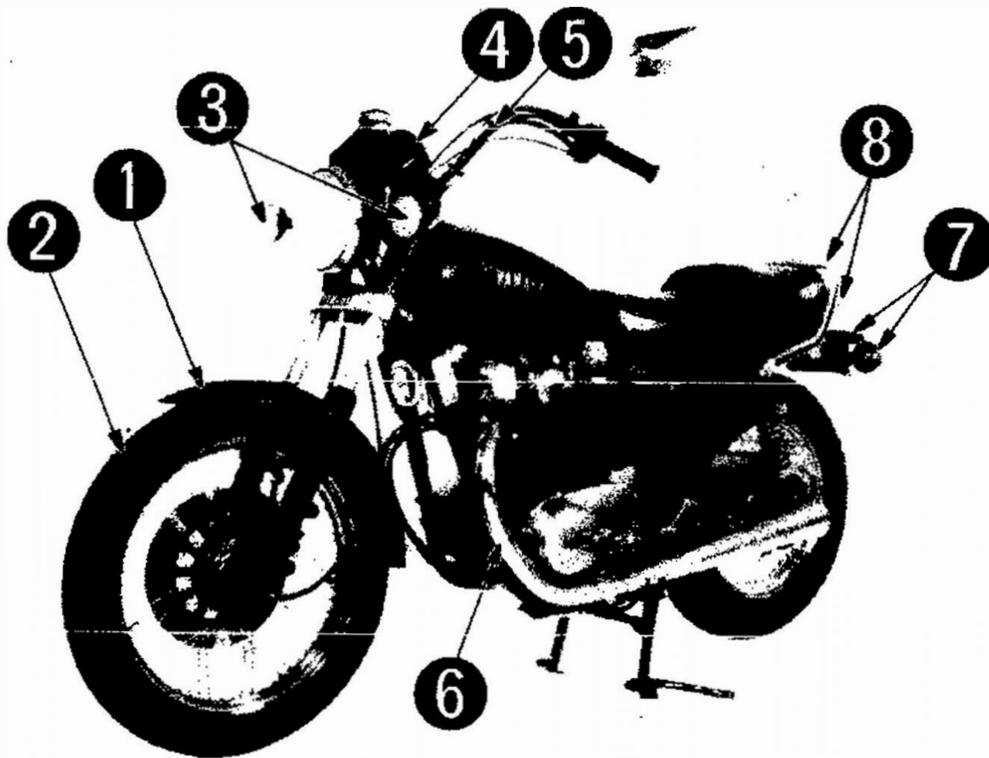




YAMAHA

XS650SJ

ASSEMBLY MANUAL



Particularly important information is distinguished in this manual by the following notation:

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

CAUTION: A CAUTION indicates special procedures that must be followed to avoid damage to the motorcycle.

WARNING: A WARNING indicates special procedures that must be followed to avoid injury to a motorcycle operator or person inspecting or repairing the motorcycle.

XS650SJ ASSEMBLY MANUAL
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1st edition, July 1981

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LIT-11666-02-90

GLOSSARY

(Symbols most commonly used)

- C: The "C" marked parts are contained in the small carton box.
- S: The "S" marked parts are contained in the styrofoam tray (upper or lower).
- V: The "V" marked parts are contained in the vinyl bag.
- *: The asterisk (*) parts are temporarily fitted on the motorcycle.

FOREWORD

This Assembly Manual contains the information required to unpack and assembly Yamaha motorcycles correctly prior to delivery to the customer. Proper motorcycle setup assembly and predelivery service demands a basic knowledge of motorcycle service procedures, familiarity with Yamaha products, and correct tools. This assembly manual should be used with the Dealer Setup and Predelivery Check List for this model.

Proper setup assembly and predelivery service is necessary for the following service:

To assure the customer of the long life and performance he expects from his new Yamaha motorcycle.

To minimize service problems during the break-in period.

To conform with federal new vehicle regulations.

NOTICE

The service specifications given in this 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 that the procedures are carried out correctly and completely. Failure to do so can result in poor performance, excessive emissions, and possible harm to the motorcycle and/or rider.

THE DEALER SETUP AND PREDELIVERY CHECK LIST has been designed to be used with this Assembly Manual. As each procedure is satisfactorily completed, the mechanic should mark the appropriate space on the sheet. After it has been signed by the assembling mechanic, the servicing mechanic, and the customer, a copy of the Check List should be given to the customer and another copy retained in the dealership files. If the Service Manager test rides the motorcycle before delivery, he should also sign the Check List.

CONCERNING CRATE DAMAGE:

Follow the instructions in the Dealer Warranty Handbook, Procedure Section.

UNPACKING

Note on transportation

Use care not to butt the motorcycle packed in the crate against a hard object or give it a heavy shock during transportation or in the service shop.

PREPARATION

To assemble the motorcycle correctly, the following service tools, supplies, and working space are required:

Supplies

Oils, greases, shop rags.

Workshop

The workshop where the motorcycle is assembled should be clean and large. The floor should be level.

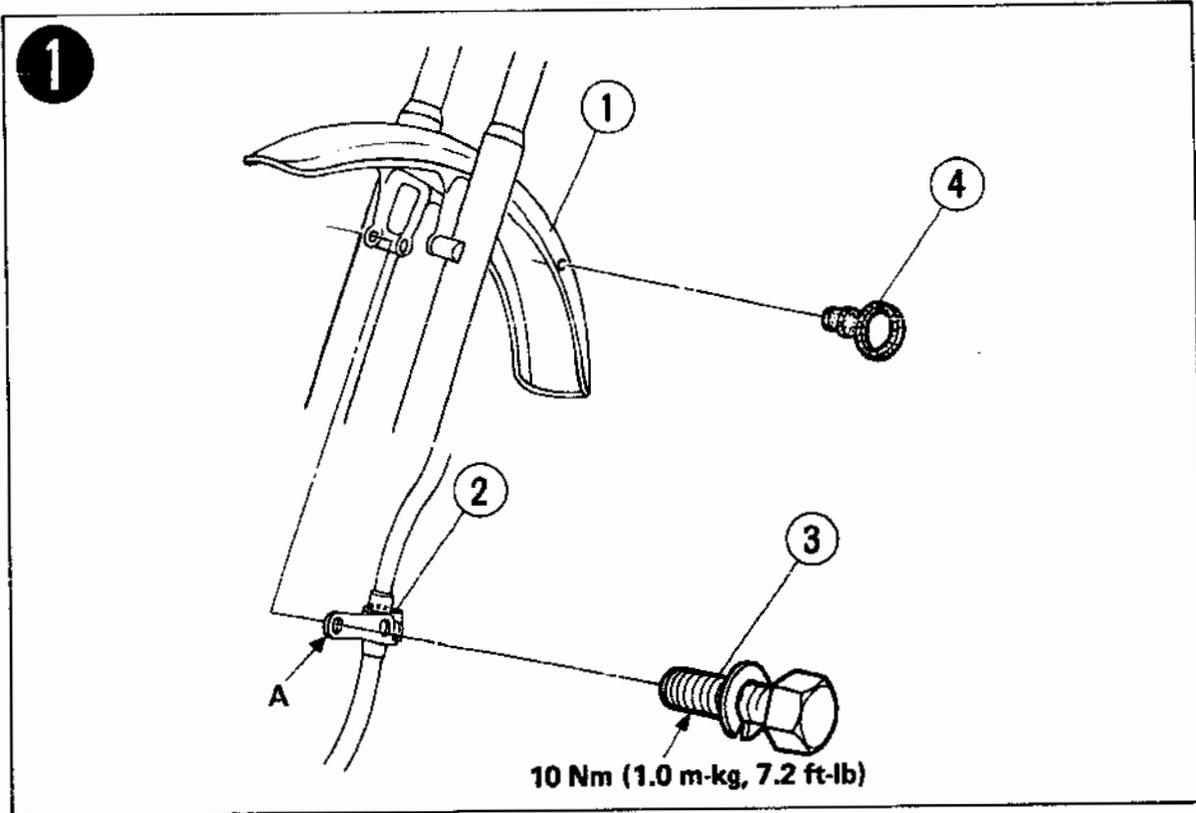
Procedure for unpacking

1. To remove the motorcycle and parts packed in the cardboard crate, cut the vinyl bands around the box using a cutter or scissors.
Next, remove the exterior carton by lifting it straight up.
2. Remove the front fender, front wheel and the rear stay from the styrofoam base.
3. Remove the nails from each corner of the crate, and remove the struts.
4. Lift up the motorcycle, and remove the rear wheel section from the styrofoam base. Then take out the motorcycle.
5. To install the front fender and front wheel, place a proper-size wooden box or a suitable stand under the engine to keep the front of the motorcycle raised off the floor. Take care so that the motorcycle does not fall over.

SETUP PROCEDURES

NOTE: _____
 Before starting the setup, see the GLOSSARY.

