YAMAHA 2004

FZ6-N(S)

1B31-AE1

SUPPLEMENTARY SERVICE MANUAL

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and data for the FZ6-N(S) 2004. For complete service information procedures it is necessary to use this Supplementary Service Manual together with the following manual.

FZ6-S(S) 2004 SERVICE MANUAL: 5VX1-AE1

FZ6-N(S) 2004
SUPPLEMENTARY
SERVICE MANUAL

First Edition, December 2003

EAS00002

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.

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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.

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HOW TO USE THIS MANUAL

This manual is intended as a handy, easy-to-read reference book for the mechanic. Comprehensive explanations of all installation, removal, disassembly, assembly, repair and check procedures are laid out with the individual steps in sequential order.

① The manual is divided into chapters. An abbreviation and symbol in the upper right corner of each page indicate the current chapter.
Refer to “SYMBOLS”.

② Each chapter is divided into sections. The current section title is shown at the top of each page, except in Chapter 3 (“PERIODIC CHECKS AND ADJUSTMENTS”), where the sub-section title(s) appears.

③ Sub-section titles appear in smaller print than the section title.

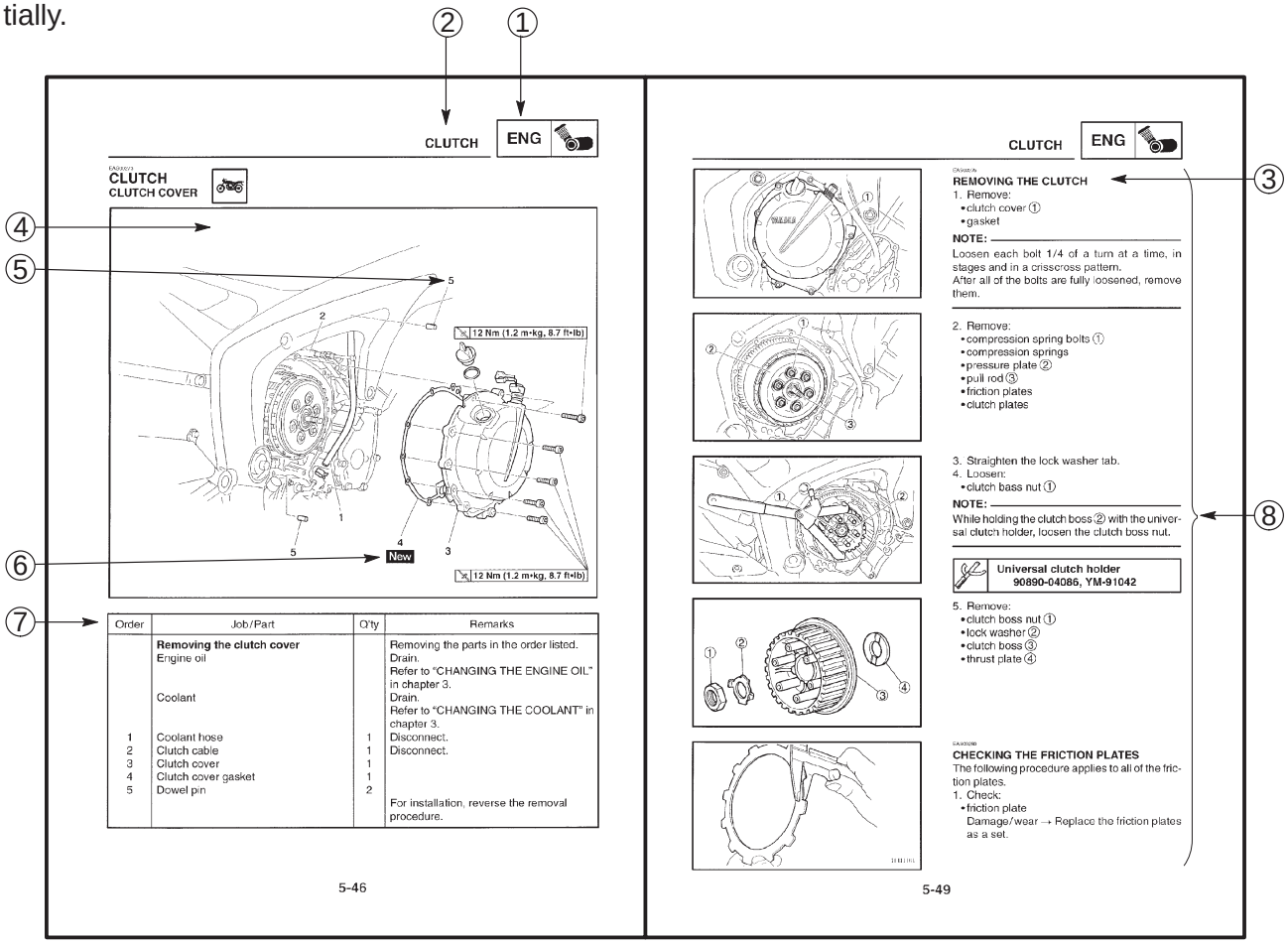
④ To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.

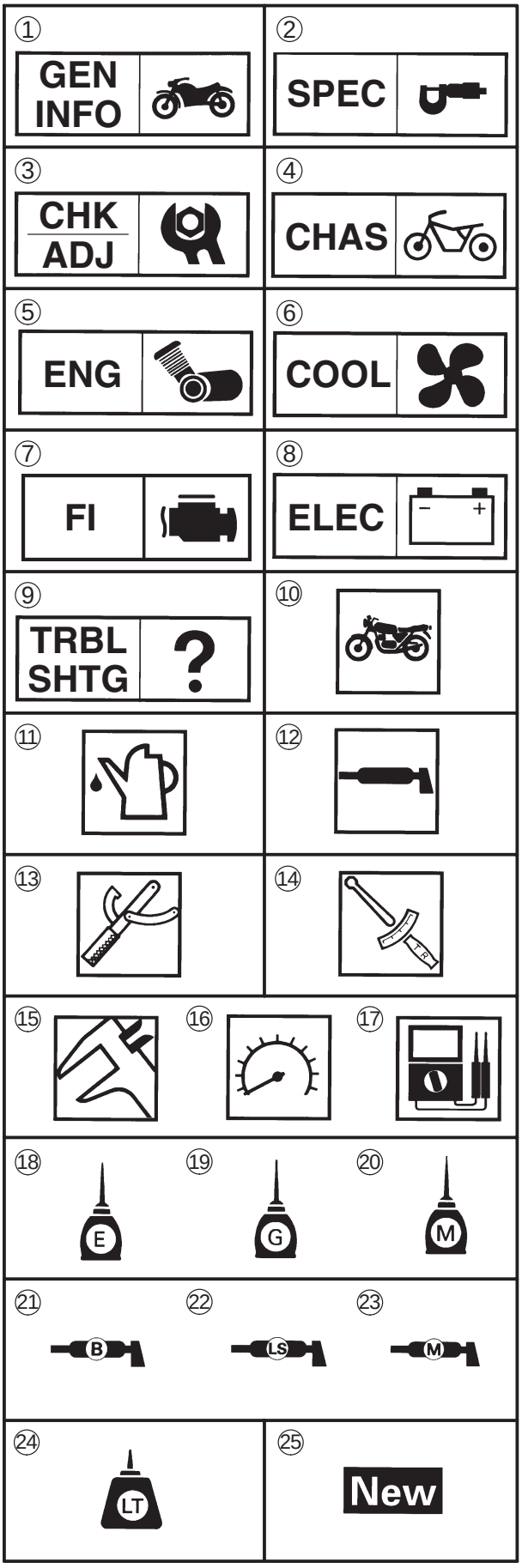
⑤ Numbers are given in the order of the jobs in the exploded diagram. A circled number indicates a disassembly step.

⑥ Symbols indicate parts to be lubricated or replaced.
Refer to “SYMBOLS”.

⑦ A job instruction chart accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.

⑧ Jobs requiring more information (such as special tools and technical data) are described sequentially.





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SYMBOLS

The following symbols are not relevant to every vehicle.

Symbols ① to ⑨ indicate the subject of each chapter.

① General information
② Specifications
③ Periodic checks and adjustments
④ Chassis
⑤ Engine
⑥ Cooling system
⑦ Fuel injection system
⑧ Electrical system
⑨ Troubleshooting

Symbols ⑩ to ⑰ indicate the following.

⑩ Serviceable with engine mounted
⑪ Filling fluid
⑫ Lubricant
⑬ Special tool
⑭ Tightening torque
⑮ Wear limit, clearance
⑯ Engine speed
⑰ Electrical data

Symbols ⑱ to ㉓ in the exploded diagrams indicate the types of lubricants and lubrication points.

⑱ Engine oil
⑲ Gear oil
⑳ Molybdenum-disulfide oil
㉑ Wheel-bearing grease
㉒ Lithium-soap-based grease
㉓ Molybdenum-disulfide grease

Symbols ㉔ to ㉕ in the exploded diagrams indicate the following.

㉔ Apply locking agent (LOCTITE®)
㉕ Replace the part

CONTENTS

FZ6-N(S) 2004 WIRING DIAGRAM

SPECIFICATIONS

GENERAL SPECIFICATIONS

Item	Standard	Limit
Model code	1B31 (EUR), 1B32 (AUS)	•••
Dimensions		
Overall width	755 mm (29.7 in)	•••
Overall height	1,085 mm (42.7 in)	•••
Weight		
Wet (with oil and a full fuel tank)	201 kg (443 lb)	•••
Maximum load (except motorcycle)	196 kg (432 lb)	•••

ELECTRICAL SPECIFICATIONS

Item	Standard	Limit
Bulbs (voltage/wattage × quantity)		
Headlight	12V 60 W/55 W × 1	•••
Auxiliary light	12 V 5 W × 1	•••
Tail/brake light	12 V 5 W/21 W × 1	•••
Turn signal light	12 V 10 W × 4	•••
Licence light	12 V 5 W × 1	•••
Meter light	EL	•••
Starting circuit cut-off relay		
Model (manufacture)	G8R-30Y-V3 (OMRON)	•••

TIGHTENING TORQUES

ENGINE TIGHTENING TORQUES

Item	Fastener	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Connecting rod caps (for EUR)	Nut	M7	8	15 + 150°	1.5 + 150°	11 + 150°	M
Connecting rod caps (for OCE)	Bolt	M7	8	15 + 120°	1.5 + 120°	11 + 120°	M

CHASSIS TIGHTENING TORQUES

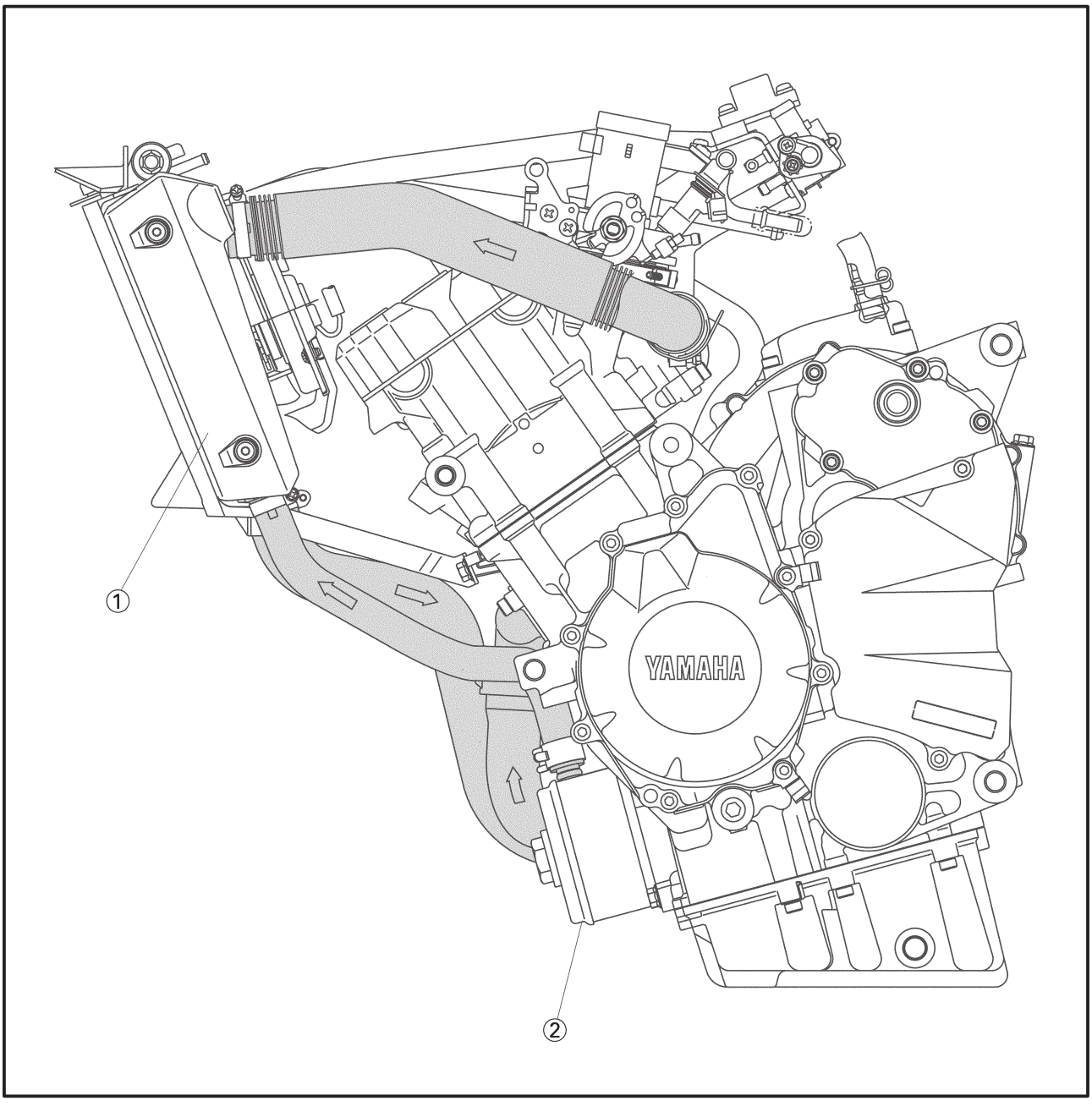
Item	Thread size	Tightening			Remarks
		Nm	m•kg	ft•lb	
Radiator cover and radiator	M6	8	0.8	7.2	LT
Horn bracket and frame	M6	7	0.7	5.1	
Front frame and rear frame (upper)	M10	41	4.1	30	E
Front frame and rear frame (lower)	M10	41	4.1	30	See NOTE 1 LT

NOTE 1:

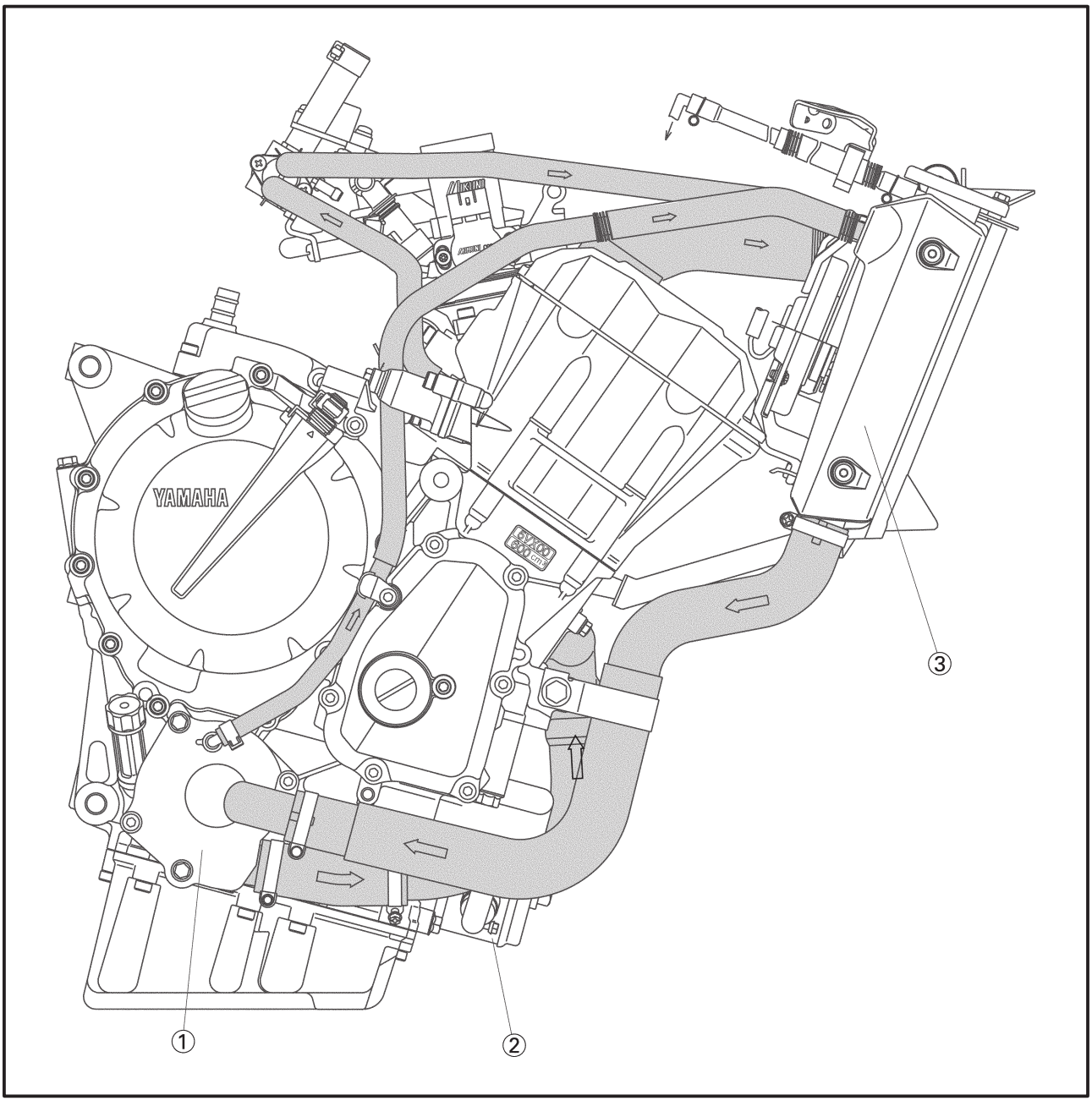
To repair, make sure to apply the liquid fixing agent to the bolt without fixing agent (90149 – 10001) and use it.

COOLING SYSTEM DIAGRAMS

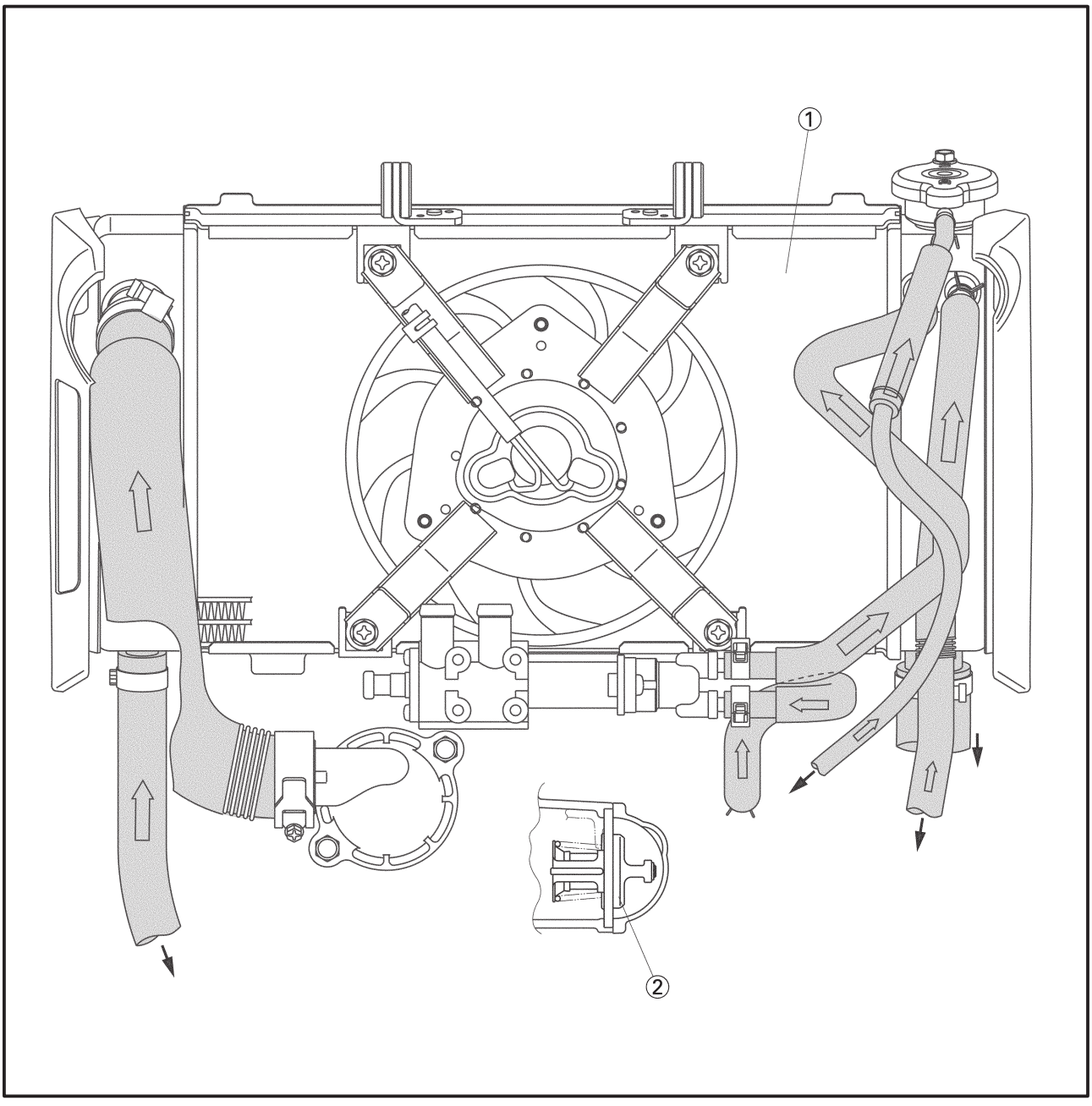
① Radiator
② Oil cooler



① Water pump
② Oil cooler
③ Radiator



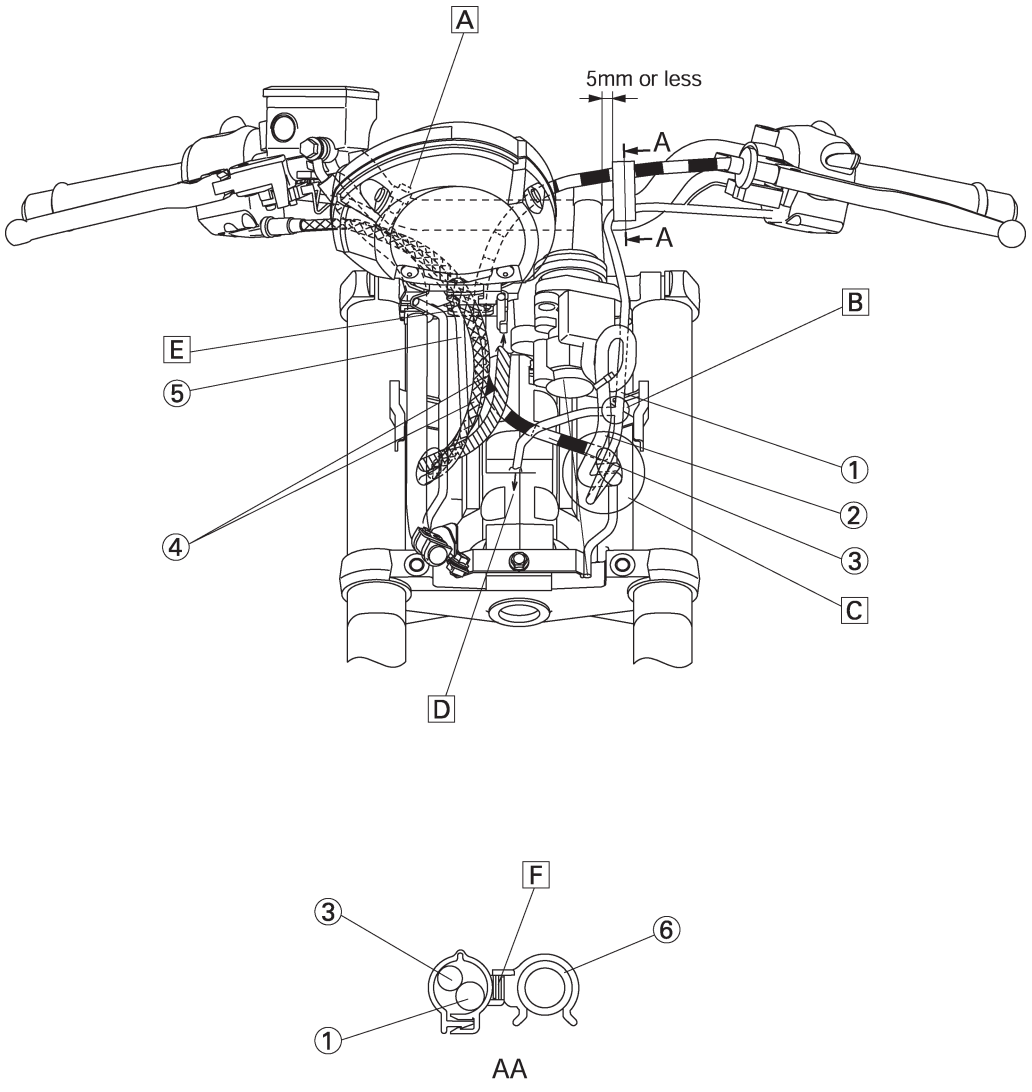
① Radiator
② Thermostat



CABLE ROUTING

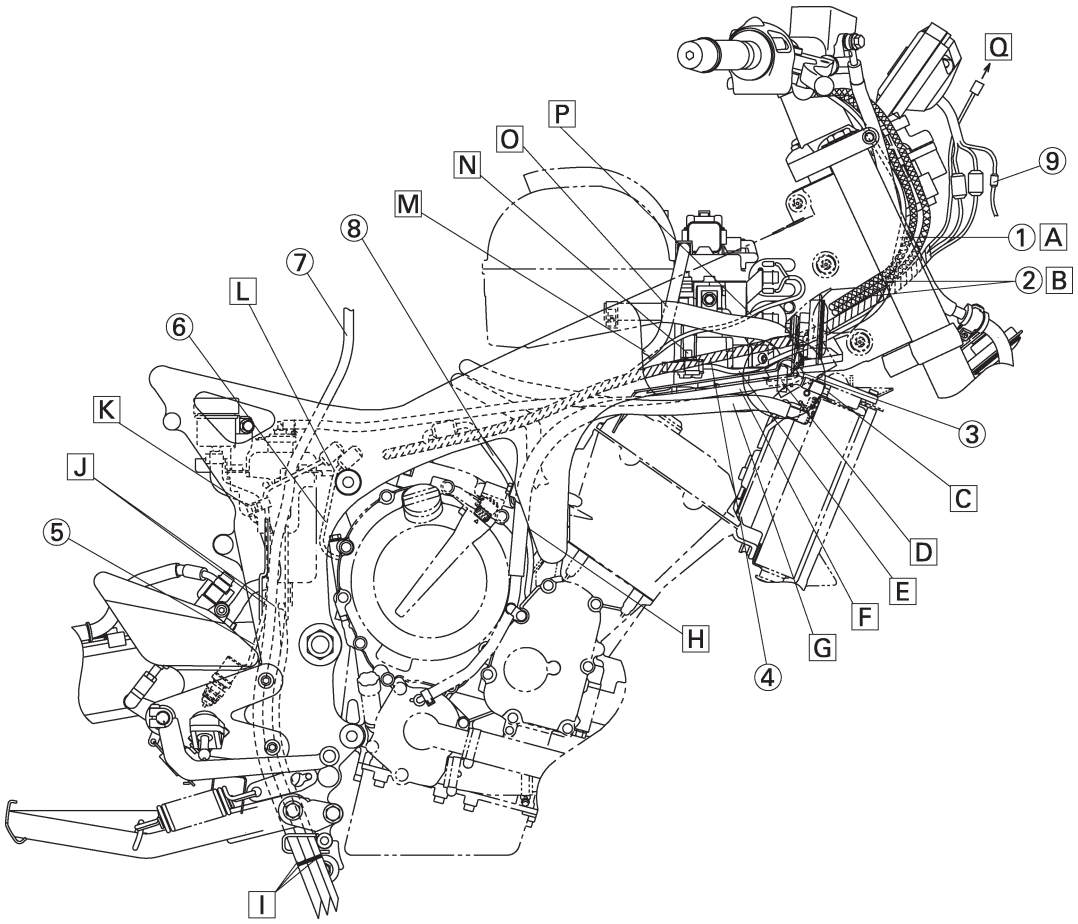
① Left handlebar switch lead
② Main switch and immobilizer lead
③ Clutch cable
④ Throttle cables
⑤ Right handlebar switch lead
⑥ Handlebar

A Clamp the right handlebar switch lead and handlebar. Point the tip of the clamp downward in front of the handlebar.
B Route the branched lead behind the main switch and immobilizer lead.
C Pass the main switch and immobilizer lead, left handlebar switch lead and clutch cable in order through the frame hole from the inner side of the vehicle.
D To the headlight and speedometer.
E Pass the right handlebar switch lead and throttle cable, clutch cable through the meter cover hole.
F Install the clamp in the direction as shown in the illustration.

