XS360-2D SUPPLEMENT 8

XS400D SUPPLEMENT 9

XS400E SUPPLEMENT 10

XS400-2E SUPPLEMENT 11

XS400F/2F SUPPLEMENT 12

XS400G/400SG SUPPLEMENT 13

# XS360-2D

# SUPPLEMENT

# FOREWORD

This Supplementary Service Manual for XS360-2D has been published to supplement the Service Manual for the XS360C.
For complete information on service procedures, it is necessary to use this Supplementary Service Manual together with the Service Manual for the XS360C.

The following are the main differences between XS360-2D and XS360C.

| | XS360C | XS360-2D |
|---|---|---|
| Front brake type | Disc brake | Drum brake |
| Main stand | Fitted | Not fitted |
| Rear fastener | Fitted | Not fitted |
| Starter motor | Fitted | Not fitted |
| Starter switch | Fitted | Not fitted |
| Flasher self cancelling system | Fitted | Not fitted |
| Battery | 12V, 12AH | 12V, 7AH |

For details, see below.

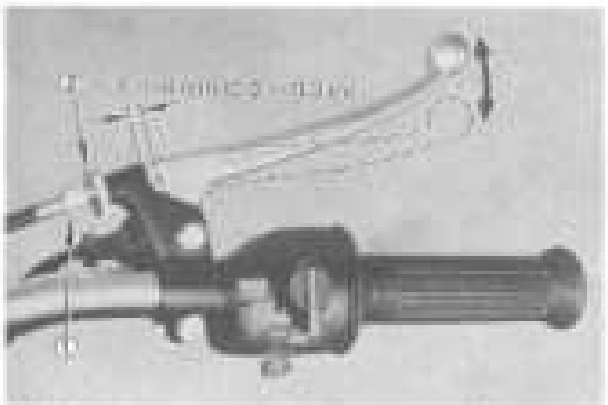
(PAGE 5)
**1-1. MACHINE IDENTIFICATION**

Specifications should be read as follows.

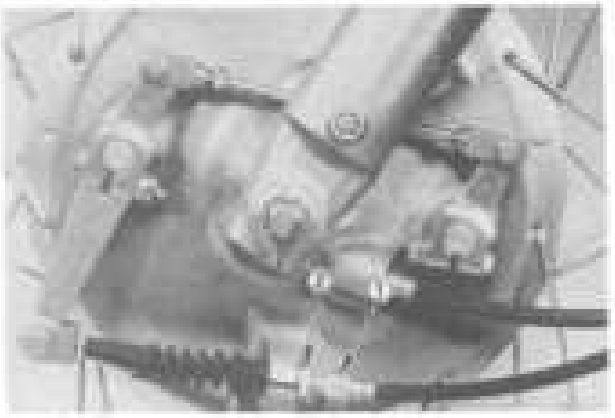
Starting Serial Number: 1T6-000101

(PAGE 16)
**B. Front brake**

1. Brake adjustment
   The front brake should be adjusted to suit rider preference with a minimum cable slack of 5 ~ 8 mm (0.2 ~ 0.3 in) play at the brake lever pivot point. Adjustment is accomplished at one of two places; either the handle lever holder or the front brake hub.
   a. Loosen the locknut.
   b. Turn the cable length adjuster in or out until adjustment is suitable.
   c. Tighten the locknut.



1. Adjuster 2. Locknut



1. Adjuster 2. Locknut

2. Brake pad check
   Delete the whole paragraph.

(PAGE 21)
**C. Battery**

Specifications should be read as follows.

Charging current: 0.7A
Charging time: 10 hrs.

(PAGE 62)
**D. Front wheel installation**

Please add the following after "D. Front wheel installation".

**E. Checking brake shoe wear**

See "Checking brake shoe wear" for the rear wheel.

Specifications should be read as follows.

Front brake shoe diameter:
180 mm (7.09 in)
Replacement limit:
176 mm (6.93 in)

**F. Brake drum**

See "Brake drum" for the rear wheel.

**G. Brake shoe plate**

See "Brake shoe plate" for the rear wheel.

(PAGE 63 to 69)
**5-3. DISC BRAKES**

Delete the whole section.

(PAGE 83)
6-3. BATTERY

The battery used in the XS360-2D has been changed from 12V, 10AH to 12V, 7AH. Specifications should be read as follows.

| | |
|---|---|
| Battery | 12V, 7AH |
| Electrolyte | Specific gravity: 1.28<br>Quantity: 550 cc (18.6 oz) |
| Recharging current | 0.7A/10 hours<br>(or until specific gravity reaches 1.28) |
| Refill fluid | Distilled water<br>(to maximum level line) |
| Refill period | Check once per month<br>(or more often, as required) |

(PAGE 84 and 85)
6-4. Starter motor

Delete the whole section.

(PAGE 86)

4. Flasher light(s) do not work.
   e. Delete the whole paragraph.

(PAGE 86 to 88)
**8. Flasher self canceling system**

Delete the whole section.

(PAGE 92 to 104)
7-2. SPECIFICATION

A. General

| | |
|---|---|
| 1. MODEL<br>1) Model (I.B.M. No.)<br>2) Frame I.D. and starting number<br>3) Engine I.D. and starting number | <br>XS360-2D (1T6)<br>1T6-000101<br>1T6-000101 |
| 3. WEIGHT<br>1) Net weight | <br>153 kg (337 lb) |
| 4. PERFORMANCE<br>1) Climbing ability<br>2) Minimum turning radius | <br>29°<br>3,200 mm (86.6 in) |

B. Engine

| | |
|---|---|
| 1. DESCRIPTION<br>2) Engine model<br>8) Lubrication system | <br>1T6<br>Pressure lubricated, wet sump |
| 2. CYLINDER HEAD<br>4) Tightening torque:<br>Cylinder head holding nut (M10 P1.25) | <br><br>3.0 ~ 3.6 m-kg (21.7 ~ 25.3 ft-lb) |
| 22. LUBRICATION<br>3) Oil type | <br>a. Yamalube 20W/40 or equivalent<br>[If temperature does not go below 5°C (40°F)]<br>b. 10W/30 "SE" motor oil [If temperature does not go above 15°C (60°F)] |

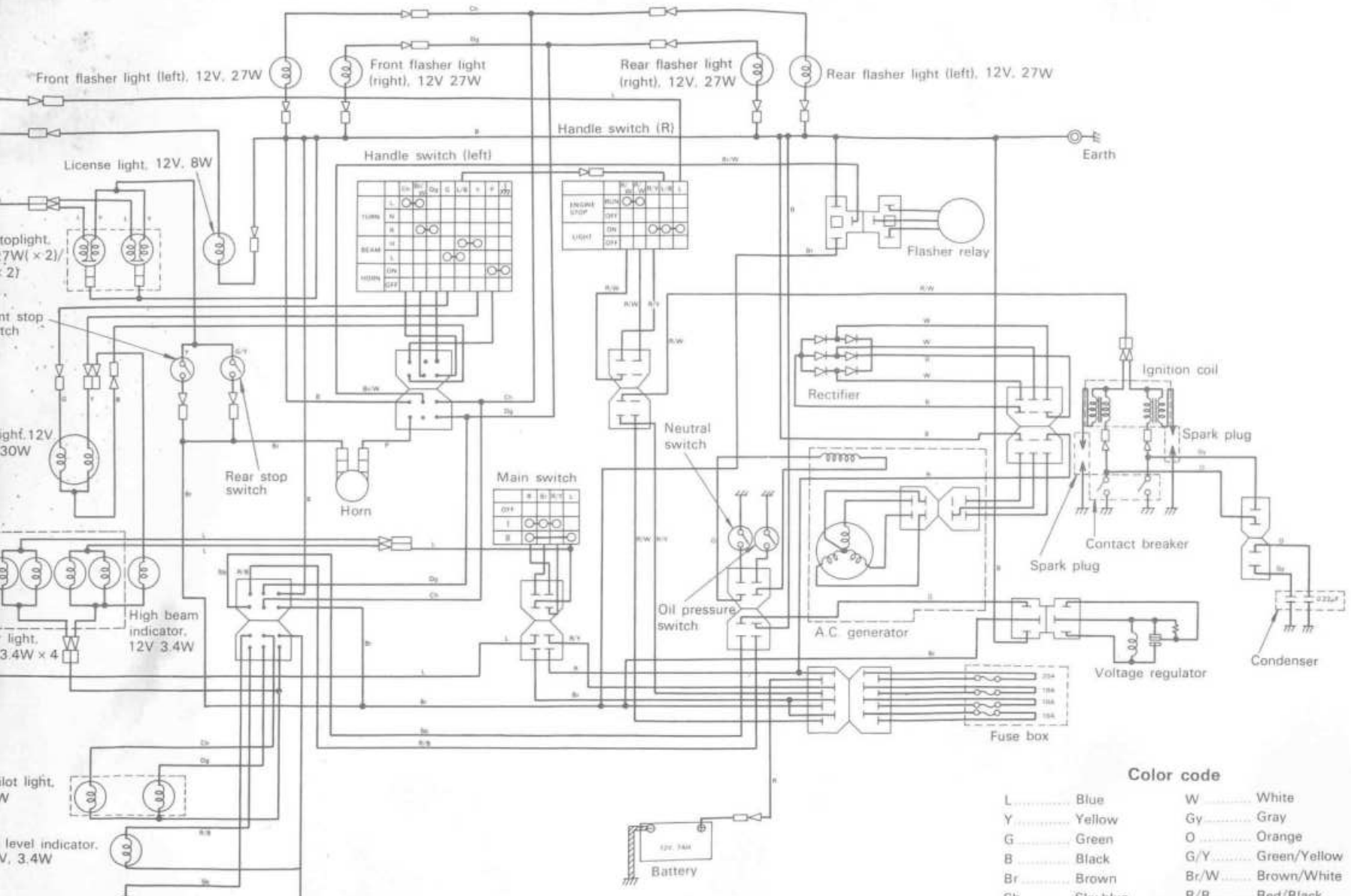
## C. CHASSIS

| | |
|---|---|
| 3. FRONT SUSPENSION | |
| 7) Front fork oil quantity and type | 130 cc (4.4 oz) each leg<br>Yamaha fork oil 10 Wt. or SAE 10W/30 motor oil |
| 6. WHEEL | |
| 3) Tire pressure | |
| Front: Normal riding | 1.8 kg/cm² (25.6 psi) |
| Front: High speed riding (above 100 km/h or 60 mph) or with passenger | 2.0 kg/cm² (28.4 psi) |
| Rear: Normal riding | 2.0 kg/cm² (28.4 psi) |
| Rear: High speed riding (above 100 km/h or 60 mph) or with passenger | 2.3 kg/cm² (32.7 psi) |
| 6) Spoke O.D. | |
| Length/Quantity (Front) | Inner: 3.5 × 153.0/18 pcs.<br>Outer: 3.5 × 152.5/18 pcs. |
| Length/Quantity (Rear) | Inner: 3.2·3.5 × 157.5/18 pcs.<br>Outer: 3.2·3.5 × 157.0/18 pcs. |
| 7) Bearing type | |
| Front wheel (Left) | 6302RS |
| Front wheel (Right) | 6302RS |
| Rear wheel (Left) | 6304RS (6304LU/3A) |
| Rear wheel (Right) | 6303LU C3/3A |
| 8) Oil seal type | |
| Front wheel (Left) | SD0-53-65-7 |
| Front wheel (Right) | SD22-42-7-1 |
| Rear wheel (Left) | SD-37-52-8 |
| Rear wheel (Right) | ———— |
| 7. BRAKE | |
| 1) Front brake | |
| Type | Drum brake |
| Actuating method | Two leading |
| Brake drum I.D. | 180 mm (7.1 in) |
| Brake shoe dia. × width | 180 × 30 mm (7.1 × 1.2in) |
| Lining thickness/Wear limit | 4 mm (0.16 in)/2 mm (0.08 in) |
| Shoe spring free length | 68 mm (2.68 in) |

## D. Electrical

| | |
|---|---|
| 2. CHARGING SYSTEM | |
| 5) Battery | |
| Model/Manufacture/Quantity | 12N7-3B-1/G.S./1 pc. |
| Capacity | 12V, 7AH |
| Charging rate | 0.7A 10 hours |
| Specific gravity/Quantity | 1.28 at 20° C/550 cc (18.6 oz) |
| 3. STARTER | |
| Delete the whole section | ———— |
| 4. LIGHTING SYSTEM | |
| 5) Flasher canceling unit | |
| Delete the whole paragraph | ———— |

# XS360-2D WIRING DIAGRAM




## Color code

| | | | |
|---|---|---|---|
| L | Blue | W | White |
| Y | Yellow | Gy | Gray |
| G | Green | O | Orange |
| B | Black | G/Y | Green/Yellow |
| Br | Brown | Br/W | Brown/White |
| Sb | Sky blue | R/B | Red/Black |
| Ch | Chocolate | R/Y | Red/Yellow |
| Dg | Dark green | L/B | Blue/Black |
| R | Red | R/W | Red/White |
| P | Pink | | |

# XS400D

# SUPPLEMENT

9

# FOREWORD

This Supplementary Service Manual for XS400D has been published to supplement the Service Manual for the XS360C and includes changes in specifications and addition to the data.

For complete information on service procedures, it is necessary to use this Supplementary Service Manual together with the Service Manual for the XS360C.

Page numbers shown in brackets correspond to page numbers of the XS360C Service Manual.

(PAGE 5)

## 1-1. MACHINE IDENTIFICATION

Specification should be read as follows:

| Starting Serial Number |
|---|
| XS400D 2A2-000101 |

(PAGE 9, 10)

## 2-1. MAINTENANCE AND LUBRICATION CHART

### A. Maintenance intervals for new machines

1. Initial 400 km (250 miles):
   - Spark plug inspection
   - Wheel and tire inspection
   - Fuel petcock cleaning
   - Battery maintenance
   - Lights, signals check
   - Fittings, fasteners tightening
2. Initial 800 km (500 miles):
   - Carburetor adjustment
   - Brake system inspection
   - Wheel and tire inspection
   - Battery maintenance
   - Ignition timing check
   - Lights, signals check
   - Fittings, fasteners tightening
3. Initial 1,600 km (1,000 miles):
   - Valve clearance check
   - Air filter cleaning
   - Brake system inspection
   - Wheel and tire inspection
   - Fuel petcock cleaning
   - Battery maintenance
   - Ignition timing check
   - Lights, signals check
   - Fittings, fasteners tightening
4. Initial 3,200 km (2,000 miles):
   - Cylinder compression check
   - Valve clearance check
   - Spark plugs inspection and cleaning
   - Carburetor adjustment
   - Battery maintenance

### B. Routine maintenance intervals

1. Every 1,600 km (1,000 miles):
   - Brake system inspection
   - Wheels and tires inspection
   - Battery maintenance
   - Lights, signals check
   - Fittings, fasteners tightening
2. Every 3,200 km (2,000 miles):
   - Spark plug inspection
   - Air filter cleaning
   - Carburetor adjustment
   - Fuel petcock cleaning
   - Ignition timing check
3. Every 6,400 km (4,000 miles):
   - Cylinder compression check
   - Valve clearance check

### C. Lubrication intervals for new machines

1. Initial 400 km (250 miles):
   - Replace engine oil
   - Check brake fluid
   - Replace oil filter
   - Lubricate drive chain
     (Every 400 km or 250 miles)
2. Initial 800 km (500 miles):
   - Check brake fluid
3. Initial 1,600 km (1,000 miles):
   - Lubricate control/meter cables
   - Check brake fluid
   - Lubricate point cam lubrication wicks
   - Lubricate brake pedal shaft
   - Lubricate change pedal shaft
4. Initial 3,200 km (2,000 miles):
   - Replace engine oil
   - Lubricate control/meter cables
   - Lubricate throttle grip/housing
   - Check brake fluid
   - Replace oil filter
     (6,400 km or 4,000 miles)
   - Lubricate speedometer gear bearing
   - Lubricate rear arm pivot shaft

### D. Routine lubrication intervals

1. Every 1,600 km (1,000 miles):
   - Lubricate drive chain
     (Every 400 km or 250 miles)
   - Lubricate brake pedal shaft
   - Lubricate change pedal shaft
   - Check brake fluid
2. Every 3,200 km (2,000 miles):

- Lubricate throttle grip/housing
- Lubricate point cam lubrication wicks

3. Every 6,400 km (4,000 miles):
   - Replace oil filter
   - Replace front fork oil (12,800 km or 8,000 miles)
   - Replace steering bearing grease (12,800 km or 8,000 miles)
   - Replace rear arm pivot shaft grease
   - Lubricate speedometer gear bearing
   - Replace wheel bearing grease (12,800 km or 8,000 miles)

**E. Recommended lubricants**

Engine/Transmission oil:
- At ambient temperature above 5°C (41°F), use YAMALUBE 4-cycle oil, or SAE 20W/40 type "SE" motor oil.
- At ambient temperature below 15°C (59°F), use SAE 10W/30 type "SE" motor oil.
- Do not use "additives" in oil.

Wheel, steering, rear arm pivot shaft:
- Medium weight wheel bearing grease, preferably waterproof.

Front forks:
- Yamaha Fork Oil 20 Wt.

Brake fluid:
- DOT No. 3

Control/Meter cables:
- Yamaha chain and cable lubricant.
- SAE 10W/30 type "SE" motor oil.

Throttle grip/housing:
- Lithium base grease.

Speedometer gear housing:
- Lithium base grease.

Point cam lubrication wicks:
- Lightweight machine oil.

**NOTE:**

Brake fluid replacement:

1) When disassembling the master cylinder or caliper cylinder, replace and bleed the air from the brake fluid. Normally check the brake fluid level and add the fluid as required.
2) Replace the master cylinder and caliper cylinder internal seals every two years.
3) Replace the brake hoses every four years, or if cracked or damaged.

**(PAGE 11)**

**2-2. ENGINE**

**A. Carburetor**

2. Idle speed adjustment

Specification should be read as follow:

| |
|---|
| Pilot screw:<br>Back out 1-1/4 ± 1/2 turns<br>Idle speed: 1,200 ± 50 rpm |

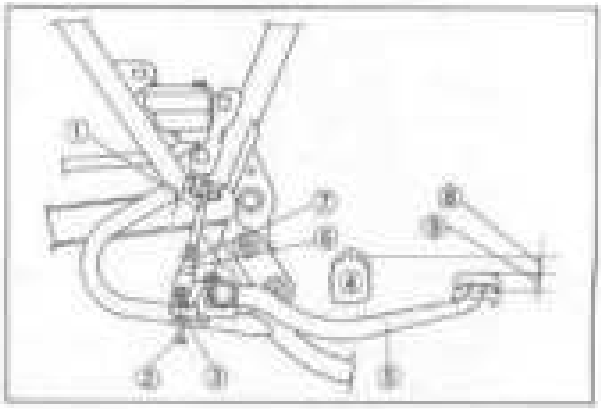
**(PAGE 16, 17)**

**C. Rear brake**

1. Brake adjustment

**CAUTION: Proper pedal free play is essential to avoid excessive brake drag.**

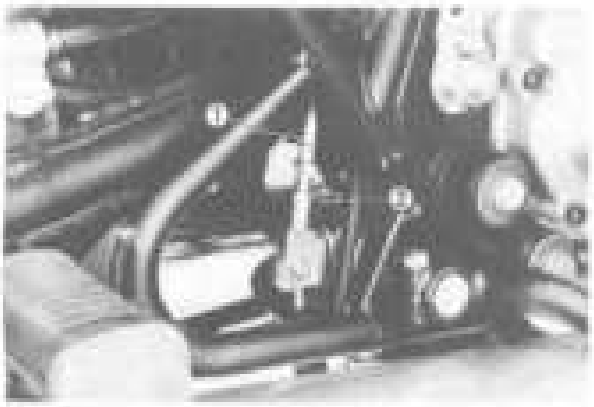
1) Loosen the adjustor locknut (for pedal height).
2) By turning the adjustor bolt clockwise or counterclockwise, adjust the brake pedal position so that its top end is approx. 12 ~ 18 mm (0.5 ~ 0.7 in) below the footrest top end.



1. Brake rod
2. Adjustor bolt (for pedal height)
3. Locknut
4. Footrest
5. Brake pedal
6. Joint
7. Locknut
8. Pedal height (12 ~ 18 mm or 0.5 ~ 0.7 in)
9. Free play (10 ~ 15 mm or 0.3 ~ 0.6 in)

3) Secure the adjustor locknut.

4) Loosen the brake rod adjustor locknut and screw brake rod downward until there is noticeable freeplay between rod and master cylinder.



1. Brake rod 2. Locknut

5) Turn in the brake rod until it lightly touches the master cylinder, then turn it out by approx. 1-1/2 turns (for proper freeplay).

6) Tighten the brake rod adjustor locknut.

**CAUTION: The pin hole mark on brake rod must not show above locknut.**

2. Brake pad check
   See "Brake pad check" for the front brake.
3. Brake fluid level check
   See "Brake fluid level check" for the front brake.

**(PAGE 21)**

**B. Spark plug**

Specifications should be read as follows:

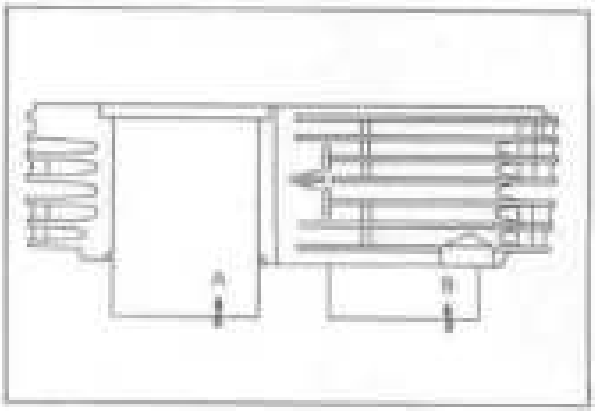
| Standard spark plug | Tightening torque |
|---|---|
| NGK BP-7ES<br>Champion N-7Y<br>DENSO W22EP | 2.0 m·kg (14 ft·lb) |

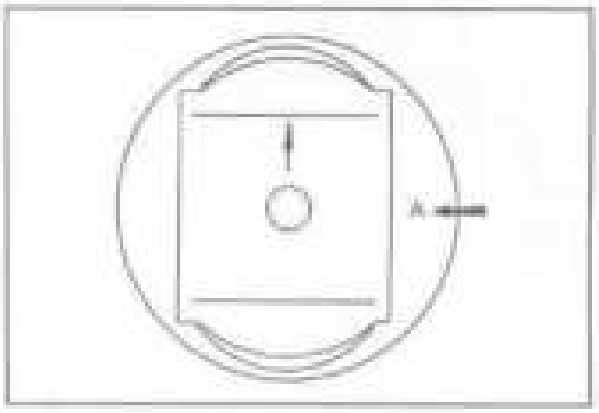
**(PAGE 37)**

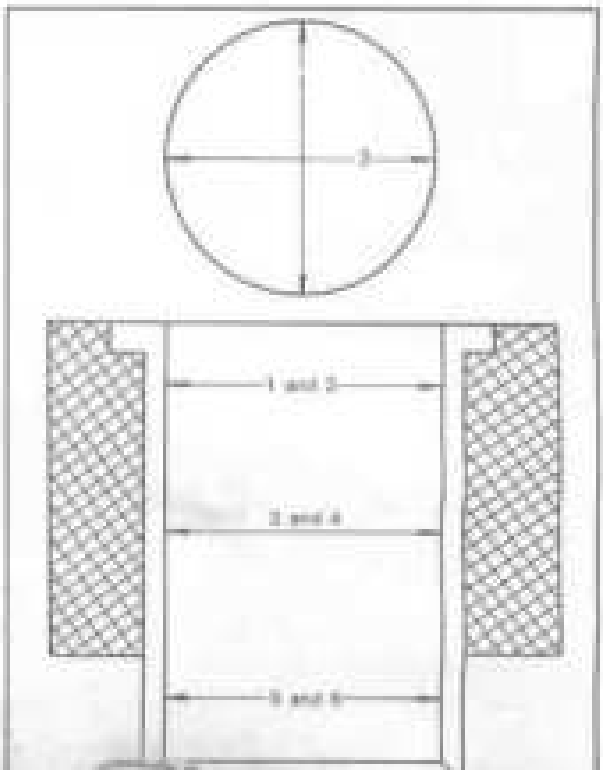
**E. Cylinder**

3. Types of cylinder
   Specifications should be read as

| | Piston size | Cylinder size |
|---|---|---|
| A | 69 −0.037 mm (0 less −0.031 mm (0.004 in) more)<br>(3.719 −0.0015 in (0 less −0.0012 in) more) | 69 +0.030 mm (0 less +0.011 mm (0.004 in) more)<br>(3.719 +0.0012 in (0 less +0.0004 in) more) |
| B | 69 −0.030 mm (0.001 in) less −0.040 mm (0.002 in) more<br>(3.719 −0.0012 in less −0.0016 in more) | 69 +0.010 mm (0.004 in) less 0<br>(3.719 +0.0004 in less 0) |



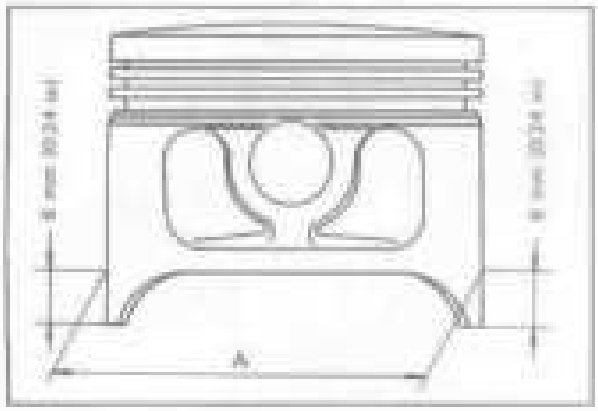
| | Standard |
|---|---|
| Cylinder bore | 69.00 — 69.02 mm (2.716 — 2.717 in) |
| Cylinder taper | 0.05 mm (0.002 in) |

F. Piston and piston rings

1. Piston

Specifications should be read as follows:

| | Size |
|---|---|
| Standard | 69.00 mm (2.716 in) |
| Oversize 1 | 69.25 mm (2.727 in) |
| Oversize 2 | 69.50 mm (2.736 in) |
| Oversize 3 | 69.75 mm (2.746 in) |
| Oversize 4 | 70.00 mm (2.756 in) |




2. Piston ring

Specifications should be read as follows:

| | Oversize Dia. | Stamped Mark |
|---|---|---|
| Oversize 1 | 69.25 mm (2.727 in) | 25 |
| Oversize 2 | 69.50 mm (2.736 in) | 50 |
| Oversize 3 | 69.75 mm (2.746 in) | 75 |
| Oversize 4 | 70.00 mm (2.756 in) | 100 |

(PAGE 58, 59)

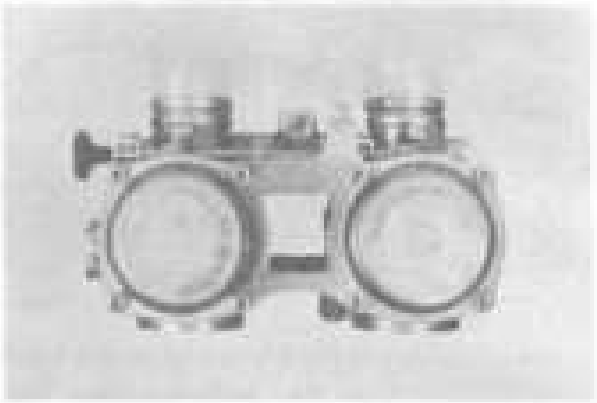
## 4-1. CARBURETOR

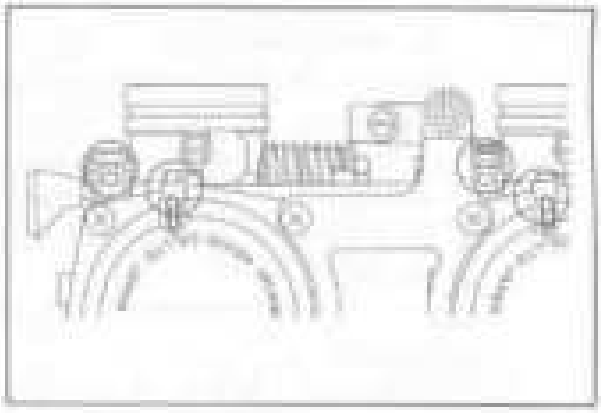
A. Disassembly

1. Prepare to separate carburetor (separation not necessary if only float level adjustment or throttle slide inspection is to be done). Remove the two screws holding the starter shaft to the

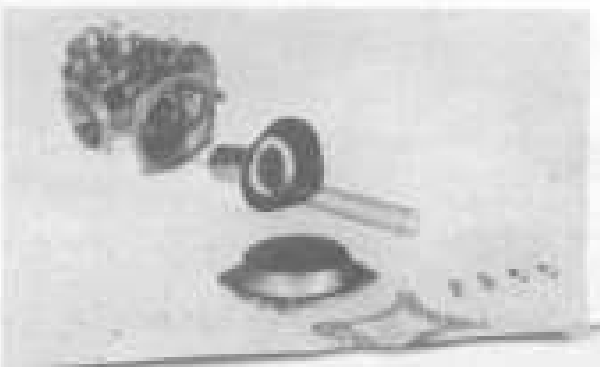
NOTE:

1) While pulling out the starter shaft, take care that the shaft positioning balls on the left and right do not pop out.
2) As illustrated, reassembly the starter shaft so that the holding screws fit in the shaft dents.

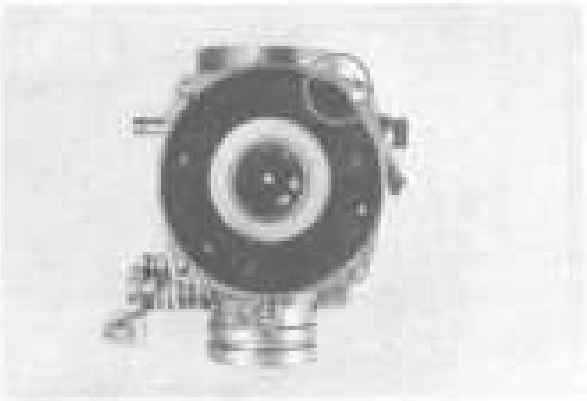




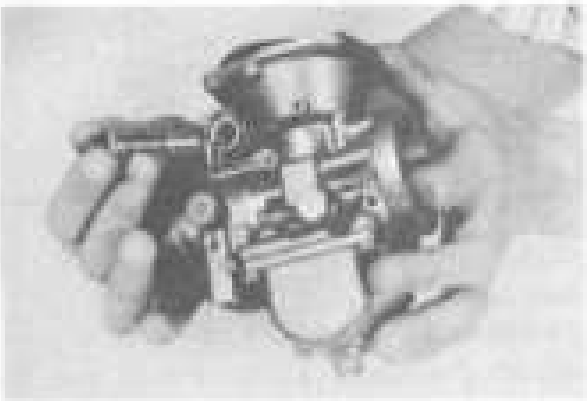
2. Remove upper and lower brackets. Note position of synchronizing screws for guidance in reassembly. Separate carburetors.
3. Remove vacuum chamber cover. Remove the spring, needle fitting plate, jet needle and diaphragm (vacuum piston).



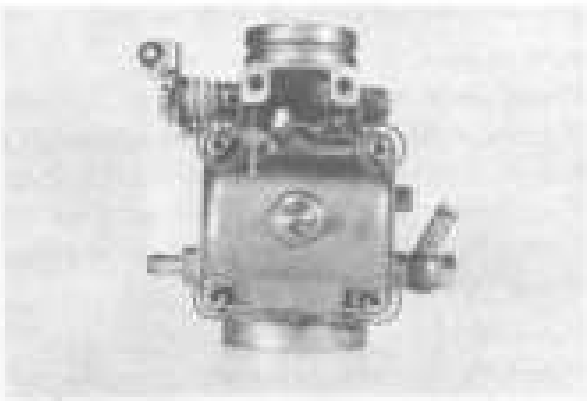
4. Note that there is tab on the rubber diaphragm. There is matching recesses in the carburetor body for the diaphragm tab.



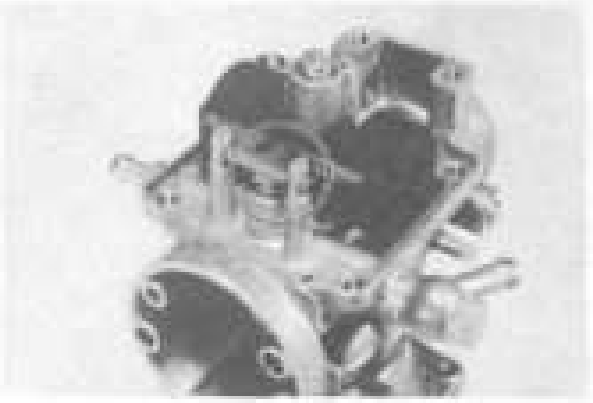
5. To inspect starter jet, remove the starter assembly to the left side of the carburetor.



6. Remove the four screws holding the float bowl cover. Remove the float bowl cover. The main jet is located under a cover in the float bowl.



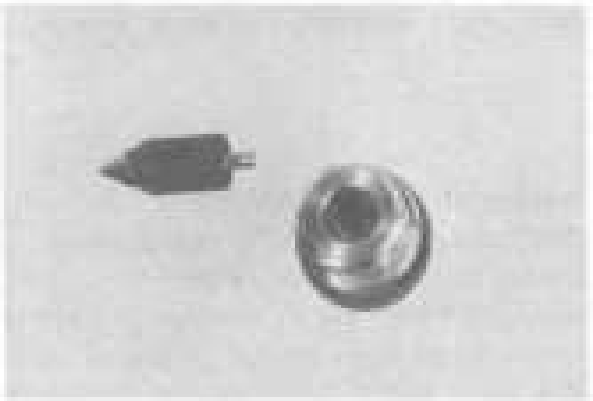
7. Pull out float pivot pin. Remove the float assembly. Be careful to not lose the float valve needle located under the float level adjustment tang. Remove



8. Reassemble in reverse order. Pay close attention to the installation of the vacuum position diaphragm.

B. Inspection

1. Examine carburetor body and fuel passages. If contaminated, wash carburetor in petroleum-based solvent. Blow out all passages and jets with compressed air.
2. Examine condition of floats. If floats are leaking or damaged, they should be replaced.
3. Inspect inlet needle valve and seat for wear or contamination. Replace these components as a set.



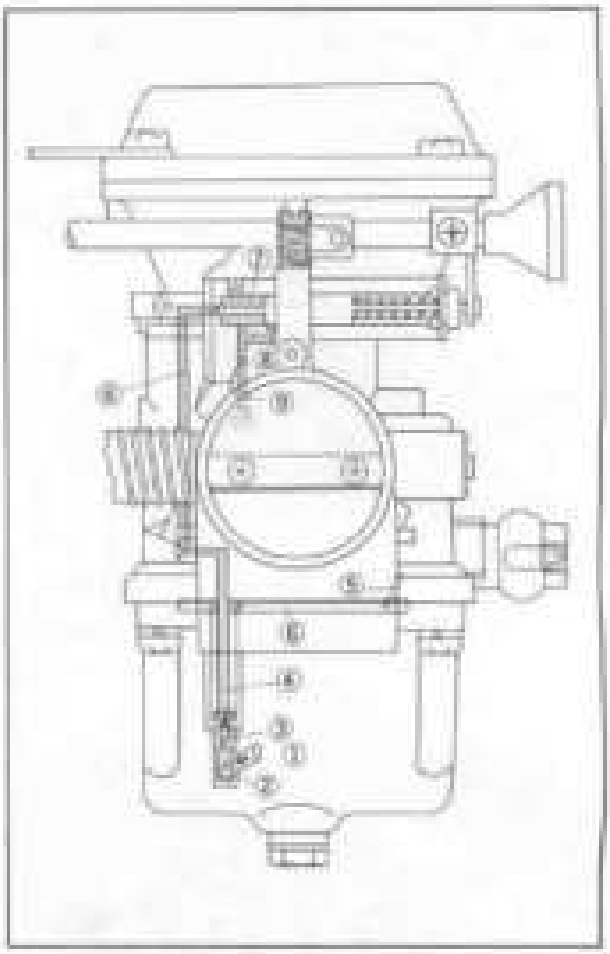
4. Inspect vacuum piston and rubber diaphragm. If the piston is scratched or the diaphragm is torn, the assembly must be replaced.



**C. Adjustment (Float level)**
Refer to CHAPTER 2, Section 2-2, C for "Float Level" adjustment procedure.

**Two-position starter jet (Choke)**
With a conventional one-position starter jet, the air-fuel ratio remains the same as that required to start the engine (despite that the engine temperature rises gradually) until the engine operating temperature rises to the point at which use of the starter jet is no longer necessary. In other words, the air-fuel mixture is too rich until the engine operating temperature rises to a certain point.
The newly-adopted two-position type starter jet is designed to supply a mixture of proper strength by switching one jet to another.

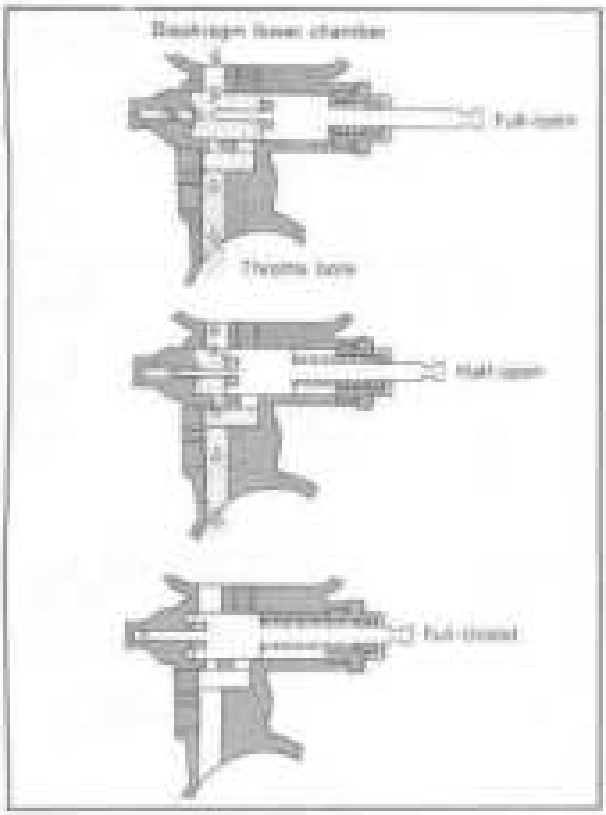
**Routes of Fuel and Air**
The fuel supplied from the float chamber ① passes through ② and metered by ③. Air is supplied from the air chamber in the float chamber and flows through ⑤ and ⑥, then it is mixed with the metered fuel. The resultant mixture passes through ④ and ⑥ and flows into the two-position starter jet ⑦ where it is further mixed with air supplied from the diaphragm lower chamber. The mixture passes through ⑧ and streams into the throttle bore out of ⑨.



**Operation of two-position starter jet**
**Full-open:**
To start a cold engine, a rich mixture is required. To supply a rich mixture, pull the starter knob all the way out so that the needle regulating the fuel from is set free and the flow rate of incoming fuel is increases to a maximum. The fuel is mixed with the air supplied from the diaphragm lower chamber, and thus a rich mixture is produced.

**Half-open:**
When warming up the engine, a slightly rich mixture is required. Pull out the starter jet a half-way so that the fuel flow is reduced by the needle. The fuel is mixed with the air from the diaphragm lower chamber, and thus a slightly rich mixture is produced.

**Full-closed:**
When the engine fully warms up, no mixture from the starter circuit is necessary. Push the starter knob all the way in so that the flow of incoming fuel is stopped by the needle. At the same time, the flow of incoming air is also stopped by the plunger, and the



(PAGE 62, 63)

## 5-1. FRONT WHEEL

### D. Front wheel installation

When installing front wheel, reverse the removal procedure taking care of the following points:

1. Lightly grease lips of front wheel oil seals and gear teeth of speedometer drive and driven gears. Use lightweight lithium soap base grease.
2. Make sure there is an enough gap between disc pads.
3. Check for proper engagement of the boss on the outer fork tube with the locating slot on speedometer gear unit housing.
4. Always secure the front wheel axle as follows:

a. Torque the front axle nut.

| Axle nut torque: |
| --- |
| 10.7 m-kg (77.4 ft-lb) |

b. Torque axle holder nuts. First tighten nut on front end of axle holder, and tighten nut on rear end.

| Holder nut torque: |
| --- |
| 2.0 m-kg (14.7 ft-lb) |



c. Install a new cotter pin.

### E. Front wheel inspection

1. Check for cracks, bends or warpage of wheels. If a wheel is deformed or cracked, it must be replaced.

**NOTE:**

**These aluminum wheels are not designed for use with tubeless tires.**

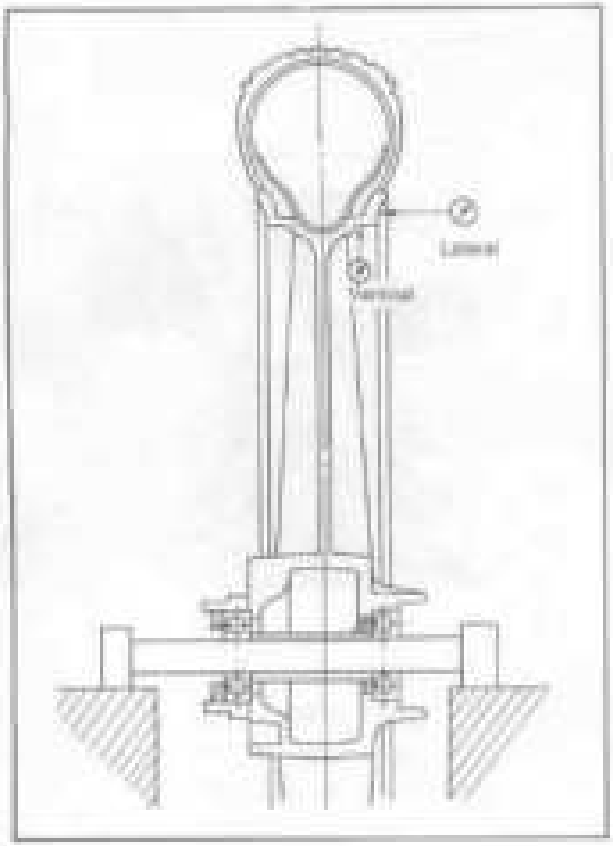
2. Check wheel run-out.
If deflection exceeds tolerance, check wheel bearing or replace wheel as required.

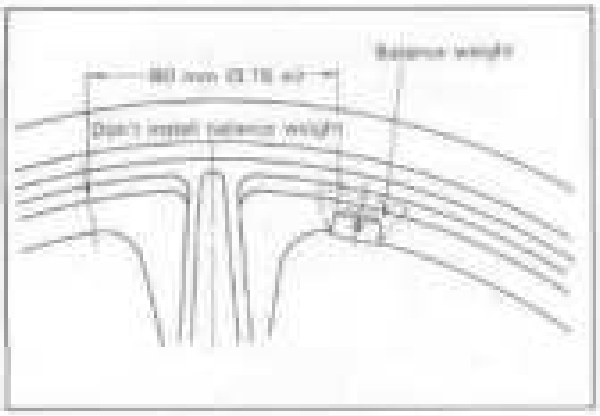
| Rim run-out limits: |
| --- |
| Vertical: 2 mm (0.08 in) |
| Lateral: 1 mm (0.04 in) |

3. Check wheel balance.
Rotate wheel lightly several times and observe resting position.
If wheel is not statically balanced, wheel will come to rest at the same position. Install balance weight at lighter position (at top) as illustrated.

**NOTE:**

The wheel should be balanced with brake disc installed.

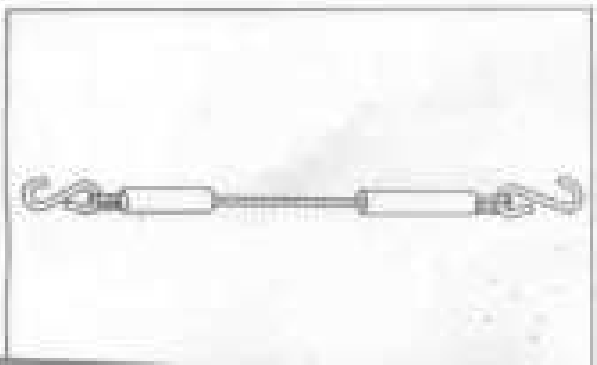





## 5-2. REAR WHEEL

### A. Rear wheel removal

1. Support machine on the side stand.
2. Hook one end of the wire tool (contained in the owner's tool kit) to the hook attached to the frame.



3. Apply your weight to the rear part of the seat, and compress the rear shock absorbers by pulling up the right side of the swing arm with your hand, then hook the other end of the wire tool to the swing arm.
4. With the wire tool in this position, place the machine on the center stand.
5. Disconnect the drive chain. Using drive chain cutter (special tool).

**NOTE:**
The chain joint should be replaced each time the chain is cut.

6. Remove the axle nut cotter pin and axle nut.
7. While supporting the brake caliper, pull outer the rear axle.
8. Remove the rear wheel assembly.

### B. Checking brake shoe wear

Delete the this section.

### C. Brake drum

Delete this section.

### D. Brake shoe plate

Delete this section.

### F. Rear wheel installation

When installing rear wheel, reverse removal procedure taking care of following points:

1. Lightly grease lip of rear wheel oil seals.
2. Make sure the brake pads are installed properly and that there is an enough gap to install the rear disc.
3. Install wheel assembly and axle. Always use a new cotter pin on the axle nut.

| Axle nut torque: |
| --- |
| 10.7 m-kg (77.4 ft-lb) |

4. Connect drive chain.
5. Adjust drive chain.

### G. Rear wheel inspection

See "E. Front wheel inspection" for the front wheel.

(PAGE 63 ~ 69)

## 5-3. DISC BRAKES

Except for the following, the same procedure can be performed for Assembly, Disassembly and Inspection of XS400D front and rear brake and XS360C front brake.

### B. Disc brake inspection

The shim in the caliper is no longer used, and a set of two pad springs has been changed into one piece type.

### C. Disc brake assembly

d. Caliper installation

2) Install the brake hoses (front and rear).
Specification should be read as follow:

Tightening torque:
Union bolt: 2.6 m-kg
(18.8 ft-lb)

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## 5-4. RIMS AND SPOKES (FRONT AND REAR WHEELS)

### A. Checking for loose spokes

Delete this section.

(PAGE 70)

## 5-5. TIRES AND TUBES

### A. Removal

1. Remove valve cap, valve core and valve stem locknut.
2. When all air is out of tube, separate tire bead from rim (both sides) by stepping on tire with your foot.
3. Use two tire irons (with rounded edges) to work the tire bead over the edge of the rim, starting 180° opposite the tube stem. Be careful not to pinch the tube as you do this.
4. After you have worked one side of the tire completely off the rim, slip the tube out. Be very careful not to damage the stem while pushing it back out of the rim hole.

NOTE:

If you are changing the tire itself, then finish the removal by working the second bead off the rim.

### B. Installation

Reinstall the tire and tube by reversing the disassembly procedure. After the tube has been installed, but before the tire has been completely slipped onto the rim, inflate the tube. This removes any creases that might exist. Release the air continue with reassembly. After the tire has been completely slipped onto the rim, make sure the stem comes out of the hole in the rim at a right angle to the rim. Finally, inflate the tire.

| | Front | Rear |
|---|---|---|
| Normal riding | 1.8 kg/cm² | 2.0 kg/cm² |
| Continued high riding or with passenger | 2.0 kg/cm² | 2.3 kg/cm² |

NOTE:

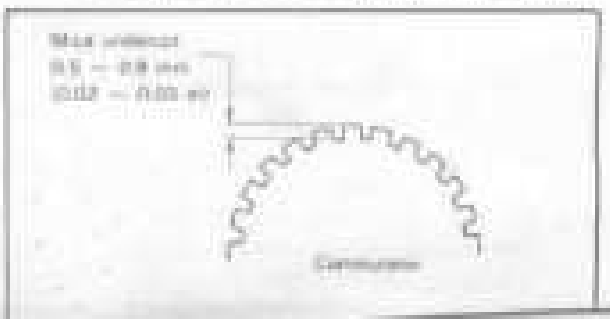
Make sure the wheel is balance every time the tire replaced.

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## 5-4. STARTER MOTOR

### A. Servicing and troubleshooting

1. Armature
   a. Check the outer surface of the commutator. If it's surface is dirty, clean with No. 600 grit sand paper.
   b. The mica insulation between commutator segments should be 0.5 ~ 0.8 mm (0.02 ~ 0.03 in) below the segment level. If not, scrape to proper limits with appropriately shaped tool. (A hack saw blade can be ground to fit.)



c. Check the armature and field coil for shorting and insulation. Replace armature as required.

| | Coil resistance |
|---|---|
| Armature coil | 0.005Ω at 20°C (68°F) |
| Field coil | 0.011Ω at 20°C (68°F) |

d. Check the front and rear cover bearings for damage. If damaged, the starter assembly must be replaced.

