YAMAHA

WR250FR

ASSEMBLY MANUAL

LIT-11666-16-48

5UM-28107-10

EAA00002

FOREWORD

This Assembly Manual contains the information required for the correct reassembly of this Yamaha machine prior to delivery to the customer. Since some external parts of the machine have been removed at the Yamaha factory for the convenience of packing, assembly by the Yamaha dealer is required. It should be noted that the assembled machine should be thoroughly cleaned, inspected, and adjusted prior to delivery to the customer.

EAA00005

NOTICE

The service specifications given in this assembly manual are based on the model as manufactured. Yamaha Motor Company, Ltd. is continually striving to improve all of its model. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha dealers and will appear in future editions of this manual where applicable.
The procedures below are described in the order that the procedures are carried out correctly and completely. Failure to do so can result in poor performance and possible harm to the machine and/or rider.

CONCERNING CRATE DAMAGE:
Follow the instructions in the Dealer Warranty Handbook, Procedure Section.

Particularly important information is distinguished in this manual by the following notations.

⚠ The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠ WARNING Failure to follow WARNING instructions could result in severe injury or death to the machine operator, a bystander, or a person inspecting or repairing the machine.

CAUTION: A CAUTION indicates special precautions that must be taken to avoid damage to the machine.

NOTE: A NOTE provides key information to make procedures easier or clearer.

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WR250FR
ASSEMBLY MANUAL

First Edition, December 2002

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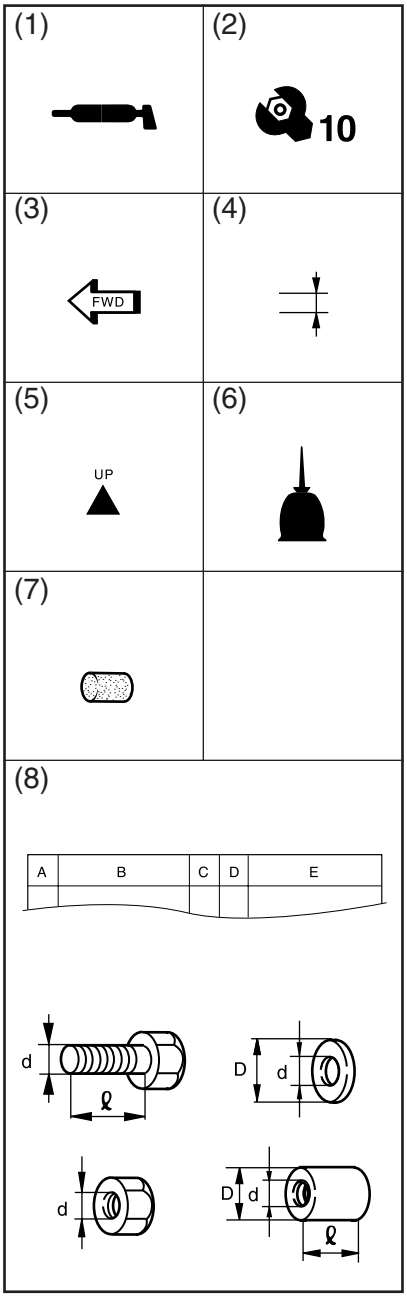
LIT-11666-16-48



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SYMBOLS USED IN ASSEMBLY MANUAL

In order to simplify descriptions in this assembly manuals, the following symbols are used:

(1) Coat with lithium-soap-based-grease.
(2) Tighten to 10 Nm.
(10 Nm = 1.0 m•kg = 7.2 ft•lb)
(3) Towards the front of the machine.
(4) Clearance required.
(5) Install so that the arrow mark faces upward.
(6) Apply a motor oil.
(7) Made of rubber or plastics.
(8)
A: Ref No. (indicating the order of operations.)
B: Part name
C: Quantity of parts per machine.
D: Place where parts are held.
V: Stored in vinyl bag.
C: Stored in carton box.
S: Fixed inside the steel frame, and/or contained in the styro-foam tray (upper or lower).
✻: Temporarily installed or secured.
E: Size or material of parts.
d/D: Diameter of part.
ℓ: Length of part.

ex, D = 5 (0.2) = 5 mm (0.2 in)

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PREPARATION

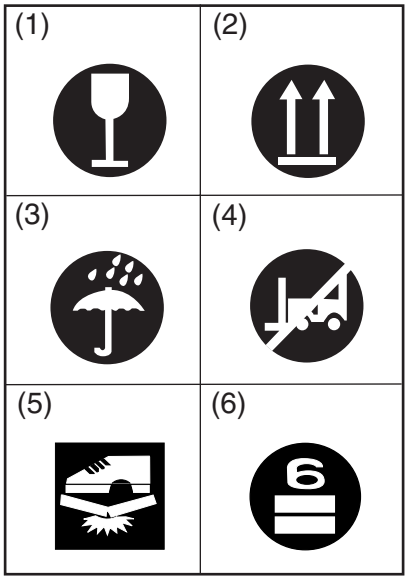
To assemble the machine correctly, supplies (e.g. oils, greases, and shop rags) and sufficient working space are required.

Workshop

The workshop where the machine is assembled, should be clean, specious, and have a level floor.

Self-protection

Protect your eyes with suitable safety glasses or goggles when using compressed air, when grinding or when doing any operation which may cause particles to fly off.
Protect hands and feet by wearing safety gloves and shoes.



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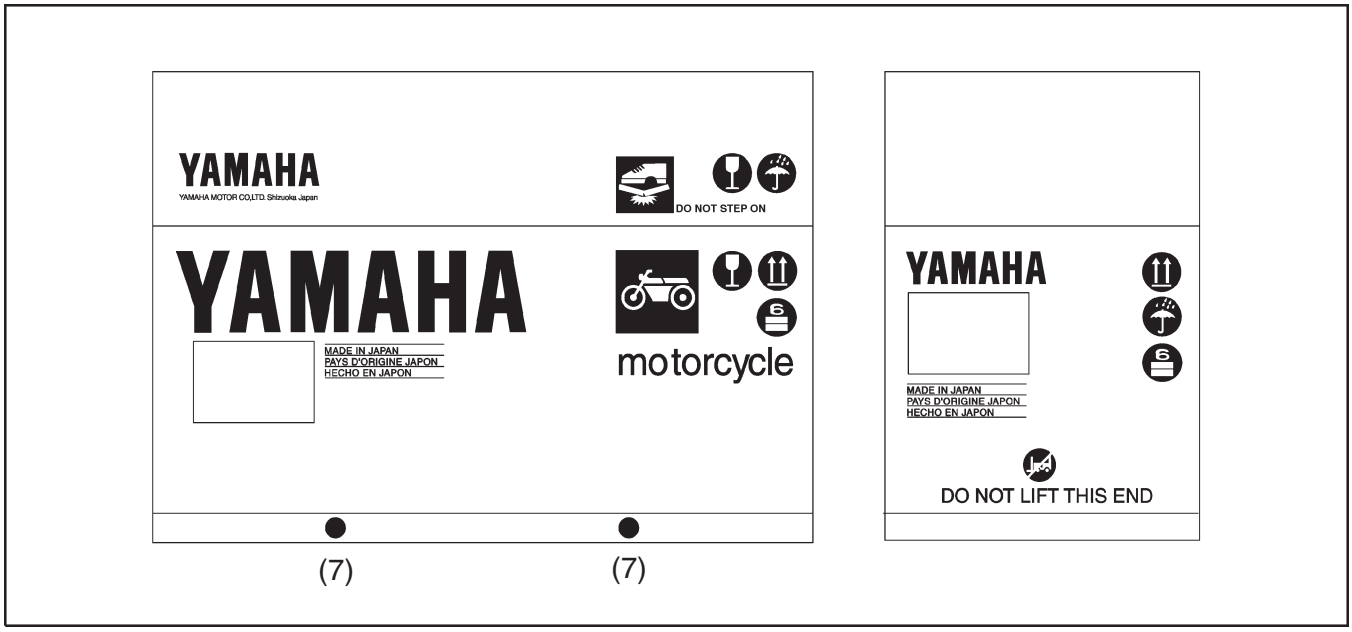
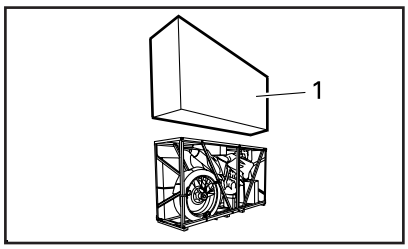
SYMBOLS USED ON CRATE CARTON

(1) Contents of the transport package are fragile, therefore the package must be handled with care.
(2) Indicates correct upright position of the transport package.
(3) Transport package must be kept away from rain.
(4) Insertion of the forklift arm from this side will cause damage.
(5) Do not step anywhere on the transport package.
(6) Up to 6 of the transport packages can be piled up.
(7) Yellow label
Lift arm insertion position
If the forklift arms cannot be inserted under the transport package in alignment with the two yellow labels, adjust the arms so that they are positioned evenly in relation to these marks while taking care not to damage the package contents.





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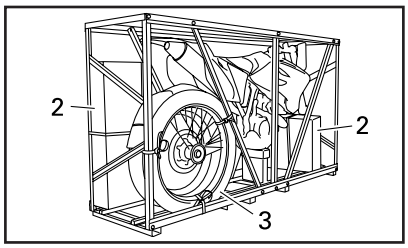
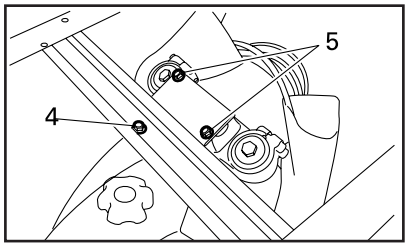
UNPACKING

1. Remove the frame cover (1).

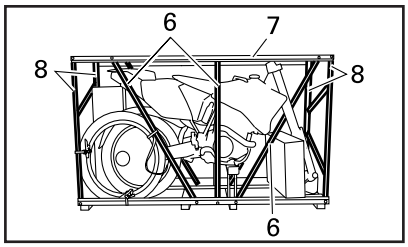
NOTE:
To remove the frame cover, cut the vinyl bands around the cover using a cutter or scissors.



2. Remove the carton boxes (2), front tire (3).

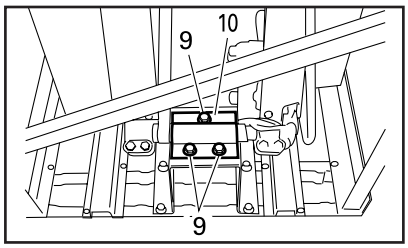


3. Remove the packing frame bolt (4), and handlebar holder bolts (5).



4. Remove the packing frames (in order of sideways (6), upward (7), and front/back (8)).

NOTE:
Hold the frame while removing the frame bolts.



5. Remove the bolts (9). (front axle fixed plate (10)).

NOTE:
Before starting the assembly, check for damaged or missing parts. Check the parts contained in the carton boxes and on the machine for damage, scratches and other defects.

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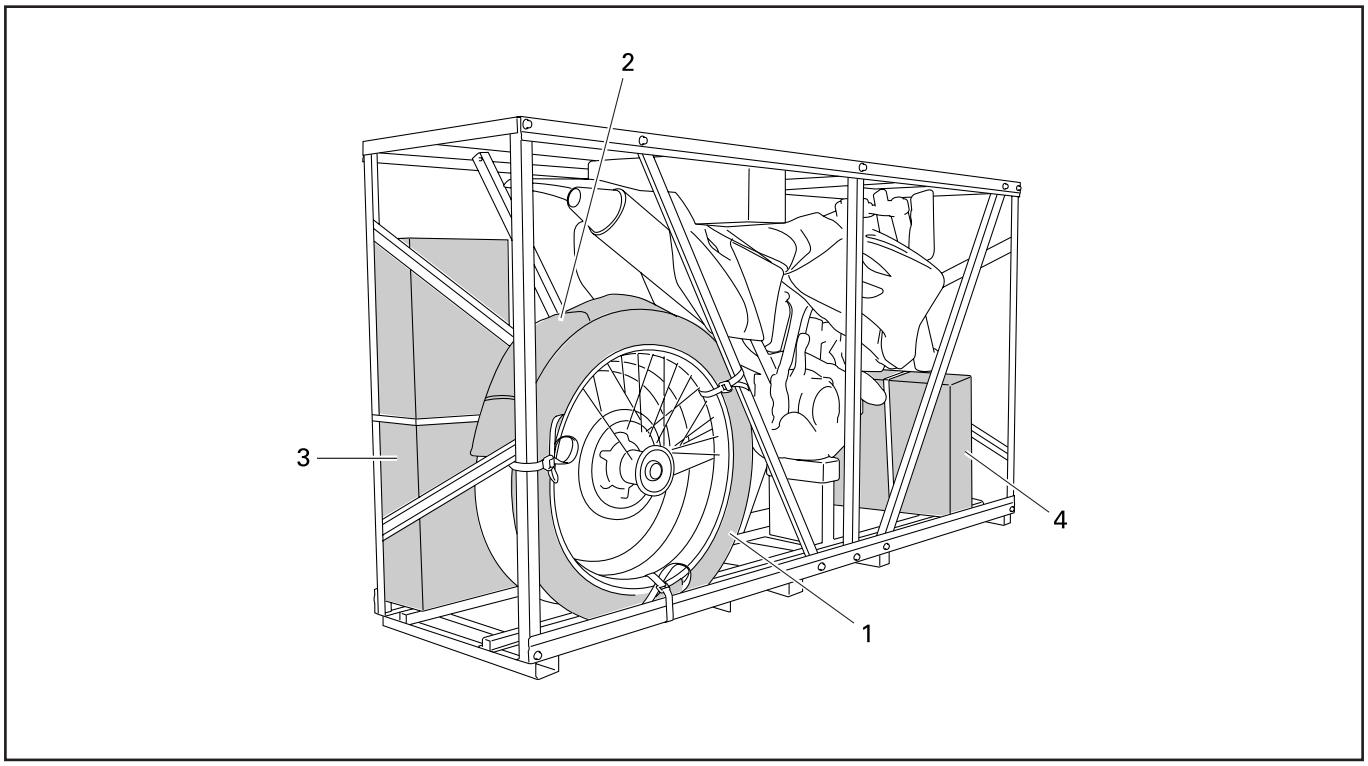
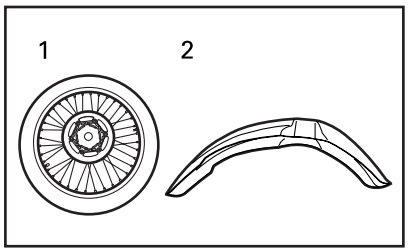
PARTS LOCATION

