



YAMAHA

2003

AG200F

3GX-AE2

**SUPPLEMENTARY
SERVICE MANUAL**

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and data for the AG200F 2003. For complete service information procedures it is necessary to use this Supplementary Service Manual together with the following manual.

AG200F '97 SERVICE MANUAL: 3GX-AE1

EAS00000

**AG200F 2003
SUPPLEMENTARY
SERVICE MANUAL
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NOTICE

This manual was produced by the Yamaha Motor Company, Ltd. primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual. Therefore, anyone who uses this book to perform maintenance and repairs on Yamaha vehicles should have a basic understanding of mechanics and the techniques to repair these types of vehicles. Repair and maintenance work attempted by anyone without this knowledge is likely to render the vehicle unsafe and unfit for use.

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

NOTE:

Designs and specifications are subject to change without notice.

IMPORTANT MANUAL INFORMATION

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



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

WARNING







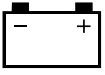


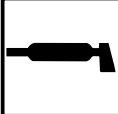
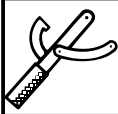



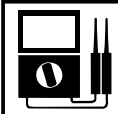







Failure to follow WARNING instructions could result in severe injury or death to the motorcycle operator, a bystander or a person checking or repairing the motorcycle.

CAUTION:

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

NOTE:

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

① GEN INFO 	② SPEC 	
③ CHK ADJ 	④ ENG 	
⑤ CARB 	⑥ CHAS 	
⑦ ELEC 	⑧ TRBL SHTG ?	
⑨ 	⑩ 	
⑪ 	⑫ 	
⑬ 	⑭ 	
⑮ 	⑯ 	
⑰ 	⑱ 	⑲ 
⑳ 	㉑ 	㉒ 
㉓ 	㉔ New	

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SYMBOLS

The following symbols are not relevant to every vehicle.

Symbols ① to ⑧ indicate the subject of each chapter.

- ① General information
- ② Specifications
- ③ Periodic checks and adjustments
- ④ Engine
- ⑤ Carburetor(s)
- ⑥ Chassis
- ⑦ Electrical system
- ⑧ Troubleshooting

Symbols ⑨ to ⑯ indicate the following.

- ⑨ Serviceable with engine mounted
- ⑩ Filling fluid
- ⑪ Lubricant
- ⑫ Special tool
- ⑬ Tightening torque
- ⑭ Wear limit, clearance
- ⑮ Engine speed
- ⑯ Electrical data

Symbols ⑰ to ㉒ in the exploded diagrams indicate the types of lubricants and lubrication points.

- ⑰ Engine oil
- ⑱ Gear oil
- ⑲ Molybdenum-disulfide oil
- ⑳ Wheel-bearing grease
- ㉑ Lithium-soap-based grease
- ㉒ Molybdenum-disulfide grease

Symbols ㉓ to ㉔ in the exploded diagrams indicate the following.

- ㉓ Apply locking agent (LOCTITE®)
- ㉔ Replace the part

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SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	AG200F
Model code:	3GXF
Engine:	
Engine type	Air-cooled 4-stroke, SOHC
Cylinder arrangement	Forward-inclined single cylinder
Displacement	0.196 L (196 cm ³)
Bore × stroke	67.0 × 55.7 mm
Compression ratio	9.5 : 1
Compression pressure (STD)	900 kPa (9.0 kg/cm ² , 130.5 psi) at 1,000 r/min
Starting system	Electric and kick starter
Lubrication system:	Wet sump
Chassis:	
Frame type	Diamond
Caster angle	27.42°
Trail	87 mm
Tire:	
Type	With tube
Size	front 80/100-21 51M
	rear 4.10-18 59M
Manufacturer	front IRC
	rear IRC
Type	front VE-32
	rear FARM SPECIAL - Z2
Tire pressure (cold tire):	
Maximum load-except motorcycle	112 kg
Loading condition A * (off road riding)	0~112 kg
	front 120 kPa (1.2 kgf/cm ² , 17.4 psi)
	rear 150 kPa (1.5 kgf/cm ² , 21.8 psi)
Electrical:	
Ignition system	DC-CDI
Generator system	AC magneto
Battery type	GT6B-3
Battery capacity	12V 6 Ah

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



MAINTENANCE SPECIFICATIONS

CHASSIS

Item	Standard	Limit
Rear suspension:		
Shock absorber stroke	82 mm	...
Spring free length	279 mm	276 mm
Fitting length	265 mm	...
Spring rate (K1)	44.3 N/mm (4.52 kg/mm)	...
(K2)	70.8N/mm (7.22 kg/mm)	...
Stroke (K1)	0 ~ 42 mm	...
(K2)	42 ~ 82 mm	...
Drive chain:		
Type/manufacturer	428HG/DAIDO	...
No. of links	122	...
Chain free play	30~45 mm	...

ELECTRICAL

Item	Standard	Limit
CDI:		
CDI magneto model/manufacturer	3GX/YAMAHA	...
Pickup coil resistance/color	656~984 Ω at 20°C/ Red — White	...
Ignition coil:		
Model/manufacturer	2JN/YAMAHA	...
Minimum spark gap	6 mm	...
Primary winding resistance	0.24~0.36 Ω at 20°C	...
Secondary winding resistance	5.68~8.52 kΩ at 20°C	...
Charging system:		
Type	CDI magneto	...
Model/manufacturer	F5MP/YAMAHA	...
Standard output	14 V, 175W @5,000 r/min	...
Stator coil resistance/color	0.56~0.84 Ω at 20°C/ White — White	...
Rectifier/regulator:		
Model/manufacturer	SH629A-12/SHINDENGEN	...
Type (regulator)	Semi conductor - short circuit type	...
No load regulated voltage	14.1~14.9 V	...
Capacity (rectifier)	10 A	...
Withstand voltage	200 V	...

