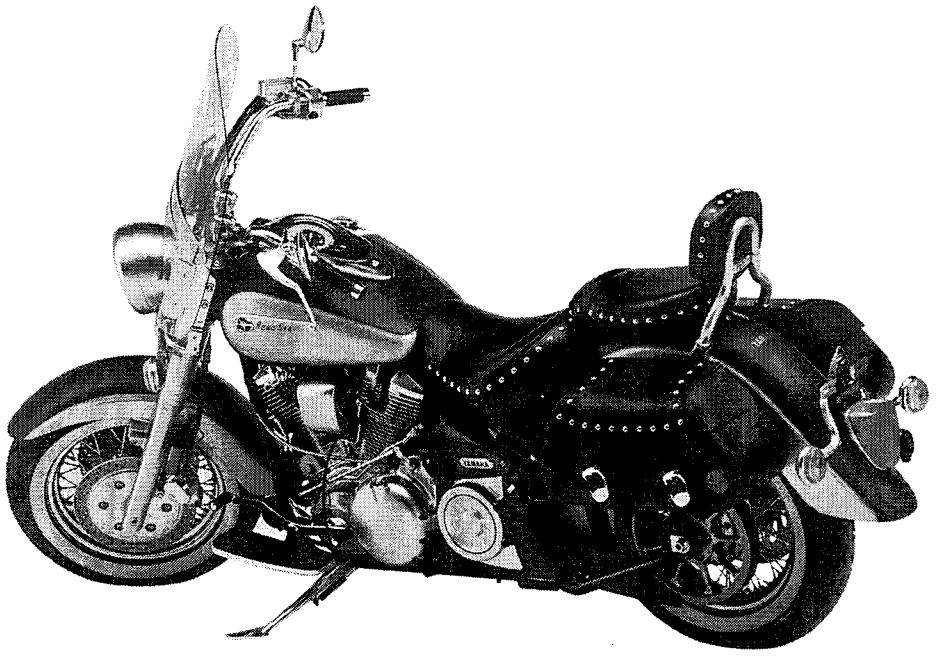
YAMAHA

XV16ATL
XV16ATLC

ASSEMBLY MANUAL



LIT-11666-12-61

5GA-28107-E0

FOREWORD

This Assembly Manual contains the information required for the correct reassembly of this Yamaha motorcycle prior to delivery to the customer. Since some external parts of the motorcycle 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 reassembled motorcycle should be throughly cleaned, inspected, and adjusted prior to delivery to the customer.

NOTICE

The service specifications given in this assembly manual are based on the model as manufactured. Modifications and significant changes in specifications and/or procedures will be forwarded to Authorized Yamaha Dealers. The procedures below are described in the order the procedures are carried out correctly and completely. Failure to do so can result in poor performance and possible harm to the motorcycle and/or rider.
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 motorcycle operator, a bystander, or a person inspecting or repairing the motorcycle.

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

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

SYMBOLS USED IN ASSEMBLY MANUAL

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

: Coat with lithium soap base grease.

10 : Tighten to 10 Nm.
(10 Nm = 1.0 m • kg, 7.2 ft • lb)

FWD : Forward of the motorcycle.

: Provide a clearance.

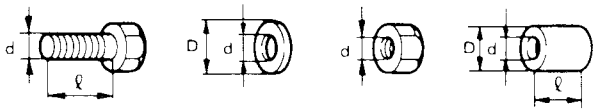
UP : Install so that the arrow mark faces upward.

: Apply a motor oil.

: Made of rubber or plastics.

A	B	C	D	E

A: Ref No. (indicating the order or operations.)
B: Part name
C: Quantity of parts per motorcycle.
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 styrofoam tray (upper or lower).
  ✱: Temporarily installed or secured.
E: Size or material of parts.
  d/D: Diameter of part.
  ℓ : Length of part.



Ex: 0.2 = 0.2 in (5 mm)

XV16ATL/XV16ATLC
ASSEMBLY MANUAL

First Edition, November 1998

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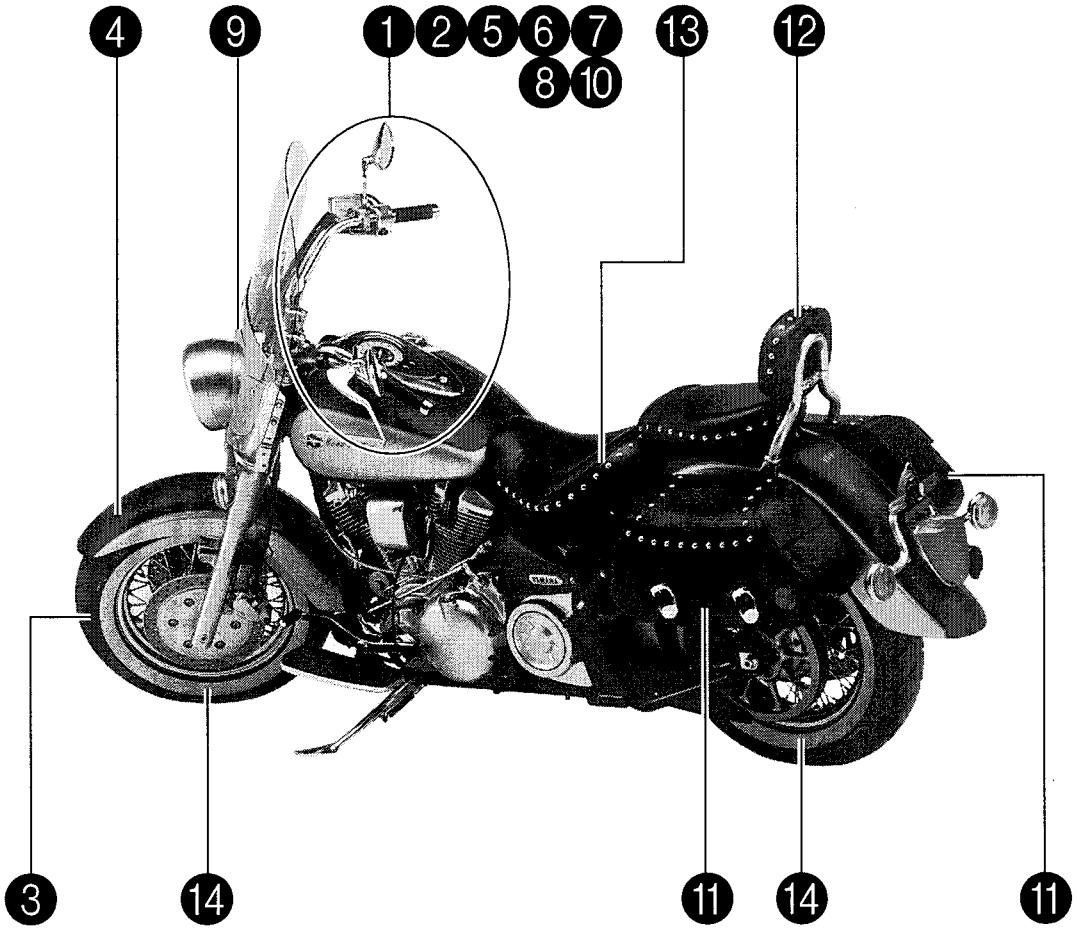
P/N LIT-11666-12-61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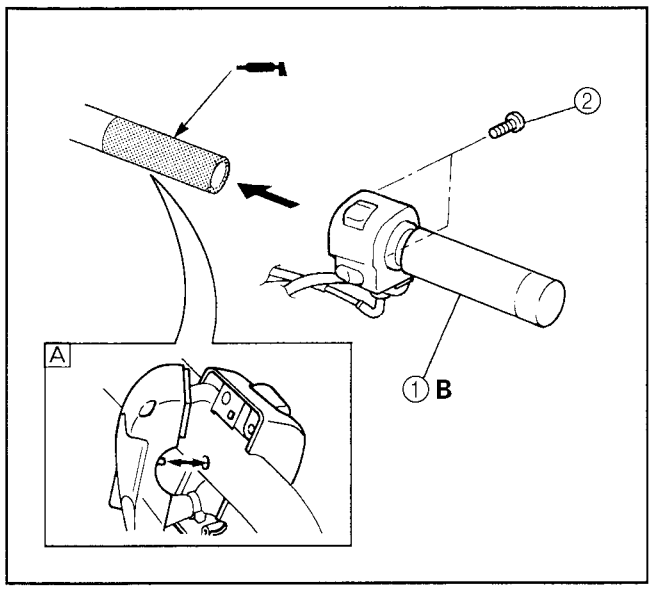
1. Throttle grip



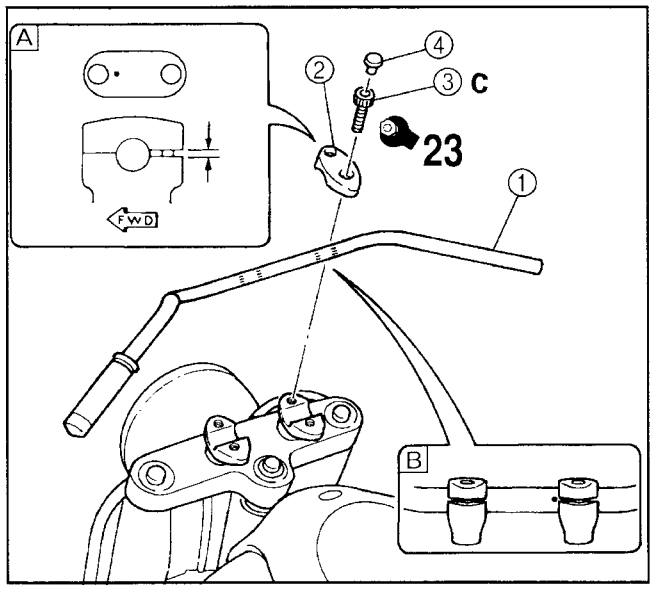
1	Throttle grip	1	✻	
2	Screw	2	✻	d = 0.20 (5), ℓ = 0.98 (25)

A: Fit the handlebar switch projection to the handlebar hole.
B: Check the throttle grip for smooth action.