Front fender



Parts list

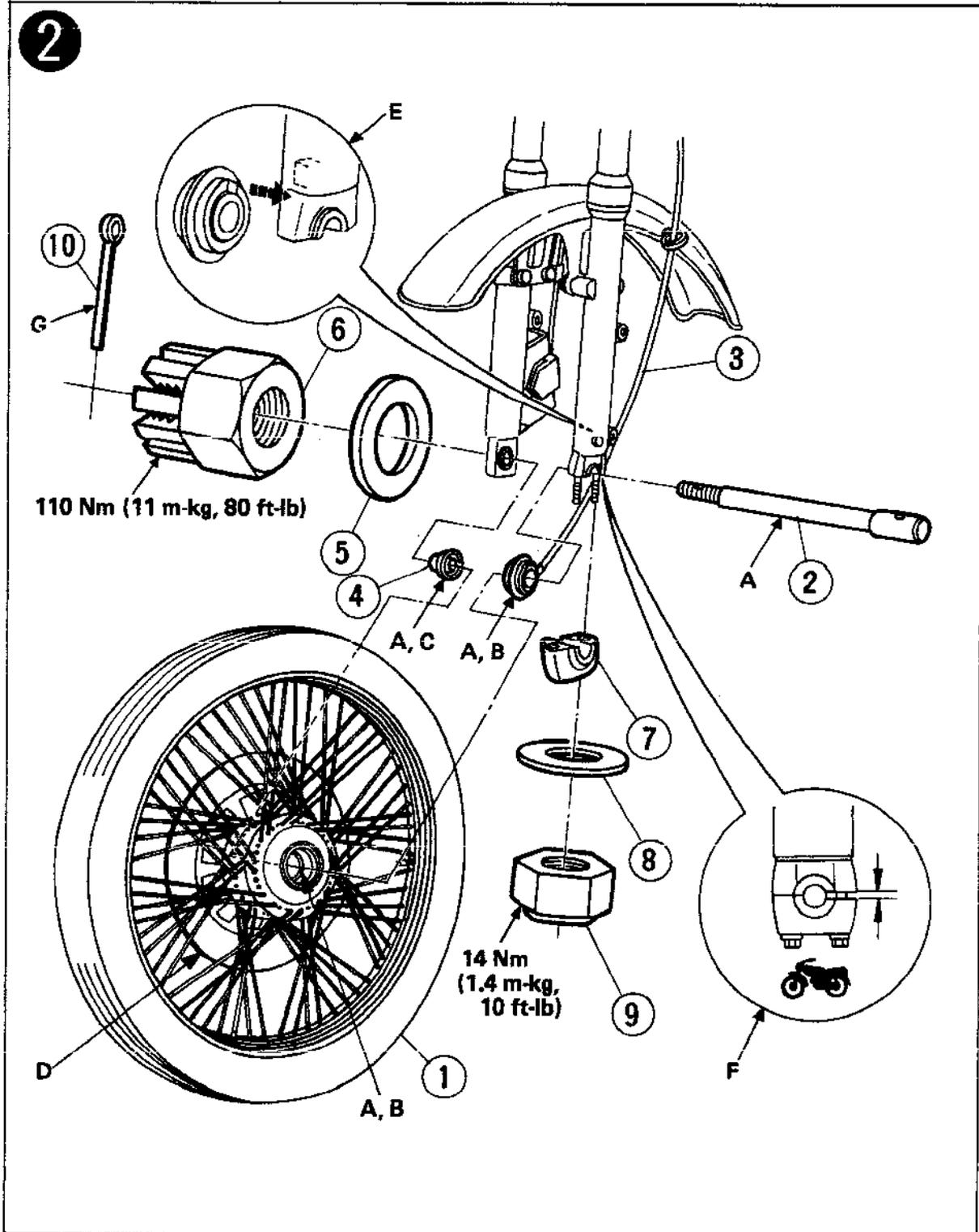
No.	Part name	Q'ty	Locating mark	Remarks
1	Front fender	1	S	
2	Hexagon bolt with spring washer	4	V	d = 8 mm (0.32 in), ℓ = 20 mm (0.8 in)
3	Brake hose holder (Right)	1	V	
4	Speedometer cable holder	1	V	Rubber

Front wheel

Parts list

No.	Part name	Q'ty	Locating mark	Remarks
1	Front wheel	1	S	
2	Front wheel axle	1	*	d = 14 mm (0.55 in)
3	Speedometer cable assembly	1	S	
4	Wheel axle collar	1	V	d = 17 mm (0.67 in)
5	Plain washer	1	*	d = 14 mm (0.55 in)

6	Castle nut	1	*	d = 14 mm (0.55 in)
7	Axle holder	1	*	
8	Plain washer	2	*	d = 8 mm (0.32 in)
9	Hexagon nut	2	*	d = 8 mm (0.32 in)
10	Cotter pin	1	V	d = 3 mm (0.12 in), ℓ = 28 mm (1.10 in)



Setup points

- A: Apply a light coat of lithium soap base grease.
- B: Make sure the two projections inside the wheel hub are meshed with the two slots in the speedometer cable housing.
- C: If the collar is dirty, clean with a rag.
- D: Clean the brake disc using trichloroethylene or another oilless solvent.
- E: Before installing the axle nut, make sure the projecting portion (torque stopper) of the speedometer cable housing is positioned correctly.

tioned correctly.

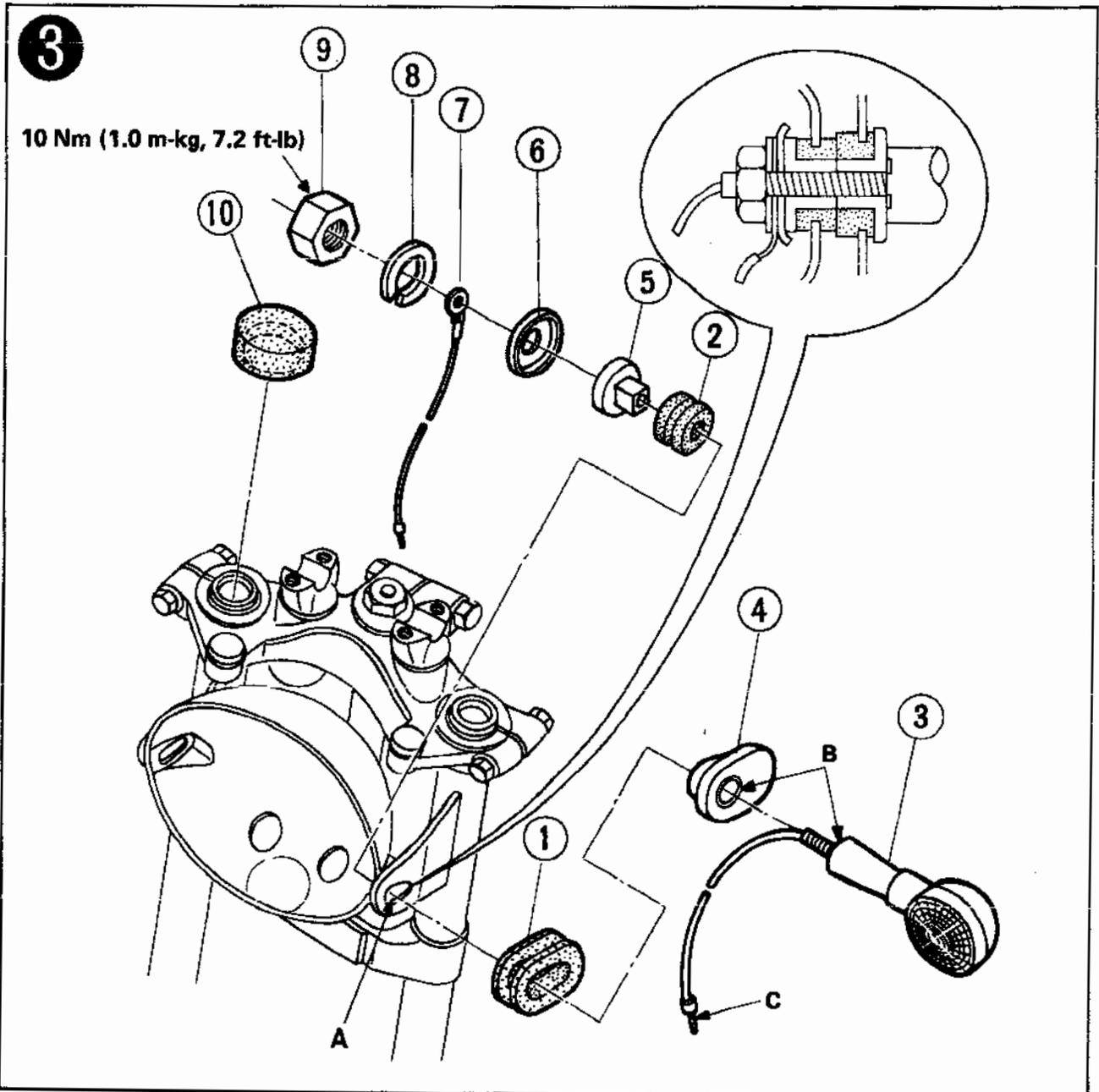
- F: Tighten the axle holder nut temporarily before tightening the axle nut.

NOTE:

First tighten the nut on the front end of the axle holder, and tighten the nut on the rear end.

