EAS10003

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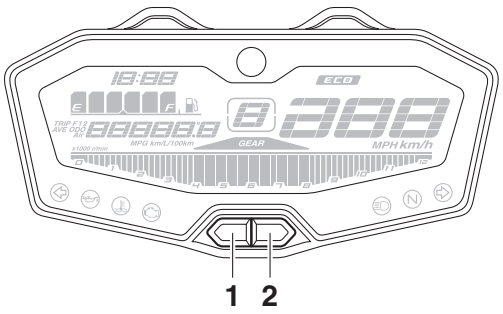
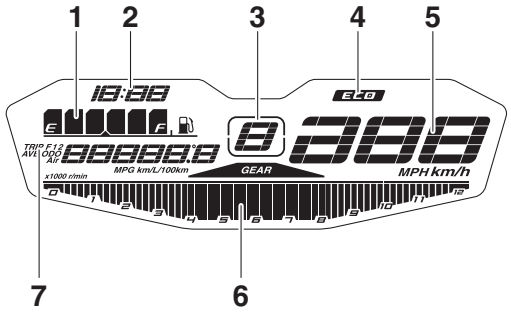
EAS30982
MULTI-FUNCTION METER UNIT



1. Set button (left)
2. Set button (right)



1. Fuel meter
2. Clock
3. Transmission gear display
4. Eco indicator “ECO”
5. Speedometer
6. Tachometer
7. Multi-function display

EWA12423
WARNING

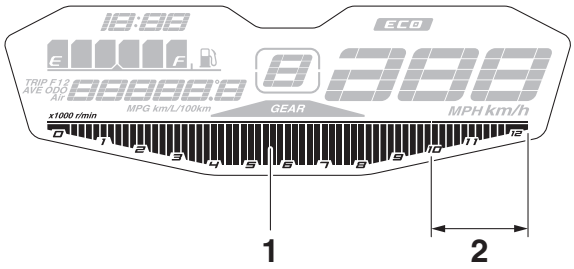
Be sure to stop the vehicle before making any setting changes to the multi-function meter unit. Changing settings while riding can distract the operator and increase the risk of an accident.

The multi-function meter unit is equipped with the following:
- a speedometer
- a tachometer
- a clock
- a fuel meter
- an eco indicator
- a transmission gear display
- a multi-function display
- a self-diagnosis device
- a brightness control mode

TIP
- Be sure to turn the key to “ON” before using the left and right set buttons except for setting the brightness control mode.
- To switch the speedometer and multi-function display between kilometers and miles, set the multi-function display to the odometer mode or a tripmeter mode, and then press the left set button for at least three seconds.

Speedometer
The speedometer shows the vehicle’s traveling speed.

Tachometer



1. Tachometer
2. Tachometer red zone

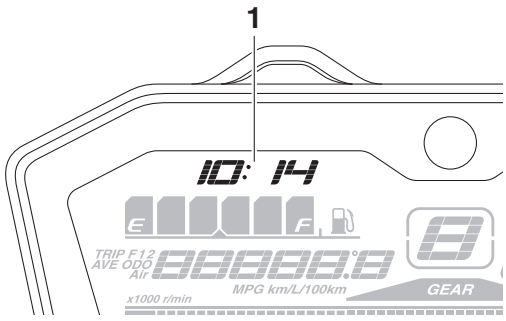
The tachometer allows the rider to monitor the engine speed and keep it within the ideal power range.

ECA19660
NOTICE

Do not operate the engine in the tachometer red zone.

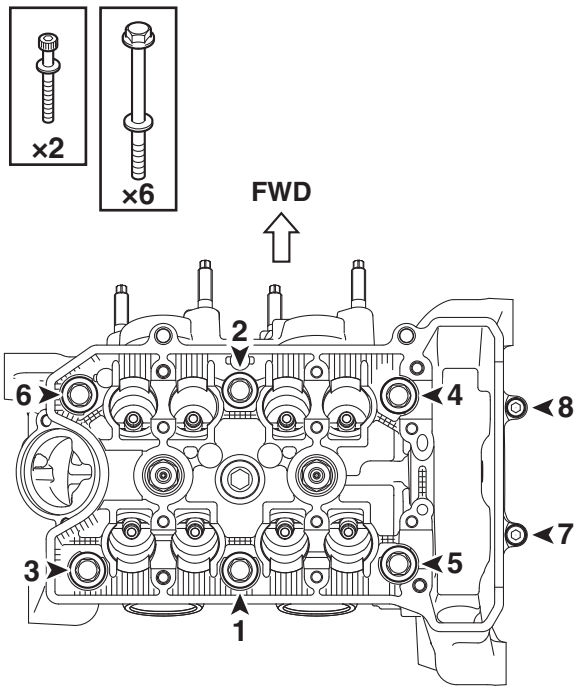
	Red zone **10000 r/min and above**

Clock



1. Clock

5. Tighten the cylinder head bolts “7” and “8” to 10 Nm (1.0 m·kgf, 7.2 ft·lbf).



TIP

Crankcase bolt

Tighten the crankcase bolts “1”–“27” in the proper tightening sequence as follows: Tighten the bolts “1”–“16” in the order of the embossed numbers on the crankcase.