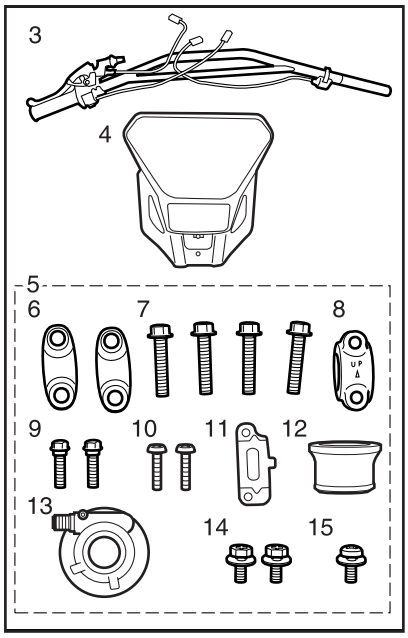
1. Front wheel
2. Front fender
3. Carton Box 1
4. Carton Box 2





Packing frame

1. Front wheel
2. Front fender



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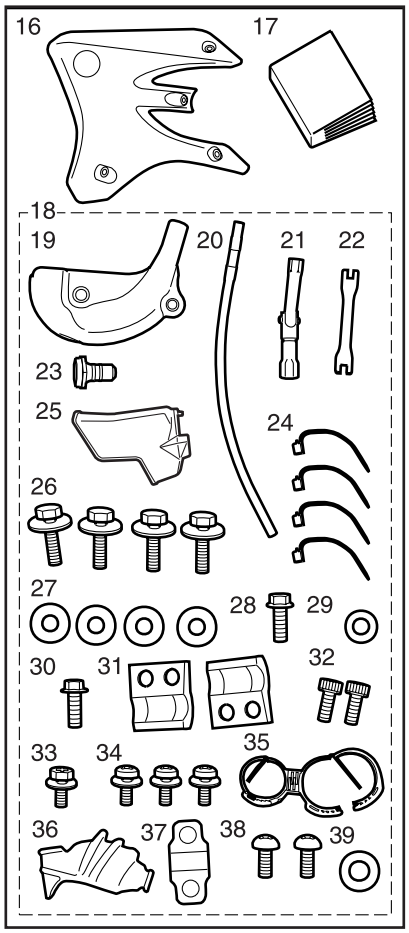
Carton Box 1

3. Handlebar
4. Headlight
5. Plastic bag
6. Handlebar upper holder
7. Flange bolt [d=8 (0.31), ℓ=35 (1.38)]
8. Master cylinder bracket
9. Flange bolt [d=6 (0.24), ℓ=22 (0.87)]
10. Panhead screw (light switch) [d=4 (0.16), ℓ=14 (0.55)]
11. Bracket (light switch)
12. Collar (front wheel axle)
13. Trip meter gear unit
14. Flange bolt (headlight) [d=6 (0.24), ℓ=10 (0.39)]
15. Panhead screw with plain washer (headlight) [d=6 (0.24), ℓ=12 (0.47)]



Carton Box 2

16. Air scoop (left)
17. Owner's service manual
18. Plastic bag
19. Brake hose cover
20. Fuel tank breather hose
21. Spark plug wrench
22. Nipple wrench
23. Boot (adjust nut)
24. Handlebar clamp
25. Boot (clutch lever)
26. Hexagon bolt with plain washer (front fender) [d=6 (0.24), ℓ=20 (0.79)]
27. Collar (front fender) [d=6 (0.24)]
28. Flange bolt (brake hose cover) [d=6 (0.24), ℓ=12 (0.47)]
29. Plain washer (brake hose cover) [d=8 (0.31)]
30. Flange bolt (brake hose cover) [d=8 (0.31), ℓ=20 (0.79)]
31. Brake hose holder
32. Hexagon socket bolt (brake hose holder) [d=6 (0.24), ℓ=14 (0.55)]
33. Hexagon bolt with plain washer (air scoop) [d=6 (0.24), ℓ=16 (0.63)]
34. Panhead screw with plain washer (air scoop) [d=6 (0.24), ℓ=11 (0.43)]
35. Cable clamp (handlebar)
36. Boot [hot starter (choke) lever]
37. Bracket (trip meter cable)
38. Button head bolt (trip meter cable) [d=5 (0.20), ℓ=8 (0.31)]
39. Steering shaft cap

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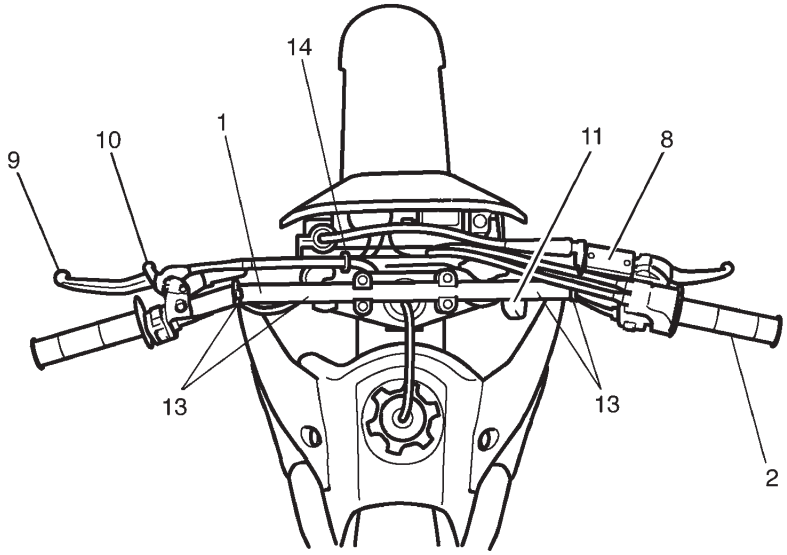
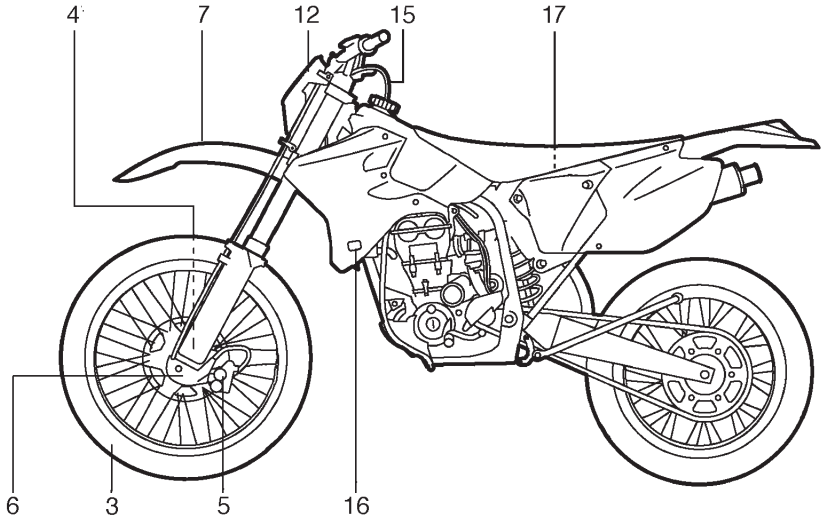
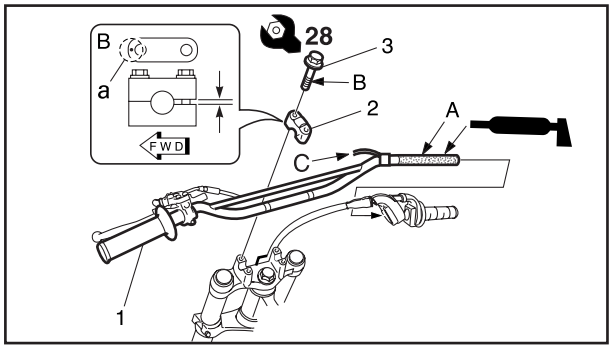
SETUP PROCEDURES

Perform the setup procedures in the order indicated by the numbers.
Always follow the order as shown.







1	Handlebar	1	C	
2	Handlebar upper holder	2	V	
3	Flange bolt	4	V	d=8 (0.31), ℓ=35 (1.38)

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1. HANDLEBAR

A: Clean the right handlebar end. Apply light coat grease.

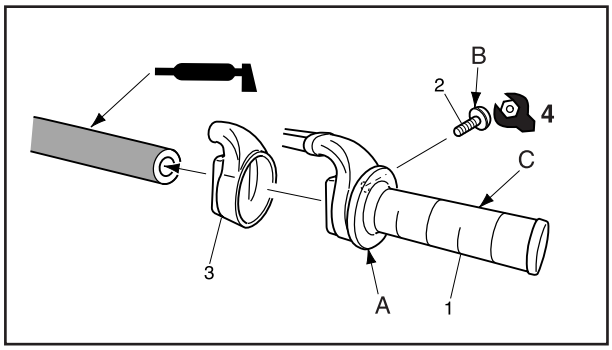
B: First tighten the bolts on the front side of the handlebar holder, and then tighten the bolts on the rear side to specification.

NOTE:
The upper handlebar holder should be installed with the punched mark (a) forward.

Bolt:
28 Nm (2.8 m•kg, 20 ft•lb)

C: Connect the couplers.

CAUTION:
Proper cable and lead routing is essential to assure safe machine operation. Refer to "CABLE ROUTING".



1	Throttle grip	1	*	
2	Panhead screw	2	*	d=5 (0.2), ℓ=20 (0.79)
3	Grip cap cover	1	*	

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2. THROTTLE GRIP

A: Slip the throttle grip over the right handlebar completely and then slide it back about 2 mm (0.08 in).

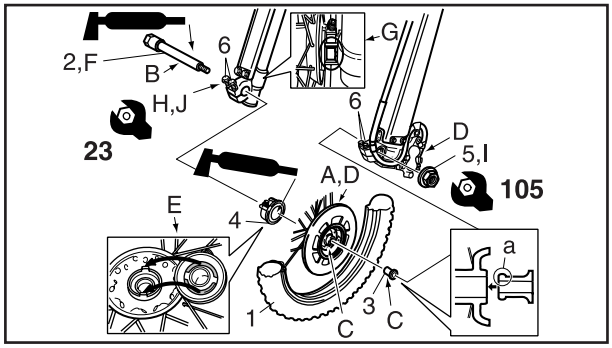
B: Tighten the screws to specification.

Screw:
4 Nm (0.4 m•kg, 2.9 ft•lb)

C: Check the throttle grip for smooth action.

⚠ WARNING
- **The throttle cables should not be twisted, and make sure that the throttle grip rotates on the handlebar freely, without binding.**
- **Proper cable routing is essential to assure safe machine operation.**

Refer to "CABLE ROUTING".



1	Front wheel	1	S	
2	Front wheel axle	1	*	
3	Collar (front wheel axle)	1	V	d=20 (0.79)
4	Trip meter gear unit	1	V	
5	Axle nut	1	*	d=16 (0.63)
6	Flange bolt	4	*	d=8 (0.31), ℓ=40 (1.57)

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3. FRONT WHEEL

A: Clean the brake disc.
B: Clean the front wheel axle.
C: Clean the collars.