MAINTENANCE SPECIFICATIONS

SPEC



Item	Standard	Limit
Electric starter system:		
Type	Constant mesh type	
Starter motor:		
Model/manufacturer	4JG/YAMAHA	...
Output	0.4 kW	...
Armature coil resistance	0.0126~0.0154 Ω at 20°C	...
Brush overall length	10 mm	3.5 mm
Brush spring pressure	5.52~8.28 N (563~844g)	...
Starter relay:		
Model/manufacturer	MS5F-431/JIDECO	...
Amperage rating	180 A	...
Coil winding resistance	4.18~4.62 Ω at 20°C	...
Flasher relay:		
Type	Full transistor type	...
Model/manufacturer	FE218BH/DENSO	...
Flasher frequency	75~95 cycle/min	...

TIGHTENING TORQUES ENGINE

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque		Remarks
				Nm	m•kg	
Carburetor joint and carburetor	Bolt	M6	2	12	1.2	

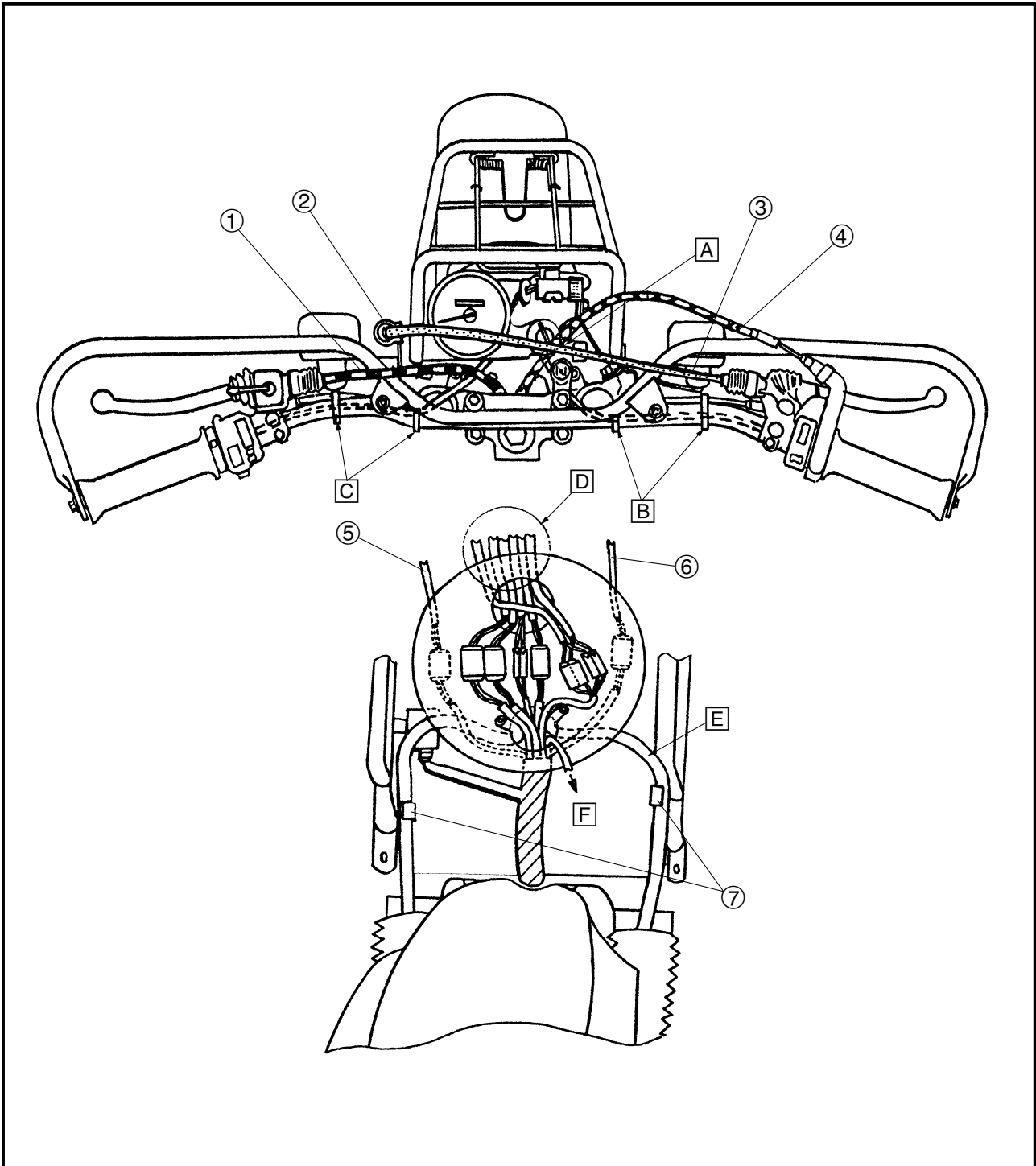


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CABLE ROUTING

- ① Clutch cable
- ② Cable guide
- ③ Front brake cable
- ④ Throttle cable
- ⑤ Front brake switch lead
- ⑥ Clutch switch lead
- ⑦ Clamp

- A Pass the throttle cable behind the main switch.
- B Clamp the handlebar switch lead and the front brake switch lead.
- C Clamp the handlebar switch lead and the clutch lead.
- D From the left, front turn signal light lead (right), handlebar switch lead (right), main switch lead, auxiliary DC terminal coupler, speedometer lead and front turn signal light lead (left).
- E Insert the front fork breather hose into the headlight body under hole.
- F To the headlight.