1. Lubricate the crankcase bolts “1”–“27” threads, mating surfaces, washers, and O-rings with the engine oil.
2. Tighten the crankcase bolts “1”–“6” to 24 Nm (2.4 m·kgf, 17 ft·lbf).
3. Loosen and retighten the crankcase bolts “1”–“6” to 17 Nm (1.7 m·kgf, 12 ft·lbf) in the proper tightening sequence, and then tighten them further to reach the specified angle 60° in the proper tightening sequence.
4. Tighten the crankcase bolts “7”–“27”.
   “7”–“14”: 24 Nm (2.4 m·kgf, 17 ft·lbf)
   “15”–“16”: 10 Nm (1.0 m·kgf, 7.2 ft·lbf)
   “17”–“27”: 10 Nm (1.0 m·kgf, 7.2 ft·lbf)
   Tighten the bolts “17”–“27” in any tightening sequence using a crisscross pattern.

EAS30649
LUBRICATING THE PEDAL
Lubricate the pivoting point and metal-to-metal moving parts of the pedal.

	Recommended lubricant **Lithium-soap-based grease**

EAS30805
LUBRICATING THE CLUTCH LEVER
Lubricate the pivoting point and metal-to-metal moving parts of the lever.

	Recommended lubricant **Lithium-soap-based grease**

EAS30650
CHECKING THE SIDESTAND
1. Check:
   - Sidestand operation
     Check that the sidestand moves smoothly.
     Rough movement → Repair or replace.

EAS30651
LUBRICATING THE SIDESTAND
Lubricate the pivoting point, metal-to-metal moving parts and spring contact point of the sidestand.

	Recommended lubricant **Lithium-soap-based grease**

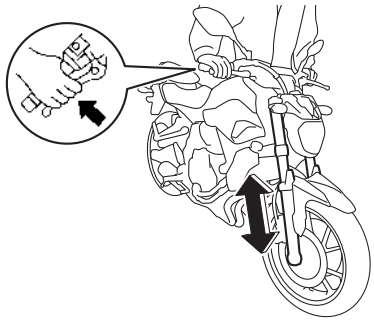
EAS30652
CHECKING THE SIDESTAND SWITCH
Refer to "CHECKING THE SWITCHES" on page 8-79.

EAS30653
CHECKING THE FRONT FORK
1. Stand the vehicle on a level surface.

EWA13120
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

2. Check:
   - Inner tube
     Damage/scratches → Replace.
   - Front fork leg
     Oil leaks between inner tube and outer tube → Replace the oil seal.
3. Hold the vehicle upright and apply the front brake.
4. Check:
   - Front fork operation
     Push down hard on the handlebar several times and check if the front fork rebounds smoothly.
     Rough movement → Repair.
     Refer to "FRONT FORK" on page 4-64.



EAS30808
CHECKING THE REAR SHOCK ABSORBER ASSEMBLY
Refer to "CHECKING THE REAR SHOCK ABSORBER ASSEMBLY" on page 4-82.

EAS30655
ADJUSTING THE REAR SHOCK ABSORBER ASSEMBLY
EWA13120
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

Spring preload

ECA13590
NOTICE

Never go beyond the maximum or minimum adjustment positions.

1. Adjust:
   - Spring preload

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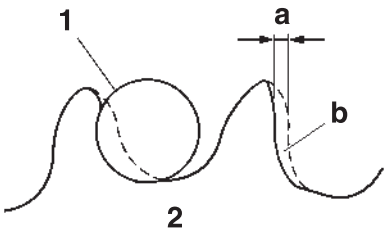
a. Adjust the spring preload with the special wrench "1" and extension bar "2" included in the owner's tool kit.
b. Turn the adjusting ring "3" in direction "a" or "b".
c. Align the desired position on the adjusting ring with the stopper "4".

Direction "a"
Spring preload is increased (suspension is harder).
Direction "b"
Spring preload is decreased (suspension is softer).

Recommended lubricant
Chain lubricant suitable for O-ring chains

EAS30231
CHECKING THE DRIVE SPROCKET

1. Check:
   - Drive sprocket
     More than 1/4 tooth "a" wear → Replace the drive chain sprocket, drive chain, and rear wheel sprocket as a set.
     Bent teeth → Replace the drive chain sprocket, drive chain, and rear wheel sprocket as a set.



b. Correct
1. Drive chain roller
2. Drive sprocket

EAS30232
CHECKING THE REAR WHEEL SPROCKET

Refer to "CHECKING AND REPLACING THE REAR WHEEL SPROCKET" on page 4-28.

EAS30233
CHECKING THE REAR WHEEL DRIVE HUB

Refer to "CHECKING THE REAR WHEEL DRIVE HUB" on page 4-28.

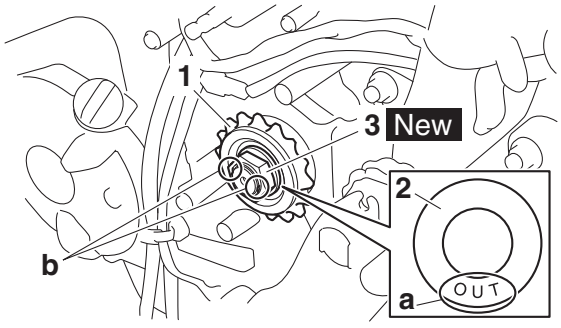
EAS31116
INSTALLING THE DRIVE SPROCKET

1. Install:
   - Drive sprocket "1"
   - Washer "2"
   - Drive sprocket nut "3" New

Drive sprocket nut
95 Nm (9.5 m·kgf, 69 ft·lbf)

TIP

- While applying the rear brake, tighten the drive sprocket nut.
- Install washer with the "OUT" mark "a" facing out.
- Stake the drive sprocket nut at cutouts "b" in the drive axle.