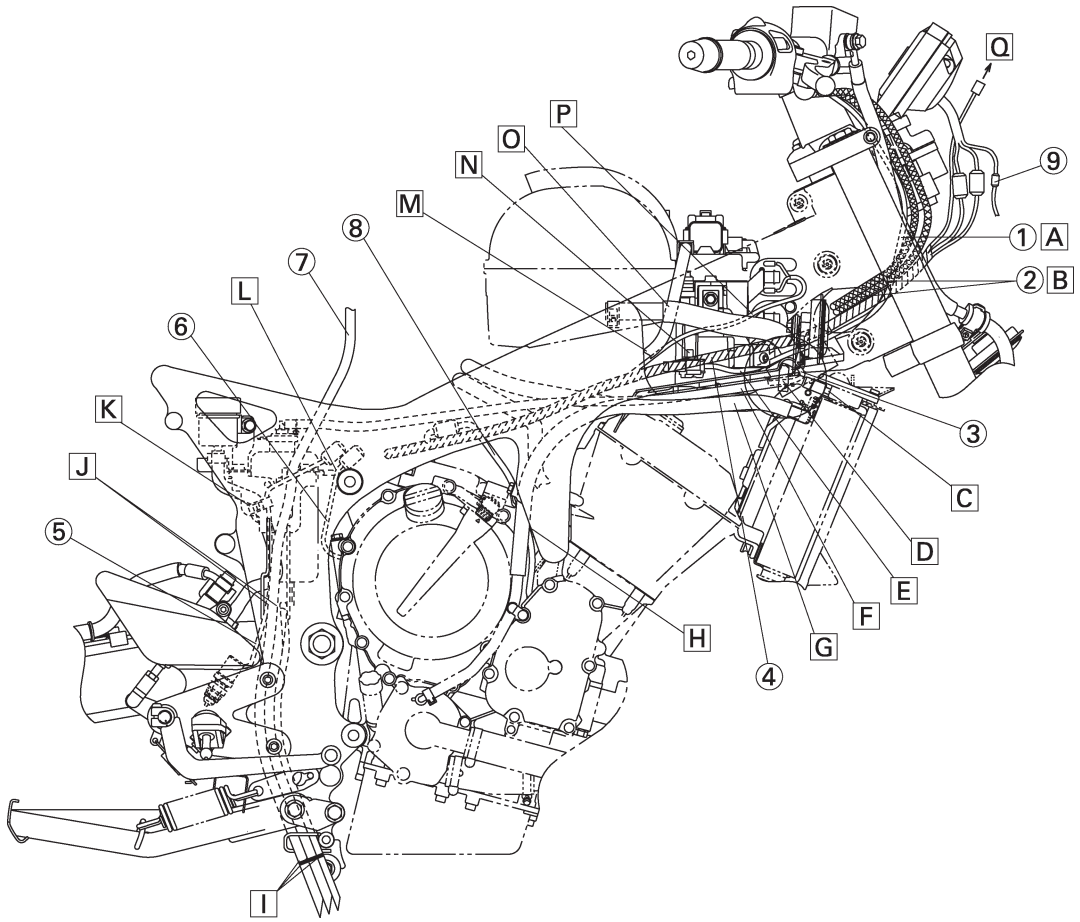


① Right handlebar switch lead
② Throttle cables
③ Horn lead
④ Wire harness
⑤ Rear brake light switch lead
⑥ Neutral switch lead
⑦ Fuel tank breather hose
⑧ Crankshaft position sensor lead
⑨ Meter lead and left handlebar lead

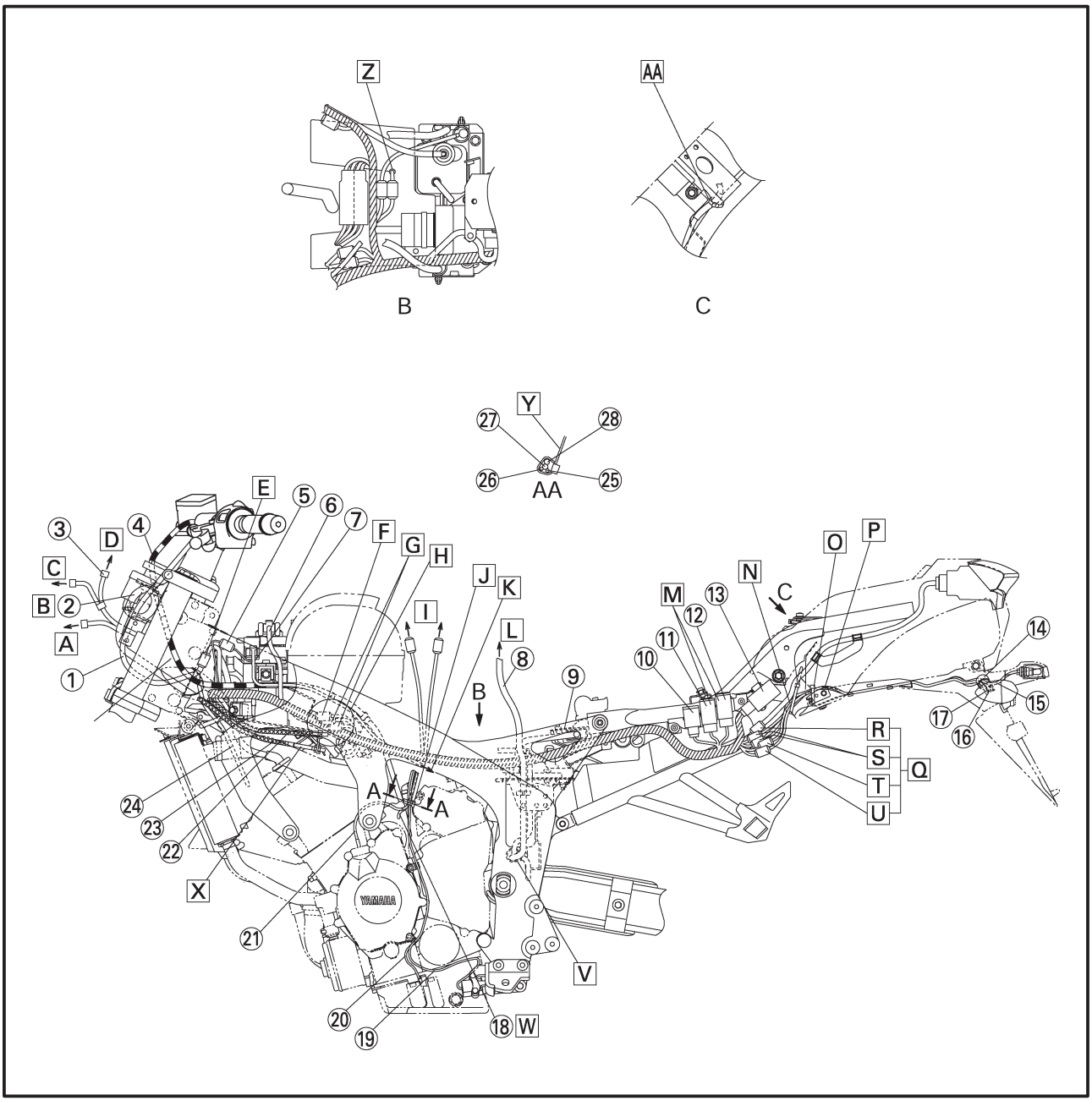
[A] Pass the right handlebar switch lead through the hole on the right side of the frame.
Route it under the inside of the throttle cable and wire harness.
[B] Pass the throttle cable through the hole located on the right side of the frame.
Route the throttle cable above the wire harness.
[C] Route the horn lead inner side of the coolant reservoir tank hose.
[D] Clamp the horn lead and radiator hose (the external side only). Horn lead should be positioned inside of the hose. Install the clamp in the direction pointing its detent pawl to the downside.
[E] Route the right handlebar switch lead under the bracket 2.
[F] Route the coolant reservoir tank hose under the cover 2. Route the radiator hose (outside) inner side.
[G] Route the radiator hoses (2 pieces) under the cover 2.
[H] Route the crank shaft position sensor lead inner side of the radiator hose.



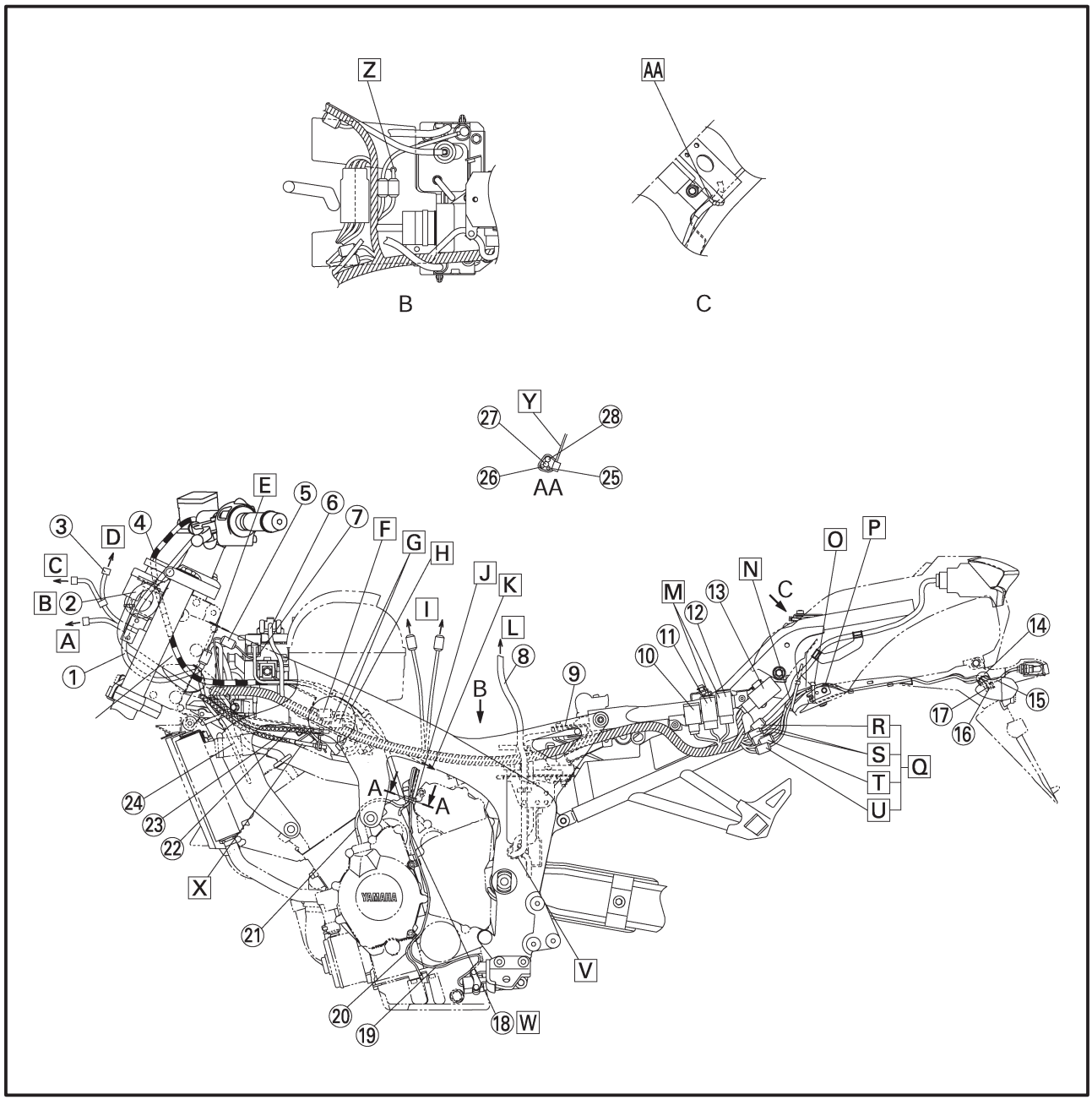
I Pull down the mark-painted sections of the fuel tank breather hose, fuel tank drain hose and coolant reservoir tank breather hose to be lower than the clamp position of the muffler stay. Any order to take out the fuel tank breather hose and fuel tank drain hose can be accepted.
J Pass the fuel tank breather hose, fuel tank drain hose, coolant reservoir tank breather hose and brake right switch lead through the guide of the stay assembly 2.
K Clamp the tail brake light switch lead together with the brake fluid reservoir hose.
L Pass the neutral switch lead between the engine and coolant reservoir tank bracket.
M To the starter motor.
N Install the right handlebar switch lead coupler through the hole of the bracket 2 from the downside.
O Route the starter motor lead by the inner side of the air cut-off valve hose.
P Pass the ignition coil leads #1 and #4 through inner side of the air cut-off valve hose, and then between the frame and bracket 2.
Q To the sub-wire harness.



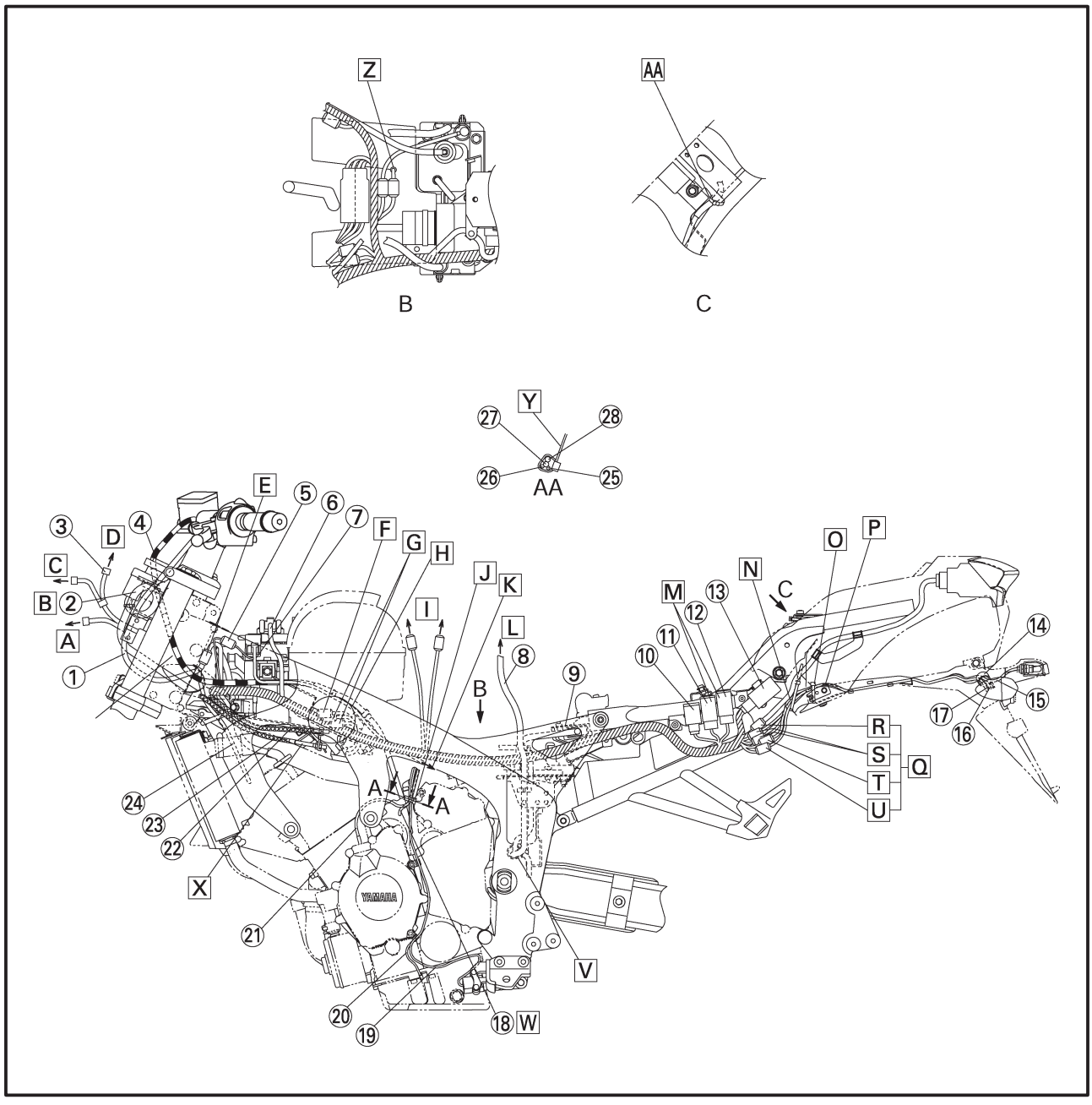
① Left handlebar switch lead
② Main switch and immobilizer lead
③ Meter lead and left handlebar switch lead
④ Clutch cable
⑤ Battery negative lead coupler
⑥ Starter relay lead
⑦ Battery negative lead
⑧ Fuel tank drain hose
⑨ Rectifier/regulator
⑩ Turn signal relay
⑪ Radiator fan motor relay
⑫ Dimmer relay
⑬ Starting circuit cut-off relay
⑭ Clamp
⑮ License plate light lead
⑯ Rear turn signal light lead (right)
⑰ Rear turn signal light lead (left)
⑱ Speed sensor lead
⑲ Side stand switch lead
⑳ Oil level switch lead
㉑ A.C. magneto lead
㉒ Throttle cable (return side)
㉓ Throttle cable (pull side)
㉔ Radiator fan motor lead
㉕ Oil level gauge lead
㉖ Sidestand switch lead
㉗ A. C. magneto lead
㉘ Speed sensor lead



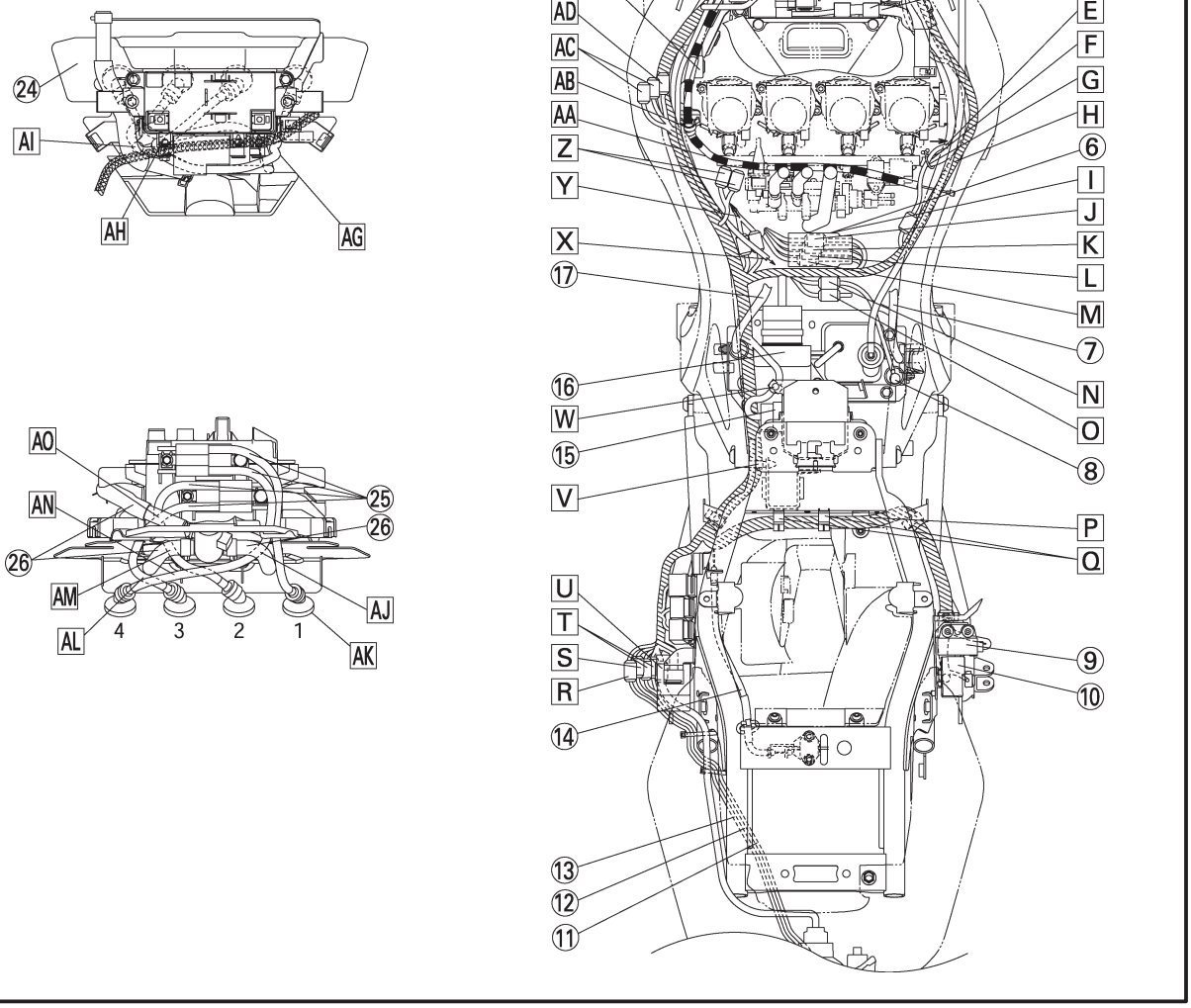
[A] To the headlight bulb.
[B] Route it inside (in the width direction of the vehicle) of the left handlebar switch lead.
[C] To the auxiliary light socket.
[D] To the meter.
[E] Line up the left handlebar switch lead coupler and fan motor lead coupler behind the head pipe.
[F] To the immobilizer.
[G] To the main switch.
[H] Place three couplers on the flange of the cover.
[I] To the fuel pump.
[J] Clamp four wire leads. There should be no excessive slack on the wire leads.
[K] To the engine.
[L] To the fuel tank.
[M] Either installation position can be accepted, but make sure that the leads are not crossed.
[N] Clamp the rear turn signal lead and license plate light lead to the frame. Hook the clamp to the bracket. Pull out the lead sufficiently to the frame side and route it along with the side of the back stay. Cut the tip of the clamp to be between 1 and 5 mm (0.04 and 0.20 in) upward.
[O] Clamp the rear turn signal lead and license plate light lead to the frame. Cut the tip of the clamp to be between 1 and 5 mm (0.04 and 0.20 in).
[P] Gap between the lead and muffler should be 10 mm (0.39 in) or more.
[Q] Coupler should not run on the relay assembly.
[R] To the tail/brake light.
[S] To the license plate light.
[T] To the rear turn signal light. (right)
[U] To the rear turn signal light. (left)