- G: Insert the cotter pin into the axle nut and bend the end of the cotter pin.

Front flasher light



Parts list

No.	Part name	Q'ty	Locating mark	Remarks
1	Front flasher light damper (Outside)	2	*	Rubber
2	Front flasher light damper (Inside)	2	*	Rubber
3	Front flasher light (Left and Right)	2	S	
4	Flasher light collar (Outside)	2	*	
5	Flasher light collar (Inside)	2	*	
6	Special washer	2	*	d = 8.5 mm (0.34 in), D = 30 mm (1.2 in)
7	Negative lead	2	V	ℓ = 170 mm (6.7 in)
8	Spring washer	2	*	d = 8 mm (0.32 in)
9	Hexagon nut	2	*	d = 8 mm (0.32 in)
10	Front fork cap	2	V	Rubber

Setup points

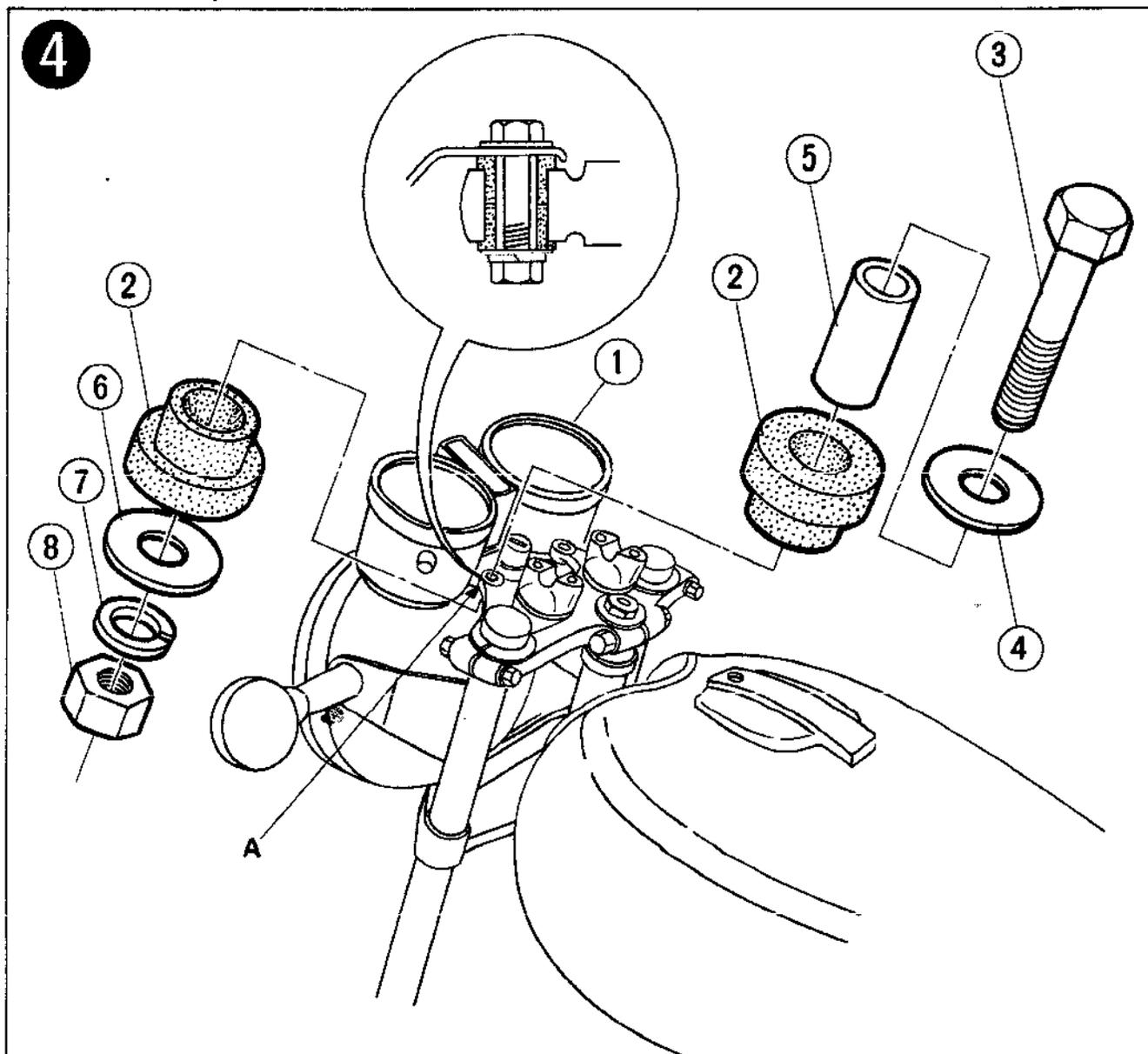
- A: The removed bolt is "temporary bolt" and therefore, it is not used for the final assembly.
- B: Install the flasher light collar (Outside) with its convex part rearward. Next, install the flasher light with the notch in its end fit the convex part of the flasher light collar.
- C: Install the flasher light leads to the wire harness.

NOTE:

The leads of the identical color must be connected to each other with the exception of the following #1 and #2 connections.

- #1: Left front flasher light lead B (Black)
→ Left wire harness lead Ch (Chocolate)
- #2: Right front flasher light lead B (Black)
→ Right wire harness lead Dg (Dark green)

Meter assembly



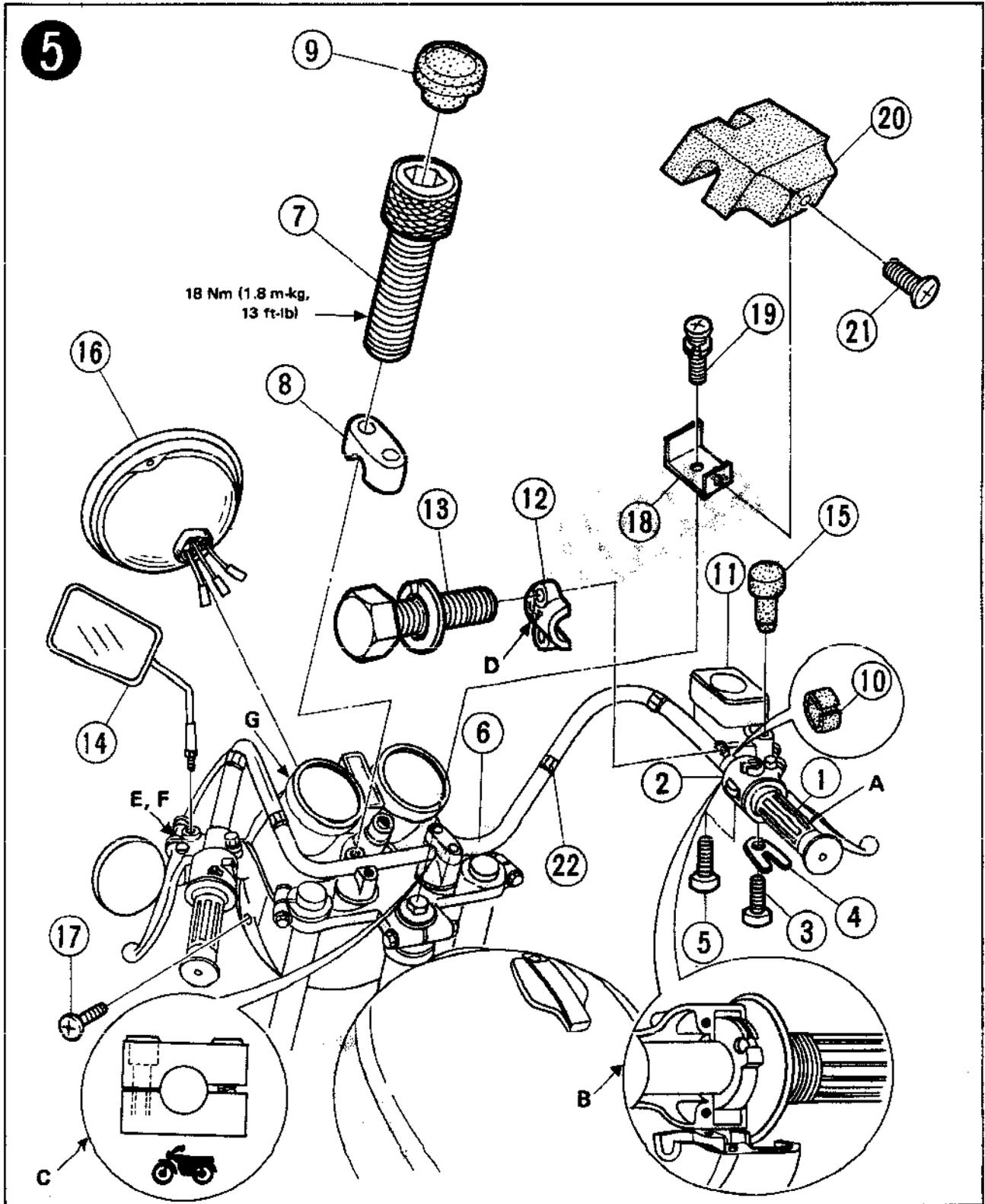
Parts list

No.	Part name	Q'ty	Locating mark	Remarks
1	Meter assembly	1	S	
2	Meter damper (Upper and Lower)	4	V	Rubber
3	Hexagon bolt	2	V	d = 6 mm (0.24 in), ℓ = 40 mm (1.6 in)
4	Plain washer	2	V	d = 6 mm (0.24 in)
5	Collar	2	V	d = 6.5 mm (0.26 in), D = 10.5 mm (0.41 in), ℓ = 26 mm (1.0 in)
6	Plain washer	2	V	d = 6 mm (0.24 in)
7	Spring washer	2	V	d = 6 mm (0.24 in)
8	Hexagon nut	2	V	d = 6 mm (0.24 in)

Setup points

A: Before securing the meter bracket, all leads should be threaded through the headlight body grommet. Take care not to kink leads by pressure.

