



MIO

SERVICE MANUAL

5TL-F8197-E0

EAS00000

**AL115
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 motorcycle. Repair and maintenance work attempted by anyone without this knowledge is likely to render the motorcycle 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!



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.

HOW TO USE THIS MANUAL

CONSTRUCTION OF THIS MANUAL

This manual consists of chapters for the main categories of subjects. (See “symbols”)

1st title ①: This is a chapter with its symbol on the upper right of each page.

2nd title ②: This title appears on the upper of each page on the left of the chapter symbol. (For the chapter “Periodic checks and adjustments” the 3rd title appears.)

3rd title ③: This is a final title.

MANUAL FORMAT

All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspections.

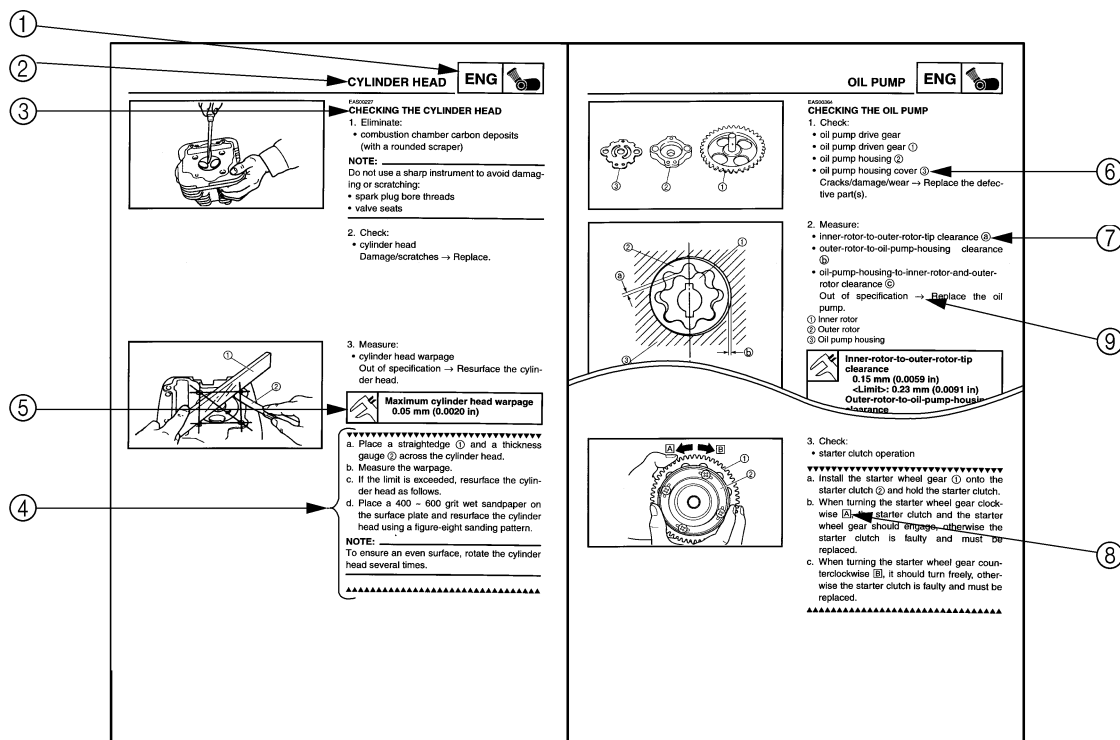
A set of particularly important procedure ④ is placed between a line of triangle “▲” with each procedure preceded by alphabetical letters.

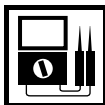
IMPORTANT FEATURES

- Data and a special too are framed in a box preceded by a relevant symbol ⑤.
- An encircled numeral ⑥ indicates a part name, and an encircled alphabetical letter or an alignment mark ⑦, the others being indicated by an alphabetical letter in a box ⑧.
- A condition of a faulty component will precede an arrow symbol and the course of action required the symbol ⑨.

EXPLODED DIAGRAMS

Each chapter provide exploded diagrams before each disassembly section for ease in identifying correct disassembly and assembly procedures.



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		㉑	
㉒		㉓		㉔	
㉕		㉖	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
- 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
- ㉑ Wheel-bearing grease
- ㉒ Lithium-soap-based grease
- ㉓ Molybdenum-disulfide grease

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

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

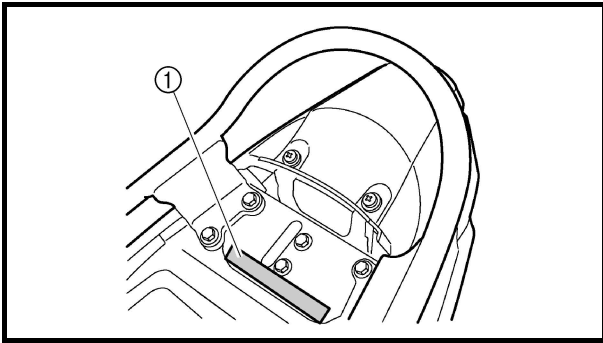
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CHAPTER 1

GENERAL INFORMATION

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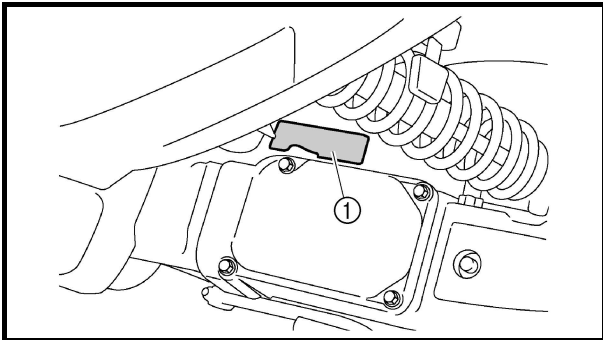
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GENERAL INFORMATION MOTORCYCLE IDENTIFICATION

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VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the frame.

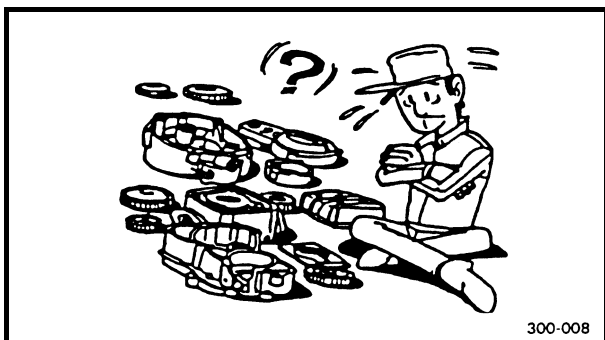
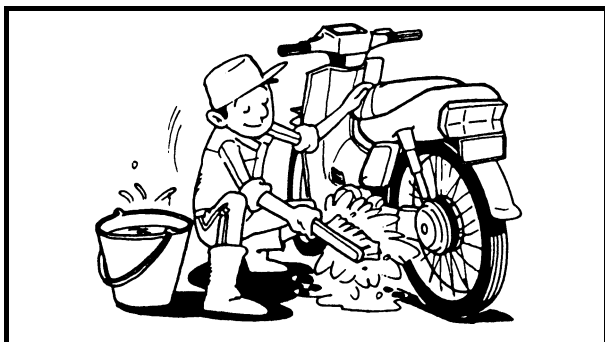


ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the crankcase.

NOTE:

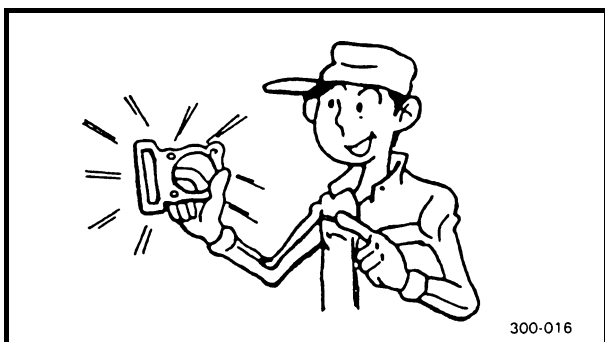
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IMPORTANT INFORMATION PREPARATION FOR REMOVAL AND DISASSEMBLY

1. Before removal and disassembly, remove all dirt, mud, dust and foreign material.
2. Use only the proper tools and cleaning equipment.
Refer to the "SPECIAL TOOLS".
3. When disassembling, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been "mated" through normal wear. Mated parts must always be reused or replaced as an assembly.
4. During disassembly, clean all of the parts and place them in trays in the order of disassembly. This will speed up assembly and allow for the correct installation of all parts.
5. Keep all parts away from any source of fire.



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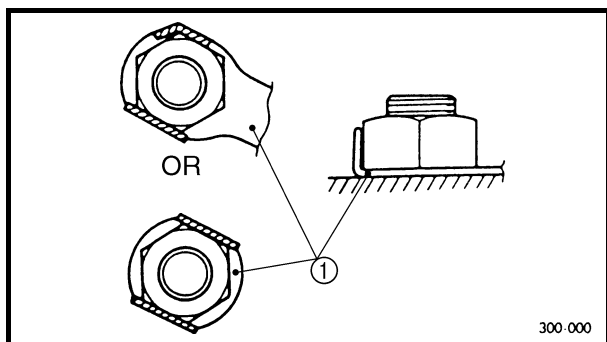
REPLACEMENT PARTS

Use only genuine Yamaha parts for all replacements. Use oil and grease recommended by Yamaha for all lubrication jobs. Other brands may be similar in function and appearance, but inferior in quality.

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GASKETS, OIL SEALS AND O-RINGS

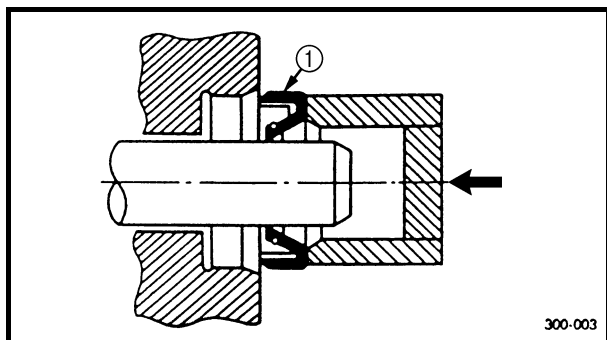
1. When overhauling the engine, replace all gaskets, seals and O-rings. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. During reassembly, properly oil all mating parts and bearings and lubricate the oil seal lips with grease.



EAS00023

LOCK WASHERS/PLATES AND COTTER PINS

After removal, replace all lock washers/plates ① and cotter pins. After the bolt or nut has been tightened to specification, bend the lock tabs along a flat of the bolt or nut.



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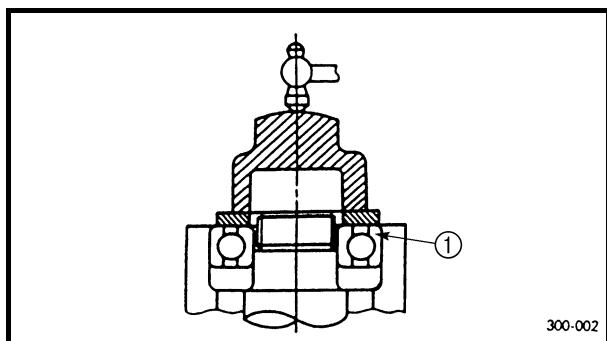
BEARINGS AND OIL SEALS

Install bearings and oil seals so that the manufacturer's marks or numbers are visible. When installing oil seals, lubricate the oil seal lips with a light coat of lithium-soap-based grease. Oil bearings liberally when installing, if appropriate.

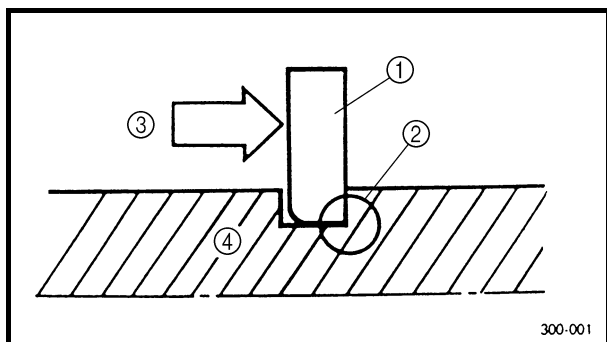
① Oil seal

CAUTION:

Do not spin the bearing with compressed air because this will damage the bearing surfaces.



① Bearing

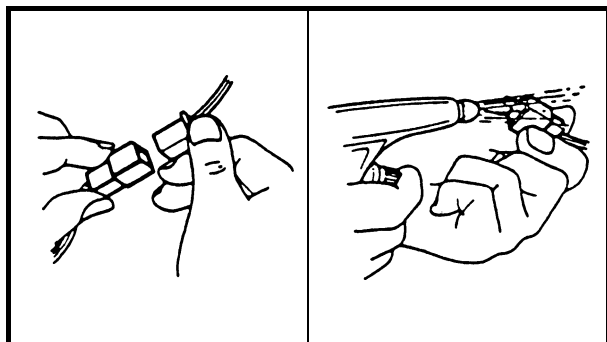


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CIRCLIPS

Before reassembly, check all circlips carefully and replace damaged or distorted circlips. Always replace piston pin clips after one use. When installing a circlip ①, make sure the sharp-edged corner ② is positioned opposite the thrust ③ that the circlip receives.

④ Shaft



EAS00026

CHECKING THE CONNECTIONS

Check the leads, couplers, and connectors for stains, rust, moisture, etc.

1. Disconnect:

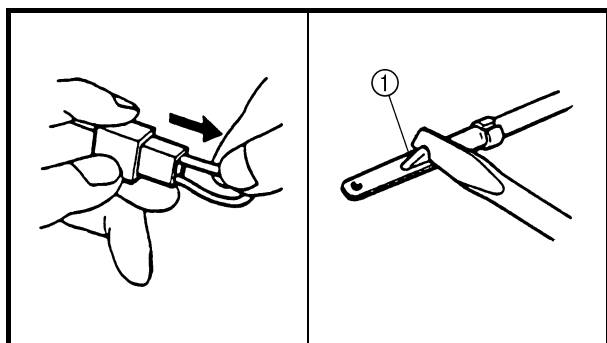
- lead
- coupler
- connector

2. Check:

- lead
- coupler
- connector

Moisture → Dry with an air blower.

Rust/stains → Connect and disconnect several times.



3. Check:

- all connections

Loose connection → Connect properly.

NOTE:

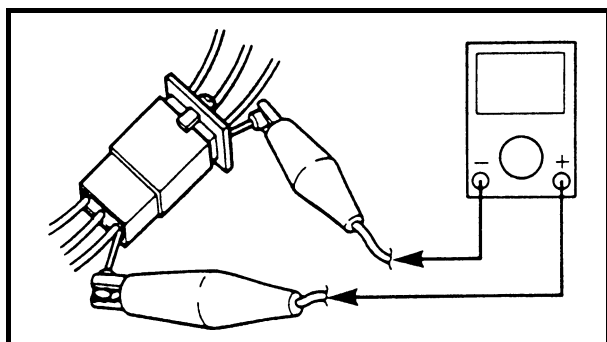
If the pin ① on the terminal is flattened, bend it up.

4. Connect:

- lead
- coupler
- connector

NOTE:

Make sure all connections are tight.



5. Check:

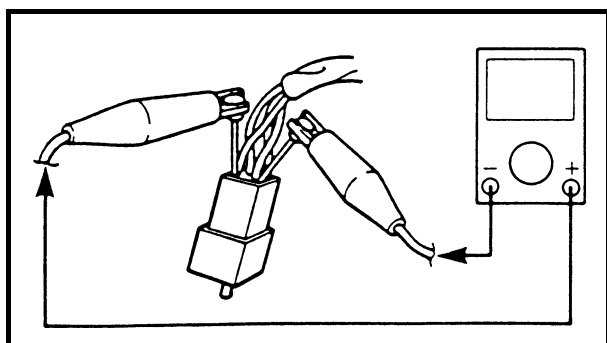
- continuity
(with the pocket tester)



Pocket tester
90890-03112

NOTE:

- If there is no continuity, clean the terminals.
- When checking the wire harness, perform steps (1) to (3).
- As a quick remedy, use a contact revitalizer available at most part stores.

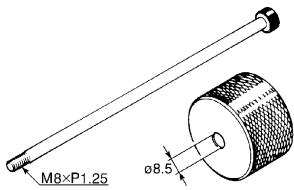
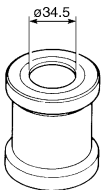
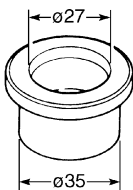
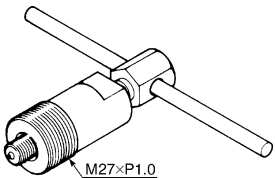
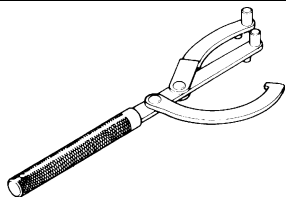
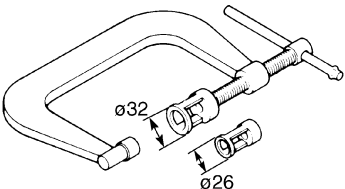
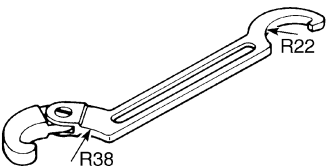


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SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools, part numbers or both may differ depending on the country.

When placing an order, refer to the list provided below to avoid any mistakes.

Tool No.	Tool name/Usage	Illustration
Weight 90890-01084 Slide hammer bolt 90890-01085	Weight Slide hammer bolt These tools are used when removing or installing the rocker arm shafts.	
90890-01184	Fork seal driver weight This tool is used to installing the oil seal.	
90890-01186	Fork seal driver attachment This tool is used to installing the oil seal.	
90890-01189	Flywheel puller This tool is used for removing the A.C. magneto rotor.	
90890-01235	Rotor holding tool This tool is used to hold the A.C. magneto rotor when removing or installing the A.C. magneto rotor nut.	
Compressor 90890-01253 Attachment 90890-01243	Valve spring compressor Valve spring compressor attachment These tools are used when removing or installing the valve and the valve spring.	
90890-01268	Ring nut wrench This tool is used to loosen and tighten the steering ring nut.	

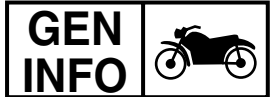
SPECIAL TOOLS

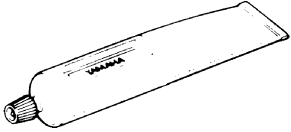


Tool No.	Tool name/Usage	Illustration
90890-01311	Tappet adjusting tool This tool is necessary for adjusting valve clearance.	
90890-01312	Fuel level gauge This gauge is used to measure the fuel level in the float chamber.	
90890-01326	T-handle This tool is used for holding the damper rod holder when removing or installing the damper rod holder.	
90890-01337	Clutch spring holder This tool is used to disassembly and assembly the secondary sheave.	
90890-01384	Oil seal guide This tool is used to install oil seals.	
90890-01403	Steering nut wrench This tool is used to loosen and tighten the steering ring nut.	
90890-01493	Socket wrench This tool is used to loosen and tighten the clutch carrier locknut of the secondary sheave.	
90890-01701	Sheave holder This tool is used for holding the primary sheave and secondary sheave.	



Tool No.	Tool name/Usage	Illustration
90890-03081	Compression gauge These tools are used to measure the engine compression.	
90890-03112	Pocket tester These instruments are invaluable for checking the electrical system.	
90890-03113	Engine tachometer This tool is needed for detecting engine rpm.	
90890-04097	Valve guide remover (ø5) This tool is needed to remove and install the valve guide.	
90890-04098	Valve guide installer (ø5) This tool is needed to install the valve guide.	
90890-04099	Valve guide reamer (ø5) This tool is needed to rebore the new valve guide.	
90890-04101	Valve lapper This tool is used for lapping the valve.	
90890-06754	Ignition checker This instrument is necessary for checking the ignition system components.	

SPECIAL TOOLS

Tool No.	Tool name/Usage	Illustration
90890-85505	Yamaha bond No. 1215 This sealant (bond) is used for crank-case mating surface, etc.	

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SPECIFICATIONS

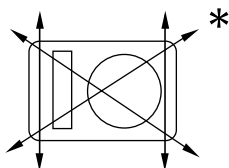
GENERAL SPECIFICATIONS

Model	AL115
Model code	5LT1
Dimensions	
Overall length	1,820 mm (71.7 in)
Overall width	675 mm (26.6 in)
Overall height	1,050 mm (41.3 in)
Seat height	745 mm (29.3 in)
Wheelbase	1,240 mm (48.8 in)
Minimum ground clearance	130 mm (5.12 in)
Minimum turning radius	1,800 mm (70.9 in)
Weight	
Wet (with oil and full fuel tank)	90 kg (198 lb)
Maximum load*	168 kg (370 lb)
* Total weight of rider, passenger, cargo and accessories	

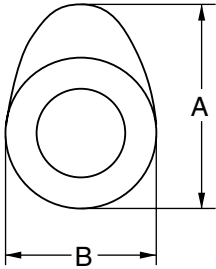
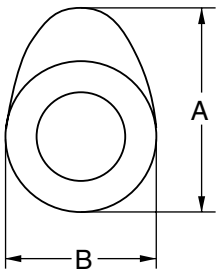
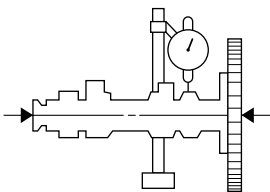


ENGINE SPECIFICATIONS

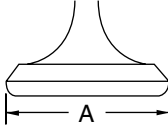
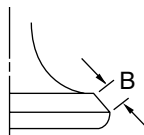
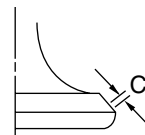
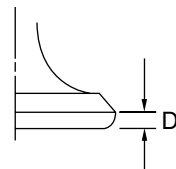
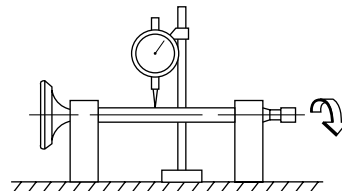
Item	Standard	Limit
Engine		
Engine type	Forced-air-cooled 4-stroke, SOHC	----
Displacement	113.7 cm ³ (6.94 cu.in)	----
Cylinder arrangement	Forward-inclined single cylinder	----
Bore × stroke	50.0 × 57.9 mm (1.97 × 2.28 in)	----
Compression ratio	8.8:1	----
Standard compression pressure (at sea level)	1,100 kPa (11 kgf/cm ² , 156.5 psi) at 510 r/min	----
Starting system	Electric and kickstarter	----
Engine idling speed	1,400 ~ 1,600 r/min	----
Fuel		
Recommended fuel	Regular gasoline	----
Fuel tank capacity	3.7 L (0.81 Imp gal, 0.98 US gal)	----
Engine oil		
Recommended oil	SAE 10W30 SE or SAE 20W40 SE	----
Lubrication system	Wet sump	----
Engine oil quantity		
Periodic oil change	0.8 L (0.70 Imp qt, 0.85 US qt)	----
Total amount	0.9 L (0.79 Imp qt, 0.95 US qt)	----
Final transmission oil		
Recommended oil	Engine oil	----
Periodic oil change	0.10 L (0.09 Imp qt, 0.11 US qt)	----
Quantity	0.12 L (0.11 Imp qt, 0.13 US qt)	----
Oil pump		
Oil filter type	Wire mesh	----
Oil pump type	Trochoid	----
Inner-rotor-to-outer-rotor-tip-clear- ance	0.15 mm (0.0059 in)	0.23 mm (0.0091 in)
Outer-rotor-to-oil-pump-housing clearance	0.13 ~ 0.18 mm (0.0051 ~ 0.0071 in)	0.25 mm (0.0098 in)
Oil pump-housing-to-inner-rotor-and- outer-rotor clearance	0.06 ~ 0.10 mm (0.0024 ~ 0.0039 in)	0.17 mm (0.0067 in)
Rotor thickness	7.96 ~ 7.98 mm (0.313 ~ 0.314 in)	----
Spark plug		
Type/manufacturer	C7HSA/NGK	----
Spark plug gap	0.6 ~ 0.7 mm (0.024 ~ 0.028 in)	----
Cylinder head		
Max. warpage “*”	----	0.05 mm (0.0020 in)





Item	Standard	Limit
Camshaft		
Drive system	Chain drive (left)	----
Intake camshaft lobe dimensions		
		
Measurement A	25.881 ~ 25.981 mm (1.0189 ~ 1.0229 in)	25.780 mm (1.0150 in)
Measurement B	21.195 ~ 21.295 mm (0.8344 ~ 0.8384 in)	21.095 mm (0.8305 in)
Exhaust camshaft lobe dimensions		
		
Measurement A	25.841 ~ 25.941 mm (1.0174 ~ 1.0213 in)	25.740 mm (1.0134 in)
Measurement B	21.050 ~ 21.150 mm (0.8287 ~ 0.8327 in)	20.950 mm (0.8248 in)
Max. camshaft runout	----	0.03 mm (0.0012 in)
		
Timing chain		
Timing chain type/No. of links	DID SCR-0404 SDH/90	----
Rocker arm/rocker arm shaft		
Rocker arm inside diameter	10.000 ~ 10.015 mm (0.3937 ~ 0.3943 in)	10.030 mm (0.3949 in)
Rocker arm shaft outside diameter	9.981 ~ 9.991 mm (0.3930 ~ 0.3933 in)	9.950 mm (0.3917 in)
Rocker-arm-to-rocker-arm shaft clearance	0.009 ~ 0.034 mm (0.0004 ~ 0.0013 in)	0.08 mm (0.0031 in)

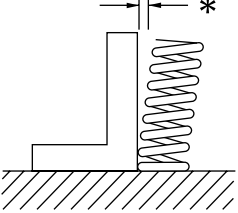


Item		Standard		Limit
Valve, valve seat, valve guide				
Valve clearance (cold)	IN	0.06 ~ 0.10 mm (0.0024 ~ 0.0039 in)		----
	EX	0.08 ~ 0.12 mm (0.0031 ~ 0.0047 in)		----
Valve dimensions				
				
Head Diameter		Face Width	Seat Width	Margin Thickness
“A” head diameter	IN	22.9 ~ 23.1 mm (0.9016 ~ 0.9094 in)		----
	EX	19.9 ~ 20.1 mm (0.7835 ~ 0.7913 in)		----
“B” face width	IN	1.20 ~ 2.50 mm (0.0472 ~ 0.0984 in)		----
	EX	1.30 ~ 2.40 mm (0.0512 ~ 0.0945 in)		----
“C” seat width	IN	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)		1.6 mm (0.0630 in)
	EX	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)		1.6 mm (0.0630 in)
“D” margin thickness	IN	0.7 mm (0.0276 in)		----
	EX	1.0 mm (0.0394 in)		----
Stem outside diameter	IN	4.970 ~ 4.985 mm (0.1957 ~ 0.1963 in)		4.930 mm (0.1941 in)
	EX	4.955 ~ 4.970 mm (0.1951 ~ 0.1957 in)		4.920 mm (0.1937 in)
Guide inside diameter	IN	5.000 ~ 5.012 mm (0.1969 ~ 0.1973 in)		5.050 mm (0.1988 in)
	EX	5.000 ~ 5.012 mm (0.1969 ~ 0.1973 in)		5.050 mm (0.1988 in)
Valve stem-to-guide clearance	IN	0.015 ~ 0.042 mm (0.0006 ~ 0.0017 in)		0.080 mm (0.0031 in)
	EX	0.030 ~ 0.057 mm (0.0012 ~ 0.0022 in)		0.110 mm (0.0043 in)
Valve stem runout limit		----		0.01 mm (0.0004 in)
				

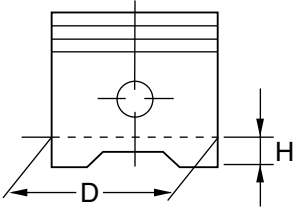
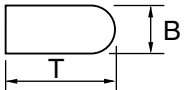
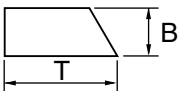
ENGINE SPECIFICATIONS

SPEC

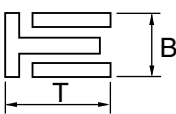
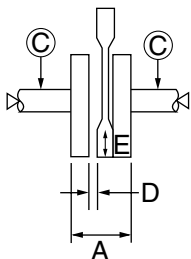


Item	Standard	Limit
Valve springs		
Free length		
Intake	35.44 mm (1.40 in)	34.00 mm (1.34 in)
Exhaust	35.44 mm (1.40 in)	34.00 mm (1.34 in)
Installed length (valve closed)		
Intake	24.1 mm (0.95 in)	----
Exhaust	24.1 mm (0.95 in)	----
Compressed spring force (installed)		
Intake	146 ~ 168 N (14.9 ~ 17.1 kgf, 32.8 ~ 37.7 lb)	----
Exhaust	146 ~ 168 N (14.9 ~ 17.1 kgf, 32.8 ~ 37.7 lb)	----
Spring tilt		
Intake		2.5°/1.5 mm (2.5°/0.06 in)
Exhaust		2.5°/1.5 mm (2.5°/0.06 in)
Winding direction (top view)		
Intake		----
Exhaust	Clockwise	----
Cylinder		
Bore	50.000 ~ 50.010 mm (1.9685 ~ 1.9689 in)	----
Max. taper	----	0.05 mm (0.0020 in)
Max. out-of-round	----	0.05 mm (0.0020 in)
Warp limit	----	0.05 mm (0.0020 in)



Item	Standard	Limit
Piston		
Piston-to-cylinder clearance	0.020 ~ 0.035 mm (0.0008 ~ 0.0014 in)	0.150 mm (0.0059 in)
Diameter D 	49.970 ~ 49.985 mm (1.9673 ~ 1.9679 in)	----
Height H	5 mm (0.20 in)	----
Piston pin bore (in the piston) Diameter	15.002 ~ 15.013 mm (0.5906 ~ 0.5911 in)	15.043 mm (0.5922 in)
Offset	0.5 mm (0.020 in)	----
Offset direction	Intake side	----
Piston pin		
Outside diameter	14.995 ~ 15.000 mm (0.5904 ~ 0.5906 in)	14.975 mm (0.5896 in)
Piston-pin-to-piston-pin-bore clearance	0.002 ~ 0.018 mm (0.0001 ~ 0.0007 in)	0.068 mm (0.0027 in)
Piston rings		
Top ring 		
Ring type	Barrel	----
Dimensions (B × T)	1.00 × 1.95 mm (0.039 × 0.077 in)	----
End gap (installed)	0.10 ~ 0.25 mm (0.004 ~ 0.010 in)	0.50 mm (0.020 in)
Ring side clearance	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)	0.12 mm (0.0047 in)
2nd ring 		
Ring type	Taper	----
Dimensions (B × T)	1.0 × 2.0 mm (0.039 × 0.079 in)	----
End gap (installed)	0.10 ~ 0.25 mm (0.004 ~ 0.010 in)	0.60 mm (0.024 in)
Ring side clearance	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)	0.12 mm (0.0047 in)



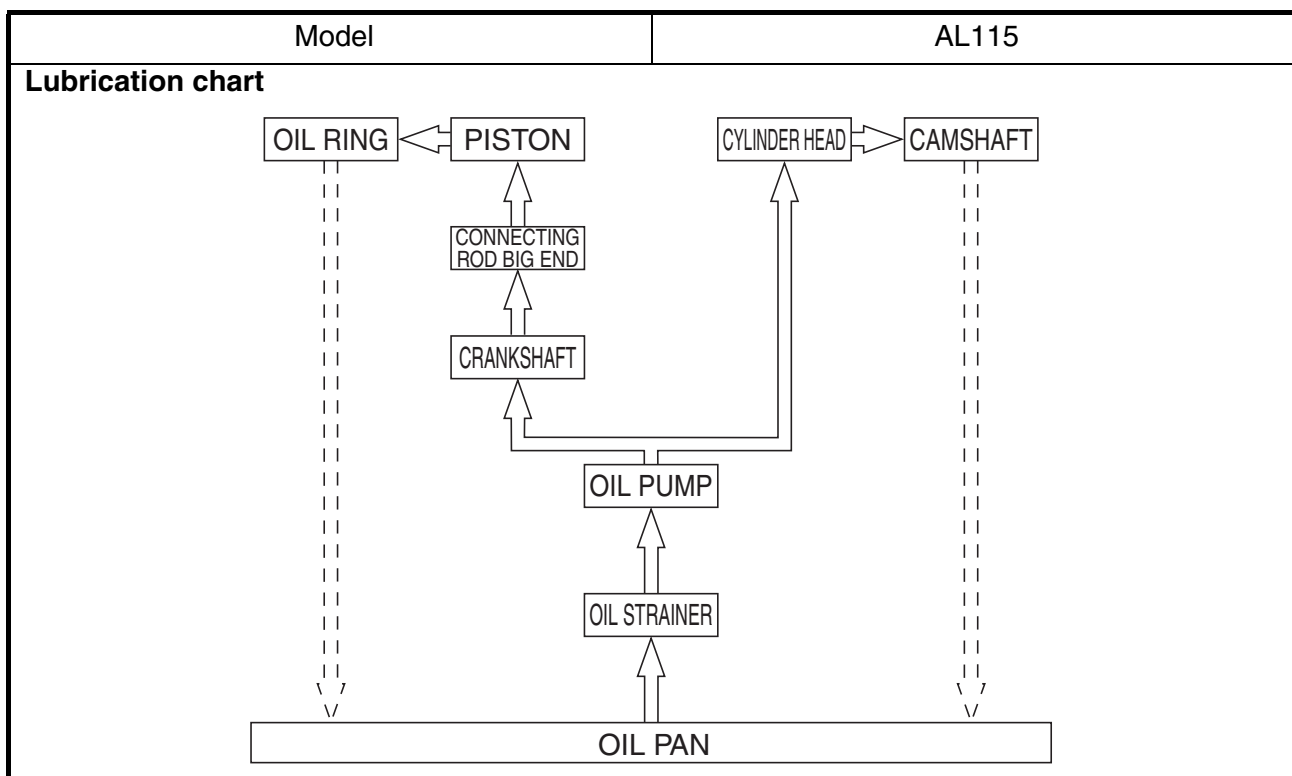
Item	Standard	Limit
Oil ring  Dimensions (B × T) End gap (installed)	 2.00 × 2.25 mm (0.079 × 0.089 in) 0.20 ~ 0.70 mm (0.008 ~ 0.028 in)	 ---- ----
Crankshaft  Crank width "A" Max. runout "C" Big end side clearance "D" Big end radial clearance "E"	 45.45 ~ 45.50 mm (1.789 ~ 1.791 in) ---- 0.15 ~ 0.45 mm (0.0059 ~ 0.0177 in) 0.004 ~ 0.014 mm (0.0002 ~ 0.0006 in)	 ---- 0.03 mm (0.0012 in) ---- ----
Clutch type	V-belt automatic	----
Automatic centrifugal clutch Clutch shoe thickness Clutch shoe spring free length Clutch housing inside diameter Compression spring free length Weight outside diameter Clutch - in revolution Clutch - stall revolution	3.0 mm (0.12 in) 30.6 mm (1.20 in) 112 mm (4.41 in) 74.3 mm (2.93 in) 15 mm (0.59 in) 2,150 ~ 2,550 r/min 4,200 ~ 4,800 r/min	1.0 mm (0.04 in) ---- 112.5 mm (4.43 in) 70.6 mm (2.78 in) 14.5 mm (0.57 in) ---- ----
V-belt V-belt width	18.2 mm (0.72 in)	17.2 mm (0.68 in)
Transmission Transmission type Primary reduction system Primary reduction ratio Secondary reduction system Secondary reduction ratio Operation Single speed automatic	V-belt automatic Helical gear 47/15 (3.133) Spur gear 42/13 (3.231) Centrifugal automatic type 2.399 ~ 0.829:1	---- ---- ---- ---- ---- ----

ENGINE SPECIFICATIONS

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Item	Standard	Limit
Kickstarter		
Kickstarter type	Ratchet type	----
Kickstarter pinion gear clip friction force	1.0 ~ 3.5 N (0.10 ~ 0.36 kgf, 0.22 ~ 0.79 lb)	----
Air filter		
Air filter element	Dry element	----
Carburetor		
Type (manufacturer)/quantity	NCV24 (KEIHIN)/1	----
I.D. mark	5TL1 00	----
Main jet (M.J)	#110	----
Main air jet (M.A.J)	ø1.0	----
Jet needle (J.N)	N425-DUA00	----
Needle jet (N.J)	N426-62A45	----
Pilot air jet 1 (P.A.J.1)	#110	----
Pilot air jet 2 (P.A.J.2)	#100	----
Pilot outlet (P.O)	ø1.0	----
Pilot jet (P.J)	#38	----
Bypass 1 (B.P.1)	ø0.7	----
Bypass 2 (B.P.2)	ø0.7	----
Bypass 3 (B.P.3)	ø0.7	----
Bypass 4 (B.P.4)	ø0.7	----
Pilot screw turns out	2-3/8	----
Valve seat size (V.S)	ø1.6	----
Starter jet 1 (G.S.1)	#40	----
Throttle cable free play	3 ~ 7 mm (0.12 ~ 0.28 in)	----





CHASSIS SPECIFICATIONS

Item	Standard	Limit
Frame		
Frame type	Steel tube underbone	----
Caster angle	26.5°	----
Trail	100 mm (3.94 in)	----
Front wheel		
Wheel type	Spoke wheel	----
Rim		
Size	14 × 1.40	----
Material	Steel	----
Wheel travel	90 mm (3.54 in)	----
Wheel runout		
Max. radial wheel runout	----	2.0 mm (0.079 in)
Max. lateral wheel runout	----	2.0 mm (0.079 in)
Rear wheel		
Wheel type	Spoke wheel	----
Rim		
Size	14 × 1.60	----
Material	Steel	----
Wheel travel	80 mm (3.15 in)	----
Wheel runout		
Max. radial wheel runout	----	2.0 mm (0.079 in)
Max. lateral wheel runout	----	2.0 mm (0.079 in)
Front tire		
Tire type	With tube	----
Size	70/90-14M/C 34P	----
Manufacturer/model	IRC/NF59	----
Tire pressure (cold tire)		
0 ~ 90 kg	200 kPa (2.00 kgf/cm ² , 29 psi)	----
Min. tire tread depth	----	0.8 mm (0.031 in)

CHASSIS SPECIFICATIONS

SPEC


Item	Standard	Limit
Rear tire		
Tire type	With tube	----
Size	80/90-14M/C 40P	----
Manufacturer/model	IRC/NR76	----
Tire pressure (cold tire)		
0 ~ 90 kg	225 kPa (2.25 kgf/cm ² , 33 psi)	----
Min. tire tread depth	----	0.8 mm (0.031 in)
Front brake		
Brake type	Single-disc brake	----
Operation	Right-hand operation	----
Brake lever free play (at lever end)	0 mm (0 in)	----
Brake discs		
Diameter × thickness	200 × 3.5 mm (7.87 × 0.14 in)	----
Min. thickness	----	3.0 mm (0.12 in)
Max. deflection	----	0.15 mm (0.006 in)
Brake pad lining thickness-inner	5.3 mm (0.21 in)	0.8 mm (0.031 in)
Brake pad lining thickness-outer	5.3 mm (0.21 in)	0.8 mm (0.031 in)
Master cylinder inside diameter	11 mm (0.43 in)	----
Caliper cylinder inside diameter	33.34 mm (1.31 in)	----
Recommended fluid	DOT 4	----
Rear brake		
Brake type	Drum brake	----
Drum brake type	Leading, trailing	----
Brake lever free play (at lever end)	10 ~ 20 mm (0.39 ~ 0.79 in)	----
Drum inside diameter	130 mm (5.12 in)	131 mm (5.16 in)
Lining thickness	4.0 mm (0.16 in)	2.0 mm (0.079 in)
Shoe spring free length (camshaft side)	52 mm (2.05 in)	----
Shoe spring free length (pivot side)	48 mm (1.89 in)	----
Steering		
Steering bearing type	Angular bearing	----
Lock to lock angle (left)	47.5°	----
Lock to lock angle (right)	47.5°	----

CHASSIS SPECIFICATIONS

SPEC


Item	Standard	Limit
Front suspension		
Suspension type	Telescopic fork	----
Front fork type	Coil spring/oil damper	----
Front fork travel	90 mm (3.54 in)	----
Spring		
Free length	266.7 mm (10.50 in)	261.4 mm (10.29 in)
Installed length	256.7 mm (10.11 in)	----
Spring rate (K1)	3.90 N/mm (0.40 kgf/mm, 22.27 lb/in)	----
Spring rate (K2)	7.10 N/mm (0.72 kgf/mm, 40.54 lb/in)	----
Spring stroke (K1)	0 ~ 50 mm (0 ~ 1.97 in)	----
Spring stroke (K2)	50 ~ 90 mm (1.97 ~ 3.54 in)	----
Optional spring available	No	----
Fork oil		
Recommended oil	Fork oil 10 W or equivalent	----
Quantity (each front fork leg)	57 cm ³ (2.01 Imp oz, 1.93 US oz)	----
Level (from the top of the inner tube, with the inner tube fully compressed, and without the fork spring)	88 mm (3.46 in)	----
Inner tube outer diameter	26 mm (1.02 in)	----
Inner tube bend limit	----	0.2 mm (0.008 in)
Rear suspension		
Suspension type	Unit swing	----
Spring/shock absorber type	Coil spring/oil damper	----
Rear shock absorber assembly travel	78 mm (3.07 in)	----
Spring		
Free length	249.6 mm (9.83 in)	244.6 mm (9.63 in)
Installed length	245.6 mm (9.67 in)	----
Spring rate (K1)	28.5 N/mm (2.91 kgf/mm, 162.74 lb/in)	----
Spring rate (K2)	40.0 N/mm (4.08 kgf/mm, 228.40 lb/in)	----
Spring stroke (K1)	0 ~ 50 mm (0 ~ 1.97 in)	----
Spring stroke (K2)	50 ~ 78 mm (1.97 ~ 3.07 in)	----
Optional spring available	No	----



ELECTRICAL SPECIFICATIONS

Item	Standard	Limit
System voltage	12 V	----
Ignition system		
Ignition system type	C.D.I.	----
Ignition timing (B.T.D.C.)	5° at 1,500 r/min	----
Advanced type	Electrical (Analogue)	----
DC.C.D.I.		
Magneto model/manufacture	F5TL/PT. MORIC	----
Pickup coil resistance/color	248 ~ 372 Ω at 20 °C (68 °F)/W/L-W/R	----
C.D.I. unit model/manufacture	5TL/PT. MORIC	----
Ignition coil		
Model/manufacture	4ST/PT. MORIC	----
Minimum ignition spark gap	6 mm (0.24 in)	----
Primary coil resistance	0.32 ~ 0.48 Ω at 20 °C (68 °F)	----
Secondary coil resistance	5.68 ~ 8.52 kΩ at 20 °C (68 °F)	----
Spark plug cap		
Material	Resin	----
Resistance	5 kΩ at 20 °C (68 °F)	----
Charging system		
Type	A.C. magneto	----
Model/manufacture	F5TL/PT. MORIC	----
Standard output	14 V 100 W at 5,000 r/min	----
Lighting coil resistance/color	0.24 ~ 0.36 Ω at 20 °C (68 °F)/Y/R-B	----
Charging coil resistance/color	0.32 ~ 0.48 Ω at 20 °C (68 °F)/W-B	----
Rectifier/regulator		
Regulator type	Semi conductor-short circuit	----
Model/manufacture	SH656-12/SHINDENGEN	----
No load regulated voltage (DC)	14.1 ~ 14.9 V	----
(AC)	13.0 ~ 14.0 V	----
Rectifier capacity (DC)	8 A	----
(AC)	12 A	----
Battery		
Model/manufacture	GM5Z-3B/PT. GS or YB5L-B/PT. YUASA	----
Battery voltage/capacity	12 V/5 Ah	----
Specific gravity	1.280	----
Headlight type	Krypton bulb	----

ELECTRICAL SPECIFICATIONS

SPEC



Item	Standard	Limit
Bulbs (voltage/wattage × quantity)		
Headlight	12 V 32 W/32 W × 1	----
Tail/brake light	12 V 5 W/21 W × 1	----
Front turn signal light	12 V 10 W × 2	----
Rear turn signal light	12 V 10 W × 2	----
Meter light	12 V 1.7 W × 1	----
Indicator light (voltage/wattage × quantity)		
Turn signal indicator light	12 V 1.7 W × 1	----
High beam indicator light	12 V 1.7 W × 1	----
Electric starting system		
System type	Constant mesh	----
Starter motor		
Model/manufacturer	5TL/PT. MORIC	----
Power output	0.25 kW	----
Armature coil resistance	0.032 ~ 0.039 Ω at 20 °C (68 °F)	----
Brushes		
Overall length	9.5 mm (0.37 in)	3.5 mm (0.14 in)
Spring force	5.52 ~ 8.28 N (563 ~ 844 gf, 19.87 ~ 29.80 oz)	----
Commutator diameter	22 mm (0.87 in)	21 mm (0.83 in)
Mica undercut	1.5 mm (0.06 in)	----
Starter relay		
Model/manufacturer	5TN/OMRON	----
Amperage	50 A	----
Coil resistance	54 ~ 66 Ω at 20 °C (68 °F)	----
Horn		
Horn type	Plane	----
Model/manufacturer × quantity	3WE/PT. MORIC × 1	----
Max. amperage	1.5 A	----
Performance	95 ~ 105 dB/2 m	----
Coil resistance	4.30 ~ 4.80 Ω	----
Turn signal relay		
Relay type	Condenser	----
Model/manufacturer	FR22-091/PT. MITSUBA	----
Self-cancelling device built-in	No	----
Turn signal blinking frequency	75 ~ 95 cycles/min.	----
Wattage	10 W × 2 + 3.4 W	----
Fuel gauge		
Model/manufacturer	5TL/NIPPON SEIKI	----
Sender unit resistance- full	4 ~ 10 Ω at 20 °C (68 °F)	----
Sender unit resistance- empty	90 ~ 100 Ω at 20 °C (68 °F)	----

ELECTRICAL SPECIFICATIONS

SPEC

Item	Standard	Limit
Fuses (amperage × quantity)		
Fuse	10 A × 1	----
Reserve fuse	10 A × 1	----

CONVERSION TABLE/ GENERAL TIGHTENING TORQUE SPECIFICATIONS



EAS00028

CONVERSION TABLE

All specification data in this manual are listed in SI and METRIC UNITS.

Use this table to convert METRIC unit data to IMPERIAL unit data.

Ex.

METRIC	MULTIPLIER	IMPERIAL
** mm	× 0.03937	= ** in
2 mm	× 0.03937	= 0.08 in

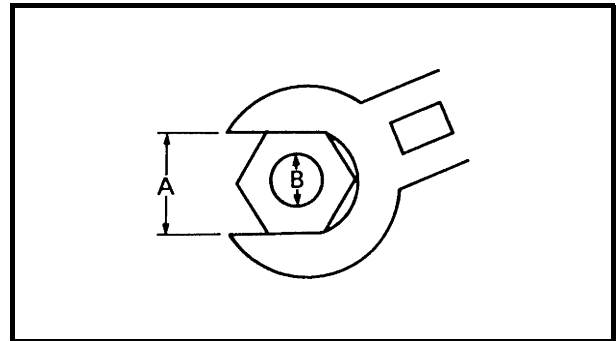
CONVERSION TABLE

METRIC TO IMPERIAL			
Tighten- ing torque	Metric unit	Multiplier	Imperial unit
	m·kg	7.233	ft·lb
	m·kg	86.794	in·lb
	cm·kg	0.0723	ft·lb
	cm·kg	0.8679	in·lb
Weight	kg	2.205	lb
	g	0.03527	oz
Speed	km/hr	0.6214	mph
Distance	km	0.6214	mi
	m	3.281	ft
	m	1.094	yd
	cm	0.3937	in
	mm	0.03937	in
Volume/ Capacity	cc (cm³)	0.03527	oz (IMP liq.)
	cc (cm³)	0.06102	cu.in
	lt (liter)	0.8799	qt (IMP liq.)
	lt (liter)	0.2199	gal (IMP liq.)
Misc.	kg/mm	55.997	lb/in
	kg/cm²	14.2234	psi (lb/in²)
	Centigrade (°C)	9/5+32	Fahrenheit (°F)

EAS00030

GENERAL TIGHTENING TORQUE SPECIFICATIONS

This chart specifies tightening torques for standard fasteners with a standard ISO thread pitch. Tightening torque specifications for special components or assemblies are provided for each chapter of this manual. To avoid warpage, tighten multi-fastener assemblies in a crisscross pattern and progressive stages until the specified tightening torque is reached. Unless otherwise specified, tightening torque specifications require clean, dry threads. Components should be at room temperature.



A: Distance between flats

B: Outside thread diameter

A (nut)	B (bolt)	General tightening torques		
		Nm	m·kg	ft·lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94

TIGHTENING TORQUES

SPEC



TIGHTENING TORQUES

ENGINE TIGHTENING TORQUES

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m · kg	ft · lb	
Spark plug	—	M10	1	15	1.5	11	
Cylinder head	Nut	M8	4	22	2.2	16	
Cylinder head (timing chain side)	Bolt	M6	2	10	1.0	7.2	
Cylinder head stud bolt	Bolt	M8	2	13	1.3	9.4	
Oil gallery bolt	Bolt	M6	1	7	0.7	5.1	
Tappet cover (intake and exhaust side)	—	M45	2	18	1.8	13	
Camshaft sprocket cover	Bolt	M6	2	12	1.2	8.7	
Camshaft retainer	Bolt	M6	1	12	1.2	8.7	
Camshaft sprocket cover breather plate	Bolt	M6	2	10	1.0	7.2	
Camshaft sprocket	Bolt	M8	1	30	3.0	22	
Valve adjusting locknut	Nut	M5	2	7	0.7	5.1	
Timing chain guide (intake side)	Bolt	M6	1	7	0.7	5.1	
Timing chain tensioner	Bolt	M6	2	9	0.9	6.5	
Engine cooling fan cover	Screw	M6	2	7	0.7	5.1	
Engine cooling fan	Bolt	M6	3	8	0.8	5.8	
A.C. magneto rotor	Nut	M12	1	70	7.0	50	
Oil pump cover	Bolt	M6	3	10	1.0	7.2	
Oil pump assembly	Screw	M5	2	4	0.4	2.9	
Engine oil drain plug	Plug	M30	1	20	2.0	14	
Engine oil drain bolt	Bolt	M12	1	20	2.0	14	
Transmission oil drain bolt	Bolt	M8	1	22	2.2	16	
Muffler and cylinder head	Nut	M8	2	20	2.0	14	
Muffler and muffler stay (lower bolt)	Bolt	M8	1	35	3.5	25	
Muffler and muffler stay (upper bolt)	Bolt	M10	1	50	5.0	36	
Muffler stay and right crankcase	Bolt	M8	2	37	3.7	27	
Muffler protector	Screw	M6	2	8	0.8	5.8	
Intake manifold	Bolt	M6	2	10	1.0	7.2	
Air filter case	Bolt	M6	3	7	0.7	5.1	
Kickstarter crank	Bolt	M6	1	12	1.2	8.7	
V-belt case cover protector 1	Screw	M6	2	7	0.7	5.1	
V-belt case cover protector 1	Bolt	M6	1	10	1.0	7.2	
V-belt case air duct	Bolt	M6	1	10	1.0	7.2	
V-belt case cover	Bolt	M6	13	10	1.0	7.2	
V-belt case cover protector 2	Bolt	M6	4	10	1.0	7.2	
Kickstarter shaft plate	Screw	M6	6	9	0.9	6.5	
Secondary sheave nut	Nut	M10	1	40	4.0	29	
Clutch carrier nut	Nut	M27	1	55	5.5	40	
Transmission case cover	Bolt	M6	6	13	1.3	9.4	
Bearing retainer (primary drive gear)	Bolt	M6	1	10	1.0	7.2	

TIGHTENING TORQUES

SPEC



Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m · kg	ft · lb	
Primary sheave nut	Nut	M12	1	50	5.0	36	
Idle gear plate	Bolt	M6	2	10	1.0	7.2	
Starter wheel gear holder	Bolt	M6	1	10	1.0	7.2	
Crankcase (left and right)	Bolt	M6	9	10	1.0	7.2	
Crankcase stud bolt	Bolt	M8	4	13	1.3	9.4	
Stator coil assembly	Bolt	M6	3	11	1.1	8.0	
Pickup coil bracket	Screw	M6	2	7	0.7	5.1	
Starter motor	Bolt	M6	2	7	0.7	5.1	
Ignition coil	Screw	M6	2	7	0.7	5.1	

TIGHTENING TORQUES

SPEC


CHASSIS TIGHTENING TORQUES

Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m · kg	ft · lb	
Brake master cylinder	M6	11	1.1	8.0	
Rear brake lever assembly	M6	7	0.7	5.1	
Front brake lever	M6	7	0.7	5.1	
Starter lever	M6	7	0.7	5.1	
Handlebar nut	M10	43	4.3	31	
Steering ring nut (upper)	M25	75	7.5	54	See NOTE
Steering ring nut (lower)	M25	30	3.0	22	See NOTE
Engine mounting nut	M12	59	5.9	43	
Engine mounting rubber damper and engine bracket	M8	16	1.6	11	
Engine bracket and engine assembly	M10	32	3.2	23	
Rear shock absorber assembly nut	M10	32	3.2	23	
Rear shock absorber assembly bolt	M8	16	1.6	11	
Front wheel axle nut	M10	40	4.0	29	
Rear wheel axle nut	M14	105	10.5	75	
Disk brake and hub	M8	23	2.3	17	
Front brake hose holder and front fork outer tube	M6	7	0.7	5.1	
Front brake hose holder, bracket, and lower bracket	M6	7	0.7	5.1	
Lower front brake hose holder and bracket	M6	7	0.7	5.1	
Front brake hose holder bracket and lower bracket	M6	7	0.7	5.1	
Speedometer cable guide and lower bracket	M6	7	0.7	5.1	
Brake caliper upper bolt	M12	43	4.3	31	
Brake caliper lower bolt	M8	23	2.3	17	
Brake pad holding bolt	M6	10	1.0	7.2	
Bleed screw	M7	6	0.6	4.3	
Brake hose union bolt	M10	26	2.6	19	
Brake camshaft lever bolt	M6	7	0.7	5.1	
Front fender	M6	7	0.7	5.1	
Lower bracket pinch bolt (upper and lower)	M10	38	3.8	27	
Front fork cap bolt	M20	20	2.0	14	
Damper rod bolt	M10	23	2.3	17	
Rearview mirror	M10	32	3.2	23	
Sidestand bolt	M8	26	2.6	19	
Sidestand nut	M8	16	1.6	11	
Rear brake cable holder	M6	7	0.7	5.1	
Fuel tank and frame	M6	7	0.7	5.1	
Grab bar and fuel tank	M6	8	0.8	5.8	
Fuel cock and fuel tank	M6	7	0.7	5.1	
Sender and fuel tank	M5	4	0.4	2.9	
Seat	M6	7	0.7	5.1	

TIGHTENING TORQUES

SPEC



Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m • kg	ft • lb	
Seat lock assembly and frame	M6	7	0.7	5.1	
Rear fender	M6	8	0.8	5.8	
Rectifier/regulator	M6	7	0.7	5.1	
Footboard and frame	M6	7	0.7	5.1	
Leg shield and frame	M6	7	0.7	5.1	
License plate bracket and license plate stay	M6	7	0.7	5.1	
License plate stay and frame	M6	7	0.7	5.1	
Horn bracket and license plate stay	M6	7	0.7	5.1	
Main switch and frame	M6	7	0.7	5.1	
Spoke	—	3	0.3	2.2	

NOTE:

1. First tighten the ring nut (lower) 30 Nm (3.0 m • kg, 22 ft • lb) by using the torque wrench, then loosen the ring nut quarter turn.
2. Then, hold the ring nuts (lower) and tighten the ring nut (upper) 75 Nm (7.5 m • kg, 54 ft • lb) by using the torque wrench.

LUBRICATION POINTS AND LUBRICANT TYPES

SPEC



LUBRICATION POINTS AND LUBRICANT TYPES

ENGINE LUBRICATION POINTS AND LUBRICANT TYPES

Lubrication point	Lubricant
Oil seal lips	
O-rings	
Bearings	
Piston outside and ring groove	
Piston ring	
Piston pin	
Cylinder inner surface	
Timing chain	
Rocker arm shaft	
Rocker arm inner surfaces	
Camshaft lobes and camshaft journals	
Valve stem	
Valve stem seal	
Oil pump assembly	
Kickstarter pinion gear shaft	
Primary sliding sheave inner surface	Shell Dolium Grease R®
Secondary sheave guide pin	Shell Dolium Grease R®
Secondary fixed sheave inner surface	Shell Dolium Grease R®
Secondary sliding surface	Shell Dolium Grease R®
Idle gear shaft	
Centerstand pivot	
Sidestand pivot	
Crankcase mating surfaces	Yamaha bond No.1215

LUBRICATION POINTS AND LUBRICANT TYPES

SPEC



CHASSIS LUBRICATION POINTS AND LUBRICANT TYPES

Lubrication point	Lubricant
Front wheel oil seal lips	
Front wheel axle	
Speedometer gear unit inner surface and oil seal lip	
Brake caliper bolt (upper and lower) and boot	
Brake cam pivot shaft and camshaft surface	
Brake lever pivot shaft	
Tube guide (throttle grip) inner surface	
Throttle cable (throttle grip)	
Starter cable (starter lever)	
Steering head bearing (upper/lower)	
Steering head bearing inner and outer race	
Cover ball race (Lip)	



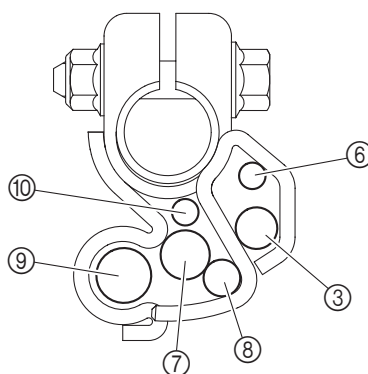
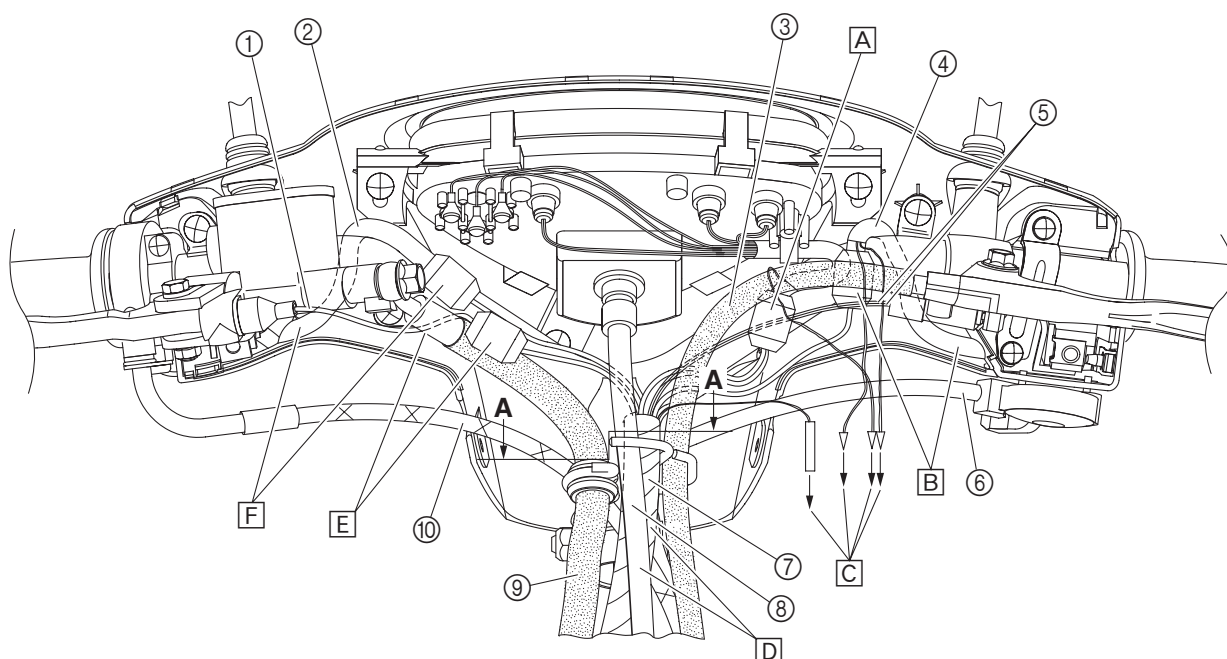
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CABLE ROUTING

- ① Front brake light switch lead
- ② Right handlebar switch lead
- ③ Rear brake cable
- ④ Left handlebar switch lead
- ⑤ Rear brake light switch leads
- ⑥ Starter cable
- ⑦ Wire harness
- ⑧ Speedometer cable
- ⑨ Front brake hose

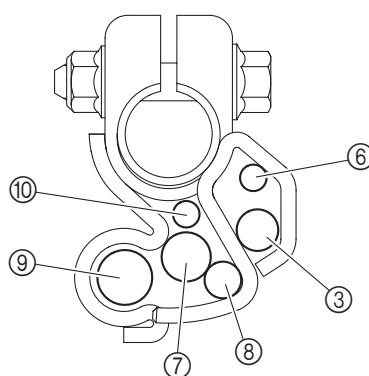
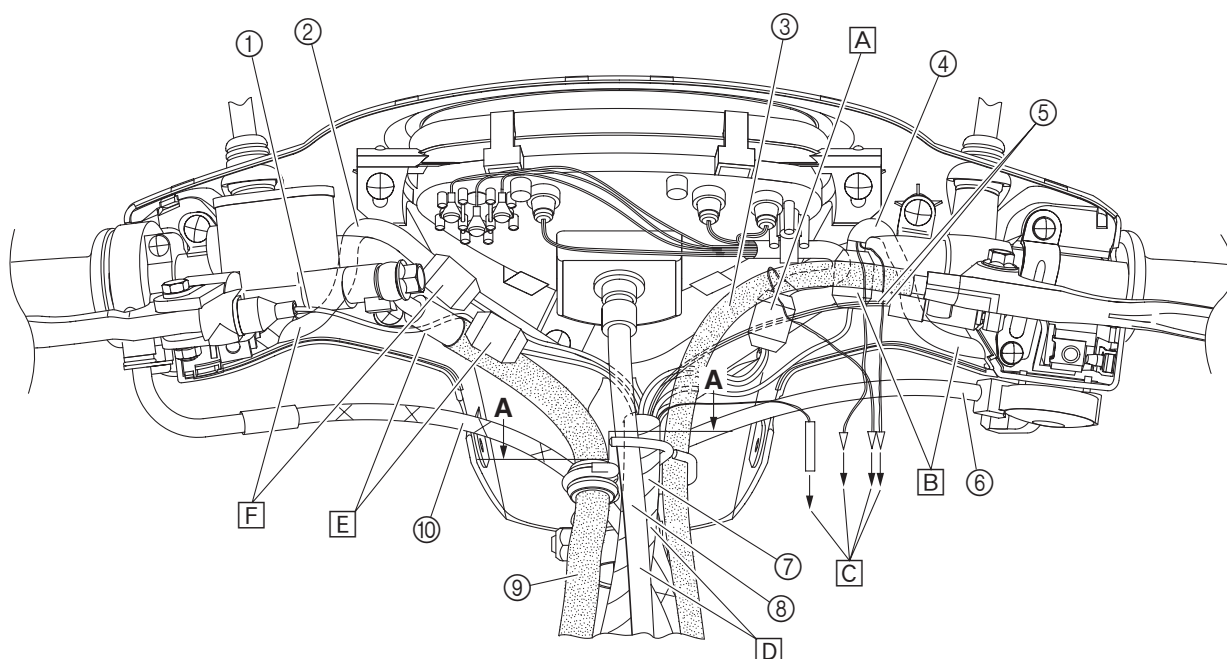
- ⑩ Throttle cable

- [A] Connect the meter assembly coupler on the left side of the meter assembly.
- [B] Route the left handlebar switch lead behind the handlebar, and then connect it on the left side of the meter assembly.
- [C] To the headlight

**A-A**



- D Pass the wire harness and speedometer cable through the guide, and then install the grommet on the front brake hose in the holder.
- E Route the front brake light switch lead behind the front brake hose, and then connect it on the right side of the meter assembly.
- F Route the right handlebar switch lead behind the handlebar, and then connect it on the right side of the meter assembly.

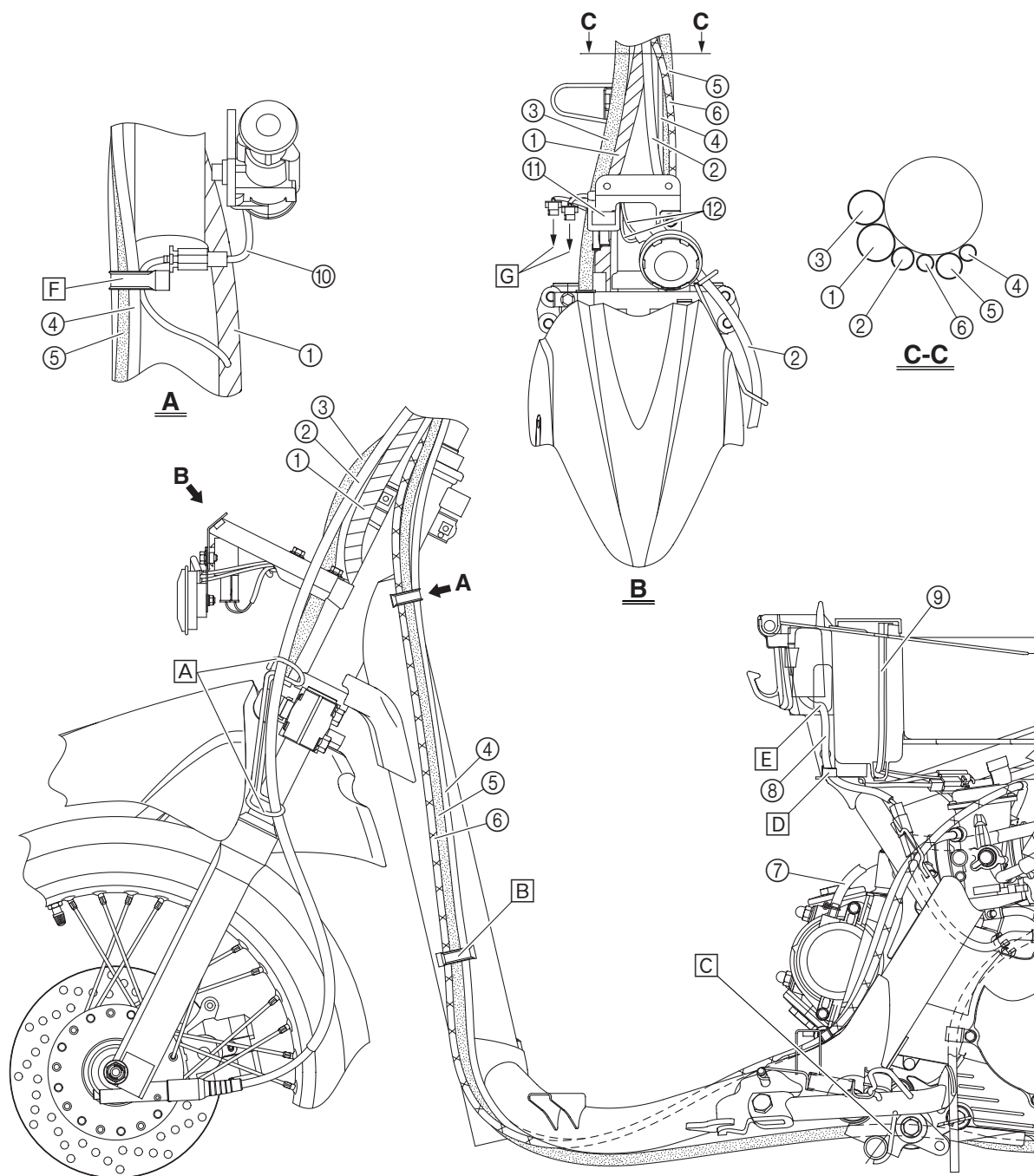
A-A



- ① Wire harness
- ② Speedometer cable
- ③ Front brake hose
- ④ Starter cable
- ⑤ Rear brake cable
- ⑥ Throttle cable
- ⑦ Cylinder head breather hose
- ⑧ Starter motor lead
- ⑨ Negative battery lead
- ⑩ Main switch lead
- ⑪ Turn signal relay

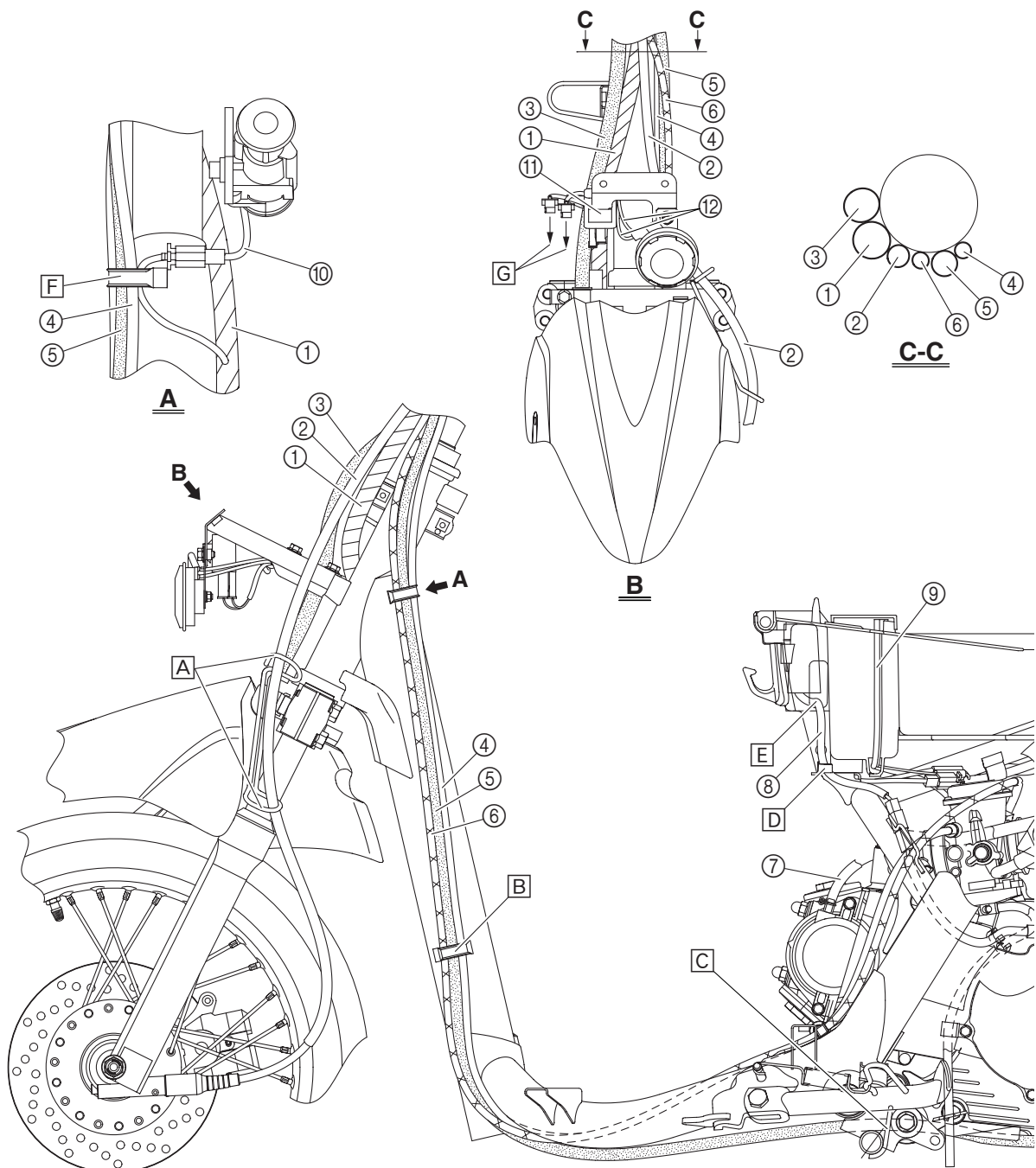
- ⑫ Horn leads

- [A] Pass the speedometer cable through the cable guide as shown.
- [B] Fasten the starter cable, rear brake cable, and throttle cable with the holder.
- [C] Pass the rear brake cable through the cable guide.
- [D] Fasten the starter motor lead with the holder.





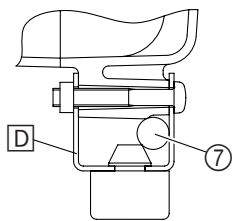
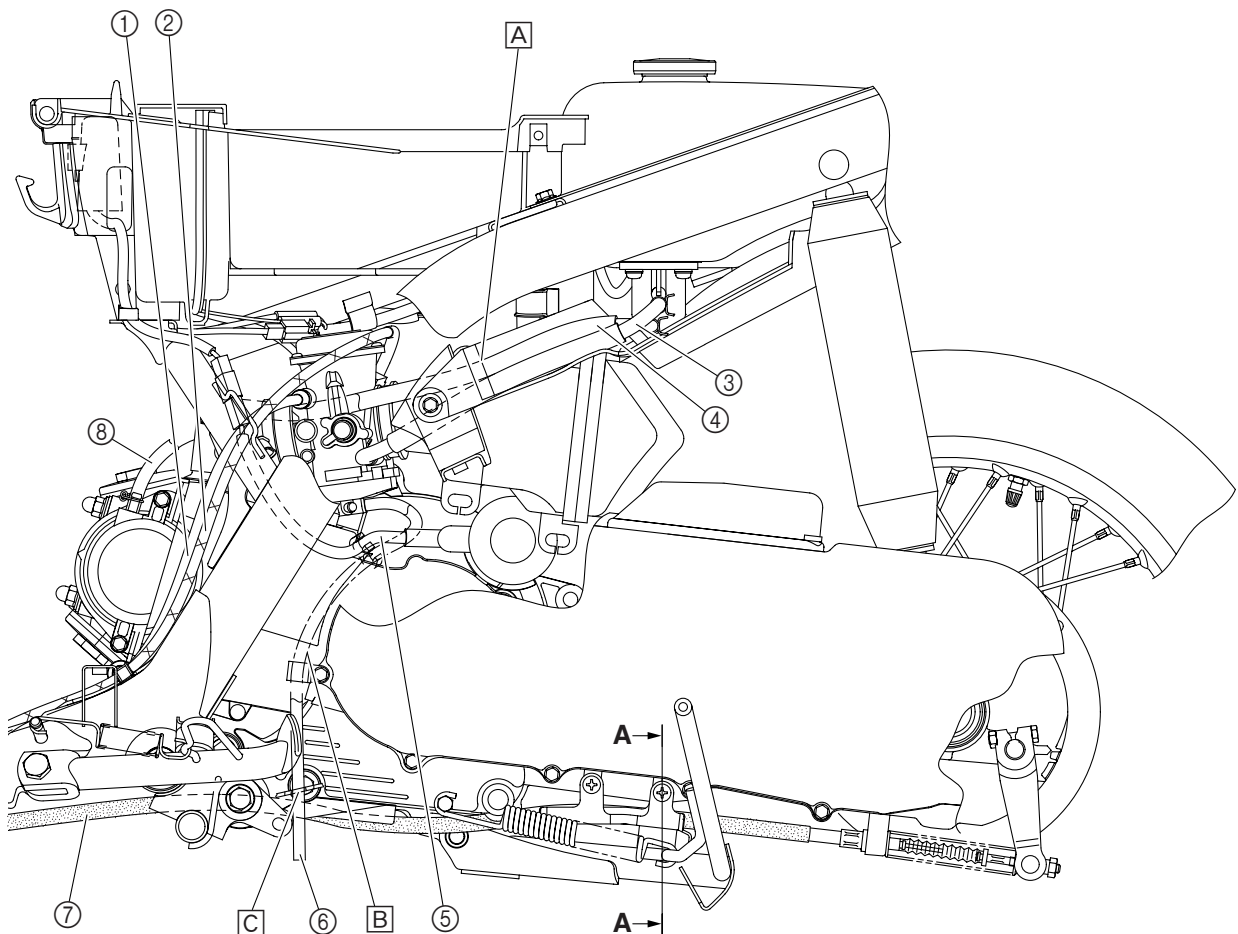
- [E] Pass the starter motor lead through the hole in the storage box.
- [F] Fasten the main switch lead, starter cable, rear brake cable, and throttle cable with the holder.
- [G] To the turn signal lights





- ① Starter cable
- ② Throttle cable
- ③ Fuel hose
- ④ Vacuum hose
- ⑤ Starter motor lead
- ⑥ Fuel overflow hose
- ⑦ Rear brake cable
- ⑧ Cylinder head breather hose

- [A] Pass the fuel hose and vacuum hose through the hole in the rear fender.
- [B] Route the fuel overflow hose as shown.
- [C] Pass the fuel overflow hose through the hole in the bottom cowling.
- [D] Fasten the rear brake cable with the holder.