NOTE:
Install the collars with its position (a) facing the wheel.

D:

⚠ WARNING
Take care not to get grease on the brake disc or inner surface of the brake pads. If you do so, clean using a rag dampened with a solvent. Foreign material on the braking surface can cause impaired braking action.

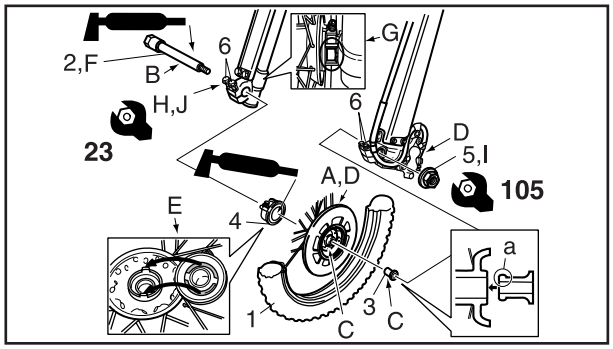
E: Make sure the two projections in the wheel hub are meshed with the two slots in the trip meter gear unit.

F: Lift the front wheel and install the front wheel axle.

NOTE:
Do not depress the brake lever when the caliper is off the brake disc.

G: Before tightening the front wheel axle, make sure the projection (torque stopper) on the front fork end is placed in the slot in the trip meter gear unit as shown.

H: Tighten the front axle bolts temporarily before tightening the axle.



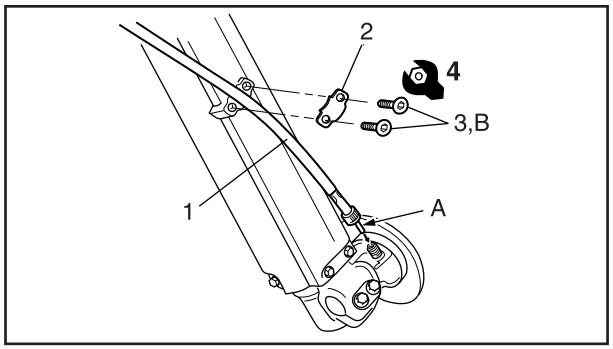
1	Front wheel	1	S	
2	Front wheel axle	1	✻	
3	Collar (front wheel axle)	1	V	d=20 (0.79)
4	Trip meter gear unit	1	V	
5	Axle nut	1	✻	d=16 (0.63)
6	Flange bolt	4	✻	d=8 (0.31), ℓ=40 (1.57)

I: Tighten the front wheel axle nut to specification.

Front wheel axle:
105 Nm (10.5 m•kg, 75 ft•lb)

J: Tighten the front axle bolts to specification.

Front axle bolts:
23 Nm (2.3 m•kg, 17 ft•lb)



1	Trip meter cable	1	✻	
2	Bracket (trip meter cable)	1	V	
3	Button head bolt (trip meter cable)	2	V	d=5 (0.20), ℓ=8 (0.31)

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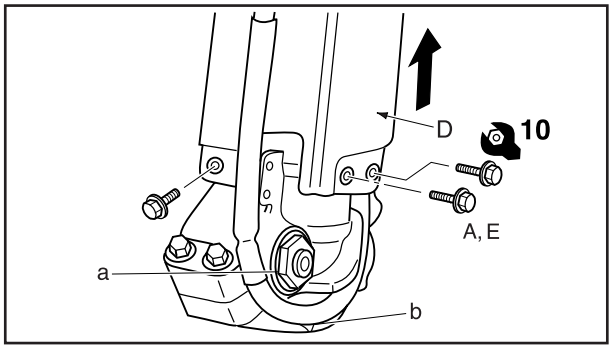
4. TRIP METER CABLE

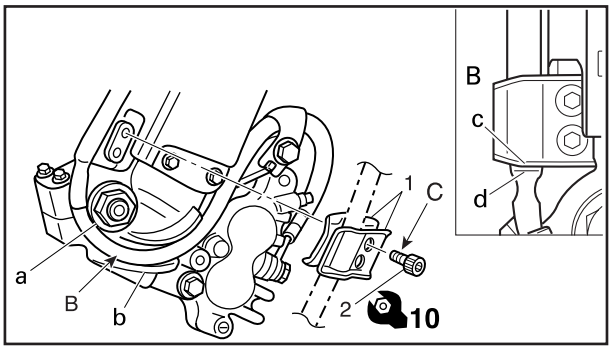
A: Connect the trip meter cable to trip meter gear unit.
B: Tighten the bolts to specification.

Bolts:
4 Nm (0.4 m•kg, 2.9 ft•lb)

⚠ WARNING

Proper cable routing is essential to assure safe machine operation.
Refer to "CABLE ROUTING".





1	Brake hose holder	2	V	
2	Hexagon socket bolt (brake hose holder)	2	V	d=6 (0.24), ℓ=14 (0.55)

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5. FRONT BRAKE HOSE HOLDER

A: Remove the front fork cover bolts to slide the front fork cover upwards.

B:

NOTE:

- Align the top (d) of the brake hose neck with the brake hose holder bottom (c).
- Pass the brake hose in front of the axle boss (a), then fit it into the brake hose groove (b).
- Make sure that brake hose does not contact the front axle nut.

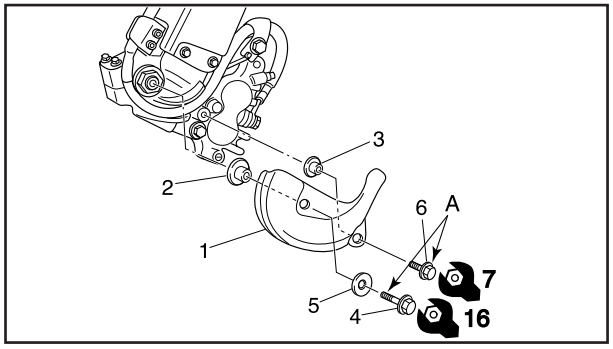
C: Tighten the brake hose holder bolts to specification.

Bolt:
10 Nm (1.0 m•kg, 7.2 ft•lb)

D: Slide the front fork cover to its original position.

E: Tighten the front fork cover bolts to specification.

Bolt:
10 Nm (1.0 m•kg, 7.2 ft•lb)



1	Brake hose cover	1	V	
2	Collar	1	V	d=8 (0.31)
3	Collar	1	V	d=6 (0.24)
4	Flange bolt (brake hose cover)	1	V	d=8 (0.31), ℓ=20 (0.79)
5	Plain Washer	1	V	d=8 (0.31)
6	Flange bolt (brake hose cover)	1	V	d=6 (0.24), ℓ=12 (0.47)

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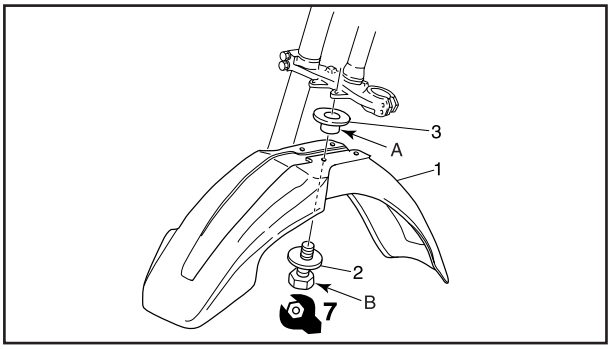
6. BRAKE HOSE COVER

A: Tighten the bolts to specification.

Bolt (M8):
16 Nm (1.6 m•kg, 11 ft•lb)

Bolt (M6):
7 Nm (0.7 m•kg, 5.1 ft•lb)



1	Front fender	1	S	
2	Hexagon bolt with plain washer (front fender)	4	V	d=6 (0.24), ℓ=20 (0.79)
3	Collar (front fender)	4	V	d=6 (0.24)

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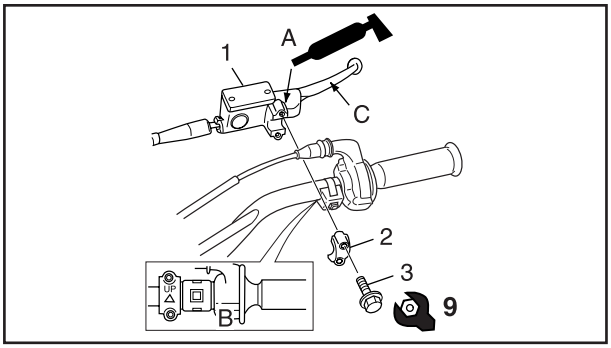
7. FRONT FENDER

A: Install the collars.
B: Tighten the bolts to specification.

Bolt: 7 Nm (0.7 m•kg, 5.1 ft•lb)

CAUTION:
Be careful not to scratch the front fender with the front fork outer tubes.

⚠ WARNING
Proper cable routing is essential to assure safe machine operation.
Refer to "CABLE ROUTING".



1	Front brake master cylinder	1	*	
2	Master cylinder bracket	1	V	
3	Flange bolt	2	V	d=6 (0.24), ℓ=22 (0.87)

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8. FRONT BRAKE MASTER CYLINDER

A: Lubricate the pivoting part of the brake lever.

Recommended lubricants: Lithium-soap-based grease

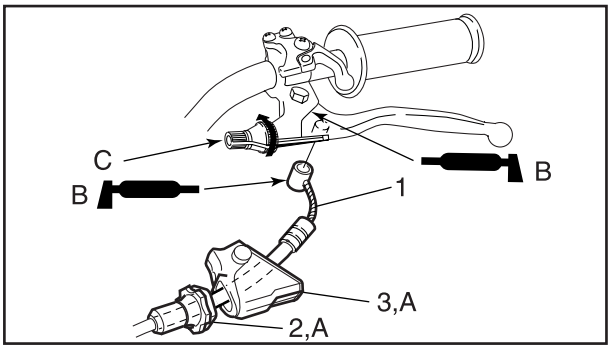
B: Tighten the bolts to specification.

Bolt: 9 Nm (0.9 m•kg, 6.5 ft•lb)

C: Check the brake lever for smooth action.

NOTE:
- Make sure that the "UP" mark on the bracket is pointed upwards.
- First tighten the bolt on the upper side of the master cylinder bracket, and then tighten the bolt on the lower side.

⚠ WARNING
Proper hose routing is essential to assure safe machine operation. Refer to "CABLE ROUTING".



1	Clutch cable	1	*	
2	Boot (adjust nut)	1	V	
3	Lever cover (clutch lever)	1	V	

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9. CLUTCH CABLE

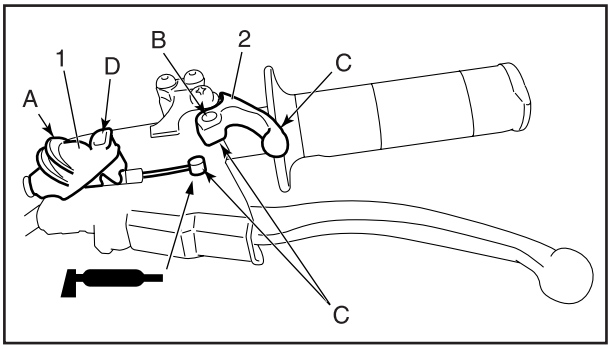
A: Install the boot and lever cover to the clutch cable.
B: Lubricate the pivoting part of the clutch lever.

Recommended lubricants: Lithium-soap-based grease

C: To install the clutch cable, be sure to proceed as follows:
a. Turn in the adjusting nut on the lever holder until tight. Next, align the slit in the adjusting nut and cable socket with the slit in the lever holder.
b. Insert the cable end into the lever hole. Next, while pulling the outer cable in the direction opposite to the lever, seat the outer cable into the cable socket.
c. Install the boot and lever cover to the clutch lever.

NOTE:
Check the clutch lever for smooth action. Refer to "ADJUSTMENTS AND PREDELIVERY SERVICE".

⚠ WARNING
Proper cable routing is essential to assure safe machine operation.
Refer to "CABLE ROUTING".



1	Boot [hot starter (choke) lever]	1	V	
2	Hot starter (choke) lever	1	*	

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10. HOT STARTER (CHOKE) CABLE

A: Install the boot to the hot starter (choke) lever cable.

B: Lubricate the pivoting part of the hot starter (choke) lever.

Recommended lubricants:
Lithium-soap-based grease

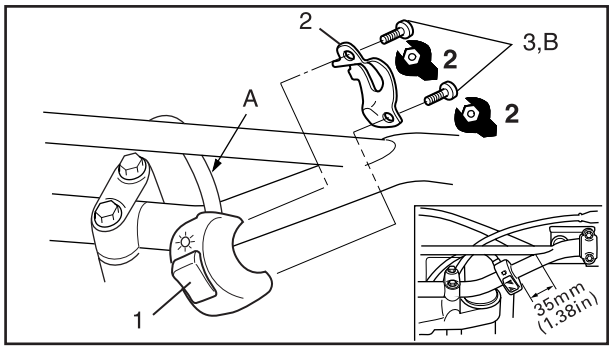
C: Insert the cable end into the lever hole, then squeeze the lever.
While pulling the outer cable in the direction opposite to the lever, release the lever quickly.
While releasing the lever, seat the outer cable into the lever holder.