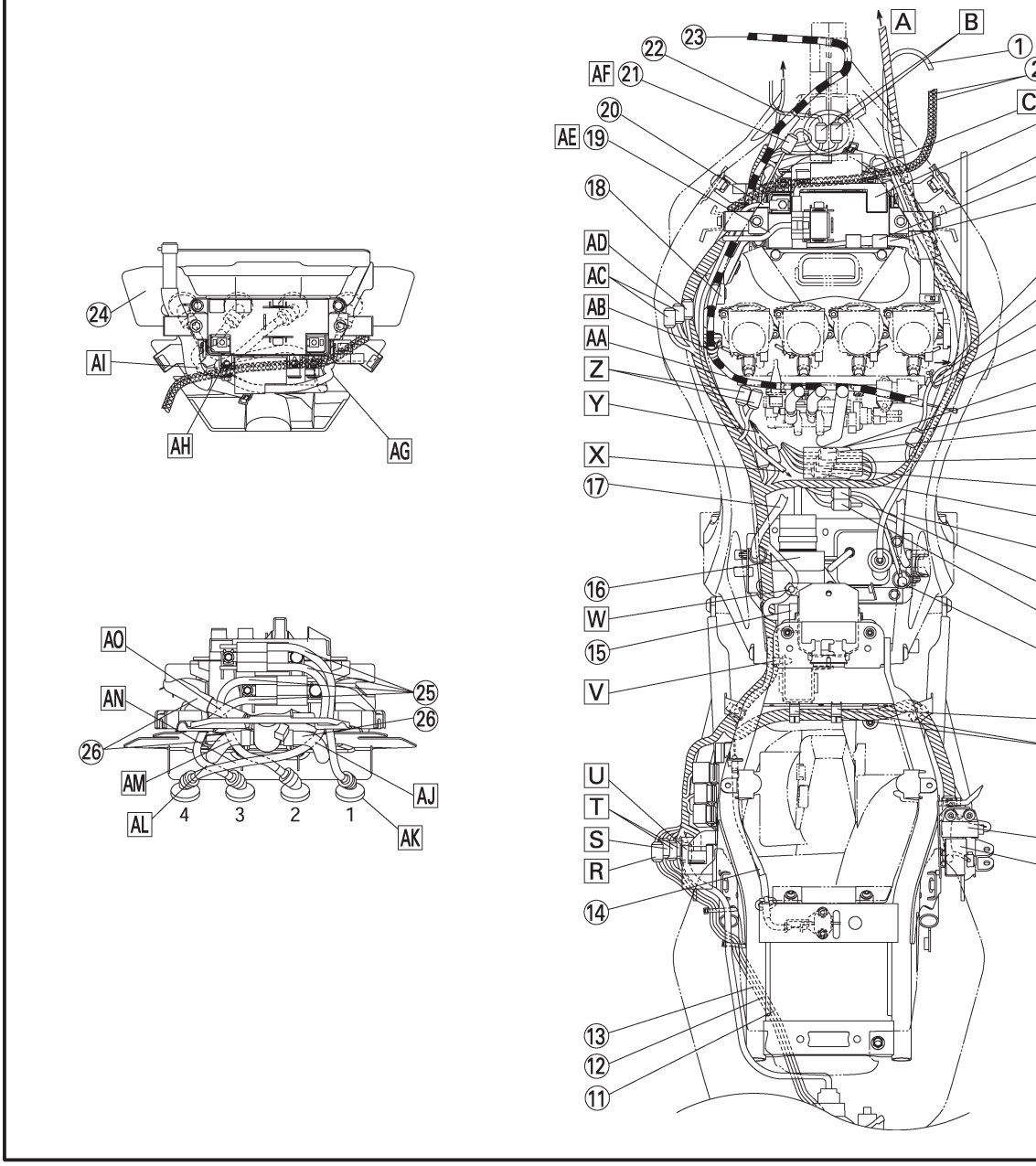
[V] Pass the fuel tank drain hose through the clamp located under the coolant reservoir tank.
[W] Route it behind the starter motor lead.
[X] Point the bend-R section of the throttle cable (pull side) to the inner side horizontally. It is also possible to visually check the bend-R section.
[Y] Point the tip of the clamp to the inner side of the vehicle body.
[Z] Make sure to pass the neutral switch lead through the hole of the flap.
[AA] Clamp the seat lock wire to the frame as shown in the illustration. Secure the clamp to the weld of the cross member with the frame. Position the binding section in front of the vehicle body and cut the tip to be between 1 and 5 mm (0.04 and 0.20 in).



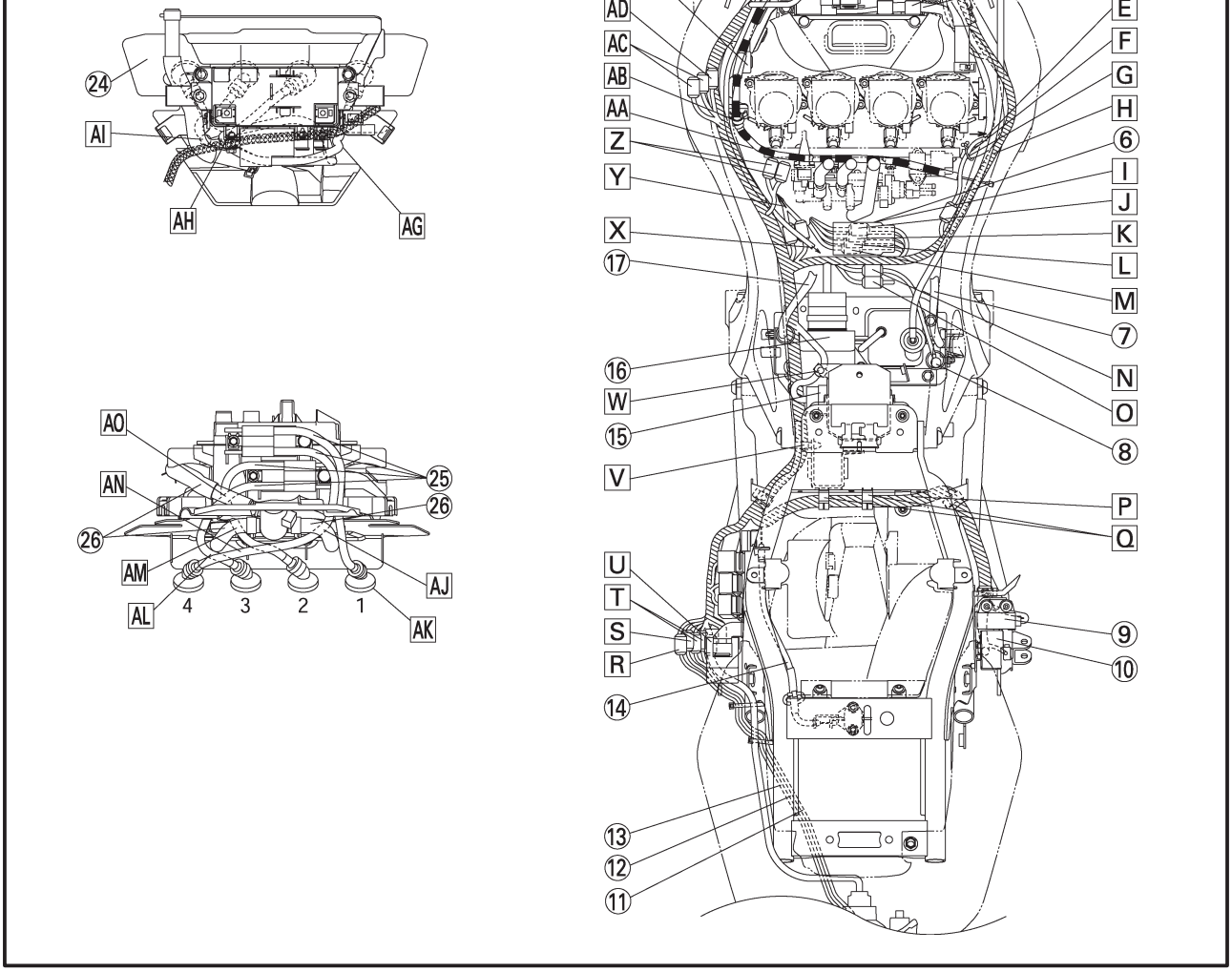
① Right handlebar switch lead
② Throttle cables
③ Battery positive lead
④ Coolant reservoir tank hose
⑤ Battery cover
⑥ Connecter cover
⑦ Fuel tank breather hose
⑧ Brake fluid reservoir hose
⑨ Lean angle cut-off switch
⑩ Fuse box
⑪ Rear turn signal light lead (right)
⑫ License plate light lead
⑬ Rear turn signal light lead (left)
⑭ Seat lock cable
⑮ Rectifier/regulator
⑯ E.C.U
⑰ Fuel tank drain hose
⑱ Cover
⑲ Starter relay lead
⑳ Battery negative lead
㉑ Battery negative lead coupler
㉒ Handlebar switch lead
㉓ Clutch cable
㉔ Cover 2
㉕ Spark plug lead
㉖ Air cut-off valve hose



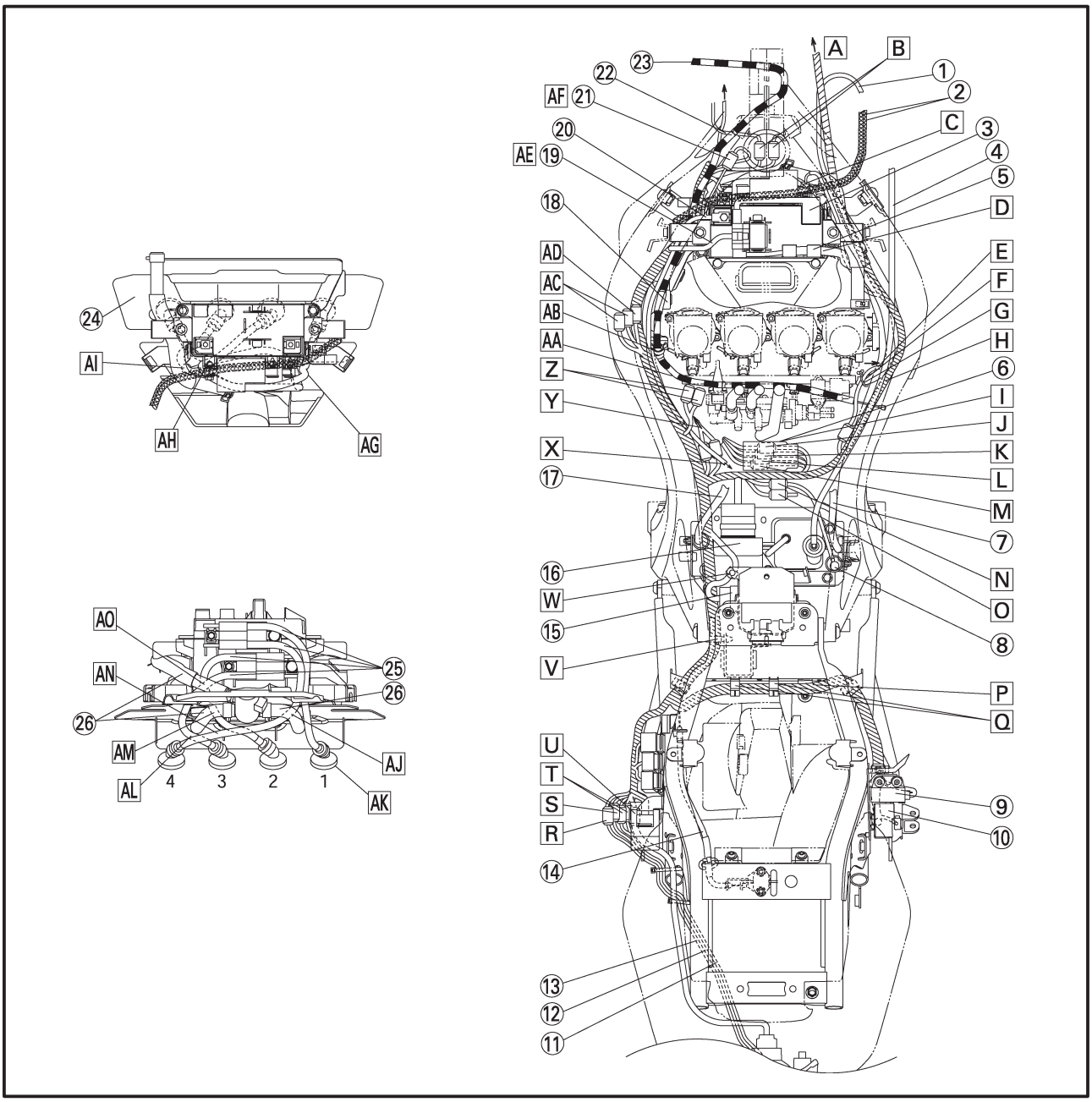
[A] To the meter.
[B] Either right or left side arrangement for the left handlebar switch lead coupler and radiator fan motor coupler can be accepted.
[C] Point the L-shape terminal to the front side of the vehicle.
[D] Hook the starter motor lead to the alternate pawls on the battery cover.
[E] To the crankshaft position sensor.
[F] Route the crank shaft position sensor lead above the starter motor leads.
[G] Clamp the starter motor lead and crank shaft position sensor lead. Point the projected part of the tip to the inner side of the vehicle.
[H] Pass the radiator hose, coolant reservoir hose, wire harness and starter motor lead in order through the lower side of the vehicle.
[I] Set the 4-pin coupler in the connector cover after wiring it.
[J] To the sidestand switch.
[K] To the speed sensor.
[L] To the A.C. magneto.
[M] To the oil level gauge.
[N] To the rear brake/light switch.
[O] To the neutral switch.
[P] Push the wire harness in the groove of the mud guard.
[Q] Point the opening section of the clamp upward.
[R] To the rear turn signal. (right)
[S] To the rear turn signal. (left)
[T] To the license plate light.
[U] To the tail/brake light.
[V] Insert the enwinding clamp of the wire harness into the hole of the rear frame.



W Attach the rectifier regulator lead to the clamp of the rectifier bracket.
X To the engine ground.
Y To the fuel injection.
Z To the fuel pump.
AA Route the clutch cable under the fuel injection lead.
AB Pass the clutch cables through the clamp, and then install the clamp to the cover. Position of the clamp is forward of the cable stopper.
AC To the main switch.
AD To the immobilizer.
AE Route the starter relay lead outside of the main switch and immobilizer lead.
AF Press the battery negative lead into the space between the ribs of the frame.
AG Pass the spark plug leads #1 and #4 through the slit of the cover 2.
AH Pass the spark plug lead #2 through the inner hole of the cover 2.
AI Pass the spark plug lead #3 through the outer hole of the cover 2.
AJ Route the spark plug lead #4 behind the air cut-off valve hose.
AK Point the spark plug caps of #1 to #4 to the direction as shown in the illustration.
AL Route the spark plug lead #3 under the air cut-off valve hose.
AM Route the spark plug lead #2 behind the air cut-off valve hose.
AN Route the spark plug lead #4 by the front side of the spark plug leads #2 and #3.



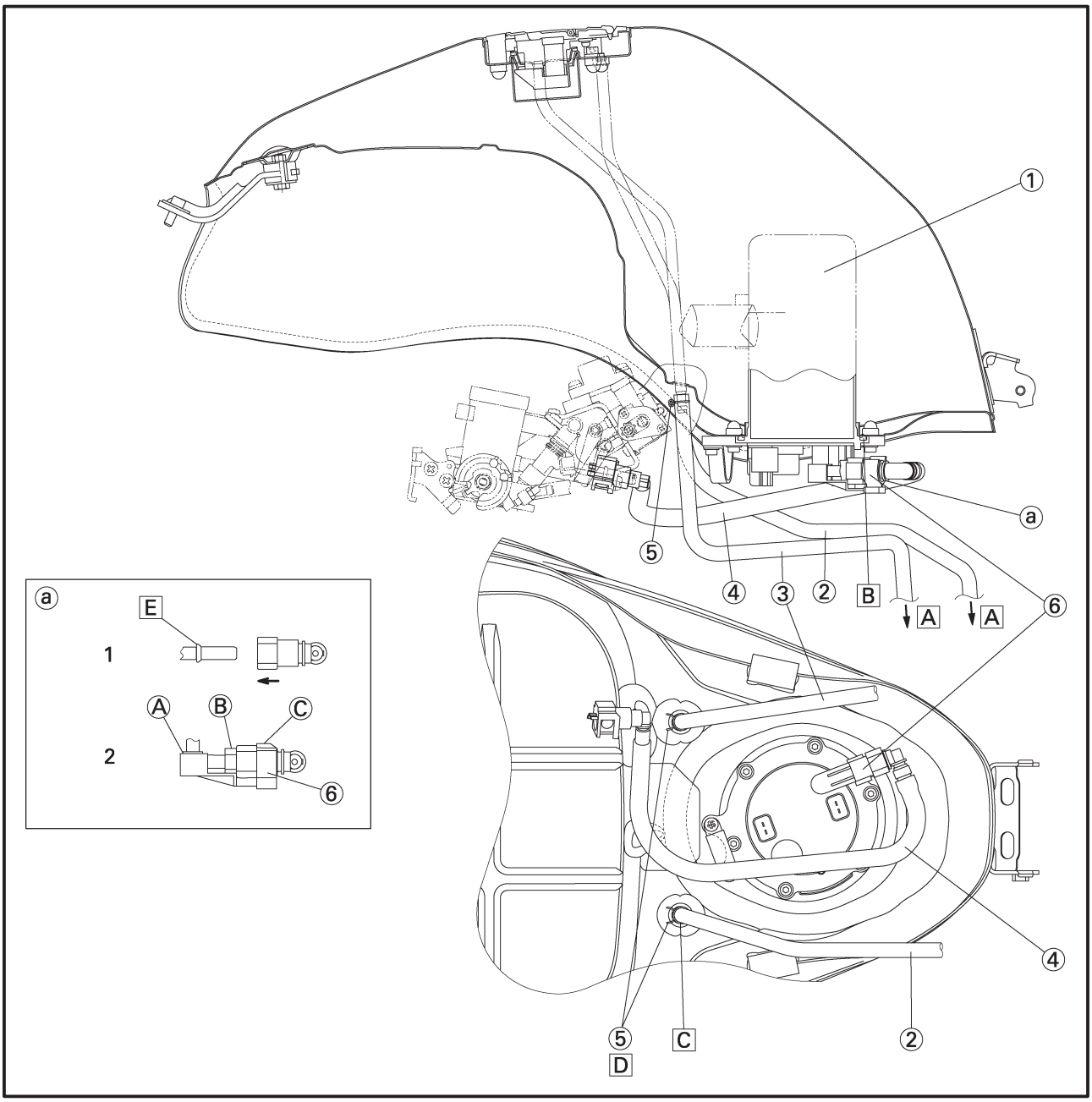
AO Route the spark plug leads #2 and #3 behind the air cut-off valve hose.



① Fuel pump assembly
② Fuel tank breather hose
③ Fuel tank drain hose
④ Fuel hose
⑤ Clip
⑥ Clamp

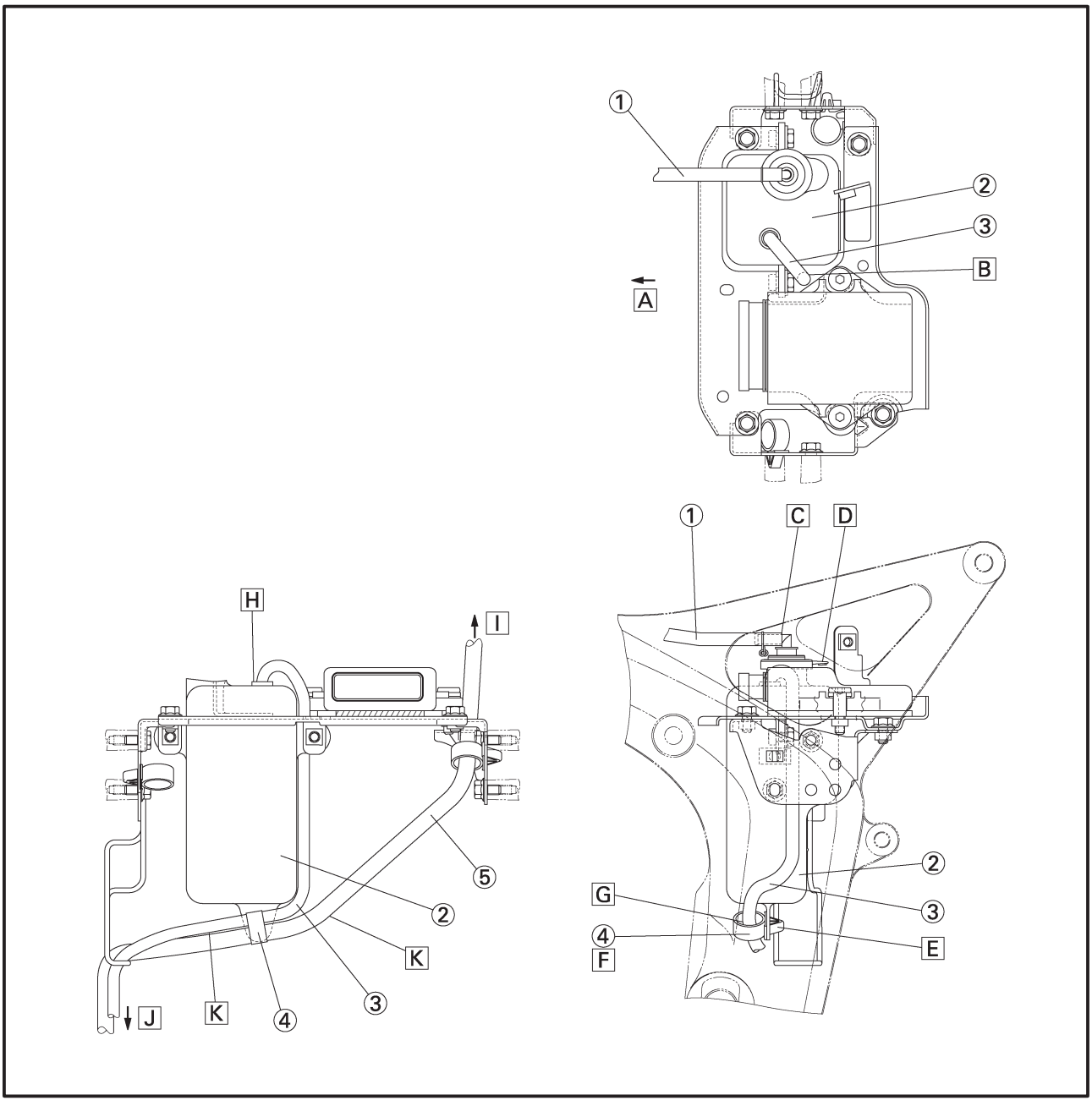
[A] Air opening.
[B] Install the O-ring with its lip pointed upward.
[C] Fuel tank breather hose has a white point mark.
[D] Point the knob of clip front side

ⓐ Fuel piping connector attachment directions. (fuel pump side)
1. It is inserted until it makes a click sound the connector, and it checks that a connector does not fall out. It takes care that a foreign substance does not enter into a seal portion. (Working groves should not be used at the time of work.)
[E] It prevents that this portion falls out.
2. The clamp is attached from the bottom after the work of "1".
It checks being completely equipped with Ⓐ, Ⓑ and Ⓒ section.



① Coolant breather hose
② Coolant reservoir tank
③ Coolant reservoir tank hose
④ Clamp
⑤ Fuel tank drain hose

A Front side.
B Pass the coolant reservoir tank hose hangs down downward from back of the bolt.
C Insert this portion securely.
D Spittle is turned back.
E Insert the clamp certainly.
F It may open and close to direction of which. All notches gear at the time of attachment.
G Pass the coolant reservoir tank hose inside of the clamp.
H Insert in certainly.
I To the fuel tank drain tube (left).
J Air opening.
K There should be no slacking of the hose when it is routed.



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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.

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PERIODIC MAINTENANCE AND LUBRICATION INTERVALS

NOTE:

- The annual checks must be performed every year, except if a kilometer-based maintenance is performed instead.
- From 50,000 km, repeat the maintenance intervals starting from 10,000 km.
- Items marked with an asterisk should be performed by a Yamaha dealer as they require special tools, data and technical skills.

