A Few Words About Safety

Service Information

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you or others. It could also damage the vehicle or create an unsafe condition.

This manual describes the proper methods and procedures for performing service, maintenance and repairs. Some procedures require the use of specially designed tools and dedicated equipment. Any person who intends to use a replacement part, service procedure or a tool that is not recommended by Honda, must determine the risks to their personal safety and the safe operation of the vehicle.

If you need to replace a part, use Honda Genuine parts with the correct part number or an equivalent part. We strongly recommend that you do not use replacement parts of inferior quality.

For Your Customer's Safety

Proper service and maintenance are essential to the customer's safety and the reliability of the vehicle. Any error or oversight while servicing a vehicle can result in faulty operation, damage to the vehicle, or injury to others.

⚠WARNING

Improper service or repairs can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

For Your Safety

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (e.g., Hot parts–wear gloves). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practice, we recommended that you do not attempt to perform the procedures described in this manual.

Some of the most important general service safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing service and repair procedures. Only you can decide whether or not you should perform a given task.

⚠WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.

Follow the procedures and precautions in this manual carefully.

Important Safety Precautions

Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When performing any service task, be especially careful of the following:

- Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to perform the tasks safely and completely.
- Protect your eyes by using proper safety glasses, goggles or face shields any time you hammer, drill, grind, pry or work around pressurized air or liquids, and springs or other stored-energy components. If there is any doubt, put on eye protection.
- Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
- Protect yourself and others whenever you have the vehicle up in the air. Any time you lift the vehicle, either with a hoist or a jack, make sure that it is always securely supported. Use jack stands.

Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:

- Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine
- Burns from hot parts or coolant. Let the engine and exhaust system cool before working in those areas.
- Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers and clothing are out of the way.

Gasoline vapors and hydrogen gases from batteries are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.

- Use only a nonflammable solvent, not gasoline, to clean parts.
- Never drain or store gasoline in an open container.
- Keep all cigarettes, sparks and flames away from the battery and all fuel-related parts.

How To Use This Manual

This manual describes the service procedures for the AFS110 1SH/1SH-II-D.

Sections 1 and 3 apply to the whole vehicle. Section 2 illustrates procedures for removal/installation of components that may be required to perform service described in the following sections.
Section 4 through 17 describe parts of the motorcycle, grouped according to location.

Follow the Maintenance Schedule recommendations to ensure that the vehicle is in peak operating condition.
Performing the first scheduled maintenance is very important. It compensates for the initial wear that occurs during the break-in period.

Find the section you want on this page, then turn to the table of contents on the first page of the section.

Most sections start with an assembly or system illustration, service information and troubleshooting for the section. The subsequent pages give detailed procedure.

Refer to the troubleshooting in each section according to the malfunction or symptom. In case of an engine trouble, refer to fuel system section troubleshooting first.

Your safety, and the safety of others, is very important. To help you make informed decisions we have provided safety messages and other information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing this vehicle.
You must use your own good judgement.
You will find important safety information in a variety of forms including:

- Safety Labels – on the vehicle
- Safety Messages – preceded by a safety alert symbol ⚠ and one of three signal words, DANGER, WARNING, or CAUTION. These signal words mean:

⚠DANGER You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.

⚠WARNING You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.

⚠CAUTION You CAN be HURT if you don't follow instructions.

- Instructions – how to service this vehicle correctly and safely.

As you read this manual, you will find information that is preceded by a **NOTICE** symbol. The purpose of this message is to help prevent damage to your vehicle, other property, or the environment.

SERVICE PUBLICATION OFFICE

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SYMBOLS

The symbols used throughout this manual show specific service procedures. If supplementary information is required pertaining to these symbols, it would be explained specifically in the text without the use of the symbols.

	Replace the part(s) with new one(s) before assembly.
	Use the recommend engine oil, unless otherwise specified.
	Use molybdenum oil solution (mixture of the engine oil and molybdenum grease in a ratio of 1:1).
	Use multi-purpose grease (lithium based multi-purpose grease NLGI #2 or equivalent).
	Use molybdenum disulfide grease (containing more than 3% molybdenum disulfide, NLGI #2 or equivalent). Example: • Molykote® BR-2 plus manufactured by Dow Corning U.S.A. • Multi-purpose M-2 manufactured by Mitsubishi Oil, Japan
	Use molybdenum disulfide paste (containing more than 40% molybdenum disulfide, NLGI #2 or equivalent). Example: • Molykote® G-n Paste manufactured by Dow Corning U.S.A. • Honda Moly 60 (U.S.A. only) • Rocol ASP manufactured by Rocol Limited, U.K. • Rocol Paste manufactured by Sumico Lubricant, Japan
	Use silicone grease.
	Apply a locking agent. Use a medium strength locking agent unless otherwise specified.
	Apply sealant.
	Use DOT 3 or DOT 4 brake fluid. Use the recommended brake fluid unless otherwise specified.
	Use fork or suspension fluid.