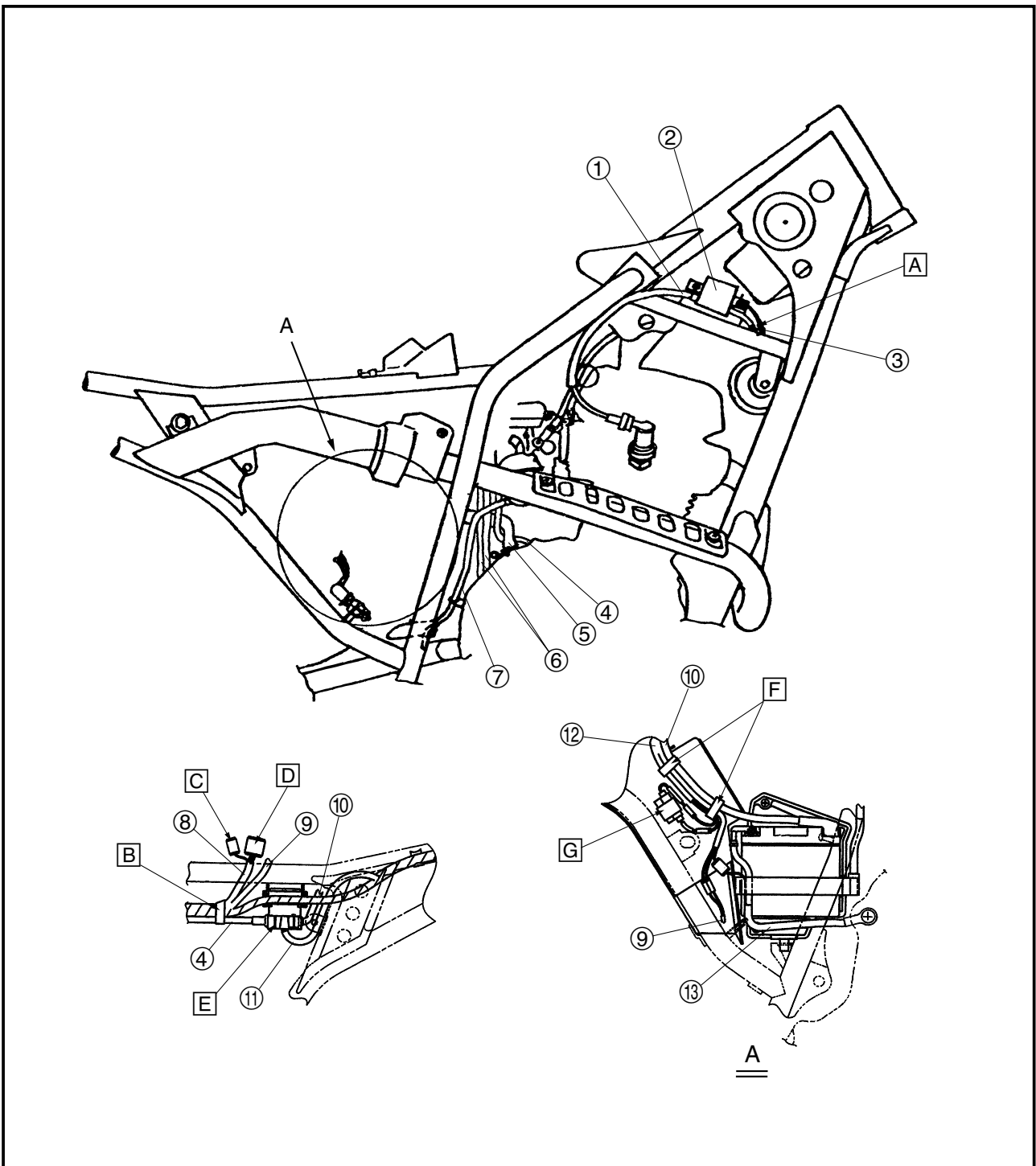




- ① High-tension cord
- ② Ignition coil
- ③ Ignition coil lead (primary side)
- ④ Starting motor lead
- ⑤ Breather hose
- ⑥ Magneto lead
- ⑦ Over flow hose
- ⑧ Rectifier/regulator lead
- ⑨ Brake switch lead
- ⑩ Battery positive lead
- ⑪ Starter relay lead
- ⑫ Wireharness
- ⑬ Battery negative lead