NO.		ITEM	CHECK OR MAINTENANCE JOB	ODOMETER READING (× 1,000 km)					ANNUAL CHECK
				1	10	20	30	40	
1	*	**Fuel line (See page 3-34)**	• Check fuel hoses for cracks or damage.		√	√	√	√	√
2	*	**Spark plugs (See page 3-22)**	• Check condition. • Clean and regap.		√		√		
			• Replace.			√		√	
3	*	**Valves (See page 3-10)**	• Check valve clearance. • Adjust.	Every 40,000 km					
4		**Air filter element (See page 3-32)**	• Replace.					√	
5		**Clutch (See page 3-31)**	• Check operation. • Adjust.	√	√	√	√	√	
6	*	**Front brake (See page 3-41, 43, 45)**	• Check operation, fluid level and vehicle for fluid leakage.	√	√	√	√	√	√
			• Replace brake pads.	Whenever worn to the limit					
7	*	**Rear brake (See page 3-42, 43, 45)**	• Check operation, fluid level and vehicle for fluid leakage.	√	√	√	√	√	√
			• Replace brake pads.	Whenever worn to the limit					
8	*	**Brake hoses (See page 3-45)**	• Check for cracks or damage.		√	√	√	√	√
			• Replace.	Every 4 years					
9	*	**Wheels (See page 4-3)**	• Check runout and for damage.		√	√	√	√	
10	*	**Tires (See page 3-54)**	• Check tread depth and for damage. • Replace if necessary. • Check air pressure. • Correct if necessary.		√	√	√	√	√
11	*	**Wheel bearings (See page 4-3)**	• Check bearing for looseness or damage.		√	√	√	√	
12	*	**Swingarm (See page 4-70)**	• Check operation and for excessive play.		√	√	√	√	
			• Lubricate with lithium-soap-based grease.	Every 50,000 km					
13	*	**Steering bearings (See page 3-50)**	• Check bearing play and steering for roughness.	√	√	√	√	√	
			• Lubricate with lithium-soap-based grease.	Every 20,000 km					
14	*	**Chassis fasteners (See page 2-21)**	• Make sure that all nuts, bolts and screws are properly tightened.		√	√	√	√	√
15		**Sidestand (See page 3-57)**	• Check operation. • Lubricate.		√	√	√	√	√

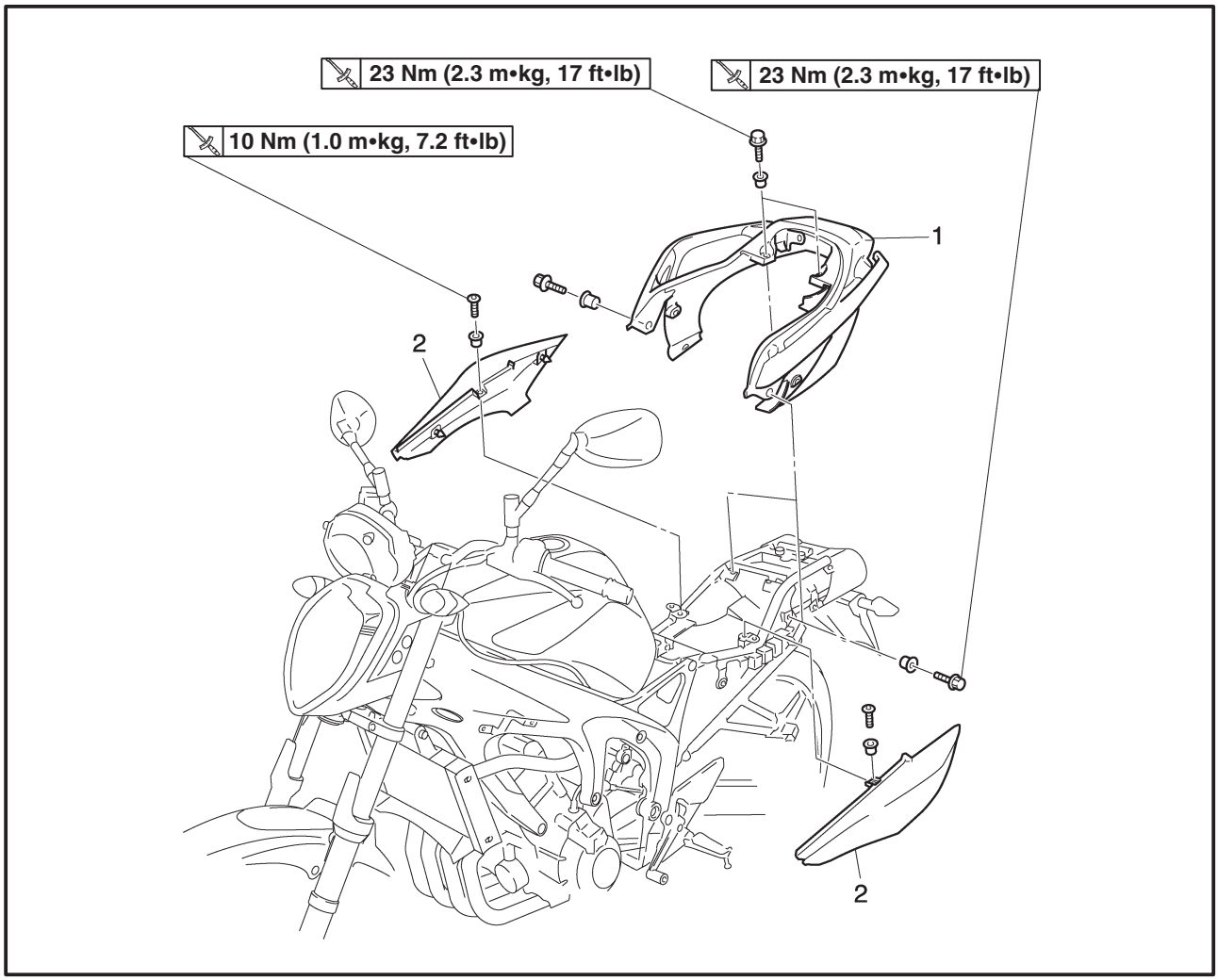
NO.		ITEM	CHECK OR MAINTENANCE JOB	ODOMETER READING (× 1,000 km)					ANNUAL CHECK
				1	10	20	30	40	
16	*	**Sidestand switch (See page 3-57, 8-4)**	• Check operation.	√	√	√	√	√	√
17	*	**Front fork (See page 3-52)**	• Check operation and for oil leakage.		√	√	√	√	
18	*	**Shock absorber assembly (See page 3-53, 4-65)**	• Check operation and shock absorber for oil leakage.		√	√	√	√	
19	*	**Electronic fuel injection (See page 3-16, 18)**	• Adjust engine idling speed and synchronization.	√	√	√	√	√	√
20		**Engine oil (See page 3-26, 27)**	• Change. • Check oil level and vehicle for oil leakage.	√	√	√	√	√	√
21		**Engine oil filter cartridge (See page 3-27)**	• Replace.	√		√		√	
22	*	**Cooling system (See page 3-36, 37)**	• Check coolant level and vehicle for coolant leakage.		√	√	√	√	√
			• Change.	Every 3 years					
23		**Drive chain (See page 3-48, 49)**	• Check chain slack. • Make sure that the rear wheel is properly aligned. • Clean and lubricate.	Every 800 km and after washing the motorcycle or riding in the rain					
24	*	**Front and rear brake switches (See page 3-45) (See page 8-4)**	• Check operation.	√	√	√	√	√	√
25		**Moving parts and cables (See page 3-57)**	• Lubricate.		√	√	√	√	√
26	*	**Throttle grip housing and cable (See page 3-19)**	• Check operation and free play. • Adjust the throttle cable free play if necessary. • Lubricate the throttle grip housing and cable.		√	√	√	√	√
27	*	**Air induction system (See page 7-29)**	• Check the air cut-off valve, reed valve, and hose for damage • Replace the entire air induction system if necessary.		√	√	√	√	√
28	*	**Muffler and exhaust pipe (See page 3-35)**	• Check the screw clamp for looseness.	√	√	√	√	√	
29	*	**Lights, signals and switches (See page 3-67)**	• Check operation. • Adjust headlight beam.	√	√	√	√	√	√

EAU03884

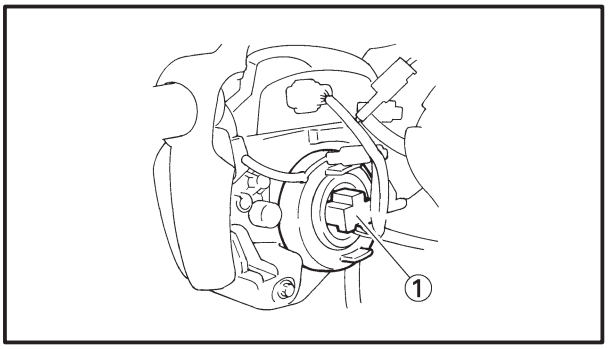
NOTE:

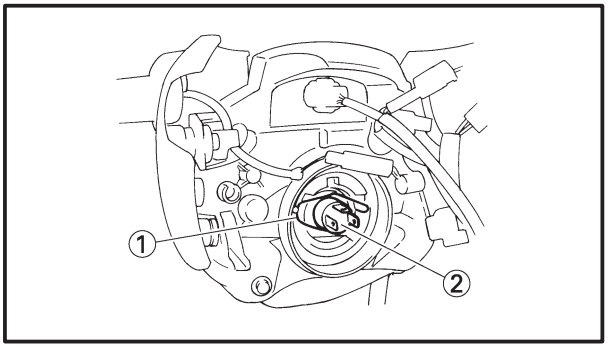
- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.
- Hydraulic brake service
  - Regularly check and, if necessary, correct the brake fluid level.
  - Every two years replace the internal components of the brake master cylinders and calipers, and change the brake fluid.
  - Replace the brake hoses every four years and if cracked or damaged.

COWLINGS



Order	Job/Part	Q'ty	Remarks
	Removing the cowlings		Remove the parts in the order listed.
	Seat		Refer to "SEAT".
1	Rear cowling	1	
2	Frame side cover	2	
			For installation, reverse the removal procedure.





EAS00183

ELECTRICAL SYSTEM

REPLACING THE HEADLIGHT BULBS

The following procedure applies to both of the headlight bulbs.

1. Disconnect:
   - headlight bulb cover
   - headlight coupler ①
2. Remove:
   - headlight bulb holder ①
3. Remove:
   - headlight bulb ②

⚠ WARNING

Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.

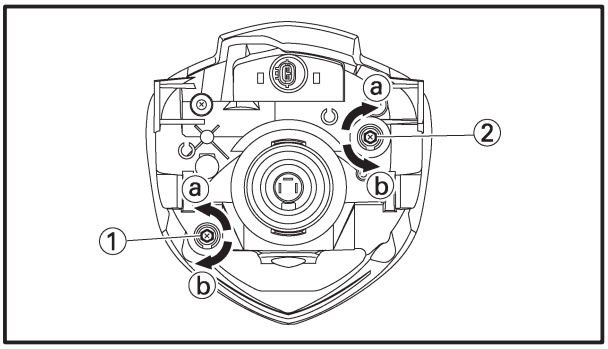
4. Install:
   - headlight bulb New

   Secure the new headlight bulb with the headlight bulb holder.

CAUTION:

Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.

5. Install:
   - headlight bulb holder
6. Install:
   - headlight bulb cover
7. Connect:
   - headlight coupler



EAS00185

ADJUSTING THE HEADLIGHT BEAMS

The following procedure applies to both of the headlights.

1. Adjust:
   • headlight beam (vertically)

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a. Turn the adjusting screw ① in direction ⓐ or ⓑ.

Direction ⓐ	**Headlight beam is raised.**
Direction ⓑ	**Headlight beam is lowered.**

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2. Adjust:
   • headlight beam (horizontally)

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a. Turn the adjusting knob ② in direction ⓐ or ⓑ.

Direction ⓐ	**Headlight beam moves to the right.**
Direction ⓑ	**Headlight beam moves to the left.**

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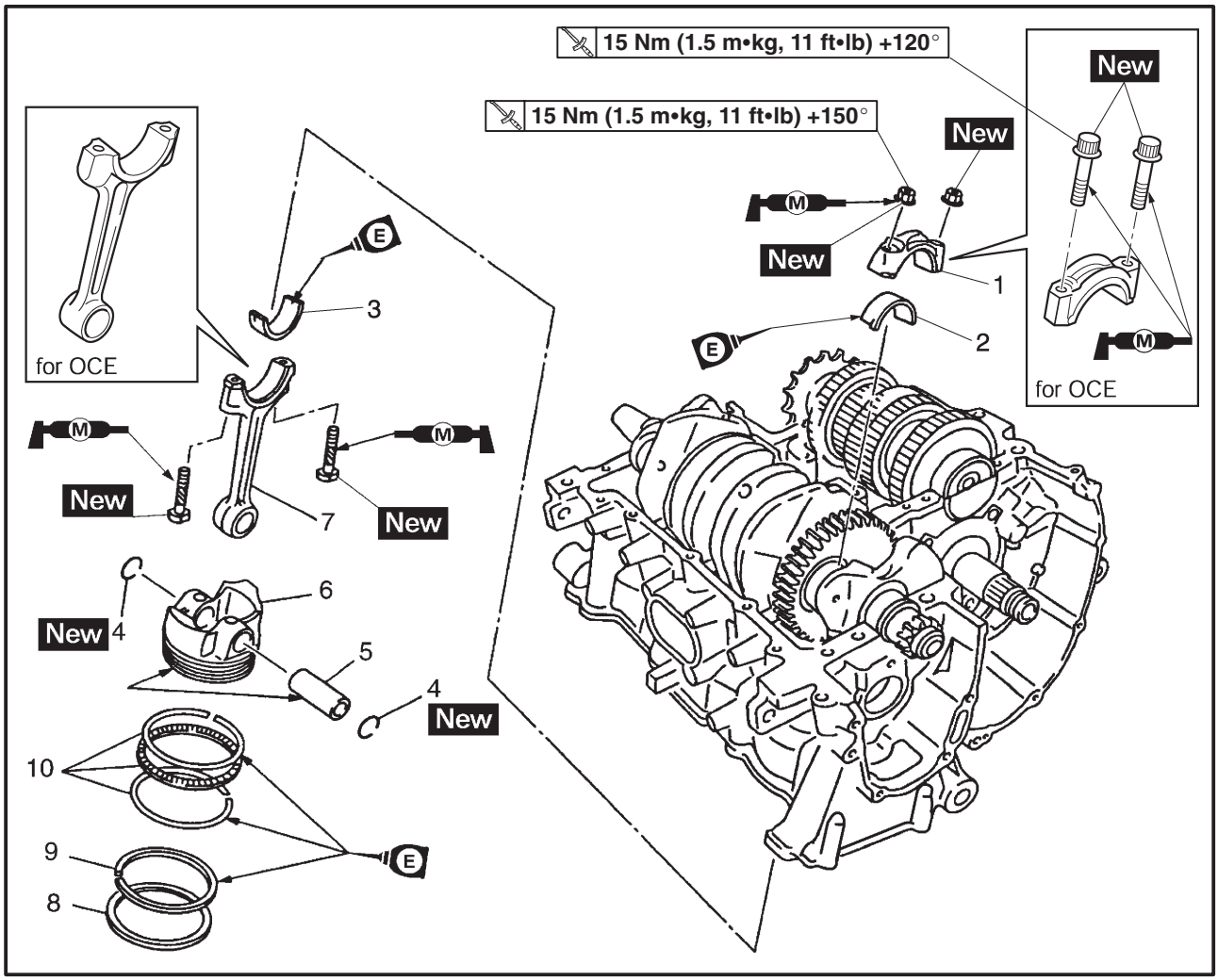
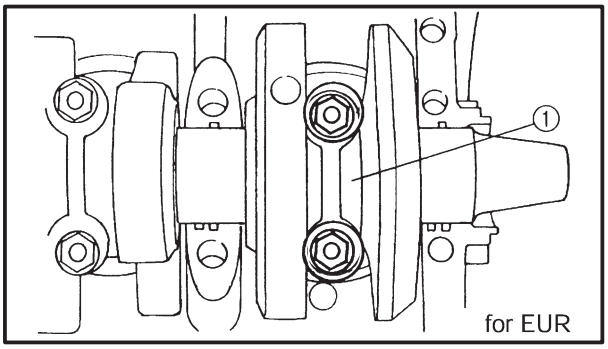
EAS00252

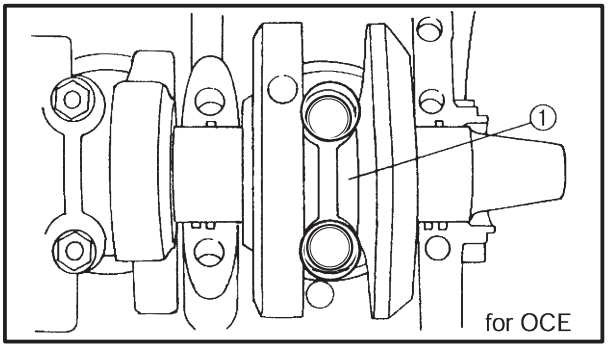
ENGINE

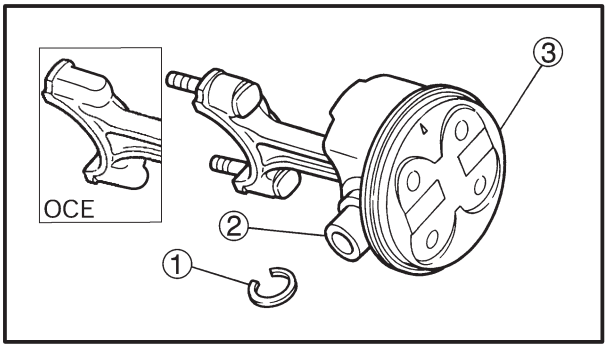
CONNECTING RODS AND PISTONS

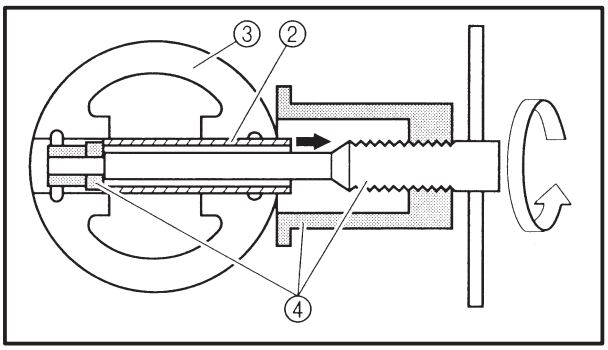


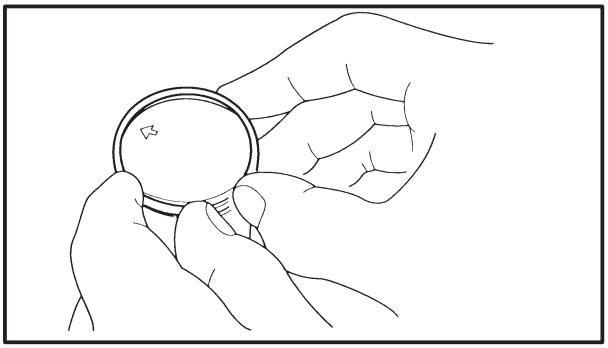
Order	Job/Part	Q'ty	Remarks
	Removing the connecting rods and pistons		Remove the parts in the order listed.
	Lower crankcase		Refer to "CRANKCASE".
1	Connecting rod cap	4	
2	Big end lower bearing	4	
3	Big end upper bearing	4	
4	Piston pin clip	8	
5	Piston pin	4	
6	Piston	4	
7	Connecting rod	4	
8	Top ring	4	
9	2nd ring	4	
10	Oil ring	4	
			For installation, reverse the removal procedure.











EAS00393

REMOVING THE CONNECTING RODS AND PISTONS

The following procedure applies to all of the connecting rods and pistons.

1. Remove:
   - connecting rod cap ①
   - big end bearings

NOTE:

Identify the position of each big end bearing so that it can be reinstalled in its original place.

2. Remove:
   - piston pin clips ①
   - piston pin ②
   - piston ③

CAUTION:

Do not use a hammer to drive the piston pin out.

NOTE:

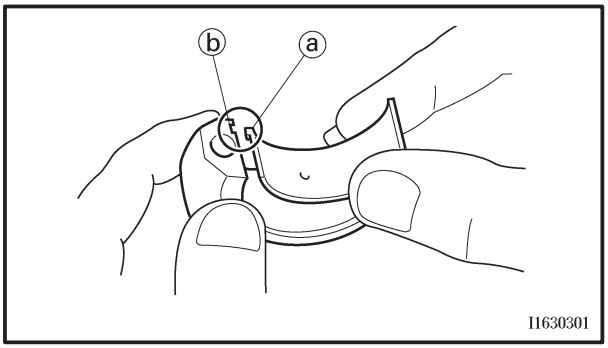
- For reference during installation, put identification marks on the piston crown.
- Before removing the piston pin, deburr the piston pin clip groove and the piston pin bore area. If both areas are deburred and the piston pin is still difficult to remove, remove it with the piston pin puller set ④.

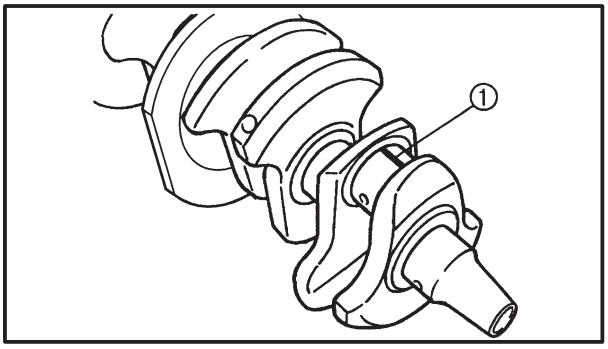
Piston pin puller set
90890-01304, YU-01304

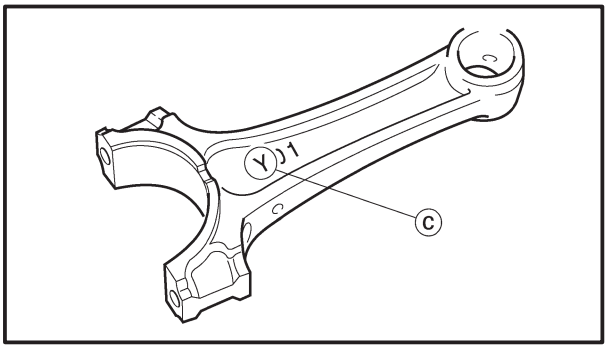
3. Remove:
   - top ring
   - 2nd ring
   - oil ring

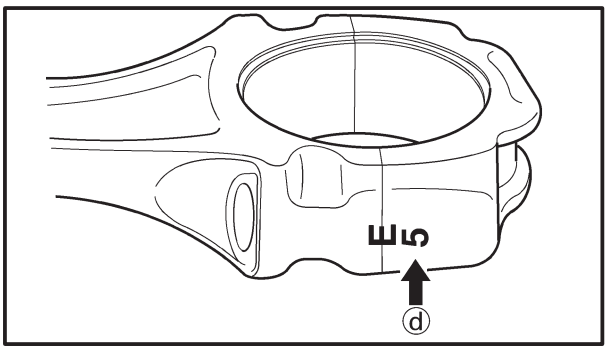
NOTE:

When removing a piston ring, open the end gap with your fingers and lift the other side of the ring over the piston crown.









CHECKING THE BIG END BEARINGS (for EUR)

1. Measure:
   - crankshaft-pin-to-big-end-bearing clearance
     Out of specification → Replace the big end bearings.

Crankshaft-pin-to-big-end-bearing clearance
0.038 ~ 0.062 mm
(0.0015 ~ 0.0024 in)

The following procedure applies to all of the connecting rods.

CAUTION:

Do not interchange the big end bearings and connecting rods. To obtain the correct crankshaft-pin-to-big-end-bearing clearance and prevent engine damage, the big end bearings must be installed in their original positions.

a. Clean the big end bearings, crankshaft pins, and the inside of the connecting rod halves.
b. Install the big end upper bearing into the connecting rod and the big end lower bearing into the connecting rod cap.

NOTE:

Align the projections ⓐ on the big end bearings with the notches ⓑ in the connecting rod and connecting rod cap.

c. Put a piece of Plastigauge® ① on the crankshaft pin.
d. Assemble the connecting rod halves.

NOTE:

- Do not move the connecting rod or crankshaft until the clearance measurement has been completed.
- Lubricate the bolt threads and nut seats with molybdenum disulfide grease.
- Make sure that the "Y" mark ⓒ on the connecting rod faces towards the left side of the crankshaft.
- Make sure that the characters ⓓ on both the connecting rod and connecting rod cap are aligned.

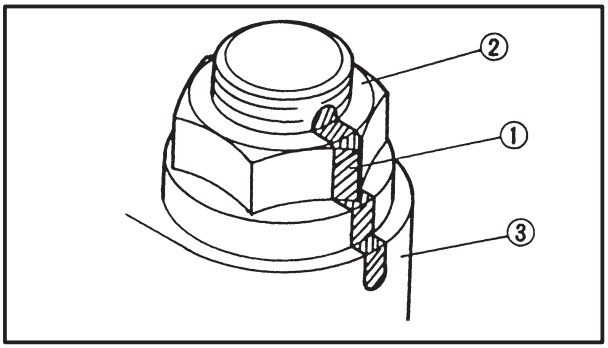
e. Tighten the connecting rod nuts.

	Connecting rod nut **15 Nm (1.5 m•kg, 11 ft•lb) + 150°**

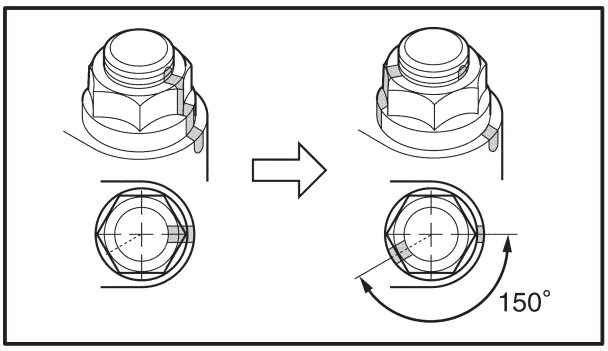
f. Replace the connecting rod bolts with new ones.

CAUTION:

Tighten the connecting rod bolts using the plastic-region tightening angle method.
Always install new bolts and nuts.



g. Clean the connecting rod bolts.
h. Tighten the connecting rod bolts.
i. Put a mark ① on the corner of the connecting rod nut ② and the connecting rod cap ③.



j. Tighten the nut further to reach the specified angle (150°).