⚠ WARNING

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

2. Handlebar



1	Handlebar	1	C	
2	Handlebar holder	2	V	
3	Hexagon socket bolt	4	V	d = 0.31 (8), ℓ = 0.98 (25)
4	Plug	4	V	

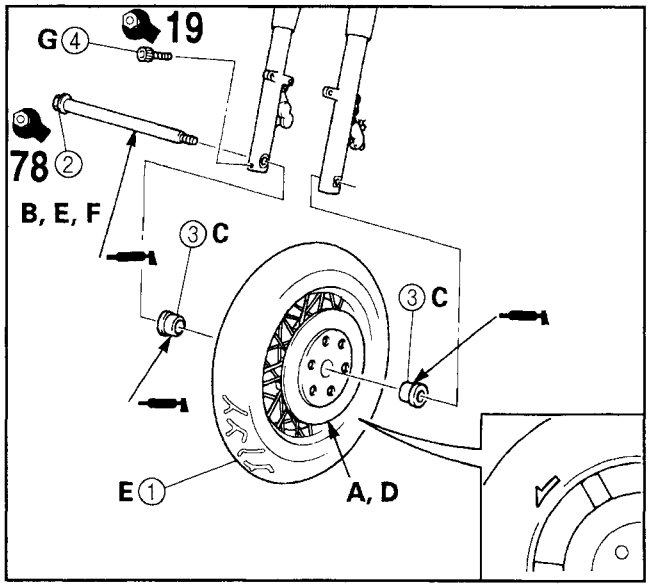
Tightening torque:
23 Nm (2.3 m • kg, 17 ft • lb)

A: **CAUTION:**

First, tighten the bolts on the front side, then tighten the bolts on the rear side.

B: Align the punch mark on the handlebar with the top of the lower handlebar holder.
C: Tighten the bolts to specified torque.

3. Front wheel



1	Front wheel	1	S	
2	Front wheel axle	1	✻	
3	Collar	2	V	
4	Hexagon socket bolt	1	✻	d = 0.31 (8), ℓ = 1.38 (35)

A: Clean the brake discs.
B: Clean the front wheel axle.
C: Clean the collar.

D: **⚠ WARNING**

Take care not to put grease on the brake discs or inner surface of the brake pads. If you do so, clean it by using a rag dampened with a solvent. Foreign material on the braking surface may cause impaired braking action.

E: Lift the front wheel and install the front wheel axle. Be sure the arrow on the tire is pointed in the rotating direction.

NOTE:
Do not depress the brake lever when the caliper is off the brake disc as the brake pads will be forced shut.

F: Make sure the axle is properly torqued.

Tightening torque:
78 Nm (7.8 m • kg, 56 ft • lb)

CAUTION:

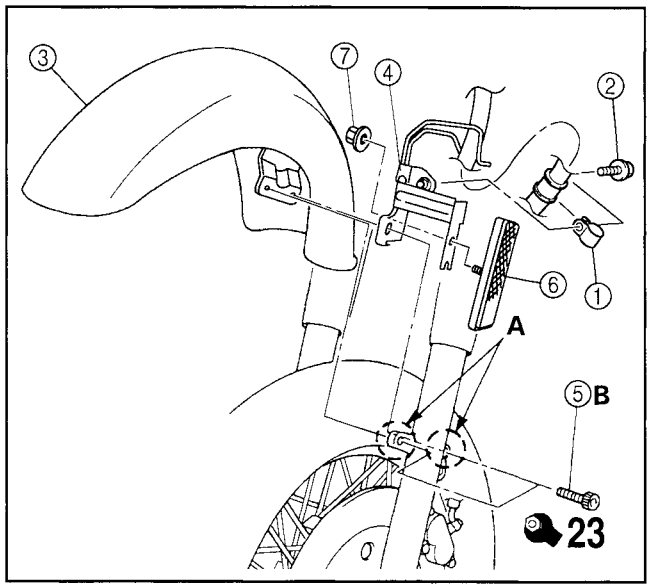
Before tightening the pinch bolt, stroke the front forks several times to make sure of proper fork operation.

NOTE:
Be sure that axle grooves can be seen around the circumference after tightening the front axle.

G: Tighten the axle pinch bolt to specified torque.

Tightening torque:
19 Nm (1.9 m • kg, 13 ft • lb)

4. Front fender



1	Brake hose holder 1 (left and right)	2	V	
2	Flange bolt	2	V	d = 0.24 (6), ℓ = 0.47 (12)
3	Front fender	1	C	
4	Brake hose holder 2 (left and right)	2	✻	
5	Hexagon socket bolt	2	V	d = 0.31 (8), ℓ = 0.98 (25)
		2	✻	
6	Reflector	2	V	
7	Flange nut	2	V	d = 0.20 (5)

A: **CAUTION:**

Be careful not to scratch the front fender with the front fork outer tube.

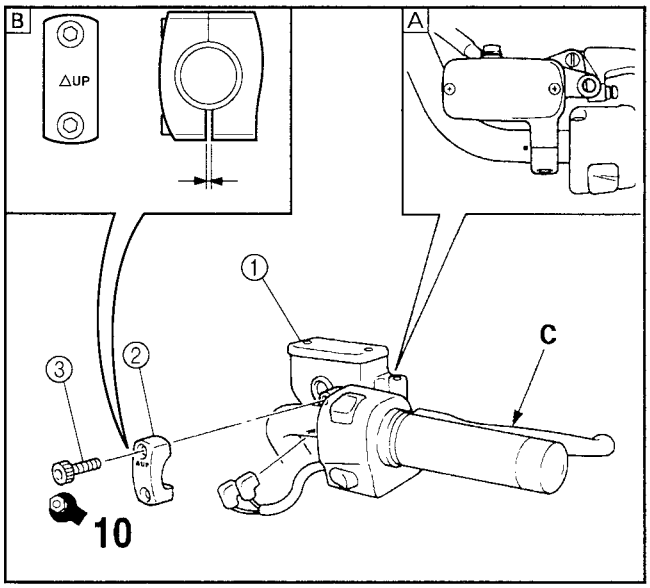
B: Tighten the front fender bolt to specified torque.

Tightening torque:
23 Nm (2.3 m • kg, 17 ft • lb)

CAUTION:

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

5. Front brake master cylinder



1	Master cylinder	1	✻	
2	Bracket	1	V	
3	Hexagon socket bolt	2	V	d = 0.24 (6), ℓ = 0.98 (25)

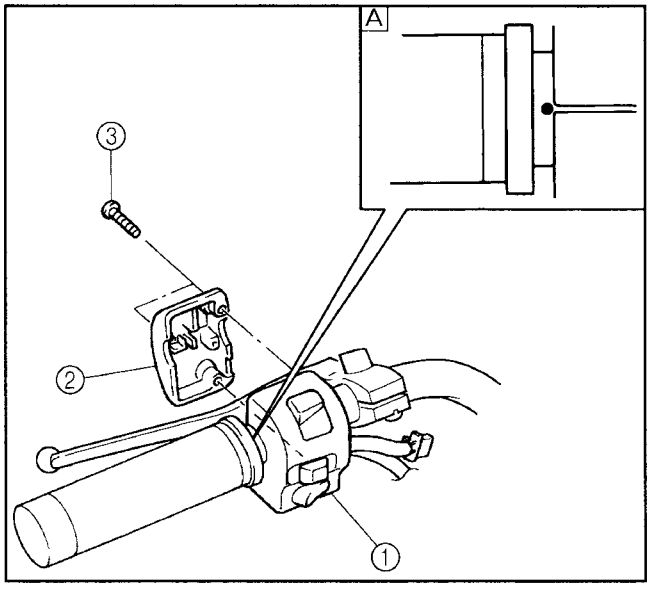
A: Align the punch mark on the handlebar with the gap of the master cylinder bracket.

B: **CAUTION:**
First, tighten the bolt on the upper side, and then tighten the bolt on the lower side.

C: Check the brake lever for smooth action.

CAUTION:
Proper hose routing is essential to assure safe motorcycle operation. Refer to "CABLE ROUTING".

6. Handlebar switch (left)

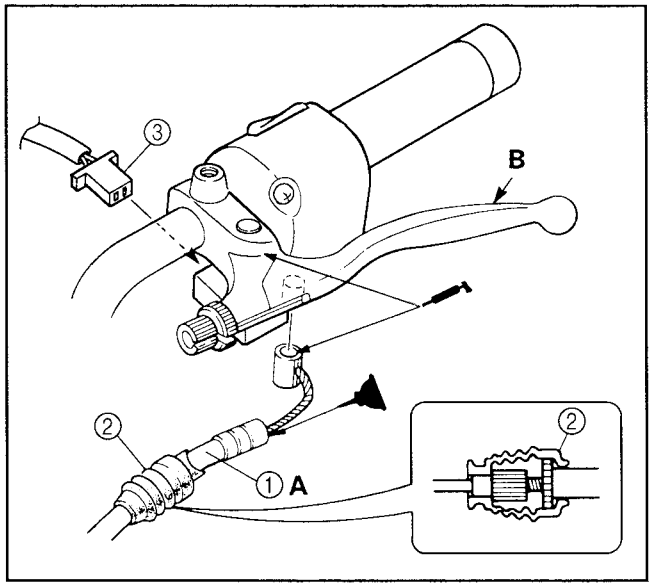


1	Handlebar switch (left)	1	✻	
2	Bracket	1	V	
3	Screw	2	V	d = 0.20 (5), ℓ = 0.98 (25)

A: Align the punch mark on the handlebar with the gap of the handlebar switch (left).