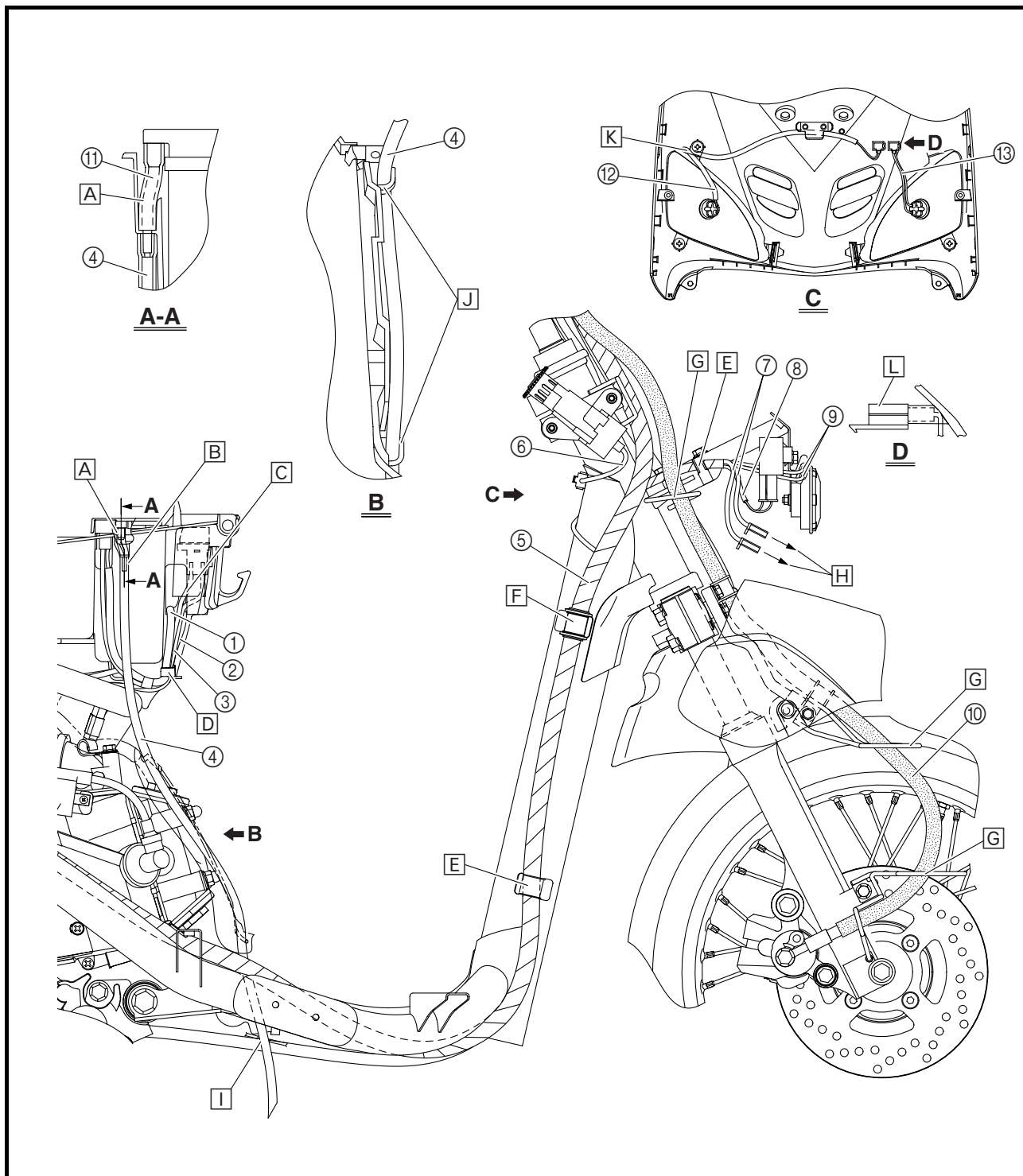
**A-A**



- ① Positive battery lead
- ② Starter relay lead
- ③ Fuse lead
- ④ Battery breather hose 2
- ⑤ Wire harness
- ⑥ Main switch lead
- ⑦ Turn signal light leads
- ⑧ Turn signal relay lead
- ⑨ Horn leads
- ⑩ Front brake hose
- ⑪ Battery breather hose 1

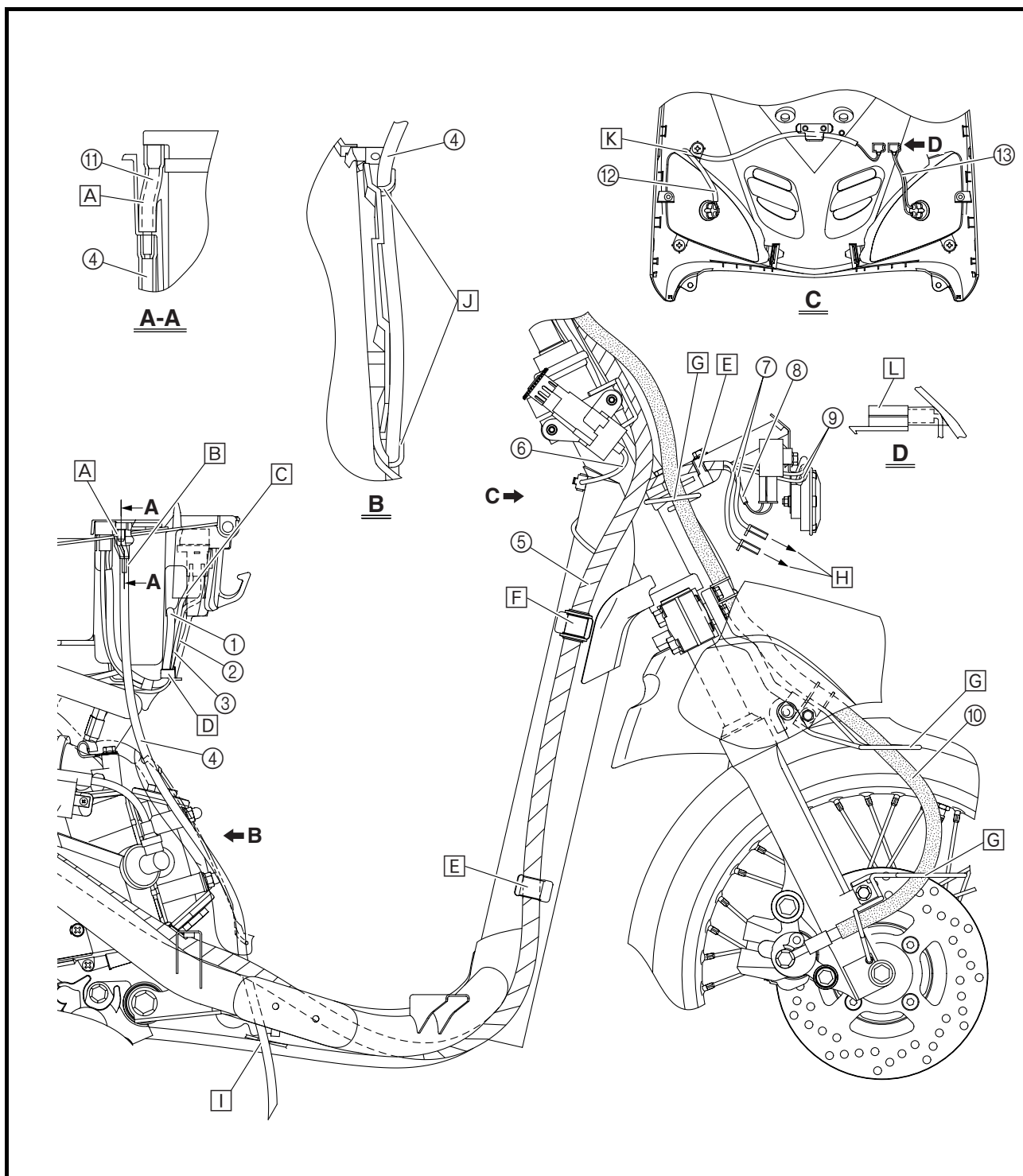
- ⑫ Front turn signal light lead (left)
- ⑬ Front turn signal light lead (right)

- [A] Install the battery breather 1 hose to the battery.
- [B] Install the battery breather 2 hose to the storage box.
- [C] Pass the positive battery lead, fuse lead, and starter relay lead through the hole in the storage box.
- [D] Fasten the fuse lead, starter relay lead, and positive battery lead with the holder.





- [E] Fasten the wire harness with the holders.
- [F] Fasten the grommet on the wire harness with the holder as shown.
- [G] Pass the front brake hose through the hose guides.
- [H] To the turn signal lights
- [I] Pass the battery breather hose 2 through the hole in the bottom cowling.
- [J] Pass the battery breather hose 2 through the hose guides on the footboard.
- [K] Route the front turn signal light lead (left) between the front turn signal light (left) and the screw support on the front cowling as shown.
- [L] Install the front turn signal light lead couplers in the holders on the front cowling.



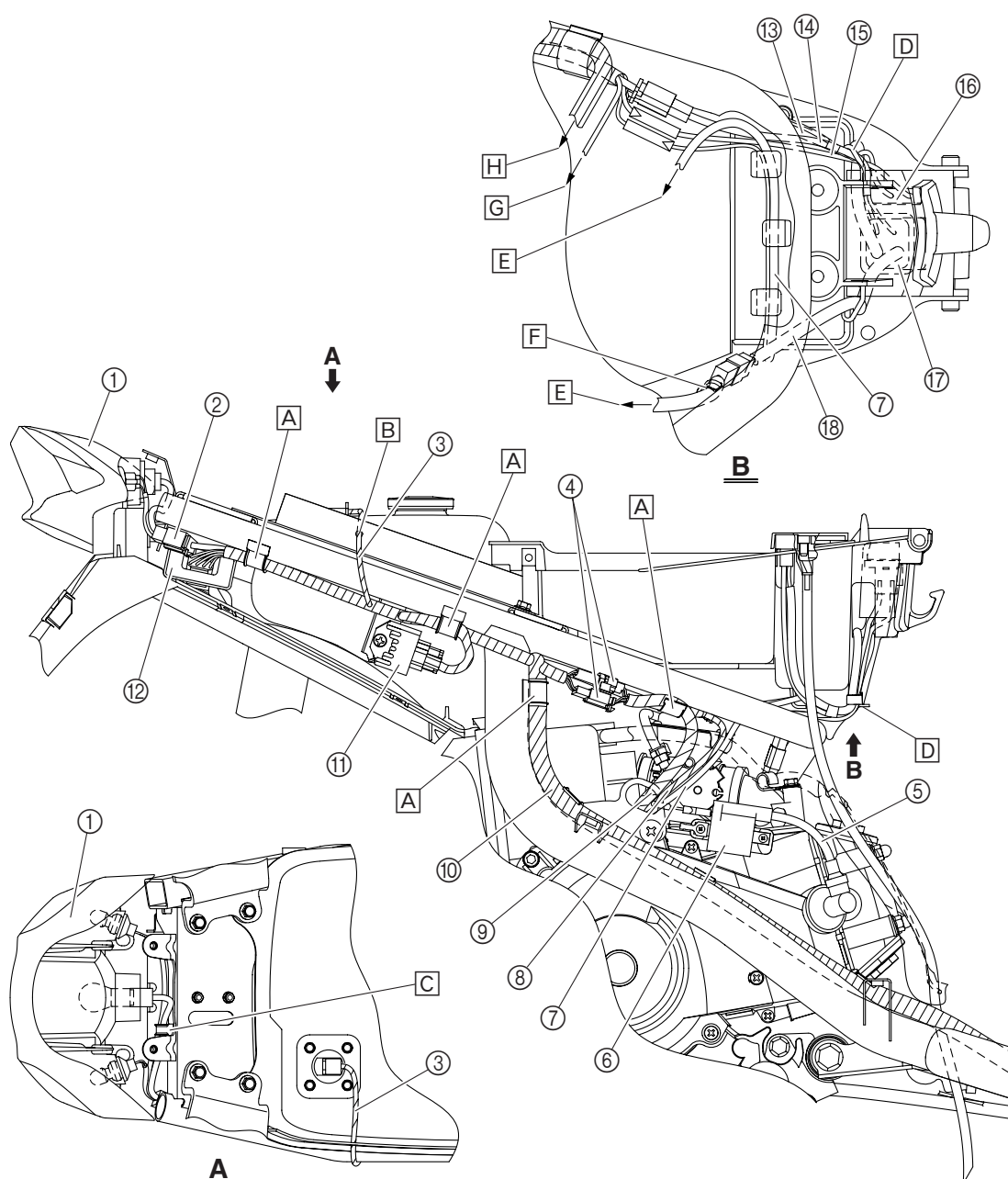


- ① Tail/brake light assembly
- ② Tail/brake light assembly coupler
- ③ Fuel sender lead
- ④ A.C. magneto lead couplers
- ⑤ Spark plug lead
- ⑥ Ignition coil
- ⑦ Negative battery lead
- ⑧ Ignition coil lead
- ⑨ A.C. magneto lead
- ⑩ Wire harness
- ⑪ Rectifier/regulator

- ⑫ C.D.I. unit
- ⑬ Positive battery lead
- ⑭ Starter relay lead
- ⑮ Fuse lead
- ⑯ Fuse
- ⑰ Starter relay
- ⑱ Starter motor lead

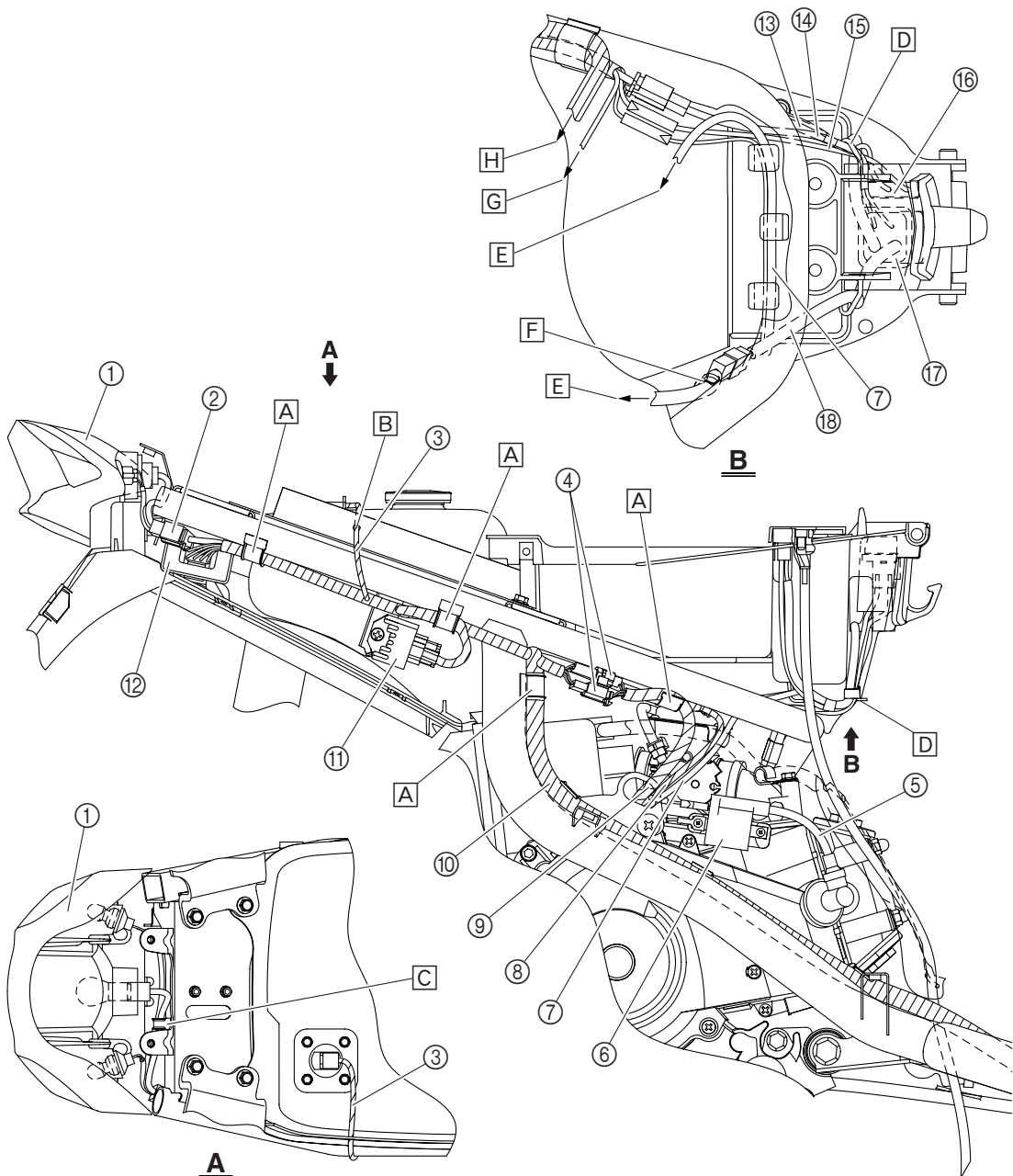
A Fasten the wire harness with the holders.

B Pass the fuel sender lead through the hole in the fuel tank rubber damper.



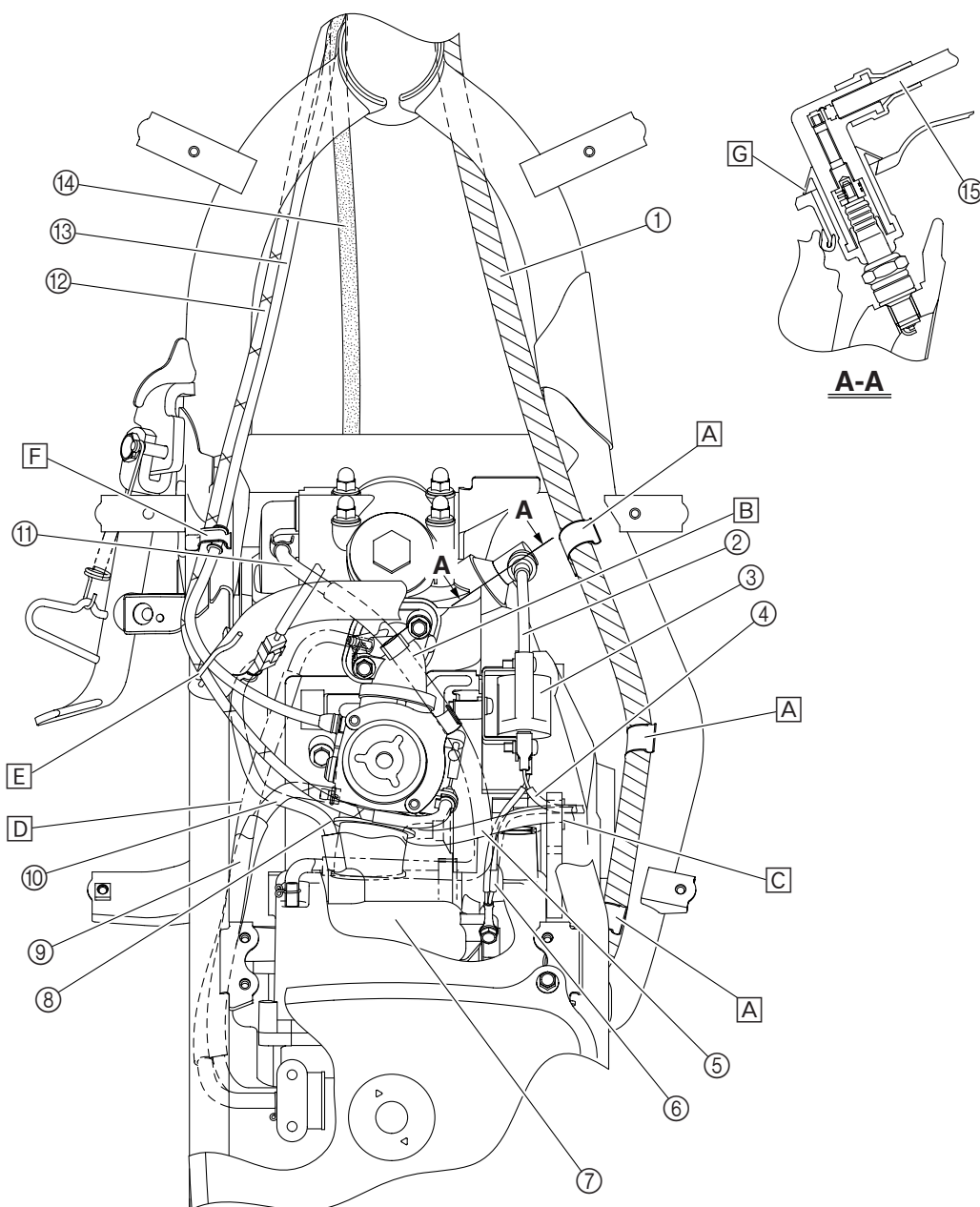


- [C] Fasten the tail/brake light lead and rear turn signal light lead (left) with the holder.
- [D] Fasten the fuse lead, starter relay lead, and positive battery lead with the holder.
- [E] To the starter motor
- [F] Fasten the starter motor lead with the holder.
- [G] To the ignition coil
- [H] To the A.C. magneto



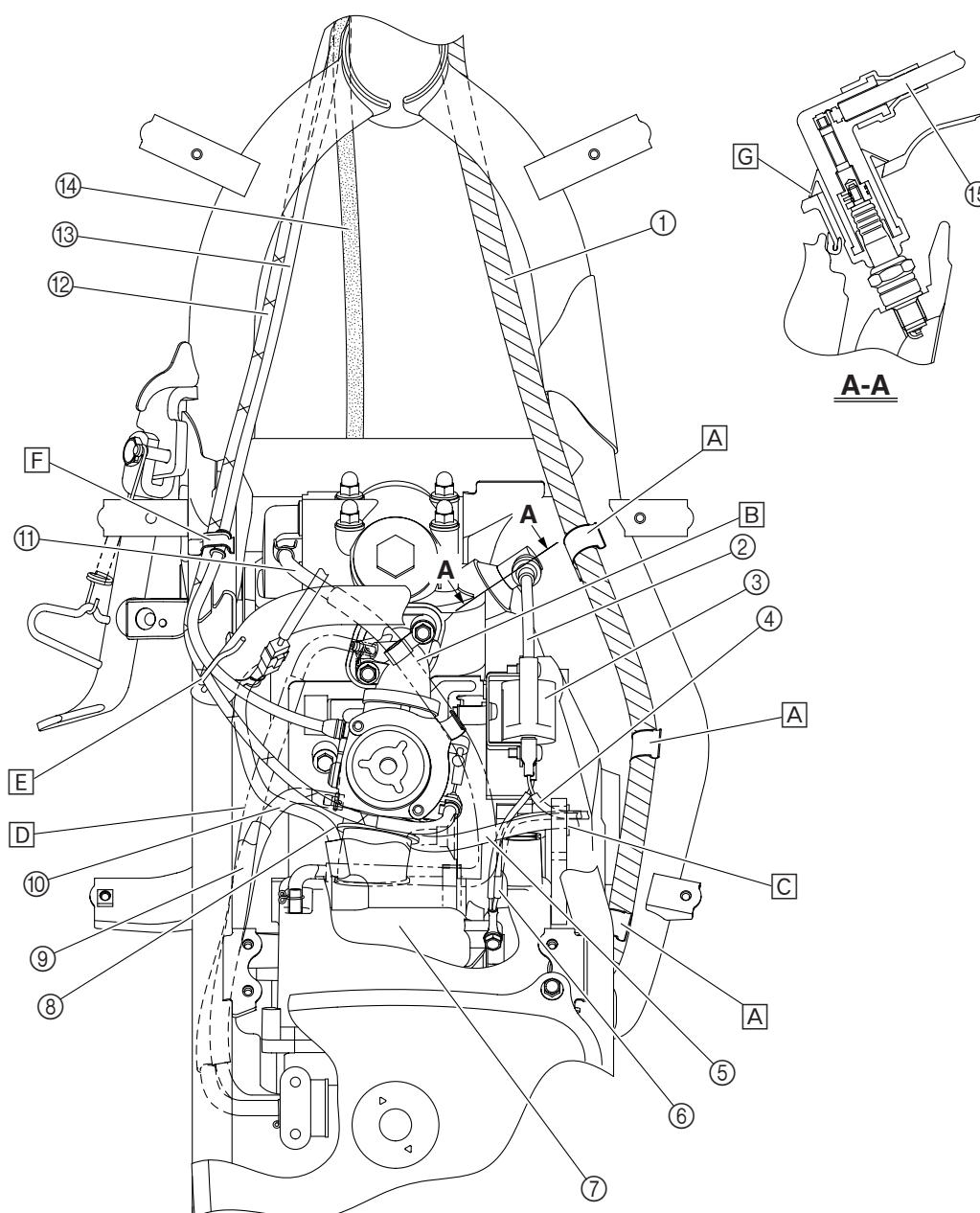


- ① Wire harness
- ② Spark plug lead
- ③ Ignition coil
- ④ Ignition coil lead
- ⑤ A.C. magneto lead
- ⑥ Negative battery lead
- ⑦ Starter motor
- ⑧ Starter motor lead
- ⑨ Vacuum hose
- ⑩ Fuel hose
- ⑪ Cylinder head breather hose
- ⑫ Throttle cable
- ⑬ Starter cable
- ⑭ Rear brake cable
- ⑮ Spark plug lead





- [A] Fasten the wire harness with the holders.
- [B] Route the cylinder head breather hose as shown.
- [C] Pass the A.C. magneto lead, ignition coil lead, and negative battery lead through the guide on the air filter case.
- [D] Route the fuel hose between the vacuum hose and both the starter cable and throttle cable as shown.
- [E] Pass the starter cable and throttle cable through the cable guide.
- [F] Fasten the throttle cable at the white mark and the starter cable grommet with the holder.
- [G] Install the spark plug cap securely so that there is no space between the rubber seal on the spark plug cap and the air shroud.



CHAPTER 3

PERIODIC CHECKS AND ADJUSTMENTS

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INTRODUCTION/PERIODIC MAINTENANCE AND LUBRICATION CHART



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 CHART

NO.	ITEM	CHECK OR MAINTENANCE JOB	ODOMETER READING [× 1,000 km (× 600 mi)]				
			0.5	2	4	8	12
1	* Fuel line	• Check fuel hose and vacuum hose for cracks or damage.		√	√	√	√
2	Spark plug	• Check condition. • Clean and regap.	√	√	√	√	√
		• Replace if necessary.			√	√	√
3	* Valves	• Check valve clearance. • Adjust.	√	√	√	√	√
4	Air filter element	• Clean. Replace if necessary.		√	Every 2,000 km (1,200 mi)		
5	V-belt case air filter element	• Clean. Replace if necessary.		√	Every 2,000 km (1,200 mi)		
6	* Battery	• Check electrolyte level and specific gravity. • Make sure that the breather hose is properly routed.		√	√	√	√
7	* Front brake	• Check operation, fluid level and vehicle for fluid leakage. (See NOTE on page 3-2.) • Replace brake pads if necessary.	√	√	√	√	√
8	* Rear brake	• Check operation and adjust brake lever free play. • Replace brake shoes if necessary.	√	√	√	√	√
9	* Wheels	• Check runout, spoke tightness and for damage. • Tighten spokes if necessary.	√	√	√	√	√
10	* Wheel bearings	• Check bearing for looseness or damage.		√	√	√	√
11	* Steering bearings	• Check bearing play and steering for roughness. • Lubricate with lithium-soap-based grease, every 12,000 km.	√	√	√	√	√
12	* Chassis fasteners	• Make sure that all nuts, bolts and screws are properly tightened.		√	√	√	√
13	Sidestand/center-stand	• Check operation. • Lubricate.		√	√	√	√
14	* Front fork	• Check operation and for oil leakage.		√	√	√	√
15	* Shock absorber assembly	• Check operation and shock absorber for oil leakage.		√	√	√	√
16	* Carburetor	• Check starter (choke) operation. • Adjust engine idling speed.	√	√	√	√	√
17	Engine oil	• Change. • Check oil level and vehicle for oil leakage.	√	√	Every 2,000 km (1,200 mi)		
18	* Engine oil strainer	• Clean.	√				√
19	Final transmission oil	• Check vehicle for oil leakage.	√	√	√	√	√
		• Change.	√		Every 10,000 km (6,000 mi)		
20	* V-belt	• Check the damage and wear.			√	√	√
		• Replace.	Every 25,000 km (16,000 mi) (See NOTE.)				
21	* Front and rear brake switches	• Check operation.	√	√	√	√	√

PERIODIC MAINTENANCE AND LUBRICATION CHART

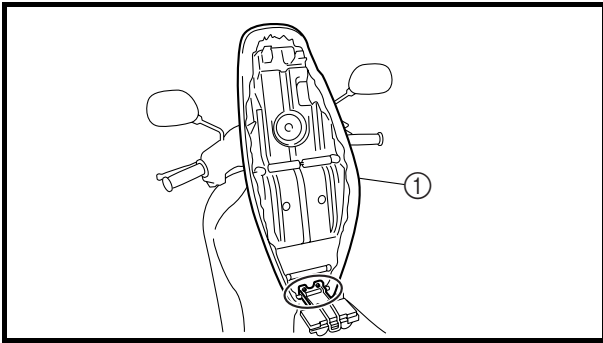


NO.	ITEM	CHECK OR MAINTENANCE JOB	ODOMETER READING [$\times 1,000$ km ($\times 600$ mi)]				
			0.5	2	4	8	12
22	Moving parts and cables	• Lubricate.		✓	✓	✓	✓
23	* Lights, signals and switches	• Check operation. • Adjust headlight beam.	✓	✓	✓	✓	✓

* Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.

NOTE:

- From 16,000 km (10,000 mi), repeat the maintenance intervals starting from 4,000 km (2,500 mi).
- Depending on riding conditions, the V-belt replacement interval may vary.
- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.
- Hydraulic brake system
 - After disassembling the brake master cylinder, and caliper cylinder, always change the fluid. Regularly check the brake fluid level and fill reservoir as required.
 - Replace the oil seals on the inner parts of the brake master cylinder and caliper cylinder every two years.
 - Replace the brake hose every four years or if cracked or damaged.

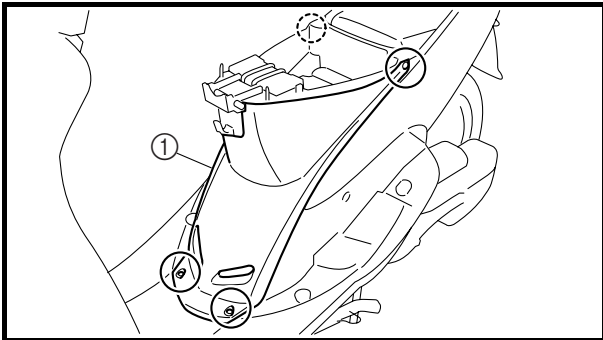


EASF0004

COVERS**REMOVING THE SEAT AND SIDE COVERS**

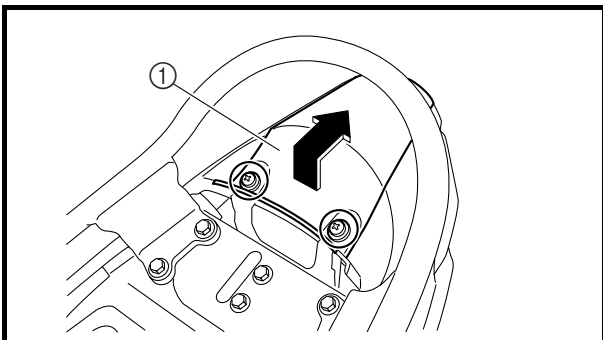
1. Remove:

- seat ①



2. Remove:

- center cover ①

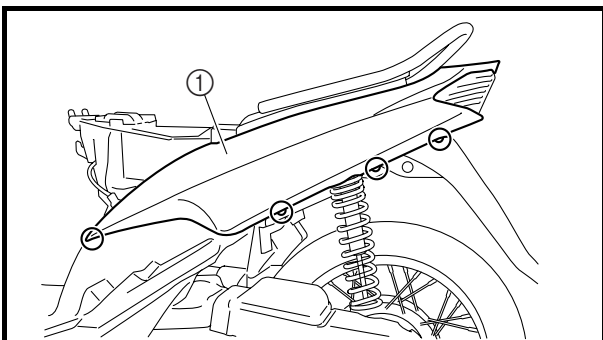


3. Remove:

- rear panel ①

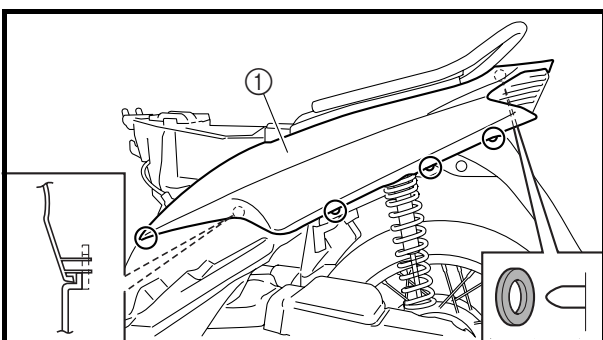
NOTE:

Remove the rear panel by sliding it up in the direction of the arrow shown.



4. Remove:

- side cover (left and right) ①

**INSTALLING THE SEAT AND SIDE COVERS**

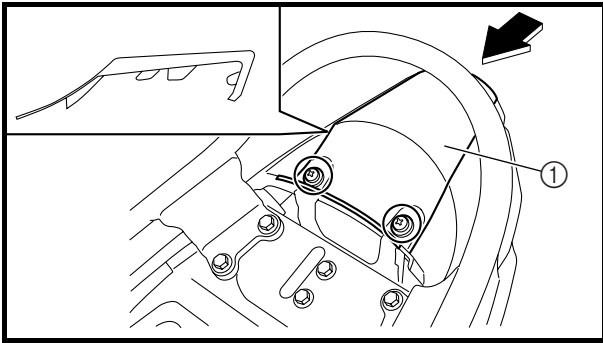
For installation, reverse the removal procedure.

1. Install:

- side cover (left and right) ①

NOTE:

Before tightening the side cover screws, make sure that all projections are securely fitted.

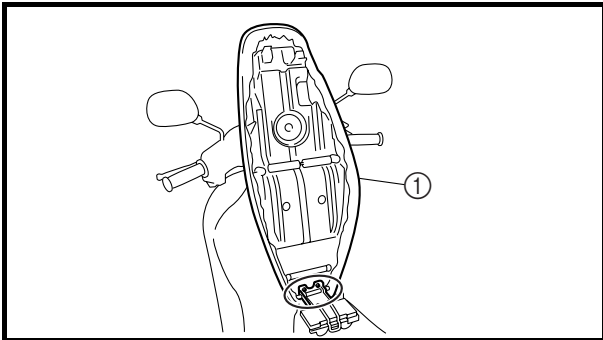


2. Install:

- rear panel ①

NOTE:

Make sure that all projections are securely fitted.



3. Install:

- seat ①

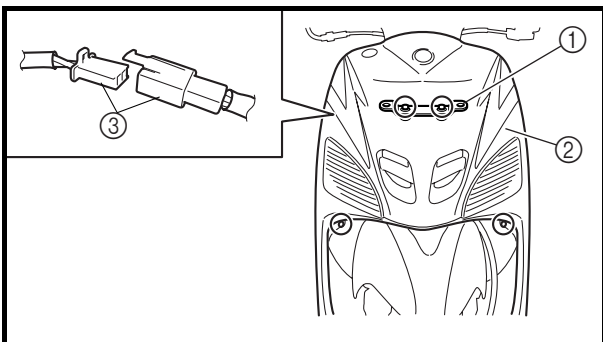
 7 Nm (0.7 m · kg, 5.1 ft · lb)

REMOVING THE FRONT COWLING AND LEG SHIELD

1. Remove:

- seat
- center cover
- rear panel
- side cover (left and right)

Refer to "REMOVING THE SEAT AND SIDE COVERS".

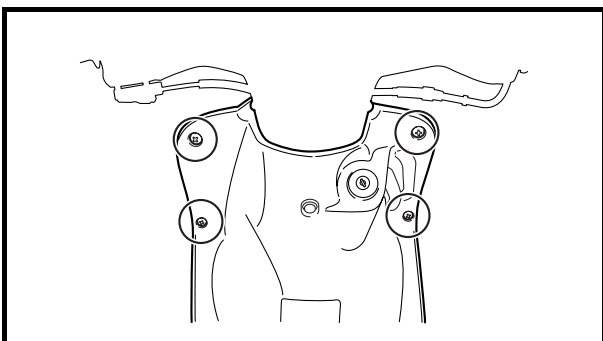


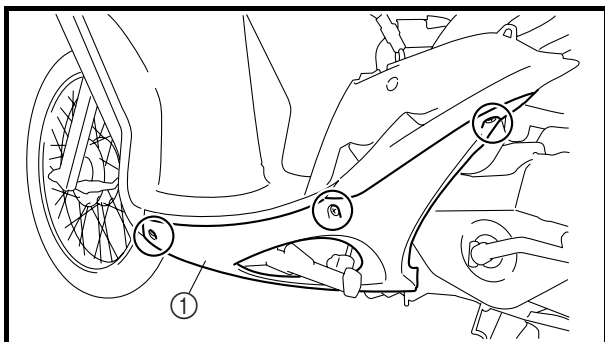
2. Remove:

- license plate bracket ①
- spacer
- front cowling ②

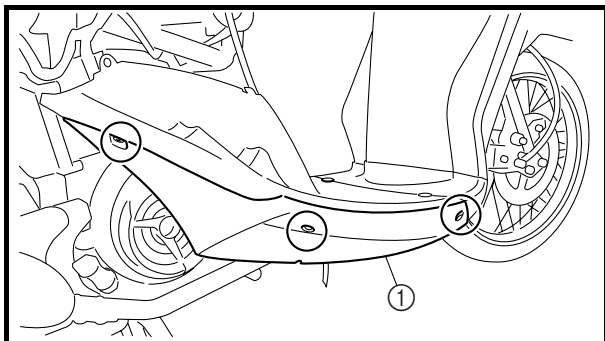
NOTE:

Disconnect the front turn signal light couplers (left and right) ③.

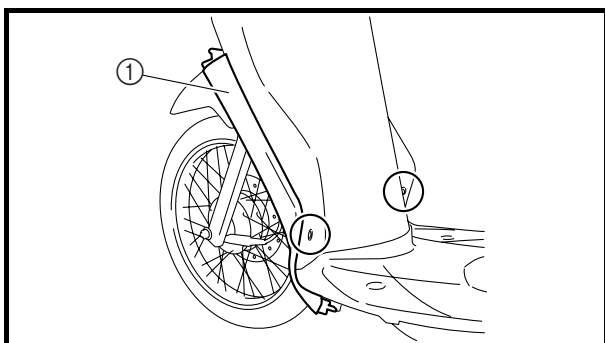




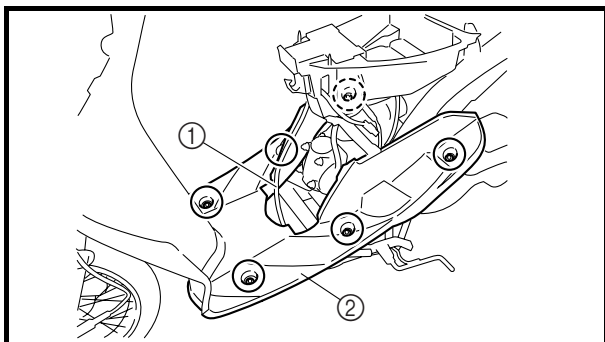
3. Remove:
- bottom cowling ①



4. Remove:
- front bottom cowling ①

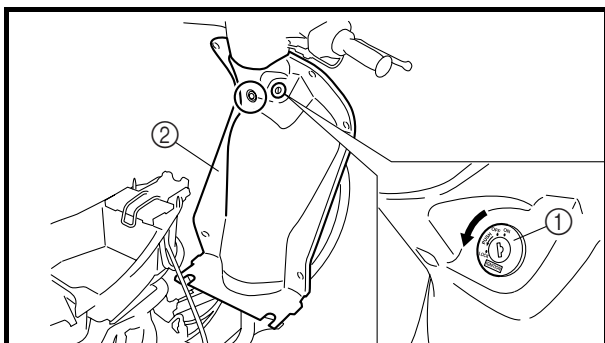


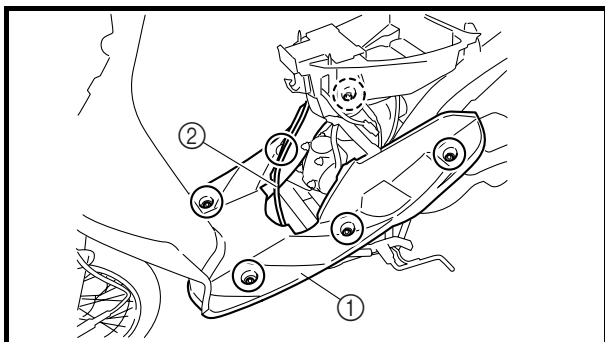
5. Remove:
- battery breather hose 2 ①
 - footboard ②



6. Remove:
- main switch cover ①
 - leg shield ②

NOTE: Remove the main switch cover by turning it in the direction of the arrow shown.





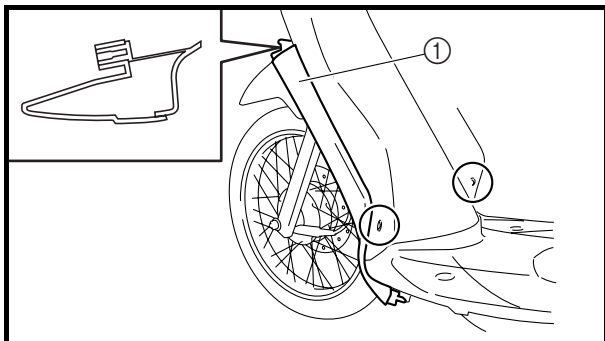
INSTALLING THE FRONT COWLING AND LEG SHIELD

For installation, reverse the removal procedure.

1. Install:

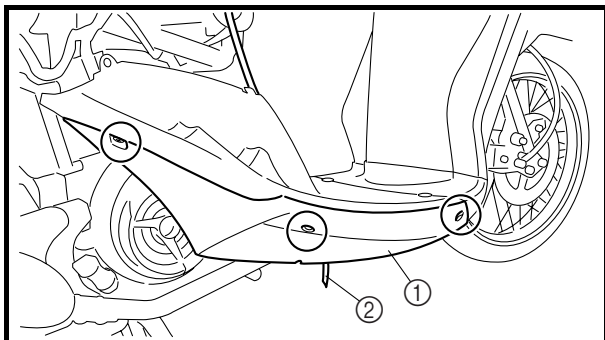
- footboard ①
- battery breather hose 2 ②

Refer to "CABLE ROUTING" in chapter 2.



2. Install:

- front bottom cowling ①

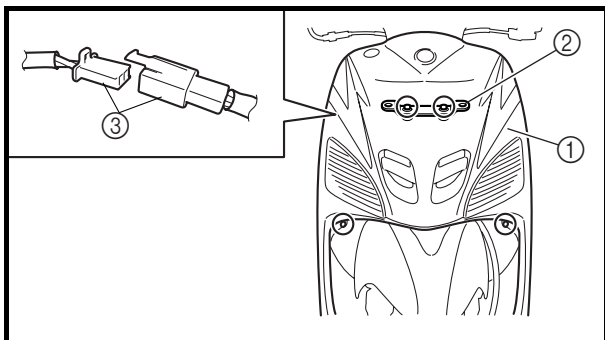


3. Install:

- bottom cowling ①

NOTE:

Be sure to pass the battery breather hose 2 ② through the hole in the bottom cowling.

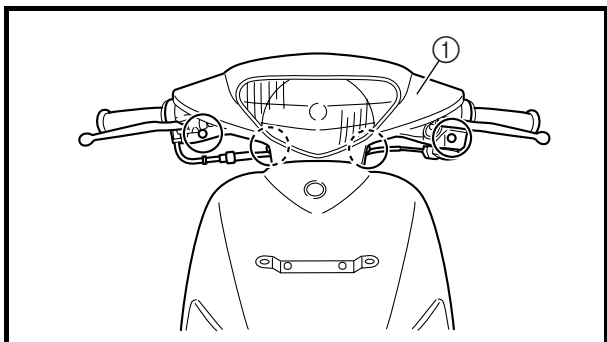


4. Install:

- front cowling ①
- spacer
- license plate bracket ②

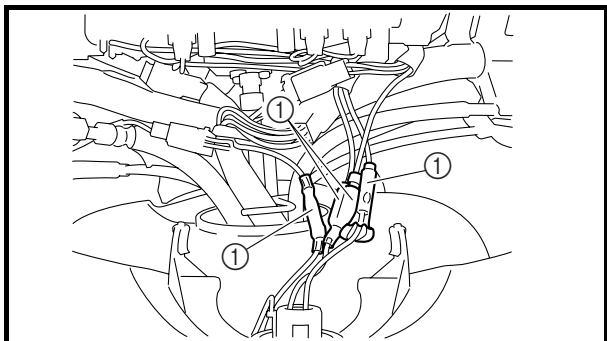
NOTE:

Connect the front turn signal light couplers (left and right) ③, and then install the couplers in the holders on the front cowling. Refer to "CABLE ROUTING" in chapter 2.

**REMOVING THE HEADLIGHT ASSEMBLY**

1. Remove:

- headlight assembly ①



2. Disconnect:

- headlight connectors ①

INSTALLING THE HEADLIGHT ASSEMBLY

For installation, reverse the removal procedure.

EAS00049

ENGINE

ADJUSTING THE VALVE CLEARANCE

The following procedure applies to all of the valves.

NOTE:

- Valve clearance adjustment should be made on a cold engine, at room temperature.
- When the valve clearance is to be measured or adjusted, the piston must be at the Top Dead Center (TDC) on the compression stroke.

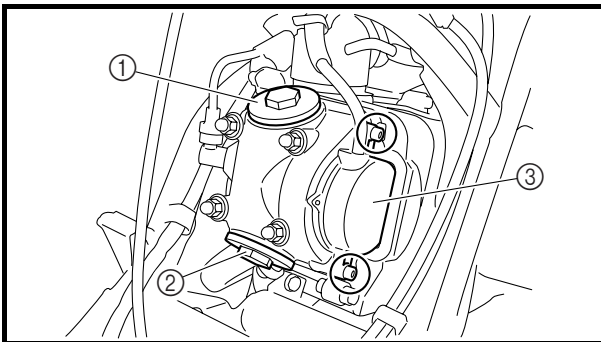
1. Remove:

- front cowl
- bottom cowl
- front bottom cowl
- footboard

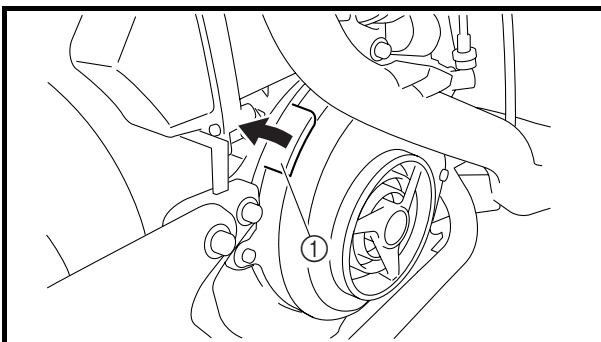
Refer to "REMOVING THE FRONT COWLING AND LEG SHIELD".

2. Remove:

- intake tappet cover ①
- exhaust tappet cover ②
- camshaft sprocket cover ③ (with O-ring)



3. Open the rubber damper ①.



ADJUSTING THE ENGINE IDLING SPEED/ ADJUSTING THE THROTTLE CABLE FREE PLAY



7. Install:

- center cover
- seat

Refer to "INSTALLING THE SEAT AND SIDE COVERS".

EAS00058

ADJUSTING THE THROTTLE CABLE FREE PLAY

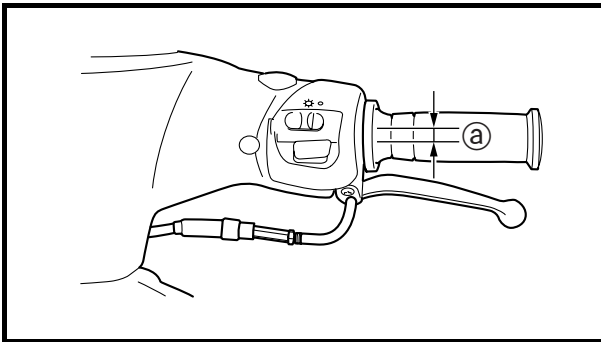
NOTE:

Prior to adjusting the throttle cable free play, the engine idling speed should be adjusted.

1. Check:

- throttle cable free play ①

Out of specification → Adjust.



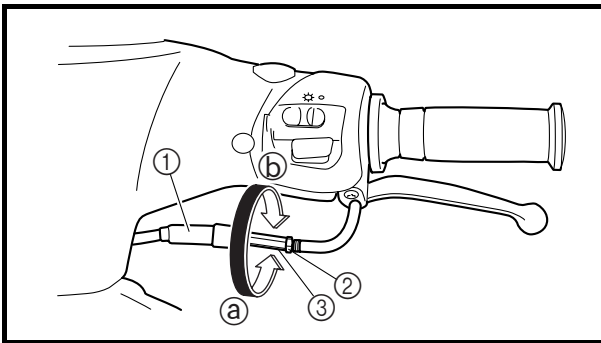
Throttle cable free play (at the flange of the throttle grip)
3 ~ 7 mm (0.12 ~ 0.28 in)

2. Adjust:

- throttle cable free play



- Slide back the rubber cover ①.
- Loosen the locknut ②.
- Turn the adjusting nut ③ in direction ① or ② until the specified throttle cable free play is obtained.



Direction ①	Throttle cable free play is increased.
Direction ②	Throttle cable free play is decreased.

- Tighten the locknut.

- Slide the rubber cover to its original position.



WARNING

After adjusting the throttle cable free play, start the engine and turn the handlebar to the right or left to ensure that this does not cause the engine idling speed to change.



EAS00060

CHECKING THE SPARK PLUG

1. Remove:

- seat
- center cover

Refer to “REMOVING THE SEAT AND SIDE COVERS”.

2. Disconnect:

- spark plug cap

3. Remove:

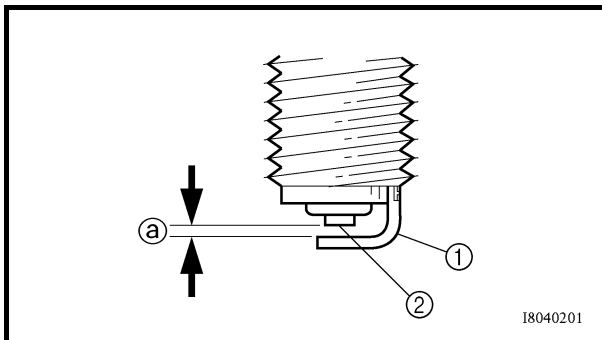
- spark plug

CAUTION:

Before removing the spark plug, blow away any dirt accumulated in the spark plug well with compressed air to prevent it from falling into the cylinder.

4. Check:

- spark plug type
- Incorrect → Change.



	Spark plug type (manufacturer) C7HSA (NGK)
--	---

5. Check:

- electrode ①
Damage/wear → Replace the spark plug.
- insulator ②
Abnormal color → Replace the spark plug.
Normal color is medium-to-light tan.

6. Clean:

- spark plug
(with a spark plug cleaner or wire brush)

7. Measure:

- spark plug gap ③
(with a wire thickness gauge)
Out of specification → Regap.

	Spark plug gap 0.6 ~ 0.7 mm (0.024 ~ 0.028 in)
---	---

8. Install:

- spark plug

 **15 Nm (1.5 m · kg, 11 ft · lb)**

NOTE:

Before installing the spark plug, clean the spark plug and gasket surface.

9. Connect:

- spark plug cap

CHECKING THE SPARK PLUG/ MEASURING THE COMPRESSION PRESSURE



10. Install:

- center cover
- seat

Refer to "INSTALLING THE SEAT AND SIDE COVERS".

EAS00067

MEASURING THE COMPRESSION PRESSURE

NOTE:

Insufficient compression pressure will result in a loss of performance.

1. Measure:

- valve clearance

Out of specification → Adjust

Refer to "ADJUSTING THE VALVE CLEARANCE".

2. Start the engine, warm it up for several minutes, and then turn it off.

3. Disconnect:

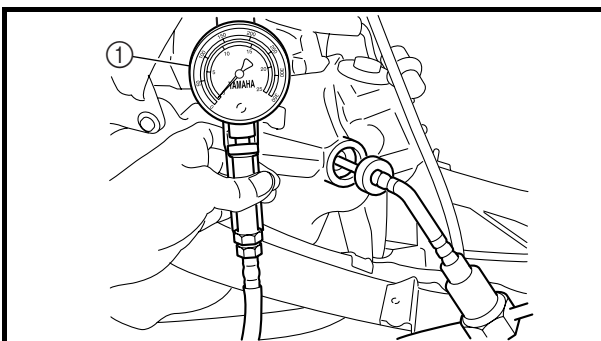
- spark plug cap

4. Remove:

- spark plug

CAUTION:

Before removing the spark plug, use compressed air to blow away any dirt accumulated in the spark plug well to prevent it from falling into the cylinder.



5. Install:

- compression gauge ①



Compression gauge
90890-03081

6. Measure:

- compression pressure

Out of specification → Refer to steps (c) and (d).



Compression pressure (at sea level)

Minimum

960 kPa (9.6 kg/cm², 136.5 psi)

Standard

1,100 kPa

(11 kg/cm², 156.5 psi)

Maximum

1,230 kPa

(12.3 kg/cm², 174.9 psi)



- Set the main switch to "ON".
- With the throttle wide open, crank the engine until the reading on the compression gauge stabilizes.



WARNING

To prevent sparking, ground the spark plug lead before cranking the engine.

- If the compression pressure is above the maximum specification, check the cylinder head, valve surfaces, and piston crown for carbon deposits.

Carbon deposits → Eliminate.

- If the compression pressure is below the minimum specification, pour a teaspoonful engine oil into the spark plug bore and measure again.

Refer to the following table.

Compression pressure (with oil applied into the cylinder)	
Reading	Diagnosis
Higher than without oil	Piston ring(s) wear or damage → Repair.
Same as without oil	Piston, valves, cylinder head gasket or piston possibly defective → Repair.



7. Install:

- spark plug



15 Nm (1.5 m · kg, 11 ft · lb)

MEASURING THE COMPRESSION PRESSURE/ CHECKING THE ENGINE OIL LEVEL



8. Connect:

- spark plug cap

9. Install:

- footboard
- front bottom cowl
- bottom cowl
- front cowl

Refer to "INSTALLING THE FRONT COWLING AND LEG SHIELD".

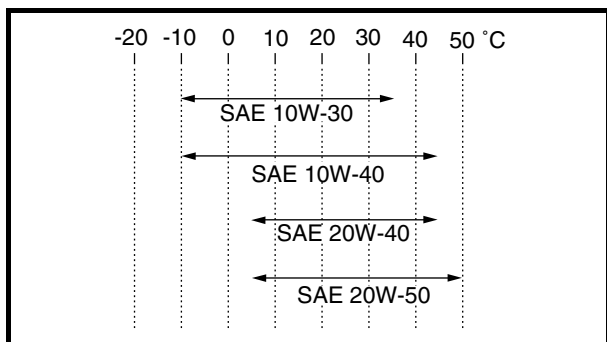
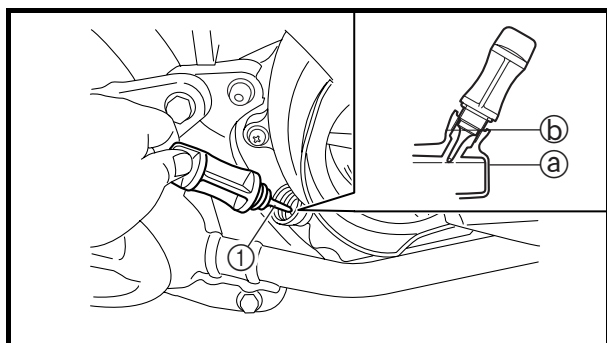
EAS00070

CHECKING THE ENGINE OIL LEVEL

1. Stand the motorcycle on a level surface.

NOTE:

- Place the motorcycle on a suitable stand.
- Make sure the motorcycle is upright.



Recommended oil

Refer to the chart for the engine oil grade which is best suited for certain atmospheric temperatures.

API standard
SE or higher grade

CAUTION:

Do not allow foreign materials to enter the crankcase.

NOTE:

- Before checking the engine oil level, wait a few minutes until the oil has settled.
- Do not screw the dipstick in when checking the oil level.

5. Install:

- dipstick

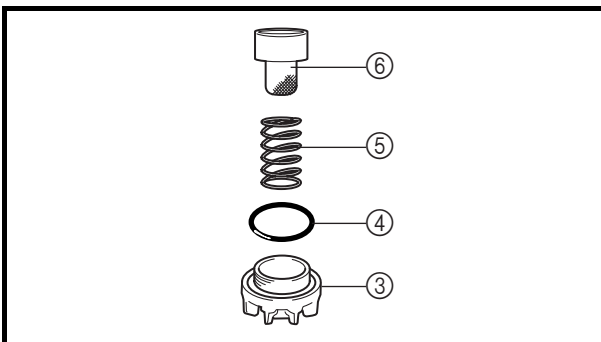
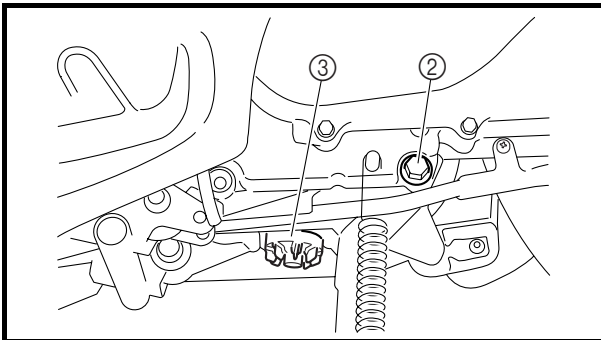
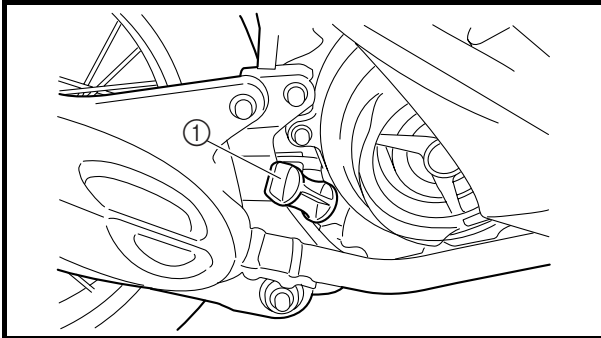
CHECKING THE ENGINE OIL LEVEL/ CHANGING THE ENGINE OIL



6. Start the engine, warm it up for several minutes, and then turn it off.
7. Check the engine oil level again.

NOTE:

Before checking the engine oil level, wait a few minutes until the oil has settled.



EAS00075

CHANGING THE ENGINE OIL

1. Start the engine, warm it up for several minutes, and then turn it off.
2. Place a container under the engine oil drain bolt.
3. Remove:
 - dipstick ①
 - engine oil drain bolt ② (along with the gasket)
 - engine oil drain plug ③
 - O-ring ④
 - spring ⑤
 - engine oil strainer ⑥

NOTE:

When only changing the engine oil, remove engine oil drain bolt only.

4. Drain:
 - engine oil (completely from the crankcase)
5. Check:
 - engine oil strainer
Dirt → Clean.
6. Check:
 - engine oil drain bolt gasket
Damage → Replace.
7. Install:
 - engine oil drain bolt (along with the gasket)

20 Nm (2.0 m · kg, 14 ft · lb)

- spring
- engine oil strainer
- O-ring **New**
- engine oil drain plug

20 Nm (2.0 m · kg, 14 ft · lb)

CHANGING THE ENGINE OIL/ CHANGING THE TRANSMISSION OIL



8. Fill:

- crankcase
(with the specified amount of the recommended engine oil)



Quantity

Total amount

0.9 L (0.79 Imp qt, 0.95 US qt)

Periodic replacement

0.8 L (0.70 Imp qt, 0.85 US qt)

9. Install:

- dipstick

10. Start the engine, warm it up for several minutes, and then turn it off.

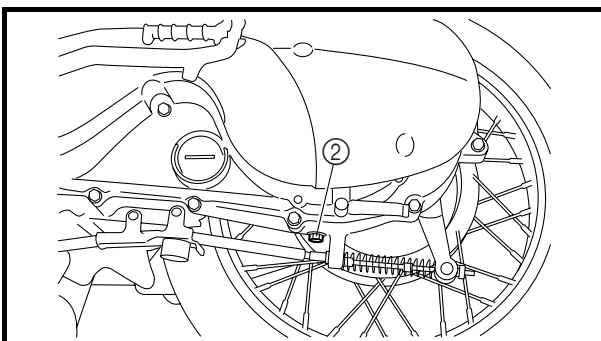
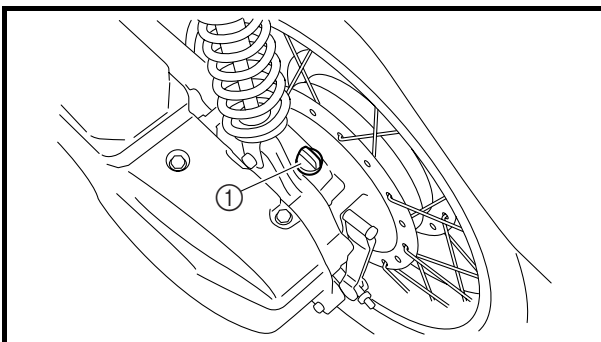
11. Check:

- engine
(for engine oil leaks)

12. Check:

- engine oil level

Refer to "CHECKING THE ENGINE OIL LEVEL".



CHANGING THE TRANSMISSION OIL

1. Start the engine, warm it up for several minutes, and then turn it off.

2. Place a container under the transmission oil drain bolt.

3. Remove:

- transmission oil filler plug ①
- transmission oil drain bolt ②
(along with the gasket)

4. Drain:

- transmission oil
(completely from the transmission case)

5. Check:

- transmission oil drain bolt gasket
Damage → Replace.

6. Install:

- transmission oil drain bolt
(along with the gasket)

22 Nm (2.2 m · kg, 16 ft · lb)

CHANGING THE TRANSMISSION OIL/ CLEANING THE AIR FILTER ELEMENT



7. Fill:

- transmission case
(with the specified amount of the recommended transmission oil)



Recommended oil

Engine oil

Quantity

Total amount

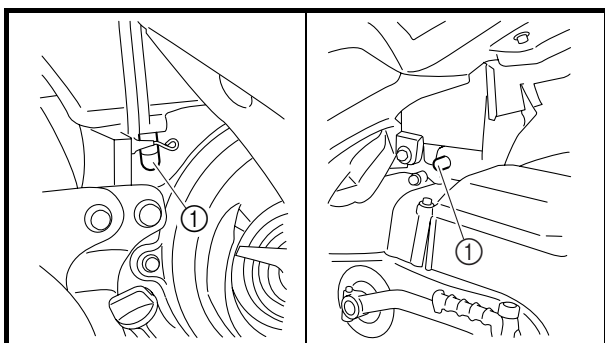
0.12 L (0.11 Imp qt, 0.13 US qt)

Periodic replacement

0.10 L (0.09 Imp qt, 0.11 US qt)

8. Install:

- transmission oil filler plug

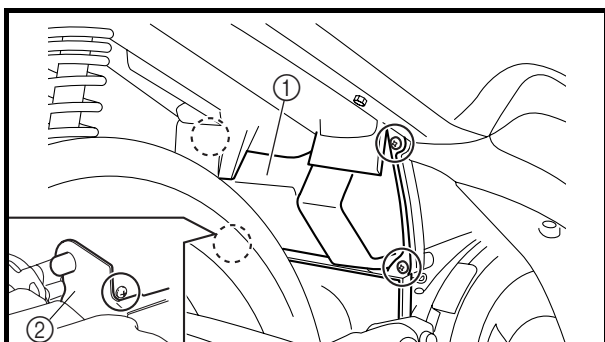


EAS00086

CLEANING THE AIR FILTER ELEMENT

NOTE:

There is a check cap ① at the bottom of the air filter case. If dust and/or water collects in this cap, clean the air filter element and filter case.

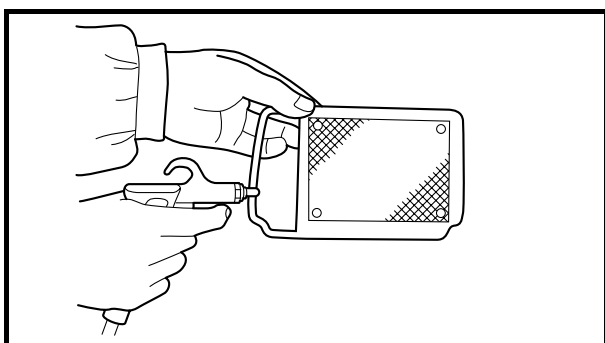


1. Remove:

- air filter case cover ①
- air filter element

NOTE:

Unhook the mud flap ② from the check cap, and then remove the air filter case cover and the air filter element together.



2. Clean:

- air filter element

Apply compressed air to the outer surface of the air filter element.

3. Check:

- air filter element
Damage → Replace.

CLEANING THE AIR FILTER ELEMENT/ CHECKING THE V-BELT



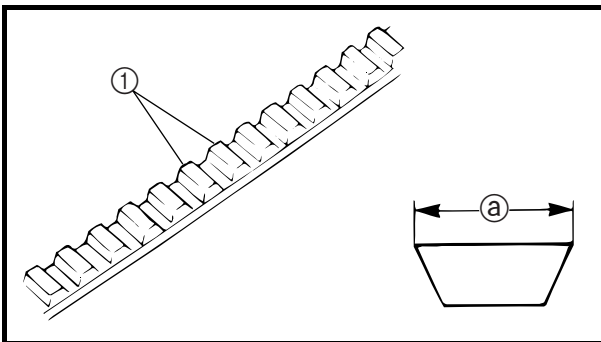
4. Install:
 - air filter element
 - air filter case cover

CAUTION:

Never operate the engine without the air filter element installed. Unfiltered air will cause rapid wear of engine parts and may damage the engine. Operating the engine without the air filter element will also affect the carburetor tuning, leading to poor engine performance and possible overheating.

NOTE:

When installing the air filter element into the air filter case cover, make sure their sealing surfaces are aligned to prevent any air leaks.



EAS00320

CHECKING THE V-BELT

1. Remove:
 - V-belt case cover
Refer to "KICKSTARTER" in chapter 4.
2. Check:
 - V-belt ①
Cranks/damage/wear → Replace.
Grease/oil → Clean the primary and secondary sheaves.
Refer to "BELT DRIVE" in chapter 4.
3. Measure:
 - V-belt width ②
Out of specification → Replace.
Refer to "BELT DRIVE" in chapter 4.



V-belt width
18.2 mm (0.72 in)
<Limit>: 17.2 mm (0.68 in)

4. Install:
 - V-belt case cover
Refer to "KICKSTARTER" in chapter 4.

CAUTION:

Do not twist or wring out the element. This could damage the foam material.

- c. Apply oil of the recommended type to the entire surface of the element, and then squeeze the excess oil out.

NOTE:

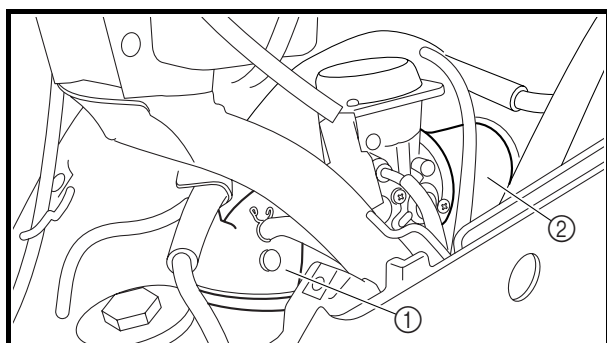
The element should be wet but not dripping.



Recommended oil
Engine oil



4. Install:
- V-belt case air filter element
 - V-belt case air filter dust seal
 - V-belt case air filter cover



EAS00094

**CHECKING THE CARBURETOR JOINT AND
INTAKE MANIFOLD**

1. Remove:
- seat
 - center cover
 - rear panel
 - left side cover
- Refer to "REMOVING THE SEAT AND SIDE COVERS".
2. Check:
- intake manifold ①
 - carburetor joint ②
- Cracks/damage → Replace.
Refer to "CARBURETOR" in chapter 5.

3. Install:

- left side cover
- rear panel
- center cover
- seat

Refer to "INSTALLING THE SEAT AND SIDE COVERS".

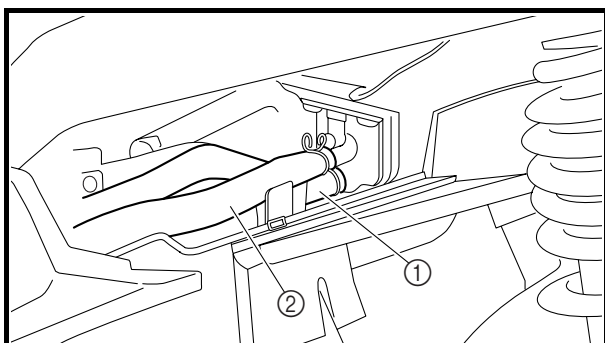
EAS00096

CHECKING THE FUEL AND VACUUM HOSES

1. Remove:

- seat
- center cover
- rear panel
- left side cover

Refer to "REMOVING THE SEAT AND SIDE COVERS".



2. Check:

- vacuum hose ①
- fuel hose ②

Cracks/damage → Replace.

Loose connection → Connect properly.

3. Install:

- left side cover
- rear panel
- center cover
- seat

Refer to "INSTALLING THE SEAT AND SIDE COVERS".

EAS00098

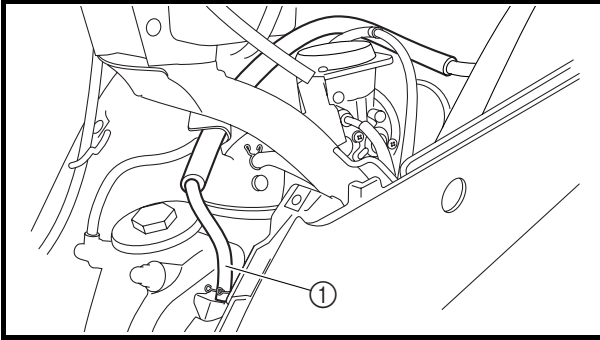
CHECKING THE BREATHER HOSES

1. Remove:

- seat
- center cover
- rear panel
- left side cover

Refer to "REMOVING THE SEAT AND SIDE COVERS".

CHECKING THE BREATHER HOSES/ CHECKING THE EXHAUST SYSTEM

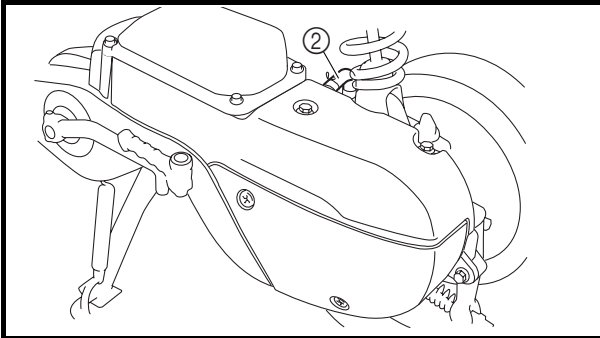


2. Check:

- cylinder head breather hose ①
 - crankcase breather hose ②
- Cracks/damage → Replace.
Loose connection → Connect properly.

CAUTION:

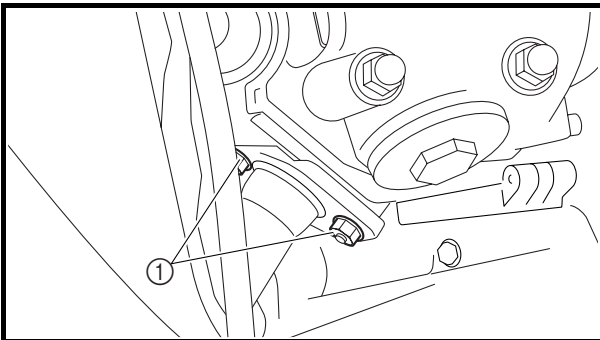
Make sure the cylinder head breather hose is routed correctly.



3. Install:

- left side cover
- rear panel
- center cover
- seat

Refer to "INSTALLING THE SEAT AND SIDE COVERS".

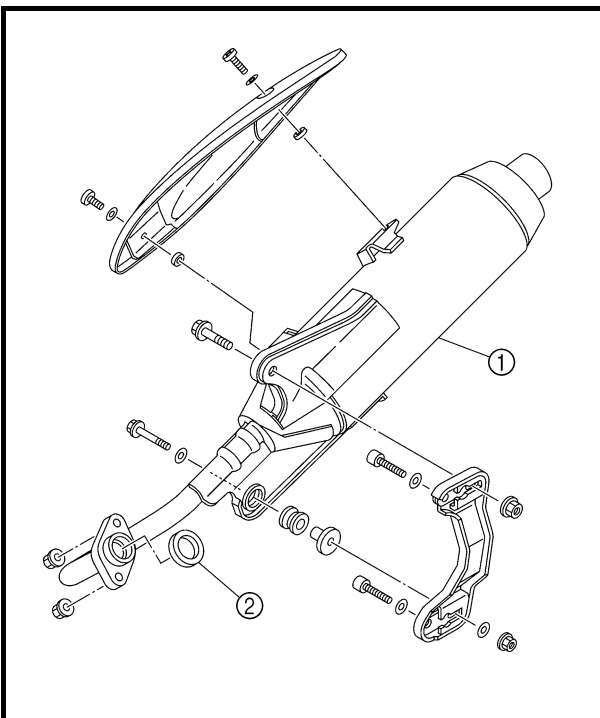


CHECKING THE EXHAUST SYSTEM

1. Check:

- exhaust pipe nuts ①
- Loose/damage → Tighten/replace.

20 Nm (2.0 m · kg, 14 ft · lb)



2. Check:

- muffer ①
 - exhaust pipe gasket ②
- Cracks/damage → Replace.
Exhaust gas leaks → Tighten/replace.

WARNING

- Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.
- When refilling, be careful that water does not enter the brake fluid reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.

CAUTION:

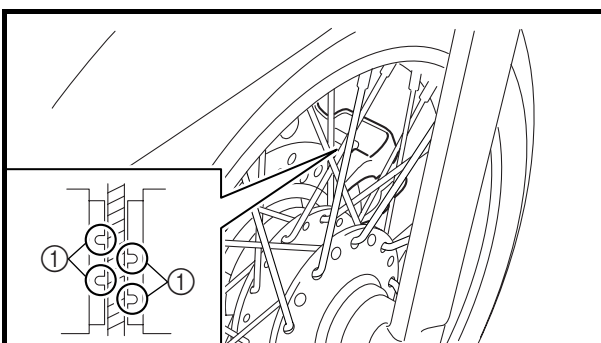
Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

NOTE:

- If DOT 4 brake fluid is not available, DOT 3 brake fluid can be used.
- In order to ensure a correct reading of the brake fluid level, make sure the top of the brake fluid reservoir is horizontal.

3. Install:

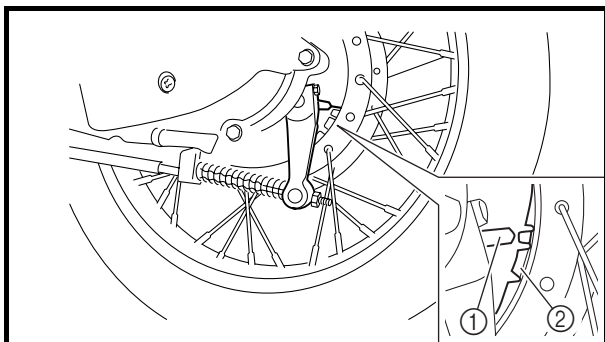
- headlight assembly
Refer to "INSTALLING THE HEADLIGHT ASSEMBLY".



EAS00120

CHECKING THE FRONT BRAKE PADS

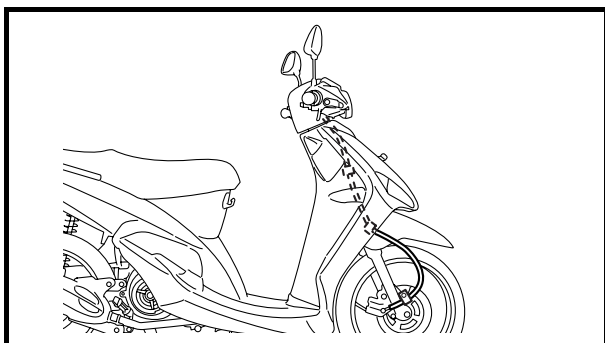
1. Operate the brake.
2. Check:
 - front brake pads
Wear indicator groove ① almost disappeared → Replace the brake pads as a set.
Refer to "REPLACING THE FRONT BRAKE PADS" in chapter 6.



EAS00126

CHECKING THE REAR BRAKE SHOES

1. Operate the brake.
2. Check:
 - wear indicator ①
Reaches the wear limit line ② → Replace the brake shoes as a set.
Refer to “REAR WHEEL AND BRAKE” in chapter 6.



EAS00129

CHECKING THE FRONT BRAKE HOSE

1. Check:
 - brake hose
Cracks/damage/wear → Replace.
2. Check:
 - brake hose holder
Loose connection → Tighten the clamp bolt.
3. Hold the motorcycle upright and apply the front brake several times.
4. Check:
 - brake hose
Brake fluid leakage → Replace the damaged hose.
Refer to “FRONT BRAKE” in chapter 6.

EAS00133

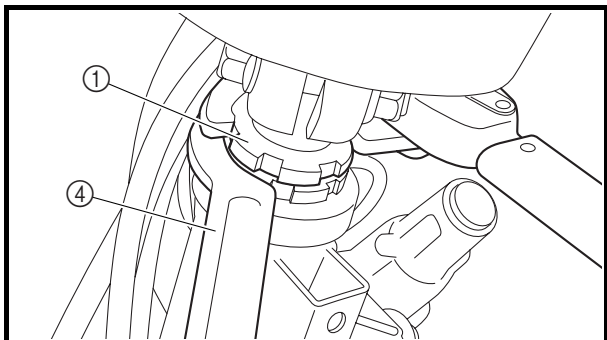
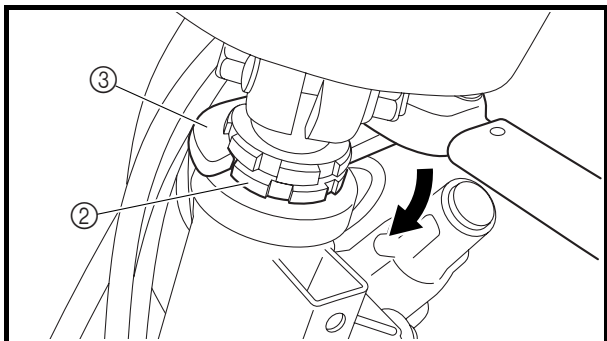
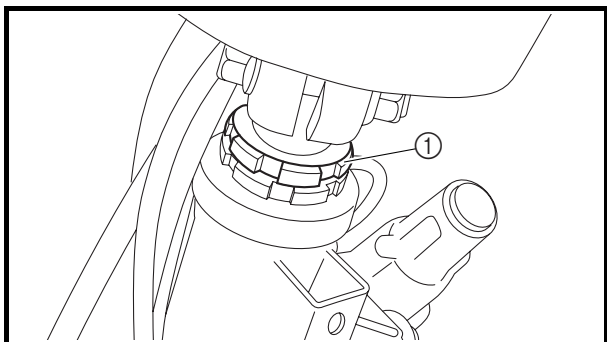
BLEEDING THE HYDRAULIC BRAKE SYSTEM

⚠ WARNING

Bleed the hydraulic brake system whenever:

- the system is disassembled.
- a brake hose is loosened, disconnected or replaced.
- the brake fluid level is very low.
- brake operation is faulty.

CHECKING AND ADJUSTING THE STEERING HEAD



4. Adjust:
- steering head



- Loosen the upper ring nut ①.
- Loosen the lower ring nut ② and then tighten it to specification with the steering nut wrench ③.

NOTE:

Set the torque wrench at a right angle to the steering nut wrench.



Steering nut wrench
90890-01403



Lower ring nut
30 Nm (3.0 m · kg, 22 ft · lb)

- Loosen the lower ring nut counterclockwise 1/4 of a turn.
- Hold the lower ring nut with a ring nut wrench ④ and tighten the upper ring nut ① with a steering nut wrench.



WARNING

Do not overtighten the lower ring nut.



Ring nut wrench
90890-01268



Upper ring nut
75 Nm (7.5 m · kg, 54 ft · lb)

- Check the steering head for looseness or binding by turning the front fork all the way in both directions. If any binding is felt, remove the lower bracket and check the upper and lower bearings.
Refer to "STEERING HEAD" in chapter 6.



5. Install:

- leg shield
- footboard
- front bottom cowl
- bottom cowl
- front cowl

Refer to "INSTALLING THE FRONT COWLING AND LEG SHIELD".

CHECKING THE FRONT FORK/ CHECKING THE TIRES



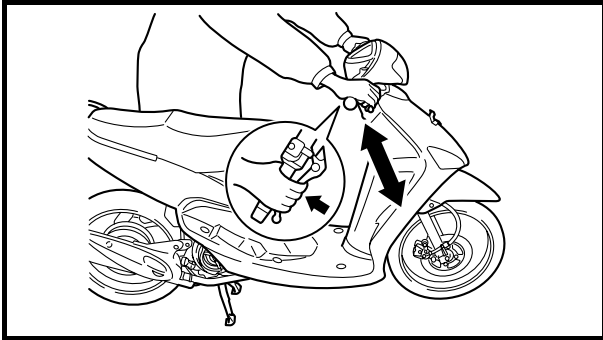
EAS00149

CHECKING THE FRONT FORK

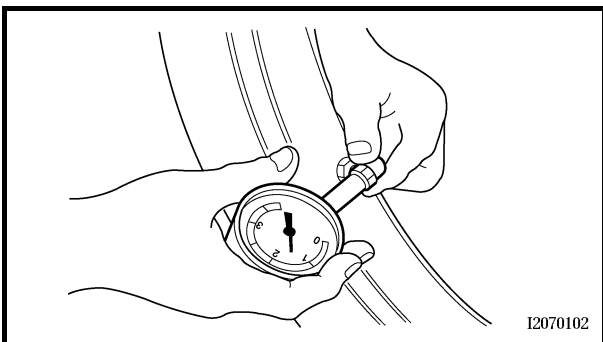
1. Stand the motorcycle on a level surface.

WARNING

Securely support the motorcycle so that there is no danger of it falling over.



2. Check:
 - inner tube
Damage/scratches → Replace.
 - oil seal
Oil leakage → Replace.
3. Hold the motorcycle upright and apply the front brake.
4. Check:
 - front fork operation
Push down hard on the handlebar several times and check if the front fork rebounds smoothly.
Rough movement → Repair.
Refer to “FRONT FORK” in chapter 6.