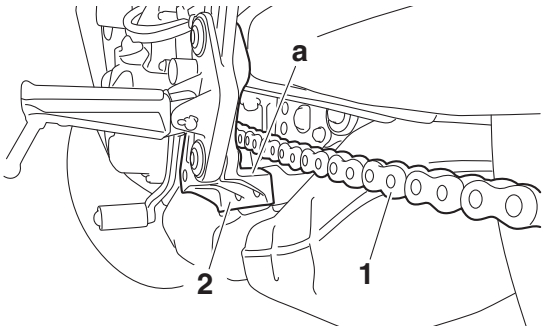


EAS30234
INSTALLING THE DRIVE CHAIN

1. Install:
   - Drive chain "1"

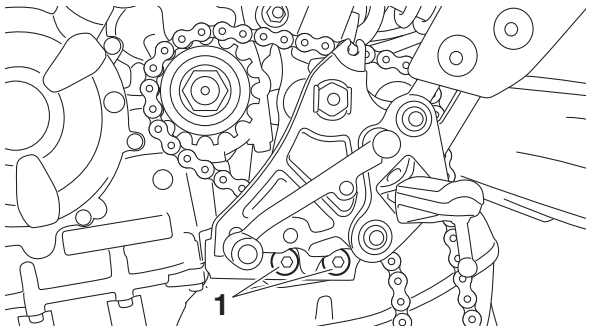
TIP

Make sure that the drive chain is positioned above the portion "a" of the footrest bracket "2".



2. Tighten:
   - Footrest bracket bolts "1"

Footrest bracket bolt
45 Nm (4.5 m·kgf, 33 ft·lbf)
LOCTITE®



3. Lubricate:
   - Drive chain

Recommended lubricant
Chain lubricant suitable for O-ring chains

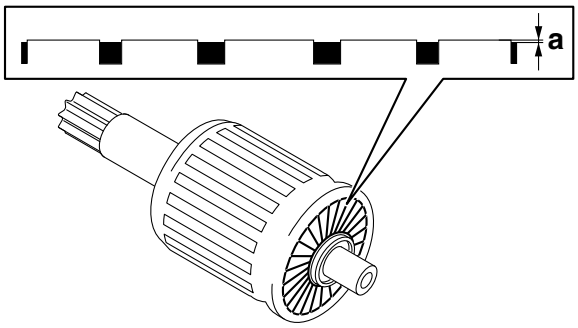
EAS30325
CHECKING THE STARTER MOTOR

1. Check:
   • Commutator
   Dirt → Clean with 600 grit sandpaper.
2. Measure:
   • Mica undercut “a”
   Out of specification → Cut the mica to the proper measurement with a hacksaw blade that has been grounded to fit the commutator.

Mica undercut (depth)
0.70 mm (0.03 in)

TIP

The mica of the commutator must be undercut to ensure proper operation of the commutator.



3. Measure:
   • Armature assembly resistances (commutator and insulation)
   Out of specification → Replace the starter motor.

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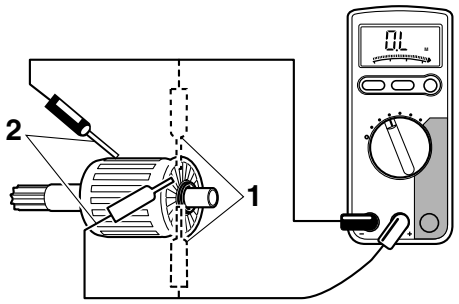
a. Measure the armature assembly resistances with the digital circuit tester.

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

Armature coil
Commutator resistance “1”
0.015–0.025 Ω
Insulation resistance “2”
Above 1 MΩ at 20 °C (68 °F)

b. If any resistance is out of specification, replace the starter motor.



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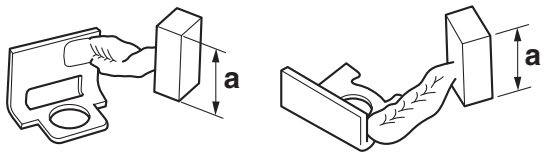
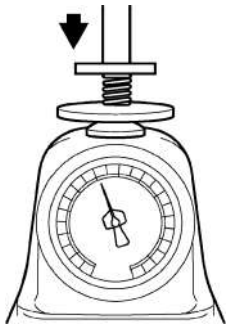
4. Measure:
   • Brush length “a”
   Out of specification → Replace the brush holder set.

Brush overall length
12.0 mm (0.47 in)
Limit
6.50 mm (0.26 in)



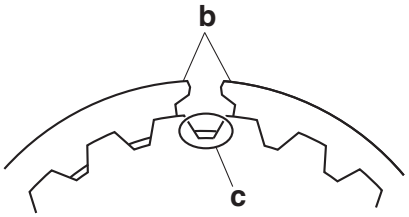
5. Measure:
   • Brush spring force
   Out of specification → Replace the brush holder set.

