XS650G
XS650SG

Supplementary

12

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and new data for the XS650G/XS650SG. For complete information on service procedure, it is necessary to use this Supplementary Service Manual together with following manuals:

XS650E Service Manual (LIT-1 1616-00-76)
XS650SE Supplementary Service Manual (LIT-1 1616-01-08)
XS650SF/2F Supplementary Service Manual (LIT-1 1616-01-65)

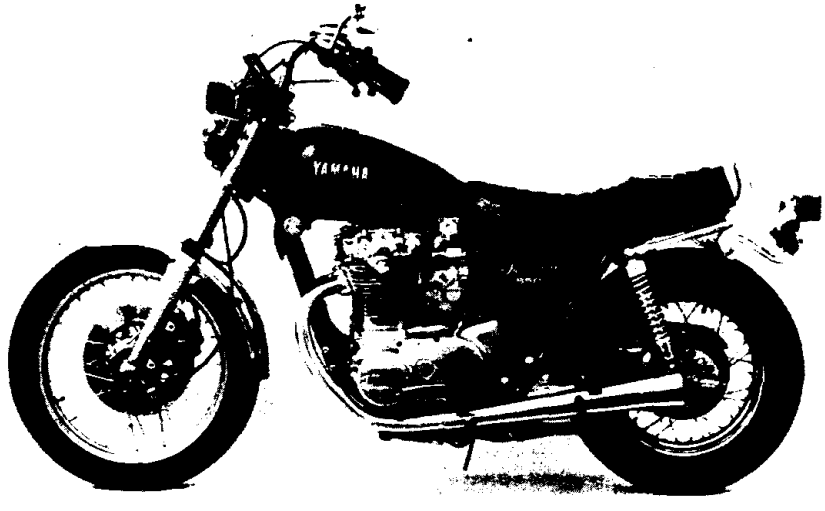
SERVICE DEPT.
INTERNATIONAL DIVISION
YAMAHA MOTOR CO., LTD.

NOTE:

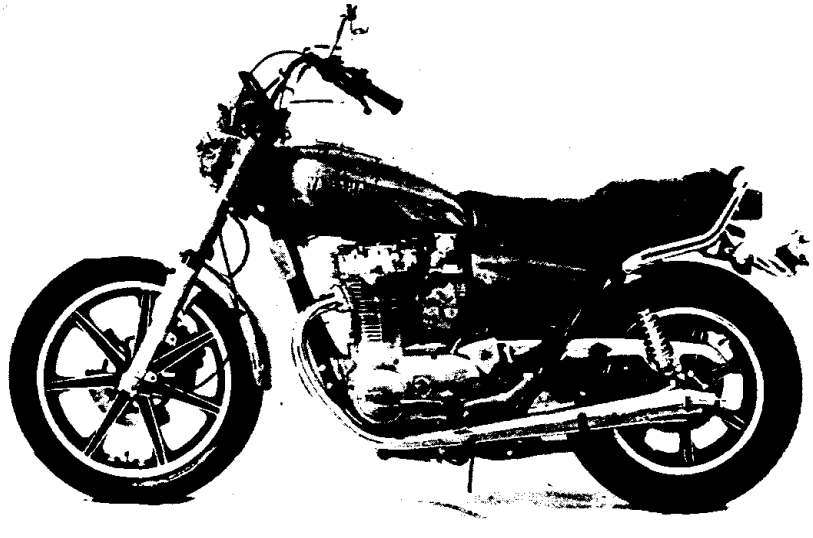
This Supplementary Service Manual contains information regarding periodic maintenance to the emission control system for the XS650G/XS650SG. Please read this material carefully.

Starting Serial Number

XS650G 3G1-000101



XS650SG 2F0-200101



MAINTENANCE AND LUBRICATION CHART

PERIODIC MAINTENANCE EMISSION CONTROL SYSTEM

NO.	ITEM	REMARKS	INITIAL BREAK-IN		THEREAFTEREVERY	
			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'	Cam Chain	Check and adjust chain tension.	○	0		0
2'	Valve Clearance	Check and adjust valve clearance when engine is cold.	0	0		0
3	Spark Plugs	Check condition. Adjust gap. Replace after initial 13,000 km.		○	○	Replace every 12,000 km or 18 months (7,500 mi)
4'	Crankcase Ventilation System	Check ventilation hose for cracks or damage. Replace if necessary.		0		0
5'	Fuel Hose	Check fuel hose for cracks or damage. Replace if necessary.		0		○
6'	Exhaust System	Check for leakage. Retighten as necessary. Replace gasket(s) if necessary.		0	0	
7'	Carburetor Synchronization	Adjust synchronization of carburetors.		0	0	
8'	Idle Speed	Check and adjust engine idle speed, Adjust cable free play if necessary.		0	0	

'It is recommended that these items be inspected and service 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	Yamalube 4-cycle oil or SAE 20W/40 "SE" motor oil	Replace	Replace	Replace		
2	Oil Filter	Clean element in solvent	–		○		○	
3*	Air Filter	Dry type filter. Clean with compressed air.	–		○		○	
4*	Brake System	Adjust free play. Replace (**shoes and/or) pads if necessary.	–	○	○	○		
5'	Clutch	Adjust free play.	–	0	0	0		
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).				
,	Control and Meter Cable	Apply cable lube thoroughly.	Yamaha chain and cable lube or 10W/30 motor oil	○	○	0		
6	Rear Arm Pivot Shaft	Apply until new grease shows.	–			0		
9	Brake Pedal and Change Pedal Shaft	Apply lightly	Yamaha chain and cable lube or 10W/30 motor oil		0	0		
10	Brake/Clutch Lever Pivot Shafts	Apply lightly	Yamaha chain and cable lube or 10W/30 motor oil		0	0		

NO.	ITEM	REMARKS	TYPE	INITIAL BREAK-IN		THEREAFTEREVERY		
				1,000 km or 1 monthior (600 mi)	5,000 km 7 months 13,000 mi)	4,000 km or 6 month!s (2,500 mi)	8,000 km or 12 months (5,000 mi)	16,000 km or 24 months (10,000 mi)
11	Center and Side Stand Pivots and Kick Crank Boss	Lubricate Apply lightly	Yamaha chain and cable lube or 10W/30 motor oil		○	0		
12*	Front Fork Oil	Drain completely. Refill to specification	Yamaha fork oil 10wt or equivalent					Replace
13*	Steering Bearings	Check bearings assembly for looseness. Moderately repack every 16,000 km (10,000 mi).	Medium weight wheel bearing grease.		○	○		Repack
14*	Wheel Bearings	Check bearings for smooth rotation.	–		○	○		
15	Battery	Check specific gravity. Check breather pipe for proper operation.	–		◐	○		
16*	A.C. Generator	Replace generator brushes. Replace at initial 9,000 km (5,500 mi)	–				Replace	

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

**XS650G only

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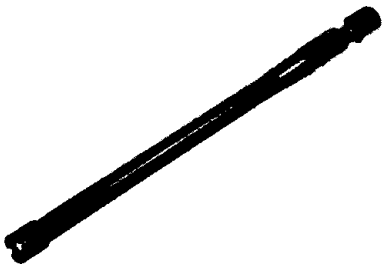
NEW SERVICE

***SPECIAL TOOL**

New special tool for XS650G/XS650SG.

"TORX" socket

P/NO. 90890-01308-00



This socket is used to tighten the pick-up coil securing bolts (special bolts) and to shear off the bolt head.

***ENGINE**

A. IGNITION TIMING CHECK

Ignition timing adjustment is required only when the pick-up coil is replaced.

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 rotor pointer should line up with the "F" stamped timing mark on the timing plate. If it does not align or steady, check the crankshaft bearing and/or woodruff key for damage.**

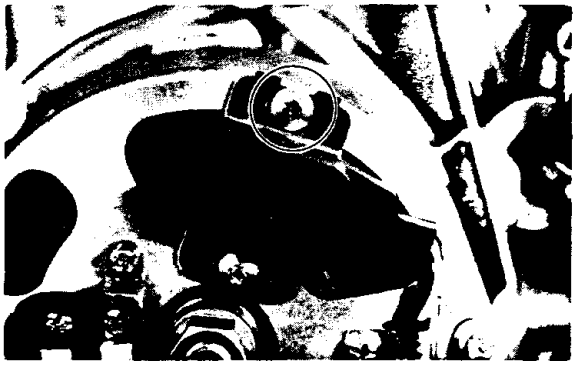
B. PICK-UP COIL ASSEMBLY

The pick-up plate assembly is permanently mounted to the stator housing with special bolts and adhesive. It is necessary to replace the A.C.G. stator assembly with a new one if the pick-up coil is damaged.

C. IGNITION TIMING ADJUSTMENT

If the A.C.G. stator assembly is 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.

1. **Install the A.C.G. stator assembly to the crankcase.**
2. **Set the pick-up coil assembly so that the upper bolt (special bolt) comes in the center of the oblong hole in the upper pick-up plate and lightly tighten the special bolts (upper and lower).**

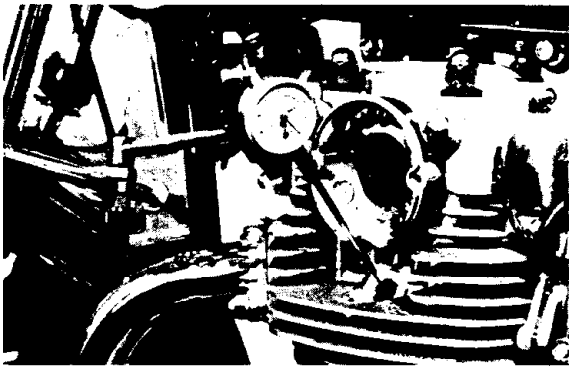


3. **Remove the breaker cover.**
4. **Install the dial gauge in the left cylinder to set the timing plate.**

NOTE:

Put the gauge needle through the plug hole as normal to the piston head as possible.