(PAGE 92 ~ 104)

## 7-2. SPECIFICATION

### A. General

| | |
|---|---|
| 1. MODEL | |
| 1) Model (U.S.M. No.) | XS400DX2A2 |
| 2) Frame I.D. and starting number | 2A2-000101 |
| 3) Engine I.D. and starting number | 2A2-000101 |
| 2. DIMENSION | |
| 1) Overall length | 2,025 mm (79.7 in) |
| 2) Overall width | 845 mm (33.3 in) |
| 3) Overall height | 1,100 mm (43.3 in) |
| 4) Seat height | 815 mm (32.1 in) |
| 5) Wheelbase | 1,335 mm (52.6 in) |
| 6) Minimum ground clearance | 150 mm ( 5.9 in) |
| 3. WEIGHT | |
| 1) Net weight (Dry) | 184 kg (387 lb) |
| 4. PERFORMANCE | |
| 1) Climbing ability | 28° |
| 2) Minimum turning radius | 2,200 mm (86.6 in) |
| 3) Braking distance | 14 m @50 km/h (45.9 ft @31 mi/h) |

### B. Engine

| | |
|---|---|
| 1. DESCRIPTION | |
| 1) Engine type | Air cooled, 4-stroke, SOHC twin, parallel forward incline |
| 2) Engine model | 2A2 |
| 3) Displacement | 392 cc (23.92 cu in) |
| 4) Bore x stroke | 69.0 x 52.4 mm (2.717 x 2.063 in) |
| 5) Compression ratio | 9.2 : 1 |
| 6) Starting system | Kick and electric starter |
| 7) Ignition system | Battery ignition |
| 8) Lubrication system | Wet sump |
| 2. CYLINDER HEAD | |
| 1) Combustion chamber volume | 24.0 cc (1.464 cu in) BP7ES |
| 2) Combustion chamber type | Dome + Squish |
| 3) Head gasket thickness | 1.0 mm (0.04 in) |
| 4) Tightening torque | |
| Cylinder head holding nut (M10 P1.25) | 3.3 m·kg (23.9 ft·lb) |
| Cylinder head holding bolt (M6 P1.0) | 1.0 m·kg ( 7.2 ft·lb) |
| Spark plug (M14 P1.25) | 2.0 m·kg (14.5 ft·lb) |

## 3. CYLINDER

| | |
|---|---|
| 1) Material | Aluminum alloy with cast iron sleeve |
| 2) Bore size | 69.0 $^{+0.02}_{0}$ mm (2.72 $^{+0.0008}_{0}$ in) |
| 3) Taper limit | 0.05 mm (0.002 in) |
| 4) Out of round limit | 0.01 mm (0.0004 in) |

## 4. PISTON

| | |
|---|---|
| 1) Piston skirt clearance | 0.030 ~ 0.050 mm (0.0012 ~ 0.0019 in) |
| 2) Piston oversize | |

| | | | |
|---|---|---|---|
| 69.25 mm (2.727 in) | 69.50 mm (2.736 in) | 69.75 mm (2.746 in) | 70.00 mm (2.756 in) |

| | |
|---|---|
| 3) Piston pin outside diameter × length | 18.0 $^{0}_{-0.005}$ mm × 58.5 $^{0}_{-0.3}$ mm |
| | (0.63 $^{0}_{-0.0002}$ in × 2.303 $^{0}_{-0.0118}$ in) |

## 5. PISTON RING

| | | |
|---|---|---|
| 1) Piston ring design | (Top) | Plain ring 1.0 mm (0.039 in) |
| | (2nd) | Plain ring 1.5 mm (0.059 in) |
| | (Oil ring) | With expander 2.45 mm (0.096 in) |
| 2) Ring end gap | (Installed, top) | 0.2 ~ 0.4 mm (0.008 ~ 0.016 in) |
| | (Installed, 2nd) | 0.2 ~ 0.4 mm (0.008 ~ 0.016 in) |
| | (Installed, oil) | 0.2 ~ 0.9 mm (0.008 ~ 0.035 in) |
| 3) Ring groove side clearance | (Top) | 0.04 ~ 0.08 mm (0.0016 ~ 0.0032 in) |
| | (2nd) | 0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in) |
| | (Oil) | |

## 6. BIG END BEARING

| | |
|---|---|
| 1) Type | Plain bearing |
| 2) Oil clearance | 0.021 ~ 0.045 mm (0.0008 ~ 0.0018 in) |
| 3) Bearing size | |

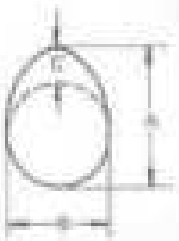
| | | |
|---|---|---|
| 1. (Blue) | 18.0 $^{+0.004}_{0}$ mm | Ø.591 $^{+0.00016}_{0}$ in |
| 2. (Black) | 18.0 $^{0}_{-0.004}$ mm | Ø.591 $^{0}_{-0.00016}$ in |
| 3. (Brown) | 18.0 $^{-0.004}_{-0.008}$ mm | Ø.591 $^{-0.00016}_{-0.00031}$ in |
| 4. (Green) | 18.0 $^{-0.008}_{-0.012}$ mm | Ø.591 $^{-0.00031}_{-0.00047}$ in |

## 7. CAMSHAFT

| | |
|---|---|
| 1) Cam drive type | Chain (Center side) |
| 2) Number and type of bearing | 3 bearings, cylinder head direct support |
| 3) Bearing dimensions | |

| | Cap I.D. | Shaft O.D. | Clearance |
|---|---|---|---|
| IN and EX | 23.0 $^{+0.031}_{0}$ mm | 23.0 $^{-0.033}_{-0.053}$ mm | 0.033 ~ 0.084 mm |
| 1, 2, 3 | Ø.906 $^{+0.0012}_{0}$ in | Ø.906 $^{-0.00079}_{-0.00130}$ in | 0.00078 ~ 0.00213 in |

4) Cam dimensions

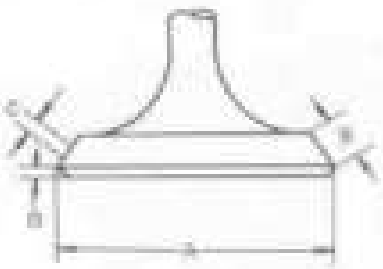



| | Cam height "A" | Limit | Base circle "B" | Limit | Lift "C" |
|---|---|---|---|---|---|
| IN | 39.03 ± 0.05 mm (1.559 ± 0.0019 in) | 38.98 mm (1.550 in) | 32.27 ± 0.05 mm (1.270 ± 0.0019 in) | 32.12 mm (1.265 in) | 7.69 mm (0.299 in) |
| EX | 39.57 ± 0.05 mm (1.558 ± 0.0019 in) | 39.42 mm (1.552 in) | 32.13 ± 0.05 mm (1.265 ± 0.0019 in) | 31.97 mm (1.259 in) | 7.57 mm (0.298 in) |

5) Valve timing

| | OPEN | CLOSE | DURATION | OVERLAP |
|---|---|---|---|---|
| IN | BTDC 30° | ABDC 10° | 220° | 80° |
| EX | BBDC 70° | ATDC 20° | 270° | |

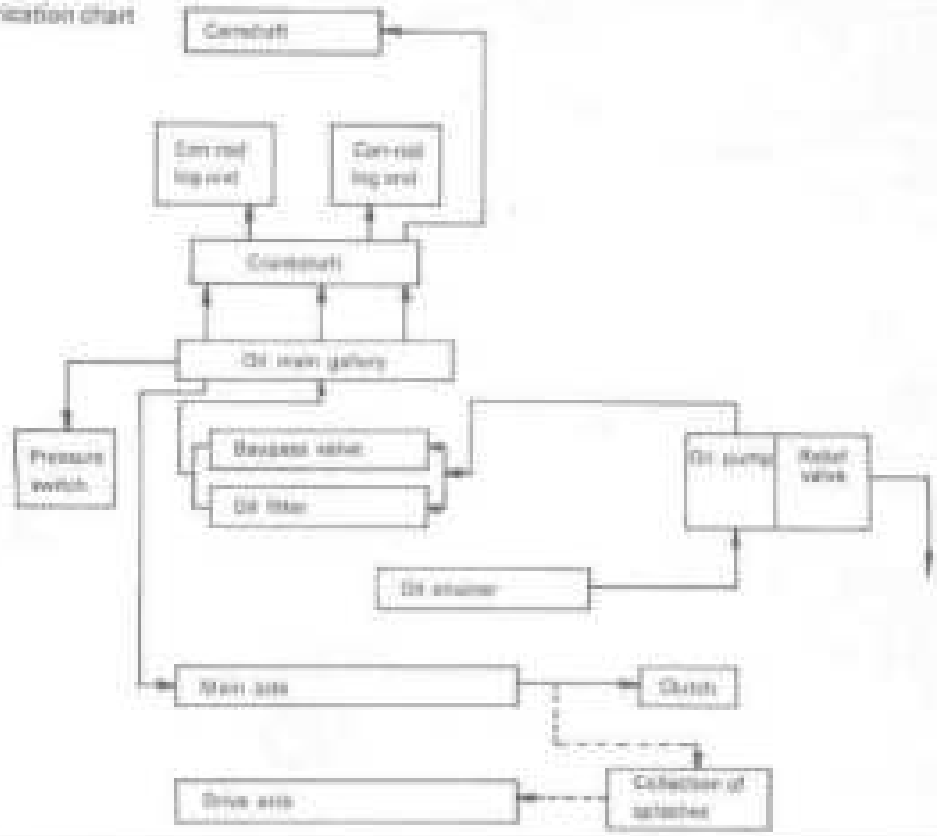
Camshaft deflection limit: 0.03 mm (0.0012 in)

| | |
|---|---|
| 7) Cam chain<br>Type<br>Pitch/Number of links<br>Sprocket ratio (Teeth) | <br>TSUBAKIMOTO BF06M<br>7.774 mm (0.3060 in) /82L<br>34/17 (2.000) |
| 8. ROCKER ARM AND ROCKER SHAFT | |
| 1) Rocker arm inner diameter | $13.0^{+0.018}_{0}$ mm ($0.512^{+0.0007}_{0}$ in) |
| 2) Rocker arm shaft diameter | $13.0^{-0.016}_{-0.034}$ mm ($0.512^{-0.00063}_{-0.00134}$ in) |
| 3) Clearance | 0.016 ~ 0.052 mm (0.00063 ~ 0.00205 in) |
| 4) Lift ratio | X : Y = 32.05 : 33.62 mm (1.262 : 1.324 in) |
| 9. VALVE, VALVE SEAT AND VALVE GUIDE | |
| 1) Valve per cylinder | 2 pcs. |
| 2) Valve clearance (in cold engine) | IN: 0.08 ~ 0.12 mm (0.0031 ~ 0.0047 in)<br>EX: 0.18 ~ 0.22 mm (0.0063 ~ 0.0078 in) |
| 3) Dimensions<br>Valve head diameter "A" | IN: 35.5 ± 0.1 mm (1.398 ± 0.004 in)<br>EX: 30.0 ± 0.1 mm (1.181 ± 0.004 in) |
| Valve face width "B" | IN: 2.3 mm (0.091 in)<br>EX: 2.3 mm (0.091 in) |
| Valve seat width "C" | IN: 1.0 ± 0.1 mm (0.039 ± 0.004 in)<br>EX: 1.0 ± 0.1 mm (0.039 ± 0.004 in) |
| Valve margin thickness "D" | IN: 1.0 ± 0.2 mm (0.039 ± 0.008 in)<br>EX: 1.0 ± 0.2 mm (0.039 ± 0.008 in) |
|  | |
| Valve stem diameter | IN: $7.0^{-0.010}_{-0.025}$ mm ($0.275^{-0.0004}_{-0.0009}$ in)<br>EX: $7.0^{-0.030}_{-0.045}$ mm ($0.275^{-0.0012}_{-0.0018}$ in) |
| Valve guide diameter | IN: $7.0^{+0.012}_{0}$ mm ($0.275^{+0.0005}_{0}$ in)<br>EX: $7.0^{+0.012}_{0}$ mm ($0.275^{+0.0005}_{0}$ in) |
| Valve stem to stem clearance | IN: 0.010 ~ 0.037 mm (0.00039 ~ 0.00145 in)<br>EX: 0.030 ~ 0.057 mm (0.0012 ~ 0.0022 in) |
| 4) Valve face runout limit | IN & EX: 0.03 mm (0.0012 in) or less |
| 10. VALVE SPRING | |
| 1) Free length | INNER (IN/EX): 39.3 mm (1.547 in)<br>OUTER (IN/EX): 42.9 mm (1.685 in) |
| 2) Spring rate (kg/mm) | INNER (IN/EX): $k_1$ = 1.93<br>$k_2$ = 2.47<br>OUTER (IN/EX): $k_1$ = 4.19<br>$k_2$ = 5.48 |
| 3) Installed length (Valve closed) | INNER (IN/EX): 33.0 mm (1.299 in)<br>OUTER (IN/EX): 37.0 mm (1.457 in) |
| 4) Installed pressure (Valve closed) | INNER (IN/EX): 12.1 ± 1.2 kg (26.7 ± 2.6 lb)<br>OUTER (IN/EX): 24.4 ± 1.7 kg (53.8 ± 3.8 lb) |
| 5) Compressed length (Valve open) | INNER (IN/EX): 25.0 mm (0.984 in)<br>OUTER (IN/EX): 29.0 mm (1.142 in) |
| 6) Compressed pressure (Valve open) | INNER (IN/EX): 21.4 kg (69.2 lb)<br>OUTER (IN/EX): 66.3 kg (161 lb) |

| | |
|---|---|
| 7) Wire diameter (Valve open) | INNER (IN/EX): 3.0 mm (0.118 in)<br>OUTER (IN/EX): 4.4 mm (0.173 in) |
| 8) Winding O.D. (Valve open) | INNER (IN/EX): 23.4 mm (0.882 in)<br>OUTER (IN/EX): 32.0 mm (1.260 in) |
| 9) Number of windings (Valve open) | INNER (IN/EX): 7.75 turns<br>OUTER (IN/EX): 6.25 turns |
| 10) Tilt limit (Valve open) | INNER (IN/EX): 1.7 mm (0.067 in) or 2.5°<br>OUTER (IN/EX): 1.9 mm (0.075 in) or 2.5° |
| 11. CRANKSHAFT | |
| 1) Crankshaft deflection | 0.02 mm (0.0008 in) |
| 2) Con-rod large end clearance | 0.160 ~ 0.284 mm (0.0063 ~ 0.0104 in) |
| 3) Clearance between crank and crankcase | 0.05 ~ 0.25 mm (0.002 ~ 0.010 in) |
| 12. CONNECTING ROD | |
| 1) Big end I.D. | $41.0^{+0.024}_{0}$ mm ($1.614^{+0.0009}_{0}$ in) |
| 2) Small end I.D. | $18.0^{+0.028}_{+0.015}$ mm ($0.630^{+0.0011}_{+0.0006}$ in) |
| 3) Difference of each rod weight | 5 g or less |
| 13. CRANK BEARING | |
| 1) Oil clearance | 0.020 ~ 0.044 mm (0.00079 ~ 0.00157 in) |
| 2) Bearing size | 1. (Blue): $19.0^{-0.013}_{-0.009}$ mm / $0.591^{-0.00047}_{-0.00031}$ in<br>2. (Black): $19.0^{-0.009}_{-0.004}$ mm / $0.591^{-0.00031}_{+0.00016}$ in<br>3. (Brown): $19.0^{+0.004}_{0}$ mm / $0.591^{+0.00016}_{0}$ in<br>4. (Green): $19.0^{0}_{-0.004}$ mm / $0.591^{0}_{-0.00016}$ in |
| 14. CLUTCH | |
| 1) Clutch type | Wet, multiple type |
| 2) Clutch operating mechanism | Inner push type, screw push system |
| 3) Primary reduction ratio and method | 78/24 (3.250), spur gear |
| 4) Primary reduction gear back lash<br>Tolerance | A – C, B – D, C – E, D – F |
| 5) Friction plate<br>Thickness/Quantity | 3 mm (0.12 in) / 7 pcs. |
| Wear limit | 2.7 mm (0.11 in) |
| 6) Clutch plate<br>Thickness/Quantity | 1.6 mm (0.063 in) / 6 pcs. |
| Warp limit | 0.05 mm (0.002 in) |
| 7) Clutch spring<br>Free length/Quantity | 34.5 mm (1.362 in) / 4 pcs. |
| Minimum length | 33.8 mm (1.323 in) |
| 8) Clutch housing radial play (Wear limit) | 0.009 ~ 0.043 mm (0.00035 ~ 0.00169 in) |
| 9) Push rod bending limit | 0.2 mm (0.008 in) |
| 10) Tightening torque<br>Primary drive gear (M10 P1.25) | 4.3 m-kg (31.1 ft-lb) |
| Clutch spring screw (M6 P1.0) | 1.0 m-kg (7.2 ft-lb) |
| 15. TRANSMISSION | |
| 1) Type | Constant mesh, 6-speed forward |
| 2) Gear ratio: 1st | 35/14 (2.500) |
| 2nd | 32/18 (1.777) |
| 3rd | 29/21 (1.380) |
| 4th | 27/24 (1.125) |
| 5th | 25/26 (0.961) |
| 6th | 26/30 (0.866) |

| | |
|---|---|
| 3) Bearing type: Main axle (Left) | Needle bearing (ø20-ø30-15) |
| Main axle (Right) | Ball bearing (6205) |
| Drive axle (Left) | Ball bearing (6305 special) |
| Drive axle (Right) | Needle bearing (ø20-ø33-15) |
| 4) Oil seal type Drive axle (Left) | SD-35-62-6 |
| 5) Secondary reduction ratio and method | 37/16 (2.312) |
| 6) Tightening torque | |
| Drive sprocket | 7.0 m-kg (50.6 ft-lb) |
| 16. SHIFTING MECHANISM | |
| 1) Type | Cam drum, return type |
| 2) Oil seal type (Change lever) | SD-12-22-6 |
| 3) Tightening torque | |
| Change pedal (M8 P1.0) | 1.0 m-kg (7.2 ft-lb) |
| 17. KICK STARTER | |
| 1) Type | Bendix type |
| 2) Oil seal type (Kick axle) | SD-20-30-7 |
| 3) Kick clip friction tension | 1.0 m-kg (7.2 ft-lb) |
| 4) Tightening torque | |
| Kick crank (M8 P1.25) | 2.0 m-kg (14.5 ft-lb) |
| 18. CRANKCASE | |
| 1) Tightening torque | |
| Bolt (M8 P1.25) | 2.2 m-kg (15.9 ft-lb) |
| Bolt (M6 P1.0) | 1.0 m-kg (7.2 ft-lb) |
| 19. INTAKE | |
| 1) Air cleaner: Type/Quantity | Dry, foam rubber/2 pcs. |
| 2) Cleaner cleaning interval | Every 3,200 km (2,000 mile) |
| 3) Valve clearance | See No. 10-2) Valve, valve seat and valve guide |
| 20. CARBURETOR | |
| 1) Type and manufacturer/Quantity | BS34 MIKUNI/2 pcs. |
| 2) I.D. mark | 2A2-60 |
| 3) Main jet (MJ) | #142.5 |
| 4) Air jet (AJ) | #45 |
| 5) Jet needle-clip position (JN) | 5Z1-4 |
| 6) Needle jet (NJ) | X-4 |
| 7) Throttle valve (Th.V) | #135 |
| 8) Pilot jet (PJ) | #42.5 |
| 9) Air screw (Turns out) (AS) | 1-1/4 ± 1/2 |
| 10) Starter jet (GS) | $GS_1$ #90, $GS_2$ —, $AB_2$ ø0.7 |
| 11) Fuel level (FL) | 32 ± 1 mm (1.26 ± 0.04 in) |
| 12) Vacuum synchronization | 5 mmHg or less |
| 13) Idling engine speed | 1,200 ± 50 rpm |
| 21. LUBRICATION | |
| 1) Engine sump oil Quantity | Oil exchange: 2.0 lit (2.1 qt) |
| | Filter and oil exchange: 2.3 lit (2.4 qt) |
| | Total amount: 2.6 lit (2.7 qt) |
| 2) Oil grade | Shell X-100 or Yamalube 4-cycle oil |
| 3) Oil type | SAE 20W/40 (more than 5°C (32°F)) |
| | SAE 10W/30 (below 15°C (59°F)) |
| 4) Oil pump type | Trochoid pump |
| 5) Trochoid pump specifications | |
| Top clearance | 0.10 — 0.18 mm (0.0039 — 0.0071 in) |
| Tip clearance | 0.03 — 0.09 mm (0.0012 — 0.0035 in) |
| Side clearance | 0.03 — 0.09 mm (0.0012 — 0.0035 in) |
| Oil pump volume | 1.2 lit/min at 500 rpm |
| 6) Relief valve operating pressure | 5 ± 0.5 kg/cm² (71 ± 7 psi) |
| 7) Bypass valve setting pressure | 1.0 ± 0.3 kg/cm² (14 ± 3 psi) |

8) Lubrication chart




## C. Chassis

| | |
|---|---|
| 1. FRAME | |
| 1) Frame design | Semi double cradle, high tensil frame |
| 2) Tightening torque | |
| Engine mounting bolt (M8 P1.25) | 1.8 m-kg (13.0 ft-lb) |
| Engine mounting bolt (M10 P1.25) | 3.1 m-kg (22.4 ft-lb) |
| 2. STEERING SYSTEM | |
| 1) Caster | 28°30' |
| 2) Trail | 85 mm (3.35 in) |
| 3) Number and size of balls in steering head | |
| Upper race | 19 pcs. 1/4 in |
| Lower race | 19 pcs. 1/4 in |
| 4) Steering lock to lock | 43° each (L and R) |
| 5) Tightening torque | |
| Steering shaft fitting nut (M14 P1.25) | 5.4 m-kg (39.1 ft-lb) |
| Steering shaft fitting nut (M25 P1.0) | 3.8 m-kg (27.5 ft-lb) |
| Stem pinch bolt (M8 P1.25) | 1.2 m-kg ( 8.7 ft-lb) |
| Handle bar mounting bolt (M10 P1.25) | 2.3 m-kg (16.6 ft-lb) |
| 3. FRONT SUSPENSION | |
| 1) Type | Telescopic fork |
| 2) Damper type | Oil damper, coil spring |
| 3) Front fork spring | |
| Free length | 484 mm (19.05 in) |
| Wire diameter × winding diameter | 3.8 mm × 23 mm (0.15 × 0.91 in) |
| Spring constant | $k_1$ = 0.4 kg/mm (0 — 100 mm) |
| | $k_2$ = 0.476 kg/mm (100 — 140 mm) |
| 4) Front fork travel | 140 mm (5.5 in) |
| 5) Inner tube O.D. | 44 mm (1.30 in) |
| 6) Front fork oil quantity and type | 130 cc (4.4 oz) each leg |
| | Yamaha fork oil or SAE 10W/30 motor oil |

| | |
|---|---|
| 7) Oil seal type | SD-33-48-10.5 |
| 8) Tightening torque | |
| Under bracket and inner tube (M10 P1.25) | 3.5 m-kg (25.3 ft-lb) |
| Handle crown and inner tube (M8 P1.25) | 1.2 m-kg ( 8.7 ft-lb) |
| 4. REAR SUSPENSION | |
| 1) Type | Swing arm |
| 2) Damper type | Oil damper, coil spring |
| 3) Shock absorber travel | 80 mm (3.15 in) |
| 4) Shock absorber spring | |
| Set length | 193 mm (7.6 in) |
| Free length | 205 mm (8.1 in) |
| Wire diameter × winding diameter | 7.0 mm × 56.5 mm (0.27 × 2.22 in) |
| Spring constant | k = 1.6 kg/mm |
| 5) Swing arm free play (Limit) | 1.0 mm (0.04 in) |
| 6) Pivot shaft — Outside diameter | 16 mm (0.63 in) |
| 7) Tightening torque | |
| Rear shock absorber (Upper) (M10 P1.25) | 3.0 m-kg (21.7 ft-lb) |
| Rear shock absorber (Upper) (M10 P1.25) | 3.0 m-kg (21.7 ft-lb) |
| Pivot shaft (M14 P1.5) | 6.5 m-kg (47.0 ft-lb) |
| 5. FUEL TANK | |
| 1) Capacity | 11.0 ℓ (2.9 US gal) |
| 2) Fuel grade | Regular gasoline (90 octane) |
| 6. WHEEL | |
| 1) Type (Front and rear) | Cast wheel |
| 2) Tire size (Front) | 3.50S18-4PR |
| (Rear) | 3.50S18-4PR |
| 3) Tire pressure | |
| Normal riding (Front) | 1.8 kg/cm² (26 psi) |
| (Rear) | 2.0 kg/cm² (28 psi) |
| High speed riding or with passenger (Front) | 2.0 kg/cm² (28 psi) |
| (Rear) | 2.3 kg/cm² (33 psi) |
| 4) Rim run out limit (Front and rear) | |
| Vertical | 2.0 mm (0.08 in) |
| Lateral | 2.0 mm (0.08 in) |
| 5) Rim size (Front) | 1.85 × 18 |
| (Rear) | 2.15 × 18 |
| 6) Bearing type | |
| Front wheel (Left) | 6302ZZ |
| Front wheel (Right) | 6302ZZ |
| Rear wheel (Left) | 6304ZZ |
| Rear wheel (Right) | 6304ZZ |
| 7) Oil seal type | |
| Front wheel (Left) | SDO-45-56-8 |
| Front wheel (Right) | SD-32-42-7 |
| Rear wheel (Left) | SD-37-52-8 |
| Rear wheel (Right) | SD-33-47-7 |
| 8) Secondary drive chain type | |
| Type | DK530DS |
| Number of links | 97L+Joint |
| Chain pitch | 15.875 mm (5/8 in) |
| Chain free play | 10 — 20 mm (0.4 — 0.8 in) |
| 9) Tightening torque | |
| Front wheel axle (M14 P1.5) | 10.7 m-kg (77.4 ft-lb) |
| Front axle holder (M8 P1.25) | 2.0 m-kg (14.5 ft-lb) |
| Rear wheel axle (M14 P1.5) | 10.7 m-kg (77.4 ft-lb) |

| | |
|---|---|
| 7. BRAKE | |
| 1) Front and rear brake | |
| Type | Hydraulic disc type |
| Disc size (Outside dia. × thickness) | 257 mm × 5.0 mm (10.5 × 0.2 in) |
| Disc wear limit | 4.5 mm (0.18 in) |
| Disc pad thickness | 6.5 mm (0.26 in) |
| Pad wear limit (Minimum thickness) | 1.5 mm (0.06 in) |
| Master cylinder inside dia. | |
| Front | 14.0 mm (0.55 in) |
| Rear | 15.8 mm (0.62 in) |
| Caliper cylinder inside dia. | 38.1 mm (1.5 in) |
| Brake fluid type/quantity | DOT #3/34 cc (0.8 oz) |
| 2) Tightening torque | |
| Brake disc and hub (M8 P1.25) | 2.0 m-kg (14.5 ft-lb) |
| Caliper and support bracket (M8 P1.25) | 1.8 m-kg (13.0 ft-lb) |
| Caliper and pad (M5 P0.8) | 0.3 m-kg ( 2.2 ft-lb) |
| Caliper and bleed screw (M8 P1.25) | 0.6 m-kg ( 4.3 ft-lb) |
| Support bracket and front fork (M10 P1.25) | 3.5 m-kg (25.3 ft-lb) |
| Caliper and brake hose (M10 P1.25) | 2.6 m-kg (18.8 ft-lb) |
| Master cylinder and cylinder bracket (M6 P1.0) | 0.6 m-kg ( 4.3 ft-lb) |

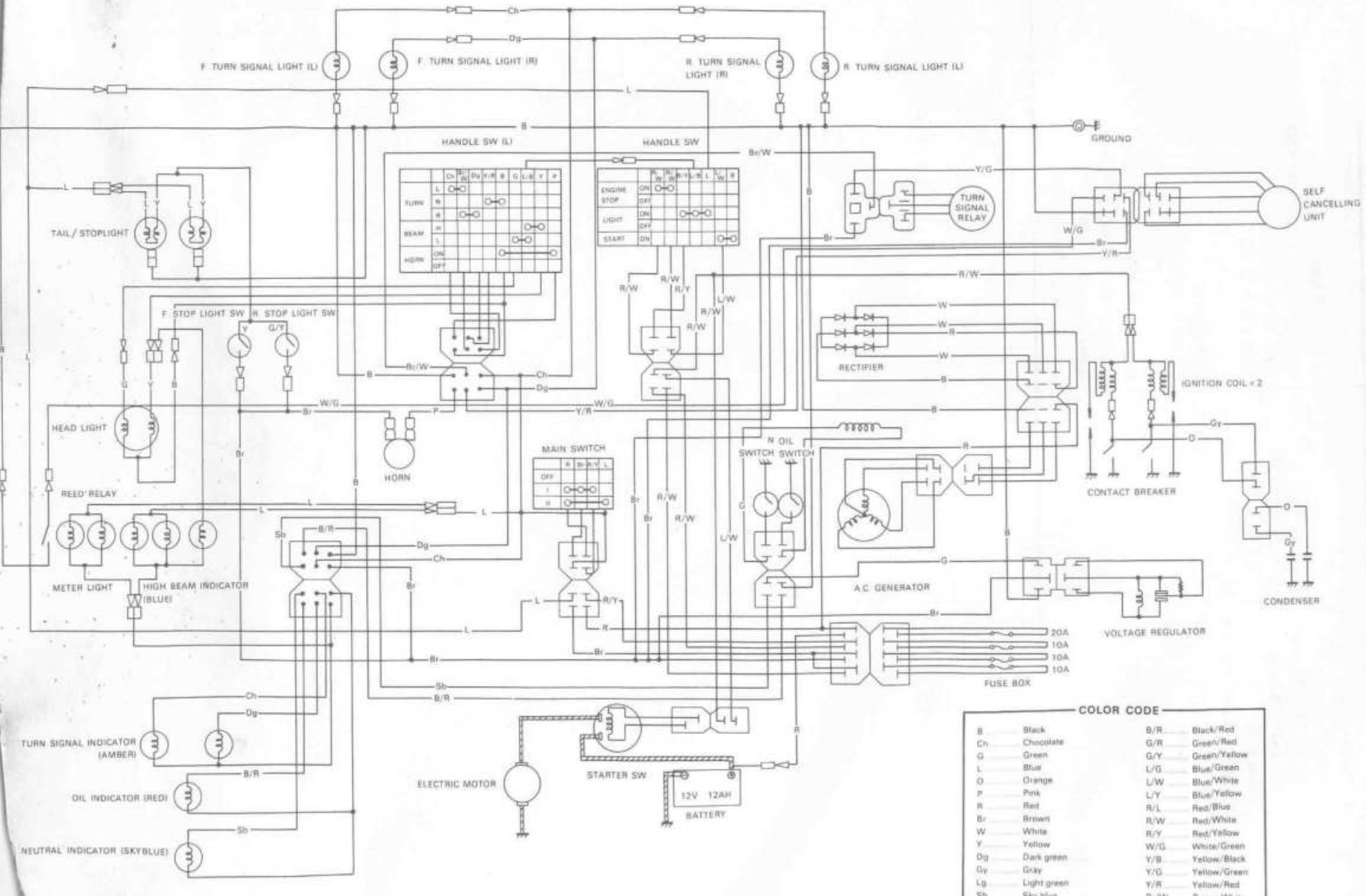
## D. Electrical

| | |
|---|---|
| 1. IGNITION SYSTEM | |
| 1) Battery (AC generator) | |
| Model/Manufacturer | 021000-5840/NIPPON DENSO |
| Voltage | 12V |
| Taper dia. at large end | 25 mm (0.98 in) |
| Rotor tightening torque (M10 P1.25) | 3.3 m-kg (23.9 ft-lb) |
| 2) Ignition timing (B.T.D.C.) | 10° ~ 35° |
| 3) Ignition coil | |
| Model/Manufacturer | 023700-4130/NIPPON DENSO |
| Spark gap | 6 mm/0.24 in/ or more/ 500 rpm |
| Primary winding resistance | 4.00 ± 10% at 20°C (68°F) |
| Secondary winding resistance | 5.5 kΩ ± 20% at 20°C (68°F) |
| 4) Spark plug | |
| Type | NGK BP-7ES, CHAMPION N-7Y, NIPPON DENSO W22EP |
| Spark plug gap | 0.7 ~ 0.8 mm (0.027 ~ 0.031 in) |
| 5) Contact breaker | |
| Manufacture/Quantity | NIPPON DENSO/2 pcs. |
| Point gap | 0.30 ~ 0.40 mm (0.012 ~ 0.016 in) |
| Point spring pressure | 800 ± 100 g |
| Cam closing angle | 135° |
| 6) Condenser | |
| Capacity | 0.24μF |
| Insulation resistance | 10 MΩ (500V megger used) |
| Quantity | 2 pcs. |
| 2. CHARGING SYSTEM | |
| 1) AC generator | |
| Charging output | 14.9V 13A/5,000 rpm |
| Rotor coil resistance (Field coil) | 4.04Ω ± 10% at 20°C (68°F) |
| Stator coil resistance | 0.72Ω ± 10% at 20°C (68°F) |

| | |
|---|---|
| 2) Rectifier | |
| Type | 6-Element type (Full wave) |
| Model/Manufacturer | OS10TEY/MITSUBISHI |
| Capacity | 12A |
| Withstand voltage | 400V |
| 3) Regulator | |
| Type | TRR type |
| Model/Manufacturer | 029000-2790/NIPPON DENSO |
| Regulating voltage | 14.5 ± 0.5V |
| 4) Voltage regulator | |
| Core gap | MIN. 0.2 mm (0.008 in) |
| Yoke gap | MIN. 0.1 mm (0.004 in) |
| Point gap | 0.25 ~ 0.5 mm (0.01 ~ 0.02 in) |
| Voltage coil | 10.5 $^{+5}_{-3}$Ω at 20°C (68°F) |
| Resistor | 140 ± 10Ω at 20°C (68°F) |
| 5) Battery | |
| Model/Manufacturer/Quantity | 12N12-4A-1/F.B. or YUASA/1 pc. |
| Capacity | 12V, 12A |
| Charging rate | 1.2A 10 hours |
| Specific gravity/Quantity | 1.28 at 20°C (68°F), Total 800 cc (27 oz) |
| 3. STARTER | |
| 1) Starter motor | |
| Type | Constant mesh type |
| Manufacturer | MITSUBA ELEC. |
| Model | SM2238 |
| Output | 0.5 kW |
| Armature coil resistance | 0.005 ± 10% at 20°C (68°F) |
| Field coil resistance | 0.011 ± 10% at 20°C (68°F) |
| Brush size/Quantity | 11 $^{+1.5}_{0}$ mm (0.43 $^{+0.06}_{0}$ in)/2 pcs. |
| Wear limit | 8.0 mm (0.24 in) |
| Spring pressure | 550 ± 55 g (19.4 ± 1.9 oz) |
| Commutator O.D./Wear limit | |
| Mica undercut | 0.7 mm (0.027 in) |
| Reduction system/Ratio | Planetary gear/8.45 |
| 2) Starter switch | |
| Manufacturer | HITACHI |
| Model | A104-70 |
| Amperage rating | 100A |
| Cut-in voltage | 8.5V or less |
| Winding resistance | 3.5Ω ± 10% |
| 4. LIGHTING SYSTEM | |
| 1) Head light type | Sealed beam |
| 2) Bulb wattage/Quantity | |
| Head light wattage | 12V, 40/30W × 1 pc. |
| Tail/Stoplight wattage | 12V, 8/27W × 2 pcs. |
| Flasher light wattage | 12V, 27W × 2 pcs. |
| Meter light wattage | 12V, 3.4W × 4 pcs. |
| Neutral light wattage | 12V, 3.4W × 1 pc. |
| Flasher pilot light wattage | 12V, 3.4W × 2 pcs. |
| Oil pressure light wattage | 12V, 3.4W × 1 pc. |
| High beam indicator light wattage | 12V, 3.4W × 1 pc. |
| 3) Horn | |
| Model/Manufacturer | SF-12/NIKKO |
| Maximum amperage | 2.5A |

| | |
|---|---|
| 4) Flasher relay | |
| Type | Condenser type |
| Model/Manufacturer | 081300-4810/NIPPON DENSO |
| Flasher frequency | 85 ± 10 cycle/min |
| Capacity | 27W × 2 + 3.4W |
| 5) Flasher canceling unit | |
| Model | EVH-AC516 |
| Voltage | DC 9V ~ 16V |
| 6) Fuse | |
| Rating/Quantity | Main (Red): 20A<br>Headlight (Red/Yellow): 10A<br>Signal (Brown): 10A<br>Ignition (Red/White): 10A |

# S400D CIRCUIT DIAGRAM




## COLOR CODE

| | | | |
|---|---|---|---|
| B | Black | B/R | Black/Red |
| Ch | Chocolate | G/R | Green/Red |
| G | Green | G/Y | Green/Yellow |
| L | Blue | L/G | Blue/Green |
| O | Orange | L/W | Blue/White |
| P | Pink | L/Y | Blue/Yellow |
| R | Red | R/L | Red/Blue |
| Br | Brown | R/W | Red/White |
| W | White | R/Y | Red/Yellow |
| Y | Yellow | W/G | White/Green |
| Dg | Dark green | Y/B | Yellow/Black |
| Gy | Gray | Y/G | Yellow/Green |
| Lg | Light green | Y/R | Yellow/Red |
| Sb | Sky blue | | |

# XS400E

# SUPPLEMENT

10

# FOREWORD

This Supplementary Service Manual for XS400E has been published to supplement the Service Manual for XS360C and the Supplementary Service Manual for the XS400D. For complete information on service procedures, it is necessary to use this Supplementary Service Manual with Service Manual for XS360C (1L9-28197-10) and the Supplementary Service Manual for the XS400D (2A2-28197-10).

# NOTICE

The service specifications given in this Service Manual are based on the model as manufactured. When this model may require improvements, the service specifications may be subject to change in the future. If any change is introduced into the specifications or service procedure, Yamaha dealers will be notified through technical service information to be published by Yamaha.

The Service procedure is described in the order that mechanic should follow, and the correct service procedure is described in the order that mechanic should follow, and the correct service tools should be used in the correct manner. Failure to do this may result in poor performance and danger to the rider.

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

**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 machine.

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

Page numbers shown in brackets correspond to page numbers of the XS360C Service Manual (1L9-28197-10)

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## 1-1. MACHINE IDENTIFICATION

Specification should be read as follows:

| | Starting Serial Number |
|---|---|
| XS400E | 2L0-000101 |

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## 2-1. MAINTENANCE AND LUBRICATION CHART

### PERIODIC MAINTENANCE

Unit: km (miles)

| Item | Remarks | Initial | | | | Thereafter every | | |
|---|---|---|---|---|---|---|---|---|
| | | 400 (250) | 800 (500) | 1,600 (1,000) | 3,200 (2,000) | 1,600 (1,000) | 3,200 (2,000) | 6,400 (4,000) |
| Cylinder/Piston | Check compression | | | | ○ | | | ○ |
| Valve | Check/Adjust valve clearance | | | ○ | ○ | | | ○ |
| Spark plugs | Inspect/Clean or replace as required | ○ | | | ○ | | ○ | |
| Air filter | Dry type – Clean/Replace as required | | | ○ | | | ○ | |
| Carburetor | Check operation/Adjust as required | | ○ | | ○ | | ○ | |
| Brake system (complete) | Check/Adjust as required — Repair as required | ○ | ○ | ○ | ○ | ○ | | |
| Clutch | Check/Adjust as required | | ○ | | ○ | | ○ | |
| Drive chain | Check tension, alignment/Adjust as required | Every 400 (250) | | | | | | |
| Wheel and tires | Check pressure/Wear/Balance/Damage | ○ | ○ | ○ | | ○ | | |
| Fuel petcocks | Clean/Flush tank as required | ○ | | ○ | | | ○ | |
| Battery | Top-up/Check specific gravity and breather pipe | ○ | ○ | ○ | ○ | ○ | | |
| Ignition timing | Adjust/Clean or replace parts as required | | ○ | ○ | ○ | | ○ | |
| Lights/Signals | Check operation/Replace as required | ○ | ○ | ○ | ○ | ○ | | |
| Fittings/Fasteners | Tighten before each trip and/or ... | ○ | ○ | ○ | ○ | ○ | | |

## LUBRICATION INTERVALS

Unit: km (miles)

| Item | Remarks | Type | Initial | | | | Thereafter every | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 400 (250) | 800 (500) | 1,600 (1,000) | 3,200 (2,000) | 1,600 (1,000) | 3,200 (2,000) | 8,400 (4,000) |
| Engine oil | Replace/Warm engine before draining | See note | ○ | | | ○ | | ○ | |
| Drive chain | Clean/Lube | Yamaha chain and cable lube or SAE 10W-30 motor oil | Every 400 (250) | | | | | | |
| Brake pedal shaft | Light application | Lithium base grease | | | ○ | | ○ | | |
| Change pedal shaft | Light application | Lithium base grease | | | ○ | | ○ | | |
| Control/Meter cables | Apply thoroughly | Yamaha chain and cable lube or SAE 10W-30 motor oil | | | ○ | ○ | | ○ | |
| Throttle grip/ Housing | Apply lightly | Lithium base grease | | | | ○ | | ○ | |
| Hydraulic brake fluid reserve | Use new fluid only | DOT NO. 3 Brake fluid | check | check | check | check | check | | |
| Oil filter element | — | — | ○ | | | 8,400 (4,000) | | | ○ |
| Front forks | Drain completely — Check specifications | Yamaha Fork Oil 20 wt | | | | | | | 12,800 (8,000) |
| Steering bearings | Inspect thoroughly/ Yearly or ..... | Medium-weight wheel bearing grease | | | | | | | 12,800 (8,000) |
| Speedometer gear housing | Inspect thoroughly/ Pack moderately | Lithium base grease | | | | ○ | | | ○ |
| Rear arm pivot shafts | Apply grease fully | Medium-weight wheel bearing grease | | | | ○ | | | ○ |
| Wheel bearings | Do not over/ Yearly or ..... | Medium-weight wheel bearing grease | | | | | | | 12,800 (8,000) |
| Pivot cam fulcrum/ cam welds | Apply very lightly | Light-weight machine oil | | | ○ | | | ○ | |

**NOTE:**

Engine oil type:

a. Yamalube 20W/40 motor oil or equivalent (if temperature does not go below 5°C (40°F).
b. 10W/30 type "SE" motor oil (if temperature does not go above 15°C (60°F).

Brake fluid replacement:

a. When disassembling the master cylinder or caliper cylinder, replace and bleed the air from the brake fluid level and add the fluid as required.
b. Replace the master cylinder and caliper cylinder internal seals every two years.
c. Replace the brake hoses every four years, or if cracked or damaged.

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B. Spark plug

Specification should be read as follows:

| Standard spark plug | Tightening torque |
|---|---|
| NGK BP-7ES<br>CHAMPION N-7Y | 2.0 m-kg (14 ft-lb) |

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## 5-6. TIRES AND TUBES

B. Installation

Specification should be changed as follow.

Tires

Check the tire pressure and check the tires for wear.

IMPORTANT NOTICE

Proper loading of your motorcycle is important for the handling, braking, and other performance and safety characteristics of your machine.

NEVER OVERLOAD YOUR MOTORCYCLE. Consider your riding skill, road and weather conditions, and correct weight distribution when loading your motorcycle. Securely pack your heaviest items close to the center of the machine. Always check the condition and inflation pressure of your tires.

**WARNING:**

**Never overload your motorcycles beyond specified tire limits. Operation of an overloaded tire could cause tire damage, an accident and injury.**

| | FRONT | REAR |
|---|---|---|
| XS400E BASIC WEIGHT with oil and full fuel tank | 82 kg (181 lb) | 87 kg (214 lb) |
| Standard tire | Bridgestone 3.00S-18-4PR | Bridgestone 3.50S-18-4PR |
| Maximum load limit | 118 kg (260 lb) | 226 kg (498 lb) |
| Cold tire pressure: Up to 90 kg (198 lb) load | 1.8 kg/cm² (26 psi) | 2.0 kg/cm² (28 psi) |
| 90 kg (198 lb) load ~ 118 kg (254 lb) load (Maximum load) High speed riding | 2.0 kg/cm² (28 psi) | 2.3 kg/cm² (32 psi) |
| | 2.0 kg/cm² (28 psi) | 2.3 kg/cm² (32 psi) |
| Minimum tire tread depth | 0.8 mm (0.03 in) | 0.8 mm (0.03 in) |

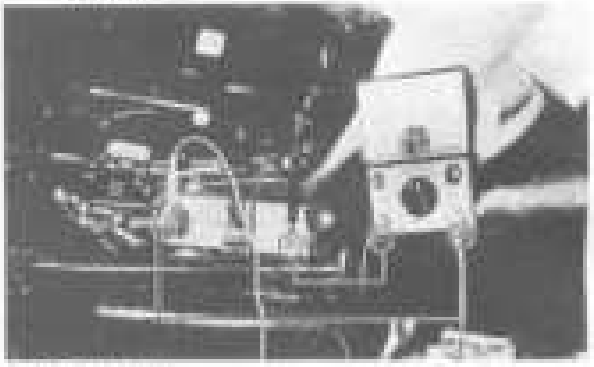
Make sure the total weight of the motorcycle with accessories, rider(s), etc., does not ex-

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B. I.C. voltage regulator

The regulator has been changed from a mechanical-point type to an IC (Integrated Circuit) type. The IC Voltage Regulator is a small and normally very reliable component. Due to its construction, it is light-weight and free from the wear and misadjustment associated with mechanical voltage regulators. If the following inspection reveals that the regulator is faulty, it cannot be adjusted and must be replaced.

1. Checking method
   a. Connect D.C. voltmeter to the battery terminals.



1. D.C. voltmeter

   b. Start engine.
   c. Accelerate engine to approximately 3,000 r/min or more and check regulated voltage.

| Regulated voltage: | 14.0 ~ 14.7V |
|---|---|

   d. If voltage is off, check battery, generator and rectifier. If generator, battery and rectifier are good, then IC regulator is broken and it should be replaced.

NOTE:

1) Never disconnect wires from the battery while the generator is in operation. If the battery is disconnected, the voltage across the generator terminals will increase, damaging the semiconductors.
2) When checking the regulator being installed on a machine, the battery should not be removed, and it should be fully charged.
3) Never use a high voltage insulation ohmmeter such as a megaohmmeter for such a test. If high voltage is applied to the regulator terminals, the regulator will be damaged.

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## 7-2. SPECIFICATION

### A. General

| | |
|---|---|
| 1. MODEL | |
| 1) Model (I.B.M. No.) | KS400E (2L0) |
| 2) Frame I.D. and starting number | 2L0-000101 |
| 3) Engine I.D. and starting number | 2L0-000101 |
| 2. DIMENSION | |
| 1) Overall length | 2,055 mm (81.3 in) |
| 2) Overall width | 865 mm (34.1 in) |
| 3) Overall height | 1,140 mm (44.9 in) |
| 4) Seat height | 780 mm (30.7 in) |
| 5) Wheelbase | 1,385 mm (53.7 in) |
| 6) Minimum ground clearance | 150 mm ( 5.9 in) |
| 3. WEIGHT | |
| 1) Net weight (Dry) | 168 kg (370 lb) |
| 4. PERFORMANCE | |
| 1) Climbing ability | 28° |
| 2) Minimum turning radius | 2,300 mm (90.6 in) |
| 3) Braking distance | 14 m @ 50 km/h (45.9 ft @ 31 mi/h) |

### B. Engine

| | |
|---|---|
| 1. DESCRIPTION | |
| 1) Engine type | Air cooled, 4-stroke, SOHC twin, parallel forward incline |
| 2) Engine model | 2L0 |
| 3) Displacement | 391 cc (23.82 cu.in) |
| 4) Bore x stroke | 69.0 x 52.4 mm (2.717 x 2.063 in) |
| 5) Compression ratio | 9.3 : 1 |
| 6) Starting system | Kick and electric starter |
| 7) Ignition system | Battery ignition |
| 8) Lubrication system | Wet sump |
| 2. CYLINDER HEAD | |
| 1) Combustion chamber volume | 23.6 cc (1.440 cu.in) BP7ES |
| 2) Combustion chamber type | Dome + Squish |
| 3) Head gasket thickness | 1.0 mm (0.04 in) |
| 4) Tightening torque | |
| Cylinder head holding nut (M10 P1.25) | 3.3 m·kg (24.0 ft·lb) |
| Cylinder head holding bolt (M6 P1.0) | 1.0 m·kg ( 7.0 ft·lb) |
| Spark plug (M14 P1.25) | 2.0 m·kg (14.5 ft·lb) |
| 3. CYLINDER | |
| 1) Material | Aluminum alloy with cast iron sleeve |
| 2) Bore size | $69.0^{+0.02}_{0}$ mm ($2.72^{+0.0008}_{0}$ in) |
| 3) Taper limit | 0.05 mm (0.002 in) |
| 4) Out of round limit | 0.01 mm (0.0004 in) |
| 4. PISTON | |
| 1) Piston skirt clearance | 0.030 ~ 0.050 mm (0.0012 ~ 0.0019 in) |
| 2) Piston oversize | 69.25 mm (2.727 in) \| 69.50 mm (2.736 in) \| 69.75 mm (2.746 in) \| 70.00 mm (2.756 in) |
| 3) Piston pin outside diameter x length | $16.0^{\ 0}_{-0.008}$ mm x $58.5^{\ 0}_{-0.3}$ mm<br>($0.63^{\ 0}_{-0.0003}$ in x $2.303^{\ 0}_{-0.0118}$ in) |

| | | |
|---|---|---|
| 5. PISTON RING | | |
| 1) Piston ring design | (Top) | Plain ring 1.0 mm (0.039 in) |
| | (2nd) | Plain ring 1.5 mm (0.059 in) |
| | (Oil ring) | With expander 2.46 mm (0.096 in) |
| 2) Ring end gap | (Installed, top) | 0.2 ~ 0.4 mm (0.008 ~ 0.016 in) |
| | (Installed, 2nd) | 0.2 ~ 0.4 mm (0.008 ~ 0.016 in) |
| | (Installed, oil) | 0.2 ~ 0.9 mm (0.008 ~ 0.035 in) |
| 3) Ring groove side clearance | (Top) | 0.04 ~ 0.08 mm (0.0016 ~ 0.0032 in) |
| | (2nd) | 0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in) |
| | (Oil) | |
| 6. BIG END BEARING | | |
| 1) Type | | Plain bearing |
| 2) Oil clearance | | 0.021 ~ 0.045 mm (0.0008 ~ 0.0018 in) |
| 3) Bearing size | | |

| | | |
|---|---|---|
| 1. (Blue) | $15.0^{+0.004}_{0}$ mm | $0.591^{+0.00016}_{0}$ in |
| 2. (Black) | $15.0^{0}_{-0.004}$ mm | $0.591^{0}_{-0.00016}$ in |
| 3. (Brown) | $15.0^{-0.004}_{-0.008}$ mm | $0.591^{-0.00016}_{-0.00031}$ in |
| 4. (Green) | $15.0^{-0.008}_{-0.012}$ mm | $0.591^{-0.00031}_{-0.00047}$ in |

| | | |
|---|---|---|
| 7. CAMSHAFT | | |
| 1) Cam drive type | | Chain (Center side) |
| 2) Number and type of bearing | | 3 bearings, cylinder head direct support |
| 3) Bearing dimensions | | |

| | Cap I.D. | Shaft O.D. | Clearance |
|---|---|---|---|
| IN and EX | $22.0^{+0.021}_{0}$ mm | $22.0^{-0.020}_{-0.033}$ mm | 0.020 — 0.054 mm |
| 1, 2, 3 | $0.866^{+0.0083}_{0}$ in | $0.866^{-0.00079}_{-0.00130}$ in | 0.00079 — 0.00213 in |

4) Cam dimensions

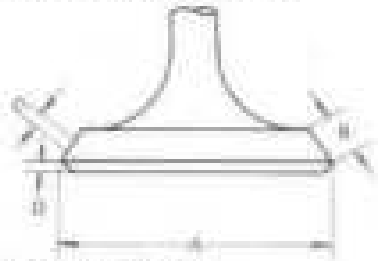
| | Cam height "A" | Limit | Base circle "B" | Limit | Lift "C" |
|---|---|---|---|---|---|
| IN | 39.93 ± 0.05 mm (1.556 ± 0.0019 in) | 39.38 mm (1.550 in) | 32.27 ±0.05 mm (1.270 ± 0.0019 in) | 32.12 mm (1.265 in) | 7.63 mm (0.299 in) |
| EX | 39.67 ± 0.05 mm (1.562 ± 0.0019 in) | 39.42 mm (1.552 in) | 32.12 ± 0.05 mm (1.265 ± 0.0019 in) | 31.97 mm (1.259 in) | 7.67 mm (0.298 in) |




5) Valve timing

| | OPEN | CLOSE | DURATION | OVERLAP |
|---|---|---|---|---|
| IN | BTDC 30° | ABDC 70° | 280° | 60° |
| EX | BBDC 70° | ATDC 30° | 280° | |

| | |
|---|---|
| 6) Camshaft deflection limit | 0.03 mm (0.0012 in) |
| 7) Cam chain | |
| Type | TSUBAKIMOTO BF05M |
| Pitch/Number of links | 7.774 mm (0.3060 in)/92L |
| Sprocket ratio (Teeth) | 34/17 (2.000) |
| 8. ROCKER ARM AND ROCKER SHAFT | |
| 1) Rocker arm inner diameter | $13.0^{+0.018}_{0}$ mm ($0.512^{+0.0007}_{0}$ in) |
| 2) Rocker arm shaft diameter | $13.0^{-0.016}_{-0.034}$ mm ($0.512^{-0.00063}_{-0.00134}$ in) |
| 3) Clearance | 0.016 ~ 0.052 mm (0.00063 ~ 0.00122 in) |
| 4) Lift ratio | X : Y = 32.05 : 33.82 mm (1.262 : 1.324 in) |

| | |
|---|---|
| 9. VALVE, VALVE SEAT AND VALVE GUIDE | |
| 1) Valve per cylinder | 2 pcs |
| 2) Valve clearance (In cold engine) | IN: 0.08 ~ 0.12 mm (0.0031 ~ 0.0047 in)<br>EX: 0.16 ~ 0.20 mm (0.0063 ~ 0.0079 in) |
| 3) Dimensions | |
| Valve head diameter "A" | IN: 35.5 ± 0.1 mm (1.398 ± 0.004 in)<br>EX: 30.0 ± 0.1 mm (1.181 ± 0.004 in) |
| Valve face width "B" | IN: 2.3 mm (0.091 in)<br>EX: 2.3 mm (0.091 in) |
| Valve seat width "C" | IN: 1.0 ± 0.1 mm (0.039 ± 0.004 in)<br>EX: 1.0 ± 0.1 mm (0.039 ± 0.004 in) |
| Valve margin thickness "D" | IN: 1.0 ± 0.2 mm (0.039 ± 0.008 in)<br>EX: 1.0 ± 0.2 mm (0.039 ± 0.008 in) |
|  | |
| Valve stem diameter | IN: 7.0 $^{-0.010}_{-0.025}$ mm (0.275 $^{-0.0004}_{-0.0009}$ in)<br>EX: 7.0 $^{-0.030}_{-0.045}$ mm (0.275 $^{-0.0012}_{-0.0018}$ in) |
| Valve guide diameter | IN: 7.0 $^{+0.015}_{0}$ mm (0.275 $^{+0.0006}_{0}$ in)<br>EX: 7.0 $^{+0.015}_{0}$ mm (0.275 $^{+0.0006}_{0}$ in) |
| Valve stem to stem clearance | IN: 0.010 ~ 0.037 mm (0.00039 ~ 0.00145 in)<br>EX: 0.030 ~ 0.057 mm (0.0012 ~ 0.0022 in) |
| 4) Valve face runout limit | IN & EX: 0.03 mm (0.0012 in) or less |
| 10. VALVE SPRING | |
| 1) Free length | INNER (IN/EX): 38.3 mm (1.547 in)<br>OUTER (IN/EX): 42.8 mm (1.685 in) |
| 2) Spring rate (kg/mm) | INNER (IN/EX): $k_1$ = 1.93<br>$k_2$ = 2.47<br>OUTER (IN/EX): $k_1$ = 4.19<br>$k_2$ = 5.49 |
| 3) Installed length (Valve closed) | INNER (IN/EX): 33.0 mm (1.299 in)<br>OUTER (IN/EX): 37.0 mm (1.457 in) |
| 4) Installed pressure (Valve closed) | INNER (IN/EX): 12.1 ± 1.2 kg (26.7 ± 2.6 lb)<br>OUTER (IN/EX): 24.4 ± 1.7 kg (53.8 ± 3.8 lb) |
| 5) Compressed length (Valve open) | INNER (IN/EX): 25.0 mm (0.984 in)<br>OUTER (IN/EX): 29.0 mm (1.142 in) |
| 6) Compressed pressure (Valve open) | INNER (IN/EX): 31.9 kg (69.2 lb)<br>OUTER (IN/EX): 68.3 kg (151 lb) |
| 7) Wire diameter (Valve open) | INNER (IN/EX): 3.0 mm (0.118 in)<br>OUTER (IN/EX): 4.4 mm (0.173 in) |
| 8) Winding O.D. (Valve open) | INNER (IN/EX): 22.4 mm (0.882 in)<br>OUTER (IN/EX): 32.0 mm (1.260 in) |
| 9) Number of windings (Valve open) | INNER (IN/EX): 7.75 turns<br>OUTER (IN/EX): 6.25 turns |
| 10) Tilt limit (Valve open) | INNER (IN/EX): 1.7 mm (0.067 in) or 2.5°<br>OUTER (IN/EX): 1.9 mm (0.075 in) or 2.5° |