Brush spring force
6.03–6.52 N (615–665 gf, 21.71–23.47 oz)

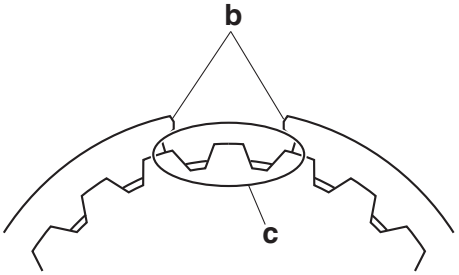


6. Check:
   • Gear teeth
   Damage/wear → Replace the starter motor.

A



B

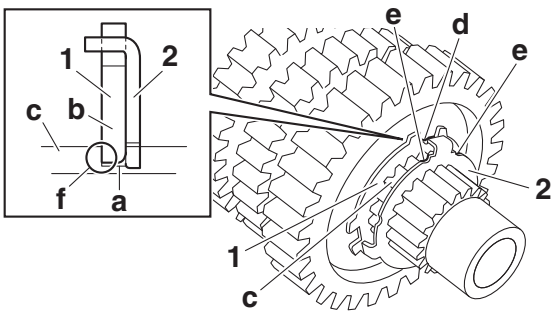


A. Main axle
B. Drive axle

2. Install:
   • Toothed lock washer retainer “1”
   • Toothed lock washer “2”

TIP

- With the toothed lock washer retainer in the groove “a” in the axle, align the projection “b” on the retainer with an axle spline “c”, and then install the toothed lock washer.
- Be sure to align the projection on the toothed lock washer that is between the alignment marks “e” with the alignment mark “d” on the retainer.
- Be sure the toothed lock washer retainer sharp-edged corner “f” is positioned opposite side to the toothed lock washer.



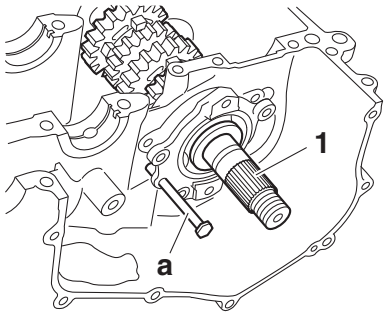
EAS30438
INSTALLING THE TRANSMISSION

1. Install:
   • Main axle assembly “1”
   • Bearing retainer

Bearing retainer bolt
12 Nm (1.2 m·kgf, 8.7 ft·lbf)
LOCTITE®

TIP

Use a suitable pin “a” to position the bearing housing, and then install the housing until it contacts the cylinder.



2. Install:
   • Shift fork “C”
   • Shift drum assembly
   • Shift fork guide bar

TIP

- The embossed marks on the shift forks should face towards the right side of the engine.
- Install shift fork “C” into the groove in the 3rd pinion gear on the main axle.

3. Install:
   • Shift fork “L” “1”
   • Shift fork “R” “2”
   • Shift fork guide bar
   • Shift drum retainer
   • Drive axle assembly “3”

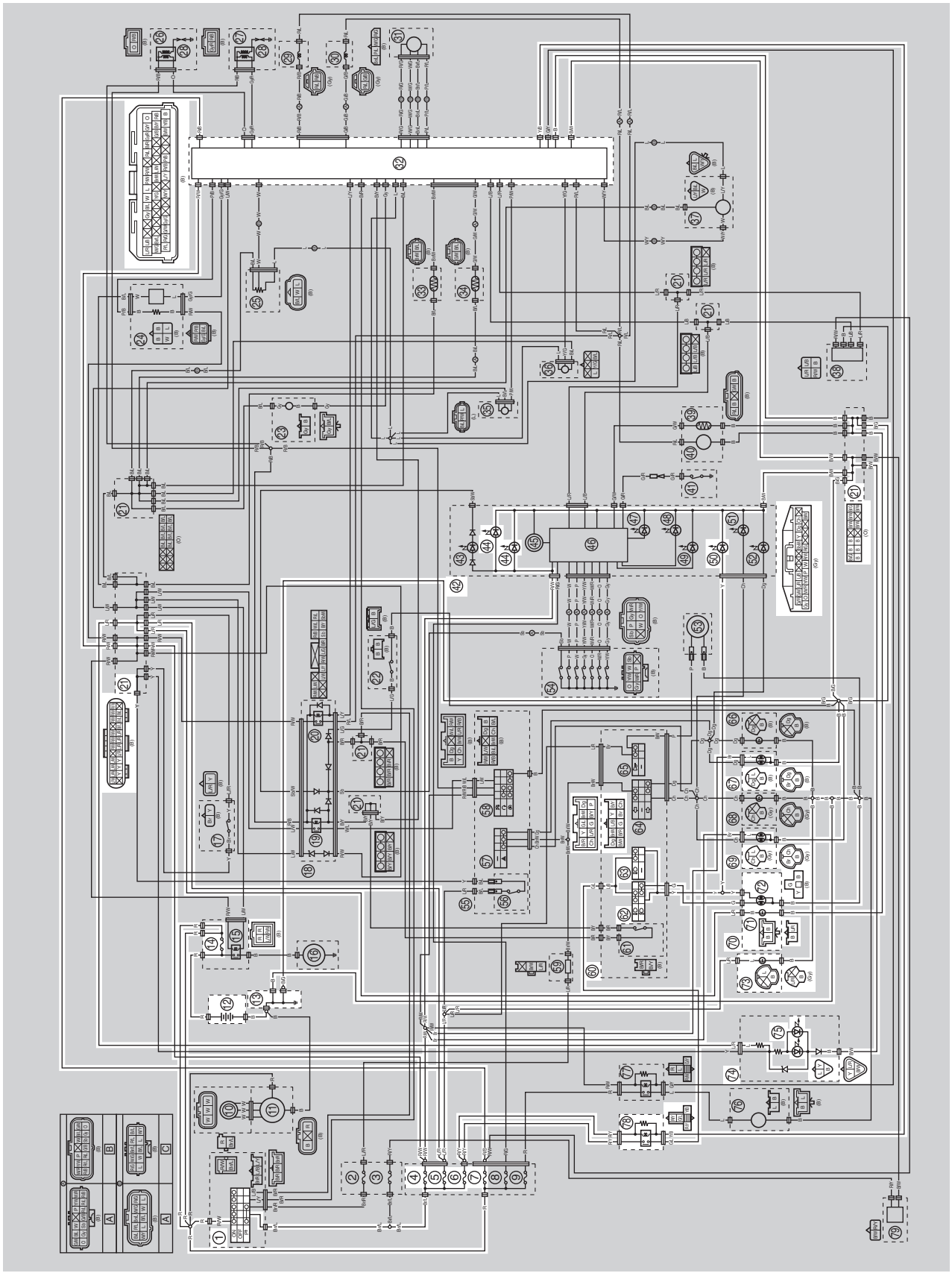
Shift drum retainer bolt
10 Nm (1.0 m·kgf, 7.2 ft·lbf)
LOCTITE®