⚠ WARNING

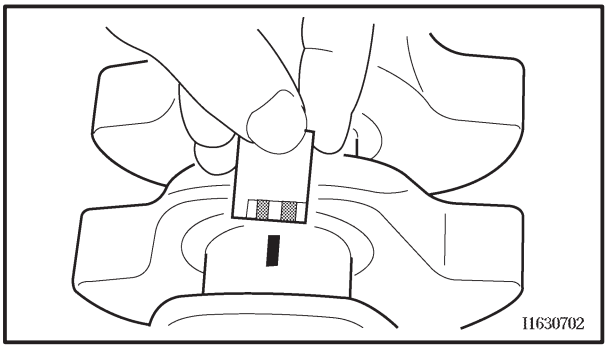
When the nut is tightened more than the specified angle, do not loosen the nut and then retighten it.
Replace the bolt with a new one and perform the procedure again.

CAUTION:

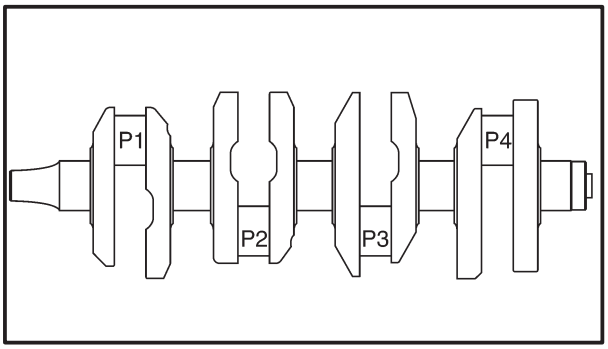
- **Do not use a torque wrench to tighten the nut to the specified angle.**
- **Tighten the nut until it is at the specified angles.**

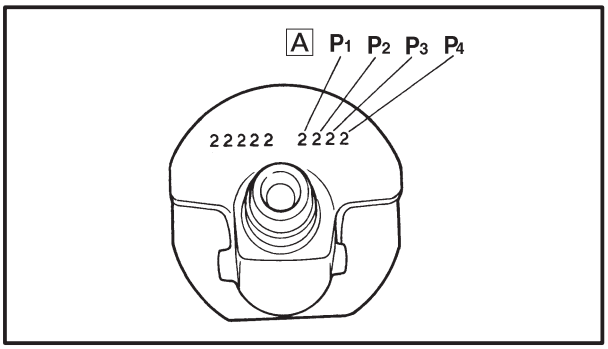
NOTE:

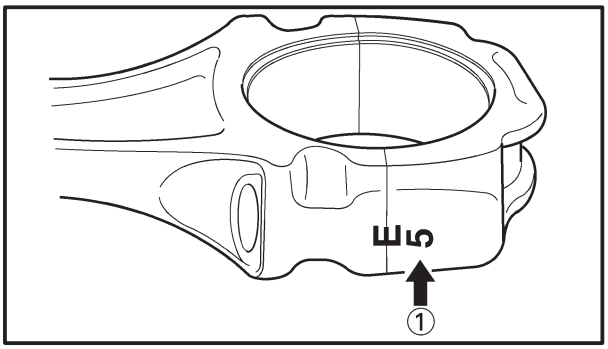
When using a hexagonal nut, note that the angle from one corner to another is 60°



k. Remove the connecting rod and big end bearings.
Refer to "REMOVING THE CONNECTING RODS AND PISTONS".
l. Measure the compressed Plastigauge® width on the crankshaft pin.
If the crankshaft-pin-to-big-end-bearing clearance is out of specification, select replacement big end bearings.







2. Select:
   • big end bearings (P1 ~ P4)

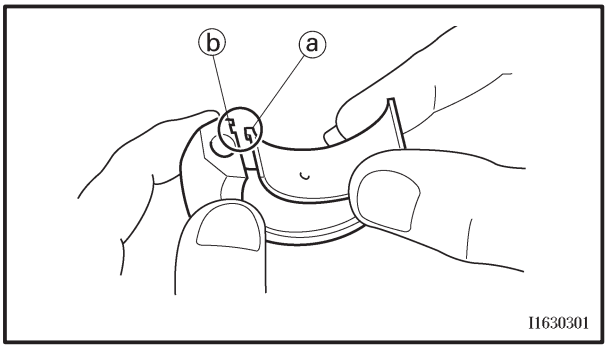
NOTE:

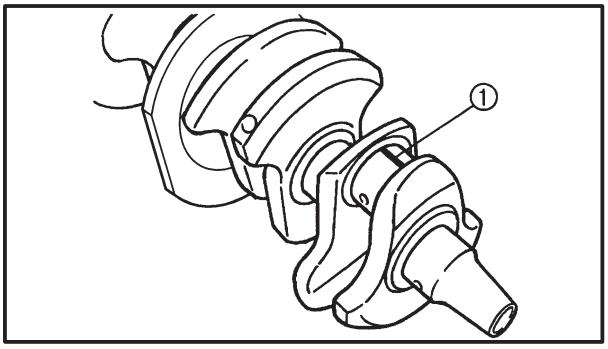
- The numbers A stamped into the crankshaft web and the numbers ① on the connecting rods are used to determine the replacement big end bearing sizes.
- "P1" ~ "P4" refer to the bearings shown in the crankshaft illustration.

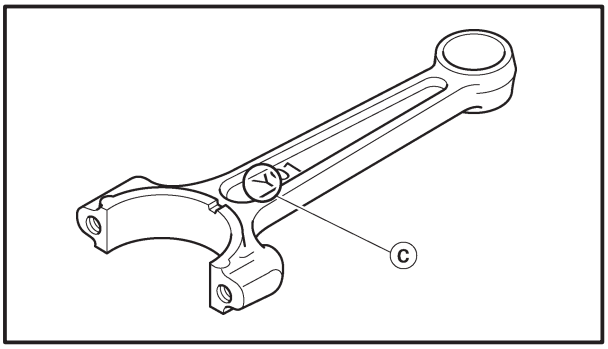
For example, if the connecting rod "P_1" and the crankshaft web "P_1" numbers are "5" and "2" respectively, then the bearing size for "P1" is:

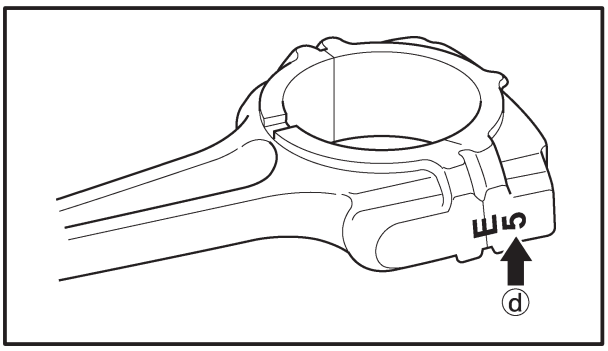
"P_1" (connecting rod) – "P_1" (crankshaft) =
5 – 2 = 3 (brown)

BIG END BEARING COLOR CODE	
1	Blue
2	Black
3	Brown
4	Green









CHECKING THE BIG END BEARINGS (for OCE)

1. Measure:
   - crankshaft-pin-to-big-end-bearing clearance
     Out of specification → Replace the big end bearings.

Crankshaft-pin-to-big-end-bearing clearance
0.038 ~ 0.062 mm
(0.0015 ~ 0.0024 in)

The following procedure applies to all of the connecting rods.

CAUTION:

Do not interchange the big end bearings and connecting rods. To obtain the correct crankshaft-pin-to-big-end-bearing clearance and prevent engine damage, the big end bearings must be installed in their original positions.

a. Clean the big end bearings, crankshaft pins, and the inside of the connecting rod halves.
b. Install the big end upper bearing into the connecting rod and the big end lower bearing into the connecting rod cap.

NOTE:

Align the projections ⓐ on the big end bearings with the notches ⓑ in the connecting rod and connecting rod cap.

c. Put a piece of Plastigauge® ① on the crankshaft pin.
d. Assemble the connecting rod halves.

NOTE:

- Do not move the connecting rod or crankshaft until the clearance measurement has been completed.
- Lubricate the bolt threads and nut seats with molybdenum disulfide grease.
- Make sure that the "Y" mark ⓒ on the connecting rod faces towards the left side of the crankshaft.
- Make sure that the characters ⓓ on both the connecting rod and connecting rod cap are aligned.

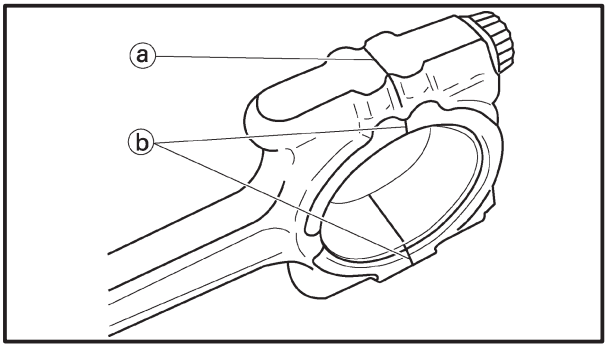
e. Tighten the connecting rod bolts.

NOTE:

Install by carrying out the following procedures in order to assemble in the most suitable condition.

- connecting rod bolts

	Connecting rod bolt **24.5 Nm (2.5 m•kg, 17.7 ft•lb)**

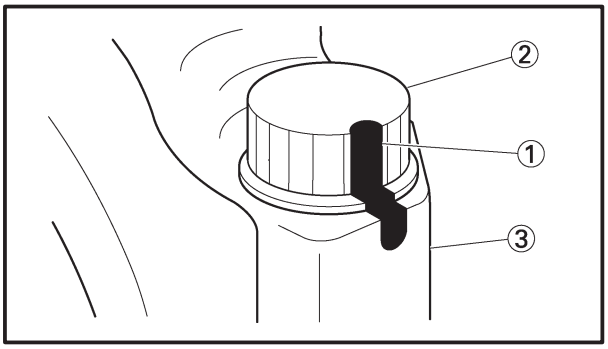


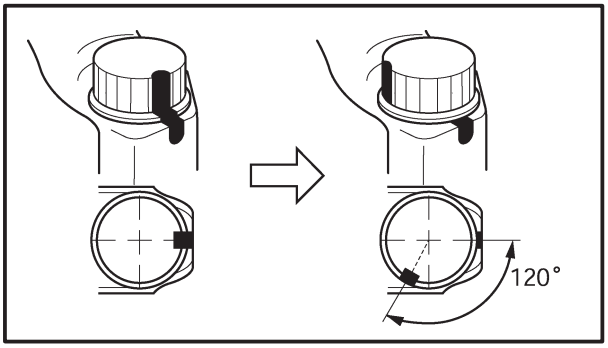
f. Replace the connecting rod bolts with new once.
g. Clean the connecting rod bolts.
h. After installing the big end bearing, assemble the connecting rod and connecting rod cap once using a single unit of the connecting rod.
i. Tighten the connecting rod bolt while checking that the sections shown ⓐ and ⓑ are flush with each other by touching the surface.
   - Side machined face ⓐ
   - Thrusting faces (4 places at front and rear) ⓑ

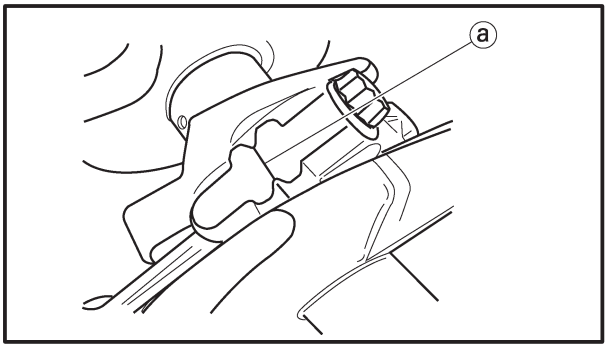
NOTE:

To install the big end bearing, care should be taken not to install it at an angle and the position should not be out of alignment.

j. Loosen the connecting rod bolt, remove the connecting rod and connecting rod cap and install these parts to the crankshaft with the big end bearing kept in the current condition.







k. Tighten the connecting rod bolts.

	Connecting rod bolt **15 Nm (1.5 m•kg, 11 ft•lb) + 120°**

CAUTION:

Tighten the connecting rod bolts using the plastic-region tightening angle method. Always install new bolts.

l. Clean the connecting rod bolts.
m. Tighten the connecting rod bolts.
n. Put a mark ① on the corner of the connecting rod bolt ② and the connecting rod cap ③.
o. Tighten the bolt further to reach the specified angle (120°).

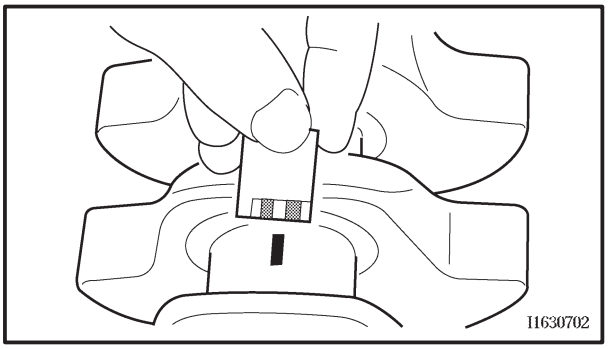
p. After the installation, check that the section show ⓐ is flush with each other by touching the surface.
   • Side machined face ⓐ

⚠ WARNING

- **When the bolt is tightened more than the specified angle, do not loosen the bolt and then retighten it.**
  Replace the bolt with a new one and perform the procedure again.
- **If they are not flush with each other, remove the connecting rod bolt and big end bearing and restart from step "e". In this case, make sure to replace the connecting rod bolt.**

CAUTION:

- **Do not use a torque wrench to tighten the nut to the specified angle.**
- **Tighten the bolt until it is at the specified angles.**



q. Remove the connecting rod and big end bearings.
   Refer to "REMOVING THE CONNECTING RODS AND PISTONS".
r. Measure the compressed Plastigauge® width on the crankshaft pin.
   If the crankshaft-pin-to-big-end-bearing clearance is out of specification, select replacement big end bearings.

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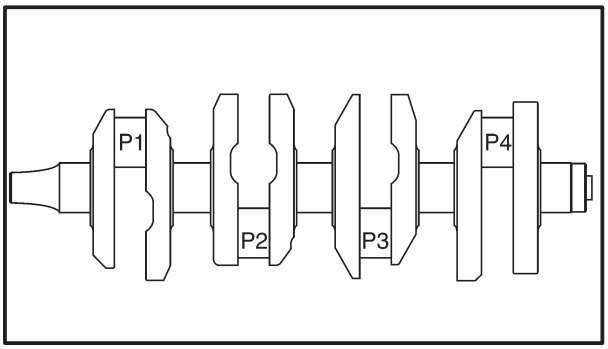
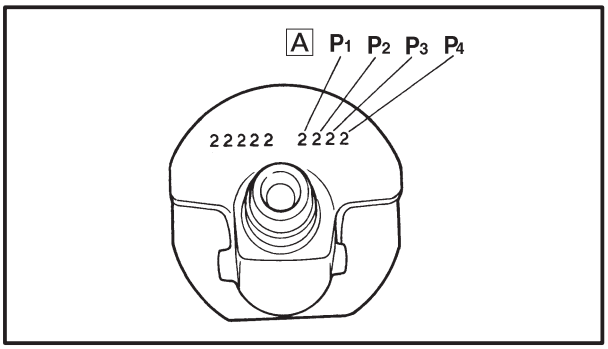


2. Select:
   • big end bearings (P1 ~ P4)

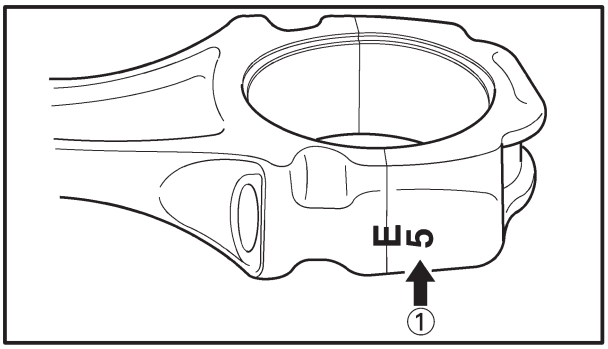
NOTE:

- The numbers Ⓐ stamped into the crankshaft web and the numbers ① on the connecting rods are used to determine the replacement big end bearing sizes.
- "P1" ~ "P4" refer to the bearings shown in the crankshaft illustration.

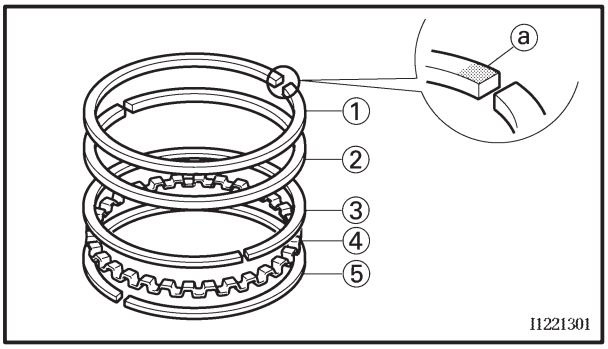


For example, if the connecting rod "P_1" and the crankshaft web "P_1" numbers are "5" and "2" respectively, then the bearing size for "P1" is:

"P_1" (connecting rod) – "P_1" (crankshaft) =
5 – 2 = 3 (brown)



BIG END BEARING COLOR CODE	
1	Blue
2	Black
3	Brown
4	Green



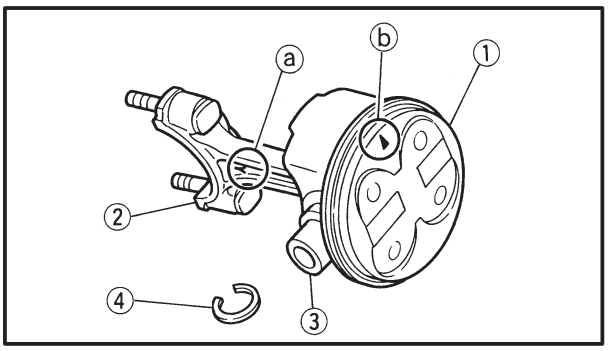
INSTALLING THE CONNECTING ROD AND PISTON (for EUR)

The following procedure applies to all of the connecting rods and pistons.

1. Install:
   - top ring ①
   - 2nd ring ②
   - upper oil ring rail ③
   - oil ring expander ④
   - lower oil ring rail ⑤

NOTE:

Be sure to install the piston rings so that the manufacturer's marks or numbers ⓐ face up.



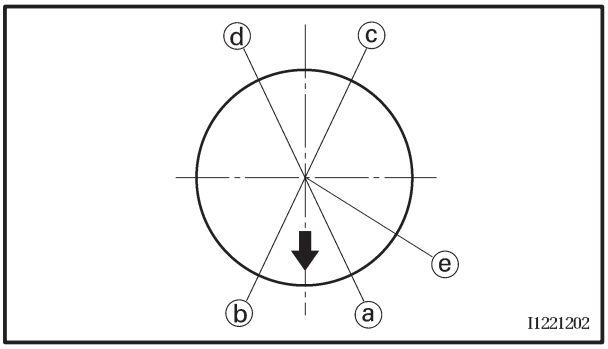
2. Install:
   - piston ①
     (onto the respective connecting rod ②)
   - piston pin ③
   - piston pin clip New ④

NOTE:

- Apply engine oil onto the piston pin.
- Make sure that the "Y" mark ⓐ on the connecting rod faces left when the arrow mark ⓑ on the piston is pointing up. Refer to the illustration.
- Reinstall each piston into its original cylinder (numbering order starting from the left: #1 to #4).

3. Lubricate:
   - piston
   - piston rings
   - cylinder
     (with the recommended lubricant)

	Recommended lubricant **Engine oil**



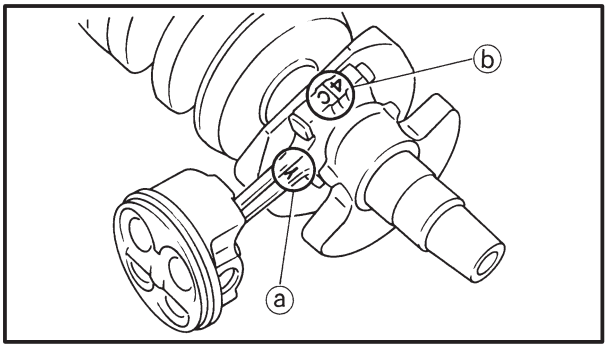
4. Offset:
   • piston ring end gaps

ⓐ Top ring
ⓑ Lower oil ring rail
ⓒ Upper oil ring rail
ⓓ 2nd ring
ⓔ Oil ring expander

5. Lubricate:
   • crankshaft pins
   • big end bearings
   • connecting rod big end inner surface
   (with the recommended lubricant)

Recommended lubricant
Engine oil

6. Install:
   • big end bearings
   • connecting rod assembly
   (into the cylinder and onto the crankshaft pin)
   • connecting rod cap
   (onto the connecting rod)



NOTE:

- Align the projections on the big end bearings with the notches in the connecting rods and connecting rod caps.
- Be sure to reinstall each big end bearing in its original place.
- While compressing the piston rings with one hand, install the connecting rod assembly into the cylinder with the other hand.
- Make sure that the "Y" marks ⓐ on the connecting rods face towards the left side of the crankshaft.
- Make sure that the characters ⓑ on both the connecting rod and connecting rod cap are aligned.

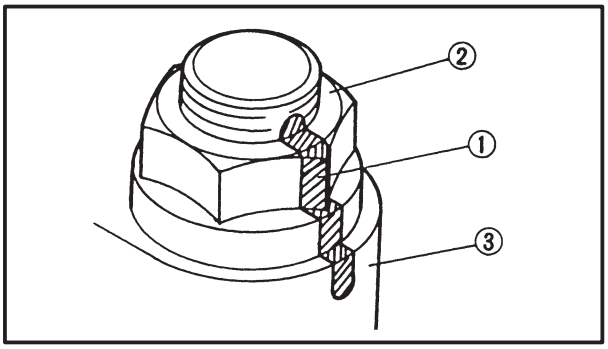
7. Align:
   • bolt heads
   (with the connecting rod caps)
8. Tighten:
   • connecting rod nuts

15 Nm (1.5 m•kg, 11 ft•lb) + 150°

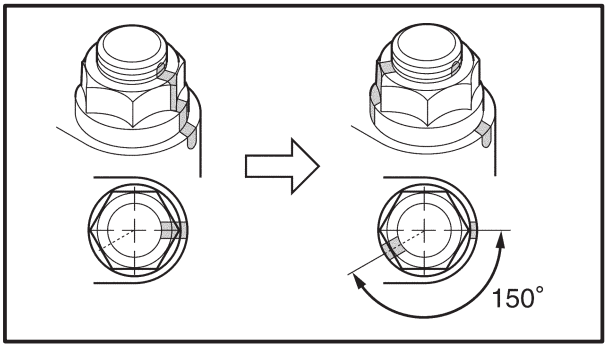
a. Replace the connecting rod bolts and nuts with new ones.

CAUTION:

Tighten the connecting rod bolts using the plastic-region tightening angle method. Always install new bolts and nuts.



b. Clean the connecting rod bolts and nuts.
c. Tighten the connecting rod nuts.
d. Put a mark ① on the corner of the connecting rod nut ② and the connecting rod cap ③.



e. Tighten the nut further to reach the specified angle (150°).

⚠ WARNING

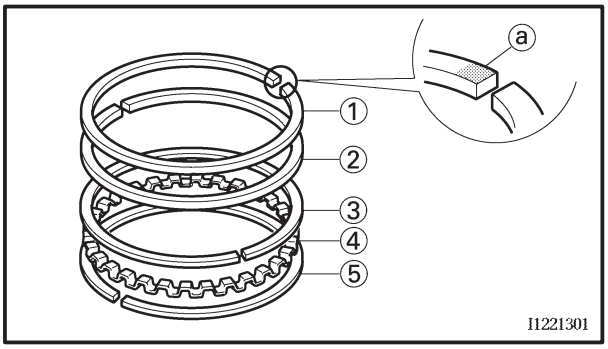
When the nut is tightened more than the specified angle, do not loosen the bolt and then retighten it.
Replace the bolt with a new one and perform the procedure again.

CAUTION:

- **Do not use a torque wrench to tighten the nut to the specified angle.**
- **Tighten the nut until it is at the specified angles.**

NOTE:

When using a hexagonal nut, note that the angle from one corner to another is 60°.



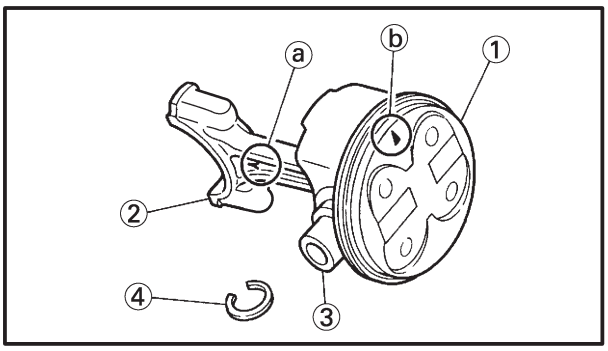
INSTALLING THE CONNECTING ROD AND PISTON (for OCE)

The following procedure applies to all of the connecting rods and pistons.

1. Install:
   - top ring ①
   - 2nd ring ②
   - upper oil ring rail ③
   - oil ring expander ④
   - lower oil ring rail ⑤

NOTE:

Be sure to install the piston rings so that the manufacturer's marks or numbers ⓐ face up.