EASF0015

CHECKING THE TIRES

The following procedure applies to both of the tires.

1. Check:
 - tire pressure
Out of specification → Regulate.

⚠ WARNING

- The tire pressure should only be checked and regulated when the tire temperature equals the ambient air temperature.
- The tire pressure and the suspension must be adjusted according to the total weight (including cargo, rider, passenger and accessories) and the anticipated riding speed.
- Operation of an overloaded motorcycle could cause tire damage, an accident or an injury.

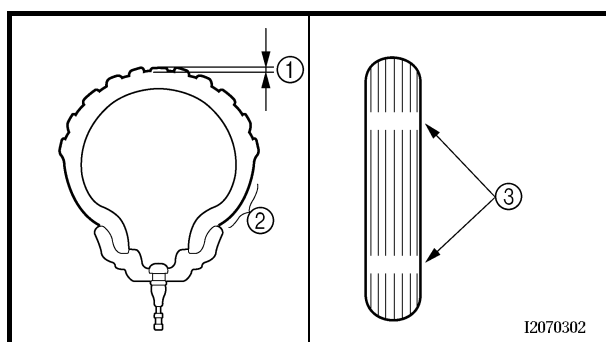
NEVER OVERLOAD THE MOTORCYCLE.

Basic weight (with oil and a full fuel tank)	90 kg (198 lb)	
Maximum load*	168 kg (370 lb)	
Cold tire pressure	Front	Rear
	200 kPa (2.00 kgf/cm ² , 29 psi)	225 kPa (2.25 kgf/cm ² , 33 psi)

* Total weight of rider, passenger, cargo and accessories

⚠ WARNING

It is dangerous to ride with a worn-out tire. When the tire tread reaches the wear limit, replace the tire immediately.



2. Check:

- tire surfaces
- Damage/wear → Replace the tire.

	Minimum tire tread depth 0.8 mm (0.031 in)
---	--

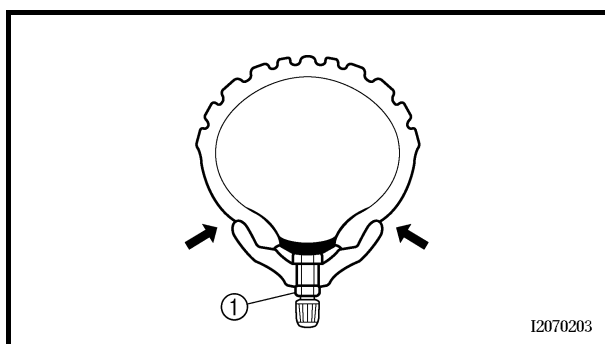
- ① Tire tread depth
- ② Sidewall
- ③ Wear indicator

⚠ WARNING

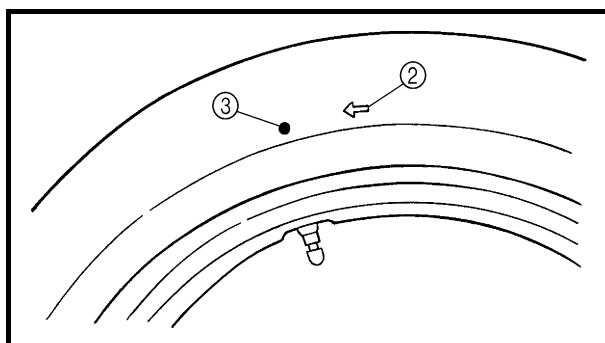
- Do not use a tubeless tire on a wheel designed only for tube tires to avoid tire failure and personal injury from sudden deflation.
- When using tube tires, be sure to install the correct tube.
- Always replace a new tube tire and a new tube as a set.
- To avoid pinching the tube, make sure the wheel rim band and tube are centered in the wheel groove.
- Patching a punctured tube is not recommended. If it is absolutely necessary to do so, use great care and replace the tube as soon as possible with a good quality replacement.

Tube wheel	Tube tire only
Tubeless wheel	Tube or tubeless tire

- After extensive tests, the tires listed below have been approved by Yamaha Motor Co., Ltd. for this model. The front and rear tires should always be by the same manufacturer and of the same design. No guarantee concerning handling characteristics can be given if a tire combination other than one approved by Yamaha is used on this motorcycle.



12070203



⚠ WARNING

- New tires have a relatively low grip on the road surface until they have been slightly worn. Therefore, approximately 100 km (60 mi) should be traveled at normal speed before any high-speed riding is done.
- After a tire has been repaired or replaced, be sure to tighten the tire air valve stem locknut ① to specification.

NOTE:

For tires with a direction of rotation mark ②:

- Install the tire with the mark pointing in the direction of wheel rotation.
- Align the mark ③ with the valve installation point.

CHECKING THE WHEELS/ CHECKING AND TIGHTENING THE SPOKES



EAS00168

CHECKING THE WHEELS

The following procedure applies to both of the wheels.

1. Check:

- wheel

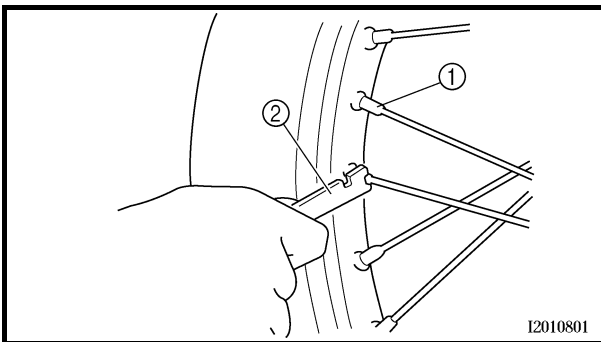
Damage/out-of-round → Replace.

WARNING

Never attempt to make any repairs to the wheel.

NOTE:

After a tire or wheel has been changed or replaced, always balance the wheel.



EAS00169

CHECKING AND TIGHTENING THE SPOKES

The following procedure applies to all of the spokes.

1. Check:

- spoke ①

Bends/damage → Replace.

Loose → Tighten.

Tap the spokes with a screwdriver.

NOTE:

A tight spoke will emit a clear, ringing tone; a loose spoke will sound flat.

2. Tighten:

- spoke
(with a spoke wrench ②)

 **3 Nm (0.3 m · kg, 2.2 ft · lb)**

NOTE:

Be sure to tighten the spokes before and after break-in.

EAS00170

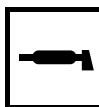
CHECKING AND LUBRICATING THE CABLES

The following procedure applies to all of the inner and outer cables.

WARNING

Damaged outer cable may cause the cable to corrode and interfere with its movement. Replace damaged outer cable and inner cables as soon as possible.

1. Check:
 - outer cable
Damage → Replace.
2. Check:
 - cable operation
Rough movement → Lubricate.



Recommended lubricant
Engine oil or a suitable cable lubricant

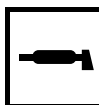
NOTE:

Hold the cable end upright and pour a few drops of lubricant into the cable sheath or use a suitable lubricating device.

EAS00171

LUBRICATING THE LEVERS

Lubricate the pivoting point and metal-to-metal moving parts of the levers.

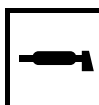


Recommended lubricant
Lithium-soap-based grease

EAS00172

LUBRICATING THE SIDESTAND

Lubricate the pivoting point and metal-to-metal moving parts of the sidestand.



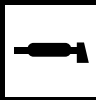
Recommended lubricant
Lithium-soap-based grease



EAS00173

LUBRICATING THE CENTERSTAND

Lubricate the pivoting point and metal-to-metal moving parts of the centerstand.

	Recommended lubricant Lithium-soap-based grease
---	--



EAS00176

ELECTRICAL SYSTEM

CHECKING AND CHARGING THE BATTERY

⚠ WARNING

Batteries generate explosive hydrogen gas and contain electrolyte which is made of poisonous and highly caustic sulfuric acid. Therefore, always follow these preventive measures:

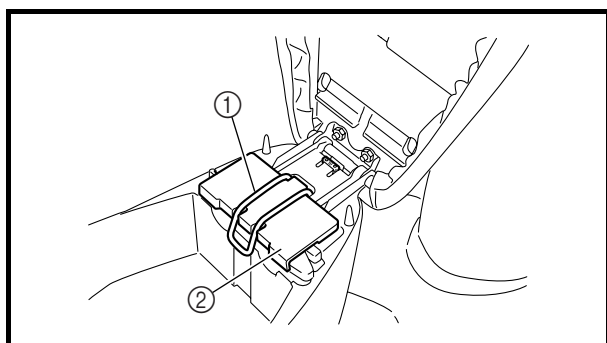
- Wear protective eye gear when handling or working near batteries.
- Charge batteries in a well-ventilated area.
- Keep batteries away from fire, sparks or open flames (e.g., welding equipment, lighted cigarettes).
- DO NOT SMOKE when charging or handling batteries.
- KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.
- Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.

FIRST AID IN CASE OF BODILY CONTACT: EXTERNAL

- Skin — Wash with water.
- Eyes — Flush with water for 15 minutes and get immediate medical attention.

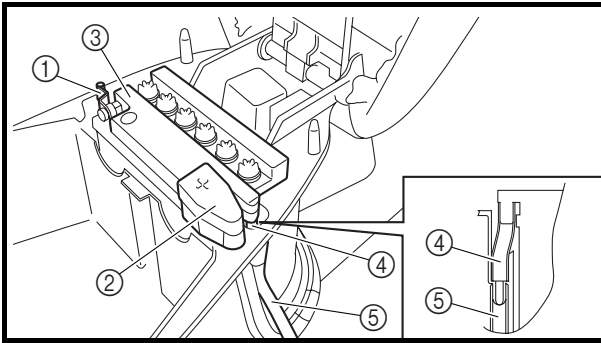
INTERNAL

- Drink large quantities of water or milk followed with milk of magnesia, beaten egg or vegetable oil. Get immediate medical attention.



1. Open the seat.
2. Remove:
 - center cover
 - rear panel
 - right side cover
 Refer to "REMOVING THE SEAT AND SIDE COVERS".
3. Unhook the battery band ① and open the lid ②.

CHECKING AND CHARGING THE BATTERY

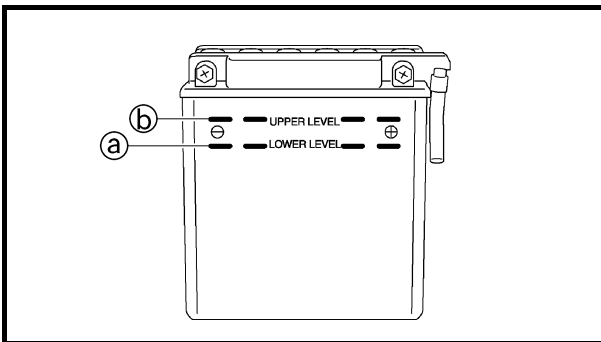


4. Disconnect:
 - battery leads (from the battery terminals)

CAUTION:

First, disconnect the negative battery lead ①, and then positive battery lead ②.

5. Remove:
 - battery ③
6. Disconnect:
 - battery breather hose 1 ④
 - battery breather hose 2 ⑤



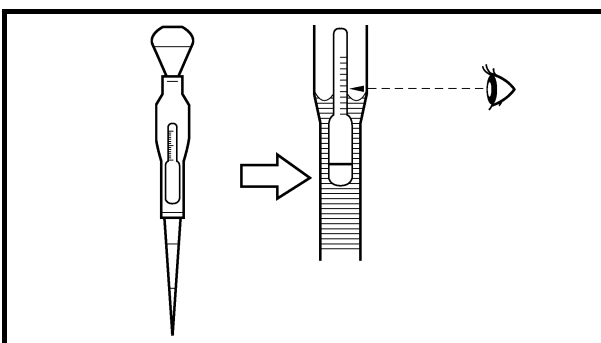
7. Check:
 - electrolyte level

The electrolyte level should be between the minimum level mark ① and the maximum level mark ②.

Below the minimum level mark → Add distilled water to the proper level.

CAUTION:

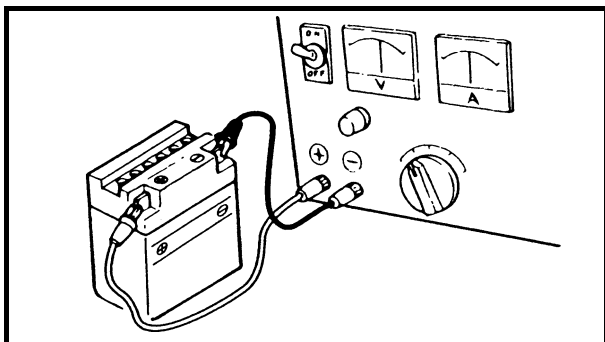
Add only distilled water. Tap water contains minerals which are harmful to the battery.



8. Check:
 - specific gravity

Less than 1.280 → Recharge the battery.

	Specific gravity 1.280 at 20 °C (68 °F)
--	--



9. Charge:

- battery



Battery charging amperage and time
0.5 amps/10 hrs

WARNING

Do not quick charge a battery.

CAUTION:

- Loosen the battery sealing caps.
- Make sure the battery breather hose and battery vent are free of obstructions.
- To ensure maximum performance, always charge a new battery before using it.
- Do not use a high-rate battery charger. They force a high-amperage current into the battery quickly and can cause battery overheating and battery plate damage.
- If it is impossible to regulate the charging current on the battery charger, be careful not to overcharge the battery.
- When charging a battery, be sure to remove it from the motorcycle. (If charging has to be done with the battery mounted on the motorcycle, disconnect the negative battery lead from the battery terminal.)
- To reduce the chance of sparks, do not plug in the battery charger until the battery charger leads are connected to the battery.
- Before removing the battery charger lead clips from the battery terminals, be sure to turn off the battery charger.
- Make sure the battery charger lead clips are in full contact with the battery terminal and that they are not shorted. A corroded battery charger lead clip may generate heat in the contact area and a weak clip spring may cause sparks.
- If the battery becomes hot to the touch at any time during the charging process, disconnect the battery charger and let the battery cool before reconnecting it. Hot batteries can explode!

NOTE:

Replace the battery whenever:

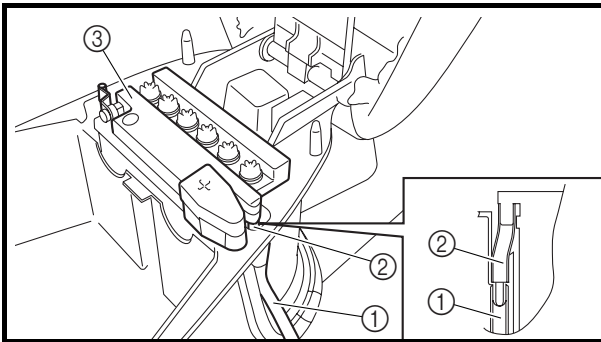
- battery voltage does not rise to specification or bubbles fail to rise during charging,
- sulphation of one or more battery cells occurs (as indicated by the battery plates turning white or material accumulating in the bottom of the battery cell),
- specific gravity readings after a long, slow charge indicate that one battery cell's charge is lower than the rest,
- warpage or buckling of the battery plates or insulators is evident.

10. Check:

- battery breather hose and battery vent
Obstruction → Clean.
Damage → Replace.

11. Connect:

- battery breather hose 2
(to the storage box) ①
- battery breather hose 1
(to the battery) ②

**CAUTION:**

- **When checking the battery, make sure the battery breather hose is properly installed and routed correctly. If the battery breather hose is positioned so as to allow electrolyte or hydrogen gas from the battery to contact the frame, the motorcycle and its finish may be damaged.**
- **Make sure the battery breather hose is properly routed.**

12. Install:

- battery ③

13. Check:

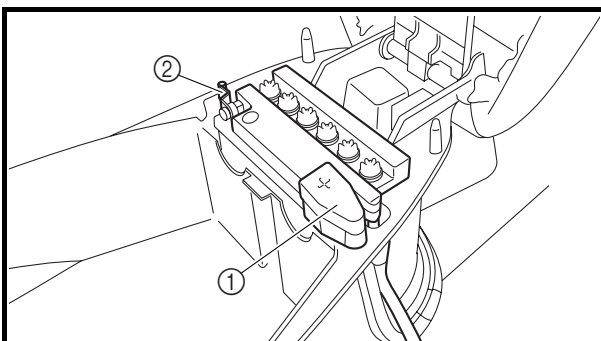
- battery terminals
Dirt → Clean with a wire brush.
Loose connection → Connect properly.

14. Connect:

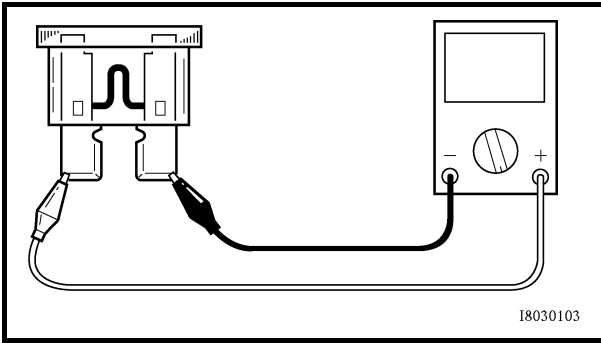
- battery leads
(to the battery terminals)

CAUTION:

First, connect the positive battery lead ①, and then the negative battery lead ②.



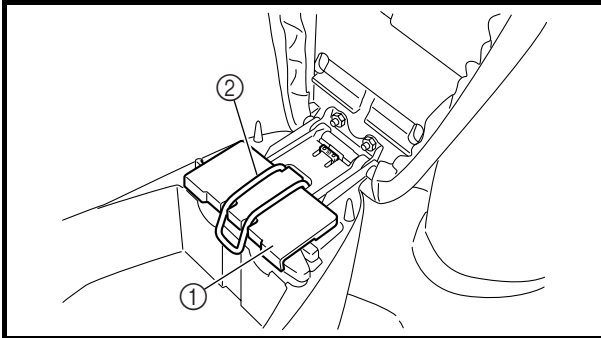
CHECKING THE FUSE/ REPLACING THE HEADLIGHT BULB



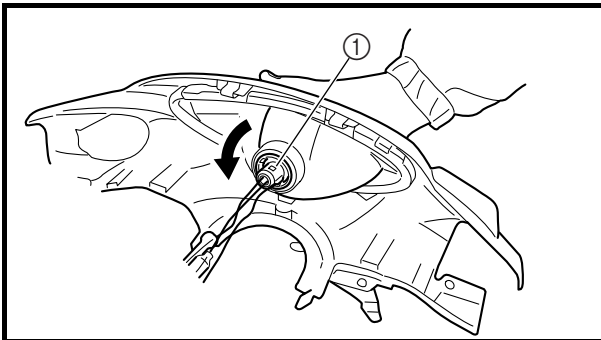
4. Replace:
 - blown fuse

⚠ WARNING

Never use a fuse with an amperage rating other than that specified. Improvising or using a fuse with the wrong amperage rating may cause extensive damage to the electrical system, cause the lighting and ignition systems to malfunction and could possibly cause a fire.



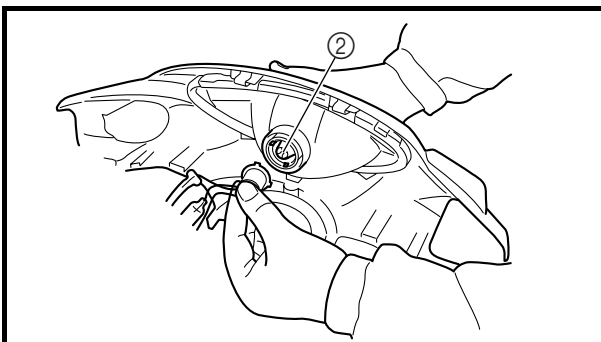
5. Close the lid ① and the hook battery band ②.



EAS00182

REPLACING THE HEADLIGHT BULB

1. Remove:
 - headlight assembly
Refer to "REMOVING THE HEADLIGHT ASSEMBLY".
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.

REPLACING THE HEADLIGHT BULB/ ADJUSTING THE HEADLIGHT BEAM



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.

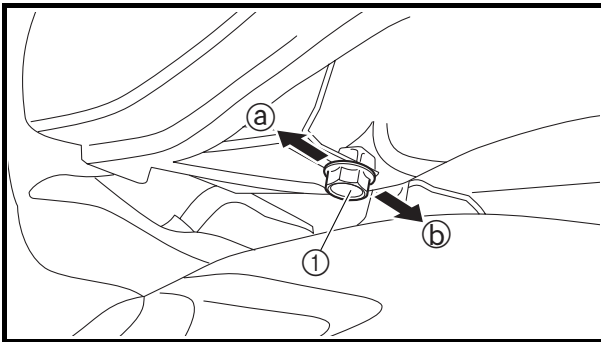
5. Install:

- headlight bulb holder

6. Install:

- headlight assembly

Refer to "INSTALLING THE HEADLIGHT ASSEMBLY".



EAS00186

ADJUSTING THE HEADLIGHT BEAM

1. Adjust:

- headlight beam (vertically)



a. Loosen the bolt ①.

b. Slide the bottom of the headlight unit forward ② or backward ③.

Slide forward ②	Headlight beam is raised.
Slide backward ③	Headlight beam is lowered.

c. Tighten the bolt.





CHAPTER 4

ENGINE

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ENGINE REMOVING THE ENGINE

NOTE:

It is not necessary to remove the engine in order to remove the following components.

- Cylinder head
- Cylinder
- Piston
- Starter clutch
- Starter motor
- Kickstarter shaft
- V-belt
- Primary sheave
- Secondary sheave
- Transmission
- Rear wheel assembly
- Oil pump
- A.C. magneto

ENGINE OIL

1. Drain:

- engine oil

Refer to “CHANGING THE ENGINE OIL” in chapter 3.

COVERS

1. Remove:

- footboard

Refer to “REMOVING THE FRONT COWLING AND LEG SHIELD” in chapter 3.

CARBURETOR

1. Remove:

- fuel tank

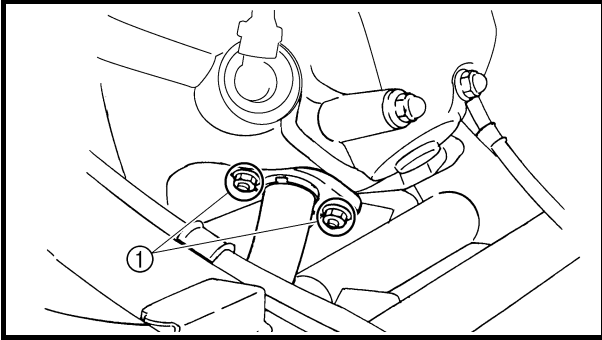
Refer to “FUEL TANK” in chapter 5.

- air filter case

Refer to “AIR FILTER CASE” in chapter 5.

- carburetor assembly

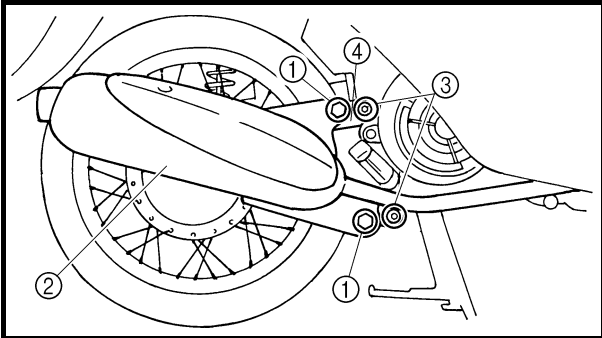
Refer to “CARBURETOR” in chapter 5.



MUFFLER

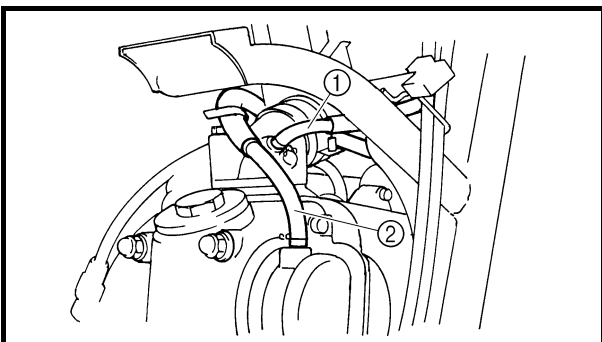
1. Remove:

- muffer nuts ①



2. Remove:

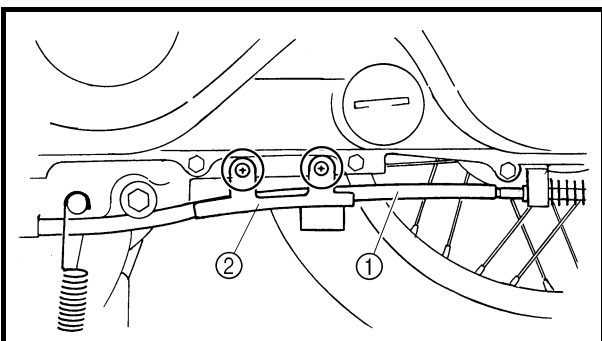
- muffer bolts ①
- washer
- nuts
- washer
- spacer
- damper
- muffer ②
- muffer stay bolts ③
- washers
- muffer stay ④



CABLE AND HOSE

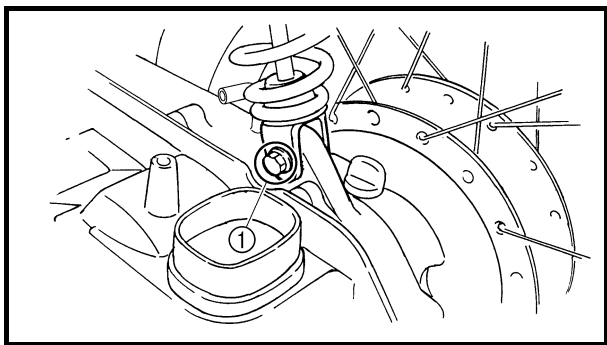
1. Disconnect:

- vacuum hose ①
- cylinder head breather hose ②



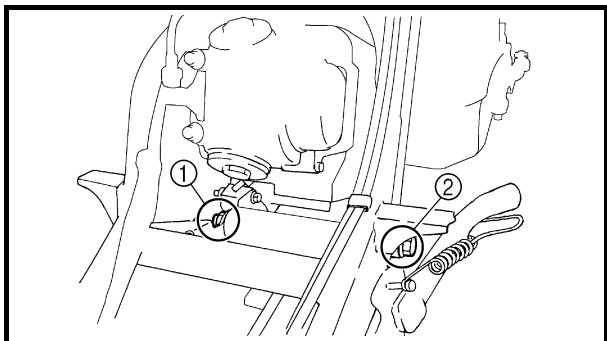
2. Remove:

- rear brake cable ①
- rear brake cable holder ②



REAR SHOCK ABSORBER ASSEMBLY BOLT

1. Remove:
 - rear shock absorber assembly bolt ①



ENGINE ASSEMBLY

1. Remove:
 - engine mounting nut ①
 - washer
 - engine mounting bolt ②
 - engine assembly

⚠ WARNING

Securely support the motorcycle so there is no danger of it falling over.



EASF0019

INSTALLING THE ENGINE

ENGINE ASSEMBLY

WARNING

Securely support the motorcycle so there is no danger of it falling over when installing engine.

1. Install:
 - engine assembly
 - engine mounting bolt
 - washer
 - engine mounting nut

 **59 Nm (5.9 m · kg, 43 ft · lb)**

REAR SHOCK ABSORBER ASSEMBLY BOLT

1. Install:
 - rear shock absorber assembly bolt

 **16 Nm (1.6 m · kg, 11 ft · lb)**

CABLE AND HOSE

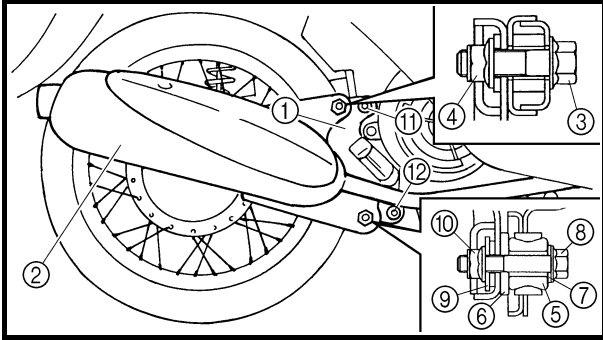
1. Install:
 - rear brake cable
 - rear brake cable holder
 - rear brake cable holder screws

 **7 Nm (0.7 m · kg, 5.1 ft · lb)**

2. Connect:
 - cylinder head breather hose
 - vacuum hose

3. Adjust:
 - rear brake lever free play

Refer to “ADJUSTING THE REAR BRAKE” in chapter 3.



MUFFLER

1. Install:

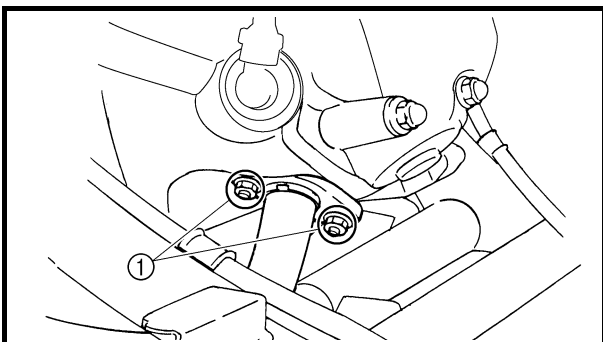
- muffler stay ①
(to the muffler ②)
- muffler upper bolt ③
(install without tightening)
- nut ④
- damper ⑤
- spacer ⑥
- washer ⑦
- muffler lower bolt ⑧
(install without tightening)
- washer ⑨
- nut ⑩

NOTE:

Install the washer ⑨ and the nut ⑩ as shown.

2. Install:

- muffler stay
(to the right crankcase)
- washer
- muffler stay upper bolt ⑪
(tighten temporarily)
- washer
- muffler stay lower bolt ⑫
(tighten temporarily)



3. Tighten:

- nuts ① 20 Nm (2.0 m · kg, 14 ft · lb)

4. Tighten:

- muffler stay upper bolt
 - muffler stay lower bolt
- 37 Nm (3.7 m · kg, 27 ft · lb)

5. Tighten:

- muffler upper bolt
 - muffler lower bolt
- 50 Nm (5.0 m · kg, 36 ft · lb)
35 Nm (3.5 m · kg, 25 ft · lb)



CARBURETOR

1. Install:
 - carburetor assembly
Refer to “CARBURETOR” in chapter 5.
 - air filter case
Refer to “AIR FILTER CASE” in chapter 5.
 - fuel tank
Refer to “FUEL TANK” in chapter 5.
2. Adjust:
 - throttle cable free play
Refer to “ADJUSTING THE THROTTLE CABLE FREE PLAY” in chapter 3.

COVERS

1. Install:
 - footboard
Refer to “INSTALLING THE FRONT COWLING AND LEG SHIELD” in chapter 3.

ENGINE OIL

1. Fill:
 - engine oil
Refer to “CHANGING THE ENGINE OIL” in chapter 3.

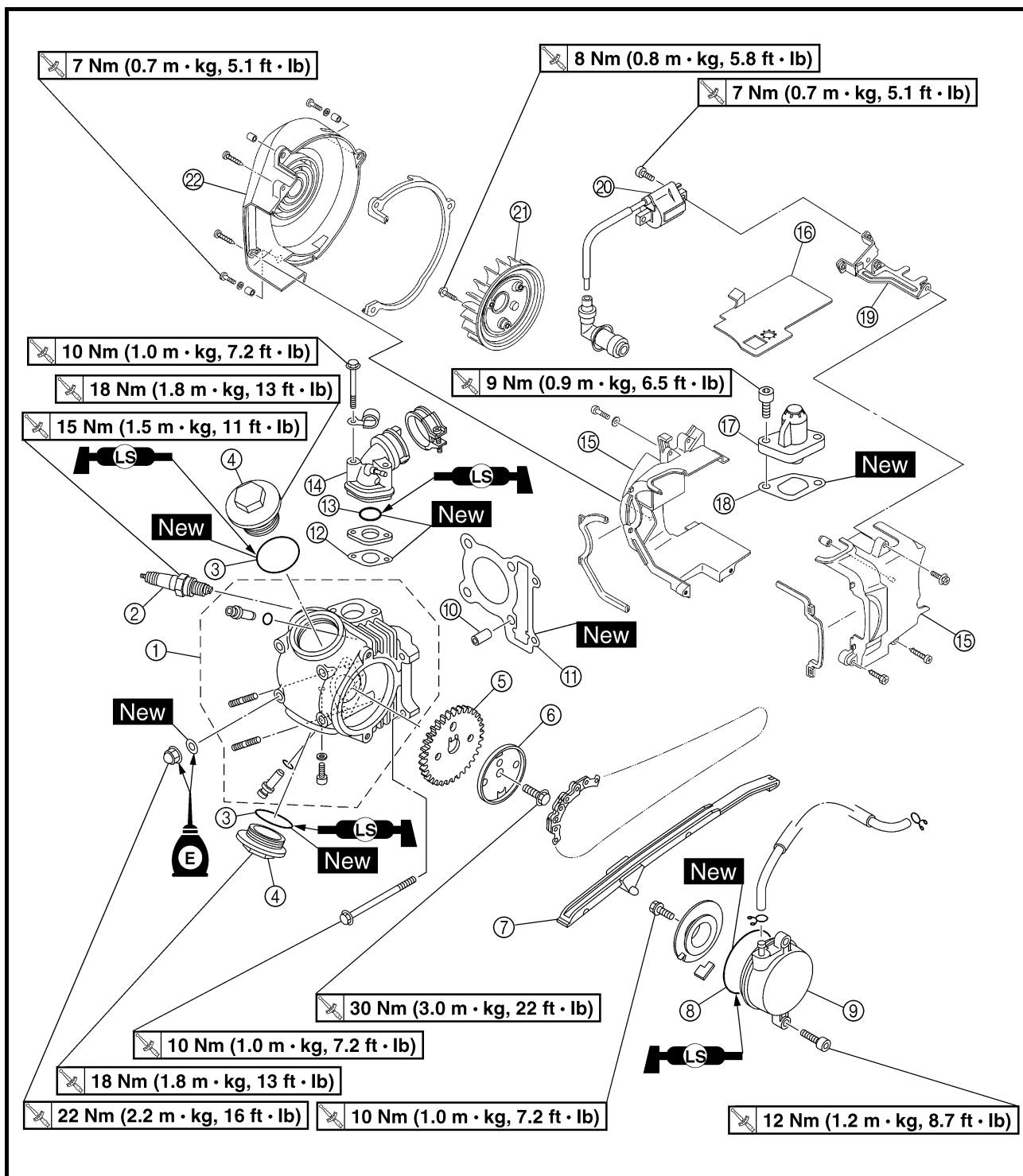


EASF0023

CYLINDER HEAD



- | | | |
|-------------------------------------|---------------------------|----------------------------------|
| ① Cylinder head | ⑧ O-ring | ⑯ Rubber cover |
| ② Spark plug | ⑨ Camshaft sprocket cover | ⑰ Timing chain tensioner |
| ③ O-ring | ⑩ Dowel pin | ⑱ Gasket |
| ④ Tappet cover | ⑪ Gasket | ⑲ Ignition coil assembly bracket |
| ⑤ Camshaft sprocket | ⑫ Gasket | ⑳ Ignition coil assembly |
| ⑥ Camshaft sprocket plate | ⑬ O-ring | ㉑ Engine cooling fan |
| ⑦ Timing chain guide (exhaust side) | ⑭ Intake manifold | ㉒ Engine cooling fan cover |
| | ⑮ Air shroud | |

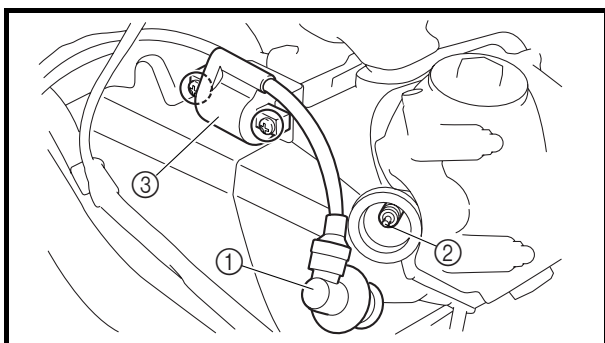




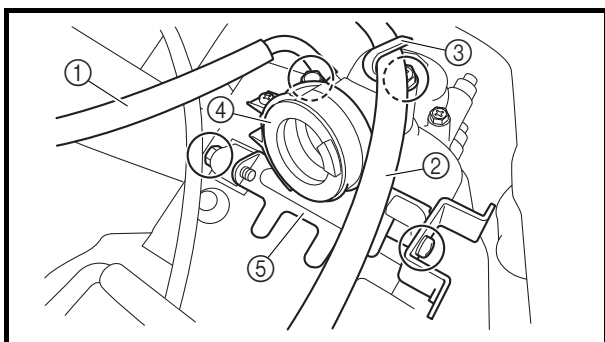
EAS00225

REMOVING THE CYLINDER HEAD

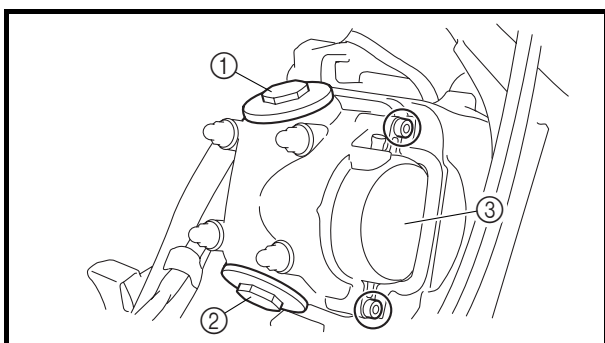
1. Remove:
 - footboard
Refer to “REMOVING THE FRONT COWLING AND LEG SHIELD” in chapter 3.
2. Remove:
 - fuel tank
Refer to “FUEL TANK” in chapter 5.
 - air filter case
Refer to “AIR FILTER CASE” in chapter 5.
 - carburetor assembly
Refer to “CARBURETOR” in chapter 5.
3. Remove:
 - muffler
Refer to “REMOVING THE ENGINE”.



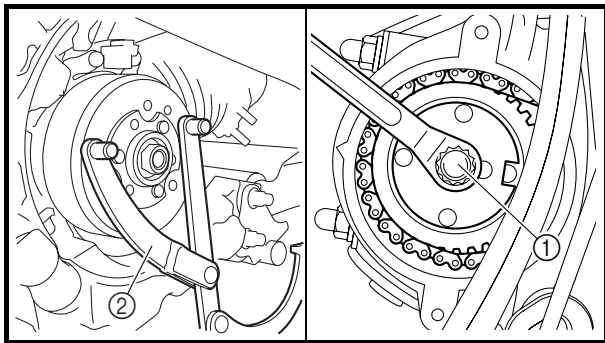
4. Remove:
 - spark plug cap ①
 - spark plug ②
 - ignition coil assembly ③



5. Remove:
 - vacuum hose ①
 - cylinder head breather hose ②
 - cylinder head breather hose holder ③
 - intake manifold ④
 - ignition coil assembly bracket ⑤



6. Remove:
 - intake tappet cover ①
 - exhaust tappet cover ②
 - camshaft sprocket cover ③
(with the O-ring)



10. Loosen:

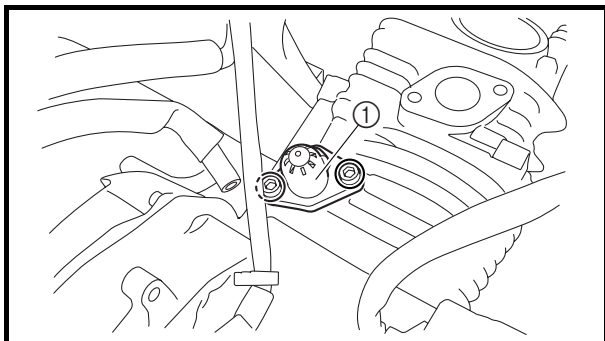
- camshaft sprocket bolt ①

NOTE:

While holding the A.C. magneto rotor with the rotor holding tool ②, loosen the camshaft sprocket bolt.

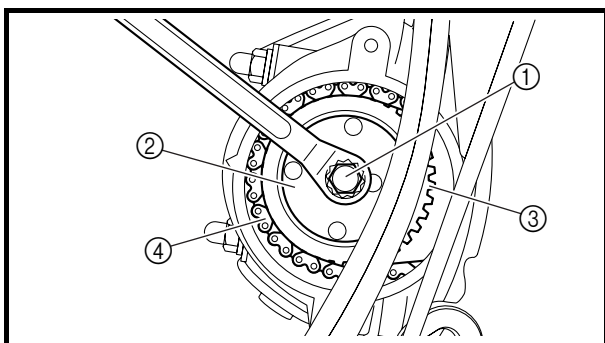


Rotor holding tool
90890-01235



11. Remove:

- timing chain tensioner ①
(along with the gasket)

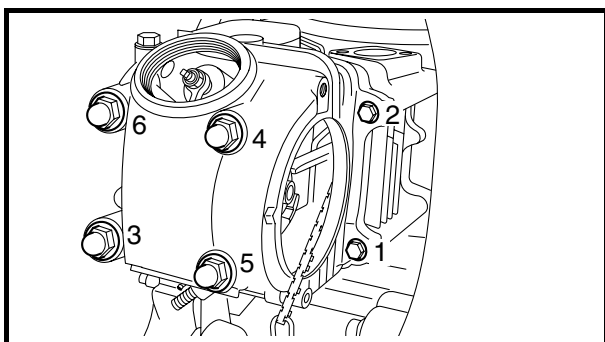


12. Remove:

- camshaft sprocket bolt ①
- camshaft sprocket plate ②
- camshaft sprocket ③
- timing chain ④

NOTE:

To prevent the timing chain from falling into the crankcase, fasten it with a wire.

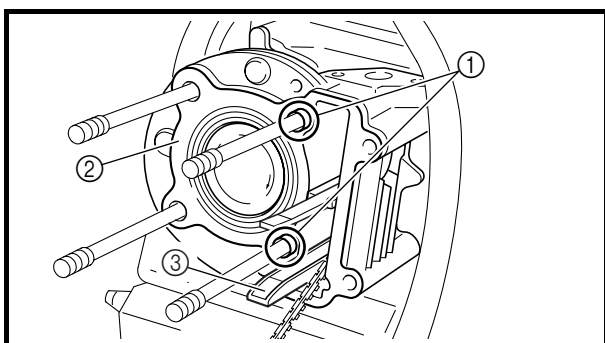


13. Remove:

- cylinder head

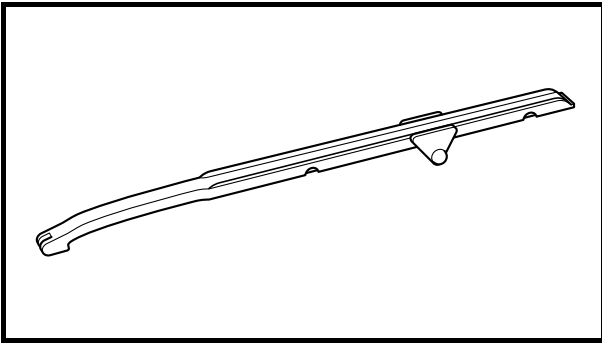
NOTE:

- Loosen the bolts and nuts in the proper sequence as shown.
- Loosen each nut 1/2 of a turn at a time. After all of the nuts are fully loosened, remove them.



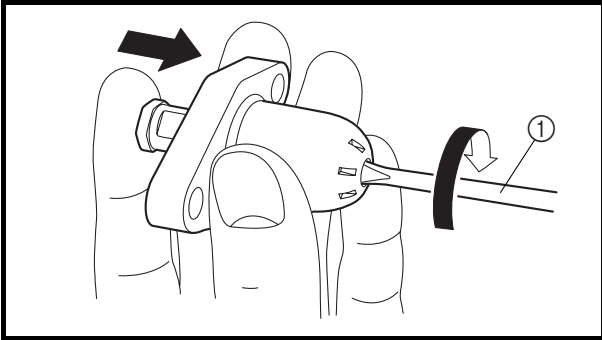
14. Remove:

- dowel pins ①
- gasket ②
- timing chain guide (exhaust side) ③

**CHECKING THE TIMING CHAIN GUIDE**

1. Check:

- timing chain guide (exhaust side)
Damage/wear → Replace.

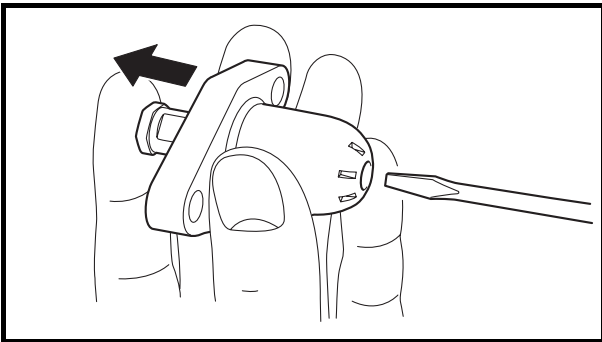


EAS00210

CHECKING THE TIMING CHAIN TENSIONER

1. Check:

- timing chain tensioner
Cracks/damage → Replace.



a. Remove the plug cap.

b. While lightly pressing the timing chain tensioner rod by hand, turn the tensioner rod fully clockwise with a thin screwdriver ①.

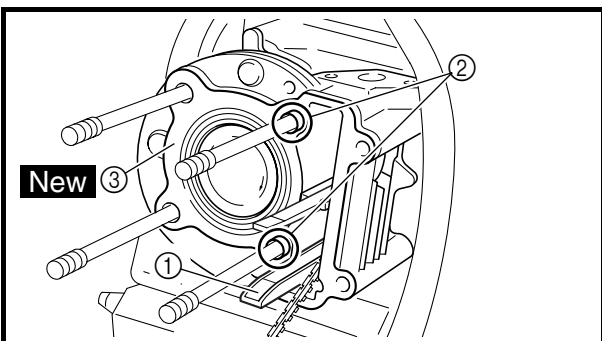
c. Remove the screwdriver and slowly release the timing chain tensioner rod.

d. Make sure that the timing chain tensioner rod comes out of the timing chain tensioner housing smoothly. If there is rough movement, replace the timing chain tensioner.

e. Install the plug cap.

2. Check:

- one-way cam
- timing chain tensioner rod
Damage/wear → Replace the defective part(s).



EAS00231

INSTALLING THE CYLINDER HEAD

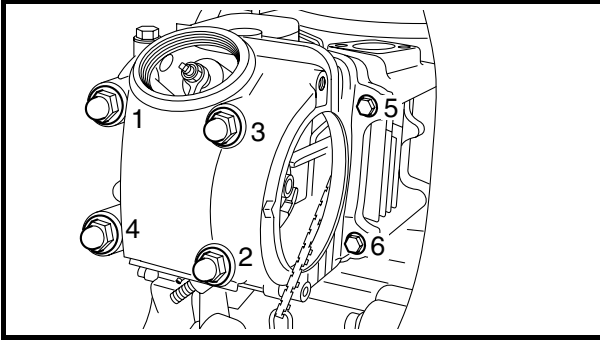
For installation, reverse the removal procedure.

1. Install:

- timing chain guide (exhaust side) ①
- dowel pins ②
- gasket ③ **New**

2. Install:

- cylinder head



3. Tighten:

- cylinder head nuts

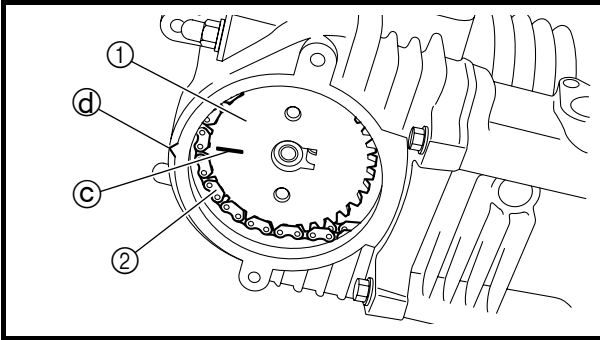
22 Nm (2.2 m · kg, 16 ft · lb)

- cylinder head bolts

10 Nm (1.0 m · kg, 7.2 ft · lb)

NOTE:

- Lubricate the cylinder head nuts with engine oil.
- Tighten the cylinder head nuts and bolts in the proper tightening sequence as shown and torque them in two stages.



4. Install:

- camshaft sprocket ①
- timing chain ②



- Check that the "I" mark ① on the A.C. magneto rotor is aligned with the stationary pointer ② on the crankcase.
- Align the "I" mark ③ on the camshaft sprocket with the stationary pointer ④ on the cylinder head.
- Install the timing chain onto the camshaft sprocket, and then install the camshaft sprocket onto the camshaft.

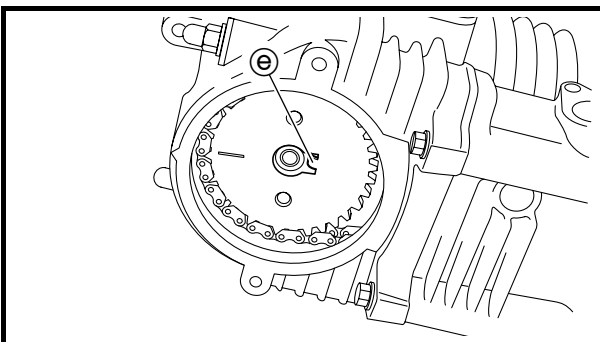
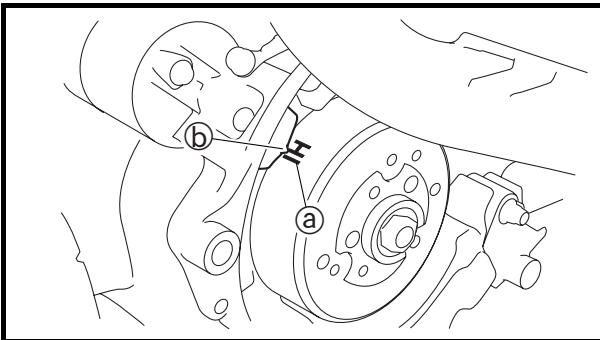
NOTE:

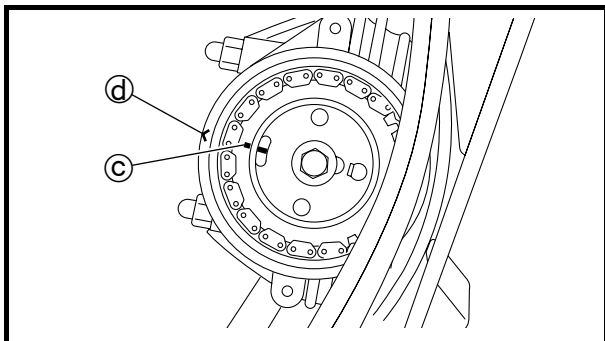
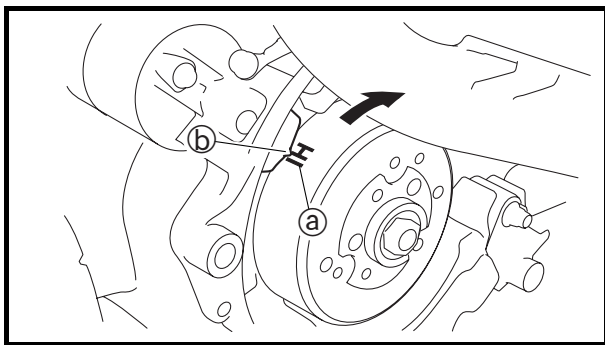
- When installing the camshaft sprocket, be sure to keep the timing chain as tight as possible on the exhaust side.
- Align the projection ⑤ on the camshaft sprocket with the slot in the camshaft.

CAUTION:

Do not turn the crankshaft when installing the camshaft to avoid damage or improper valve timing.

- While holding the camshaft, temporarily tighten the camshaft sprocket bolt.
- Remove the wire from the timing chain.





8. Check:

- "I" mark (a)
Align the "I" mark on the A.C. magneto rotor with the stationary pointer (b) on the crankcase.
 - "I" mark (c)
Align the "I" mark on the camshaft sprocket with the stationary pointer (d) on the cylinder head.
- Out of alignment → Correct.
Refer to the installation steps above.

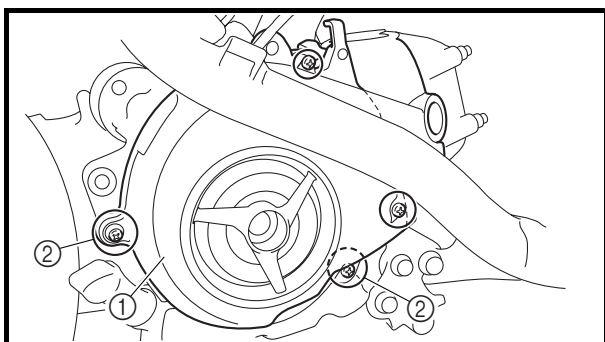
9. Measure:

- valve clearance
Out of specification → Adjust.
Refer to "ADJUSTING THE VALVE CLEARANCE" in chapter 3.

10. Install:

- engine cooling fan
- engine cooling fan bolts

8 Nm (0.8 m · kg, 5.8 ft · lb)



11. Install:

- air shroud (right)
- engine cooling fan cover (1)
- engine cooling fan cover screws (2)

7 Nm (0.7 m · kg, 5.1 ft · lb)

- air shroud (left)
- rubber cover

12. Install:

- camshaft sprocket cover
- camshaft sprocket cover bolts

12 Nm (1.2 m · kg, 8.7 ft · lb)

13. Install:

- exhaust tappet cover
- intake tappet cover

18 Nm (1.8 m · kg, 13 ft · lb)



14.Install:

- intake manifold
- cylinder head breather hose holder
- intake manifold bolts

 **10 Nm (1.0 m · kg, 7.2 ft · lb)**

15.Install:

- ignition coil assembly
- ignition coil assembly screws

 **7 Nm (0.7 m · kg, 5.1 ft · lb)**

16.Install:

- spark plug

 **15 Nm (1.5 m · kg, 11 ft · lb)**

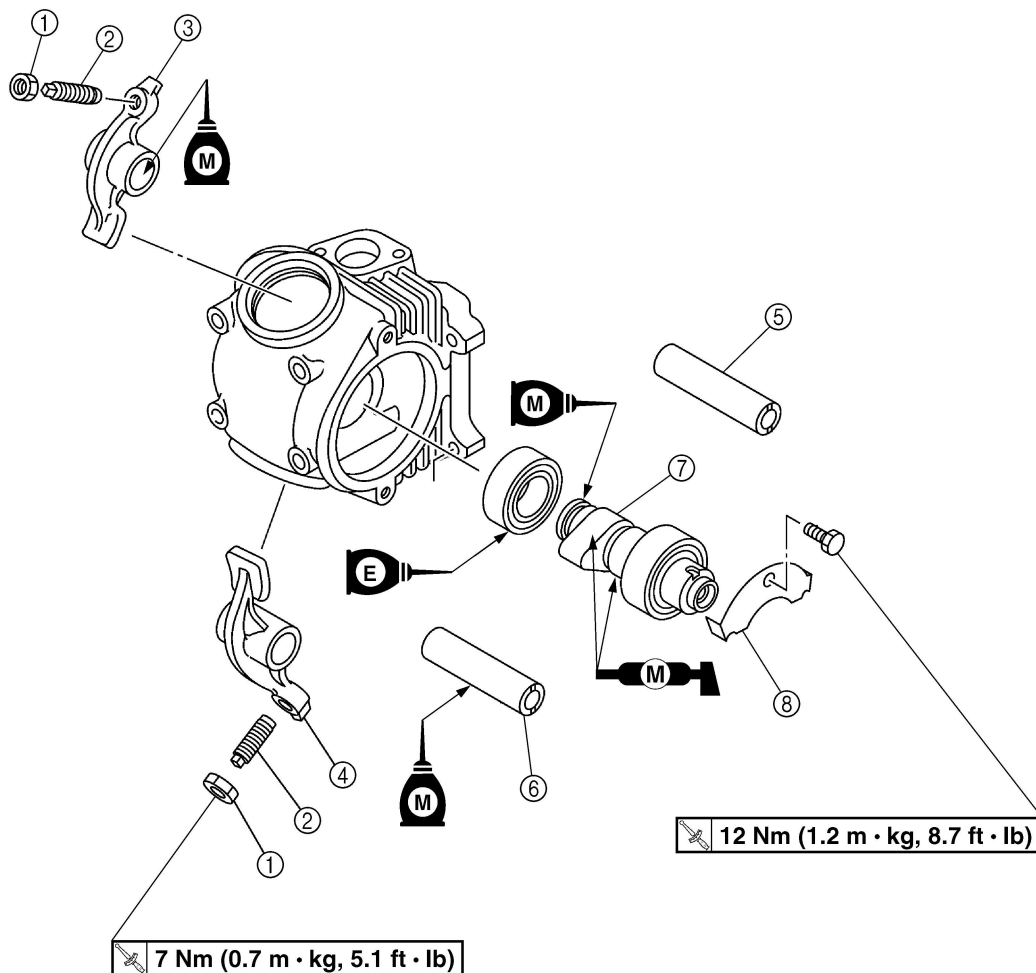


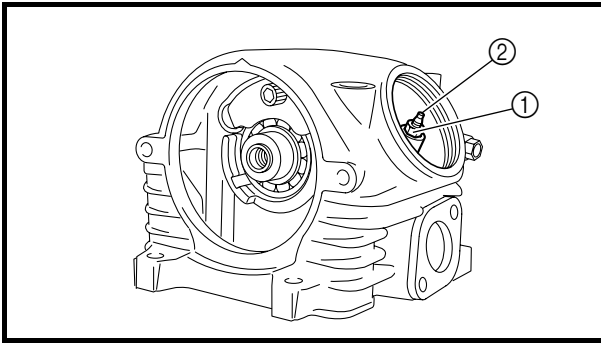
EASF0020

CAMSHAFT



- ① Locknut
- ② Adjusting screw
- ③ Rocker arm (intake side)
- ④ Rocker arm (exhaust side)
- ⑤ Rocker arm shaft (intake side)
- ⑥ Rocker arm shaft (exhaust side)
- ⑦ Camshaft
- ⑧ Camshaft retainer





EASF0022

REMOVING THE ROCKER ARMS AND CAMSHAFT

NOTE:

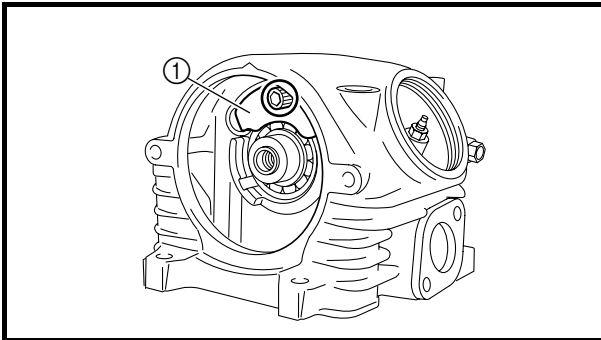
Prior to remove the rocker arms and camshaft, remove the cylinder head.

1. Loosen:

- locknuts ①
- adjusting screws ②

2. Remove:

- camshaft retainer ①

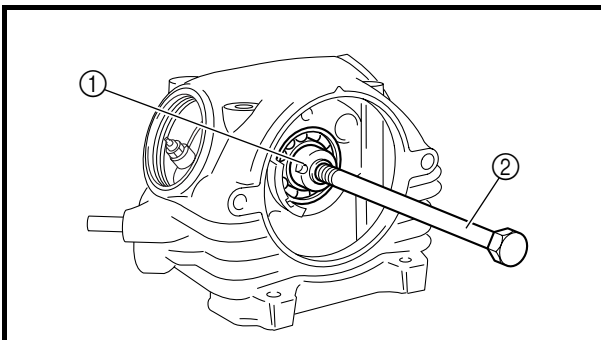


3. Remove:

- camshaft ①

NOTE:

Screw 8 mm bolt ② into the threaded end of the camshaft and then pull out the camshaft.

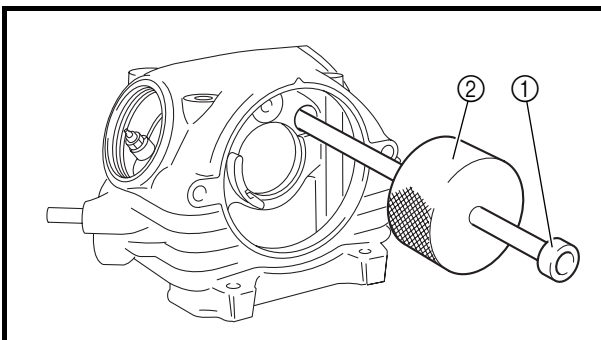


4. Remove:

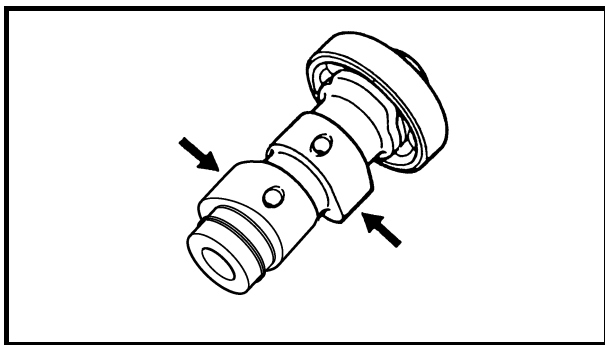
- intake rocker arm shaft
- exhaust rocker arm shaft
- intake rocker arm
- exhaust rocker arm

NOTE:

Remove the rocker arm shafts with the slide hammer bolt ① and weight ②.



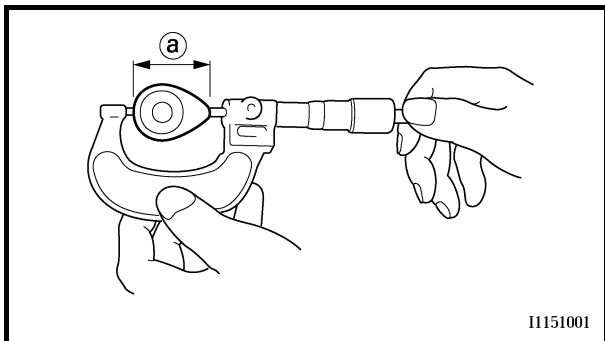
Slide hammer bolt
90890-01085
Weight
90890-01084



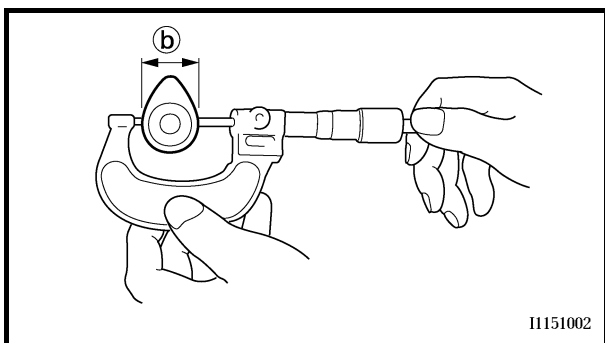
EAS00205

CHECKING THE CAMSHAFTS**1. Check:**

- camshaft lobes
Blue discoloration/pitting/scratches → Replace the camshaft.



11151001



11151002

2. Measure:

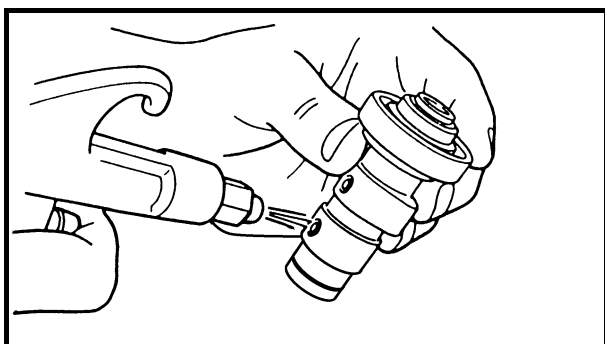
- camshaft lobe dimensions ① and ②
Out of specification → Replace the camshaft.

**Camshaft lobe dimension limit****Intake**

- ① 25.881 ~ 25.981 mm
(1.0189 ~ 1.0229 in)
<Limit>: 25.780 mm (1.0150 in)
- ② 21.195 ~ 21.295 mm
(0.8344 ~ 0.8384 in)
<Limit>: 21.095 mm (0.8305 in)

Exhaust

- ① 25.841 ~ 25.941 mm
(1.0174 ~ 1.0213 in)
<Limit>: 25.740 mm (1.0134 in)
- ② 21.050 ~ 21.150 mm
(0.8287 ~ 0.8327 in)
<Limit>: 20.950 mm (0.8248 in)

**3. Check:**

- camshaft oil passage
Obstruction → Blow out with compressed air.



EAS00206

CHECKING THE ROCKER ARMS AND ROCKER ARM SHAFTS

The following procedure applies to all of the rocker arms and rocker arm shafts.

1. Check:

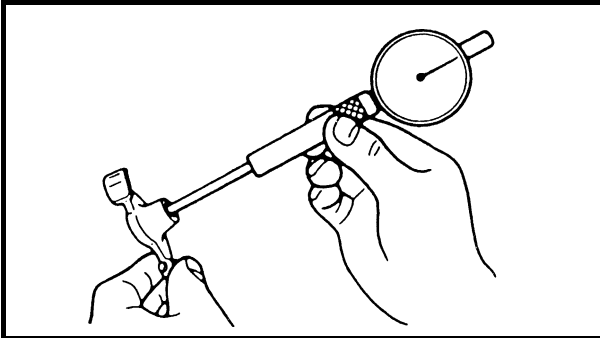
- rocker arm
Damage/wear → Replace.

2. Check:

- rocker arm shaft
Blue discoloration/excessive wear/pitting/scratches → Replace or check the lubrication system.

3. Measure:

- rocker arm inside diameter
Out of specification → Replace.



Rocker arm inside diameter

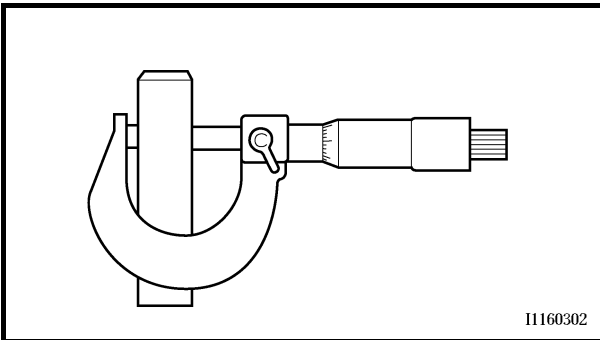
10.000 ~ 10.015 mm

(0.3937 ~ 0.3943 in)

<Limit>: 10.030 mm (0.3949 in)

4. Measure:

- rocker arm shaft outside diameter
Out of specification → Replace.



Rocker arm shaft outside diameter

9.981 ~ 9.991 mm

(0.3930 ~ 0.3933 in)

<Limit>: 9.950 mm (0.3917 in)

5. Calculate:

- rocker-arm-to-rocker-arm-shaft clearance

NOTE:

Calculate the clearance by subtracting the rocker arm shaft outside diameter from the rocker arm inside diameter.

Above 0.08 mm (0.0031 in) → Replace the defective part(s).

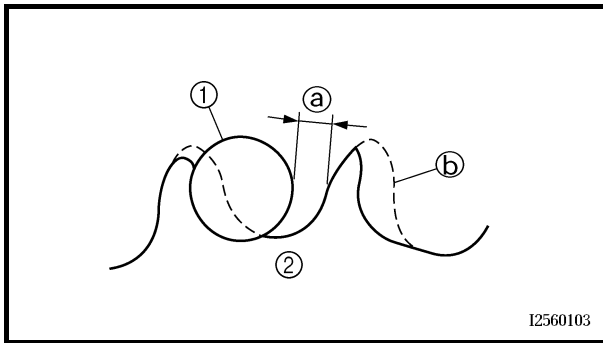


Rocker-arm-to-rocker-arm-shaft clearance

0.009 ~ 0.034 mm

(0.0004 ~ 0.0013 in)

<Limit>: 0.08 mm (0.0031 in)



EAS00207

CHECKING THE CAMSHAFT SPROCKET

1. Check:

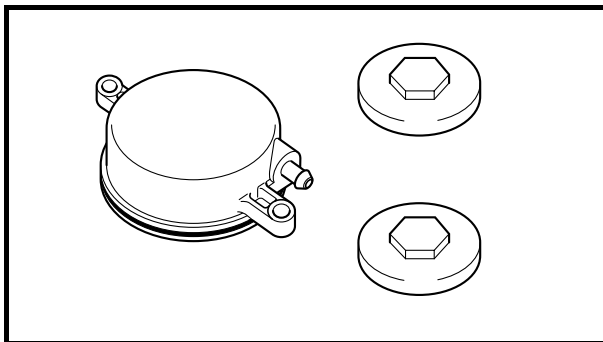
- camshaft sprocket
More than 1/4 tooth wear (a) → Replace the camshaft sprocket and the timing chain as a set.

① 1/4 tooth

② Correct

① Timing chain roller

② Camshaft sprocket



EAS00212

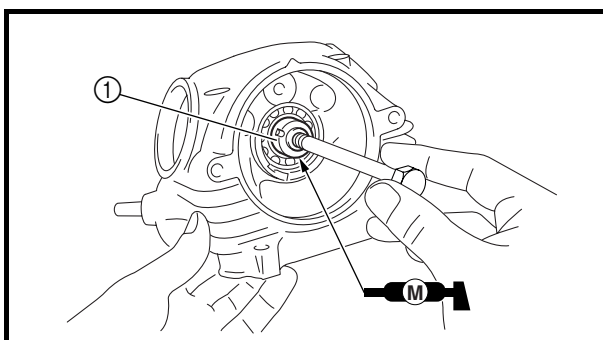
CHECKING THE TAPPET COVERS AND CAMSHAFT SPROCKET COVER

The following procedure applies to both of the tappet covers and O-rings.

1. Check:

- tappet cover
- camshaft sprocket cover
- O-ring

Damage/wear → Replace the defective part(s).



EAS00219

INSTALLING THE CAMSHAFTS AND ROCKER ARMS

1. Lubricate:

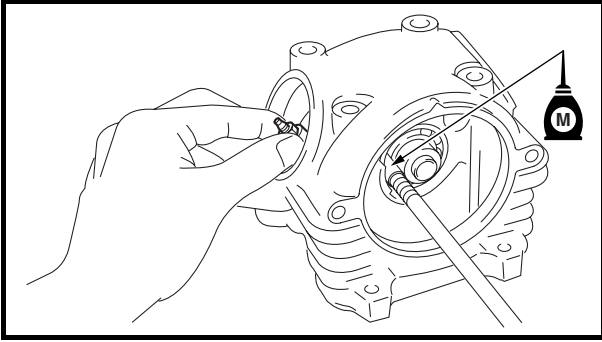
- camshaft journals



Recommended lubricant
Molybdenum disulfide grease

2. Install:

- camshaft ①

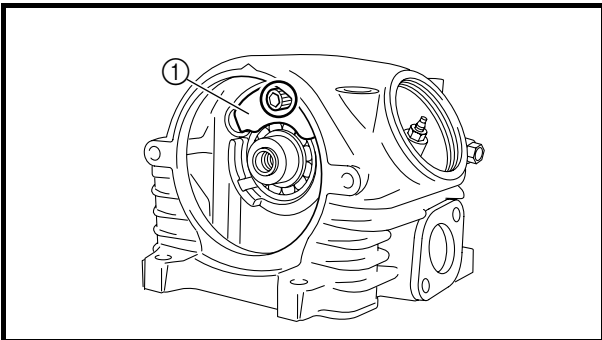


3. Lubricate:
- rocker arm shafts



Recommended lubricant
Molybdenum disulfide oil

4. Install:
- exhaust rocker arm
 - intake rocker arm
 - exhaust rocker arm shaft
 - intake rocker arm shaft



5. Install:
- camshaft retainer ①
 - camshaft retainer bolt

 **12 Nm (1.2 m · kg, 8.7 ft · lb)**

NOTE:

Install the camshaft retainer with the folded side facing inward.

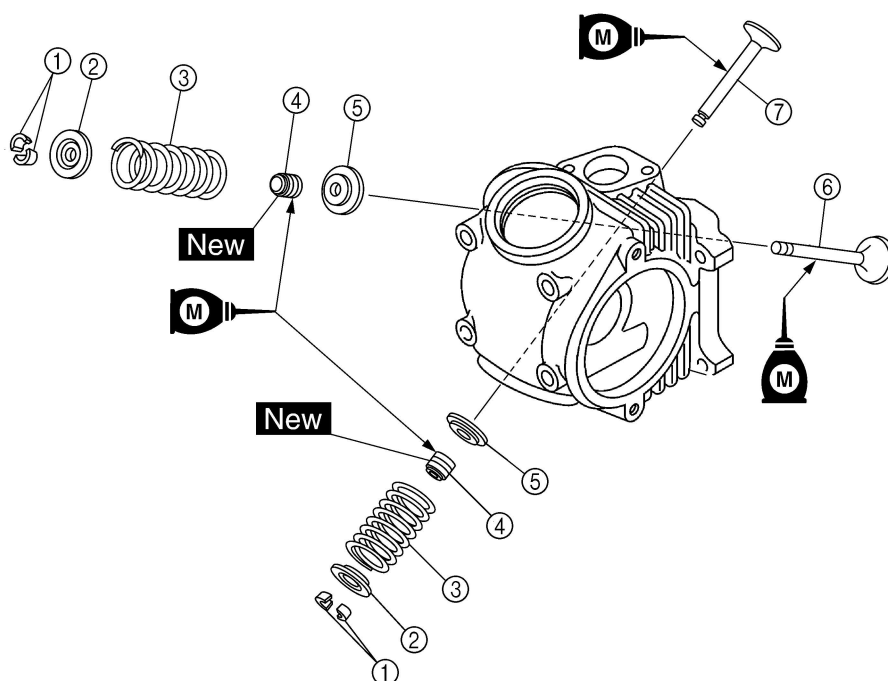


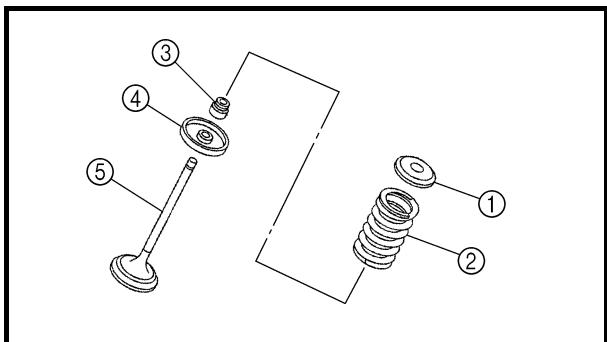
EASF0024

VALVES AND VALVE SPRINGS



- ① Valve cotter
- ② Upper spring seat
- ③ Valve spring
- ④ Valve stem seal
- ⑤ Lower spring seat
- ⑥ Intake valve
- ⑦ Exhaust valve



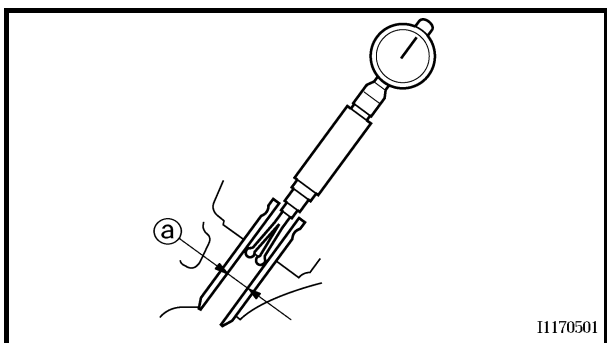


3. Remove:

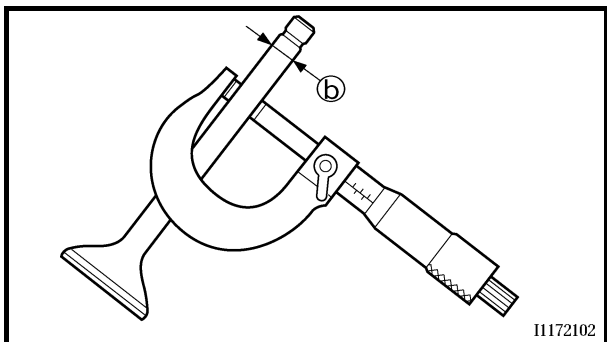
- upper spring seat ①
- valve spring ②
- valve stem seal ③
- lower spring seat ④
- valve ⑤

NOTE:

Identify the position of each part very carefully so that it can be reinstalled in its original place.



11170501



11172102

EAS00239

CHECKING THE VALVES AND VALVE GUIDES

The following procedure applies to all of the valves and valve guides.

1. Measure:

- valve-stem-to-valve-guide clearance

Valve-stem-to-valve-guide clearance =
Valve guide inside diameter ① –
Valve stem diameter ②

Out of specification → Replace the valve guide.



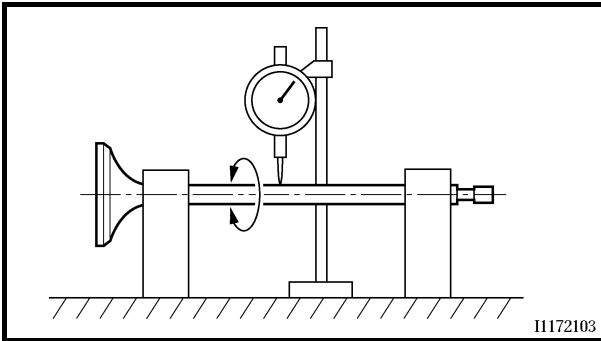
Valve-stem-to-valve-guide clearance

Intake

0.015 ~ 0.042 mm
 (0.0006 ~ 0.0017 in)
 <Limit>: 0.080 mm (0.0031 in)

Exhaust

0.030 ~ 0.057 mm
 (0.0012 ~ 0.0022 in)
 <Limit>: 0.110 mm (0.0043 in)



6. Measure:

- valve stem runout

Out of specification → Replace the valve.

NOTE:

- When installing a new valve, always replace the valve guide.
- If the valve is removed or replaced, always replace the valve stem seal.



Valve stem runout
0.01 mm (0.0004 in)

EAS00240

CHECKING THE VALVE SEATS

The following procedure applies to all of the valves and valve seats.

1. Eliminate:

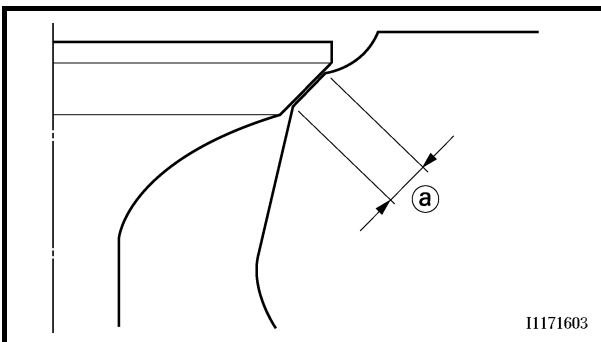
- carbon deposits
(from the valve face and valve seat)

2. Check:

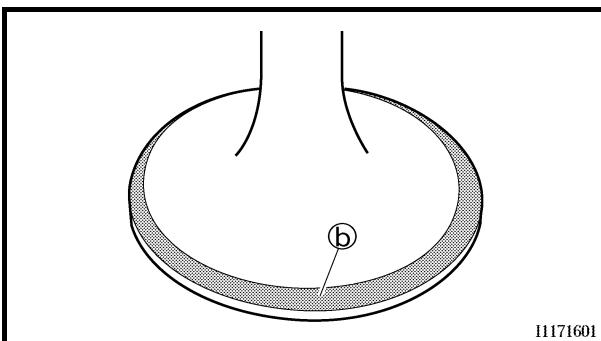
- valve seat
Pitting/wear → Replace the cylinder head.

3. Measure:

- valve seat width ①
Out of specification → Replace the cylinder head.