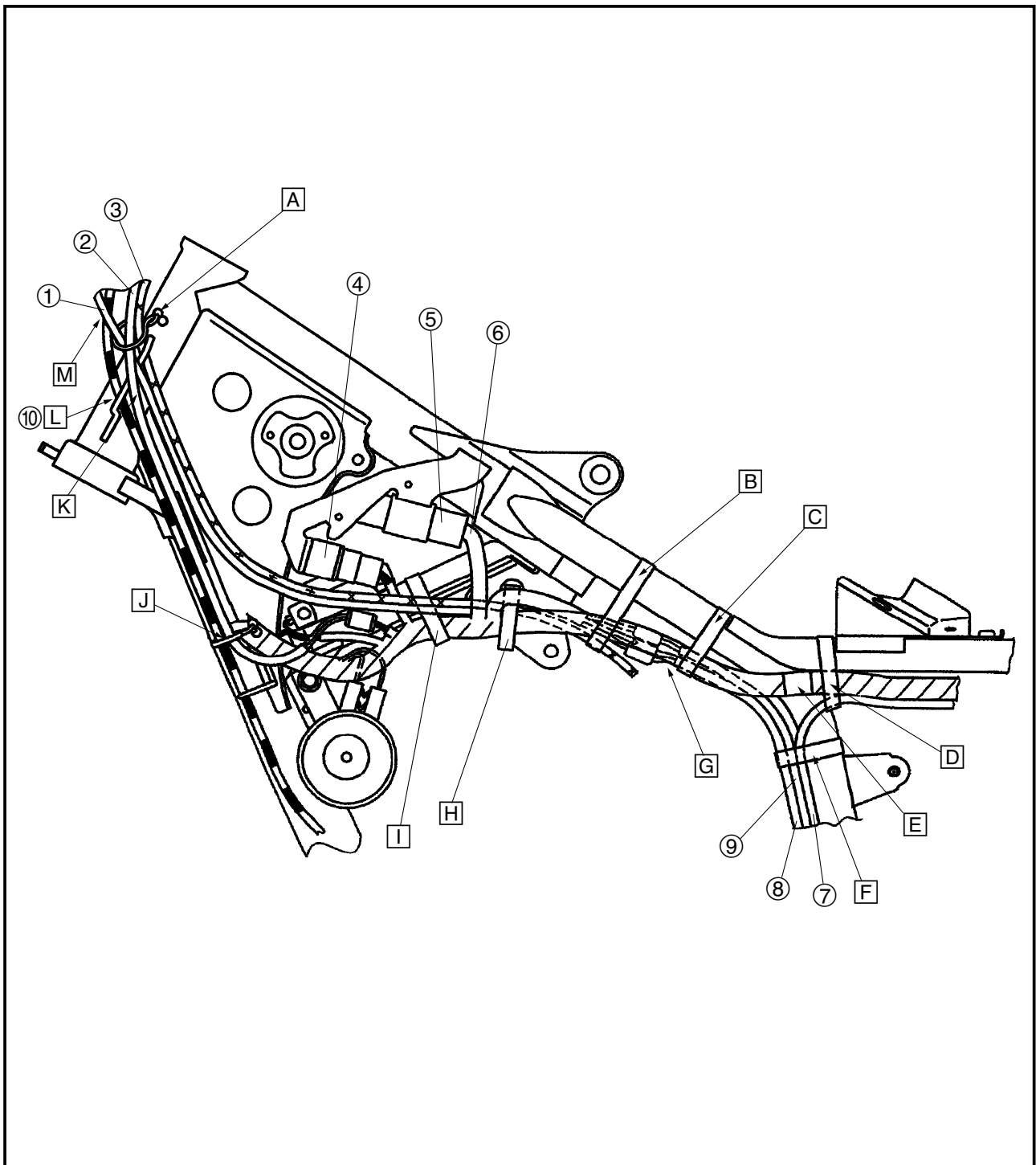
- [A] Tighten with the ignition coil and the earth lead. (bypass from the wireharness)
- [B] Clamp the wireharness and the starting motor lead behind the air cleaner duct.
- [C] To the regulator earth lead.
- [D] Black coupler. (to the regulator coupler)
- [E] White coupler. (to the starter relay)

- [F] Clamp the battery positive lead and wireharness.
- [G] Insert the fuse holder into the guard flap projection.