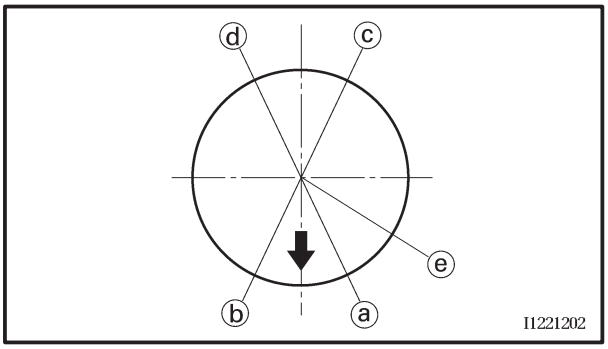
2. Install:
   - piston ①
     (onto the respective connecting rod ②)
   - piston pin ③
   - piston pin clip New ④

NOTE:

- Apply engine oil onto the piston pin.
- Make sure that the "Y" mark ⓐ on the connecting rod faces left when the arrow mark ⓑ on the piston is pointing up. Refer to the illustration.
- Reinstall each piston into its original cylinder (numbering order starting from the left: #1 to #4).

3. Lubricate:
   - piston
   - piston rings
   - cylinder
     (with the recommended lubricant)

	Recommended lubricant **Engine oil**

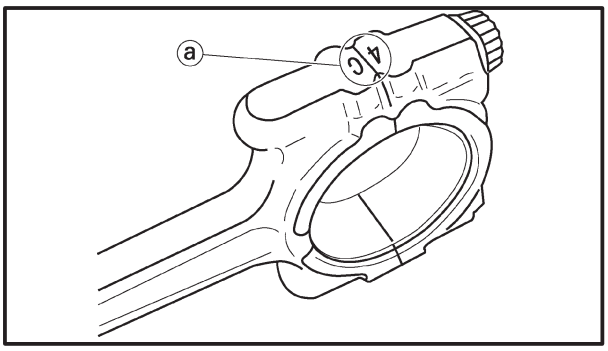


4. Offset:
   • piston ring end gaps

ⓐ Top ring
ⓑ Lower oil ring rail
ⓒ Upper oil ring rail
ⓓ 2nd ring
ⓔ Oil ring expander

5. Lubricate:
   • crankshaft pins
   • big end bearings
   • connecting rod big end inner surface
     (with the recommended lubricant)

	Recommended lubricant **Engine oil**



6. Install:
   • big end bearings
   • connecting rod cap
     (onto the connecting rod)

NOTE:

- Align the projections on the big end bearings with the notches in the connecting rods and connecting rod caps.
- Make sure that the characters ⓐ on both the connecting rod and connecting rod cap are aligned.

7. Tighten:

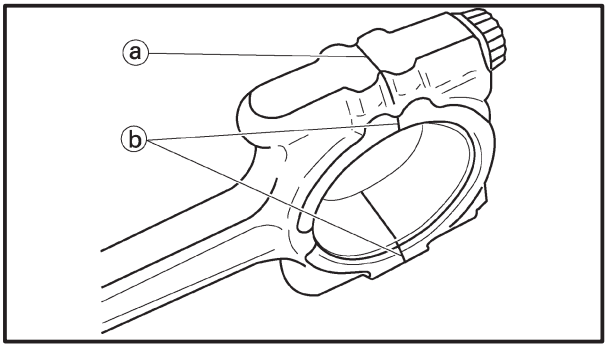
NOTE:

Install by carrying out the following procedures in order to assemble in the most suitable condition.

- connecting rod bolts.

24.5 Nm (2.5 m•kg, 17.7 ft•lb)

a. Replace the connecting rod bolts with new ones.
b. Clean the connecting rod bolts.
c. After installing the big end bearing, assemble the connecting rod and connecting rod cap once using a single unit of the connecting rod.
d. Tighten the connecting rod bolt while checking that the sections shown ⓐ and ⓑ are flush with each other by touching the surface.
   - Side machined face ⓐ
   - Thrusting faces (4 places at front and rear) ⓑ

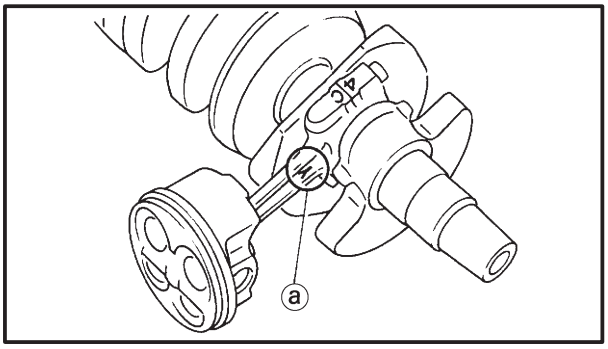


NOTE:

To install the big end bearing, care should be taken not to install it at an angle and the position should not be out of alignment.

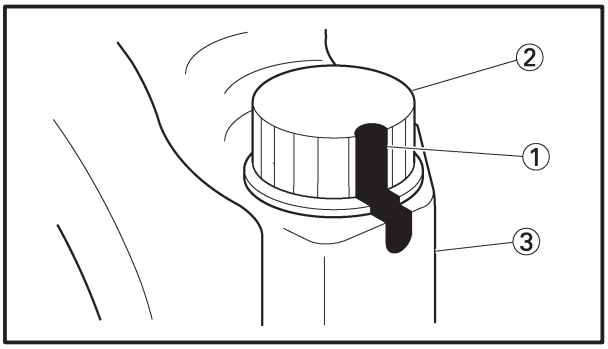
e. Loosen the connecting rod bolt, remove the connecting rod and connecting rod cap and install these parts to the crankshaft with the big end bearing kept in the current condition.

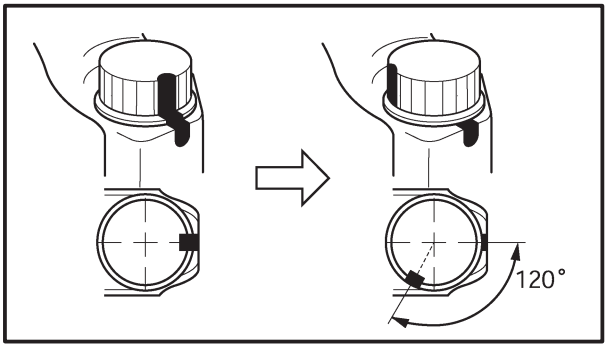
8. Install:
   - connecting rod assembly
     (into the cylinder and onto the crankshaft pin)

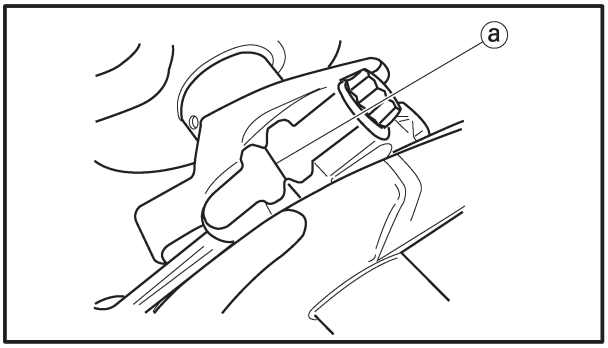


NOTE:

- While compressing the piston rings with one hand, install the connecting rod assembly into the cylinder with the other hand.
- Make sure that the "Y" marks ⓐ on the connecting rods face towards the left side of the crankshaft.







9. Tighten:
   • connecting rod bolts
   15 Nm (1.5 m•kg, 11 ft•lb) + 120°

CAUTION:

Tighten the connecting rod bolts using the plastic-region tightening angle method.

a. Clean the connecting rod bolts.
b. Tighten the connecting rod bolts.
c. Put a mark ① on the corner of the connecting rod bolt ② and the connecting rod cap ③.
d. Tighten the bolt further to reach the specified angle (120°).

e. After the installation, check that the section shown ⓐ is flush with each other by touching the surface.
   • Side machined face ⓐ

⚠ WARNING

- **When the bolt is tightened more than the specified angle, do not loosen the bolt and then retighten it.**
  Replace the bolt with a new one and perform the procedure again.
- **If they are not flush with each other, remove the connecting rod bolt and big end bearing and restart from step "7". In this case, make sure to replace the connecting rod bolt.**

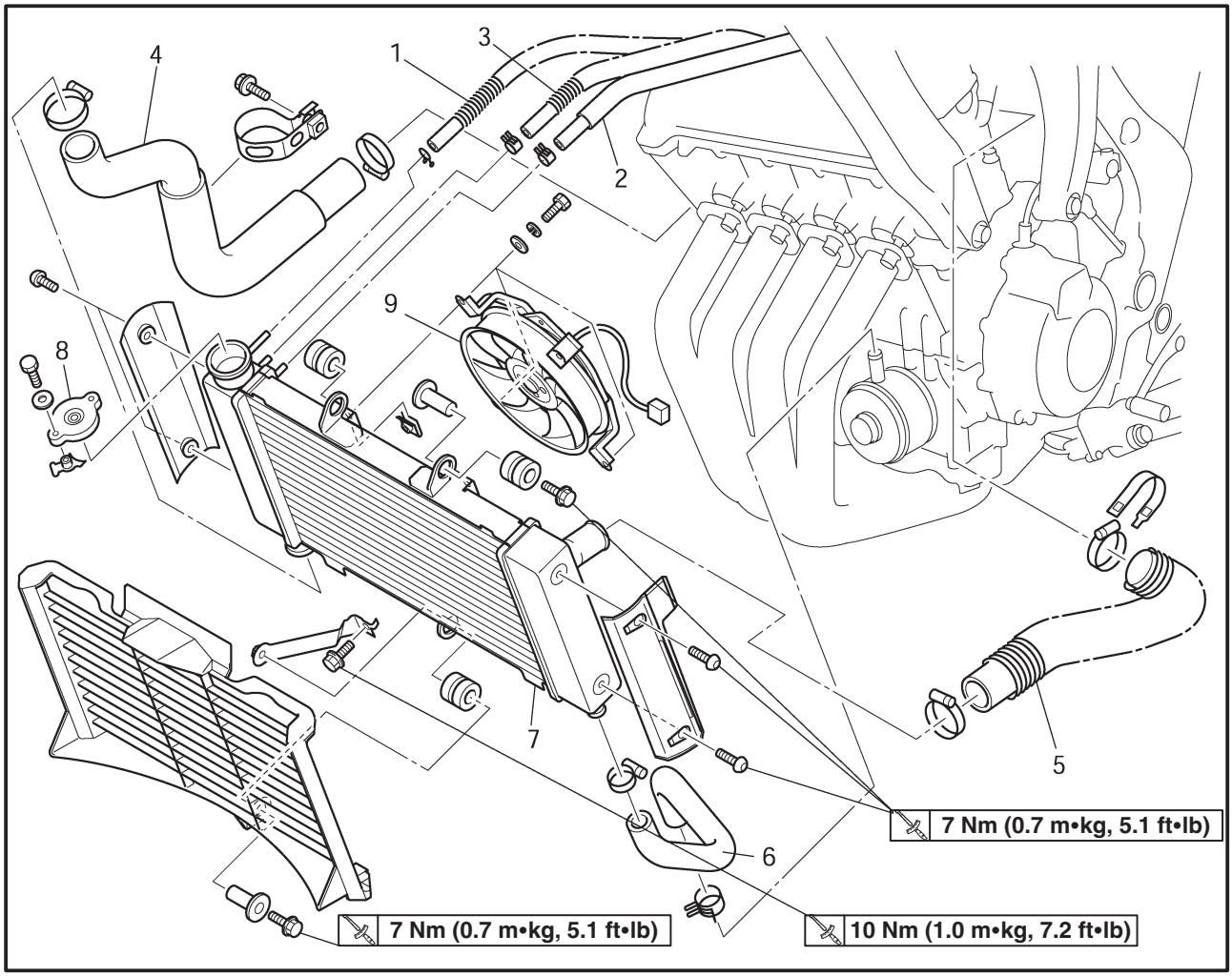
CAUTION:

- **Do not use a torque wrench to tighten the bolt to the specified angle.**
- **Tighten the bolt until it is at the specified angles.**

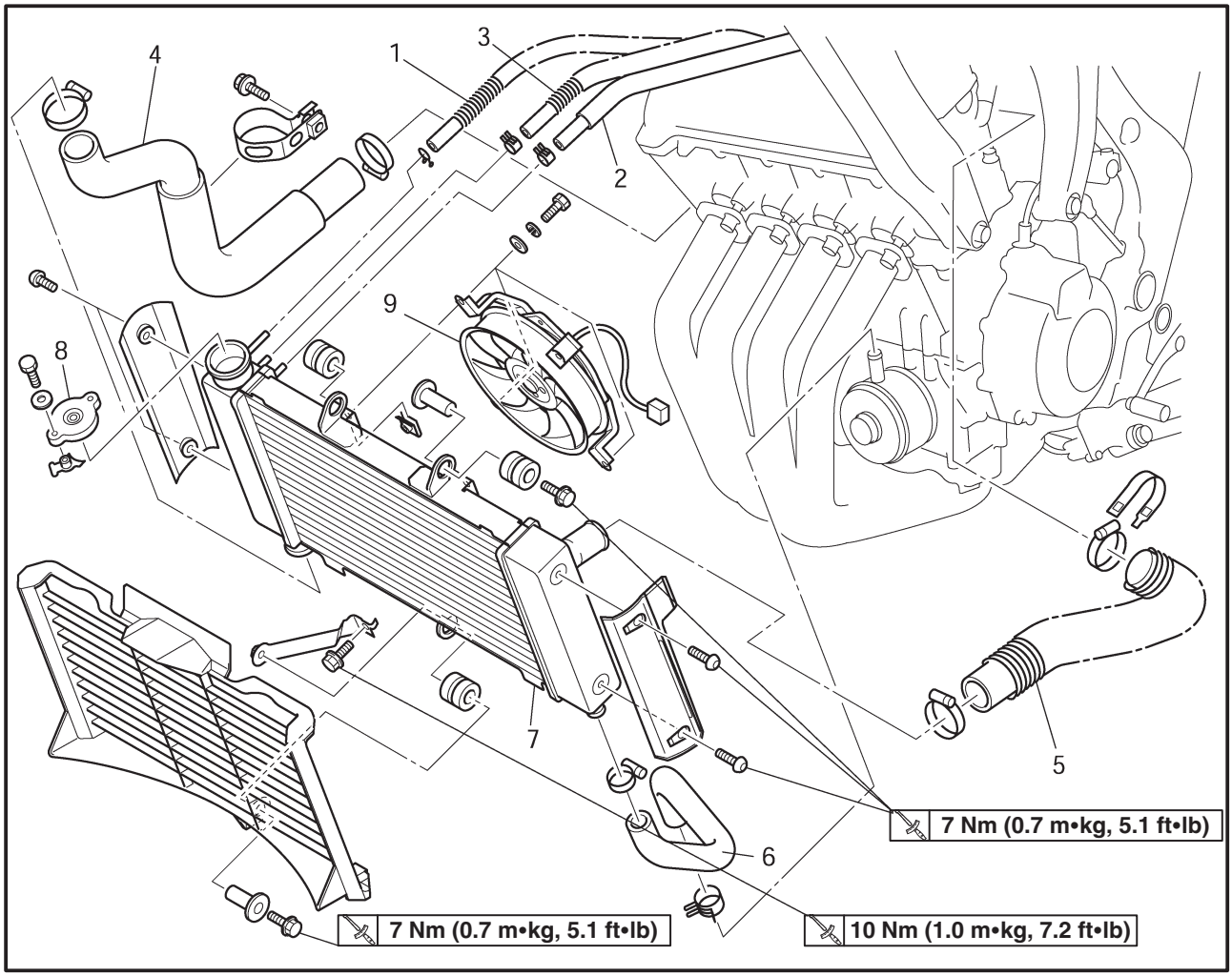
EAS00454

COOLING SYSTEM

RADIATOR

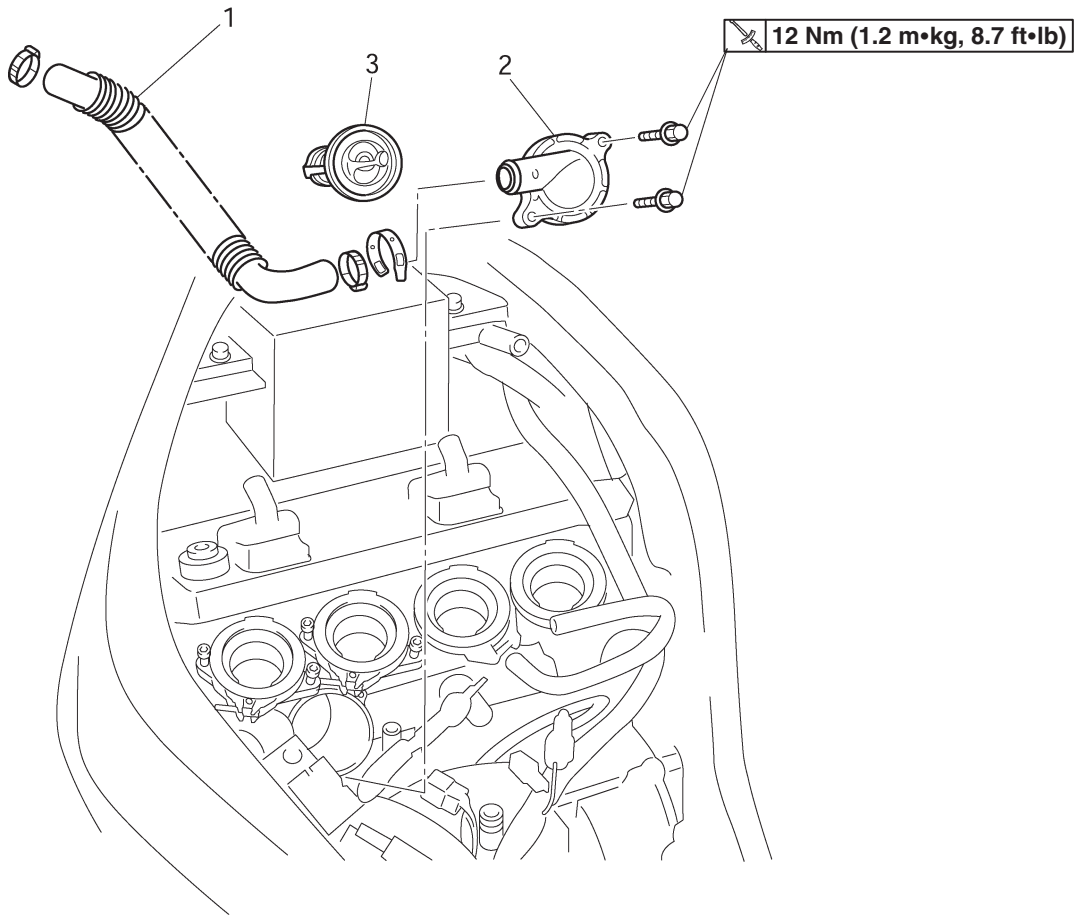


Order	Job/Part	Q'ty	Remarks
	Removing the radiator		Remove the parts in the order listed.
	Seat		Refer to "SEAT" in chapter 3.
	Front cowling inner panel (left and right)		Refer to "COWLINGS"
	Fuel tank		Refer to "FUEL TANK" in chapter 3.
	Air filter case		Refer to "AIR FILTER CASE" in chapter 3.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
1	Coolant reservoir hose and protector	1	Disconnect.
2	Throttle body hose	1	Disconnect.
3	Water pump breather hose and protector	1	Disconnect.
4	Radiator outlet hose	1	
5	Radiator inlet hose and protector	1	
6	Oil cooler outlet hose	1	
7	Radiator	1	
8	Radiator cap	1	



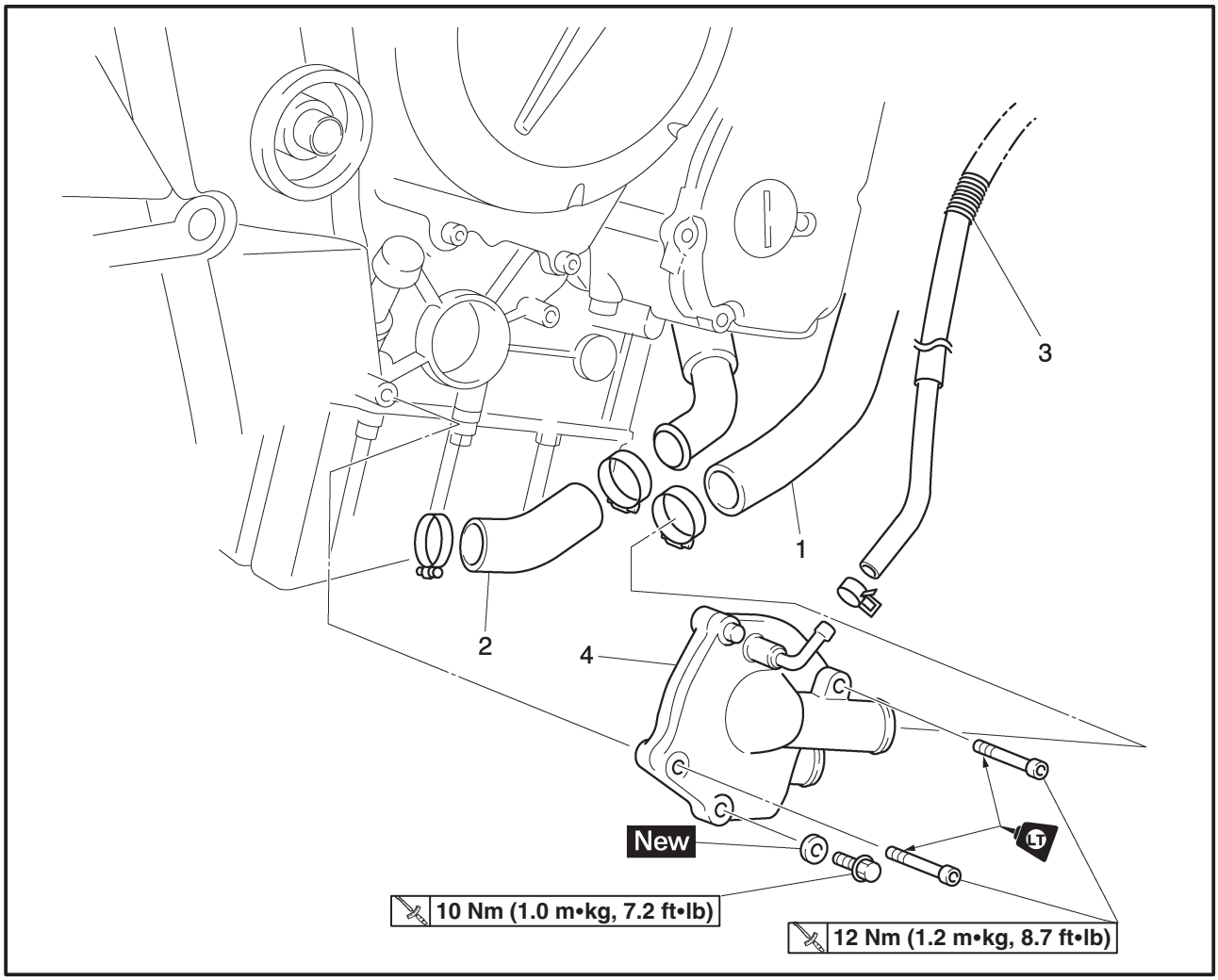
Order	Job/Part	Q'ty	Remarks
9	Radiator fan	1	For installation, reverse the removal procedure.

EAS00460
THERMOSTAT



Order	Job/Part	Q'ty	Remarks
	Removing the thermostat		Remove the parts in the order listed.
	Seat		Refer to "SEAT" in chapter 3.
	Front cowling inner panel (left and right)		Refer to "COWLINGS"
	Fuel tank		Refer to "FUEL TANK"
	Air filter case		Refer to "AIR FILTER CASE" in chapter 3.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
	Throttle body assembly		Refer to "THROTTLE BODIES" in chapter 7.
1	Radiator inlet hose and protector	1	
2	Thermostat cover	1	
3	Thermostat	1	
			For installation, reverse the removal procedure.