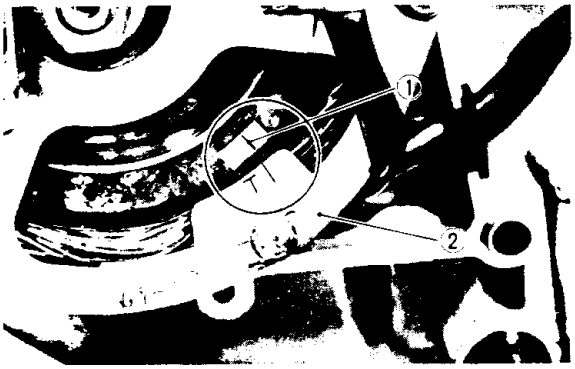
Do not let the needle contact the plug hole.



5. **Rotate the engine in a counterclockwise direction until top dead center is found.**
6. **With the engine at top dead center, loosen the screw on the timing plate and align the "T" mark on the timing plate with the rotor pointer.**

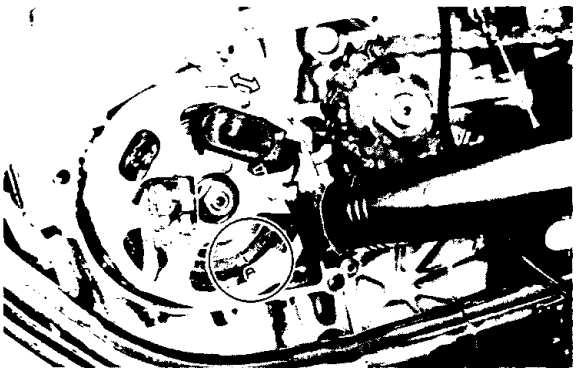
   Recheck the top dead center and alignment of the "T" mark and pointer. When all are aligned, tighten the screw.

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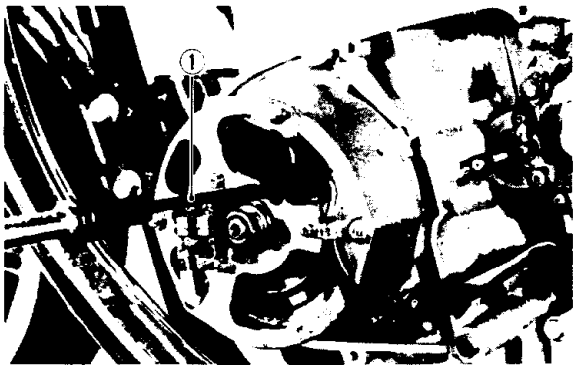


1. Rotor pointer 2. Timing plate

7. Check the ignition timing (refer to page 3).
8. If the ignition timing is incorrect, loosen the special bolts and move the pick-up plate until the "F" and pointer marks align.



9. After the ignition timing is properly adjusted, tighten the lower special bolt until the head shears off.

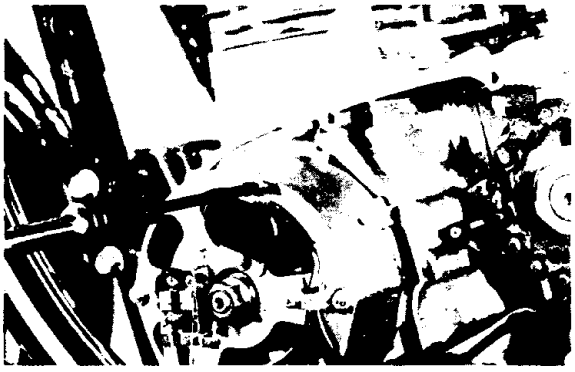


1. "TORX" socket

10. Back off the upper special bolt 3 or 4 turns and apply a liberal amount of an epoxy adhesive around the bolt thread. Retighten the bolt until the head shears off.

NOTE:

A special socket (90890-01308-00) is necessary for tightening these special bolts. The heads will shear off when the bolts have been properly torqued.



D. CARBURETOR

1. Specifications

Main jet	# 132.5
Jet needle	5HX12
Needle jet	Y-O
Starter jet	# 30
Float level	27.3 ± 0.5 mm (1.075 ± 0.020 in)
Pilot jet	# 42.5
Pilot screw	Preset
Fuel valve seat	2.0 mm (0.079 in)
Engine idle speed	1,200 r/min

2. Inspection And Correction

a. Examine the carburetor body and fuel passages. If contaminated, remove all component pieces, wash the carburetor in a petroleum-based solvent. Blow out all passages and jets with compressed air.

CAUTION:

Do not use caustic carburetor cleaning solutions.

b. Examine the condition of the floats. If the floats are damaged, they should be replaced.
c. Inspect the inlet needle valve and seat for wear or contamination. Replace these components as a set if required.
d. Inspect the vacuum piston and rubber diaphragm. If the piston is scratched or the diaphragm is torn, the assembly must be replaced.

e. Inspect the starter plunger assembly for damage. If damaged, replace.

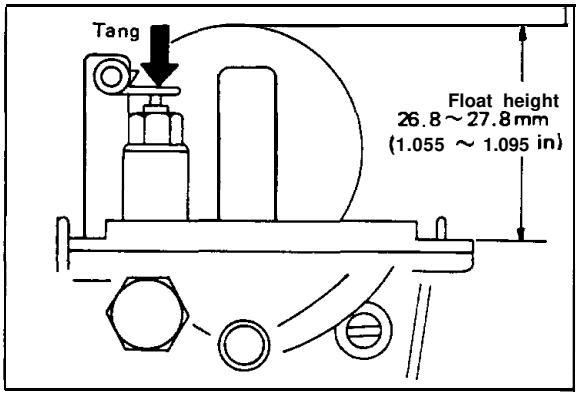


f. Float level

Hold the carburetor in an upside down position. Hold the floats so the tang is just touching the float needle. Measure the distance from the top of the float to the float bowl gasket base surface without the gasket. If the distance is out of the specification, correct the specification.

Float level: 27.3 ± 0.5 mm (1.075 ± 0.02 in)

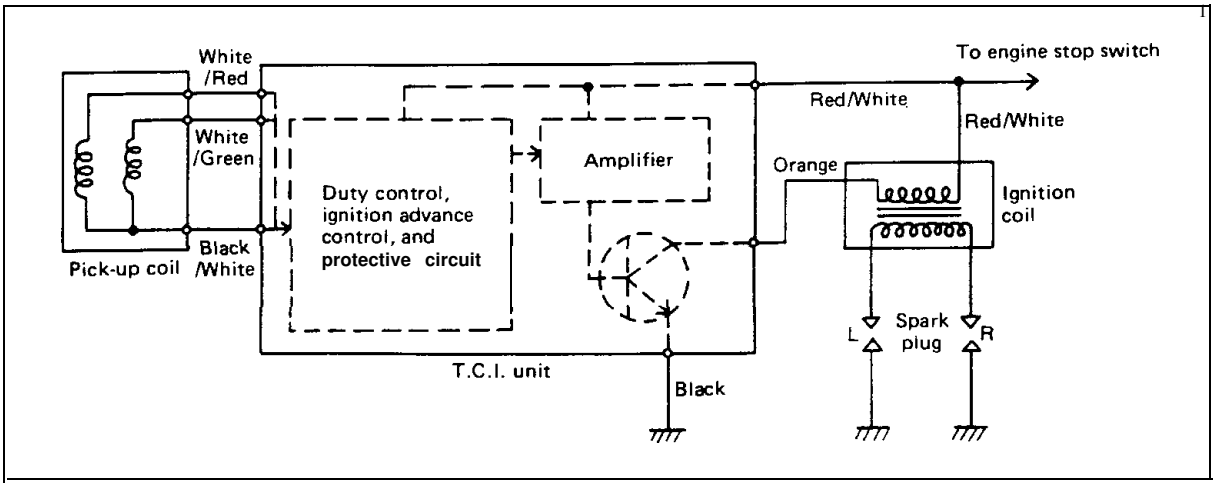
To correct, carefully bend the tang on the float arm. Both floats must be at the same height.



*ELECTRICAL

A. IGNITION SYSTEM

1. Block diagram



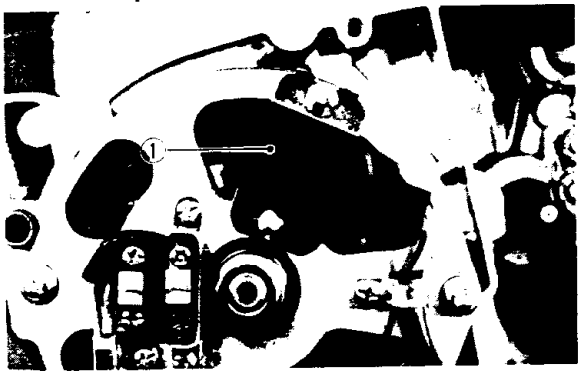
2. Description

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 TCI unit incorporates an automatic advance circuit controlled by signals generated by the pick-up coils. This adds to the dependability of the system by eliminating the mechanic advancer. This TCI system consists of two main units; a pick-up unit and an ignitor unit.

3. Operation

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

a. Pick-up unit

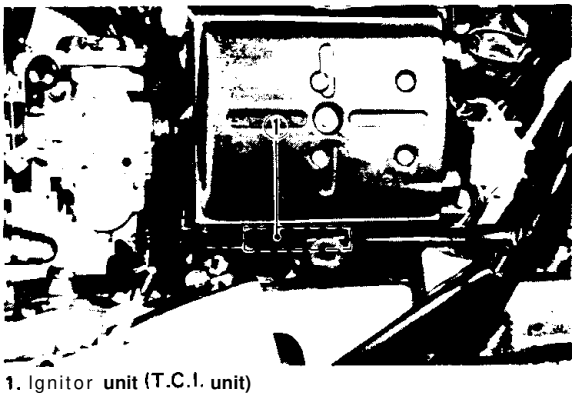


1. Pick-up unit

This unit consists of two pick-up coils mounted on the generator case and a permanent magneto on the rotor which is mounted to the crankshaft. When the magneto passes through these pickup coils, the signals are generated at the pick-up coils and forwarded to the ignitor unit as a signal.

The full ignition advance is determined by the distance (or angle) between two pick-up coils.

b. Ignitor unit



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

This unit has such functions of wave form, duty control, switching, and electrical ignition advance. The ignition timing is advanced electrically using two signals from the pick-up coils.

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.

NOTE:

Even though two spark plugs fire at the same time only one cylinder is on the compression stroke at a time. The other cylinder is on the exhaust stroke and the spark in that cylinder has no effect.