D: Install the boot to the hot starter (choke) lever.

NOTE:
Check the hot starter (choke) lever for smooth action. Refer to "ADJUSTMENTS AND PREDELIVERY SERVICE".

⚠ WARNING

Proper cable routing is essential to assure safe machine operation.
Refer to "CABLE ROUTING".



1	Light switch	1	*	
2	Bracket (light switch)	1	V	
3	Panhead screw (light switch)	2	V	d=4 (0.16), ℓ=14 (0.55)

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11. LIGHT SWITCH

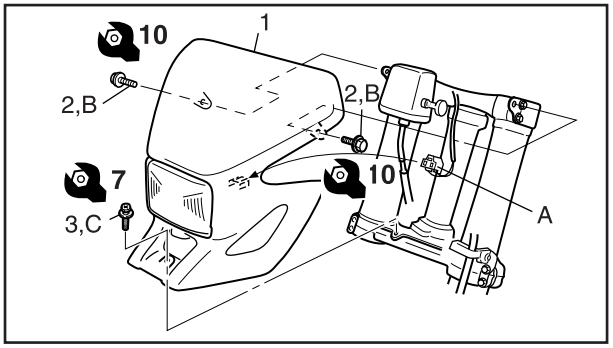
A:

⚠ WARNING

Proper hose routing is essential to assure safe machine operation.
Refer to "CABLE ROUTING".

B: Tighten the screws to specification.

Screws:
2 Nm (0.2 m•kg, 1.4 ft•lb)



1	Headlight	1	C	
2	Flange bolt (headlight)	2	V	d=6 (0.24), ℓ=10 (0.39)
3	Panhead screw with plain washer (headlight)	1	V	d=6 (0.24), ℓ=12 (0.47)

EAA00212*

12. HEADLIGHT

A: Connect the headlight coupler to the headlight.

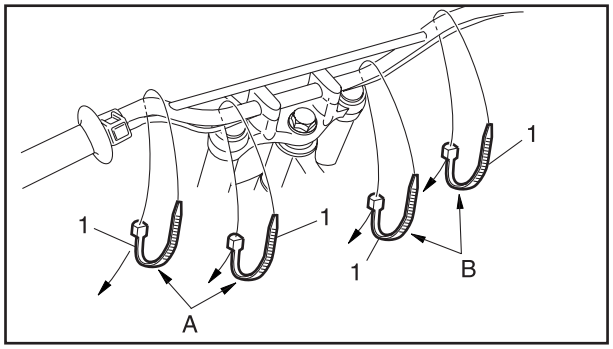
NOTE:
Refer to “CABLE ROUTING”.

B: Tighten the bolts to specification.

Bolt:
10 Nm (1.0 m•kg, 7.2 ft•lb)

C: Tighten the screw to specification.

Screw:
7 Nm (0.7 m•kg, 5.1 ft•lb)



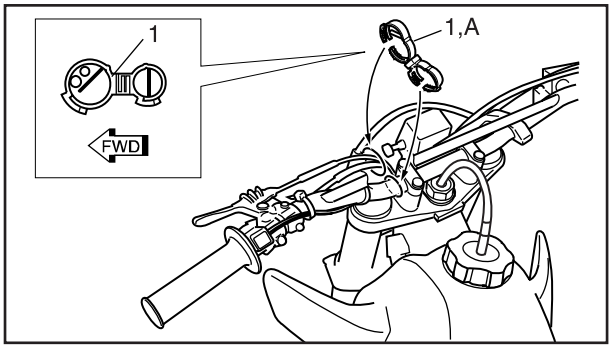
1	Handlebar clamp	4	V	

EAA00039*

13. HANDLEBAR CLAMP

A: Secure the left handlebar switch lead with a cableclamp.
B: Secure the right handlebar switch lead with a cableclamp.

NOTE:
Refer to “CABLE ROUTING”.



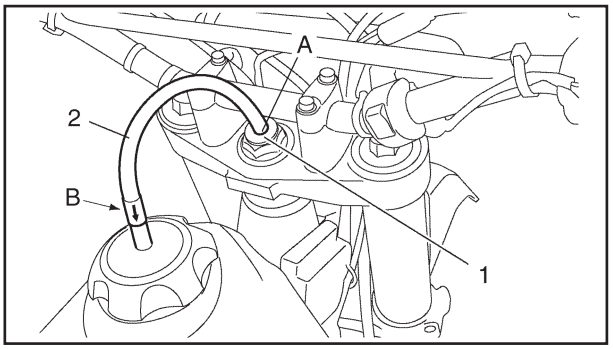
1	Cable clamp	1	V	

EAA00209*

14. CABLE CLAMP

A: Clamp the hot starter (choke) cable and clutch cable.

NOTE:
Refer to "CABLE ROUTING".



1	Steering shaft cap	1	V	
2	Fuel tank breather hose	1	V	

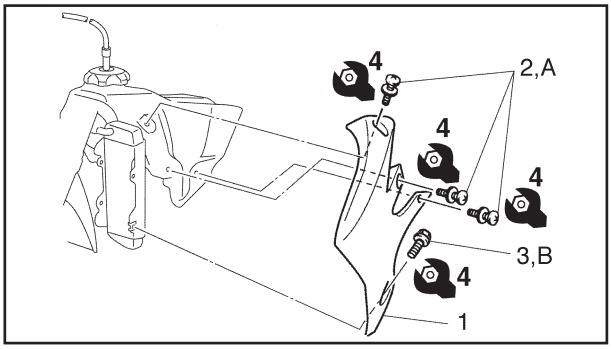
EAA00071*

15. FUEL TANK BREATHER HOSE

A: Install the steering shaft cap to the fuel tank breather hose.
B: Connect one end of the breather hose to the fuel tank filler cap, and insert the other end into the hole of the steering shaft.

NOTE:
Refer to "CABLE ROUTING".

CAUTION:
Install the hose joint with its arrow mark facing the TANK side.



1	Air scoop (left)	1	C	
2	Panhead screw with plain washer (air scoop)	3	V	
3	Hexagon bolt with plain washer (air scoop)	1	V	

EAA00109*

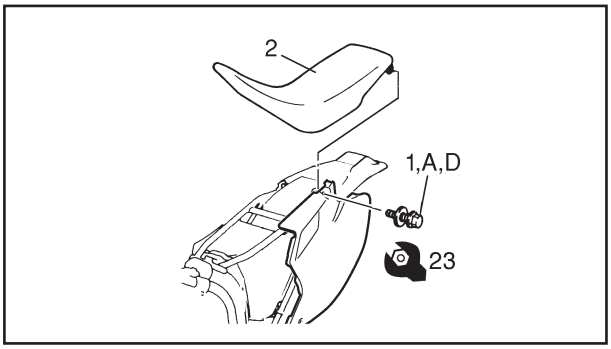
16. AIR SCOOP (LEFT)

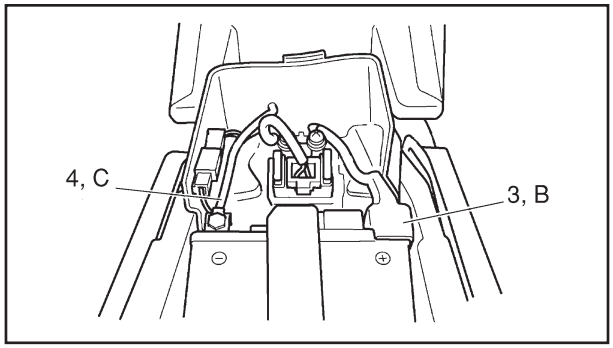
A: Tighten the screws to specification.

Screw:
4 Nm (0.4 m•kg, 2.9 ft•lb)

B: Tighten the bolt to specification.

Bolt:
4 Nm (0.4 m•kg, 2.9 ft•lb)





1	Hexagon bolt with plain washer	2	*	
2	Seat	1	*	
3	Positive lead	1	*	
4	Negative lead	1	*	

EAA00189*

17. BATTERY

A: Remove the bolts (seat).

B: First, connect the positive lead to the positive terminal.

C: Second, connect the negative lead to the negative terminal.

NOTE:
Refer to "CABLE ROUTING".

D: Install the bolts (seat) to specification.

Bolt:
23 Nm (2.3 m•kg, 17 ft•lb)

EAA00900

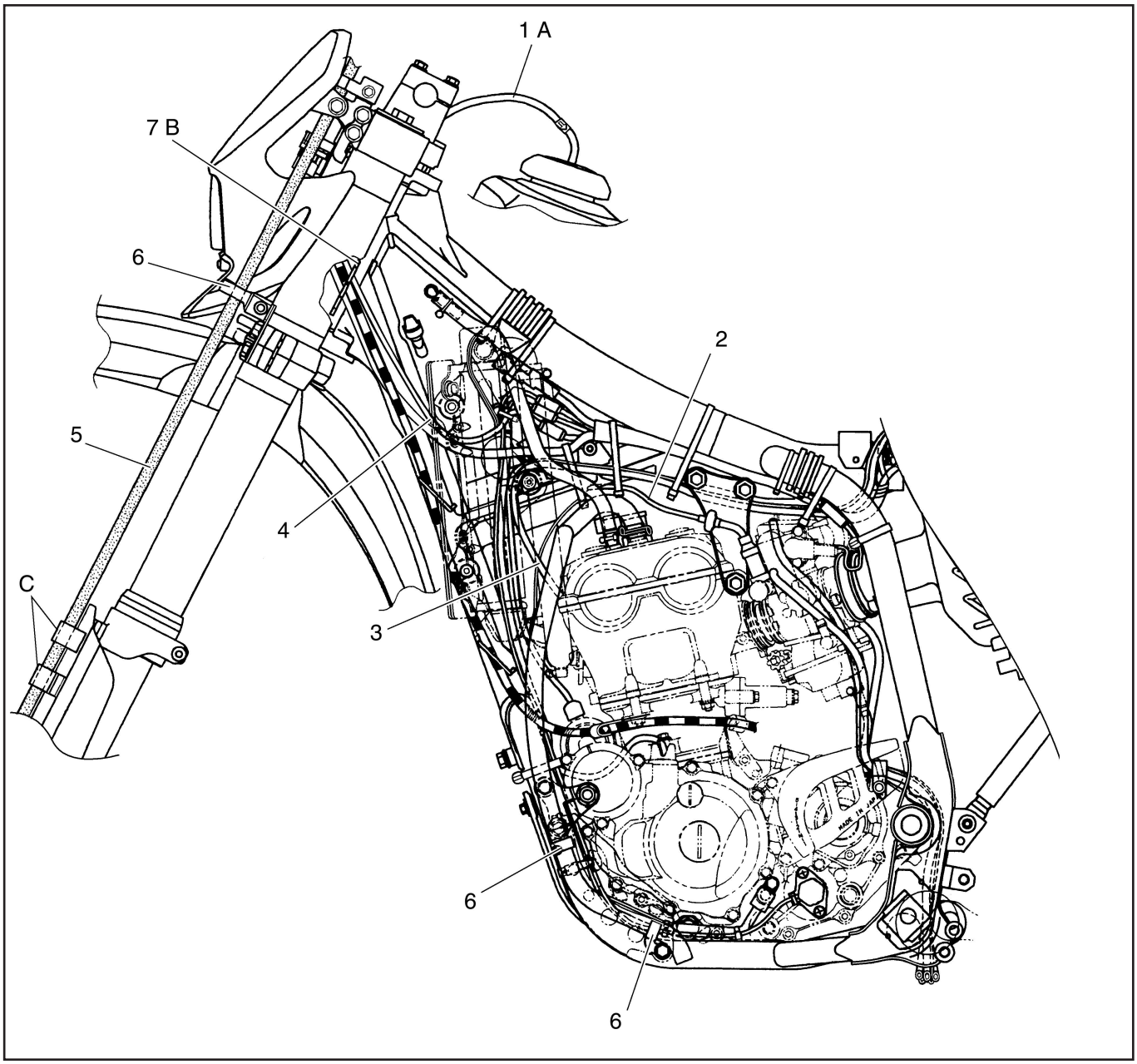
CABLE ROUTING

CAUTION:

Proper cable and lead routing are essential to insure safe machine operation.