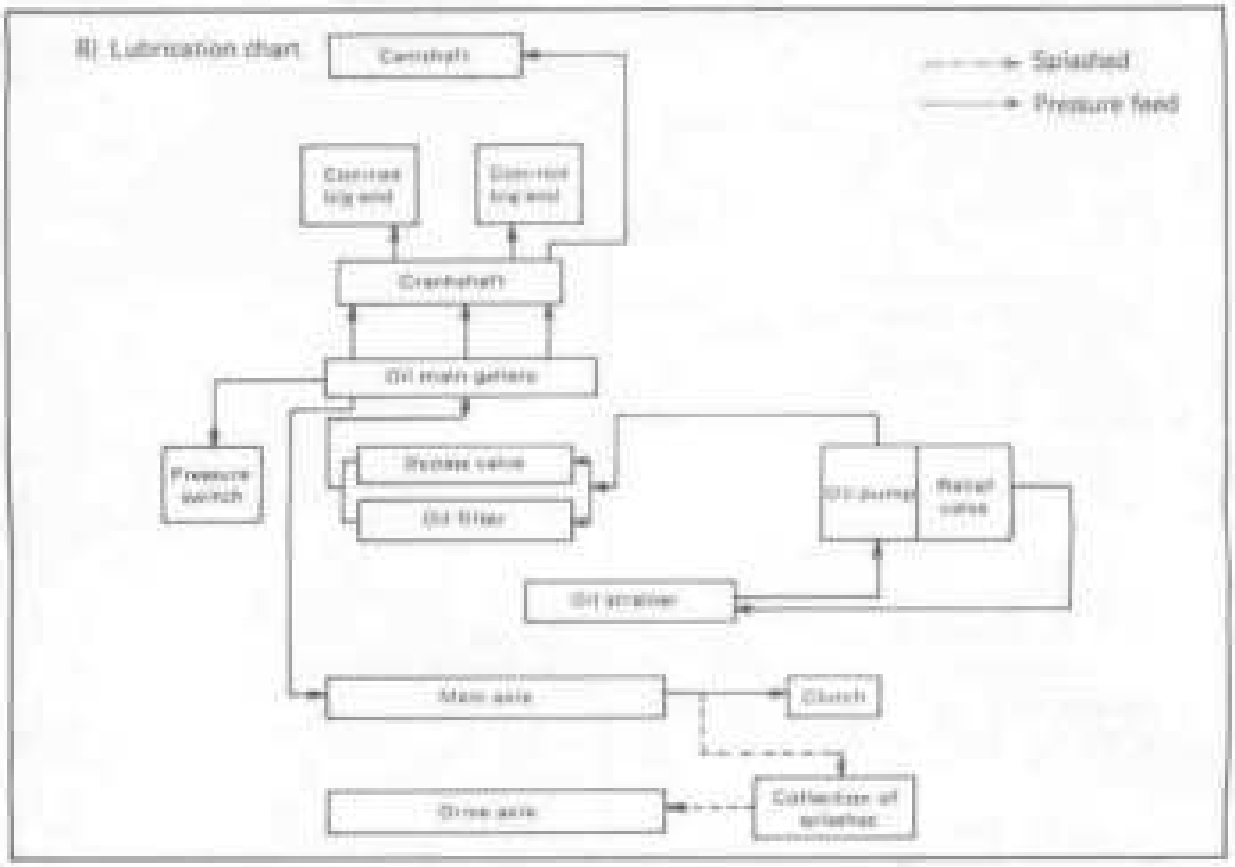
| | |
|---|---|
| 11. CRANKSHAFT | |
| 1) Crankshaft deflection | 0.02 mm (0.0008 in) |
| 2) Con-rod large end clearance | 0.160 ~ 0.264 mm (0.0063 ~ 0.0104 in) |
| 3) Clearance between crank and crankcase | 0.05 ~ 0.25 mm (0.002 ~ 0.010 in) |
| 12. CONNECTING ROD | |
| 1) Big end I.D. | 41.0 $^{+0.024}_{0}$ mm (1.614 $^{+0.0009}_{0}$ in) |
| 2) Small end I.D. | 16.0 $^{+0.026}_{+0.015}$ mm (0.630 $^{+0.0011}_{+0.0006}$ in) |
| 3) Difference of each rod weight | 5 g or less |
| 13. CRANK BEARING | |
| 1) Oil clearance | 0.020 ~ 0.044 mm (0.00079 ~ 0.00157 in) |
| 2) Bearing size | |

| | | |
|---|---|---|
| 1. (Blue) | 16.0 $^{+0.012}_{+0.006}$ mm | (0.591 $^{+0.00047}_{+0.00031}$ in) |
| 2. (Black) | 16.0 $^{+0.009}_{+0.004}$ mm | (0.591 $^{+0.00031}_{+0.00016}$ in) |
| 3. (Brown) | 16.0 $^{+0.004}_{0}$ mm | (0.591 $^{+0.00016}_{0}$ in) |
| 4. (Green) | 16.0 $^{0}_{-0.004}$ mm | (0.591 $^{0}_{-0.00016}$ in) |

| | |
|---|---|
| 14. CLUTCH | |
| 1) Clutch type | Wet, multiple type |
| 2) Clutch operating mechanism | Inner push type, screw push system |
| 3) Primary reduction ratio and method | 78/24 (3.250), spur gear |
| 4) Friction plate | |
| Thickness/Quantity | 3 mm (0.12 in)/7 pcs. |
| Wear limit | 2.7 mm (0.11 in) |
| 5) Clutch plate | |
| Thickness/Quantity | 1.6 mm (0.063 in)/6 pcs. |
| Warp limit | 0.05 mm (0.002 in) |
| 6) Clutch spring | |
| Free length/Quantity | 34.6 mm (1.362 in)/4 pcs. |
| Minimum length | 33.6 mm (1.323 in) |
| 7) Clutch housing radial play (Wear limit) | 0.009 ~ 0.043 mm (0.00035 ~ 0.00169 in) |
| 8) Push rod bending limit | 0.2 mm (0.008 in) |
| 9) Tightening torque | |
| Primary drive gear (M10 P1.25) | 4.8 m-kg (34.5 ft-lb) |
| Clutch spring screw (M6 P1.0) | 1.0 m-kg ( 7.2 ft-lb) |
| 15. TRANSMISSION | |
| 1) Type | Constant mesh, 6-speed forward |
| 2) Gear ratio: 1st | 35/14 (2.500) |
| 2nd | 32/18 (1.777) |
| 3rd | 29/21 (1.380) |
| 4th | 27/24 (1.125) |
| 5th | 25/26 (0.961) |
| 6th | 26/30 (0.866) |
| 3) Bearing type: Main axle (Left) | Needle bearing (φ20-φ30-15) |
| Main axle (Right) | Ball bearing (6206) |
| Drive axle (Left) | Ball bearing (6305 special) |
| Drive axle (Right) | Needle bearing (φ20-φ33-15) |
| 4) Oil seal type Drive axle (Left) | SD-35-62-8 |
| 5) Secondary reduction ratio and method | 38/18 (2.437) Chain |
| 6) Tightening torque | |
| Drive sprocket (M18 P1.0) | 6.5 m-kg (47.0 ft-lb) |

| | | |
|---|---|---|
| 18. SHIFTING MECHANISM | | |
| 1) Type | | Cam drum, return type |
| 2) Oil seal type (Change lever) | | SD-12-22-6 |
| 3) Tightening torque | | |
| Change pedal (M6 P1.0) | | 1.0 m-kg (7.2 ft-lb) |
| 17. KICK STARTER | | |
| 1) Type | | Kick and mesh |
| 2) Oil seal type (Kick axle) | | SD-20-30-7 |
| 3) Kick clip friction tension | | 1.0 m-kg (7.0 ft-lb) |
| 4) Tightening torque | | |
| Kick crank (M8 P1.25) | | 2.0 m-kg (14.5 ft-lb) |
| 16. CRANKCASE | | |
| 1) Tightening torque | | |
| Bolt (M8 P1.25) | | 2.2 m-kg (16.0 ft-lb) |
| Bolt (M6 P1.0) | | 1.0 m-kg (7.0 ft-lb) |
| 19. INTAKE | | |
| 1) Air cleaner: Type/Quantity | | Dry, foam rubber/2 pcs. |
| 2) Cleaner cleaning interval | | Every 3,200 km (2,000 mile) |
| 3) Valve clearance | | See No. 9-2) Valve, valve seat and valve guide |
| 20. CARBURETOR | | |
| 1) Type and manufacturer/Quantity | | BS34 MIKUNI/2 pcs. |
| 2) I.D. mark | | 21D-60 |
| 3) Main jet | (MJ) | # 132.5 |
| 4) Air jet | (AJ) | # 45 |
| 5) Jet needle clip position | (JN) | 5Z1-3 |
| 6) Needle jet | (NJ) | X-6 |
| 7) Throttle valve | (Th.V) | # 135 |
| 8) Pilot jet | (PJ) | # 42.5 |
| 9) Air screw (Turns out) | (AS) | 1-1/4 ± 1/2 |
| 10) Starter jet | (GS) | # 30 |
| 11) Fuel level | (FL) | 32 ± 1 mm (1.26 ± 0.04 in) |
| 12) Vacuum synchronization | | 5 mmHg or less |
| 13) Idling engine speed | | 1,200 ± 50 r/min |
| 21. LUBRICATION | | |
| 1) Engine sump oil quantity | | Oil exchange: 2.0 lit (2.1 qt)<br>Filter and oil exchange: 2.3 lit (2.4 qt)<br>Total amount: 2.8 lit (2.7 qt) |
| 2) Oil type | | Yamalube 4-cycle oil or<br>SAE 20W/40 "SE" motor oil(more than 5°C(32°F))<br>SAE 10W/30 "SE" motor oil(below 15°C (59°F)) |
| 3) Oil pump type | | Trochoid pump |
| 4) Trochoid pump specifications | | |
| Top clearance | | 0.10 ~ 0.18 mm (0.0039 ~ 0.0071 in) |
| Tip clearance | | 0.03 ~ 0.09 mm (0.0012 ~ 0.0035 in) |
| Side clearance | | 0.03 ~ 0.09 mm (0.0012 ~ 0.0035 in) |
| Oil pump volume | | 1.2 lit/min at 500 r/min |
| 5) Relief valve operating pressure | | 5 ± 0.5 kg/cm$^2$ (71 ± 7 psi) |
| 6) Bypass valve setting pressure | | 1.0 ± 0.2 kg/cm$^2$ (14 ± 3 psi) |

8) Lubrication chart




## C. Chassis

| | |
|---|---|
| 1. FRAME | |
| 1) Frame design | Semi double-cradle, high tensil frame |
| 2) Tightening torque | |
| Engine mounting bolt (M8 P1.25) | 1.8 m·kg (13.0 ft·lb) |
| Engine mounting bolt (M10 P1.25) | 3.1 m·kg (22.5 ft·lb) |
| 2. STEERING SYSTEM | |
| 1) Caster | 27° |
| 2) Trail | 84 mm (3.31 in) |
| 3) Number and size of balls in steering head | |
| Upper race | 19 pcs. 1/4 in |
| Lower race | 19 pcs. 1/4 in |
| 4) Steering lock to lock | 42° each (L and R) |
| 5) Tightening torque | |
| Steering shaft fitting nut (M14 P1.25) | 5.4 m·kg (39.0 ft·lb) |
| Steering shaft fitting nut (M25 P1.0) | 3.8 m·kg (27.5 ft·lb) |
| Stem pinch bolt (M8 P1.25) | 1.2 m·kg ( 8.5 ft·lb) |
| Handle bar mounting bolt (M10 P1.25) | 2.3 m·kg (16.5 ft·lb) |
| 3. FRONT SUSPENSION | |
| 1) Type | Telescopic fork |
| 2) Damper type | Oil damper, coil spring |
| 3) Front fork spring | |
| Free length | 484 mm (19.05 in) |
| Wire diameter x winding diameter | 3.8 mm x 23 mm (0.15 x 0.91 in) |
| Spring constant | $k_1$ = 0.4 kg/mm (0 ~ 100 mm) |
| | $k_2$ = 0.575 kg/mm (100 ~ 140 mm) |
| 4) Front fork travel | 140 mm (5.5 in) |
| 5) Inner tube O.D. | 33 mm (1.30 in) |
| 6) Front fork oil quantity and type | 143 cc (4.8 oz) each leg |
| | Yamaha fork oil or SAE 10W/30 [illegible] |

| | |
|---|---|
| 7) Oil seal type | SD-33-46-10.5 |
| 8) Tightening torque | |
| Under bracket and inner tube (M10 P1.25) | 3.5 m-kg (25.0 ft-lb) |
| Handle crown and inner tube (M8 P1.25) | 1.1 m-kg ( 8.0 ft-lb) |
| 4. REAR SUSPENSION | |
| 1) Type | Swing arm |
| 2) Damper type | Oil damper, coil spring |
| 3) Shock absorber travel | 80 mm (3.15 in) |
| 4) Shock absorber spring | |
| Set length | 216 mm (8.50 in) |
| Free length | 305 mm (8.07 in) |
| Wire diameter x winding diameter | 7.0 mm x 54.0 mm (0.27 x 2.13 in) |
| Spring constant | $k_1$ = 1.7 kg/mm (0 ~ 55 mm) |
| | $k_2$ = 2.1 kg/mm (55 ~ 80 mm) |
| 5) Swing arm free play (Limit) | 1.0 mm (0.04 in) |
| 6) Pivot shaft – Outside diameter | 16 mm (0.63 in) |
| 7) Tightening torque | |
| Rear shock absorber (Upper) (M10 P1.25) | 3.0 m-kg (21.5 ft-lb) |
| Rear shock absorber (Upper) (M10 P1.25) | 3.0 m-kg (21.5 ft-lb) |
| Pivot shaft (M14 P1.5) | 6.5 m-kg (47.0 ft-lb) |
| 5. FUEL TANK | |
| 1) Capacity | 14.0 lit (3.7 US. gal) |
| 2) Fuel grade | Regulator gasoline (90 octane) |
| 6. WHEEL | |
| 1) Type (Front and rear) | Cast wheel |
| 2) Tire size (Front) | 3.00S18-4PR |
| (Rear) | 3.50S18-4PR |
| 3) Tire pressure: | |
| Normal riding: (Front) | 1.8 kg/cm$^2$ (26 psi) |
| (Rear) | 2.0 kg/cm$^2$ (28 psi) |
| High speed riding or with passenger (Front) | 2.0 kg/cm$^2$ (28 psi) |
| (Rear) | 2.3 kg/cm$^2$ (33 psi) |
| 4) Rim run out limit (Front and rear) | |
| Vertical | 2.0 mm (0.08 in) |
| Lateral | 2.0 mm (0.08 in) |
| 5) Rim size (Front) | 1.85 x 18 |
| (Rear) | 2.15 x 18 |
| 6) Bearing type | |
| Front wheel (Left) | 6302Z2 |
| Front wheel (Right) | 6302Z2 |
| Rear wheel (Left) | 6304Z2 |
| Rear wheel (Right) | 6304Z2 |
| 7) Oil seal type | |
| Front wheel (Left) | SDD-45-56-6 |
| Front wheel (Right) | SD-32-42-7 |
| Rear wheel (Left) | SD-27-52-5 |
| Rear wheel (Right) | SD-23-47-7 |
| 8) Secondary drive chain type | |
| Type | DK530DS |
| Number of links | 97L + Joint |
| Chain pitch | 15.875 mm (5/8 in) |
| Chain free play | 10 ~ 20 mm (0.4 ~ 0.8 in) |
| 9) Tightening torque | |
| Front wheel axle (M14 P1.5) | 10.7 m-kg (77.5 ft-lb) |
| Front axle holder (M8 P1.25) | 2.0 m-kg (14.5 ft-lb) |
| Rear wheel axle (M16 P1.5) | 10.7 m-kg (77.5 ft-lb) |

| | |
|---|---|
| 7. BRAKE | |
| 1) Front and rear brake | |
| Type | Hydraulic disc type |
| Disc size (Outside dia. x thickness) | 257 mm x 5.0 mm (10.5 x 0.2 in) |
| Disc wear limit | 4.5 mm (0.18 in) |
| Disc pad thickness | 6.5 mm (0.26 in) |
| Pad wear limit (Minimum thickness) | 1.5 mm (0.06 in) |
| Master cylinder inside dia. | |
| Front | 14.0 mm (0.55 in) |
| Rear | 15.8 mm (0.62 in) |
| Caliper cylinder inside dia. | 38.1 mm (1.5 in) |
| Brake fluid type/quantity | DOT #3/34 cc (0.8 oz) |
| 2) Tightening torque | |
| Brake disc and hub (M8 P1.25) | 2.0 m-kg (14.5 ft-lb) |
| Caliper and support bracket (M8 P1.25) | 1.8 m-kg (13.0 ft-lb) |
| Caliper and pad (M5 P0.8) | 0.3 m-kg ( 2.0 ft-lb) |
| Caliper and bleed screw (M8 P1.25) | 0.6 m-kg ( 4.5 ft-lb) |
| Support bracket and front fork (M10 P1.25) | 3.5 m-kg (25.5 ft-lb) |
| Caliper and brake hose (M10 P1.25) | 2.6 m-kg (19.0 ft-lb) |
| Master cylinder and cylinder bracket (M6 P1.0) | 0.6 m-kg ( 4.5 ft-lb) |

## D. Electrical

| | |
|---|---|
| 1. IGNITION SYSTEM | |
| 1) Battery (AC generator) | |
| Model/Manufacturer | 021000-5840/NIPPON DENSO |
| Voltage | 12V |
| Taper dia. at large end | 25 mm (0.98 in) |
| Rotor tightening torque (M10 P1.25) | 3.3 m-kg (24.0ft -lb) |
| 2) Ignition timing (B.T.D.C.) | 10° / 1,200 r/min |
| 3) Ignition coil | |
| Model/Manufacturer | 029700-4130/NIPPON DENSO |
| Spark gap | 6 mm (0.24 in) or more/500 r/min. |
| Primary winding resistance | 4.0 Ω ± 10% at 20°C (68°F) |
| Secondary winding resistance | 9.5KΩ ± 20% at 20°C (68°F) |
| 4) Spark plug | |
| Type | NGK BP-7ES, CHAMPION N-7Y, |
| Spark plug gap | 0.7 ~ 0.8 mm (0.027 ~ 0.031 in) |
| 5) Contact breaker | |
| Manufacture/Quantity | NIPPON DENSO/2 pcs. |
| Point gap | 0.30 ~ 0.40 mm (0.012 ~ 0.016 in) |
| Point spring pressure | 800 ± 100 g |
| Cam closing angle | 105° |
| 6) Condenser | |
| Capacity | 0.24μF ± 15% |
| Insulation resistance | 10MΩ (500V megger used) or more |
| Quantity | 2 pcs. |
| 2. CHARGING SYSTEM | |
| 1) AC generator | |
| Charging output | 14.5V 13A/5,000 r/min |
| Rotor coil resistance (Field coil) | 4.04Ω ± 10% at 20°C (68°F) |
| Stator coil resistance | 0.72Ω ± 10% at 20°C (68°F) |

| | |
|---|---|
| 2) Rectifier | |
| Type | 6-Element type (Full wave) |
| Model/Manufacturer | DS10TE Y/MITSUBISHI or DE3804-1/STANLEY |
| Capacity | 12V |
| Withstand voltage | 400V |
| 3) Regulator | |
| Type | I.C. type |
| Model/Manufacturer | 026000-3280 NIPPON DENSO |
| Regulating voltage | 14.0 ~ 14.7V |
| 4) Battery | |
| Model/Manufacturer/Quantity | 12N12-4A-1 |
| Capacity | 12V, 12AH |
| Charging rate | 1.2A 10 hours |
| Specific gravity/Quantity | 1.28 at 20°C (68°F), Total 800 cc (27 oz) |
| 3. STARTER | |
| 1) Starter motor | |
| Type | Constant mesh type |
| Manufacturer | MITSUBA ELEC. |
| Model | SM223B |
| Output | 0.5kW |
| Armature coil resistance | 0.0085Ω ±10% at 20°C (68°F) |
| Field coil resistance | 0.011Ω ±10% at 20°C (68°F) |
| Brush size/Quantity | 11 $^{+1.5}_{-0}$ mm (0.43 $^{+0.06}_{-0}$ in)/2 pcs. |
| Wear limit | 6.0 mm (0.24 in) |
| Spring pressure | 550 ± 55 g (19.4 ± 1.9 oz) |
| Commutator O.D./Wear limit | 28 mm (1.102 in)/27 mm (1.063 in) |
| Mica undercut | 0.7 mm (0.027 in) |
| Reduction system/Ratio | Chain / 5.45 |
| 2) Starter switch | |
| Manufacturer | HITACHI |
| Model | A104-70 |
| Amperage rating | 100A |
| Cut-in voltage | 8.5V or less |
| Winding resistance | 3.5Ω ± 10% |
| 4. LIGHTING SYSTEM | |
| 1) Head light type | Semi-sealed beam |
| 2) Bulb wattage/Quantity | |
| Head light wattage | 12V, 40/30W |
| Tail/brake light wattage | 12V, 8/27W (3/32 cp) x 2 pcs. |
| Flasher light wattage | 12V, 27W (32 cp) x 4 pcs. |
| Meter light wattage | 12V, 3.4W x 4 pcs. |
| Neutral light wattage | 12V, 3.4W |
| Flasher pilot light wattage | 12V, 3.4W |
| Oil pressure light wattage | 12V, 3.4W |
| High beam indicator light wattage | 12V, 3.4W |
| 3) Horn | |
| Model/Manufacturer | SF-12/NIKKO |
| Maximum amperage | 2.5A |

| | |
|---|---|
| 4) Flasher relay<br>Type<br>Model/Manufacturer<br>Flasher frequency<br>Capacity | <br>Condenser type<br>061300-4810/NIPPON DENSO<br>85 ± 10 cycle/min.<br>27W x 2 +3.4W |
| 5) Flasher cancelling unit<br>Model<br>Voltage | <br>EVH-AC518<br>DC9V ~ 16V |
| 6) Fuse<br>Rating/Quantity | <br>Main (Red): 20 A<br>Headlight (Red/Yellow): 10A<br>Signal (Brown): 10A<br>Ignition (Red/White): 10A |

YAMAHA MOTOR CO.,LTD.
IWATA JAPAN

# XS400-2E

# SUPPLEMENT

# FOREWORD

This Supplementary Service Manual for XS400-2E has been published to supplement the Service Manual for the XS360C (1L9-28197-10) and includes changes in specifications and addition to the data.
For complete information on service procedures, it is necessary to use this Supplementary Service Manual together with the Service Manual for the XS360C (1L9-28197-10).

# NOTICE

This manual has been written by Yamaha Motor Company for use by Authorized Yamaha Dealers and their qualified mechanics. In light of this purpose it has been assumed that certain basic mechanical precepts and procedures inherent to basic knowledge, repairs or service to this model may render the machine unsafe, and for this reason we must advise that all repairs and/or service by performed by an Authorized Yamaha Dealer who is in possession of the requisite basic product knowledge.
The Research, Engineering and Overseas Service Department of Yamaha are continually striving to further improve all models manufactured by the company. Modifications are therefore inevitable and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha Dealers and will, where applicable, appear in future editions of this manual.

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

**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 machine.

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

**Pages numbers shown in brackets correspond to page numbers of the XS360C (1L9-28197-10) Service Manual.**

**(PAGE 5)**
**H. MACHINE IDENTIFICATION**

Specification should be read as follow:

| Starting Serial Number | |
|---|---|
| XS400-2E | 2G5-000101 |

**(PAGE 9, 10)**
**2-1. MAINTENANCE AND LUBRICATION CHART**

**Periodic Maintenance**

Unit: km (mile)

| Item | Remarks | Initial | | | | Thereafter every | | |
|---|---|---|---|---|---|---|---|---|
| | | 400 (250) | 800 (500) | 1,600 (1,000) | 3,200 (2,000) | 1,600 (1,000) | 3,200 (2,000) | 6,400 (4,000) |
| Cylinder | Check compression | | | | ○ | | | ○ |
| Valves | Check/Adjust valve clearance | | | ○ | ○ | | | ○ |
| Spark plugs | Inspect/Clean or replace as required | ○ | | | ○ | | ○ | |
| Air filter | Dry type: Clean/Replace as required | | | ○ | | | ○ | |
| Carburetor | Check operation/Adjust as required | | ○ | | ○ | | ○ | |
| Brake system (complete) | Check/Adjust as required: Repair as required | | ○ | ○ | | ○ | | |
| Wheel and tires | Check pressure/ Wear/ Balance | ○ | ○ | ○ | | ○ | | |
| Fuel petcock | Clean/Flush tank as required | ○ | | ○ | | | ○ | |
| Battery | Top-up/Check specific gravity and breather pipe | ○ | ○ | ○ | ○ | ○ | | |
| Ignition timing | Adjust/Clean or replace parts as required | | ○ | ○ | ○ | | ○ | |
| Lights/Signals | Check operation/Replace as required | ○ | ○ | ○ | ○ | ○ | | |
| Fittings/Fasteners | Tighten before each trip and/or ... | ○ | ○ | ○ | ○ | ○ | | |

## Lubrication Intervals

| Item | Remarks | Type | Initial | | | | Thereafter every | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 400 (250) | 800 (500) | 1,600 (1,000) | 3,200 (2,000) | 1,600 (1,000) | 3,200 (2,000) | 6,400 (4,000) |
| Engine/Transmission oil | Replace/Warm engine before draining | See Note | ○ | | | ○ | | ○ | |
| Drive chain | Lube/Adjust as required | Yamaha chain and cable lube or | Every 400 (250) | | | | | | |
| | Remove/Clean/Lube | SAE 10W/30 motor oil | | | ○ | | ○ | | |
| Brake pedal shaft | Light application | Yamaha chain and cable lube or SAE 10W/30 motor oil | | | ○ | | ○ | | |
| Change pedal shaft | Light application | Yamaha chain and cable lube or SAE 10W/30 motor oil | | | ○ | | ○ | | |
| Control/Meter | Apply thoroughly | Yamaha chain and cable lube or SAE 10W/30 motor oil | | | ○ | ○ | | ○ | |
| Throttle grip/Housing | Apply lightly | Lithium base grease | | | | ○ | | ○ | |
| Oil filter element | Replace | — | ○ | | | 8,400 (4,000) | | | ○ |
| Front forks | Drain completely—Check specifications | Yamaha Fork Oil 20Wt | | | | | | | 12,800 (8,000) |
| Steering bearing | Inspect thoroughly/Yearly or ____ | Medium-weight wheel bearing grease | | | | | | | 12,800 (8,000) |
| Speedometer gear housing | Inspect thoroughly/Pack moderately | Lithium base grease | | | | ○ | | | ○ |
| Point cam lubrication wicks | Apply very lightly | Light-weight machine oil | | | ○ | | | ○ | |

NOTE:

Engine/Transmission oil type

a. Yamalube 20W/40 motor oil or equivalent (if temperature does not go below 5°C (41°F))

b. 10W/30 type "SE" motor oil (if temperature does not go above 15°C (59°F)).

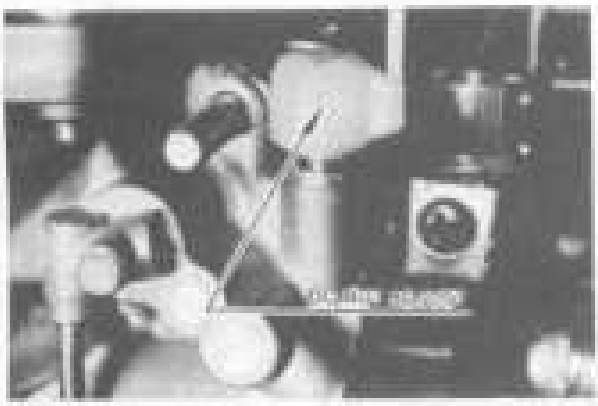
(PAGE 11, 12)

## 2-2. ENGINE

### A. Carburetor

1. Idle mixture

   The idle mixture is set at the factory by the use of special equipment. No attempt should be made to change this adjustment by the dealer.

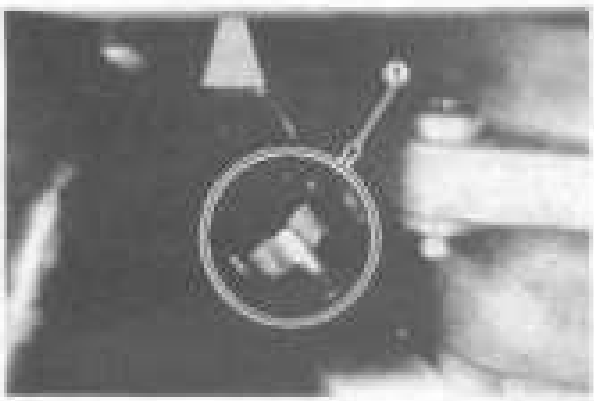


2. Idle speed adjustment

   **NOTE:**
   Carburetors must be synchronized before setting final idle speed. The idle speed adjustment is made by turning only one throttle stop screw.

   a. The engine must be warmed up before setting idle speed.
   b. Set engine idle speed by turning the throttle stop screw in (to increase engine speed) or out (to decrease engine speed).

| Standard idle r/min. |
| --- |
| 1,150 ~ 1,250 r/min |



3. Throttle cable adjustment

   **NOTE:**
   Idle speed should be set before making this adjustment.

   The throttle grip should have a play of 3 ~ 7mm (0.12 ~ 0.28 in) in the turning direction at the grip flange. If the play is not this range, take the following steps for adjustment:
   Loosen the lock nut on the throttle cable, and turn the adjuster in or out so the play is correct. After the adjustment, tighten the lock nut.

4. Synchronization

   **NOTE:**
   Ignition timing and valve clearance must be set properly before synchronizing carburetors.

   Procedure:

   a. Turn petcock to "PRI" position. Remove vacuum pipe and blind plug from carburetor joints.
   b. Connect vacuum gauge pipes on carburetor joints.
   c. Start engine and allow it to warm-up for a few minutes. The warm-up is complete when engine responds normally to throttle opening.
   d. Adjust damping valve on vacuum gauge until the needle flutters only slightly. The gauge needle must responds quickly to rapid opening of the throttle.
   e. Both gauge reading will indicate the same reading if the carburetors are synchronized.
   f. If not, turn the synchronizing screw until the gauge reading is the same.



1. Bandhexagon screw

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C. Float Level

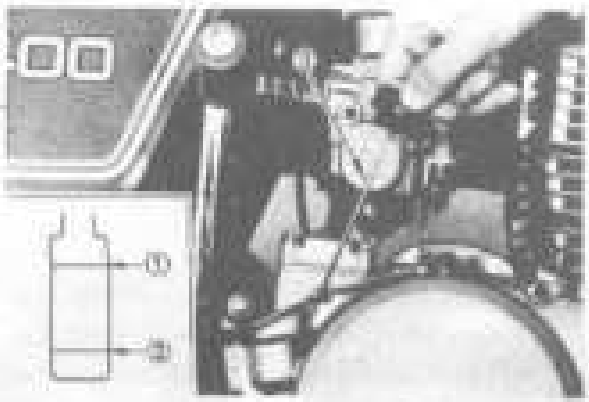
Specification should be read as follow:

Float height:
25.7±1.0mm (1.012±0.039 in)

D. Engine Oil

1. Oil level measurement
   a. Place machine is positioned straight up and on both wheels. Warm up engine for a few minutes. With the engine stopped, screw the dip stick completely out and then reset the stick in the hole.

   NOTE:
   When checking engine oil level with the dip stick, let the unscrewed dip stick rest on the case threads. Also, be sure the engine is stopped and the machine is positioned straight up and both wheels.




1. Maximum level 2. Minimum level

   b. The dip stick has a Minimum and a Maximum mark. The oil level should be between the two. If the level is lower, add sufficient oil to raise it to the proper level.

Oil Capacity:
Periodic oil change
2.0 lit (2.1 US qt)
With oil filter replacement
2.3 lit (2.4 US qt)
Total amount
2.6 lit (2.7 US qt)
Recommended Oil:
a. Yamalube 20W/40 motor oil or equivalent (if temperature does not go below 5°C (41°F)).
b. 10W/30 type "SE" motor oil (if temperature does not go above 15°C (59°F)).

(PAGE 15)

G. Valve Clearance Adjustment

Specifications should be read as follows:

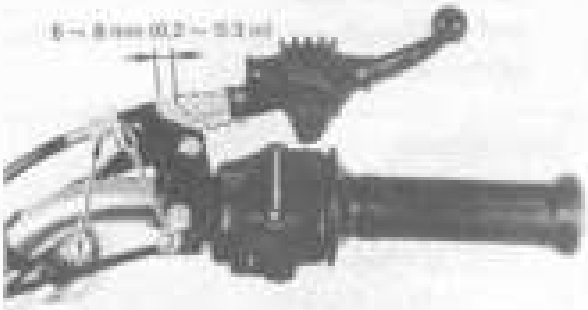
Valve clearance (cold):
Intake 0.10mm (0.004 in)
Exhaust 0.18mm (0.007 in)

(PAGE 16)

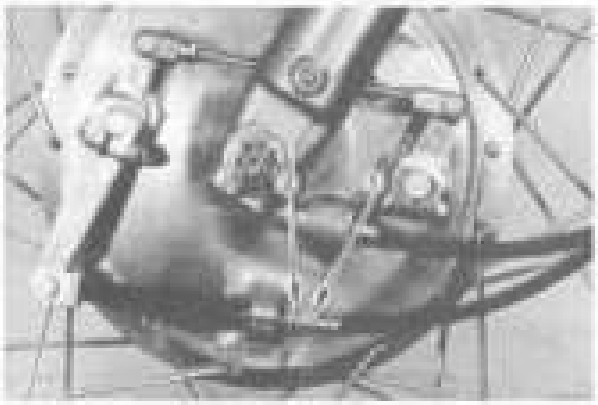
B. Front Brake

1. Brake adjustment
   The front brake should be adjusted to suit rider preference with a minimum cable slack of 5 ~ 8mm (0.2 ~ 0.3 in) play at the brake lever pivot point. Adjustment is accomplished at one of two places: either the handlebar lever holder of the front brake hub.
   a. Loosen the lock nut.
   b. Turn the cable length adjuster in or out until adjustment is suitable.

c. Tighten the lock nut.



1. Adjuster 2. Lock nut



1. Adjuster 2. Lock nut

2. Brake pad check
   Delete the whole paragraph.
3. Brake fluid level check
   Delete the whole paragraph.

(PAGE 17)

**D. Drive Chain Tension Check**

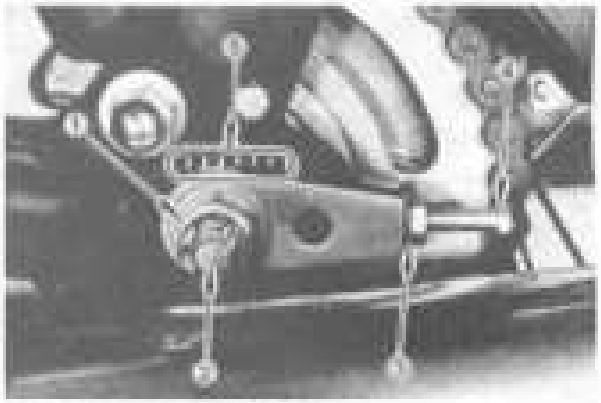
Inspect the drive chain with both tires touching the ground and machine is positioned straight up. Check the tension at the halfway between the drive and driven sprockets. The normal vertical deflection is approximately 30 ~ 35mm (1.2 ~ 1.4 in). If the deflection exceeds 35mm (1.4 in) adjust the chain tension.

**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.

**E. Drive Chain Tension Adjustment**

1. Loosen the rear brake adjuster.
2. Remove the cotter pin of the rear wheel axle nut.
3. Loosen the axle nut.
4. To tighten chain, turn chain puller adjuster clockwise. To loosen chain, turn adjuster counterclockwise. To each adjuster exactly the same amount to maintain correct axle alignment.



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

5. After adjusting, be sure to tighten the lock nuts and the rear wheel axle nut.
6. Install the new cotter pin.
7. In the final step, adjust the play in the brake pedal.

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**2-4. ELECTRICAL**

**A. Contact Breaker**

1. The contact breaker should be checked for the following:
   a. Wear of the bakelite cam heel.
   b. Damage of contact point surfaces.
   c. Rust or wear on the breaker arm or arm shaft.
   d. Faulty insulation of the contact breaker assembly.
   e. Oil or dirt on the assembly.
2. To clean the points, run a point file between the points until grey deposits and pits have been removed. Spray the points with ignition cleaner or lacquer thinner, then snap the points shut on

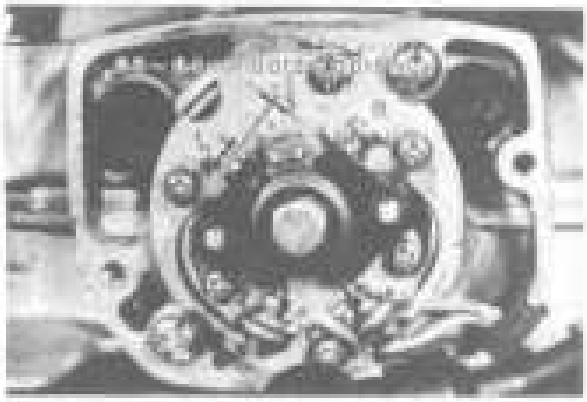
through until no more carbon or metal particles come off on the card. (The card may be clipped in lacquer or other cleaner to facilitate this procedure.)

3. Point replacement should be necessary when the points become severely pitted, or if the heel is broken or worn unevenly, or if the points become shorted or show faulty operation.

NOTE:
New points must be cleaned and adjusted.

4. Adjust point gap (at widest opening) by moving the contact breaker assembly. Use filler gauge for this adjustment.

| Point gap: |
| --- |
| 0.3 ~ 0.4 mm (0.012 ~ 0.015 in) |



5. Add a few drops of light-weight machine oil onto the felt rubbing pad after each point adjustment to lubricate the point cam surface. Do not over oil.

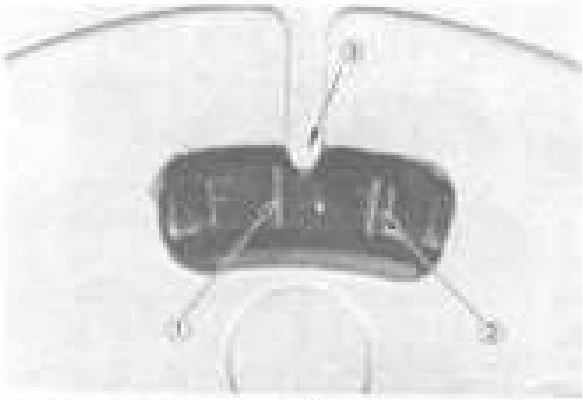
**B. Ignition Timing**

NOTE:
Point gap must be set before setting ignition timing.

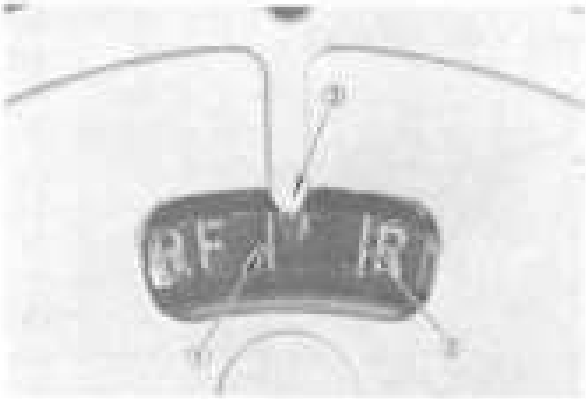
1. Ignition timing is checked with a timing light by observing the position of the stationary pointer on the crankcase cover and the marks stamped on the generator rotor.

[illegible] is marked as fol-

| | |
| --- | --- |
| "LF" | Retarded firing point for L.H. cylinder |
| "RF" | Retarded firing point for R.H. cylinder |
| "LT" | Top Dead Center for L.H. cylinder |
| "RT" | Top Dead Center for R.H. cylinder |




1. "LF" mark 2. "LT" mark 3. Pointer




1. "RF" mark 2. "RT" mark 3. Pointer

2. Connect timing light to left cylinder spark lead wire. Ignition timing of left cylinder must be set first.

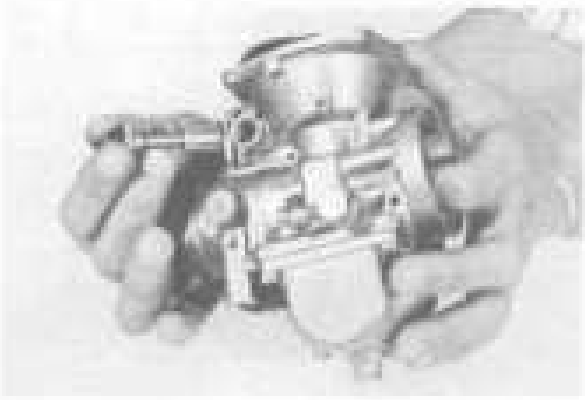
NOTE:
Install a suitable rubber cap on to the crankcase cover lower hole.

3. Start the engine and keep the engine speed as specified. Use a tachometer for checking.

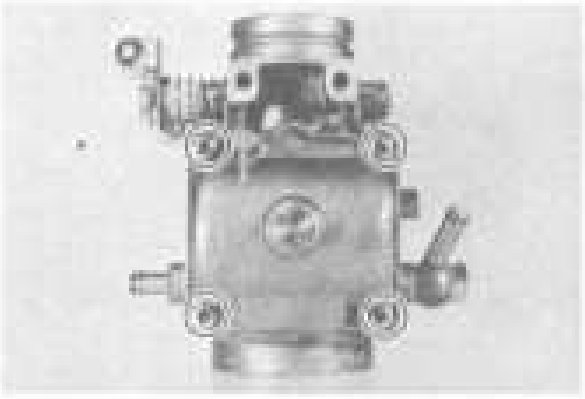
| Engine idling speed: |
| --- |
| 1,200 r/min |

4. The "LF" mark stamped on the rotor should line up pointer on the crankcase cover at a specified engine speed. If it does not align, loosen two breaker

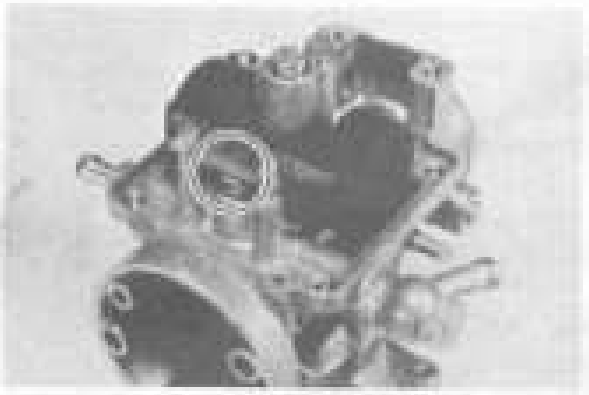
5. To inspect starter jet, remove the starter assembly to the left side of the carburetor.



6. Remove the four screws holding the float bowl cover. Remove the float bowl cover. The main jet is located under a cover in the float bowl.



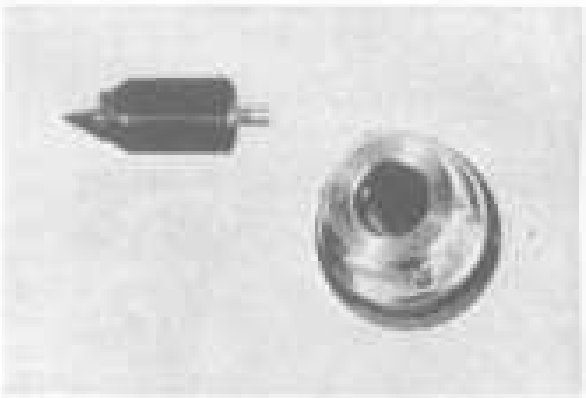
7. Pull out float pivot pin. Remove the float assembly. Be careful to not lose the float valve needle located under the float level adjustment tang. Remove the needle jet.



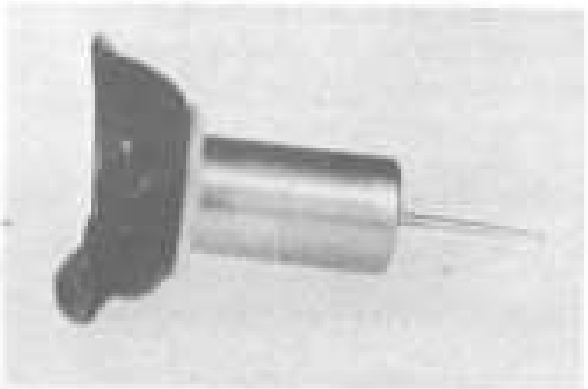
8. Reassemble in reverse order. Pay close attention to the installation of the vacuum position diaphragm.

**B. Inspection**

1. Examine carburetor body and fuel passages. If contaminated, wash carburetor in petroleum-based solvent. Blow out all passages and jets with compressed air.
2. Examine condition of floats. If floats are leaking or damaged, they should be replaced.
3. Inspect inlet needle valve and seat for wear or contamination. Replace these components as a set.



4. Inspect vacuum piston and rubber diaphragm. If the piston is scratched or the diaphragm is torn, the assembly must be replaced.



**C. Adjustment (Float level)**

Refer to CHAPTER 2, Section 2-2, C for "Float Level" adjustment procedure.

| Tightening point | Stud dia (mm) | Q'ty | Torque m·kg (ft·lb) | Remarks |
|---|---|---|---|---|
| Oil filter | 20 | 1 | 1.5 (11.0) | |
| Oil strainer | 5 | 6 | 0.7 ( 5.0) | |
| Oil pressure switch | 1/8 in | 1 | 1.8 (13.0) | Apply Lock Tite |
| Crankcase | 8 | 7 | 2.2 (16.0) | |
| | 6 | 14 | 1.0 ( 7.0) | |
| Clutch spring screw | 6 | 4 | 1.0 ( 7.0) | |
| Primary drive gear | 10 | 1 | 4.8 (35.0) | |
| Drive sprocket | 18 | 1 | 6.5 (47.0) | |
| Kick crank | 8 | 1 | 2.0 (14.5) | |
| Change pedal | 6 | 1 | 1.0 ( 7.0) | |
| Neutral switch | 5 | 3 | 0.4 ( 3.0) | |
| Exhaust pipe | 8 | 4 | 2.2 (16.0) | |

## 3-3. INSPECTION AND REPAIRING

### C. Valves, Valve Springs, Valve Guides and Valve Seats

2. Checking the valve springs

| | Outer (IN & EX) | Inner (IN & EX) |
|---|---|---|
| Free length | 42.8 mm (1.685 in) | 39.3 mm (1.547 in) |
| Installed length (Valve closed) | 37.0 mm (1.457 in) | 33.0 mm (1.299 in) |
| Installed pressure | 24.4±1.7 kg (53.8±3.8 lb) | 12.1±1.2 kg (26.7±2.6 lb) |
| Compressed length (Valve open) | 29.0 mm (1.142 in) | 25.0 mm (0.984 in) |
| Compressed pressure | 66.2±4.5 kg (150.6±9.9 lb) | 31.4±2.2 kg (69.2±4.8 lb) |

### E. Cylinder

3. Types of cylinder

| | Piston size | Cylinder size |
|---|---|---|
| A | 69 [illegible] mm (2.7165 [illegible] in) | 69 [illegible] mm (2.7165 [illegible] in) |
| B | 69 [illegible] mm (2.7165 [illegible] in) | 69 [illegible] mm (2.7165 [illegible] in) |

| | Standard |
|---|---|
| Cylinder bore | 69.00 — 69.02 mm (2.7165 — 2.7173 in) |
| [illegible] | 0.05 mm (0.002 in) |

### F. Piston and Piston Rings

1. Piston

| | Size |
|---|---|
| Standard | 69.00 mm (2.716 in) |
| Oversize 1 | 69.25 mm (2.726 in) |
| Oversize 2 | 69.50 mm (2.736 in) |
| Oversize 3 | 69.75 mm (2.746 in) |
| Oversize 4 | 70.00 mm (2.756 in) |

2. Piston ring

| | Oversize Dia. | Stamped Mark |
|---|---|---|
| Oversize 1 | 69.25 mm (2.726 in) | 25 |
| Oversize 2 | 69.50 mm (2.736 in) | 50 |
| Oversize 3 | 69.75 mm (2.746 in) | 75 |
| Oversize 4 | 70.00 mm (2.756 in) | 100 |

(PAGE 58, 59)

## 4-1. CARBURETOR

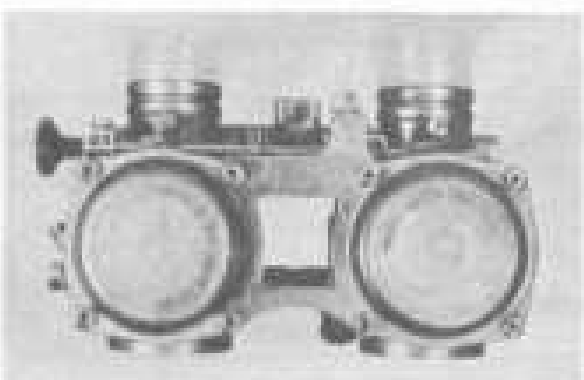
This model is furnished with the two-position starter jet of carburetor.

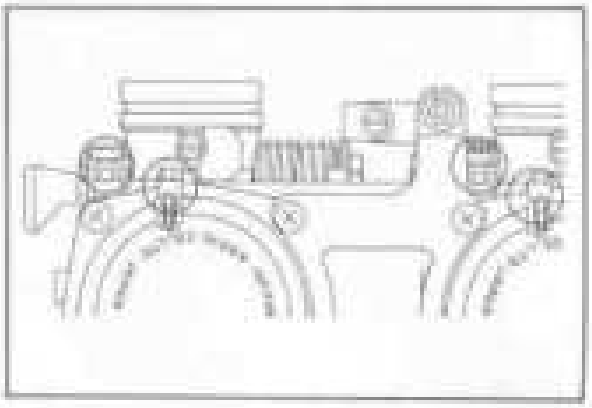
### A. Disassembly

1. Prepare to separate carburetor (separation not necessary if only float level adjustment or throttle slide inspection is to be done). Remove the two screws holding the starter shaft to the carburetor.

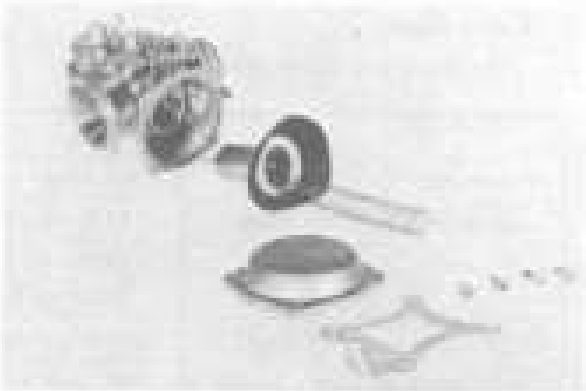
**NOTE:**

1) While pulling out the starter shaft, take care that the shaft positioning balls on the left and right do not pop out.
2) As illustrated, reassembly the starter shaft so that the holding screws fit in the shaft dents.

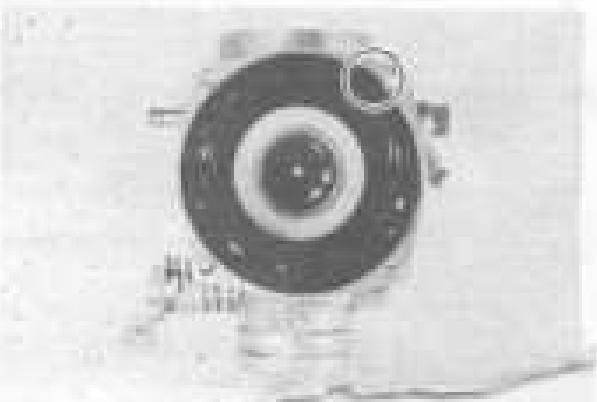




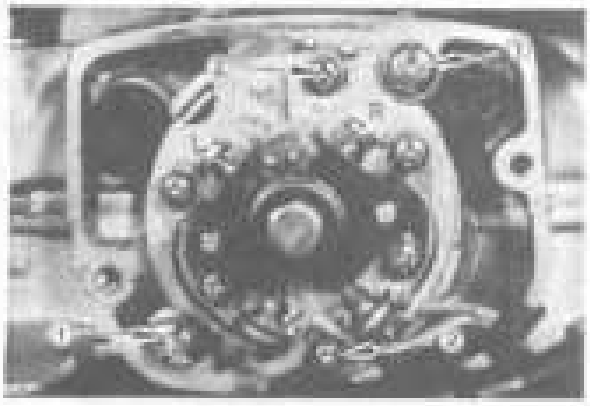
2. Remove upper and lower brackets. Note position of synchronizing screws for guidance in reassembly. Separate carburetors.
3. Remove vacuum chamber cover. Remove the spring, needle fitting plate, jet needle and diaphragm (vacuum piston).



4. Note that there is tab on the rubber diaphragm. There is matching recesses in the carburetor body for the diaphragm tab.



backing plate screws and move the complete backing plate until the pointer marker align.



1. Left cylinder timing adjustment
2. Right cylinder timing adjustment

5. Retighten screws. Check timing again for left cylinder.

6. Repeat procedure (steps 1-5) for right cylinder.

(PAGE 20)

B. Spark Plug

Specifications should be read as follows:

| Standard spark plug | Tightening torque |
|---|---|
| N-7Y (CHAMPION) or B7ES (N.G.K.) | 2.0 m-kg (14.5 ft-lb) |

(PAGE 25-56)

This model is not furnished with a starter motor. Please delete the items concerning the starter motor from these pages.

This model (XS400-2E) is different from XS360C in the following items and specifications.