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

7. Clutch cable

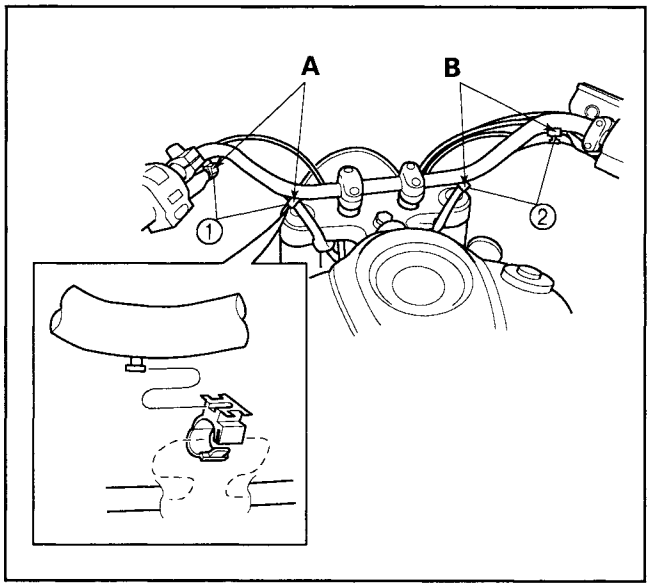


1	Clutch cable	1	✻	
2	Boot	1	V	
3	Clutch switch coupler	1	✻	

A: Pass the clutch cable through the wire guide.
B: Check the clutch lever for smooth action.

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

8. Plastic clamp

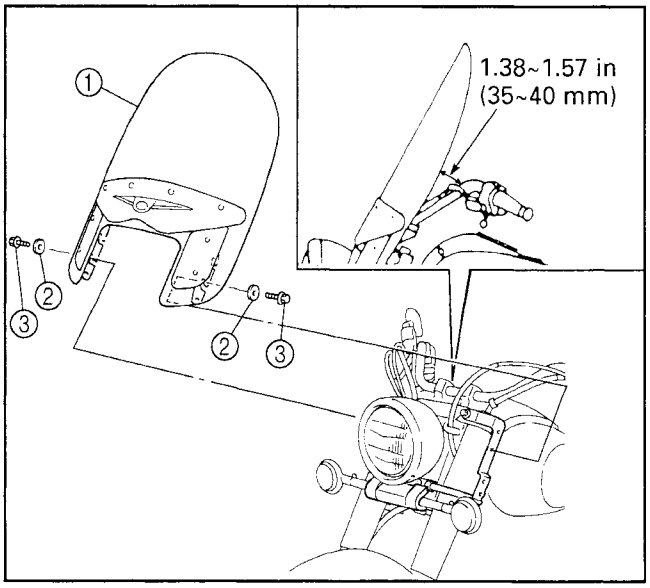


1	Plastic clamp (large)	2	V	
2	Plastic clamp (small)	2	V	

A: Clamp the handlebar switch lead (left).
B: Clamp the handlebar switch lead (right).

NOTE:
Refer to "CABLE ROUTING".

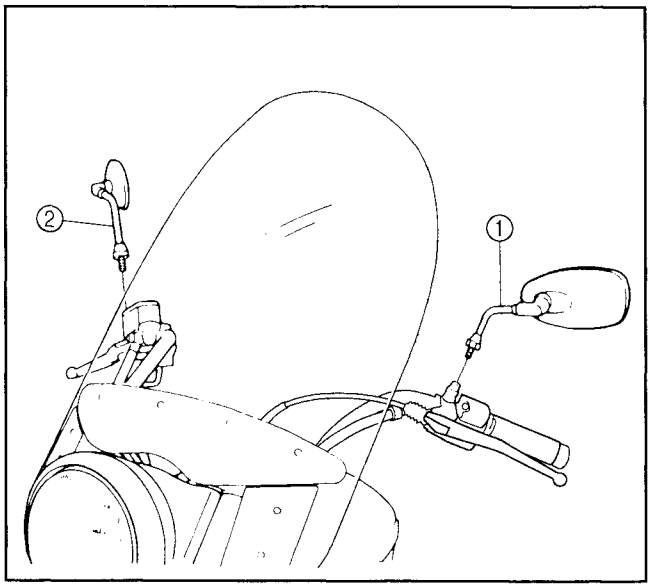
9. Windshield



1	Windshield	1	A	
2	Washer	4	V	d = 0.31 (8)
3	Flange bolt (0.47)	4	V	d = 0.31 (8), ℓ = 0.79 (20)

CAUTION:
When installing the windshield, leave a 1.38 ~ 1.57 in (35 ~ 40 mm) clearance (approximately) the width of two fingers) between the windshield and the master cylinders as shown.

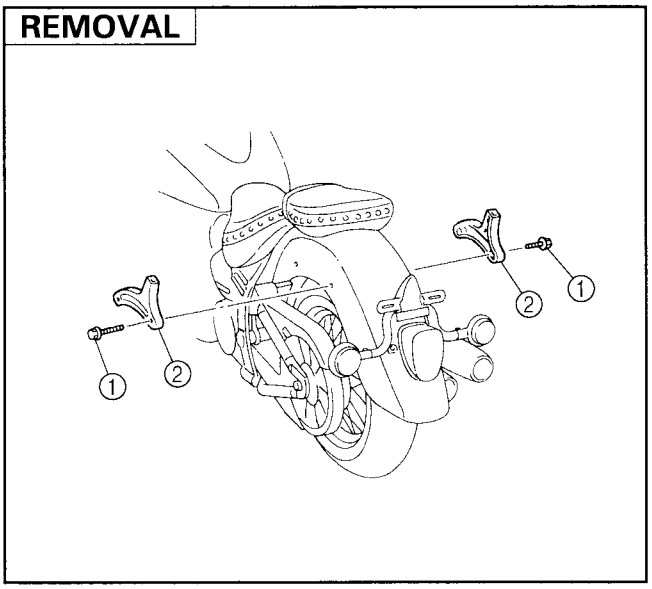
10. Rear view mirror

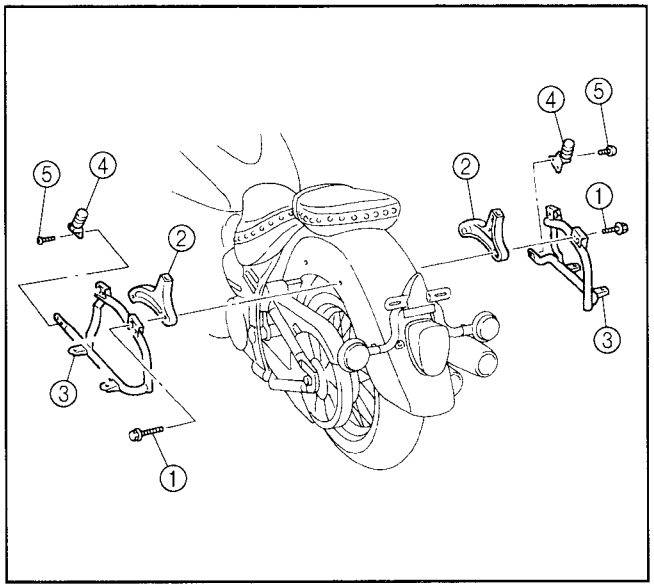


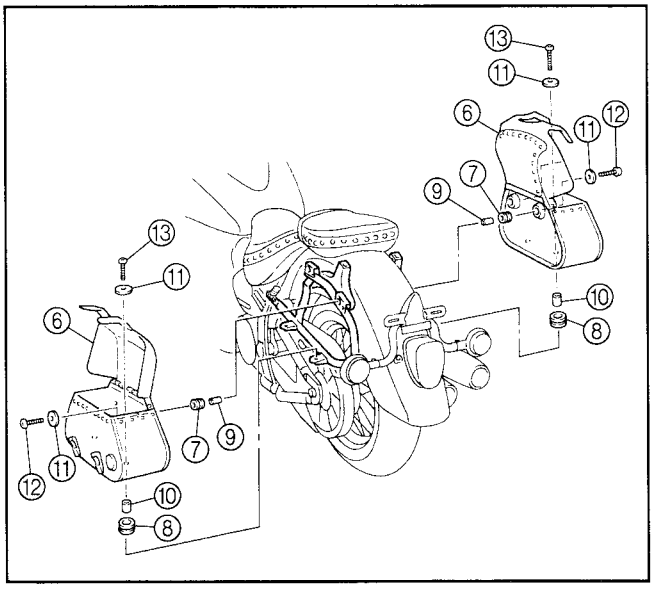
1	Mirror (left)	1	C	
2	Mirror (right)	1	C	

11. Saddlebag

REMOVAL





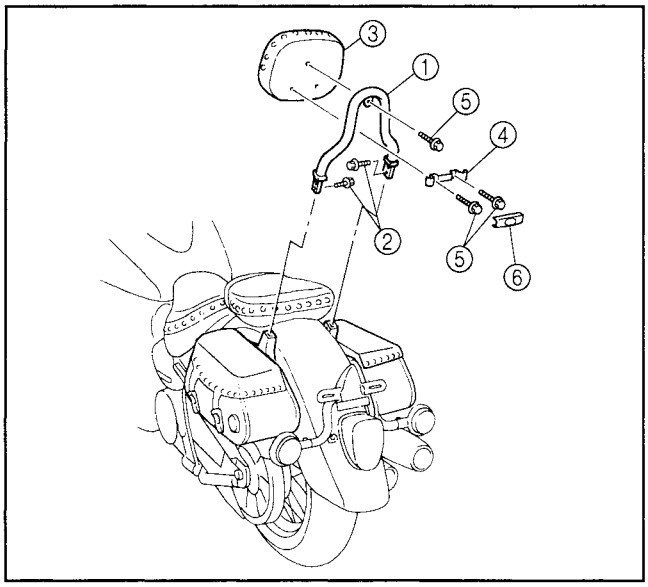


1	Flange bolt	4	✻	d = 0.31 (8), ℓ = 1.97 (50)
2	Grip (left and right)	2	✻	
3	Saddle frame (left and right)	2	C	
4	Passenger footrest	2	C	
5	Button head bolt	4	V	d = 0.31 (8), ℓ = 0.98 (25)
6	Saddle bag (left and right)	2	A	
7	Grommet	4	V	d = 0.47 (12)
8	Grommet	4	V	d = 0.55 (14)
9	Collar	4	V	D = 0.47 (12), ℓ = 0.51 (13)
10	Collar	4	V	D = 0.55 (14), ℓ = 0.71 (18)
11	Washer	8	V	d = 0.28 (7)
12	Button head bolt	4	V	d = 0.24 (6), ℓ = 0.98 (25)
13	Button head bolt	4	V	d = 0.24 (6), ℓ = 1.18 (30)