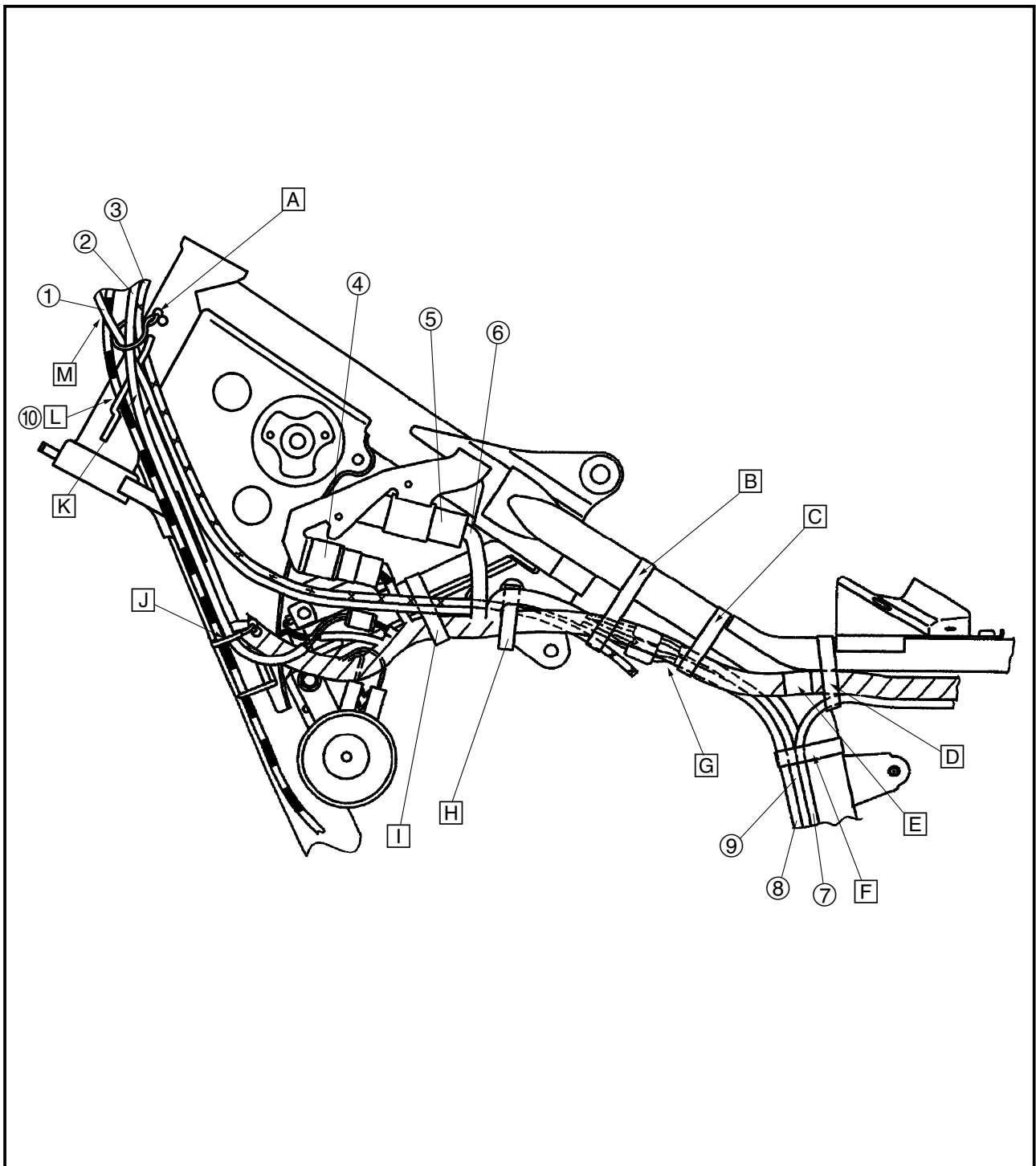


- | | | |
|--|---|--|
| <ul style="list-style-type: none"> ① Starter (choke) cable ② Handlebar switch lead ③ Throttle cable ④ Starter circuit cut-off relay ⑤ CDI unit ⑥ CDI unit lead ⑦ Starting motor lead ⑧ Magneto lead (charge, neutral) ⑨ Magneto lead (pickup coil) ⑩ Cable guide | <ul style="list-style-type: none"> [A] Clamp the throttle cable, starter (choke) cable and handlebar switch lead (left). [B] Clamp the wireharness, CDI unit lead, magneto (pickup coil) lead and throttle cable coupler with front and rear by the band. [C] Clamp the wireharness, CDI unit lead, magneto (pickup coil) lead, magneto (charge, neutral) lead and throttle cable coupler with front and rear by the band. | <ul style="list-style-type: none"> [D] Clamp the wireharness, CDI unit lead, magneto (pickup coil) lead and starting motor lead. [E] Align the location tape with the seat pillar tube. [F] Clamp the magneto (pickup coil) lead, magneto (charge, neutral) lead and starting motor lead. |
|--|---|--|





- G** Pass the wireharness to the farthest left side.
- H** Clamp the wireharness, CDI unit lead, magneto lead, throttle cable, and starter (choke) cable on the center of the engine mount stay.
- I** Clamp the wireharness.
- J** Clamp the handlebar switch lead and clutch cable.
- K** Pass the starter (choke) cable and handlebar switch lead through the outside of the cable guide.
- L** Pass the throttle cable and clutch cable (under side) into the cable guide.
- M** Pass the starter (choke) cable in front of the throttle cable and clutch cable.



EAS00036

PERIODIC CHECKS AND ADJUSTMENTS

INTRODUCTION

This chapter includes all information necessary to perform recommended checks and adjustments. If followed, these preventive maintenance procedures will ensure more reliable vehicle operation, a longer service life and reduce the need for costly overhaul work. This information applies to vehicles already in service as well as to new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

EAS00037

PERIODIC MAINTENANCE AND LUBRICATION INTERVALS

NO.	ITEM	CHECK OR MAINTENANCE JOB	ODOMETER READING (× 1,000 km)					ANNUAL CHECK
			1	6	12	18	24	
1 *	Fuel line	• Check fuel hoses for cracks or damage.		√	√	√	√	√
2	Spark plug	• Check condition. • Clean and regap.		√		√		
		• Replace.			√		√	
3 *	Valves	• Check valve clearance. • Adjust.		√	√	√	√	
4	Air filter element	• Clean.		√		√		
		• Replace.			√		√	
5	Clutch	• Check operation. • Adjust.	√	√	√	√	√	
6 *	Front brake	• Check operation and adjust brake lever free play.	√	√	√	√	√	√
		• Replace brake shoes.	Whenever worn to the limit					
7 *	Rear brake	• Check operation and adjust brake pedal free play.	√	√	√	√	√	√
		• Replace brake shoes.	Whenever worn to the limit					
8 *	Wheels	• Check runout, spoke tightness and for damage. • Tighten spokes if necessary.		√	√	√	√	
9 *	Tires	• Check tread depth and for damage. • Replace if necessary. • Check air pressure. • Correct if necessary.		√	√	√	√	√
10 *	Wheel bearings	• Check bearing for looseness or damage.		√	√	√	√	
11 *	Swingarm	• Check operation and for excessive play.		√	√	√	√	
		• Lubricate with lithium-soap-based grease.	Every 24,000 km					
12	Drive chain	• Check chain slack. • Make sure that the rear wheel is properly aligned. • Clean and lubricate.	Every 500 km and after washing the motorcycle or riding in the rain					
13 *	Steering bearings	• Check bearing play and steering for roughness.	√	√	√	√	√	
		• Lubricate with lithium-soap-based grease.	Every 24,000 km					
14 *	Chassis fasteners	• Make sure that all nuts, bolts and screws are properly tightened.		√	√	√	√	√
15	Sidestand	• Check operation. • Lubricate.		√	√	√	√	√
16 *	Front fork	• Check operation and for oil leakage.		√	√	√	√	
17 *	Shock absorber assembly	• Check operation and shock absorber for oil leakage.		√	√	√	√	
18 *	Carburetor	• Check starter (choke) operation. • Adjust engine idling speed.	√	√	√	√	√	√
19	Engine oil	• Change. • Check oil level and vehicle for oil leakage.	√	√	√	√	√	√
20	Engine oil filter element	• Clean.	√		√		√	

*: It is recommended that these items be serviced by a Yamaha dealer.

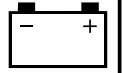
PERIODIC MAINTENANCE AND LUBRICATION INTERVALS



NO.	ITEM	CHECK OR MAINTENANCE JOB	ODOMETER READING (× 1,000 km)					ANNUAL CHECK
			1	6	12	18	24	
21 *	Engine oil strainer	• Clean.	√					
22 *	Front and rear brake switches	• Check operation.	√	√	√	√	√	√
23	Moving parts and cables	• Lubricate.		√	√	√	√	√
24 *	Throttle grip housing and cable	• Check operation and free play. • Adjust the throttle cable free play if necessary. • Lubricate the throttle grip housing and cable.		√	√	√	√	√
25 *	Lights, signals and switches	• Check operation. • Adjust headlight beam.	√	√	√	√	√	√

*: It is recommended that these items be serviced by a Yamaha dealer.