-CAUTION:

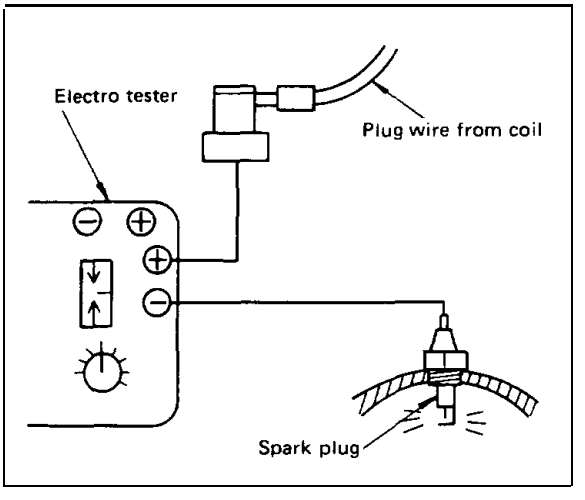
Do not run the engine without any spark plug cap(s) in place. Due to the high secondary voltage, it is possible to damage the internal insulation of the secondary coil.

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.

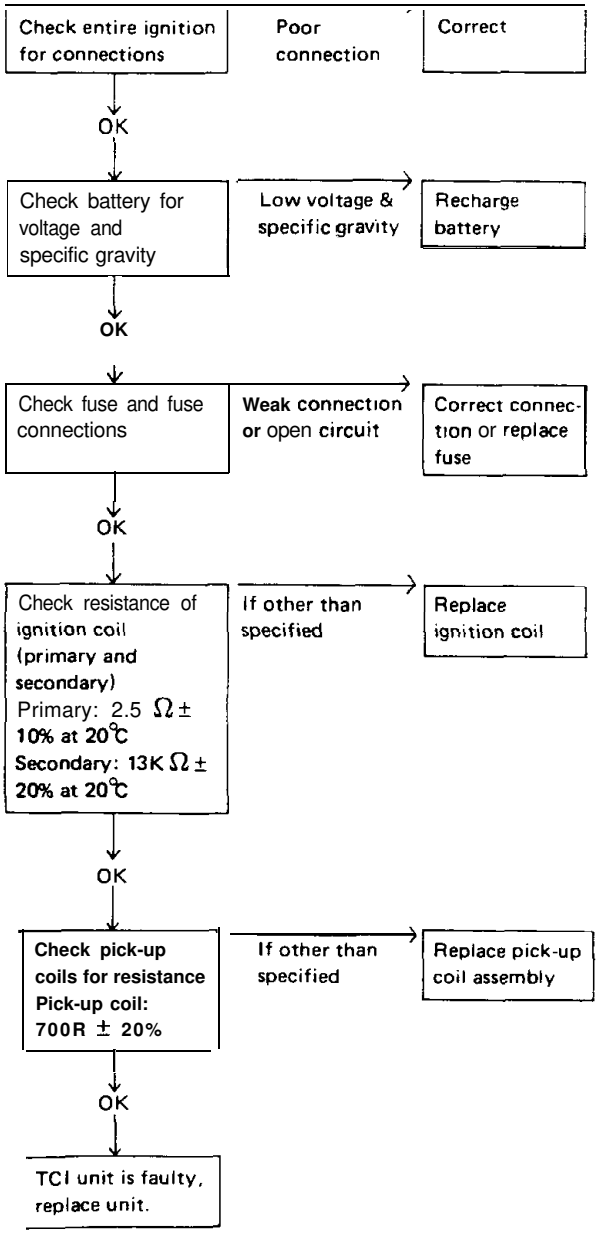


3) Start the engine and increase the spark gap until misfire occurs. (Test at various rpm between idle and red line.)

Minimum spark gap: 6 mm (0.24 in)

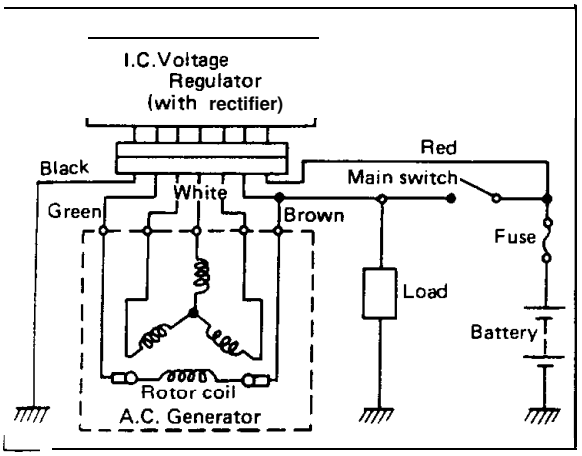
Do not run engine in neutral above 6,000 r/min for more than 1 or 2 seconds.

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



B. CHARGING SYSTEM

1. Block Diagram

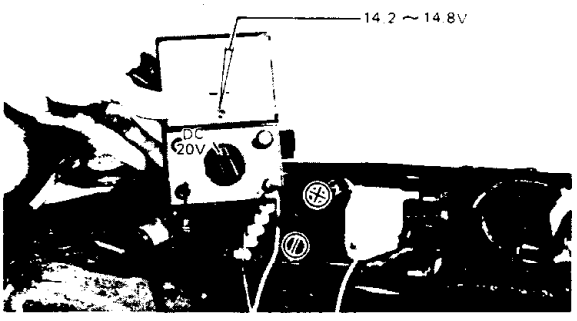


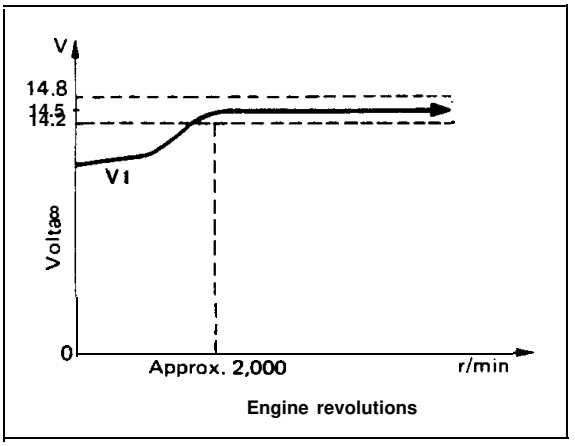
2. A.C. Generator/Voltage Regulator

a. Output voltage check

1) Remove the seat and left side cover.
2) Connect a D.C. voltmeter to the battery terminals and start the engine.
3) Accelerate the engine to approximately 2,000 r/min or more and check the generated voltage.

Generated voltage: 14.2 ~14.8V





NOTE:

Remove the headlight fuse (I0A) in the fuse box so that the headlight does not turn on when the engine is started. Do not turn on the signals.

4) If the indicated voltage cannot reach the specification, then perform the following tests.

- CAUTION:

Never disconnect the 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.

b. Brush

Check the brush length. Replace brush if at, or near, limits. Check the brush spring pressure by comparing it with a new spring. Replace the old spring if it is weak.

Minimum brush length: 7 mm (0.28 in)

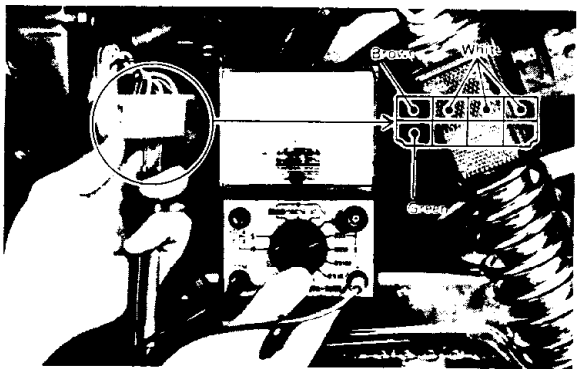


c. Rotor coil/Stator coil

Check the resistance between terminals using the Yamaha Pocket Tester or other circuit tester as shown. If resistance is out of specification, check the coil connections. If the coil connections are good, then the coil is broken inside and it should be replaced.

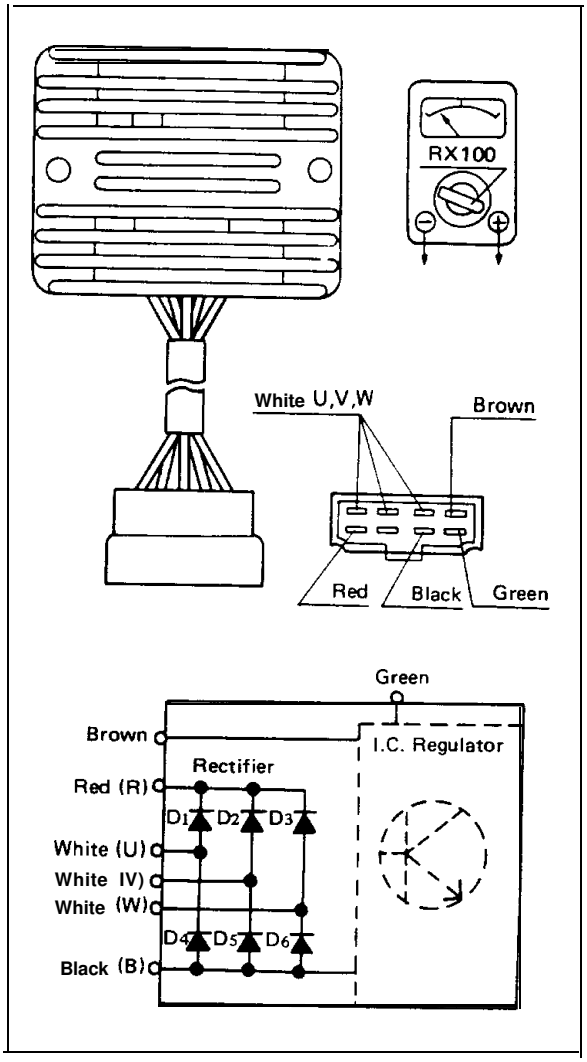
Rotor coil resistance (Green-Brown):
5.3Ω ± 10% at 20°C (68°F)
Stator coil resistance (White-White):
0.46Ω ± 10% at 20°C (68°F)

All three stator windings must be checked. Also test between each terminal and ground. A reading other than infinity indicates an improper ground which must be corrected.



d. Silicon rectifier

Check the silicon rectifiers as specified using the Yamaha Pocket Tester or other circuit tester. Even if only one of the elements is broken, replace the voltage regulator assembly.