NOTE:

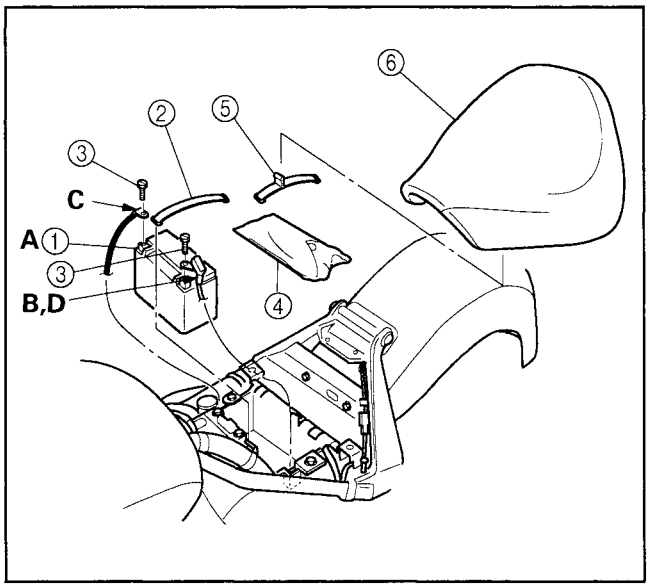
- For easier installation, apply a small amount of oil to the grommet.
- First, finger tighten bolts ⑫ and ⑬. Then, tighten the bolts to the specified torque; tightening bolts ⑫ first.

12. Back rest



1	Stay 1	1	C	
2	Flange bolt	4	V	d = 0.31 (8), ℓ = 0.47 (12)
3	Back rest	1	C	
4	Stay 2	1	V	
5	Flange bolt	3	V	d = 0.24 (6), ℓ = 0.39 (10)
6	Emblem	1	V	

13. Battery



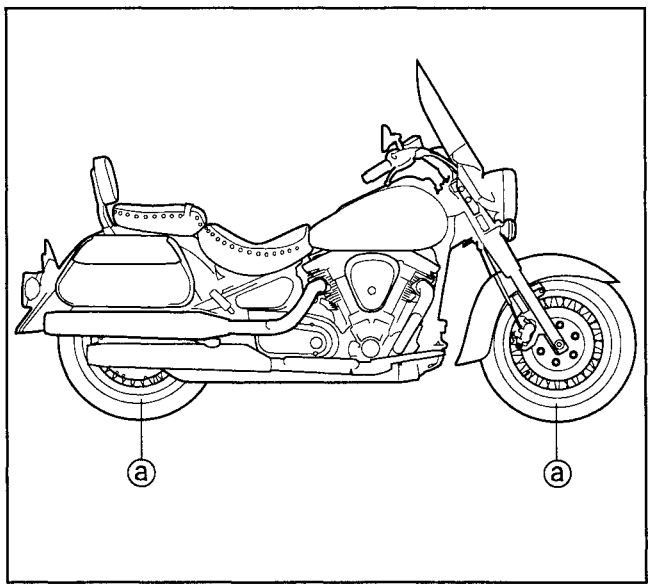
1	Battery	1	*	
2	Band (long)	1	*	
3	Bolt	2	*	d = 0.24 (6), ℓ = 0.47 (12)
4	Tool kit	1	*	
5	Band (short)	1	*	
6	Front seat	1	*	

A: **NOTE:**
Before installing the battery, refer to "ADJUSTMENTS AND PREDELIVERY SERVICE".

B: First, connect the ⊕ lead (Red color lead) to the ⊕ terminal.
C: Connect the ⊖ lead (Black color lead) to the ⊖ terminal.
D: Pass the ⊕ lead through it guide on the battery box.

NOTE:
Refer to "CABLE ROUTING".

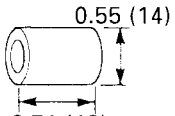
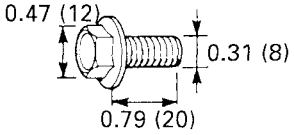
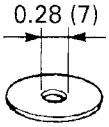
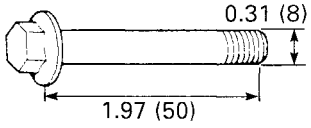
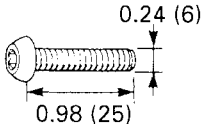
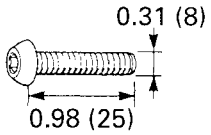
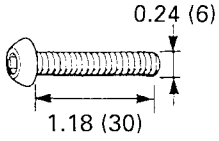
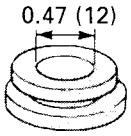
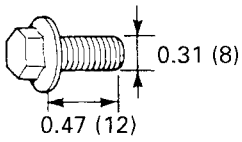
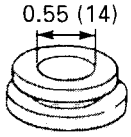
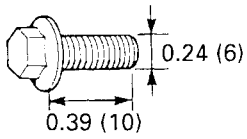
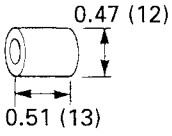
14. Blue protective coating



NOTE:
To remove the blue protective coating ⓐ on the front and rear tire sidewalls, wash the tires with warm water, waits a few minutes and then rinse off the blue coating.

CAUTION:
Never use an alkaline or strong acid cleaner, gasoline, brake fluid, or any other solvents when cleaning the tires.

Accessory parts hardware

9 2		Washer 90201-08772 4pcs For installing the windshield	11 10		Collar 90387-061Y7 4pcs For installing the saddlebags (bottom)
9 3		Flange bolt 95804-08020 4pcs For installing the windshield	11 11		Washer 90201-06074 8pcs For installing the saddlebags (side and bottom)
11 1		Flange bolt 95807-08050 4pcs For installing the saddlebag frame	11 12		Button head bolt 92017-06025 4pcs For installing the saddlebag frame (side)
11 5		Button head bolt 90111-08002 4pcs For installing the passenger footrest	11 13		Button head bolt 92017-06030 4pcs For installing the saddlebags (bottom)
11 7		Grommet 90480-20338 4pcs For installing the saddlebag frame (side)	12 2		Flange bolt 95024-08012 4pcs For installing the backrest stay
11 8		Grommet 90480-20132 4pcs For installing the saddlebags (bottom)	12 5		Flange bolt 95024-06010 3pcs For installing the backrest
11 9		Collar 90387-06518 4pcs For installing the saddlebag frame (side)			

□ : The heading number.
□ : The parts number in the illustration.

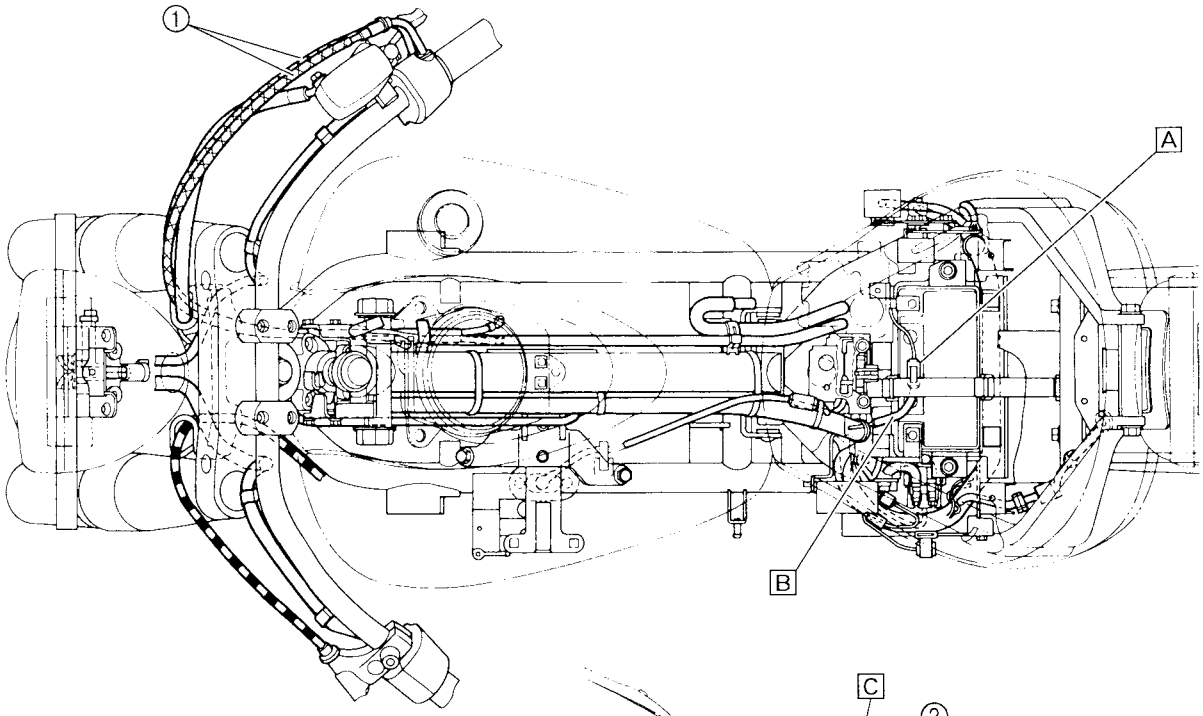
CABLE ROUTING

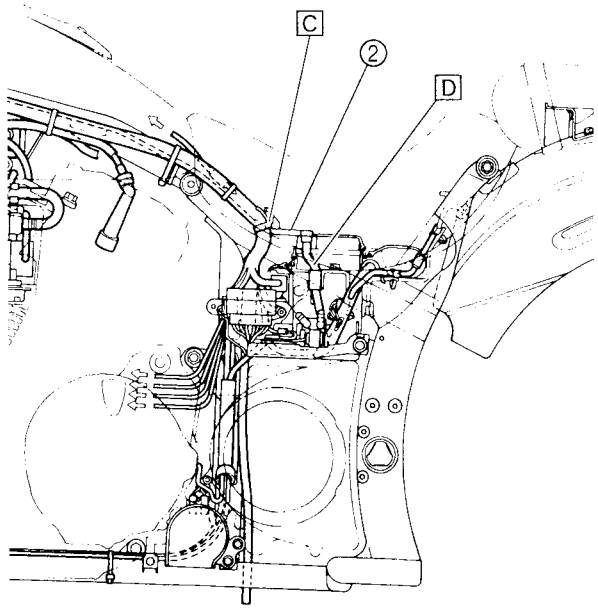
⚠ WARNING

Proper cable and lead routing is essential to insure safe motorcycle operation.