CONTENTS

MEMO

1. GENERAL INFORMATION

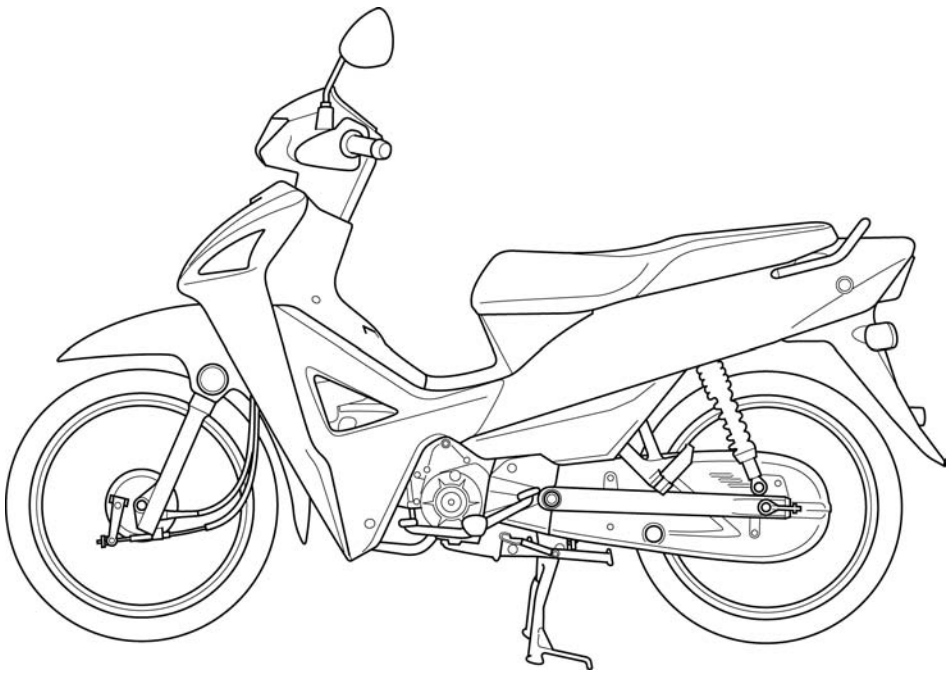
SERVICE RULES

1. Use Honda genuine or Honda-recommended parts and lubricants or their equivalents. Parts that do not meet Honda's design specifications may cause damage to the motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing the motorcycle. Metric bolts, nuts and screws are not interchangeable with English fasteners.
4. Install new gaskets, O-rings, cotter pins, and lock plates when reassembling.
5. When tightening bolts or nuts, begin with the larger diameter or inner bolt first. Then tighten to the specified torque diagonally in incremental steps unless a particular sequence is specified.
6. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as shown in the Cable and Harness Routing (page 1-16).
9. Do not bend or twist control cables. Damaged control cables will not operate smoothly and may stick or bind.

MODEL IDENTIFICATION

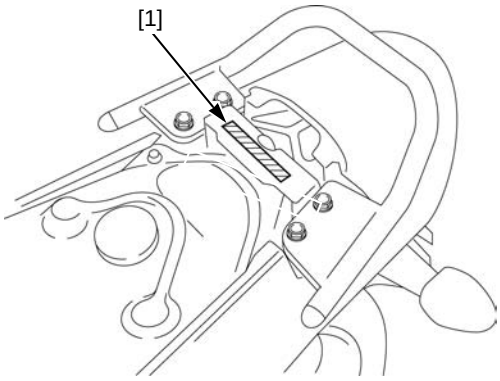
This manual covers following types of AFS110 1SH models.

DESTINATION CODE	REGION	FEATURE							
		Spoke wheel	Cast wheel	Starter motor	Secondary Air Supply System	Air cut-off valve	Carburetor heater	Lighting switch & Resistor	Viscous paper element
LA	Latin America	○		○			○		○
DK	IPPAN KILO	○						○	○
IIDK	IPPAN KILO type II		○	○				○	○
IIIDK	IPPAN KILO type III	○		○				○	○
MX	Mexico	○		○	○	○		○	○
AG	Argentina	○		○			○		○
PE	Peru	○		○	○	○		○	○
CO	Colombia	○		○	○	○		○	○
NR	Nigeria	○						○	○
IINR	Nigeria type II		○	○				○	○
IIINR	Nigeria type III	○		○				○	○