TIP

- Install shift fork “L” into the groove in the 6th wheel gear and shift fork “R” into the groove in the 5th wheel gear on the drive axle.
- Make sure that the projection “a” on the drive axle assembly is inserted into the slot in the cylinder.
- Make sure that the drive axle bearing circlip “b” and flange “c” of the oil seal are inserted into the grooves in the cylinder.

EAS20075
LIGHTING SYSTEM

EAS30498
CIRCUIT DIAGRAM



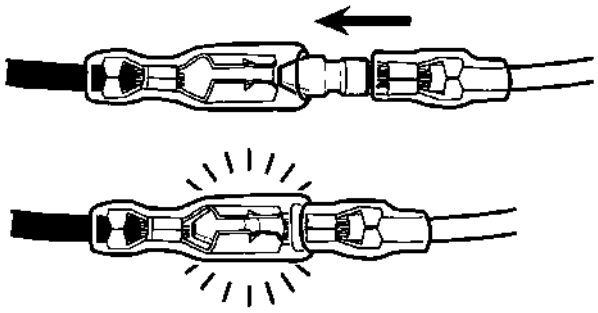
EAS30514
TROUBLESHOOTING

If the fuel pump fails to operate.

TIP

• Before troubleshooting, remove the following part(s):
1. Rider seat
2. Passenger seat
3. Center cover
4. Fuel tank side covers
5. Fuel tank
6. Headlight assembly

1. Check the fuses. (Ignition, fuel injection system, and main) Refer to “CHECKING THE FUSES” on page 8-83.	NG →	Replace the fuse(s).
OK ↓		
2. Check the battery. Refer to “CHECKING AND CHARGING THE BATTERY” on page 8-84.	NG →	• Clean the battery terminals. • Recharge or replace the battery.
OK ↓		
3. Check the main switch. Refer to “CHECKING THE SWITCHES” on page 8-79.	NG →	Replace the main switch unit.
OK ↓		
4. Check the start/engine stop switch. Refer to “CHECKING THE SWITCHES” on page 8-79.	NG →	• The start/engine stop switch is faulty. • Replace the right handlebar switch.
OK ↓		
5. Check the relay unit (fuel pump relay). Refer to “CHECKING THE RELAYS” on page 8-87.	NG →	Replace the relay unit.
OK ↓		
6. Check the fuel pump. Refer to “CHECKING THE FUEL PUMP BODY” on page 7-4.	NG →	Replace the fuel pump assembly.
OK ↓		

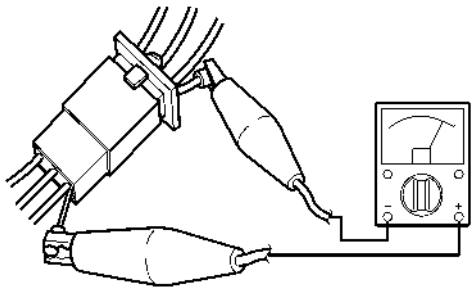


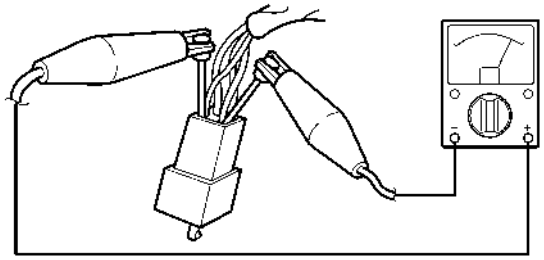
4. Check:
   • Continuity
   (with the pocket tester)

	Pocket tester **90890-03132**

TIP

- If there is no continuity, clean the terminals.
- When checking the wire harness, perform steps (1) to (4).
- As a quick remedy, use a contact revitalizer available at most part stores.