① Throttle cables
② Battery negative (–) lead

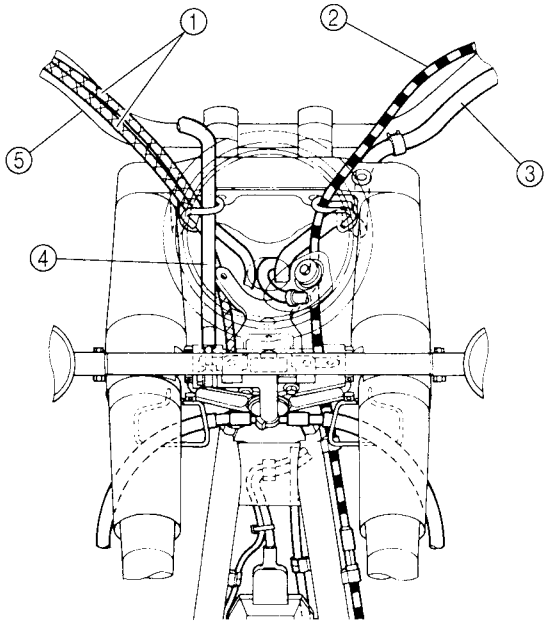
[A] Fasten the battery negative (–) lead with a battery band.
[B] Install the sleeve of the battery negative (–) lead between the battery negative (–) lead coupler and the clamp.
[C] Fasten the wire harness and the battery negative (–) lead with a clamp.
[D] Pass the battery positive (+) lead through lead guide on the battery box.

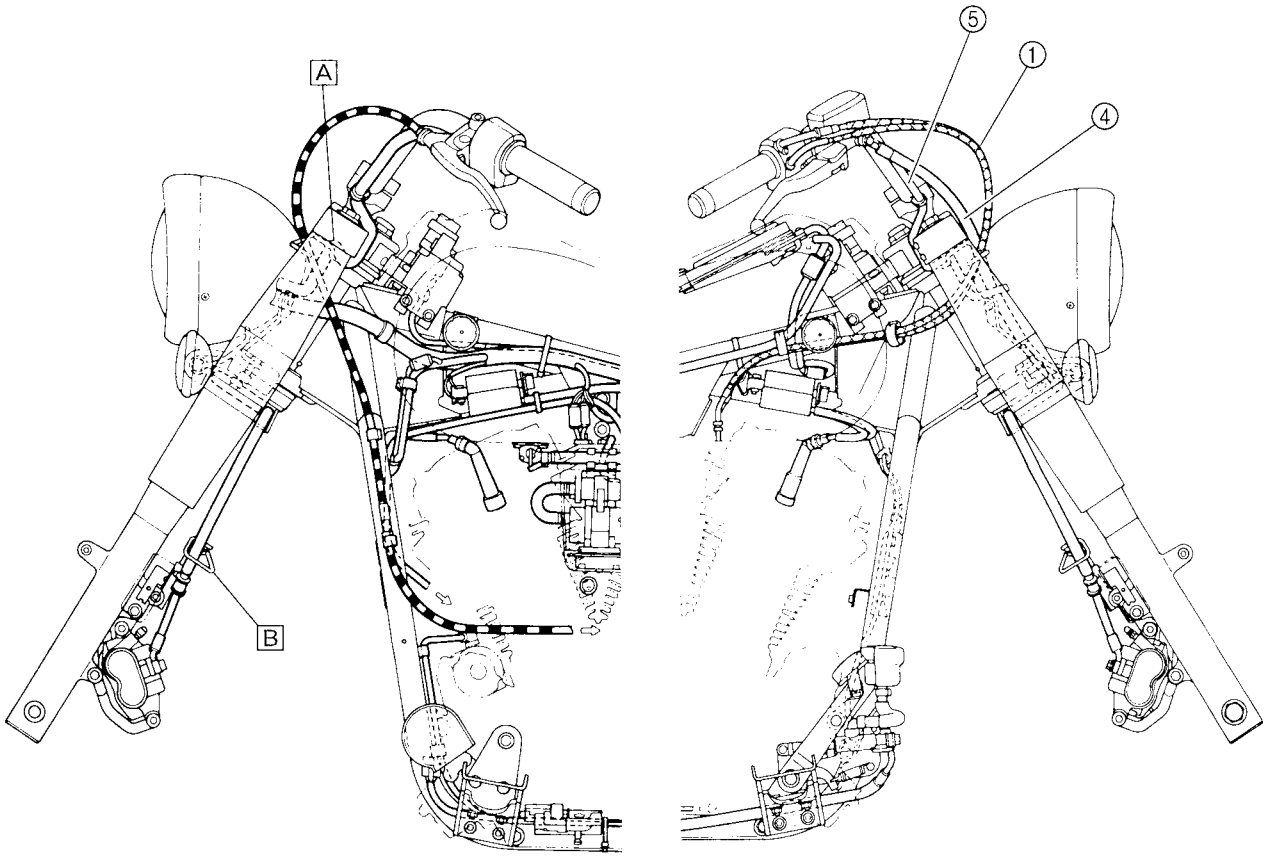


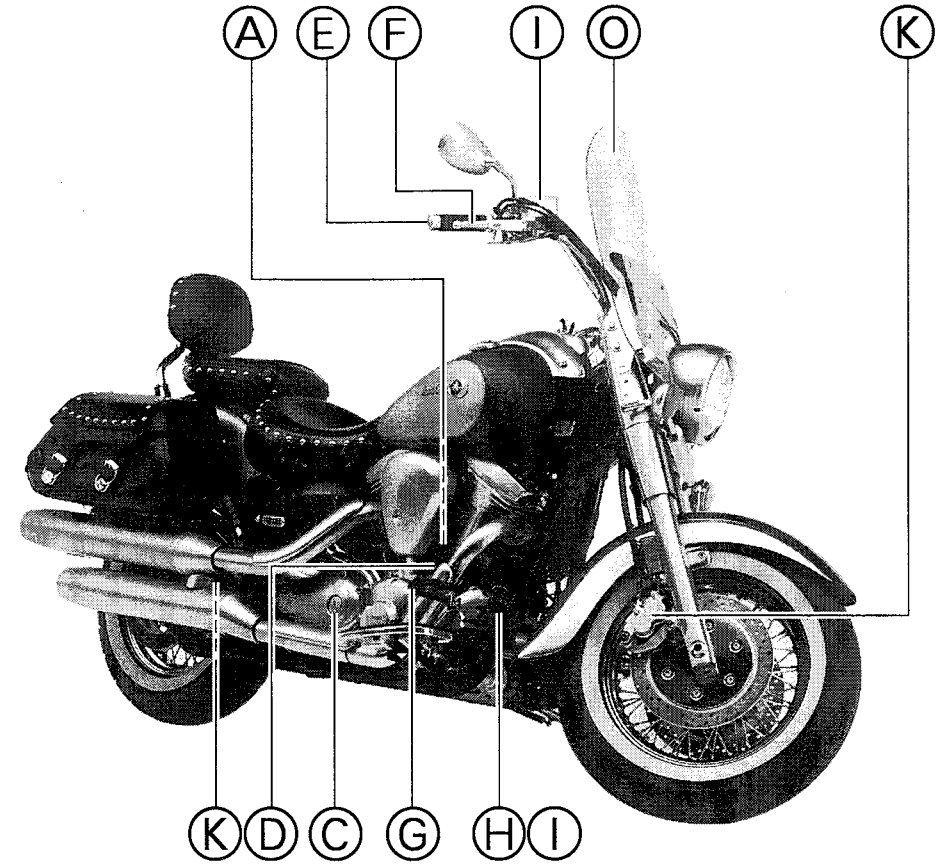


① Throttle cables
② Clutch cable
③ Left handlebar switch lead
④ Brake hose
⑤ Right handlebar switch lead

[A] Pass the left and right handlebar switch leads through the lead guide under the upper bracket.
[B] Pass the brake hose through the hose guide.



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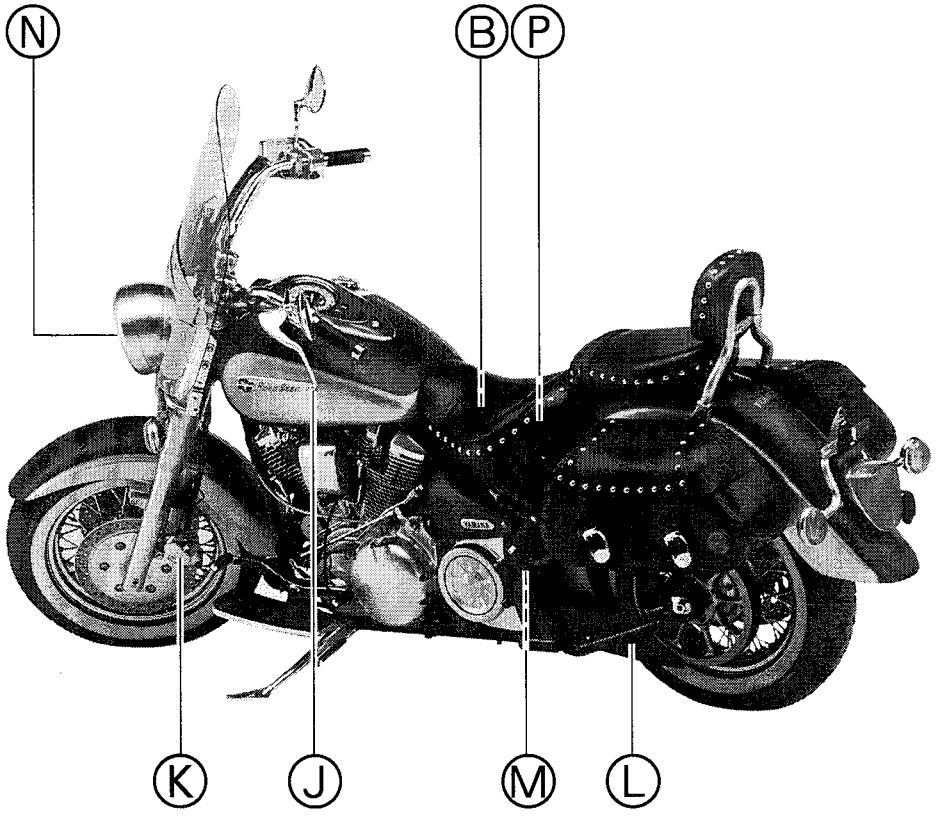
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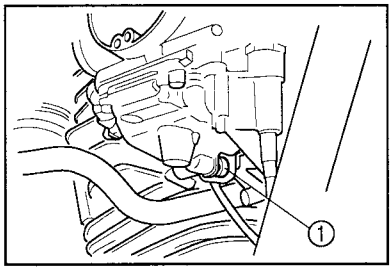