Handlebar



Parts list

No.	Part name	Q'ty	Locating mark	Remarks
1	Handlebar grip (Right)	1	*	
2	Handlebar switch (Right)	1	*	
3	Panhead screw	1	*	d = 5 mm (0.2 in), ℓ = 40 mm (1.6 in)
4	Throttle cable holder	1	*	
5	Panhead screw	1	*	d = 5 mm (0.21 in), ℓ = 30 mm (1.2 in)
6	Handlebar	1	S	
7	Hexagon socket head bolt	4	V	d = 8 mm (0.32 in), ℓ = 25 mm (0.98 in)
8	Handlebar upper holder	2	V	
9	Bolt cap	4	V	Plastic
10	Handlebar collar	1	V	Rubber
11	Master cylinder	1	*	
12	Master cylinder bracket	1	V	
13	Hexagon bolt with spring washer	2	V	d = 6 mm (0.24 in), ℓ = 25 mm (0.98 in)
14	Rear view mirror	1	C	
15	Blind plug	1	V	Rubber
16	Headlight lens unit	1	S	
17	Panhead screw	2	V	d = 5 mm (0.2 in), ℓ = 12 mm (0.47 in)
18	Handlebar cover bracket	1	C	
19	Panhead screw with spring washer	1	V	d = 6 mm (0.24 in), ℓ = 16 mm (0.63 in)
20	Handlebar cover	1	C	Plastic
21	Panhead screw	1	V	d = 5 mm (0.2 in), ℓ = 10 mm (0.39 in)
22	Handlebar band	4	V	Plastic

Setup points

- A: Slip the throttle grip over the right handlebar to the limit and slide it back about 2 mm (0.08 in).
- B: Thread the throttle cable through the hole in lower handlebar switch (Right). Hook the throttle cable end onto its seat in the throttle housing. Then, grease the throttle cable and housing.

NOTE:

Check the throttle grip for smooth action. REFER TO "ADJUSTMENTS AND PRE-DELIVERY SERVICE."

- C: Install the handlebar to the handle crown.

CAUTION:

First tighten the bolts on the front side of the handlebar holder, and then tighten the bolts on the rear side.

- D: The front brake master cylinder bracket should be installed with the "UP" mark on it on top.

- E: Lubricate the pivoting parts of each lever.

<p>Recommended lubricants: SAE 10W/30 motor oil</p>

- F: Check the brake lever and clutch lever for smooth action.

NOTE: _____
REFER TO "ADJUSTMENTS AND PRE-DELIVERY SERVICE."

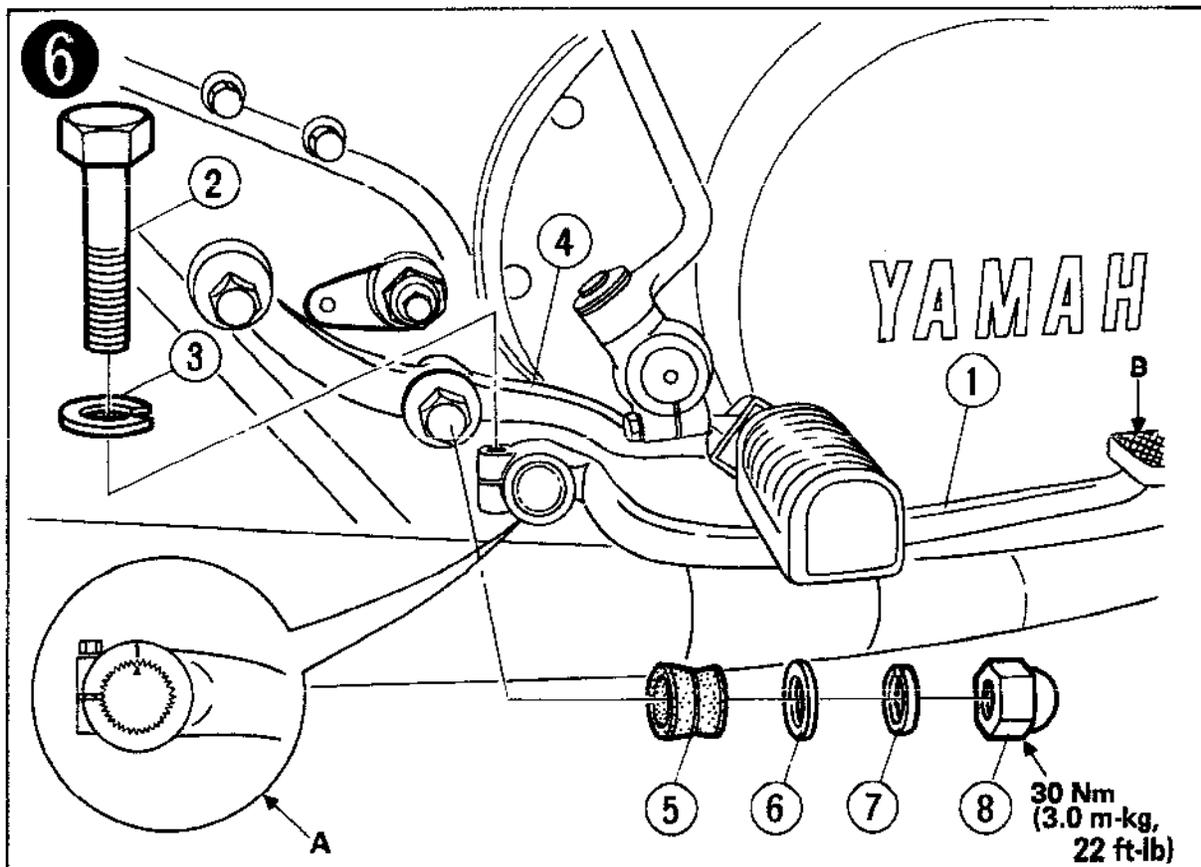
NOTE: _____
 When installing the headlight lens unit, care should be used so that leads are not pinched.

G: Connect all leads inside the headlight body. The leads of identical colors should be connected.

Brake pedal and footrest (Right)

Parts list

No.	Part name	Q'ty	Locating mark	Remarks
1	Brake pedal	1	S	
2	Hexagon bolt	1	V	d = 6 mm (0.24 in), ℓ = 28 mm (1.1 in)
3	Spring washer	1	V	d = 6 mm (0.24 in)
4	Footrest (Right)	1	S	
5	Footrest damper	2	V	Rubber
6	Plain washer	2	V	d = 10 mm (0.4 in)
7	Spring washer	2	V	d = 10 mm (0.4 in)
8	Cap nut	2	V	d = 10 mm (0.4 in)