Valve seat width
Intake
0.9 ~ 1.1 mm
(0.0354 ~ 0.0433 in)
Exhaust
0.9 ~ 1.1 mm
(0.0354 ~ 0.0433 in)

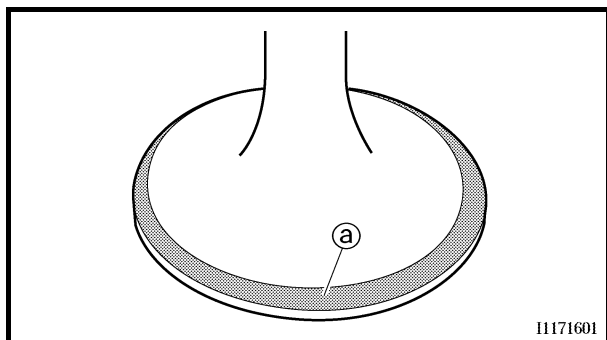


- Apply Mechanic's blueing dye (Dykem) ② onto the valve face.
- Install the valve into the cylinder head.
- Press the valve through the valve guide and onto the valve seat to make a clear impression.
- Measure the valve seat width.

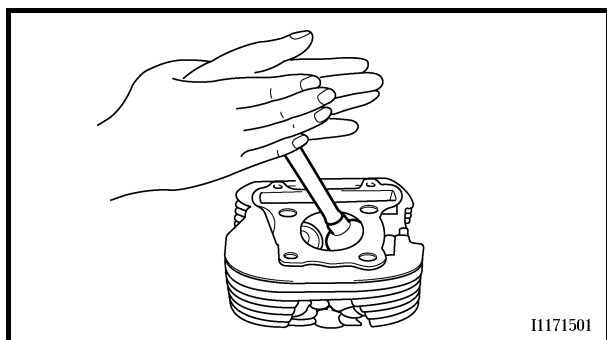
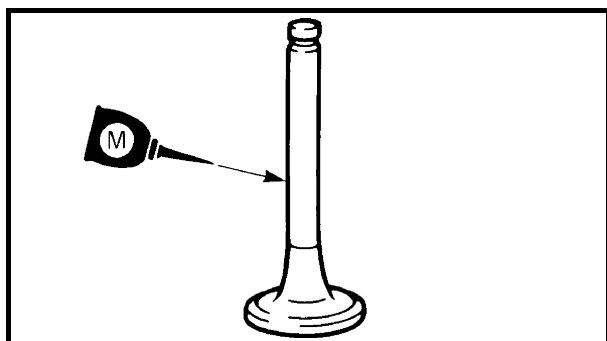


NOTE:

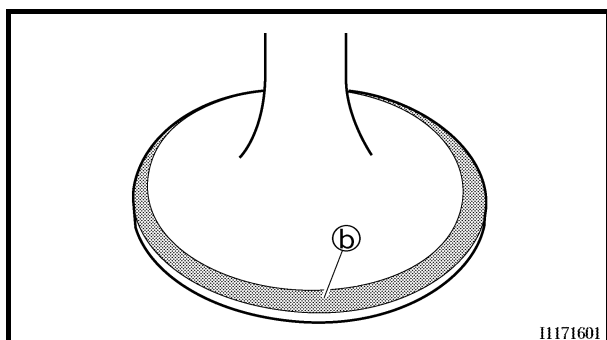
Where the valve seat and valve face contacted one another, the blueing will have been removed.



11171601



11171501



11171601

4. Lap:

- valve face
- valve seat

NOTE:

After replacing the cylinder head or replacing the valve and valve guide, the valve seat and valve face should be lapped.



- a. Apply a coarse lapping compound ① to the valve face.

CAUTION:

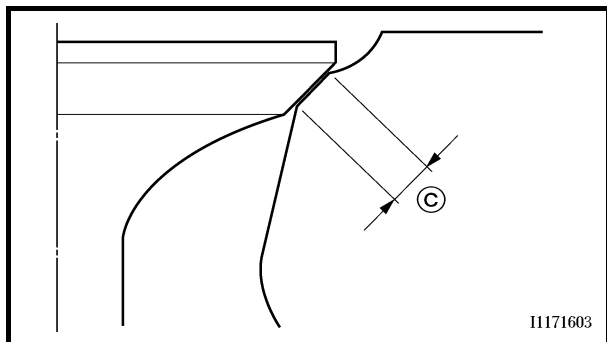
Do not let the lapping compound enter the gap between the valve stem and the valve guide.

- b. Apply molybdenum disulfide oil onto the valve stem.
- c. Install the valve into the cylinder head.
- d. Turn the valve until the valve face and valve seat are evenly polished, then clean off all of the lapping compound.

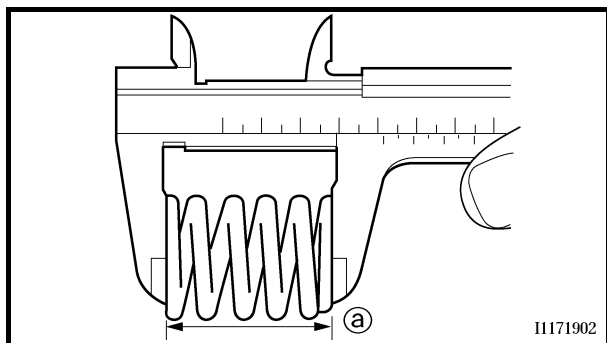
NOTE:

For the best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hands.

- e. Apply a fine lapping compound to the valve face and repeat the above steps.
- f. After every lapping procedure, be sure to clean off all of the lapping compound from the valve face and valve seat.
- g. Apply Mechanic's blueing dye (Dykem) ② onto the valve face.



- h. Install the valve into the cylinder head.
- i. Press the valve through the valve guide and onto the valve seat to make a clear impression.
- j. Measure the valve seat width © again. If the valve seat width is out of specification, reface and lap the valve seat.



EAS00241

CHECKING THE VALVE SPRINGS

The following procedure applies to all of the valve springs.

1. Measure:
 - valve spring free length (a)
 Out of specification → Replace the valve spring.



Valve spring free length

Intake valve spring

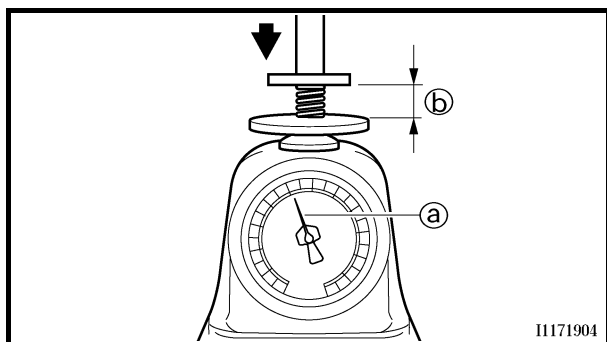
35.44 mm (1.40 in)

<Limit>: 34.00 mm (1.34 in)

Exhaust valve spring

35.44 mm (1.40 in)

<Limit>: 34.00 mm (1.34 in)



2. Measure:
 - compressed valve spring force (a)
 Out of specification → Replace the valve spring.

(b) Installed length



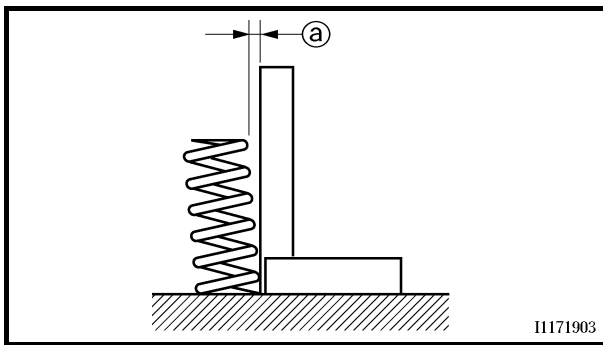
Compressed valve spring force (installed)

Intake and exhaust valve spring

146 ~ 168 N

(14.9 ~ 17.1 kgf, 32.8 ~ 37.7 lb)

at 24.1 mm (0.95 in)



3. Measure:

- valve spring tilt ①
- Out of specification → Replace the valve spring.



Valve spring tilt limit
Intake and exhaust valve spring
2.5°/1.5 mm (2.5°/0.06 in)

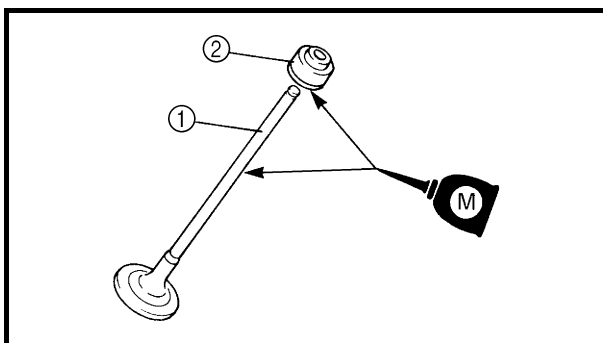
EAS00245

INSTALLING THE VALVES

The following procedure applies to all of the valves and related components.

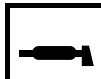
1. Deburr:

- valve stem end
(with an oil stone)

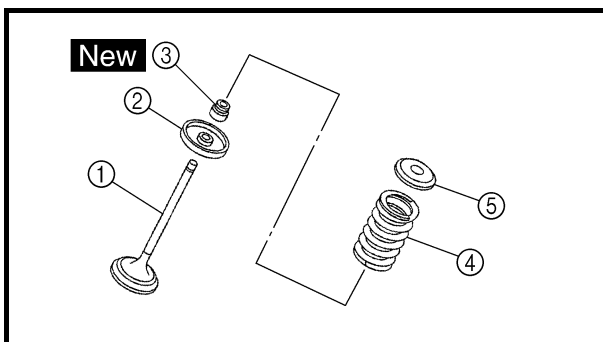


2. Lubricate:

- valve stem ①
- valve stem seal ②
(with the recommended lubricant)



Recommended lubricant
Molybdenum disulfide oil

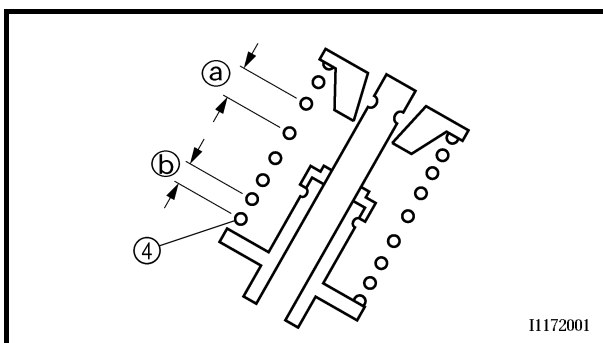


3. Install:

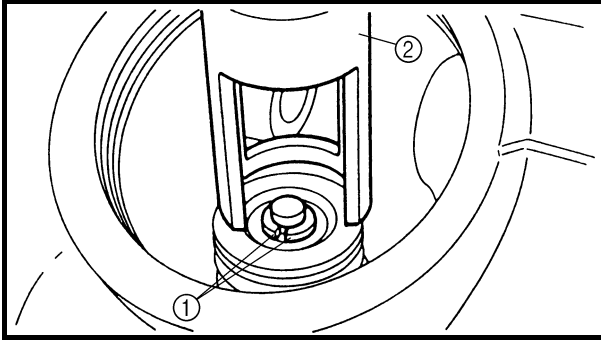
- valve ①
- lower spring seat ②
- valve stem seal ③ **New**
- valve spring ④
- upper spring seat ⑤
(into the cylinder head)

NOTE:

Install the valve spring with the larger pitch ① facing up.



② Smaller pitch



4. Install:

- valve cotteners ①

NOTE:

Install the valve cotteners by compressing the valve spring with the valve spring compressor ②.

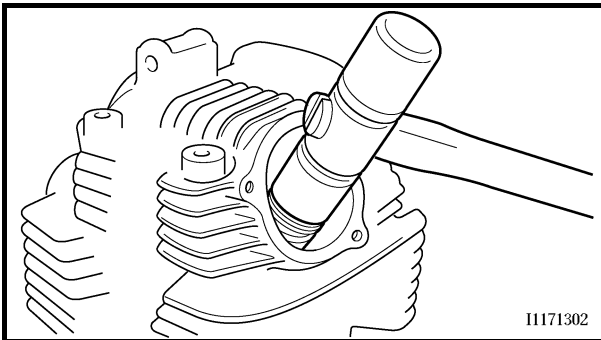


Valve spring compressor

90890-01253

Valve spring compressor attachment

90890-01243



5. To secure the valve cotteners onto the valve stem, lightly tap the valve tip with a soft-face hammer.

CAUTION:

Hitting the valve tip with excessive force could damage the valve.



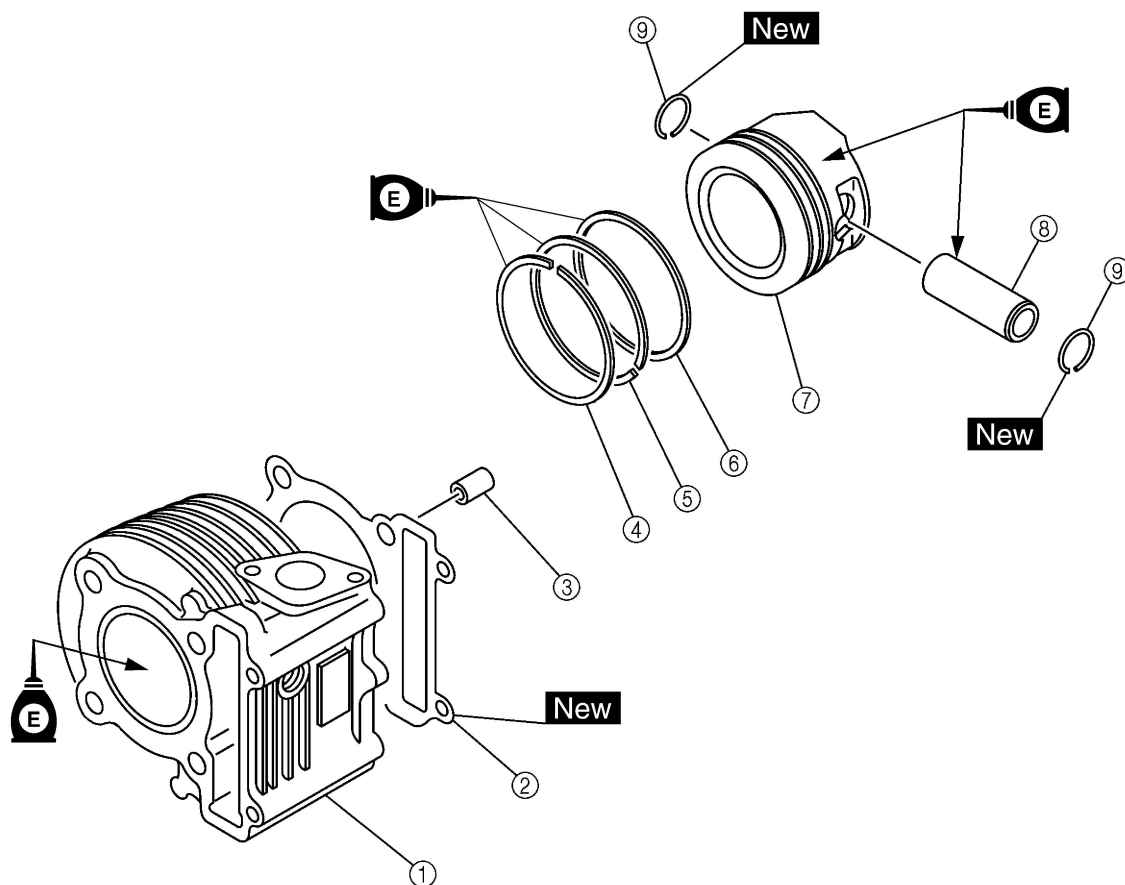
EASF0027

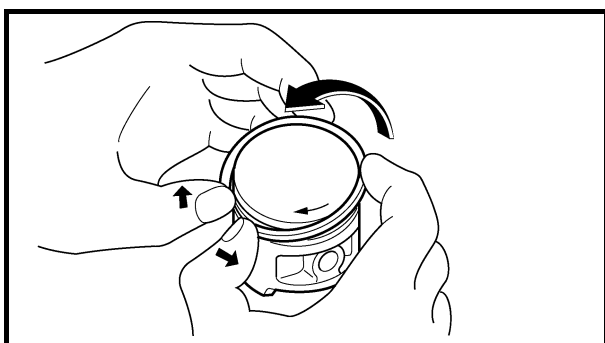
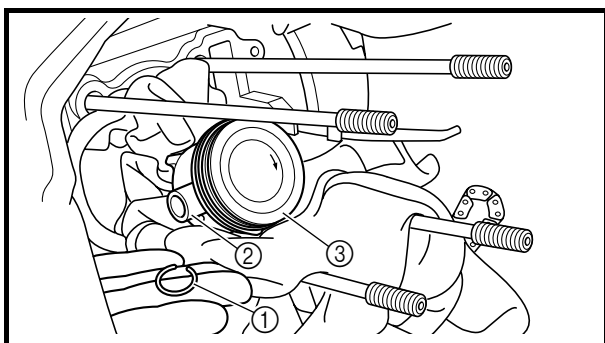
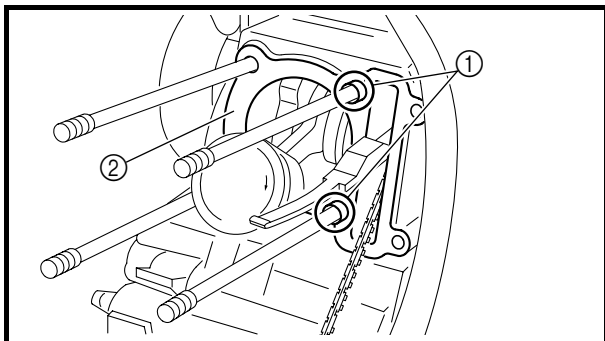
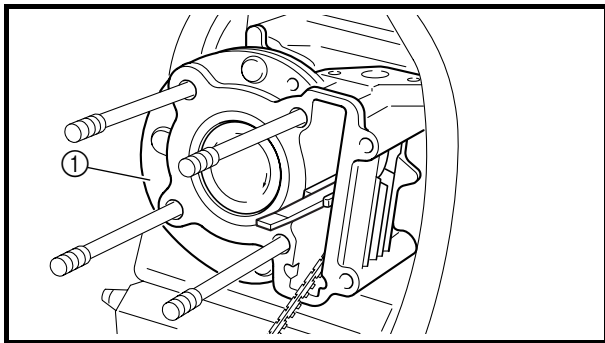
CYLINDER AND PISTON



- ① Cylinder
- ② Cylinder gasket
- ③ Dowel pin
- ④ Top ring
- ⑤ 2nd ring
- ⑥ Oil ring
- ⑦ Piston

- ⑧ Piston pin
- ⑨ Piston pin circlip





EASF0028

REMOVING THE CYLINDER AND PISTON**NOTE:**

Prior to remove the cylinder and piston, remove the cylinder head.

1. Remove:

- cylinder ①

2. Remove:

- dowel pins ①
- gasket ②

3. Remove:

- piston pin clip ①
- piston pin ②
- piston ③

CAUTION:

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

NOTE:

- Before removing the piston pin clip, cover the crankcase opening with a clean rag to prevent the piston pin clip from falling into the crankcase.
- Before removing the piston pin, deburr the piston pin clip's groove and the piston's 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. Remove:

- top ring
- 2nd ring
- oil ring

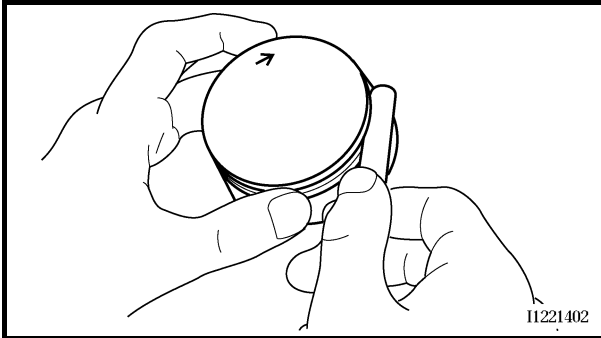
NOTE:

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



Piston-to-cylinder clearance
0.020 ~ 0.035 mm
(0.0008 ~ 0.0014 in)
<Limit>: 0.15 mm (0.0059 in)

- f. If out of specification, rebore or replace the cylinder, and replace the piston and piston rings as a set.



EAS00263

CHECKING THE PISTON RINGS

1. Measure:

- piston ring side clearance
 Out of specification → Replace the piston and piston rings as a set.

NOTE:

Before measuring the piston ring side clearance, eliminate any carbon deposits from the piston ring grooves and piston rings.



Piston ring side clearance
Top ring
0.03 ~ 0.07 mm
(0.0012 ~ 0.0028 in)
<Limit>: 0.12 mm (0.0047 in)
2nd ring
0.02 ~ 0.06 mm
(0.0008 ~ 0.0024 in)
<Limit>: 0.12 mm (0.0047 in)

2. Install:

- piston ring
 (into the cylinder)

NOTE:

Level the piston ring into the cylinder with the piston crown.

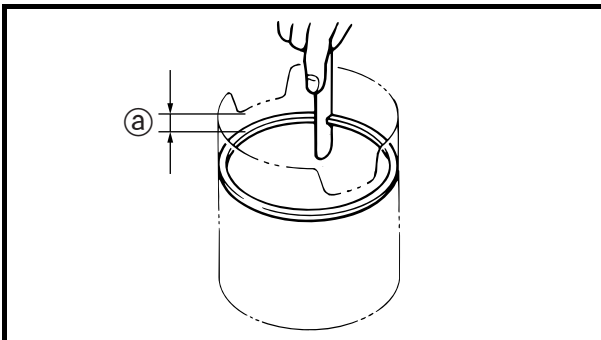
② 5.0 mm (0.20 in)

3. Measure:

- piston ring end gap
 Out of specification → Replace the piston ring.

NOTE:

The oil ring expander spacer's end gap cannot be measured. If the oil ring rail's gap is excessive, replace all three piston rings.



**Piston ring end gap****Top ring**

0.10 ~ 0.25 mm (0.004 ~ 0.010 in)

<Limit>: 0.5 mm (0.020 in)

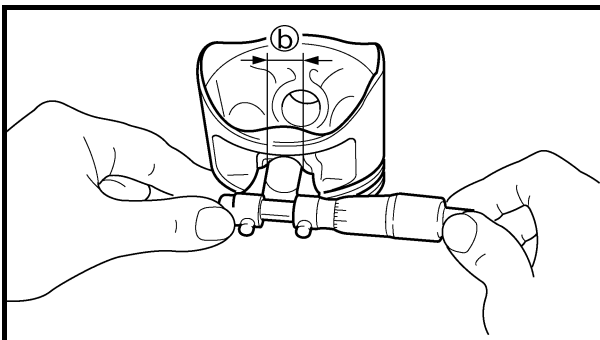
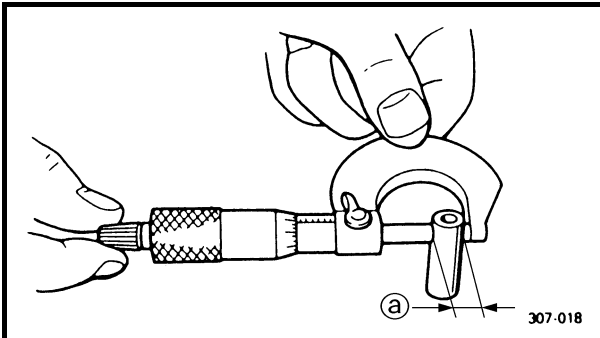
2nd ring

0.10 ~ 0.25 mm (0.004 ~ 0.010 in)

<Limit>: 0.6 mm (0.024 in)

Oil ring

0.20 ~ 0.70 mm (0.008 ~ 0.028 in)



EAS00265

CHECKING THE PISTON PIN**1. Check:**

- piston pin

Blue discoloration/grooves → Replace the piston pin and then check the lubrication system.

2. Measure:

- piston pin outside diameter (a)

Out of specification → Replace the piston pin.

**Piston pin outside diameter**

14.995 ~ 15.000 mm

(0.5904 ~ 0.5906 in)

<Limit>: 14.975 mm (0.5896 in)

3. Measure:

- piston pin bore diameter (of the piston) (b)

Out of specification → Replace the piston.

**Piston pin bore diameter (of the piston)**

15.002 ~ 15.013 mm

(0.5906 ~ 0.5911 in)

<Limit>: 15.043 mm (0.5922 in)

4. Calculate:

- piston-pin-to-piston-pin-bore clearance

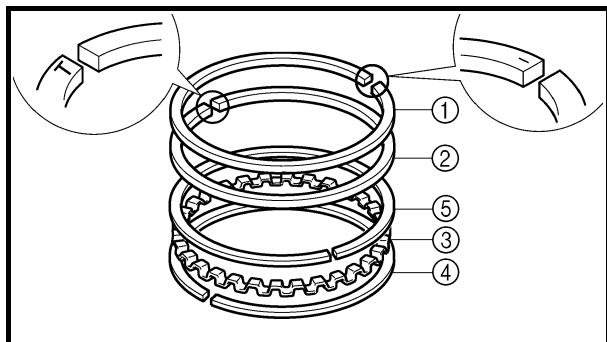
Out of specification → Replace the piston pin and piston as a set.

Piston-pin-to-piston-pin-bore clearance =**Piston pin bore diameter (b) –****Piston pin outside diameter (a)****Piston-pin-to-piston-pin-bore-clearance**

0.002 ~ 0.018 mm

(0.0001 ~ 0.0007 in)

<Limit>: 0.068 mm (0.0027 in)



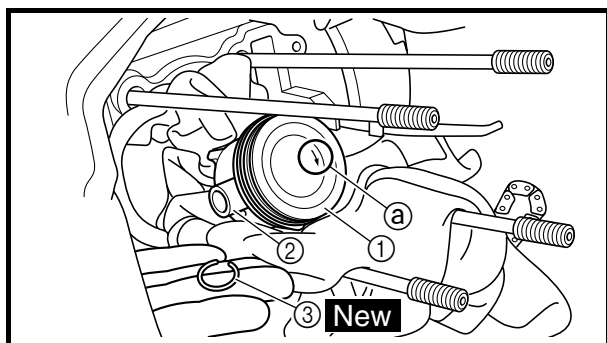
EAS00267

INSTALLING THE PISTON AND CYLINDER**1. Install:**

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

NOTE:

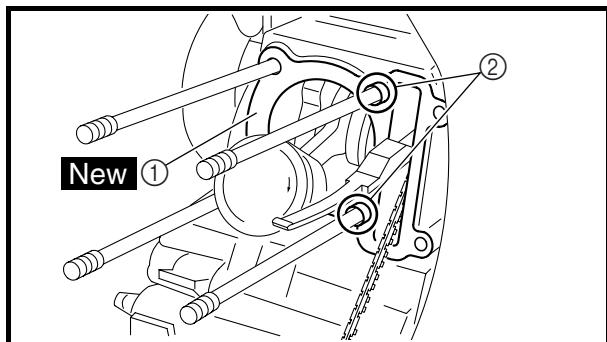
Be sure to install the piston rings so that the manufacturer's marks or numbers face up.

**2. Install:**

- piston ①
- piston pin ②
- piston pin clip ③ **New**

NOTE:

- Apply engine oil the piston pin.
- Make sure the arrow mark ③ on the piston points towards the exhaust side of the cylinder.
- Before installing the piston pin clip, cover the crankcase opening with a clean rag to prevent the clip from falling into the crankcase.



3. Install:

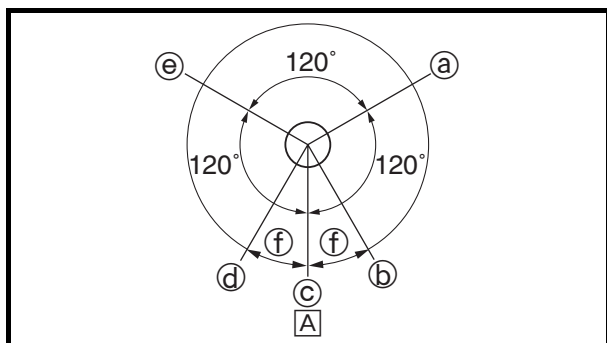
- gasket ① **New**
- dowel pins ②

4. Lubricate:

- piston
- piston rings
- cylinder
(with the recommended lubricant)



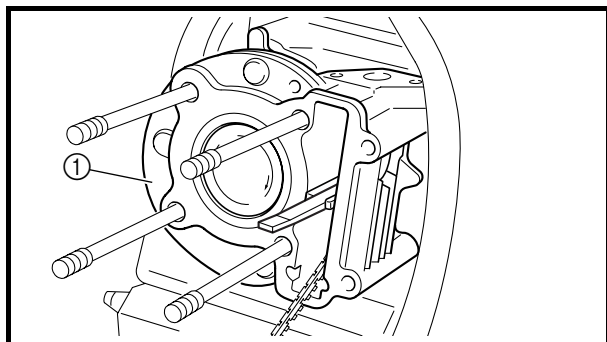
Recommended lubricant
Engine oil



5. Offset:

- piston ring end gaps

- ① Top ring
- ② Upper oil ring rail
- ③ Expander end
- ④ Lower oil ring rail
- ⑤ 2nd ring
- ⑥ 20 mm (0.79 in)
- ⑦ exhaust side



6. Install:

- cylinder ①

NOTE:

- While compressing the piston rings with one hand, install the cylinder with the other hand.
- Pass the timing chain and timing chain guide (intake side) through the timing chain cavity.

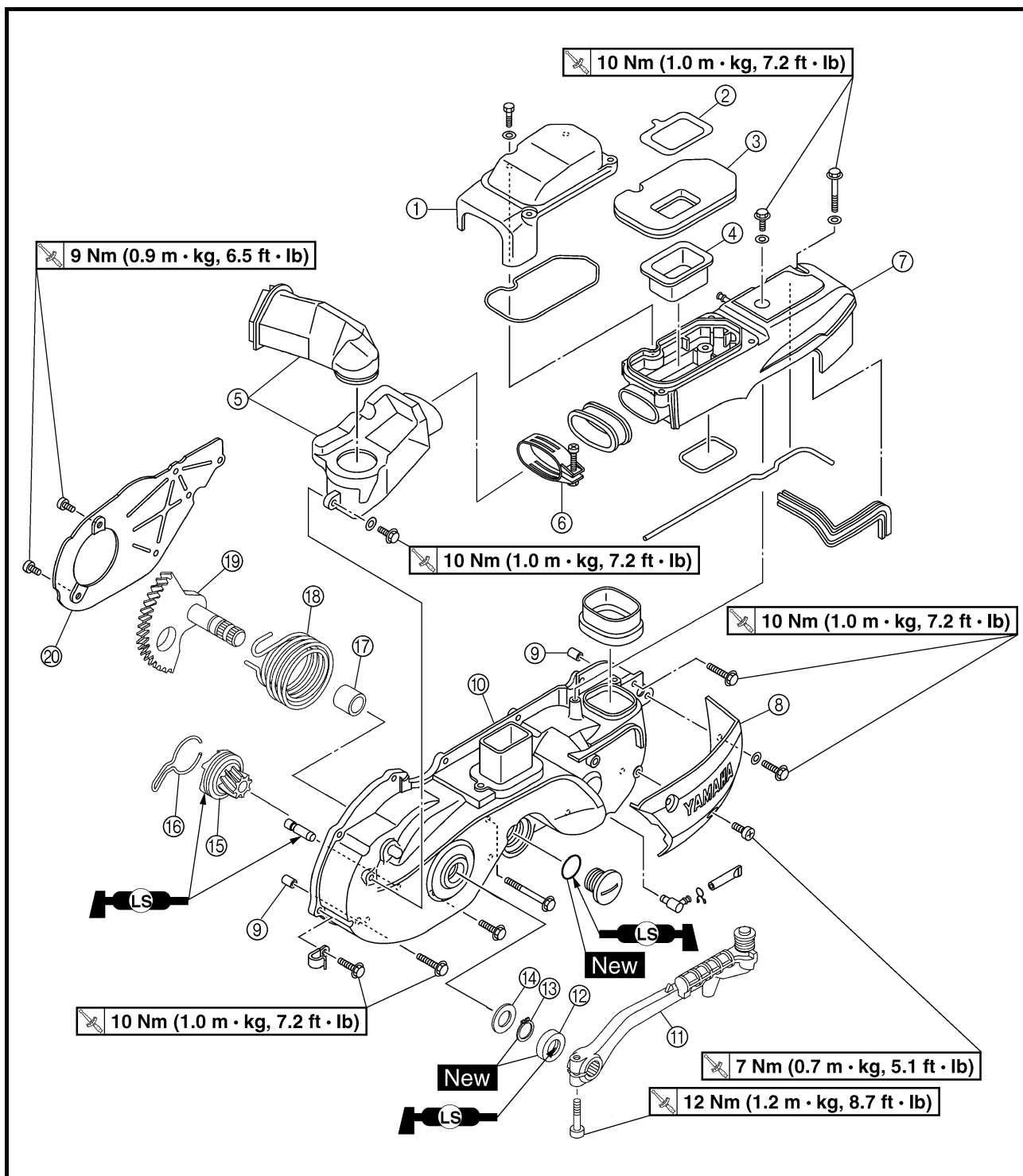


EASF0033

KICKSTARTER



- | | | |
|--|---------------------------------|--------------------------------|
| ① V-belt case air filter cover | ⑦ V-belt case cover protector 2 | ⑭ Washer |
| ② V-belt case air filter dust seal | ⑧ V-belt case cover protector 1 | ⑮ Kickstarter pinion gear |
| ③ V-belt case air filter element | ⑨ Dowel pin | ⑯ Kickstarter pinion gear clip |
| ④ V-belt case air filter element guide | ⑩ V-belt case cover | ⑰ Spacer |
| ⑤ V-belt case air duct | ⑪ Kickstarter crank | ⑱ Kickstarter spring |
| ⑥ V-belt case air filter joint | ⑫ Oil seal | ⑲ Kickstarter shaft |
| | ⑬ Circlip | ⑳ Kickstarter shaft plate |





REMOVING THE KICKSTARTER

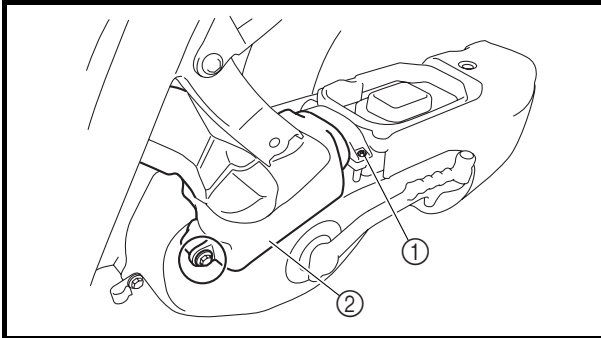
1. Remove:

- footboard

Refer to "REMOVING THE FRONT COWLING AND LEG SHIELD" in chapter 3.

- V-belt case air filter element

Refer to "CLEANING THE V-BELT CASE AIR FILTER ELEMENT" in chapter 3.

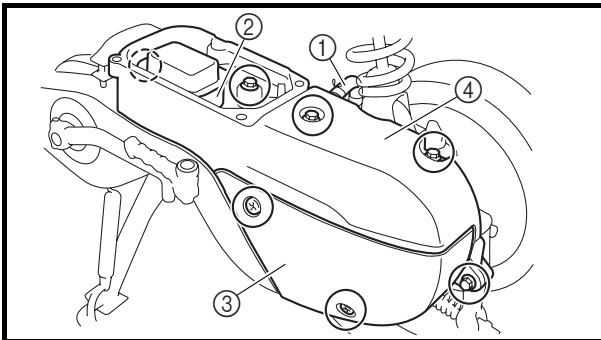


2. Loosen:

- V-belt case air filter joint screw ①

3. Remove:

- V-belt case air duct ②

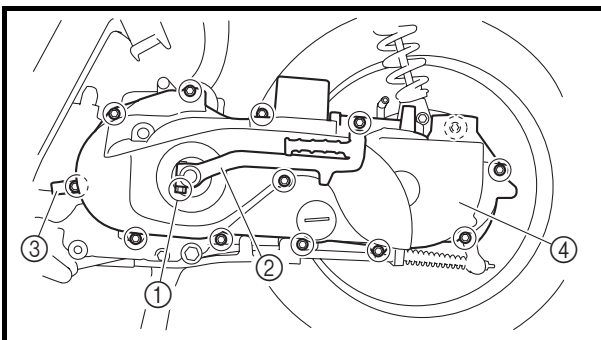


4. Disconnect:

- crankcase breather hose ①

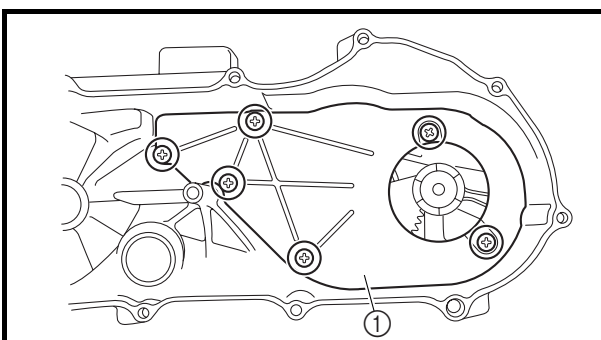
5. Remove:

- V-belt case air filter element guide ②
- V-belt case cover protector 1 ③
- V-belt case cover protector 2 ④



6. Remove:

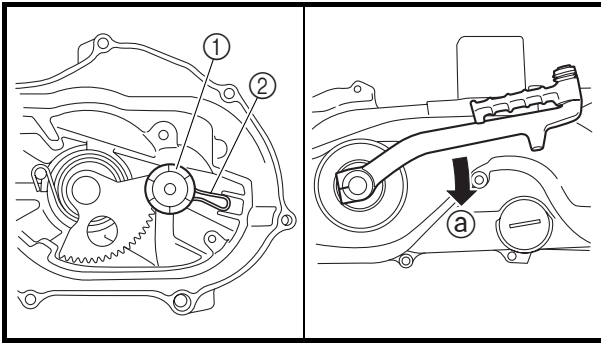
- kickstarter crank bolt ①
- kickstarter crank ②
- fuel overflow hose holder ③
- V-belt case cover ④
- dowel pins



DISASSEMBLING THE KICKSTARTER SHAFT

1. Remove:

- kickstarter shaft plate ①

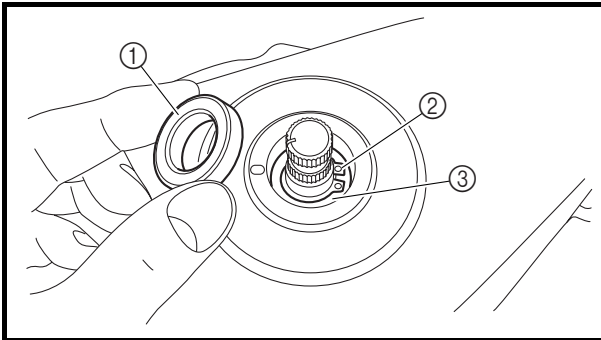


2. Remove:

- kickstarter pinion gear ①
- kickstarter pinion gear clip ②

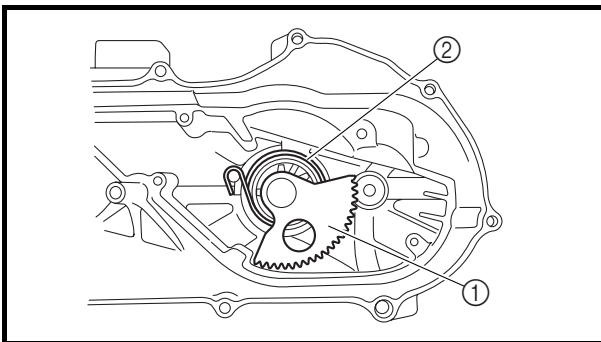
NOTE:

Turn the kickstarter crank attached to the kickstarter shaft in the direction of the arrow (a) and remove the kickstarter pinion gear and kickstarter pinion gear clip together.



3. Remove:

- oil seal ①
- circlip ②
- washer ③



4. Remove:

- kickstarter shaft ①
- kickstarter spring ②
- spacer

EAS00339

CHECKING THE KICKSTARTER

1. Check:

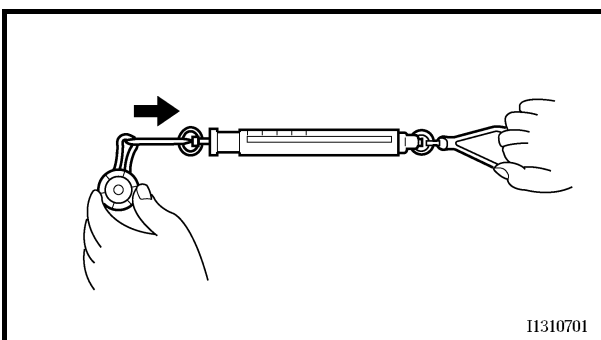
- kickstarter shaft
- kickstarter pinion gear
- Damage/wear → Replace.

2. Check:

- kickstarter spring
- Damage/wear → Replace.

3. Measure:

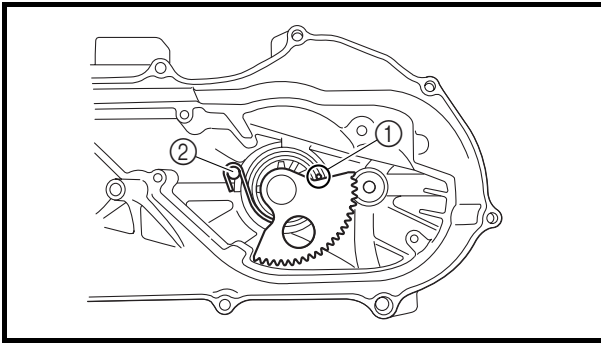
- kickstarter pinion gear clip friction force (with the spring gauge)
- Out of specification → Replace the kickstarter pinion gear clip.



11310701



Kickstarter pinion gear clip friction force
1.0 ~ 3.5 N
(0.10 ~ 0.36 kgf, 0.22 ~ 0.79 lb)



EAS00340

ASSEMBLING THE KICKSTARTER

1. Install:

- spacer
- kickstarter spring
- kickstarter shaft
- washer
- circlip **New**
- oil seal **New**

NOTE:

- Hook the straight end of the kickstarter spring onto the notch ① in the kickstarter shaft and hook the hooked end of the kickstarter spring onto the projection ② as shown.
- Install the circlip securely into the groove on the kickstarter shaft.

2. Install:

- kickstarter pinion gear clip
- kickstarter pinion gear
- kickstarter shaft plate
- kickstarter shaft plate screws

9 Nm (0.9 m · kg, 6.5 ft · lb)

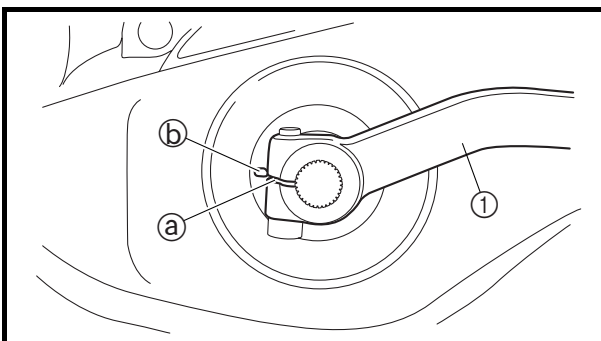
INSTALLING THE KICKSTARTER

For installation, reverse the removal procedure.

1. Install:

- dowel pins
- V-belt case cover
- fuel overflow hose holder
- V-belt case cover bolts

10 Nm (1.0 m · kg, 7.2 ft · lb)



2. Install:

- kickstarter crank ①
- kickstarter crank bolt

12 Nm (1.2 m · kg, 8.7 ft · lb)

NOTE:

To install the kickstarter crank, align the notch ① in the kickstarter crank with the projection ② on the V-belt case cover.



3. Install:

- V-belt case cover protector 2
- V-belt case cover protector 2 bolts

 **10 Nm (1.0 m · kg, 7.2 ft · lb)**

- V-belt case cover protector 1
- V-belt case cover protector 1 screws

 **7 Nm (0.7 m · kg, 5.1 ft · lb)**

- V-belt case cover protector 1 bolt

 **10 Nm (1.0 m · kg, 7.2 ft · lb)**

- V-belt case air filter element guide

4. Install:

- V-belt case air duct
- V-belt case air duct bolt

 **10 Nm (1.0 m · kg, 7.2 ft · lb)**



EASF0030

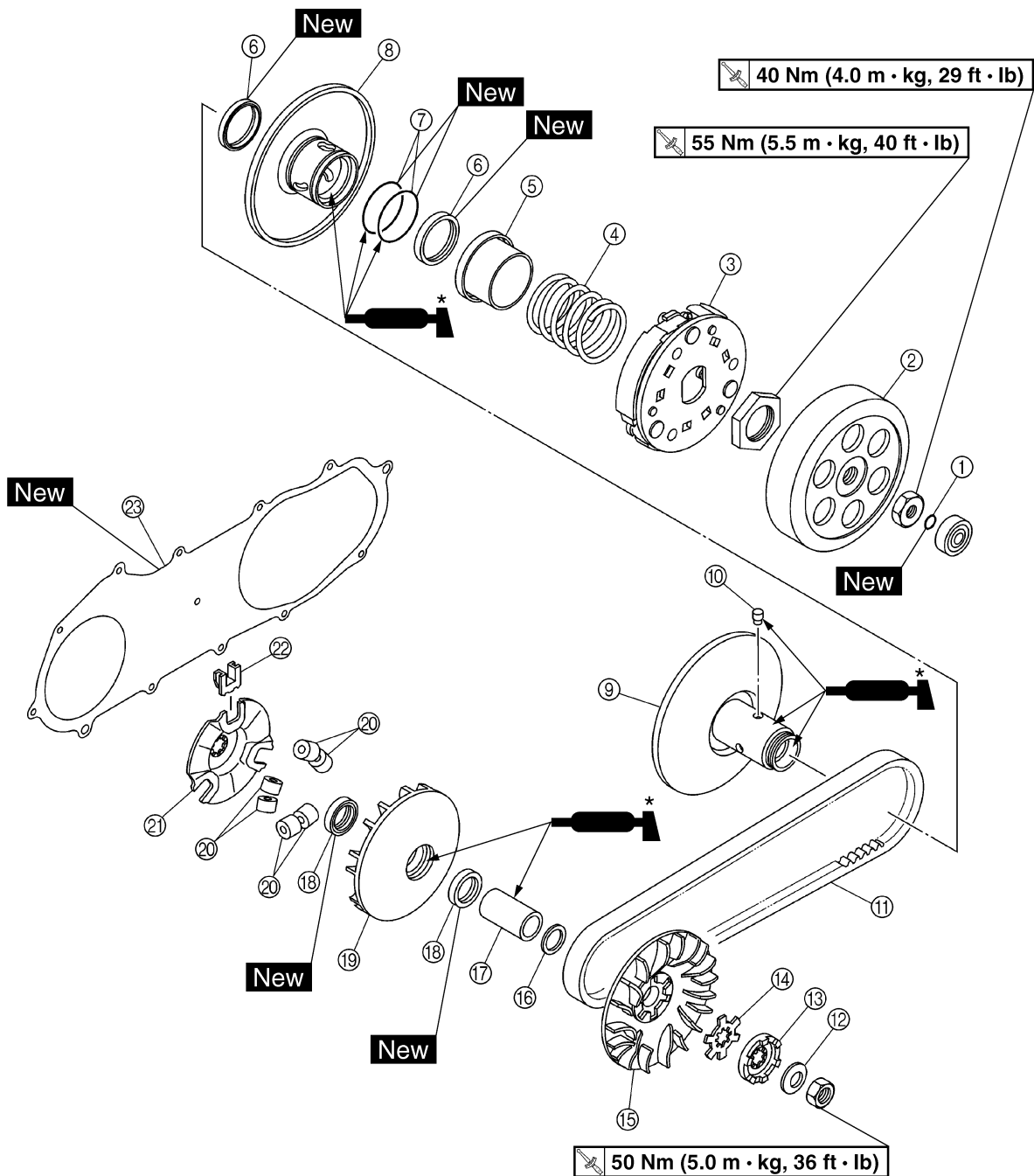
BELT DRIVE



V-BELT, PRIMARY AND SECONDARY SHEAVE

- ① O-ring
- ② Clutch housing
- ③ Clutch carrier
- ④ Spring
- ⑤ Spring seat
- ⑥ Oil seal
- ⑦ O-ring
- ⑧ Secondary sliding sheave
- ⑨ Secondary fixed sheave
- ⑩ Guide pin
- ⑪ V-belt
- ⑫ Conical spring washer
- ⑬ Kickstarter one-way clutch
- ⑭ Claw washer

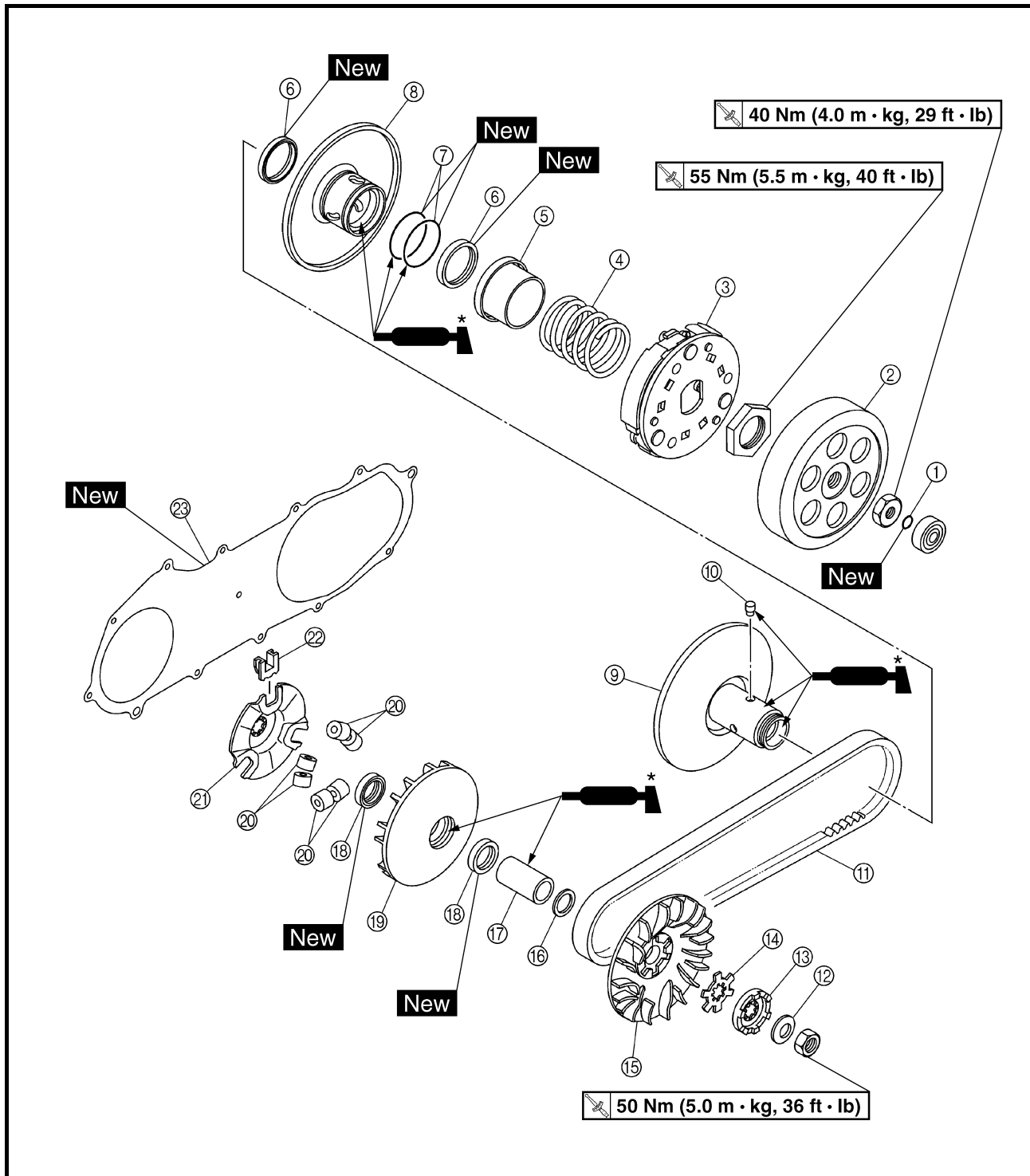
* Shell Dolium Grease R[®]





- ⑮ Primary fixed sheave
- ⑯ Washer
- ⑰ Spacer
- ⑱ Oil seal
- ⑲ Primary sliding sheave
- ⑳ Primary sheave weight
- ㉑ Slider
- ㉒ Plastic slider guide
- ㉓ Gasket

* Shell Dolium Grease R[®]

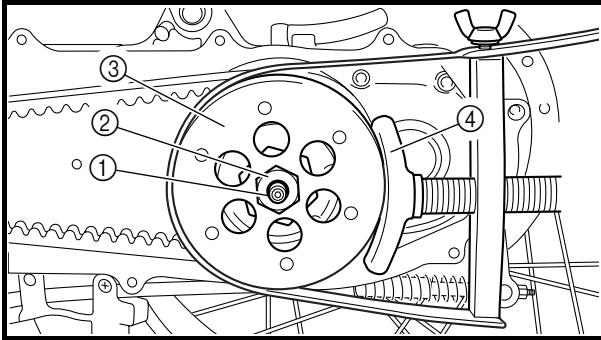




EAS00318

REMOVING THE SECONDARY SHEAVE AND V-BELT

1. Remove:
 - footboard
Refer to "REMOVING THE FRONT COWLING AND LEG SHIELD" in chapter 3.
2. Remove:
 - V-belt case cover
Refer to "KICKSTARTER".
3. Remove:
 - O-ring ①
 - secondary sheave nut ②
 - clutch housing ③

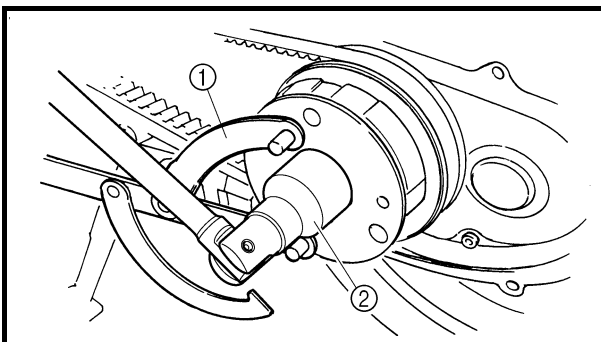


NOTE:

While holding the clutch housing with the sheave holder ④, loosen the secondary sheave nut.



Sheave holder
90890-01701



4. Loosen:
 - clutch carrier nut

CAUTION:

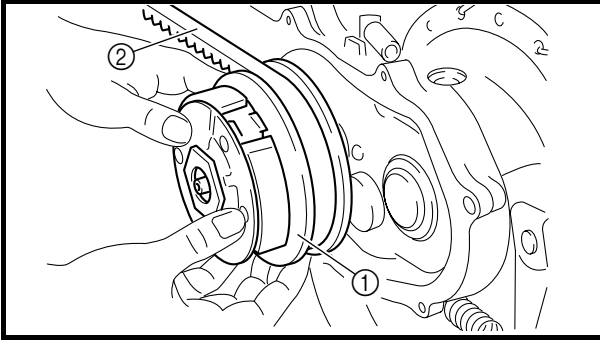
Do not remove the clutch carrier nut at this stage.

NOTE:

While holding the clutch carrier with the rotor holding tool ①, loosen the clutch carrier nut one full turn with the socket wrench ②.



Rotor holding tool
90890-01235
Socket wrench
90890-01493

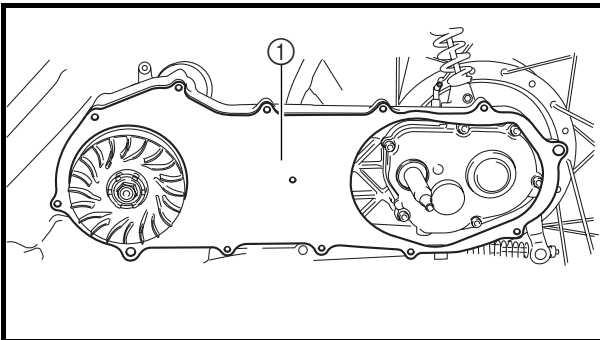


5. Remove:

- secondary sheave ①
- V-belt ②

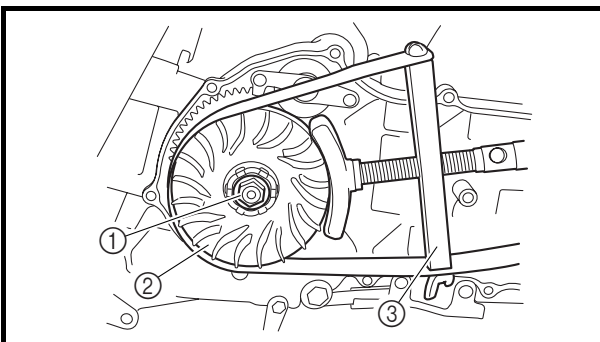
NOTE:

Pull the secondary sliding sheave out as shown, remove the V-belt along with the secondary sheave ①, and then remove the V-belt ② from the primary sheave.



6. Remove:

- gasket ①



EASF0031

REMOVING THE PRIMARY SHEAVE

1. Remove:

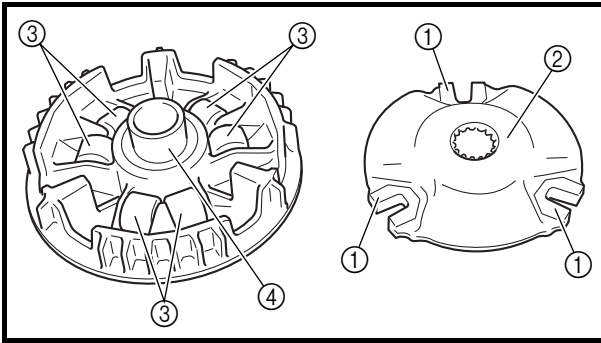
- primary sheave nut ①
- conical spring washer
- kickstarter one-way clutch
- claw washer
- primary fixed sheave ②
- washer
- primary sliding sheave

NOTE:

While holding the primary fixed sheave with the sheave holder ③, loosen the primary sheave nut.

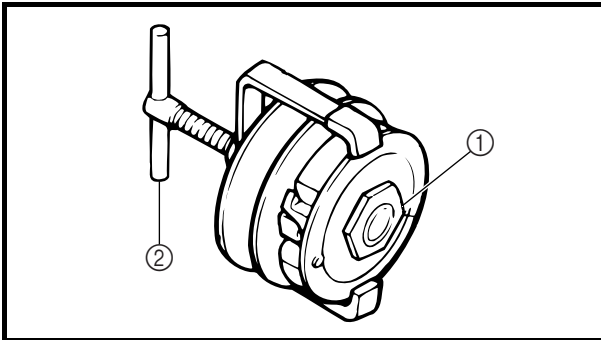


Sheave holder
90890-01701



2. Remove:

- plastic slider guides ①
- slider ②
- primary sheave weights ③
- spacer ④
- oil seals



EAS00319

DISASSEMBLING THE SECONDARY SHEAVE

1. Remove:

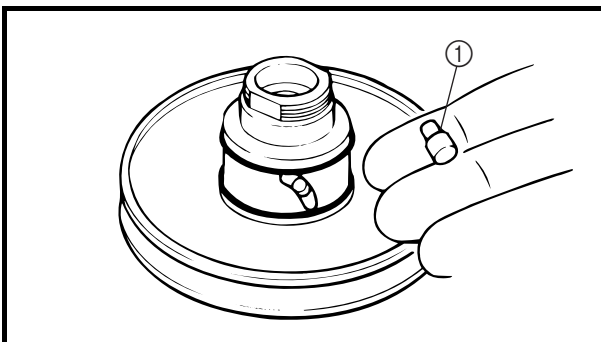
- clutch carrier nut ①

NOTE:

Install the clutch spring holder ② onto the secondary sheave as shown. Then, compress the spring, and remove the clutch carrier nut.



Clutch spring holder
90890-01337

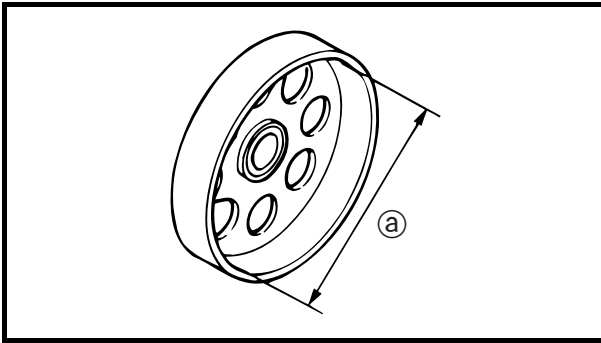


2. Remove:

- spring seat

3. Remove:

- guide pins ①
- secondary sliding sheave
- secondary fixed sheave



EAS00290

CHECKING THE CLUTCH HOUSING

1. Check:

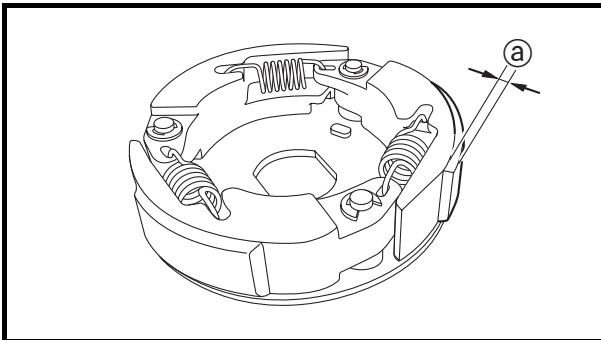
- clutch housing
Damage/wear → Replace.

2. Measure:

- clutch housing inside diameter (a)
Out of specification → Replace the clutch housing.



Clutch housing inside diameter
112 mm (4.41 in)
 <Limit>: 112.5 mm (4.43 in)



EAS00291

CHECKING THE CLUTCH SHOES

The following procedure applies to all of the clutch shoes.

1. Check:

- clutch shoe
Damage/wear → Replace the clutch shoes and springs as a set.
Glazed areas → Sand with course sandpaper.

NOTE:

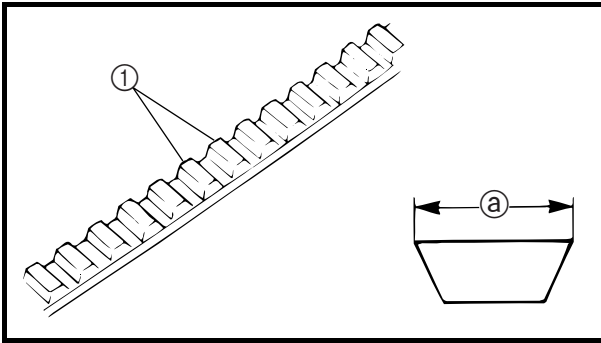
After sanding the glazed areas, clean the clutch with a cloth.

2. Measure:

- clutch shoe thickness (a)
Out of specification → Replace the clutch shoes and springs as a set.



Clutch shoe thickness
3.0 mm (0.12 in)
 <Limit>: 1.0 mm (0.04 in)



EAS00320

CHECKING THE V-BELT

1. Check:

- V-belt ①
Cracks/damage/wear → Replace.
Grease/oil → Clean the primary and secondary sheave.

2. Measure:

- V-belt width ②
Out of specification → Replace.



V-belt width
18.2 mm (0.72 in)
<Limit>: 17.2 mm (0.68 in)

EAS00321

CHECKING THE PRIMARY SHEAVE WEIGHTS

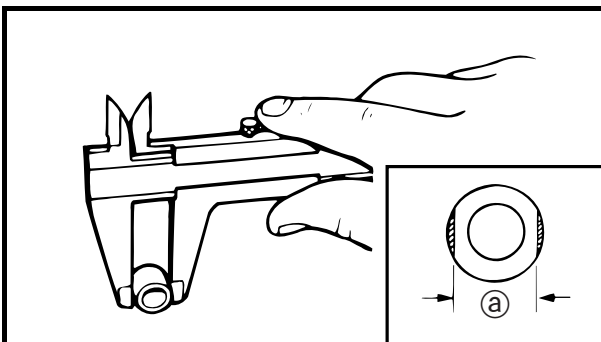
The following procedure applies to all of the primary sheave weights.

1. Check:

- primary sheave weight
Cracks/damage/wear → Replace.

2. Measure:

- primary sheave weight outside diameter ③
Out of specification → Replace.



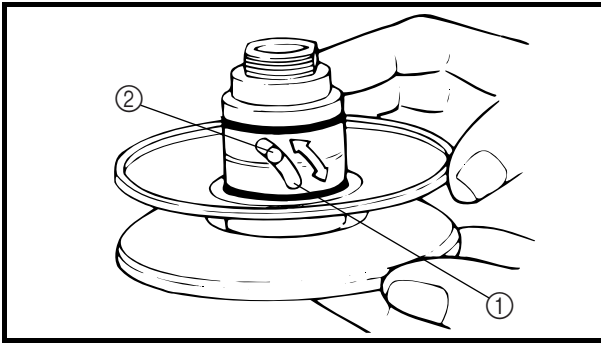
Primary sheave weight outside diameter
15 mm (0.59 in)
<Limit>: 14.5 mm (0.57 in)

EAS00322

CHECKING THE SECONDARY SHEAVE

1. Check:

- secondary fixed sheave
- secondary sliding sheave
Cracks/damage/wear → Replace the secondary fixed and sliding sheaves as a set.

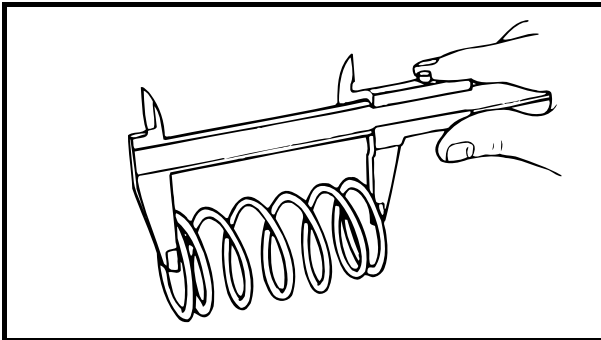


2. Check:

- torque cam groove ①
Damage/wear → Replace the secondary fixed and sliding sheaves as a set.

3. Check:

- guide pin ②
Damage/wear → Replace the secondary fixed and sliding sheaves as a set.



4. Check:

- spring free length
Out of specification → Replace the spring.



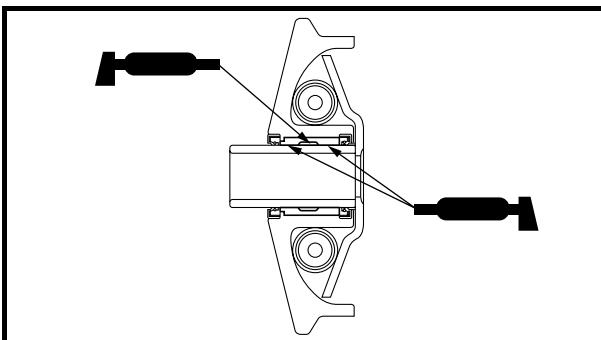
Spring free length
74.3 mm (2.93 in)
<Limit>: 70.6 mm (2.78 in)

EAS00323

ASSEMBLING THE PRIMARY SHEAVE

1. Clean:

- primary fixed sheave
- primary sliding sheave
- spacer
- primary sheave weights



2. Install:

- oil seal **New**

3. Lubricate:

- primary sliding sheave
- spacer



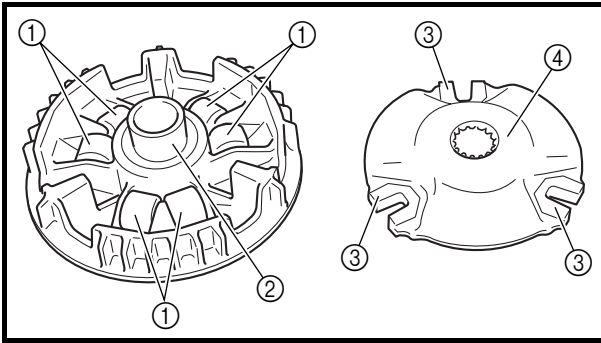
Recommended lubricant
Shell Dolium Grease R®

NOTE:

Fill the notch of the primary sliding sheave with grease. Apply grease to the inner surface of the primary sliding sheave as shown.

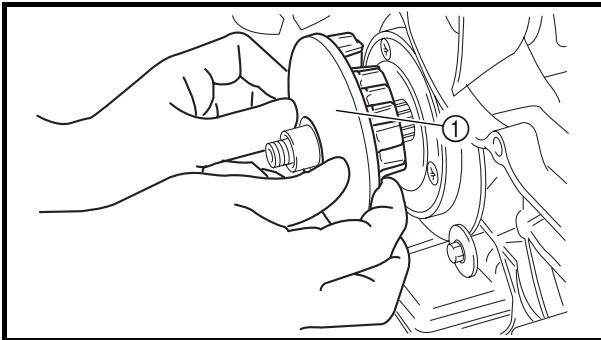
CAUTION:

Do not get any grease on the surfaces of the sheaves. If any grease gets on the sheaves, be sure to wipe it off with alcohol, etc.



4. Install:

- primary sheave weights ①
- spacer ②
- plastic slider guides ③
- slider ④

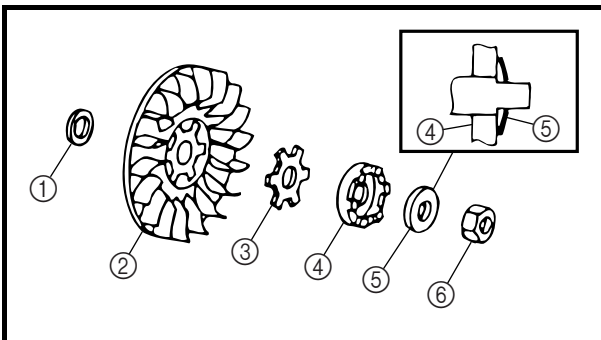


5. Install:

- primary sliding sheave ①

NOTE:

When installing the primary sliding sheave, hold the slider to prevent the primary sheave weights from falling out of the primary sliding sheave.



6. Install:

- washer ①
- primary fixed sheave ②
- claw washer ③
- kickstarter one-way clutch ④
- conical spring washer ⑤
- primary sheave nut ⑥

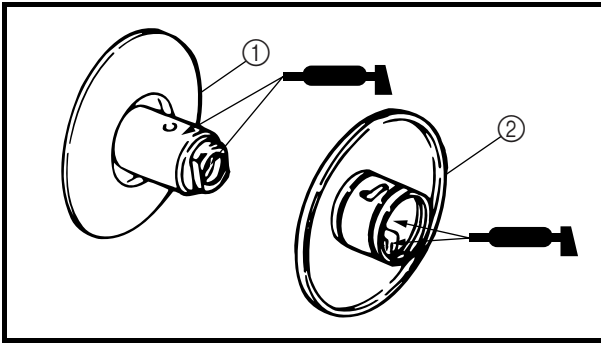
50 Nm (5.0 m · kg, 36 ft · lb)

NOTE:

- Install the conical spring washer ⑤ as shown in the illustration.
- While holding the primary fixed sheave with the sheave holder, tighten the primary sheave nut.



Sheave holder
90890-01701



EAS00324

ASSEMBLING THE SECONDARY SHEAVE**1. Lubricate:**

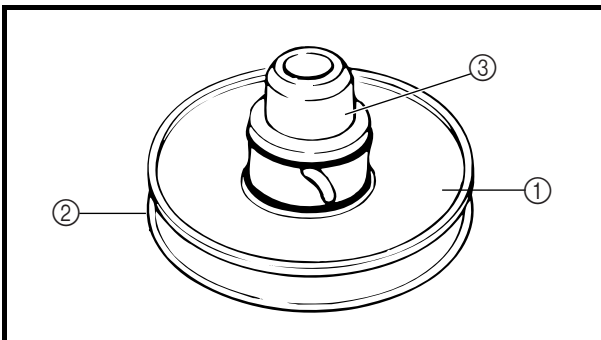
- secondary fixed sheave's inner surface ①
- secondary sliding sheave's inner surface ②
- oil seals
- bearings
(with the recommended lubricant)



Recommended lubricant
Shell Dolium Grease R®

CAUTION:

Do not get any grease on the surfaces of the sheaves. If any grease gets on the sheaves, be sure to wipe it off with alcohol, etc.

**2. Install:**

- oil seals **New**
- secondary sliding sheave ①
- secondary fixed sheave ②

NOTE:

Install the secondary sliding sheave onto the secondary fixed sheave ② with the oil seal guide ③.



Oil seal guide
90890-01384

3. Lubricate:

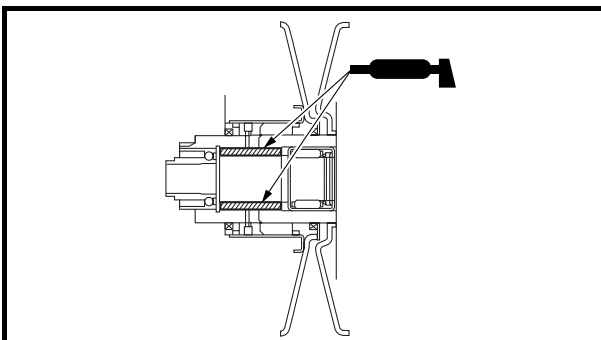
- secondary sliding sheave's inner surface
(with the recommended lubricant)

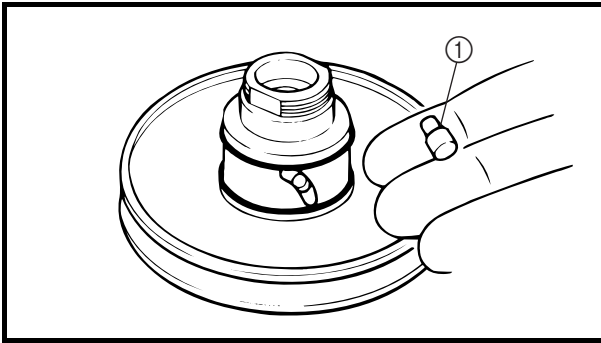


Recommended lubricant
Shell Dolium Grease R®

NOTE:

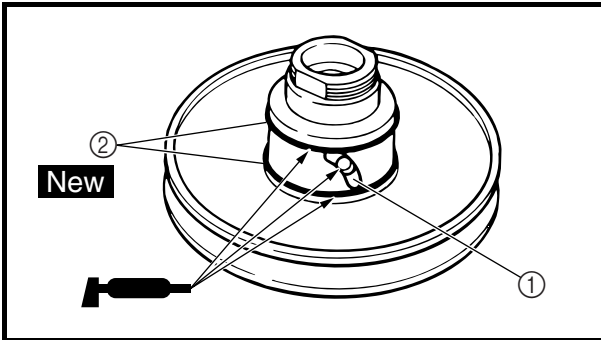
Apply 3 cc of Shell Dolium Grease R® to the inner surface of the secondary fixed sheave.





4. Install:

- guide pin ①



5. Lubricate:

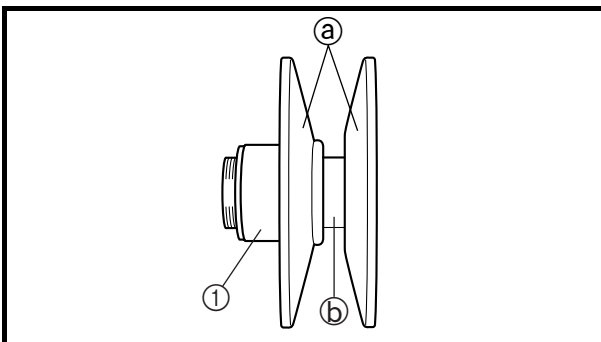
- guide pin groove ①
- O-rings ② **New**
(with the recommended lubricant)



Recommended lubricant
Shell Dolium Grease R®

NOTE:

Apply 1 cc of Shell Dolium Grease R® to the guide pin groove.

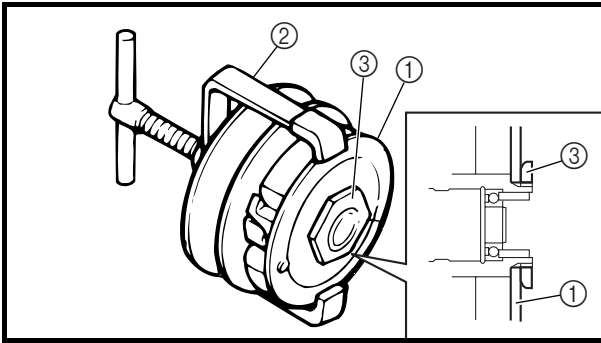


6. Install:

- spring seat ①

CAUTION:

Do not get any grease on the surfaces (a) and (b) of the sheaves. If any grease gets on the sheaves, be sure to wipe it off with alcohol, etc.



7. Install:

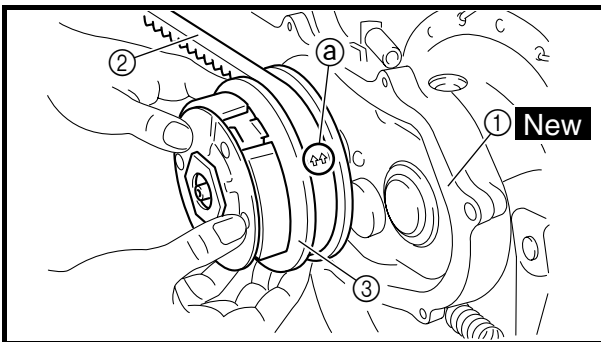
- spring
- clutch carrier ①

NOTE:

- Attach the clutch spring holder ② onto the secondary sheave as shown. Then, compress the spring, and tighten the clutch carrier nut ③.
- Install the clutch carrier nut with the beveled side of the nut facing the clutch carrier.



Clutch spring holder
90890-01337



EAS00325

INSTALLING THE BELT DRIVE

For installation, reverse the removal procedure.

1. Install:

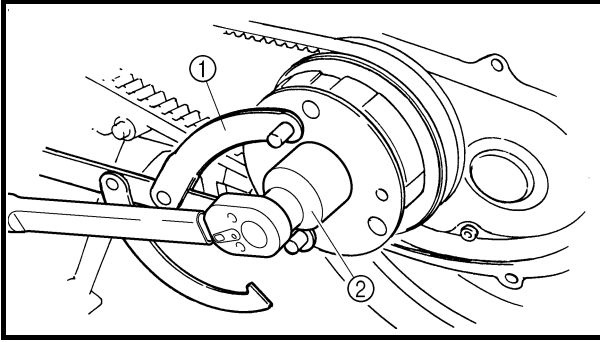
- gasket ① **New**
- V-belt ②
- secondary sheave ③

CAUTION:

Do not allow grease to contact the V-belt, secondary sheave assembly.

NOTE:

- The V-belt must be installed, with the arrows ② facing forward.
- Install the V-belt on the primary sheave, then install the secondary sheave ③ along with the V-belt ②.
- When installing the secondary sheave, do not get grease from the inner surface of the secondary sheave on the primary drive gear.



2. Install:

- clutch carrier nut

55 Nm (5.5 m · kg, 40 ft · lb)

NOTE:

While holding the clutch carrier with the rotor holding tool ①, tighten the clutch carrier nut with the socket wrench ②.