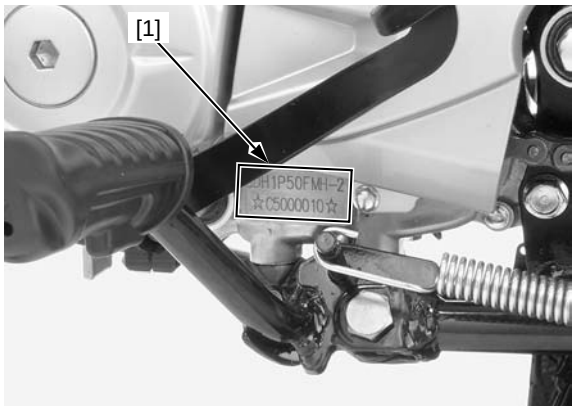


SERIAL NUMBER/LABEL

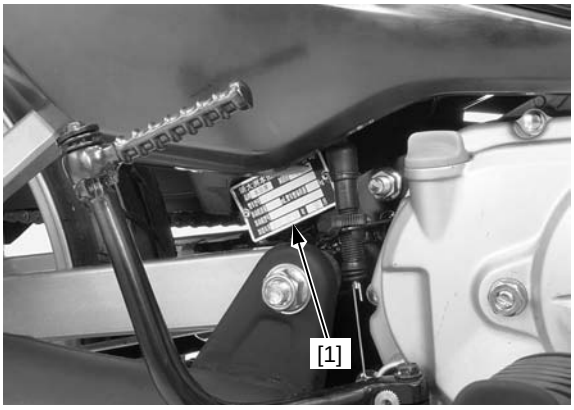
The Vehicle Identification Number (V.I.N) [1] is stamped on the frame as shown.



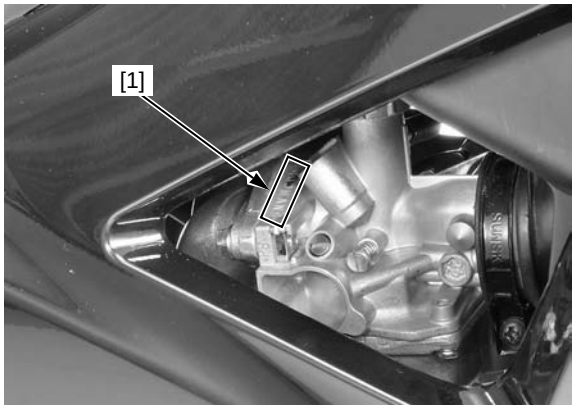
The engine serial number [1] is stamped on the lower left side of the crankcase.



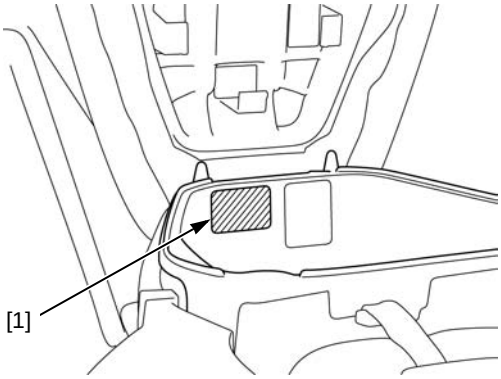
The registered number plate [1] is attached on the right side of the frame as shown.



The carburetor number [1] is stamped on the right side of the carburetor as shown.



The color label [1] is attached on the luggage box. When ordering color-coded parts, always specify the designated color code.



SPECIFICATIONS

GENERAL SPECIFICATIONS

ITEM				SPECIFICATIONS
DIMENSIONS	Overall length			1,897 mm
	Overall width			706 mm
	Overall height			1,092 mm
	Wheelbase			1,227 mm
	Seat height			765 mm
	Footpeg height			272 mm
	Ground clearance			135 mm
	Curb weight	DK, NR type		95 kg
		IIIDK, IIINR type		97 kg
		LA, IIDK, AG, IINR type		98 kg
		MX, PE, CO type		99 kg
FRAME	Frame type			Back bone type
	Front suspension			Telescopic fork
	Front axle travel			81 mm
	Rear suspension			Swingarm
	Rear axle travel			82 mm
	Front tire size			70/90 - 17M/C 38P
	Rear tire size			80/90 - 17M/C 50P
	Tire brand	Front		C6016 (CST)
		Rear		C6016R (CST)
		Front/Rear		DM-261B (DURO)
		Front/Rear		P180 (CORDIAL)
	Front brake			Mechanical leading trailing
	Rear brake			Mechanical leading trailing
	Caster angle			26°30’
	Trail length			68 mm
	Fuel tank capacity			3.7 liter
ENGINE	Bore and stroke			50.0 x 55.6 mm
	Displacement			109.1 cm^3
	Compression ratio			9.0 : 1
	Valve train			2 valve, single chain driven SOHC
	Intake valve	opens	at 1 mm lift	–10° BTDC
		closes	at 1 mm lift	30° ABDC
	Exhaust valve	opens	at 1 mm lift	–10° BBDC
		closes	at 1 mm lift	30° ATDC
	Lubrication system			Forced pressure and wet sump
	Oil pump type			Trochoid
	Cooling system			Air cooled
	Air filtration			Viscous paper filter
	Engine dry weight	DK, NR type		21.0 kg
		IIDK, IIIDK, IINR, IIINR type		22.6 kg
		LA, MX, AG, PE, CO type		22.7 kg
	Cylinder arrangement			Single cylinder inclined 80° from vertical
CARBURETOR	Carburetor type			Piston valve type
	Throttle bore			16 mm