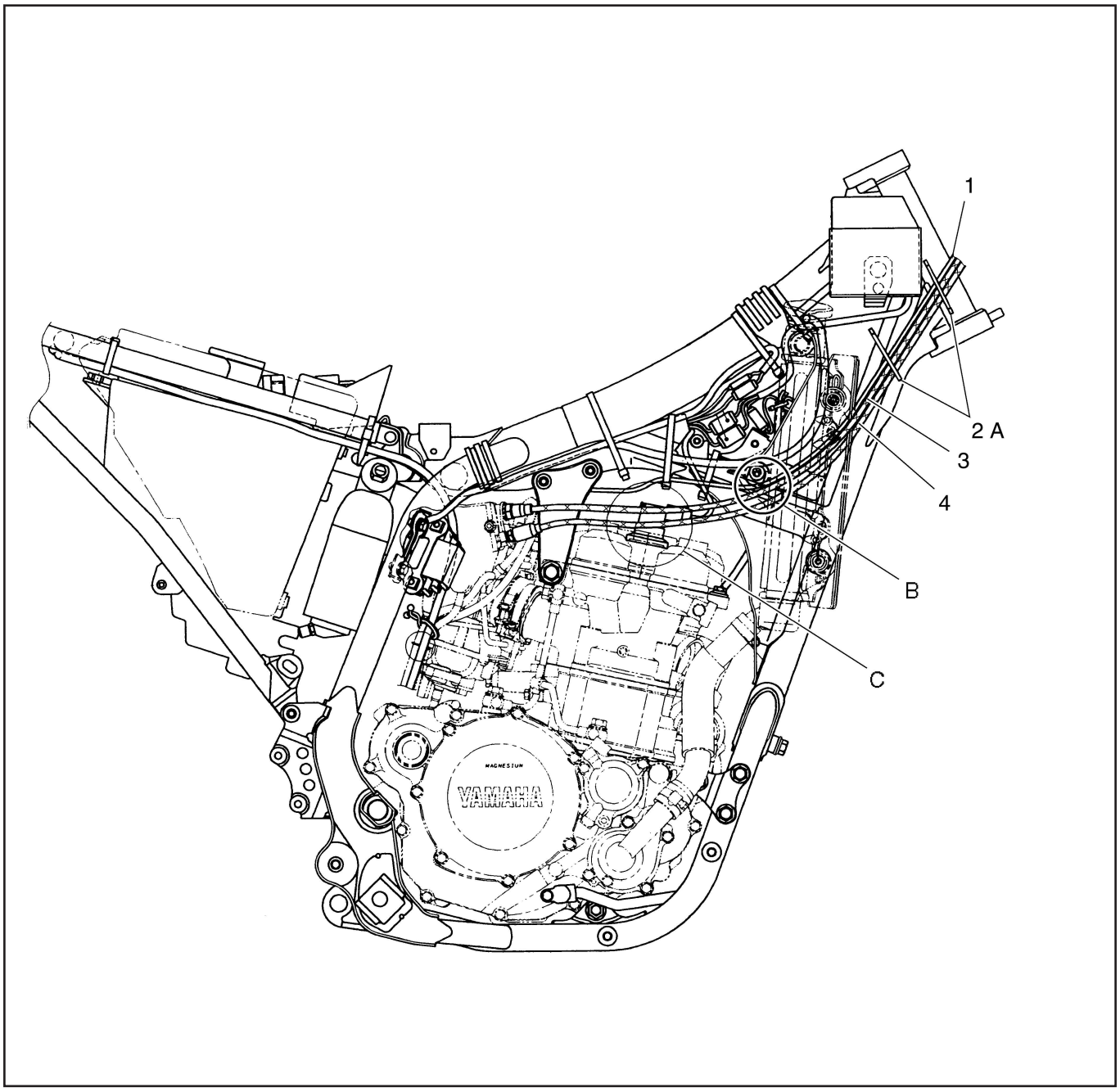
(1) Fuel tank breather hose
(2) Hot starter (choke) cable
(3) Negative battery lead
(4) Lights switch lead
(5) Brake hose
(6) Hose guide
(7) Cable guide

(A) Pass the fuel tank breather hose into the hole in the steering shaft cap.
(B) Pass the wire harness, clutch cable and light switch lead through the cable guide.
(C) Fit the brake hose into the guides on the protector.



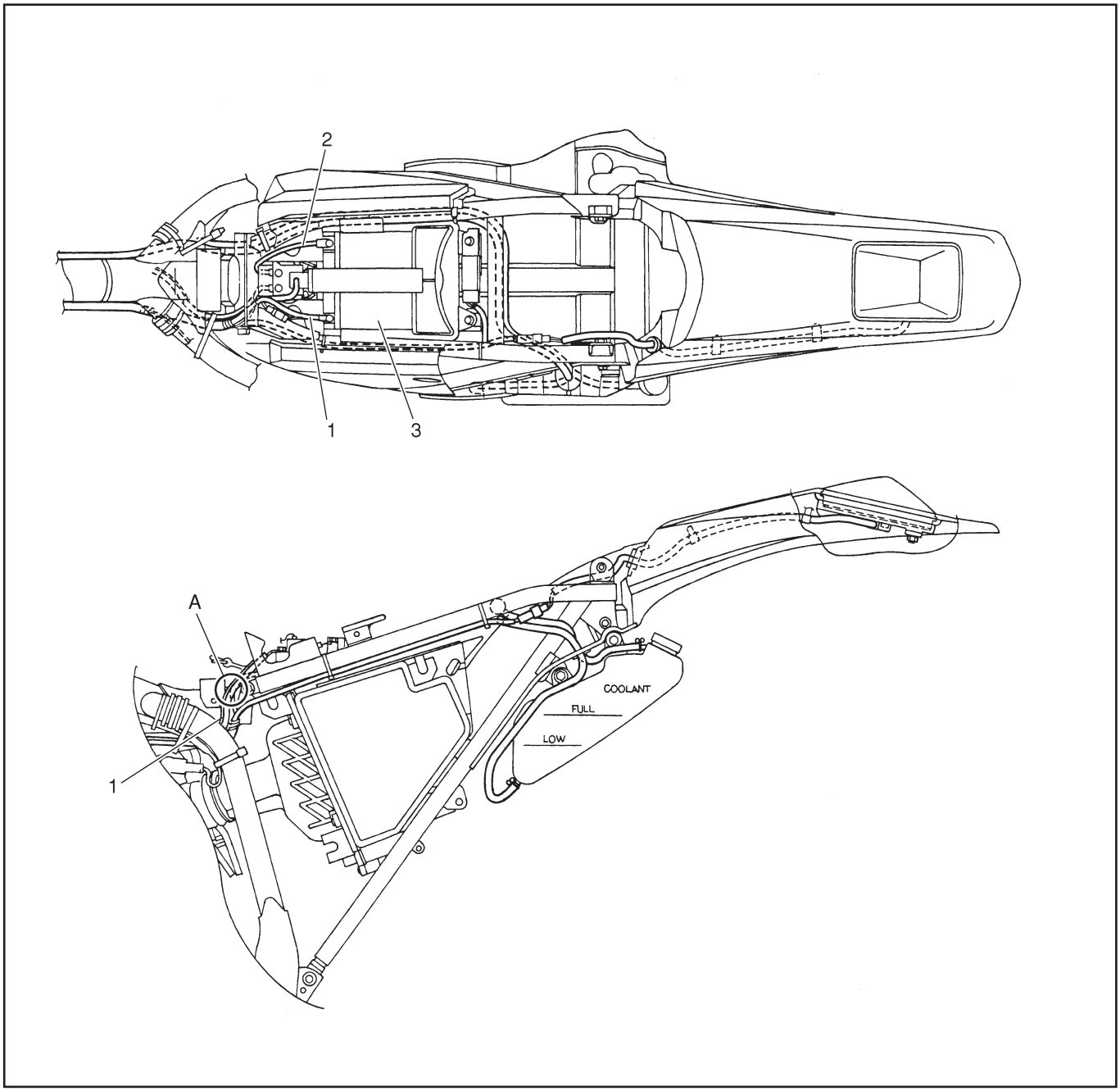
(1) Hot starter (choke) cable
(2) Cable guide
(3) Throttle cable (return)
(4) Throttle cable (pull)

(A) Pass the throttle cables and hot starter (choke) cable through the cable guides.
(B) Pass the throttle cables, and hot starter (choke) cable between the radiator and frame, then under the radiator mounting boss.
(C) Pass the throttle cables on the outside of the ignition coil.



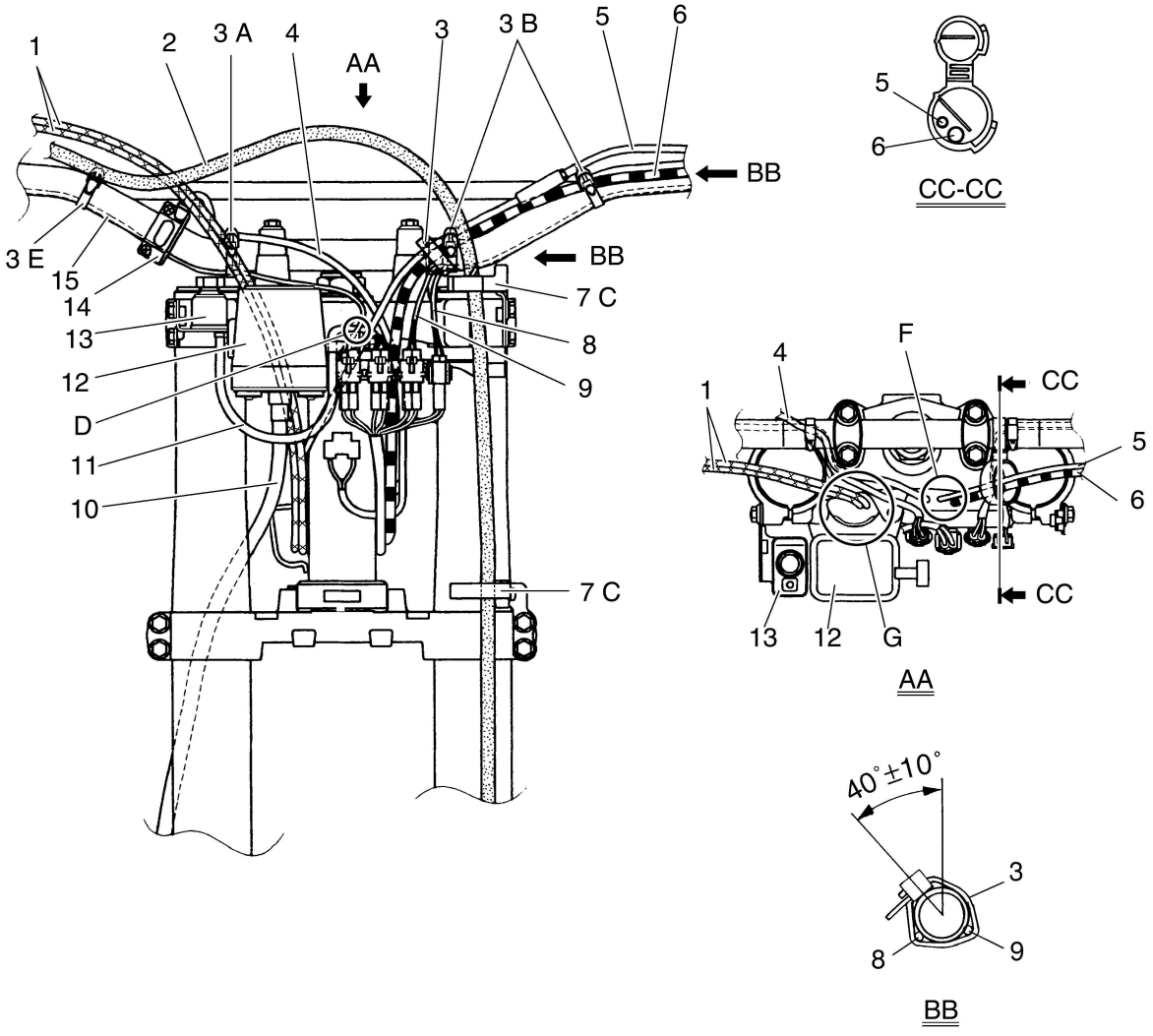
(1) Negative battery lead
(2) Positive battery lead
(3) Battery

(A) Position the start motor lead, negative battery lead and wire harness in the tank damper slit.