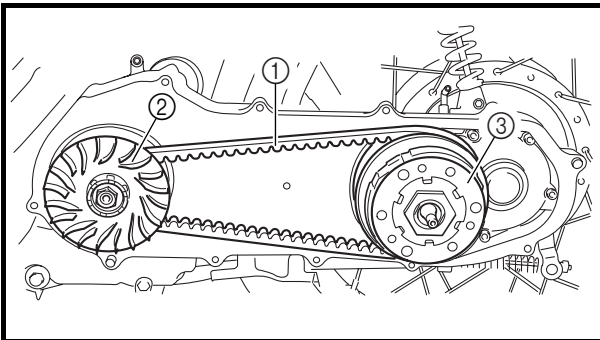


Rotor holding tool

90890-01235

Socket wrench

90890-01493

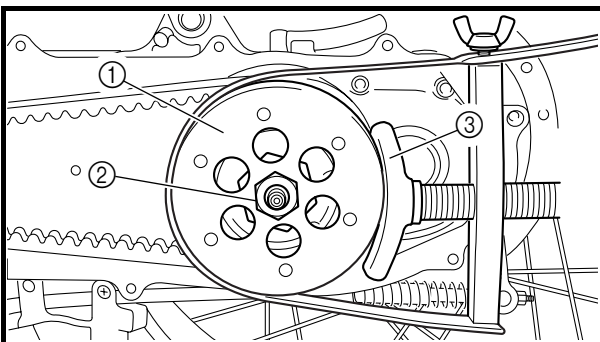


3. Position:

- V-belt ①

NOTE:

Position the V-belt in the primary sheave ② (when the sheave is at its widest position) and in the secondary sheave ③ (when the sheave is at its narrowest position), and make sure the V-belt is tight.



4. Install:

- clutch housing ①
- secondary sheave nut ②

40 Nm (4.0 m · kg, 29 ft · lb)

- O-ring

NOTE:

Tighten the secondary sheave nut with the sheave holder ③.



Sheave holder

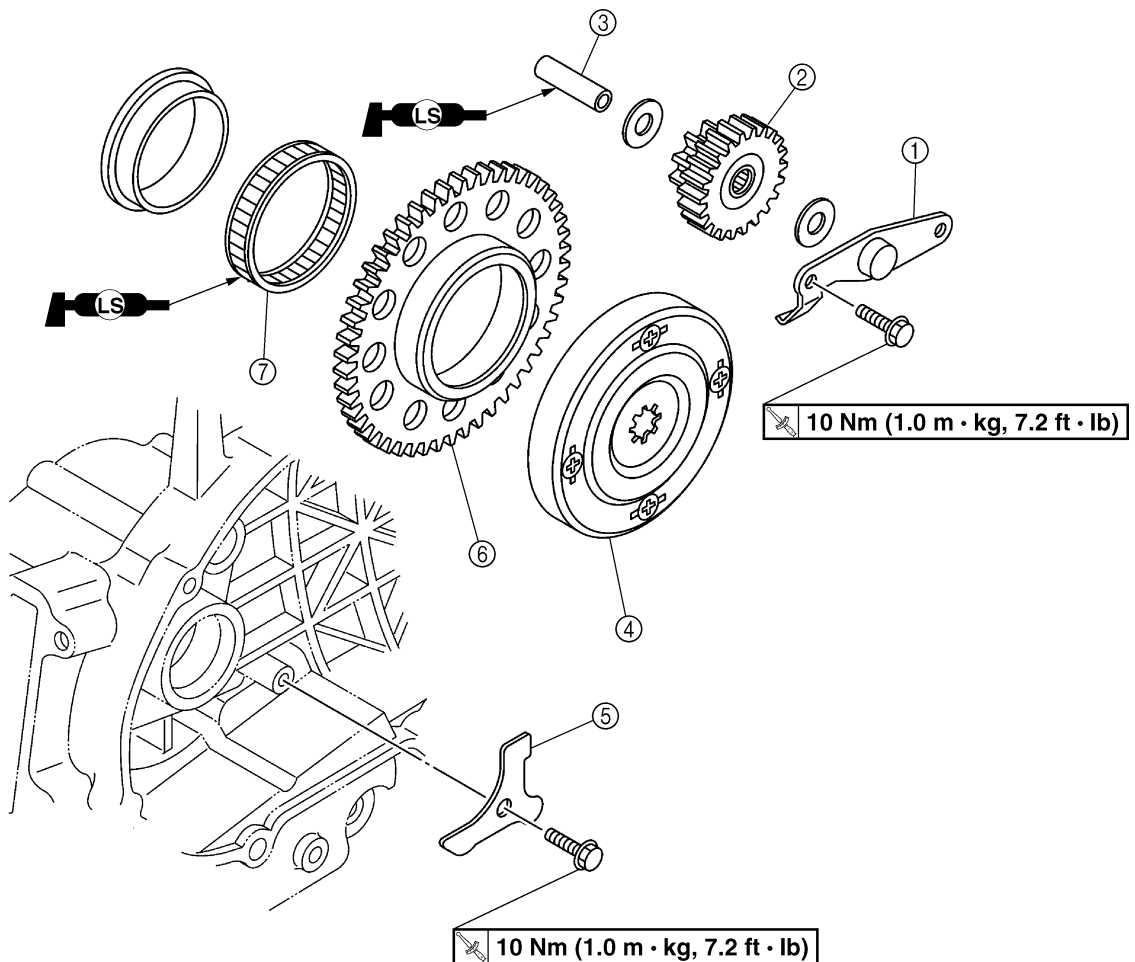
90890-01701



EAS00341

STARTER CLUTCH

- ① Idle gear plate
- ② Idle gear
- ③ Idle gear shaft
- ④ Starter clutch assembly
- ⑤ Starter wheel gear holder
- ⑥ Starter wheel gear
- ⑦ Bearing

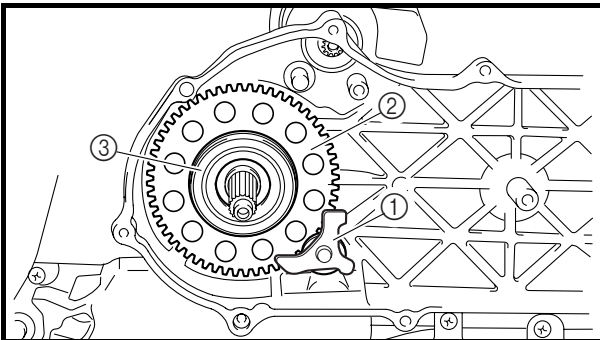
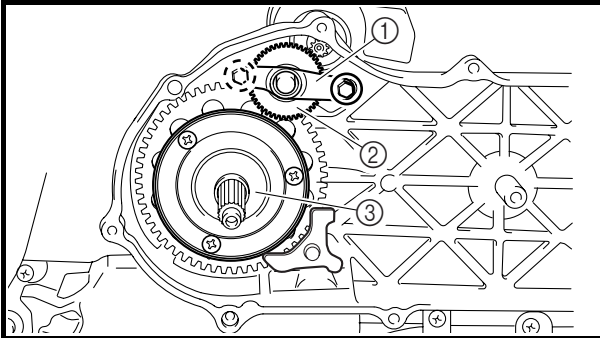




EAS00344

REMOVING THE STARTER CLUTCH

1. Remove:
 - footboard
Refer to “REMOVING THE FRONT COWLING AND LEG SHIELD” in chapter 3.
2. Remove:
 - V-belt case cover
Refer to “KICKSTARTER”.
 - primary sliding sheave
Refer to “BELT DRIVE”.
3. Remove:
 - idle gear plate ①
 - washer
 - idle gear ②
 - washer
 - starter clutch assembly ③

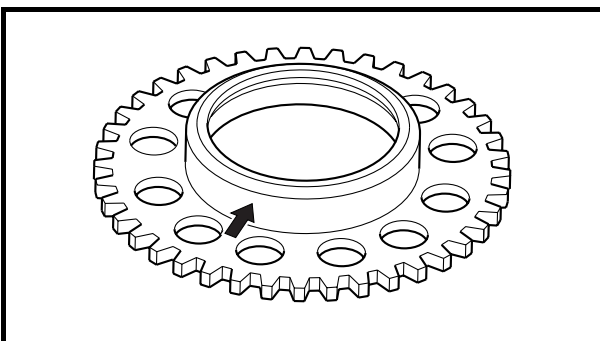


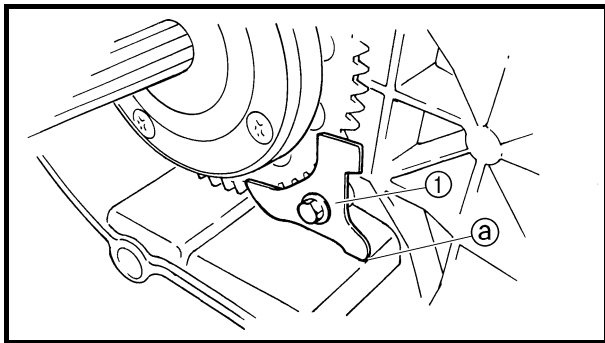
4. Remove:
 - starter wheel gear holder ①
 - starter wheel gear ②
 - bearing ③

EAS00348

CHECKING THE STARTER CLUTCH

1. Check:
 - idle gear
 - starter wheel gear
 - starter clutch assembly
Burrs/chips/roughness/wear → Replace the defective part(s).
2. Check:
 - starter wheel gear contacting surface
Damage/pitting/wear → Replace the starter wheel gear.





3. Install:

- starter wheel gear holder ①
- starter wheel gear holder bolt

 10 Nm (1.0 m · kg, 7.2 ft · lb)

NOTE:

Install the starter wheel gear holder in the direction shown so that the section ② of the holder contacts the left crankcase.

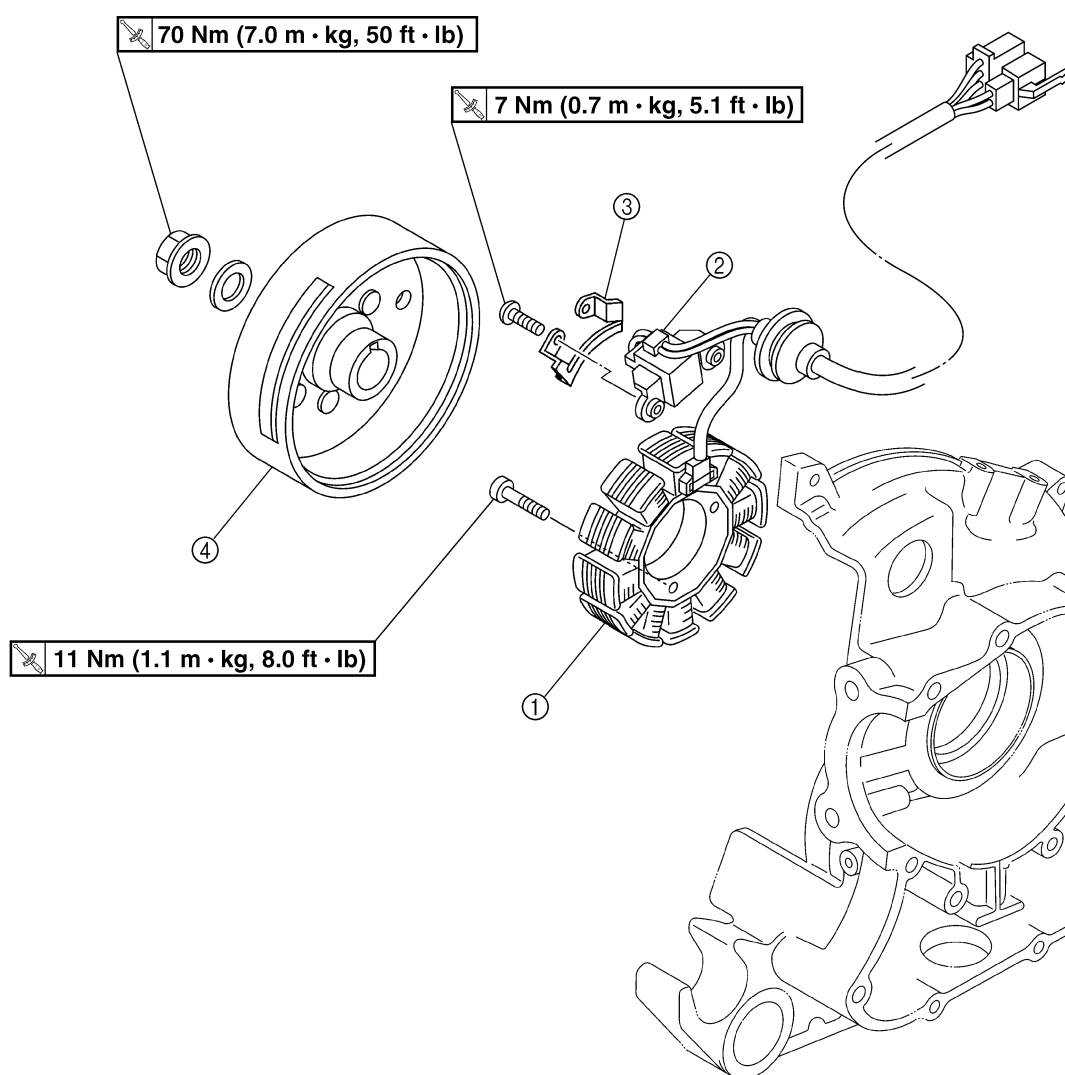
4. Install:

- idle gear plate
- idle gear plate bolts

 10 Nm (1.0 m · kg, 7.2 ft · lb)

**A.C. MAGNETO**

- ① Stator coil assembly
- ② Pickup coil
- ③ Pickup coil bracket
- ④ A.C. magneto rotor





EAS00346

REMOVING THE A.C. MAGNETO

1. Remove:

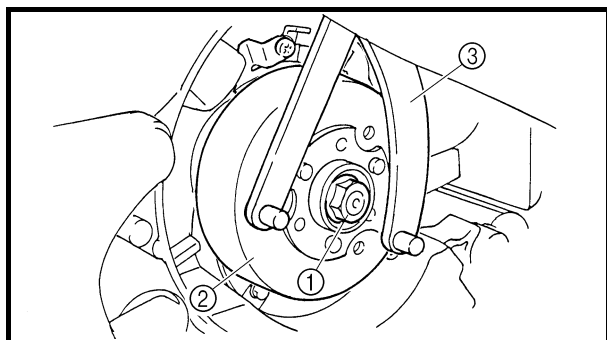
- air filter case

Refer to "AIR FILTER CASE" in chapter 5.

2. Remove:

- engine cooling fan cover
- engine cooling fan

Refer to "CYLINDER HEAD".



3. Remove:

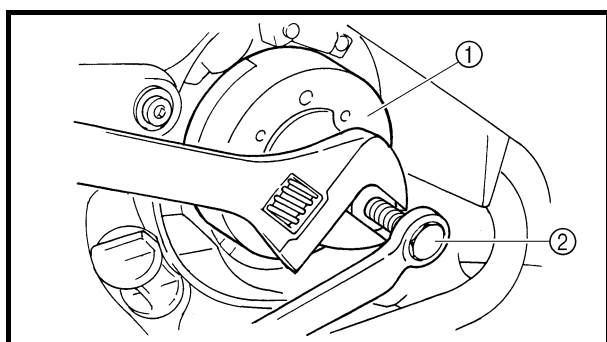
- A.C. magneto rotor nut ①
- washer

NOTE:

While holding the A.C. magneto rotor ② with the rotor holding tool ③, loosen the A.C. magneto rotor nut.



Rotor holding tool
90890-01235

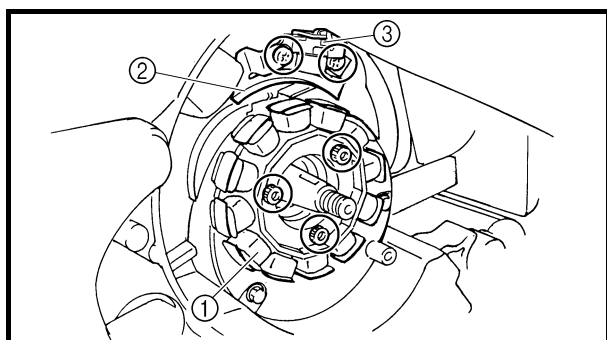


4. Remove:

- A.C. magneto rotor ①
(with the flywheel puller ②)
- woodruff key

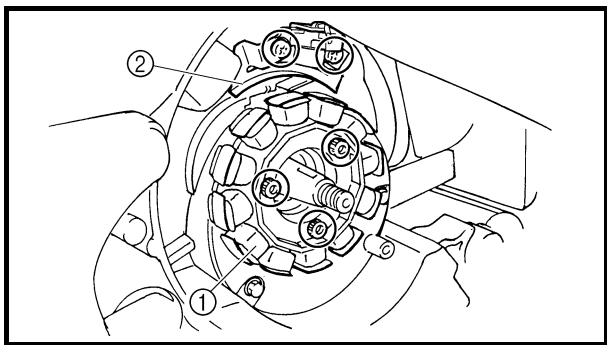


Flywheel puller
90890-01189



5. Remove:

- stator coil assembly ①
- pickup coil bracket ②
- pickup coil ③



EAS00354

INSTALLING THE A.C. MAGNETO

For installation, reverse the removal procedure.

1. Install:

- stator coil assembly ①
- stator coil assembly bolts

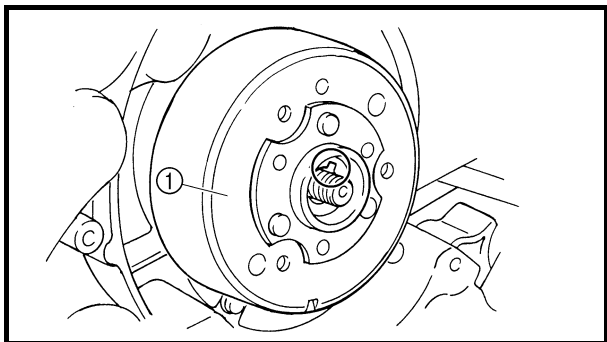
11 Nm (1.1 m · kg, 8.0 ft · lb)

- pickup coil
- pickup coil bracket ②
- pickup coil bracket screws

7 Nm (0.7 m · kg, 5.1 ft · lb)

NOTE:

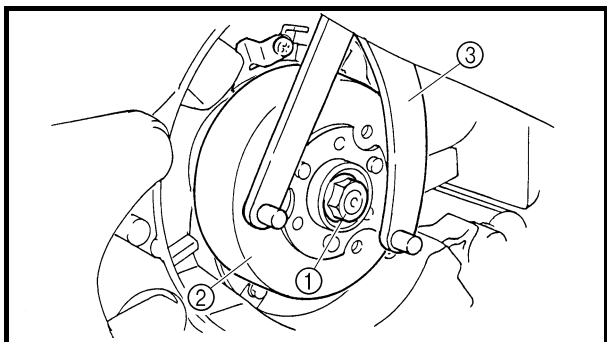
Pass the stator coil lead under the pickup coil bracket.

**2. Install:**

- woodruff key
- A.C. magneto rotor ①
- washer
- A.C. magneto rotor nut

NOTE:

- Clean the tapered portion of the crankshaft and the A.C. magneto rotor hub.
- When installing the A.C. magneto rotor, make sure the woodruff key is properly seated in the keyway of the crankshaft.

**3. Tighten:**

- A.C. magneto rotor nut ①

70 Nm (7.0 m · kg, 50 ft · lb)

NOTE:

While holding the A.C. magneto rotor ② with the rotor holding tool ③, tighten the A.C. magneto rotor nut.



Rotor holding tool
90890-01235



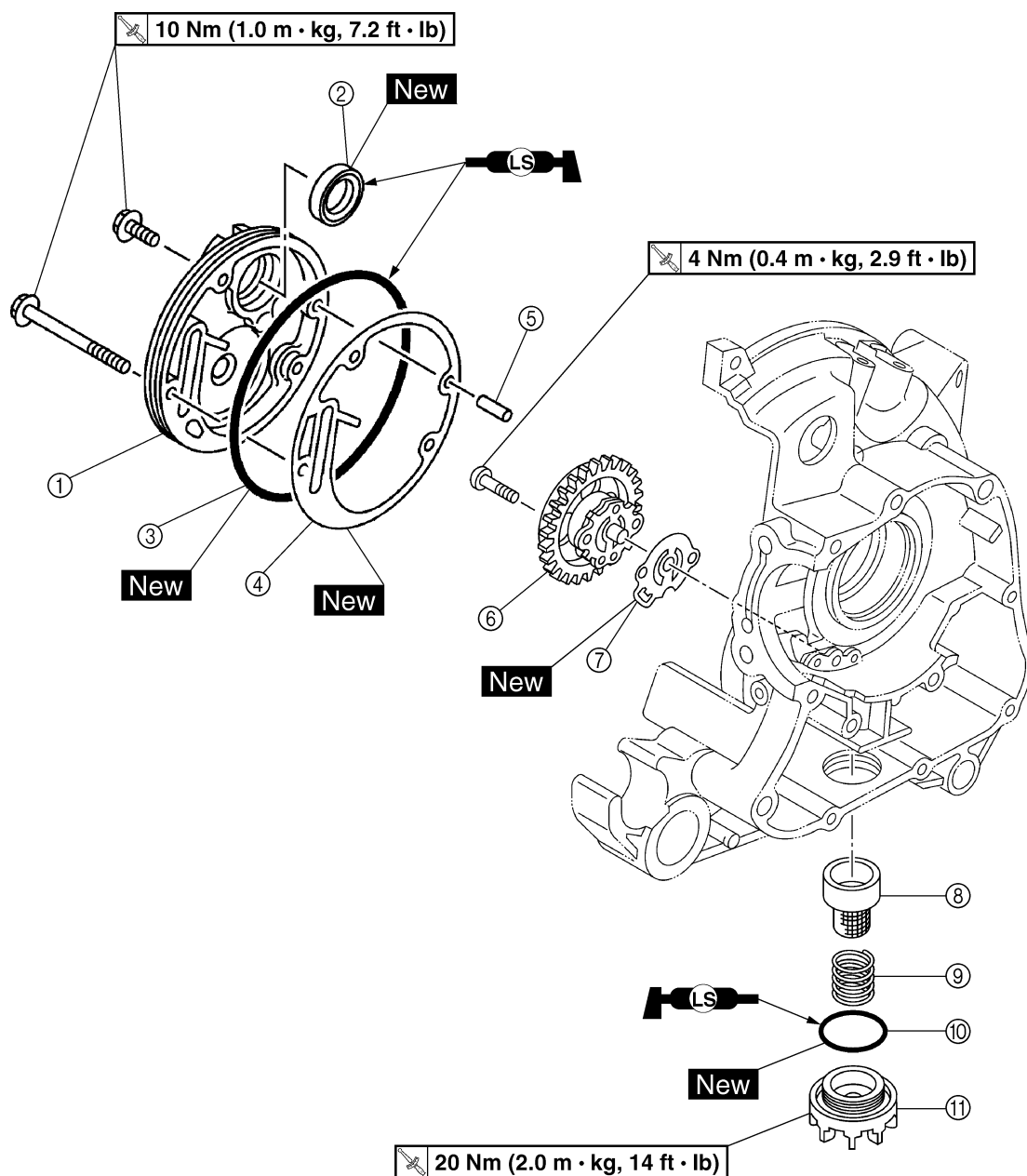
EASF0035

OIL PUMP



- ① Oil pump cover
- ② Oil seal
- ③ O-ring
- ④ Gasket
- ⑤ Dowel pin
- ⑥ Oil pump assembly
- ⑦ Gasket

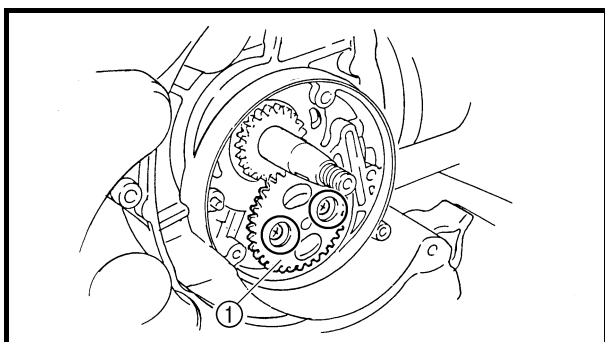
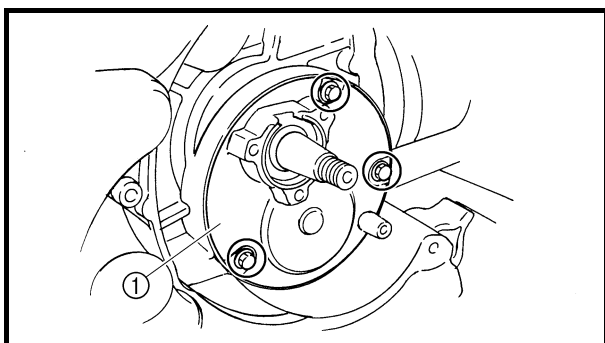
- ⑧ Engine oil strainer
- ⑨ Spring
- ⑩ O-ring
- ⑪ Engine oil drain plug



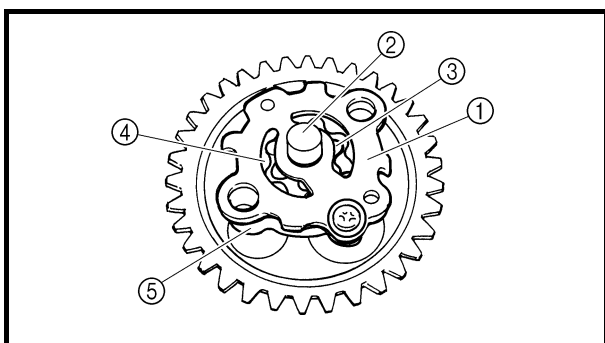


REMOVING THE OIL PUMP

1. Drain:
 - engine oil
(completely from the crankcase)
Refer to "CHANGING THE ENGINE OIL" in chapter 3.
2. Remove:
 - footboard
Refer to "REMOVING THE FRONT COWLING AND LEG SHIELD" in chapter 3.
3. Remove:
 - air filter case
Refer to "AIR FILTER CASE" in chapter 5.
4. Remove:
 - engine cooling fan cover
 - engine cooling fan
Refer to "CYLINDER HEAD".
 - stator coil assembly
Refer to "A.C. MAGNETO".
5. Remove:
 - oil pump cover ①
 - O-ring
 - gasket
 - dowel pin

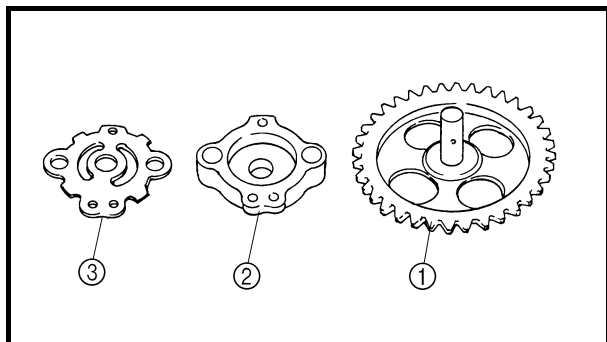


6. Remove:
 - oil pump assembly ①
 - gasket



DISASSEMBLING THE OIL PUMP

1. Remove:
 - oil pump housing cover ①
 - pin
 - oil pump driven gear ②
 - inner rotor ③
 - outer rotor ④
 - oil pump housing ⑤



EAS00364

CHECKING THE OIL PUMP**1. Check:**

- oil pump drive gear
- oil pump driven gear ①
- oil pump housing ②
- oil pump housing cover ③

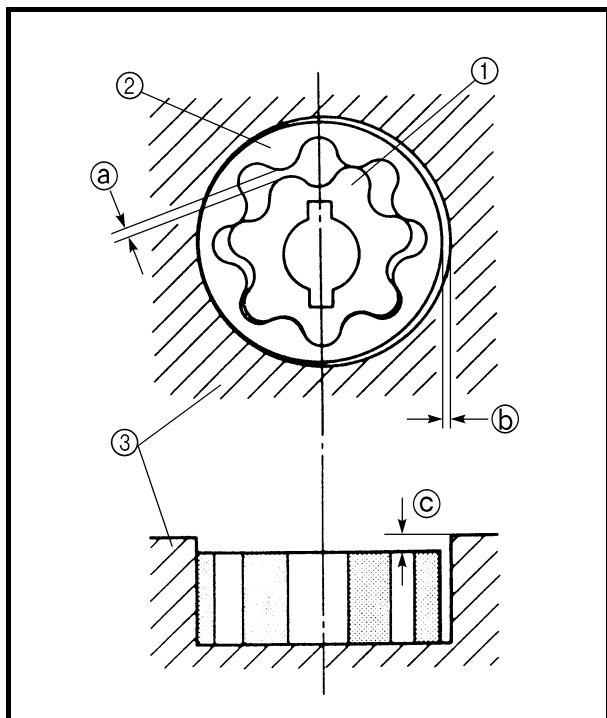
Cracks/damage/wear → Replace the defective part(s).

2. Measure:

- inner-rotor-to-outer-rotor-tip clearance ①
- outer-rotor-to-oil-pump-housing clearance ②
- oil-pump-housing-to-inner-rotor-and-outer-rotor clearance ③

Out of specification → Replace the oil pump.

- ① Inner rotor
- ② Outer rotor
- ③ Oil pump housing

**Inner-rotor-to-outer-rotor-tip clearance**

0.15 mm (0.0059 in)

<Limit>: 0.23 mm (0.0091 in)

Outer-rotor-to-oil-pump-housing clearance

0.13 ~ 0.18 mm

(0.0051 ~ 0.0071 in)

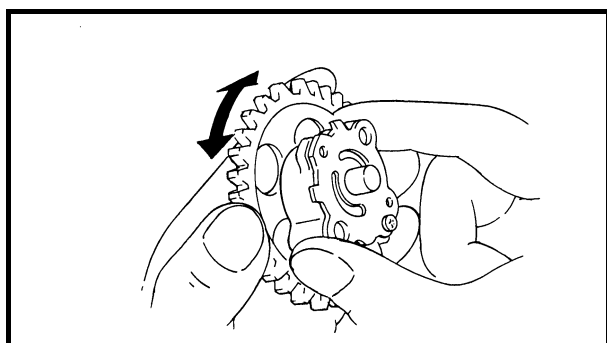
<Limit>: 0.25 mm (0.0098 in)

Oil-pump-housing-to-inner-rotor-and-outer-rotor clearance

0.06 ~ 0.10 mm

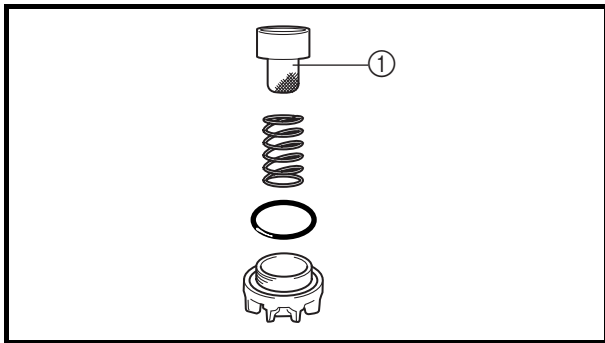
(0.0024 ~ 0.0039 in)

<Limit>: 0.17 mm (0.0067 in)

**3. Check:**

- oil pump operation

Rough movement → Repeat steps (1) and (2) or replace the defective part(s).



EAS00368

CHECKING THE OIL STRAINER

1. Check:

- oil strainer ①
- Damage → Replace.
- Contaminants → Clean with solvent.

EAS00375

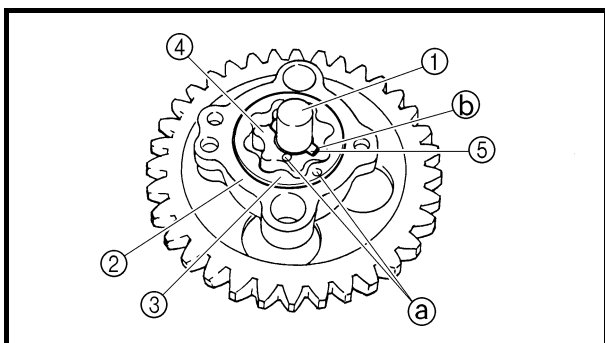
ASSEMBLING THE OIL PUMP

1. Lubricate:

- inner rotor
- outer rotor
- oil pump shaft (oil pump driven gear)
(with the recommended lubricant)



Recommended lubricant
Engine oil



2. Install:

- oil pump driven gear ①
(to the oil pump housing ②)
- outer rotor ③
- inner rotor ④
- pin ⑤
- oil pump housing cover

NOTE:

- Install the inner rotor and outer rotor with their punch marks ① facing away from the oil pump housing.
- When installing the inner rotor, align the pin in the oil pump driven gear with the groove ② in the inner rotor.

3. Check:

- oil pump operation
- Refer to "CHECKING THE OIL PUMP".

EAS00376

INSTALLING THE OIL PUMP

For installation, reverse the removal procedure.

1. Install:

- gasket **New**
- oil pump assembly
- oil pump assembly screws

4 Nm (0.4 m · kg, 2.9 ft · lb)

**CAUTION:**

After tightening the bolts, make sure the oil pump turns smoothly.

2. Install:

- gasket **New**
- O-ring **New**
- oil pump cover
- oil pump cover bolts

 **10 Nm (1.0 m · kg, 7.2 ft · lb)**

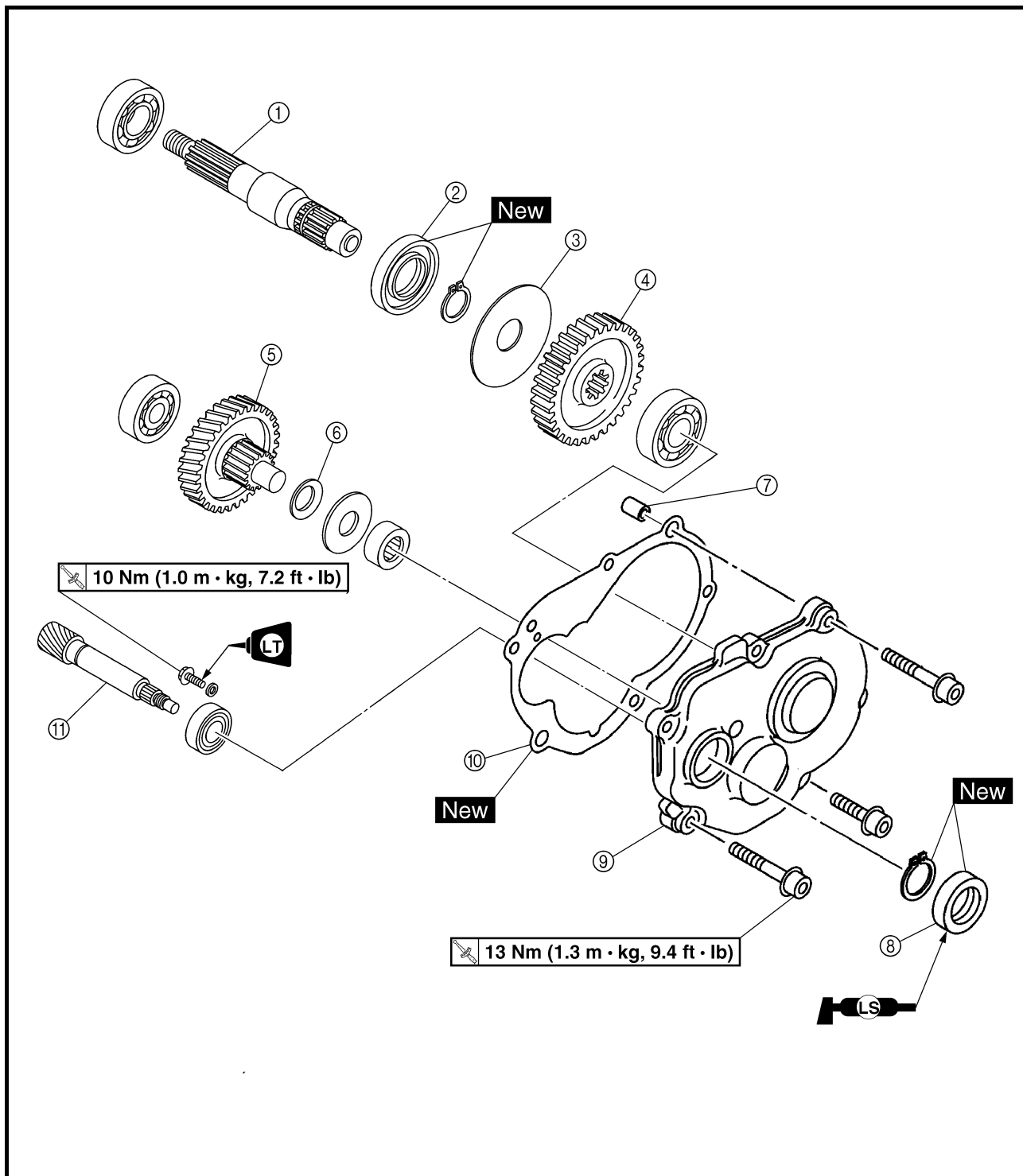


EASF0041

TRANSMISSION



- ① Drive axle
- ② Oil seal
- ③ Conical spring washer
- ④ Drive axle gear
- ⑤ Main axle
- ⑥ Conical spring washer
- ⑦ Dowel pin
- ⑧ Oil seal
- ⑨ Transmission case cover
- ⑩ Gasket
- ⑪ Primary drive gear





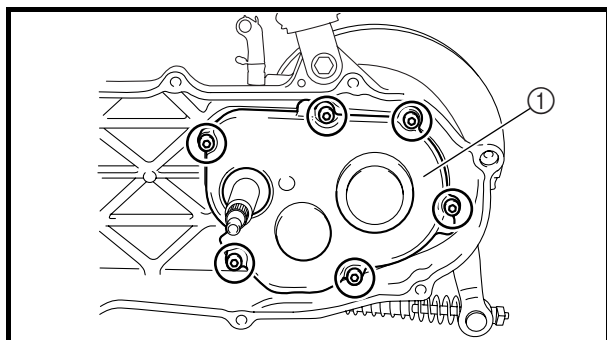
EASF0042

REMOVING THE TRANSMISSION**NOTE:**

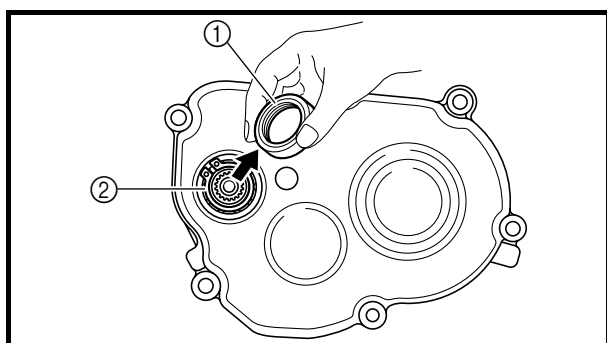
Prior to remove the transmission, remove the muffler, rear wheel and secondary sheave.

1. Drain:

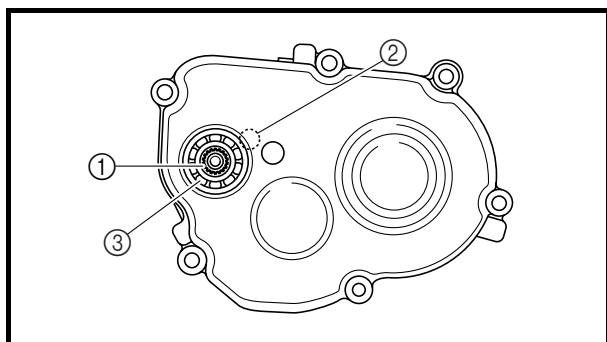
- transmission oil
(completely from the transmission case)
Refer to "CHANGING THE TRANSMISSION OIL" in chapter 3.

**2. Remove:**

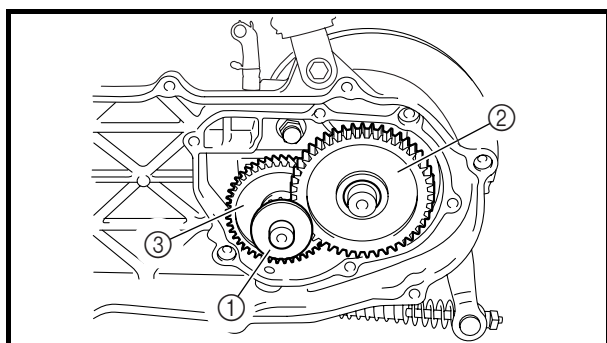
- transmission case cover (1)
(with primary drive gear, bearings)
- gasket
- dowel pins

**3. Remove:**

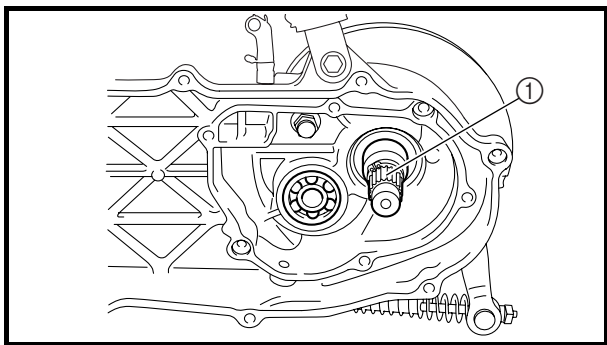
- oil seal (1)
- circlip (2)

**4. Remove:**

- primary drive gear (1)
- retainer bolt (2)
- primary drive gear bearing (3)

**5. Remove:**

- washer (1)
- conical spring washer
- drive axle gear (2)
- conical spring washer
- main axle (3)

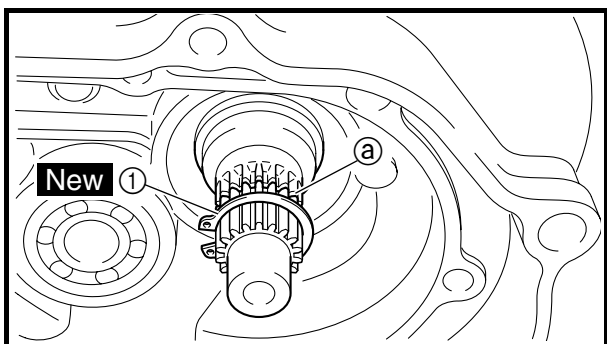


6. Remove:
- drive axle ①
(with circlip)

EAS00425

CHECKING THE TRANSMISSION

1. Check:
 - drive axle
 - main axle
 - primary drive gear
 - drive axle gear
 Damage/wear → Replace.
2. Check:
 - bearings
 Rough movement → Replace.
3. Check:
 - circlips
 Bends/damage/looseness → Replace.



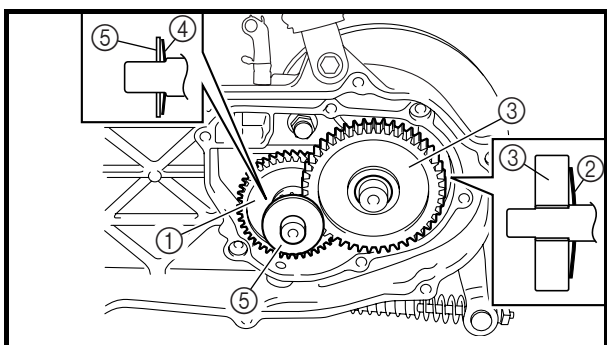
EAS00428

INSTALLING THE TRANSMISSION

1. Install:
 - drive axle
 - circlip ① **New**

NOTE:

Make sure the circlip ① is inserted into the groove ② in the drive axle.



2. Install:
 - main axle ①
 - conical spring washer ②
 - drive axle gear ③
 - conical spring washer ④
 - washer ⑤

NOTE:

Install the conical spring washers as shown in the illustration.



3. Install:

- primary drive gear bearing
- retainer bolt 

 10 Nm (1.0 m · kg, 7.2 ft · lb)

4. Install:

- primary drive gear
- circlip **New**
- oil seal **New**
- dowel pins
- gasket **New**
- transmission case cover
(with primary drive gear, bearings)
- transmission case cover bolts

 13 Nm (1.3 m · kg, 9.4 ft · lb)

5. Check:

- transmission
Rough movement → Repair.

NOTE:

Oil each gear, shaft, and bearing thoroughly.

6. Fill:

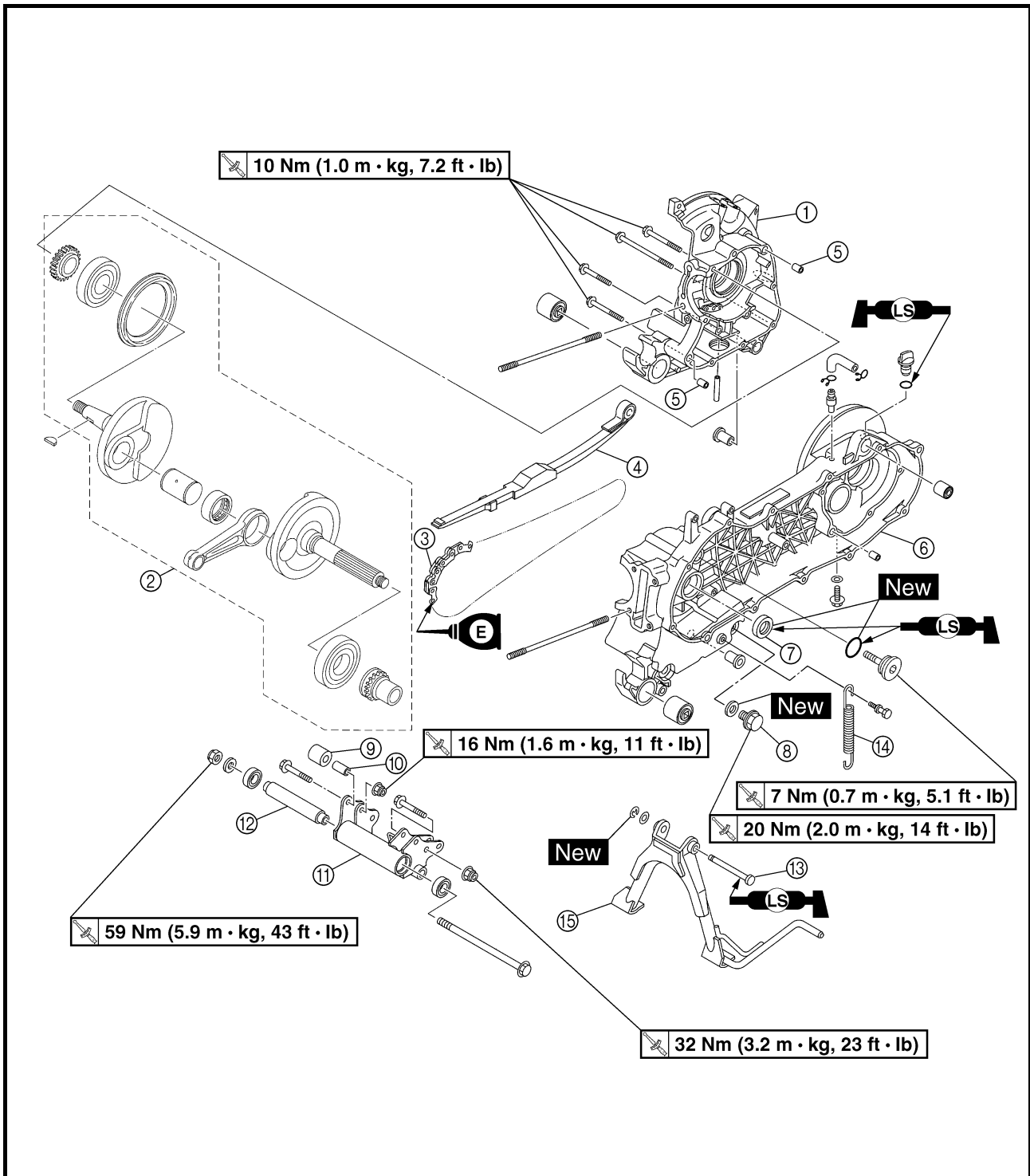
- transmission case
Refer to “CHANGING THE TRANSMISSION OIL” in chapter 3.



EASF0037

CRANKSHAFT

- | | |
|------------------------------------|----------------------|
| ① Crankcase (right) | ⑩ Collar |
| ② Crankshaft assembly | ⑪ Engine bracket |
| ③ Timing chain | ⑫ Spacer |
| ④ Timing chain guide (intake side) | ⑬ Centerstand shaft |
| ⑤ Dowel pin | ⑭ Centerstand spring |
| ⑥ Crankcase (left) | ⑮ Centerstand |
| ⑦ Oil seal | |
| ⑧ Engine drain bolt | |
| ⑨ Rubber damper | |

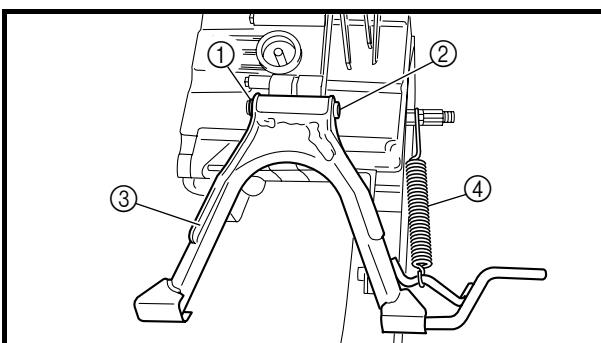
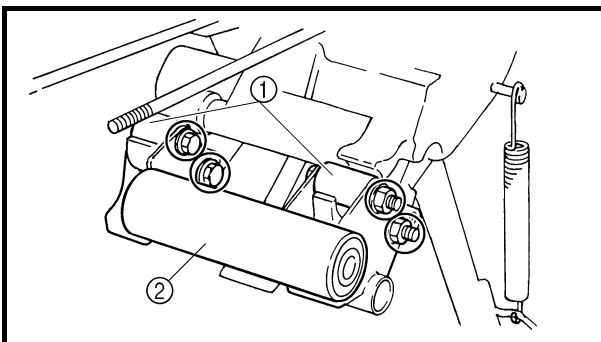




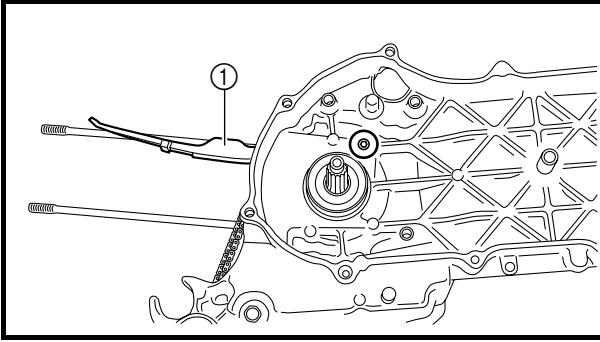
EAS00385

DISASSEMBLING THE CRANKCASE

1. Remove:
 - engine assembly
Refer to "REMOVING THE ENGINE".
2. Remove:
 - cylinder head
 - cylinder
 - piston
Refer to "CYLINDER HEAD" and "CYLINDER AND PISTON".
3. Remove:
 - V-belt case cover
Refer to "KICKSTARTER".
4. Remove:
 - secondary sheave
 - V-belt
 - primary sheave
Refer to "BELT DRIVE".
5. Remove:
 - starter clutch
Refer to "STARTER CLUTCH".
6. Remove:
 - starter motor
Refer to "STARTER MOTOR" in chapter 7.
7. Remove:
 - A.C. magneto rotor
Refer to "A.C. MAGNETO".
8. Remove:
 - oil pump
Refer to "OIL PUMP".
9. Remove:
 - rear wheel assembly
Refer to "REAR WHEEL AND BRAKE" in chapter 6.
10. Remove:
 - rubber dampers ①
 - collars
 - engine bracket ②

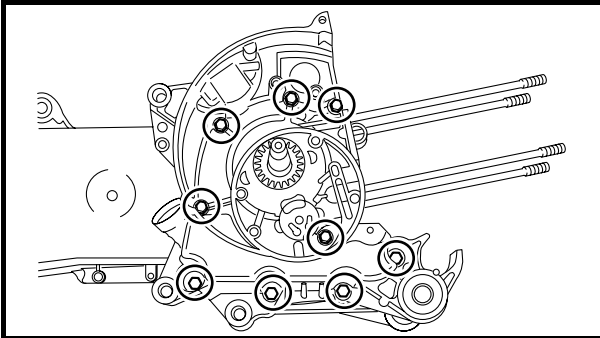


11. Remove:
 - circlip ①
 - washer
 - centerstand shaft ②
 - centerstand ③
 - centerstand spring ④



12.Remove:

- timing chain guide (intake side) ①



13.Remove:

- crankcase bolts

NOTE:

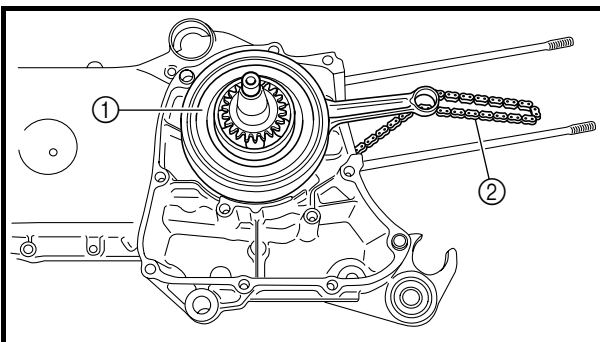
Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern. After all of the bolts are fully loosened, remove them.

14.Remove:

- right crankcase
- dowel pins

CAUTION:

Tap on one side of the crankcase with a soft-face hammer. Tap only on reinforced portions of the crankcase, not on the crankcase mating surfaces. Work slowly and carefully and make sure the crankcase halves separate evenly.



EASF0040

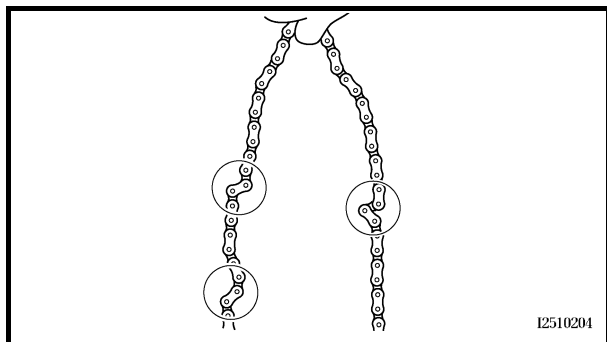
REMOVING THE CRANKSHAFT ASSEMBLY

1. Remove:

- crankshaft assembly ①
- timing chain ②

NOTE:

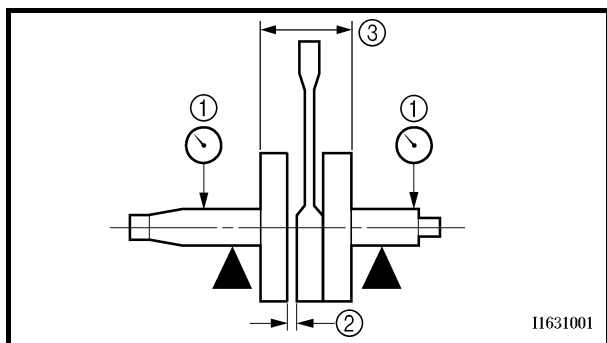
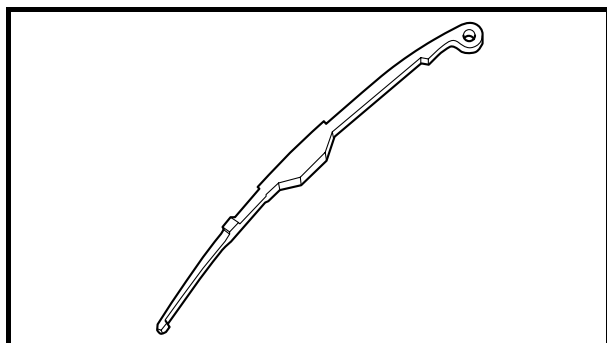
- Before removing the crankshaft assembly, remove the timing chain from the crankshaft drive sprocket.
- The crankshaft assembly cannot be removed if the timing chain is attached onto the crankshaft drive sprocket.



EAS00207

CHECKING THE TIMING CHAIN AND TIMING CHAIN GUIDE

1. Check:
 - timing chain
Damage/stiffness → Replace the timing chain and camshaft sprocket as a set.
2. Check:
 - timing chain guide (intake side)
Damage/wear → Replace.



EAS00394

CHECKING THE CRANKSHAFT AND CONNECTING ROD

1. Measure:
 - crankshaft runout ①
Out of specification → Replace the crankshaft, bearing or both.

NOTE: Turn the crankshaft slowly.



Maximum crankshaft runout
0.03 mm (0.0012 in)

2. Measure:
 - big end side clearance ②
Out of specification → Replace the crankshaft.

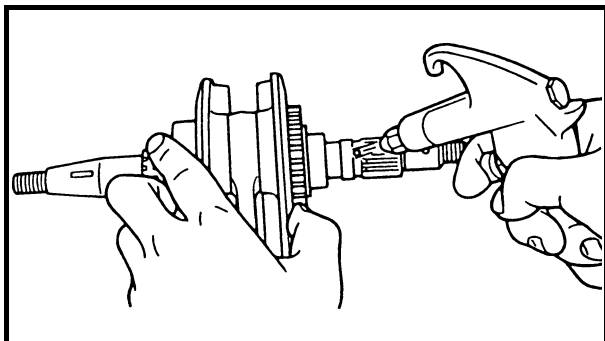
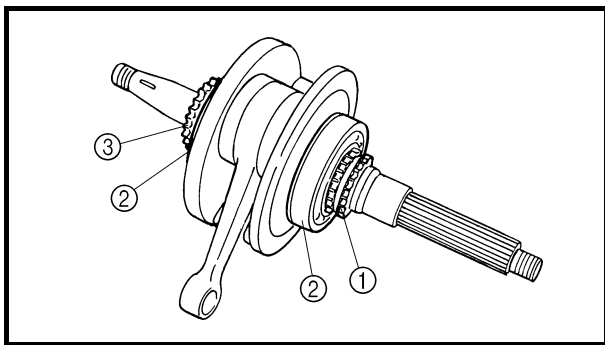


Big end side clearance
0.15 ~ 0.45 mm
(0.0059 ~ 0.0177 in)

3. Measure:
 - crankshaft width ③
Out of specification → Replace the crankshaft.



Crankshaft width
45.45 ~ 45.50 mm
(1.789 ~ 1.791 in)



4. Check:

- crankshaft drive sprocket ①
Damage/wear → Replace the crankshaft.
- bearings ②
Cracks/damage/wear → Replace the crankshaft.
- oil pump drive gear ③
Damage/wear → Replace the crankshaft.

5. Check:

- crankshaft journal
Scratches/wear → Replace the crankshaft.
- crankshaft journal oil passage
Obstruction → Blow out with compressed air.

EAS00399

CHECKING THE CRANKCASE

1. Thoroughly wash the crankcase halves in a mild solvent.
2. Thoroughly clean all the gasket surfaces and crankcase mating surfaces.
3. Check:
 - crankcase
Cracks/damage → Replace.
 - oil delivery passages
Obstruction → Blow out with compressed air.

EAS00401

CHECKING THE BEARINGS AND OIL SEALS

1. Check:
 - bearings
Clean and lubricate the bearings, then rotate the inner race with your finger.
Rough movement → Replace.
2. Check:
 - oil seals
Damage/wear → Replace.



EAS00408

INSTALLING THE CRANKSHAFT

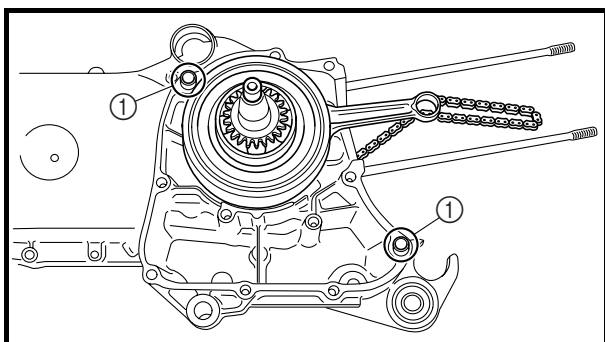
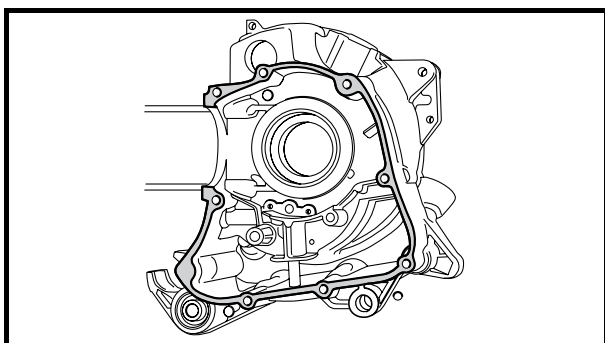
1. Install:
 - timing chain
 - crankshaft assembly

CAUTION:

To avoid scratching the crankshaft and to ease the installation procedure, lubricate the oil seal lips with lithium-soap-based grease and each bearing with engine oil.

NOTE:

After installing the crankshaft to the left crankcase, make sure that the timing chain meshes with the camshaft drive sprocket and the crankshaft turns smoothly.



EAS00416

ASSEMBLING THE CRANKCASE

1. Apply:
 - sealant
(onto the crankcase mating surfaces)



Yamaha bond No. 1215
90890-85505

NOTE:

Do not allow any sealant to come into contact with the oil gallery.

2. Install:
 - dowel pins ①
3. Install:
 - right crankcase
(onto the left crankcase)

NOTE:

Tap lightly on the right crankcase with a soft-face hammer.

4. Install:
 - crankcase bolts

10 Nm (1.0 m · kg, 7.2 ft · lb)

5. Install:
 - timing chain guide (intake side)
 - timing chain guide retainer bolt

7 Nm (0.7 m · kg, 5.1 ft · lb)

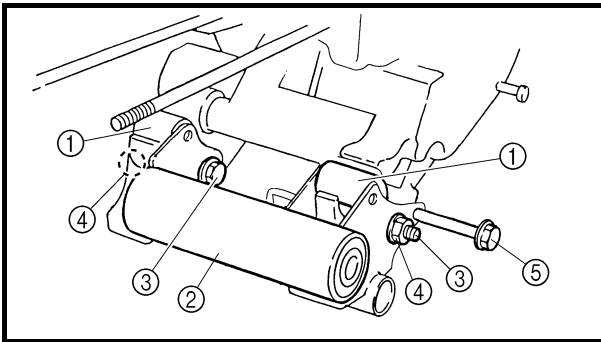


6. Check:
 - crankshaft operation
Rough movement → Repair.
7. Lubricate:
 - centerstand shaft
(with the recommended lubricant)



Recommended lubricant
Lithium-soap-based grease

8. Install:
 - centerstand spring
 - centerstand
 - centerstand shaft
 - washer
 - circlip **New**



9. Install:
 - spacers
 - rubber dampers ①
 - engine bracket ②
 - lower engine mounting bolts ③
 - nuts ④
 - 8 mm bolt ⑤

NOTE:

- Do not fully tighten the lower engine mounting bolts and nuts.
- Insert an 8 mm bolt or similar rod into the hole in the engine bracket and into the hole in the left crankcase to ease the installation procedure.

10. Tighten:

- nuts ④

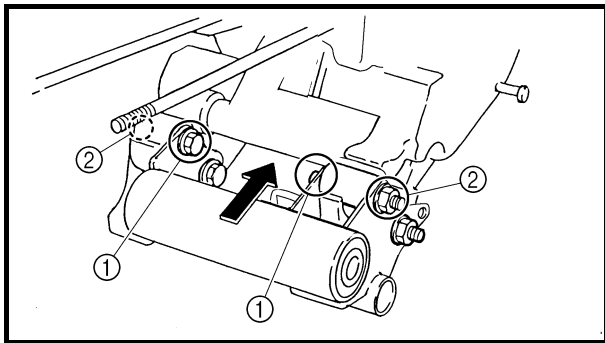
32 Nm (3.2 m · kg, 23 ft · lb)

NOTE:

First tighten the nuts on the left crankcase side, and then tighten the nuts on the right crankcase side.

11. Remove:

- 8 mm bolt ⑤



12.Install:

- upper engine mounting bolts ①
- nuts ②

NOTE:

Push the engine bracket in the direction of the arrow shown and install the upper engine mounting bolts.

13.Tighten:

- nuts ②

 16 Nm (1.6 m · kg, 11 ft · lb)

CHAPTER 5

CARBURETOR

CARBURETOR	5-1
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CHECKING THE CARBURETOR	5-4
ASSEMBLING THE CARBURETOR.....	5-7
MEASURING AND ADJUSTING THE FUEL LEVEL	5-8
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INSTALLING THE FUEL TANK.....	5-12
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REMOVING THE AIR FILTER CASE.....	5-13
INSTALLING THE AIR FILTER CASE	5-13

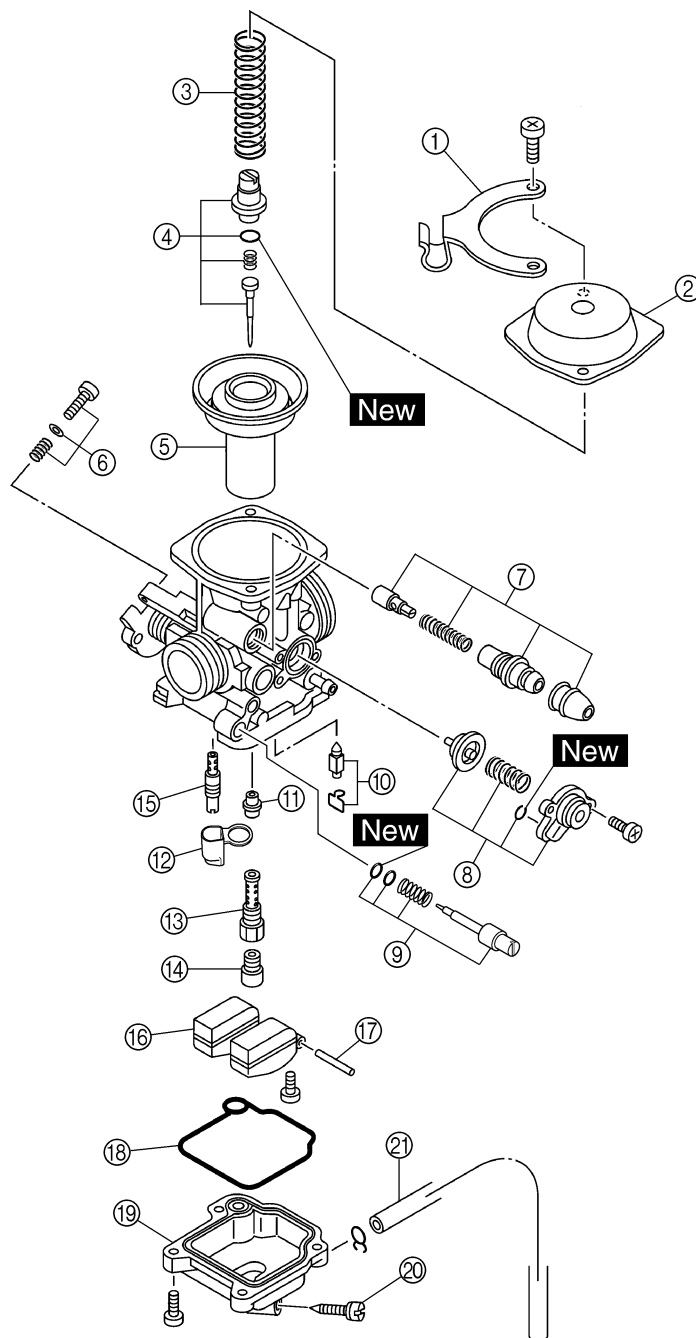


EASF0480

CARBURETOR

CARBURETOR

- | | | |
|--------------------------------------|-------------------------|----------------------|
| ① Cylinder head breather hose holder | ⑧ Coasting enricher set | ⑯ Float |
| ② Vacuum chamber cover | ⑨ Pilot screw set | ⑰ Float pivot pin |
| ③ Piston valve spring | ⑩ Needle valve | ⑱ Gasket |
| ④ Jet needle set | ⑪ Needle jet | ⑲ Float chamber |
| ⑤ Piston valve | ⑫ Cap | ⑳ Fuel drain screw |
| ⑥ Throttle stop screw set | ⑬ Needle jet holder | ㉑ Fuel overflow hose |
| ⑦ Starter plunger assembly | ⑭ Main jet | |
| | ⑮ Pilot jet | |



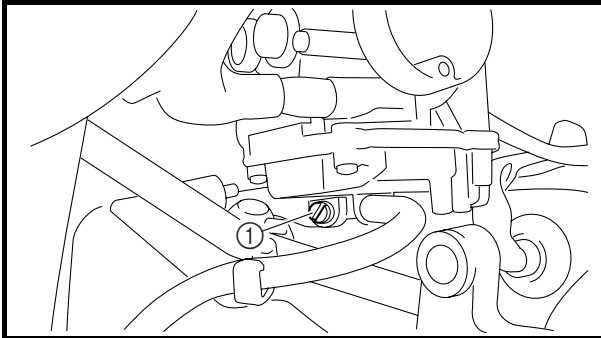


EASF0481

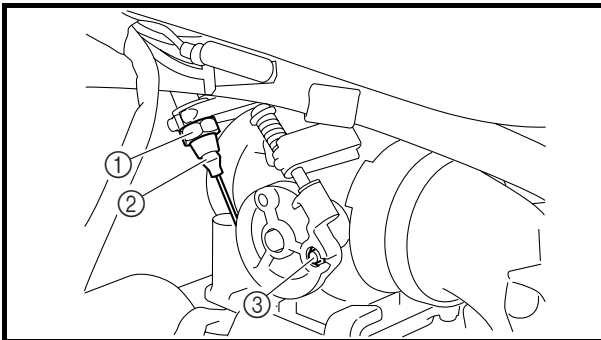
REMOVING THE CARBURETOR

⚠ WARNING

**Gasoline is highly flammable.
Avoid spilling fuel on the hot engine.**



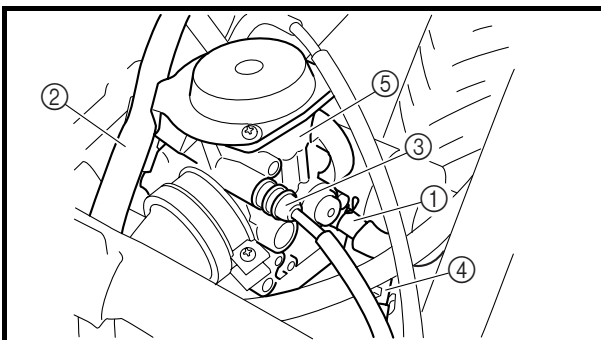
1. Remove:
 - fuel tank
Refer to "FUEL TANK".
2. Remove:
 - air filter case
Refer to "AIR FILTER CASE".
3. Loosen:
 - fuel drain screw ①
4. Drain:
 - fuel (from the float chamber)



5. Loosen:
 - locknut (throttle cable) ①

NOTE:

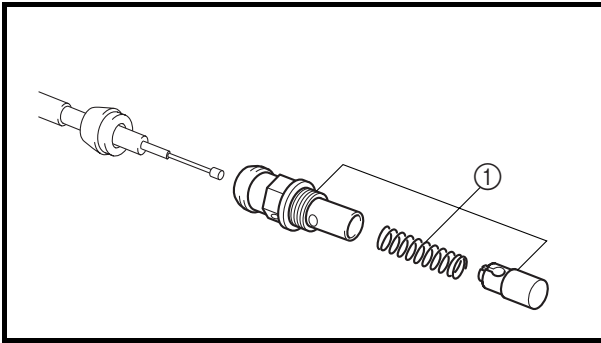
Slide the rubber cover ② back, and then loosen the locknut.



6. Disconnect:
 - throttle cable ③
7. Disconnect:
 - fuel hose ①
8. Remove:
 - cylinder head breather hose (from the hose holder) ②
 - starter plunger assembly (from the carburetor body) ③
 - fuel overflow hose (from the hose holder) ④
 - carburetor assembly ⑤

NOTE:

Slide the rubber cover back, and then remove the starter plunger assembly.



9. Disconnect:

- starter plunger assembly ①
(from the starter cable)

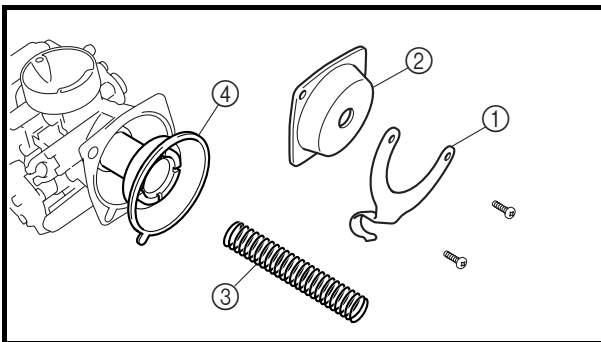
EASF0483

DISASSEMBLING THE CARBURETOR

NOTE:

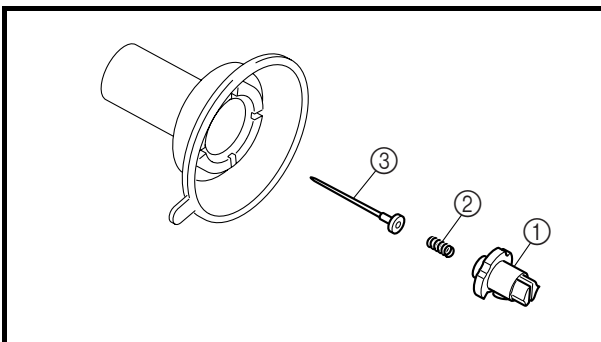
The following parts can be cleaned and inspected without disassembly.

- Throttle stop screw
- Pilot screw
- Coasting enricher



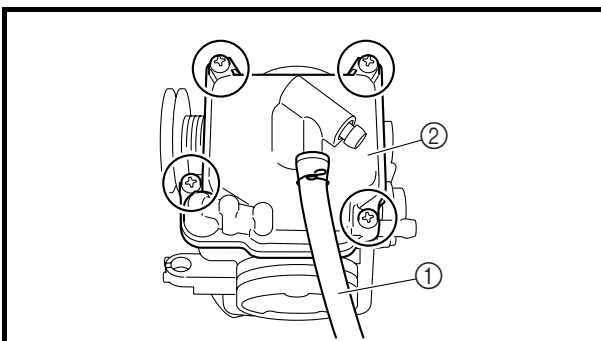
1. Remove:

- cylinder head breather hose holder ①
- vacuum chamber cover ②
- piston valve spring ③
- piston valve ④



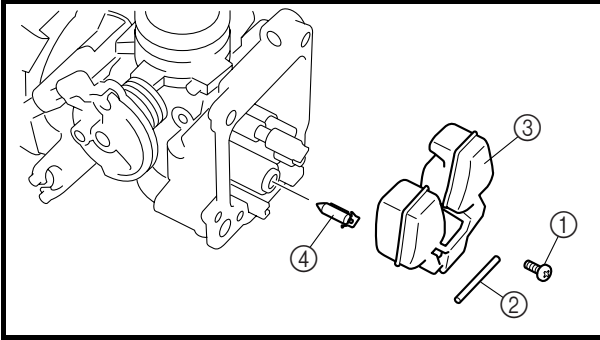
2. Remove:

- jet needle holder ①
- jet needle spring ②
- jet needle ③

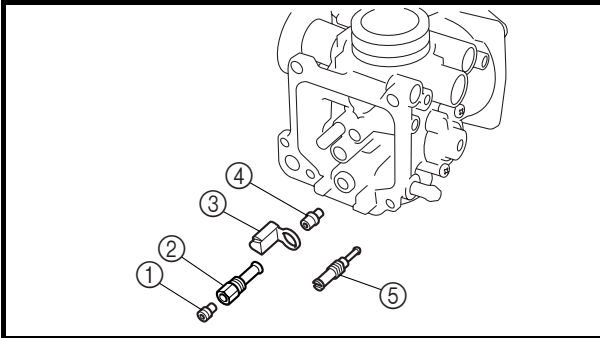


3. Remove:

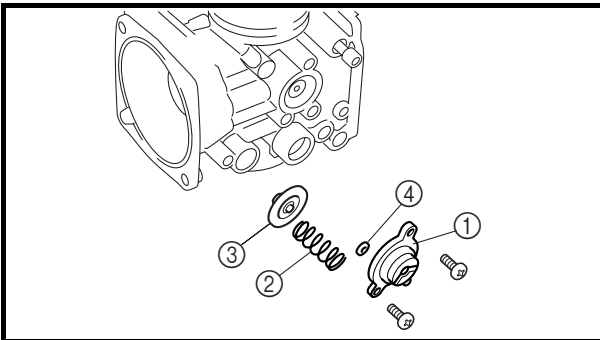
- fuel overflow hose ①
- float chamber ②
- float chamber rubber gasket



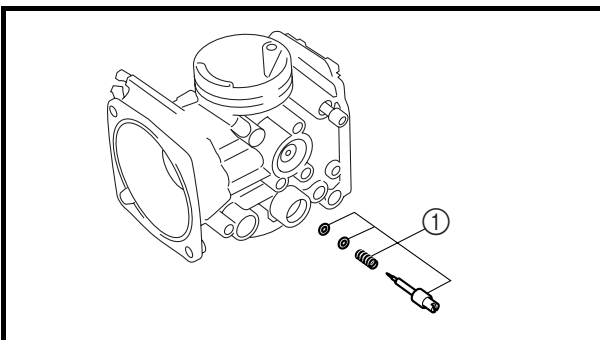
4. Remove:
- float pin screw ①
 - float pivot pin ②
 - float ③
 - needle valve ④



5. Remove:
- main jet ①
 - needle jet holder ②
 - cap ③
 - needle jet ④
 - pilot jet ⑤



6. Remove:
- coasting enricher cover ①
 - coasting enricher spring ②
 - coasting enricher ③
 - O-ring ④

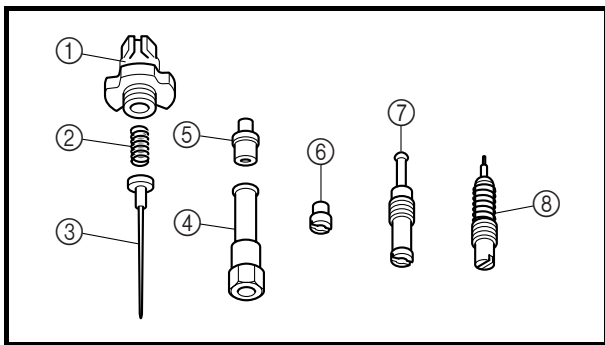


7. Remove:
- pilot screw set ①

EAS00485

CHECKING THE CARBURETOR

1. Check:
- carburetor body
 - float chamber
 - jet housing
- Cracks/damage → Replace.



9. Check:

- jet needle holder ①
- jet needle spring ②
- jet needle ③
- needle jet holder ④
- needle jet ⑤
- main jet ⑥
- pilot jet ⑦
- pilot screw ⑧

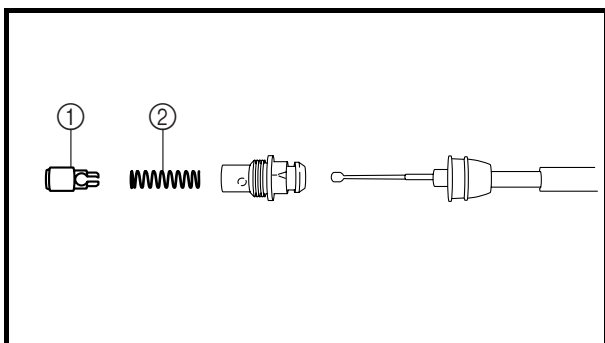
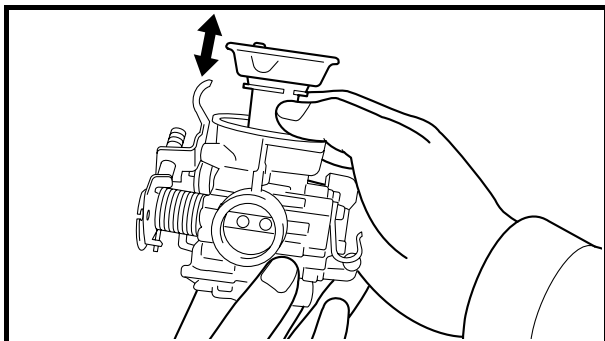
Bends/damage/wear → Replace.

Obstruction → Clean.

Blow out the jets with compressed air.

10. Check:

- piston valve movement
Insert the piston valve into the carburetor body and move it up and down.
- Tightness → Replace the piston valve.



11. Check:

- starter plunger ①
 - starter plunger spring ②
- Bends/cracks/damage → Replace.

12. Check:

- coasting enricher
 - coasting enricher spring
 - coasting enricher cover
- Clog/cracks/damage → Replace.