## ENGINE SECTION TIGHTENING TORQUE CHART

| Tightening point | Stud dia. (mm) | Q'ty | Torque m-kg (ft-lb) | Remarks |
|---|---|---|---|---|
| Cylinder head cover and cylinder head | 8 | 8 | 2.2 (16.0) | |
| | 6 | 6 | 1.0 ( 7.0) | |
| Cylinder head | 6 | 2 | 1.0 ( 7.0) | |
| | 10 | 8 | 3.3 (24.0) | Apply engine oil |
| Tapper cover | 32 | 4 | 1.2 ( 8.5) | |
| Rocker plug | 16 | 2 | 1.6 (11.5) | |
| Spark plug | 14 | 2 | 2.0 (14.5) | |
| Valve clearance adjusting nut | 8 | 4 | 1.4 (10.0) | |
| Cam sprocket bolt | 7 | 2 | 2.0 (14.5) | |
| Connecting rod | 8 | 4 | 3.6 (26.0) | Apply molybdenum grease |
| Rotor bolt | 10 | 1 | 3.3 (24.0) | |
| Governor | 6 | 1 | 1.0 ( 7.0) | |
| Drain plug | 14 | 1 | 3.7 (27.0) | |

## D. Description

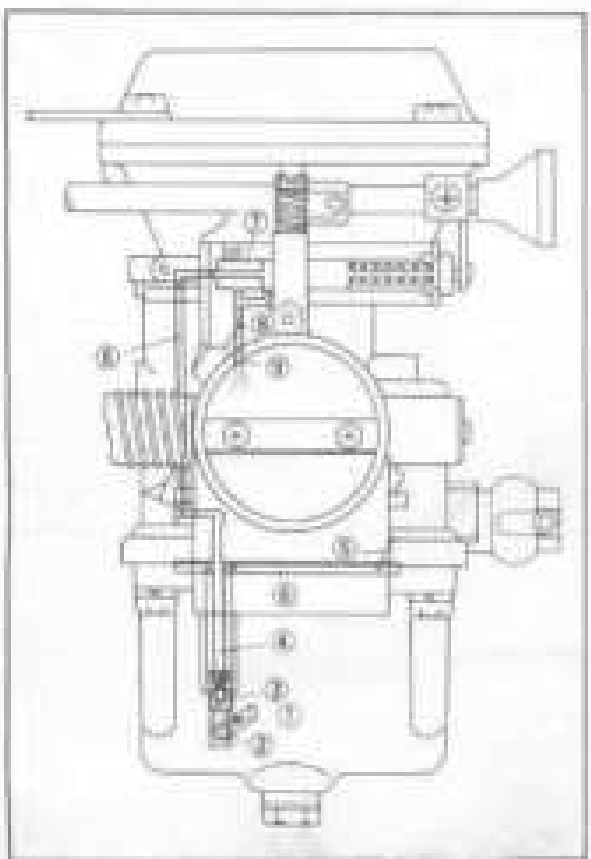
### Two-position starter jet (Choke)

With a conventional one-position starter jet, the air-fuel ratio remains the same as that required to start the engine (despite that the engine temperature rises gradually) until the engine operating temperature rises to the point at which use of the starter jet is no longer necessary. In other words, the air-fuel mixture is too rich until the engine operating temperature rises to a certain point.

The newly-adopted two-position type starter jet is designed to supply a mixture of proper strength by switching one jet to another.

### Routes of Fuel and Air

The fuel supplied from the float chamber ① passes through ② and metered by ③. Air is supplied from the air chamber in the float chamber and flows through ⑤ and ⑥, then it is mixed with the metered fuel. The resultant mixture passes through ④ and ⑤ and flows into the two-position starter jet ⑦, where it is further mixed with air supplied from the diaphragm lower chamber. The mixture passes through ⑧ and streams into the throttle bore out of ⑨.



### Operation of two-position starter jet

**Full-open:**

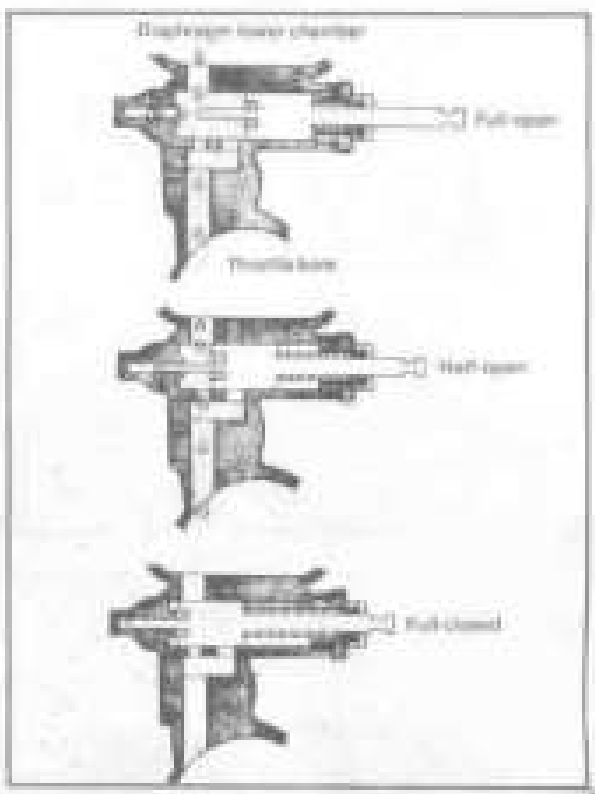
To start a cold engine, a rich mixture is required. To supply a rich mixture, pull the starter knob all the way out so that the needle regulating the fuel from is set free and the flow rate of incoming fuel is increases to a maximum. The fuel is mixed with the air supplied from the diaphragm lower chamber, and thus a rich mixture is produced.

**Half-open:**

When warming up the engine, a slightly rich mixture is required. Pull out the starter jet a half-way so that the fuel flow is reduced by the needle. The fuel is mixed with the air from the diaphragm lower chamber, and thus a slightly rich mixture is produced.

**Full-closed:**

When the engine fully warms up, no mixture from the starter circuit is necessary. Push the starter knob all the way in so that the flow of incoming fuel is stopped by the needle. At the same time, the flow of incoming air is also stopped by the plunger, and thus no mixture enters the throttle bore.



**(PAGE 62-76)**

This model is not furnished with the disc brake. Please delete the items concerning the disc brake from these pages.

This model (XS400-2E) is different from XS360C in the following items and specifications.

## CHASSIS SECTION TIGHTENING TORQUE CHART

| Tightening point | Start dia (mm) | Q'ty | Torque m-kg (ft-lb) | Remarks |
|---|---|---|---|---|
| Engine mounting | 10 | 4 | 3.1 (22.5) | |
| | 8 | 1 | 1.8 (13.0) | |
| Handle crown and steering shaft | 14 | 1 | 5.4 (39.0) | |
| | 25 | 1 | 3.8 (27.5) | |
| Handle crown and inner tube | 8 | 2 | 1.1 ( 8.0) | |
| Handle crown and handle holder | 10 | 2 | 2.3 (16.5) | |
| Under bracket and inner tube | 10 | 2 | 3.5 (25.5) | |
| Damper unit | 8 | 1 | 2.0 (14.5) | Apply Lock Tite |
| Rear shock absorber | 10 | 4 | 3.0 (21.5) | |
| Pivot shaft | 14 | 1 | 6.5 (47.0) | Use lock washer |
| Front wheel axle | 14 | 1 | 10.5 (76.0) | |
| Front wheel axle holder | 8 | 2 | 2.0 (14.5) | |
| Engine mounting stay | 8 | 6 | 1.8 (13.0) | |
| Rear wheel axle | 14 | 1 | 10.5 (76.0) | |
| Tension bar and brake plate | 8 | 1 | 1.4 (10.0) | |
| Tension bar and rear arm | 8 | 1 | 1.4 (10.0) | |
| Sprocket wheel | 12 | 4 | 5.5 (40.0) | Use lock washer |
| Footrest (front) | 8 | 4 | 1.1 ( 8.0) | |
| Footrest (rear) | 10 | 2 | 1.7 (12.5) | |

## 5-2. REAR WHEEL

### B. Checking Brake Shoe Wear

1. Measure the outside diameter at the brake shoes with slide calipers.

| | FRONT | REAR |
|---|---|---|
| Brake shoe dia. | 180 mm (7.07 in) | 160 mm (6.30 in) |
| Lining thickness/Wear limit | 4 mm/2 mm (0.16/0.08 in) | 4 mm/2 mm (0.16/0.08 in) |
| Brake shoe dia. replacement limit | 176 mm (6.93 in) | 156 mm (6.14 in) |

## 5-5. TIRES AND TUBES

### A. Removal

1. Remove valve cap, valve core and valve stem lock nut.
2. When all air is out of tube, separate tire bead from rim (both sides) by stepping on tire with your foot.
3. Use two tire irons (with rounded edges) to work the tire bead over the edge of the rim, starting 180° opposite the tube stem. Be careful not to pinch the tube as you do this.
4. After you have worked one side of the tire completely off the rim, slip the tube out. Be very careful not to damage the stem while pushing it back out of the rim hole.

**NOTE:**
If you are changing the tire itself, then finish the removal by working the second bead off the rim.

**B. Installation**
Please add the following item after "B. Installation".

**C. Checking for tire pressure and wear**
Check the tire pressure and check the tire for wear.

**IMPORTANT NOTICE**

Proper loading of XS400-2E is important for the handling, braking, and other performance and safety characteristics of the machine.

**NEVER OVERLOAD THE MOTORCYCLE.**
Always check the condition and inflation pressure of tires.

**WARNING:**
**Never overload the motorcycle beyond specified tire limits. Operation of an overload tire could cause tire damage, an accident injury.**

| | FRONT | REAR |
|---|---|---|
| XS400-2E BASIC WEIGHT with oil and full fuel tank | 78kg (142 lb) | 89kg (196 lb) |
| Standard tire | Bridgestone or Yokohama 3.00S18 4PR | Bridgestone or Yokohama 3.50S18 4PR |
| Tire load limit | 116kg (255 lb) | 224kg (485 lb) |
| Cold tire pressure: Normal riding | 1.8 kg/cm² (26 psi) | 2.0 kg/cm² (28 psi) |
| With passenger or high speed riding | 2.0 kg/cm² (28 psi) | 2.5 kg/cm² (32 psi) |
| With passenger and extra load riding | 2.0 kg/cm² (28 psi) | 2.3 kg/cm² (32 psi) |
| Minimum tire tread depth | 0.8 mm (0.03 in) | 0.8 mm (0.03 in) |

Make sure the total weight of the motorcycle with accessories, rider (s) etc., does not exceed the tire limits.

**(PAGE 78-88)**

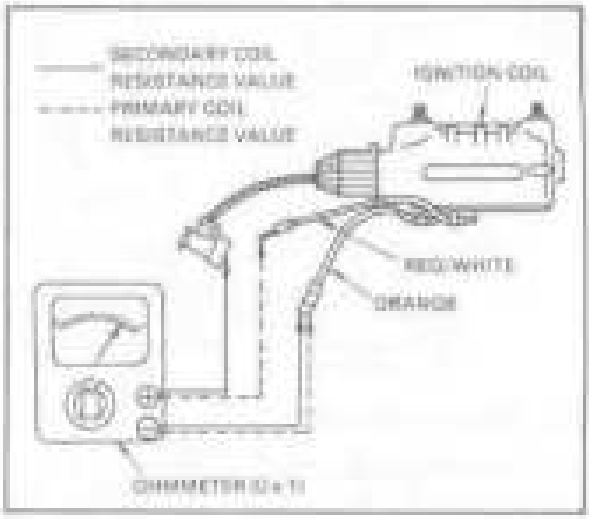
This model is not furnished with starter motor and flasher self cancelling system. Please delete the items concerning the starter motor and flasher self cancelling system from these pages.

This model (XS400-2E) is different from XS360C in the following items and specifications.

**6-1. IGNITION SYSTEM**

C. Ignition Coil

2. Direct current resistance test
Use a pocket tester or equivalent ohmmeter to determine resistance and continuity of primary and secondary coil windings.




**E. Spark Plug**

2. Inspection

| | |
|---|---|
| Standard spark plug | N-7Y (CHAMPION) or BP7ES (N.G.K.) |
| Spark plug gap | 0.7 — 0.8 mm (0.028 — 0.031 in) |

## 6-3. BATTERY

### B. Service Life

| | |
|---|---|
| Battery | 12V, 12AH |
| Electrolyte | Specific gravity: 1.28<br>Quantity: 800 cc (27 oz) |
| Initial charging current | 1.20A/10 Hours<br>(New battery) |
| Recharging current | 1.20A/10 Hours (or until specific gravity reached 1.28) |
| Refill fluid | Distilled water<br>(to maximum level line) |
| Refill period | Check once per month<br>(or more often, as required) |

(PAGE 92-104)

## 7-2. SPECIFICATION

### A. General

| | |
|---|---|
| 1. MODEL | |
| 1) Model (I.B.M. No.) | KS400-2E (2G5) |
| 2) Frame I.D. and starting number | 2G5-000101 |
| 3) Engine I.D. and starting number | 2G5-000101 |
| 2. DIMENSION | |
| 1) Overall length | 2,025 mm (79.5 in) |
| 2) Overall width | 845 mm (33.3 in) |
| 3) Overall height | 1,100 mm (43.3 in) |
| 4) Seat height | 815 mm (32.1 in) |
| 5) Wheelbase | 1,335 mm (52.6 in) |
| 6) Minimum ground clearance | 150 mm (5.9 in) |
| 3. WEIGHT | |
| 1) Net weight (Dry) | 155 kg (342 lb) |
| 4. PERFORMANCE | |
| 1) Climbing ability | 29° |
| 2) Minimum turning radius | 2,200 mm (86.6 in) |

### B. Engine

| | |
|---|---|
| 1. DESCRIPTION | |
| 1) Engine type | Air cooled, 4-stroke, SOHC twin, parallel forward incline |
| 2) Engine model | 2G5 |
| 3) Displacement | 391 cc (23.86 cu.in) |
| 4) Bore x stroke | 69.0 × 52.4 mm (2.717 × 2.063 in) |
| 5) Compression ratio | 9.4 : 1 |
| 6) Starting system | Kick Starter |
| 7) Ignition system | Battery ignition |
| 8) Lubrication system | Wet sump |
| 2. CYLINDER HEAD | |
| 1) Combustion chamber volume | 23.3 cc (1.422 cu.in) BP7ES |
| 2) Combustion chamber type | Dome + Squish |
| [illegible] | 1.0 mm (0.04 in) |

| | |
|---|---|
| 4) Tightening torque | |
| Cylinder head holding nut (M10 P1.25) | 3.3 m-kg (24.0 ft-lb) |
| Cylinder head holding bolt (M6 P1.0) | 1.0 m-kg ( 7.5 ft-lb) |
| Spark plug (M14 P1.25) | 2.0 m-kg (14.5 ft-lb) |
| **3. CYLINDER** | |
| 1) Material | Aluminum alloy with cast iron sleeve |
| 2) Bore size | $69.0^{+0.002}_{0}$ mm ($2.72^{+0.0008}_{0}$ in) |
| 3) Taper limit | 0.05 mm (0.002 in) |
| 4) Out of round limit | 0.01 mm (0.0004 in) |
| **4. PISTON** | |
| 1) Piston skirt clearance | 0.030 ~ 0.050 mm (0.0012 ~ 0.0019 in) |
| 2) Piston oversize | |

| | | | |
|---|---|---|---|
| 69.25 mm (2.726 in) | 69.50 mm (2.736 in) | 69.75 mm (2.746 in) | 70.00 mm (2.756 in) |

| | |
|---|---|
| 3) Piston pin outside diameter × length | 18.0 $^{+0}_{-0.005}$ mm × 58.5 $^{+0}_{-0.3}$ mm |
| | (0.83 $^{+0}_{-0.0002}$ in × 2.303 $^{+0}_{-0.0118}$ in) |
| **5. PISTON RING** | |
| 1) Piston ring design (Top) | Plain ring 1.0 mm (0.039 in) |
| (2nd) | Plain ring 1.5 mm (0.059 in) |
| (Oil ring) | With expander 2.45 mm (0.096 in) |
| 2) Ring end gap (Installed, top) | 0.2 ~ 0.4 mm (0.008 ~ 0.016 in) |
| (Installed, 2nd) | 0.2 ~ 0.4 mm (0.008 ~ 0.016 in) |
| (Installed, oil) | 0.2 ~ 0.9 mm (0.008 ~ 0.035 in) |
| 3) Ring groove side clearance (Top) | 0.04 ~ 0.08 mm (0.0016 ~ 0.0032 in) |
| (2nd) | 0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in) |
| (Oil) | |
| **6. BIG END BEARING** | |
| 1) Type | Plain bearing |
| 2) Oil clearance | 0.021 ~ 0.045 mm (0.0008 ~ 0.0018 in) |
| 3) Bearing size | |

| | | |
|---|---|---|
| 1 (Blue) | 1.50 $^{+0.004}_{0}$ mm | (0.0591 $^{+0.0002}_{0}$ in) |
| 2 (Black) | 1.50 $^{0}_{-0.004}$ mm | (0.0591 $^{0}_{-0.0002}$ in) |
| 3 (Brown) | 1.50 $^{+0.004}_{-0.004}$ mm | (0.0591 $^{+0.0002}_{-0.0002}$ in) |
| 4 (Green) | 1.50 $^{+0.008}_{+0.004}$ mm | (0.0591 $^{+0.0004}_{+0.0002}$ in) |
| **7. CAMSHAFT** | | |
| 1) Cam drive type | | Chain (Center side) |
| 2) Number and type of bearing | | 3 bearings, cylinder head direct support |
| 3) Bearing dimensions | | |

| | Cap I.D. | Bush O.D. | Clearance |
|---|---|---|---|
| IN and EX | 23.0 $^{+0.021}_{0}$ mm | 23.0 $^{-0.020}_{-0.033}$ mm | 0.020 ~ 0.054 mm |
| 1, 2, 3 | (0.906 $^{+0.0008}_{0}$ in) | (0.906 $^{-0.0008}_{-0.0013}$ in) | (0.00079 ~ 0.00213 in) |

4) Cam dimensions

| | Cam height "A" | Limit | Base circle "B" | Limit | Lift "C" |
|---|---|---|---|---|---|
| IN | 29.53 ± 0.05 mm (1.656 ± 0.0019 in) | 29.38 mm (1.550 in) | 32.27 ± 0.05 mm (1.270 ± 0.0019 in) | 32.12 mm (1.265 in) | 7.53 mm (0.296 in) |
| EX | 29.53 ± 0.05 mm (1.656 ± 0.0019 in) | 29.42 mm (1.553 in) | 32.12 ± 0.05 mm (1.265 ± 0.0019 in) | 31.97 mm (1.259 in) | 7.57 mm (0.298 in) |



5) Valve timing

| | OPEN | CLOSE | DURATION | OVERLAP |
|---|---|---|---|---|
| IN | BTDC 36° | ABDC 70° | 286° | 82° |
| EX | BBDC 10° | ATDC 36° | 226° | |

6) Camshaft deflection limit: 0.03 mm (0.0012 in)

7) Cam chain
- Type: TSUBAKIMOTO 6P08M
- Pitch/Number of links: 7.774 mm (0.3060 in)/92L
- Sprocket ratio: 34/17 (2.000)

## 8. ROCKER ARM AND ROCKER SHAFT

1) Rocker arm inner diameter: 13.0 $^{+0.018}_{0}$ mm (0.512 $^{+0.0007}_{0}$ in)

2) Rocker arm shaft diameter: 13.0 $^{-0.016}_{-0.034}$ mm (0.512 $^{-0.0006}_{-0.0013}$ in)

3) Clearance: 0.016 – 0.054 mm (0.00063 – 0.00122 in)

4) Lift ratio: X : Y = 32.05 : 32.82 mm (1.262 : 1.324 in)

## 9. VALVE, VALVE SEAT AND VALVE GUIDE

1) Valve per cylinder: 2 pcs.

2) Valve clearance (In cold engine)
- IN: 0.10 mm (0.004 in)
- EX: 0.18 mm (0.007 in)

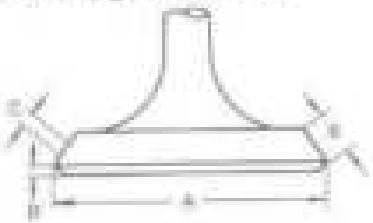
3) Dimensions

Valve head diameter "A":
- IN: 35.5 ± 0.1 mm (1.398 ± 0.004 in)
- EX: 30.0 ± 0.1 mm (1.181 ± 0.004 in)

Valve face width "B":
- IN: 2.3 mm (0.091 in)
- EX: 2.3 mm (0.091 in)

Valve seat width "C":
- IN: 1.0 ± 0.1 mm (0.039 ± 0.004 in)
- EX: 1.0 ± 0.1 mm (0.039 ± 0.004 in)

Valve margin thickness "D":
- IN: 1.0 ± 0.2 mm (0.039 ± 0.008 in)
- EX: 1.0 ± 0.2 mm (0.039 ± 0.008 in)




Valve stem diameter:
- IN: 7.0 $^{-0.015}_{-0.024}$ mm (0.275 $^{-0.0006}_{-0.0009}$ in)
- EX: 7.0 $^{-0.030}_{-0.045}$ mm (0.275 $^{-0.0012}_{-0.0018}$ in)

Valve guide diameter:
- IN: 7.0 $^{+0.015}_{0}$ mm (0.275 $^{+0.0006}_{0}$ in)
- EX: 7.0 $^{+0.015}_{0}$ mm (0.275 $^{+0.0006}_{0}$ in)

Valve stem to stem clearance:
- IN: 0.010 – 0.037 mm (0.00039 – 0.00145 in)
- EX: 0.030 – 0.057 mm (0.0012 – 0.0022 in)

4) Valve face runout limit: IN & EX: 0.03 mm (0.0012 in) or less

## 10. VALVE SPRING

1) Free length:
- INNER (IN/EX): 39.3 mm (1.547 in)
- OUTER (IN/EX): 42.8 mm (1.685 in)

2) Spring rate:
- INNER (IN/EX): $k_1$ = 1.93 kg/mm (108 lb/in), $k_2$ = 2.47 kg/mm (138 lb/in)
- OUTER (IN/EX): $k_1$ = 4.18 kg/mm (235 lb/in), $k_2$ = 5.49 kg/mm (307 lb/in)

3) Installed length (Valve closed):
- INNER (IN/EX): 33.0 mm (1.299 in)
- OUTER (IN/EX): 37.0 mm (1.457 in)

4) Installed pressure (Valve closed):
- INNER (IN/EX): 12.1 ± 1.2 kg (26.7 ± 2.6 lb)
- OUTER (IN/EX): 24.4 ± 1.7 kg (53.8 ± 3.8 lb)

5) Compressed length (Valve open):
- INNER (IN/EX): 25.0 mm (0.984 in)
- OUTER (IN/EX): 29.0 mm (1.142 in)

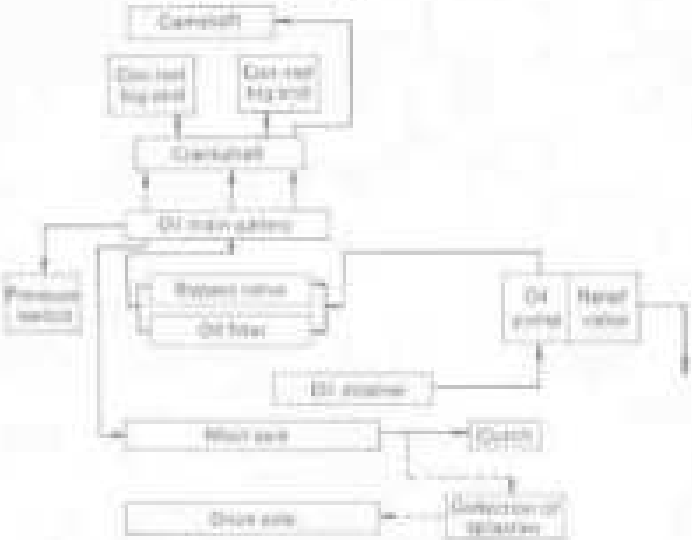
| | |
|---|---|
| 6) Compressed pressure (Valve open) | INNER (IN/EX): 31.4 kg (69.2 lb)<br>OUTER (IN/EX): 68.3 kg (151 lb) |
| 7) Wire diameter (Valve open) | INNER (IN/EX): 3.0 mm (0.118 in)<br>OUTER (IN/EX): 4.4 mm (0.173 in) |
| 8) Winding O.D. (Valve open) | INNER (IN/EX): 22.4 mm (0.882 in)<br>OUTER (IN/EX): 32.0 mm (1.260 in) |
| 9) Number of windings (Valve open) | INNER (IN/EX): 7.75 turns<br>OUTER (IN/EX): 6.25 turns |
| 10) Tilt limit (Valve open) | INNER (IN/EX): 1.7 mm (0.067 in) or 2.5°<br>OUTER (IN/EX): 1.9 mm (0.075 in) or 2.5° |
| 11. CRANKSHAFT | |
| 1) Crankshaft deflection | 0.02 mm (0.0008 in) |
| 2) Con-rod large end clearance | 0.160 ~ 0.264 mm (0.0063 ~ 0.0104 in) |
| 3) Clearance between crank and crankcase | 0.09 ~ 0.23 mm (0.002 ~ 0.010 in) |
| 12. CONNTING ROD | |
| 1) Big end I.D. | 41.0 $^{+0.018}_{0}$ mm (1.614 $^{+0.0008}_{0}$ in) |
| 2) Small end I.D. | 16.0 $^{+0.035}_{+0.014}$ mm (0.630 $^{+0.0014}_{+0.0006}$ in) |
| 3) Difference of each rod weight | 5 g or less |
| 13. CRANK BEARING | |
| 1) Oil clearance | 0.020 ~ 0.044 mm (0.00079 ~ 0.00157 in) |
| 2) Bearing size | |

| | |
|---|---|
| 1. (Blue) | 1.50 $^{+0.012}_{+0.006}$ mm (0.0591 $^{+0.0005}_{+0.0002}$ in) |
| 2. (Black) | 1.50 $^{+0.018}_{+0.012}$ mm (0.0591 $^{+0.0007}_{+0.0005}$ in) |
| 3. (Brown) | 1.50 $^{+0.024}_{0}$ mm (0.0591 $^{+0.0009}_{0}$ in) |
| 4. (Green) | 1.50 $^{0}_{-0.006}$ mm (0.0591 $^{0}_{-0.0002}$ in) |

| | |
|---|---|
| 14. CLUTCH | |
| 1) Clutch type | Wet, multiple type |
| 2) Clutch operating mechanism | Inner push type, screw push system |
| 3) Primary reduction ratio and method | 78/24 (3.250), spur gear |
| 4) Primary reductin gear back lash | |
| Tolerance | A—C, B—D, C—E, D—F |
| 5) Friction plate | |
| Thickness/Quantity | 3 mm (0.12 in)/7 pcs. |
| Wear limit | 2.7 mm (0.11 in) |
| 6) Clutch plate | |
| Thickness/Quantity | 1.6 mm (0.063 in)/6 pcs. |
| Warp limit | 0.05 mm (0.002 in) |
| 7) Clutch spring | |
| Free length/Quantity | 34.8 mm (1.362 in)/4 pcs. |
| Minimum length | 33.8 mm (1.323 in) |
| 8) Clutch housing radial play (Wear limit) | 0.039 ~ 0.043 mm (0.00035 ~ 0.00169 in) |
| 9) Push rod bending limit | 0.2 mm (0.008 in) |
| 10) Tightening torque | |
| Primary drive gear (M10 P1.25) | 4.8 m·kg (35.0 ft·lb) |
| Clutch spring screw (M6 P1.0) | 1.0 m·kg ( 7.0 ft·lb) |
| 15. TRANSMISSION | |
| 1) Type | Constant mesh, 6-speed forward |
| 2) Gear ratio: 1st | 35/14 (2.500) |
| 2nd | 32/18 (1.777) |
| 3rd | 29/21 (1.380) |
| 4th | 27/24 (1.125) |

| | |
|---|---|
| 3th | 25/28 (0.961) |
| 6th | 28/30 (0.889) |
| 3) Bearing type: Main axle (Left) | Needle bearing (φ20-φ35-15) |
| Main axle (Right) | Ball bearing (6205) |
| Drive axle (Left) | Ball bearing (6305 special) |
| Drive axle (Right) | Needle bearing (φ20-φ33-19) |
| 4) Oil seal type: Drive axle (Left) | SD-35-62-8 |
| 5) Secondary reduction ratio and method | 37/16 (2.312)/Chain |
| 6) Tightening torque | |
| Drive sprocket (M16 P1.5) | 6.5 m-kg (47.0 ft-lb) |
| **16. SHIFTING MECHANISM** | |
| 1) Type | Guide bar, return type |
| 2) Oil seal type (Change lever) | SD-12-22-5 |
| 3) Tightening torque | |
| Change pedal (M6 P1.0) | 1.2 m-kg (7.0 ft-lb) |
| **17. KICK STARTER** | |
| 1) Type | Bendix type |
| 2) Oil seal type (Kick axle) | SD-20-30-7 |
| 3) Kick clip friction tension | 1.0 m-kg (7.0 ft-lb) |
| 4) Tightening torque | |
| Kick crank (M8 P1.25) | 2.0 m-kg (14.5 ft-lb) |
| **18. CRANKCASE** | |
| 1) Tightening torque | |
| Bolt (M8 P1.25) | 2.2 m-kg (16.0 ft-lb) |
| Bolt (M6 P1.0) | 1.0 m-kg (7.0 ft-lb) |
| **19. INTAKE** | |
| 1) Air cleaner: Type/Quantity | Dry, foam rubber/2 pcs. |
| 2) Cleaner cleaning interval | Every 3,200 km (2,000 mile) |
| 3) Valve clearance | See No. 9-2) Valve, valve seat and valve guide |
| **20. CARBURETOR** | |
| 1) Type and manufacturer/Quantity | 5S3A MIK(JN)/2 pcs. |
| 2) I.D. mark | 30S-80 |
| 3) Main jet (MJ) | #137.5 |
| 4) Air jet (AJ) | #45 |
| 5) Jet needle clip position (JN) | 5Z1-3 |
| 6) Needle jet (NJ) | K-6 |
| 7) Throttle valve (Th.V) | #135 |
| 8) Pilot jet (PJ) | #42.5 |
| 9) Air screw (Turns out) (AS) | Preset |
| 10) Starter jet (GS) | GS$_1$ #30, GS$_2$ ---- |
| 11) Fuel height (FL) | 28.7 ± 1.0 mm (1.012 ± 0.039 in) |
| 12) Vacuum synchronization | 5 mmHg or less |
| 13) Idling engine speed | 1,200 ± 50 r/min |
| **21. LUBRICATION** | |
| 1) Engine sump oil/Quantity | Periodic oil change: 2.0 l (2.1 qt) |
| | With oil filter replacement: 2.3 l (2.4 qt) |
| | Total amount: 2.6 l (2.7 qt) |
| 2) Oil grade | Shell X-100 or Yamalube 4-cycle oil |
| 3) Oil type | SAE 20W/40 (more than 5°C (41°F)) |
| | SAE 10W/30 (below 15°C (59°F)) |
| 4) Oil pump type | Trochoid pump |
| 5) Trochoid pump specifications | |
| Tip clearance | 0.10 ~ 0.18 mm (0.0039 ~ 0.0071 in) |
| Tip clearance | 0.03 ~ 0.09 mm (0.0012 ~ 0.0035 in) |
| Side clearance | 0.03 ~ 0.09 mm (0.0012 ~ 0.0035 in) |
| Oil pump rpm | 1.3 l/min at 500 r/min |

| | |
|---|---|
| 6) Relief valve operating pressure | 5±0.5 kg/cm² (71±7 psi) |
| 7) Bypass valve setting pressure | 1.0±0.2 kg/cm² (14±3 psi) |
| 8) Lubrication chart | |




## C. Chassis

| | |
|---|---|
| 1. FRAME | |
| 1) Frame design | Semi-double cradle, high tensil frame |
| 2) Tightening torque | |
| Engine mounting bolt (M8 P1.25) | 1.8 m-kg (13.0 ft-lb) |
| Engine mounting bolt (M10 P1.25) | 3.1 m-kg (22.5 ft-lb) |
| 2. STEERING SYSTEM | |
| 1) Caster | 26°30' |
| 2) Trail | 81 mm (3.19 in) |
| 3) Number and size of balls in steering head | |
| Upper race | 19 pcs. 1/4 in |
| Lower race | 19 pcs. 1/4 in |
| 4) Steering lock to lock | 42° each (L and R) |
| 5) Tightening torque | |
| Steering shaft fitting nut (M14 P1.25) | 5.4 m-kg (39.0 ft-lb) |
| Steering shaft fitting nut (M25 P1.0) | 3.8 m-kg (27.5 ft-lb) |
| Stem pinch bolt (M8 P1.25) | 1.1 m-kg (8.0 ft-lb) |
| Handlebar mounting bolt (M10 P1.25) | 2.3 m-kg (16.5 ft-lb) |
| 3. FRONT SUSPENSION | |
| 1) Type | Telescopic fork |
| 2) Damper type | Oil damper, coil spring |
| 3) Front fork spring | |
| Free length | 484 mm (19.05 in) |
| Wire diameter × winding diameter | 3.8 mm × 23 mm (0.15 × 0.91 in) |
| Spring constant | $k_1$ = 0.4 kg/mm (22.4 lb/in)/0 ~ 100 mm (0 ~ 3.94 in) |
| | $k_2$ = 0.475 kg/mm (26.6 lb/in)/ |
| | 100 ~ 140 mm (3.94 ~ 5.51 in) |
| 4) Front fork travel | 140 mm (5.5 in) |
| 5) Inner tube O.D. | 33 mm (1.30 in) |
| 6) Front fork oil quantity and type | 130 cc (4.4 oz) each leg |
| | Yamaha Fork Oil 20W or SAE 20W motor oil |
| 7) Oil seal type | SD-33-46-10.5 |

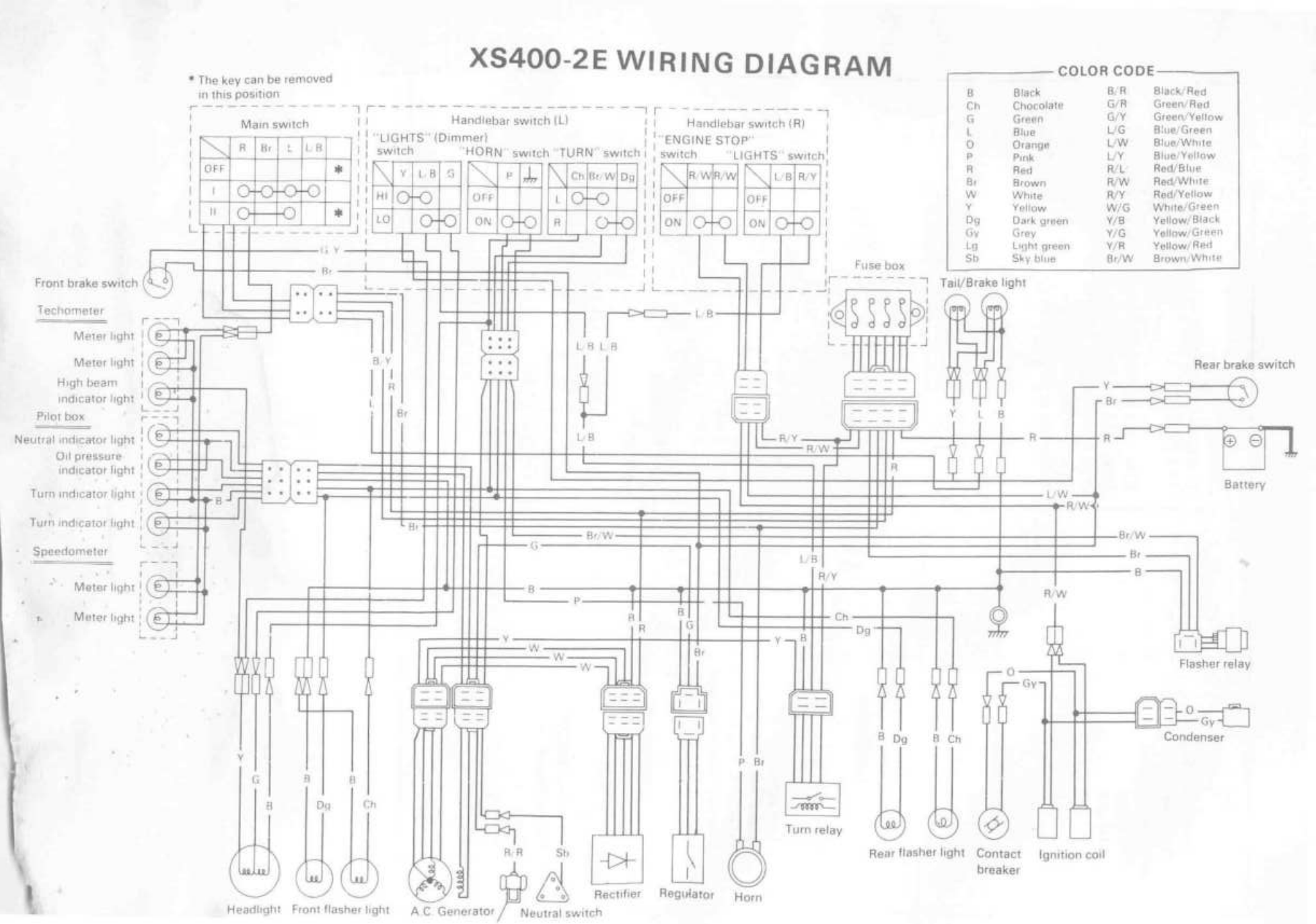
| | |
|---|---|
| 6) Tightening torque | |
| Under bracket and inner tube (M10 P1.25) | 3.5 m-kg (25.5 ft-lb) |
| Handle crown and inner tube (M8 P1.25) | 1.1 m-kg ( 8.0 ft-lb) |
| 4. REAR SUSPENSION | |
| 1) Type | Swing arm |
| 2) Damper type | Oil damper, coil spring |
| 3) Shock absorber travel | 80 mm (3.15 in) |
| 4) Shock absorber spring | |
| Set length | 193 mm (7.6 in) |
| Free length | 205 mm (8.1 in) |
| Wire diameter × winding diameter | 7.0 mm × 56.5 mm (0.27 × 2.22 in) |
| Spring constant | k = 1.8 kg/m (85.8 lb/in) |
| 5) Swing arm free play (Limit) | 1.0 mm (0.04 in) |
| 6) Pivot shaft — Outside diameter | 16 mm (0.63 in) |
| 7) Tightening torque | |
| Rear shock absorber (Upper) (M10 P1.25) | 3.0 m-kg (21.5 ft-lb) |
| Rear shock absorber (Under) (M10 P1.25) | 3.0 m-kg (21.5 ft-lb) |
| Pivot shaft (M14 P1.5) | 6.5 m-kg (47.0 ft-lb) |
| 5. FUEL TANK | |
| 1) Capacity | 11.0 lit (2.9 US gal) |
| 2) Fuel grade | Regular gasoline |
| 6. WHEEL | |
| 1) Type (Front and rear) | Spoke wheel |
| 2) Tire size (Front) | 3.00S18-4PR |
| Tire size (Rear) | 3.50S18-4PR |
| 3) Tire pressure | |
| Normal riding (Front) | 1.8 kg/cm² (26 psi) |
| Normal riding (Rear) | 2.0 kg/cm² (28 psi) |
| High speed riding or with passenger (Front) | 2.0 kg/cm² (28 psi) |
| High speed riding or with passenger (Rear) | 2.3 kg/cm² (32 psi) |
| With passenger and extra load riding (Front) | 2.0 kg/cm² (28 psi) |
| With passenger and extra load riding (Rear) | 2.3 kg/cm² (32 psi) |
| 4) Rim run out limit (Front and Rear) | |
| Vertical | 2.0 mm (0.08 in) |
| Lateral | 2.0 mm (0.08 in) |
| 5) Rim size (Front) | 1.60 × 18 |
| (Rear) | 1.85 × 18 |
| 6) Spoke O.D | |
| Length/Quantity (Front) Inner | 3.5 × 153.0/18 pcs. |
| Outer | 3.5 × 152.5/18 pcs. |
| Length/Quantity (Rear) Inner | 3.2-3.5 × 157.5/18 pcs. |
| Outer | 3.2-3.5 × 157.0/18 pcs. |
| 7) Bearing type | |
| Front wheel (Left) | 6302RS |
| Front wheel (Right) | 6302RS |
| Rear wheel (Left) | 6304RS (6304 LU/3A) |
| Rear wheel (Right) | 6303 LUC3/3A |
| 8) Oil seal type | |
| Front wheel (Left) | SDD-53-65-7 |
| Front wheel (Right) | SD-22-42-7-1 |
| Rear wheel (Left) | SD-27-52-5 |
| 9) Secondary drive chain type | |
| Type | DK50DS (DK530DS) |
| Number of links | 97L+Joint |
| Chain pitch | 15.875 mm (5/8 in) |
| Chain free play | 30 — 35 mm (1.2 — 1.4 in) |

| | |
|---|---|
| 10) Tightening torque | |
| Front wheel axle (M14 P1.5) | 10.5 m-kg (76.0 ft-lb) |
| Front axle holder (M8 P1.25) | 2.0 m-kg (14.5 ft-lb) |
| Rear wheel axle (M14 P1.5) | 10.5 m-kg (76.0 ft-lb) |
| 7. BRAKE | |
| 1) Front and rear brake | |
| Type Front | Drum brake |
| Rear | Drum brake |
| Actuating method Front | Two leading |
| Rear | Leading trailing |
| Brake drum I.D. Front | 180 mm (7.1 in) |
| Rear | 160 mm (6.3 in) |
| Brake shoe dia. × width Front | 180 × 30 mm (7.1 × 1.2 in) |
| Rear | 160 × 30 mm (6.3 × 1.2 in) |
| Lining thickness/Wear limit Front | 4.0/2.0 mm (0.16/0.08 in) |
| Rear | 4.0/2.0 mm (0.16/0.08 in) |
| Shoe spring free length Front | 68 mm (2.68 in) |
| Rear | 68 mm (2.68 in) |

| | |
|---|---|
| 1. IGNITION SYSTEM | |
| 1) Battery (AC generator) | |
| Model/Manufacturer | 021000-5840/NIPPON DENSO |
| Voltage | 12V |
| Taper dia. at large end | 25 mm (0.98 in) |
| Rotor tightening torque (M10 P1.25) | 3.3 m-kg (24.0 ft-lb) |
| 2) Ignition timing (B.T.D.C.) | 10° ~ 35° |
| 3) Ignition coil | |
| Model/Manufacturer | 029700-4130/NIPPON DENSO |
| Spark gap | 6 mm (0.24 in) or more/500 r/min |
| Primary winding resistance | 4.00 ± 10% at 20°C (68°F) |
| Secondary winding resistance | 8.5 kΩ ± 20% at 20°C (68°F) |
| 4) Spark plug | |
| Type | N-7Y (CHAMPION) or BP7ES (NGK) |
| Spark plug gap | 0.7 ~ 0.8 mm (0.027 ~ 0.031 in) |
| 5) Contact breaker | |
| Manufacturer/Quantity | NIPPON DENSO/2 pcs. |
| Point gap | 0.30 ~ 0.40 mm (0.012 ~ 0.016 in) |
| Point spring pressure | 600 ± 100 g |
| Cam closing angle | 105° |
| 6) Condenser | |
| Capacity | 0.24μF |
| Insulation resistance | 10 MΩ or more |
| Quantity | 2 pcs. |
| 2. CHARGING SYSTEM | |
| 1) AC generator | |
| Charging output | 14.5V 13A/5,000 r/min |
| Rotor coil resistance (Field coil) | 4.04Ω ± 10% at 20°C (68°F) |
| Stator coil resistance | 0.72Ω ± 10% at 20°C (68°F) |
| 2) Rectifier | |
| Type | 6-Element type (Full wave) |
| Model/Manufacturer | DB10TEY/MITSUBISHI |
| Capacity | 12A |
| Withstand voltage | 400V |

| | |
|---|---|
| 3) Regulator | |
| Type | TIRI type |
| Model/Manufacturer | 026000-2790/NIPPON DENSO |
| Regulating voltage | 14.5±0.5V |
| 4) Voltage regulator | |
| Core gap | MIN. 0.2 mm (0.008 in) |
| Yoke gap | MIN. 0.1 mm (0.004 in) |
| Point gap | 0.25 ~ 0.5 mm (0.01 ~ 0.02 in) |
| Voltage coil | 10.5Ω at 20°C (68°F) |
| Resistor | 140±100 at 20°C (68°F) |
| 5) Battery | |
| Model/Manufacturer/Quantity | 12N12-4A-1/GS/1 pc |
| Capacity | 12V, 12A |
| Charging rate | 1.2A 10 hours |
| Specific gravity/Quantity | 1.28 at 20°C (68°F); Total 800 cc (27 oz) |
| 3. LIGHTING SYSTEM | |
| 1) Head light type | Sealed beam |
| 2) Bulb wattage/Quantity | |
| Head light | 12V, 40/30W×1 pc |
| Tail/Brake light | 12V, 8/27W×2 pcs |
| Flasher light | 12V, 27W×2 pcs |
| Meter light | 12V, 3.4W×4 pcs |
| Neutral indicator light | 12V, 3.4W×1 pc |
| Turn indicator light | 12V, 3.4W×2 pcs |
| Oil pressure indicator light | 12V, 3.4W×1 pc |
| High beam indicator light | 12V, 3.4W×1 pc |
| 3) Horn | |
| Model/Manufacturer | CF3-12/NIKKO |
| Maximum amperage | 2.5A or less |
| 4) Flasher relay | |
| Type | Condenser type |
| Model/manufacturer | 061300-3572/NIPPON DENSO |
| Flasher frequency | 85±10 cycle/min |
| Capacity | 27W×2+3.4W |
| 5) Fuse | |
| Rating/Quantity | Main (Red): 20A<br>Headlight (Red/Yellow): 10A<br>Signal (Brown): 10A<br>Ignition (Red/White): 10A |

# XS400-2E WIRING DIAGRAM



# XS400F/2F

# SUPPLEMENT

# FOREWORD

This Supplementary Service Manual for XS400F/XS400-2F has been published to supplement the Service Manual for the XS360C models and provides updated information for the XS360C models as well as new data concerning the XS400F/XS400-2F. For complete information on service procedures it is necessary to use this Supplementary Service Manual together with the Service Manual for XS360C (LIT-11616-00-49).

**NOTE:**

This Supplementary Manual contains special information regarding periodic maintenance to the emissions control system for the XS400F/XS400-2F. Please read this material carefully.

SERVICE DEPT.
INTERNATIONAL DIVISION
YAMAHA MOTOR CO., LTD.

# NOTICE

This manual was written by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha motorcycles have a basic understanding of the mechanical precepts and procedures inherent to motorcycle repair technology. Without such knowledge, attempted repairs or service to this model may render it unfit for use and/or unsafe.

This model has been designed and manufactured to perform within certain specifications in regard to performance and emissions. Proper service with the correct tools is necessary to ensure that the machine will operate as designed. If there is any question about a service procedure it is imperative that you contact a Yamaha dealer before continuing. Before attempting any service, check with your Yamaha dealer for any service information changes that apply to this model. This policy is intended to provide the customer with the most satisfaction from his machine and to conform with federal environmental quality objectives.

Yamaha Motor Company, Ltd. is continually striving to further improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

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

**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 machine.

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

Page number shown in brackets correspond to page numbers of the XS360C Service Manual (LIT-11616-00-49).

(PAGE 5)

## 1-1. MACHINE IDENTIFICATION

Specification should read as follows:

| Starting Serial Number | |
|---|---|
| XS400F | 2L0-100101 |
| XS400-2F | 2V6-000101 |

(PAGE 9 — 18)

## 2-1. MAINTENANCE AND LUBRICATION CHART (XS400F/XS400-2F)

### A. PERIODIC MAINTENANCE EMISSION CONTROL SYSTEM

| No. | ITEM | REMARKS | INITIAL BREAK-IN | | THEREAFTER EVERY | |
|---|---|---|---|---|---|---|
| | | | 1,000 km or 1 month (600 mi) | 5,000 km or 7 months (3,000 mi) | 4,000 km or 6 months (2,500 mi) | 8,000 km or 12 months (5,000 mi) |
| 1. | Valve Clearance | Check and adjust valve clearance when engine is cold. | ○ | ○ | | ○ |
| 2. | Contact Breaker Points | Check condition. Adjust point gap. Replace if necessary. | ○ | ○ | ○ | |
| 3. | Ignition Timing | Check and adjust ignition timing. | ○ | ○ | ○ | |
| 4. | Spark Plugs | Check condition. Adjust gap. Replace if necessary. | | ○ | | ○ |
| 5. | Crankcase Ventilation System | Check ventilation hose for cracks or damage. Replace if necessary. | | ○ | | ○ |
| 6. | Fuel Hose | Check fuel hose for cracks or damage. Replace if necessary. | | ○ | | ○ |
| 7. | Exhaust System | Check for leakage. Retighten as necessary. Replace gasket (s) if necessary. | ○ | ○ | ○ | |
| 8. | Carburetor Synchronization | Adjust synchronization of carburetors. | ○ | ○ | ○ | |
| 9. | Idle Speed | Check and adjust engine idle speed. Adjust cable free play if necessary. | ○ | ○ | ○ | |

### B. GENERAL MAINTENANCE/LUBRICATION

| NO. | ITEM | REMARKS | TYPE | INITIAL BREAK-IN | | THEREAFTER EVERY | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1,000 km or 1 month (600 mi) | 5,000 km or 7 months (3,000 mi) | 4,000 km or 6 months (2,500 mi) | 8,000 km or 12 months (5,000 mi) | 16,000 km or 24 months (10,000 mi) |
| 1. | Engine Oil | Warm-up engine before draining. | See page 13 | ○ | ○ | ○ | | |
| 2. | Oil Filter | Replace. | — | ○ | ○ | | ○ | |
| 3. | Air Filter | Dry type filter. Clean with compressed air. | — | | ○ | | ○ | |
| 4. | Brake System | Adjust free play. Replace pads (XS400F) or shoes (XS400-2F) if necessary. | — | ○ | ○ | ○ | | |
| 5. | Clutch | Adjust free play. | — | ○ | ○ | ○ | | |

| NO. | ITEM | REMARKS | TYPE | INITIAL BREAK IN | | THEREAFTER EVERY | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1,000 km or 1 month (600 mi) | 5,000 km or 7 months (3,000 mi) | 4,000 km or 6 months (2,500 mi) | 8,000 km or 12 months (5,000 mi) | 16,000 km or 24 months (10,000 mi) |
| 6. | Drive Chain | Apply chain lube thoroughly. | Yamaha chain and cable lube or 10W/30 motor oil | CHECK CHAIN TENSION AND LUBE EVERY 500 km (300 mi) | | | | |
| 7. | Control Cables/ Meter Cables | Apply cable lube thoroughly. | Yamaha chain and cable lube or 10W/30 motor oil | ○ | ○ | ○ | | |
| 8. | Rear Arm Pivot Shaft | Apply lightly. | Lithium-soap base grease | | ○ | | ○ | |
| 9. | Stand Shaft Pivots/ Brake Pedal Shaft/ Change Pedal Shaft/ Kick Crank Boss | Apply lightly. | Yamaha chain and cable lube or 10W/30 motor oil | | ○ | ○ | | |
| 10. | Front Fork oil | Drain completely. Refill to specification. | Yamaha Fork Oil 20WI or equivalent | | | | | ○ |
| 11. | Steering Ball Bearing and Recie | Check bearings assembly for looseness. Moderately repack every 16,000 km (10,000 mi) | Medium weight wheel bearing grease | | ○ | ○ | | repack |
| 12. | Battery | Check specific gravity. Check breather pipe for proper operation. | – | | ○ | ○ | | |

## 2-2. ENGINE (PAGE 11)

### A. Carburetor

2. Idle speed adjustment
Specification should read as follows:
(XS400F/XS400-2F)

| | |
|---|---|
| Pilot screw: | Preset |
| Idle speed: | 1,200 r/min |

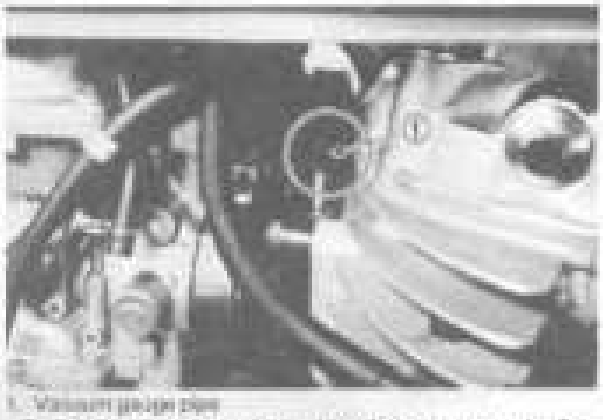
**"3. Synchronizing carburetors" section should read as follows.**

### Carburetor Synchronization (XS400F/XS400-2F)

Carburetors must be adjusted to open and close simultaneously at specified intervals. Adjust as follows:

**NOTE:**
Ignition timing and valve clearances must be set properly before synchronizing carburetors.

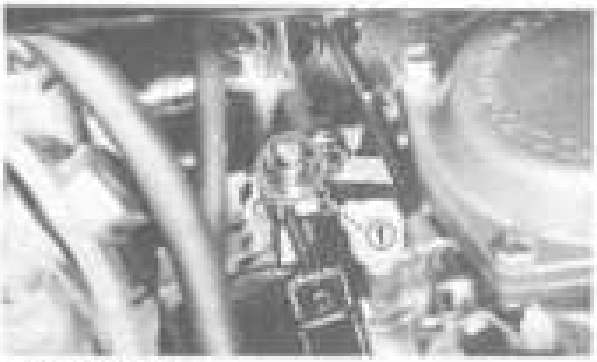
1. Turn petcock to "PRI" position. Remove vacuum pipe and blind plug from carburetor joints.
2. Connect vacuum gauge pipes on carburetor joints.