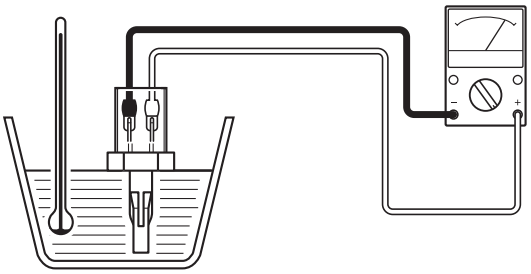
5. Check:
   • Resistance

	Pocket tester **90890-03112** **Analog pocket tester** **YU-03112-C**

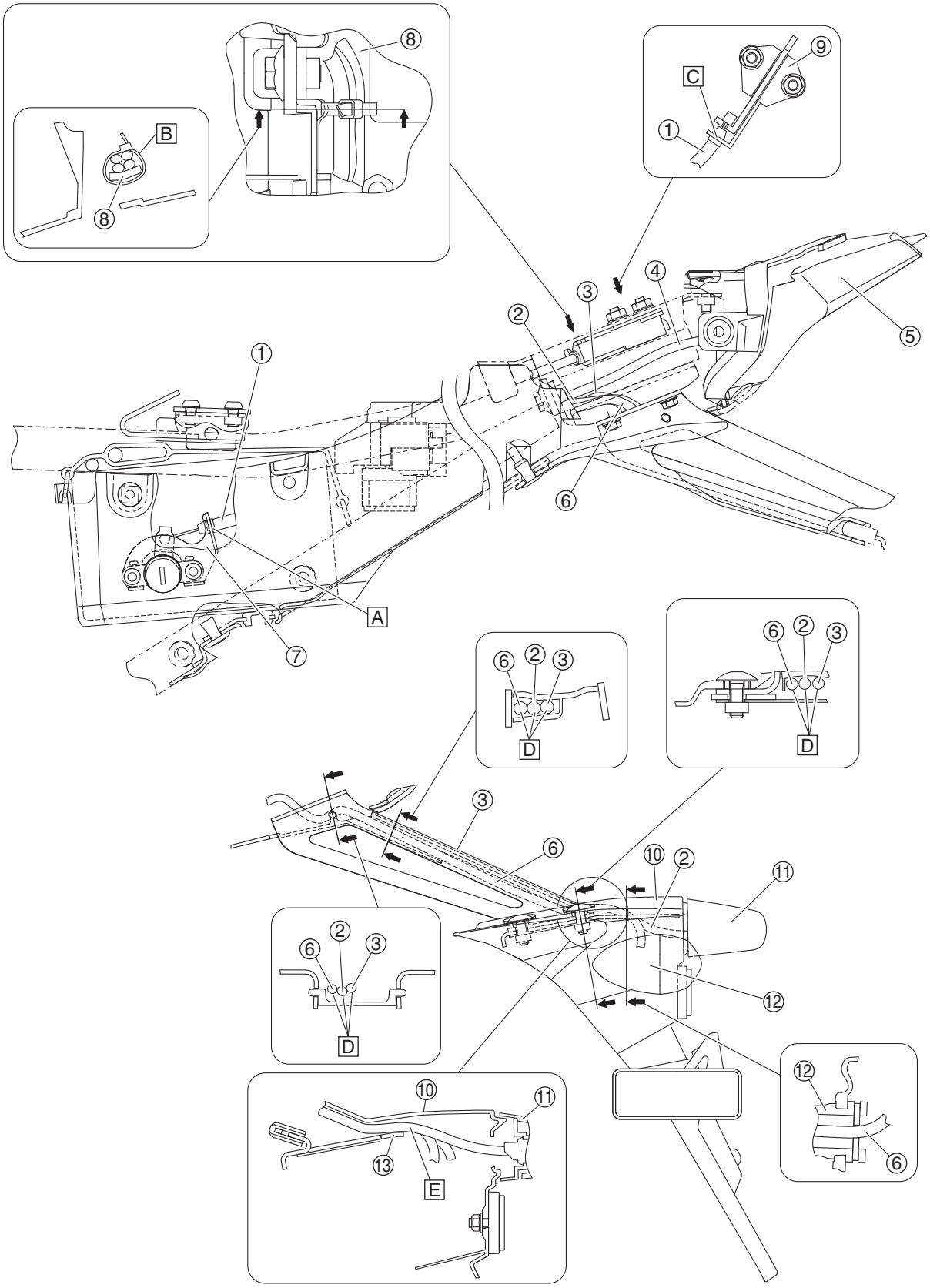
TIP

The resistance values shown were obtained at the standard measuring temperature of 20 °C (68 °F). If the measuring temperature is not 20 °C (68 °F), the specified measuring conditions will be shown.

	Intake air temperature sensor resistance **5.40–6.60 kΩ at 0 °C (32 °F)** **290–390 Ω at 80 °C (176 °F)**