13. Check:

- vacuum hose
 - fuel hose
- Cracks/damage/wear → Replace.
- Obstruction → Clean.
- Blow out the hoses with compressed air.



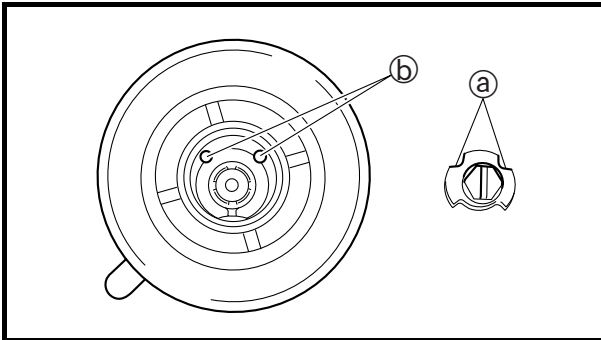
EAS00487

ASSEMBLING THE CARBURETOR

For assembly, reverse the disassembly procedure.

CAUTION:

- Before assembling the carburetor, wash all of the parts in a petroleum-based solvent.
- Always use a new gasket and O-ring.



1. Install:

- pilot screw



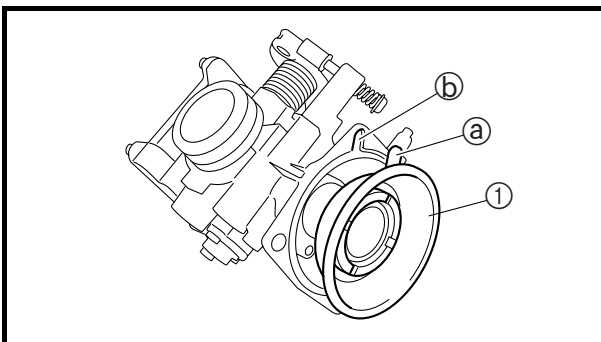
Pilot screw setting
2-3/8 turns out

2. Install:

- jet needle
- jet needle spring
- jet needle holder

NOTE:

When installing the jet needle holder, align the notches ① in the jet needle holder with the projections ② on the piston valve.

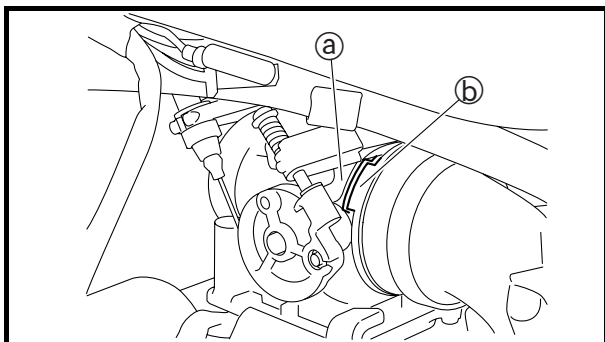


3. Install:

- piston valve ①

NOTE:

- Match the tab ① on the piston diaphragm to the matching recess ② in the carburetor body.
- Make sure that the rim of the piston diaphragm is installed in the groove in the carburetor body.



EAS00492

INSTALLING THE CARBURETOR

For installation, reverse the removal procedure.

1. Install:
 - carburetor assembly

NOTE:

When installing the carburetor assembly, align the slot (a) in the carburetor assembly with the projection (b) on the intake manifold.

2. Install:
 - fuel overflow hose
 - cylinder head breather hose (from the hose holder)
 - fuel hose
 - throttle cable

⚠ WARNING

Proper hose and cable routing are essential to insure safe motorcycle operation. Refer to “CABLE ROUTING” in chapter 2.

3. Adjust:
 - engine idling speed



Engine idling speed (with headlight on)
1,400 ~ 1,600 r/min

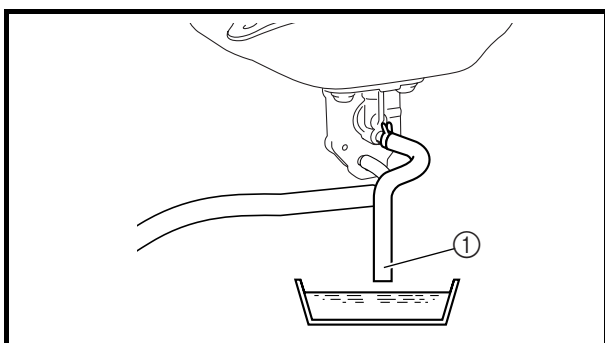
Refer to “ADJUSTING THE ENGINE IDLING SPEED” in chapter 3.

4. Adjust:
 - throttle cable free play



Throttle cable free play (at the flange of the throttle grip)
3 ~ 7 mm (0.12 ~ 0.18 in)

Refer to “ADJUSTING THE THROTTLE CABLE FREE PLAY” in chapter 3.



EAS00506

CHECKING THE FUEL COCK OPERATION

1. Place a container under the end of the fuel hose (1).

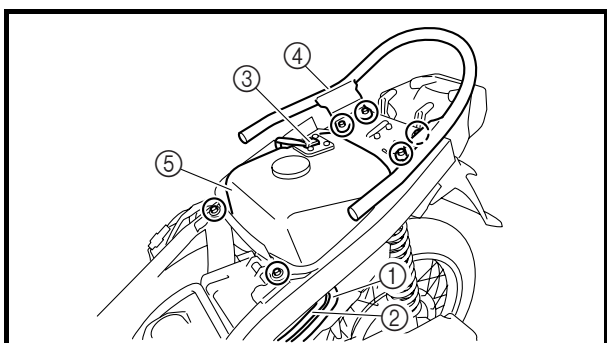
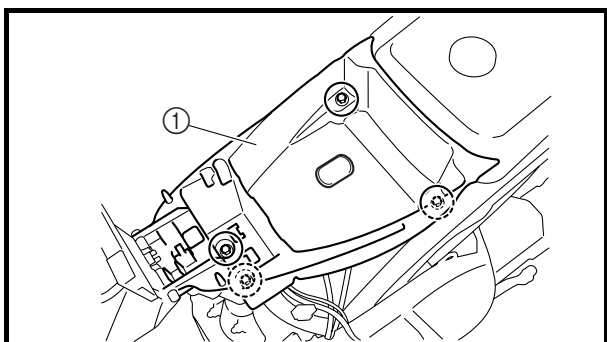
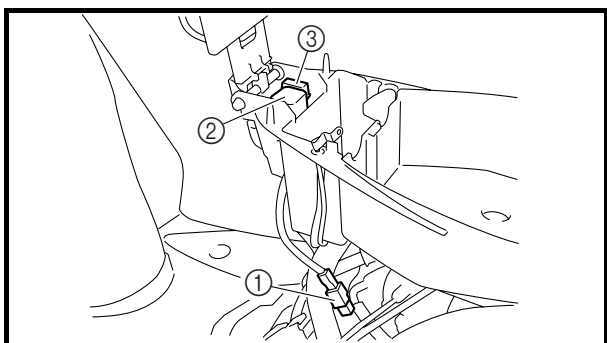
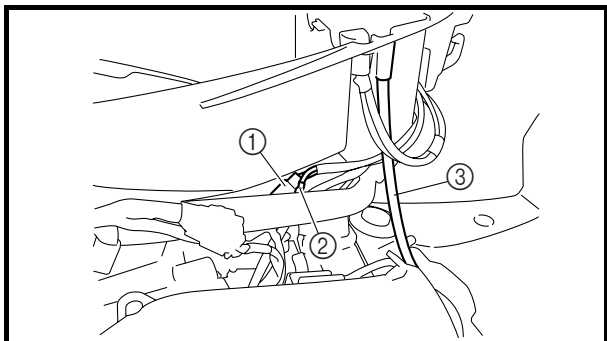


EASF0006

FUEL TANK

REMOVING THE FUEL TANK

1. Remove:
 - side cover (left and right)
Refer to "REMOVING THE SEAT AND SIDE COVERS" in chapter 3.
2. Remove:
 - battery
Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.
3. Disconnect:
 - starter relay lead coupler ①
 - fuse connector ②
 - battery breather hose 2 ③
4. Disconnect:
 - starter motor lead coupler ①
5. Remove:
 - starter relay ②
 - fuse holder ③
6. Remove:
 - storage box ①
7. Disconnect:
 - fuel hose ①
 - vacuum hose ②
 - fuel sender coupler ③
8. Remove:
 - grab bar ④
 - fuel tank ⑤



INSTALLING THE FUEL TANK

For installation, reverse the removal procedure.

1. Install:

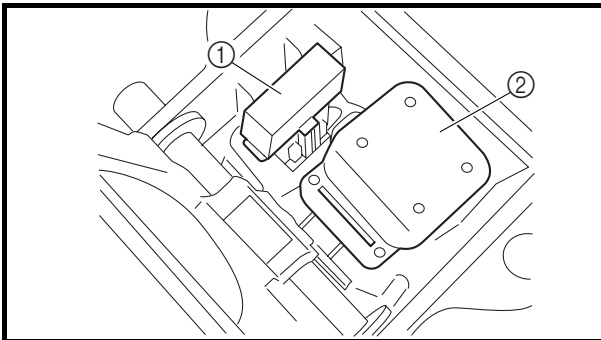
- fuel tank
- grab bar

	7 Nm (0.7 m · kg, 5.1 ft · lb)
	7 Nm (0.7 m · kg, 5.1 ft · lb)

2. Connect:

- vacuum hose
- fuel hose
- fuel sender coupler

Refer to “CABLE ROUTING” in chapter 2.



3. Install:

- fuse holder ①
- starter relay ②

NOTE:

Install the fuse holder and the starter relay in the storage box as shown.

4. Connect:

- starter motor lead coupler
- starter relay lead coupler
- fuse connector
- battery breather hose 2

Refer to “CABLE ROUTING” in chapter 2.

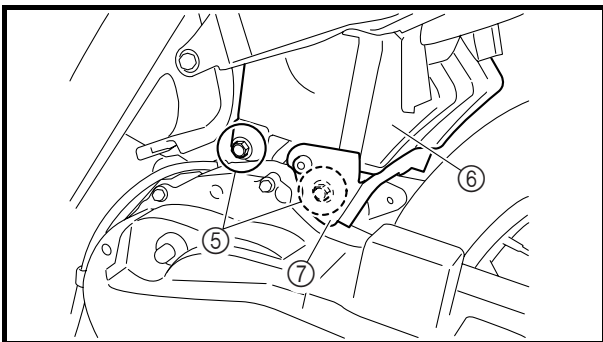
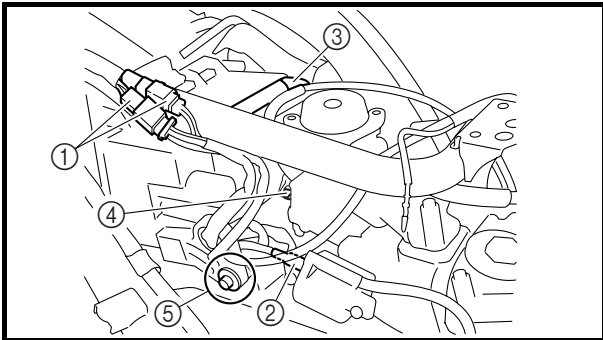


EASF0009

AIR FILTER CASE

REMOVING THE AIR FILTER CASE

1. Remove:
 - footboard
Refer to “REMOVING THE FRONT COWLING AND LEG SHIELD” in chapter 3.
2. Remove:
 - V-belt case air duct
Refer to “KICKSTARTER” in chapter 4.
3. Remove:
 - fuel tank
Refer to “FUEL TANK”.
4. Disconnect:
 - A.C. magneto couplers ①
 - ignition coil connector ②
 - cylinder head breather hose ③
5. Loosen:
 - carburetor joint screw (air filter case side) ④
6. Remove:
 - air filter case bolts ⑤
 - air filter case ⑥
 - collar



NOTE:

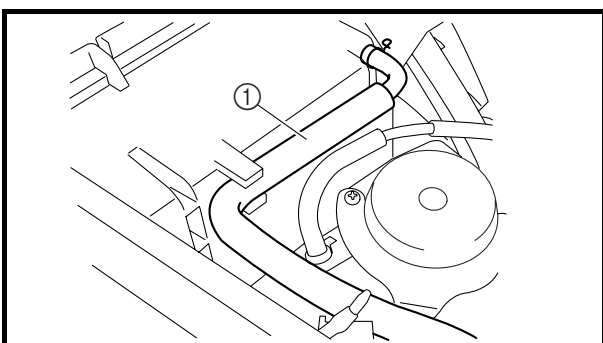
Unhook the mud flap ⑦ from the check cap, and then remove the air filter case bolts.

INSTALLING THE AIR FILTER CASE

For installation, reverse the removal procedure.

1. Install:
 - collar
 - air filter case
 - air filter case bolts

7 Nm (0.7 m · kg, 5.1 ft · lb)



2. Connect:
 - cylinder head breather hose ①
 - ignition coil connector
 - A.C. magneto couplers
 Refer to “CABLE ROUTING” in chapter 2.

NOTE:

Install the cylinder head breather hose between the projections on the air filter case.

CHAPTER 6

CHASSIS

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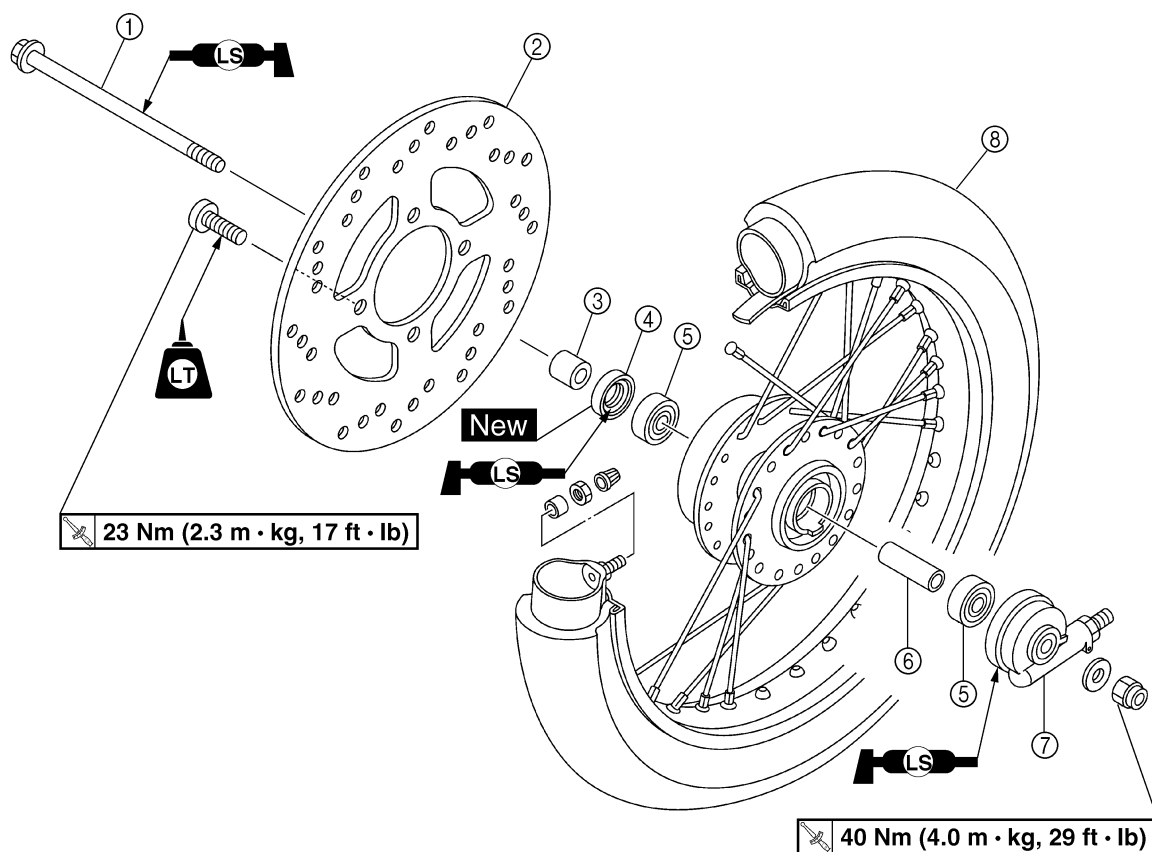
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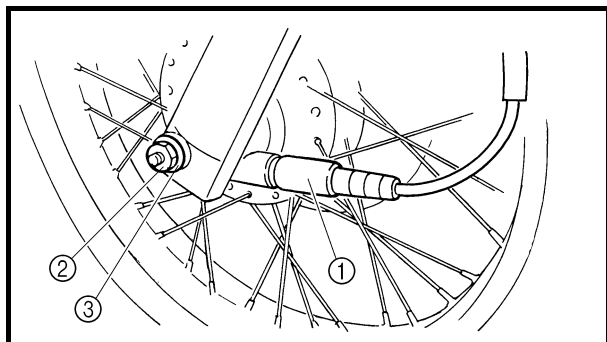
EASF0044

CHASSIS

FRONT WHEEL AND BRAKE DISC

- ① Front wheel axle
- ② Brake disc
- ③ Spacer
- ④ Oil seal
- ⑤ Bearing
- ⑥ Spacer
- ⑦ Speedometer gear unit
- ⑧ Front wheel





EAS00519

REMOVING THE FRONT WHEEL

1. Stand the motorcycle on a level surface.

⚠ WARNING

Securely support the motorcycle so that there is no danger of it falling over.

2. Remove:

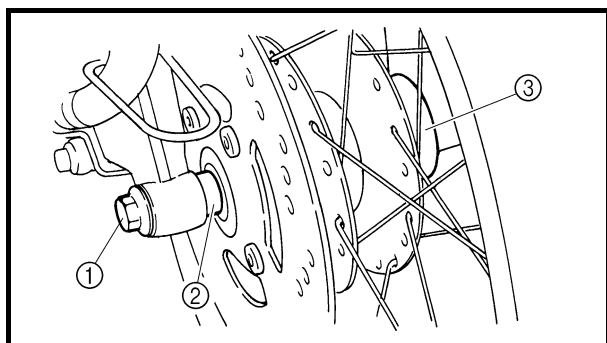
- speedometer cable ①
- wheel axle nut ②
- washer ③

3. Elevate:

- front wheel

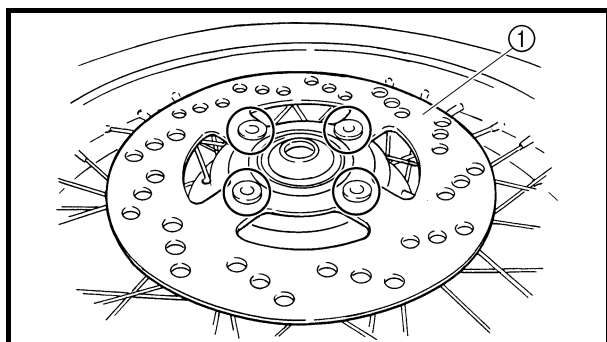
NOTE:

Place the motorcycle on a suitable stand so that the front wheel is elevated.



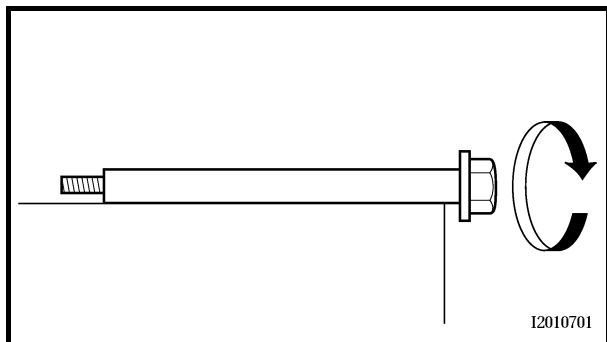
4. Remove:

- front wheel axle ①
- spacer ②
- speedometer gear unit ③
- front wheel



5. Remove:

- brake disc ①



EAS00526

CHECKING THE FRONT WHEEL

1. Check:

- wheel axle

Roll the wheel axle on a flat surface.

Bends → Replace.

⚠ WARNING

Do not attempt to straighten a bent wheel axle.



Wheel axle bending limit
0.25 mm (0.0098 in)

2. Check:

- tire
- front wheel

Damage/wear → Replace.

Refer to “CHECKING THE TIRES” and “CHECKING THE WHEELS” in chapter 3.

3. Check:

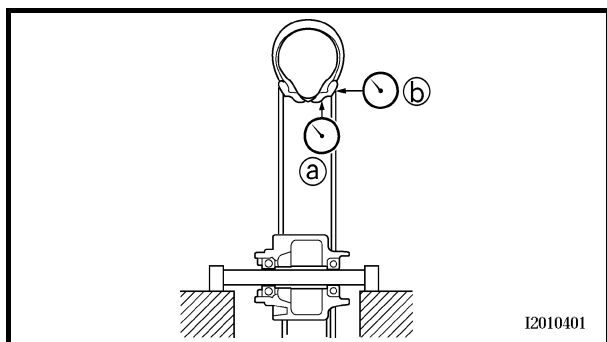
- spokes

Bends/damage → Replace.

Loose → Tighten.

Tap the spokes with a screwdriver.

Refer to “CHECKING AND TIGHTENING THE SPOKES” in chapter 3.



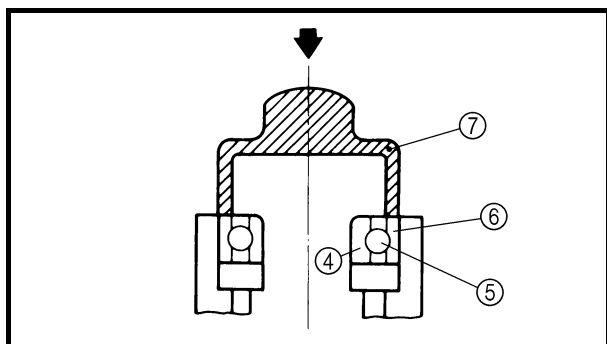
4. Measure:

- radial wheel runout ①
- lateral wheel runout ②

Over the specified limits → Replace.



Radial wheel runout limit
2.0 mm (0.079 in)
Lateral wheel runout limit
2.0 mm (0.079 in)

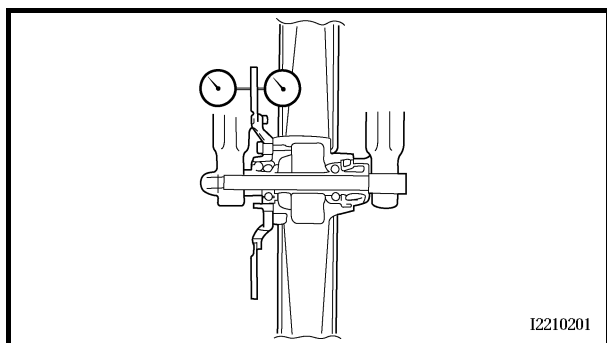


CAUTION:

Do not contact the wheel bearing inner race ④ or balls ⑤. Contact should be made only with the outer race ⑥.

NOTE:

Use a socket ⑦ that matches the diameter of the wheel bearing outer race and oil seal.



EAS00527

CHECKING THE BRAKE DISC

1. Check:
 - brake disc
 - Damage/galling → Replace.
2. Measure:
 - brake disc deflection
 - Out of specification → Correct the brake disc deflection or replace the brake disc.

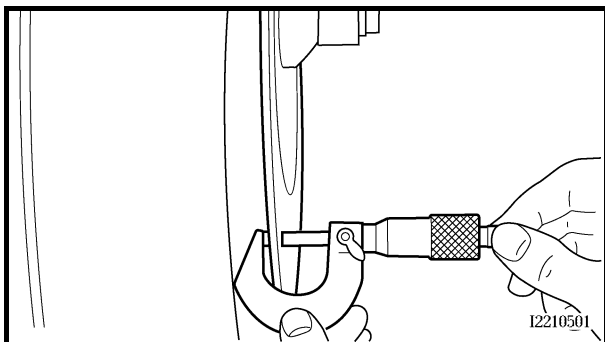


Brake disc deflection limit (maximum)
0.15 mm (0.006 in)



- a. Place the motorcycle on a suitable stand so that the front wheel is elevated.
- b. Before measuring the front brake disc deflection, turn the handlebar to the left or right to ensure that the front wheel is stationary.
- c. Remove the brake caliper.
- d. Hold the dial gauge at a right angle against the brake disc surface.
- e. Measure the deflection 1.5 mm (0.059 in) below the edge of the brake disc.





3. Measure:

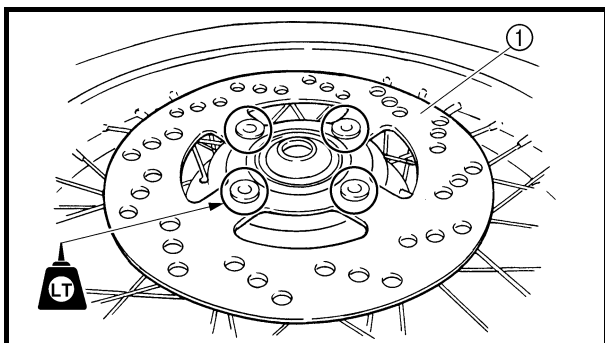
- brake disc thickness

Measure the brake disc thickness at a few different locations.

Out of specification → Replace.



Brake disc thickness limit (minimum)
3.0 mm (0.12 in)



4. Adjust:

- brake disc deflection



- Remove the brake disc.
- Rotate the brake disc by one bolt hole.
- Install the brake disc ①.

NOTE:

Tighten the brake disc bolts in stages and in a crisscross pattern.



Brake disc bolt
23 Nm (2.3 m · kg, 17 ft · lb)
LOCTITE®

- Measure the brake disc deflection.
- If out of specification, repeat the adjustment steps until the brake disc deflection is within specification.
- If the brake disc deflection cannot be brought within specification, replace the brake disc.



EAS00535

CHECKING THE SPEEDOMETER GEAR UNIT

1. Check:

- speedometer gear

Bends/damage/wear → Replace.



EAS00542

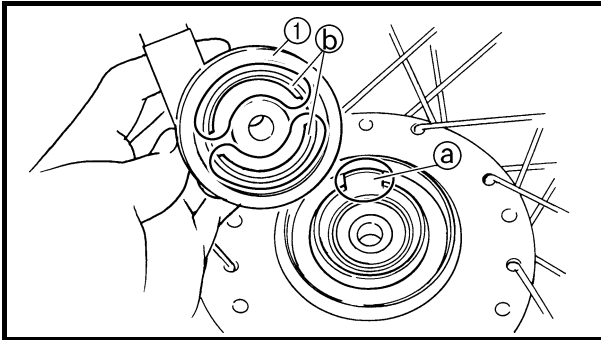
INSTALLING THE FRONT WHEEL

1. Lubricate:

- wheel axle
- wheel bearings
- oil seal lips
- speedometer gear unit



Recommended lubricant
Lithium-soap-based grease

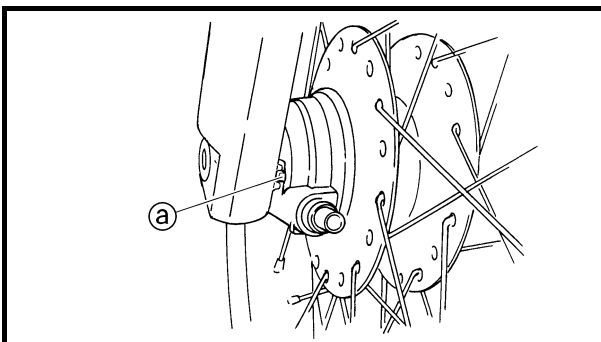


2. Install:

- speedometer gear unit ①

NOTE:

- Make sure that the speedometer gear unit and the wheel hub are installed with the projection (a) of the wheel hub inserted in a slot (b) of the speedometer gear unit.
- When installing the speedometer gear unit, make sure that the projection on the wheel hub does not damage the lip of the speedometer gear unit oil seal.



3. Install:

- brake disc

Refer to "CHECKING THE BRAKE DISC".

4. Install:

- speedometer gear unit
- spacer
- front wheel
- front wheel axle
- washer

NOTE:

Make sure the projection (a) on the speedometer gear unit fits over the stopper on the outer tube.

5. Tighten:

- wheel axle nut

	40 Nm (4.0 m · kg, 29 ft · lb)
---	--------------------------------

 WARNING

Make sure the brake hose is routed properly.

CAUTION:

Before tightening the wheel axle nut, push down hard on the handlebar several times and check if the front fork rebounds smoothly.

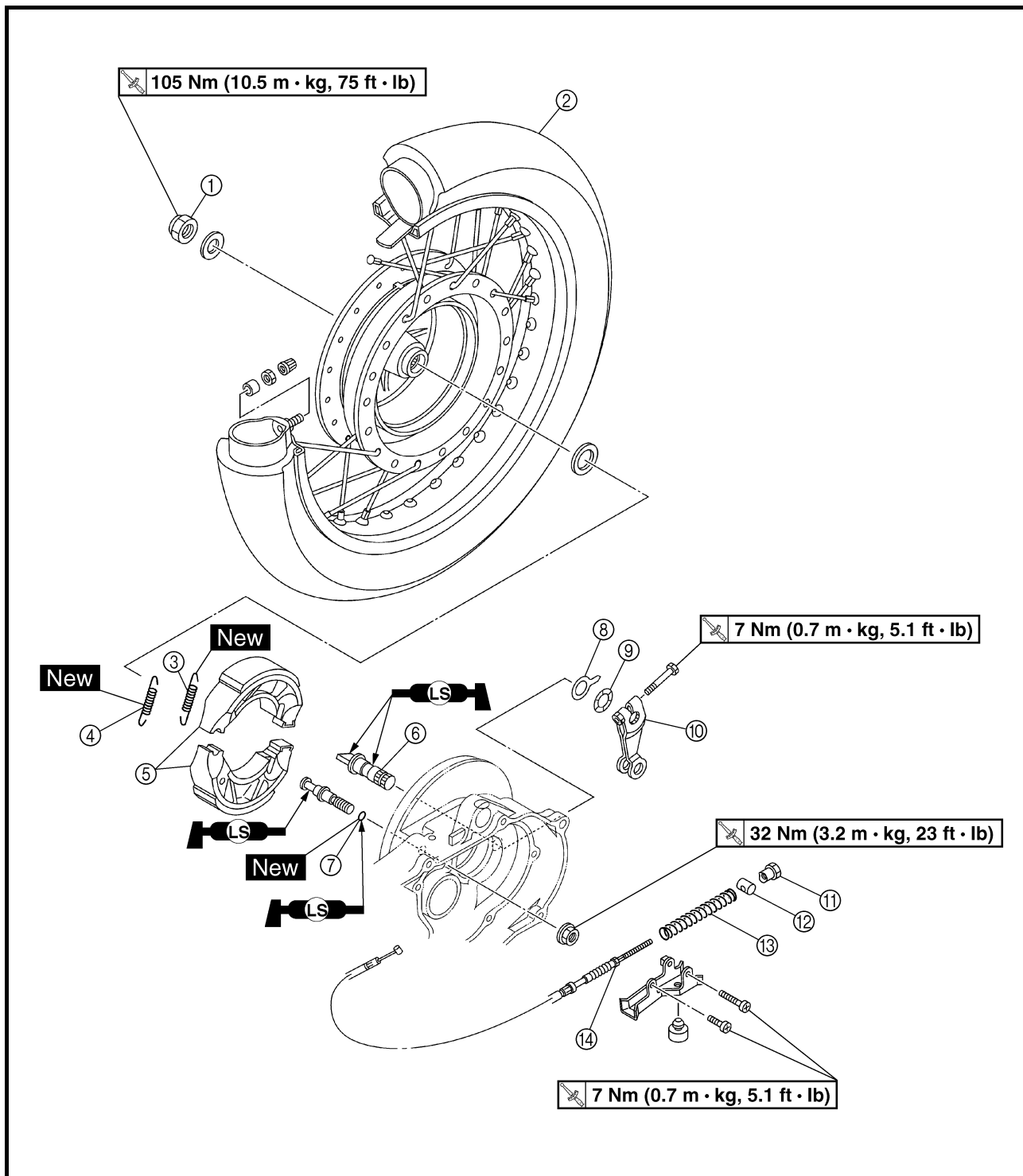
6. Connect:

- speedometer cable

EASF0049

REAR WHEEL AND BRAKE

- | | |
|---|---------------------------|
| ① Axle nut | ⑩ Brake camshaft lever |
| ② Rear wheel | ⑪ Adjusting nut |
| ③ Brake shoe spring (brake camshaft side) | ⑫ Pin |
| ④ Brake shoe spring (pivot side) | ⑬ Rear brake cable spring |
| ⑤ Brake shoe | ⑭ Rear brake cable |
| ⑥ Brake camshaft | |
| ⑦ O-ring | |
| ⑧ Brake shoe wear indicator | |
| ⑨ Wave washer | |



EAS00563

REMOVING THE REAR WHEEL AND REAR BRAKE

1. Stand the motorcycle on a level surface.

WARNING

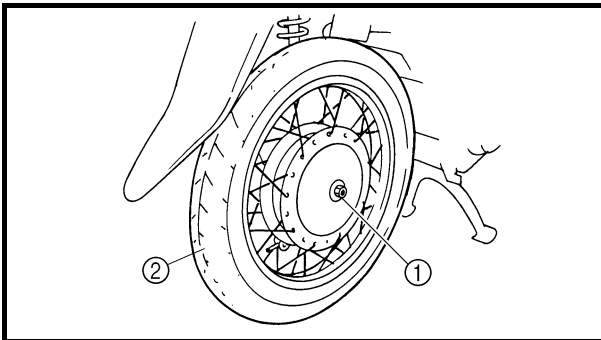
Securely support the motorcycle so that there is no danger of it falling over.

NOTE:

Place the motorcycle on a suitable stand so that the rear wheel is elevated.

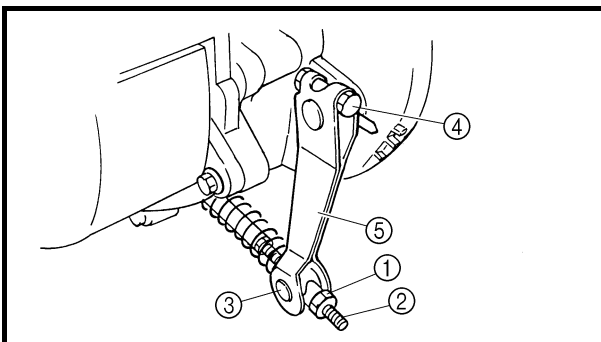
2. Remove:

- muffler
- Refer to “REMOVING THE ENGINE” in chapter 4.



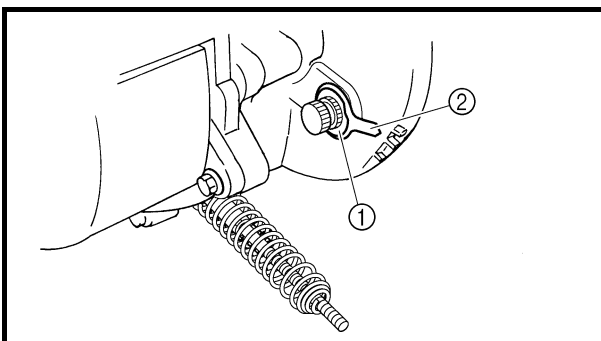
3. Remove:

- wheel axle nut ①
- washer
- rear wheel ②



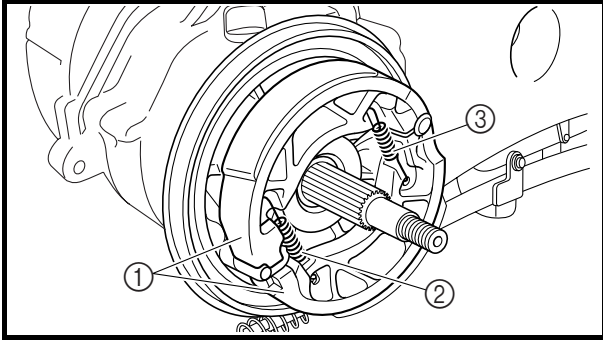
4. Remove:

- adjusting nut ①
- rear brake cable ②
- pin ③
- brake camshaft lever bolt ④
- brake camshaft lever ⑤



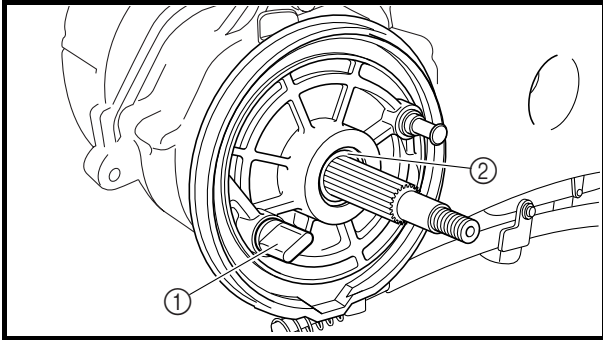
5. Remove:

- wave washer ①
- brake shoe wear indicator ②



6. Remove:

- brake shoes ①
- brake shoe spring (brake camshaft side) ②
- brake shoe spring (pivot side) ③



7. Remove:

- brake camshaft ①
- washer ②

EAS00566

CHECKING THE REAR WHEEL

1. Check:

- tire
- rear wheel

Damage/wear → Replace.

Refer to “CHECKING THE TIRES” and “CHECKING THE WHEELS” in chapter 3.

2. Check:

- spokes

Bends/damage → Replace.

Loose → Tighten.

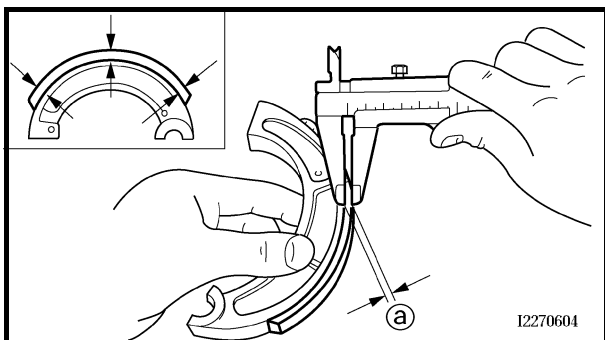
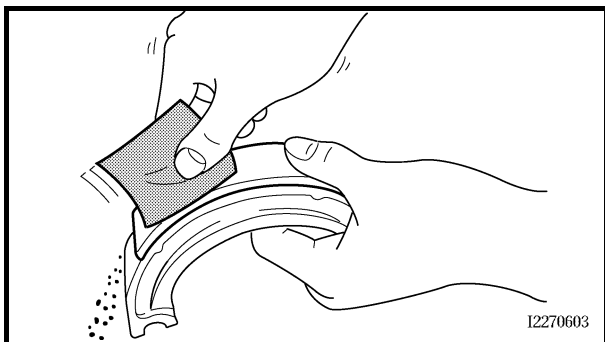
Tap the spokes with a screwdriver.

Refer to “CHECKING AND TIGHTENING THE SPOKES” in chapter 3.

3. Measure:

- radial wheel runout
- lateral wheel runout

Refer to “CHECKING THE FRONT WHEEL”.



EAS00569

CHECKING THE BRAKE

The following procedure applies to all of the brake shoes.

1. Check:

- brake shoe lining
Glazed areas → Repair.
Sand the glazed areas with course sandpaper.

NOTE:

After sanding the glazed areas, clean the brake shoe with a cloth.

2. Measure:

- brake shoe lining thickness @
Out of specification → Replace.



Brake shoe lining thickness limit
2.0 mm (0.079 in)



WARNING

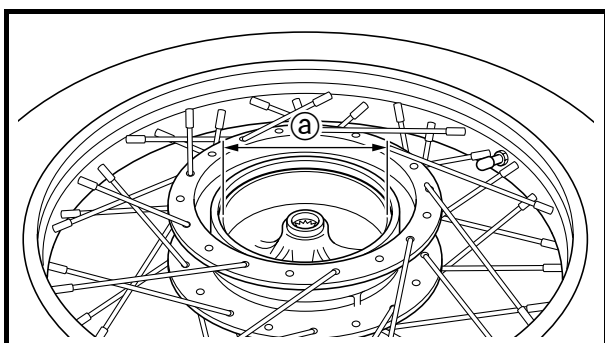
Do not allow oil or grease to contact the brake shoes.

NOTE:

Replace the brake shoes as a set, if either is worn to the wear limit.

3. Check:

- brake drum inner surface
Oil deposits → Clean.
Remove the oil with a rag soaked in lacquer thinner or solvent.
Scratches → Repair.
Lightly and evenly polish the scratches with an emery cloth.



4. Measure:

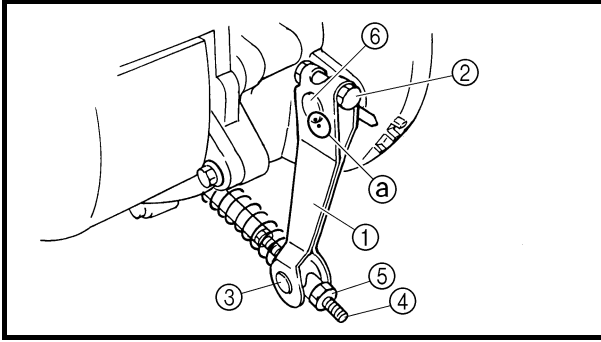
- brake drum inside diameter @
Out of specification → Replace the wheel.



Brake drum inside diameter limit
131 mm (5.16 in)

5. Check:

- brake camshaft
Damage/wear → Replace.



5. Install:

- brake camshaft lever ①
- brake camshaft lever bolt ②
- pin ③
- rear brake cable ④
- adjusting nut ⑤

NOTE:

- Align the punch mark on the brake camshaft with the mark on the brake camshaft lever positioned as shown ③.
- Lubricate the brake camshaft ⑥ and pin ③ with lithium-soap-based grease.

6. Tighten:

- brake camshaft lever bolt

 7 Nm (0.7 m · kg, 5.1 ft · lb)

- wheel axle nut

 105 Nm (10.5 m · kg, 75 ft · lb)

CAUTION:

Do not loosen the wheel axle nut after tightening it to the specified torque.

7. Adjust:

- rear brake lever free play



Rear brake lever free play (lever end)
10 ~ 20 mm (0.39 ~ 0.79 in)

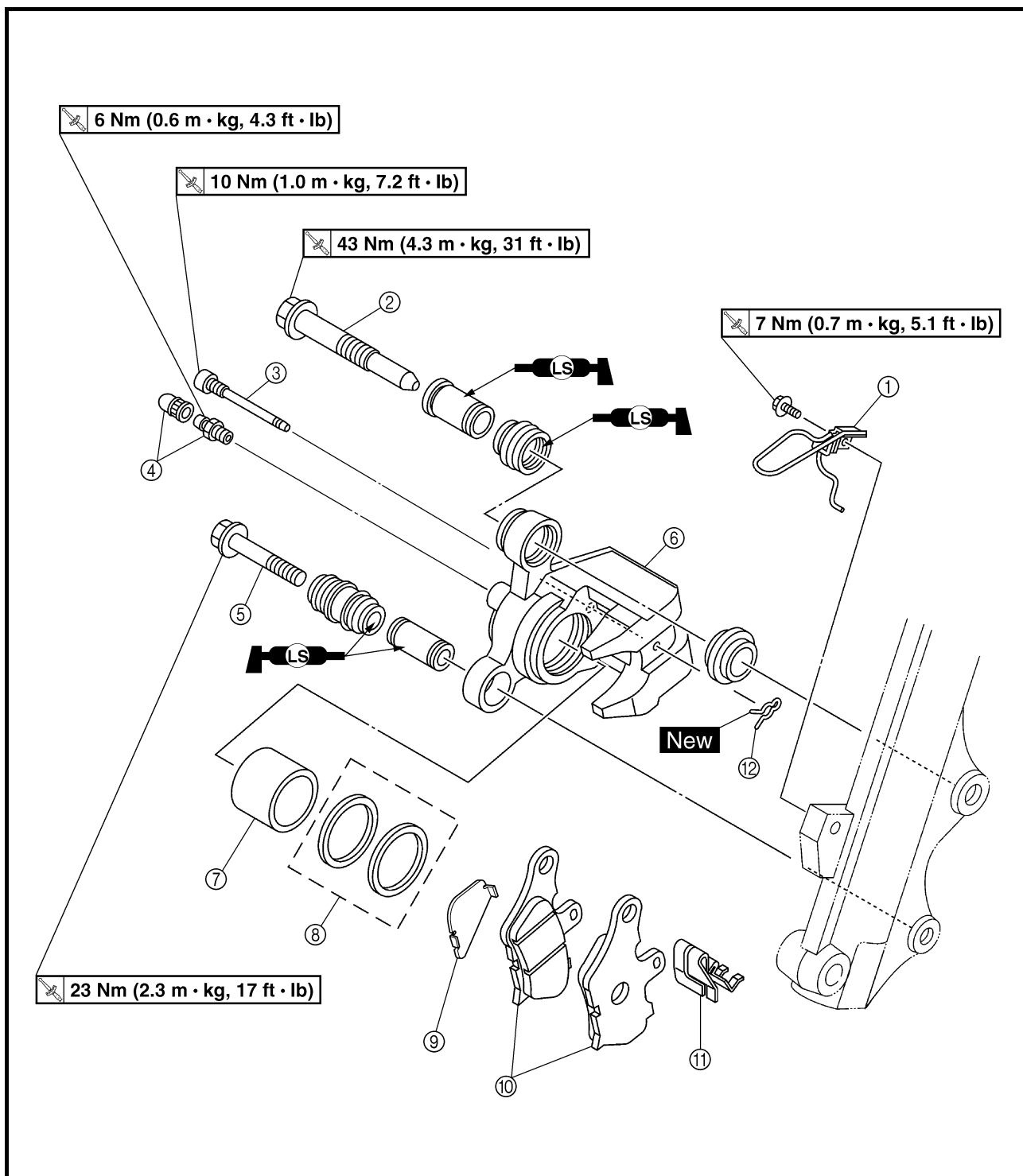
Refer to “ADJUSTING THE REAR BRAKE” in chapter 3.

FRONT BRAKE

EASF0052

FRONT BRAKE CALIPER

- | | |
|----------------------------|------------------------|
| ① Brake hose holder | ⑦ Brake caliper piston |
| ② Brake caliper upper bolt | ⑧ Brake caliper seal |
| ③ Brake pad holding bolt | ⑨ Brake pad shim |
| ④ Bleed screw kit | ⑩ Brake pad |
| ⑤ Brake caliper lower bolt | ⑪ Brake pad spring |
| ⑥ Brake caliper | ⑫ Pin |



EAS00579

CAUTION:

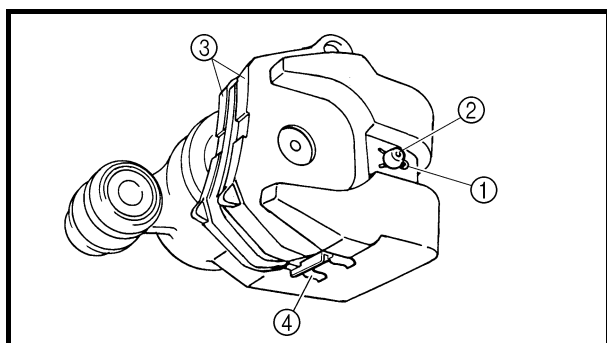
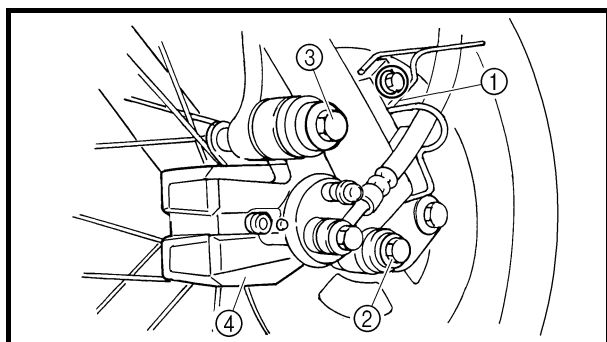
Disc brake components rarely require disassembly.

Therefore, always follow these preventive measures:

- Never disassemble brake components unless absolutely necessary.
- If any connection on the hydraulic brake system is disconnected, the entire brake system must be disassembled, drained, cleaned, properly filled, and bled after reassembly.
- Never use solvents on internal brake components.
- Use only clean or new brake fluid for cleaning brake components.
- Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.
- Avoid brake fluid coming into contact with the eyes as it can cause serious injury.

FIRST AID FOR BRAKE FLUID ENTERING THE EYES:

- Flush with water for 15 minutes and get immediate medical attention.



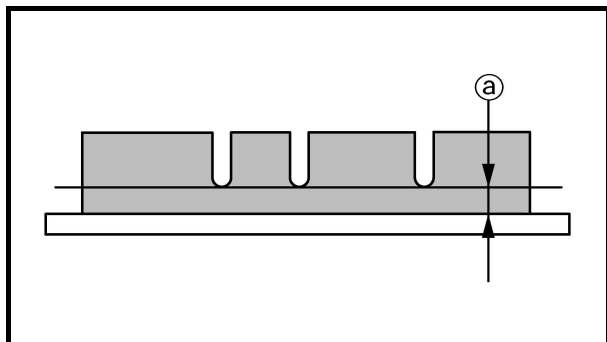
EAS00581

REPLACING THE FRONT BRAKE PADS

NOTE:

When replacing the brake pads, it is not necessary to disconnect the brake hose or disassemble the brake caliper.

1. Remove:
 - brake hose holder ①
 - brake caliper lower bolt ②
 - brake caliper upper bolt ③
 - brake caliper ④
2. Remove:
 - pin ①
 - brake pad holding bolt ②
 - brake pads ③ (along with the brake pad shim)
 - brake pad spring ④



3. Measure:

- brake pad wear limit ①

Out of specification → Replace the brake pads as a set.



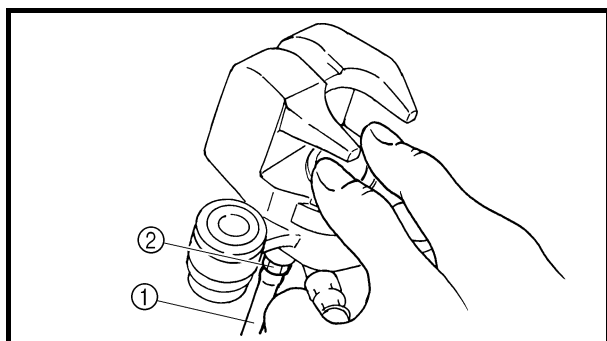
Brake pad wear limit
0.8 mm (0.031 in)

4. Install:

- brake pad shim
(onto the brake pad)
- brake pads
- brake pad spring

NOTE:

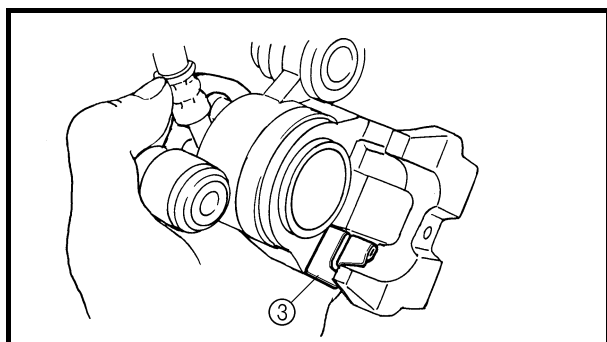
Always install new brake pads, a new brake pad shim and a new brake pad spring as a set.



- Connect a clear plastic hose ① tightly to the bleed screw ②. Put the other end of the hose into an open container.
- Loosen the bleed screw and push the brake caliper piston into the brake caliper with your fingers.
- Tighten the bleed screw.



Bleed screw
6 Nm (0.6 m · kg, 4.3 ft · lb)



- Install a new brake pad shim onto the new brake pad.
- Install a new brake pad spring ③ and new brake pads.

NOTE:

Install the brake pad spring as shown.



5. Lubricate:

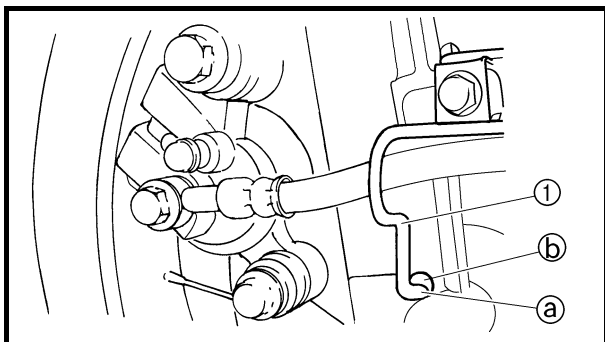
- brake caliper bolts



Recommended lubricant
Lithium-soap-based grease

CAUTION:

- Do not allow grease to contact the brake pads.
- Remove any excess grease.



6. Install:

- brake pad holding bolt

 10 Nm (1.0 m · kg, 7.2 ft · lb)

- pin **New**
- brake caliper
- brake caliper upper bolt

 43 Nm (4.3 m · kg, 31 ft · lb)

- brake caliper lower bolt

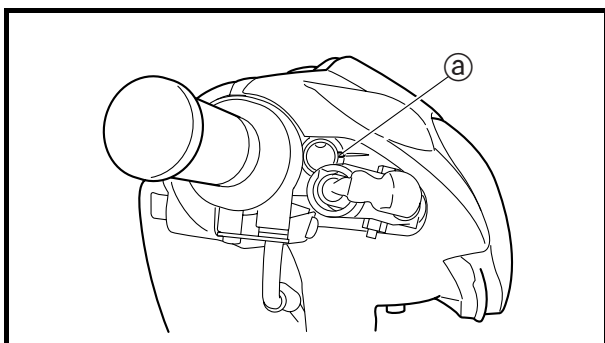
 23 Nm (2.3 m · kg, 17 ft · lb)

- brake hose holder ①
- brake hose holder bolt

 7 Nm (0.7 m · kg, 5.1 ft · lb)

NOTE:

Insert the end ② of the brake hose holder ① into the hole ③ in the outer tube, and then install the brake hose holder.



7. Check:

- brake fluid level

Below the minimum level mark ② → Add the recommended brake fluid to the proper level.

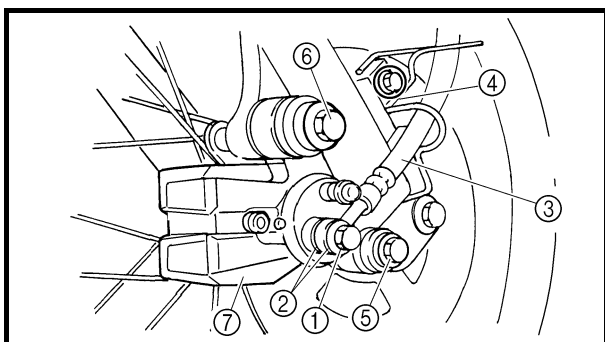
Refer to “CHECKING THE BRAKE FLUID LEVEL” in chapter 3.

8. Check:

- brake lever operation

Soft or spongy feeling → Bleed the brake system.

Refer to “BLEEDING THE HYDRAULIC BRAKE SYSTEM” in chapter 3.



EAS00618

DISASSEMBLING THE FRONT BRAKE CALIPER

NOTE:

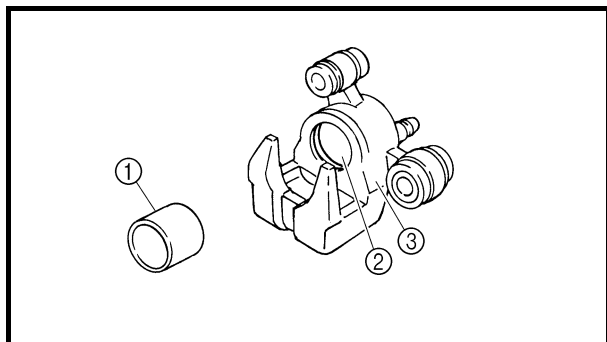
Before disassembling the brake caliper, drain the brake fluid from the entire brake system.

1. Remove:

- union bolt ①
- copper washers ②
- brake hose ③
- brake hose holder ④
- brake caliper lower bolt ⑤
- brake caliper upper bolt ⑥
- brake caliper ⑦

NOTE:

Put the end of the brake hose into a container and pump out the brake fluid carefully.



1. Check:

- brake caliper piston ①
Rust/scratches/wear → Replace the brake caliper piston.
- brake caliper cylinder ②
Scratches/wear → Replace the brake caliper assembly.
- brake caliper body ③
Cracks/damage → Replace the brake caliper assembly.
- brake fluid delivery passage (brake caliper body)
Obstruction → Blow out with compressed air.

WARNING

Whenever a brake caliper is disassembled, replace the piston seals.

EAS00634

ASSEMBLING AND INSTALLING THE FRONT BRAKE CALIPER

WARNING

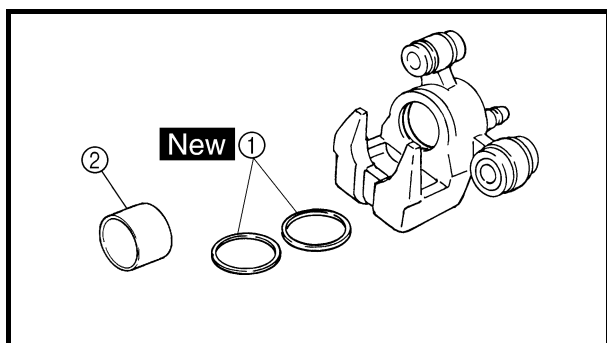
- Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.
- Never use solvents on internal brake components as they will cause the piston seals to swell and distort.
- Whenever a brake caliper is disassembled, replace the brake caliper piston seals.



**Recommended brake fluid
DOT 4**

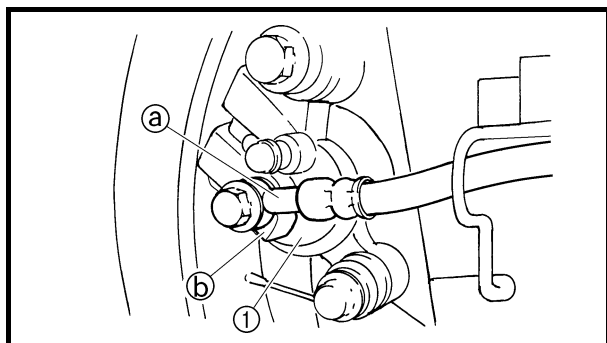
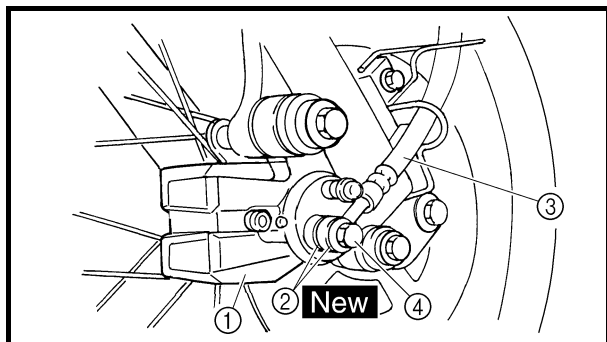
NOTE:

If DOT 4 brake fluid is not available, DOT 3 brake fluid can be used.



1. Install:

- brake caliper piston seals ① **New**
- brake caliper piston ②



2. Install:

- brake caliper ① (temporarily)

- copper washers ② **New**

- brake hose ③

- union bolt ④

 **26 Nm (2.6 m · kg, 19 ft · lb)**

⚠ WARNING

Proper brake hose routing is essential to insure safe motorcycle operation. Refer to “CABLE ROUTING” in chapter 2.

CAUTION:

When installing the brake hose onto the brake caliper ①, make sure the brake pipe ① touches the projection ② on the brake caliper.

3. Remove:

- brake caliper

4. Install:

- brake pad springs

- brake pads

- brake pad holding bolt

 **10 Nm (1.0 m · kg, 7.2 ft · lb)**

- pin **New**

- brake caliper

- brake caliper upper bolt

 **43 Nm (4.3 m · kg, 31 ft · lb)**

- brake caliper lower bolt

 **23 Nm (2.3 m · kg, 17 ft · lb)**

- brake hose holder

- brake hose holder bolt

 **7 Nm (0.7 m · kg, 5.1 ft · lb)**

Refer to “REPLACING THE FRONT BRAKE PADS”.

5. Fill:

- brake master cylinder reservoir (with the specified amount of the recommended brake fluid)



**Recommended brake fluid
DOT 4**

**⚠ WARNING**

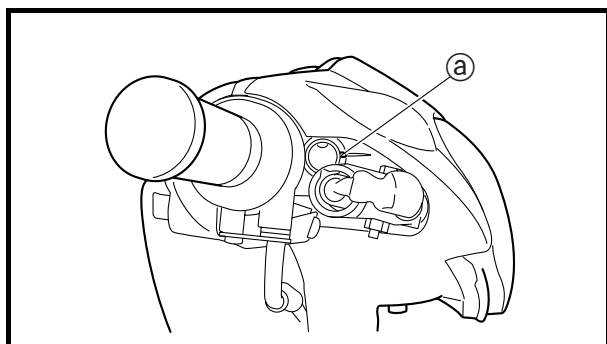
- Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.
- When refilling, be careful that water does not enter the brake master cylinder reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.

CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

NOTE:

If DOT 4 brake fluid is not available, DOT 3 brake fluid can be used.

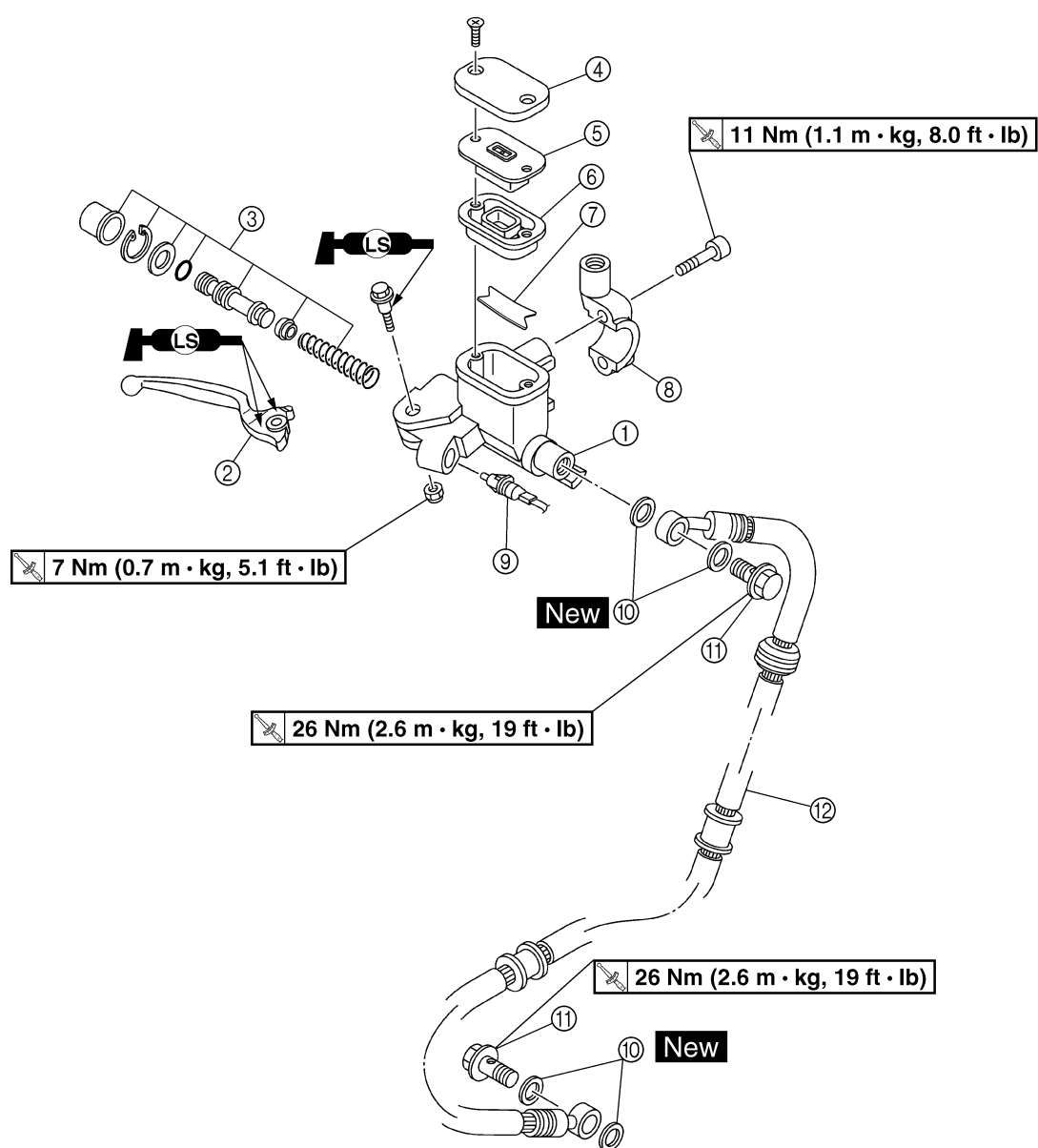


6. Bleed:
 - brake system
Refer to “BLEEDING THE HYDRAULIC BRAKE SYSTEM” in chapter 3.
7. Check:
 - brake fluid level
Below the minimum level mark (a) → Add the recommended brake fluid to the proper level.
Refer to “CHECKING THE BRAKE FLUID LEVEL” in chapter 3.
8. Check:
 - brake lever operation
Soft or spongy feeling → Bleed the brake system.
Refer to “BLEEDING THE HYDRAULIC BRAKE SYSTEM” in chapter 3.

EASF0050

FRONT BRAKE MASTER CYLINDER

- | | |
|--|----------------------------|
| ① Brake master cylinder | ⑨ Front brake light switch |
| ② Brake lever | ⑩ Copper washer |
| ③ Brake master cylinder kit | ⑪ Union bolt |
| ④ Brake master cylinder reservoir cap | ⑫ Brake hose |
| ⑤ Brake master cylinder reservoir diaphragm holder | |
| ⑥ Brake master cylinder reservoir diaphragm | |
| ⑦ Plate | |
| ⑧ Brake master cylinder bracket | |



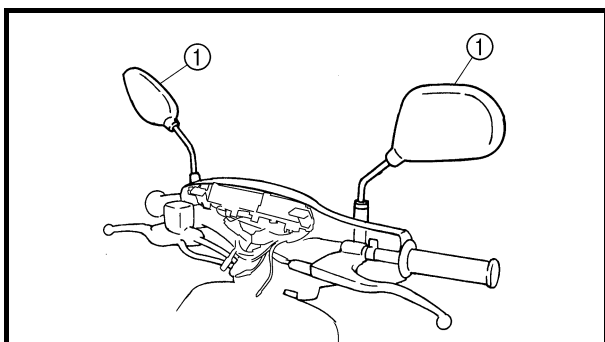
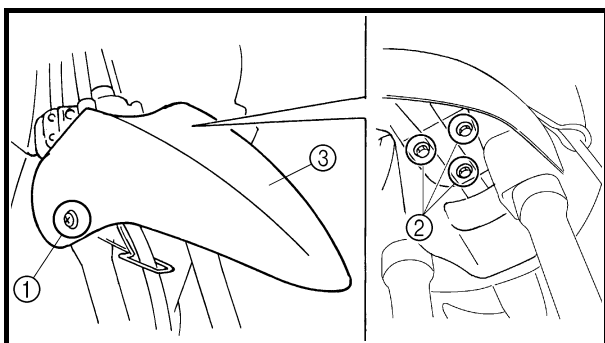
EAS00588

DISASSEMBLING THE FRONT BRAKE MASTER CYLINDER

NOTE:

Before disassembling the front brake master cylinder, drain the brake fluid from the entire brake system.

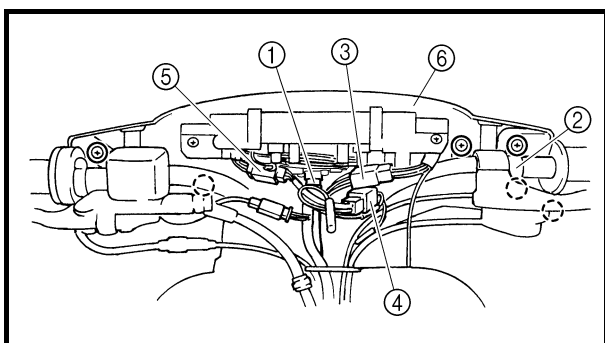
1. Remove:
 - front cowling
Refer to “REMOVING THE FRONT COWLING AND LEG SHIELD” in chapter 3.
2. Remove:
 - headlight assembly
Refer to “REMOVING THE HEADLIGHT ASSEMBLY” in chapter 3.
3. Remove:
 - front wheel
Refer to “FRONT WHEEL AND BRAKE DISC”.
4. Remove:
 - front fender screw ①
 - front fender bolts ②
 - collars
 - front fender ③



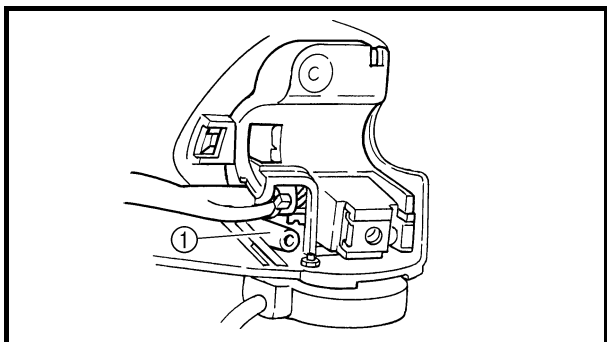
5. Remove:
 - rearview mirrors (left and right) ①

NOTE:

Slide the rubber cover back and loosen the nut before removing each rearview mirror.



6. Remove:
 - speedometer cable ①
 - meter assembly cover screw
 - left handlebar switch bracket ②
7. Disconnect:
 - meter assembly coupler ③
 - left handlebar switch coupler ④
 - right handlebar switch coupler ⑤
8. Remove:
 - meter assembly cover ⑥
(with left handlebar switch)

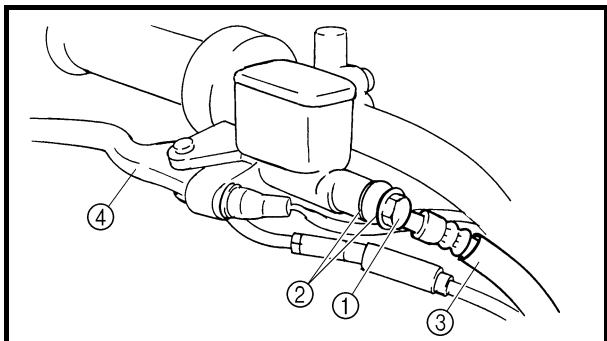


9. Remove:

- left handlebar switch ①

NOTE:

Remove the left handlebar switch from the meter assembly cover.

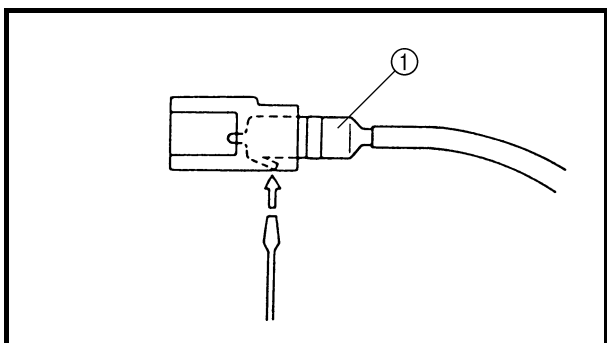


10. Remove:

- union bolt ①
- copper washers ②
- brake hose ③
- brake lever ④

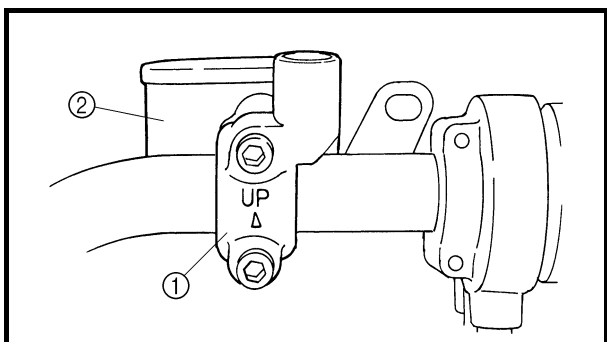
NOTE:

To collect any remaining brake fluid, place a container under the master cylinder and the end of the brake hose.



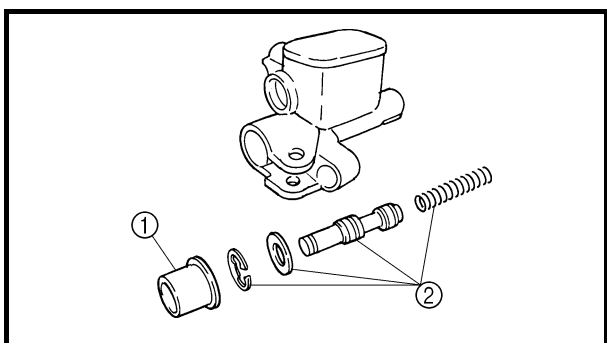
11. Remove:

- front brake light switch ①



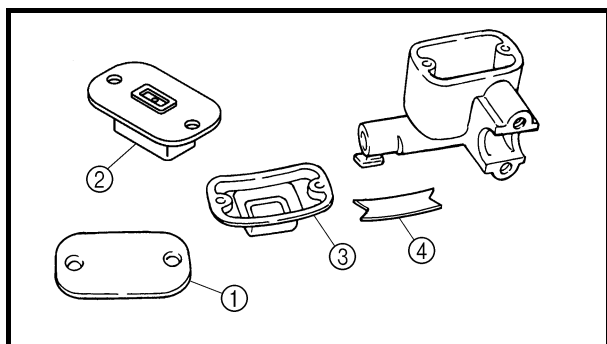
12. Remove:

- brake master cylinder bracket ①
- brake master cylinder ②



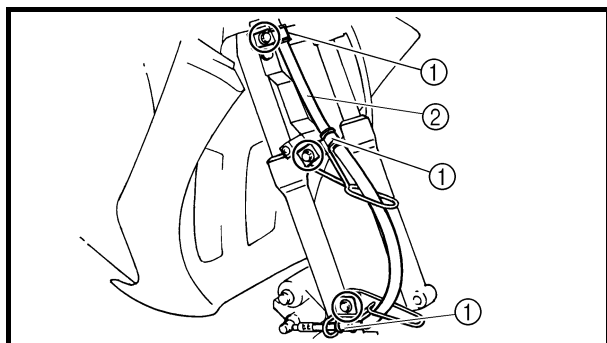
13. Remove:

- dust boot ①
- brake master cylinder kit ②



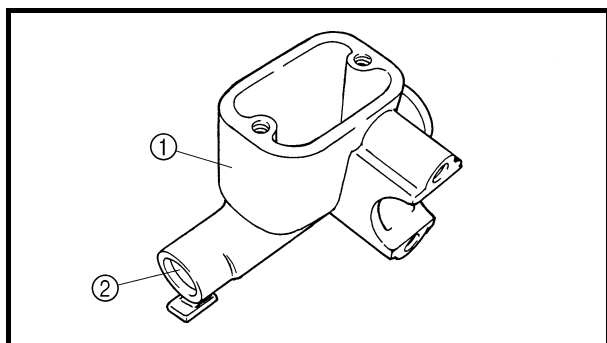
14.Remove:

- brake master cylinder reservoir cap ①
- brake master cylinder reservoir diaphragm holder ②
- brake master cylinder reservoir diaphragm ③
- plate ④



15.Remove:

- brake hose holder ①
- brake hose ②

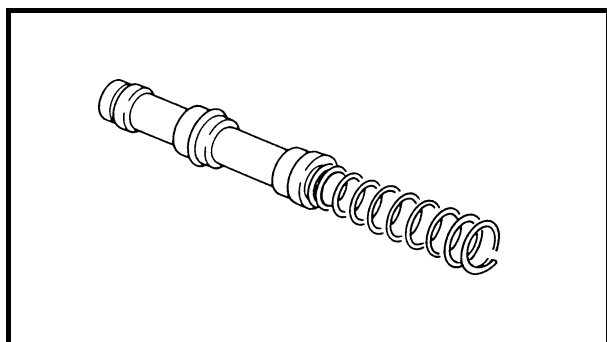


EAS00590

CHECKING THE FRONT BRAKE MASTER CYLINDER

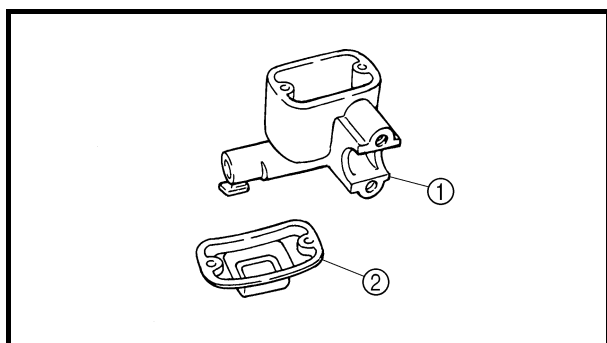
1. Check:

- brake master cylinder ①
Damage/scratches/wear → Replace.
- brake fluid delivery passages ②
(brake master cylinder body)
Obstruction → Blow out with compressed air.



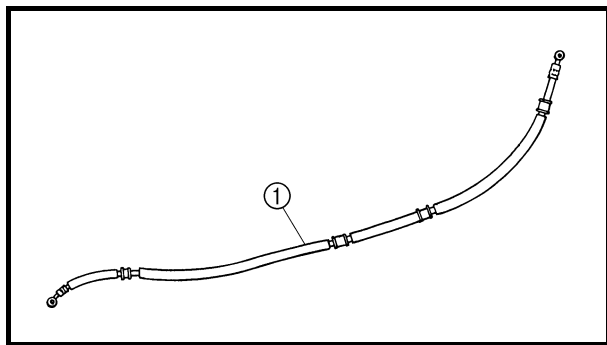
2. Check:

- brake master cylinder kit
Damage/scratches/wear → Replace.



3. Check:

- brake master cylinder reservoir ①
Cracks/damage → Replace.
- brake master cylinder reservoir diaphragm ②
Damage/wear → Replace.



4. Check:

- brake hose ①
Cracks/damage/wear → Replace.

EAS00598

ASSEMBLING AND INSTALLING THE FRONT BRAKE MASTER CYLINDER

For assembly and installation, reverse the disassembly and removal procedure.

⚠ WARNING

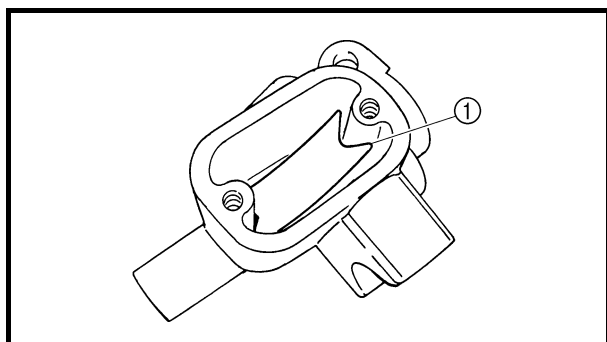
- Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.
- Never use solvents on internal brake components.



**Recommended brake fluid
DOT 4**

NOTE:

If DOT 4 brake fluid is not available, DOT 3 brake fluid can be used.