1. Vacuum gauge pipe

3. Start engine and allow it to warm-up for a few minutes. The warm-up is complete when engine responds normally to throttle opening.
4. Adjur ·mping valve on vacuum gauge until t. needle flutters only slightly. The gauge needle must respond quickly to rapid opening of the throttle.

5. Both gauge readings will indicate the same reading if the carburetors are synchronized.
6. If not, turn the sychronizing screw until the gauge readings the same.



1. Sychronizing screw

(PAGE 15)

**The following sections should be added after section "H. Cam Chain Adjustment". (XS400F/XS400-2F)**

**Crankcase Ventilation System**

Check ventilation hose from crankcase to air filter case for cracks or damage. Replace if necessary.

**Fuel Hose**

Check fuel hose(s) from fuel petcock to carburetor and left and right carburetor joint pipe for crack or damage. Replace if necessary.

**Exhaust System**

1. Tighten the joint bolts and nuts.
2. Replace the joint gasket(s) if necessary.

**2-3. CHASSIS**

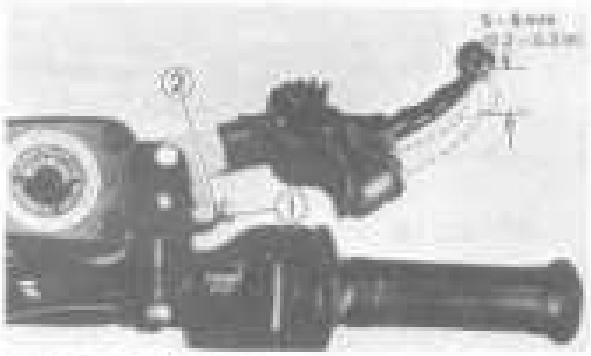
(PAGE 16)

**"B. Front Brake" section should read as follows.**

**Front Brake Adjustment (XS400F)**

The front brake lever should be adjusted so that it has a free play of 5 ~ 8mm (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 (0.20 ~ 0.3 in) before the adjuster contacts the master cylinder piston.
3. After adjusting, tighten the lock nut.



1. Adjuster 2. Lock nut

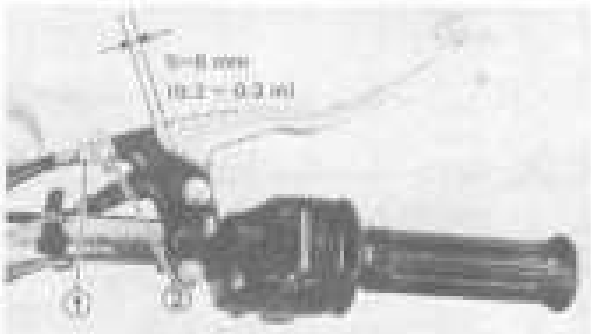
**NOTE:**

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

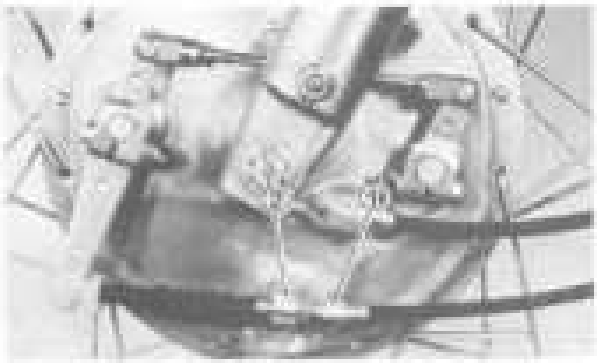
**Front Brake Adjustment (XS400-2F)**

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

1. Loosen the lock nut of the lever holder, fully turn the adjuster in and tighten the lock nut.
2. Loosen the lock nut of the front brake plate and turn the cable length adjuster in or out until adjustment is suitable.
3. Tighten the lock nut.
4. When adjustment cannot be completed on the brake plate side proceed to adjustment on the brake lever side.



1. Adjuster 2. Lock nut

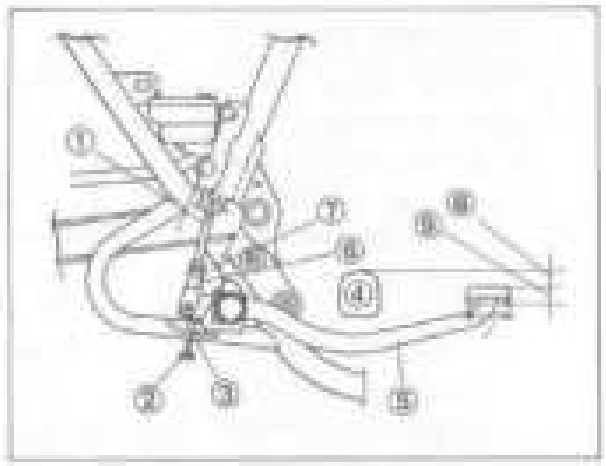


1. Adjuster 2. Lock nut

(PAGE 16)
**"C. Rear Brake" section should read as follows.**

**Rear Brake Adjustment (XS400F)**

The rear brake pedal should be adjusted so that it has a free play of 13 ~ 15 mm (0.5 ~ 0.6 in) from when the brake pedal is trod to when the brake begins to be effected.



1. Brake rod
2. Adjuster bolt (for pedal height)
3. Lock nut
4. Footrest
5. Brake pedal
6. Joint
7. Lock nut
8. Pedal height: 12 ~ 18 mm (0.5 ~ 0.7 in)
9. Free play: 13 ~ 15 mm (0.6 ~ 0.6 in)

1. Loosen the adjuster lock nut (for pedal height).
2. By turning the adjuster bolt clockwise or counterclockwise, adjust the brake pedal position so that its top end is approx. 12 ~ 18 mm (0.5 ~ 0.7 in) below the footrest top end.
3. Tighten the adjuster lock nut.
4. Loosen the brake rod adjuster lock nut and screw brake rod downward until there is noticeable free play between rod and master cylinder.
5. Turn in the brake rod until it lightly touches the master cylinder, then turn it out by approx. 1-1/2 turns (for proper free play).
6. Tighten the brake rod adjuster lock nut.

**CAUTION:**
**The pin hole mark on brake rod must not show above lock nut.**

**Brake Pedal Position Adjustment (XS400-2F)**

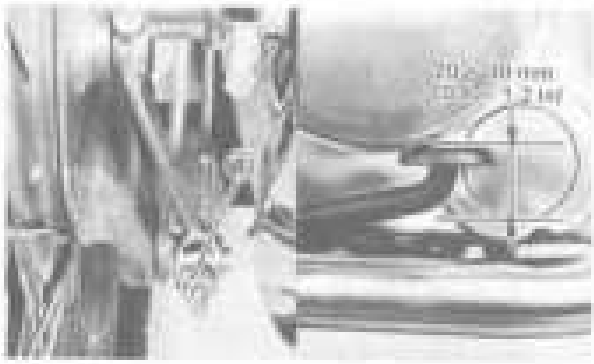
The position of the rear brake pedal should be adjusted in relation to the footrest. As illustrated, loosen the lock nut and adjust the pedal height by turning the adjuster.
After adjusting, check for correct rear brake play and brake light operation. Do not forget to tighten the lock nut.



1. Adjuster 2. Lock nut

**Rear Brake Adjustment (XS400-2F)**

The rear brake should be adjusted so the end of the brake pedal moves 20 ~ 30 mm (0.8 ~ 1.2 in). To adjust, turn the adjuster on the brake rod clockwise to reduce play; turn the adjuster counterclockwise to increase play. Check whether or not the brake light operates correctly after adjusting.



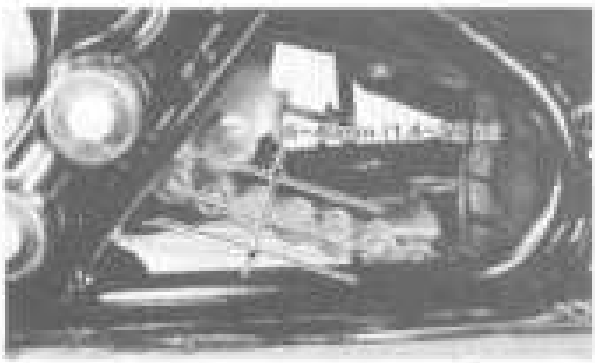
1. Adjuster

(PAGE 17)
"D. Drive Chain Tension Check" section should read as follows.

D. Drive Chain Tension Check (XS400F/XS400-2F)

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.

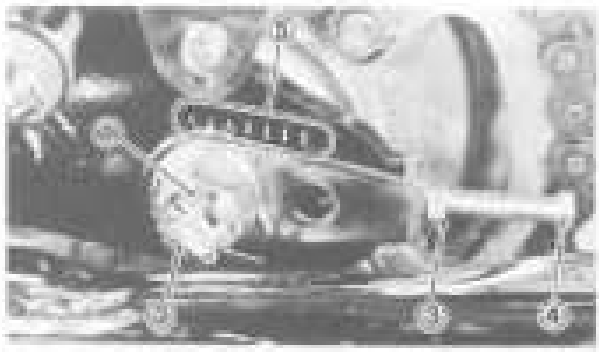
Inspect the drive chain with the center stand put up. Check the tension at the position shown in the illustration. The normal vertical deflection is approximately 35 – 40 mm (1.4 – 1.6 in). If the deflection exceeds 40 mm (1.6 in) adjust the chain tension.



"E. Drive Chain Tension Adjustment" section should read as follows.

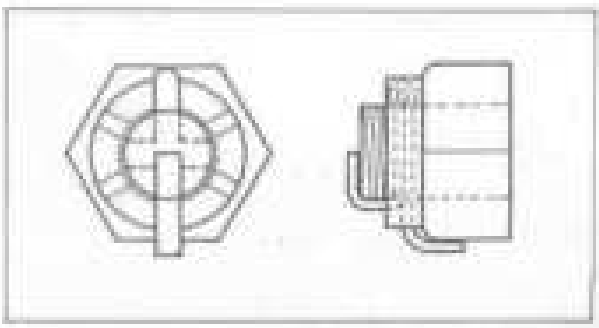
E. Drive Chain Tension Adjustment (XS400F/XS400-2F)

1. Loosen the rear brake adjuster.
(XS400-2F only)
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).



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

5. After adjusting, be sure to tighten the lock nuts and the rear wheel axle nut.
6. After adjusting, be sure to tighten the lock nuts and the rear wheel axle nut.
7. 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 match).



NOTE:
Excessive chain tension will overload the engine and other vital parts of the machine; keep the tension within the specified limits. Remember to replace the rear axle cotter pin with a new one.

8. In the final step, adjust the play in the brake pedal. (XS400-2F only)

(PAGE 18)
**The following sections should be added after section "Drive Chain Lubrication". (XS400F/XS400-2F)**

**Control Cables/Meter Cables**

1. Cable inspection
   Damage to the outer housing of the various cables, may cause corrosion and often free movement will be obstructed. An unsafe condition may result so replace as soon as possible.

2. Cable lubrication
   If the inner cables do not operate smoothly, lubricate with Yamaha Chain and Cable Lube or SAE 10W/30 motor oil.

**Rear Arm Pivot Shaft**

Apply lithium soap base grease to the rear arm pivot shaft.

**Stand Shaft Pivots/Brake Pedal Shaft/ Change Pedal Shaft/Kick Crank Boss**

Apply Yamaha Chain and Cable Lube or SAE 10W/30 motor oil to the center and side stand, brake pedal and change pedal shafts, and kick crank boss.

(PAGE 18)
**G. Front Fork Oil Change**

**Specification should read as follows. (XS400F/XS400-2F)**

Recommended oil:
Yamaha fork oil 20Wt or equivalent
Quantity per leg: 142 cc (4.8 oz)

**The following sections should be added after section "G. Front Fork Oil Change". (XS400F/XS400-2F)**

**Steering Ball Bearing and Races**

1. Steering head inspection:
   With front wheel elevated, grab bottoms of fork legs and gently push and pull to check steering head free play. If any free play can be felt, adjust as follows.
   a. Loosen front fork upper pinch bolts and stem bolt.
   b. Use ring nut wrench to tighten ring nut. Tighten until play is eliminated.

CAUTION:
**Forks must swing from lock to lock without binding or catching**

   c. After adjusting, tighten fork pinch bolts and stem bolt.
2. Bearing lubrication:
   Lubricate the steering ball bearing with bearing grease at specified intervals.

**2-3. ELECTRICAL**
(PAGE 19)
**"A. Ignition Timing" section should read as follows. (XS400F/XS400-2F)**

**Contact Breaker Points**

1. The contact breaker should be checked for the following:
   a. Wear of the bakelite cam heel.
   b. Damage of contact point surfaces.
   c. Rust or wear on the breaker arm or arm shaft.
   d. Faulty insulation of the contact breaker assembly.
   e. Oil or dirt on the assembly.
2. To clean the points, run a point file between the points until the grey deposits and pits have been removed. Spray the points with ignition point cleaner or lacquer thinner, then snap the points

on a white business card (or paper of hard texture) and repeatedly pull the card through until no more carbon or metal particles come off on the card. (The card may be dipped in lacquer thinner or other cleaner to facilitate this procedure.)

3. Contact point replacement is necessary whenever the contact surface are severely pitted, or the "heel" that rides on the point cam is worn excessively. The latter case becomes evident when it is not possible to properly set the ignition timing after the proper point gap has been set.
4. Adjust point gap (at widest opening) by moving the contact breaker assembly. Use filler guage for this adjustment.

| Point gap: 0.3 – 0.4 mm (0.012 – 0.016 in) |
|---|

5. Add a few drops of light-weight machine oil onto the felt rubbing pad after each point adjustment to lubricate the point cam surface. Do not over oil.

**Ignition Timing**

**NOTE:**
Point gap must be set before setting timing.

1. Ignition timing is checked with a timing light by observing the position of the stationary pointer on the crankcase cover and the marks stamped on the generator rotor.

Generator rotor is marked as follows:

| | |
|---|---|
| "LF" | Retarded firing point for L.H cylinder |
| "RF" | Retarded firing point R.H. cylinder |
| "LT" | Top Dead Center for L.H. cylinder |
| "RT" | Top Dead Center for R.H. cylinder |

2. Connect timing light to left cylinder spark plug lead wire. Ignition timing of left cylinder must be set first.
3. Start the engine and keep the engine speed as specified in the label. Use a tachometer for checking.
4. The "LF" mark ("RF" for right cylinder) stamped on the rotor should be lined up with the pointer on the crankcase cover at a specified engine speed. If it does not align, loosen two breaker backing plate screws (shift plate screws for right cylinder) and move the complete backing plate (shift plate for right cylinder) until the pointer marks align.
5. Retighten screws. Check timing again.
6. Repeat procedure (steps 1 – 5) for right cylinder.

**(PAGE 20)**
**"B. Spark Plug" section should read as follows. (XS400F/XS400-2F)**

**Spark Plugs**

1. Check electrode, insulator and electrode gap, condition and wear.
2. Clean the spark plug with spark plug cleaner if necessary. Use a wire gauge to adjust the plug gap to the specification.
3. If the electrodes become too worn, replace the spark plug.
4. When installing the plug, always clean the gasket surface, wipe off any grime that might be present on the surface of the spark plug, and torque the spark plug properly.

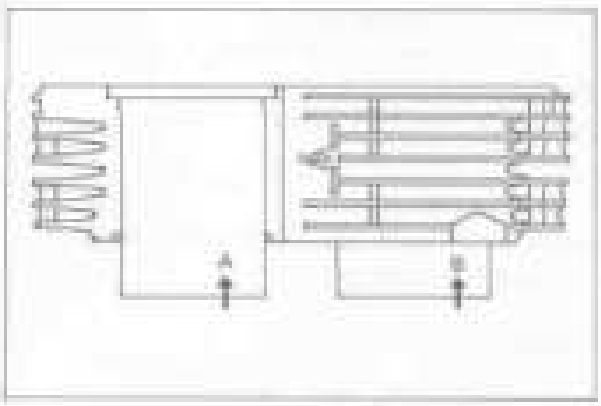
| |
|---|
| Standard spark plug: NGK BP7ES or CHAMPION N-7Y |
| Spark Plug Gap: 0.7 ~ 0.8 mm (0.028 – 0.031 in) |
| Spark plug tightening torque: 2.0 m-kg (14.5 ft-lb) |

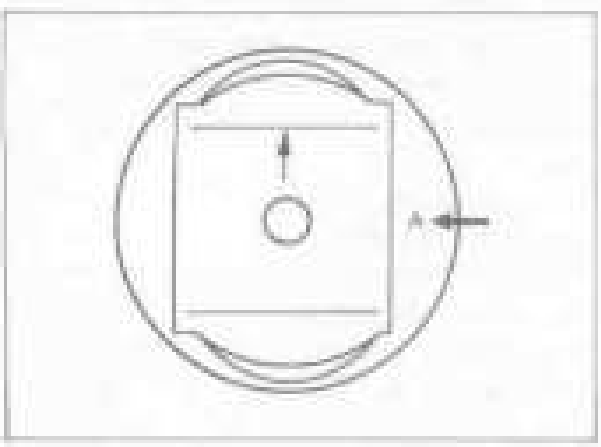
(PAGE 37)

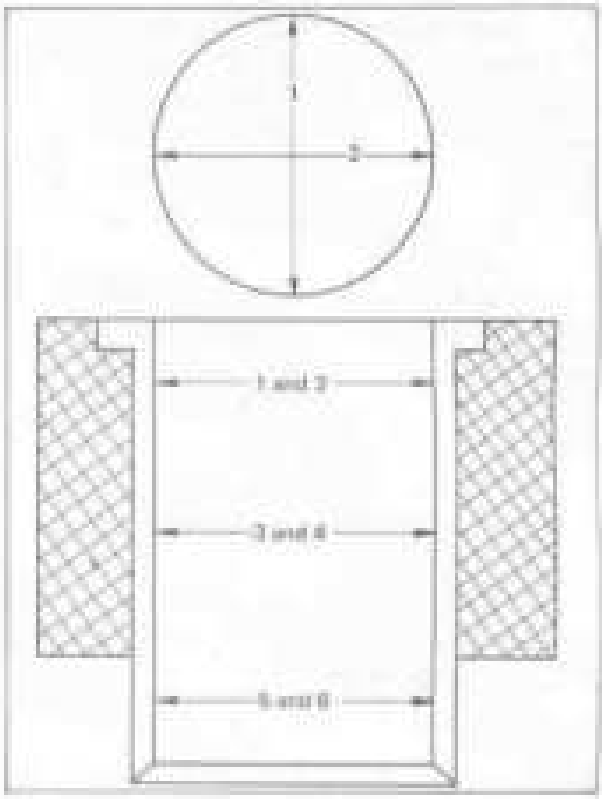
**E. Cylinder**

3. Types of cylinder
   Specifications should read as follows:
   (XS400F/XS400-2F)

| | Piston size | Cylinder size |
|---|---|---|
| A | 69 [illegible] (2.716 [illegible]) | 69 [illegible] (2.716 [illegible]) |
| B | 69 [illegible] (2.716 [illegible]) | 69 [illegible] (2.716 [illegible]) |



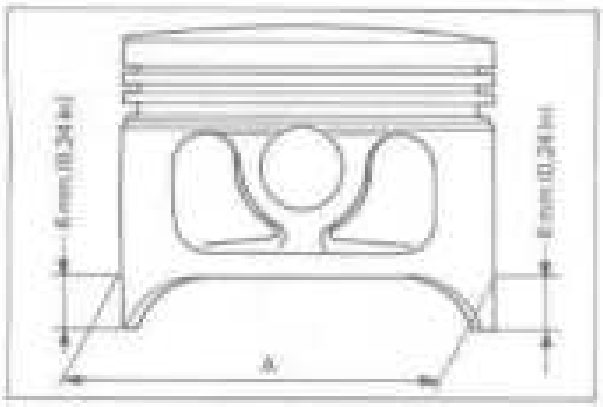

| | Standard |
|---|---|
| Cylinder bore | 69.00 ~ 69.02 mm (2.716 ~ 2.717 in) |
| Cylinder taper | 0.05 mm (0.002 in) |

(PAGE 38)

**F. Piston and Piston Rings**

1. Piston
   Specifications should read as follows:
   (XS400F/XS400-2F)

| | Size |
|---|---|
| Standard | 69.00 mm (2.716 in) |
| Oversize 1 | 69.25 mm (2.727 in) |
| Oversize 2 | 69.50 mm (2.736 in) |
| Oversize 3 | 69.75 mm (2.746 in) |
| Oversize 4 | 70.00 mm (2.756 in) |




2. Piston ring
   Specifications should read as follows: (XS400F/XS400-2F)

| | Oversize Dia. | Stamped Mark |
|---|---|---|
| Oversize 1 | 69.25 mm (2.727 in) | 25 |
| Oversize 2 | 69.50 mm (2.736 in) | 50 |
| Oversize 3 | 69.75 mm (2.746 in) | 75 |
| Oversize 4 | 70.00 mm (2.756 in) | 100 |

**(PAGE 58, 59)**

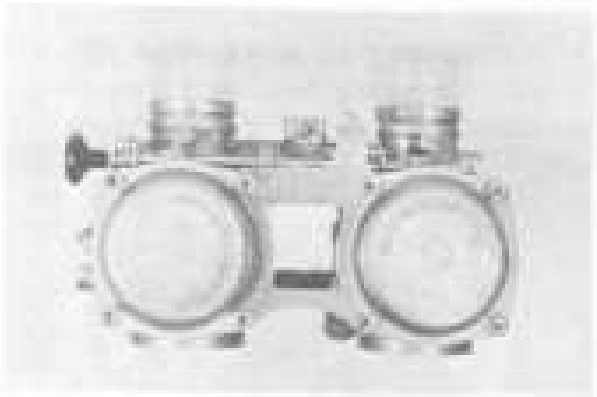
**"4-1. CARBURETOR" section should read as follows. (XS400F/XS400-2F)**

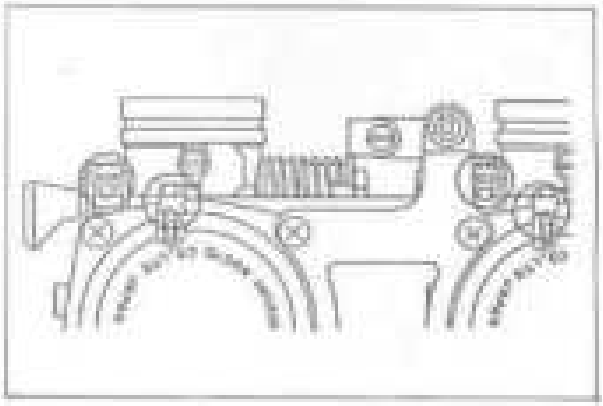
A. Disassembly

1. Prepare to separate carburetor (separation is not necessary if only float level adjustment or throttle slide inspection is to be done). Remove the two screws holding the starter shaft to the carburetor.

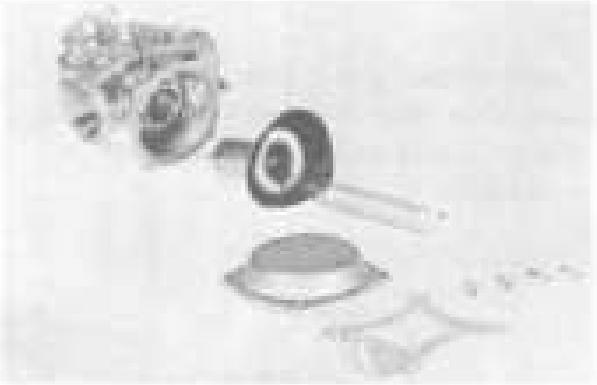
NOTE:

1) While pulling out the starter shaft, take care that the shaft positioning balls on the left and right do not pop out.
2) As illustrated, reassemble the starter shaft so that the holding screws fit in the shaft dents.

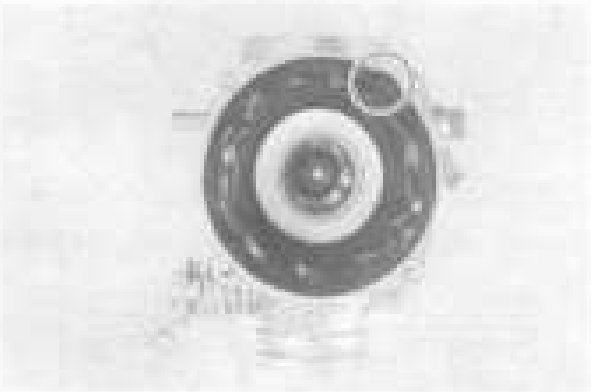




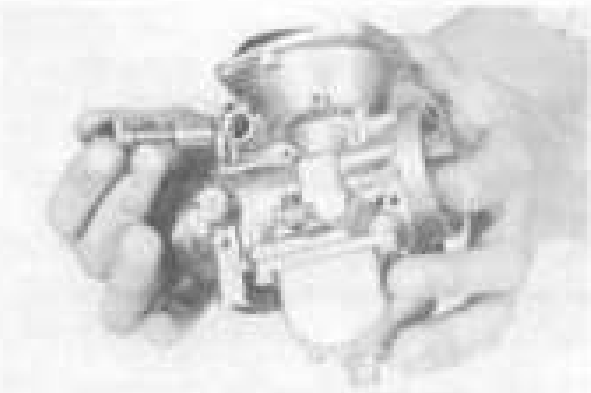
2. Remove upper and lower brackets. Note position of synchronizing screws for guidance in reassembly. Separate carburetors.
3. Remove vacuum chamber cover. Remove the spring, needle fitting plate, jet needle and diaphragm (vacuum piston).



4. Note that there is tab on the rubber diaphragm. There is a matching recess in the carburetor body for the diaphragm tab.



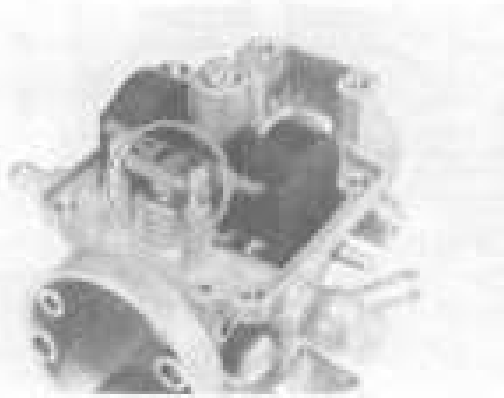
5. To inspect starter jet, remove the starter assembly to the left side of the carburetor.



6. Remove the four screws holding the float bowl cover. Remove the float bowl cover. The main jet is located under a cover in the float bowl.



7. Pull out float pivot pin. Remove the float assembly. Be careful not to lose the float valve needle located under the float level adjustment tang. Remove the needle jet.



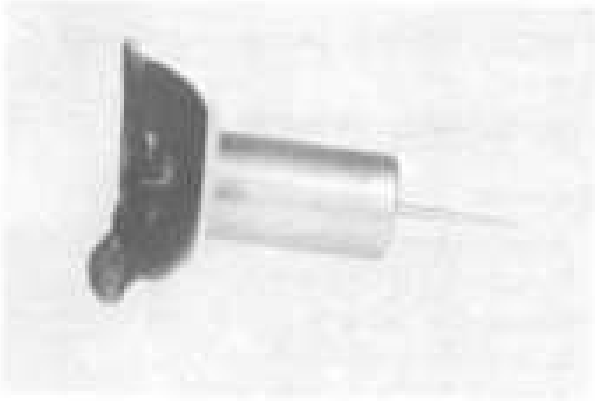
8. Reassemble in reverse order. Pay close attention to the installation of the vacuum position diaphragm.

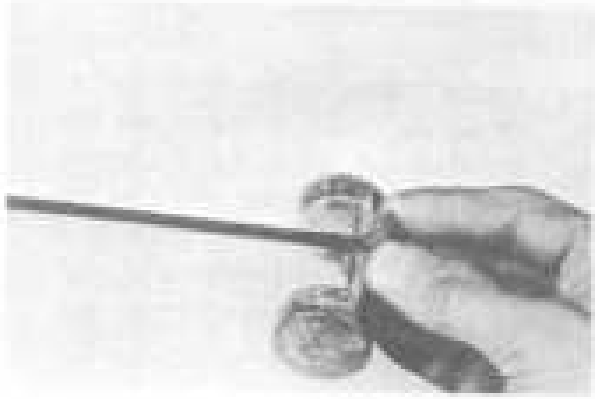
## B. Inspection

1. Examine carburetor body and fuel passages. If contaminated, wash carburetor in petroleum-based solvent. Blow out all passages and jets with compressed air.
2. Examine condition of floats. If floats are leaking or damaged, they should be replaced.
3. Inspect inlet needle valve and seat for wear or contamination. Replace these components as a set.



4. Inspect vacuum piston and rubber diaphragm. If the piston is scratched or the diaphragm is torn, the assembly must be replaced.



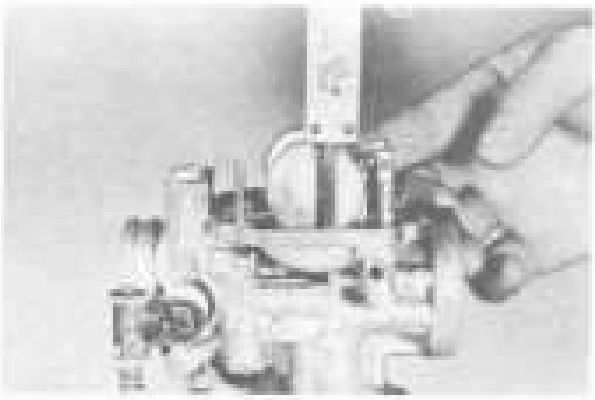


### C. Float Level

1. Using a vernier caliper, measure the distance of float arm from the top of the float chamber gasket seat (gasket removed) to the float.

| Float level: 28.6 ± 2.5 mm (1.047 ± 0.098 in) |
|---|

**NOTE:**
The float should be just resting on, but not depressing, the spring loaded inlet needle.



1. Float level

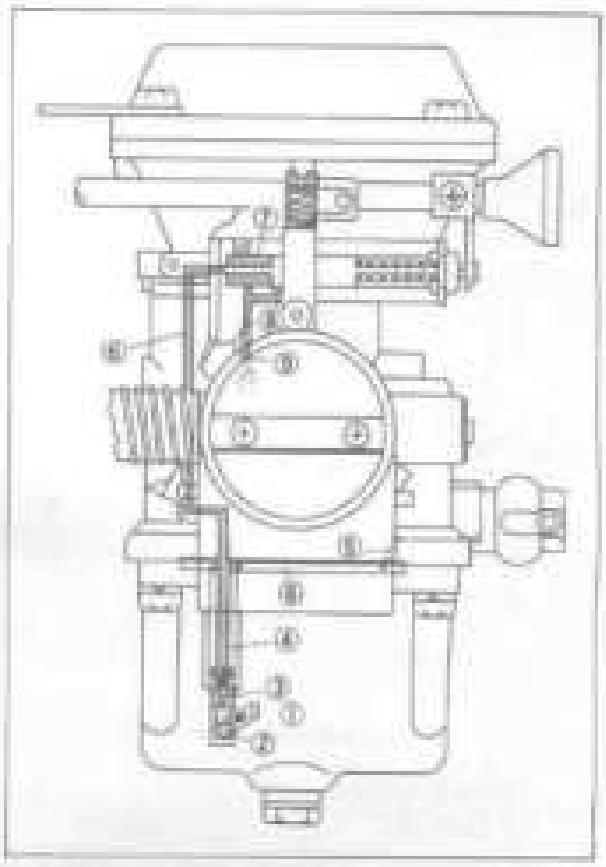
2. To correct float level, bend the tang a slight amount as required.

**NOTE:**
Both the right and left of the float should measure identically. Correct as required by bending float tang.

### D. Two-position Starter Jet (Choke)

1. Routes of Fuel and Air

The fuel supplied from the float chamber ① passes through ② and metered by ③. Air is supplied from the air chamber in the float chamber and flows through ⑤ and ⑥, then it is mixed with the metered fuel. The resultant mixture passes through ④ and ⑧ and flows into the two-position starter jet ⑦, where it is further mixed with air supplied from the diaphragm lower chamber. The mixture passes through ⑧ and streams into the throttle bore out of ⑨.



2. Operation of two-position starter jet

a. Full-open:

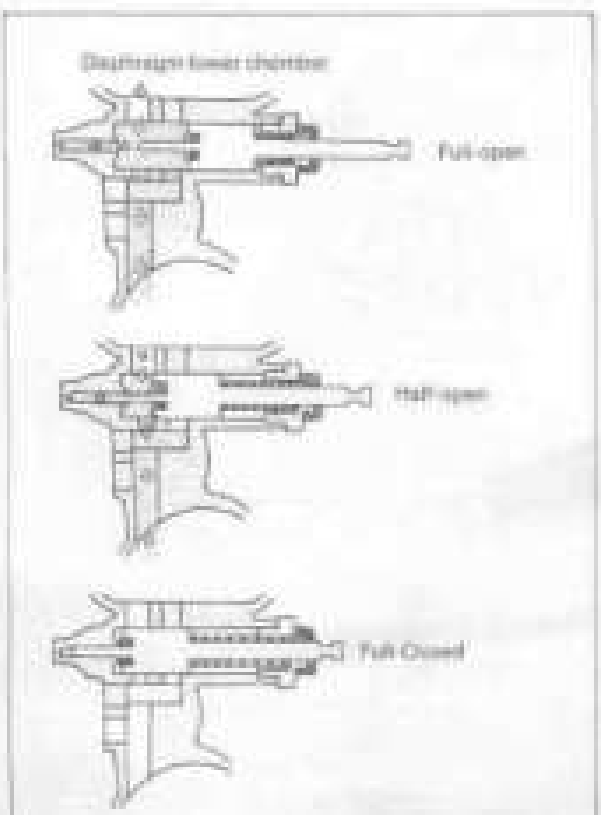
To start a cold engine, a rich mixture is required. To supply a rich mixture, pull the starter knob all the way out so that the needle regulating the fuel from is set free and the flow rate of incoming fuel is increases to a maximum. The fuel is mixed with the air supplied from the diaphragm lower chamber, and thus a rich mixture is produced.

b. Half-open:

When warming up the engine, a slightly rich mixture is required. Pull out the starter jet a half-way so that the fuel flow is reduced by the needle. The fuel is mixed with the air from the diaphragm lower chamber, and thus a slightly rich mixture is produced.

C. Full-closed:

When the engine fully warms up, no mixture from the starter circuit is necessary. Push the starter knob all the way in no that the flow of incoming fuel is stopped by the needle. At the same time the flow of incoming air is also stopped by the plunger, and thus no mixture enters the throttle bore.




(PAGE 62)

"5-1. FRONT WHEEL" section should read as follows.

## 5-1. FRONT WHEEL (XS400F)

### A. Removal

1. Remove cotter pin from front axle.
2. Remove the front axle nut.
3. Loosen the two axle holder nuts at the bottom of the right-hand fork leg.
4. Remove the front wheel axle by simultaneously twisting and pulling out on the axle. Then remove the wheel assembly.

NOTE:

Raise the front of the machine by placing a suitable stand under the engine.

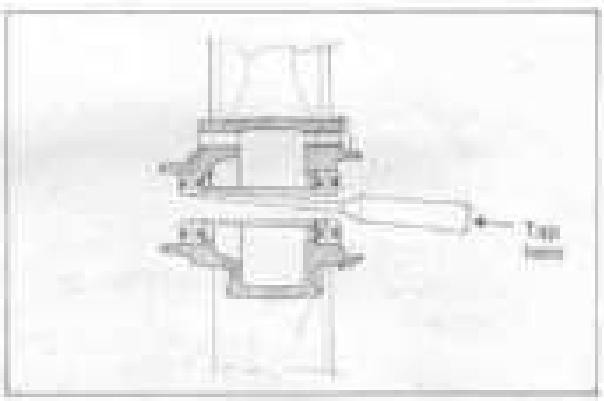
### B. Front Axle

Remove any corrosion from axle with emery cloth. Then place it on a surface plate and check for bending. If bent, replace.

### C. Replacing Wheel Bearings

If the bearings allow play in the wheel hub or if wheel does not turn smoothly, replace the bearings as follows:

1. First clean the outside of the wheel hub.
2. Drive the bearing out by pushing the spacer aside (the spacer "floats" between the bearings) and tapping around the perimeter of the bearing inner race with a soft metal drift pin and hammer. Either or both bearings can be removed in this manner.



3. To install the wheel bearing, reverse the above sequence. Be sure to grease the bearing before installation. Use a socket that matches the outside race of the bearing as a tool to drive in the bearing.

### D. Front Wheel Installation

When installing front wheel, reverse the removal procedure taking care of the following points:

1. Lightly grease lips of front wheel oil seals and gear teeth of speedometer drive and driven gears. Use lightweight lithium soap base grease.
2. Make sure there is enough gap between disc pads.
3. Check for proper engagement of the boss on the outer fork tube with the locating slot on speedometer gear unit housing.
4. Always secure the front wheel axle as follows:

a. Torque the front axle nut.

| Axle nut torque: |
| --- |
| 10.7 m-kg (77.4 ft-lb) |

b. Torque axle holder nuts. First tighten nut on front end of axle holder, and tighten nut on rear end.

| Holder nut torque: |
| --- |
| 2.0 m-kg (14.5 ft-lb) |



c. Install a new cotter pin.

### D. Front Wheel Installation

1. Check for cracks, bends or warpage of wheels. If a wheel is deformed or cracked, it must be replaced.

**NOTE:**

These aluminum wheels are not designed for use with tubeless tires.

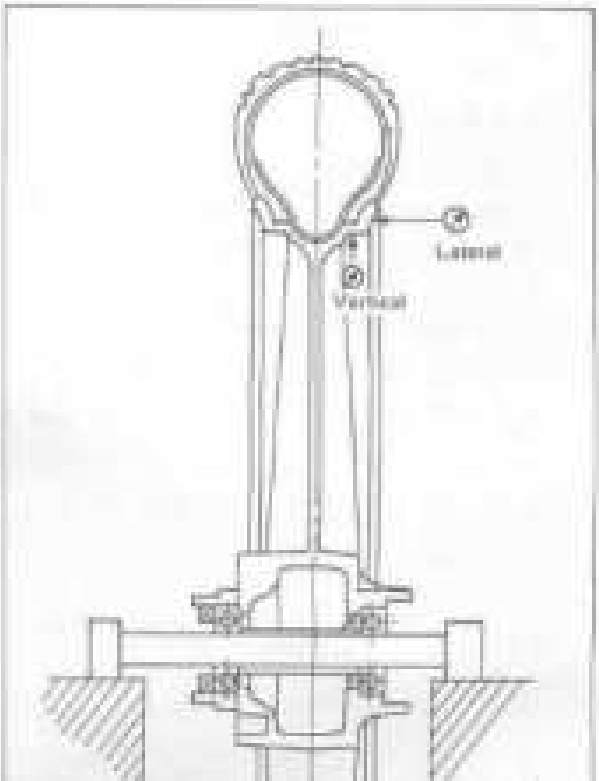
2. Check wheel run-out
   If deflection exceeds tolerance, check wheel bearing or replace wheel as required.

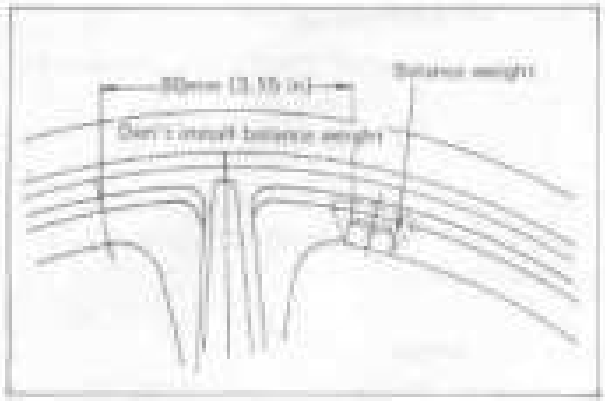
| Rim run-out limits: |
| --- |
| Vertical: 2 mm (0.08 in) |
| Lateral: 1 mm (0.04 in) |

3. Check wheel balance
   Rotate wheel lightly several times and observe resting position.
   If wheel is not statically balanced, wheel will come to rest at the same position.
   Install balance weight at lighter position (at top) as illustrated.

**NOTE:**

The wheel should be balanced with brake disc installed.






## 5-1. FRONT WHEEL (XS400-2F)

### A. Removal

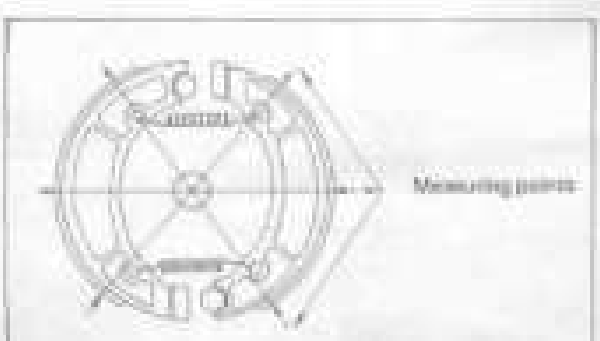
1. Elevate the front wheel by placing a suitable stand under the engine.
2. Remove speedometer cable from front brake shoe plate. First remove clip and then pull cable out.
3. Remove brake cable; loosen all cable adjuster screws and remove cable from handle lever holder. Then remove cable from cam lever at front brake shoe plate.
4. Remove cotter pin from front wheel axle and remove axle nut.
5. Loosen axle holder nuts at other end of axle.
6. Turn and pull out the front wheel axle; the wheel assembly can now be removed.

### B. Front Axle

Remove any corrosion from axle with emery cloth. Then place it on a surface plate and check for bending. If bent, replace.

### C. Checking Brake Shoe Wear

1. Measure the outside diameter at the brake shoes with slide calipers.




| Front brake shoe diameter | |
|---|---|
| Standard | 180 mm (7.1 in) |
| Wear limit | 176 mm (6.9 in) |

2. Remove any glazed areas from brake shoes using coarse sand paper.

### D. Brake Drum

Oil or scratches on the inner surface of the brake drum will impair braking performance or result in abnormal noises.
Remove oil by wiping with a rag soaked in lacquer thinner or solvent.
Remove scratches by lightly and evenly polishing with emery cloth.

### E. Brake Shoe Plate

Remove the camshaft and grease. If the cam face is worn, replace.

NOTE:
Before removing the cam lever, put a match mark (punched) on the cam lever and camshaft to indicate their positions for easy assembly.

### F. Replacing Wheel Bearings

If the bearings allow play in the wheel hub or if wheel does not turn smoothly, replace the bearings as follows:

1. First, clean the outside of the wheel hub.
2. Drive the bearing out by pushing the spacer aside (the spacer "floats" between the bearings) and tapping around the perimeter of the bearing inner race with a soft metal drift pin and hammer. Either or both bearings can be removed in this manner.
3. To install the wheel bearing, reverse the above sequence. Be sure to grease the bearing before installation. Use a socket that matches the outside race of the bearing as a tool to drive in the bearing.

### G. Front Wheel Installation

When installing front wheel, reverse the removal procedure taking care of the follo[illegible]
points:

1. Check for proper engagement of the boss on the outer fork tube with the locating slot on the brake shoe plate.
2. Always secure the front wheel axle as follows:

a. Torque the axle nut.

| Axle nut torque: 8.5 m-kg (61.5 ft-lb) |
|---|

b. Install a new cotter pin; discard old pin.
c. Install the axle holder as shown. First tighten the nut on the front end of the axle holder, and tighten the nut on the rear end.

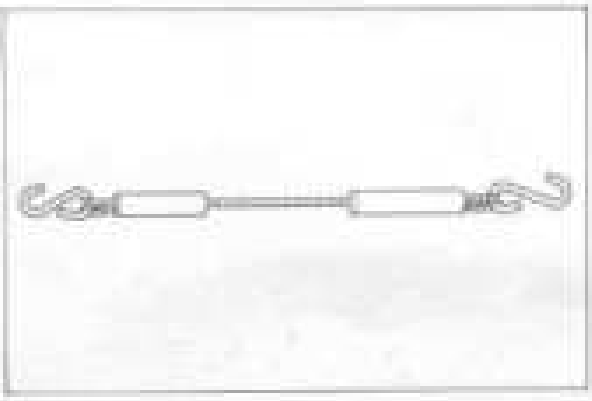
| Axle holder nut torque: 1.9 m-kg (13.7 ft-lb) |
|---|

**(PAGE 63)**
**"5-2. REAR WHEEL" section should read as follows.**

**5-2. REAR WHEEL (XS400F)**

**A. Rear Wheel Removal**

1. Support machine on the side stand.
2. Hook one end of the wire tool (contained in the owner's tool kit) to the hook attached to the frame.



3. Apply your weight to the rear part of the seat, and compress the rear shock absorbers by pulling up the right side of the swing arm with your hand, then hook the other end of the wire tool to the swing arm.
4. With the wire tool in this position, place the machine on the center stand.
5. Disconnect the drive chain. Using drive chain cutter (special tool).

NOTE:
The chain joint should be replaced each time the chain is cut.

6. Remove the axle nut cotter pin and axle nut.
7. While supporting the brake caliper, pull outer the rear axle.
8. Remove the rear wheel assembly.

**B. Checking Brake Shoe Wear**

Delete this section.

**C. Brake Drum**

Delete this section.

**D. Brake Shoe Plate**

Delete this section.

**E. Replacing Wheel Bearings**

See front wheel section, "Replacing Wheel Bearings".

**F. Rear Wheel Installation**

When installing rear wheel, reverse removal procedure taking care of following points:

1. Lightly grease lip of rear wheel oil seals.
2. Make sure the brake pads are installed properly and that there is enough gap to install the rear disc.
3. Install wheel assembly and axle. Always use a new cotter pin on the axle nut.

| Axle nut torque: 10.7 m-kg (77.4 ft-lb) |
|---|

4. Connect drive chain.
5. Adjust drive chain.

**G. Rear Wheel Inspection**

See "E. Front wheel inspection" for the front wheel.

## 5-2. REAR WHEEL (XS400-2F)

### A. Removing the Rear Wheel

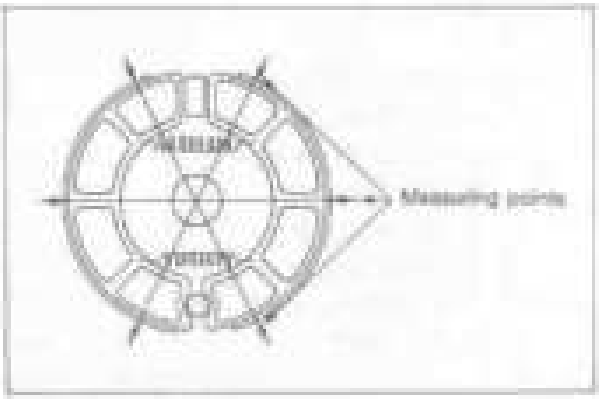
1. Remove the tension bar and the brake rod from the brake shoe plate. The tension bar can be removed by removing the cotter pin and nut from the tension bar bolt. The brake rod can be removed by removing the adjust nut.
2. Loosen the lock nuts of the right and left chain pullers and loosen the adjust bolts.
3. Remove the drive chain.
   To remove, use the chain cutter (special tool). See Chapter 3. "Engine Overhaul", page 25.

NOTE:
The chain joint should be replaced each time the chain is cut.

4. Remove the rear wheel axle nut.
5. The rear wheel assembly, the collar, the chain puller (s), etc., can be removed from the motorcycle by pulling the axle.

### B. Checking Brake Shoe Wear

1. Measure the outside diameter at the brake shoes with slide calipers.




Rear brake shoe diameter:
160 mm (6.30 in)
Replacement limit:
156 mm (6.14 in) min.

2. Remove any glazed areas from brake shoes using coarse sand paper.

### C. Brake Drum

See front wheel section, "5-1-D. Brake Drum".

### D. Brake Shoe Plate

See front wheel section, "5-1-E. Brake Shoe Plate".

### E. Replacing Wheel Bearings

See front wheel section, "5-1-F. Replacing Wheel Bearing".

### F. Installing Rear Wheel

1. Install wheel and axle.

Axle nut torque:
8.5 m-kg (61.5 ft-lb)

2. Connect drive chain, brake rod and tension bar.
3. Adjust drive chain.
   (See chapter 2, "Drive chain tension adjustment".)
4. Tighten rear axle nut.
   Install a new cotter pin.
5. Adjust rear brake. (See chaper 2, "Rear brake and wheel".)

**(PAGE 63 ~ 69)**
**"5-3. DISC BRAKES" section should read as follows.**

## 5-3. DISC BRAKES (XS400F only)

Except for the following, the same procedure can be performed for Assembly, Disassembly and Inspection of XS400F front and rear brake and XS360C front brake.

### B. Disc Brake Inspection

The shim in the caliper is no longer used, and a set of two pad springs has been changed into one piece type.

### C. Disc Brake Assembly

d. Caliper installation

2) Install the brake hoses (front and rear). Specification should be read as follows:

Tightening torque:
Union bolt: 2.6 m-kg (18.8 ft-lb)

(PAGE 69)
**5-4. RIMS AND SPOKES (FRONT AND REAR WHEELS)**

**A. Checking for loose spokes**

Delete the whole section. (XS400F only)

(PAGE 70)
**5-5. TIRES AND TUBES**

**Please add the following item after "B. Installation". (XS400F/XS400-2F)**

**C. Checking for tire pressure and wear**

Check the tire pressure and check the tires for wear.

**WARNING:**
**Never overload the motorcycle beyond specified tire limits. Operation of an overloaded tire could cause tire damage, an accident and injury.**

XS400F

| | FRONT | REAR |
|---|---|---|
| XS400F BASIC WEIGHT with oil and full fuel tank | 82 kg (181 lb) | 97 kg (214 lb) |
| Standard tire | Bridgestone 3.00S-18-4PR | Bridgestone 3.50S-18-4PR |
| Maximum load limit | 118 kg (260 lb) | 225 kg (495 lb) |
| Cold tire pressure: Up to 90 kg (198 lb) load | 1.8 kg/cm² (25 psi) | 2.0 kg/cm² (28 psi) |
| 90 kg (198 lb) load ~118 kg (254 lb) load | 2.0 kg/cm² (28 psi) | 2.3 kg/cm² (32 psi) |
| (Maximum load) High speed riding | 2.0 kg/cm² (28 psi) | 2.3 kg/cm² (32 psi) |
| Minimum tire tread depth | 0.8 mm (0.03 in) | 0.8 mm (0.03 in) |

XS400-2F

| | FRONT | REAR |
|---|---|---|
| XS400-2F BASIC WEIGHT with oil and full fuel tank | 78 kg (172 lb) | 89 kg (196 lb) |
| Standard tire | Bridgestone or Yokohama 3.00S-18-4PR | Bridgestone or Yokohama 3.50S-18-4PR |
| Maximum load limit | 118 kg (260 lb) | 225 kg (495 lb) |
| Cold tire pressure: Up to 90 kg (198 lb) load | 1.8 kg/cm² (25 psi) | 2.0 kg/cm² (28 psi) |
| 90 kg (198 lb) load ~118 kg (254 lb) load | 2.0 kg/cm² (28 psi) | 2.3 kg/cm² (32 psi) |
| (Maximum load) High speed riding | 2.0 kg/cm² (28 psi) | 2.3 kg/cm² (32 psi) |
| Minimum tire tread depth | 0.8 mm (0.03 in) | 0.8 mm (0.03 in) |

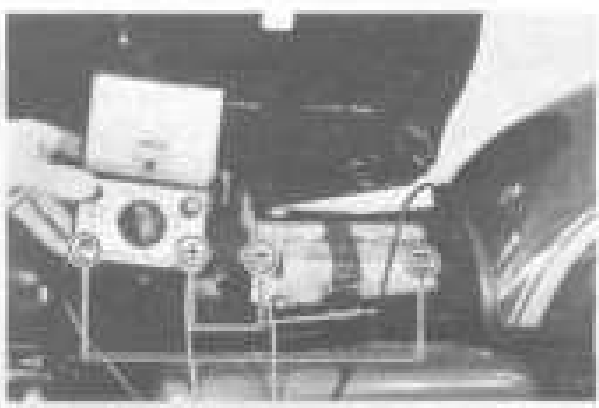
Make sure the total weight of the motorcycle with accessories, rider (s), etc., does not exceed the tire limits.

(PAGE 81–82)
**"B. Regulator" section should read as follows. (XS400F/XS400-2F)**

**B. I.C. voltage regulator**

The regulator has been changed from a mechanical-point type to an IC (Integrated Circuit) type. The IC Voltage Regulator is a small and normally very reliable component. Due to its construction, it is light-weight and free from the wear and misadjustment associated with mechanical voltage regulators. If the following inspection reveals that the regulator is faulty, it cannot be adjusted and must be replaced.

1. Checking method
   a. Connect D.C. voltmeter to the battery terminals.



b. Start engine.
c. Accelerate engine to approximately 3,000 r/min or more and check regulated voltage.

| Regulated voltage: 14.0 ~ 14.7V |
|---|

d. If voltage is off, check battery, generator and rectifier. If generator, battery and rectifier are good, then IC regulator is broken and it should be replaced.