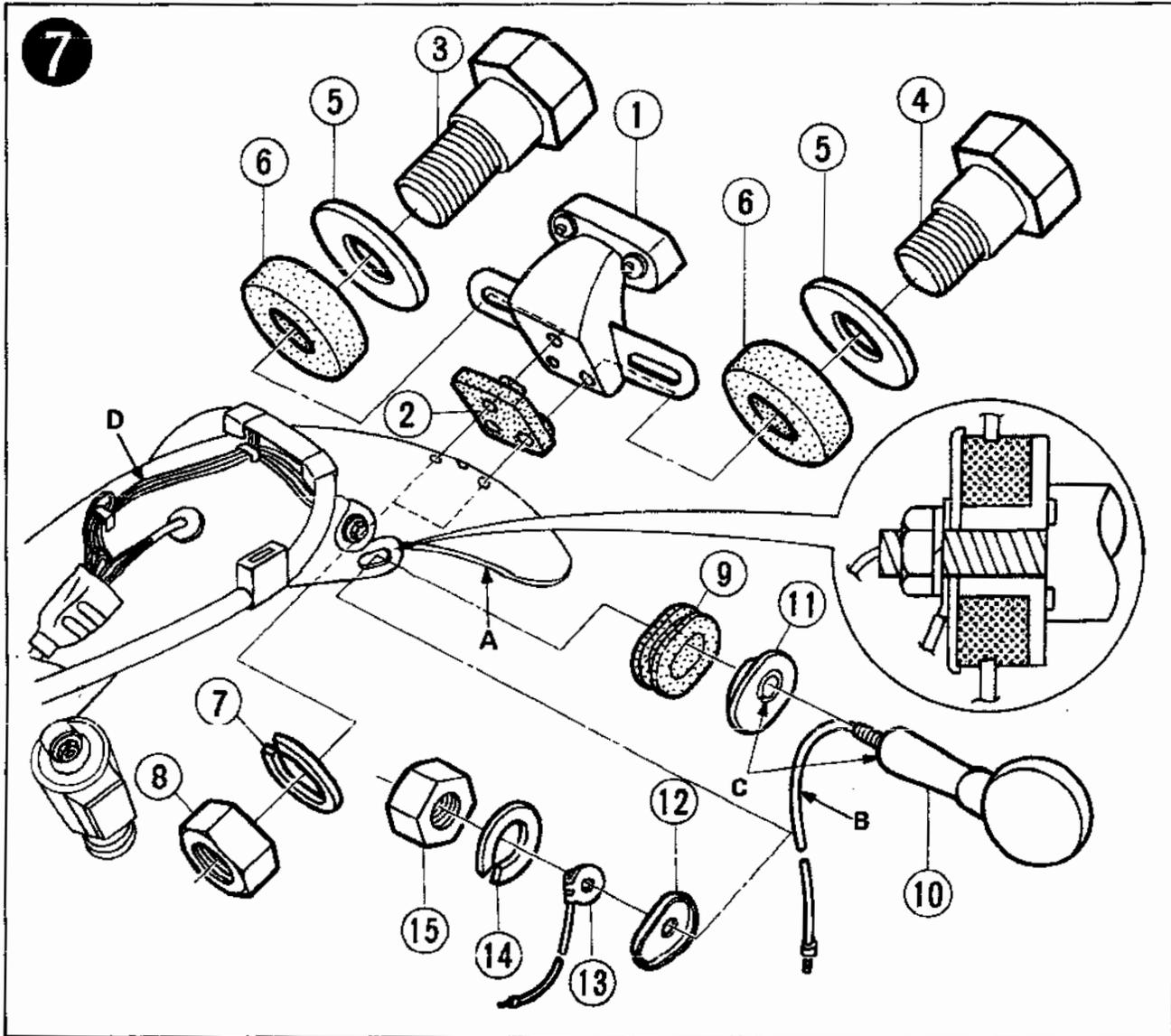


Setup points

- A: Align the punch marks on the brake shaft and brake pedal, and secure the brake pedal.
- B: Check the brake pedal for smooth action.

NOTE: _____
REFER TO "ADJUSTMENTS AND PRE-DELIVERY SERVICE."

License light and rear flasher light



Parts list

No.	Part name	Q'ty	Locating mark	Remarks
1	License light	1	S	
2	License light damper	1	V	Rubber
3	Hexagon bolt	1	V	d = 6 mm (0.24 in), ℓ = 36.5 mm (1.44 in)
4	Hexagon bolt	2	V	d = 6 mm (0.24 in), ℓ = 32.5 mm (1.28 in)
5	Plain washer	3	V	d = 8 mm (0.32 in)

6	License light grommet	3	V	Rubber
7	Spring washer	3	V	d = 6 mm (0.24 in)
8	Hexagon nut	3	V	d = 6 mm (0.24 in)
9	Rear flasher light damper	2	V	Rubber
10	Rear flasher light (Left and Right)	2	S	
11	Rear flasher light collar (Outside)	2	V	
12	Rear flasher light collar (Inside)	2	V	
13	Negative lead	2	V	ℓ = 450 mm (17.7 in)
14	Spring washer	2	V	d = 8 mm (0.32 in)
15	Hexagon nut	2	V	d = 8 mm (0.32 in)

Setup points

A: Pass the license light leads through wire guide on inside of rear fender, and then connect the license light leads to the wire harness with the identical color.

CAUTION:

Take care the license light leads should not be damaged by the rough inner surface of the rear fender.

B: Install the lead with the chocolate color marker on the left side. Next, install the other flasher light with a dark green marker on the right side.

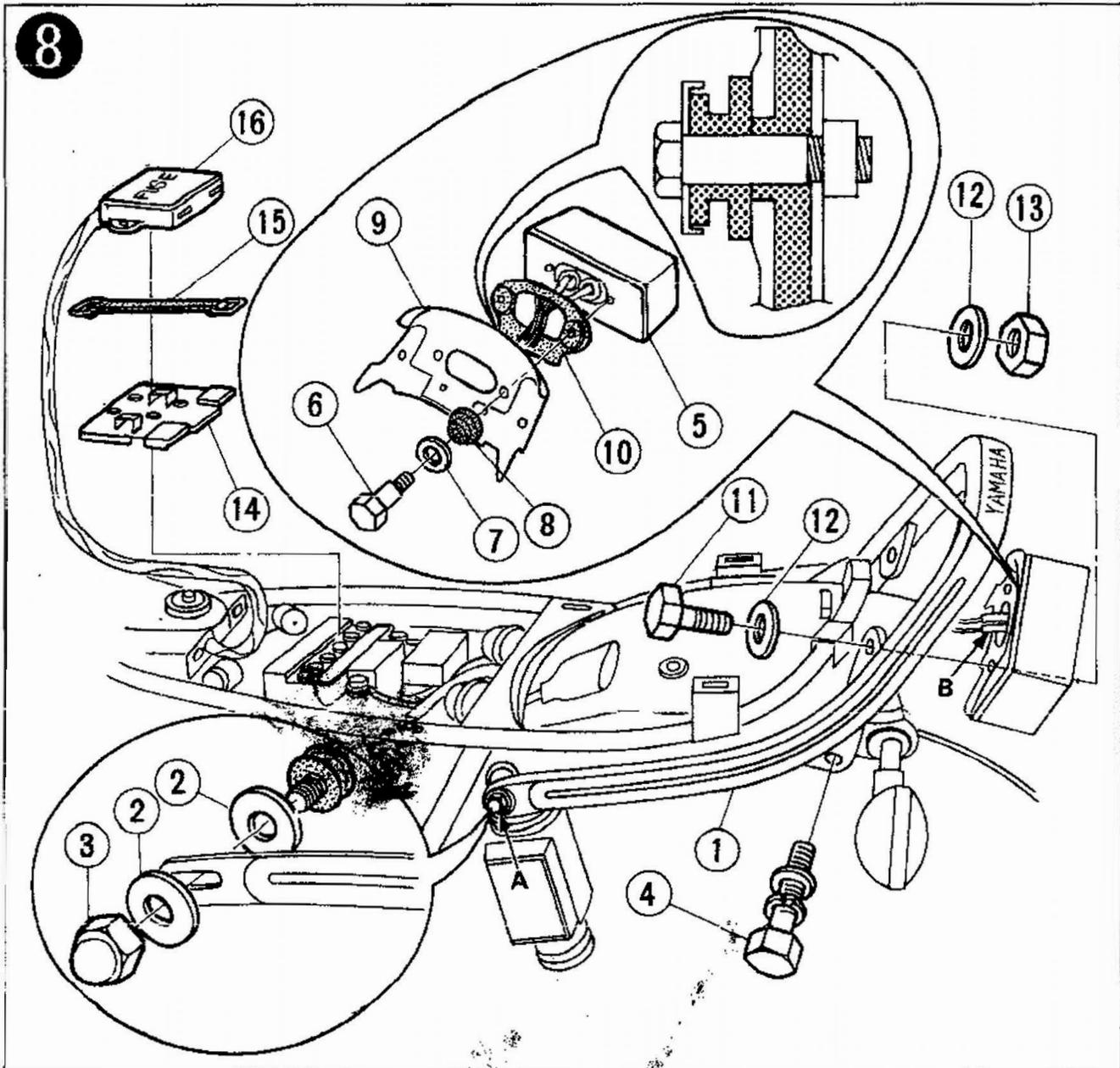
C: Install the flasher light collar (Outside) with its convex part forward. Next, install the flasher light with the notch in its end fit the convex part of the flasher collar.

D: Connect the flasher light lead and negative lead to the wire harness and then clamp.