Checking element	Tester lead connecting point (+) (red)	Tester lead connecting point (−) (black)	Good	Replace (element shorted)	Replace (element opened)
D1	R	U	○	○	x
	U	R	x	○	x
D2	R	V	○	○	x
	V	R	x	○	x
D3	R	W	○	○	x
	W	R	x	○	x
D4	U	B	○	○	x
	B	U	x	○	x
D5	V	B	○	○	x
	B	V	x	○	x
D6	W	B	○	○	x
	B	W	x	○	x

○ : Continuity
x : Discontinuity (∞)

-CAUTION:

The silicon rectifier can be damaged if subjected to overcharging. Special care should be taken to avoid a short circuit and/or incorrect connection of the positive and negative leads at the battery. Never connect the rectifier directly to the battery to make a continuity check.

e. If the above inspection reveals that the regulator is faulty, it cannot be adjusted and must be replaced.

● SPECI FICATION

A. General

*XS650SG only **XS650G only

1. MODEL	
1) Model (I.B.M. No.)	XS650SG (3G1)/ XS650G (3GO)
2) Basic color	'CARDINAL RED or NEW YAMAHA BLACK "BLACK GOLD
2. DIMENSION	
1) Overall length	2,120 mm (83.5 in)
2) Overall width	925 mm 136.4 in)
3) Overall height	'1,225 mm (48.2 in) **1,220 mm (48.0 in)
4) Seat height	790 mm (31.1 in)
5) Wheelbase	1,435 mm (56.5 in)
6) Minimum ground clearance	135 mm (5.3 in)
3. WEIGHT	
1) Net weight (Dry)	'210 kg (463 lb) "205 kg (452 lb)
4. PERFORMANCE	
1) Climbing ability	26°
2) Minimum turning radius	2,500 mm (98.4 in)

B. Engine

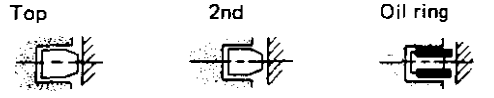
1. DESCRIPTION	
1) Engine type	Air cooled. 4-stroke, SOHC twin, parallel forward incline
2) Engine model	2FO
3) Displacement	653 cc (39.85 cu.in)
4) Bore x stroke	75 x 74 mm (2.953 x 2.913 in)
5) Compression ratio	8.7 : 1
6) Starting system	Kick and electric starter
7) Ignition system	Battery ignition (Full transistor ignition)
8) Lubrication system	Wet rump
2. CYLINDER HEAD	
1) Combustion chamber volume (with N-7Y)	42.5 cc (2.59 cu.in)
2) Combustion chamber type	Dome + Squish
3) Head gasket thickness	1.2 mm (0.047 in)
3. CYLINDER	
1) Material	Aluminum alloy with cast iron sleeve
2) Bore size	$75.00^{+0.02}_{0}$ mm (2.9528 $^{+0.008}_{0}$ 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 skin clearance		0.050 ~ 0.055 mm (0.0020 ~ 0.0022 in)
2) Piston oversize		75.25 mm (2.963 in) / 75.50 mm (2.972 in) / 75.75 mm (2.982 in) / 76.00 mm (2.992 in)
3) Piston Pin outside diameter x length		$20.0^{0}_{-0.005}$ mm x $61.0^{0}_{-0.3}$ mm ($0.79^{0}_{-0.0002}$ in x $2.40^{0}_{-0.0116}$ in)

5. PISTON RING

1) Piston ring design



1.2 mm(0.047 in) 1.5 mm (0.059 in) 2.8 mm (0.110 ir

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)	0.3-0.9 mm (0.012~0.035 in)
3) Ring groove side clearance	(Top)	0.04 ~0.08 mm (0.0016 ~0.0031 in)
	(2nd)	0.03 ~0.07 mm (0.0012~0.0028 in)

6. BIG END BEARING

1) Type	Needle bearing
2) Bearing size	ϕ 26 x ϕ 34 x 19.8
3) Needle size	ϕ 4 x ϕ 15.8 x 13

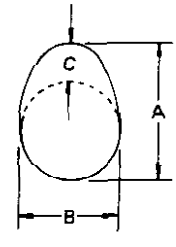
7. CAMSHAFT

1) Cam drive type	Chain (Center side)
2) Number and type of bearing	4 bearings, Ball bearings (6005)
3) Bearing type	ϕ 25- ϕ 47-8
4) Cam dimensions	

	Cam height "A"	Limit	Base circle "B"	Limit	Lift "C"
IN	39.99 ± 0.05 mm (1.574 ± 0.002 in)	39.84 mm (1.569 in)	32.24 ± 0.05 mm (1.269 ± 0.002 in)	32.09 mm (1.263 in)	7.99 mm (0.315 in)
EX	40.03 ± 0.05 mm (1.576 ± 0.002 in)	39.88 mm (1.570 in)	32.30 ± 0.05 mm (1.272 ± 0.002 in)	32.15 mm (1.266 in)	8.03 mm (0.316 in)

5) Valve timing

	OPEN	CLOSE	DURATION	OVERLAP
IN	BTDC 35°	ABDC 69°	284°	72°
EX	BBDC 67°	ATDC 37°	284°	

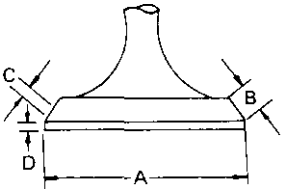


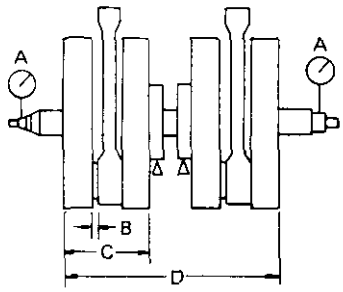
6) Camshaft deflection limit	0.03 mm (0.0012 in)
7) Cam chain	
Type	TSUBAKIMOTO BF05M
Number of links	106L
Sprocket ratio	36/18 (2.000)

8. ROCKERARMANO ROCKETSHAFT

1) Rocker arm inner diameter	$15.0^{+0.018}_{0}$ mm ($0.591^{+0.0007}_{0}$ in)
2) Rocker arm shaft diameter	$15.0^{-0.009}_{-0.015}$ mm $10.591^{-0.00035}_{-0.00059}$ in)
31 Clearance	0.009 -0.033 mm (0.00035~0.00130 in)
41 Lift ratio	X : Y = 40 : 48.41 mm (1.575 : 1.906 in)

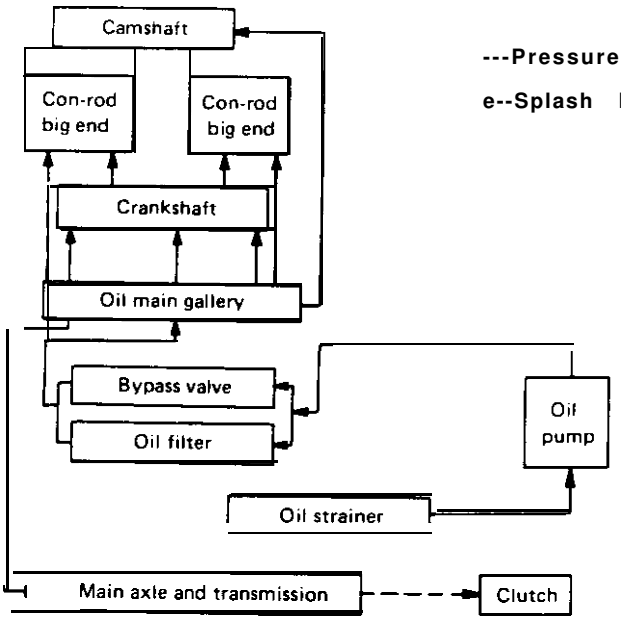
9. VALVE, VALVE SEAT AND VALVE GUIDE	
1) Valve per cylinder	2 PCS.
2) Valve clearance (In cold engine)	IN: 0.06 mm (0.0024 in) EX: 0.15 mm IO.0059 in)
3) Dimensions	
Valve head diameter "A"	IN: 41 mm (1.614 in) EX: 35 mm (1.378 in)
Valve face width "B"	IN: 2.1 mm (0.083 in) EX: 2.1 mm (0.083 in)
Valve seat width "C"	IN: 1.3 mm (0.051 in) EX: 1.3 mm 10.051 in)
Valve margin thickness "D"	IN: 1.3 mm (0.051 in) EX: 1.3 mm (0.051 in)
Valve stem diameter	IN: $8.0^{0}_{-0.015}$ mm $10.315^{0}_{-0.0010}$ in) EX: $8.0^{-0.025}_{-0.040}$ mm $(0.315^{-0.0010}_{-0.0016}$ in)
Valve guide diameter	IN: $8.0^{+0.019}_{+0.010}$ mm $(0.315^{+0.0007}_{+0.0004}$ in) EX: $8.0^{+0.019}_{+0.010}$ mm $(0.315^{+0.0007}_{+0.0004}$ in)
Valve stem to guide clearance	IN: 0.010-0.034 mm (0.00079~ 0.00173 in) EX: 0.035~ 0.059 mm (0.00138 ~ 0.00232 in)
4) Valve face runout limit	IN & EX: 0.03 mm 10.0012 in)or less
10. VALVE SPRING	
1) Free length	INNER (IN/EX): 42 mm (1.654 in) OUTER(IN/EX): 42.55 mm (1.675 in)
2) Spring rate	INNER (IN/EX): k_1 = 1.43 kg/mm (80.1lb/in) k_2 = 1.81 kg/mm (101.4 lb/in) OUTER(IN/EX): k_1 = 3.2 kg/mm (179.2 lb/in) k_2 = 4.18 kg/mm (234.1 lb/in)
3) Installed length (Valve closed)	INNER (IN/EX): 35 mm 11.378 in) OUTER(IN/EX): 37 mm 11.457 in)
4) Installed pressure (Valve closed)	INNER (IN/EX): 10 ± 0.7 kg (22.0 ± 1.5 lb) OUTER(IN/EX): 17.7 ± 1.25 kg (39.0 ± 2.8 lb)
5) Compressed length (Valve open)	INNER (IN/EX): '25.5 mm 11.004 in) OUTER(IN/EX): 27.5 mm (1.083 in)
6) Compressed pressure (Valve open)	INNER (IN/EX): 27.2 il.9 kg (60.0 ± 4.2 lb) OUTER(IN/EX): 57.4 ± 4.0 kg (126.5 ± 8.8 lb)
7) Wire diameter	INNER (IN/EX): 2.9 mm (0.114 in) OUTER(IN/EX): 4.2 mm (0.165 in)
8) Winding O.D.	INNER (IN/EX): 19.4 mm (0.764 in) OUTER(IN/EX): 32.6 mm (1.283 in)
9) Number of windings	INNER (IN/EX): 6.0 turns OUTER(IN/EX): 4.25 turns



