
9	Front upper arm	1	



Order	Job/Part	Q'ty	Remarks
10	Nut/bolt	2/2	
11	Front lower arm	1	
12	Dust cover	2	Refer to "REMOVING THE FRONT ARMS" and "INSTALLING THE FRONT ARMS AND FRONT SHOCK ABSORBERS".
13	Bushing	2	
14	Circlip	1	
15	Rubber boot	1	
16	Ball joint	1	
17	Bushing	2	
			For installation, reverse the removal procedure.





EBS00469
REMOVING THE FRONT ARMS

1. Check:
   - front arm free play

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a. Check the front arm side play [A] by moving it from side to side.
   If side play is noticeable, check the bushings.
b. Check the front arm vertical movement [B] by moving it up and down.
   If the vertical movement is tight or rough, or if there is binding, check the bushings.

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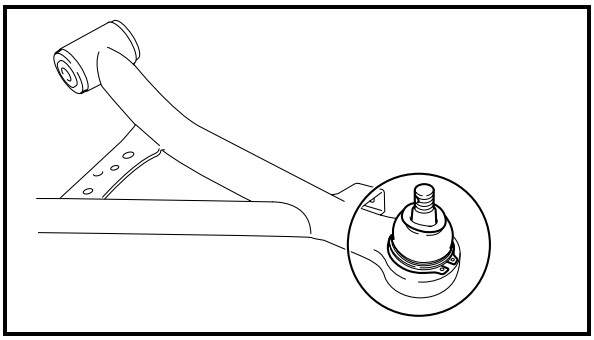
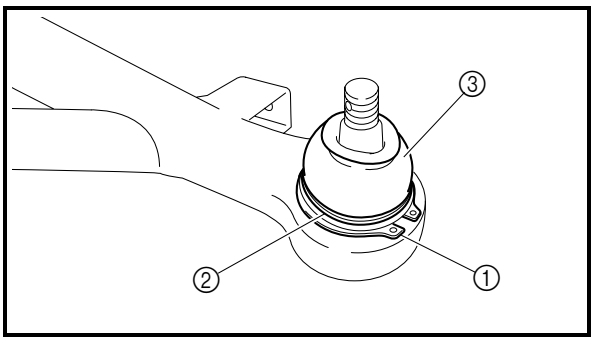
2. Remove:
   - front arms

EBS00470
CHECKING THE FRONT ARMS

1. Check:
   - front arms
     Bends/damage → Replace.
2. Check:
   - bushings
     Wear/damage → Replace.



3. Check:
   - ball joint
     Damage/pitting → Replace the ball joint.
     Free play → Replace the ball joint.
     Turns roughly → Replace the ball joint.



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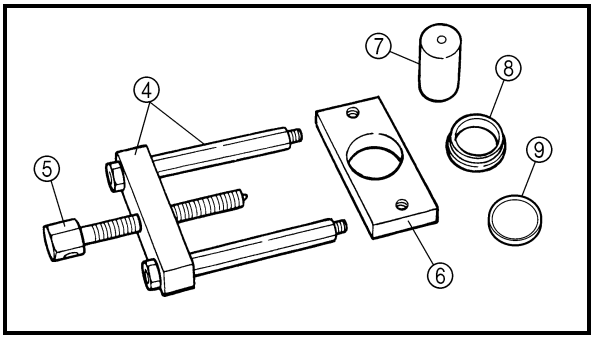
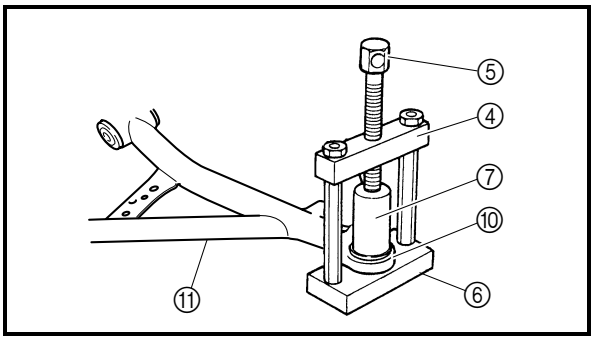
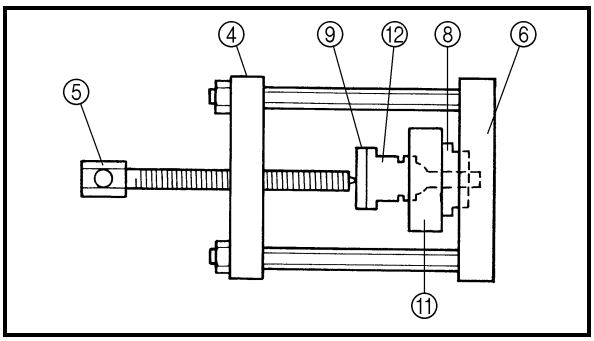
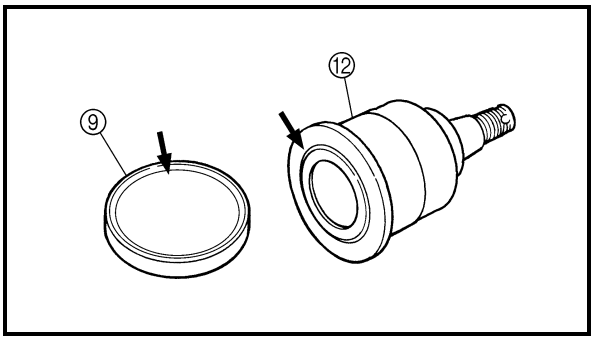
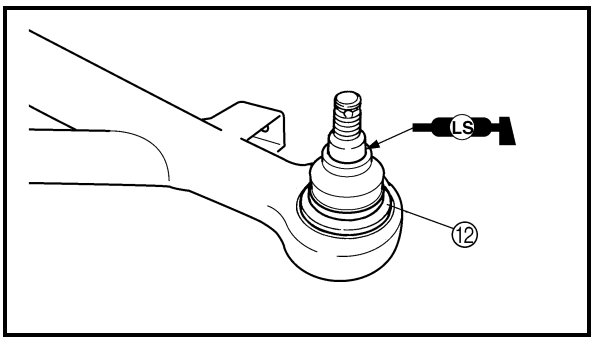
a. Clean the outside of the front upper arm.
b. Remove the circlip ①, boot retaining ring ② and rubber boot ③.
   Use the ball joint remover and installer set.