Rear stay and taillight

Parts list

No.	Part name	Q'ty	Locating mark	Remarks
1	Rear stay	1	S	
2	Special washer	4	*	
3	Crown nut	2	*	
4	Hexagon bolt with spring washer and plain washer	2	V	d = 10 mm (0.39 in), ℓ = 25 mm (0.98 in)
5	Taillight assembly	1	S	
6	Shoulder bolt	2	V	d = 6 mm (0.24 in), ℓ = 30 mm (1.2 in)
7	Special washer	2	V	d = 8 mm (0.32 in)
8	Taillight base grommet	2	V	Rubber
9	Taillight base	1	S	
10	Taillight damper	1	V	Rubber
11	Hexagon bolt	2	V	d = 8 mm (0.32 in), ℓ = 25 mm (0.98 in)
12	Plain washer	4	V	d = 8 mm (0.32 in)
13	Hexagon nut	2	V	d = 8 mm (0.32 in)
14	Battery cover	1	C	
15	Battery band	1	V	
16	Fuse box	1	*	



Setup points

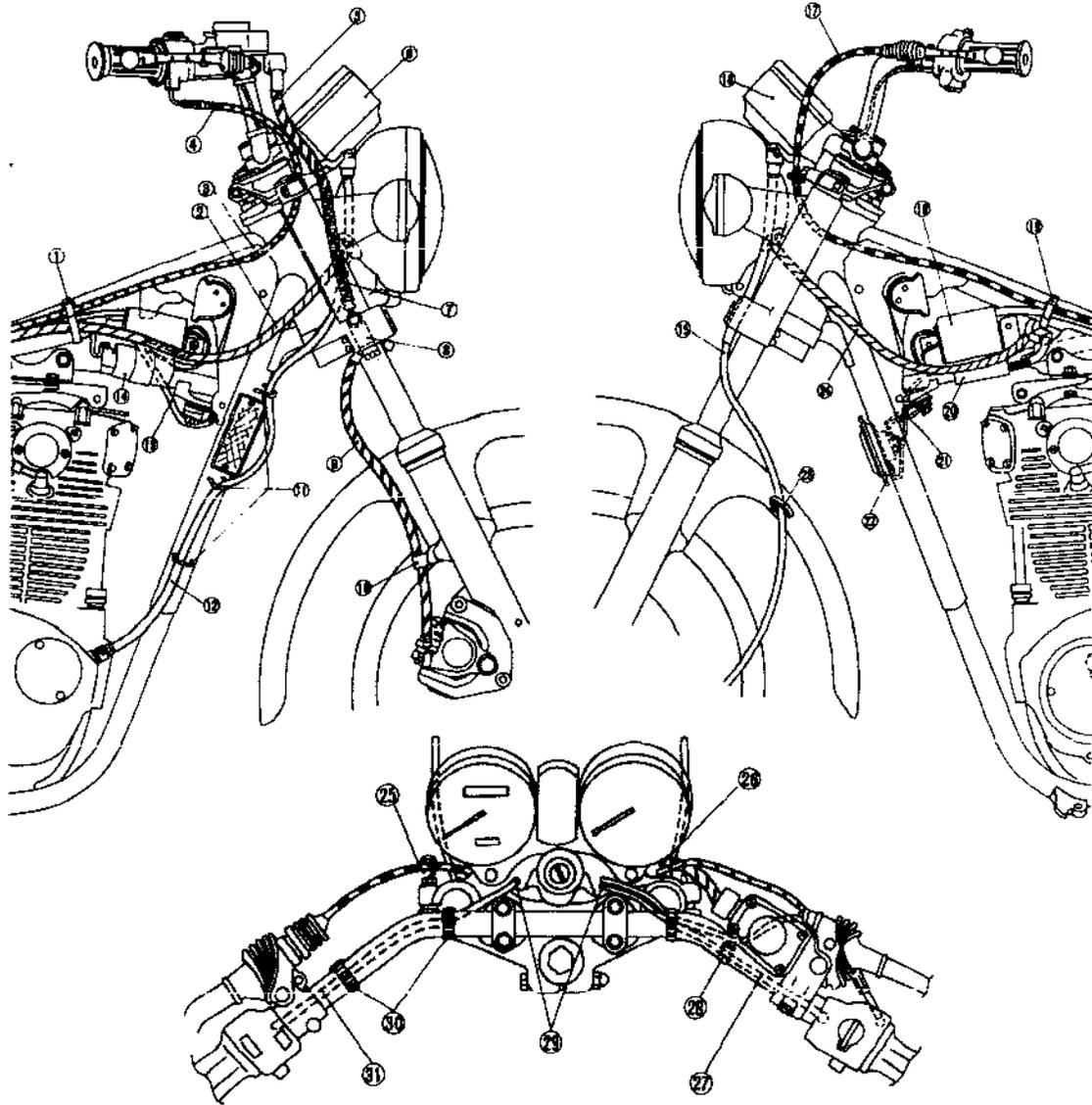
A: The two removed hexagon nuts (dummy spacer) are "temporary", and therefore, they are not used for the final assembly.

B: Connect the taillight lead to the wire harness.

NOTE:

When installing the taillight, care should be used to that leads are not pinched.

CABLE ROUTING



- | | |
|--|--|
| 1. Secure flasher relay lead, ground lead, throttle cable, high tension cord, wire harness and ignition coil lead with band on right side. | 17. Clutch cable |
| 2. Pass wire harness (right) under fuel tank fitting bracket (right). | 18. Ignition coil |
| 3. Pass throttle cable upper fuel tank fitting bracket (right) | 19. Secure clutch cable and high tension cord with band on left side. |
| 4. Throttle cable | 20. Flasher cancelling unit |
| 5. Brake hose | 21. Clamp horn lead |
| 6. Tachometer | 22. Horn |
| 7. Pass brake hose between light stay and tachometer cable. | 23. Through cable holder. |
| 8. Joint | 24. Pass wire harness (left) under fuel tank fitting bracket (left). |
| 9. Brake hose | 25. Pass first through cable holder and then between light stay and meter bracket. |
| 10. Clamp | 26. Pass between light stay and meter bracket. |
| 11. Pass tachometer cable through three cable holders. | 27. Handlebar switch (right) lead |
| 12. Tachometer cable | 28. Band |
| 13. Horn lead | 29. Pass between main switch and meter bracket. |
| 14. Flasher relay | 30. Band |
| 15. Speedometer cable | 31. Handlebar switch (left) lead |
| 16. Speedometer | |

Recommended oil:

YAMALUBE 4-cycle oil or
SAE 20W/40 type "SE" motor oil



1. Level window 2. Maximum level 3. Minimum level



1. Dip stick 2. Maximum level 3. Minimum level

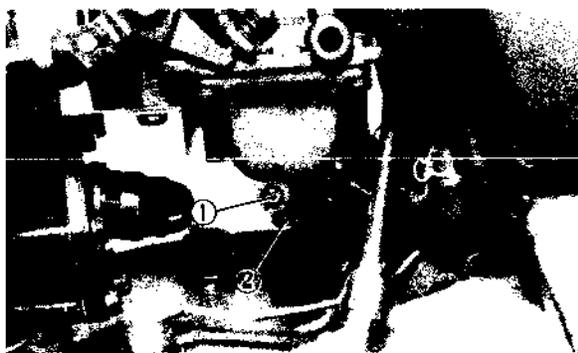
Fuel draining

1. Put a rag under the carburetor so fuel does not contact the crankcase.
2. Loosen the drain screws and drain the standing fuel.

WARNING:

FUEL IS HIGHLY FLAMMABLE:

- Always turn off the engine when draining.
- Take care not to spill any fuel on the engine or exhaust pipes/mufflers when draining
- Never drain fuel while smoking or in the vicinity of an open flame.



1. Drain screw 2. Drain nozzle

3. Retighten the drain screw securely.

CHASSIS SECTION

Inspecting the brake fluid level

Insufficient brake fluid may allow air to enter the brake system, possibly causing the brakes to become ineffective.

Before riding, check the brake fluid level and replenish when necessary, and observe these precautions:

1. Use only the designated quality brake fluid; otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.

Recommended brake fluid: DOT #3

2. Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.



1. Lower level

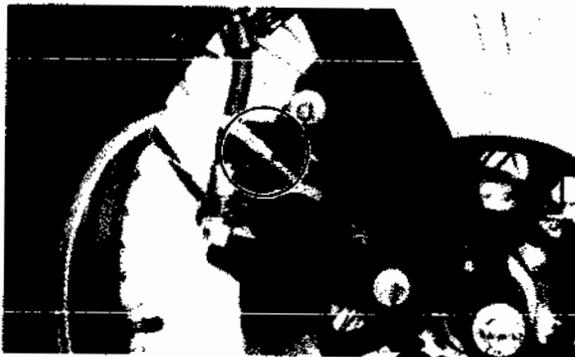
3. Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point and may result in vapor lock.

Air bleeding

CAUTION:

If the brake system is disassembled or if any brake hose has been loosened or removed, the brake system must be bled to remove air from the brake fluid. If the brake fluid level is very low or brake operation is incorrect, bleed the brake system. Failure to bleed the brake system properly can result in a dangerous loss of braking performance.

1. Add proper brake fluid to the reservoir. Install the diaphragm, being careful not to spill or overflow the reservoir.
2. Connect the clear plastic tube of 4.5 mm (3/16 in) inside diameter tightly to the caliper bleed screw. Put the other end of the tube into a container.



3. Slowly apply the brake lever several times. Pull in lever. Hold lever in "on" position. Loosen bleed screw. Allow the lever to travel slowly toward its limit. Just before the limit is reached, tighten the bleed screw.
4. Continue step 3 until all air bubbles are removed from system.

NOTE: _____
If bleeding is difficult, it may be necessary to let the brake system stabilize for a few hours. Repeat bleeding procedure.

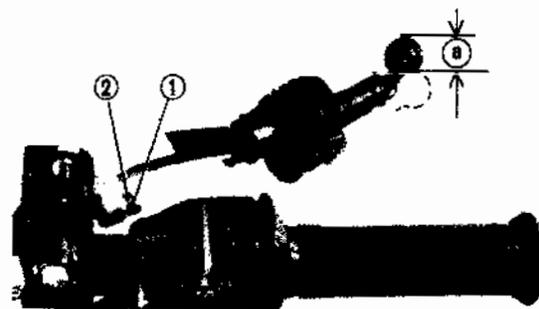
5. Discard discharged brake fluid.