1. Install:

- brake hose
- brake hose holder

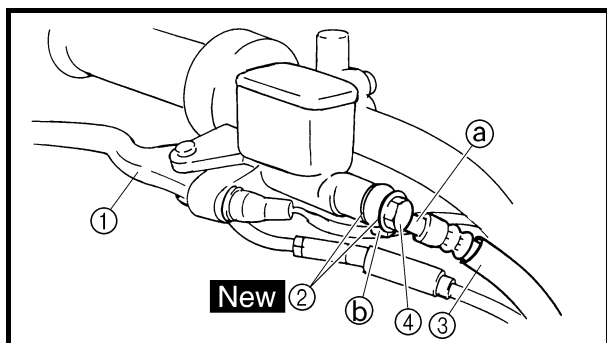
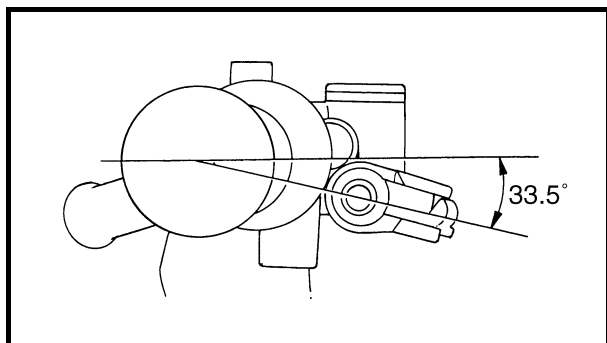
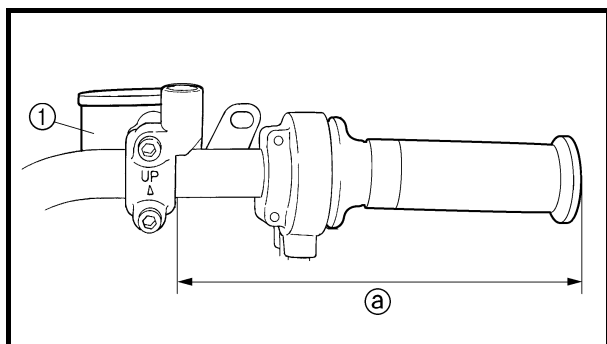
7 Nm (0.7 m · kg, 5.1 ft · lb)

2. Install:

- brake fluid baffle plate ①
- brake master cylinder reservoir diaphragm
- brake master cylinder reservoir diaphragm holder
- brake master cylinder reservoir cap

NOTE:

Install the brake fluid baffle plate in the direction shown.



3. Install:

- brake master cylinder ①
- brake master cylinder bracket
- brake master cylinder bracket upper bolt

 **11 Nm (1.1 m · kg, 8.0 ft · lb)**

- brake master cylinder bracket lower bolt (temporarily)

NOTE:

- Install the brake master cylinder bracket with the “UP” mark facing up.
- Install the brake master cylinder within 33.5° from the horizontal line shown in illustration.
- Install the brake master cylinder bracket as shown.
- First, tighten the upper bolt, then the lower bolt.

① 175 mm (6.89 in)

4. Install:

- brake lever ①
- copper washers ② **New**
- brake hose ③
- union bolt ④  **26 Nm (2.6 m · kg, 19 ft · lb)**

⚠ WARNING

Proper brake hose routing is essential to insure safe motorcycle operation. Refer to “CABLE ROUTING” in chapter 2.

NOTE:

- When install the brake hose onto the brake master cylinder, make sure the brake pipe ① touches the projection ② as shown.
- Turn the handlebar to the left and right to make sure the brake hose does not touch other parts (e.g., wire harness, cables, leads). Correct if necessary.

5. Fill:

- brake master cylinder reservoir (with the specified amount of the recommended brake fluid)



**Recommended brake fluid
DOT 4**

**⚠ WARNING**

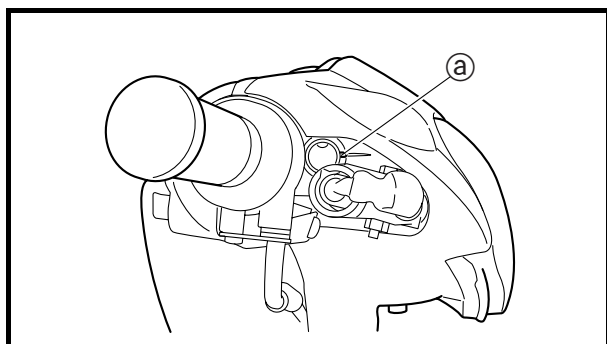
- Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.
- When refilling, be careful that water does not enter the brake master cylinder reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.

CAUTION:

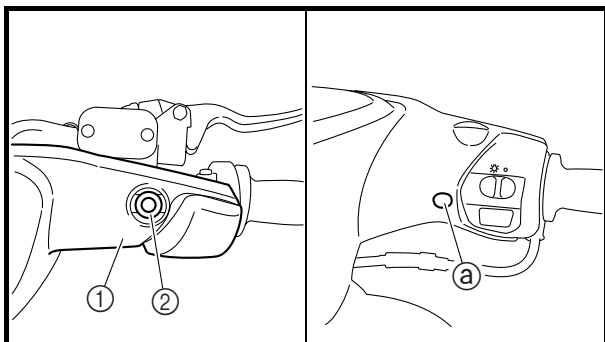
Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

NOTE:

If DOT 4 brake fluid is not available, DOT 3 brake fluid can be used.



6. Bleed:
 - brake system
Refer to “BLEEDING THE HYDRAULIC BRAKE SYSTEM” in chapter 3.
7. Check:
 - brake fluid level
Below the minimum level mark (a) → Add the recommended brake fluid to the proper level.
Refer to “CHECKING THE BRAKE FLUID LEVEL” in chapter 3.
8. Check:
 - brake lever operation
Soft or spongy feeling → Bleed the brake system.
Refer to “BLEEDING THE HYDRAULIC BRAKE SYSTEM” in chapter 3.

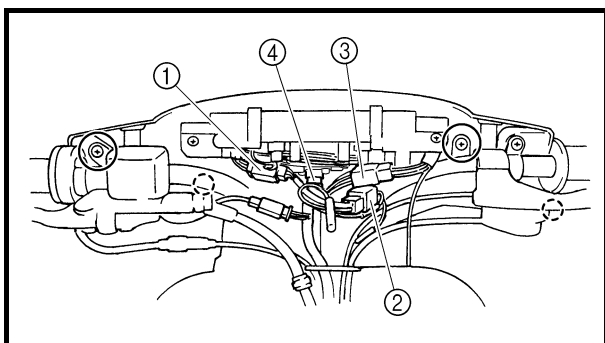


9. Install:

- meter assembly cover ①
- left handlebar switch bracket

NOTE:

When installing the meter assembly cover, make sure that the gap between the brake master cylinder bracket ② and the meter assembly cover is uniform. If the gap is not uniform, loosen the bolt in the hole ③ in the meter assembly cover and adjust the position of the brake master cylinder bracket.



10.Connect:

- right handlebar switch coupler ①
- left handlebar switch coupler ②
- meter assembly coupler ③

Refer to “CABLE ROUTING” in chapter 2.

11.Install:

- speedometer cable ④

Refer to “CABLE ROUTING” in chapter 2.

12.Tighten:

- rearview mirror nuts (left and right)

 32 Nm (3.2 m · kg, 23 ft · lb)

13.Install:

- front fender
- collars
- front fender bolts

 7 Nm (0.7 m · kg, 5.1 ft · lb)

- front fender screw

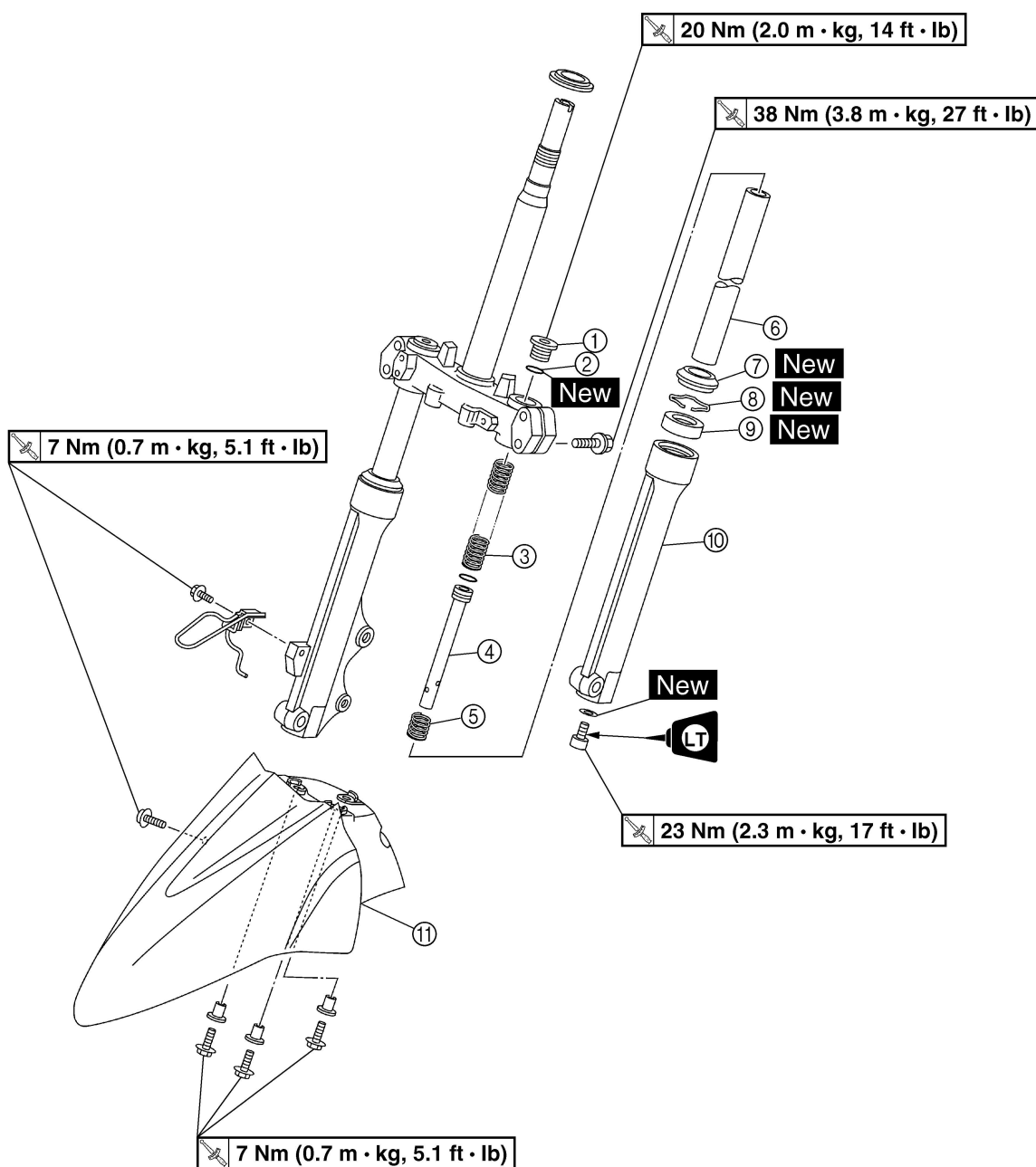
 7 Nm (0.7 m · kg, 5.1 ft · lb)

EASF0054

FRONT FORK

- ① Front fork cap bolt
- ② O-ring
- ③ Fork spring
- ④ Damper rod
- ⑤ Rebound spring
- ⑥ Inner tube

- ⑦ Dust seal
- ⑧ Oil seal clip
- ⑨ Oil seal
- ⑩ Outer tube
- ⑪ Front fender



EAS00651

REMOVING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

1. Stand the motorcycle on a level surface.

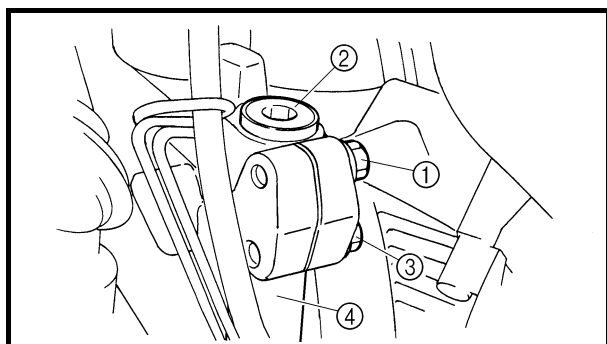
WARNING

Securely support the motorcycle so that there is no danger of it falling over.

NOTE:

Place the motorcycle on a suitable stand so that the front wheel is elevated.

2. Remove:
 - front cowl
Refer to “REMOVING THE FRONT COWLING AND LEG SHIELD” in chapter 3.
3. Remove:
 - front wheel
Refer to “FRONT WHEEL AND BRAKE DISC”.
4. Remove:
 - brake hose holder
 - brake caliper
 - front fender
Refer to “FRONT BRAKE”.

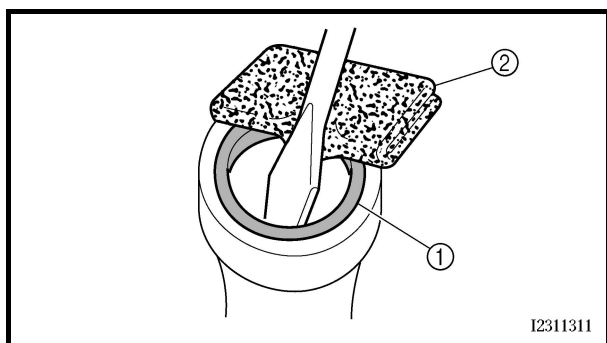
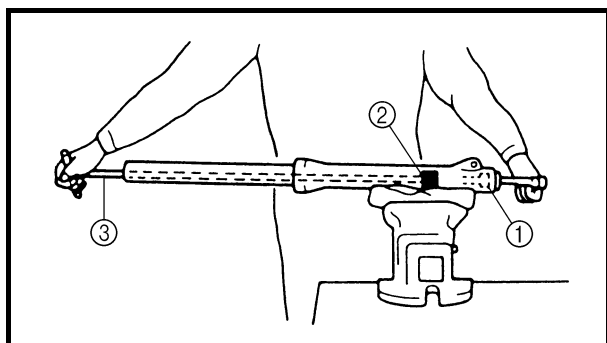
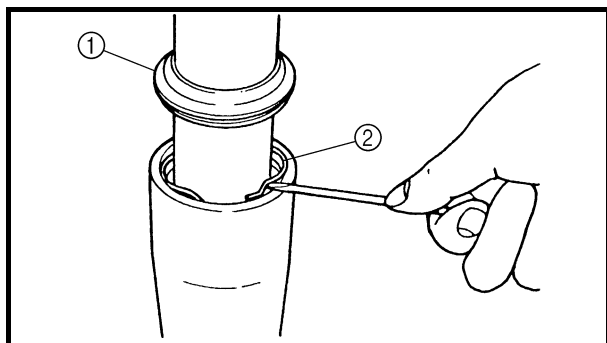
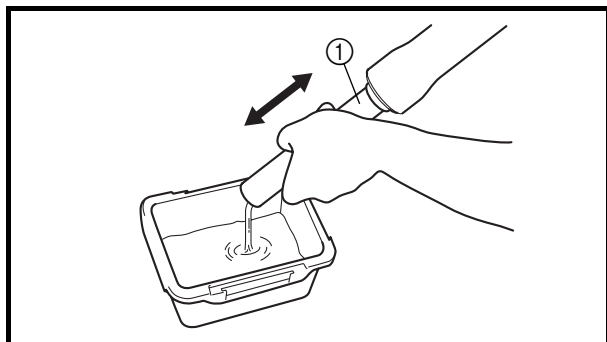


5. Remove:
 - lower bracket upper pinch bolt ①
 - front fork cap bolt ②
(with a 10-mm hexagonal wrench)
6. Loosen:
 - lower bracket lower pinch bolt ③

WARNING

Before removing the lower bracket lower pinch bolts, support the front fork leg.

7. Remove:
 - front fork leg ④



EAS00655

DISASSEMBLING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

1. Remove:
 - fork spring
2. Drain:
 - fork oil

NOTE:

Stroke the inner tube ① several times while draining the fork oil.

3. Remove:
 - dust seal ①
 - oil seal clip ②
(with a flat-head screwdriver)

CAUTION:

Do not scratch the inner tube.

4. Remove:
 - damper rod assembly bolt ①
 - copper washer

NOTE:

While holding the damper rod assembly with the hexagon socket wrench (10 mm) ② and the T-handle ③, loosen the damper rod assembly bolt ①.



T-handle
90890-01326

5. Remove:
 - inner tube
 - damper rod
 - rebound spring

NOTE:

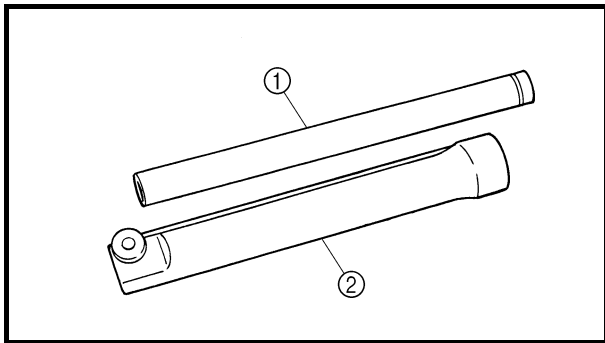
Pull out the inner tube and damper rod together.

6. Remove:
 - oil seal ①

CAUTION:

Never reuse the oil seal.

② Rag



EAS00657

CHECKING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

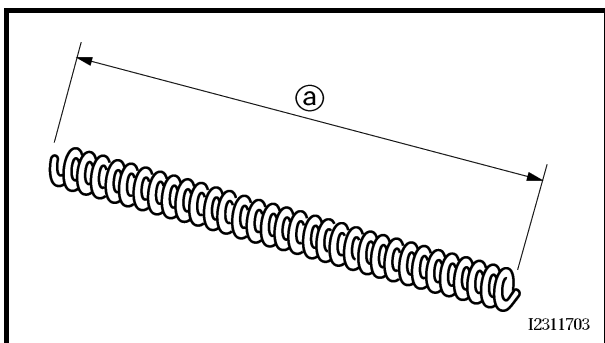
1. Check:

- inner tube ①
- outer tube ②

Bends/damage/scratches → Replace.

⚠ WARNING

Do not attempt to straighten a bent inner tube as this may dangerously weaken it.



2. Measure:

- fork spring free length ③

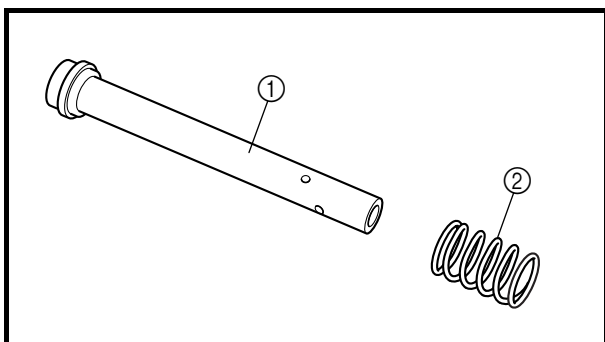
Out of specification → Replace.



Fork spring free length

266.7 mm (10.50 in)

<Limit>: 261.4 mm (10.29 in)



3. Check:

- damper rod ①

Damage/wear → Replace.

Obstruction → Blow out all of the oil passages with compressed air.

- rebound spring ②

Wear/cracks → Replace.

CAUTION:

- The front fork leg has a built-in damper adjusting rod and a very sophisticated internal construction, which are particularly sensitive to foreign material.
- When disassembling and assembling the front fork leg, do not allow any foreign material to enter the front fork.

EAS00659

ASSEMBLING THE FRONT FORK LEGS

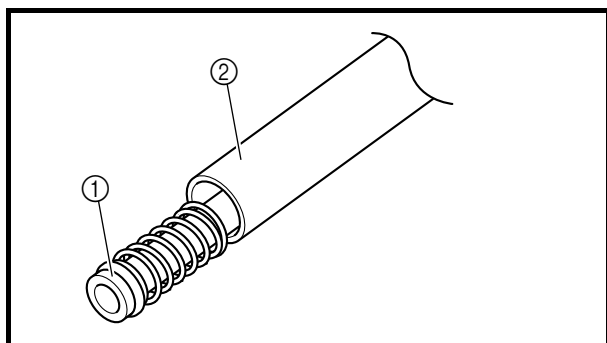
The following procedure applies to both of the front fork legs.

WARNING

- Make sure the oil levels in both front fork legs are equal.
- Uneven oil levels can result in poor handling and a loss of stability.

NOTE:

- When assembling the front fork leg, be sure to replace the following parts:
 - oil seal
 - dust seal
- Before assembling the front fork leg, make sure all of the components are clean.



1. Install:

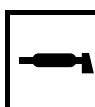
- damper rod assembly ①
- rebound spring
- inner tube ②

CAUTION:

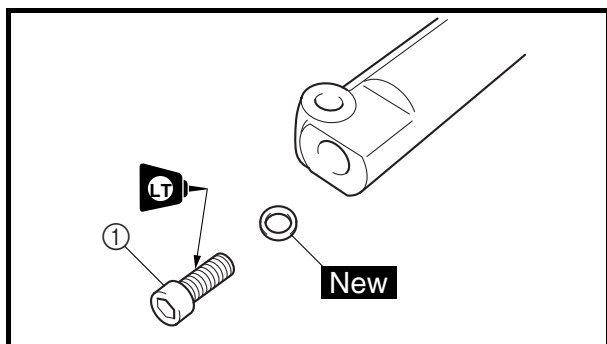
Allow the damper rod assembly to slide slowly down the inner tube ② until it protrudes from the bottom of the inner tube. Be careful not to damage the inner tube.

2. Lubricate:

- inner tube's outer surface



Recommended lubricant
Fork oil 10 W or equivalent



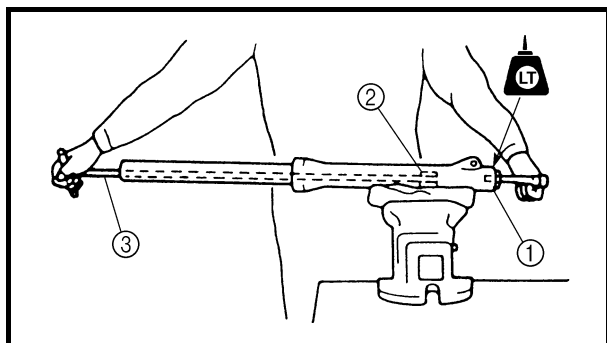
3. Tighten:

- damper rod assembly bolt (1) 

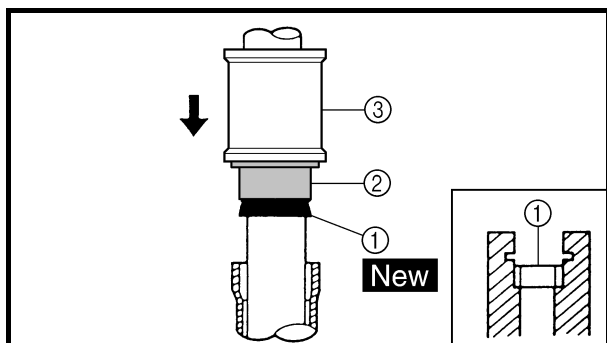
 23 Nm (2.3 m · kg, 17 ft · lb)

NOTE:

While holding the damper rod assembly with the hexagon socket wrench (10 mm) (2) and T-handle (3), tighten the damper rod assembly bolt.



T-handle
90890-01326



4. Install:

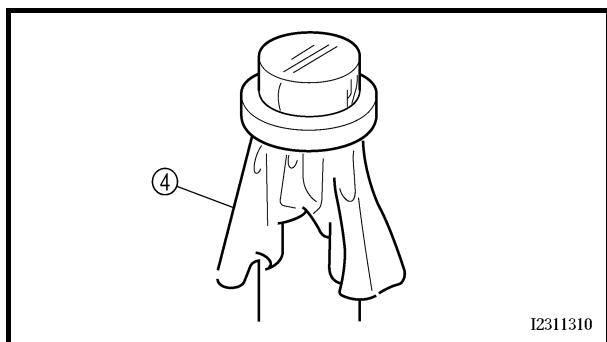
- oil seal (1) **New**
(with the fork seal driver attachment (2) and fork seal driver weight (3))



Fork seal driver weight
90890-01184
Fork seal driver attachment
90890-01186

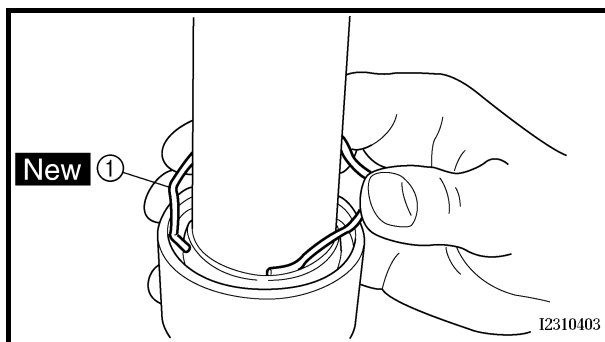
CAUTION:

Make sure the numbered side of the oil seal faces up.



NOTE:

- Before installing the oil seal, lubricate its lips with lithium-soap-based grease.
- Lubricate the outer surface of the inner tube with fork oil.
- Before installing the oil seal, cover the top of the front fork leg with a plastic bag (4) to protect the oil seal during installation.

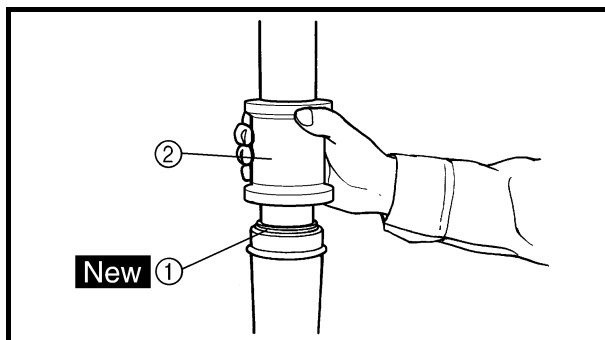


5. Install:

- oil seal clip ① **New**

NOTE:

Adjust the oil seal clip so that it fits into the outer tube's groove.



6. Install:

- dust seal ① **New**
- (with the fork seal driver weight ②)



Fork seal driver weight
90890-01184

7. Fill:

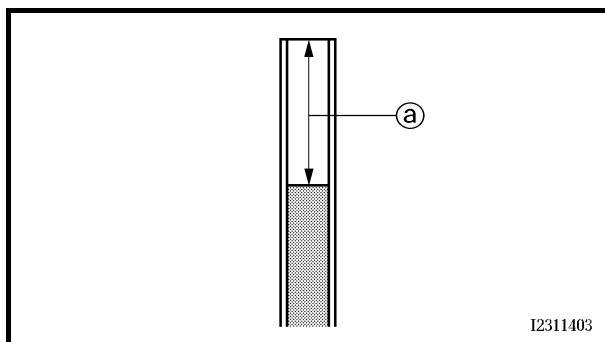
- front fork leg
- (with the specified amount of the recommended fork oil)



Quantity (each front fork leg)
57 cm³ (2.01 Imp oz, 1.93 US oz)
Recommended oil
Fork oil 10 W or equivalent

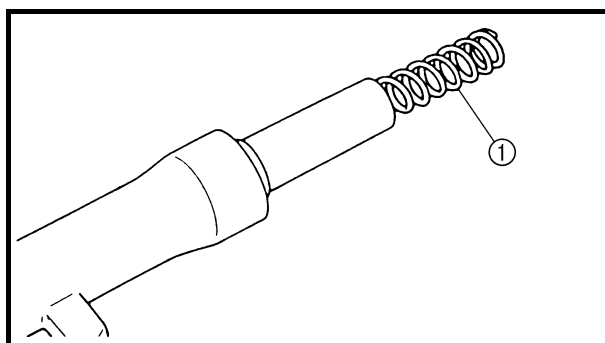


Front fork leg oil level ① (from the top of the inner tube, with the inner tube fully compressed and without the fork spring)
88 mm (3.46 in)



NOTE:

- While filling the front fork leg, keep it upright.
- After filling, slowly pump the front fork leg up and down to distribute the fork oil.

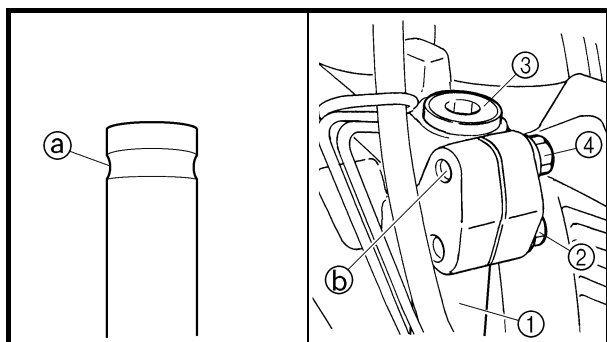


8. Install:

- fork spring ①

NOTE:

Install the fork spring with the smaller pitch facing up.



EAS00663

INSTALLING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

For installation, reverse the removal procedure.

1. Install:

- front fork leg ①
- lower bracket lower pinch bolt ②
- O-ring **New**
- cap bolt ③
- lower bracket upper pinch bolt ④

NOTE:

Install the front fork leg with the groove ① in the inner tube aligned with the hole ② for the lower bracket upper pinch bolt.

2. Tighten:

- lower bracket lower pinch bolt

 **38 Nm (3.8 m · kg, 27 ft · lb)**

- cap bolt

 **20 Nm (2.0 m · kg, 14 ft · lb)**

- lower bracket upper pinch bolt

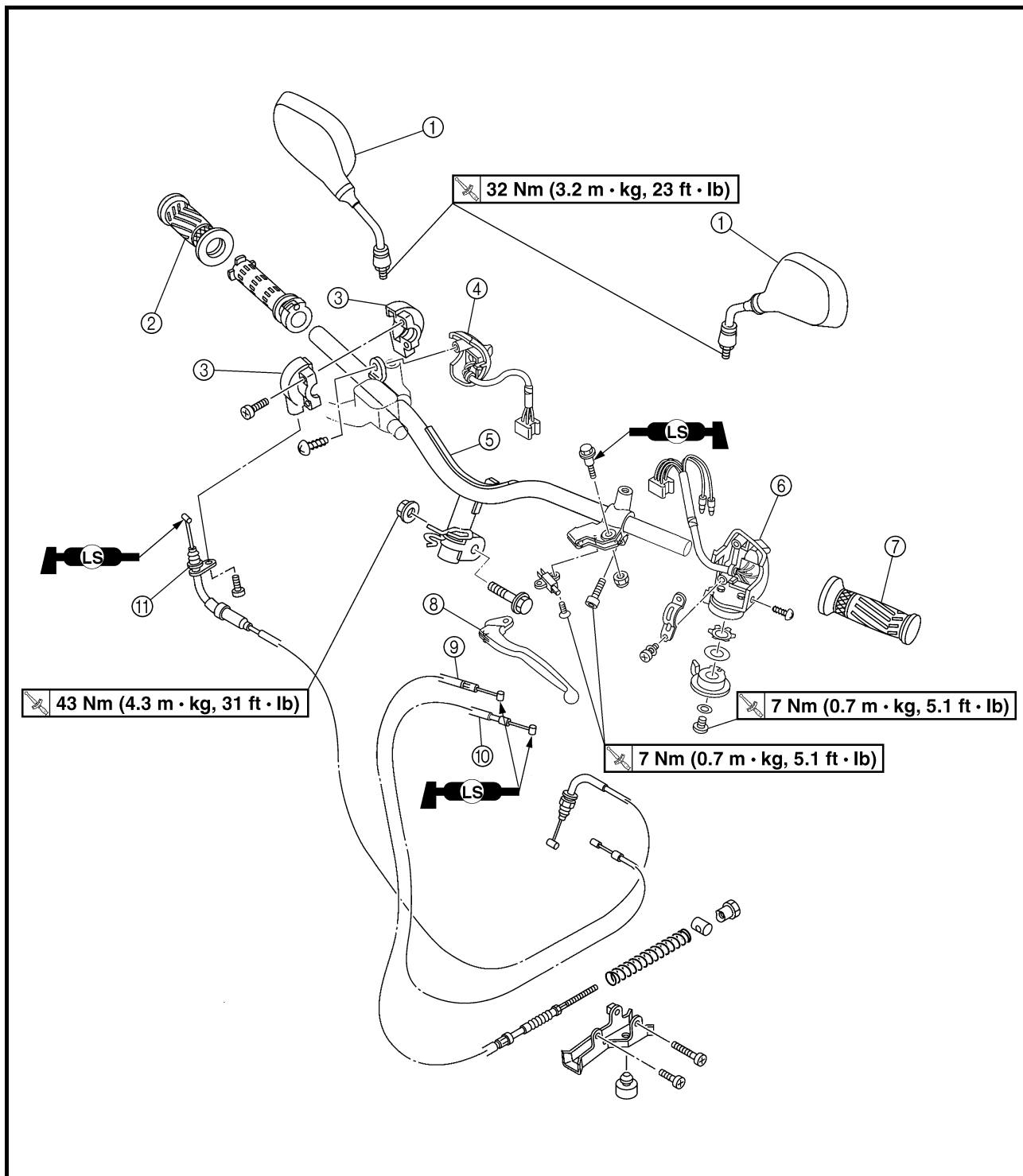
 **38 Nm (3.8 m · kg, 27 ft · lb)**



EASF0055

HANDLEBAR

- | | |
|--------------------------|--------------------|
| ① Rearview mirror | ⑦ Handlebar grip |
| ② Throttle grip | ⑧ Rear brake lever |
| ③ Throttle cable spring | ⑨ Rear brake cable |
| ④ Right handlebar switch | ⑩ Starter cable |
| ⑤ Handlebar | ⑪ Throttle cable |
| ⑥ Left handlebar switch | |





EAS00666

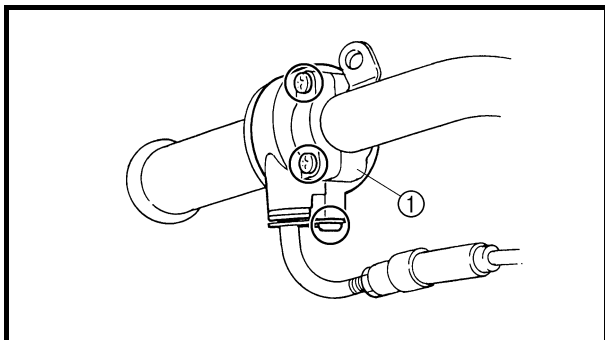
REMOVING THE HANDLEBAR

1. Stand the motorcycle on a level surface.

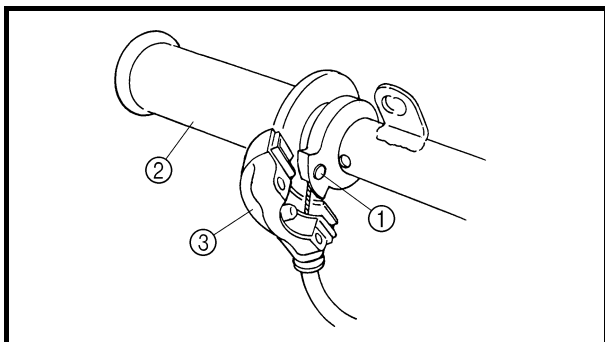
⚠ WARNING

Securely support the motorcycle so that there is no danger of it falling over.

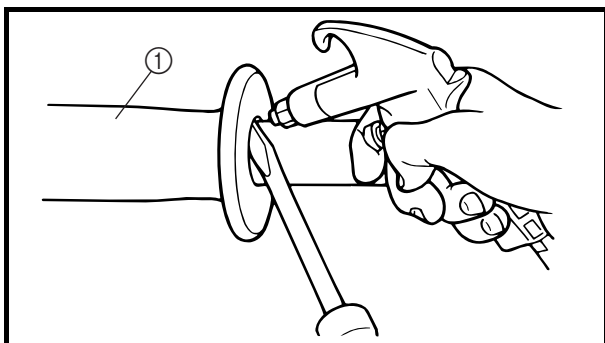
2. Remove:
 - leg shield
Refer to “REMOVING THE FRONT COWLING AND LEG SHIELD” in chapter 3.
3. Remove:
 - headlight assembly
Refer to “REMOVING THE HEADLIGHT ASSEMBLY” in chapter 3.
4. Remove:
 - brake master cylinder assembly
Refer to “FRONT BRAKE”.



5. Remove:
 - throttle cable housing (rear side) ①



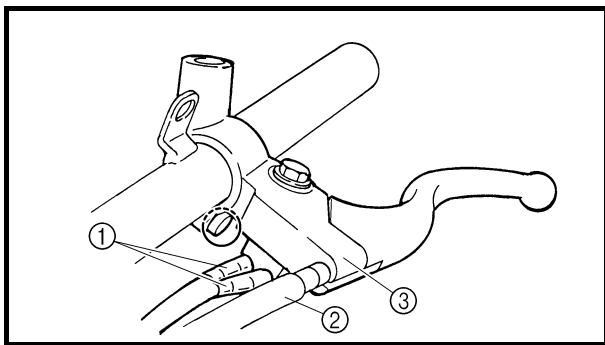
6. Remove:
 - throttle cable ①
 - throttle grip ②
 - throttle cable housing (front side) ③



7. Remove:
 - handlebar grip ①

NOTE:

Blow compressed air between the handlebar and the handlebar grip, and gradually push the grip off the handlebar.

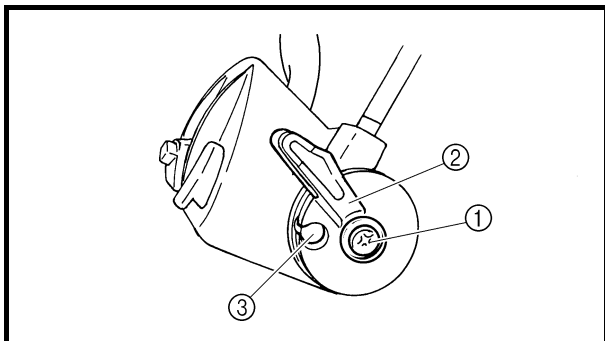


8. Disconnect:

- rear brake light switch connectors ①

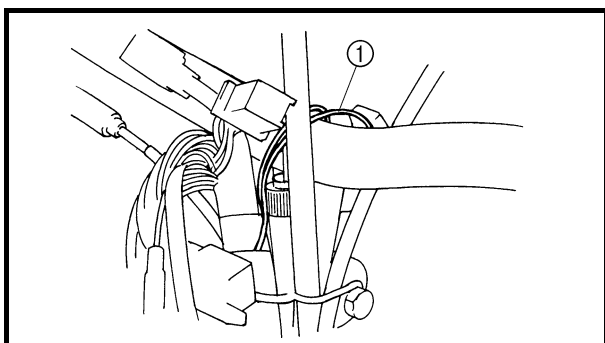
9. Remove:

- rear brake cable ②
- rear brake lever assembly ③



10. Remove:

- starter lever screw ①
- washer
- starter lever ②
- starter cable ③
- washer
- spring washer

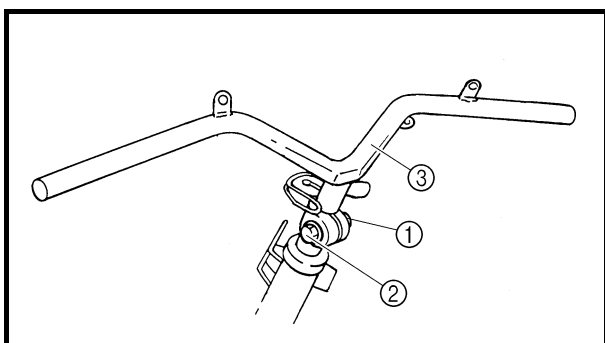


11. Remove:

- front brake hose
- wire harness
- speedometer cable
- throttle cable
- rear brake cable
- starter cable

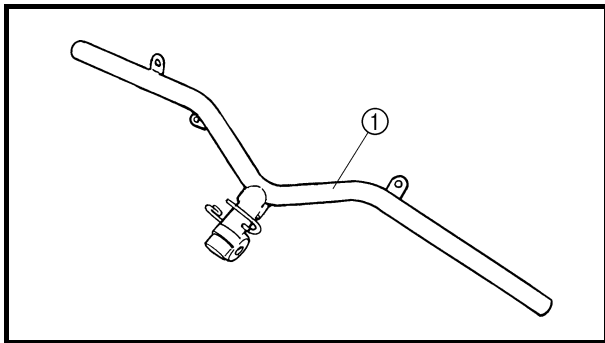
NOTE:

- Remove the front brake hose from the holder, and then remove the speedometer cable, wire harness, throttle cable, rear brake cable, and starter cable from the guide.
- Unhook the plastic loop ① attached to the wire harness from the projection on the handlebar, and then remove the wire harness.



12. Remove:

- handlebar nut ①
- handlebar bolt ②
- handlebar ③



EAS00668

CHECKING THE HANDLEBAR

1. Check:

- handlebar ①

Bends/cracks/damage → Replace.

⚠ WARNING

Do not attempt to straighten a bent handlebar as this may dangerously weaken it.

EAS00673

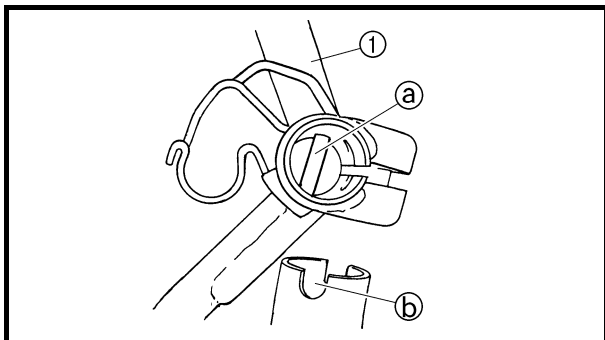
INSTALLING THE HANDLEBAR

For installation, reverse the removal procedure.

1. Stand the motorcycle on a level surface.

⚠ WARNING

Securely support the motorcycle so that there is no danger of it falling over.



2. Install:

- handlebar ①

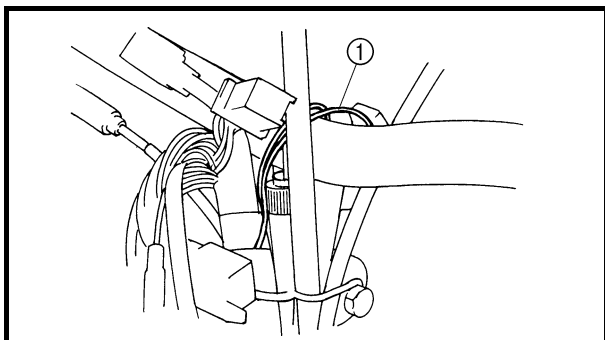
NOTE:

Align the pipe ② on the handlebar with the slit ③ on the lower bracket.

3. Tighten:

- handlebar nut

43 Nm (4.3 m · kg, 31 ft · lb)



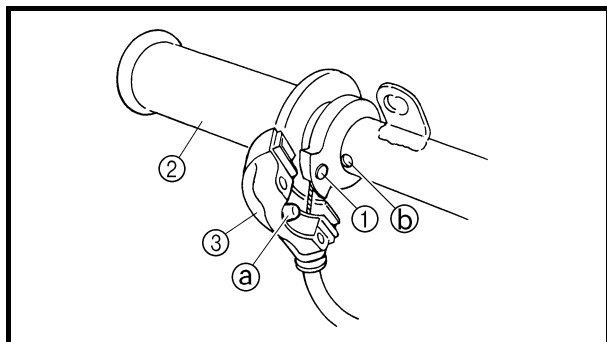
4. Install:

- starter cable
- rear brake cable
- throttle cable
- speedometer cable
- wire harness
- front brake hose

Refer to "CABLE ROUTING" in chapter 2.

NOTE:

Hook the plastic loop ① attached to the wire harness onto the projection on the handlebar after installing the wire harness.

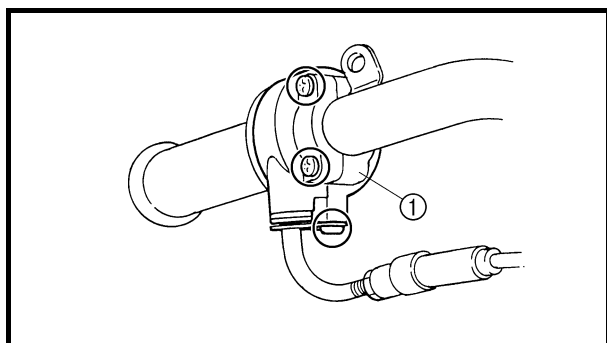


8. Install:

- throttle cable ①
- throttle grip ②
- throttle cable housing (front side) ③

NOTE:

- Lubricate the inside of the throttle grip with a thin coat of lithium-soap-based grease and install it onto the handlebar.
- Align the projection (a) on the throttle cable housing (front side) with the hole (b) on the handlebar.



9. Install:

- throttle cable housing (rear side) ①

⚠ WARNING

Make sure the throttle grip operates smoothly.

10. Adjust:

- throttle cable free play

Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY" in chapter 3.



Throttle cable free play (at the flange of the throttle grip)
3 ~ 7 mm (0.12 ~ 0.28 in)

11. Adjust:

- brake lever free play

Refer to "ADJUSTING THE REAR BRAKE" in chapter 3.



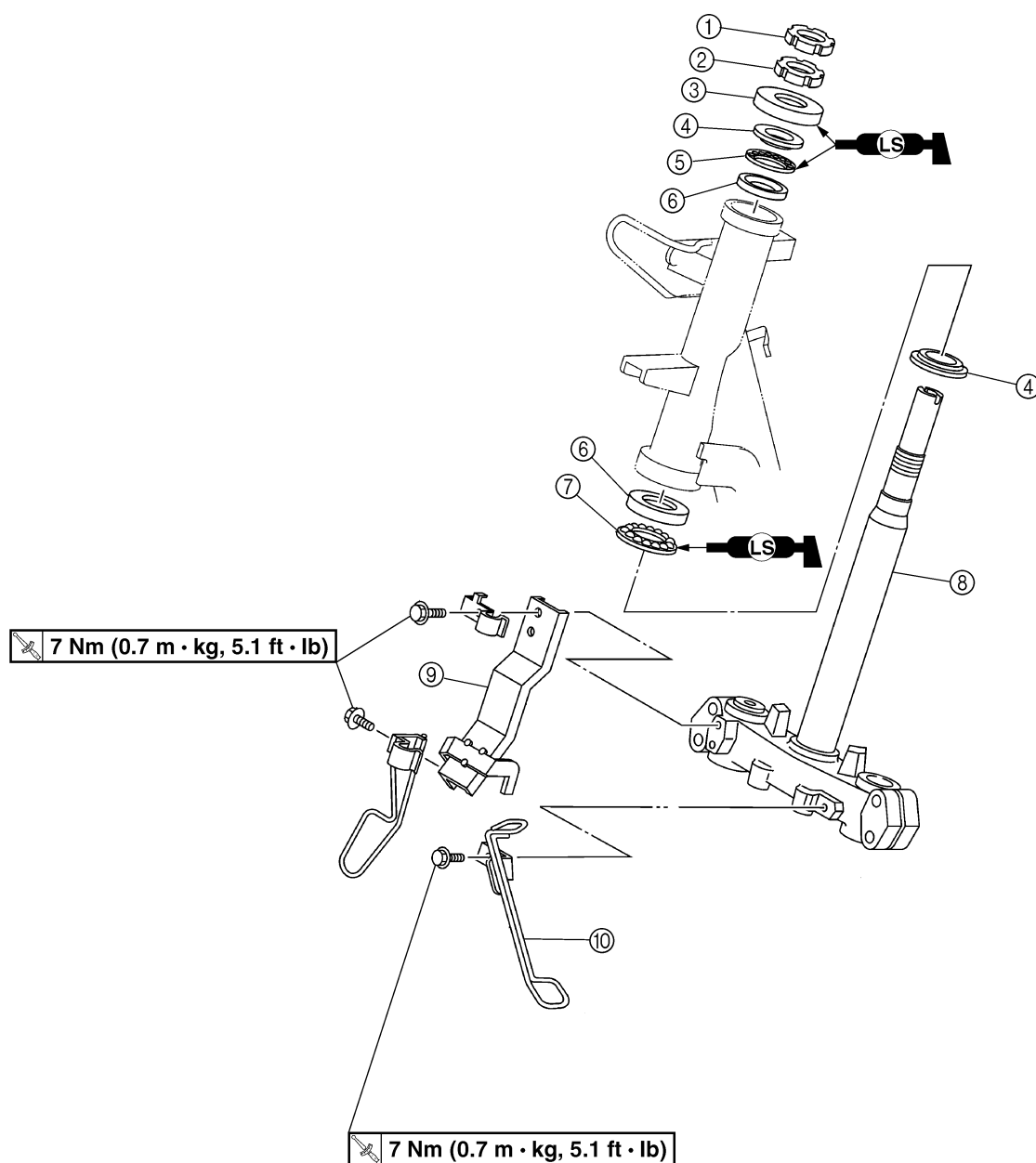
Brake lever free play (lever end)
10 ~ 20 mm (0.39 ~ 0.79 in)



EASF0057

STEERING HEAD

- ① Upper ring nut
- ② Lower ring nut
- ③ Ball race cover
- ④ Bearing inner race
- ⑤ Upper bearing
- ⑥ Bearing outer race
- ⑦ Lower bearing
- ⑧ Lower bracket
- ⑨ Brake hose holder bracket
- ⑩ Speedometer cable guide





EAS00679

REMOVING THE LOWER BRACKET

1. Stand the motorcycle on a level surface.

⚠ WARNING

Securely support the motorcycle so that there is no danger of it falling over.

2. Remove:

- leg shield

Refer to "REMOVING THE FRONT COWLING AND LEG SHIELD" in chapter 3.

3. Remove:

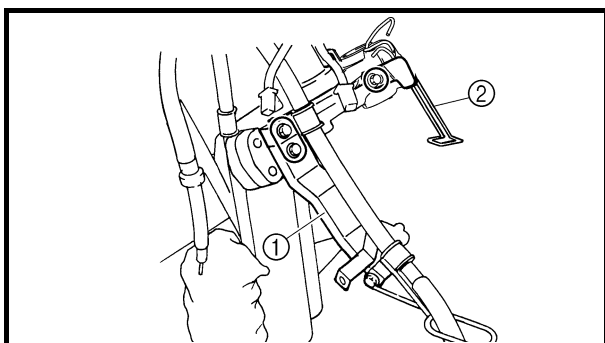
- front fork

Refer to "FRONT FORK".

4. Remove:

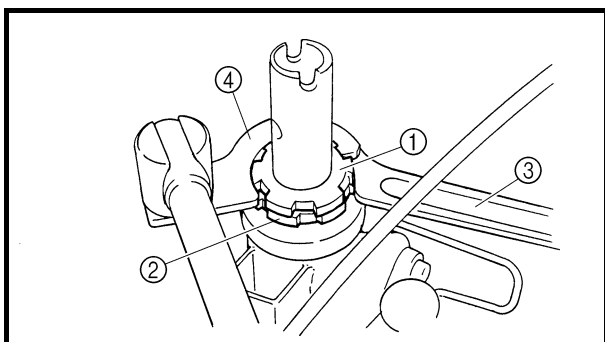
- handlebar

Refer to "HANDLEBAR".



5. Remove:

- brake hose holder bracket ①
- speedometer cable guide ②



6. Remove:

- upper ring nut ①
- lower ring nut ②
- lower bracket

NOTE:

Hold the lower ring nut with the ring nut wrench ③, and then remove the upper ring nut with the steering nut wrench ④.



Steering nut wrench

90890-01403

Ring nut wrench

90890-01268

⚠ WARNING

Securely support the lower bracket so that there is no danger of it falling.



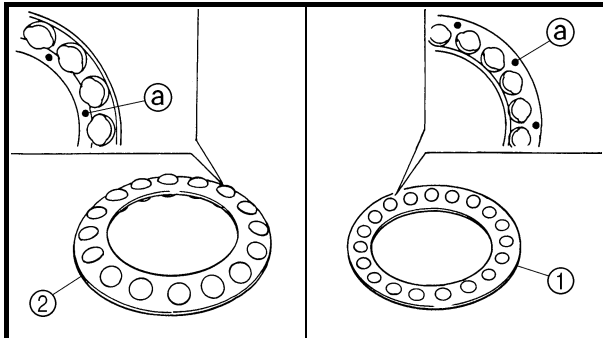
EAS00683

INSTALLING THE STEERING HEAD

For installation, reverse the removal procedure.

1. Lubricate:

- upper bearing
- lower bearing
- bearing races



Recommended lubricant
Lithium-soap-based grease

2. Install:

- upper bearing ①
- lower bearing ②

NOTE:

Install the upper and lower bearings with the projection (a) on each bearing facing up.

3. Install:

- lower ring nut
- upper ring nut

Refer to “CHECKING AND ADJUSTING THE STEERING HEAD” in chapter 3.

4. Install:

- speedometer cable guide

7 Nm (0.7 m · kg, 5.1 ft · lb)

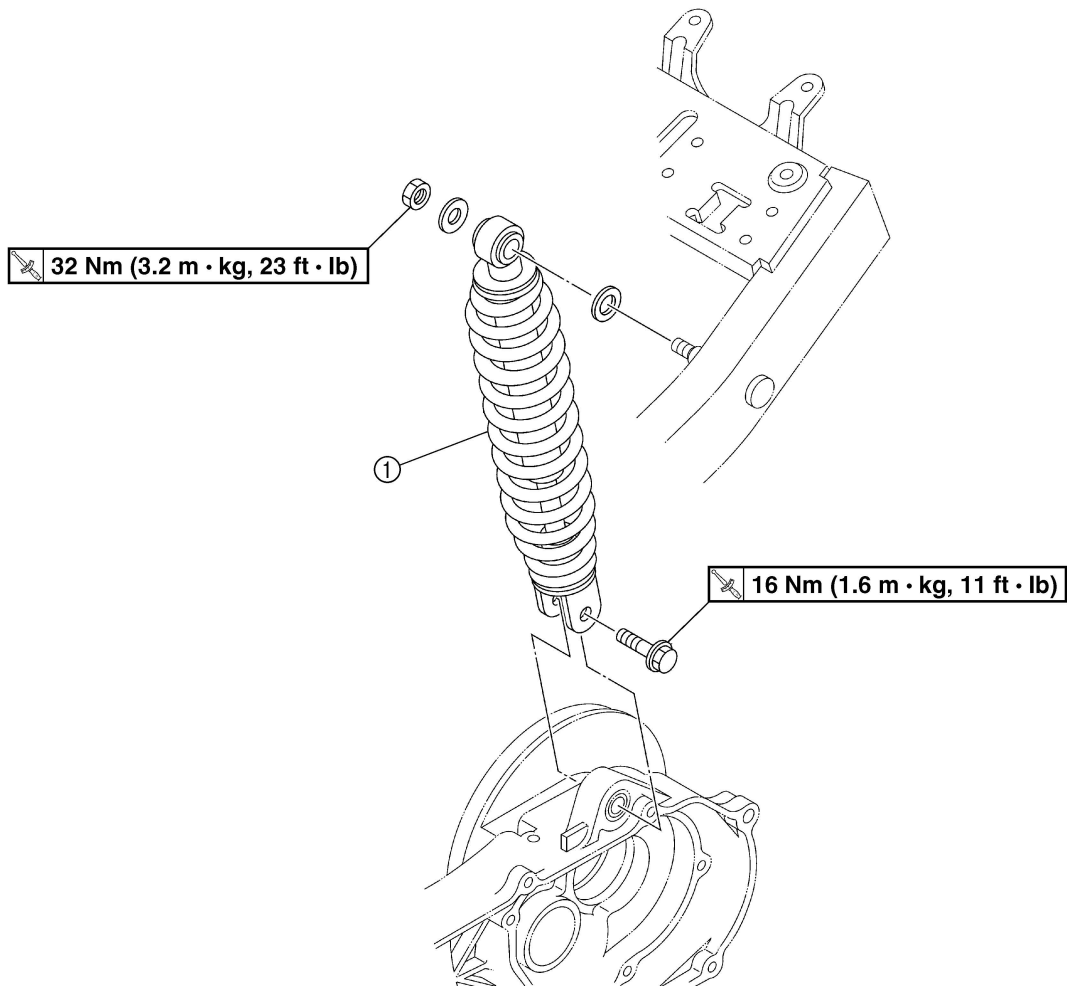
- brake hose holder bracket

7 Nm (0.7 m · kg, 5.1 ft · lb)

EASF0058

REAR SHOCK ABSORBER ASSEMBLY

① Rear shock absorber



EAS00690

REMOVING THE REAR SHOCK ABSORBER ASSEMBLY

1. Stand the motorcycle on a level surface.

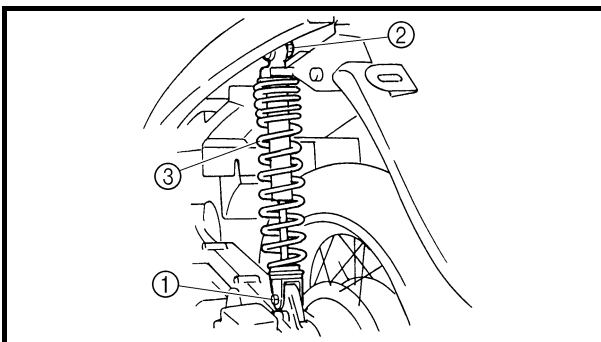
WARNING

Securely support the motorcycle so that there is no danger of it falling over.

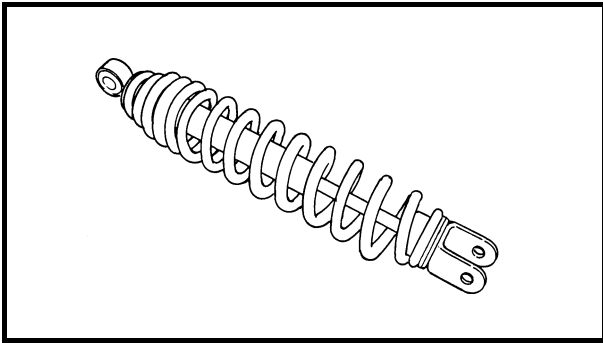
NOTE:

Place the motorcycle on a suitable stand so that the rear wheel is elevated.

2. Remove:
 - footboard
Refer to “REMOVING THE FRONT COWLING AND LEG SHIELD” in chapter 3.
3. Remove:
 - storage box
 - fuel tank
Refer to “FUEL TANK” in chapter 5.
4. Remove:
 - V-belt case cover
Refer to “KICKSTARTER” in chapter 4.



5. Remove:
 - rear shock absorber bolt ①
 - rear shock absorber nut ②
 - washer
 - rear shock absorber assembly ③
 - washer

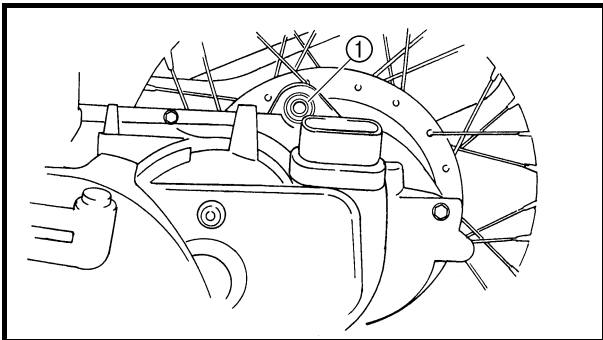


EAS00695

CHECKING THE REAR SHOCK ABSORBER ASSEMBLY

1. Check:

- rear shock absorber rod
Bends/damage → Replace the rear shock absorber assembly.
- rear shock absorber
Oil leaks → Replace the rear shock absorber assembly.
- spring
Damage/wear → Replace the rear shock absorber assembly.
- bushings
Damage/wear → Replace.
- bolts
Bends/damage/wear → Replace.



CHECKING THE CRANKCASE (LEFT)

1. Check:

- bushing (rear shock absorber assembly) ①
Damage/wear → Replace.

EAS00697

INSTALLING THE REAR SHOCK ABSORBER ASSEMBLY

For installation, reverse the removal procedure.

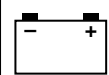
1. Install:

- washer
- rear shock absorber assembly
- washer
- rear shock absorber assembly nut

32 Nm (3.2 m · kg, 23 ft · lb)

- rear shock absorber assembly bolt

16 Nm (1.6 m · kg, 11 ft · lb)



CHAPTER 7

ELECTRICAL SYSTEM

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CIRCUIT DIAGRAM	7-34
TROUBLESHOOTING	7-35
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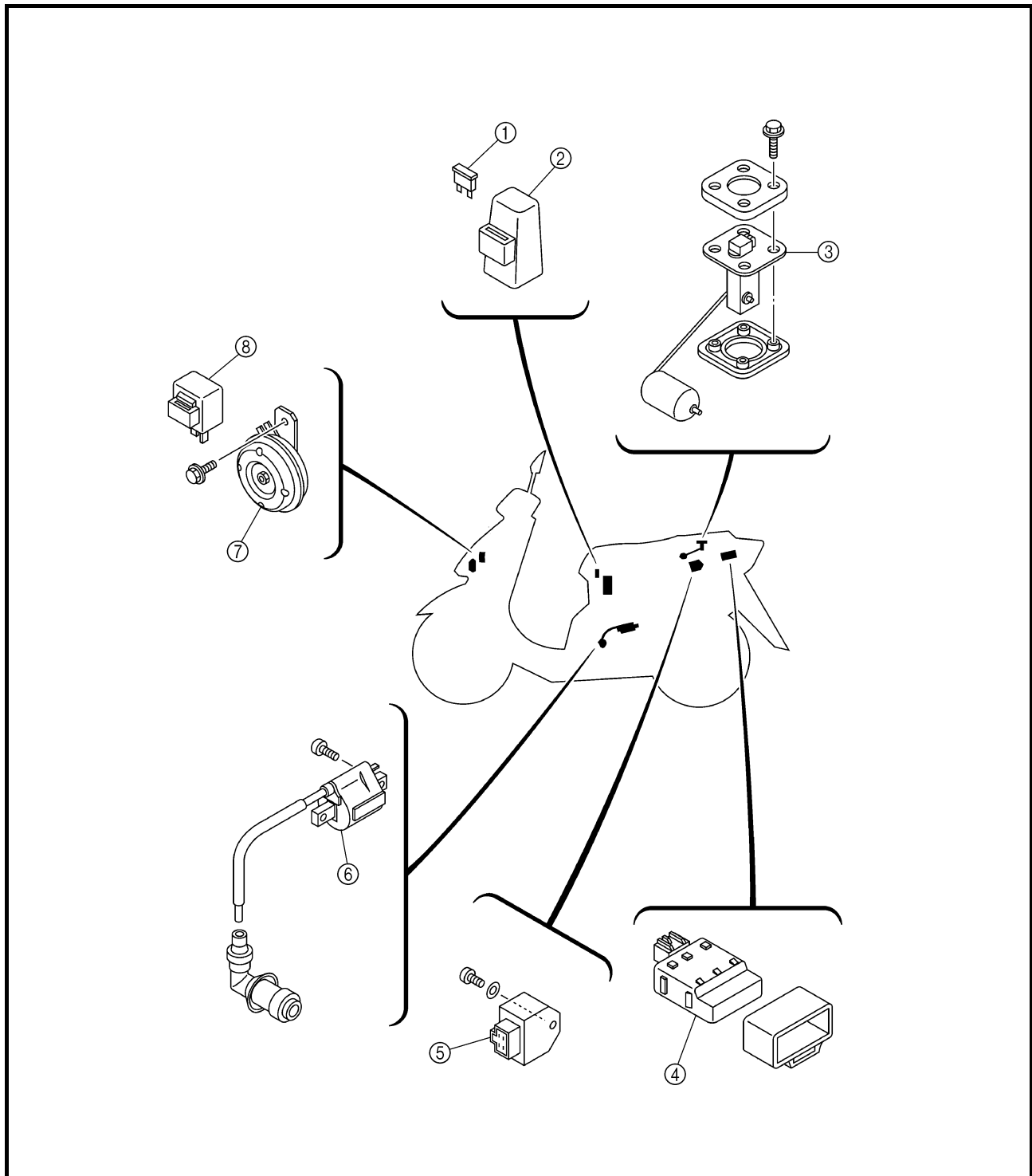


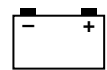
EAS00729

ELECTRICAL SYSTEM

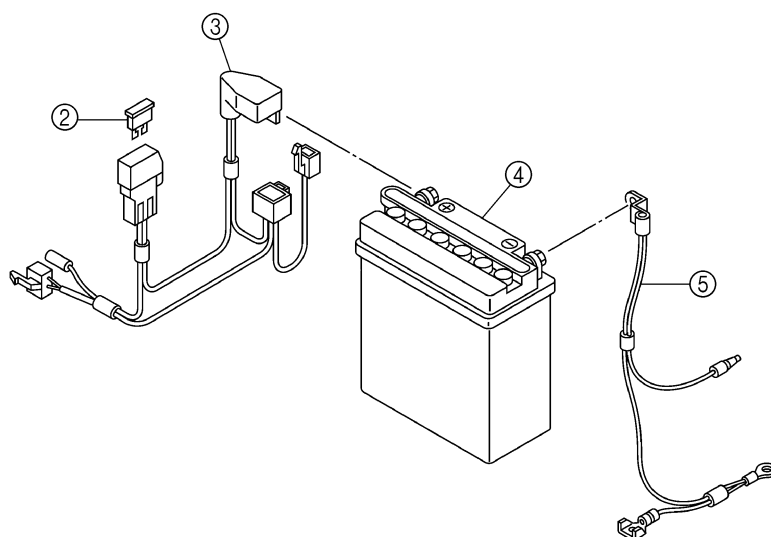
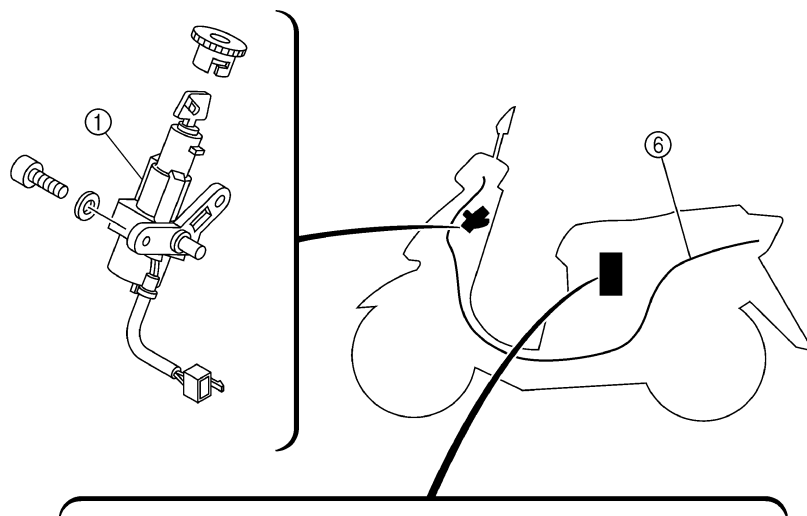
ELECTRICAL COMPONENTS

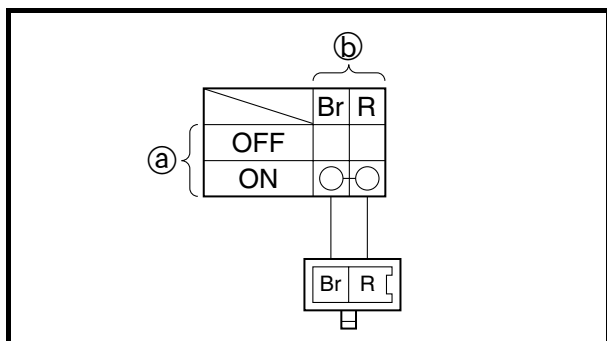
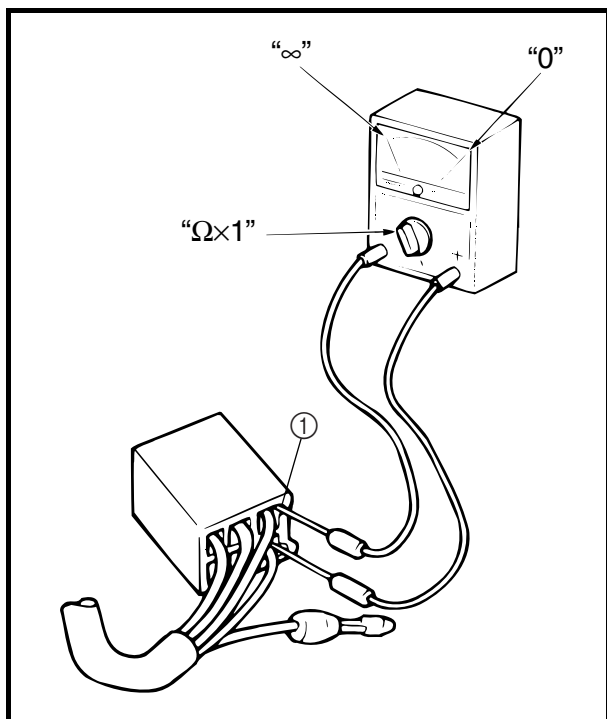
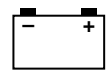
- ① Fuse
- ② Starter relay
- ③ Fuel sender
- ④ C.D.I. unit
- ⑤ Rectifier/regulator
- ⑥ Ignition coil
- ⑦ Horn
- ⑧ Turn signal relay





- ① Main switch
- ② Fuse
- ③ Positive battery lead
- ④ Battery
- ⑤ Negative battery lead
- ⑥ Wire harness





EAS00730

CHECKING SWITCH CONTINUITY

Check each switch for continuity with the pocket tester. If the continuity reading is incorrect, check the wiring connections and if necessary, replace the switch.

CAUTION:

Never insert the tester probes into the coupler terminal slots ①. Always insert the probes from the opposite end of the coupler, taking care not to loosen or damage the leads.



Pocket tester
90980-03112

NOTE:

- Before checking for continuity, set the pocket tester to "0" and to the "Ω × 1" range.
- When checking for continuity, switch back and forth between the switch positions a few times.

The terminal connections for switches (e.g., main switch, engine stop switch) are shown in an illustration similar to the one on the left.

The switch positions ① are shown in the far left column and the switch lead colors ② are shown in the top row in the switch illustration.

NOTE:

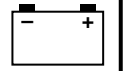
"○—○" indicates a continuity of electricity between switch terminals (i.e., a closed circuit at the respective switch position).

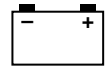
The example illustration on the left shows that:

There is continuity between red and brown when the switch is set to "ON".

CHECKING SWITCH CONTINUITY

ELEC





EAS00731

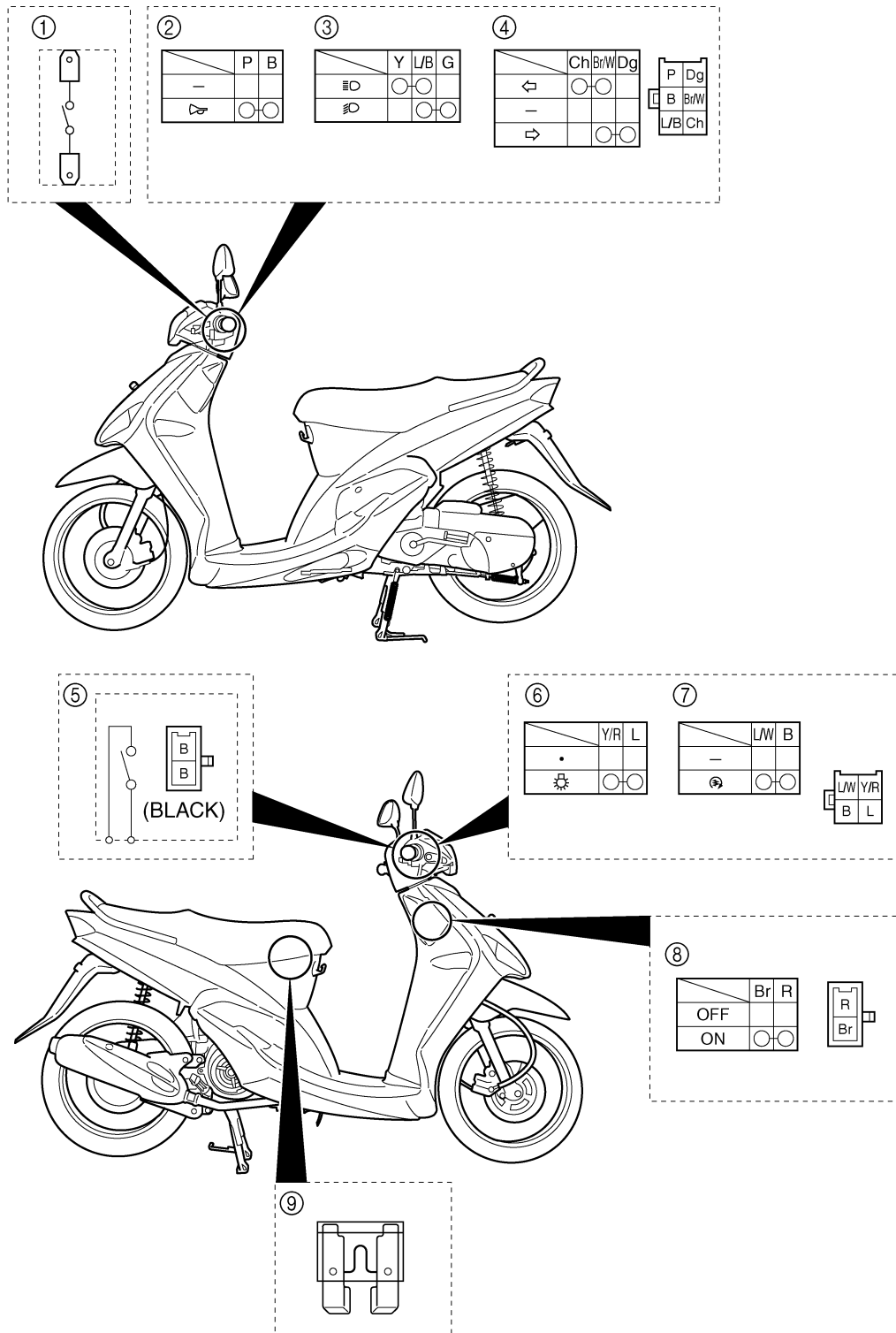
CHECKING THE SWITCHES

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.

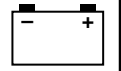
Improperly connected → Properly connect.

Incorrect continuity reading → Replace the switch.

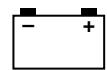


CHECKING THE SWITCHES

ELEC



- ① Rear brake light switch
- ② Horn switch
- ③ Dimmer switch
- ④ Turn signal switch
- ⑤ Front brake light switch
- ⑥ Light switch
- ⑦ Start switch
- ⑧ Main switch
- ⑨ Fuse



EAS00732

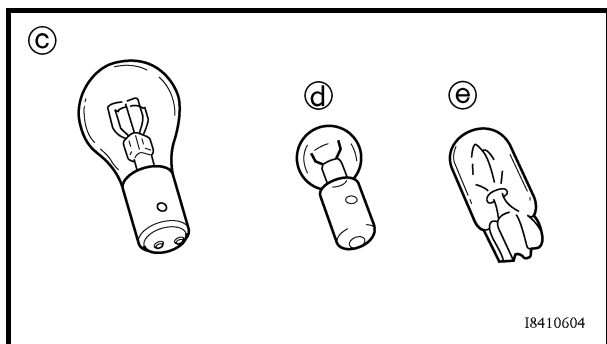
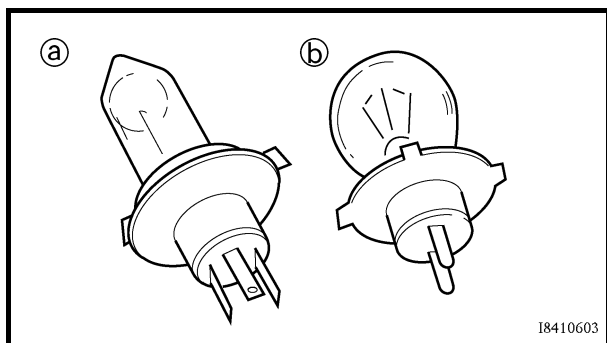
CHECKING THE BULBS AND BULB SOCKETS

Check each bulb and bulb socket for damage or wear, proper connections, and also for continuity between the terminals.

Damage/wear → Repair or replace the bulb, bulb socket or both.

Improperly connected → Properly connect.

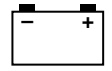
No continuity → Repair or replace the bulb, bulb socket or both.



TYPES OF BULBS

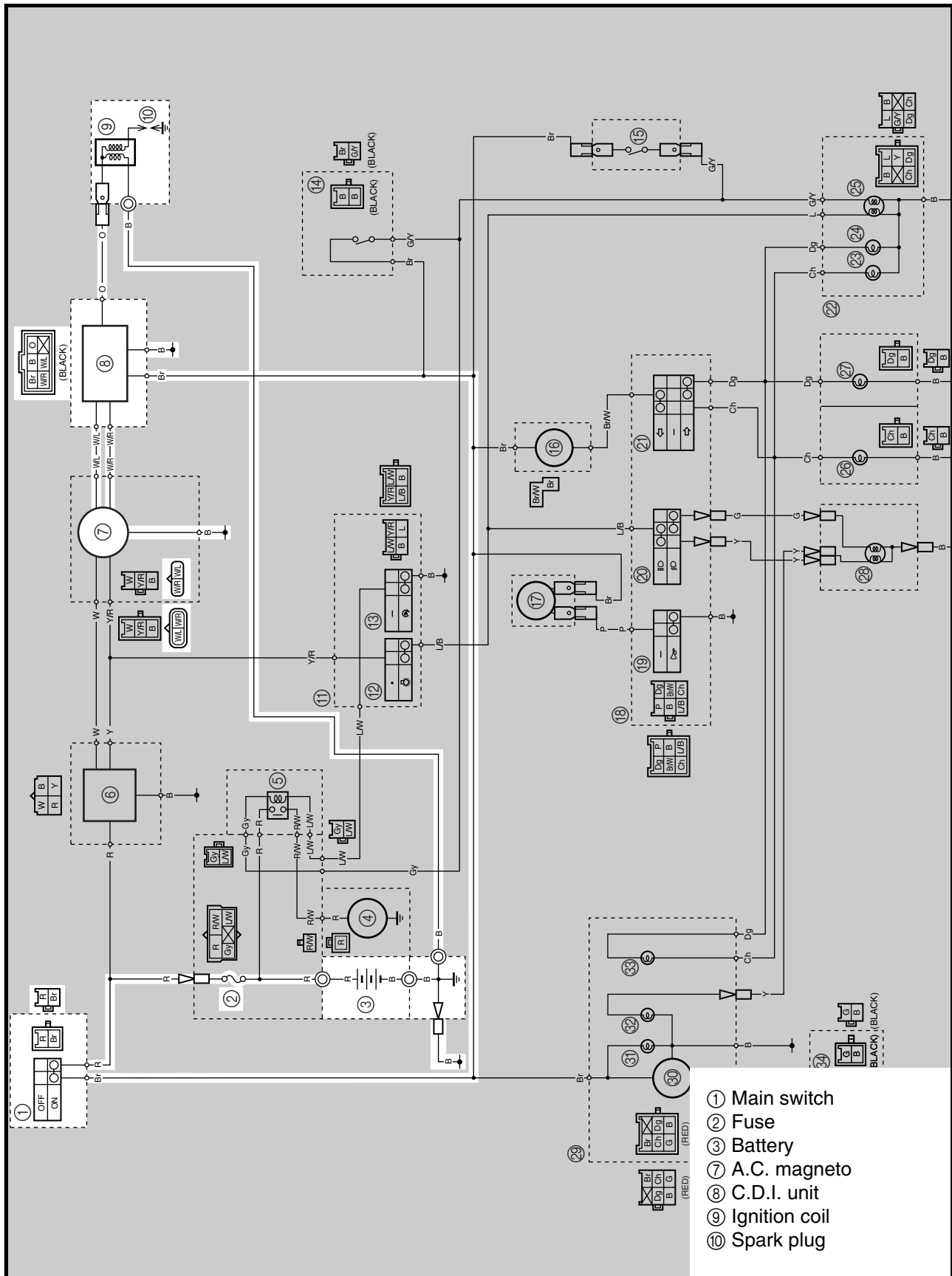
The bulbs used on this motorcycle are shown in the illustration on the left.

- Bulbs ① and ② are used for the headlights and usually use a bulb holder that must be detached before removing the bulb. The majority of these types of bulbs can be removed from their respective socket by turning them counterclockwise.
- Bulbs ③ is used for turn signal and tail/brake lights and can be removed from the socket by pushing and turning the bulb counterclockwise.
- Bulbs ④ and ⑤ are used for meter and indicator lights and can be removed from their respective socket by carefully pulling them out.