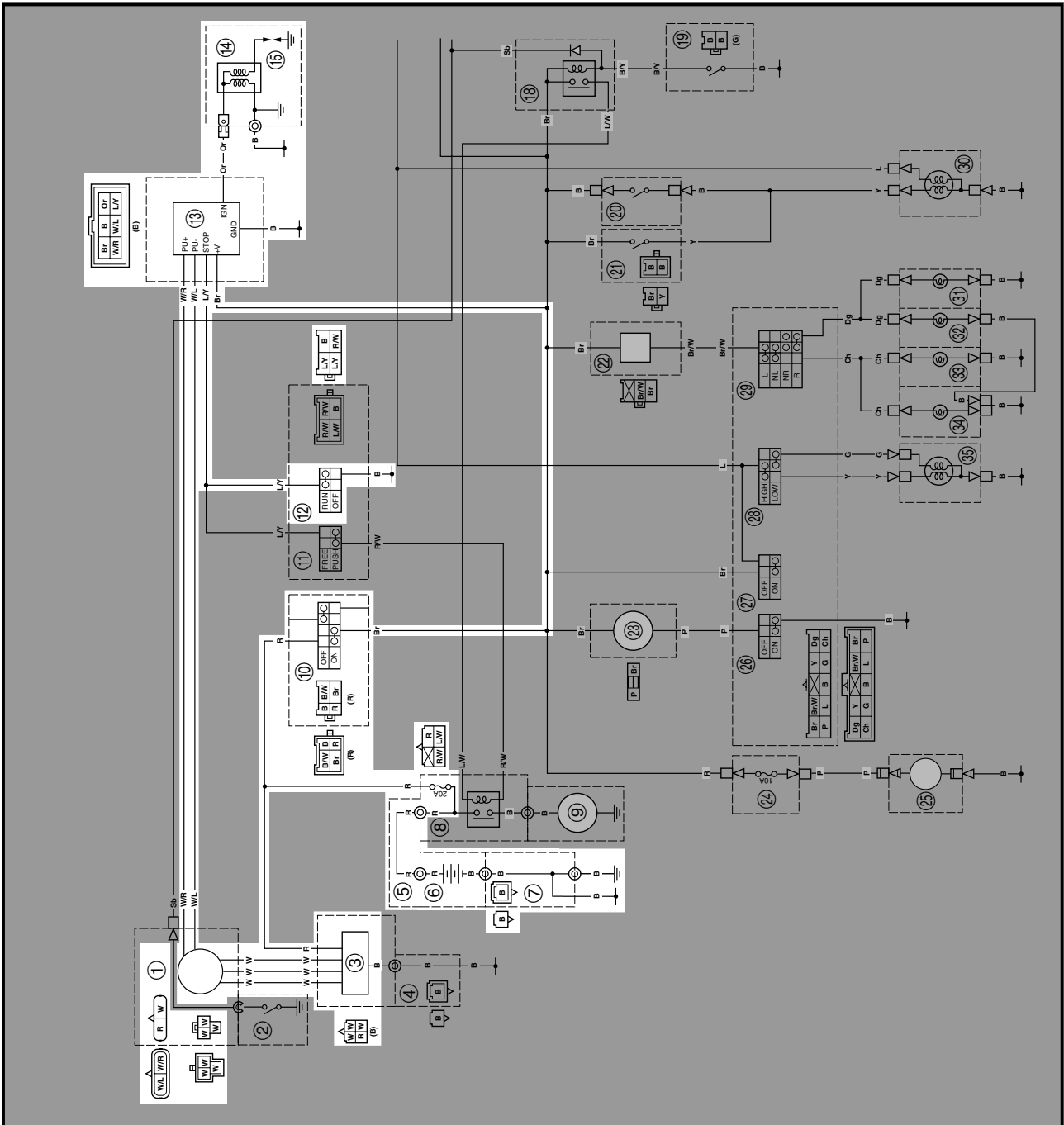
NOTE: _____
 The air filter needs more frequent service if you are riding in unusually wet or dusty areas.



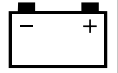
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ELECTRICAL

IGNITION SYSTEM
CIRCUIT DIAGRAM



- ① CDI magneto
- ③ Rectifier regulator
- ⑤ Positive wire lead
- ⑥ Battery
- ⑦ Negative wire lead
- ⑩ Main switch
- ⑫ Engine stop switch
- ⑬ CDI unit
- ⑭ Ignition coil
- ⑮ Spark plug



EAS00736

TROUBLESHOOTING

The ignition system fails to operate (no spark or intermittent spark).

Check:

1. Main fuse
2. Battery
3. Spark plug
4. Ignition spark gap
5. Spark plug cap resistance
6. Ignition coil resistance
7. Main switch
8. Engine stop switch
9. Pickup coil resistance
10. Wiring connections (of the entire ignition system)

NOTE:

- Before troubleshooting, remove the following part(s):
 1. Headlight unit
 2. Seat
 3. Fuel tank
- Troubleshoot with the following special tool(s).

	<p>Ignition checker: 90890-06754</p> <p>Pocket tester: 90890-03112</p>
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EAS00738

<p>1. Main fuse</p> <ul style="list-style-type: none"> • Check the main fuse for continuity. Refer to “CHECKING THE FUSES” in chapter 3. • Is the main fuse OK?

↓ YES

↓ NO

Replace the fuse (s).