Front brake adjustment

The front brake lever should be so adjusted that it has a free play of 5 ~ 8 mm (0.2~0.3 in) at the lever end.

1. Loosen the lock nut on the brake lever.
2. Turn the adjuster so that the brake lever movement at the lever end is 5 ~ 8 mm (0.2 ~ 0.3 in) before the adjuster contacts the master cylinder piston.
3. After adjusting, tighten the lock nut.

NOTE: _____
Check for correct play and make sure it is working properly.

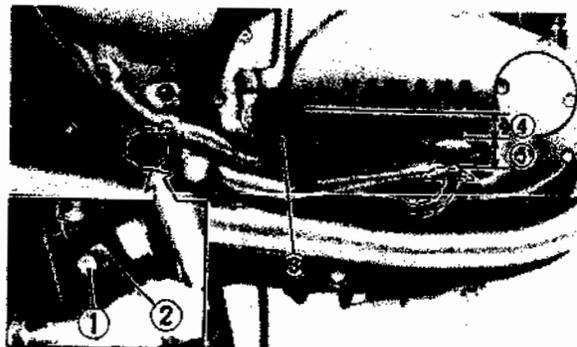


1. Adjuster a. 5 ~ 8 mm (0.2 ~ 0.3 in)
2. Lock nut

Rear brake adjustment

CAUTION: _____

For the brake pedal position adjustment, be sure to proceed as follows.



1. Adjuster bolt (for pedal height)
2. Lock nut
3. Footrest
4. Pedal height 40 mm (1.6 in)
5. Free play 20 ~ 30 mm (0.8 ~ 1.2 in)

1. Pedal height

- a. Loosen the adjuster lock nut (for pedal height).
- b. By turning the adjuster bolt (clockwise or counterclockwise, adjust the brake pedal position so that its top end is approx. 10 mm (0.4 in) below the footrest top end.
- c. Secure the adjuster lock nut.

WARNING: _____

After adjusting the pedal height, the brake pedal free play should be adjusted.

2. Free play

The rear brake should be adjusted to suit rider preference within a 20 ~ 30 mm

(0.8 ~ 1.2 in) free play at the brake pedal end. To adjust, turn the adjuster on the brake rod clockwise to reduce play; turn the adjuster counterclockwise to increase play.

NOTE:

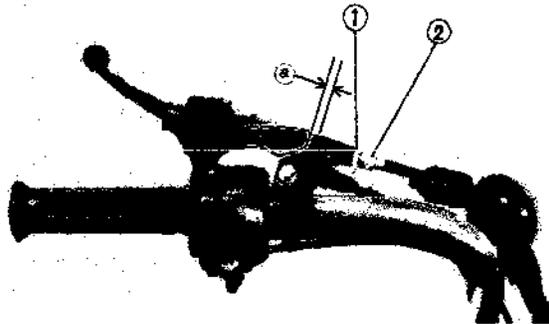
Check to see whether or not the brake light operates correctly after adjusting.

Clutch adjustment

Loosen the handlebar lever adjuster lock nut. Next, turn the length adjuster either in or out until proper lever free play is achieved.

Clutch lever free play:

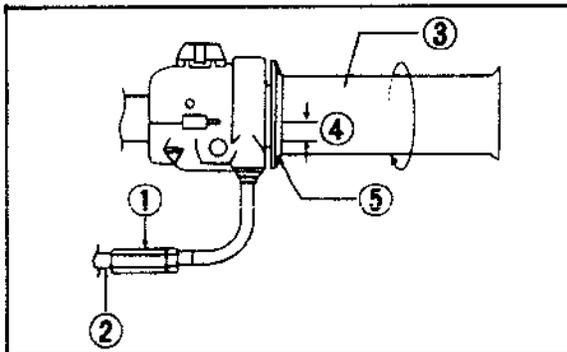
2 ~ 3 mm (0.08 ~ 0.12 in)



1. Lock nut a. 2 ~ 3 mm (0.08 ~ 0.12 in)
2. Adjuster

Throttle cable adjustment

1. Check play in turning direction of throttle grip. The play must be in the range of 5 ~ 10 mm (0.2 ~ 0.4 in) at grip flange.
2. If the play exceeds 10 mm (0.4 in) adjust with adjusting nut on throttle cable.



1. Adjusting nut 4. Turning play
2. Throttle cable 5 ~ 10 mm (0.2 ~ 0.4 in)
3. Throttle grip 5. Grip flange

Fuel cock cleaning

1. Turn the cock lever to the "RES" position.
2. Remove the drain bolt and clean it with solvent.

If gasket is damaged, replace.



1. Drain bolt

Front fork adjustment

The front fork spring tension can be adjusted to meet the load (ex: optional accessories etc.) conditions. To adjust spring tension, remove the front fork rubber cap and choose the most suitable position (three positions) by depressing and turning the spring tension adjuster with a large screwdriver.

WARNING:

Always adjust the fork preload adjuster to the same position on each side. Uneven adjustment can cause poor handling and loss of stability.



A. Shifter B. Softer

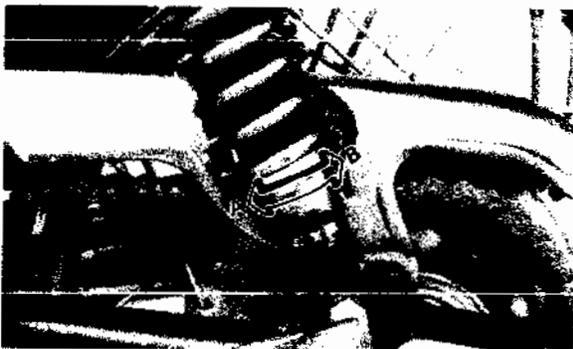
Rear shock absorbers adjustment

The spring preload of the rear shock absorbers can be adjusted to suit rider preference and riding conditions. To adjust, insert a screwdriver or rod into the hole in the spring holder. If the spring seat is raised, the spring becomes

stiffer and if lowered the spring becomes softer.

WARNING:

Always adjust the shock absorbers on each side to the same position. Uneven adjustment can cause poor handling and loss of stability.



A. Stiffer B. Softer

Drive chain tension check

NOTE:

Before checking and/or adjusting, rotate rear wheel through several revolutions and check tension several times to find the tightest point on the chain. Check and/or adjust chain tension with rear wheel in the "tight chain" position.

Inspect the drive chain with the center stand put up. Check the tension at the position shown in the illustration. The normal vertical deflection is approximately 20 ~ 30 mm (0.8 ~ 1.2 in). If the deflection exceeds 30 mm (1.2 in) adjust the chain tension.



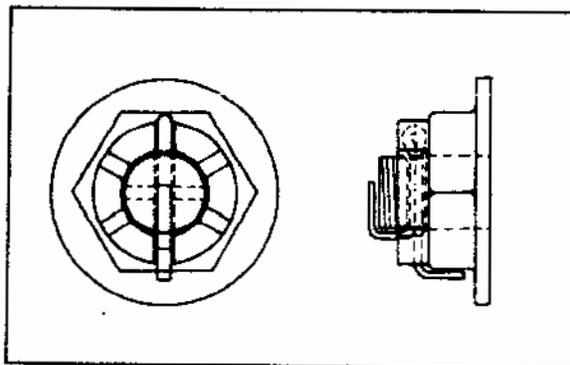
a. 20 ~ 30 mm
(0.8 ~ 1.2 in)

Drive chain tension adjustment

1. Loosen the rear brake adjuster.
2. Remove the cotter pin of the rear wheel axle nut with pliers.
3. Loosen the rear wheel axle nut.
4. Loosen the lock nuts on each side. To tighten chain, turn chain puller adjuster bolts clockwise. To loosen chain, turn adjuster bolts counterclockwise and push wheel forward. Turn each bolt exactly the same amount to maintain correct axle alignment (There are marks on each side of rear arm and on each chain puller; use them to check for proper axle alignment).
5. After adjusting, be sure to tighten the lock nuts and the rear wheel axle nut.
6. Insert a new cotter pin into the rear wheel axle nut and bend the end of the cotter pin as shown in the illustration (if the nut notch and the cotter pin hole do not match tighten the nut slightly to align them.)

WARNING:

Always use a new cotter pin on the axle nut.



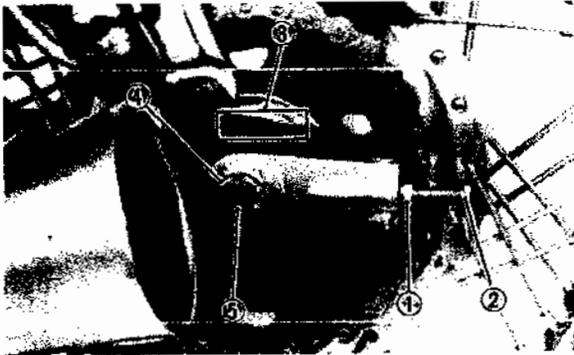
7. In the final step, adjust the play in the brake pedal.