EAS00468
WATER PUMP



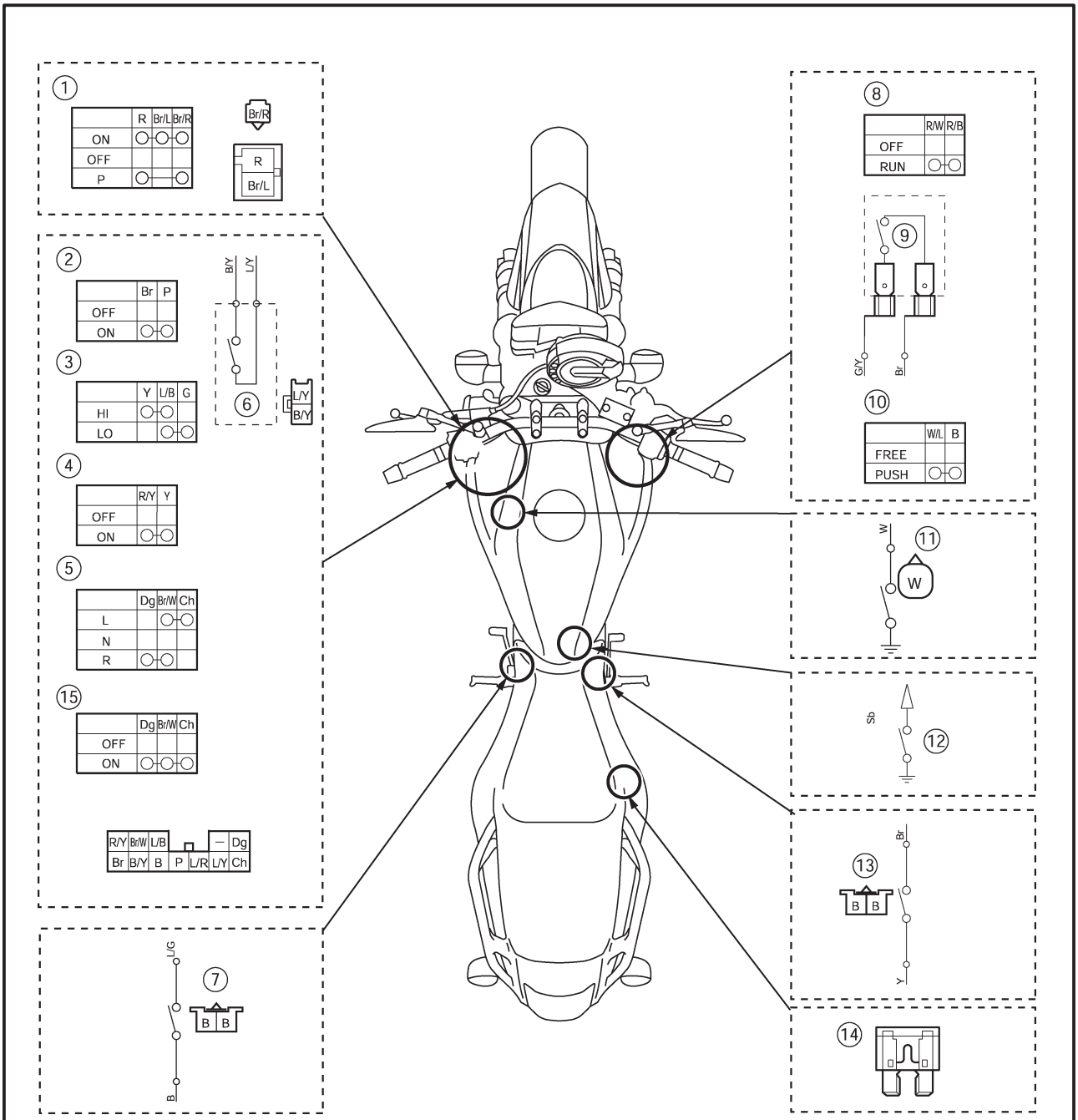
Order	Job/Part	Q'ty	Remarks
	Removing the water pump		Remove the parts in the order listed. **NOTE:** It is not necessary to remove the water pump unless the coolant level is extremely low or the coolant contains engine oil.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
1	Radiator outlet hose	1	Disconnect.
2	Water pump outlet hose	1	
3	Water pump breather hose and protector	1	Disconnect.
4	Water pump	1	
			For installation, reverse the removal procedure.

EAS00731

ELECTRICAL SYSTEM

CHECKING THE SWITCHES

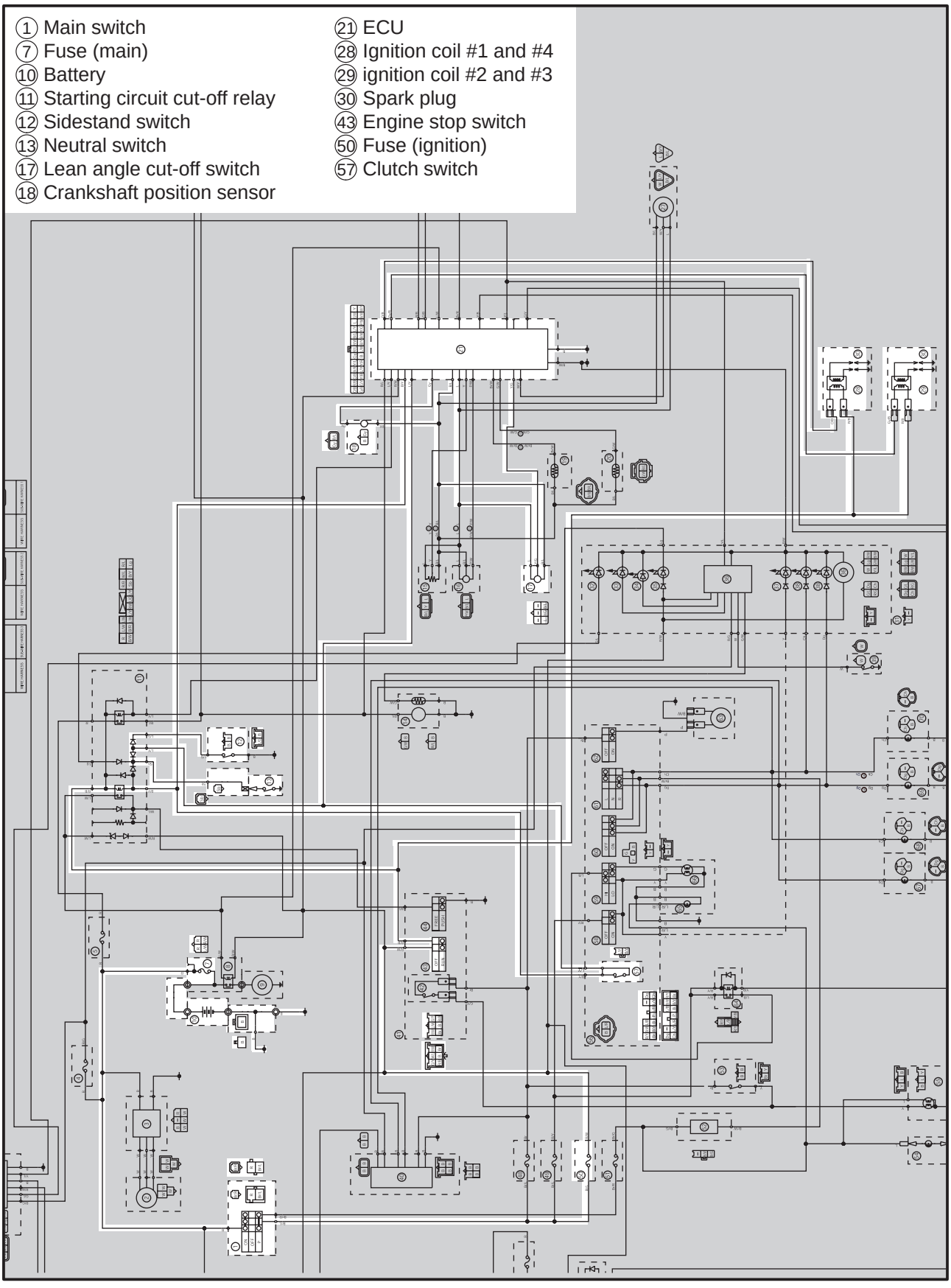
Check each switch for damage or wear, proper connections, and also for continuity between the terminals. Refer to “CHECKING SWITCH CONTINUITY”.
Damage/wear → Repair or replace.
Improperly connected → Properly connect.
Incorrect continuity reading → Replace the switch.



1. Main switch
2. Horn switch
3. Dimmer switch
4. Pass switch
5. Turn signal switch
6. Clutch switch
7. Sidestand switch
8. Engine stop switch
9. Front brake light switch
10. Start switch
11. Oil level switch
12. Neutral switch
13. Rear brake light switch
14. Fuse box
15. Hazard switch

EAS00735

IGNITION SYSTEM
CIRCUIT DIAGRAM



EAS00737
TROUBLESHOOTING

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

Check:
1. main and ignition fuses
2. battery
3. spark plugs
4. ignition spark gap
5. spark plug cap resistance
6. ignition coil resistance
7. crankshaft position sensor
8. main switch
9. engine stop switch
10. neutral switch
11. sidestand switch
12. clutch switch
13. starting circuit cut-off relay (diode)
14. lean angle cut-off switch
15. wiring connections
    (of the entire ignition system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. seat
2. fuel tank
3. side cowlings

- Troubleshoot with the following special tool(s).

Dynamic spark tester
YM-34487
Ignition checker
90890-06754
Pocket tester
90890-03112, YU-3112

EAS00738
1. Main and ignition fuses

- Check the main and ignition fuses for continuity.
  Refer to "CHECKING THE FUSES" in chapter 3.
- Are the main and ignition fuses 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.

EAS00741
3. Spark plugs

The following procedure applies to all of the spark plugs.
- Check the condition of the spark plug.
- Check the spark plug type.
- Measure the spark plug gap.
  Refer to "CHECKING THE SPARK PLUGS" in chapter 3.

Standard spark plug
CR9EK (NGK)
Spark plug gap
0.6 ~ 0.7 mm (0.0236 ~ 0.0276 in)

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

YES ⇩

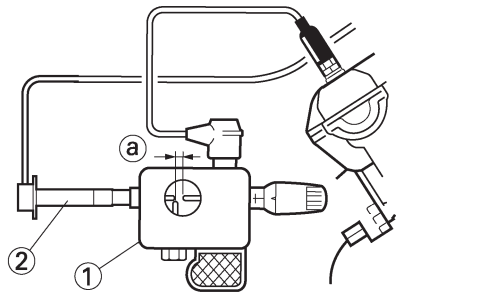
NO ⇩

Re-gap or replace the spark plug.

EAS00743

4. Ignition spark gap

The following procedure applies to all of the spark plugs.
- Disconnect the spark plug cap from the spark plug.
- Connect the ignition checker ① and spark plug cap ② as shown.
- Set the main switch to "ON".
- Measure the ignition spark gap ⓐ.
- Crank the engine by pushing the starter switch and gradually increase the spark gap until a misfire occurs.



I8110202

Minimum ignition spark gap
6 mm (0.24 in)

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

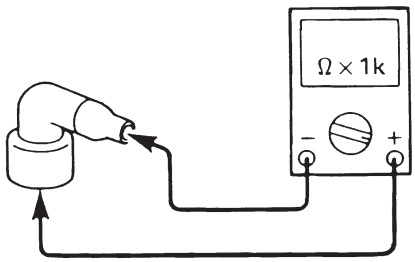
NO → The ignition system is OK.

YES

EAS00745

5. Spark plug cap resistance

The following procedure applies to all of the spark plug caps.
- Remove the spark plug cap from the spark plug lead.
- Connect the pocket tester (Ω × 1k) 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

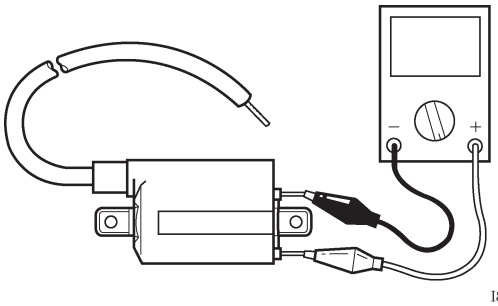
NO → Replace the spark plug cap.

EAS00747

6. Ignition coil resistance

The following procedure applies to all of the ignition coils.
- Disconnect the ignition coil leads from the wire harness.
- Connect the pocket tester (Ω × 1) to the ignition coil as shown.

Positive tester probe → red/black
Negative tester probe → orange/black (gray/black)



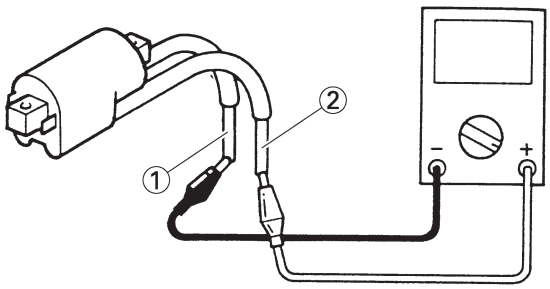
I8110104

- Measure the primary coil resistance.

Primary coil resistance
1.53 ~ 2.07 Ω at 20°C (68°F)

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

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



• Measure the secondary coil resistance.

Secondary coil resistance
12 ~ 18 kΩ at 20°C (68°F)

• Is the ignition coil OK?

YES

NO

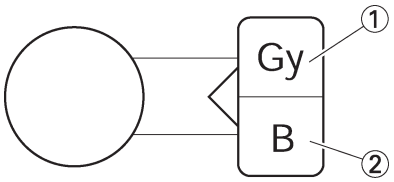
Replace the ignition coil.

EAS00748

7. Crankshaft position sensor resistance

• Disconnect the crankshaft position sensor coupler from the wire harness.
• Connect the pocket tester (Ω × 100) to the crankshaft position sensor coupler as shown.

Positive tester probe → gray ①
Negative tester probe → black ②



• Measure the crankshaft position sensor resistance.

Crankshaft position sensor resistance
248 ~ 372 Ω at 20°C (68°F)
(between gray and black)

• Is the crankshaft position sensor OK?

YES

NO

Replace the crankshaft position sensor.

EAS00749

8. Main switch

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

YES

NO

Replace the main switch.

EAS00750

9. Engine stop switch

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

YES

NO

Replace the right handlebar switch.

EAS00751

10. Neutral switch

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

YES

NO

Replace the neutral switch.

EAS00752

11. Sidestand switch

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

YES

NO

Replace the sidestand switch.

EAS00763

12. Clutch switch

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

YES

NO

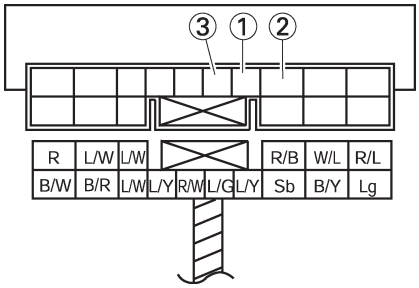
Replace the clutch switch.

EAS00753

13. Starting circuit cut-off relay (diode)

- Disconnect the starting circuit cut-off relay coupler from the wire harness.
- Connect the pocket tester (Ω × 1) to the starting circuit cut-off relay coupler as shown.
- Check the starting circuit cut-off relay for continuity.

Positive tester probe → sky blue ② **Negative tester probe → blue/yellow ①**	**Continuity**
Positive tester probe → blue/yellow ① **Negative tester probe → blue/green ③**	
Positive tester probe → sky blue ② **Negative tester probe → blue/yellow ①**	**No continuity**
Positive tester probe → blue/green ③ **Negative tester probe → blue/yellow ①**	



NOTE:

When you switch the positive and negative tester probes, the readings in the above chart will be reversed.

- Are the tester readings correct?

YES

NO

Replace the starting circuit cut-off relay.

14. Lean angle cut-off switch

- Check the lean angle cut-off switch. Refer to “FUEL INJECTION SYSTEM” in chapter 7.
- Is the lean angle cut-off switch OK?

YES

NO

Replace the lean angle cut-off switch.

EAS00754

15. Wiring

- Check the entire ignition system's wiring. Refer to "CIRCUIT DIAGRAM".
- Is the ignition system's wiring properly connected and without defects?

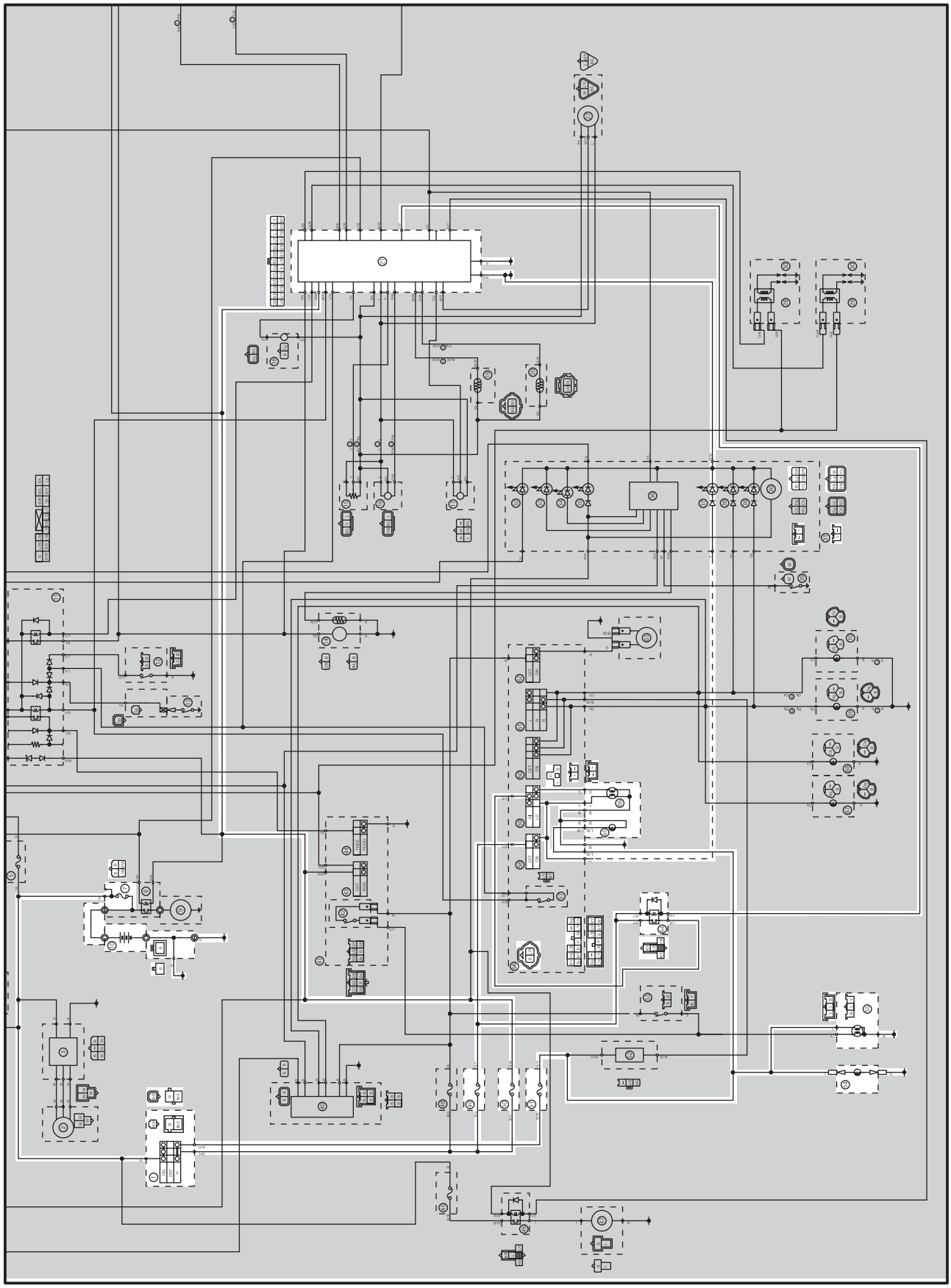
YES ⇩ Replace the ECU.

NO ⇩ Properly connect or repair the ignition system's wiring.

EAS00780

LIGHTING SYSTEM

CIRCUIT DIAGRAM



① Main switch
⑦ Fuse (main)
⑩ Battery
㉑ ECU
㊲ High beam indicator light
㊾ Fuse (headlight)
㊿ Fuse (ignition)
(51) Fuse (park)
(54) License plate light
(55) Tail/brake light
(58) Pass switch
(59) Dimmer switch
(64) Dimmer relay
(65) Auxiliary light
(66) Headlight

EAS00781
TROUBLESHOOTING

Any of the following fail to light: headlight, high beam indicator light, taillight, licence light or meter light.

Check:
1. main, park, ignition and headlight fuses
2. battery
3. main switch
4. dimmer switch
5. pass switch
6. dimmer relay
7. wiring connections
   (of the entire lighting system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. seat
2. front cowling inner panel (left and right)
3. fuel tank
4. side cover

- Troubleshoot with the following special tool(s).

Pocket tester
90890-03112, YU-3112

EAS00738
1. Main, headlight, ignition and park fuses
- Check the main, park, ignition and headlight fuses for continuity.
  Refer to “CHECKING THE FUSES” in chapter 3.
- Are the main, park, ignition and headlight fuses 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.

EAS00749
3. Main switch
- Check the main switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES ⇩ NO ⇩

Replace the main switch.

EAS00784
4. Dimmer switch
- Check the dimmer switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the dimmer switch OK?

YES ⇩ NO ⇩

The dimmer switch is faulty. Replace the left handlebar switch.

EAS00786
5. Pass switch
- Check the pass switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the pass switch OK?

YES ⇩ NO ⇩

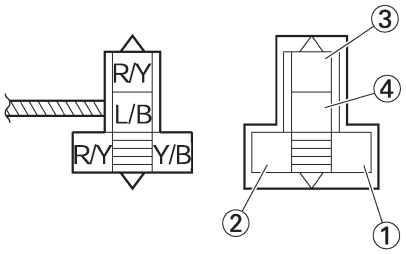
The pass switch is faulty. Replace the left handlebar switch.

6. Dimmer relay

- Disconnect the dimmer relay from the coupler.
- Connect the pocket tester (Ω × 1) and battery (12 V) to the dimmer relay as shown.

Positive battery lead → red/yellow ①
Negative battery lead → yellow/black ②

Positive tester probe → red/yellow ③
Negative tester probe → blue/black ④



- Does the dimmer relay have continuity between red/yellow and green?

YES

NO

Replace the dimmer relay.

EAS00787

7. Wiring

- Check the entire lighting system's wiring. Refer to "CIRCUIT DIAGRAM".
- Is the lighting system's wiring properly connected and without defects?

YES

NO

Check the condition of each of the lighting system's circuits. Refer to "CHECKING THE LIGHTING SYSTEM".

Properly connect or repair the lighting system's wiring.

EAS00788
CHECKING THE LIGHTING SYSTEM

1. The headlight and the high beam indicator light fail to come on.

1. Headlight bulb and socket

- Check the headlight bulb and socket for continuity.
  Refer to "CHECKING THE BULBS AND BULB SOCKETS".
- Are the headlight bulb and socket OK?

YES

NO

Replace the headlight bulb, socket or both.

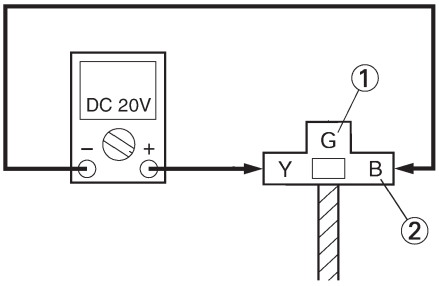
2. Voltage

- Connect the pocket tester (DC 20 V) to the headlight and meter assembly couplers as shown.

A When the dimmer switch is set to " ≡D "
B When the dimmer switch is set to " ≡D "

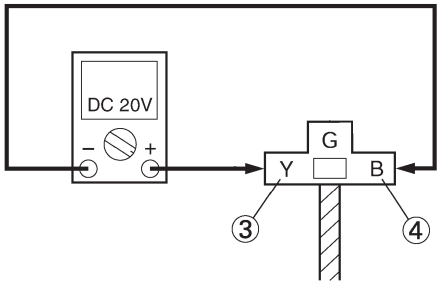
Headlight
Positive tester probe → green ①
Negative tester probe → black ②

Headlight coupler (wire harness side)
A Low beam



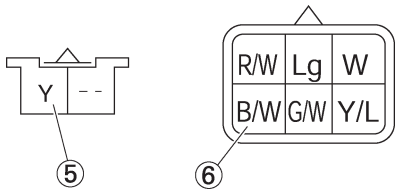
Headlight
Positive tester probe → yellow ③
Negative tester probe → black ④

Headlight coupler (wire harness side)
B High beam



High beam indicator light (LEDs)
Positive tester probe → yellow ⑤
Negative tester probe → black/white ⑥

Meter assembly coupler (wire harness side)



- Turn the main switch to "ON".
- Start the engine.
- Set the dimmer switch to " ≡D " or " ≡D ".
- Measure the voltage (DC 12 V) of green ① or yellow ③ on the headlight coupler (wire harness side).
- Is the voltage within specification?

YES

NO

This circuit is OK.

The wiring circuit from the main switch to the headlight coupler is faulty and must be repaired.

EAS00792
2. The license plate light fails to come on.

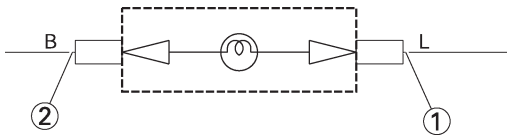
1. License plate light bulb and socket
- Check the license plate light bulb and socket for continuity.
  Refer to "CHECKING THE BULBS AND BULB SOCKETS".
- Are the license plate light bulb and socket OK?

YES → 2. Voltage

NO → Replace the license plate light bulb, socket or both.

2. Voltage
- Connect the pocket tester (DC 20 V) to the license plate light coupler (wire harness light side) as shown.

Positive tester probe → blue ①
Negative tester probe → black ②



- Turn the main switch to "ON".
- Measure the voltage (DC 12 V) of blue ① on the license plate light coupler (wire harness side).
- Is the voltage within specification?

YES → This circuit is OK.

NO → The wiring circuit from the main switch to the license plate light coupler is faulty and must be repaired.

EAS00790
3. The tail/brake light fails to come on.

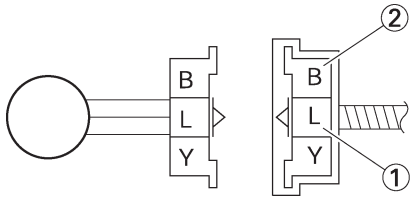
1. Tail/brake light bulb and socket
- Check the tail/brake light bulb and socket for continuity.
  Refer to "CHECKING THE BULBS AND BULB SOCKETS".
- Are the tail/brake light bulb and socket OK?

YES → 2. Voltage

NO → Replace the tail/brake light bulb, socket or both.

2. Voltage
- Connect the pocket tester (DC 20 V) to the tail/brake light coupler (wire harness side) as shown.

Positive tester probe → blue ①
Negative tester probe → black ②



- Turn the main switch to "ON".
- Measure the voltage (DC 12 V) of blue ② on the tail/brake light coupler (wire harness side).
- Is the voltage within specification?

YES → This circuit is OK.

NO → Wiring circuit from the main switch to the tail/brake light coupler is faulty and must be repaired.

EAS00791

4. The auxiliary light fails to come on.

1. Auxiliary light and socket

- Check the auxiliary light bulb and socket for continuity.
  Refer to "CHECKING THE BULBS AND BULB SOCKETS".
- Are the auxiliary light .bulb and socket OK?