Ball joint remover
90890-01474, YM-01474
Ball joint remover attachment set
90890-01480
Ball joint adapter set
YM-01480

④	**Body**	**90890-01474 YM-01474**
⑤	**Long bolt**	
⑥	**Base**	**90890-01480 YM-01480**
⑦	**Remover attachment**	**90890-01474 YM-01474**
⑧	**Installer spacer**	**90890-01480 YM-01480**
⑨	**Installer washer**	**90890-01474 YM-01474**

c. Install the body ④, long bolt ⑤, base ⑥ and attachment ⑦ onto ball joint.
d. Hold the body ④ in place while turning in the long bolt ⑤ to remove the ball joint ⑩ from the front upper arm ⑪.
e. Remove the ball joint remover.
f. Attach the assembled ball joint remover/installer, new ball joint (with rubber boot and retaining ring) ⑫, installer spacer ⑧ and installer washer ⑨ to the front upper arm ⑪.

NOTE:
- Do not tap or damage the top of the ball joint.
- Installer washer ⑨ must be aligned with the projection on the head of the ball joint ⑫.

g. Remove the ball joint remover.
h. Install a new circlip.

NOTE:
Always use a new ball joint set.

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EBS00471
CHECKING THE FRONT SHOCK ABSORBERS

1. Check:
   - shock absorber assembly
     Oil leaks → Replace the shock absorber assembly.
   - spring
     Fatigue → Replace the shock absorber assembly.
     Move the spring up and down.

EBS00475
INSTALLING THE FRONT ARMS AND FRONT SHOCK ABSORBERS

1. Install:
   - front arms
   - front shock absorber

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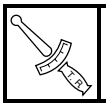
a. Install the front upper arm ① and front lower arm ②.

NOTE:

- Lubricate the bolts ③ with lithium-soap-based grease.
- Be sure to position the bolts ③ so that the bolt head faces forward.
- Temporarily tighten the nuts ④.

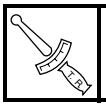
b. Install the front shock absorber ⑤ and bolts ⑥.

	**Nut ⑦** **45 Nm (4.5 m · kg, 32 ft · lb)**

c. Install the steering knuckle.

	**Nut ⑧** **25 Nm (2.5 m · kg, 18 ft · lb)** **Nut ⑨** **30 Nm (3.0 m · kg, 22 ft · lb)**

d. Install the new cotter pins.
e. Tighten the nuts ④.