NOTE:

Check to see whether or not the brake light operates correctly after adjusting.

CAUTION:

Excessive chain tension will overload the engine and other vital parts of the motorcycle; keep the tension within the specified limits.



1. Lock nut
2. Adjuster
3. Marks for align
4. Rear wheel axle nut
5. Cotter pin

ELECTRICAL SECTION

Headlight beam adjustment

1. Horizontal adjustment

To adjust the beam to the right, turn the adjusting screw clockwise.

To adjust the beam to the left, turn the screw counterclockwise.

2. Vertical adjustment

Loosen the adjusting screw under the headlight body. To adjust, loosen the screw and tilt the headlight body up or down by pushing it with your hands.

Tighten the screw securely after the adjustment is completed.



a. Horizontal adjusting screw b. Vertical adjusting screw

Battery

A. Charging

1. Remove the battery from the battery box.

CAUTION:

Never try to add battery electrolyte (battery acid) to a battery that is installed on a motorcycle. Even a skilled mechanic will spill enough acid to damage metal parts. Always remove the battery before filling with electrolyte and during charging. Always completely clean the exterior of the battery before re-installing.

2. The battery must be charged properly before using for the first time. This initial charge will prolong the life of the battery. SEE TECHNICAL BULLETIN M7075 FOR CHARGING DETAILS.
3. Electrolyte specific gravity.

Specific gravity at 20°C (68°F): 1.28

4. Filling the battery with diluted sulfuric acid (electrolyte).
 - a. Remove all filler caps from the battery, and remove the breather pipe cap at the same time.
 - b. Cool the electrolyte down to below 30°C (86°F).
 - c. Pour electrolyte into each cell little by little up to the upper level line, and leave it for a while. When the battery fluid permeates the plates and separators, the fluid level begins to lower. Add electrolyte again.
 - d. Charge the battery as required and measure the specific gravity of the fluid. Use a battery hydrometer of the single float type.
 - e. Install the filler caps, and thoroughly. Wipe off the fluid around the filler caps. Wipe off the battery completely before installation.

WARNING:

Battery electrolyte is poisonous and dangerous, causing severe burns, etc. 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 REACH OF CHILDREN.

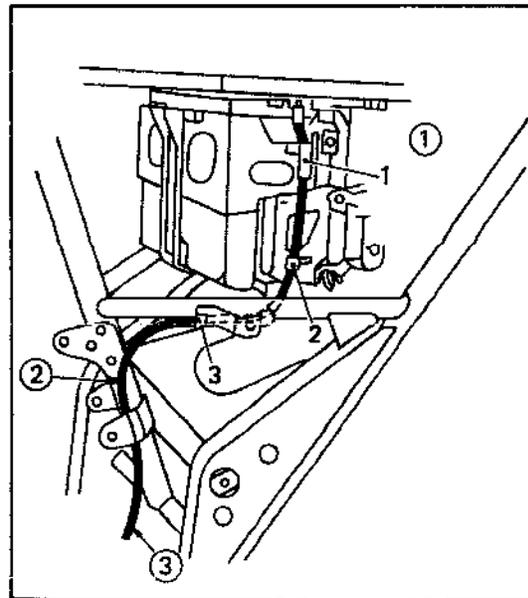
B. Battery installation

1. Make sure the main switch is turned off, and install the battery in the battery box.
2. Connect the positive lead first, and then connect then negative lead.

CAUTION:

Make sure battery leads are connected properly. Reversing leads can seriously damage the electrical system.

3. Install the battery cover using battery band, and then install the fuse box.
4. The breather pipe should be connected and routed as shown.



1. Pass through clamp 1, 2 and 3.
2. Pass through space between engine bracket and engine, then before cross pipe.
3. Pass along left side.

APPENDICES

SERVICE DATA

Idling engine speed	1,200 r/min					
Spark plug: Type Gap	BP7ES (N.G.K.) 0.7 ~ 0.8 mm (0.028 ~ 0.031 in)					
Engine oil capacity: Total amount Periodic oil change	2.5 L (2.64 US qt, 2.20 Imp qt) 2.0 L (2.11 US qt, 1.76 Imp qt)					
Fuel tank: Recommended fuel Fuel tank capacity	Regular gasoline 11.5 L (3.04 US gal, 2.53 Imp gal)					
Tire pressure (Cold tire pressure)	Front			Rear		
	kPa	kg/cm ²	psi	kPa	kg/cm ²	psi
Up to 90 kg (198 lb) load*	160	1.6	22	200	2.0	28
90 kg (198 lb) load ~ 206 kg (453 lb) load* (Maximum load)	200	2.0	28	230	2.3	32
High speed riding	200	2.0	28	230	2.3	32

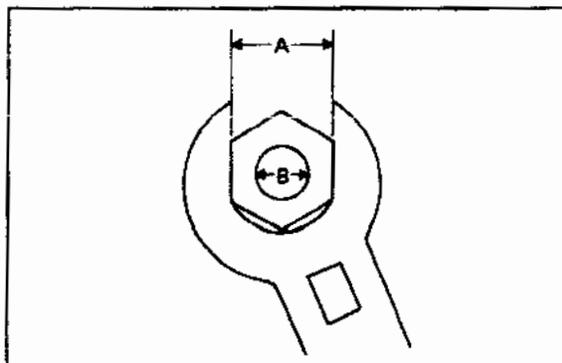
*Total weight of accessories, etc. excepting motorcycle.

TORQUE SPECIFICATIONS

The list below covers those stud/bolt sizes with standard I.S.O. pitch threads. Torque specifications for components with thread pitches other than standard are given within the applicable chapter. Torque specifications call for dry, clean threads. Components such as the cylinder or cylinder head should be at

room temperature prior to torquing. A cylinder head or any other item with several fasteners should be torqued down in a cross-wise pattern in successive stages until torque specification is reached. The method is similar to installing an automobile wheel and will avoid warping the component.

A	B	General Torque Specifications		
		Nm	m-kg	ft-lb
10 mm	6 mm	6	0.6	4.5
12 mm	8 mm	10	1.0	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94



A. Distance across flats
B. Outside thread diameter

TORQUE SPECIFICATION CHART

Part to be tightened	Thread dia. and part name	Tightening torque		
		Nm	m-kg	ft-lb
Engine:				
Spark plug	14 mm	14	2.0	20
Drain plug	30 mm bolt	42	4.2	30
Oil filter	6 mm bolt	9	0.9	6.5
Change pedal	6 mm bolt	10	1.0	7.2
Chassis:				
Front wheel axle	14 mm nut	110	11	80
Front fork and axle holder	8 mm nut	14	1.4	10
Handle crown and inner tube	8 mm nut	10	1.0	7.2
Handle crown and steering shaft	8 mm nut	10	1.0	7.2
Handle crown and steering shaft	14 mm bolt	54	5.4	39
Handle crown and handelbar holder	8 mm bolt	18	1.8	13
Under bracket and inner tube	8 mm nut	20	2.0	14
Engine mounting Upper	8 mm nut	18	1.8	13
Engine mounting Upper	10 mm nut	30	3.0	22
Engine mounting Front	10 mm nut	46	4.6	33
Engine mounting Rear	10 mm nut	41	4.1	30
Engine mounting Rear-Lower	10 mm nut	46	4.6	33
Engine mounting Lower	10 mm nut	90	9.0	65
Front flasher and headlight	8 mm nut	10	1.0	7.2
Master cylinder and brake hose	10 mm union bolt	26	2.6	19
Brake disc and hub	8 mm bolt	20	2.0	14
Caliper and support bracket	8 mm bolt	18	1.8	13
Caliper and pad	5 mm bolt	3	0.3	2.2
Caliper and bleed screw	8 mm bolt	6	0.6	4.3
Front caliper and front fork	10 mm bolt	35	3.5	25
Master cylinder and cylinder bracket	6 mm bolt	6	0.6	4.3
Pivot shaft	14 mm nut	65	6.5	47
Rear wheel axle	16 mm nut	150	15	110
Tension bar and brake caliper (plate)	8 mm nut	18	1.8	13
Tension bar and rear arm	8 mm nut	32	3.2	23
Rear shock absorber Upper	10 mm bolt	30	3.0	22
Rear shock absorber Lower	10 mm bolt	39	3.9	28
Rear arm and rear arm end	8 mm bolt	10	1.0	7.2
Front fender	8 mm bolt	10	1.0	7.2
Neutral switch	12 mm	13	1.3	9.4

OWNER'S TOOL KIT

No.	Part Name	Q'ty
1	Owner's tool bag	1
2	Spanner (8-10)	1
3	Spanner (10-12)	1
4	Spanner (14-17)	1
5	Screwdriver grip	1
6	Screwdriver bit (Phillips-head)	1
7	Special spanner (22)	1
8	Screwdriver bit (Phillips-head and Slotted-head)	1
9	Hexagon wrench (6)	1
10	Hexagon wrench (8)	1
11	Pliers	1
12	Spark plug wrench (21)	1
13	Screwdriver grip cap	1
14	Spanner handle	1
15	Spark plug wrench handle	1
16	Special spanner (27)	1
17	Point spanner (6-8)	1



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