YES

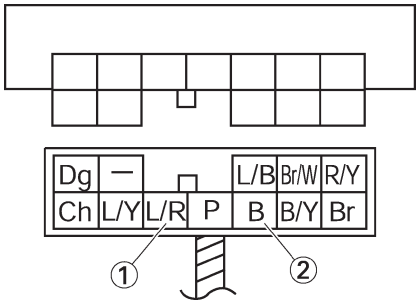
NO

Replace the auxiliary light bulb, socket or both.

2. Voltage

- Connect the pocket tester (DC 20 V) to the left handlebar switch (wire harness side) as shown.

Positive tester probe → blue/red ①
Negative tester probe → black ②



- Turn the main switch to "ON".
- Measure the voltage (DC 12 V) of black ② on the left handlebar switch (wire harness side).
- Is the voltage within specification?

YES

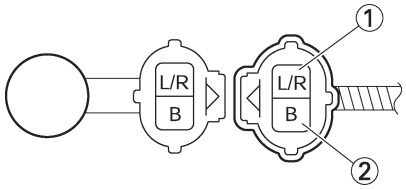
NO

The wiring circuit from the main switch to the left handlebar switch is faulty and must be repaired.

3. Voltage

- Connect the pocket tester (DC 20 V) to the auxiliary light coupler (wire harness side) as shown.

Positive tester probe → blue/red ①
Negative tester probe → black ②



- Turn the main switch to "ON".
- Measure the voltage (DC 12 V) of black ② on the auxiliary light coupler (wire harness side).
- Is the voltage within specification?

YES

NO

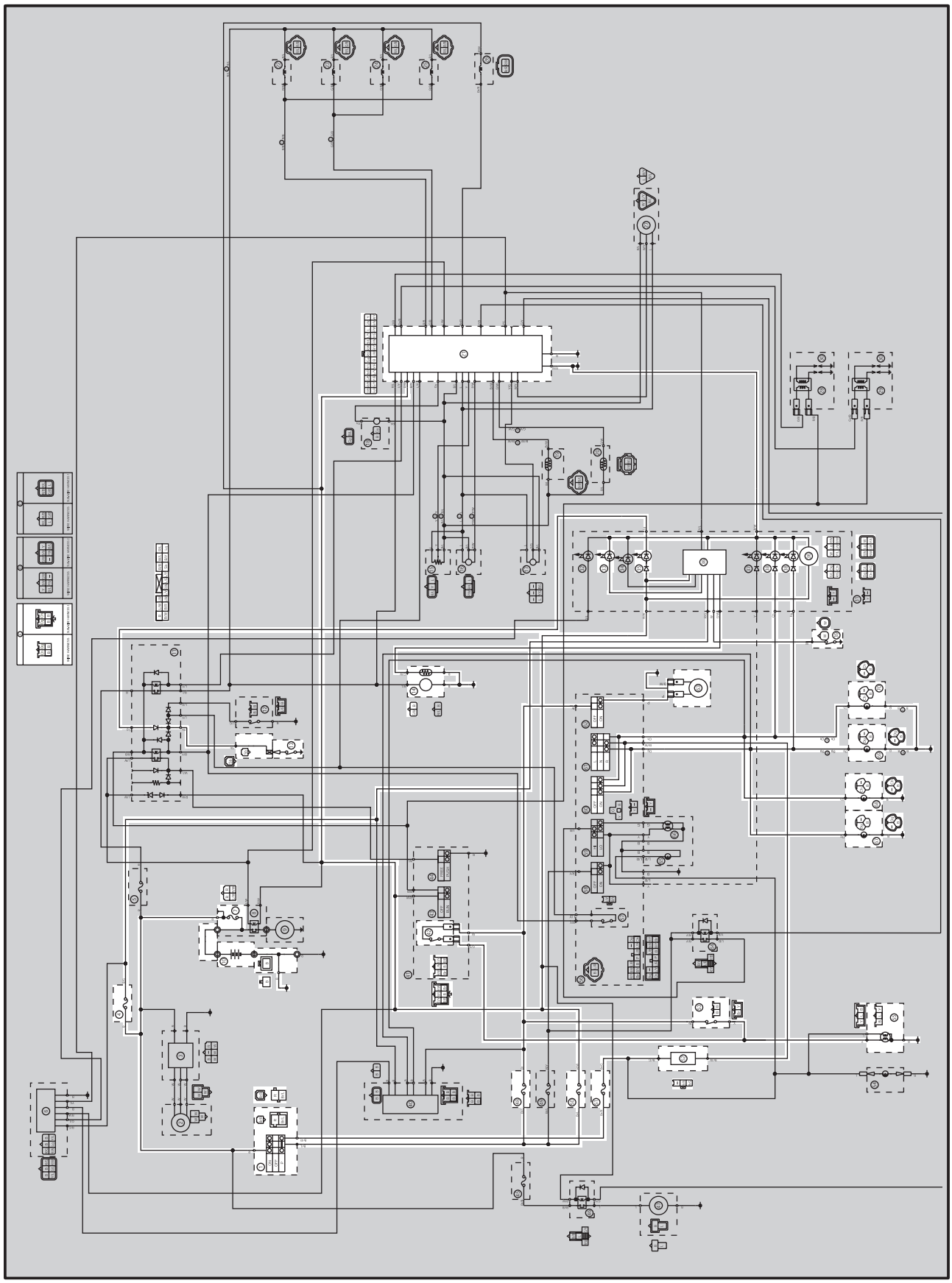
This circuit is OK.

Replace the left handlebar switch.

EAS00793

SIGNALING SYSTEM

CIRCUIT DIAGRAM



① Main switch
④ Fuse (backup)
⑦ Fuse (main)
⑩ Battery
⑪ Starting circuit cut-off relay
⑬ Neutral switch
⑭ Fuel pump
㉑ ECU
㉝ Oil level waning light
㉟ Neutral indicator light
㊱ Multi-function meter
㊳ Turn signal indicator light
㊴ Oil level switch
㊷ Front brake light switch
㊽ Fuse (signal)
㊿ Fuse (ignition)
(51) Fuse (park)
(52) Turn signal relay
(53) Rear brake light switch
(55) Tail/brake light
(60) Hazard switch
(61) Turn signal switch
(62) Horn switch
(63) Horn
(67) Rear turn signal light (right)
(68) Rear turn signal light (left)
(69) Front turn signal light (right)
(70) Front turn signal light (left)

EAS00794
TROUBLESHOOTING

• Any of the following fail to light: turn signal light, brake light or an indicator light.
• The horn fails to sound.

Check:
1. backup, main, ignition, signal, and park fuses
2. battery
3. main switch
4. wiring connections (of the entire signaling system)

NOTE:
• Before troubleshooting, remove the following part(s):
1. seat
2. front cowling inner panel (left and right)
3. fuel tank
4. side cover

• Troubleshoot with the following special tool(s).


Pocket tester
90890-03112, YU-3112

EAS00738
1. Backup, main, ignition, signal and park fuses

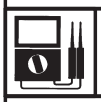
• Check the backup, main, ignition, signal and park fuses for continuity.
Refer to "CHECKING THE FUSES" in chapter 3.
• Are the backup, main, ignition, signal and park fuses OK?

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.

EAS00749
3. Main switch

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

YES ⇩ NO ⇩

Replace the main switch.

EAS00795
4. Wiring

• Check the entire signaling system's wiring.
Refer to "CIRCUIT DIAGRAM".
• Is the signaling system's wiring properly connected and without defects?

YES ⇩ NO ⇩

Check the condition of each of the signaling system's circuits. Refer to "CHECKING THE LIGHTING SYSTEM".

Properly connect or repair the signaling system's wiring.

EAS00796
CHECKING THE SIGNALING SYSTEM
1. The horn fails to sound.

1. Horn switch

• Check the horn switch for continuity.
Refer to "CHECKING THE SWITCHES".
• Is the horn switch OK?

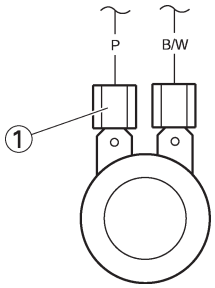
YES ⇩ NO ⇩

Replace the left handlebar switch.

2. Voltage

- Connect the pocket tester (DC 20 V) to the horn connector at the horn terminal as shown.

Negative tester probe → ground
Positive tester probe → pink ①



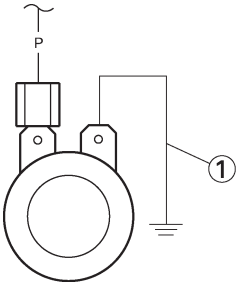
- Turn the main switch to "ON".
- Push the horn switch.
- Measure the voltage (DC 12 V) of pink at the horn terminal.
- Is the voltage within specification?

YES → The wiring circuit from the main switch to the horn connector is faulty and must be repaired.

NO

3. Horn

- Disconnect the black connector at the horn terminal.
- Connect a jumper lead ① to the horn terminal and ground the jumper lead.
- Turn the main switch to "ON".
- Push the horn switch.
- Does the horn sound?



YES → The horn is OK.

NO → Replace the horn.

EAS00797
2. The tail/brake light fails to come on.

1. Tail/brake light bulb and socket

- Check the tail/brake light bulb and socket for continuity.
  Refer to "CHECKING THE BULBS AND BULB SOCKETS".
- Are the tail/brake light bulb and socket OK?

YES

NO → Replace the tail/brake light bulb, socket or both.

2. Brake light switches

- Check the brake light switches for continuity.
  Refer to "CHECKING THE SWITCHES".
- Is the brake light switch OK?

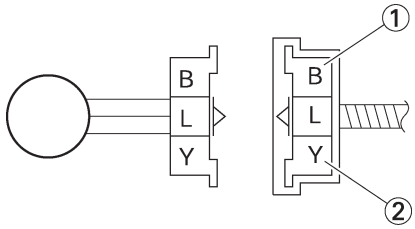
YES

NO → Replace the brake light switch.

3. Voltage

- Connect the pocket tester (DC 20 V) to the tail/brake light coupler (wire harness side) as shown.

Negative tester probe → black ①
Positive tester probe → yellow ②



- Turn the main switch to "ON".
- Pull in the brake lever or push down on the brake pedal.
- Measure the voltage (DC 12 V) of yellow ② on the tail/brake light coupler (wire harness side).
- Is the voltage within specification?

YES

This circuit is OK.

NO

The wiring circuit from the main switch to the tail/brake light coupler is faulty and must be repaired.

EAS00799

3. The turn signal light, turn signal indicator light or both fail to blink.

1. Turn signal indicator light (LEDs)

- Check the turn signal indicator light for continuity.
  Refer to "CHECKING THE LEDs".
- Are the turn signal indicator light OK?

YES

NO

Replace the meter assembly.

2. Turn signal switch

- Check the turn signal switch for continuity.
  Refer to "CHECKING THE SWITCHES".
- Is the turn signal switch OK?

YES

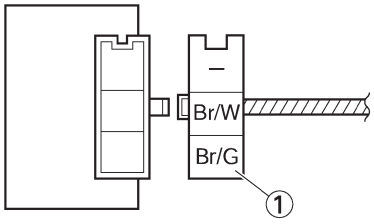
NO

Replace the left handlebar switch.

3. Voltage

- Connect the pocket tester (DC 20 V) to the turn signal relay coupler (wire harness side) as shown.

Negative tester probe → ground
Positive tester probe → brown/green ①



- Turn the main switch to "ON".
- Measure the voltage (DC 12 V) on brown/green ① at the turn signal relay coupler (wire harness side).
- Is the voltage within specification?

YES

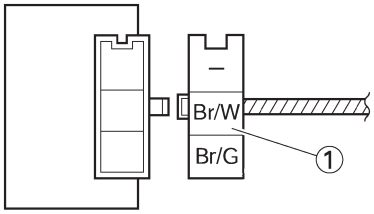
NO

The wiring circuit from the main switch to the turn signal relay coupler is faulty and must be repaired.

4. Voltage

- Connect the pocket tester (DC 20 V) to the turn signal relay coupler (wire harness side) as shown.

Positive tester probe → ground
Negative tester probe → brown/white ①



- Turn the main switch to "ON".
- Measure the voltage (DC 12 V) on brown/white ① at the turn signal relay coupler (wire harness side).
- Is the voltage within specification?

YES

NO

The turn signal relay is faulty and must be replaced.

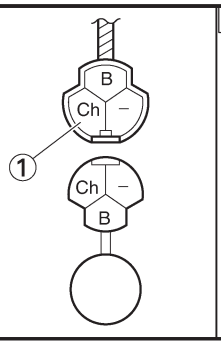
5. Voltage

- Connect the pocket tester (DC 20 V) to the turn signal light connector or meter assembly coupler (wire harness side) as shown.

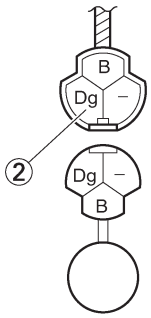
A Left turn signal light
B Right turn signal light
C Turn signal indicator light

Left turn signal light
Positive tester probe → ground
Negative tester probe → chocolate ①
Right turn signal light
Positive tester probe → ground
Negative tester probe → dark green ②

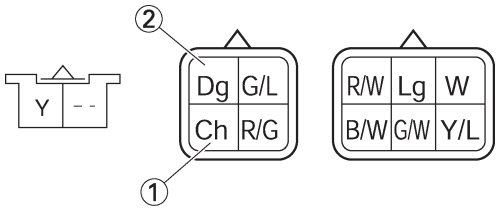
A



B



C



- Turn the main switch to "ON".
- Set the turn signal switch to "⇦" or "⇨".
- Measure the voltage (DC 12 V) of the chocolate ① or dark green ② at the turn signal light connector (wire harness side).
- Is the voltage within specification?

YES

This circuit is OK.

NO

The wiring circuit from the turn signal switch to the turn signal light connector is faulty and must be repaired.

EAS00801

4. The neutral indicator light fails to come on.

1. Neutral indicator light (LEDs)

- Check the neutral indicator light for continuity.
  Refer to "CHECKING THE LEDs".
- Are the neutral indicator light OK?

YES

NO

Replace the meter assembly.

2. Neutral switch

- Check the neutral switch for continuity.
  Refer to "CHECKING THE SWITCHES".
- Is the neutral switch OK?

YES

NO

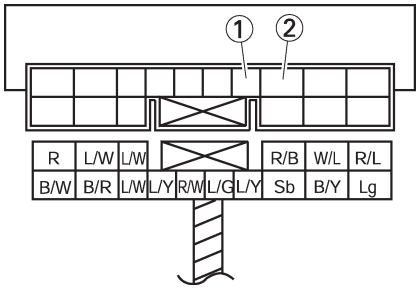
Replace the neutral switch.

EAS00753

3. Starting circuit cut-off relay (diode)

- Disconnect the starting circuit cut-off relay coupler from the wire harness.
- Connect the pocket tester (Ω × 1) to the starting circuit cut-off relay coupler as shown.
- Check the starting circuit cut-off relay for continuity.

Positive tester probe → blue/yellow ① **Negative tester probe → sky blue ②**	**Continuity**
Positive tester probe → sky blue ② **Negative tester probe → blue/yellow ①**	**No continuity**



NOTE:
When you switch the positive and negative tester probes, the readings in the above chart will be reversed.

• Are the tester readings correct?

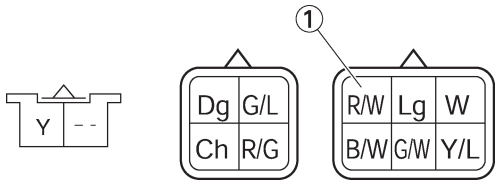
YES ⇩ NO ⇩

Replace the starting circuit cut-off relay.

4. Voltage

• Connect the pocket tester (DC 20 V) to the meter assembly coupler (wire harness side) as shown.

Negative tester probe → ground
Positive tester probe → red/white ①



• Turn the main switch to "ON".
• Measure the voltage (DC 12 V) of red/white at the meter assembly coupler (wire harness side).
• Is the voltage within specification?

YES ⇩ NO ⇩

This circuit is OK.

The wiring circuit from the main switch to the meter assembly coupler is faulty and must be repaired.

EAS00802

5. The oil level warning light fails to come on.

1. Oil level warning light (LEDs)

• Check the oil level warning light for continuity.
When the main switch is turn to "ON", the oil level warning light is come on.
• Are the oil level warning light OK?

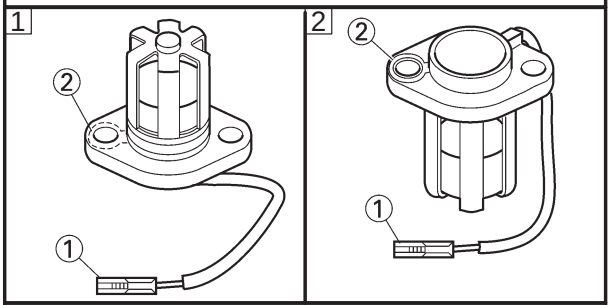
YES ⇩ NO ⇩

Replace the meter assembly.

2. Oil level switch

• Drain the engine oil and remove the oil level switch from the oil pan.
• Connect the pocket tester (Ω × 100) to the oil level switch as shown.

Positive tester probe →
Connector ① (white)
Negative tester probe → Body ground ②



• Measure the oil level switch resistance.

Oil level switch resistance
1 114 ~ 126 Ω at 20°C (68°F)
2 484 ~ 536 Ω at 20°C (68°F)

• Is the oil level switch OK?

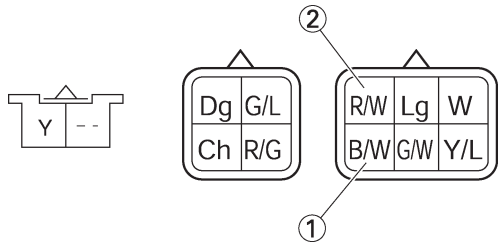
YES ⇩ NO ⇩

Replace the oil level switch.

3. Voltage

- Connect the pocket tester (DC 20 V) to the meter assembly coupler (wire harness side) as shown.

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



- Turn the main switch to "ON".
- Measure the voltage (DC 12V) of black/white ① and red/white ② at the meter assembly coupler.
- Is the voltage within specification?

YES

This circuit is OK.

NO

The wiring circuit from the main switch to the meter assembly is faulty and must be repaired.

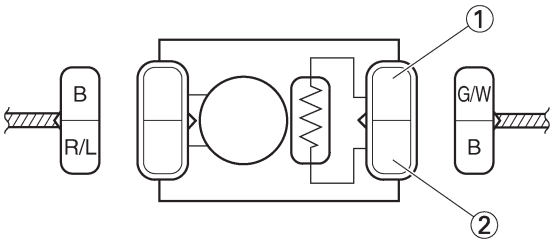
EAS00803

6. The fuel level warning light fails to come on.

1. Fuel sender

- Drain the fuel from the fuel tank and remove the fuel pump from the fuel tank.
- Disconnect the fuel sender coupler from the wire harness.
- Connect the pocket tester (Ω × 10) to the fuel sender terminals as shown.

Tester positive probe → green/white ①
Tester negative probe → black ②



- Measure the fuel sender resistances.

NOTE:

Measure the resistances when the float arm is in contact with the full position and empty position of the stopper.

Fuel sender resistance
Full position of the float
20 ~ 26 Ω at 20°C (68°F)
Empty position of the float
134 ~ 140 Ω at 20°C (68°F)

- Is the fuel sender OK?

YES

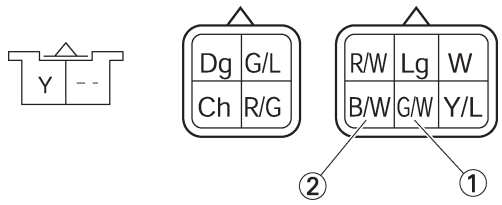
NO

Replace the fuel pump.

2. Voltage

- Connect the pocket tester (DC 20 V) to the meter assembly coupler (wire harness side) as shown.

Positive tester probe → green/white ①
Negative tester probe → black/white ②



- Turn the main switch to "ON".
- Measure the voltage (DC 12 V) of green/white ① and black/white ② at the meter assembly coupler.
- Is the voltage within specification?

YES → This circuit is OK.

NO → The wiring circuit from the main switch to the meter assembly coupler is faulty and must be repaired.

FZ6-N(S) 2004 WIRING DIAGRAM

1. Main switch
2. A.C. magneto
3. Rectifier/regulator
4. Fuse (backup)
5. Fuse (fuel injection)
6. Immobilizer unit
7. Fuse (main)
8. Starter relay
9. Starter motor
10. Battery
11. Starting circuit cut-off relay
12. Sidestand switch
13. Neutral switch
14. Fuel pump
15. Throttle position sensor
16. Intake air presser sensor
17. Lean angle cut-off switch
18. Crankshaft position sensor
19. Intake air temperature sensor
20. Coolant temperature sensor
21. ECU
22. Cylinder #1-injector
23. Cylinder #2-injector
24. Cylinder #3-injector
25. Cylinder #4-injector
26. Air cut-off valve
27. Speed sensor
28. Ignition coil #1 and #4
29. Ignition coil #2 and #3
30. Spark plug
31. Meter assembly
32. Immobilizer indicator light
33. Oil level warning light
34. Engine trouble warning light
35. Neutral indicator light
36. Multi-function meter
37. High beam indicator light
38. Turn signal indicator light
39. Oil level switch
40. CYCLELOCK (OPTION)
41. Right handlebar switch
42. Front brake light switch
43. Engine stop switch
44. Start switch
45. Fuse (radiator fan motor)
46. Radiator fan motor relay
47. Radiator fan motor
48. Fuse (signal)
49. Fuse (headlight)
50. Fuse (ignition)
51. Fuse (park)
52. Turn signal relay
53. Rear brake light switch
54. License plate light
55. Tail/brake light
56. Left handlebar switch
57. Clutch switch
58. Pass switch
59. Dimmer switch
60. Hazard switch
61. Turn signal switch
62. Horn switch
63. Horn
64. Dimmer relay
65. Auxiliary light
66. Headlight (high beam)
67. Rear turn signal light (right)
68. Rear turn signal light (left)
69. Front turn signal light (right)
70. Front turn signal light (left)

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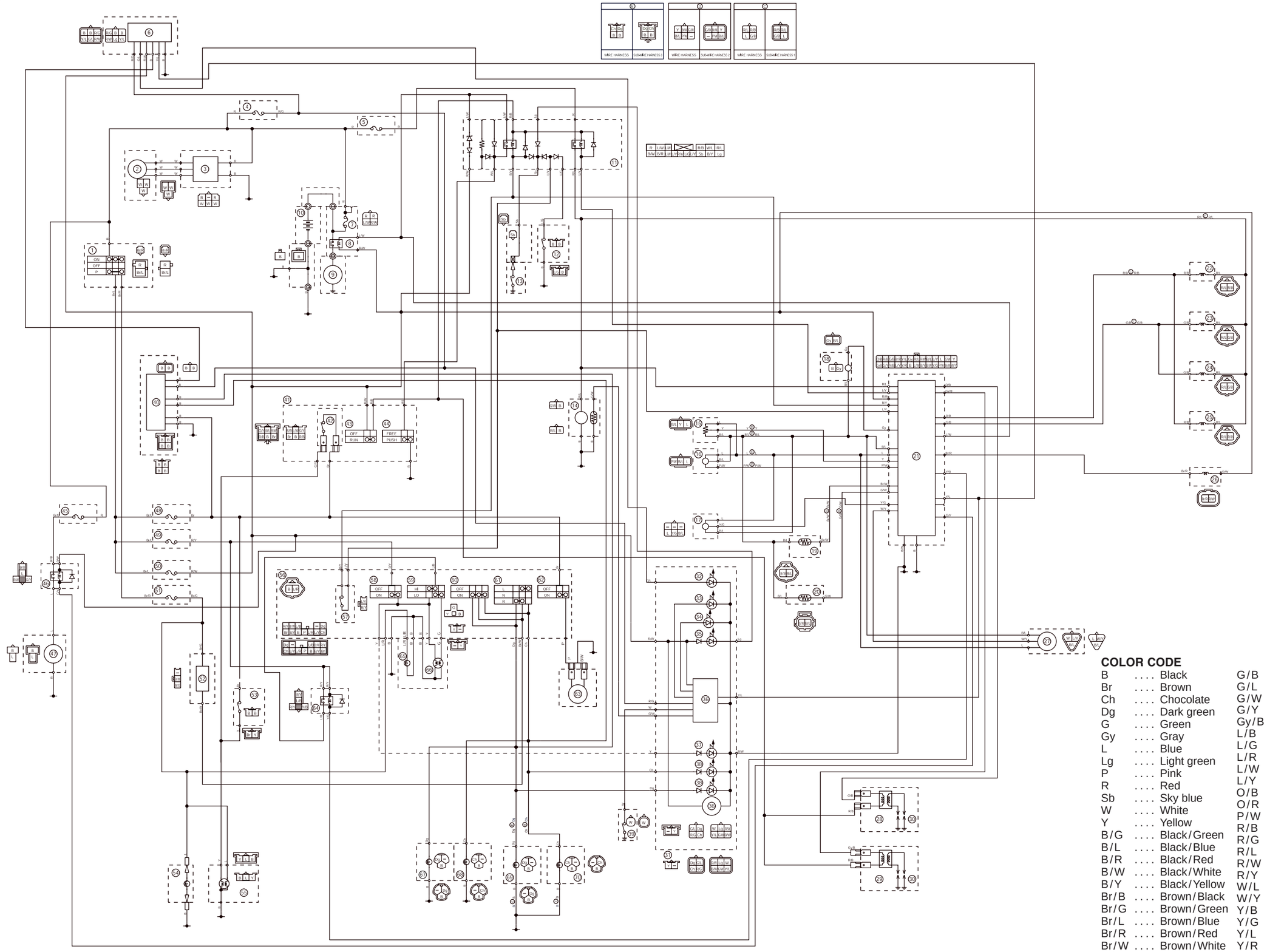
FZ6-N(S) 2004 WIRING DIAGRAM



COLOR CODE

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