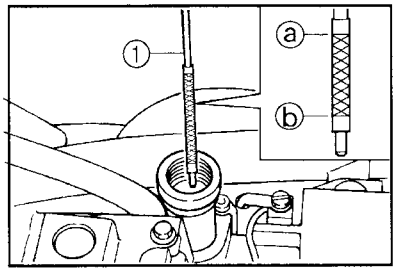
A. Fuel draining

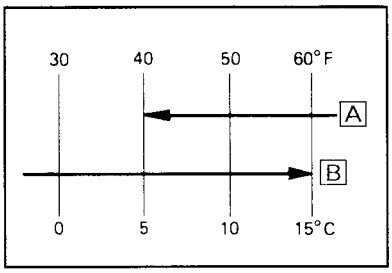
1. Remove:
- Air filter case
2. Put a rag under the carburetor drain hose so fuel does not contact the crankcase.
3. Loosen the drain screw ① and drain the standing fuel.

⚠ WARNING

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

4. Retighten the drain screw securely.
5. Install:
- Air filter case





B. Engine oil level inspection

1. Stand the motorcycle on a level surface.

NOTE:
- Make sure the motorcycle is upright when inspecting the oil level.
- Place the motorcycle on a suitable stand.

2. Remove:
- Rider seat
- Dipstick ①
3. Inspect:
- Oil level

  Oil level should be between maximum ⓐ and minimum ⓑ marks.

  Oil level is below the minimum mark → Add oil up to the proper level.

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

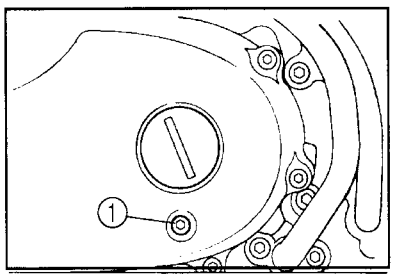
Recommended oil:
At 5°C (40°F) or higher [A]:
Yamalube 4 (20W40) or
SAE 20W40 motor oil
(NON-FRICTION MODIFIED)
At 15°C (60°F) or lower [B]:
Yamalube 4 (10W30) or
SAE 10W30 motor oil
(NON-FRICTION MODIFIED)
Oil capacity (periodic oil change):
3.9 US qt (3.3 Imp qt, 3.7 L)

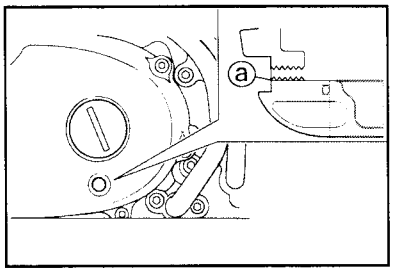
NOTE:

Recommended oil classification: API Service "SE", "SF" and "SG" type or equivalent (e.g. "SF-SE", "SF-SE-CC", "SF-SE-SD" etc.).

CAUTION:
- **Engine oil also lubricates the clutch and the wrong oil types or additives could cause clutch slippage. Therefore, do not add any chemical additives.**
- **Do not allow foreign material to enter the crankcase.**

4. Install:
- Dipstick
- Rider seat





C. Transfer gear oil level inspection

1. Stand the motorcycle on a level surface.

NOTE:
- Place the motorcycle on a suitable stand.
- Make sure the motorcycle is upright.

2. Remove:
- Checking bolt ①
3. Inspect:
- Transfer gear oil level

  The transfer gear oil level should be up to the brim ⓐ of the hole.

  Below the brim → Add the recommended transfer gear oil to the proper level.

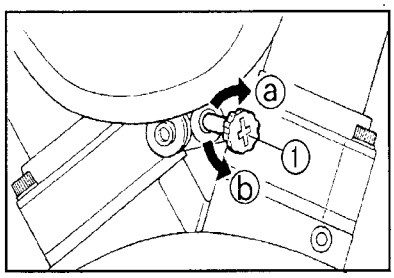
Recommended oil:
SAE 80 API "GL-4" Hypoid gear oil
Oil quantity:
0.42 US qt (0.35 Imp qt, 0.4 L)

CAUTION:

Do not allow foreign materials to enter the transfer case.

4. Install:
- Checking bolt

Checking bolt torque:
8 Nm (0.8 m • kg, 5.8 ft • lb)



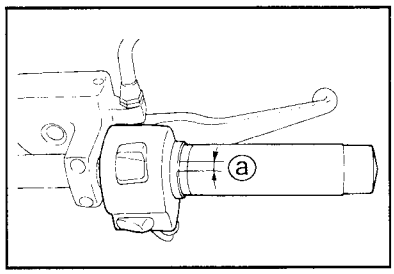
D. Idling speed adjustment

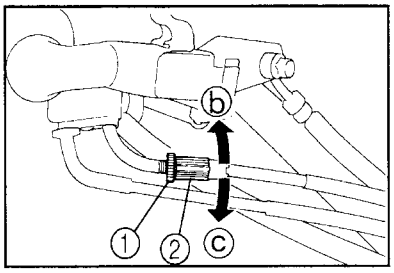
1. Start the engine and let it warm up for several minutes.
2. Check:
- Engine idling speed
  Out of specification → Adjust.

Engine idling speed:
850 ~ 950 r/min

3. Adjust:
- Turn the throttle stop screw ① in direction ⓐ or ⓑ until the specified idling speed is obtained.

Direction ⓐ:	idling speed is increased.
Direction ⓑ:	idling speed is decreased.





E. Throttle cable free play adjustment

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

1. Check:
- Throttle cable free play ⓐ
  Out of specification → Adjust.

Free play:
0.16 ~ 0.24 in (4 ~ 6 mm)
(at throttle grip flange)

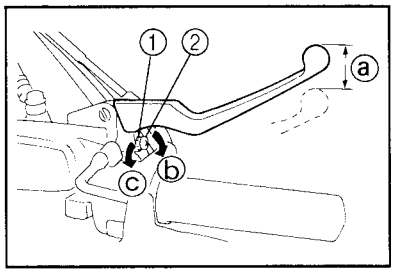
2. Adjust:
- Loosen the locknut ①.
- Turn the adjuster ② in direction ⓑ or ⓒ until the specified free play is obtained.

Direction ⓑ:	free play is increased.
Direction ⓒ:	free play is decreased.

- Tighten the locknut.

⚠ WARNING

After adjusting, turn the handlebar to the right and to the left to ensure this does not cause the engine idling speed to change.



F. Front brake adjustment

1. Check:
- Brake lever free play ⓐ
  Out of specification → Adjust.

Free play (brake lever):
0.08 ~ 0.20 in (2 ~ 5 mm)
(at brake lever end)

2. Adjust:
- Loosen the locknut ①.
- Turn the adjuster ② in direction ⓑ or ⓒ until the specified free play is obtained.

Direction ⓑ:	brake lever free play is increased.
Direction ⓒ:	brake lever free play is decreased.

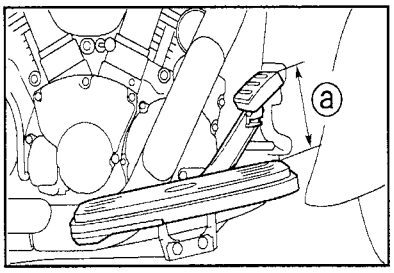
- Tighten the locknut.

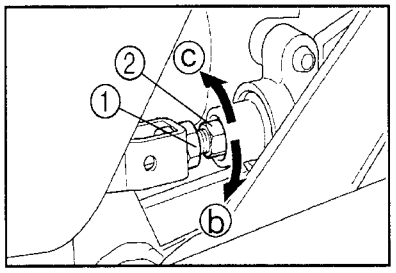
CAUTION:

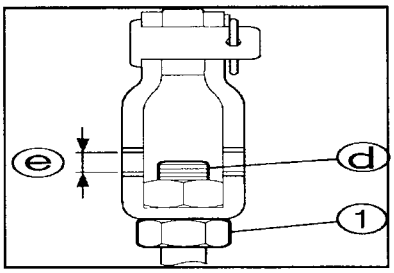
After adjusting the front brake lever free play, make sure there is no brake drag.

⚠ WARNING

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







G. Rear brake adjustment

1. Check:
- Brake pedal height ⓐ
  Out of specification → Adjust.

Brake pedal height:
3.9 in (100 mm)
(above the top of the footrest)

2. Adjust:
- Loosen the locknut ①.
- Turn the adjuster ② in direction ⓑ or ⓒ until the specified pedal height is obtained.

Direction ⓑ:	brake pedal height is raised.
Direction ⓒ:	brake pedal height is lowered.

⚠ WARNING

After adjusting the brake pedal position, check that the end ⓓ of the adjusting bolt is visible through the hole ⓔ.

- Tighten the locknut.