EAS00739

2. Battery

- Check the condition of the battery. Refer to “CHECKING AND CHARGING THE BATTERY” in chapter 3.



Minimum open-circuit voltage
12.8 V or more at 20 °C (68 °F)

- Is the battery OK?

↓ YES

↓ NO

• Clean the battery terminals.

• Recharge or replace the battery.

EAS00740

3. Spark plug

- Check the condition of the spark plug.
- Check the spark plug type.
- Measure the spark plug gap. Refer to “CHECKING THE SPARK PLUG” in chapter 3.



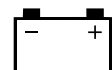
Standard spark plug
D8EA (NGK)
X24ES-U (DENSO)
Spark plug gap
0.6 ~ 0.7 mm

- Is the spark plug in good condition, is it of the correct type, and is its gap within specification?

↓ YES

↓ NO

Re-gap or replace the spark plug.



EAS00743

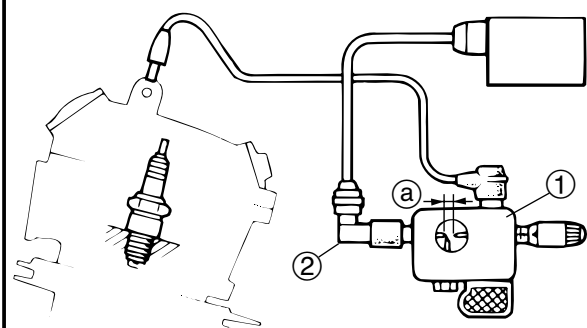
4. Ignition spark gap

The following procedure applies to all of the spark plug.

- Disconnect the spark plug cap from the spark plug.
- Connect the ignition checker ① as shown.

② Spark plug cap

- Set the main switch to "ON".
- Measure the ignition spark gap ③.
- Crank the engine by pushing the starter switch or kicking the kick starter and gradually increase the spark gap until a misfire occurs.



Minimum ignition spark
6 mm

- Is there a spark and is the spark gap within specification?

↓ YES

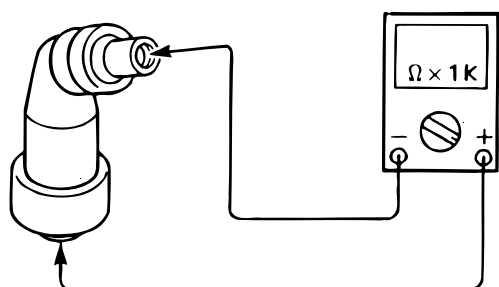
↓ NO

The ignition system is OK.

EAS00744

5. Spark plug cap resistance

- Remove the spark plug cap from the spark plug lead.
- Connect the pocket tester ("Ω x 1k" range) to the spark plug cap as shown.
- Measure the spark plug cap resistance.



Spark plug cap resistance
10 kΩ at 20°C (68°F)

- Is the spark plug cap OK?

↓ YES

↓ NO

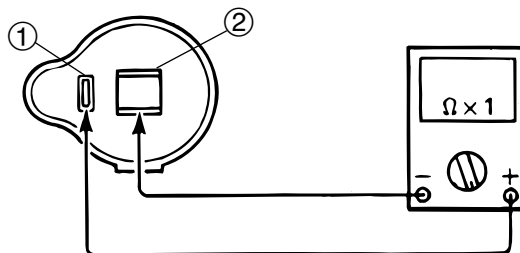
Replace the spark plug cap.

EAS00746

6. Ignition coil resistance

- Disconnect the ignition coil connectors from the ignition coil terminals.
- Connect the pocket tester (Ω x 1) to the ignition coil as shown.

Positive tester probe → orange ①
Negative tester probe → ground ②



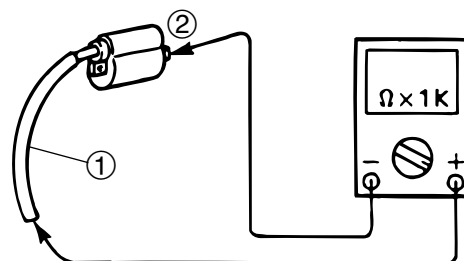
- Measure the primary coil resistance.

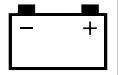


Primary coil resistance
0.24 ~ 0.36 Ω at 20°C (68°F)


- Connect the pocket tester (Ω x 1k) to the ignition coil as shown.

Positive tester probe → spark plug lead ①
Negative tester probe → spark plug lead ②





•Measure the secondary coil resistance.

 **Secondary coil resistance**
5.68 ~ 8.52 kΩ at 20°C (68°F)

•Is the ignition coil OK?

↓ YES ↓ NO

Replace the ignition coil.

EAS00749

7. Main switch

•Check the main switch for continuity. Refer to “CHECKING THE SWITCHES”.
•Is the main switch OK?

↓ YES ↓ NO

Replace the main switch.

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8. Engine stop switch

•Check the engine stop switch for continuity. Refer to “CHECKING THE SWITCHES”.
•Is the engine stop switch switch OK?

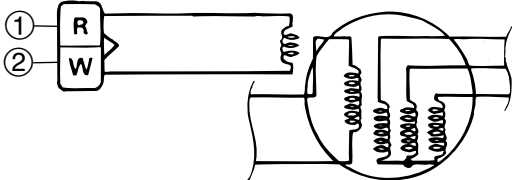
↓ YES ↓ NO

Replace the right handlebar switch.

EAS00748


9. Pickup coil resistance

•Disconnect the pickup coil coupler from the wire harness.
•Connect the pocket tester ($\Omega \times 100$) to the pickup coil terminal as shown.



Positive tester probe → red ①
Negative tester probe → white ②

•Measure the pickup coil resistance.

 **Pickup coil resistance**
656 ~ 984 Ω at 20°C (68°F)
(between red and white)

•Is the pickup coil OK?