**NOTE:**

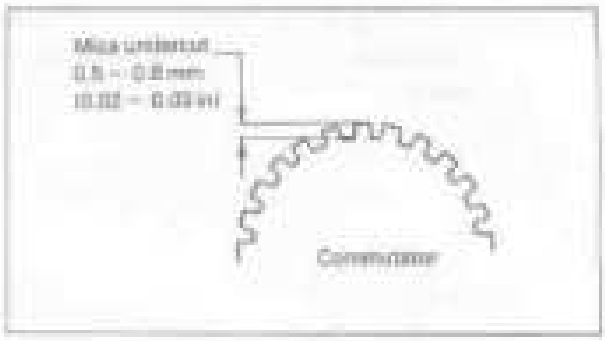
1) Never disconnect wires from the battery while the generator is in operation. If the battery is disconnected, the voltage across the generator terminals will increase, damaging the semiconductors.
2) When checking the regulator being installed on a machine, the battery should not be removed, and it should be fully charged.
3) Never use a high voltage insulation ohmmeter such as a megachmmeter for such a test. If high voltage is applied to the regulator terminals, the regulator will be damaged.

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**(PAGE 84)**
**6-4. STARTER MOTOR (XS400F only)**

**A. Servicing and troubleshooting**
**"1. Armature" section should read as follows.**

1. Armature
a. Check the outer surface of the commutator. If its surface is dirty, clean with No. 600 grit sand paper.
b. The mica insulation between commutator segments should be 0.5 ~ 0.8 mm (0.02 ~ 0.03 in) below the segment level. If not, scrape to proper limits with appropriately shaped tool. (A hack saw blade can be ground to fit.)




c. Check the armature and field coil for shorting and insulation. Replace armature as required.

| | Coil resistance |
|---|---|
| Armature coil | 0.006Ω at 20°C (68°F) |
| Field coil | 0.011Ω at 20°C (68°F) |

d. Check the front and rear cover bearings for damage. If damaged, the starter assembly must be replaced.

(PAGE 92 ~ 104)

## 7-2. SPECIFICATION

### A. General

| Item | XS400F | XS400-2F |
|---|---|---|
| 1. MODEL | | |
| 1) Model (I.B.M. No.) | XS400F (2L0) | XS400-2F (2V6) |
| 2) Frame I.D. and starting number | 2L0-100101 | 2V6-000101 |
| 3) Engine I.D. and starting number | 2L0-100101 | 2V6-000101 |
| 2. DIMENSION | | |
| 1) Overall length | 2,065 mm (81.3 in) | — |
| 2) Overall width | 865 mm (34.1 in) | 845 mm (33.3 in) |
| 3) Overall height | 1,140 mm (44.9 in) | 1,130 mm (44.5 in) |
| 4) Seat height | 760 mm (30.7 in) | — |
| 5) Wheelbase | 1,385 mm (53.7 in) | — |
| 6) Minimum ground clearance | 150 mm ( 5.9 in) | — |
| 3. WEIGHT | | |
| 1) Net weight (Dry) | 166 kg (370 lb) | 159 kg (351 lb) |
| 4. PERFORMANCE | | |
| 1) Climbing ability | 28° | — |
| 2) Minimum turning radius | 2,300 mm (86.6 in) | — |
| 3) Braking distance | 14 m @ 50 km/h (46 ft @ 31 mi/h) | — |

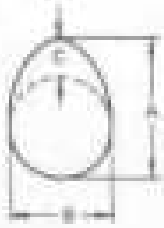
### B. Engine

| | | |
|---|---|---|
| 1. DESCRIPTION | | |
| 1) Engine type | Air cooled, 4-stroke, SOHC twin, parallel forward incline | — |
| 2) Engine model | 2L0 | 2V6 |
| 3) Displacement | 391 cc (23.92 cu.in) | — |
| 4) Bore × stroke | 65.0 × 52.4 mm (2.717 × 2.063 in) | — |
| 5) Compression ratio | 9.3 : 1 | — |
| 6) Starting system | Kick and electric starter | Kick starter |
| 7) Ignition system | Battery ignition | — |
| 8) Lubrication system | Wet sump | — |
| 2. CYLINDER HEAD | | |
| 1) Combustion chamber volume | 23.6 cc (1.440 cu.in) BF7ES | — |
| 2) Combustion chamber type | Dome + Squish | — |
| 3) Head gasket thickness | 1.5 mm (0.04 in) | — |
| 4) Tightening torque | | |
| Cylinder head holding nut (M10 P1.25) | 3.3 m-kg (24.0 ft-lb) | — |
| Cylinder head holding bolt (M6 P1.0) | 1.0 m-kg ( 7.0 ft-lb) | — |
| Spark plug (M14 P1.25) | 2.0 m-kg (14.5 ft-lb) | — |
| 3. CYLINDER | | |
| 1) Material | Aluminum alloy with cast iron sleeve | — |
| 2) Bore size | 65.0 $^{+0.00}_{-0.02}$ mm (2.72 $^{+0.000}_{-0.001}$ in) | — |
| 3) Taper limit | 0.08 mm (0.003 in) | — |
| 4) Out of round limit | 0.01 mm (0.0004 in) | — |
| 4. PISTON | | |
| 1) Piston skirt clearance | 0.030 ~ 0.050 mm (0.0012 ~ 0.0019 in) | — |

| Item | XS400F | XS400-2F |
|---|---|---|
| 2) Piston oversize | 68.25 mm (2.727 in) \| 68.50 mm (2.736 in) \| 68.75 mm (2.746 in) \| 70.00 mm (2.795 in) | ← |
| 3) Piston pin outside diameter × length | 16.0 $^{0}_{-0.008}$ mm × 58.5 $^{0}_{-0.2}$ mm<br>(0.63 $^{0}_{-0.0003}$ in × 2.303 $^{0}_{-0.0118}$ in) | ← |
| 5. PISTON RING | | |
| 1) Piston ring design (Top) | Plain ring 1.0 mm (0.039 in) | ← |
| (2nd) | Plain ring 1.5 mm (0.059 in) | ← |
| (Oil ring) | With expander 2.45 mm (0.096 in) | ← |
| 2) Ring end gap (Installed top) | 0.2 ~ 0.4 mm (0.008 ~ 0.016 in) | ← |
| (Installed 2nd) | 0.2 ~ 0.4 mm (0.008 ~ 0.016 in) | ← |
| (Installed Oil) | 0.2 ~ 0.9 mm (0.008 ~ 0.035 in) | ← |
| 3) Ring groove side clearance (Top) | 0.04 ~ 0.08 mm (0.0016 ~ 0.0032 in) | ← |
| (2nd) | 0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in) | ← |
| (Oil) | ---------- | ← |
| 6. BIG END BEARING | | |
| 1) Type | Plain bearing | ← |
| 2) Oil clearance | 0.021 ~ 0.045 mm<br>(0.0008 ~ 0.0018 in) | ← |
| 3) Bearing size | 1. (Blue) 1.92 $^{+0.004}_{0}$ mm (0.0691 $^{+0.00016}_{0}$ in)<br>2. (Black) 1.96 $^{0}_{-0.004}$ mm (0.0001 $^{0}_{-0.00016}$ in)<br>3. (Brown) 1.96 $^{-0.004}_{-0.008}$ mm (0.0691 $^{-0.00016}_{-0.00031}$ in)<br>4. (Green) 1.98 $^{0.008}_{-0.012}$ mm (0.0787 $^{-0.00031}_{-0.00047}$ in) | ← |
| 7. CAMSHAFT | | |
| 1) Cam drive type | Chain (Center side) | ← |
| 2) Number and type of bearing | 3 bearings cylinder head direct support | ← |
| 3) Bearing dimensions | | |

| | Cap I. D. | Shaft O. D. | Clearance |
|---|---|---|---|
| IN and EX 1,2,3 | 23.0 $^{+0.021}_{0}$ mm<br>(0.906 $^{+0.0008}_{0}$ in) | 23.0 $^{-0.020}_{-0.033}$ mm<br>(0.906 $^{-0.0079}_{-0.0013}$ in) | 0.020 ~ 0.054 mm<br>(0.0008 ~ 0.0021 in) |

4) Cam dimensions

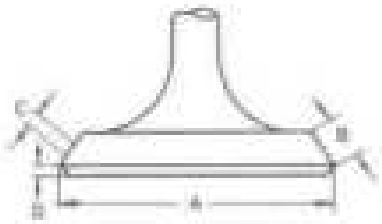



| | Cam height "A" | Limit | Base circle "B" | Limit | Lift "C" |
|---|---|---|---|---|---|
| IN | 38.03 ± 0.05 mm<br>(1.598 ± 0.0019 in) | 37.98 mm<br>(1.950 in) | 32.27 ± 0.05 mm<br>(1.270 ± 0.0019 in) | 32.12 mm<br>(1.265 in) | 7.93 mm<br>(0.296 in) |
| EX | 38.57 ± 0.05 mm<br>(1.368 ± 0.0019 in) | 38.42 mm<br>(1.512 in) | 32.13 ± 0.05 mm<br>(1.265 ± 0.0019 in) | 31.97 mm<br>(1.259 in) | 7.97 mm<br>(0.298 in) |

5) Valve timing

| | OPEN | CLOSE | DURATION | OVERLAP |
|---|---|---|---|---|
| IN | BTDC 35° | ABDC 75° | 290° | 60° |
| EX | BBDC 75° | ATDC 30° | 285° | |

| | | |
|---|---|---|
| 6) Camshaft deflection limit | 0.03 mm (0.0012 in) | ← |
| 7) Cam chain | | |
| Type | TSUBAKIMOTO 6F05M | ← |
| Pitch/Number of links | 7.774 mm (0.3060 in)/92L | ← |
| Sprocket ratio (Teeth) | 34/17 (2.000) | ← |

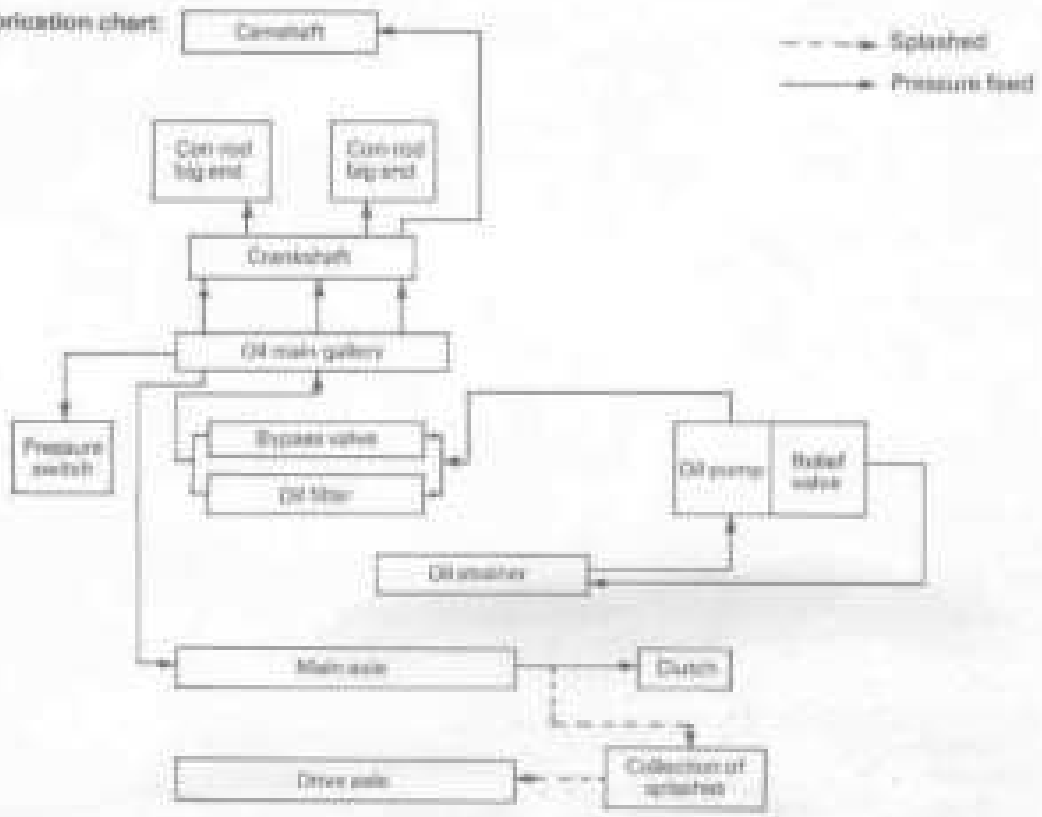
| Item | XS400F | XS400-2F |
|---|---|---|
| 8. ROCKER ARM AND ROCKER SHAFT | | |
| 1) Rocker arm inner diameter | 13.0 $^{+0.018}_{0}$ mm (0.512 $^{+0.0007}_{0}$ in) | ← |
| 2) Rocker arm shaft diameter | 13.0 $^{-0.016}_{-0.034}$ mm (0.512 $^{-0.0006}_{-0.0014}$ in) | ← |
| 3) Clearance | 0.016 ~ 0.054 mm | ← |
| | (0.00063 ~ 0.00122 in) | |
| 4) Lift ratio | X : Y = 32.06 : 33.62 mm | ← |
| | (1.262 : 1.324 in) | |
| 9. VALVE, VALVE SEAT AND VALVE GUIDE | | |
| 1) Valve per cylinder | 2 pcs. | ← |
| 2) Valve clearance (In cold engine) | IN: 0.08 ~ 0.12 mm | ← |
| | (0.0031 ~ 0.0047 in) | |
| | EX: 0.16 ~ 0.20 mm | ← |
| | (0.0063 ~ 0.0079 in) | |
| 3) Dimensions | | |
| Valve head diameter "A" | IN: 35.5 ± 0.1 mm | ← |
| | (1.398 ± 0.004 in) | |
| | EX: 30.0 ± 0.1 mm | ← |
| | (1.181 ± 0.004 in) | |
| Valve face width "B" | IN: 2.3 mm (0.091 in) | ← |
| | EX: 2.3 mm (0.091 in) | ← |
| Valve seat width "C" | IN: 1.0 ± 0.1 mm (0.039 ± 0.004 in) | ← |
| | EX: 1.0 ± 0.1 mm (0.039 ± 0.004 in) | ← |
| Valve margin thickness "D" | IN: 1.0 ± 0.2 mm (0.039 ± 0.008 in) | ← |
| | EX: 1.0 ± 0.2 mm (0.039 ± 0.008 in) | ← |
|  | | |
| Valve stem diameter | IN: 7.0 $^{-0.010}_{-0.025}$ mm (0.275 $^{-0.0004}_{-0.0009}$ in) | ← |
| | EX: 7.0 $^{-0.030}_{-0.045}$ mm (0.275 $^{-0.0012}_{-0.0018}$ in) | ← |
| Valve guide diameter | IN: 7.0 $^{+0.012}_{0}$ mm (0.275 $^{+0.0005}_{0}$ in) | ← |
| | EX: 7.0 $^{+0.012}_{0}$ mm (0.275 $^{+0.0005}_{0}$ in) | ← |
| Valve stem to stem clearance | IN: 0.010 ~ 0.037 mm | ← |
| | (0.00039 ~ 0.00146 in) | |
| | EX: 0.030 ~ 0.057 mm | ← |
| | (0.0012 ~ 0.0022 in) | |
| 4) Valve face runout limit | IN & EX: 0.03 mm (0.0012 in) or less | ← |
| 10. VALVE SPRING | | |
| 1) Free length | INNER (IN/EX): 39.3 mm (1.547 in) | ← |
| | OUTER (IN/EX): 42.8 mm (1.685 in) | ← |
| 2) Spring rate (kg/mm) | INNER (IN/EX): $k_1$ = 1.93 | ← |
| | $K_2$ = 2.47 | ← |
| | OUTER (IN/EX): $k_1$ = 4.19 | ← |
| | $k_2$ = 5.49 | ← |
| 3) Installed length (Valve closed) | INNER (IN/EX): 33.0 mm (1.299 in) | ← |
| | OUTER (IN/EX): 37.0 mm (1.457 in) | ← |

| Item | XS400F | | XS400-2F |
|---|---|---|---|
| 4) Installed pressure (Valve closed) | INNER (IN/EX): | 12.1 ± 1.2 kg (26.7 ± 2.6 lb) | ← |
| | OUTER (IN/EX): | 24.6 ± 1.7 kg (53.8 ± 3.8 lb) | ← |
| 5) Compressed length (Valve open) | INNER (IN/EX): | 25.0 mm (0.984 in) | ← |
| | OUTER (IN/EX): | 29.0 mm (1.142 in) | ← |
| 6) Compressed pressure (Valve open) | INNER (IN/EX): | 31.9 kg (68.2 lb) | ← |
| | OUTER (IN/EX): | 68.3 kg (151 lb) | ← |
| 7) Wire diameter (Valve open) | INNER (IN/EX): | 3.0 mm (0.118 in) | ← |
| | OUTER (IN/EX): | 4.4 mm (0.173 in) | ← |
| 8) Winding O.D. (Valve open) | INNER (IN/EX): | 22.4 mm (0.882 in) | ← |
| | OUTER (IN/EX): | 32.0 mm (1.260 in) | ← |
| 9) Number of windings (Valve open) | INNER (IN/EX): | 7.75 turns | ← |
| | OUTER (IN/EX): | 6.25 turns | ← |
| 10) Tilt limit (Valve open) | INNER (IN/EX): | 1.7 mm (0.067 in) or 2.5° | ← |
| | OUTER (IN/EX): | 1.9 mm (0.075 in) or 2.5° | ← |
| 11. CRANKSHAFT | | | |
| 1) Crankshaft deflection | 0.02 mm (0.0008 in) | | ← |
| 2) Con-rod large end clearance | 0.160 ~ 0.264 mm (0.0063 ~ 0.0104 in) | | ← |
| 3) Clearance between crank and crankcase | 0.05 ~ 0.25 mm (0.002 ~ 0.010 in) | | ← |
| 12. CONNECTING ROD | | | |
| 1) Big end I.D. | $41.0\ ^{+0.024}_{0}$ mm ($1.614\ ^{+0.0009}_{0}$ in) | | ← |
| 2) Small end I.D. | $16.0\ ^{+0.028}_{+0.010}$ mm ($0.630\ ^{+0.0011}_{+0.0004}$ in) | | ← |
| 3) Difference of each rod weight | 5 g or less | | ← |
| 13. CRANK BEARING | | | |
| 1) Oil clearance | 0.020 ~ 0.044 mm (0.00079 ~ 0.00157 in) | | ← |
| 2) Bearing size | 1.(Blue) | $1.80\ ^{+0.012}_{+0.008}$ mm ($0.0591\ ^{+0.00047}_{+0.00031}$ in) | ← |
| | 2.(Black) | $1.80\ ^{+0.008}_{+0.004}$ mm ($0.0591\ ^{+0.00031}_{+0.00016}$ in) | |
| | 3.(Brown) | $1.80\ ^{+0.004}_{0}$ mm ($0.0591\ ^{+0.00016}_{0}$ in) | |
| | 4.(Green) | $1.80\ ^{0}_{-0.004}$ mm ($0.0591\ ^{0}_{-0.00016}$ in) | |
| 14. CLUTCH | | | |
| 1) Clutch type | Wet, multiple type | | ← |
| 2) Clutch operating mechanism | Inner push type, screw push system | | ← |
| 3) Primary reduction ratio and method | 78/24 (3.250), spur gear | | ← |
| 4) Friction plate | | | |
| Thickness/ Quantity | 3 mm (0.12 in)/ 7 pcs. | | ← |
| Wear limit | 2.7 mm (0.11 in) | | ← |
| 5) Clutch plate | | | |
| Thickness/ Quantity | 1.6 mm (0.063 in)/ 6 pcs. | | ← |
| Warp limit | 0.05 mm (0.002 in) | | ← |
| 6) Clutch spring | | | |
| Free length/ Quantity | 34.0 mm (1.362 in)/ 4 pcs. | | ← |
| Minimum length | 33.6 mm (1.323 in) | | ← |

| Item | XS400F | XS400-3F |
|---|---|---|
| 7) Clutch housing radial play<br>(Wear limit | 0.009 — 0.043 mm<br>(0.00035 — 0.00169 in) | — |
| 8) Push rod bending limit | 0.2 mm (0.008 in) | — |
| 9) Tightening torque<br>Primary drive gear (M16 P1.25)<br>Clutch spring screw (M6 P1.0) | 4.8 m·kg (34.5 ft·lb)<br>1.0 m·kg (7.2 ft·lb) | —<br>— |
| 15. TRANSMISSION<br>1) Type<br>2) Gear ratio: 1st<br>2nd<br>3rd<br>4th<br>5th<br>6th<br>3) Bearing type: Main axle (Left)<br>Main axle (Right)<br>Drive axle (Left)<br>Drive axle (Right)<br>4) Oil seal type Drive axle (Left)<br>5) Secondary reduction ratio and method<br>6) Tightening torque<br>Drive sprocket (M18 P1.0) | <br>Constant mesh, 6-speed forward<br>35/14 (2.500)<br>32/18 (1.777)<br>29/21 (1.380)<br>27/24 (1.125)<br>26/26 (0.961)<br>26/30 (0.866)<br>Needle bearing (ø30-ø36-15)<br>Ball bearing (6206)<br>Ball bearing (6305 special)<br>Needle bearing (ø20-ø33-15)<br>SD-35-62-8<br>38/16 (2.437) Chain<br>6.5 m·kg (47.0 ft·lb) | <br>—<br>—<br>—<br>—<br>—<br>—<br>—<br>—<br>—<br>—<br>—<br>— |
| 16. SHIFTING MECHANISM<br>1) Type<br>2) Oil seal type (Change lever)<br>3) Tightening torque<br>Change pedal (M6 P1.0) | <br>Cam drum, return type<br>SD-12-22-5<br>1.0 m·kg (7.2 ft·lb) | <br>—<br>—<br>— |
| 17. KICK STARTER<br>1) Type<br>2) Oil seal type (Kick axle)<br>3) Kick clip friction tension<br>4) Tightening torque<br>Kick crank (M8 P1.25) | <br>Kick and mesh<br>SD-20-30-7<br>1.0 m·kg (7.0 ft·lb)<br>2.0 m·kg (14.5 ft·lb) | <br>—<br>—<br>—<br>— |
| 18. CRANKCASE<br>1) Tightening torque<br>Bolt (M8 P1.25)<br>Bolt (M6 P1.0) | <br>2.2 m·kg (16.0 ft·lb)<br>1.0 m·kg (7.0 ft·lb) | <br>—<br>— |
| 19. INTAKE<br>1) Air cleaner: Type / Quantity<br>2) Cleaner cleaning interval<br>3) Valve clearance | <br>Dry, foam rubber / 2 pcs.<br>Every 6,000 km (5,000 mile)<br>See No. 9-2) Valve, valve seat and valve guide | <br>—<br>—<br>— |
| 20. CARBURETOR<br>1) Type and manufacturer / Quantity<br>2) I.D. mark<br>3) Main jet (MJ)<br>4) Air jet (AJ)<br>5) Jet needle clip position (JN)<br>6) Needle jet (NJ)<br>7) Throttle valve (Th.V) | <br>BS34 MIKUNI / 2 pcs.<br>2L0 6<br>#132.5<br>#45<br>5Z1-3<br>X-6<br>#135 | <br>—<br>—<br>—<br>—<br>—<br>—<br>— |

| Item | | XS400F | XS400-2F |
|---|---|---|---|
| 8) Pilot jet | (PJ) | #42.5 | ← |
| 9) Air screw (Turns out) | (AS) | Preset (1-1/4 ± 1/2) | ← |
| 10) Starter jet | (GS) | #30 | ← |
| 11) Fuel level | (FL) | 32 ± 1 mm (1.26 ± 0.04 in) | ← |
| 12) Vacuum synchronization | | 5 mmHg or less | ← |
| 13) Idling engine speed | | 1,200 r/min | ← |
| 21. LUBRICATION | | | |
| 1) Engine sump oil quantity | | Oil exchange: 2.0 lit (2.1 qt) | ← |
| | | Filter and oil exchange: 2.3 lit (2.4 qt) | ← |
| | | Total amount: 2.6 lit (2.7 qt) | ← |
| 2) Oil type | | Yamalube 4-cycle oil or | ← |
| | | SAE 20W/40 "SE" motor oil | ← |
| | | (more than 5°C (32°F)) | |
| | | SAE 10W/30 "SE" motor oil | ← |
| | | (below 15°C (59°F)) | |
| 3) Oil pump type | | Trochoid pump | ← |
| 4) Trochoid pump specifications | | | |
| Top clearance | | 0.10 ~ 0.18 mm | ← |
| | | (0.0039 ~ 0.0071 in) | |
| Tip clearance | | 0.03 ~ 0.09 mm | ← |
| | | (0.0012 ~ 0.0035 in) | |
| Side clearance | | 0.03 ~ 0.09 mm | ← |
| | | (0.0012 ~ 0.0035 in) | |
| Oil pump volume | | 1.2 lit/min at 500 r/min | ← |
| 5) Relief valve operating pressure | | 5 ± 0.5 kg/cm² (71 ± 7 psi) | ← |
| 6) Bypass valve setting pressure | | 1.0 ± 0.2 kg/cm² (14 ± 3 psi) | ← |

Lubrication chart:



## C. Chassis

| Item | XS400F | XS400-2F |
|---|---|---|
| 1. FRAME | | |
| 1) Frame design | Semi double cradle, high tensile frame | ← |
| 2) Tightening torque | | |
| Engine mounting bolt (M8 P1.25) | 1.8 m·kg (13.0 ft·lb) | ← |
| Engine mounting bolt (M10 P1.25) | 3.1 m·kg (22.5 ft·lb) | ← |
| 2. STEERING SYSTEM | | |
| 1) Caster | 27° | ← |
| 2) Trail | 84 mm (3.31 in) | ← |
| 3) Number and size of balls in steering head | | |
| Upper race | 19 pcs. 1/4 in | ← |
| Lower race | 19 pcs. 1/4 in | ← |
| 4) Steering lock to lock | 42° each (L and R) | ← |
| 5) Tightening torque | | |
| Steering shaft fitting nut (M14 P1.25) | 5.4 m·kg (39.0 ft·lb) | ← |
| Steering shaft fitting nut (M25 P1.0) | 3.8 m·kg (27.5 ft·lb) | ← |
| Stem pinch bolt (M8 P1.25) | 1.2 m·kg (8.5 ft·lb) | ← |
| Handle bar mounting bolt (M10 P1.25) | 2.3 m·kg (16.5 ft·lb) | ← |
| 3. FRONT SUSPENSION | | |
| 1) Type | Telescopic fork | ← |
| 2) Damper type | Oil damper, coil spring | ← |
| 3) Front fork spring | | |
| Free length | 502 mm (19.76 in) | ← |
| Wire diameter × winding diameter | 3.8 mm × 33 mm (0.15 × 0.91 in) | ← |
| Spring constant | $k_1$ = 0.4 kg/mm (0 ~ 100 mm) | ← |
| | $k_2$ = 0.525 kg/mm (100 ~ 140 mm) | ← |
| 4) Front fork travel | 140 mm (5.5 in) | ← |
| 5) Inner tube O.D. | 33 mm (1.30 in) | ← |
| 6) Front fork oil quantity and type | 142 cc (4.8 oz) each leg | ← |
| | Yamaha fork oil or SAE 10W/30 motor oil | ← |
| 7) Oil seal type | SD-33-46-10.5 | ← |
| 8) Tightening torque | | |
| Under bracket and inner tube (M10 P1.25) | 3.5 m·kg (25.0 ft·lb) | ← |
| Handle crown and inner tube (M8 P1.25) | 1.1 m·kg (8.0 ft·lb) | ← |
| 4. REAR SUSPENSION | | |
| 1) Type | Swing arm | ← |
| 2) Damper type | Oil damper, coil spring | ← |
| 3) Shock absorber travel | 80 mm (3.15 in) | ← |
| 4) Shock absorber spring | | |
| Set length | 204 mm (8.03 in) | ← |
| Free length | 215 mm (8.50 in) | ← |
| Wire diameter × Winding diameter | 7.0 mm × 54.0 mm (0.27 × 2.13 in) | ← |
| Spring constant | $k_1$ = 1.7 kg/mm (0 ~ 55 mm) | ← |
| | $k_2$ = 2.1 kg/mm (55 ~ 80 mm) | ← |
| 5) Swing arm free play (Limit) | 1.0 mm (0.04 in) | ← |
| 6) Pivot shaft – Outside diameter | 16 mm (0.63 in) | ← |
| 7) Tightening torque | | |
| Rear shock absorber (Upper) (M10 P1.25) | 3.0 m·kg (21.5 ft·lb) | ← |

| Item | | XS400F | XS400-2F |
|---|---|---|---|
| Rear shock absorber (Upper) (M10 P1.25) | | 3.0 m-kg (21.5 ft-lb) | ← |
| Pivot shaft (M14 P1.5) | | 6.5 m-kg (47.0 ft-lb) | ← |
| 5. FUEL TANK | | | |
| 1) Capacity | | 14.0 ℓ (3.7 US gal) | ← |
| 2) Fuel grade | | Regulator gasoline (90 octane) | ← |
| 6. WHEEL | | | |
| 1) Type (Front and rear) | | Cast wheel | Spoke wheel |
| 2) Tire size | (Front) | 3.00S18-4PR | ← |
| | (Rear) | 3.50S18-4PR | ← |
| 4) Rim run out limit (Front and rear) | | | |
| Vertical | | 2.0 mm (0.08 in) | ← |
| Lateral | | 2.0 mm (0.08 in) | ← |
| 5) Rim size | (Front) | 1.85 × 18 | 1.60 × 18 |
| | (Rear) | 2.15 × 18 | 1.85 × 18 |
| 6) Bearing type | | | |
| Front wheel | (Left) | 6302ZZ | 6302RS |
| Front wheel | (Right) | 6302ZZ | 6302RS |
| Rear wheel | (Left) | 6304ZZ | 6304RS (6304 Lu/3A) |
| Rear wheel | (Right) | 6303ZZ | 6303 Lu/3/3A |
| 7) Oil seal type | | | |
| Front wheel | (Left) | SDD-46-56-6 | SDD-53-65-7 |
| Front wheel | (Right) | SD-22-42-7 | SD-22-42-7-1 |
| Rear wheel | (Left) | SD-27-52-5 | SD-37-62-5 |
| Rear wheel | (Right) | SD-38-47-7 | — |
| 8) Secondary drive chain type | | | |
| Type | | DK530DS | ← |
| Number of links | | 101L + Joint | ← |
| Chain pitch | | 15.875 mm (5/8 in) | ← |
| Chain free play | | 35 ~ 40 mm (1.38 ~ 1.57 in) | ← |
| 9) Tightening torque | | | |
| Front wheel axle | (M14 P1.5) | 10.5 m-kg (76 ft-lb) | ← |
| Front axle holder | (M8 P1.25) | 2.0 m-kg (14.5 ft-lb) | ← |
| Rear wheel axle | (M14 P1.5) | 10.5 m-kg (76 ft-lb) | ← |
| 7. BRAKE | | | |
| 1) Front and rear brake | | | |
| Type | | Hydraulic disc type | Drum brake |
| Disc size (Outside dia. × thickness) | | 267 mm × 5.0 mm (10.5 × 0.2 in) | — |
| Disc wear limit | | 4.5 mm (0.18 in) | — |
| Disc pad thickness | | 6.5 mm (0.26 in) | — |
| Pad wear limit (Minimum thickness) | | 1.5 mm (0.06 in) | — |
| Master cylinder inside dia. | | | |
| Front | | 14.0 mm (0.55 in) | — |
| Rear | | 15.8 mm (0.62 in) | — |
| Caliper cylinder inside dia. | | 38.1 mm (1.5 in) | — |
| Brake fluid type/quantity | | DOT #3/34 cc (0.8 oz) | — |
| Actuating method | Front | — | Two leading |
| | Rear | — | Leading trailing |
| Brake drum I.D. | Front | — | 180 mm (7.1 in) |
| | Rear | — | 160 mm (6.3 in) |
| Brake shoe dia × width | Front | — | 180 mm × 30 mm (7.1 in × 1.2 in) |
| | Rear | — | 160 mm × 30 mm (6.3 in × 1.2 in) |

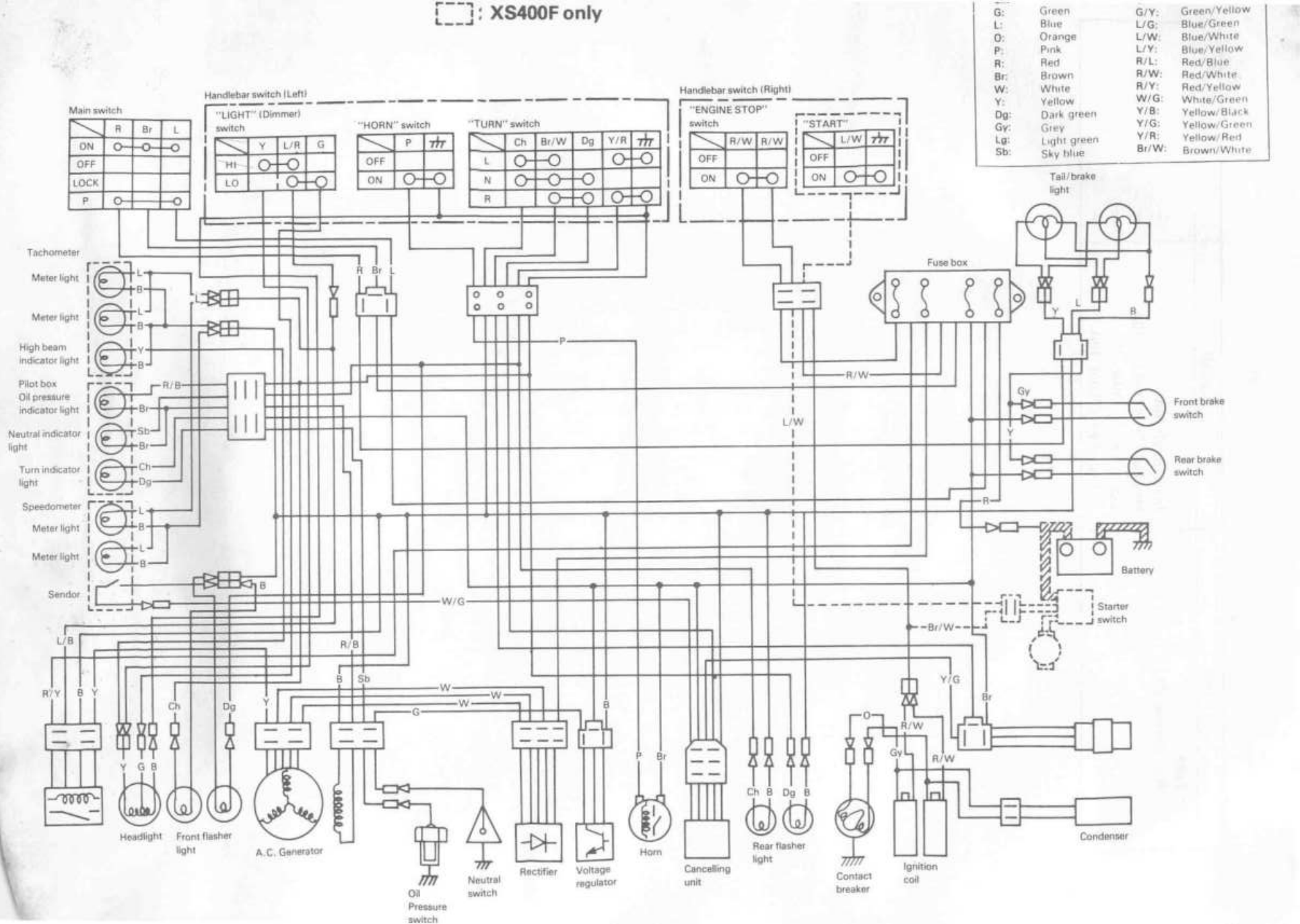
| Item | | XS400F | XS400-2F |
|---|---|---|---|
| Lining thickness/wear limit | Front | — | 4.0/2.0 mm (0.16/0.08 in) |
| | Rear | — | 4.0/2.0 mm (0.16/0.08 in) |
| Shoe spring free length | Front | — | 68 mm (2.68 in) |
| | Rear | — | 68 mm (2.68 in) |
| 2) Tightening torque | | | |
| Brake disc and hub (M8 P1.25) | | 2.0 m-kg (14.5 ft-lb) | — |
| Caliper and support bracket (M8 P1.25) | | 1.8 m-kg (13.0 ft-lb) | — |
| Caliper and pad (M5 P0.8) | | 0.3 m-kg (2.0 ft-lb) | — |
| Caliper and bleed screw (M8 P1.25) | | 0.6 m-kg (4.5 ft-lb) | — |
| Support bracket and front fork (M10 P1.25) | | 3.5 m-kg (25.5 ft-lb) | — |
| Caliper and brake hose (M10 P1.25) | | 2.6 m-kg (19.0 ft-lb) | — |
| Master cylinder and cylinder bracket (M6 P1.0) | | 0.6 m-kg (4.5 ft-lb) | — |

## D. Electrical

| Item | XS400F | XS400-2F |
|---|---|---|
| 1. IGNITION SYSTEM | | |
| 1) Battery (AC generator) | | |
| Model/ Manufacturer | 021000-5840/NIPPON DENSO | ← |
| Voltage | 12V | ← |
| Taper dia. at large end | 25 mm (0.98 in) | ← |
| Rotor tightening torque (M10 P1.25) | 3.3 m-kg (24.0 ft-lb) | ← |
| 2) Ignition timing (B.T.D.C.) | 10°/1,200 r/min | ← |
| 3) Ignition coil | | |
| Model/ Manufacturer | 022700-4130/NIPPON DENSO | ← |
| Spark gap | 6 mm (0.24 in) or more/500 r/min. | ← |
| Primary winding resistance | 4.0 Ω ± 10% at 20°C (68°F) | ← |
| Secondary winding resistance | 9.5 kΩ ± 20% at 20°C (68°F) | ← |
| 4) Spark plug | | |
| Type | NGK BP7ES, CHAMPION N-7Y | ← |
| Spark plug gap | 0.7 ~ 0.8 mm (0.027 ~ 0.031 in) | ← |
| 5) Contact breaker | | |
| Manufacture/ Quantity | NIPPON DENSO/2 pcs. | ← |
| Point gap | 0.35 ~ 0.40 mm (0.012 ~ 0.016 in) | ← |
| Point spring pressure | 600 ± 100g | ← |
| Cam closing angle | 105° | ← |
| 6) Condenser | | |
| Capacity | 0.24μF ± 15% | ← |
| Insulation resistance | 10MΩ (500V megger used) or more | ← |
| Quantity | 2 pcs. | ← |
| 2. CHARGING SYSTEM | | |
| 1) AC generator | | |
| Charging output | 14.5V 13A/5,000 r/min | ← |
| Rotor coil resistance (Field coil) | 4.04 Ω ± 10% at 20°C (68°F) | ← |
| Stator coil resistance | 0.72 Ω ± 10% at 20°C (68°F) | ← |
| 2) Rectifier | | |
| Type | 6 Element type (Full wave) | ← |
| Model/ Manufacturer | DS10TEY/MITSUBISHI or DE3804-1/STANLEY | ← |

| Item | XS400E | XS400-2F |
|---|---|---|
| Capacity | 12V | " |
| Withstand voltage | 400V | " |
| 3) Regulator | | |
| Type | I.C. type | " |
| Model/Manufacturer | 028000-3280 NIPPON DENSO | " |
| Regulating voltage | 14.0 ~ 14.7V | " |
| 4) Battery | | |
| Model/Manufacturer/Quantity | 12N12-4A-1 | " |
| Capacity | 12V, 12AH | " |
| Charging rate | 1.2A | " |
| Specific gravity/Quantity | 1.28 at 20°C (68°F), Total 800 cc (27 oz) | " |
| 3. STARTER | | |
| 1) Starter motor | | |
| Type | Constant mesh type | — |
| Manufacturer | MITSUBA ELEC. | — |
| Model | SM223B | — |
| Output | 0.5 kW | — |
| Armature coil resistance | 0.005 Ω ± 10% at 20°C (68°F) | — |
| Field coil resistance | 0.011 Ω ± 10% at 20°C (68°F) | — |
| Brush size/Quantity | $11^{+1.5}_{0}$ mm ($0.43^{+0.06}_{0}$ in) 2 pcs. | — |
| Wear limit | 8.0 mm (0.24 in) | — |
| Spring pressure | 560 ± 56g (19.4 ± 1.9 oz) | — |
| Commutator O.D./Wear limit | 28 mm (1.102 in)/27 mm (1.063 in) | — |
| Mica undercut | 0.7 mm (0.027 in) | — |
| Reduction system/Ratio | Chain/0.46 | — |
| 2) Starter switch | | |
| Manufacturer | HITACHI | — |
| Model | A104-70 | — |
| Amperage rating | 100A | — |
| Cut-in voltage | 6.5V or less | — |
| Winding resistance | 3.5 Ω ± 10% | — |
| 4. LIGHTING SYSTEM | | |
| 1) Head light type | Semi-sealed beam | " |
| 2) Bulb wattage/Quantity | | |
| Head light wattage | 12V, 40/30W | " |
| Tail/Brake light wattage | 12V, 8/27W (3/32 cpl) × 2 pcs. | " |
| Turn light wattage | 12V, 27W (32 cpl) × 4 pcs. | " |
| Meter light wattage | 12V, 3.4W × 4 pcs. | " |
| Neutral light wattage | 12V, 3.4W | " |
| Turn indicator light wattage | 12V, 3.4W | " |
| Oil pressure light wattage | 12V, 3.4W | " |
| High beam indicator light wattage | 12V, 3.4W | " |
| 3) Horn | | |
| Model/Manufacturer | SF-12/NIKKO | " |
| maximum amperage | 2.5A | " |
| 4) Flasher relay | | |
| Type | Condenser type | " |
| Model/Manufacturer | 061300-4810/NIPPON DENSO | " |
| Flasher frequency | 85 ± 10 cycle/min. | " |
| Capacity | 27W × 2 + 3.4W | " |
| 5) Flasher cancelling unit | | |
| Model | 2VH-ACB58 | " |
| Voltage | DC9V ~ 16V | " |

| Item | XS400F | XS400-2F |
| --- | --- | --- |
| ⑥ Fuse<br>Rating/Quantity | Main (Red): 20A<br>Headlight (Red/Yellow): 10A<br>Signal (Brown): 10A<br>Ignition (Red/White): 10A | ←<br>←<br>←<br>← |


: XS400F only
G: Green
L: Blue
O: Orange
P: Pink
R: Red
Br: Brown
W: White
Y: Yellow
Dg: Dark green
Gy: Grey
Lg: Light green
Sb: Sky blue
G/Y: Green/Yellow
L/G: Blue/Green
L/W: Blue/White
L/Y: Blue/Yellow
R/L: Red/Blue
R/W: Red/White
R/Y: Red/Yellow
W/G: White/Green
Y/B: Yellow/Black
Y/G: Yellow/Green
Y/R: Yellow/Red
Br/W: Brown/White
Main switch
Handlebar switch (Left)
"LIGHT" (Dimmer) switch
"HORN" switch
"TURN" switch
Handlebar switch (Right)
"ENGINE STOP" switch
"START"
Tail/brake light
Fuse box
Tachometer
Meter light
Meter light
High beam indicator light
Pilot box
Oil pressure indicator light
Neutral indicator light
Turn indicator light
Speedometer
Meter light
Meter light
Sendor
Front brake switch
Rear brake switch
Battery
Starter switch
Headlight
Front flasher light
A.C. Generator
Oil Pressure switch
Neutral switch
Rectifier
Voltage regulator
Horn
Cancelling unit
Rear flasher light
Contact breaker
Ignition coil
Condenser

# XS400G
# XS400SG

## Supplementary

# FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and new data for the XS400G/XS400SG.
For complete information on service procedures, it is necessary to use this Supplementary Service Manual together with following manuals:

XS360C Service Manual (LIT-11616-00-49)
XS400F/XS400ZF Supplementary Service Manual (LIT-11616-01-19)

**SERVICE DEPT.**
**INTERNATIONAL DIVISION**
**YAMAHA MOTOR CO., LTD.**

**NOTE:**
This Supplementary Service Manual contains information regarding periodic maintenance to the emissions control system for the XS400G/-XS400SG. Please read this material carefully.

# NOTICE

This manual was written by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha motorcycles have a basic understanding of the mechanical concepts and procedures inherent to motorcycle repair technology. Without such knowledge, attempted repairs or service to this model may render it unfit for use and/or unsafe.

This model has been designed and manufactured to perform within certain specifications in regard to performance and emissions. Proper service with the correct tools is necessary to ensure that the motorcycle will operate as designed. If there is any question about a service procedure, it is imperative that you contact a Yamaha dealer for any service information changes that apply to this model. This policy is intended to provide the customer with the most satisfaction from his motorcycle and to conform with federal environmental quality objectives.

Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

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

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

**CAUTION:** A CAUTION indicates special procedure that must be followed to avoid damage to the engine.

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

**Starting Serial Number**

XS400G: 3F8-020101



XS400SG: 3F9-000101



# MAINTENANCE AND LUBRICATION CHART

## Periodic maintenance emission control system

| No. | ITEM | REMARKS | INITIAL BREAK-IN | | THEREAFTER EVERY | |
|---|---|---|---|---|---|---|
| | | | 1,000 km or 1 month (600 mi) | 5,000 km or 7 months (3,000 mi) | 4,000 km or 6 months (2,500 mi) | 8,000 km or 12 months (5,000 mi) |
| 1.* | Valve Clearance | Check and adjust valve clearance when engine is cold. | ○ | ○ | | ○ |
| 2. | Spark Plugs | Check condition. Adjust gap. Clean. Replace after initial 13,000 km (8,000 mi). | | ○ | ○ | Replace every 12,000 km or 18 months (7,500 mi) |
| 3.* | Crankcase Ventilation System | Check ventilation hose for cracks or damage. Replace if necessary. | | ○ | | ○ |
| 4.* | Fuel Hose | Check fuel hose for cracks or damage. Replace if necessary. | | ○ | | ○ |
| 5.* | Exhaust System | Check for leakage. Retighten as necessary. Replace gasket(s) if necessary. | | ○ | ○ | |
| 6.* | Carburetor Synchronization | Adjust synchronization of carburetors. | | ○ | ○ | |
| 7.* | Idle Speed | Check and adjust engine idle speed. Adjust cable free play if necessary. | | ○ | ○ | |

* It is recommended that these items be inspected and serviced by a Yamaha Dealer or other qualified mechanic.

## General maintenance/lubrication

| No. | ITEM | REMARKS | TYPE | INITIAL BREAK-IN | | THEREAFTER EVERY | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1,000 km or 1 month (600 mi) | 5,000 km or 7 months (3,000 mi) | 4,000 km or 6 months (2,500 mi) | 8,000 km or 12 months (5,000 mi) | 16,000 km or 24 months (10,000 mi) |
| 1. | Engine Oil | Warm-up engine before draining. | Refer to NOTE | ○ | ○ | ○ | | |
| 2. | Oil Filter | Replace. | — | ○ | ○ | | ○ | |
| 3.* | Air Filter | Dry type filter. Clean with compressed air. | — | | ○ | | ○ | |
| 4.* | Brake system | Adjust free play. Replace pads,** (front brake only) or shoes (rear brake only) if necessary. | — | ○ | ○ | ○ | | |
| 5.* | Clutch | Adjust free play. | — | ○ | ○ | ○ | | |
| 6. | Drive Chain | Check chain condition. Adjust and lubricate chain thoroughly. | Yamaha chain and cable lube or 10W/30 motor oil | CHECK CHAIN TENSION AND LUBE EVERY 500 km (300 mi). | | | | |
| 7. | Control and Meter Cable | Apply cable lube thoroughly. | Yamaha chain and cable lube or 10W/30 motor oil | ○ | ○ | ○ | | |
| 8. | Rear Arm Pivot Shaft | Apply lightly. | Lithium soap base grease | | ○ | | ○ | |

| No. | ITEM | REMARKS | TYPE | INITIAL BREAK-IN | | THEREAFTER EVERY | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1,000 km or 1 month (600 mi) | 5,000 km or 7 months (3,000 mi) | 4,000 km or 8 months (2,500 mi) | 8,000 km or 12 months (5,000 mi) | 16,000 km or 24 months (10,000 mi) |
| 9. | Stand Shaft Pivots/ Brake Pedal Shaft/ Change Pedal Shaft/ Kick Crank Boss | Apply lightly | Yamaha chain and cable oil or 10W/30 motor oil | | ○ | ○ | | |
| 10. * | Front Fork Oil | Drain completely. Refill to specification | Yamaha fork oil 20wt or equivalent | | | | | ○ |
| 11. * | Steering Bearings | Check bearings assembly for looseness. Moderately repack every 16,000 km (10,000 mi) | Medium weight wheel bearing grease. | | ○ | ○ | | Repack |
| 12. * | Wheel Bearings | Check bearings for smooth rotation. | — | | ○ | ○ | | |
| 13. | Battery | Check specific gravity. Check breather pipe for proper operation. | — | | ○ | ○ | | |
| 14. | Brake/ Clutch Lever Pivot Shafts | Apply lightly | Yamaha chain and cable lube or 10W/30 motor oil | | ○ | ○ | | |

* It is recommended that these items be inspected and serviced by a Yamaha dealer or other qualified mechanic.
** KS460SG only

**NOTE:**

Engine oil type:

a. If temperature does not go below 5°C (41°F): YAMALUBE 4-cycle oil or SAE 20W/40 type "SE" motor oil.

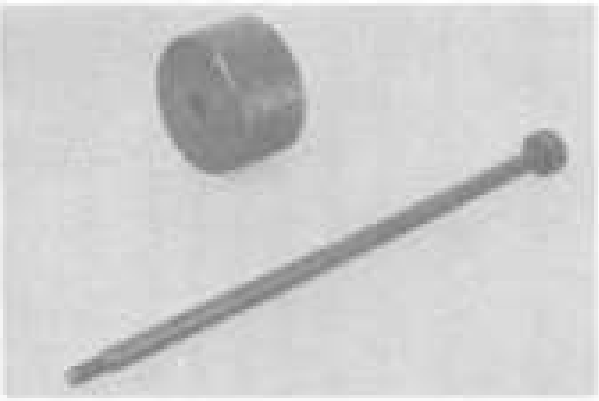
b. If temperature does not go above 15°C (59°F): SAE 10W/30 type "SE" motor oil

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# NEW SERVICE

* SPECIAL TOOL

Slide hammer
P/N. 90890-01083-00,
90890-01084-00



These tools are used to remove the blind plug from the pick-up coil cover.

* ENGINE

## A. ENGINE OIL LEVEL MEASUREMENT

1. Place the motorcycle on the center stand. Warm up the engine for several minutes.

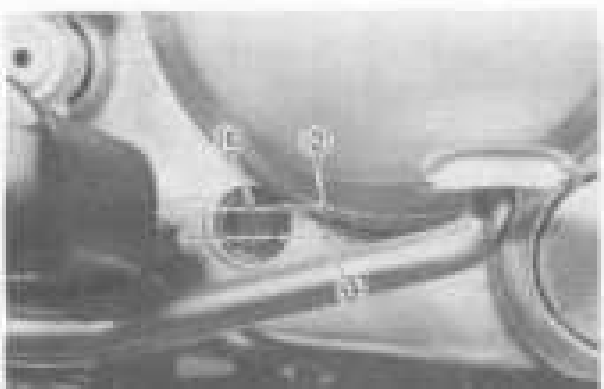
**NOTE:**

Be sure the motorcycle is positioned straight up when checking the oil level; a slight tilt toward the side can produce false readings.

2. With the engine stopped, check the oil level through the level window located at the lower part of the right side crankcase cover.

**NOTE:**

Wait a few minutes until the oil level settles before checking



3. The oil level should be between maximum and minimum marks. If the level is lower, add sufficient oil to raise it to the proper level.

## B. IGNITION TIMING CHECK

Ignition timing adjustment is required only when the pick-up base is removed from the crankcase.

1. Connect the timing light to the left cylinder spark plug lead wire.
2. Start the engine and keep the engine speed as specified.
   Use a tachometer to check the engine speed.

| Specified engine speed: 1,200 r/min |
|---|

3. The stationary pointer should line up with the "LF" timing mark on the rotor. If it does not align or steady, check the selector (rotor) securing bolt for looseness.

## C. PICK-UP COIL REMOVAL AND REINSTRATION

The pick-up coil cover is permanently mounted to the cylinder head.

It is necessary to remove the blind plug from the cover when the pick-up coil removal and/or engine overhaul are required.

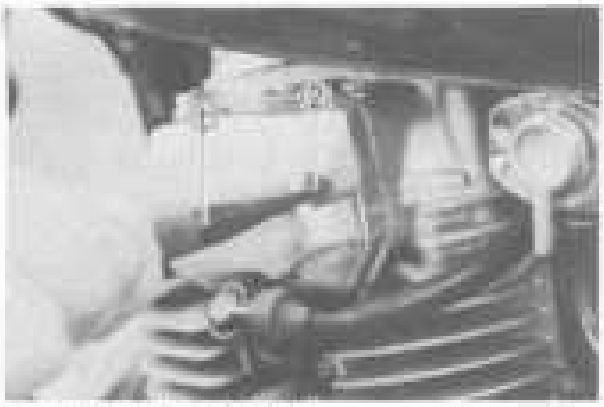
If the pick-up coil cover is removed and/or pick-up coil is removed or replaced with a new one, the following adjustment and treatment are necessary.

It is mandatory that these procedures be followed carefully and exactly as described. Failure to do so may be a violation of law.