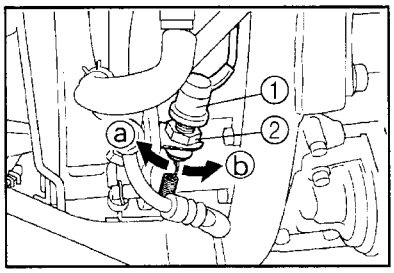
Locknut torque:
18 Nm (1.8 m • kg, 13 ft • lb)

CAUTION:

After adjusting the brake pedal height, make sure there is no brake drag.

⚠ WARNING

A soft or spongy feeling in the brake pedal may indicate the presence of air in the brake system. This air must be removed by bleeding the brake system before the motorcycle is operated. Air in the brake system will considerably reduce braking performance and can result in a loss of control and possibly an accident. Inspect and, if necessary, bleed the brake system.



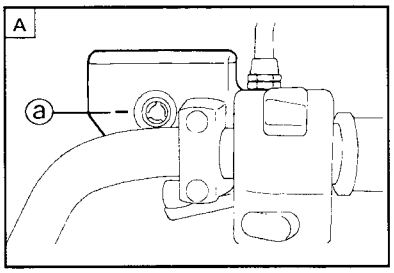
H. Brake light switch adjustment

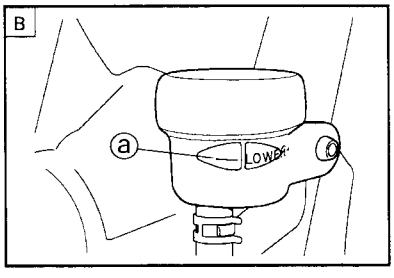
NOTE:
- The brake light switch is operated by movement of the brake pedal.
- Adjustment is correct when the brake light comes on just before the braking effect starts.

1. Check:
- Brake light operation
  Incorrect → Adjust.

2. Adjust:
- Hold the main body ① of the switch so it does not rotate, and turn the adjuster ② in direction ⓐ or ⓑ until the proper operation timing is obtained.

Direction ⓐ:	brake light comes on sooner.
Direction ⓑ:	brake light comes on later.





I. Brake fluid level inspection

1. Stand the motorcycle on a level surface.

NOTE:
- When inspecting the brake fluid level, make sure the motorcycle is upright.
- Set the motorcycle on its center stand. If it does not have a center stand, place a suitable stand under the motorcycle.

2. Inspect:
- Brake fluid level
  Brake fluid level is below the "LOWER" level line ⓐ → Fill to proper level.

Recommended brake fluid:
DOT #4

Ⓐ Front brake
Ⓑ Rear brake

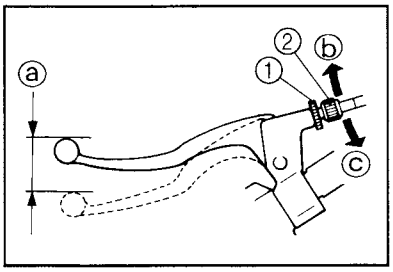
NOTE:
For a correct reading of the brake fluid level, make sure the top of the handlebar brake fluid reservoir is horizontal.

CAUTION:

Brake fluid may corrode painted surfaces or plastic parts. Always clean up any spilt fluid immediately.

⚠ WARNING

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



J. Clutch adjustment

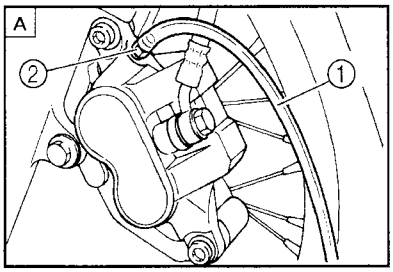
1. Check:
- Clutch cable free play ⓐ
  Out of specification → Adjust.

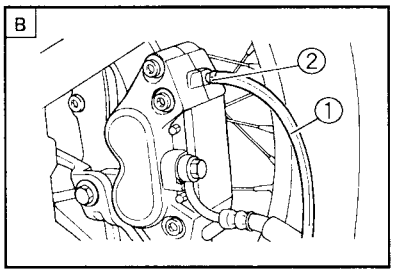
Free play:
0.4 ~ 0.6 in (10 ~ 15 mm)
(at clutch lever end)

2. Adjust:
- Pull the boot off.
- Loosen the locknut ①.
- Turn the adjuster ② in direction ⓑ or ⓒ until the specified free play is obtained.

Direction ⓑ:	Free play is increased.
Direction ⓒ:	Free play is decreased.

- Tighten the locknut.
- Pull the boot in.





K. Air bleeding (hydraulic brake system)

⚠ WARNING

Bleed the brake system whenever:
- **the system is disassembled,**
- **a brake hose is loosened or removed,**
- **the brake fluid level is very low, or**
- **brake operation is faulty.**

If the brake system is not properly bled, a loss of braking performance may occur.

1. Remove:
- Muffler
- Muffler bracket
- Plastic clamps

Air bleeding steps:

a. Fill the reservoir with the proper brake fluid.
b. Install the diaphragm. Be careful not to spill any fluid or allow the reservoir to overflow.
c. Connect a clear plastic hose ① tightly to the caliper bleed screw ②.
   Ⓐ Front Ⓑ Rear
d. Place the other end of the hose into a container.
e. Slowly apply the brake lever or pedal several times.
f. Pull the lever in or push down on the pedal. Hold the lever or pedal in position.
g. Loosen the bleed screw and allow the lever or pedal to travel towards its limit.
h. Tighten the bleed screw when the lever or pedal limit has been reached, then release the lever or pedal.
i. Repeat steps (e) to (h) until all the air bubbles have disappeared from the brake fluid.

NOTE:
When bleeding the brake system, make sure there is always enough brake fluid in the brake fluid reservoir, before applying the brake lever or pedal. Ignoring this precaution could allow air to enter the brake system, lengthening the bleeding procedure considerably.

j. Tighten the bleed screw.

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

NOTE:
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 brake system have disappeared.

k. Fill the brake fluid reservoir to the proper level.

⚠ WARNING

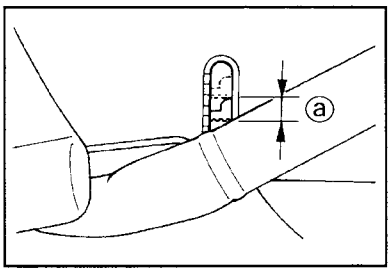
After bleeding the brake system, check the brake operation.

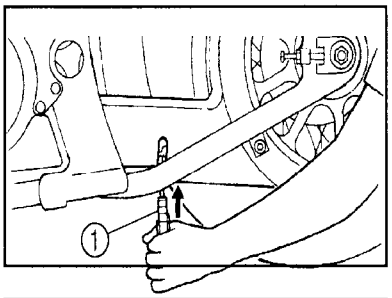
2. Install:
- Plastic clamps
- Muffler bracket
- Muffler

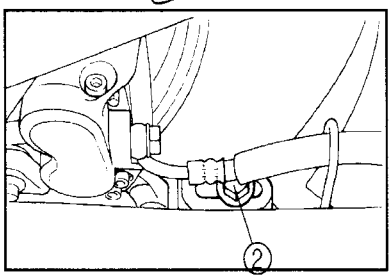
Muffler bracket bolt torque:
26 Nm (2.6 m • kg, 19 ft • lb)

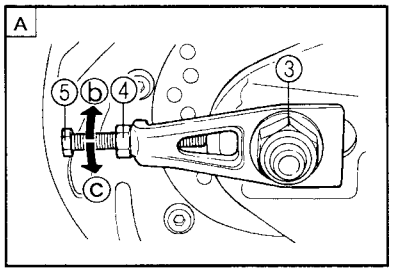
3. Tighten:
- Muffler bolts
- Muffler clamp bolts

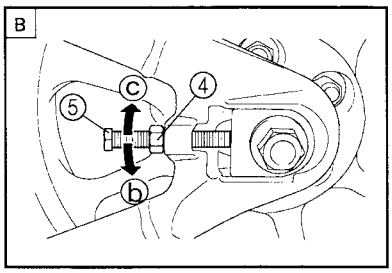
Muffler bolt torque:
25 Nm (2.5 m • kg, 18 ft • lb)
Muffler clamp bolt torque:
25 Nm (2.5 m • kg, 18 ft • lb)











L. Drive belt slack adjustment

CAUTION:

A drive belt 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 belt slack within the specified limits.

NOTE:

Measure the drive belt slack when the engine is cold, and when the drive belt is dry.

1. Stand the motorcycle on a level surface.

CAUTION:

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

NOTE:

Place the motorcycle on a side stand.

2. Rotate the rear wheel several times and check the drive belt to locate its tightest point.
3. Measure:
- Drive belt slack ⓐ
  Out of specification → Adjust.

Drive belt slack:
0.3 ~ 0.5 in at 10 lbs (7.5 ~ 13 mm at 4.5 kg)

Belt tension gauge:
YM-03170

NOTE:

- The level marks of the level window on the lower drive belt cover are in units of 0.2 in (5 mm). Use them as a standard for measuring the drive belt slack.
- Measure the drive belt slack when the drive belt has been pushed with 10 lbs (4.5 kg) of pressure using a belt tension gauge.

4. Adjust:

NOTE:

Place the motorcycle on a suitable stand so that the rear wheel is elevated.

- Loosen the brake caliper bracket bolt ②.
- Loosen the wheel axle nut ③.
- Loosen both locknuts ④.

[A] Right
[B] Left

- Turn both adjusting bolts ⑤ in direction ⓑ or ⓒ until the specified drive belt slack is obtained.

Direction ⓑ:	Drive belt slack is reduced.
Direction ⓒ:	Drive belt slack is increased.

NOTE:

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

- Tighten both locknuts to specification.

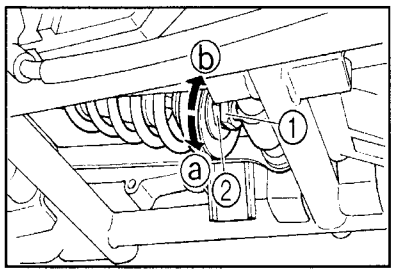
Locknut torque:
32 Nm (3.2 m • kg, 23 ft • lb)

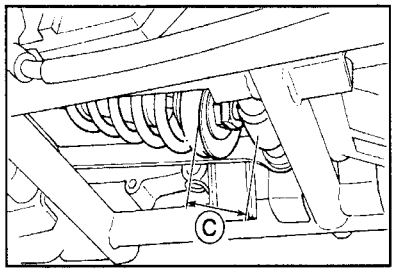
- Tighten the wheel axle nut to specification.