	**Nut ④** **45 Nm (4.5 m · kg, 32 ft · lb)**

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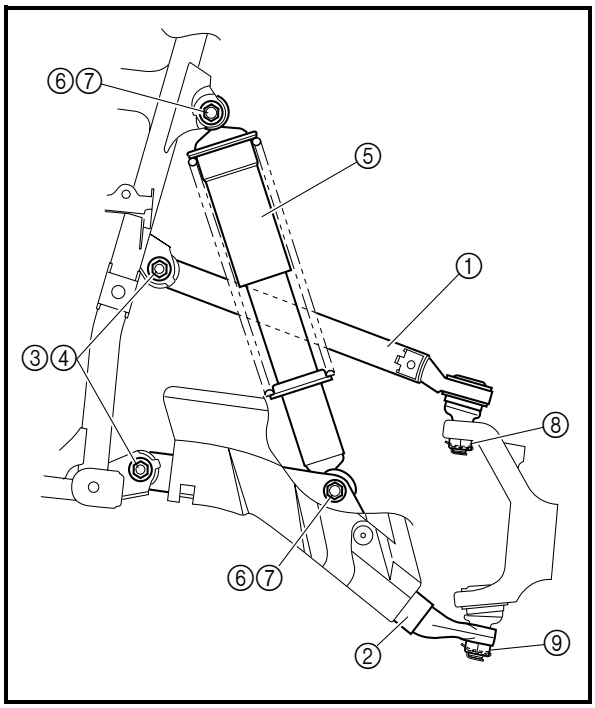
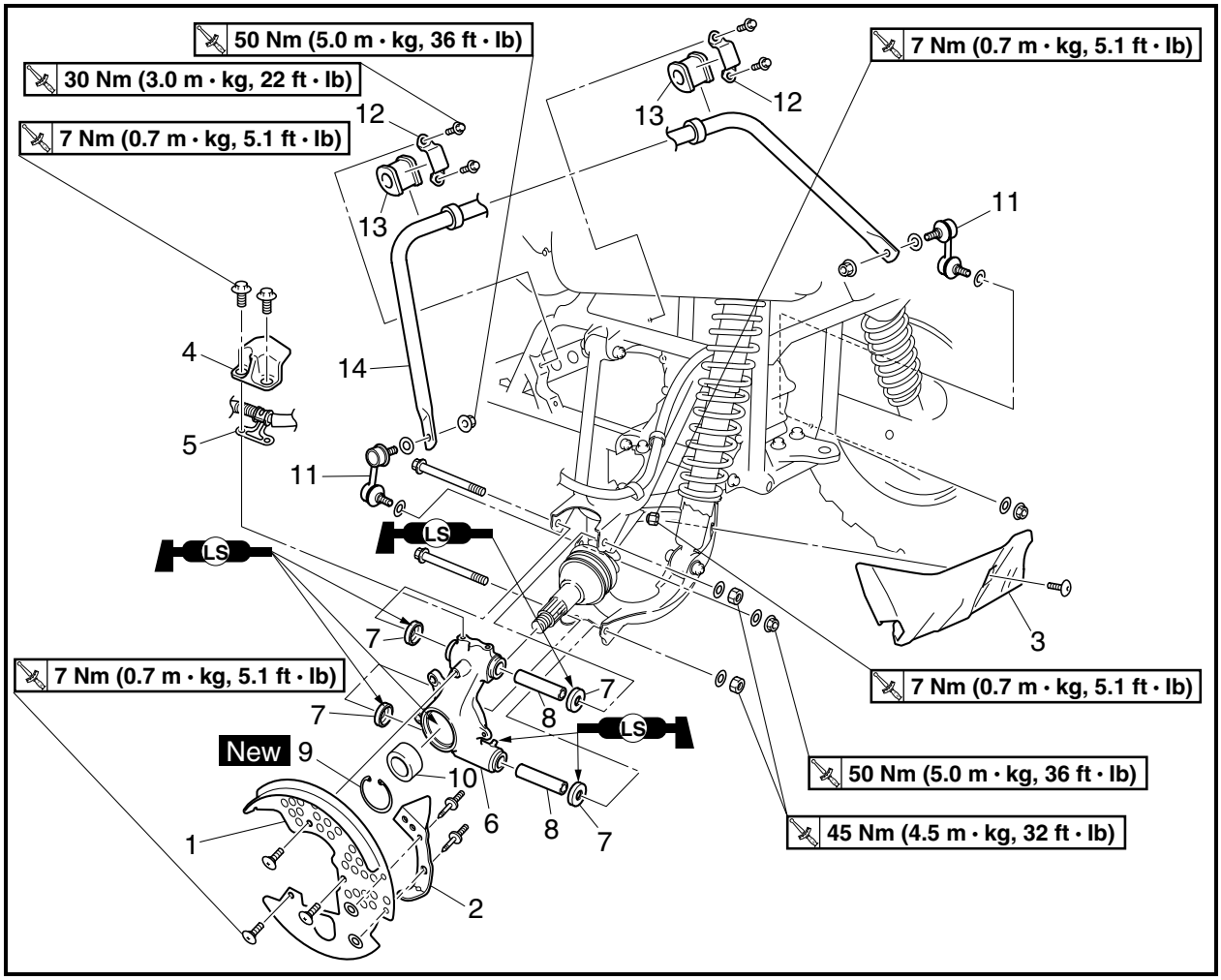
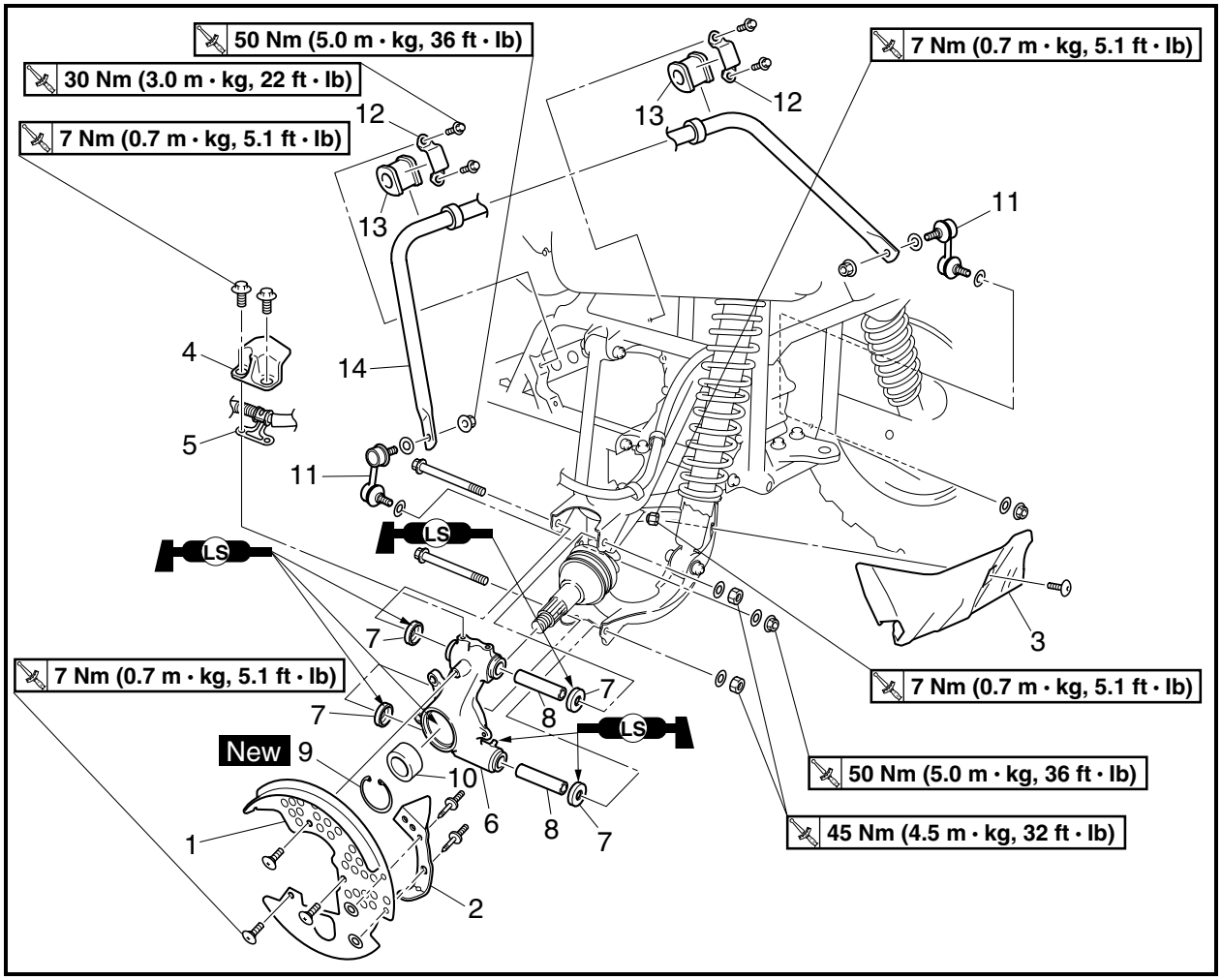


EBS01023

REAR KNUCKLES AND STABILIZER



Order	Job/Part	Q'ty	Remarks
	Removing the rear knuckles and stabilizer		Remove the parts in the order listed. The following procedure applies to both of the rear knuckles.
	Rear wheel hubs		Refer to "FRONT AND REAR WHEELS".
1	Brake disc guard	1	
2	Plate	1	
3	Rear arm protector	1	
4	Rear brake hose protector	1	
5	Rear brake hose holder	1	
6	Rear knuckle	1	
7	Spacer cover	4	
8	Spacer	2	
9	Circlip	1	
10	Bearing	1	
11	Stabilizer joint	2	



Order	Job/Part	Q'ty	Remarks
12	Stabilizer holder	2	
13	Bushing	2	
14	Stabilizer	1	
			For installation, reverse the removal procedure.