11. CRANKSHAFT 	
1) Crankshaft deflection limit (A)	0.05 mm 10.002 in)
2) Con-rod large end clearance (B)	0.15~ 0.4 mm (0.0059~ 0.0157 in)
3) Width of crankshaft (C)	$66^{-0.05}_{-0.10}$ mm ($2.598^{-0.002}_{-0.004}$ in)
(D)	$186^{0}_{-0.3}$ mm ($7.323^{0}_{-0.012}$ in)
4) Crank pin I.D.	$26^{-0.077}_{-0.095}$ mm ($1.024^{-0.003}_{-0.004}$ in)
5) Crank pin O.D. x length	$26^{0}_{-0.006}$ x 65 $^{+0.1}_{-0.2}$ mm ($1.024^{0}_{-0.0002}$ x $2.559^{+0.004}_{-0.008}$ in)
12. CONNECTING ROD	
1) Big end I.D.	$34^{+0.016}_{0}$mm ($1.339^{+0.0006}_{0}$ in)
2) Small end I.D.	$20^{+0.028}_{+0.015}$ mm (0.787 $^{+0.0011}_{+0.0006}$in)
13. CRANK BEARING	
1) Type Right end	ϕ 30-ϕ78-19 (Ball bearing)
Others	ϕ 32-ϕ68-17(Rollar bearing)
2) Oil seal type	SD-25-40-9
14. CLUTCH	
1) Clutch type	Wet, multiple type
2) Clutch operating mechanism	Inner push type, screw push system
31 Primary reduction ratio and method	72/27(2.666), spar gear
4) Primary reduction gear back lash (4 teeth)	$21.45^{0}_{-0.025}$ mm ($0.8445^{0}_{-0.00010}$ in)
5) Friction plate	
Thickness/Quantity	3 mm (0.118 in)/7pcs.
Wear limit	2.7 mm (0.106 in)
6) Clutch plate	
Thickness/Quantity	1.4 mm (0.055 in)/6 pa.
Warp limit	0.05 mm (0.002 in)
7) Clutch spring	
Free length/Quantity	34.6 mm II.362 in)/6 pcs.
8) Clutch housing radial play	0.027-0.081 mm (0.0011~ 0.0032 in)
9) Push rod bending limit	0.2 mm 10.008 in)
15. TRANSMISSION	
1) Type	Constant mesh, 5-speed forward
2) Gear ratio: 1st	32/13 12.461)
2nd	27/17 (1.588)
3rd	26/20(1.300)
4th	23/21 (1.095)
5th	22/23 (0.956)

3) Bearing: Main axle (Left)	Needle bearing (φ20-φ30-20)
(Right)	Ball bearing (φ25-φ52-20.6)
Drive axle (Left)	Ball bearing (φ30-φ62-23.8)
(Right)	Needle bearing (φ20-φ30-16)
41 Oil seal type Drive axle (Left)	SDD-40-62-9
5) Secondary reduction ratio and method	34/17 (2.000)/Chain
16. SHIFTING MECHANISM	
1) Type	Cam drum, return type
2) Oil seal type (Change lever)	SDO-14-24-6
17. KICK STARTER	
1) Type	Bendix type
2) Oil seal type (Kick axle)	SD-25-35-7
3) Kick clip friction tension	1.2 ~ 1.7 kg (2.6 ~ 3.7 lb)
18. INTAKE	
1) Air cleaner: Type/Quantity	Dry. foam rubber/2pcs.
2) Cleaner cleaning interval	Every 8,000 km 15.000 mile)
19. CARBURETOR	
1) Type and manufacturer/Quantity	BS34 MIKUNI/2 pcs.
2) I.D. mark	3G1-00
3) Main jet (M.J.)	#132.5
4) Air jet (A.J.)	#85
5) Jet needle (J.N.)	5HX12
6) Needle jet (N.J.)	Y-0
7) Throttle valve (Th.V)	#135
8) Pilot jet (P.J.)	#42.5
9) Pilot screw (Turns out) (P.S.)	Preset
10) starter jet (G.S.)	#30
11) Fuel level (F.L.)	27.3 ± 0.5 mm 11.075 ± 0.020 in)
12) Idling engine speed	1,200 r/min
20. LUBRICATION	
1) Engine rump oil quantity	Oil exchange: 2.0 lit 12.1 US qt)
	Overhaul: 2.5 lit (2.6 US qt)
2) Oil type and grade	Yamalube 4-cycle oil or SAE 20W/40 type
	"SE" motor oil
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~ 0.08 mm (0.0012 ~ 0.0031 in)
Oil pump volume	1.3 lit/min (1.37 qt/min) at 1,000 r/min
5) Bypass valve setting pressure	1.0 kg/cm^2 (14 psi)

6) Lubrication chart



C. Chassis

1 FRAME	
1) Frame design	Double cradle, high tensile frame
2. STEERING SYSTEM	
1) caster	27°
2) Trail	115 mm 14.53 in)
31 Number and size of balls in steering head	
Upper race	19 pcs. 114 in
Lower race	19 pcs.1/4 in
4) Steering lock to lock	42° each (L and R)
3. FRONT SUSPENSION	
1) Type	Telescopic fork
21 Damper type	Oil damper, coil spring
3) Front fork spring	
Free length	482 mm (16.96 in)
Wire diameter x winding diameter	4 x 24.5 mm (0.157 x 0.965 in)
Spring constant	k1 = 0.46 kg/mm (26.88 lb/in)/ 0 ~ 100 mm (0 ~ 3.94 in)
	k2 = 0.65 kg/mm 136.40 lb/in)/ 100 ~ 150 mm (3.94-5.91 in)
4) Front fork travel	150 mm (5.906 in)
5) Inner tube O.D.	35 mm (1.378 in)
6) Front fork oil quantity and type	169 cc 15.72 oz) each leg Yamaha fork oil 10wt or equivalent
7) Distance from the top of inner tube oil level without spring	Approx. 454 mm (17.9 in)
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	
Free length	226 mm (8.90 in)
Wire diameter x winding diameter	7.5 x 60.5 mm 10.295 x 2.382 in)
Spring constant	k_1 = 1.714 kg/mm 196.0 lb/in)/ O-45 mm (0~ 1.77 in)
	k_2 = 2.244 kg/mm (125.7 lb/in)/ 45~ 80 mm (1.77 ~ 3.15 in)
5) Swing arm free play (Limit)	1 mm (0.04 in)
6) Pivot shaft -Outside diameter	16 mm (0.63 in)
5. FUEL TANK	
1) Capacity	11.5 lit (3.04 US gall
2) Reserve capacity	2.3 lit (0.61 US gall
3) Fuel grade	Regular gasoline
6. WHEEL	
1) Type (Front and rear)	*Cast wheel **Spoke wheel
2) Tire size (Front)	3.50S19-4PR "Tubeless tire **Tube-type tire
(Rear)	130/90S16-4PR *Tubeless tire "Tube-type tire
3) Tire pressure:	
Up to 90 kg (198 lb) load"*'	Front: 1.6 kg/cm² 122 psi)
	Rear: 2.0 kg/cm² (28 psi)
90 kg (198 lb) load-206 kg (453 lb) load"' (Maximum load)	Front: 2.0 kg/cm² (28 psi)
	Rear: 2.3 kg/cm² (32 psi)
High speed riding	Front: 2.0 kg/cm² (28 psi)
	Rear: 2.3 kg/cm² (32 psi)
4) Rim run out limit (Front and rear)	
Vertical	2 mm (0.08 in)
Lateral	2 mm (0.08 in)
51 Rim size (Front)	*MT1.85 x 19 **1.85 x 19
(Rear)	'MT3.00 x 16 '"2.75 x 16
6) Bearing type	
Front wheel (Left)	*6302ZZ ""86303
(Right)	'63022 **B6303RS
Rear wheel (Left)	63042
(Right)	63052
7) Oil seal type	
Front wheel (Left)	SDD-45-56-6
(Right)	SD-22-42-7
Rear wheel (Left)	SD-35-62-9
(Right)	SO-27.52-5
8) Secondary drive chain type	
Type	50HDS
Number of links	103L + Joint
Chain pitch	15.875 mm (5/8in)
Chain free play	20 ~ 30 mm (0.8 ~ 1.2 in)

*: XS650SG
**: XS650G
***: Total weight of accessories, etc., excepting motorcycle.