(1) Throttle cable
(2) Brake hose
(3) Clamp
(4) Lights switch lead
(5) Hot starter cable
(6) Clutch cable
(7) Hose guide
(8) Clutch switch lead
(9) "ENGINE STOP" button lead
(10) Trip meter cable
(11) Main switch lead
(12) Trip meter
(13) Main switch
(14) Lights switch
(15) Start switch lead

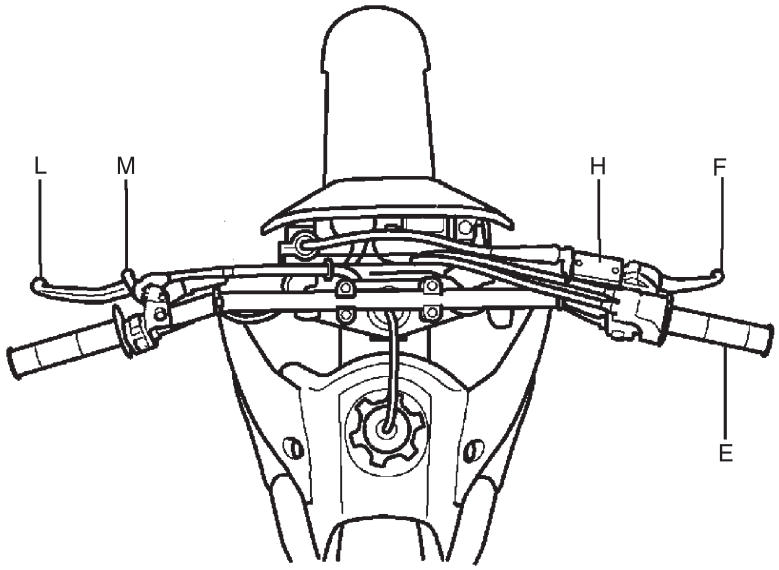
(A) Fasten the start switch lead and lights switch lead to the handlebar with a plastic band.
(B) Fasten the "ENGINE STOP" button lead and clutch switch lead to the handlebar with the plastic bands.
(C) Pass the brake hose though the hose guide.
(D) Pass the start switch lead in front of the main switch lead.
(E) Fasten the start switch lead to the handlebar with a plastic band.
(F) Pass the hot starter cable, clutch cable and lights switch lead between the handle crown and coupler bracket.
(G) Pass the throttle cables between the handle crown and trip meter.

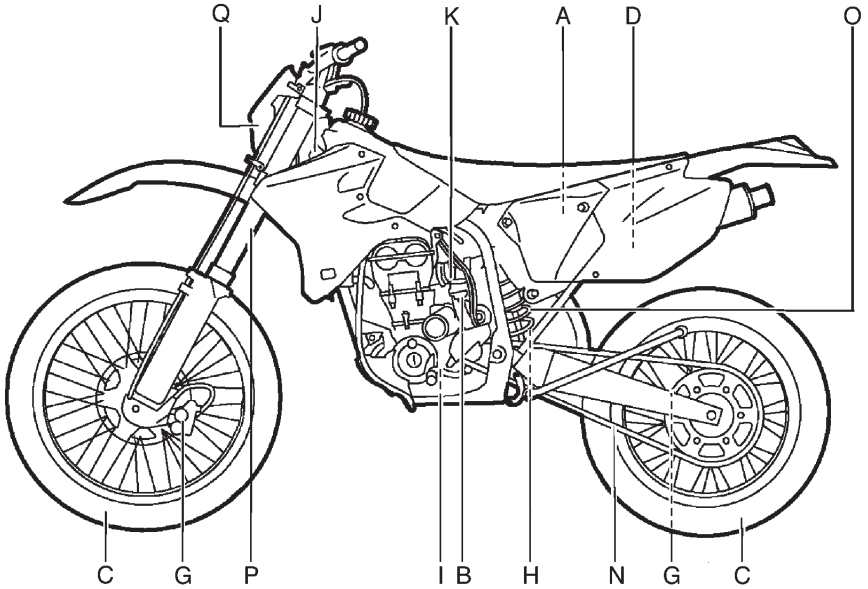


EAA01100

ADJUSTMENTS AND PREDELIVERY SERVICE

Perform the predelivery service in the order indicated by the letters.
Always follow the order as shown.





EAA01000

A. CHECKING AND CHARGING THE BATTERY

CAUTION:

The battery used in this machine is a maintenance free (MF) "Valve Regulated Lead Acid Battery", it has been pre-filled with electrolyte at the factory so there is no need to add fluid at any time.

1. Check:
   Using a digital volt meter, the state of a discharged MF battery can be checked by measuring open-circuit voltage (the voltage measured with the positive and negative terminals being disconnected).

Open-circuit voltage: 12.8 V or higher Charging time: Charging is not necessary

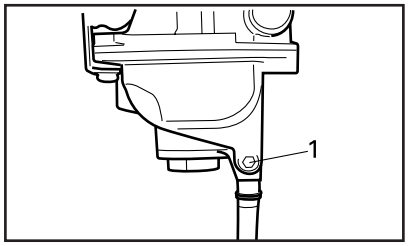
⚠ WARNING

- **Do not attempt boost charging under any circumstances.**
- **Battery electrolyte is poisonous and dangerous, causing severe burns, etc. It contains sulfuric acid. Avoid contact with skin, eyes or clothing.**

Antidote: External -Flush with water. Internal-Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call physician immediately.
Eyes: Flush with water for 15 minutes and get prompt medical attention. Batteries produce explosive gases. Keep sparks, flame, cigarettes, etc., away. Ventilate when charging or using in enclosed space. Always shield eyes when working near batteries.
KEEP OUT OF THE REACH OF CHILDREN.

CAUTION:

- **If the voltage is lower than 12.8 V the battery must be charged. If this is not done, the life of the battery will be shortened drastically. Refer to the service manual for battery charging instructions.**
- **Never remove the strip of caps, nor add any water or electrolyte.**



EAA01005

B. DRAINING THE FUEL

1. Put a rag under the carburetor drain hose so fuel does not contact the crankcase.
2. Loosen the drain screw (1) and drain the standing fuel.

⚠ WARNING

FUEL IS HIGHLY FLAMMABLE:

- **Always turn off the engine when draining fuel.**
- **Take care not to spill any fuel on the engine or exhaust pipe(s)/muffler(s) when draining fuel.**
- **Never drain fuel while smoking or in the vicinity of an open flame.**

3. Tighten the drain screw securely.

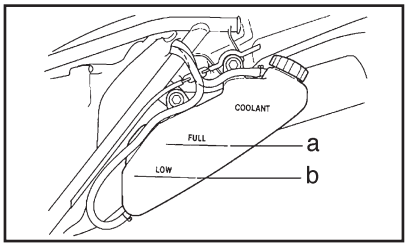
EAA01009

C. MEASURING THE TIRE PRESSURE

1. Measure:
   - tire pressure
     Out of specification → Adjust.

NOTE:
- Check the tire while it is cold.
- Loose bead stoppers allow the tire to slip off its position on the rim when the tire pressure is low.
- A tilted tire valve stem indicates that the tire slips off its position on the rim.
- If the tire valve stem is found tilted, the tire is considered to be slipping off its position.

Basic weight:
With oil,coolant and full fuel tank
122.1 kg (269 lb)
Cold tire pressure:
Front 100 kPa (1.0 kgf/cm², 15 psi)
Rear 100 kPa (1.0 kgf/cm², 15 psi)



EAA01017*

D. CHECKING THE COOLANT LEVEL

1. Stand the machine on a level surface.

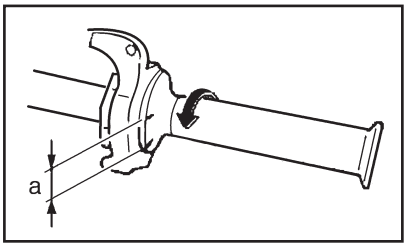
NOTE:
Make sure that the machine is upright

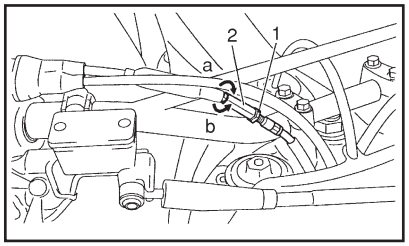
2. Check:
   - coolant level
     The coolant level should be between the maximum level mark (a) and minimum level mark (b).
     Below the minimum level mark → Add the recommended coolant to the proper level.

CAUTION:
- **Adding water instead of coolant lowers the antifreeze content of the coolant. If water is used instead of coolant, check and correct the antifreeze concentration of the coolant.**
- **Use only distilled water. Soft water may be used if distilled water is not available.**

3. Start the engine, warm it up for several minutes, and then turn it off.
4. Check:
   - coolant level

NOTE:
Before checking the coolant level, wait a few minutes until it settles.





EAA01022

E. ADJUSTING THE THROTTLE CABLE FREE PLAY

NOTE:
Prior to adjusting throttle cable free play, the engine idling speed should be adjusted.

1. Measure:
   - throttle cable free play (a)
     Out of specification → Adjust.

Throttle cable free play
(at the flange of the throttle grip):
3 ~ 5 mm (0.12 ~ 0.20 in)

2. Adjust:
   - throttle cable free play

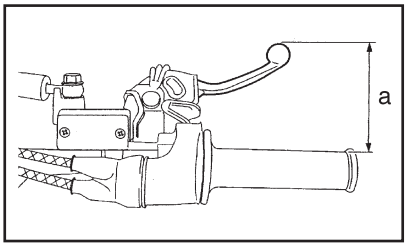
a. Slide back the rubber cover.
b. Loosen the locknut (1).
c. Turn the adjusting nut (2) in direction (a) or (b) until the specified throttle cable free play is obtained.

Direction (a):
Throttle cable free play is increased.
Direction (b):
Throttle cable free play is decreased.

d. Tighten the locknut.

⚠ WARNING

After adjusting the throttle cable free play, start the engine and turn the handlebar to the right and to the left to ensure that this does not cause the engine idling speed to change.

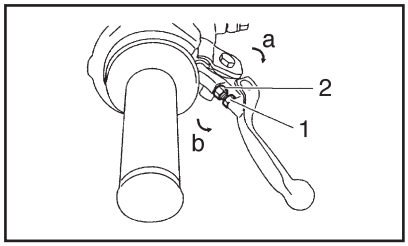


EAA01024

F. ADJUSTING THE FRONT BRAKE

1. Measure:
   - brake lever position (a)
     (distance (a) from the throttle grip to the brake lever)
     Out of specification → Adjust.

Brake lever position (distance (a) from the throttle grip to the brake lever)
Standard position: 95 mm (3.74 in)
Extent of adjustment: 76 ~ 97 mm (2.99 ~ 3.82 in)



2. Adjust:
   - brake lever position
     (distance (a) from the throttle grip to the brake lever)
   a. Loosen the locknut (1).
   b. Turn the adjusting bolt (2) in direction (a) or (b) until the specified brake lever position is obtained.
   c. Tighten the locknut.

Locknut: 5 Nm (0.5 m•kg, 3.6 ft•lb)

Direction (a): Brake lever distance is increased. Direction (b): Brake lever distance is decreased.

⚠ WARNING

A soft or spongy feeling in the brake lever can indicate the presence of air in the brake system. Before the vehicle is operated, the air must be removed by bleeding the brake system. Air in the brake system will considerably reduce braking performance and could result in loss of control and possibly an accident. Therefore, check the brake system and bleed if necessary.

CAUTION:

After adjusting the brake lever position, make sure that there is no brake drag.

EAA01034

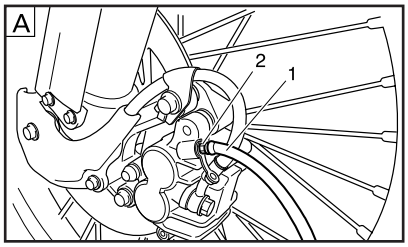
G. BLEEDING THE HYDRAULIC BRAKE SYSTEM

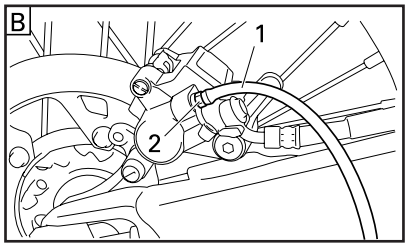
⚠ WARNING

Bleed the hydraulic brake system whenever:
- **The system was disassembled,**
- **A brake hose was loosened or removed,**
- **The brake fluid level is very low,**
- **Brake operation is faulty.**

A dangerous loss of braking performance may occur if the brake system is not properly bled.

1. Remove:
   - diaphragm
   - protector (rear brake)





2. Bleed:
   - hydraulic brake system
   a. Add the recommended brake fluid to the proper level.
   b. Install the brake master cylinder reservoir diaphragm.
   c. Connect a clear plastic hose (1) tightly to the bleed screw (2).
      (A) Front brake
      (B) Rear brake
   d. Place the other end of the hose into a container.
   e. Slowly squeeze the brake lever several times and release it.
   f. Fully squeeze the brake lever and do not release it.
   g. Loosen the bleed screw. This will release the tension and cause the brake lever to contact the throttle grip.

NOTE:
- Be careful not to spill any brake fluid or allow the brake master cylinder reservoir to overflow.
- When bleeding the hydraulic brake system, make sure that there is always enough brake fluid before applying the brake. Ignoring this precaution could allow air to enter the hydraulic brake system, considerably lengthening the bleeding procedure.
- If bleeding is difficult, it may be necessary to let the brake fluid settle for a few hours. Repeat the bleeding procedure when the tiny bubbles in the hose have disappeared.

   h. Tighten the bleed screw and then release the brake lever.
   i. Repeat steps (e) to (h) until all of the air bubbles have disappeared from the brake fluid in the plastic hose.
   j. Tighten the bleed screw to specification.