**Removal**

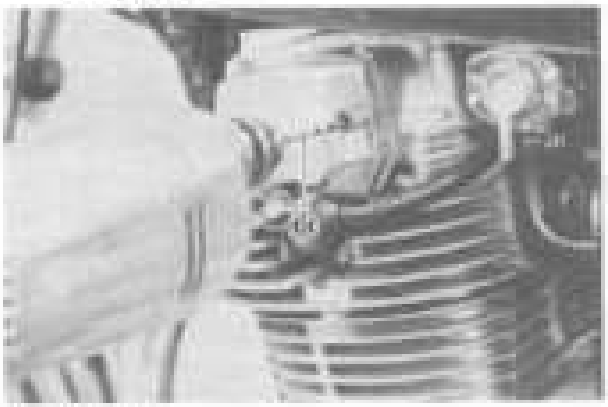
1. Punch a center mark in the blind plug with a centerpunch.

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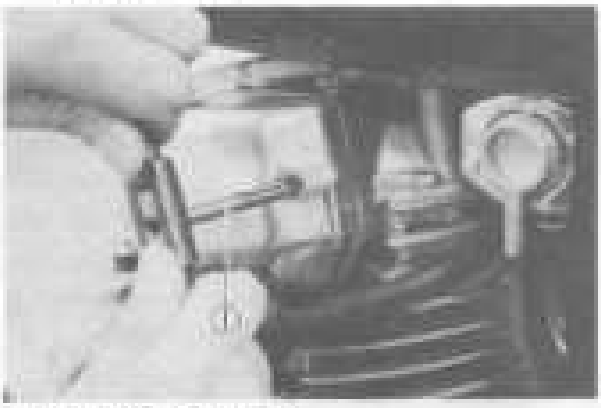
1. Center punch 2. Blind plug

2. Use a 5 mm drill bit to drill a hole in the blind plug.



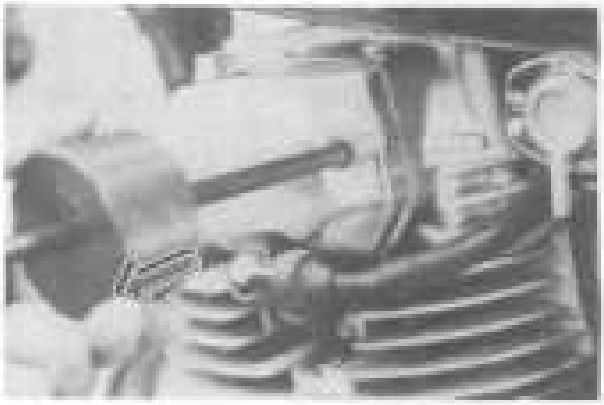
1. 5 mm drill bit

3. Cut internal threads of 6 mm dia. × 1.0 mm pitch in the blind plug with a tap drill of proper size.

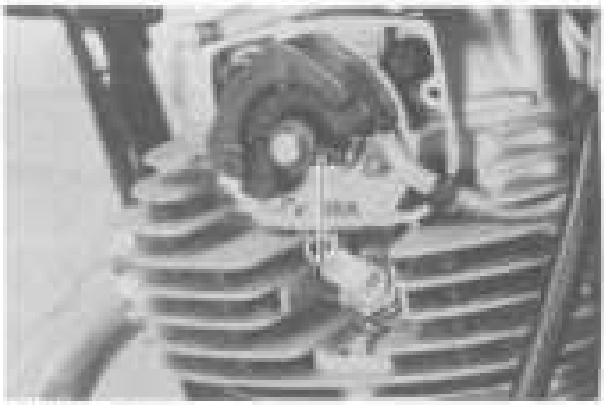


1. Tap drill (M6 × 1.0 mm pitch)

4. Remove the blind plug with the slide hammer (special tool) from the pick-up coil cover.

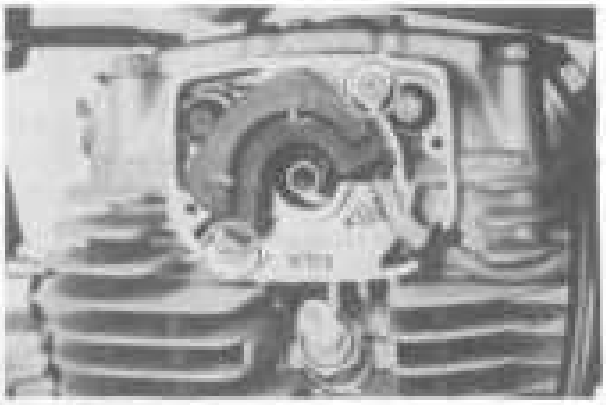


5. Remove the cover holding screws and remove the cover.
6. Remove the reluctor (rotor) holding bolt and remove the reluctor (rotor).



1. Reluctor

7. Remove the pick-up coil holding screws and remove the pick-up coil assembly from the cylinder head.



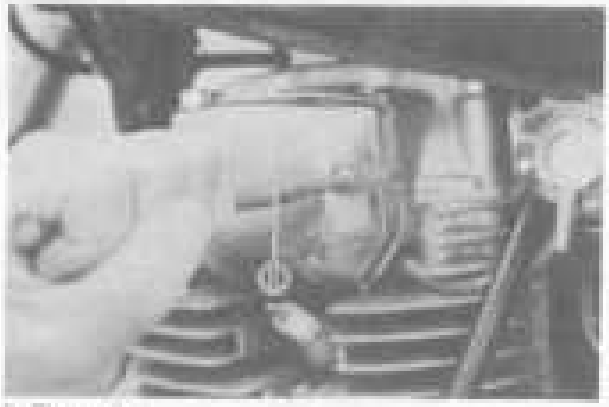
**Reinstallation**

1. Install the pick-up coil assembly to the cylinder head.
2. Install the reluctor (rotor).

| Reluctor (rotor) holding bolt torque: |
|---|

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3. Check the ignition timing (refer to page 3).
4. If the ignition timing is incorrect, loosen the pick-up coil holding screws and move the pick-up coil base plate until the "LF" and the stationary pointer marks align.
5. After the ignition timing is properly adjusted tighten the screws securly.
6. Install the pick-up coil cover and tighten the screws.
7. Install a new blind plug into the cover hole and tap it in until it tight enough. If the plug will not be tightly fitted or if a crack is developed in the cover while the plug is being installed, be sure to change the cover and repeat the above steps.



1. Pin punch

## * CHASSIS

### A. TUBELESS TIRES AND ALUMINUM WHEELS (XS400SG only)

This motorcycle is equipped with aluminum wheels designed to be compatible with either tube or tubeless tires. Tubeless tires are installed as standard equipment.

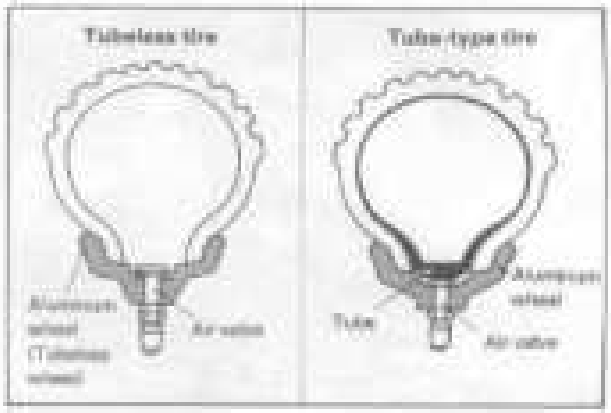
**WARNING:**

**Do not attempt to use tubeless tires on a wheel designed for use only with tube-type tires. Tire failure and personal injury may results from sudden deflation.**

**Tube-type Wheel — Tube type tires only**

**Tubeless-type Wheel — Tube-type or Tubeless tires**

**When using tube-type tires, be sure to**




To insure maximum performance, long service, and safe operation, note the following precautions:

1. Check tire pressure, before riding, adjust as necessary.
2. Before operation, always check the tire surfaces for wear and/or damage; look for cranks, glass, nails, metal fragments, stones, etc. Correct any such hazard before riding.
3. Always inspect the aluminum wheels before a ride. Place the motorcycle on the center stand and check for cracks, bends or warpage of the wheels. Do not attempt even small repairs to the wheel. If a wheel is deformed or cracked, it must be replaced.
4. Tires and wheels should be balanced whenever either one is changed or replaced. Failure to have a wheel assembly balanced can result in poor performance, adverse handling characteristics, and shortened tire life.
5. After installing a tire, ride conservatively to allow the tire to seat itself on the rim properly. Failure to allow proper seating may cause tire failure resulting in damage to the motorcycle and injury to the rider.
6. After repairing or replacing a tire, check to be sure the valve stem lock nut is securely fastened. If not, torque it as

Tightening torque: 0.15 m-kg (1.1 ft-lb)

## B. TIRE PRESSURE (XS400G/XS400SG)

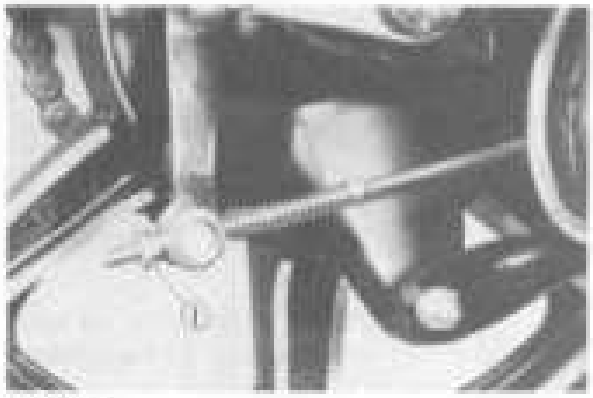
| Cold tire pressure | Front | Rear |
|---|---|---|
| Up to 90 kg (198 lb) load* | 1.8 kg/cm² (26 psi) | 2.0 kg/cm² (29 psi) |
| 90 kg (198 lb) load – (198 kg (391 lb) load* (Maximum load) | 2.0 kg/cm² (29 psi) | 2.3 kg/cm² (32 psi) |
| High speed riding | 2.0 kg/cm² (29 psi) | 2.3 kg/cm² (32 psi) |

* Total weight of accessories, etc. excepting motorcycle.

## C. REAR BREKE




1. Adjuster bolt (for pedal height)
2. Lock nut
3. Footrest
4. Pedal height 12 ~ 18 mm (0.47 – 0.71 in)
5. Free play 20 ~ 30 mm (0.79 – 1.18 in)



1. Adjuster

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. 12 – 18 mm (0.47 – 0.71 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.**

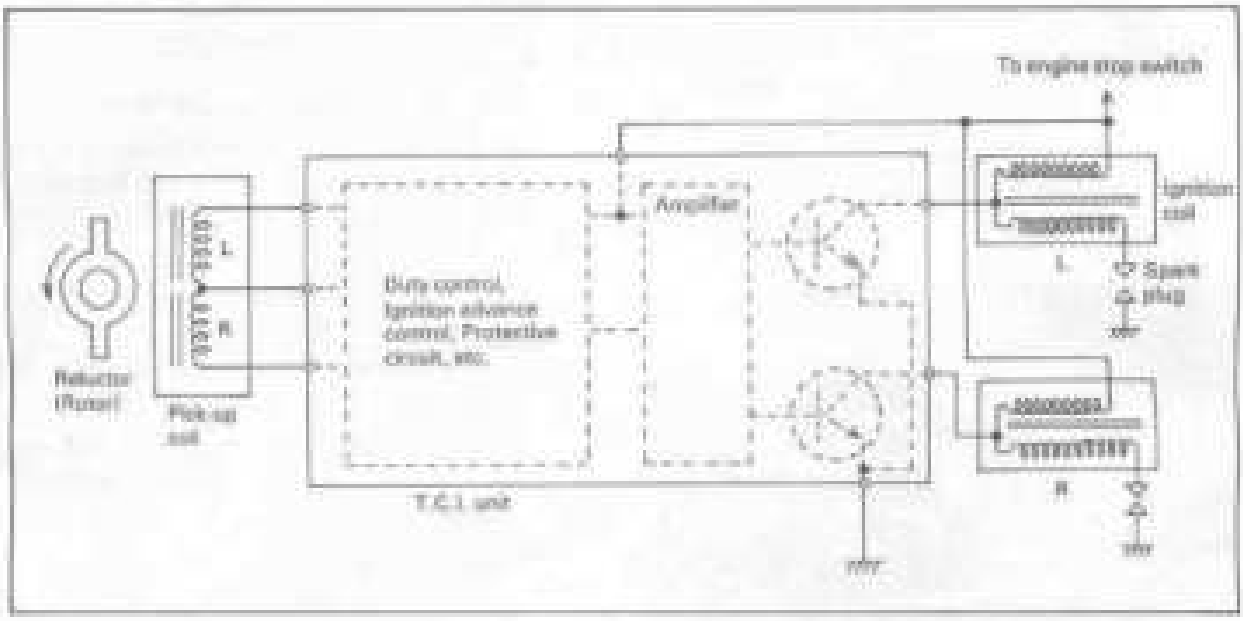
2. Free play
   Turn the adjuster on the brake rod clockwise or counterclockwise to provide the brake pedal end with a free play of 20 – 30 mm (0.79 – 1.18 in).
3. Brake lining inspection
   The specified thickness of the brake lining is 4 mm (0.16 in).
   The lining should be replaced when it wears to less than 2 mm (0.079 in). To inspect, remove the plug from the inspection hole on the brake shoe plate and check the thickness of the lining.
   Besure to replace the plug carefully so water cannot enter the shoe plate.



## * ELECTRICAL

## A. IGNITION SYSTEM

1. Block diagram



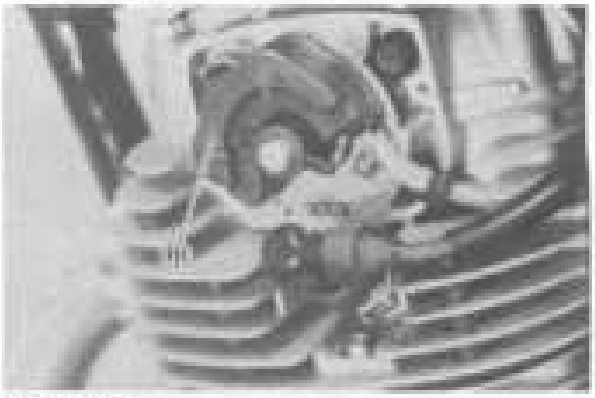

2. Description

This model is equipped with a battery operated, fully transistorized breakerless ignition system. By using magnetic pick-up coils the need for contact breaker points is eliminated. This adds to the dependability of the system by eliminating frequent cleaning and adjustment of points and ignition timing. This T.C.I. unit incorporates an automatic advance circuit controlled by signals generated by the pick-up coil. This adds to the dependability of the system by eliminating the mechanical advancer. This T.C.I. system consists of two main units; a pick-up unit and an ignitor unit.

3. Operation

The T.C.I. functions on the same principle as a conventional D.C. ignition system with the exception of using magnetic pick-up coils and a transistor control box (T.C.I.) in place of contact breaker points.

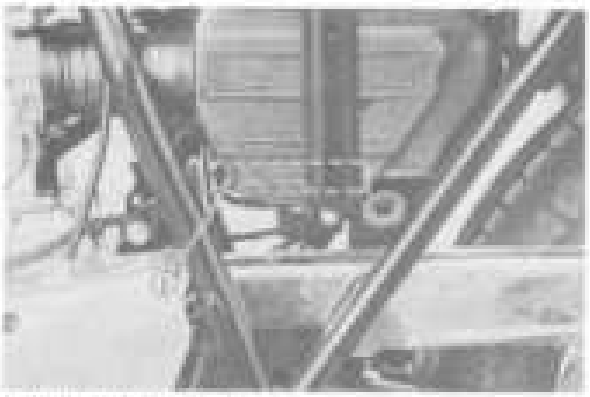
a. Pick-up unit



1. Pick-up coil

This unit consists of two pick-up coils and a magneto mounted on the cylinder head. When the reluctor (rotor) projection passes this pick-up coil, the two signals are generated at the pick-up coil and transmitted to the ignitor unit as a signal. The full ignition advance is determined by the width of the reluctor (rotor) projection.

b. Ignitor unit



1. Ignitor unit (T.C.I. unit)

This unit has such functions of wave form, duty control, switching, electrical ignition advance, and etc. The ignition timing is advanced electrically using two signals from the pick-up coil. The duty control circuit is provided to control the on time period of the primary ignition current to reduce the electrical consumption. This unit also incorporates a protective circuit for the ignition coil.

If the ignition switch is turned on and the crankshaft is not turned, the protective circuit stops current flow to the primary coil within a few seconds. When the crankshaft is turned over, the current is turned on again by the signals generated by the pick-up coils.

**CAUTION:**

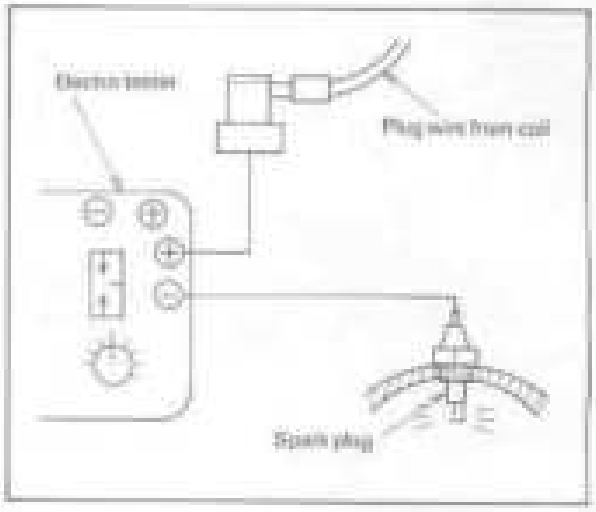
**Do not run the engine without any spark plug cap(s) in place. Due to the high secondary voltage, it is possible to damage the internal insulation of the secondary coil.**

4. Troubleshooting/Inspection

a. The entire ignition system can be checked for misfire and weak spark using the Electro Tester. If the ignition system will fire across a sufficient gap, the engine ignition system can be considered good. If not, proceed with individual component tests until the problem is found.

1) Warm up engine thoroughly so that all electrical components are at operating temperature.

2) Stop the engine and connect the tester as shown.



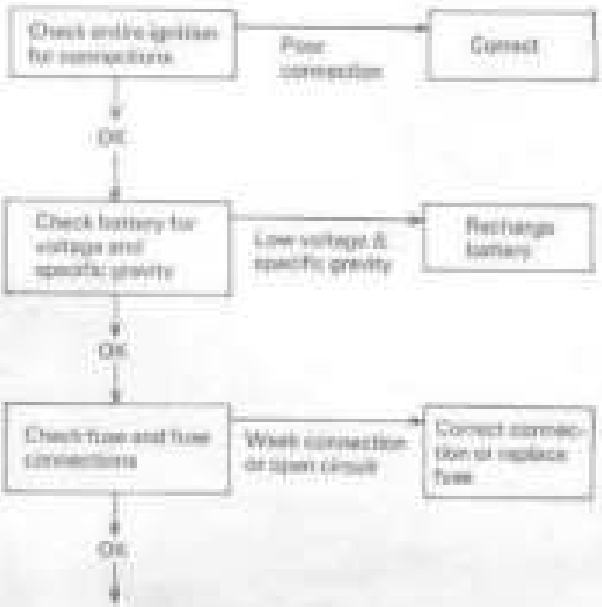

3) Start the engine and increase the spark gap until misfire occurs. (Test at various rpm between idle and red line.)

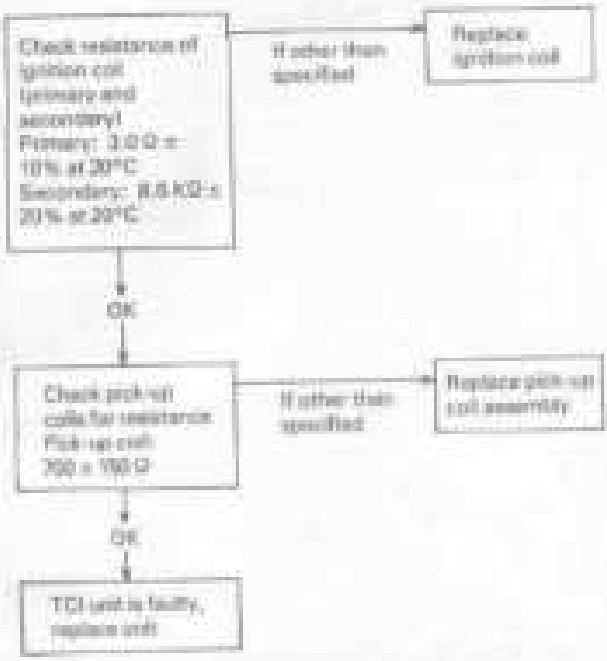
Minimum spark gap: 6 mm (0.24 in)

**CAUTION:**

**Do not run engine in neutral above 6,000 r/min for more than 1 or 2 seconds.**

b. If the ignition system should become inoperative, the following troubleshooting aids will be useful.




Check resistance of ignition coil (primary and secondary)
Primary: 3.0 Ω ± 10% at 20°C
Secondary: 8.8 kΩ ± 20% at 20°C
If other than specified
Replace ignition coil
OK
Check pick-up coils for resistance
Pick-up coil:
700 ± 190 Ω
If other than specified
Replace pick-up coil assembly
OK
TCI unit is faulty, replace unit

# SPECIFICATIONS

## General Specifications

| | XS400SG | XS400G |
|---|---|---|
| Basic color | BLACK RED or CARDINAL RED | NEW CATALINE BLUE |
| Dimensions: | | |
| Overall length | 2,065 mm (81.3 in) | ← |
| Overall width | 870 mm (34.3 in) | 860 mm (33.9 in) |
| Overall height | 1,140 mm (44.9 in) | 1,105 mm (43.5 in) |
| Seat height | 770 mm (30.3 in) | ← |
| Wheelbase | 1,375 mm (54.1 in) | ← |
| Minimum ground clearance | 135 mm ( 5.3 in) | ← |
| Caster (steering head angle) | 27°30' | ← |
| Trail | 87 mm (3.43 in) | ← |
| Weight: | | |
| Net | 169 kg (373 lb) | 166 kg (366 lb) |
| Engine: | | |
| Type | 4 stroke air-cooled, gasoline | ← |
| Bore × stroke × cylinders | 69 × 52.4 mm × 2<br>(2.717 × 2.063 in × 2) | ← |
| Displacement | 391 cc (23.86 cu. in) | ← |
| Compression ratio | 9.3 : 1 | ← |
| Lubrication: | | |
| Lubrication system | Pressure lubricated, wet sump | ← |
| Delivery pump type | Trochoid | ← |
| Carburetion: | | |
| Manufacturer | MIKUNI | ← |
| Type | BS34, constant velocity | ← |
| Air filter | Dry type element | ← |
| Ignition: | | |
| Type | Battery ignition<br>(Full transistor ignition) | ← |
| Spark plug | BP7ES (NGK) or<br>N-7Y (CHAMPION) | ← |
| Charging: | | |
| Type | Three-phase, regulated alternator | ← |
| Manufacturer, I.D. No. | ND 021600-778 | ← |
| Maximum output | 14.5V, 12A | ← |
| Battery type | 12N12A-4A | ← |
| Battery dimensions: | 134 × 160 × 80 mm<br>(5.28 × 6.30 × 3.15 in) | ← |
| Rectifier | DB3804-1 or DS10TEY-5, full wave | ← |
| Regulator | 026000-3280 IC type | ← |
| Regulating voltage (No. load) | 14.0 – 14.7 V | ← |
| Starting: | Electric and kick starter | ← |
| Primary drive: | | |
| Type | Gear | ← |
| Teeth, ratio | 78/24 (3.250) | ← |
| Clutch: | Wet, multiple disc | ← |
| Transmission: | Constant mesh, 6-speed, drum shifter | ← |

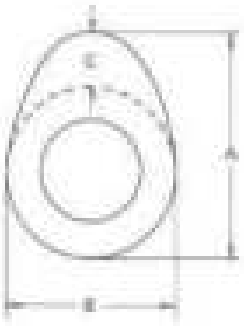
| | XS400SG | XS400G |
|---|---|---|
| Teeth, ratio 1st | 35/14 (2.500) | ← |
| 2nd | 32/18 (1.777) | ← |
| 3rd | 29/21 (1.380) | ← |
| 4th | 27/24 (1.125) | ← |
| 5th | 25/26 (0.961) | ← |
| 6th | 26/30 (0.866) | ← |
| Secondary drive: | | |
| Type | Chain DID 50DS-102L | ← |
| Teeth, ratio | 37/16 (2.312) | ← |
| Chassis: | | |
| Frame | Tubular steel, semi-double cradle | ← |
| Suspension: Front | Telescopic fork | ← |
| Rear | Swing arm | ← |
| Tires: Front | 3.00S 18-4PR (Tubeless) | 3.00S 18-4PR |
| Rear | 120/90-16 63S (Tubeless) | 120/90-16 63S |
| Brakes: Front | Hydraulic disc | Drum brake |
| Rear | Drum brake | ← |
| Fuel tank: Total | 14.0 ltr (3.67 US. gal) | ← |
| Reserve | 3.3 ltr (0.87 US. gal) | ← |
| Wheels: Front | Cast wheel | Spoke wheel |
| Rear | Cast wheel | Spoke wheel |

## Maintenance Specifications

### 1. Engine

| | |
|---|---|
| Engine oil capacity: | |
| Dry | 2.6 ltr (2.7 US. qt) |
| Oil and filter change | 2.3 ltr (2.4 US. qt) |
| Oil change | 2.0 ltr (2.1 US. qt) |
| Recommended lubricant: | |
| If temperature does not go below 5°C (40°F) | YAMALUBE 4-cycle oil or SAE 20W/40 SE motor oil |
| If temperature does not go above 15°C (60°F) | SAE 10W/30 SE motor oil |
| Cranking pressure (at sea level): | 11 kg/cm² (156 psi) |
| Maximum difference between cylinders: | 1 kg/cm² (14 psi) |

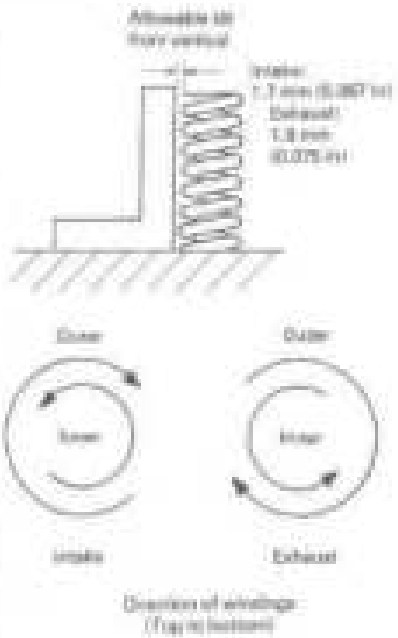
## Camshafts:




| Dimensions | | Standard size | Wear limit |
|---|---|---|---|
| Intake | A | 39.63 ± 0.05 mm (1.559 ± 0.002 in) | 39.33 mm (1.548 in) |
| | B | 32.27 ± 0.05 mm (1.270 ± 0.002 in) | 32.11 mm (1.264 in) |
| | C | 1.53 mm (0.296 in) | — |
| Exhaust | A | 39.67 ± 0.05 mm (1.558 ± 0.002 in) | 39.37 mm (1.550 in) |
| | B | 32.12 ± 0.05 mm (1.265 ± 0.002 in) | 31.96 mm (1.258 in) |
| | C | 1.53 mm (0.296 in) | — |

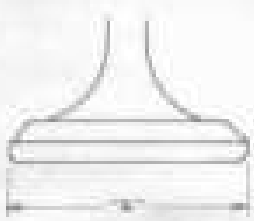
| | |
|---|---|
| Camshaft bearing surface diameter: | 22.967 – 22.980 mm (0.9042 – 0.9047 in) |
| Camshaft-to-cap clearance: | |
| Standard | 0.020 – 0.054 mm (0.0008 – 0.0021 in) |
| Maximum | 0.160 mm (0.006 in) |
| Camshaft run-out limit: | 0.1 mm (0.004 in) |

## Valves:




| | 6 mm Intake/Exhaust | Outer Intake/Exhaust |
|---|---|---|
| Free length | 39.3 mm (1.547 in) | 42.8 mm (1.685 in) |
| Spring rate | K1 = 1.93 kg/mm (108 lb/in) K2 = 2.47 kg/mm (138 lb/in) | K1 = 3.16 kg/mm (230 lb/in) K2 = 5.68 kg/mm (307 lb/in) |
| Installed length (valve closed) | 32.0 mm (1.260 in) | 37.0 mm (1.457 in) |
| Installed pressure (valve closed) | 12.1 ± 1.2 kg (26.7 ± 2.6 lb) | 24.4 ± 1.7 kg (53.8 ± 3.7 lb) |
| Compressed length (valve open) | 28.0 mm (0.984 in) | 28.6 mm (1.142 in) |
| Wire diameter | 3.2 mm (0.118 in) | 4.4 mm (0.173 in) |
| Number of windings | 7.75 | 6.25 |
| Winding I.D. | 22.4 mm (0.882 in) | 32.8 mm (1.260 in) |

| | |
|---|---|
| Valve stem run-out maximum | 0.03 mm (0.0012 in) |
| Valve seat width standard/maximum | 1.1 mm (0.043 in)/2.0 mm (0.080 in) |




**INTAKE**

| | |
|---|---|
| Clearance (Cold engine) | 0.10 mm (0.0039 in) |
| "A" head diameter | 35.9 ± 0.1 mm (1.398 ± 0.0039 in) |
| "B" face width | 2.3 mm (0.091 in) |
| "C" seat width | 1.0 ± 0.1 mm (0.039 ± 0.0039 in) |
| "D" margin thickness (minimum) | 1.0 ± 0.2 mm (0.039 ± 0.0079 in) |

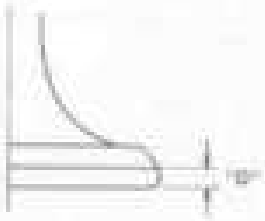


| | |
|---|---|
| Stem diameter (O.D.) | $7^{-0.035}_{-0.050}$ mm<br>(0.276 $^{-0.0020}_{-0.0031}$ in) |
| Guide diameter (I.D.) | $7^{+0.015}_{0}$ mm<br>(0.276 $^{+0.0006}_{0}$ in) |
| Stem-to-guide clearance | 0.035 – 0.065 mm<br>(0.0004 – 0.0010 in) |



EXHAUST

| | |
|---|---|
| Clearance<br>(Cold engine) | 0.18 mm (0.0071 in) |
| "A" head diameter | 30.0 ± 0.1 mm<br>(1.18 ± 0.004 in) |
| "B" face width | 2.3 mm (0.091 in) |
| "C" seat width | 1 ± 0.1 mm<br>(0.039 ± 0.004 in) |
| "D" margin thickness (minimum) | 1 ± 0.2 mm<br>(0.039 ± 0.008 in) |
| Stem diameter (O.D.) | $7^{-0.030}_{-0.045}$ mm<br>(0.276 $^{-0.0011}_{-0.0018}$ in) |
| Guide diameter (I.D.) | $7^{+0.012}_{0}$ mm<br>(0.276 $^{+0.0005}_{0}$ in) |
| Stem-to-guide clearance | 0.030 – 0.057 mm<br>(0.0012 – 0.0022 in) |

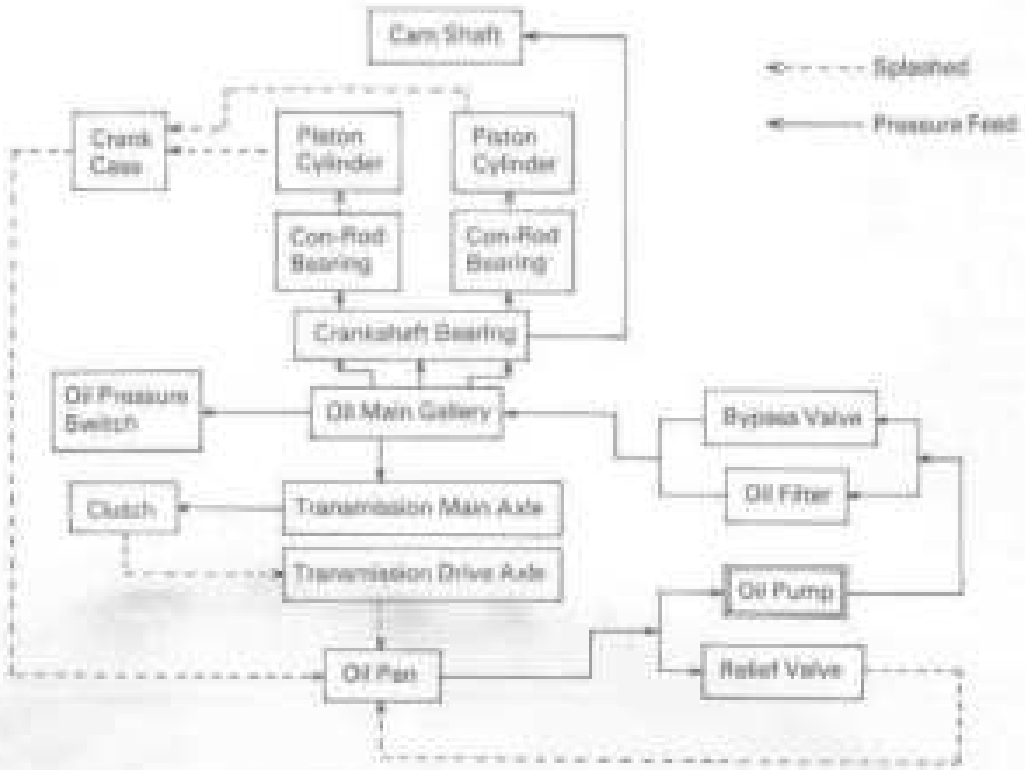


| | |
|---|---|
| Cylinder and piston: | |
| Cylinder material | Aluminum alloy |
| Cylinder liner | Pressed in; special cast iron |
| Bore size: standard | 69.00 mm (2.717 in) |
| Wear limit | 70.10 mm (2.760 in) |
| Cylinder taper limit | 0.05 mm (0.0020 in) |
| Cylinder out-of-round limit | 0.01 mm (0.0004 in) |
| Piston clearance: standard | 0.030 – 0.050 mm (0.0012 – 0.0020 in) |
| maximum | 0.1 mm (0.0039 in) |
| Piston weight (include rings, pin and clips) | 186.1 g (6.56 oz) |

| Piston rings: | Top | 2nd | Oil |
|---|---|---|---|
| Design |  |  |  |
| End gap (installed): standard | 0.2 – 0.4 mm (0.0078 – 0.016 in) | 0.2 – 0.4 mm (0.0078 – 0.016 in) | 0.2 – 0.9 mm (0.0078 – 0.035 in) |
| limit | 1.0 mm (0.0394 in) | 1.0 mm (0.0394 in) | 1.5 mm (0.0591 in) |
| Side clearance: standard | 0.04 – 0.08 mm (0.0016 – 0.0031 in) | 0.03 – 0.07 mm (0.0012 – 0.0028 in) | — |
| limit | 0.15 mm (0.0059 in) | 0.15 mm (0.0059 in) | — |

| | |
|---|---|
| Crankshaft: | |
| Crank journal/bearing oil clearance | 0.020 – 0.044 mm (0.0008 – 0.0017 in) |
| Main journal run-out (maximum) | 0.030 mm (0.0012 in) |
| Connection rods: | |
| Rod bearing oil clearance | 0.021 – 0.045 mm (0.0008 – 0.0018 in) |
| Oil pump: | |
| Housing-to-outer rotor clearance | 0.10 – 0.18 mm (0.0039 – 0.0071 in) |
| Outer rotor-to-inner rotor clearance | 0.03 – 0.09 mm (0.0012 – 0.0035 in) |
| Clutch: | |
| Friction plate thickness: standard | 3.0 mm (0.12 in) |
| minimum | 2.8 mm (0.11 in) |
| Clutch plate: thickness | 1.6 mm (0.06 in) |
| warp limit | 0.05 mm (0.0020 in) |
| Clutch spring length: standard | 34.6 mm (1.362 in) |
| minimum | 33.6 mm (1.323 in) |
| Spring rate | 2.6 kg/mm (146 lb/in) |
| Clutch lever freeplay (at lever pivot point) | 2 – 3 mm (0.08 – 0.12 in) |
| Transmission shaft run-out (maximum) | 0.08 mm (0.0031 in) |

## LUBRICATION CHART



## 2. Carburetion

| | | | |
|---|---|---|---|
| Manufacturer | MIKUNI BS34 | Float height | 27.3 ± 0.5 mm (1.075 ± 0.020 in) |
| Model I.D. No. | 3P9-00 | Pilot screw | Preset |
| Main jet | #135 | Air jet, Main | #45 |
| Needle jet | Y-2 | Air jet, Pilot | #155 |
| Pilot jet | #42.5 | Float valve seat | ø2.0 |
| Starter jet | #35 | Engine idle speed | 1,200 r/min |
| Jet needle | 5GZ9 | | |

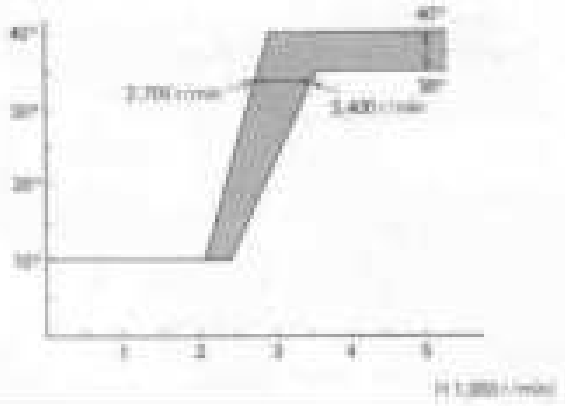
*: Total weight of accessories, etc. excepting motorcycle
**: XS400D only
***: XS400SG only

## 3. Chassis

| | | |
|---|---|---|
| Wheels and tires: | | |
| Rim run-out: vertical | 2.0 mm (0.079 in) | |
| horizontal | 2.0 mm (0.079 in) | |
| Tire pressure (cold): | Front | Rear |
| Up to 90 kg (198 lb) load* | 1.8 kg/cm² (26 psi) | 2.0 kg/cm² (28 psi) |
| 90 kg (198 lb) ~ 159 kg (351 lb) load* | 2.0 kg/cm² (28 psi) | 2.3 kg/cm² (32 psi) |
| High speed riding | 2.0 kg/cm² (28 psi) | 2.3 kg/cm² (32 psi) |
| Minimum tire tread depth | 0.8 mm (0.03 in) | 0.8 mm (0.03 in) |
| Brakes | | |
| Front brake *** | | |
| Type | Hydraulic disc type | |
| Disc size (Outside dia. × thickness) | 267 × 5.0 mm (10.51 × 0.20 in) | |
| Disc wear limit | 4.5 mm (0.18 in) | |
| Pad wear limit | 6.5 mm (0.26 in) | |
| Master cylinder inside dia. | 14.00 mm (0.551 in) | |
| Caliper cylinder inside dia. | 42.85 mm (1.687 in) | |
| Brake fluid type/quantity | DOT #3 Brake fluid/24 cc (0.81 oz) | |
| Front brake ** | | |
| Type | Drum brake (Two leading) | |
| Actuating method | Wire | |
| Brake drum I.D. | 180 mm (7.09 in) | |
| Brake shoe dia. × width | 180 × 30 mm (7.09 × 1.18 in) | |
| Lining thickness/wear limit | 4 mm/2 mm (0.16 in/0.08 in) | |
| Shoe spring free length | 69 mm (2.68 in) | |
| Rear brake | | |
| Type | Drum brake (Leading trailing) | |
| Actuating method | Link rod | |
| Brake drum I.D. | 160 mm (6.30 in) | |
| Brake shoe dia. × width | 160 × 30 mm (6.30 × 1.18 in) | |
| Lining thickness/wear limit | 4 mm/2 mm (0.16 in/0.08 in) | |
| Shoe spring free length | 69 mm (2.68 in) | |

| | |
|---|---|
| Front forks: | |
| Travel | 140 mm (5.51 in) |
| Spring free length | 502 mm (19.75 in) |
| Spring preload length | 472 mm (18.58 in) |
| Spring rate: 0 – 100 mm (0 – 3.94 in) | 0.4 kg/mm (22.4 lb/in) |
| 100 – 140 mm (3.94 – 5.51 in) | 0.575 kg/mm (32.2 lb/in) |
| Fork oil capacity (each side) | 142 cc (4.80 oz) |
| Oil type | Yamaha Fork Oil 20 Wt or equivalent |
| Rear shock absorbers: | |
| Spring free length | 216 mm (8.50 in) |
| Spring preload length | 204 mm (8.03 in) |
| Spring rate: 0 – 55 mm (0 – 2.17 in) | 1.7 kg/mm (95.2 lb/in) |
| 55 – 80 mm (2.17 – 3.15 in) | 2.10 kg/mm (117.6 lb/in) |
| Travel | 80 mm (3.15 in) |

## 4. Electrical

| | |
|---|---|
| Ignition timing retarded:<br>Ignition timing advance: | 10° at 1,200 r/min<br> |
| Spark plug:<br>Type<br>Electrode gap | <br>BP7ES (NGK) or N-7Y (CHAMPION)<br>0.7 – 0.8 mm (0.023 – 0.032 in) |
| Spark plug cap resistance: | 10kΩ |
| Pick up coil:<br>Resistance | <br>700Ω ± 20% at 20°C (68°F) |
| Ignition coil type:<br>Spark gap<br><br>Primary resistance<br>Secondary resistance | HITACHI CM11-64<br>8 mm (0.24 in) or more at 500 r/min<br>(10 kV / 100 r/min, 15 kV / 9,500 r/min)<br>3.0Ω ± 10% at 20°C (68°F)<br>8.6kΩ ± 20% at 20°C (68°F) |
| Starter motor type:<br>Armature coil resistance<br>Field coil resistance<br>Brush length: standard<br>minimum<br>Brush spring pressure<br>Armature mica undercut | MITSUBA SM-223B<br>0.005Ω at 20°C (68°F)<br>0.011Ω at 20°C (68°F)<br>11.0 mm (0.433 in)<br>6.0 mm (0.236 in)<br>550 ± 55g (19.40 ± 1.94 oz)<br>0.7 mm (0.028 in) |
| Battery type:<br>Charging rate | GS 12N12A-4A<br>1.2 Amps for 10 Hours |
| Generator type:<br>Output<br>Field (inner) coil resistance<br>Stator (outer) coil resistance | ND 021000-778<br>14.5V 12A at 5,000 r/min<br>4.0Ω ± 10% at 20°C (68°F)<br>0.72Ω ± 10% at 20°C (68°F) |
| Regulator type:<br>Regulated voltage | ND 026000-3280<br>14.35 ± 0.35V |
| Starter relay switch:<br>Cut-in voltage<br>Winding resistance | HITACHI A104-70<br>6.5V<br>3.5Ω at 20°C (68°F) |
| Headlight:<br>Tail / brake light:<br>Flasher light:<br>Licence light:<br>Pilot lights:<br>Flasher<br>High beam<br>Neutral | 12V, 50W/35W<br>12V, 8W (3CP)/27W (32CP) × 2<br>12V, 27W (32CP) × 4<br>12V, 3.8W × 2<br><br>12V, 3.4W × 1<br>12V, 3.4W × 1<br>12V, 3.4W × 1 |

| | |
|---|---|
| Oil pressure | 12V, 3.4W × 1 |
| Meter light | 12V, 3.4W × 2 |

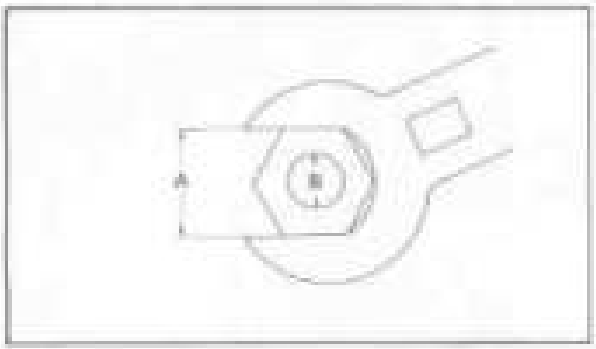
## Torque Specifications

| | Tightening torque | | Remarks |
|---|---|---|---|
| | m-kg | ft-lb | |
| Engine: | | | |
| Cylinder head cover and cylinder head 8 mm bolt | 2.2 | 15.9 | |
| 6 mm bolt | 1.0 | 7.2 | |
| Cylinder head 10 mm nut | 3.3 | 23.8 | Apply oil |
| 8 mm bolt | 1.0 | 7.2 | |
| Cylinder head cover (Tapper cover) 32 mm | 1.2 | 8.7 | |
| Spark plug | 2.0 | 14.5 | |
| Tapper adjusting screw lock nut 8 mm nut | 1.4 | 10.1 | |
| Cam sprocket 7 mm bolt | 2.0 | 14.5 | |
| Connecting rod 8 mm nut | 3.6 | 26.0 | Apply molybdenum disulfide grease |
| Generator (rotor) 10 mm bolt | 3.3 | 23.9 | |
| Starter clutch 8 mm bolt | 3.0 | 21.7 | Use LOCTITE |
| Reluctor 6 mm bolt | 1.0 | 7.2 | |
| Drain plug (engine oil) | 3.8 | 27.5 | |
| Oil filter | 1.5 | 10.9 | Apply oil |
| Strainer cover 5 mm bolt | 0.7 | 5.1 | |
| Oil pressure switch | 1.8 | 13.0 | Use LOCTITE |
| Crankcase 8 mm bolt | 2.2 | 16.0 | |
| Crankcase 6 mm bolt | 1.0 | 7.2 | |
| Clutch spring screw 6 mm bolt | 1.0 | 7.2 | |
| Primary drive gear 10 mm bolt | 4.8 | 34.7 | |
| Change pedal 6 mm bolt | 1.0 | 7.2 | |
| Neutral switch | 2.0 | 14.5 | |
| Exhaust pipe 8 mm nut | 2.2 | 16.0 | |
| Chassis: | | | |
| Engine mounting Front, under 10 mm bolt/nut | 3.0 | 21.7 | |
| Engine mounting Rear, upper 10 mm bolt/nut | 3.0 | 21.7 | |
| Engine mounting Rear, under 10 mm bolt/nut | 3.0 | 21.7 | |
| Engine mounting Upper 8 mm bolt/nut | 1.8 | 13.0 | |
| Engine mount stay Rear upper 8 mm bolt | 1.8 | 13.0 | |
| Engine mount stay Upper 8 mm bolt/nut | 1.8 | 13.0 | |
| Handle crown and steering shaft 14 mm bolt | 5.4 | 39.1 | |
| Handle crown and inner tube 8 mm bolt/nut | 1.1 | 8.0 | |
| Handle crown and handle holder 10 mm nut | 2.3 | 16.6 | |
| Under bracket and inner tube 10 mm bolt | 3.5 | 25.3 | |
| Rear shock absorber and frame 10 mm bolt | 3.0 | 21.7 | |
| Rear shock absorber and rear arm 10 mm nut | 3.0 | 21.7 | |
| Front wheel axle 14 mm nut | 10.7 | 77.4 | |
| Front fork and axle holder 8 mm nut | 2.0 | 14.5 | |
| Pivot shaft 14 mm nut | 6.5 | 47.0 | |
| Rear wheel axle 14 mm nut | 10.7 | 77.4 | |
| Sprocket wheel 12 mm nut | 4.5 | 32.5 | |

| | Tightening torque | | Remarks |
|---|---|---|---|
| | m-kg | ft-lb | |
| Tension bar and brake plate 8 mm bolt / nut | 1.4 | 10.1 | |
| Tension bar and rear arm 8 mm bolt / nut | 1.4 | 10.1 | |
| Brake cam lever and cam shaft 6 mm bolt | 1.0 | 7.2 | |
| Brake disc and hub (front) 8 mm bolt (XS400SG only) | 2.0 | 14.5 | Use lock plate |
| Caliper and brake hose (XS400SG only) | 2.6 | 18.8 | |
| Caliper and bleed screw (XS400SG only) | 0.6 | 4.3 | |
| Master cylinder and brake hose (XS400SG only) | 2.6 | 18.8 | |
| Caliper and caliper bracket 8 mm bolt (XS400SG only) | 2.5 | 18.1 | Use LOCTITE |
| Handle bar holder 8 mm bolt | 1.8 | 13.0 | |
| Rear stay (Grab bar) and rear shock absorber 10 mm nut | 3.0 | 21.7 | |
| Rear stay (Grab bar) and frame 8 mm bolt | 2.3 | 16.6 | |

## General Torque Specifications

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are included in the applicable sections of this book. To avoid warpage, tighten multi-fastener assemblies in a crisscross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.




| A (Nut) | B (Bolt) | General torque specifications | |
|---|---|---|---|
| | | m-kg | ft-lb |
| 10 mm | 6 mm | 3.5 | 4.5 |
| 12 mm | 8 mm | 1.5 | 11 |
| 14 mm | 10 mm | 3.0 | 22 |
| 17 mm | 12 mm | 5.5 | 40 |
| 19 mm | 14 mm | 8.5 | 61 |
| 22 mm | 16 mm | 13.0 | 94 |

## CONVERSION TABLES

| | METRIC TO INCH SYSTEM | | |
|---|---|---|---|
| | KNOWN | MULTIPLIER | RESULT |
| TORQUE | m-kg | 7.233 | ft-lb |
| | m-kg | 86.80 | in-lb |
| | cm-kg | 0.0723 | ft-lb |
| | cm-kg | 0.8680 | in-lb |
| WT. | kg | 2.205 | lb |
| | g | 0.03527 | oz |
| FLOW/DISTANCE | km/lt | 2.352 | mpg |
| | km/hr | 0.6214 | mph |
| | km | 0.6214 | mi |
| | m | 3.281 | ft |
| | m | 1.094 | yd |
| | cm | 0.3937 | in |
| | mm | 0.03937 | in |
| VOL. CAPACITY | cc (cm³) | 0.03382 | oz (US liq) |
| | cc (cm³) | 0.06102 | cu. in |
| | lit (liter) | 2.1134 | pt (US liq) |
| | lit (liter) | 1.057 | qt (US liq) |
| | lit (liter) | 0.2642 | gal (US liq) |
| MISC. | kg/mm | 55.997 | lb/in |
| | kg/cm² | 14.2234 | psi (lb/in²) |
| | Centigrade(°C) | 9/5(°C)+32 | Fahrenheit(°F) |

| | INCH TO METRIC SYSTEM | | |
|---|---|---|---|
| | KNOWN | MULTIPLIER | RESULT |
| TORQUE | ft-lb | 0.13826 | m-kg |
| | in-lb | 0.01152 | m-kg |
| | ft-lb | 13.831 | cm-kg |
| | in-lb | 1.1521 | cm-kg |
| WT. | lb | 0.4536 | kg |
| | oz | 28.352 | g |
| FLOW/DISTANCE | mpg | 0.4252 | km/lt |
| | mph | 1.609 | km/hr |
| | mi | 1.609 | km |
| | ft | 0.3048 | m |
| | yd | 0.9141 | m |
| | in | 2.54 | cm |
| | in | 25.4 | mm |
| VOL. CAPACITY | oz (US liq) | 29.57 | cc (cm³) |
| | cu. in | 16.387 | cc (cm³) |
| | pt (US liq) | 0.4732 | lit (liter) |
| | qt (US liq) | 0.9461 | lit (liter) |
| | gal (US liq) | 3.785 | lit (liter) |
| MISC. | lb/in | 0.017855 | kg/mm |
| | psi (lb/in²) | 0.07031 | kg/cm² |
| | Fahrenheit(°C) | 5/9(°F−32) | Centigrade(°F) |

**DEFINITION OF TERMS:**

| | | |
|---|---|---|
| m-kg | = | Meter-kilogram(s) (usually torque) |
| g | = | Gram(s) |
| kg | = | Kilogram(s) (1,000 grams) |
| lt | = | Liter(s) |
| km/lt | = | Kilometer(s) per liter (fuel consumption) |
| cc | = | Cubic centimeter(s) (cm³) (volume or capacity) |
| kg/mm | = | Kilogram(s) per millimeter (usually spring compression rate) |
| kg/cm² | = | Kilogram(s) per square centimeter (pressure) |

## CONSUMER INFORMATION

**Notice**

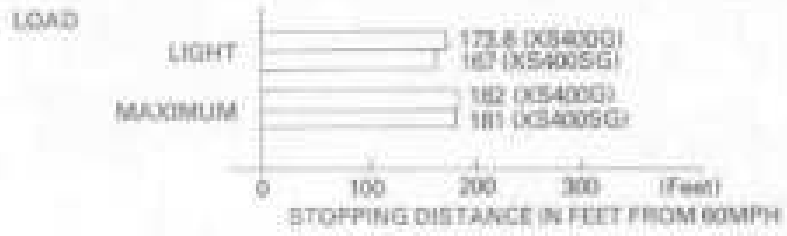
**The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions, and the information may not be correct under other conditions.**

## STOPPING DISTANCE

This figure indicates braking performance that can be met or exceeded by the vehicles to which it applies, without locking the wheels, under different conditions of loading and with partial failures of the braking system.