7. BRAKE	
1) Front brake	
Type	Hydraulic disc type
Disc size (Outside dia. x thickness)	298 x 7.0 mm (11.73 x 0.28 in)
Disc wear limit	6.5 mm (0.26 in)
Disc pad thickness	11 .O mm (0.43 in)
Pad wear limit	6.0 mm IO.24 in)
Master cylinder inside dia.	14.0 mm (0.55 in)
Caliper cylinder inside dia.	38.1 mm (1.50 in)
Brake flaid type / quantity	DOT =3 Brake fluid / 38.1 cc (1.29 oz)
2) Rear brake (XS650SG only)	
Type	Hydraulic disc type
Disc size (Outside dia. x thickness)	267 x 7.0 mm (10.5 x 0.28 in)
Disc wear limit	6.5 mm (0.26 in)
Disc pad thickness	11 .0 mm (0.43 in)
Pad wear limit	6.0 mm 10.24 in)
Master cylinder inside dia.	14.0 mm (0.55 in)
Caliper cylinder inside dia.	38.1 mm 11.50 in)
Brake fluid type/quantity	DOT =3 Brake fluid / 38.1 cc (1.29 oz)
3) Rear brake (XS650G only)	
Type	Drum brake (Leading trailing)
Actuating method	Link rod
Brake drum I.D.	180 mm (7.09 in)
Brake shoe dia. x width	180 x 30 mm (7.09 x 1.18 in)
Lining thickness I wear limit	4 mm/2 mm (0.16 in/0.08 in)
Shoe spring free length	68 mm (2.68 in)

D. Electrical

1. IGNITION SYSTEM	
1) Ignition timing (B.T.D.C.)	15°/1,200 r/min
2) Ignition coil	
Model/Manufacturer	CM12-08A/HITACHI
Spark gap	6 mm 10.24 in) or more at 500 r/min
Primary winding resistance	2.5Ω ± 10% at 20°C (68°F)
Secondary winding resistance	13kΩ ± 20% at 20°C(68°F)
3) Spark plug	
Type	N-7Y (CHAMPION) or BP7ES(N.G.K.)
Spark plug gap	0.7 ~ 0.8 mm (0.027-0.031 in)
2. CHARGING SYSTEM	
1) A.C. generator	
Charging output	14V 16A/5,000 r/min
Rotor coil resistance (Field coil)	5.25Ω ± 10% at 20°C(68°F)
Stator coil resistance	0.46Ω ± 10% at 20°C (68°F)
Brush length	14.5 mm (0.571 in)
Brush wear limit	7.0 mm (0.276 in)
2) Regulator	
Type	I.C. type
Model/Manufacturer	S8515/TOSHIBA
Regulating voltage	14.5 ±0.3V
3) Battery	
Model/Manufacturer/Quantity	YB14L-A2/YUASA/1 pc.
Capacity	12V. 14AH
Charging rate	1.4A 10 hours
Specific gravity	1.28 at 20°C(68°F)

3. STARTER	
1) Starter motor	
Type	Bendix type
Manufacturer/Model	HITACHI/S108-35
Output	0.5 kw
Armature coil resistance	0.0067Ω ± 10% at 20°C (68°F)
Field coil resistance	0.0040 ±10% at 20°C (68°F)
Brush size/Quantity	16 mm (0.63 in)/2 pcs.
Wear limit	4 mm (0.16 in)
Spring pressure	800 g (28.2 oz)
Commutator O.D./Wear limit	33mm (1.30 in)/30 mm (1.18 in)
Mica undercut	0.7 mm IO.028 in)
2) Starter switch	
Manufacturer	HITACHI
Model	A10470
Amperage rating	100A
Cut-in voltage	6.5V
Winding resistance	3.552
3) Starter clip friction tension	2.2 ~ 2.5 kg (4.9 ~ 5.5 lb)
4. LIGHTING SYSTEM	
1) Headlight type	Sealed beam
2) Bulb brightness and wattage/Quantity	
Headlight	12V, 50/40W x 1 pc.
Tail/Brake light	12V, 3/32 CP (8W/27W) x 1pc.
Flasher light	12V, 32 CP (27W) x 4 pcs.
* License light	12V, 3.8W x 2 pcs.
Pilot lights: Turn	12v. 3.4W x 1 pc.
High beam	12V, 3.4W x 1 pc.
Headlight failure	12V, 3.4W x 1 pc.
Neutral	12V, 3.4W x 1 pc.
**Tail/brake failure	12V, 3.4W x 1 pc.
Meter lights	12V, 3.4W x 4 pcs.
3) Reserve lighting unit	
Model/Manufacturer	337-11720/KOITO
4) Horn	
Model/Manufacturer	CF-12/NIKKO
Maximum amperage	2.5 ±0.5A
5) Flasher relay	
Type	Condenser type
Model/Manufacturer	061300-04810/NIPPON DENS0
Flasher frequency	85 ± 10 cycle/min.
Capacity	32 CP (27W) x 2 + 3.4W
6) Flasher cancelling unit	
Model	EVH-AC518
Voltage	DC9V ~ 16V
7) Fuse	
Rating/Quantity:	
Main	20A x 1 PC.
Head light	10A x 1 pc.
Signal	10A x 1 pc.
Ignition	10A x 1 pc.

* XS650SG only.

** : XS650G only.

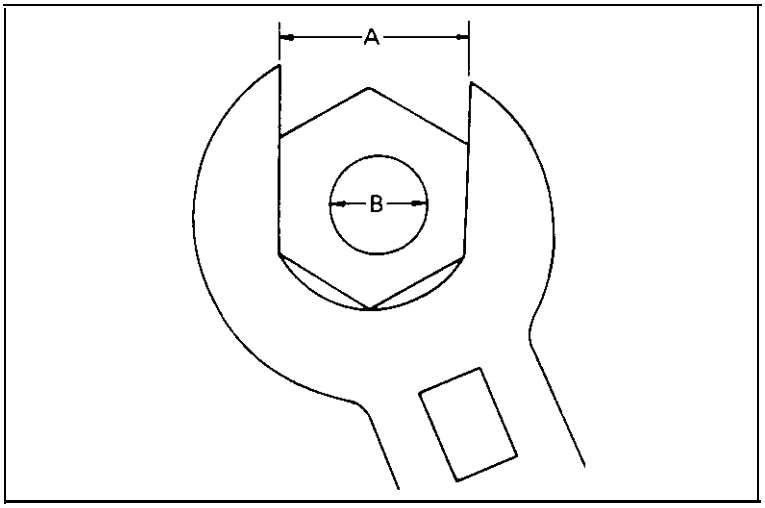
Torque Specifications

Part to be tightened	Thread dia. and part name	Tightening torque
Engine:		
Cylinder head and cylinder head cover	10 mm nut 8 mm bolt	3.7 m-kg (27.0 ft-lb) 2.1 m-kg (15.0 ft-lb)
Cylinder head	6 mm bolt	0.9 m-kg (6.5 ft-lb)
Cylinder head cover side	6 mm crown nut 8 mm crown nut	0.9 m-kg (6.5 ft-lb) 1.3 m-kg (9.5 ft-lb)
Spark plug	14 mm	2.0 m-kg (14.5 ft-lb)
Generator	12 mm nut	3.8 m-kg (27.5 ft-lb)
Stator coil	6 mm pan head screw	0.9 m-kg (6.5 ft-lb)
Governer	6 mm bolt	0.8 m-kg (6.0 ft-lb)
Valve clearance adjustment nut	8 mm nut	2.7 m-kg (19.5 ft-lb)
Cam chain tensioner	18 mm cap	2.1 m-kg (15.0 ft-lb)
Pump cover	6 mm pan head screw	1.0 m-kg (7.2 ft-lb)
Strainer cover	6 mm bolt	1.0 m-kg (7.2 ft-lb)
Drain plug	30 mm bolt	4.2 m-kg (30.5 ft-lb)
Oil filter	6 mm bolt	0.9 m-kg (6.5 ft-lb)
Delivery pipe	10 mm union bolt	2.1 m-kg (15.0 ft-lb)
Exhaust pipe	8 mm nut	1.3 m-kg (9.5 ft-lb)
Crankcase	8 mm bolt/nut	2.1 m-kg (15.0 ft-lb)
Kick crank boss	8 mm bolt	2.0 m-kg (14.5 ft-lb)
Primary drive gear	14 mm nut	9.0 m-kg (65.0 ft-lb)
Clutch boss	18 mm nut	8.0 m-kg (58.0 ft-lb)
Drive sprocket	22 mm nut	6.5 m-kg (47.0 ft-lb)
Change pedal	6 mm bolt	1.0 m-kg (7.2 ft-lb)
Chassis:		
Front wheel axle	**14 mm nut**	**10.7 m-kg (77.5 ft-lb)**
Front fork and axle holder	**8 mm nut**	**1.4 m-kg (10.0 ft-lb)**
Handle crown and inner tube	**8 mm nut**	**1.1 m-kg ((8.0 ft-lb)**
Handle crown and steering shaft	**8 mm nut**	**1.1 m-kg ((8.0 ft-lb)**
Handle crown and steering shaft	**14 mm bolt**	**5.4 m-kg (39.0 ft-lb)**
Handle crown and handlebar holder	**8 mm bolt**	**1.8 m-kg (13.0 ft-lb)**
Under bracket and inner tube	**8 mm nut**	**2.0 m-kg (14.5 ft-lb)**
Engine mounting Upper	**8 mm nut**	**1.8 m-kg (13.0 ft-lb)**
Engine mounting Upper	**10 mm nut**	**3.0 m-kg (21.5 ft-lb)**
Engine mounting Front	**10 mm nut**	**4.6 m-kg (33.5 ft-lb)**
Engine mounting Rear	**10 mm nut**	**4.1 m-kg (29.5 ft-lb)**
Engine mounting Rear-Lower	**10 mm nut**	**4.6 m-kg (33.5 ft-lb)**
Engine mounting Lower	**10 mm nut**	**9.0 m-kg (65.0 ft-lb)**
Front flasher and headlight	**8 mm nut**	**1.0 m-kg ((7.2 ft-lb)**
Master cylinder and brake hose	**10 mm union bolt**	**2.6 m-kg (19.0 ft-lb)**

Part to be tightened	Thread dia. and pan name	Tightening torque
Brake disc and hub	8 mm bolt	2.0 m-kg (14.5 ft-lb)
Caliper and support bracket	8 mm bolt	1.8 m-kg (13.0 ft-lb)
Caliper and pad	5 mm bolt	0.3 m-kg (2.2 ft-lb)
Caliper and bleed screw	8 mm bolt	0.6 m-kg (4.5 ft-lb)
Front caliper and front fork	10 mm bolt	3.5 m-kg (25.5 ft-lb)
Master cylinder and cylinder bracket	6 mm bolt	0.6 m-kg (4.5 ft-lb)
Pivot shaft	14 mm nut	6.5 m-kg (47.0 ft-lb)
Rear wheel axle	16 mm nut	15.0 m-kg (108.5 ft-lb)
Tension bar and brake caliper (plate)	8 mm nut	1.8 m-kg (13.0 ft-lb)
Tension bar and rear arm	8 mm nut	3.2 m-kg (23.0 ft-lb)
Rear shock absorber Upper	10 mm bolt	3.0 m-kg (21.5 ft-lb)
Rear shock absorber Lower	10 mm bolt	3.3 m-kg (28.0 ft-lb)
Rear arm and rear arm end	8 mm bolt	1.0 m-kg (7.2 ft-lb)
Front fender	8 mm bolt	1.0 m-kg (7.2 ft-lb)
Neutral switch	12 mm	1.3 m-kg (9.5 ft-lb)