Wheel axle nut torque:
150 Nm (15.0 m • kg, 110 ft • lb)

- Tighten the brake caliper bracket bolt to specification.

Brake caliper bracket bolt torque:
40 Nm (4.0 m • kg, 29 ft • lb)





M. Rear shock absorber adjustment

⚠ WARNING

Securely support the motorcycle so there is no danger of it falling.

1. Adjust:
- Spring preload

NOTE:
Use the special wrench and extension bar included in the owner's tool kit to adjust the spring preload.

Adjustment steps:
- Loosen the locknut ①.
- Turn the adjuster ② in direction ⓐ or ⓑ.

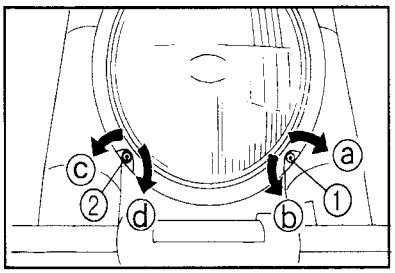
Direction ⓐ:	spring preload is harder.
Direction ⓑ:	spring preload is softer.

Measurement length ⓒ:	
Standard:	1.67 in (42.5 mm)
Minimum:	1.67 in (42.5 mm)
Maximum:	2.03 in (51.5 mm)

CAUTION:

Never turn the adjuster beyond the maximum or minimum setting.

- Tighten the locknut.



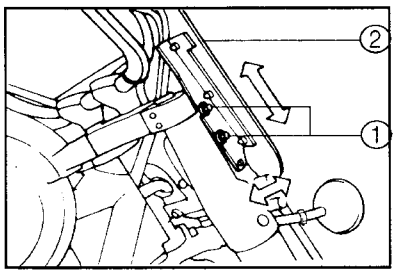
N. Headlight beam adjustment

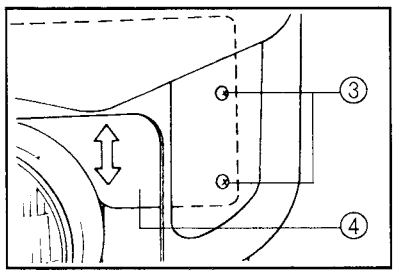
1. Adjust:
- Headlight beam (vertically)
  Turn the adjuster ① in direction ⓐ or ⓑ.

Direction ⓐ:	headlight beam is raised.
Direction ⓑ:	headlight beam is lowered.

2. Adjust:
- Headlight beam (horizontally)
  Turn the adjuster ② in direction ⓒ or ⓓ.

Direction ⓒ:	headlight beam to the right.
Direction ⓓ:	headlight beam to the left.





O. Windshield adjustment

⚠ WARNING

- **Tighten the windshield bolts securely after adjustment.**
- **After adjusting, turn the handlebars to the left and right making sure there is no obstruction and the windshield does not contact any other parts, etc.**
- **Open the throttle and make sure it returns properly when released.**

Otherwise, an accident or injury could result.

1. Adjust:
- Windshield angle
  Loosen the bolts ① on each side of the windshield ②. Move the windshield to the desired position, then be sure to tighten the bolts to the specified torque.

2. Adjust:
- Windshield height
  Remove the bolts ① on each side of the windshiled ②. Move the windshield to the desired position and reinstall the bolts. Be sure to tighten the bolts to the specified torque.
  Loosen the screws ③ which hold the headlight cover ④. Position the cover so it will fit close to the headlight without touching it. Retighten the screws.

P. Battery inspection and charging instructions

NOTE:

The battery used in this motorcycle is a new version maintenance free "*Valve Regulated Lead Acid Battery*", it has been pre-filled with electrolyte at the factory so there is no need for you to add any 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	Charging time
12.8 V or higher	Charging is not necessary

⚠ WARNING

- **Do not attempt boost charging under any circumstances.**
- **Battery electrolyte is poisonous and dangerous, causing severe burns, etc. Contains sulfric 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 OT 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. Since the procedure for charging the battery is not explained in the assembly manual, refer to the service manual for more details.**
- **Never remove the strip of caps, nor add any water or electrolyte.**

APPENDICES

SERVICE DATA

XV16ATL/XV16ATLC			
Engine idling speed:		850 ~ 950 r/min	
Spark plug: Type Gap		 DPR7EA-9 (NGK), X22EPR-U9 (DENSO) 0.031 ~ 0.035 in (0.8 ~ 0.9 mm)	
Fuel: Recommended fuel Fuel tank capacity Total:		 Unleaded fuel recommended 5.3 US gal (4.4 Imp gal, 20 L)	
Valve clearance (cold):	IN EX	0 ~ 0.0016 in (0 ~ 0.04 mm) 0 ~ 0.0016 in (0 ~ 0.04 mm)	
Maximum load *		399 lb (181 kg)	
Tire pressure		Front	Rear
	Up to 198 lb (90 kg) load*	36 psi (2.50 kg/cm², 250 kPa)	36 psi (2.50 kg/cm², 250 kPa)
	198 lb (90 kg) ~ Maximum load*	36 psi (2.50 kg/cm², 250 kPa)	41 psi (2.80 kg/cm², 280 kPa)

* Load is the total weight of cargo, rider, passenger, and accessories.

STANDARD EQUIPMENT

No.	Part name	Q'ty
1	Owner's manual	1
2	Owner's tool kit	1
3	Safety hand book	1

OWNER'S TOOL KIT

No.	Part name	Q'ty
1	Owner's tool bag	1
2	Pliers	1
3	Wrench (8 – 10)	1
4	Wrench (10 – 12)	1
5	Wrench (14 – 17)	1
6	Wrench (22 – 27)	1
7	Wrench (32)	1
8	Spark plug wrench	1
9	Screwdriver grip	1
10	Screwdriver bit (phillips-slotted)	1
11	Screwdriver bit (phillips)	1
12	Hexagon wrench (4)	1
13	Hexagon wrench (5)	1

TIGHTENING TORQUES

Item	Thread size	Tightening torque		
		Nm	m • kg	ft • lb
Engine:				
Spark plug	M12	18	1.8	13
Engine oil drain bolt (engine)	M8	43	4.3	31
Engine oil drain bolt (oil tank)	M8	43	4.3	31
Transfer gear oil drain bolt	M8	18	1.8	13
Chassis:				
Upper bracket and inner tube	M6	10	1.0	7.2
Upper bracket and steering shaft	M22	130	13.0	94
Handlebar holder (lower) and handlebar holder (upper)	M8	23	2.3	17
Ring nut (steering shaft)	M25	3	0.3	2.2
			See NOTE	
Brake hose joint and lower bracket	M6	7	0.7	5.1
Front brake master cylinder cap	M4	2	0.2	1.4
Handlebar holder (lower)	M12	40	4.0	29
Front brake master cylinder	M6	10	1.0	7.2
Union bolt (brake hose)	M10	30	3.0	22
Engine mounting:				
Mounting bolt (cylinder head and engine stay)	M10	48	4.8	35
Mounting bolt (crankcase and engine stay)	M12	88	8.8	64
Mounting bolt (crankcase and frame)	M12	88	8.8	64
Engine stay and frame	M10	48	4.8	35
Transfer gear case stay and frame	M8	30	3.0	22
Muffler stay and frame	M8	26	2.6	19
Muffler stay and muffler	M10	30	3.0	22
Ignition coil	M6	7	0.7	5.1
Swingarm pivot shaft	M18	125	12.5	90
Relay arm and swingarm	M12	59	5.9	43
Relay arm and connecting rod	M12	59	5.9	43
Relay arm and rear shock absorber	M10	40	4.0	29
Rear shock absorber, connecting rod and frame	M12	59	5.9	43
Drive belt case (upper) and swingarm	M6	10	1.0	7.2
Drive belt case (lower) and swingarm	M6	7	0.7	5.1
Mud guard and swingarm	M6	7	0.7	5.1
Fuel petcock and fuel tank	M6	7	0.7	5.1
Fuel sender and fuel tank	M6	7	0.7	5.1
Fuel tank (rear) and frame	M6	7	0.7	5.1
Meter cover and fuel tank	M6	7	0.7	5.1
Side cover and frame	M6	7	0.7	5.1
Starter relay and battery positive lead	M6	7	0.7	5.1
Starter relay and starter motor lead	M6	7	0.7	5.1
Rear fender side mold and rear fender stay	M8	30	3.0	22
Sidestand bolt and nut	M10	48	4.8	35
Footrest bracket and frame	M10	48	4.8	35
Rear footrest and frame	M8	23	2.3	17

Item	Thread size	Tightening torque		
		Nm	m • kg	ft • lb
Rear master cylinder and rear brake bracket	M8	23	2.3	17
Rear brake reservoir tank	M6	4	0.4	2.9
Union bolt (rear brake hose)	M10	30	3.0	22
Footrest bracket and rear brake bracket	M8	16	1.6	11
Footrest bracket and shift rod bracket	M8	16	1.6	11
Front wheel axle	M18	78	7.8	56
Front wheel axle pinch bolt	M8	19	1.9	13
Rear wheel axle nut	M18	150	15.0	110
Front brake caliper	M10	40	4.0	29
Rear brake caliper	M10	40	4.0	29
Brake disc and wheel	M8	23	2.3	17
Caliper bleed screw	M8	6	0.6	4.3
Driven sprocket and rear wheel clutch hub	M12	95	9.5	68
Rear brake caliper bracket and swingarm	M10	48	4.8	35

NOTE:

1. First, tighten the ring nut approximately 52 Nm (5.2 m • kg, 37 ft • lb) by using the torque wrench, then loosen the ring nut completely.
2. Retighten the ring nut to specification.

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YAMAHA

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