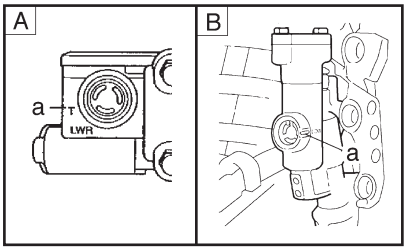
Bleed screw: 6 Nm (0.6 m•kg, 4.3 ft•lb)

   k. Fill the reservoir to the proper level.
      Refer to "CHECKING THE BRAKE FLUID LEVEL".

⚠ WARNING

After bleeding the hydraulic brake system, check the brake operation.

3. Install:
   - diaphragm
   - protector (rear brake)



EAA01032

H. CHECKING THE BRAKE FLUID LEVEL

1. Stand the machine on a level surface.

NOTE:
Make sure that the machine is upright.

2. Check:
- brake fluid level
  Below the minimum level mark (a) → Add the recommended brake fluid to the proper level.

Recommended brake fluid:
DOT 4

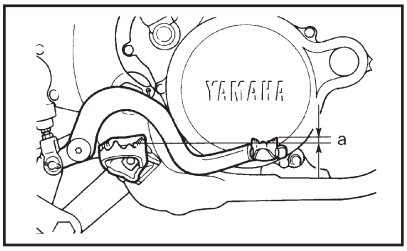
(A) Front brake
(B) Rear brake

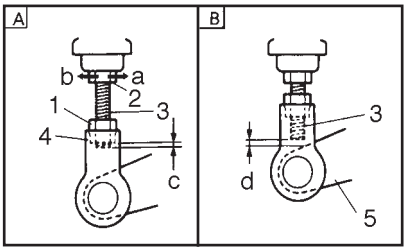
⚠ WARNING

- **Use only designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

CAUTION:
Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any split brake fluid immediately.

NOTE:
In order to ensure a correct reading of the brake fluid level, make sure that the top of the reservoir is level.





EAA01028

I. ADJUSTING THE REAR BRAKE

1. Measure:
- brake pedal position
  (distance (a) from the top of the rider footrest to the top of the brake pedal)
  Out of specification → Adjust.

Brake pedal position (above the top of the rider footrest): 5 mm (0.20 in)

2. Adjust:
- brake pedal position

a. Loosen the locknut (1).
b. Turn the adjusting nut (2) in direction (a) or (b) until the specified brake pedal position is obtained.

Direction (a): Brake pedal is raised. Direction (b): Brake pedal is lowered.

⚠ WARNING

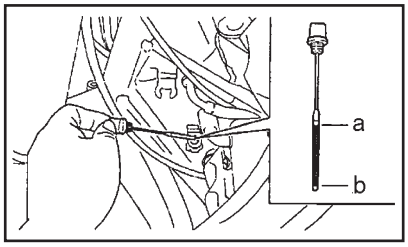
- **Adjust the pedal position between the highest position (A) and the lowest position (B) as shown. (In this adjustment, the bolt (3) end (c) should protrude out of the 2 mm (0.08 in) (d) away from the brake pedal (5)).**
- **After the pedal position adjustment, make sure that the rear brake does not drag.**

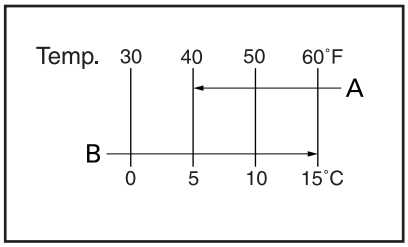
c. Tighten the locknut (1).

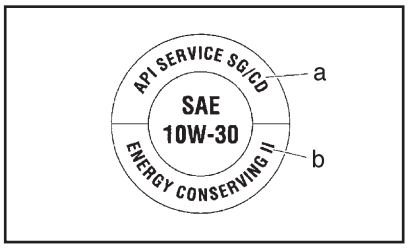
⚠ WARNING

A soft or spongy feeling in the brake pedal can indicate the presence of air in the brake system. Before the vehicle is operated, the air must be removed by bleeding the brake system. Air in the brake system will considerably reduce braking performance and could result in loss of control and possibly an accident. Therefore, check the brake system and bleed if necessary.

CAUTION:
After adjusting the brake pedal position, make sure that there is no brake drag.







EAA01013

J. CHECKING THE ENGINE OIL LEVEL

1. Stand the machine on a level surface.

NOTE:
Make sure that the machine is upright.

2. Remove:
   - engine oil tank cap
3. Check:
   - engine oil level

   The engine oil level should be between the minimum level mark (a) and maximum level mark (b).

   Below the minimum level mark →

   Add the recommended engine oil to the proper level.

   a. If the oil level is between the minimum and maximum level marks marked on the oil level gauge, you may start the engine. If there is no oil on the oil level gauge, add oil up to the minimum level mark.

   b. Start the engine and warm up until the oil temperature rises to approximately 70°C(158°F).

   c. Idle the engine more than 3 minutes while keeping the machine upright. Then stop the engine and check the oil level on the upright machine.

⚠ WARNING

Never attempt to remove the oil tank cap just after high speed operation. The heated oil could spout out, causing danger. Wait until the oil cools down to approximately 70°C(158°F).

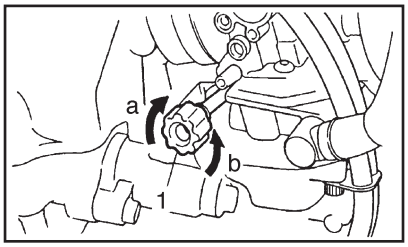
NOTE:
- Before checking the engine oil level, wait a few minutes until the oil has settled.
- Do not screw the dipstick in when inspecting the oil level.
- Adjust the oil level to the maximum level mark.

Recommended engine oil
At 5°C (40°F) or higher (A):
Yamalube 4 (20W-40) or SAE 20W-40 type SG motor oil (Non-Friction modified)
At 15°C (60°F) or lower (B):
Yamalube 4 (10W-30) or SAE 10W-30 type SG motor oil (Non-Friction modified)
or
Yamalube 4-R (15W-50) (Non-Friction modified)

⚠ WARNING

- **Do not add any chemical additives or use oils with a grade of CD (a) or higher.**
- **Do not use oils labeled "ENERGY CONSERVING II" (b) or higher. Engine oil also lubricates the clutch and additives could cause clutch slippage.**

4. Install:
   - engine oil tank cap



EAA01020

K. ADJUSTING THE ENGINE IDLING SPEED

NOTE:
Prior to adjusting the engine idling speed, the carburetor should be adjusted properly, the air filter should be clean, and the engine should have adequate compression.

1. Start the engine and let it warm up for several minutes.
2. Attach:
   - engine tachometer

   (to the spark plug lead of the cylinder)

Engine tachometer
90890-03113
YU-8036-B

3. Measure:
   - engine idling speed

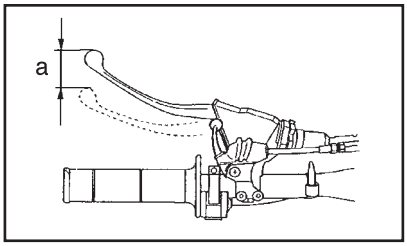
   Out of specification → Adjust.

Engine idling speed
1,900 ~ 2,100 r/min

4. Adjust:
   - engine idling speed

   a. Turn the throttle stop screw (1) in direction (a) or (b) until the specified engine idling speed is obtained.

Direction (a):
Engine idling speed is increased.
Direction (b):
Engine idling speed is decreased.



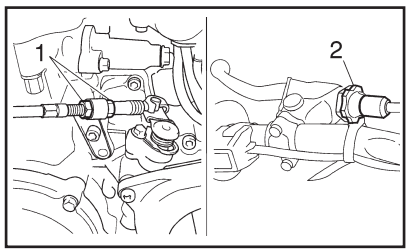
EAA01036*

L. ADJUSTING THE CLUTCH CABLE FREE PLAY

1. Measure:
   - clutch cable free play (a)

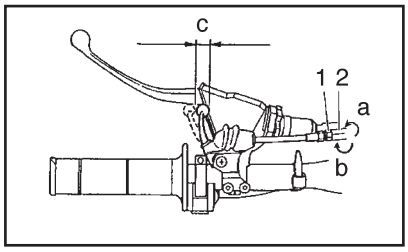
   Out of specification → Adjust.

Clutch cable free play
(at the pivot point of the clutch lever):
8 ~ 13 mm (0.31 ~ 0.51 in)



2. Adjust:
   - clutch cable free play
   a. Loosen the locknuts (1).
   b. Adjust the free play by changing their tightening position.
   c. Tighten the locknuts.

NOTE:
- Make minute adjustment on the lever side using the adjusting dial (2).
- After adjustment, check proper operation of clutch lever.



EAA01069

M. ADJUSTING THE HOT STARTER (CHOKE) CABLE FREE PLAY

1. Measure:
   - hot starter (choke) cable free play (c)
   Out of specification → Adjust.

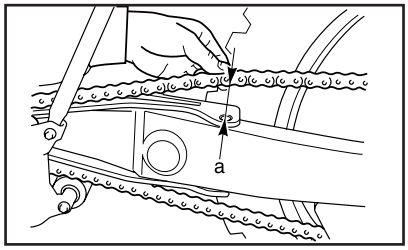
Hot starter (choke) cable free play
3 ~ 6 mm (0.12 ~ 0.24 in)

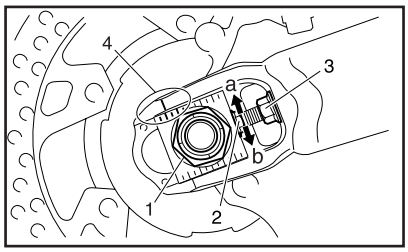
2. Adjust:
   - hot starter (choke) cable free play
   a. Loosen the locknut (1).
   b. Turn the adjusting bolt (2) in direction (a) or (b) until the specified hot starter (choke) cable free play is obtained.

Direction (a): Hot starter (choke) cable free play is increased. Direction (b): Hot starter (choke) cable free play is decreased.

   c. Tighten the locknut.

NOTE:
After adjustment, check proper operation of hot starter (choke).





EAA01059

N. ADJUSTING THE DRIVE CHAIN SLACK

NOTE:
The drive chain slack must be checked above the drive chain guide bolt.

CAUTION:
A drive chain that is too tight will overload the engine and other vital parts, and one that is too loose can skip and damage the swingarm or cause an accident. Therefore, keep the drive chain slack within the specified limits.

1. Stand the machine on a level surface.

⚠ WARNING
Securely support the machine so that there is no danger of it falling over.

NOTE:
Both wheels should be on the ground without a rider on the machine.

2. Rotate the rear wheel several times.
3. Measure:
   - drive chain slack (a)
   Out of specification → Adjust.

Drive chain slack:
40 ~ 50 mm (1.6 ~ 2.0 in)

4. Loosen:
   - wheel axle nut (1)
5. Adjust:
   - drive chain slack
   a. Loosen both locknuts (3).
   b. Turn both adjusting bolts (2) in direction (a) or (b) until the specified drive chain slack is obtained.

Direction (a): Drive chain is tightened. Direction (b): Drive chain is loosened.

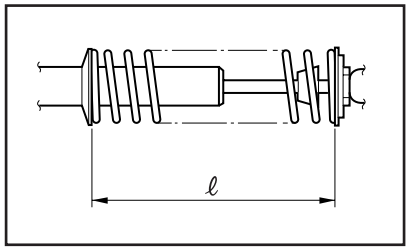
NOTE:
To maintain the proper wheel alignment, adjust both sides evenly.

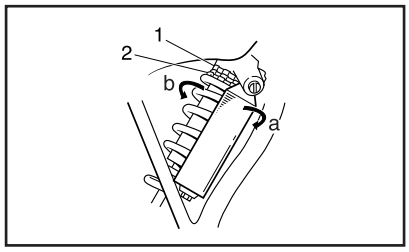
   c. Tighten the wheel axle nut to specification.

Wheel axle nut:
125 Nm (12.5 m•kg, 90 ft•lb)

   d. Tighten the locknuts to specification.

Locknut:
16 Nm (1.6 m•kg, 11 ft•lb)





EAA01049

O. ADJUSTING THE REAR SHOCK ABSORBER ASSEMBLY

Spring preload

⚠ WARNING

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

1. Remove:
   - rear frame

CAUTION:

Never go beyond the maximum or minimum adjustment positions.

2. Adjust:
   - spring preload

a. Loosen the locknut (1).
b. Turn the adjusting ring (2) in direction (a) or (b).

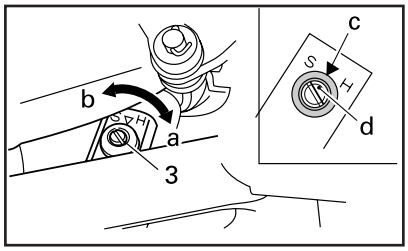
Direction (a): Spring preload is increased (suspension is harder). Direction (b): Spring preload is decreased (suspension is softer).