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 criss-cross 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)	Standard tightening torque	
		m-kg	ft-lb
10 mm	6 mm	0.6	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/lit	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 (cm^3)	0.03382	oz (US liq)
	cc (cm^3)	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	56.007	lb/in
	kg/cm^2	14.2234	psi (lb/in^2)
	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	0.4535	kg
	oz	28.352	g
FLOW/DISTANCE	mpg	0.4252	km/lit
	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 (cm^3)
	cu.in	16.387	cc (cm^3)
	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/in^2)	0.07031	kg/cm^2
	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)
lit	=	liter(s)
km/lit	=	Kilometer(s) per liter (fuel consumption)
cc	=	Cubic centimeter(s)(cm^3)(volume or capacity)
kg/mm	=	Kilogram(s) per millimeter (usually spring compression rate)
kg/cm^2	=	Kilogram(s) per square centimeter (pressure)

CONSUMER INFORMATION

Notice

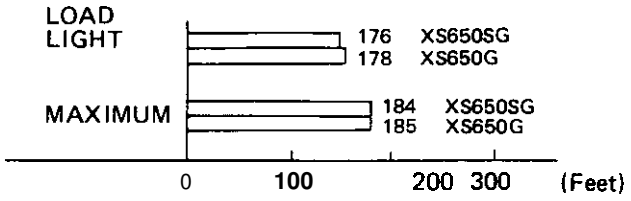
The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions, and the information may not be correct under other conditions.

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)

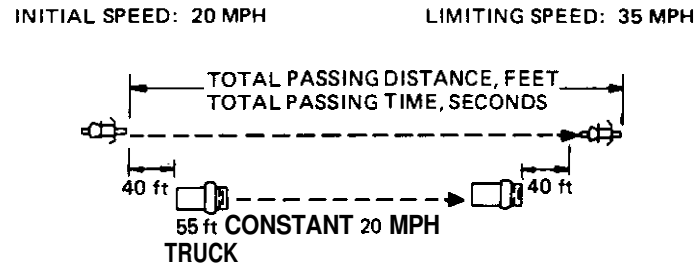


STOPPING DISTANCE IN FEET FROM 60 MPH

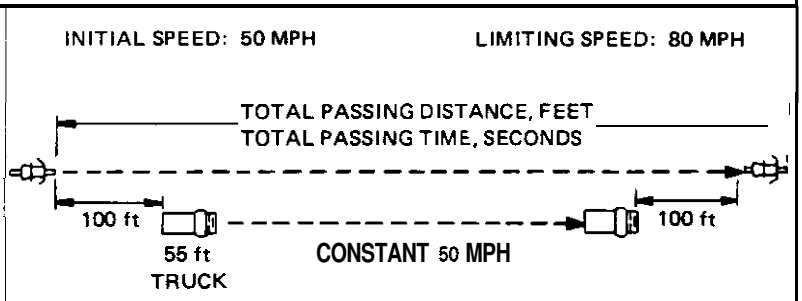
ACCELERATION AND PASSING ABILITY

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 60 mph.

LOW-SPEED PASS



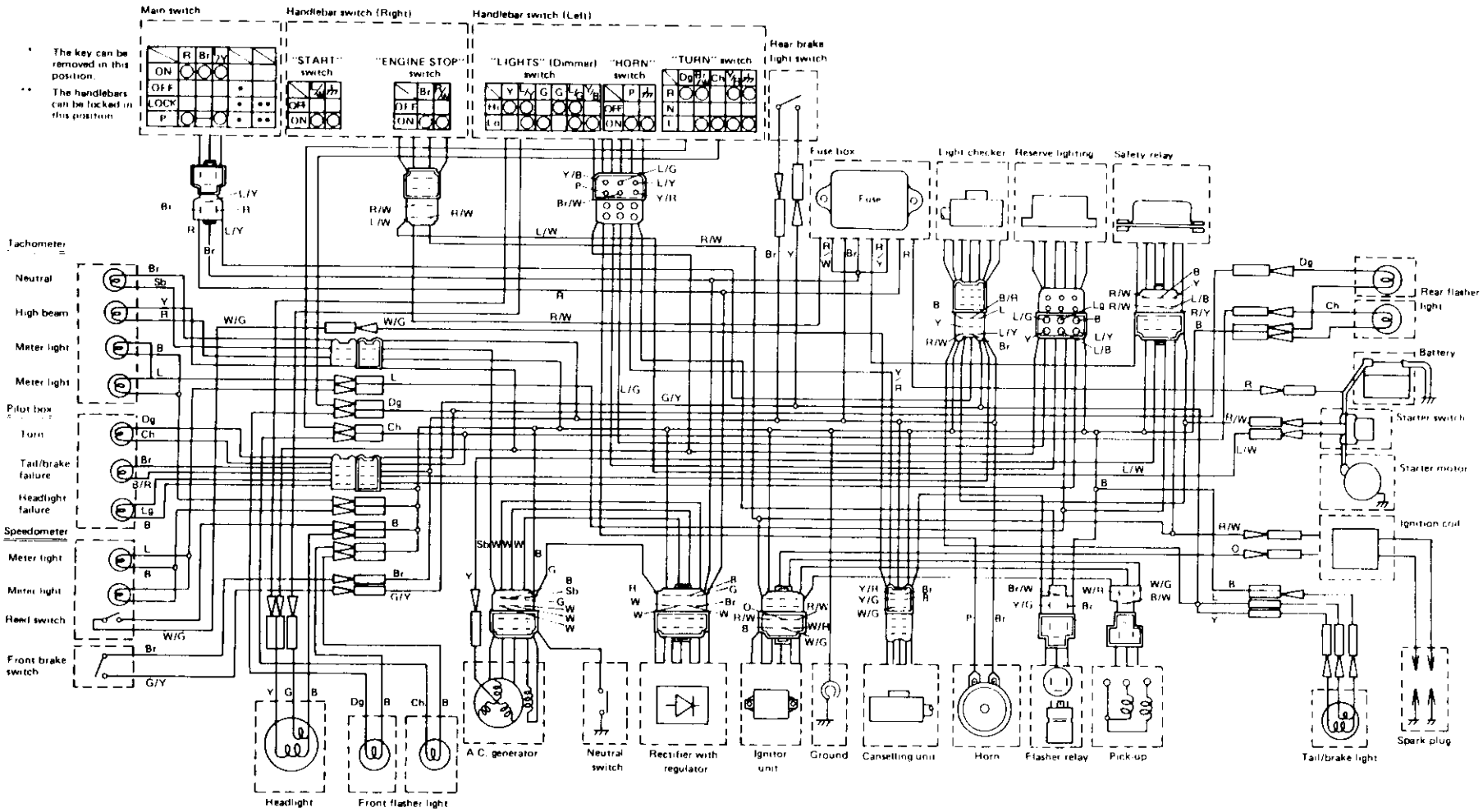
HIGHSPEED PASS



SUMMARY

Low-speed pass	357 feet:	7.3 seconds	XS650SG
	352.3 feet:	7.14 seconds	XS650G
High-speed pass	945.5 feet:	9.3 seconds	XS650SG
	931.8 feet:	9.0 seconds	XS650G