EAS00734

IGNITION SYSTEM CIRCUIT DIAGRAM



- ① Main switch
- ② Fuse
- ③ Battery
- ⑦ A.C. magneto
- ⑧ C.D.I. unit
- ⑨ Ignition coil
- ⑩ Spark plug



EAS00736

TROUBLESHOOTING

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

Check:

1. fuse
2. battery
3. spark plug
4. ignition spark gap
5. spark plug cap resistance
6. ignition coil resistance
7. pickup coil resistance
8. main switch
9. wiring connections (of the entire ignition system)

NOTE:

- Before troubleshooting, remove the following part(s):
 1. seat
 2. center cover
 3. rear panel
 4. right side cover
 5. headlight assembly
- Troubleshoot with the following special tool(s).



Ignition checker
90890-06754
Pocket tester
90890-03112

EAS00738

1. Fuse

- Check the fuse for continuity.
Refer to "CHECKING THE FUSE" in chapter 3.
- Is the fuse OK?



YES



NO

Replace the fuse.

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

- Refill battery fluid.
- 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
C7HSA(NGK)
Spark plug gap
0.6 ~ 0.7 mm (0.024 ~ 0.028 in)

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



YES



NO

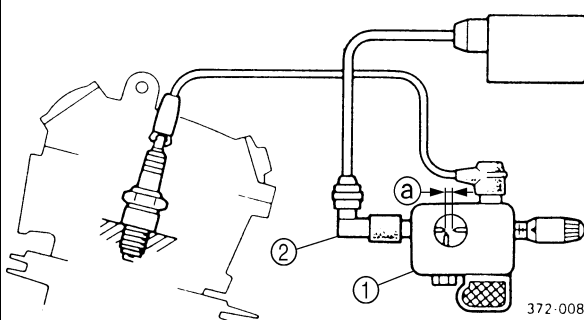
Re-gap or replace the spark plug.



EAS00742

4. Ignition spark gap

- 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 and gradually increase the spark gap until a misfire occurs.



**Minimum ignition spark gap
6 mm (0.24 in)**

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

NO

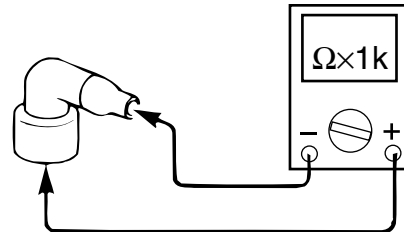
YES

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 ($\Omega \times 1k$) to the spark plug cap as shown.
- Measure the spark plug cap resistance.



**Spark plug cap resistance
5 k Ω at 20 °C (68 °F)**

- Is the spark plug cap OK?

YES

NO

Replace the spark
plug cap.



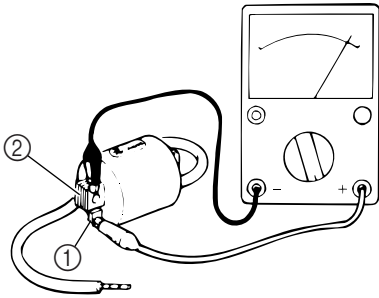
EAS00746

6. Ignition coil resistance

- Disconnect the ignition coil connector from the ignition coil terminal.
- Connect the pocket tester ($\Omega \times 1$) to the ignition coil as shown.

Positive tester probe → terminal ①

Negative tester probe → ignition coil base ②



- Measure the primary coil resistance.

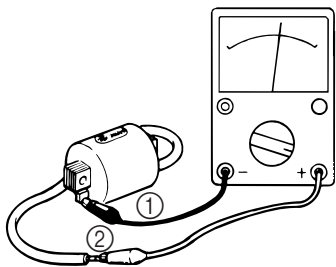


Primary coil resistance
0.32 ~ 0.48 Ω at 20 °C (68 °F)

- Connect the pocket tester ($\Omega \times 1k$) to the ignition coil as shown.

Negative tester probe → terminal ①

Positive tester probe → spark plug lead ②



- Measure the secondary coil resistance.



Secondary coil resistance
5.68 ~ 8.52 k Ω at 20 °C (68 °F)

- Is the ignition coil OK?

YES

NO

Replace the ignition coil.

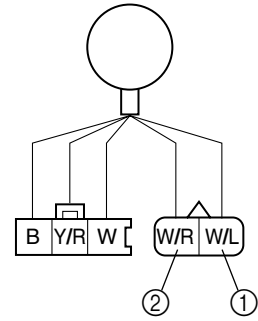
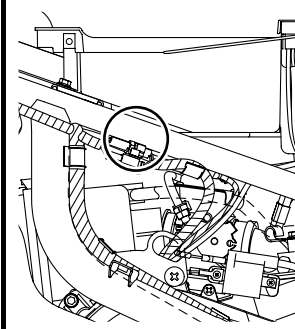
EAS00748

7. Pickup coil resistance

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

Positive tester probe → white/blue ①

Negative tester probe → white/red ②



- Measure the pickup coil resistance.



Pickup coil resistance
248 ~ 372 Ω at 20 °C (68 °F)

- Is the pickup coil OK?

YES

NO

Replace the pickup coil/stator assembly.

EAS00749

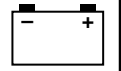
8. Main switch

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

YES

NO

Replace the main switch.



EAS00754

9. Wiring

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



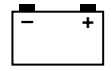
YES



NO

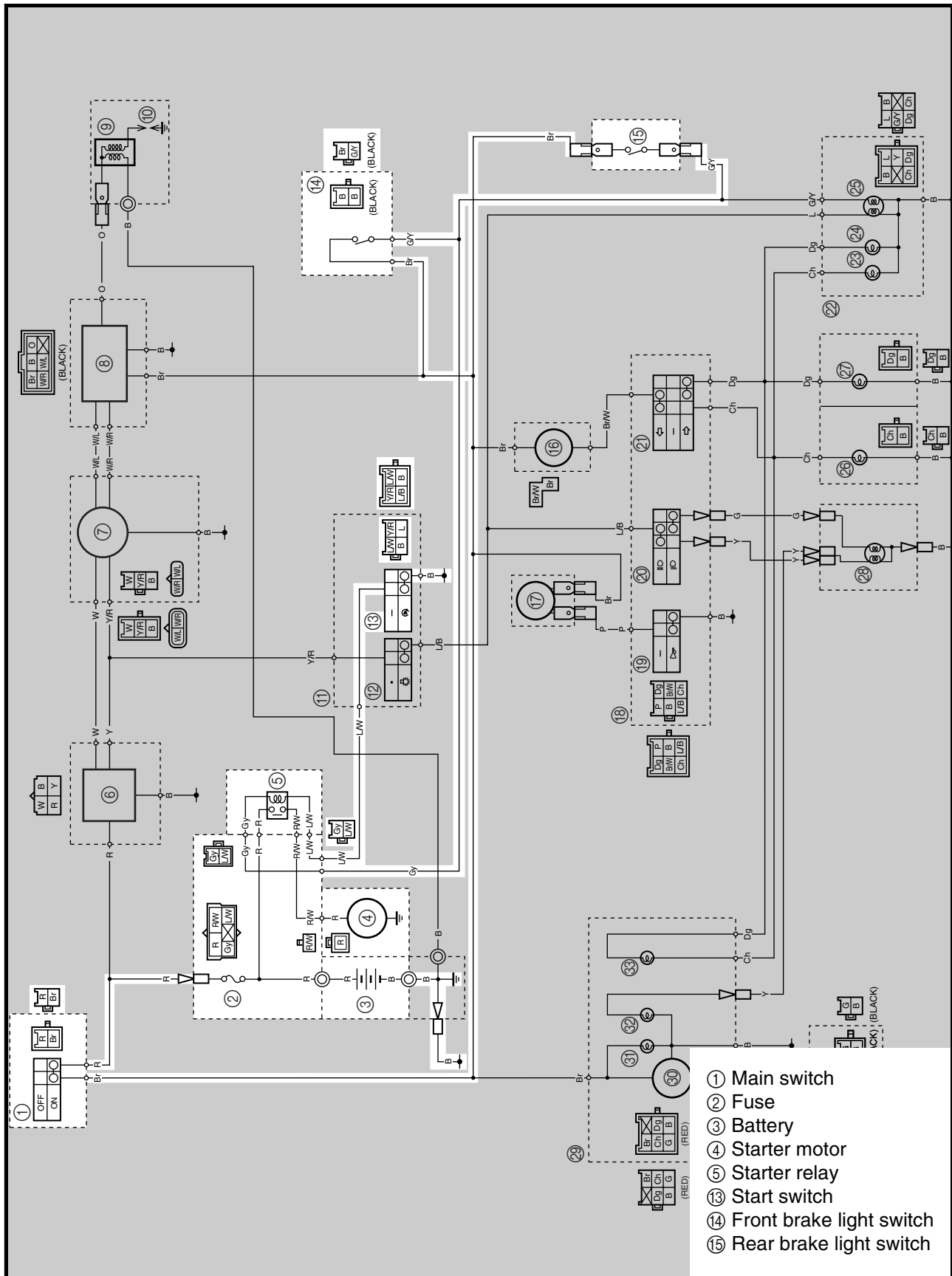
Replace the C.D.I. unit.

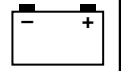
Properly connect or repair the ignition system's wiring.



EAS00755

ELECTRIC STARTING SYSTEM CIRCUIT DIAGRAM





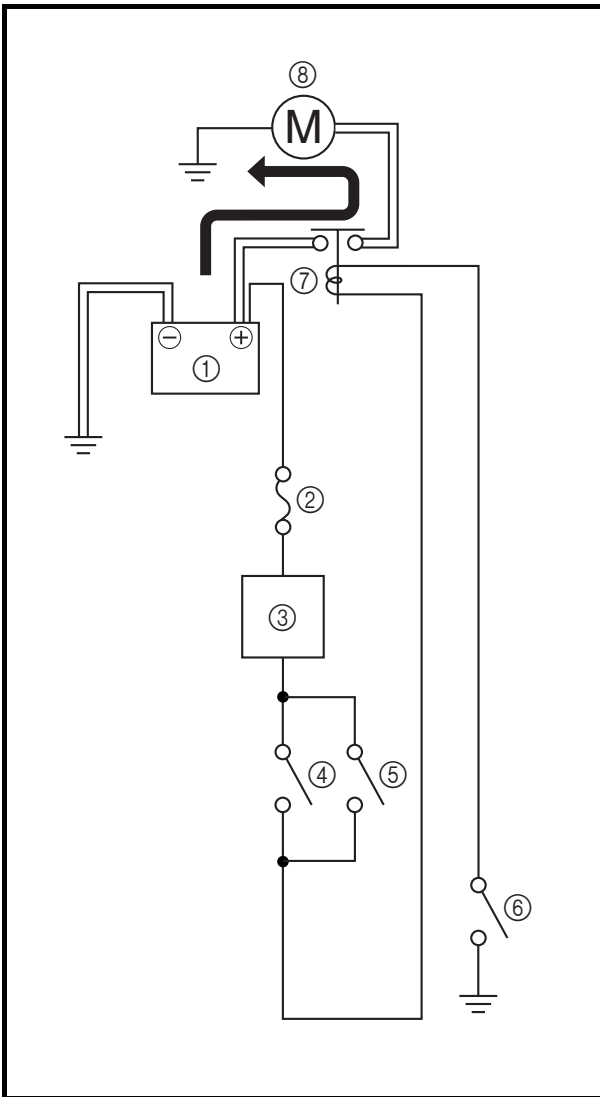
EAS00756

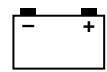
STARTING CIRCUIT CUT-OFF SYSTEM OPERATION

If the main switch is set to “ON” (switch is closed), the starter motor can only operate if at least one of the following conditions is met:

- The front brake lever is pulled to the handle-bar (the front brake light switch is closed).
- The rear brake lever is pulled to the handle-bar (the rear brake light switch is closed).

- ① Battery
- ② Fuse
- ③ Main switch
- ④ Front brake light switch
- ⑤ Rear brake light switch
- ⑥ Start switch
- ⑦ Starter relay
- ⑧ Starter motor





EAS00757

TROUBLESHOOTING

The starter motor fails to turn.

Check:

1. fuse
2. battery
3. starter motor
4. starter relay
5. main switch
6. start switch
7. front brake light switch
8. rear brake light switch
9. wiring connections
(of the entire starting system)

NOTE:

- Before troubleshooting, remove the following part(s):
 1. seat
 2. center cover
 3. rear panel
 4. side cover (left and right)
 5. headlight assembly
- Troubleshoot with the following special tool(s).

**Pocket tester**
90890-03112

EAS00738

1. Fuse

- Check the fuse for continuity.
Refer to "CHECKING THE FUSE" in chapter 3.
- Is the fuse OK?



YES



NO

Replace the fuse.

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?

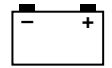


YES



NO

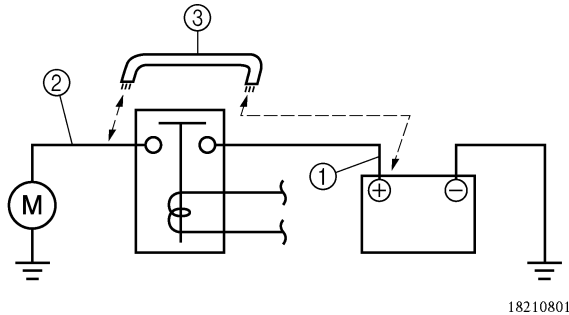
- Refill battery fluid.
- Clean the battery terminals.
- Recharge or replace the battery.



EAS00758

3. Starter motor

- Connect the positive battery terminal ① and starter motor lead ② with a jumper lead ③.



⚠ WARNING

- A wire that is used as a jumper lead must have at least the same capacity or more as that of the battery lead, otherwise the jumper lead may burn.
- This check is likely to produce sparks, therefore make sure nothing flammable is in the vicinity.

- Does the starter motor turn?

YES

NO

Repair or replace the starter motor.

EAS00761

4. Starter relay

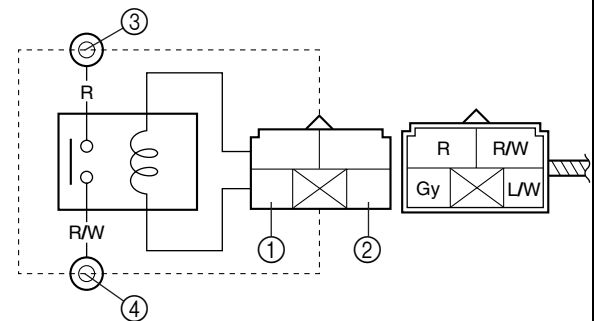
- Disconnect the starter relay coupler from the starter relay.
- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the starter relay terminal as shown.

Positive battery terminal → blue/white ①

Negative battery terminal → gray ②

Positive tester probe → red ③

Negative tester probe → red/white ④

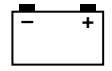


- Does the starter relay have continuity between red and red/white?

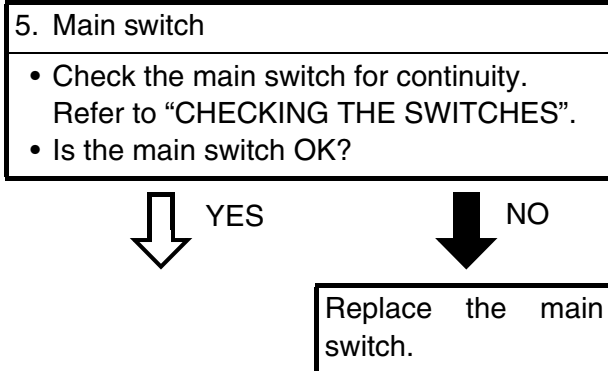
YES

NO

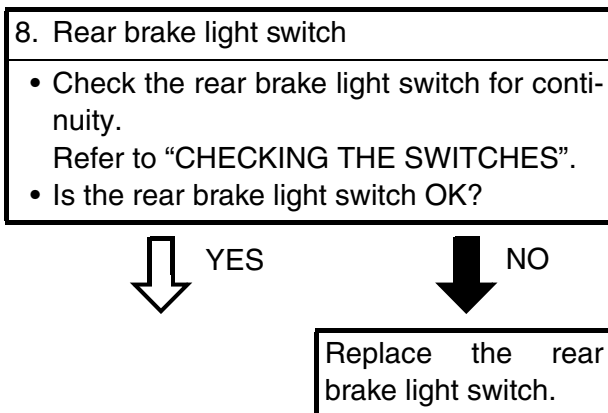
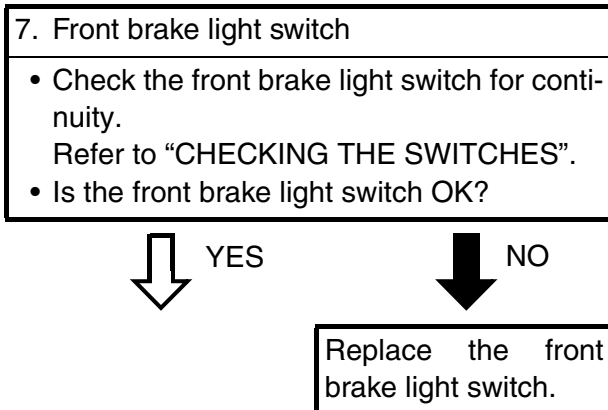
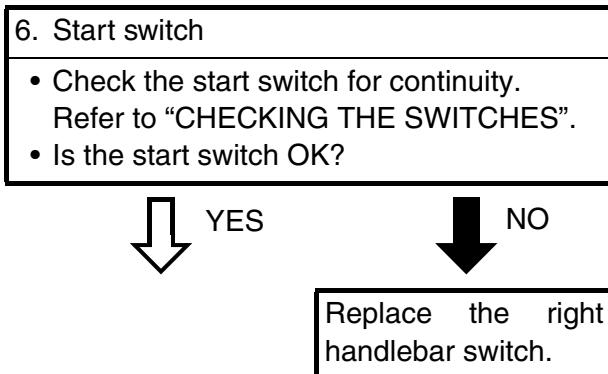
Replace the starter relay.



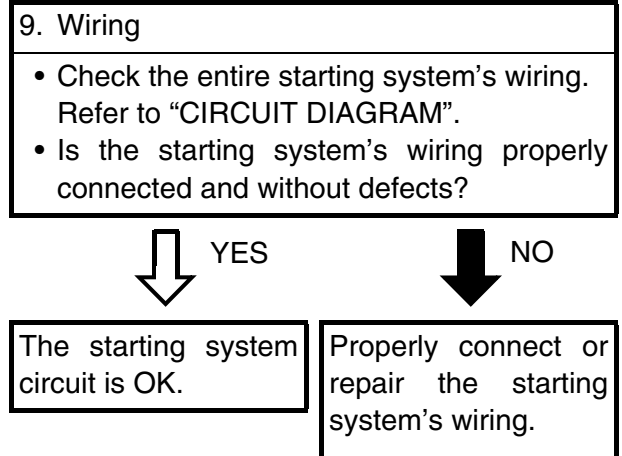
EAS00749



EAS00764



EAS00766



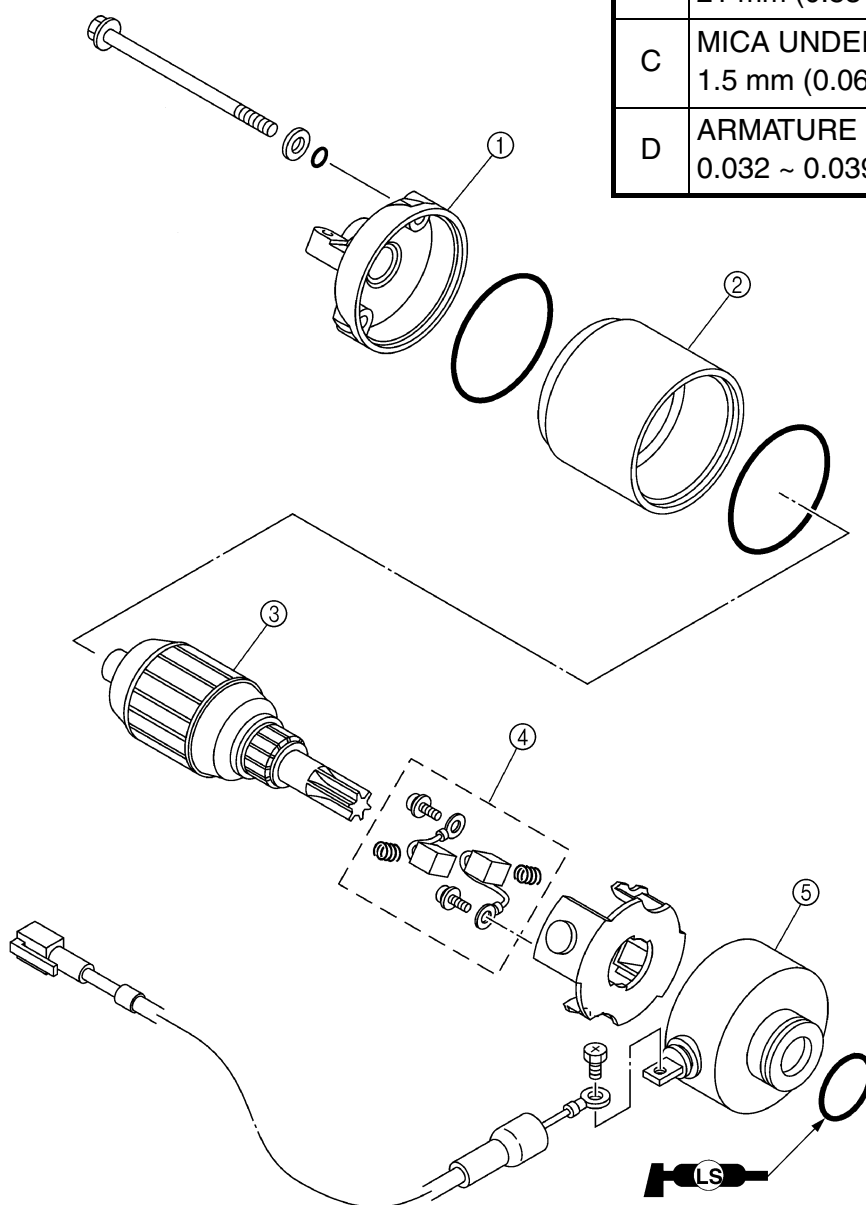


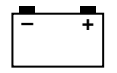
EASF0767

STARTER MOTOR

- ① Starter motor rear cover
- ② Starter motor yoke
- ③ Armature
- ④ Bush set
- ⑤ Starter motor front cover assembly

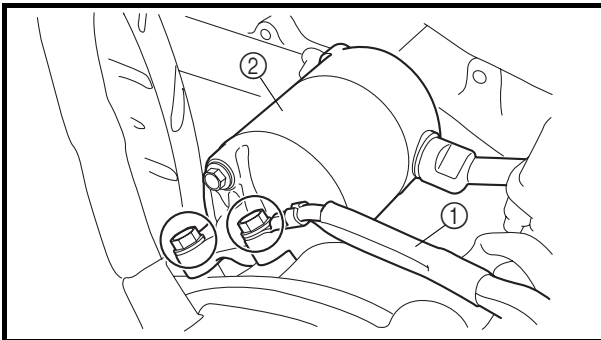
A	BRUSH LENGTH LIMIT: 3.5 mm (0.14 in)
B	COMMUTATOR WEAR LIMIT: 21 mm (0.83 in)
C	MICA UNDER CUT: 1.5 mm (0.06 in)
D	ARMATURE COIL RESISTANCE: 0.032 ~ 0.039 Ω at 20 °C (68 °F)



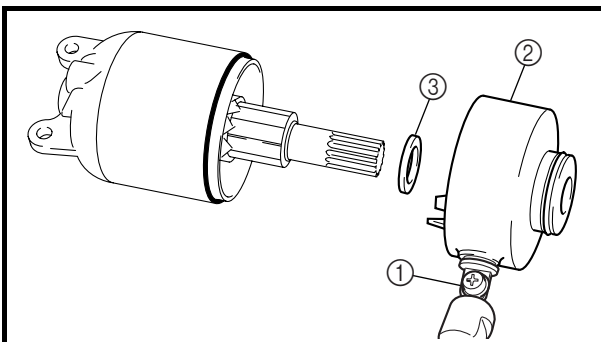


REMOVING THE STARTER MOTOR

1. Remove:
 - footboard
Refer to “REMOVING THE FRONT COWLING AND LEG SHIELD” in chapter 3.
2. Remove:
 - battery
Refer to “CHECKING AND CHARGING THE BATTERY” in chapter 3.
3. Remove:
 - storage box
Refer to “FUEL TANK” in chapter 5.
 - air filter case
Refer to “AIR FILTER CASE” in chapter 5.

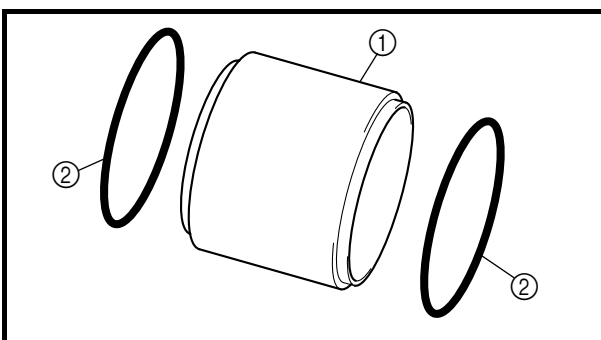


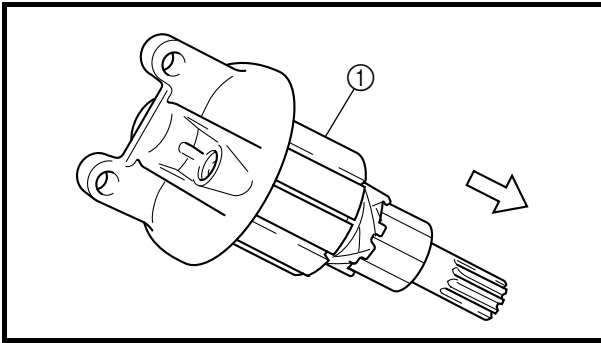
4. Disconnect:
 - battery negative lead ①
5. Remove:
 - starter motor ②



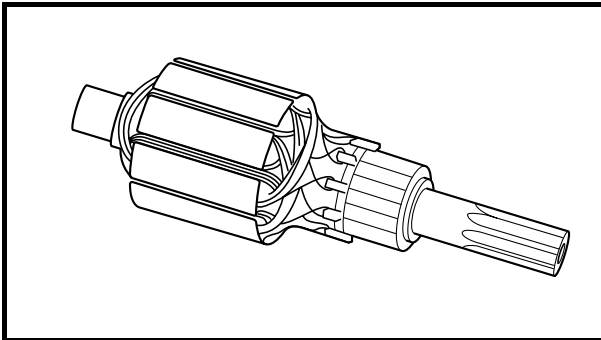
DISASSEMBLING THE STARTER MOTOR

1. Remove:
 - starter motor lead ①
 - starter motor front cover bolts (with washer and O-ring)
2. Remove:
 - starter motor front cover ②
 - washer ③
3. Remove:
 - starter motor yoke ①
 - O-rings ②





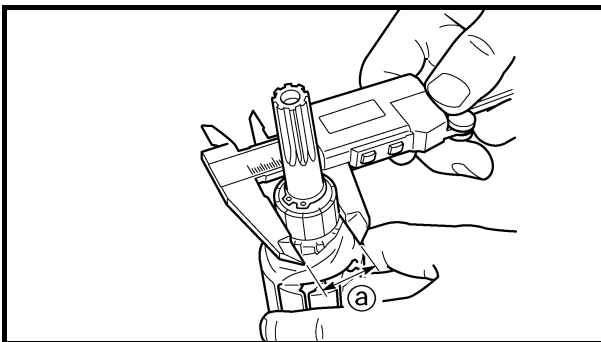
4. Remove:
- armature ①



EAS00770

CHECKING THE STARTER MOTOR

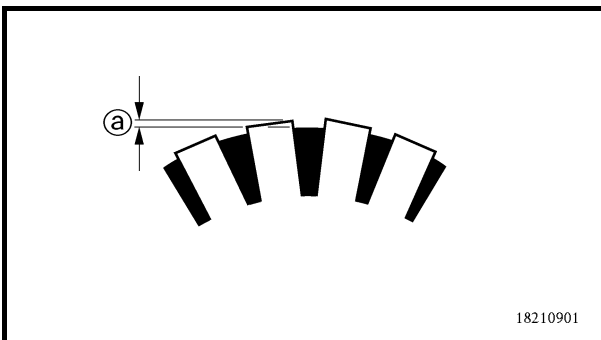
1. Check:
- commutator
- Dirt → Clean with 600-grit sandpaper.



2. Measure:
- commutator diameter ②
- Out of specification → Replace the starter motor.



Commutator wear limit
21 mm (0.83 in)



18210901

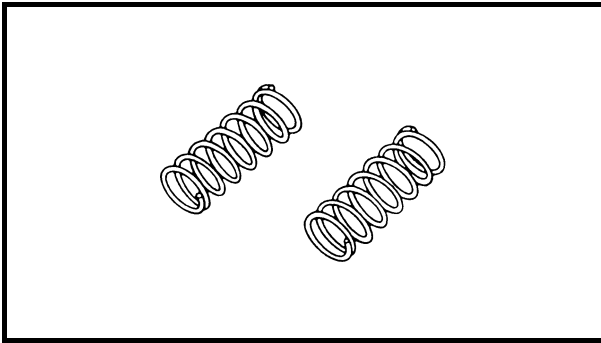
3. Measure:
- mica undercut ③
- Out of specification → Scrape the mica to the proper measurement with a hacksaw blade that has been grounded to fit the commutator.



Mica undercut
1.5 mm (0.06 in)

NOTE:

The mica of the commutator must be undercut to ensure proper operation of the commutator.



6. Measure:

- brush spring force
Out of specification → Replace the brush springs as a set.



Brush spring force

5.52 ~ 8.28 N

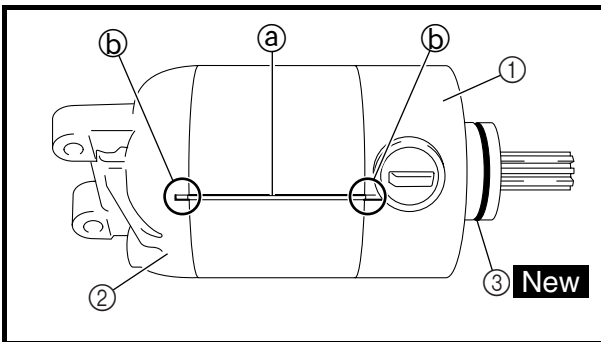
(563 ~ 844 gf, 19.87 ~ 29.80 oz)

7. Check:

- gear teeth
Damage/wear → Replace the gear.

8. Check:

- bearing
- oil seal
Damage/wear → Replace the defective part(s).



EAS00772

ASSEMBLING THE STARTER MOTOR



WARNING

Always use a new O-ring.

1. Install:

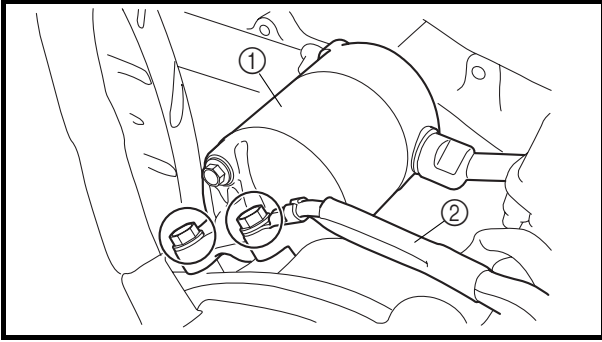
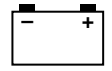
- washer
(to armature)
- armature
(in starter motor front cover ①)
- O-rings **New**
(to starter motor yoke)
- starter motor yoke
- starter motor rear cover ②

NOTE:

Align the match mark ③ on the starter motor yoke with the match marks ④ on the front and starter motor rear cover.

- starter motor rear cover bolts
(with O-ring and washer)
- O-ring ③ **New**
(to starter motor front cover)
- starter motor lead

STARTER MOTOR

ELEC

INSTALLING THE STARTER MOTOR

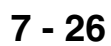
For installation, reverse the removal procedure.

1. Install:

- starter motor ①
- negative battery lead ②
- starter motor bolts

 7 Nm (0.7 m · kg, 5.1 ft · lb)

CIRCUIT DIAGRAM





EAS00774

TROUBLESHOOTING

The battery is not being charged.

Check:

1. fuse
2. battery
3. charging voltage
4. charging coil resistance
5. wiring connections
(of the entire charging system)

NOTE:

- Before troubleshooting, remove the following part(s):
 1. seat
 2. center cover
 3. rear panel
 4. right side cover
- Troubleshoot with the following special tool(s).



Engine tachometer
90890-03113
Pocket tester
90890-03112

EAS00738

1. Fuse

- Check the fuse for continuity.
Refer to "CHECKING THE FUSE" in chapter 3.
- Is the fuse OK?



YES



NO

Replace the fuse.

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

- Refill battery fluid.
- Clean the battery terminals.
- Recharge or replace the battery.

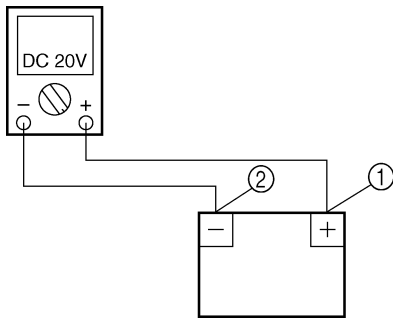


EAS00775

3. Charging voltage

- Connect the engine tachometer to the spark plug lead.
- Connect the pocket tester (DC 20 V) to the battery as shown.

Positive tester probe →
positive battery terminal ①
Negative tester probe →
negative battery terminal ②



- Start the engine and let it run at approximately 5,000 r/min.
- Measure the charging voltage.



Charging voltage
14 V at 5,000 r/min

NOTE: _____
Make sure the battery is fully charged.

- Is the charging voltage within specification?

NO

YES

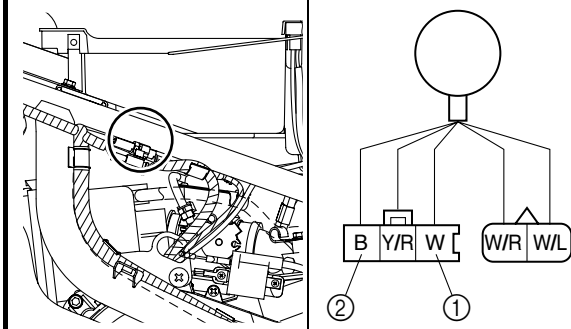
The charging circuit is OK.

EAS00776

4. Charging coil resistance

- Disconnect the A.C. magneto coupler from the wire harness.
- Connect the pocket tester ($\Omega \times 1$) to the charging coil as shown.

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



- Measure the charging coil resistances.



Charging coil resistance
0.32 ~ 0.48 Ω at 20 °C (68 °F)

- Is the charging coil OK?

YES

NO

Replace the pick up coil/stator coil assembly.

EAS00779

5. Wiring

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

YES

NO

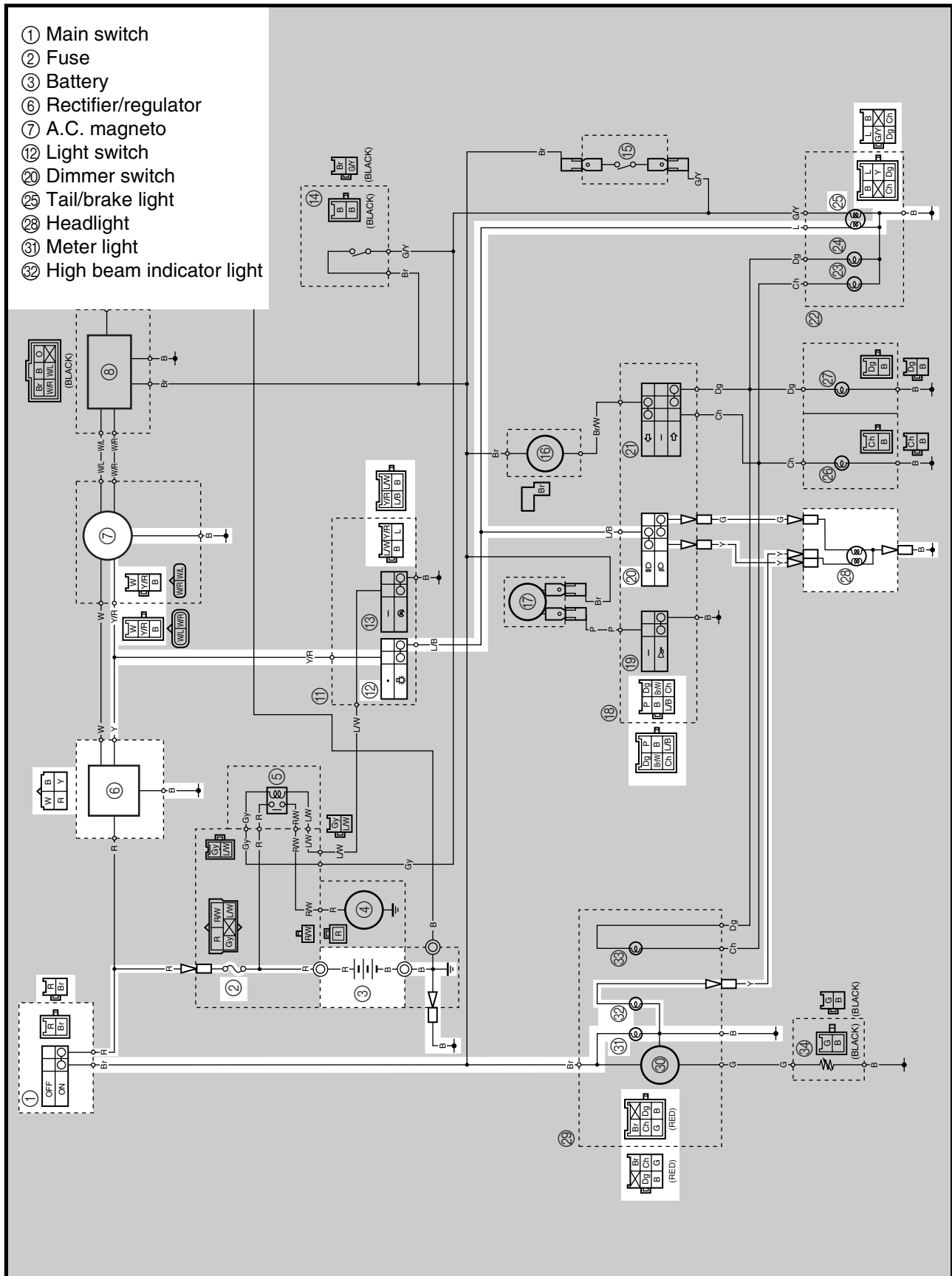
Replace the rectifier/regulator.

Properly connect or repair the charging system's wiring.

EAS00780

LIGHTING SYSTEM CIRCUIT DIAGRAM

- ① Main switch
- ② Fuse
- ③ Battery
- ⑥ Rectifier/regulator
- ⑦ A.C. magneto
- ⑫ Light switch
- ⑳ Dimmer switch
- ㉕ Tail/brake light
- ㉘ Headlight
- ㉛ Meter light
- ㉞ High beam indicator light





EAS00781

TROUBLESHOOTING

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

Check:

1. fuse
2. battery
3. main switch
4. light switch
5. dimmer switch
6. lighting coil resistance
7. wiring connections
(of the entire lighting system)

NOTE:

- Before troubleshooting, remove the following part(s):
 1. seat
 2. center cover
 3. rear panel
 4. right side cover
 5. headlight assembly
- Troubleshoot with the following special tool(s).



Pocket tester
90890-03112

EAS00738

1. Fuse

- Check the fuse for continuity.
Refer to "CHECKING THE FUSE" in chapter 3.
- Is the fuse OK?



YES



NO

Replace the fuse.

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

- Refill battery fluid.
- 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.



EAS00783

4. Light switch

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



The light switch is faulty. Replace the right handlebar switch.

EAS00784

5. Dimmer switch

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



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

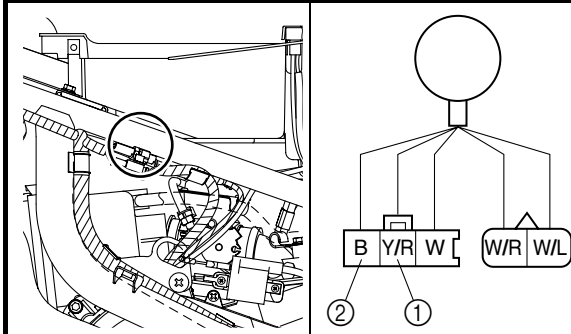
EAS00776

6. Lighting coil resistance

- Disconnect the A.C. magneto coupler from the wire harness.
- Connect the pocket tester ($\Omega \times 1$) to the lighting coils as shown.

Positive tester probe → yellow/red ①

Negative tester probe → black ②



- Measure the lighting coil resistances.



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

- Is the lighting coil OK?



Replace the pickup coil/stator coil assembly.

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?



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?



Replace the headlight bulb, socket or both.

2. Voltage

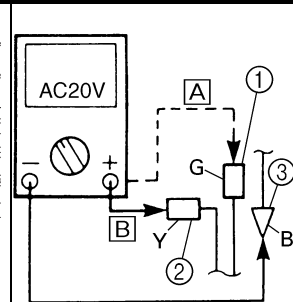
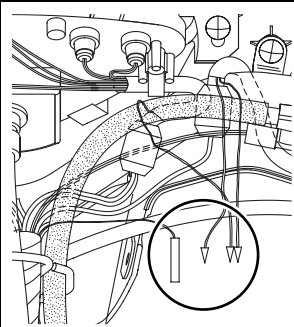
- Connect the pocket tester (AC 20 V) to the headlight connectors and high beam indicator light connector and coupler as shown.

Headlight

Positive tester probe → green ① or yellow ②

Negative tester probe → black ③

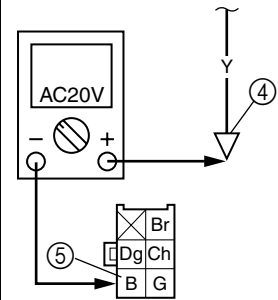
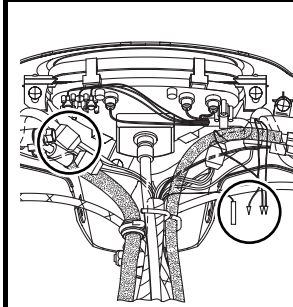
- A** When the dimmer switch is set to "☰" (High beam)
B When the dimmer switch is set to "☷" (Low beam)



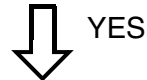
High beam indicator light

Positive tester probe → yellow ④

Negative tester probe → black ⑤

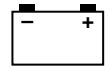


- Set the main switch to "ON".
- Start the engine.
- Set the light switch to "☰" (High beam).
- Set the dimmer switch to "☷" (Low beam) or "☷" (Low beam).
- Measure the voltage (AC 12 V) of green ① or yellow ② on the headlight connector (wire harness side) and yellow ④ on the meter assembly connector.
- Is the voltage within specification?



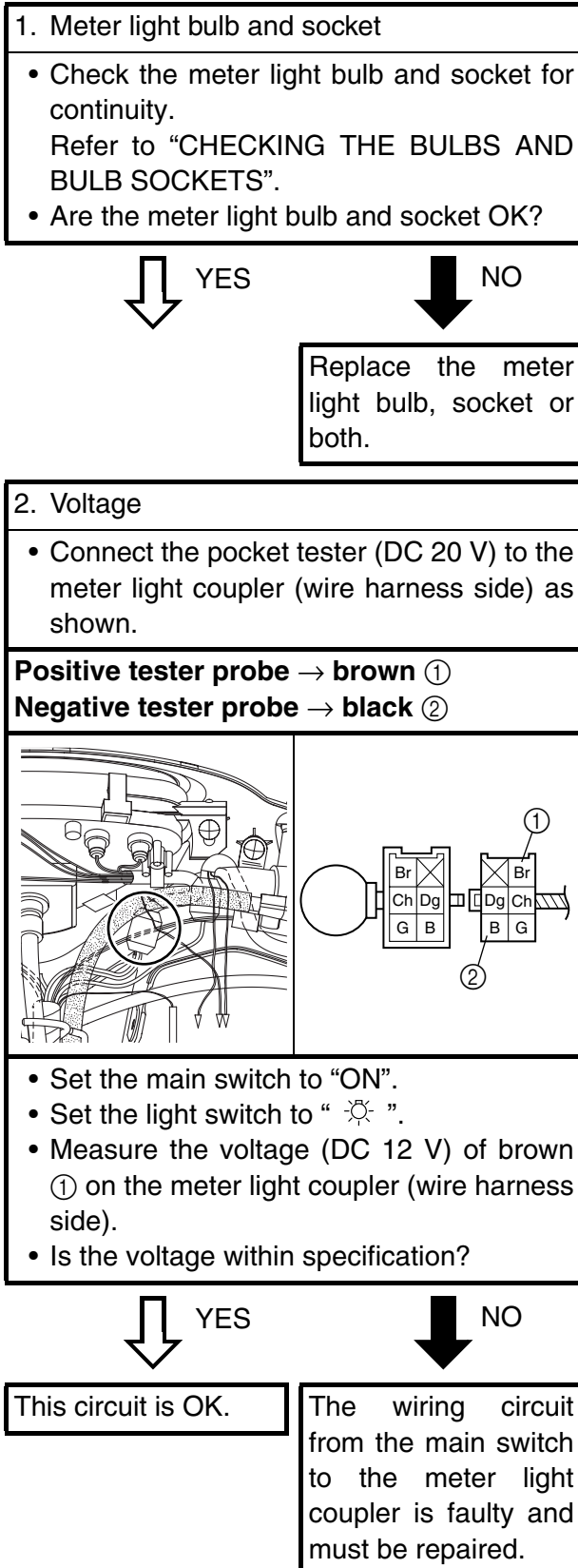
This circuit is OK.

Replace the rectifier/regulator.



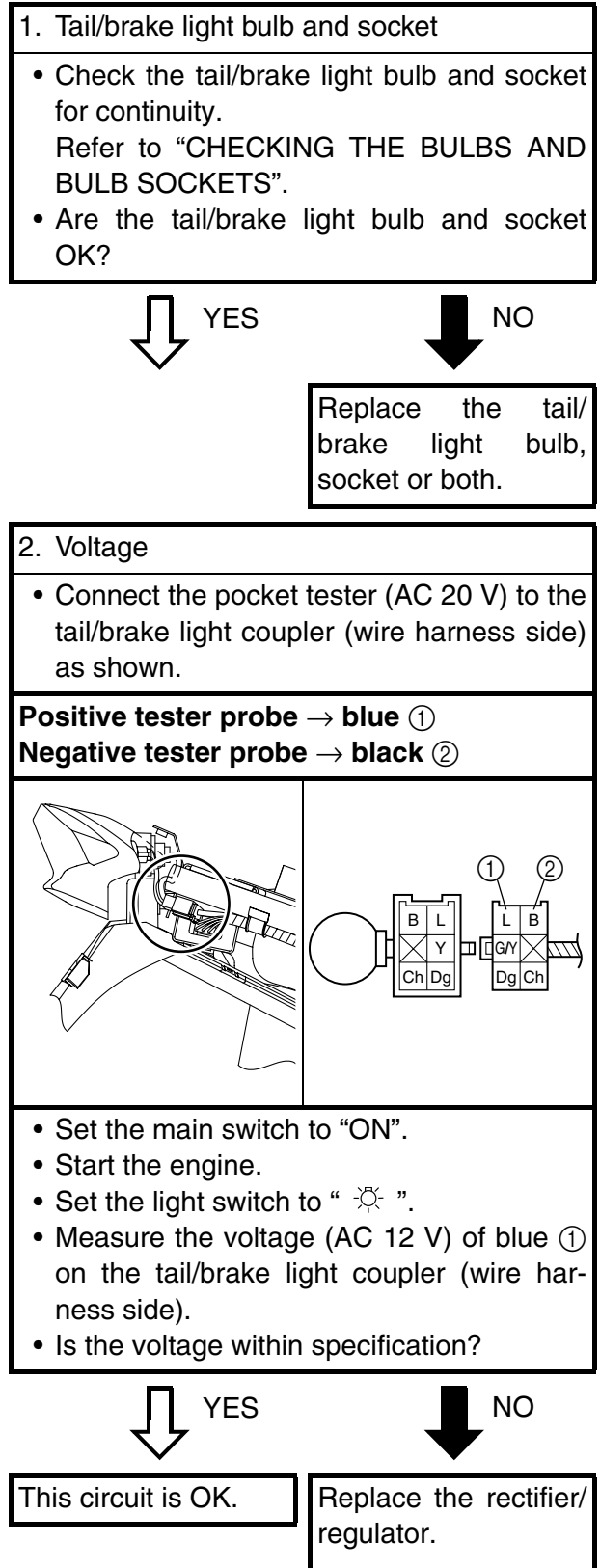
EAS00789

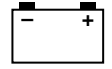
2. The meter light fails to come on.



EAS00790

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

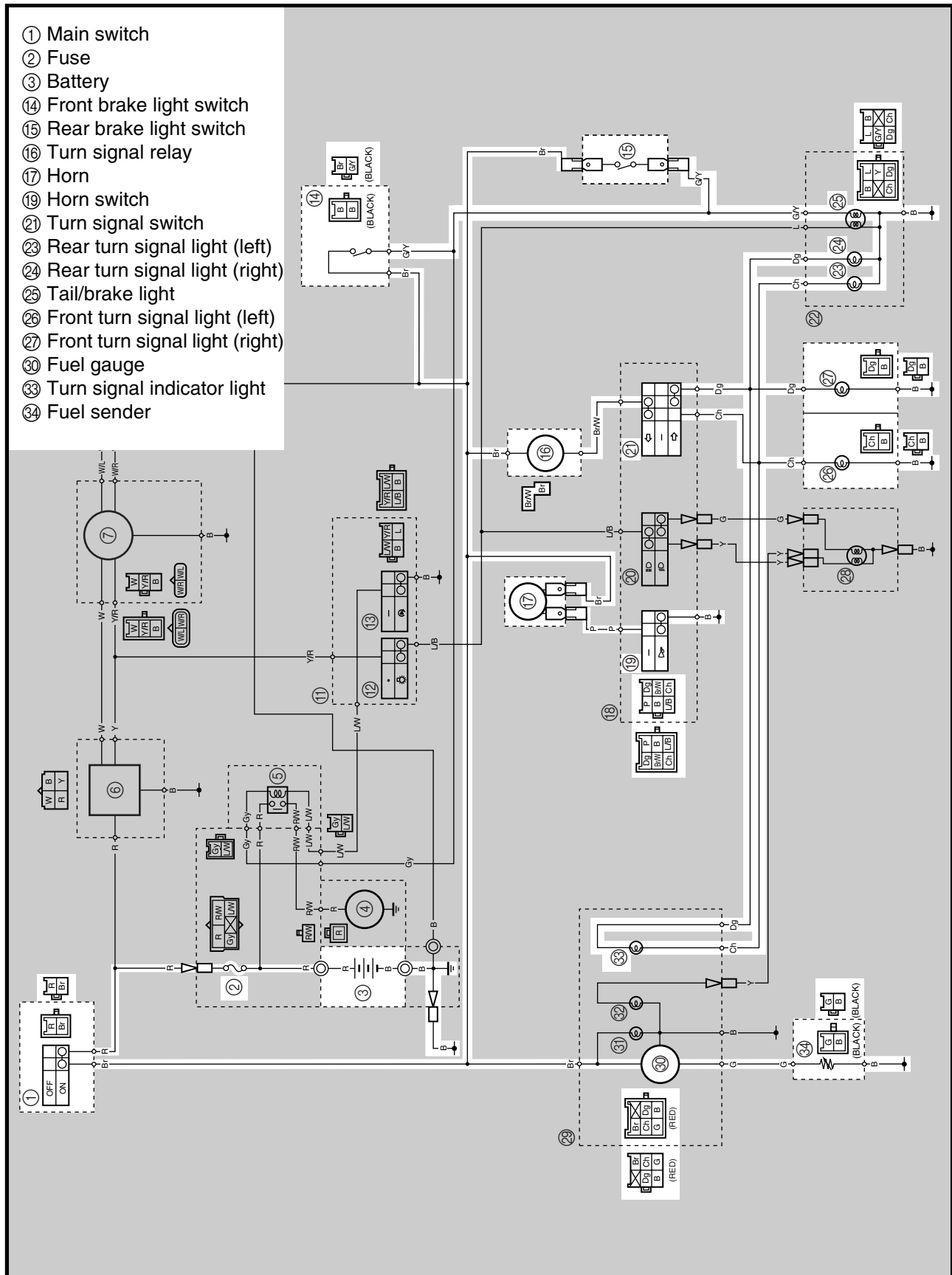




EAS00793

SIGNALING SYSTEM CIRCUIT DIAGRAM

- ① Main switch
- ② Fuse
- ③ Battery
- ④ Front brake light switch
- ⑤ Rear brake light switch
- ⑥ Turn signal relay
- ⑦ Horn
- ⑧ Horn switch
- ⑨ Turn signal switch
- ⑩ Rear turn signal light (left)
- ⑪ Rear turn signal light (right)
- ⑫ Tail/brake light
- ⑬ Front turn signal light (left)
- ⑭ Front turn signal light (right)
- ⑮ Fuel gauge
- ⑯ Turn signal indicator light
- ⑰ Fuel sender





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. fuse
2. battery
3. main switch
4. wiring connections
(of the entire signaling system)

NOTE:

- Before troubleshooting, remove the following part(s):
 1. seat
 2. center cover
 3. rear panel
 4. right side cover
 5. headlight assembly
 6. front cowl
- Troubleshoot with the following special tool(s).



Pocket tester
90890-03112

EAS00738

1. Fuse

- Check the fuse for continuity.
Refer to "CHECKING THE FUSE" in chapter 3.
- Is the fuse OK?



YES



NO

Replace the fuse.

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

- Refill battery fluid.
- 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 signal 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 SIGNALING 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

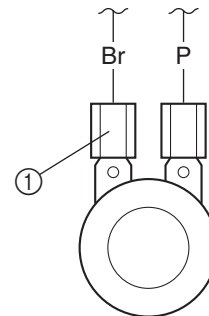
The horn switch is faulty. Replace the left handlebar switch.

2. Voltage

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

Positive tester probe → brown ①

Negative tester probe → ground



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



YES



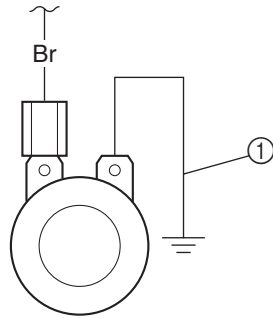
NO

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



3. Horn

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



NO

YES

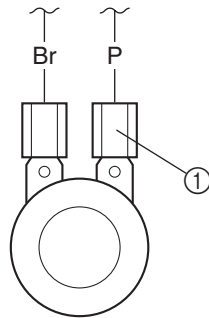
The horn is OK.

4. Voltage

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

Positive tester probe → pink ①

Negative tester probe → ground



- Set the main switch to "ON".
- Measure the voltage (DC 12 V) of pink ① at the horn terminal.
- Is the voltage within specification?

YES

NO

Repair or replace the pink lead or ground lead.

Replace the horn.

EAS00798

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.

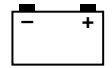
2. Brake light switches

- 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.

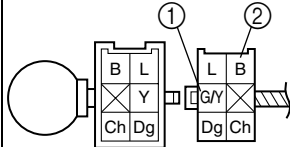
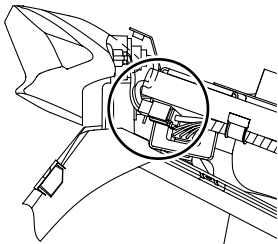


3. Voltage

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

Positive tester probe → green/yellow ①

Negative tester probe → black ②



- Set the main switch to "ON".
- Pull in the brake levers.
- Measure the voltage (DC 12 V) of green/yellow ① 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 bulb and socket

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

↓ YES

↓ NO

Replace the turn signal light bulb, socket or both.

2. Turn signal switch

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

↓ YES

↓ NO

The turn signal switch is faulty. Replace the left handlebar switch.

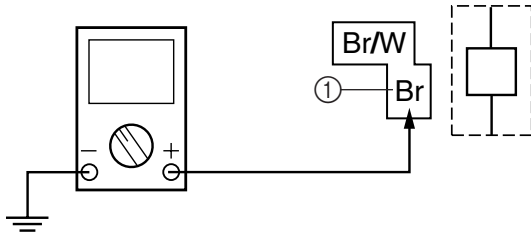


3. Voltage

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

Positive tester probe → brown ①

Negative tester probe → ground



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

YES

NO

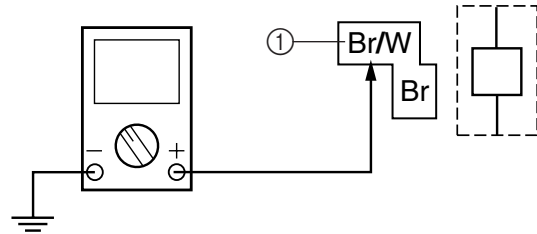
The wiring circuit from the main switch to the turn signal relay coupler is faulty and must be repaired.

4. Voltage

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

Positive tester probe → brown/white ①

Negative tester probe → ground



- Set 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 coupler (wire harness side) as shown.

A Rear turn signal light

B Front turn signal light

Left turn signal light

Positive tester probe → chocolate ①

Negative tester probe → ground

Right turn signal light

Positive tester probe → dark green ②

Negative tester probe → ground

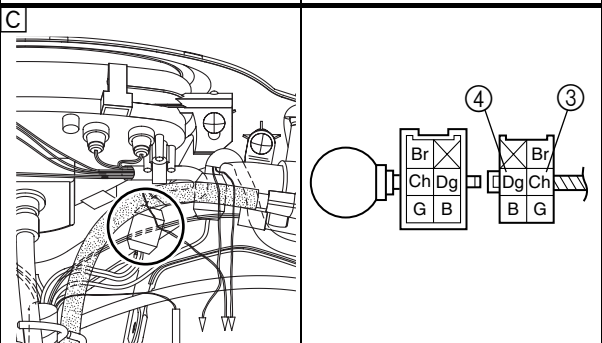
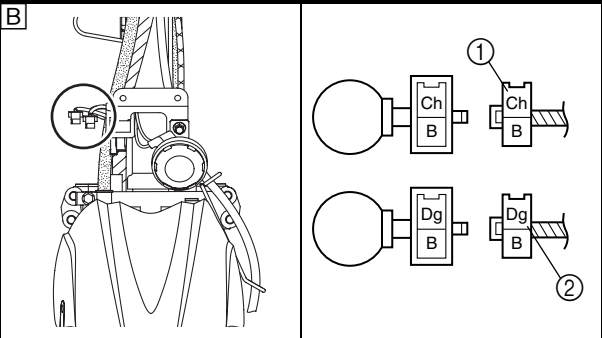
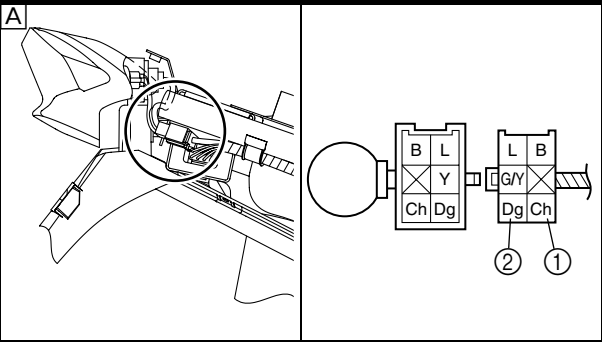
C Turn signal indicator light

Positive tester probe → chocolate ③

Negative tester probe → ground

Positive tester probe → dark green ④

Negative tester probe → ground



- Set 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 coupler (wire harness side) and chocolate ③ or dark green ④ at the turn signal indicator light coupler (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 coupler is faulty and must be repaired.



EAS00804

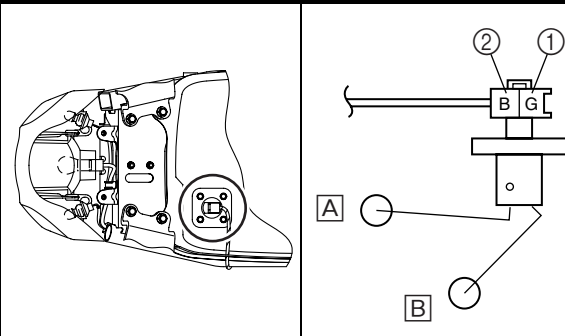
4. The fuel level gauge fails to operate.

1. Fuel sender

- Remove the fuel sender from the fuel tank.
- Connect the pocket tester to the fuel sender coupler (wire harness side) as shown.

Positive tester probe → green ①

Negative tester probe → black ②



- Measure the fuel sender resistances.



Fuel sender resistance (up position “full” [A])

($\Omega \times 1$)

4 ~ 10 Ω at 20 °C (68 °F)

Fuel sender resistance (down position “empty” [B])

($\Omega \times 10$)

90 ~ 100 Ω at 20 °C (68 °F)

- Is the fuel sender OK?

YES

NO

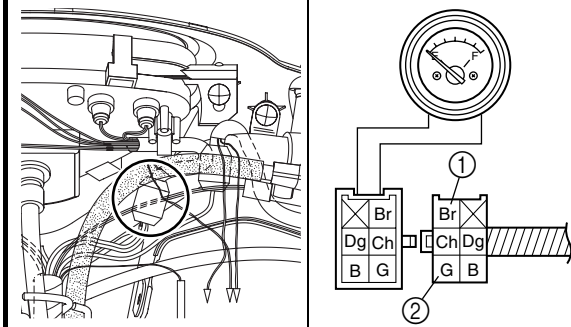
Replace the fuel sender.

2. Voltage

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

Positive tester probe → brown ①

Negative tester probe → green ②

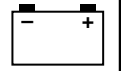


- Set the main switch to “ON”.
- Measure the voltage (DC 12 V) of brown ① on the meter light coupler (wire harness side).
- Is the voltage within specification?

YES

NO

Check the wiring connections of the entire signaling system.

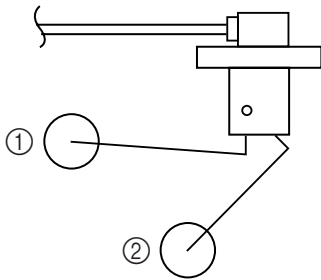


3. Fuel level gauge

- Set the main switch to “ON”.
- Move the float up ① or down ②.
- Check that the fuel level gauge needle moves to “F” or “E”.

NOTE:

Before reading the fuel level gauge, leave the float in one position (either up or down) for at least three minutes.



- Does the fuel level gauge needle move appropriately?



YES



NO

Replace the meter assembly.

4. Wiring

Check the entire signaling system's wiring.

CHAPTER 8

TROUBLESHOOTING

TROUBLESHOOTING	8-1
ELECTRICAL SYSTEM.....	8-1
COMPRESSION SYSTEM.....	8-2
INTAKE AND EXHAUST SYSTEM	8-3

TROUBLESHOOTING

TROUBLESHOOTING
ELECTRICAL SYSTEM

CHECK ALL WIRE CONNECTIONS

C.D.I. unit

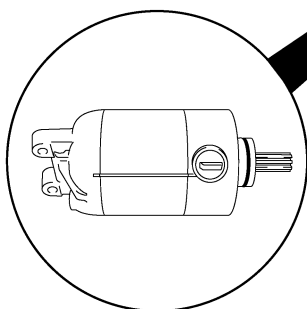
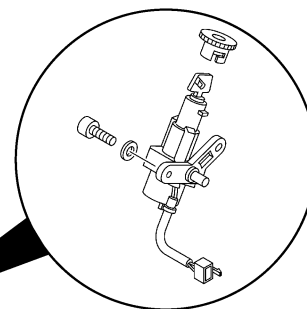
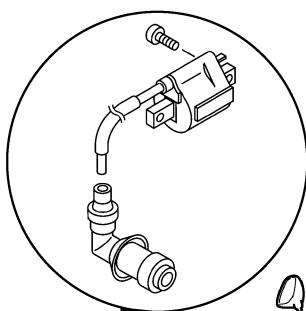
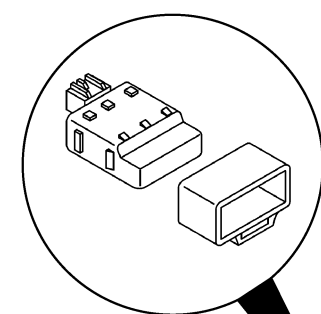
- C.D.I. unit is broken

IGNITION COIL (see page 7-13)

- Primary or secondary windings are broken or faulty
- Spark plug lead is faulty
- Spark plug cap is faulty

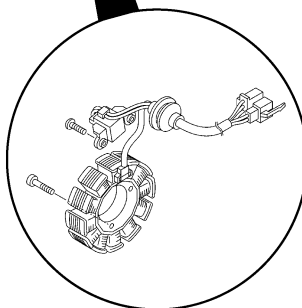
MAIN SWITCH (see page 7-5)

- Main switch is shorted

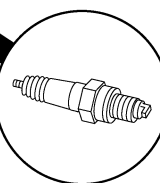


STARTER MOTOR (see page 7-20)

- Starter motor is broken or faulty
- Starter relay is broken
- Starter switch is broken

CHARGING COIL (see page 7-28) /
PICKUP COIL (see page 7-13)

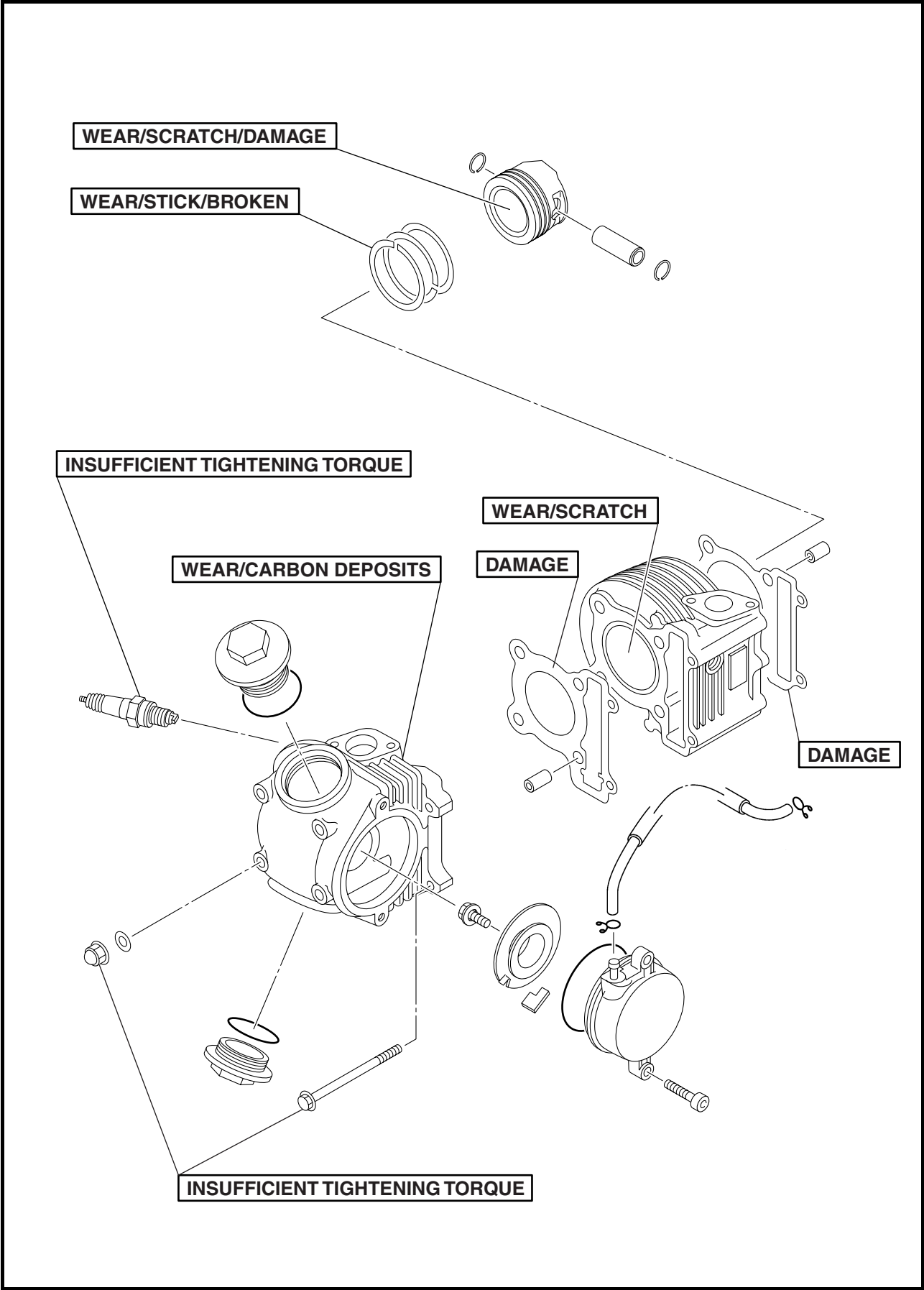
- Windings are broken



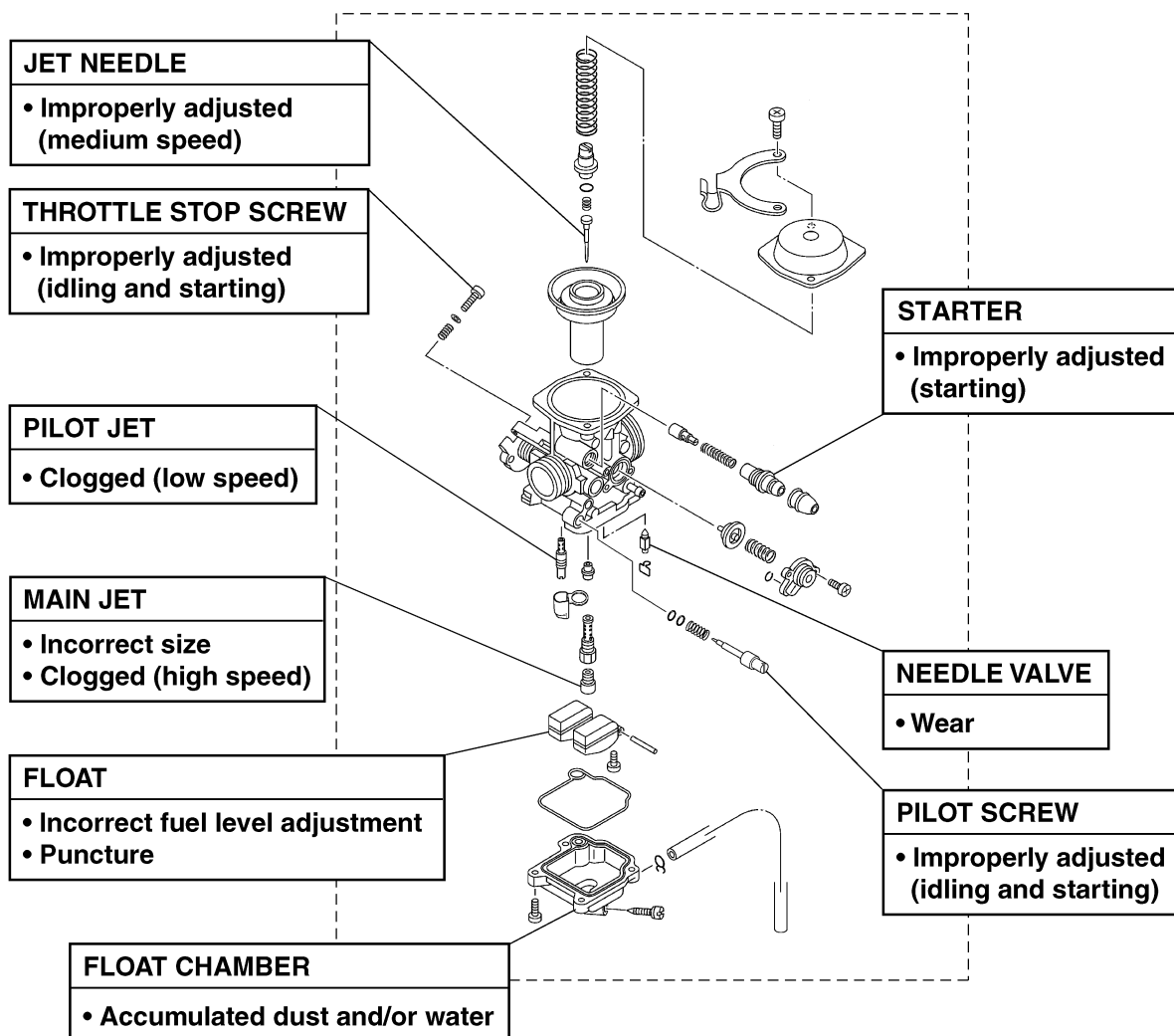
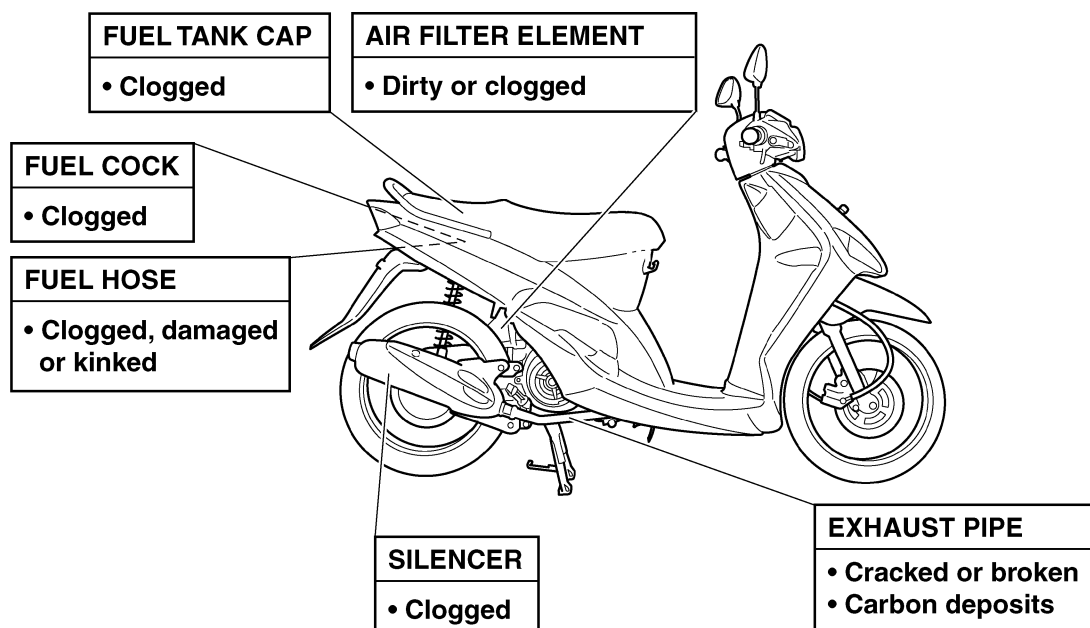
SPARK PLUG

- Many carbon deposits
- Electrodes are wet
- Improper gap
- Broken

COMPRESSION SYSTEM



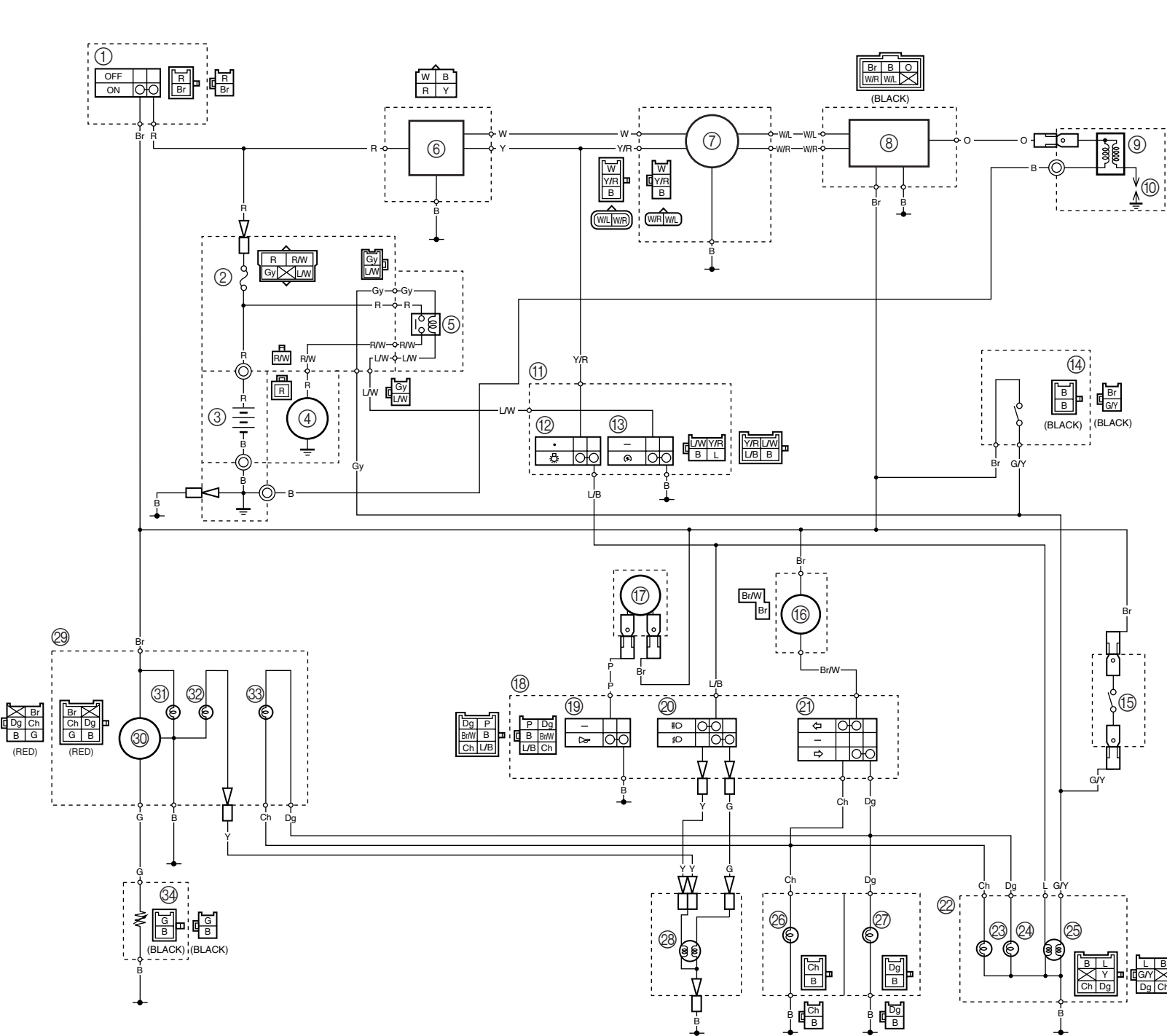
INTAKE AND EXHAUST SYSTEM





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

AL115 WIRING DIAGRAM



- ① Main switch
- ② Fuse
- ③ Battery
- ④ Starter motor
- ⑤ Starter relay
- ⑥ Rectifier/regulator
- ⑦ A.C. magneto
- ⑧ C.D.I. unit
- ⑨ Ignition coil
- ⑩ Spark plug
- ⑪ Right handlebar switch
- ⑫ Light switch
- ⑬ Start switch
- ⑭ Front brake light switch
- ⑮ Rear brake light switch
- ⑯ Turn signal relay
- ⑰ Horn
- ⑱ Left handlebar switch
- ⑲ Horn switch
- ⑳ Dimmer switch
- ㉑ Turn signal switch
- ㉒ Tail/brake light assembly
- ㉓ Rear turn signal light (left)
- ㉔ Rear turn signal light (right)
- ㉕ Tail/brake light
- ㉖ Front turn signal light (left)
- ㉗ Front turn signal light (right)
- ㉘ Headlight
- ㉙ Meter assembly
- ㉚ Fuel gauge
- ㉛ Meter light
- ㉜ High beam indicator light
- ㉝ Turn signal indicator light
- ㉞ Fuel sender

COLOR CODE

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