ITEM			SPECIFICATIONS
DRIVE TRAIN	Clutch system		Multi-plate, wet
	Clutch operation system		Automatic centrifugal type
	Transmission		Constant mesh, 4-speed
	Primary reduction		4.059 (69/17)
	Final reduction		2.642 (37/14)
	Gear ratio	1st	2.615 (34/13)
		2nd	1.555 (28/18)
		3rd	1.136 (25/22)
		4th	0.916 (22/24)
	Gearshift pattern		Left foot operated return system (rotary system; only when the motorcycle is not running) - N - 1 - 2 - 3 - 4 (- N)
ELECTRICAL	Ignition system		DC-CDI
	Starting system	(Except DK, NR)	Kickstarter with electric starter motor
		(DK, NR)	Kickstarter
	Charging system		Single phase output alternator
	Regulator/rectifier		SCR opened/single phase, half wave rectification
	Lighting system		Alternator

IGNITION SYSTEM SPECIFICATIONS

ITEM	SPECIFICATIONS
Spark plug	CPR6EA – 9S (NGK)
Spark plug gap	0.8 – 0.9 mm
Ignition coil primary peak voltage	100 V minimum
Ignition pulse generator peak voltage	0.7 V minimum
Ignition timing	10° BTDC at idle speed

ELECTRIC STARTER SYSTEM SPECIFICATIONS (Except DK, NR)

Unit: mm

ITEM	STANDARD	SERVICE LIMIT
Starter motor brush length	7.0	3.5

FUEL SYSTEM SPECIFICATIONS

ITEM		SPECIFICATIONS
Carburetor identification number	DK, IIDK, IIIDK	PB5NZ
	NR, IINR, IIINR	PB5NZ
	LA, AG	PB5NW
	MX, CO	PB5NY
	PE	PB5NX
Main jet	MX, CO	#80
	Except MX, CO	#82
Slow jet		#42
Air screw initial opening		See page 6-9
Float level		10.7 mm
Engine idle speed		1,400 ± 100 min^{-1}
Throttle grip freeplay		2 – 6 mm
PAIR control valve specified vacuum (MX, CO, PE type)		64 kPa (480 mmHg)

LUBRICATION SYSTEM SPECIFICATIONS

Unit: mm

ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	After draining	0.75 liter	–
	After disassembly	1.0 liter	–
Recommended engine oil		Honda "4-stroke motorcycle oil" or an equivalent API classification: SG or higher (except oils labeled as energy conserving on the circular API service label) Viscosity: SAE 10W-30 JASO T 903 standard: MA	–
Oil pump rotor	Tip clearance	0.10 – 0.15	0.20
	Body clearance	0.15 – 0.21	0.26
	Side clearance	0.03 – 0.09	0.15

CYLINDER HEAD/VALVES SPECIFICATIONS

Unit: mm

ITEM			STANDARD	SERVICE LIMIT
Cylinder compression			1,412 kPa (205 psi) at 400 min^{-1}	–
Cylinder head warpage			–	0.05
Rocker arm	Rocker arm I.D.	IN/EX	10.000 – 10.015	10.10
	Rocker arm shaft O.D.	IN/EX	9.972 – 9.987	9.91
	Arm to shaft clearance	IN/EX	0.013 – 0.043	0.044
Camshaft	Cam lobe height	IN	31.502 – 31.742	31.48
		EX	31.364 – 31.604	31.34
Valve, valve guide	Valve clearance	IN/EX	0.10 ± 0.02	–
	Valve stem O.D.	IN	4.975 – 4.990	4.965
		EX	4.955 – 4.970	4.945
	Valve guide I.D.	IN/EX	5.000 – 5.012	5.03
	Stem-to-guide clearance	IN	0.010 – 0.037	0.065
		EX	0.030 – 0.057	0.085
	Valve guide projection	IN/EX	9.1 – 9.3	–
	Valve seat width	IN/EX	0.9 – 1.1	1.6
Valve spring free length		IN/EX	30.67	29.82
Cam chain tensioner	Push rod O.D.		11.985 – 12.000	11.94
	Spring free length		111.3	109

CYLINDER/PISTON SPECIFICATIONS

Unit: mm

ITEM			STANDARD	SERVICE LIMIT
Cylinder	I.D.		50.005 – 50.015	50.05
	Out-of-round		–	0.10
	Taper		–	0.10
	Warpage		–	0.05
Piston, piston rings, piston pin	Piston O.D.		49.980 – 49.995	49.91
	Piston O.D. measurement point		10 from bottom of skirt	–
	Piston pin bore I.D.		13.002 – 13.008	13.03
	Piston pin O.D.		12.994 – 13.000	12.98
	Piston-to-piston pin clearance		0.002 – 0.014	0.075
	Piston ring-to-ring groove clearance	Top	0.015 – 0.045	0.08
		Second	0.015 – 0.045	0.08
	Piston ring end gap	Top	0.10 – 0.25	0.5
		Second	0.10 – 0.25	0.5
		Oil (side rail)	0.20 – 0.70	1.1
Cylinder-to-piston clearance			0.010 – 0.035	0.10
Connecting rod small end I.D.			13.016 – 13.034	13.05
Connecting rod-to-piston pin clearance			0.016 – 0.040	0.07

CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS

Unit: mm

ITEM			STANDARD	SERVICE LIMIT
Manual clutch	Disc thickness	LA, MX, AG, PE, CO	2.9 – 3.0	2.6
		DK, IIDK, IIIDK, NR, IINR, IIINR	2.92 – 3.08	2.6
	Plate warpage		–	0.20
	Clutch spring free length	LA, MX, AG, PE, CO	33.8	32.4
		DK, IIDK, IIIDK, NR, IINR, IIINR	27.14	26.4
	Clutch outer I.D.		23.020 – 23.041	23.09
	Clutch outer guide	I.D.	16.991 – 17.009	17.049
		O.D.	22.959 – 22.980	22.940
	Mainshaft O.D. at clutch outer guide		16.966 – 16.984	16.87
Centrifugal clutch	Clutch drum I.D.		104.0 – 104.2	104.3
	Clutch weight lining thickness		1.5	1.0
	One-way clutch drum I.D.		42.000 – 42.020	42.04
	One-way clutch roller O.D.		4.990 – 5.000	4.97
	Primary drive gear I.D.		19.030 – 19.058	19.11
	Crankshaft O.D. at primary drive gear		18.967 – 18.980	18.92

ALTERNATOR/STARTER CLUTCH SPECIFICATIONS (Except DK, NR type)

Unit: mm

ITEM	STANDARD	SERVICE LIMIT
Starter driven gear boss O.D.	45.660 – 45.673	45.642

CRANKSHAFT/TRANSMISSION/KICKSTARTER SPECIFICATIONS

Unit: mm

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod side clearance		0.10 – 0.35	0.60
	Connecting rod radial clearance		0.004 – 0.016	0.05
	Runout		–	0.10
Transmission	Gear I.D.	M2, M3	17.000 – 17.018	17.04
		C1	18.000 – 18.018	18.04
		C4	20.000 – 20.021	20.04
	Bushing O.D.	C1	17.966 – 17.984	17.94
	Bushing I.D.	C1	15.000 – 15.018	15.04
	Gear-to-bushing clearance	C1	0.016 – 0.052	0.10
	Mainshaft O.D.	at M3	16.966 – 16.984	16.95
	Countershaft O.D.	at C1 bushing	14.966 – 14.984	14.95
	Gear-to-shaft clearance	M3	0.016 – 0.052	0.09
	Bushing-to-shaft clearance	C1	0.016 – 0.052	0.09
Shift fork/ Shift drum	Shift fork I.D.		34.075 – 34.100	34.14
	Shift fork claw thickness		4.85 – 4.95	4.60
	Shift drum O.D.	Left	23.940 – 23.980	23.92
		Right	33.950 – 33.975	33.93
Kickstarter	Pinion I.D.		20.000 – 20.021	20.08
	Spindle O.D.		19.959 – 19.980	19.94

FRONT WHEEL/BRAKE/SUSPENSION/STEERING SPECIFICATIONS

Unit: mm

ITEM			STANDARD	SERVICE LIMIT
Minimum tire tread depth			–	To the indicator
Cold tire pressure	Driver only		200 kPa (29 psi)	–
	Driver and passenger		200 kPa (29 psi)	–
Axle runout			–	0.2
Wheel rim runout	Radial		–	2.0
	Axial		–	2.0
Wheel hub-to-rim distance (Spoke wheel type)			8.0 ± 1.0	–
Fork	Spring free length		291	–
	Pipe runout		–	0.2
	Recommended fluid		Fork fluid	–
	BRIGHT STAR:	Fluid level	90	–
		Fluid capacity	51 ± 1 cm^3	–
	CHUANNAN:	Fluid level	93	–
		Fluid capacity	61 ± 1 cm^3	–
Brake	Brake drum I.D.		110.0 – 110.2	111.0
	Brake lever freeplay		10 – 20	–

REAR WHEEL/BRAKE/SUSPENSION SPECIFICATIONS

Unit: mm

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth		–	To indicator
Cold tire pressure	Driver only	225 kPa (33 psi)	–
	Driver and passenger	280 kPa (41 psi)	–
Axle runout		–	0.20
Wheel rim runout	Radial	–	2.0
	Axial	–	2.0
Wheel hub-to-rim distance (Spoke wheel type)		6.0 ± 1.0	–
Drive chain	Size/link	DID 420AD-104 RB	–
		KMC 420JB-104	–
		RUISHI 420-104	–
	Slack	20 – 30	–
Brake	Brake drum I.D.	110.0 – 110.2	111.0
	Brake pedal freeplay	20 – 30	–