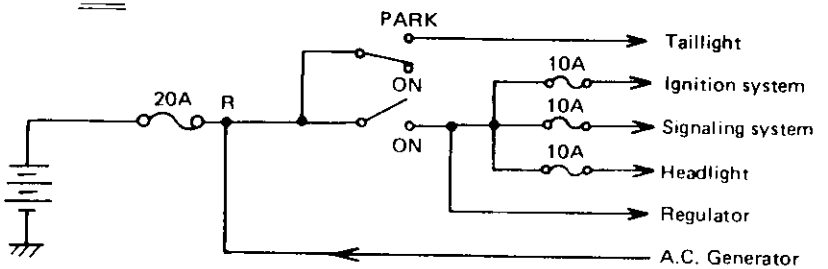
* WIRING DIAGRAM XS650G



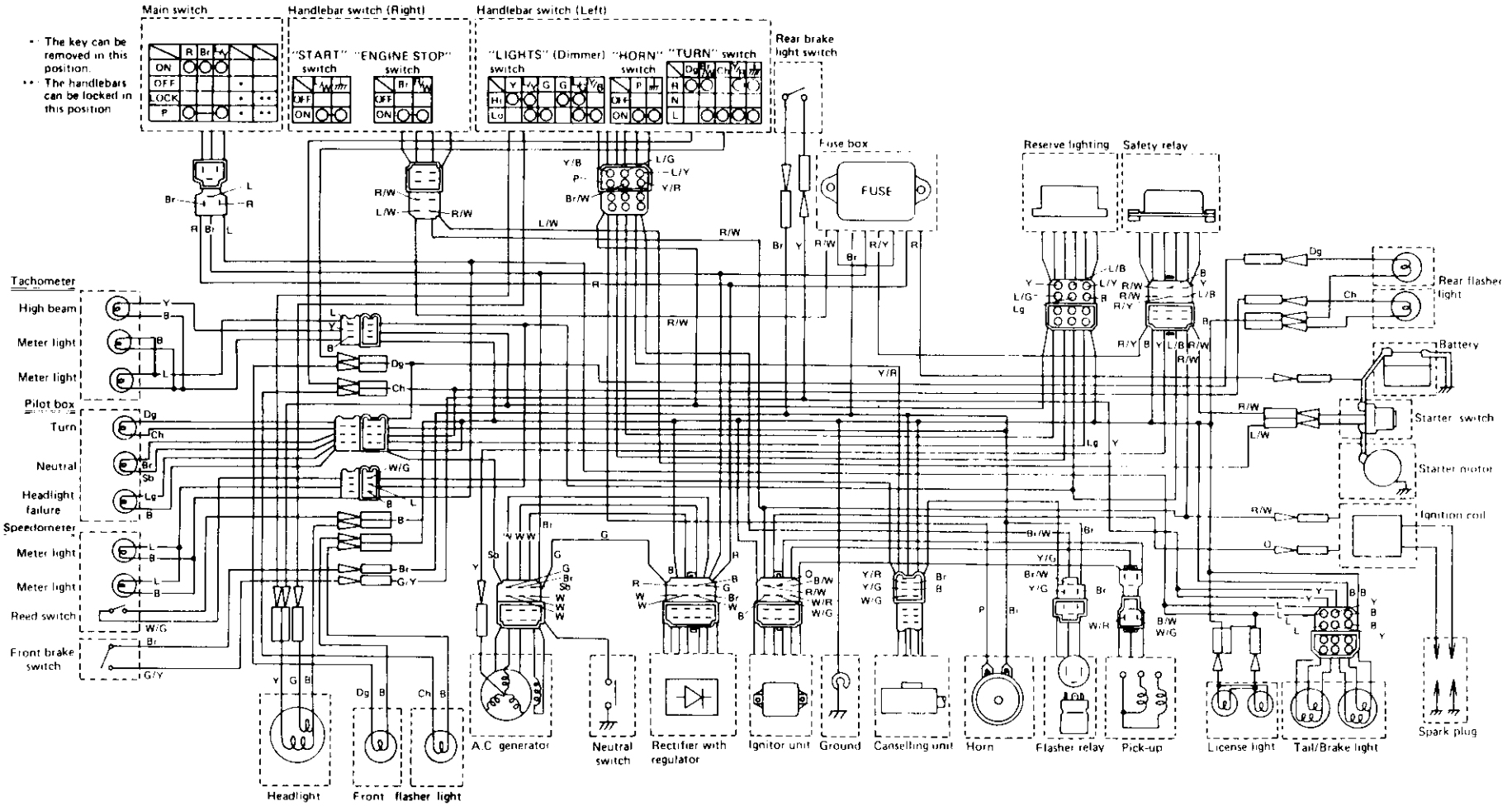
COLOR CODE

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

Fuse



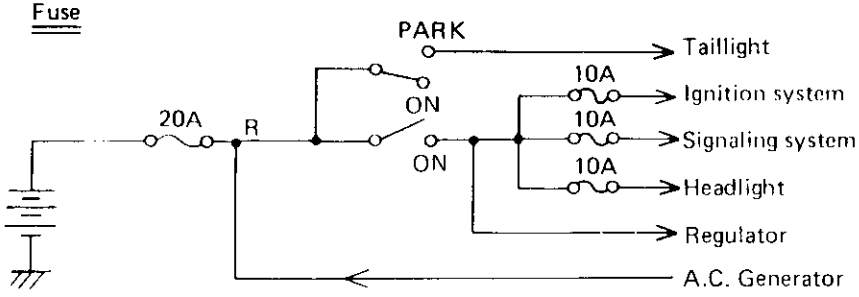
XS650SG



COLOR CODE

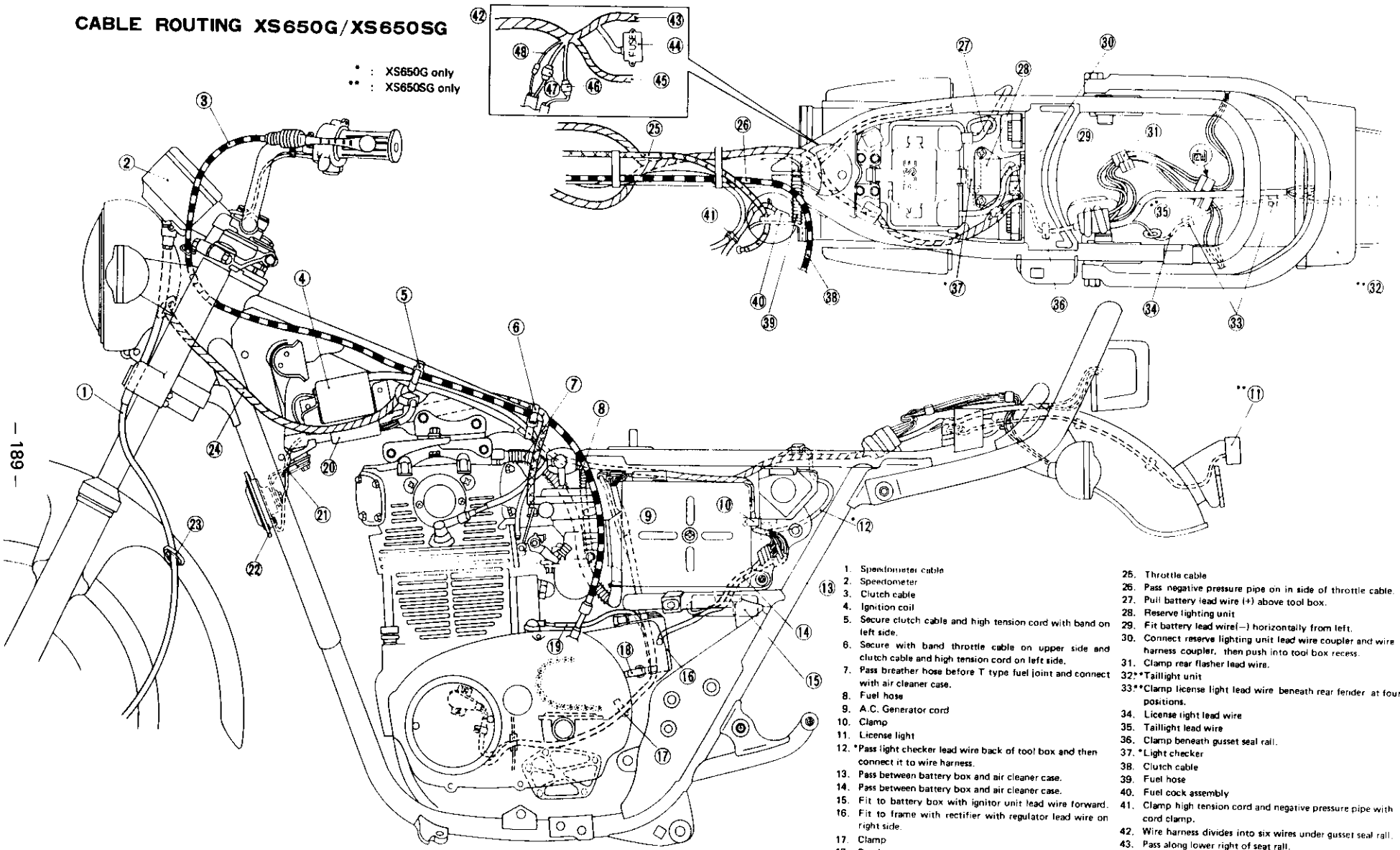
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G :	Green	R/W :	Red/White	W/R :	White/Red
W :	White	R/Y :	Red/Yellow	G/Y :	Green/Yellow
Sb :	Sky blue	L/Y :	Blue/Yellow	Y/R :	Yellow/Red
R :	Red	L/G :	Blue/Green	Y/B :	Yellow/Black

Fuse



CABLE ROUTING XS650G/XS650SG

* : XS650G only
** : XS650SG only



1. Speedometer cable
2. Speedometer
3. Clutch cable
4. Ignition coil
5. Secure clutch cable and high tension cord with band on left side.
6. Secure with band throttle cable on upper side and clutch cable and high tension cord on left side.
7. Pass breather hose before T type fuel joint and connect with air cleaner case.
8. Fuel hose
9. A.C. Generator cord
10. Clamp
11. License light
12. *Pass light checker lead wire back of tool box and then connect it to wire harness.
13. Pass between battery box and air cleaner case.
14. Pass between battery box and air cleaner case.
15. Fit to battery box with ignitor unit lead wire forward.
16. Fit to frame with rectifier with regulator lead wire on right side.
17. Clamp
18. Band
19. Neutral switch lead wire
20. Flasher cancelling unit
21. Clamp horn lead wire
22. Horn
23. Through cable holder.
24. Pass wire harness (left) under fuel tank fitting bracket (left).
25. Throttle cable
26. Pass negative pressure pipe on in side of throttle cable.
27. Pull battery lead wire (+) above tool box.
28. Reserve lighting unit
29. Fit battery lead wire(−) horizontally from left.
30. Connect reserve lighting unit lead wire coupler and wire harness coupler, then push into tool box recess.
31. Clamp rear flasher lead wire.
32. **Taillight unit
33. **Clamp license light lead wire beneath rear fender at four positions.
34. License light lead wire
35. Taillight lead wire
36. Clamp beneath gusset seal rail.
37. *Light checker
38. Clutch cable
39. Fuel hose
40. Fuel cock assembly
41. Clamp high tension cord and negative pressure pipe with cord clamp.
42. Wire harness divides into six wires under gusset seal rail.
43. Pass along lower right of seat rail.
44. Fit fuse box to battery cover.
45. Pass along lower left of seat rail.
46. Pick-up coil lead wire
47. A.C. Generator lead wire
48. Yellow

49. Starter switch
50. Secure wire harness with band.
51. Secure with band throttle cable on upper side and wire harness and high tension cord on right side.
52. Secure flasher relay lead wire, ground lead wire, throttle cable, high tension cord, wire harness and ignition coil lead wire with band on right side.
53. Pass wire harness (right) under fuel tank fitting bracket (right).
54. Pass throttle cable upper fuel tank fitting bracket (right).
55. Throttle cable
56. Brake hose
57. Tachometer
58. Pass brake hose between light stay and tachometer cable.
59. Joint
60. Brake hose
61. Clamp
62. Pass tachometer cable through three cable holders.
63. Tachometer cable
64. Horn lead wire
65. Flasher relay
66. Breather pipe
67. **Rear brake switch
68. *Rear brake switch
69. *Rear brake switch lead wire clamp
70. **Pass brake switch lead wire back of master cylinder.
71. Safety relay assembly
72. Pass first through cable holder and then between light stay and meter bracket.
73. Pass between light stay and meter bracket.
74. Handlebar switch (right) lead wire
75. Band
76. Pass between main switch and meter bracket.
77. Band
78. Handlebar switch (left) lead wire