**FULL OPERATIONAL SERVICE BRAKE**

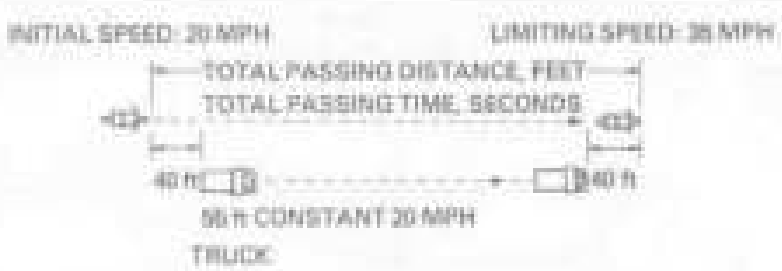
("Partial failure" information is not applicable and is not included)



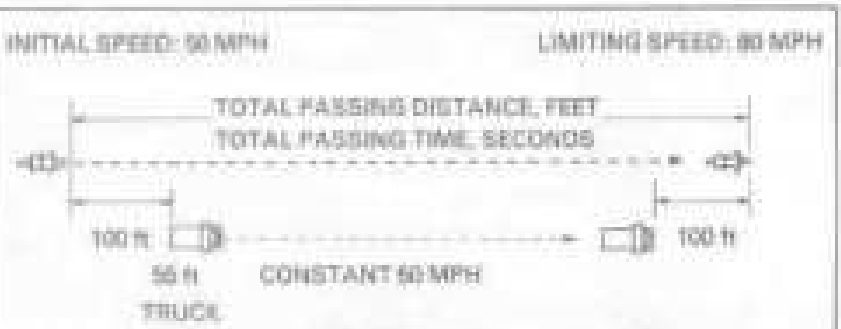

## ACCELERATION AND PASSING ABILITY

This figure indicates passing times and distances that can be met or exceeded by the vehicles to which it applies, in the situations diagrammed below. The low-speed pass assumes an initial speed of 20 mph. and a limiting speed of 35 mph. This high-speed pass assumes an initial speed of 50 mph. and a limiting speed of 80 mph.

**LOW-SPEED PASS**



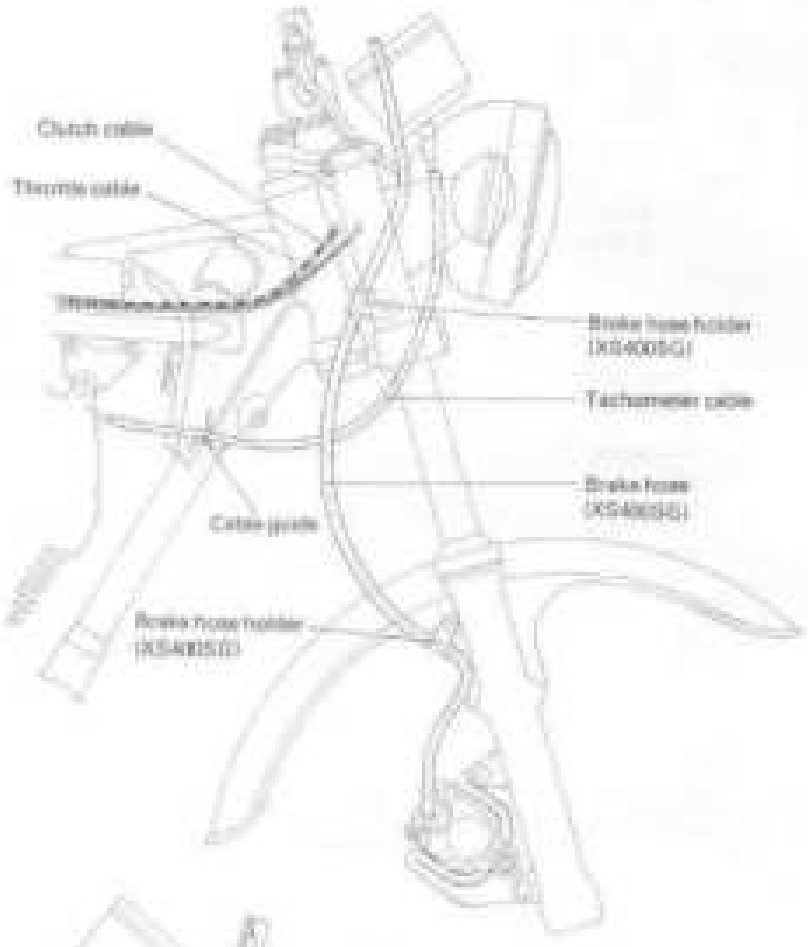

**HIGH-SPEED PASS**

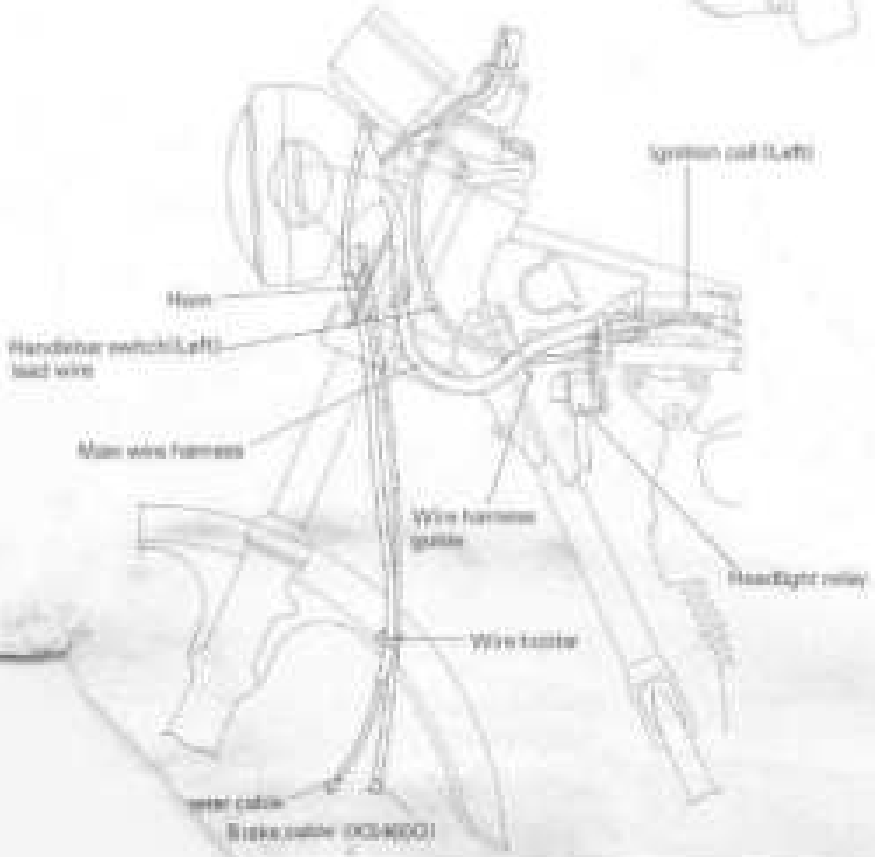


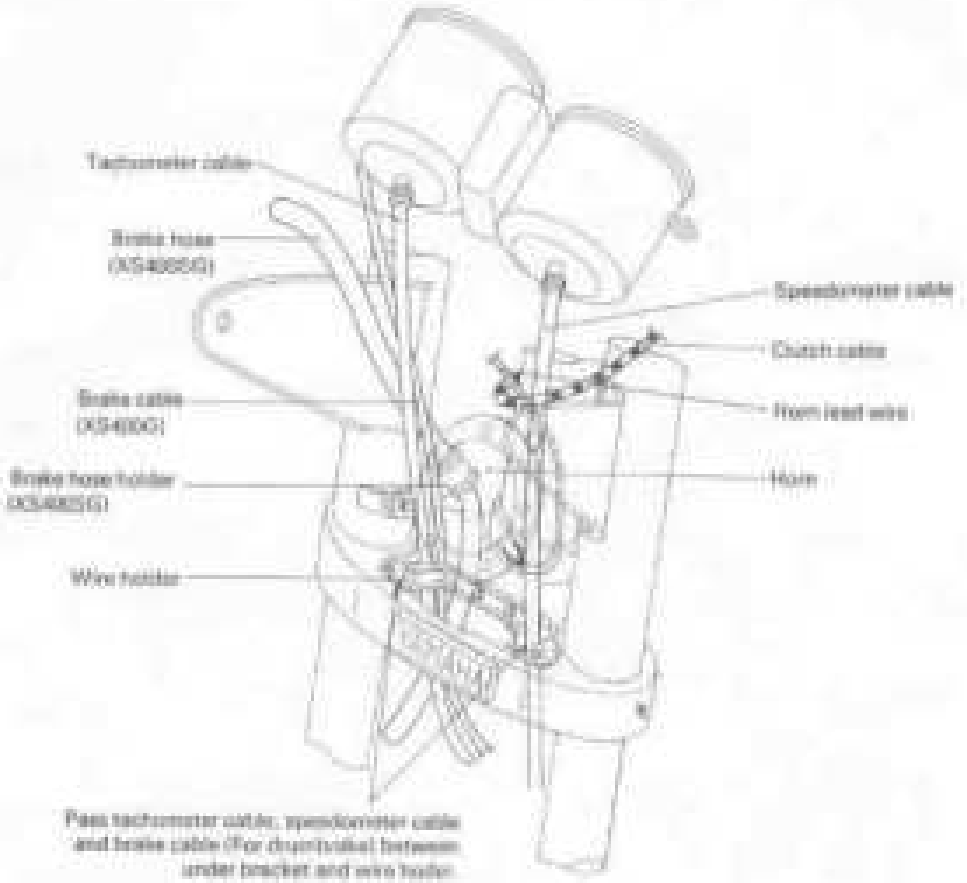

### SUMMARY

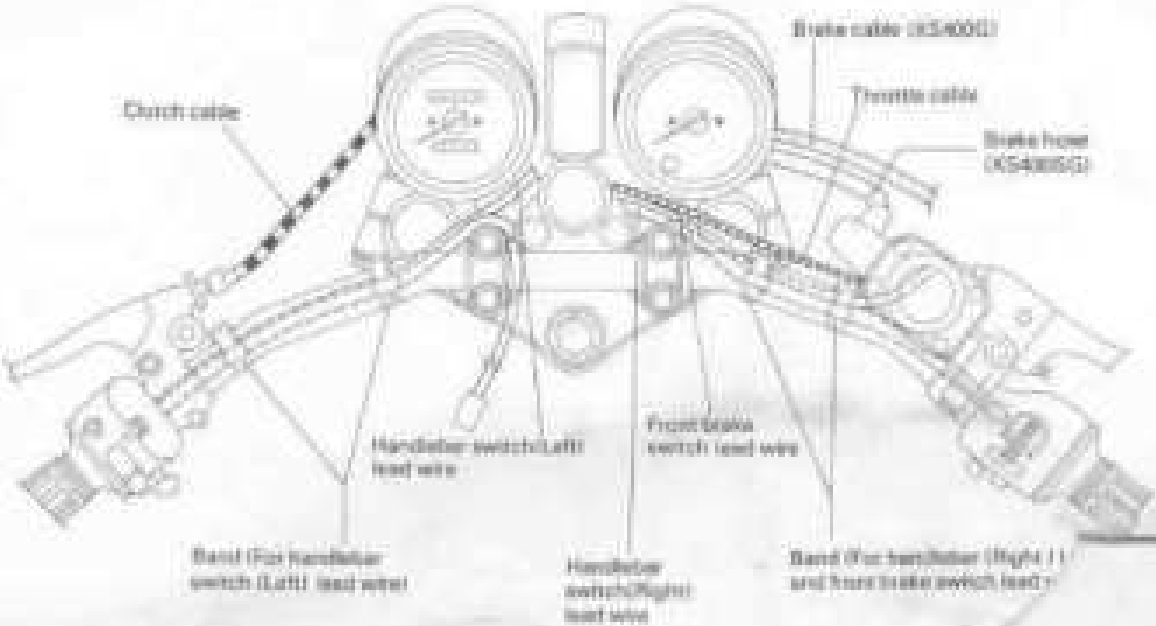
| | | |
|---|---|---|
| Low speed pass | 353.3 feet: | 7.2 seconds (XS400G) |
| | 353.0 feet: | 7.2 seconds (XS400SG) |
| High-speed pass | 944.0 feet: | 9.27 seconds (XS400G) |
| | 1,053.6 feet: | 10.6 seconds (XS400SG) |

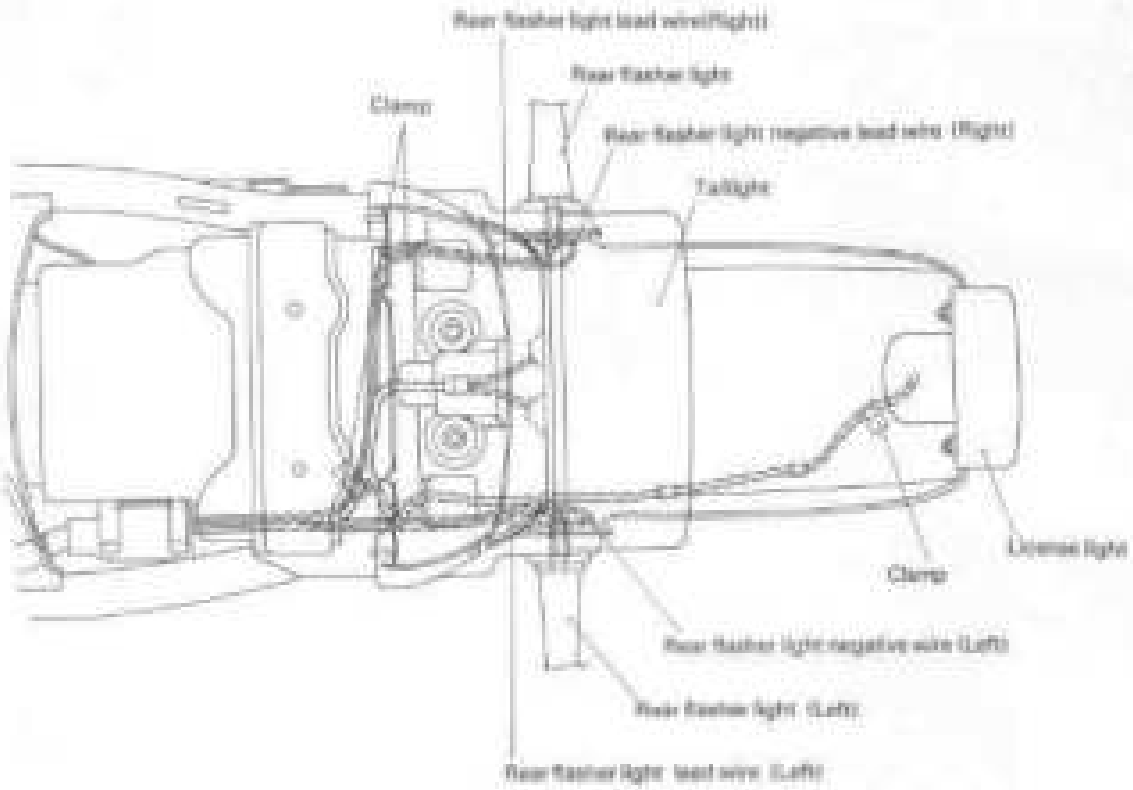
# CABLE ROUTING

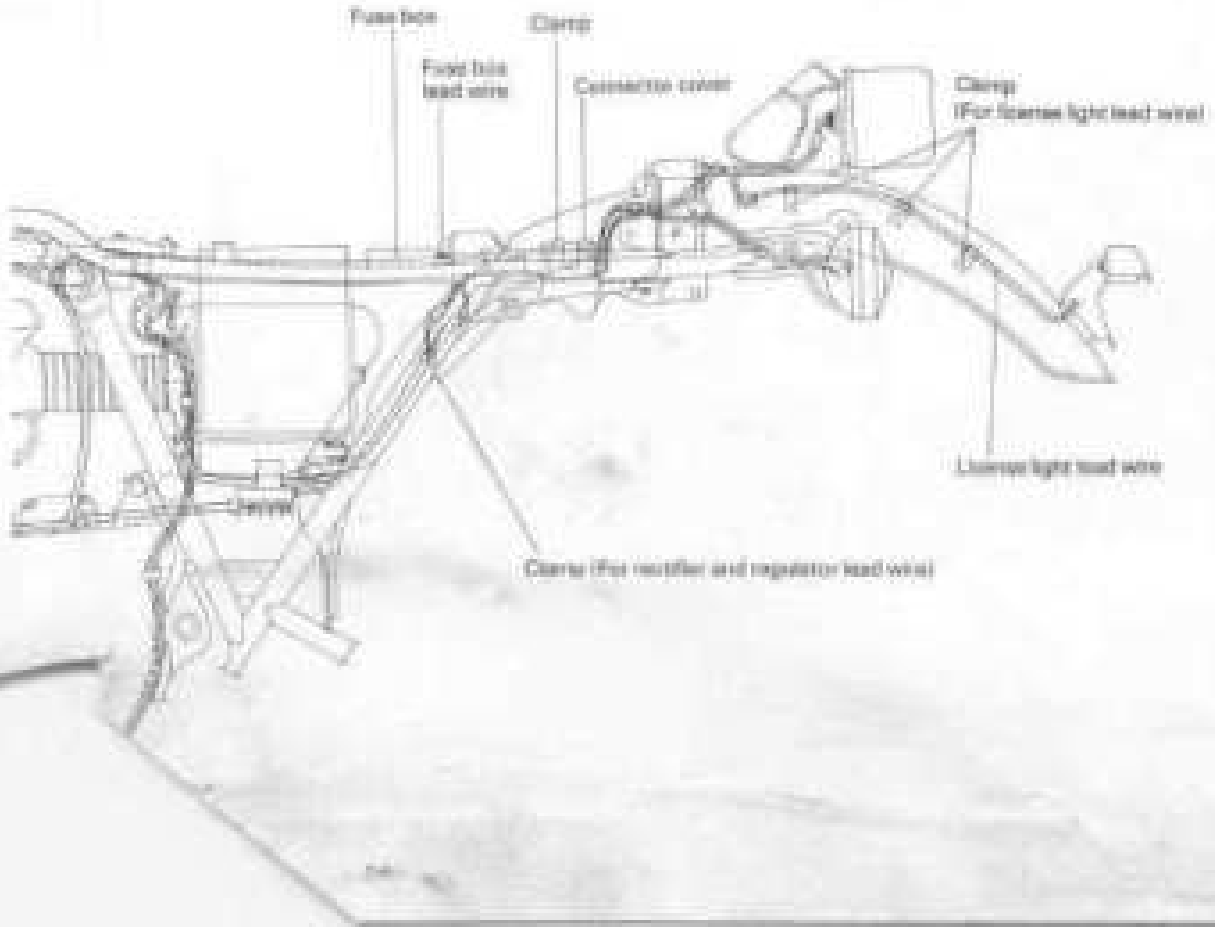


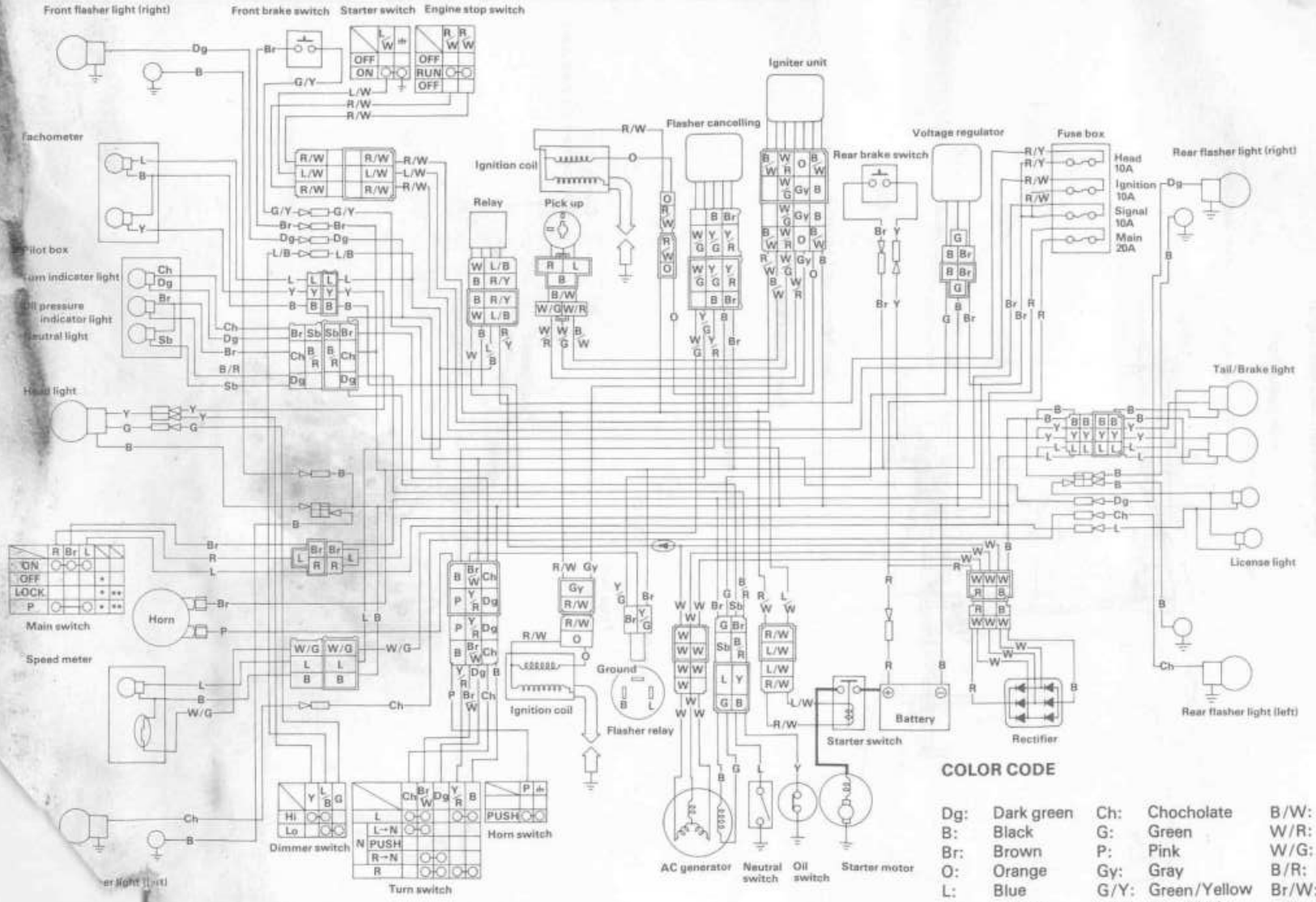

Tachometer cable
Brake hose (XS400G)
Speedometer cable
Clutch cable
Brake cable (XS400G)
Horn lead wire
Brake hose holder (XS400G)
Horn
Wire holder
Pass tachometer cable, speedometer cable and brake cable (For drum brake) between under bracket and wire holder


Brake cable (XS400G)
Clutch cable
Throttle cable
Brake hose (XS400G)
Handlebar switch (Left) lead wire
Front brake switch lead wire
Band (For handlebar switch (Left) lead wire)
Handlebar switch (Right) lead wire
Band (For handlebar (Right) and front brake switch lead


Rear flasher light lead wire(Right)
Rear flasher light
Clamp
Rear flasher light negative lead wire (Right)
Taillight
License light
Clamp
Rear flasher light negative wire (Left)
Rear flasher light (Left)
Rear flasher light lead wire (Left)


Fuse box
Clamp
Fuse box lead wire
Connector cover
Clamp (For license light lead wire)
License light lead wire
Clamp (For rectifier and regulator lead wire)

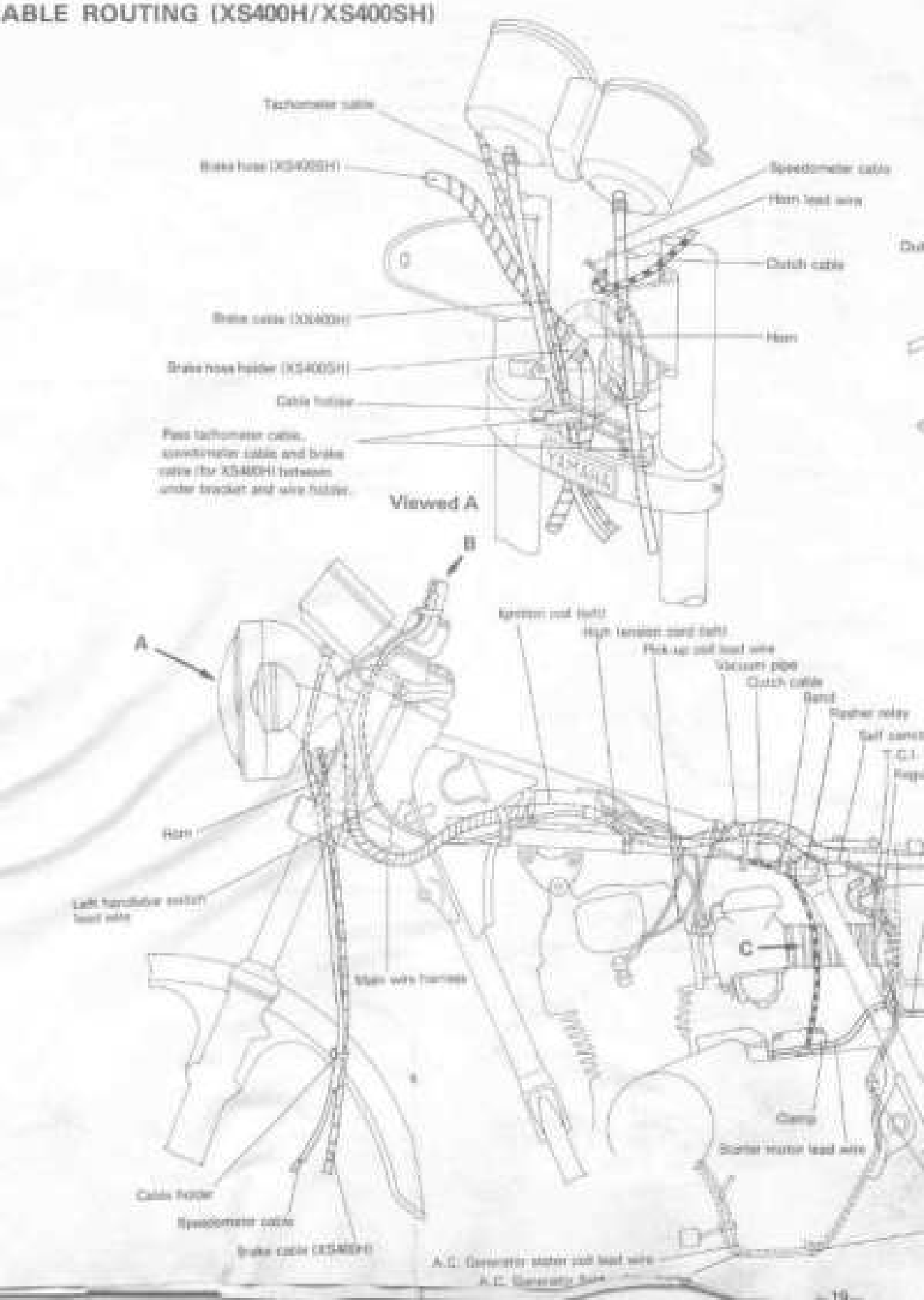
# WIRING DIAGRAM (XS400G/XS400SG)

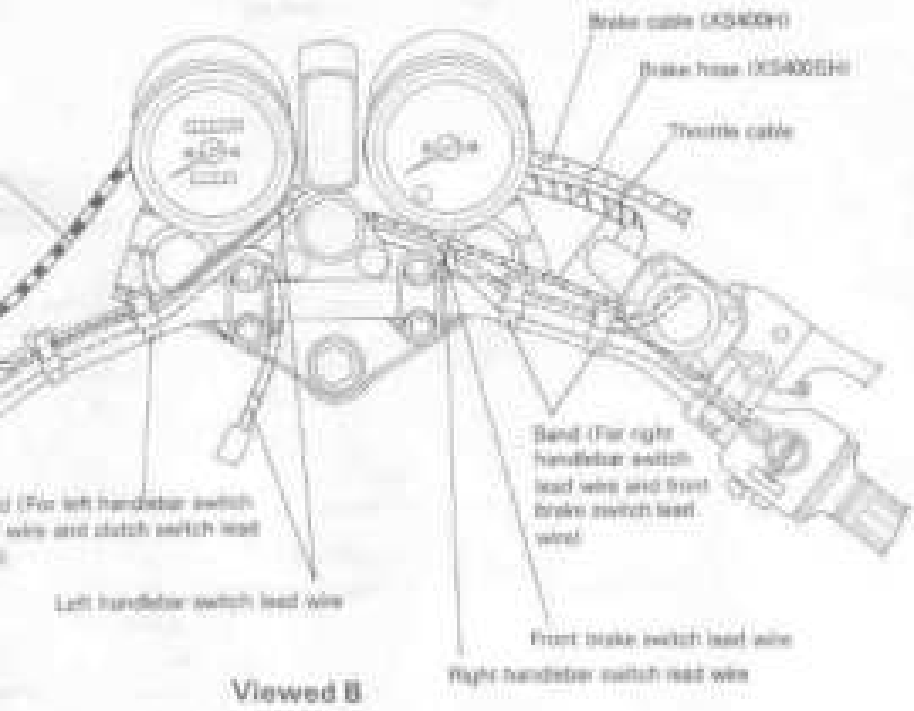



## COLOR CODE

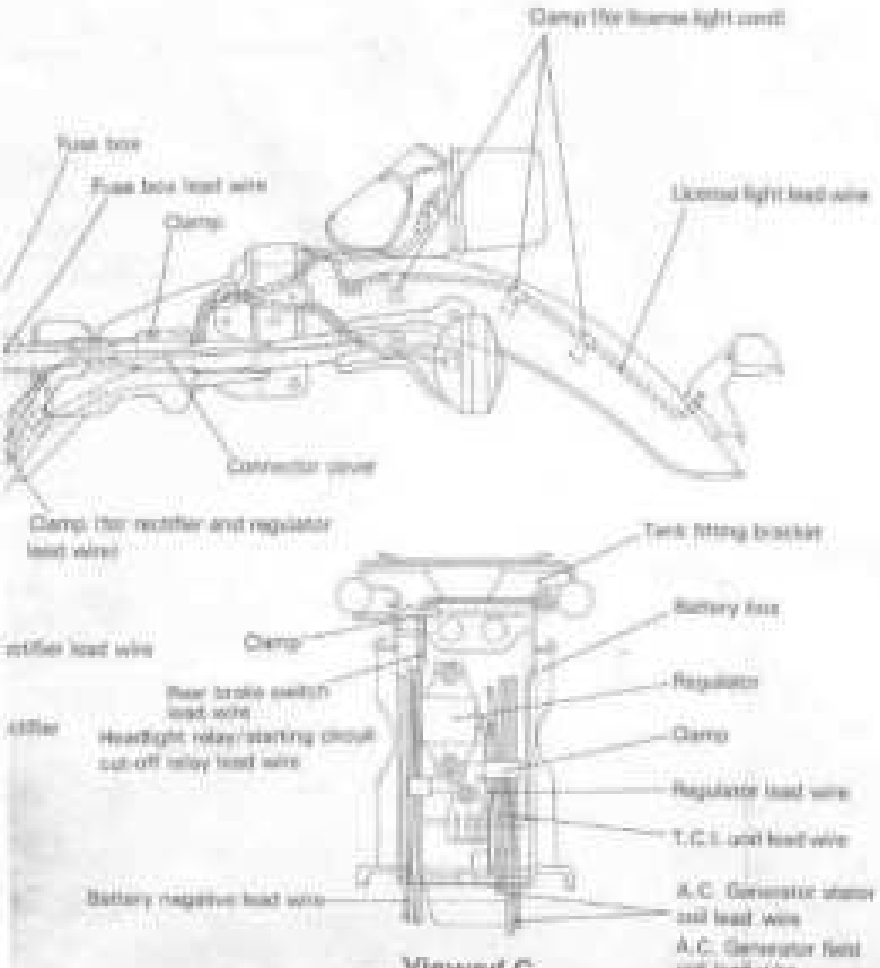
| | | | | | |
|---|---|---|---|---|---|
| Dg: | Dark green | Ch: | Chocolate | B/W: | Black/White |
| B: | Black | G: | Green | W/R: | White/Red |
| Br: | Brown | P: | Pink | W/G: | White/Green |
| O: | Orange | Gy: | Gray | B/R: | Black/Red |
| L: | Blue | G/Y: | Green/Yellow | Br/W: | Brown/White |
| Y: | Yellow | L/W: | Blue/White | Y/R: | Yellow/Red |
| R: | Red | R/W: | Red/White | Y/G | Yellow/Green |
| W: | White | L/B: | Blue/Black | | |
| Sb: | Sky blue | R/Y: | Red/Yellow | | |

# ABLE ROUTING (XS400H/XS400SH)

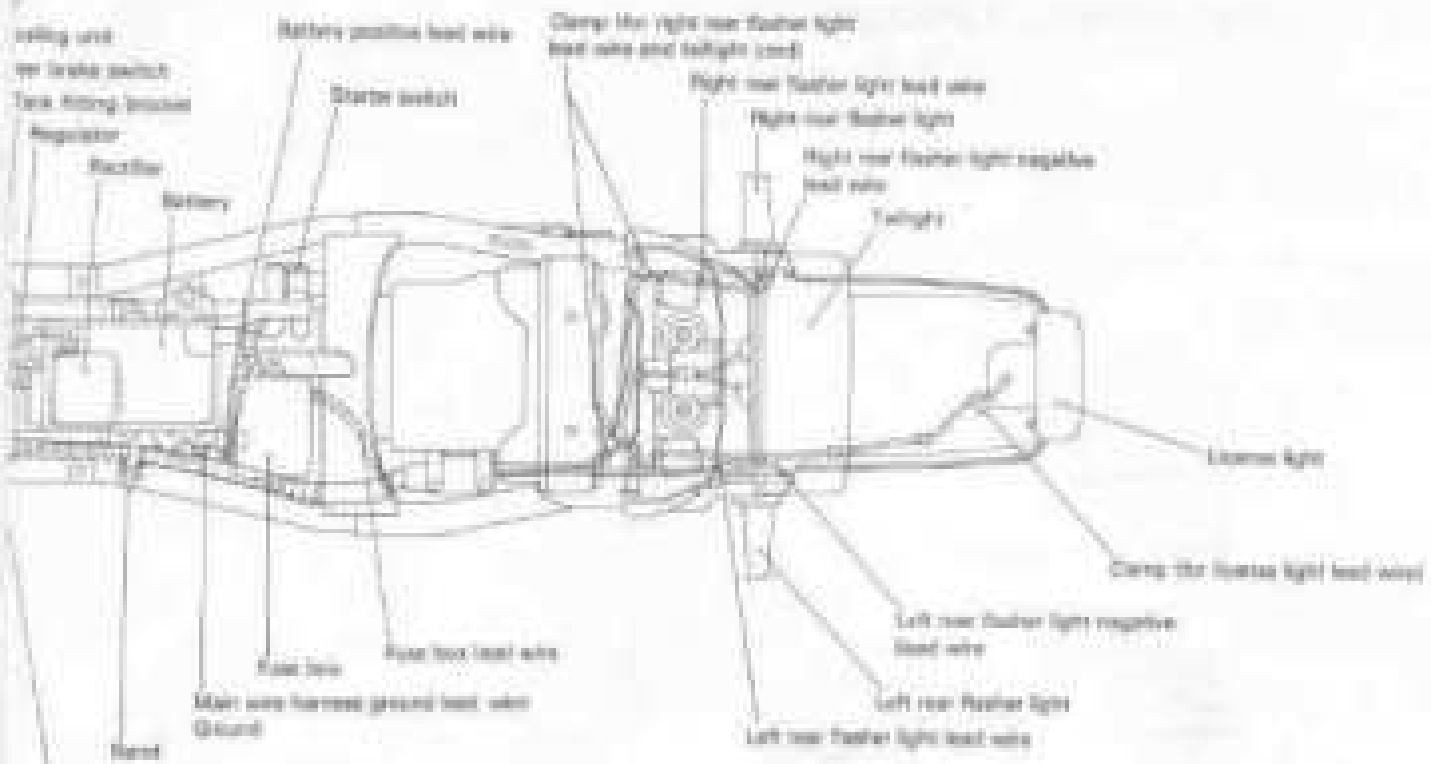


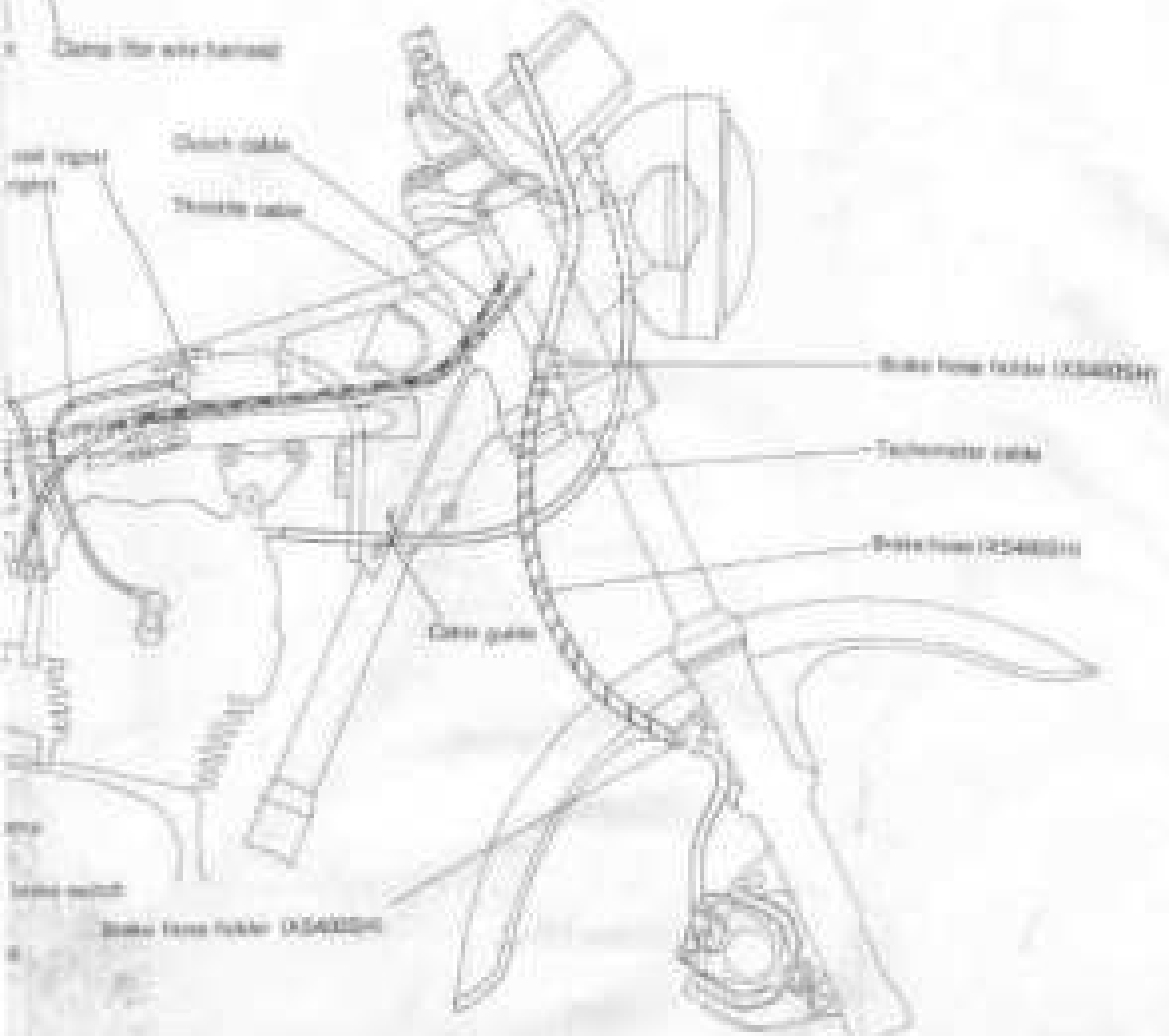


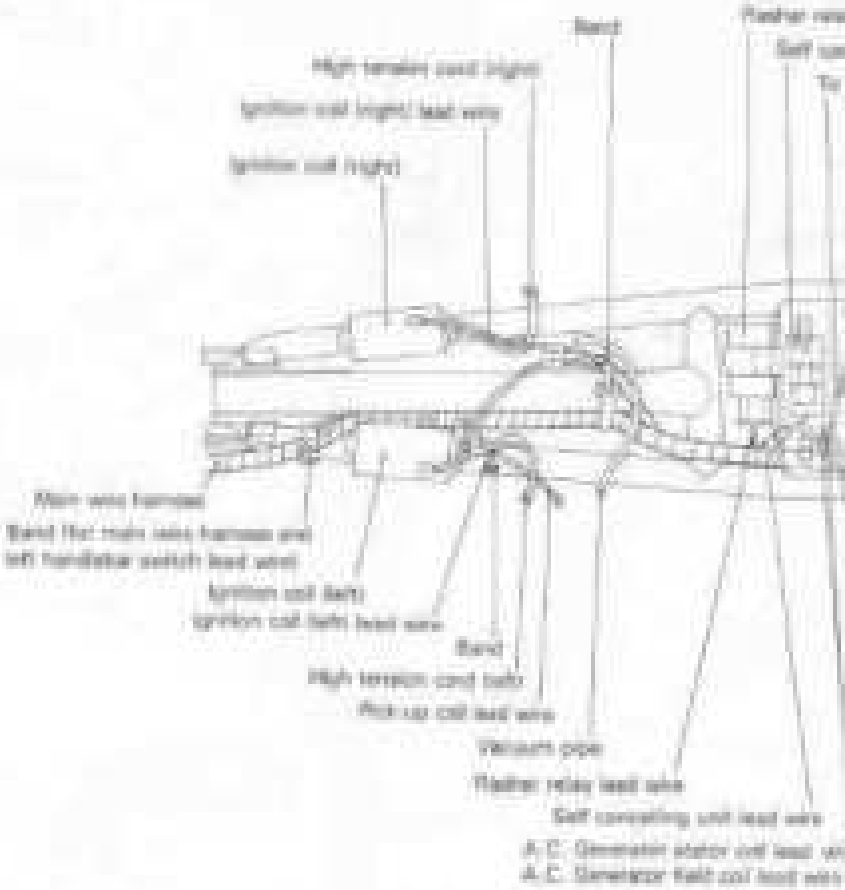

Viewed B

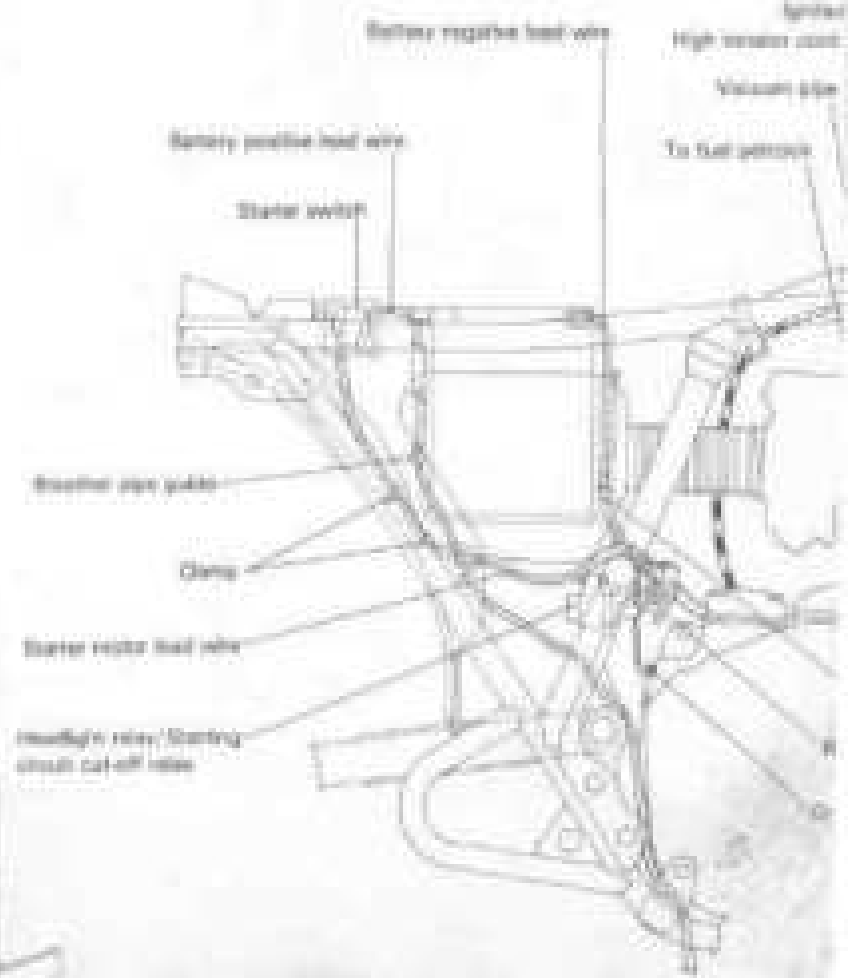



Viewed C

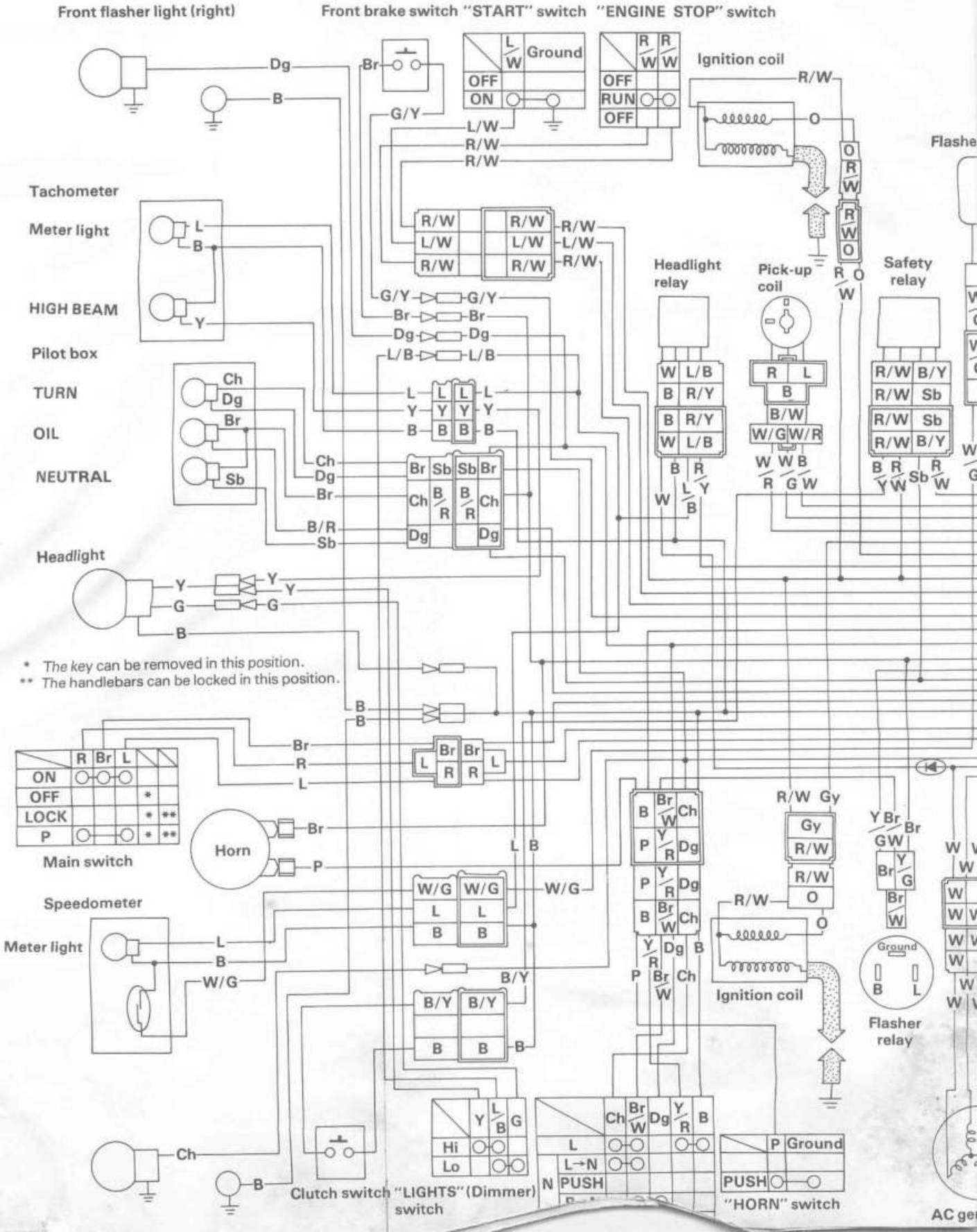

Starter switch
Regulator
Rectifier
Battery
Right rear flasher light
Twilight
License light
Rear box
Main wire harness ground lead wire
Ground
Left rear flasher light

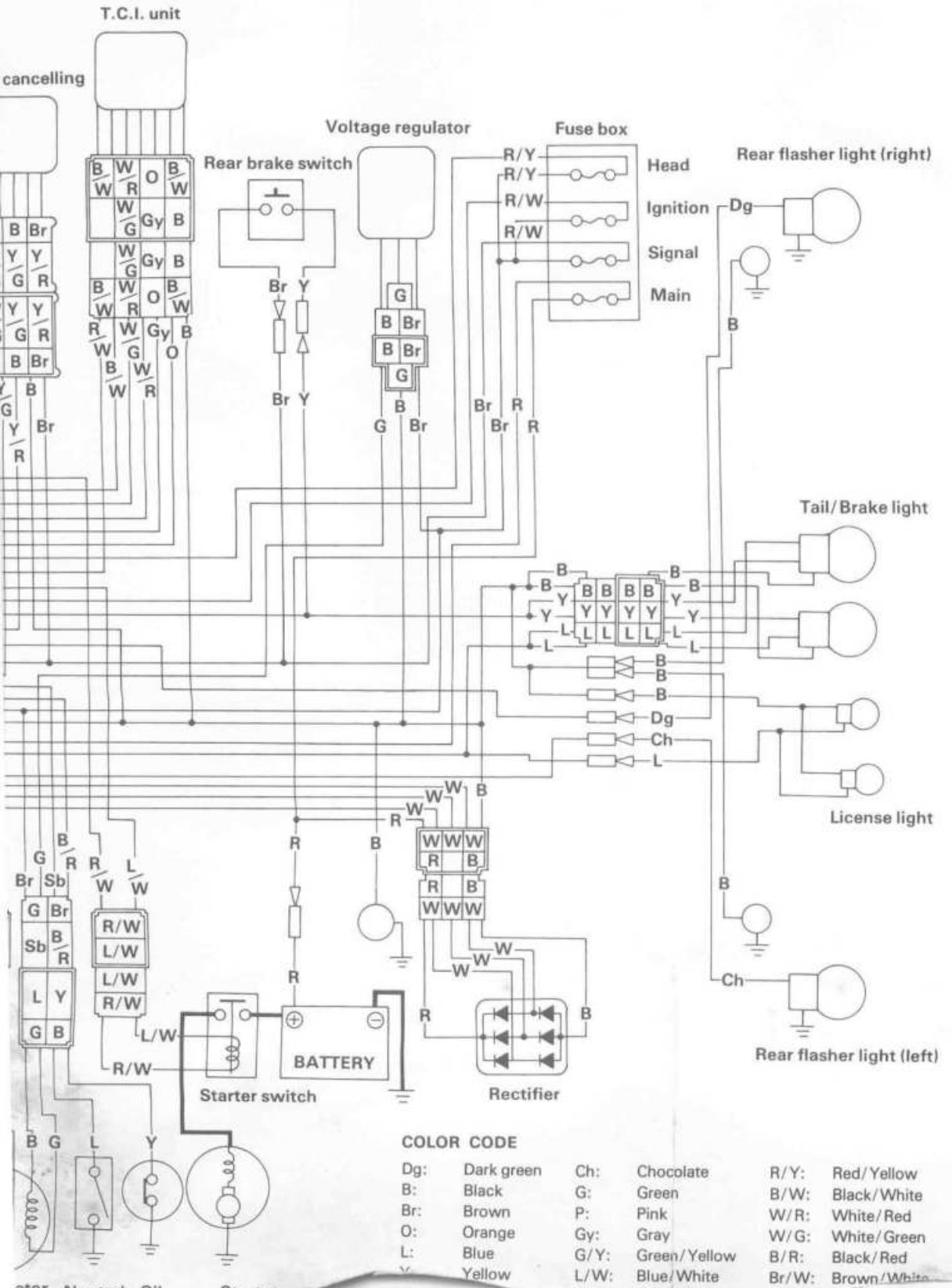

Clutch cable
Throttle cable
Brake hose holder (XS400SH)
Tachometer cable
Cable guide


Band
Ignition coil (right)
Main wire harness
Band (for main wire harness and
left handlebar switch lead wire)
Ignition coil (left)
Band
Pick-up coil lead wire
Vacuum pipe
Flasher relay lead wire


Battery negative lead wire
Battery positive lead wire
Starter switch
Clamp
Starter motor lead wire

# WIRING DIAGRAM (XS400H/XS400SH)






COLOR CODE

| | | | | | |
|---|---|---|---|---|---|
| Dg: | Dark green | Ch: | Chocolate | R/Y: | Red/Yellow |
| B: | Black | G: | Green | B/W: | Black/White |
| Br: | Brown | P: | Pink | W/R: | White/Red |
| O: | Orange | Gy: | Gray | W/G: | White/Green |
| L: | Blue | G/Y: | Green/Yellow | B/R: | Black/Red |
| Y: | Yellow | L/W: | Blue/White | Br/W: | Brown/White |
| | | R/W: | Red/White | Y/R: | |