BATTERY/CHARGING SYSTEM SPECIFICATIONS

ITEM				SPECIFICATIONS
Battery	Type		Starter motor type	12N5S-3B
			Kickstarter type	CB3L-A
	Capacity		Starter motor type	12 V – 5 Ah (10 HR)
			Kickstarter type	12 V – 3 Ah (10 HR)
	Current leakage			0.1 mA max.
	Specific gravity		Fully charged	1.270 – 1.290
			Needs charging	Below 1.230
	Voltage		Fully charged	13.0 – 13.2 V
			Needs charging	Below 12.4 V
	Charging current	12N5S-3B	Normal	0.5 A/5 – 10 h
			Quick	5.0 A/0.5 h
		CB3L-A	Normal	0.3 A/5 – 10 h
			Quick	3.0 A/0.5 h
Alternator	Capacity			0.14 kW/5,000 min^{-1}
	Charging coil resistance (20°C)			0.2 – 1.0 Ω
	Lighting coil resistance (20°C)			0.1 – 0.8 Ω

LIGHTS/METERS/SWITCHES SPECIFICATIONS

ITEM			SPECIFICATIONS
Bulbs	Headlight (High/Low)		12 V - 35/35 W
	Position light		12 V - 5 W
	Brake/taillight		12 V - 21/5 W
	Turn signal light		12 V - 21 W x 4
	Illumination light		12 V - 1.7 W x 2
	Turn signal indicator		12 V - 3.4 W x 2
	High beam indicator		12 V - 1.7 W
	Gear position indicator		12 V - 1.7 W x 4
	Neutral indicator		12 V - 3 W
Fuse	Main fuse		15 A
	Sub fuse		10 A
Resistor resistance (20°C)			15.1 – 16.7 Ω
Carburetor heater resistance (25°C)			7.5 – 18 Ω
Fuel level sensor resistance		Full	6 – 10 Ω
		Empty	90 – 100 Ω

TORQUE VALUES

STANDARD TORQUE VALUES

FASTENER TYPE	TORQUE N·m (kgf·m)	FASTENER TYPE	TORQUE N·m (kgf·m)
5 mm hex bolt and nut	5.2 (0.5)	5 mm screw	4.2 (0.4)
6 mm hex bolt and nut (Include SH flange bolt)	10 (1.0)	6 mm screw	9.0 (0.9)
		6 mm flange bolt (Include NSHF) and nut	12 (1.2)
8 mm hex bolt and nut	22 (2.2)		
10 mm hex bolt and nut	34 (3.5)	8 mm flange bolt and nut	27 (2.8)
12 mm hex bolt and nut	54 (5.5)	10 mm flange bolt and nut	39 (4.0)

ENGINE & FRAME TORQUE VALUES

- Torque specifications listed below are for specified fasteners.
- Others should be tightened to standard torque values listed above.

FRAME/BODY PANELS/EXHAUST SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Front reflex reflector mounting nut	2	6	1.8 (0.2)	U-nut
Rear reflex reflector mounting nut	1	5	1.8 (0.2)	U-nut
Rear turn signal light mounting nut	2	10	5 (0.5)	
Shock absorber upper mounting bolt	2	10	24 (2.4)	
Muffler cover screw	2	6	9 (0.9)	
Exhaust pipe joint nut	2	8	27 (2.8)	
Swingarm pivot nut	1	12	59 (6.0)	U-nut
Exhaust pipe stud bolt	2	8	–	See page 2-13
Drive chain cover mounting bolt	4	6	7 (0.7)	

MAINTENANCE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Throttle cable adjusting lock nut	1	10	3 (0.3)	
Fuel strainer cup	1	22	5.9 (0.6)	
Air cleaner housing cover screw	5	5	1.1 (0.1)	
Oil drain bolt	1	12	24 (2.4)	
Timing hole cap	1	14	10 (1.0)	
Crankshaft hole cap	1	30	8 (0.8)	
Valve adjusting lock nut	2	5	9 (0.9)	Apply oil to the threads and seating surface.
Oil centrifugal filter cover bolt	3	5	5 (0.5)	Apply locking agent to the threads: See page 3-8.
Clutch adjuster lock nut	1	8	12 (1.2)	
Spark plug	1	10	16 (1.6)	
Rear axle nut	1	12	59 (6.0)	
Front spoke (Spoke wheel type)	36	BC2.9	3.2 (0.3)	
Rear spoke (Spoke wheel type)	36	BC3.2	3.7 (0.4)	

IGNITION SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Timing hole cap	1	14	10 (1.0)	

ELECTRIC STARTER SYSTEM (Except DK, NR type)

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Starter motor cable terminal screw	1	4	2 (0.2)	

FUEL SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Connecting hose band screw	1	–	–	See page 6-4
Carburetor drain screw	1	–	1.5 (0.2)	
Choke lever mounting screw	1	5	3.4 (0.3)	
Float chamber screw	2	4	2.1 (0.2)	
Slow jet	1	–	1.5 (0.2)	
Main jet	1	–	1.5 (0.2)	
Needle jet holder	1	–	2.5 (0.3)	
Fuel valve mounting screw	2	3	0.9 (0.1)	
Fuel strainer cup	1	22	5.9 (0.6)	
Fuel valve lever mounting screw	1	–	2.1 (0.2)	Apply locking agent to the threads.
Air cut-off valve cover screw (MX, PE, CO)	2	3	0.88 (0.1)	
PAIR check valve cover screw (MX, PE, CO)	1	–	1.8 (0.2)	
PAIR control valve mounting bolt (MX, PE, CO)	2	6	10 (1.0)	