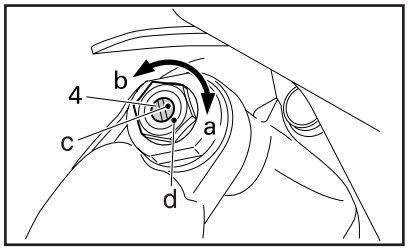
Adjusting length (ℓ): Standard: 245 mm (9.65 in) Minimum: 240.5 mm (9.47 in) Maximum: 258.5 mm (10.18 in)

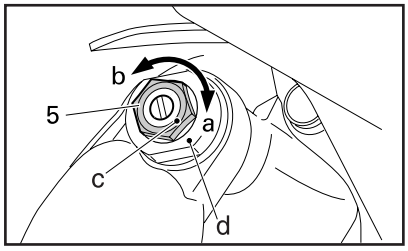
c. Tighten the locknut.
d. Tighten the rear frame bolt to specification.

Rear frame upper bolt: 32 Nm (3.2 m•kg, 23 ft•lb) Rear frame lower bolt: 29 Nm (2.9 m•kg, 21 ft•lb)

3. Install:
   - rear frame







Rebound damping

NOTE:

This is the position which is back by the specific number of clicks from the fully turned-in position. (Which align the punch mark (c) on the adjuster with the punch mark (d) on the bracket.)

CAUTION:

Never go beyond the maximum or minimum adjustment positions.

1. Adjust:
   - rebound damping

a. Turn the adjusting screw (3) in direction (a) or (b).

Direction (a): Rebound damping is increased (suspension is harder). Direction (b): Rebound damping is decreased (suspension is softer).

Adjusting positions: Standard: 7 clicks out* Minimum: 20 clicks out* Maximum: 0 clicks out*

*: from the fully turned-in position

Compression damping

NOTE:

This is the position which is back by the specific number of clicks from the fully turned-in position. (Which align the punch mark (c) on the adjuster with the punch mark (d) on the bracket.)

CAUTION:

Never go beyond the maximum or minimum adjustment positions.

1. Adjust:
   - low compression damping

a. Turn the adjusting screw (4) in direction (a) or (b).

Direction (a): Low compression damping is increased (suspension is harder). Direction (b): Low compression damping is decreased (suspension is softer).

Adjusting positions: Standard: 9 clicks out* Minimum: 20 clicks out* Maximum: 0 clicks out*

*: from the fully turned-in position

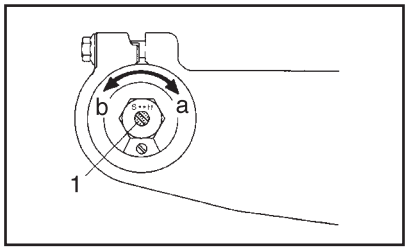
- high compression damping

a. Turn the adjusting nut (5) in direction (a) or (b).

Direction (a): High compression damping is increased (suspension is harder). Direction (b): High compression damping is decreased (suspension is softer).

Adjusting positions: Standard: 1-1/4 turns out* Minimum: 2 turns out* Maximum: 0 turns out*

*: from the fully turned-in position



EAA01041

P. ADJUSTING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

⚠ WARNING

- **Always adjust both front fork legs evenly. Uneven adjustment can result in poor handling and loss of stability.**
- **Securely support the machine so that there is no danger of it falling over.**

Rebound damping

CAUTION:

Never go beyond the maximum or minimum adjustment positions.

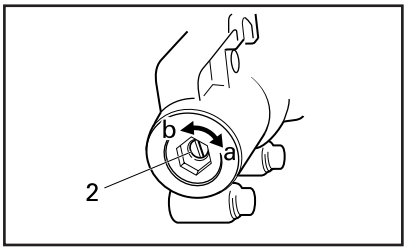
1. Adjust:
   - rebound damping

a. Turn the adjusting screw (1) in direction (a) or (b).

Direction (a): Rebound damping is increased (suspension is harder). Direction (b): Rebound damping is decreased (suspension is softer).

Adjusting positions: Standard: 9 clicks out* Minimum: 20 clicks out* Maximum: 0 clicks out*

*: from the fully turned-in position



Compression damping

CAUTION:

Never go beyond the maximum or minimum adjustment positions.

1. Remove:
   - rubber cap
2. Adjust:
   - compression damping

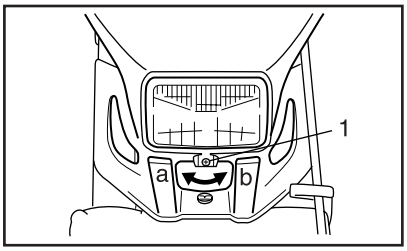
a. Turn the adjusting screw (2) in direction (a) or (b).

Direction (a): Compression damping is increased (suspension is harder). Direction (b): Compression damping is decreased (suspension is softer).

Adjusting positions: Standard: 14 clicks out* Minimum: 20 clicks out* Maximum: 0 clicks out*

*: from the fully turned-in position

3. Install:
   - rubber cap



EAA01063

Q. ADJUSTING THE HEADLIGHT BEAM

1. Adjust:
   - headlight beam (vertically)

a. Turn the adjusting screw (1) in direction (a) or (b).

Direction (a): Headlight beam is raised. Direction (b): Headlight beam is lowered.

EAA10000

APPENDICES

SERVICE DATA

Engine idling speed:	1,900～2,100r/min
Spark plug:	
Type /Manufacturer	CR8E/NGK (resistance type)
Gap	0.7～0.8 mm (0.028～0.031 in)
Fuel:	
Recommended fuel	Premium unleaded gasoline only with a research octane number of 95 or higher.
Fuel tank capacity	10L (2.2 lmp gal, 2.64 US gal)
Valve clearance (cold):	
IN	0.10～0.15 mm (0.0039～0.0059 in)
EX	0.17～0.22 mm (0.0067～0.0087 in)
Tire air pressure:	Front 100 kPa (1.0kgf/cm², 15 psi)
(measured on cold tires)	Rear 100 kPa (1.0kgf/cm², 15 psi)

EAA10100

STANDARD EQUIPMENT

Owner's service manual × 1

EAA10200

OWNER'S TOOL KIT

Nipple wrench × 1
Spark plug wrench × 1

EAA10300

TIGHTENING TORQUE

Item	Thread size	Tightening torque		
		Nm	m•kg	ft•lb
Engine:				
Engine oil drain bolt (crankcase)	M 6×1.0	10	1.0	7.2
Spark plug	M10S×1.0	13	1.3	9.4
Chassis:				
Handle crown and outer tube	M 8×1.25	23	2.3	17
Under bracket and outer tube	M 8×1.25	20	2.0	14
Handle crown and steering shaft	M24×1.0	145	14.5	105
Handlebar holder (upper)	M 8×1.25	28	2.8	20
Steering ring nut	M28×1.0	Refer to NOTE.		
Front fork and cap bolt	M48×1.0	30	3.0	22
Front fork and base valve	M30×1.0	55	5.5	40
Cap bolt and damper rod (front fork)	M12×1.25	29	2.9	21
Bleed screw (front fork) and cap bolt	M 5×0.8	1	0.1	0.7
Front fork and cover	M 6×1.0	10	1.0	7.2
Front fork and brake hose holder	M 6×1.0	10	1.0	7.2
Front fork and hose cover	M 8×1.25	16	1.6	11
Front fork and hose cover	M 6×1.0	7	0.7	5.1
Throttle grip cap	M 5×0.8	4	0.4	2.9
Clutch lever holder	M 5×0.8	4	0.4	2.9
Clutch lever mounting	M 6×1.0	2	0.2	1.4
Hot starter lever holder	M 5×0.8	2	0.2	1.4
Light switch	M 4×0.7	2	0.2	1.4
Front brake master cylinder and bracket	M 6×1.0	9	0.9	6.5
Front brake master cylinder cap	M 4×0.7	2	0.2	1.4
Brake lever mounting (bolt)	M 6×1.0	6	0.6	4.3
Brake lever mounting (nut)	M 6×1.0	6	0.6	4.3
Brake lever position locknut	M 6×1.0	5	0.5	3.6
Cable guide (front brake hose) and guide stay	M 5×0.8	4	0.4	2.9
Front brake hose union bolt (master cylinder)	M10×1.25	30	3.0	22
Front brake hose union bolt (caliper)	M10×1.25	30	3.0	22
Front brake caliper and front fork	M 8×1.25	23	2.3	17
Brake caliper (front and rear) and pad pin plug	M10×1.0	3	0.3	2.2
Brake caliper (front and rear) and pad pin	M10×1.0	18	1.8	13
Brake caliper (front and rear) and bleed screw	M 8×1.25	6	0.6	4.3
Front wheel axle and nut	M16×1.5	105	10.5	75
Front wheel axle holder	M 8×1.25	23	2.3	17
Front brake disc and wheel hub	M 6×1.0	12	1.2	8.7
Rear brake disc and wheel hub	M 6×1.0	14	1.4	10
Brake pedal mounting	M 8×1.25	26	2.6	19
Rear brake master cylinder and frame	M 6×1.0	11	1.1	8.0
Rear brake master cylinder cap	M 4×0.7	2	0.2	1.4
Rear brake hose union bolt (caliper)	M10×1.25	30	3.0	22
Rear brake hose union bolt (master cylinder)	M10×1.25	30	3.0	22

NOTE:

1. First, tighten the ring nut approximately 38 Nm (3.8 m•kg, 27 ft•lb) by using the ring nut wrench, then loosen the ring nut one turn.
2. Retighten the ring nut 7 Nm (0.7 m•kg, 5.1 ft•lb).

Item	Thread size	Tightening torque		
		Nm	m•kg	ft•lb
Rear wheel axle and nut	M20×1.5	125	12.5	90
Driven sprocket and wheel hub	M 8×1.25	50	5.0	36
Nipple (spoke)	—	3	0.3	2.2
Disc cover and rear brake caliper	M 6×1.0	7	0.7	5.1
Protector and rear brake caliper	M 6×1.0	7	0.7	5.1
Chain puller adjust bolt and locknut	M 8×1.25	16	1.6	11
Engine mounting:				
Engine lower bracket and frame	M 8×1.25	34	3.4	24
Engine upper bracket and fram	M 8×1.25	34	3.4	24
Engine and engine bracket (front)	M10×1.25	69	6.9	50
Engine and engine bracket (upper)	M10×1.25	55	5.5	40
Engine and frame (lower)	M10×1.25	69	6.9	50
Engine guard (lower)	M 6×1.0	10	1.0	72
Engine guard (left/ right)	M 8×1.25	23	2.3	17
Pivot shaft and nut	M16×1.5	85	8.5	61
Relay arm and swingarm	M14×1.5	80	8.0	58
Relay arm and connecting rod	M14×1.5	80	8.0	58
Connecting rod and frame	M14×1.5	80	8.0	58
Rear shock absorber and frame	M10×1.25	56	5.6	40
Rear shock absorber and relay arm	M10×1.25	53	5.3	38
Rear frame and frame (upper)	M 8×1.25	32	3.2	23
Rear frame and frame (lower)	M 8×1.25	29	2.9	21
Swingarm and brake hose holder	M 5×0.8	1	0.1	0.7
Swingarm and patch	M 4×0.7	2	0.2	1.4
Drive chain tensioner mounting (upper)	M 8×1.25	19	1.9	13
Drive chain tensioner mounting (lower)	M 8×1.25	20	2.0	14
Chain support and swingarm	M 6×1.0	7	0.7	5.1
Seal guard and swingarm	M 5×0.8	6	0.6	4.3
Fuel tank mounting	M 6×1.0	10	1.0	7.2
Fuel tank and fuel cock	M 6×1.0	7	0.7	5.1
Fuel tank and seat set bracket	M 6×1.0	7	0.7	5.1
Fuel tank and hooking screw (fitting band)	M 6×1.0	7	0.7	5.1
Seat mounting	M 8×1.25	23	2.3	17
Side cover mounting	M 6×1.0	7	0.7	5.1
Front fender mounting	M 6×1.0	7	0.7	5.1
Rear fender mounting (front)	M 6×1.0	7	0.7	5.1
Rear fender mounting (rear)	M 6×1.0	10	1.0	7.2
Trip meter mounting	M 6×1.0	7	0.7	5.1
Meter cable holder	M 5×0.8	4	0.4	2.9
Headlight (left/ right)	M 6×1.0	10	1.0	7.2
Headlight (lower)	M 6×1.0	7	0.7	5.1
Taillight	M 6×1.0	4	0.4	2.9
Taillight lead clamp and rear fender	M 4×1.59	0.5	0.05	0.36
Coolant reservoir	M 6×1.0	7	0.7	5.1
Sidestand bracket	M10×1.25	66	6.6	48
Sidestand	M10×1.25	64	6.4	46

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