↓ YES ↓ NO

Replace the pick up coil.

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10. Wiring

•Check the entire ignition system’s wiring. Refer to “CIRCUIT DIAGRAM”.
•Is the ignition system’s wiring properly connected and without defects?

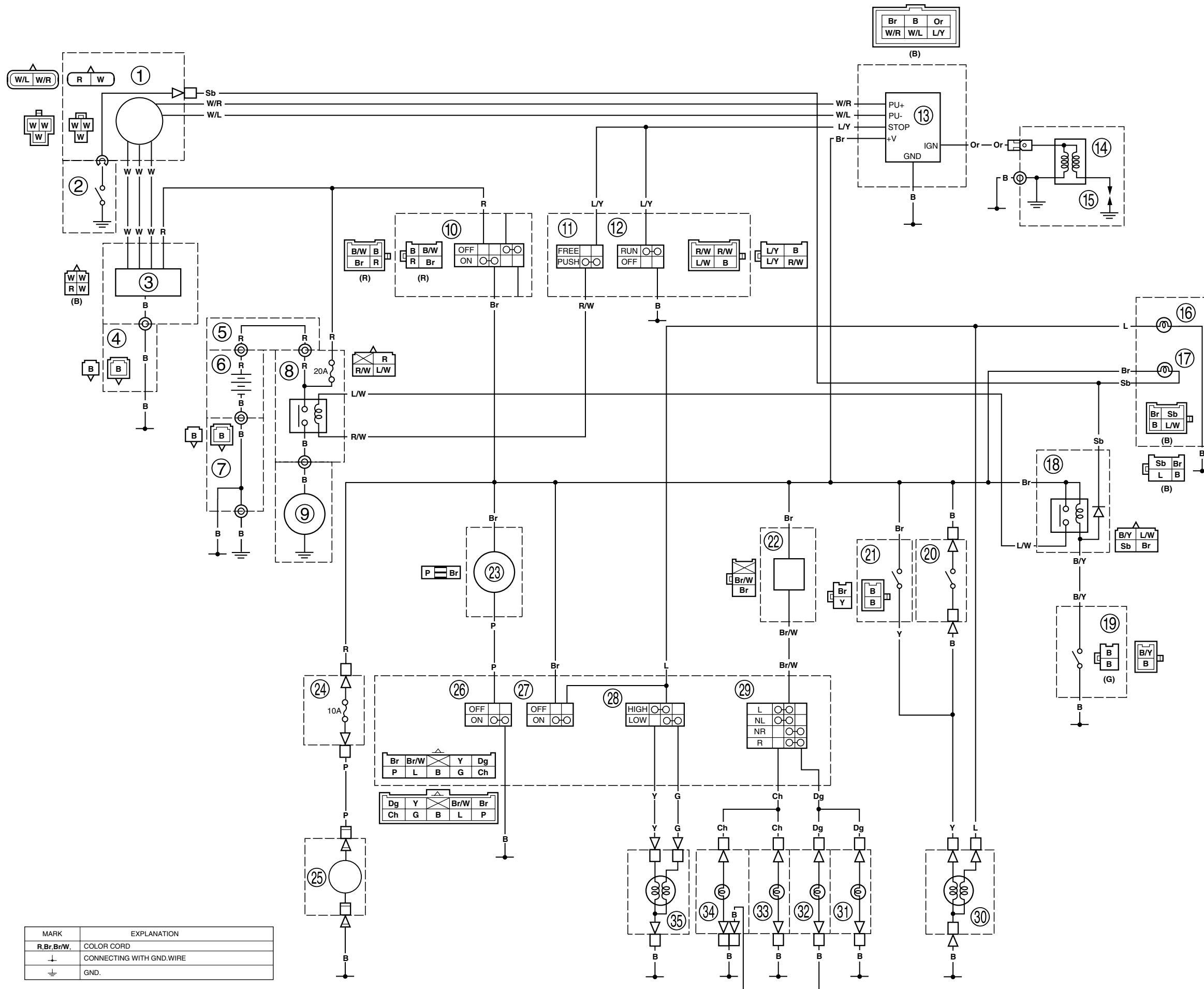
↓ YES ↓ NO

Replace the CDI unit. Properly connect or repair the ignition system’s wiring.



YAMAHA MOTOR CO., LTD.
2500 SHINGAI IWATA SHIZUOKA JAPAN

AG200F 2002 WIRING DIAGRAM



- ① CDI magneto
- ② Neutral switch
- ③ Rectifier regulator
- ④ Fuse (20A)
- ⑤ Positive wire lead
- ⑥ Battery
- ⑦ Negative wire lead
- ⑧ Starter relay
- ⑨ Starting motor
- ⑩ Main switch
- ⑪ Start switch
- ⑫ Engine stop switch
- ⑬ CDI unit
- ⑭ Ignition coil
- ⑮ Spark plug
- ⑯ Meter light
- ⑰ Neutral indicator light
- ⑱ Neutral relay
- ⑲ Clutch switch
- ⑳ Rear brake switch
- ㉑ Front brake switch
- ㉒ Flasher relay
- ㉓ Horn
- ㉔ Fuse (auxiliary DC terminal)
- ㉕ Auxiliary DC terminal socket
- ㉖ Horn switch
- ㉗ Lights switch
- ㉘ Dimmer switch
- ㉙ Turn signal switch
- ㉚ Tail/Brake light
- ㉛ Rear turn signal light (right)
- ㉜ Front turn signal light (right)
- ㉝ Rear turn signal light (left)
- ㉞ Front turn signal light (left)
- ㉟ Headlight

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

MARK	EXPLANATION
R,Br,Br/W	COLOR CORD
⊥	CONNECTING WITH GND.WIRE
⊕	GND.