LUBRICATION SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Oil pump cover screw	3	5	5 (0.5)	

CYLINDER HEAD/VALVES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Cylinder head cover special bolt	2	6	10 (1.0)	
Cylinder head nut	4	7	13 (1.3)	Apply oil to the threads and seating surface.
Cam sprocket washer bolt	1	8	27 (2.8)	Apply oil to the threads and seating surface.
Cam chain tensioner sealing bolt	1	14	22 (2.2)	
Cam chain tensioner arm pivot bolt	1	8	16 (1.6)	
Timing hole cap	1	14	10 (1.0)	
Crankshaft hole cap	1	30	8 (0.8)	

CYLINDER PISTON

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Cam chain guide roller pin bolt	1	8	10 (1.0)	
Cylinder stud bolt	4	7	–	See page 9-4

CLUTCH/GEARSHIFT LINKAGE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Oil centrifugal filter cover bolt	3	5	5 (0.5)	Apply locking agent to the threads: See page 3-8.
Shift drum stopper arm bolt	1	6	10 (1.0)	Apply locking agent to the threads: See page 10-17
Clutch lifter plate bolt	4	6	12 (1.2)	
Shift return spring pin	1	8	30 (3.1)	
Gearshift cam plate bolt	1	6	17 (1.7)	Apply locking agent to the threads: See page 10-16
Centrifugal clutch lock nut	1	14	54 (5.5)	Apply oil to the threads and seating surface.
Clutch center lock nut	1	14	54 (5.5)	Apply oil to the threads and seating surface.

ALTERNATOR/STARTER CLUTCH

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Flywheel nut	1	10	40 (4.1)	Apply oil to the threads and seating surface.
Starter clutch mounting torx bolt	6	6	16 (1.6)	Apply locking agent to the threads: See page 11-6

CRANKSHAFT/TRANSMISSION/KICKSTARTER

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Cam chain guide sprocket spindle	1	6	10 (1.0)	

ENGINE REMOVAL/INSTALLATION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Drive sprocket fixing plate bolt	2	6	12 (1.2)	
Engine hanger nut	3	10	59 (6.0)	

FRONT WHEEL/BRAKE/SUSPENSION/STEERING

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Front brake arm nut	1	6	10 (1.0)	
Brake lever pivot bolt	1	5	1 (0.1)	
Brake lever pivot nut	1	5	4.5 (0.5)	
Handlebar weight screw	2	6	9 (0.9)	Apply locking agent to the threads.
Throttle cable lock nut	1	10	10 (1.0)	
Steering stem lock nut	1	26	–	For tightening sequence; See page 14-19
Steering stem top thread	1	26	–	For tightening sequence; See page 14-19
Bottom bridge pinch bolt	4	10	64 (6.5)	For cleaning area; See page 14-13
Handlebar post mounting nut	1	10	59 (6.0)	U-nut
Front axle nut	1	12	59 (6.0)	U-nut
Front spoke (Spoke wheel type)	36	BC2.9	3.2 (0.3)	
Fork cap bolt	2	20	22 (2.2)	
Fork socket bolt	2	8	20 (2.0)	Apply locking agent to the threads.

REAR WHEEL/BRAKE/SUSPENSION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Rear axle nut	1	12	59 (6.0)	U-nut
Rear spoke (Spoke wheel type)	36	BC3.2	3.7 (0.4)	
Driven sprocket nut	4	8	32 (3.3)	U-nut
Driven flange stud bolt	4	8	–	See page 15-7
Rear brake stopper arm nut	2	8	22 (2.2)	
Rear brake arm nut	1	6	10 (1.0)	U-nut
Shock absorber upper mounting bolt	2	10	24 (2.4)	
Shock absorber lower mounting cap nut	2	10	24 (2.4)	
Swingarm pivot nut	1	12	59 (6.0)	U-nut

LIGHTS/METERS/SWITCHES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Brake/taillight unit lens screw	2	4	1 (0.1)	
Ignition switch mounting screw	2	6	9 (0.9)	ALOC screw; replace with new ones.

OTHERS

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m)	REMARKS
Sidestand pivot bolt	1	10	18 (1.8)	
Sidestand pivot nut	1	10	44 (4.5)	