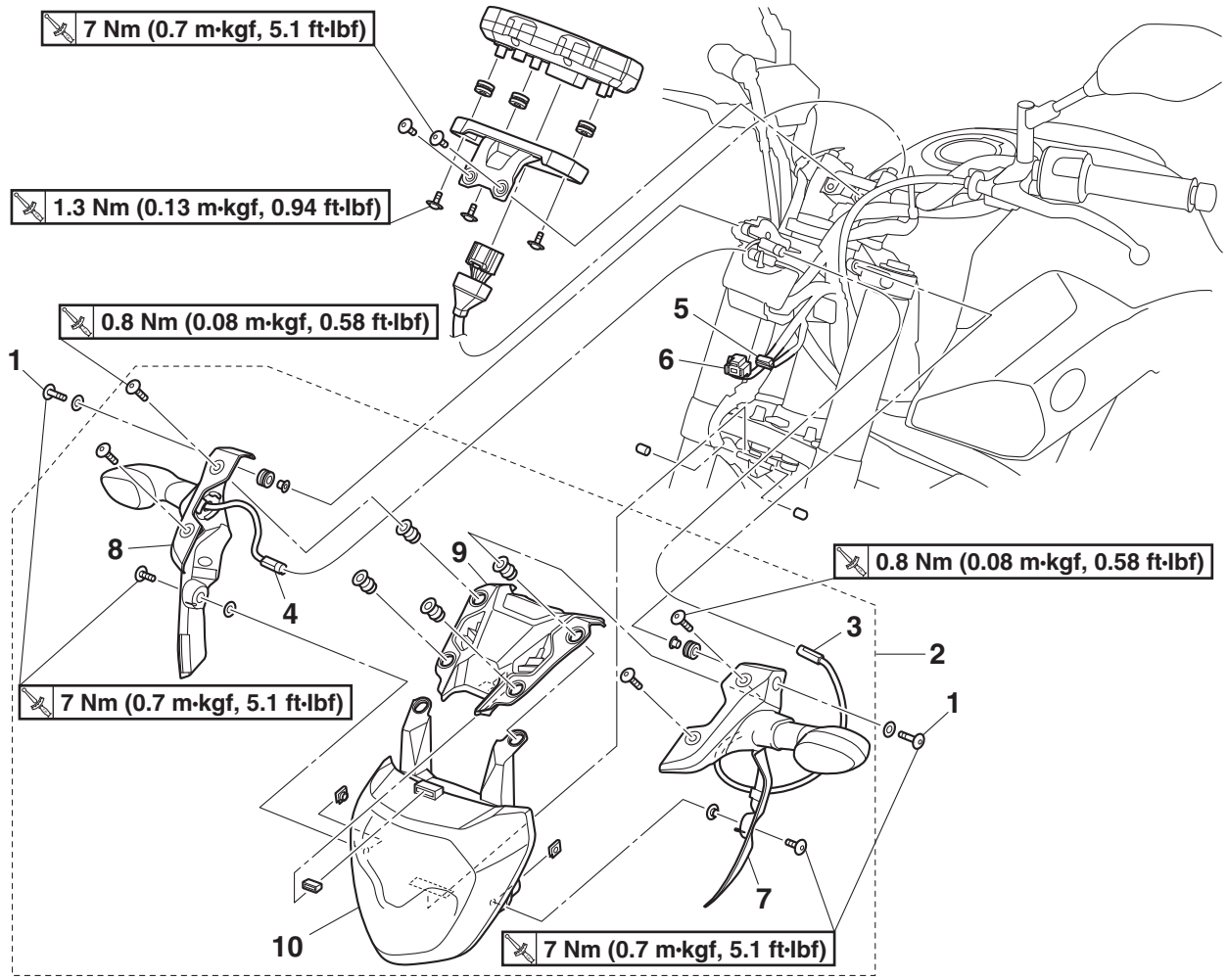
Rear fender (left side view)



EAS20156

GENERAL CHASSIS (3)

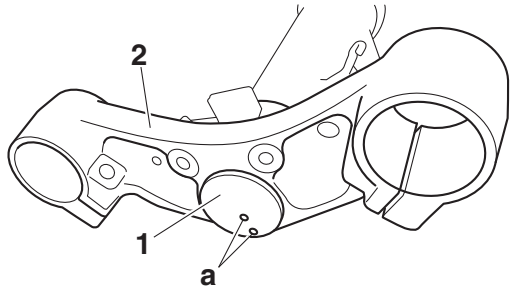
Removing the headlight and meter assembly



Order	Job/Parts to remove	Q'ty	Remarks
1	Headlight assembly bolt	2	
2	Headlight assembly	1	
3	Front turn signal light coupler (left)	1	Disconnect.
4	Front turn signal light coupler (right)	1	Disconnect.
5	Auxiliary light coupler	1	Disconnect.
6	Headlight coupler	1	Disconnect.
7	Headlight side cover (left)	1	
8	Headlight side cover (right)	1	
9	Headlight center cover	1	
10	Headlight	1	

TIP

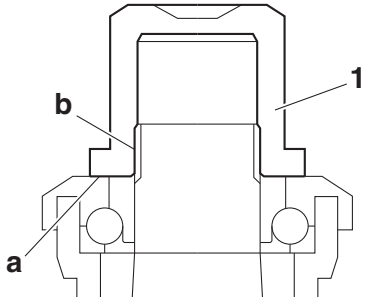
Face the holes “a” in the lower bracket cap rearward.



3. Install:
   - Lower bracket
   - Cap nut “1”
     Refer to “CHECKING AND ADJUSTING THE STEERING HEAD” on page 3-19.

TIP

Before installing the cap nut, remove any grease from the contact surfaces “a” between the cap nut and the bearing cover and from the threads “b” of the lower bracket and cap nut.

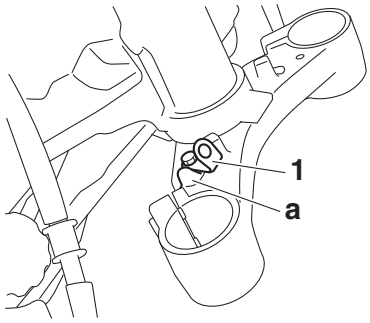


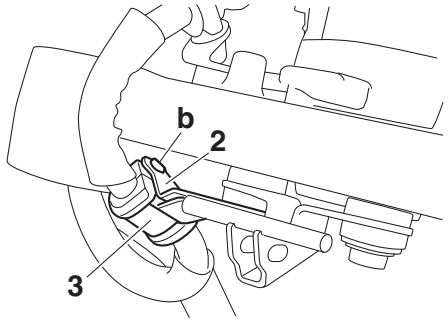
4. Install:
   - Front brake hose holder bracket “1”
   - Headlight bracket
   - Front brake hose upper holder “2”
   - Front brake hose lower holder “3”

	**Front brake hose holder bracket bolt** **3.8 Nm (0.38 m·kgf, 2.8 ft·lbf)** **Front brake hose lower holder bolt** **7 Nm (0.7 m·kgf, 5.1 ft·lbf)**

TIP

- Make sure that the front brake hose holder bracket contacts the projection “a” on the lower bracket.
- Make sure that the projection “b” on the front brake hose lower holder fits into the hole in the front brake hose upper holder.





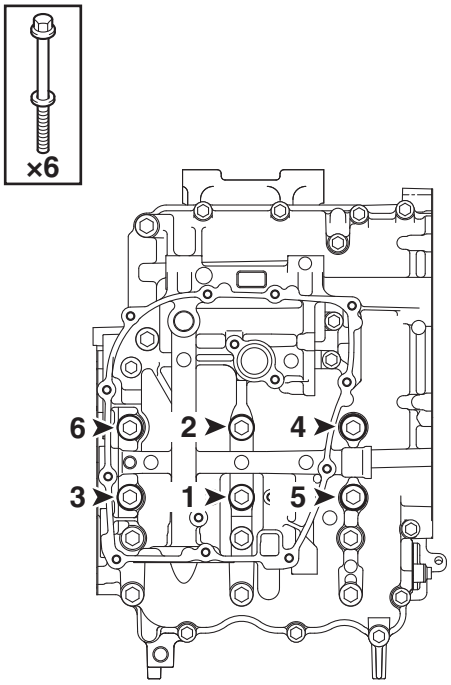
ECA20890

NOTICE

Do not use a torque wrench to tighten the bolt to the specified angle.

TIP

Tighten the bolts in the tightening sequence cast on the crankcase.

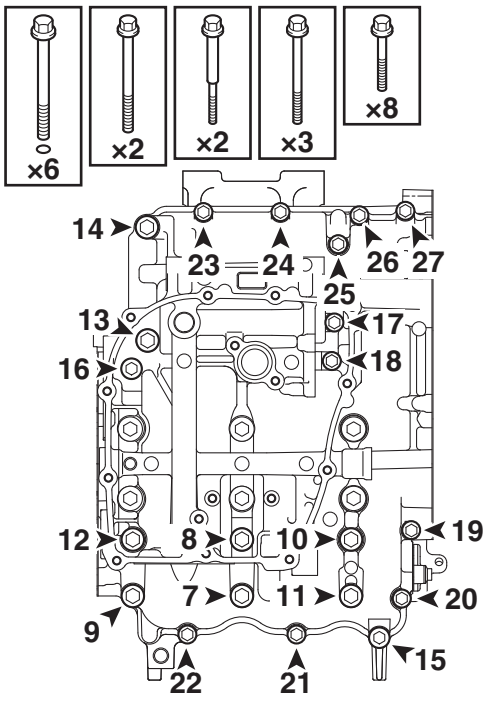


8. Tighten:
   • Crankcase bolts “7”–“27”

	Crankcase bolts “7”–“14” **24 Nm (2.4 m·kgf, 17 ft·lbf)** **Crankcase bolts “15”–“27”** **10 Nm (1.0 m·kgf, 7.2 ft·lbf)**

TIP

- Tighten the bolts “7”–“16” in the tightening sequence cast on the crankcase.
- Tighten the bolts “17”–“27” in any tightening sequence using a crisscross pattern.



EAS31071

INSTALLING THE OIL PRESSURE SWITCH

1. Install:
   • Oil pressure switch “1”
   • Oil pressure switch lead “2”

	Oil pressure switch **15 Nm (1.5 m·kgf, 11 ft·lbf)** **Oil pressure switch lead bolt** **1.8 Nm (0.18 m·kgf, 1.3 ft·lbf)**

2. Apply:
   • Sealant
   (onto the oil pressure switch threads)

	Yamaha bond No. 1215 **90890-85505** **(Three bond No.1215®)**

TIP

- Apply Three bond No.1215® to the threads “a” of the oil pressure switch. However, do not apply Three bond No.1215® to the portion “b” of the oil pressure switch.
- Install the oil pressure switch lead so that it is routed within the range shown in the illustration.

The oil pressure warning light remains on after the engine is started.

1. Check the entire signaling system wiring.
   Refer to “CIRCUIT DIAGRAM” on page 8-21.

NG → Properly connect or replace the wiring harness.

OK ↓

2. Measure the engine oil pressure.
   Refer to “MEASURING THE ENGINE OIL PRESSURE” on page 3-23.

NG → Check the engine oil leakage, oil viscosity, oil seal, oil filter, or oil pump.

OK ↓

Replace the oil pressure switch.

The fuel meter, fuel level warning light, or both fail to come on.

1. Check the fuel sender.
   Refer to “CHECKING THE FUEL SENDER” on page 8-103.

NG → Replace the fuel pump assembly.

OK ↓

2. Check the entire signaling system wiring.
   Refer to “CIRCUIT DIAGRAM” on page 8-21.

NG → Properly connect or replace the wiring harness.

OK ↓

Replace the meter assembly.

The coolant temperature warning light fails to come on.

1. Check the coolant temperature sensor.
   Refer to “CHECKING THE COOLANT TEMPERATURE SENSOR” on page 8-104.

NG → Replace the coolant temperature sensor.

OK ↓

2. Check the entire signaling system wiring.
   Refer to “CIRCUIT DIAGRAM” on page 8-21.

NG → Properly connect or replace the wiring harness.

OK ↓

Replace the ECU or meter assembly.
Refer to“REPLACING THE ECU (engine control unit)” on page 8-94.