LUBRICATION & SEAL POINTS

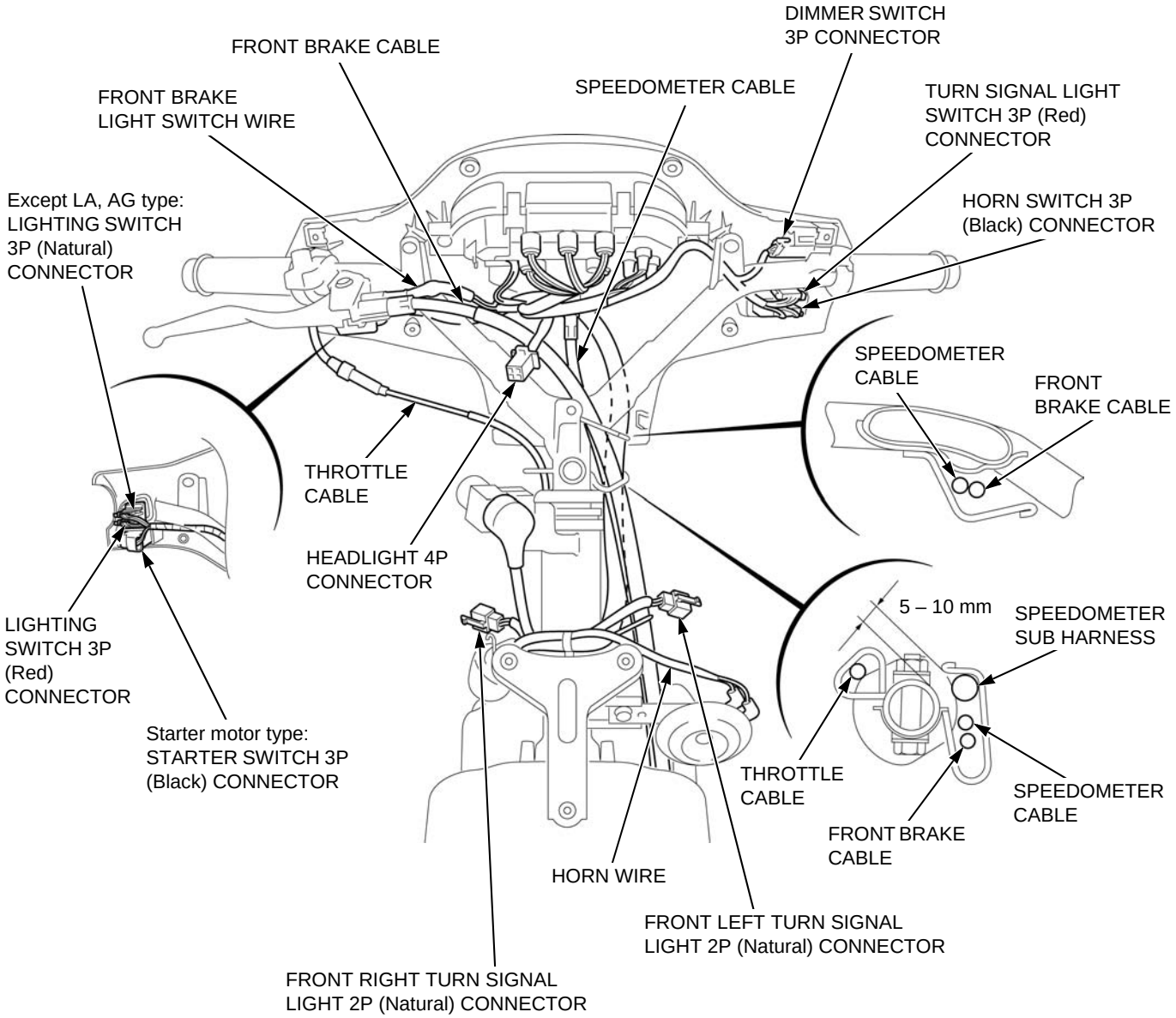
ENGINE

MATERIAL	LOCATION	REMARKS
Engine oil	Cylinder bore	
	Piston outer sliding area and piston ring grooves	
	Piston pin hole inner surface	
	Piston pin outer surface	
	Piston ring whole surface	
	Connecting rod small end inner surface	
	Connecting rod big end	1 – 2 cm^3
	IN/EX valve stem outer surface and stem end	
	Camshaft lobes and bearings	
	Cam chain whole surface	
	Rocker arm shaft hole inner surface	
	Rocker arm shaft whole surface	
	Rocker arm roller rolling area	
	Oil pump inner and outer rotor sliding area	
	Oil pump shaft sliding area	
	Cam chain guide sprocket spindle whole surface	
	Clutch outer guide outer surface	
	Clutch disc and plate whole surface	
	Gearshift spindle journal	
	Shift fork inner surface	
	Shift drum whole surface	
	Countershaft shift drum lock plate rotating area	
	Starter reduction gear journal	
	Starter motor gear tooth	
	Cam chain tensioner push rod inside	4.0 cm^3 minimum
	Starter reduction gear and shaft rolling surface	
	Starter clutch rolling surface	
	Each bearing rolling surface	
	Each O-ring whole surface	
Locking agent	Oil stopper plate bolt threads	See page 8-16
	Mainshaft bearing set plate bolt threads	See page 12-8
Molybdenum disulfide oil (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease)	Kickstarter pinion gear inner surface	
	Primary drive gear inner surface	
	Each transmission rotating gear inner surface	
	C1 gear bushing whole surface	
	M4, C3 gearshift fork groove	
Sealant (Three bond 1215 or equivalent)	Left crankcase mating surface	See page 12-4
	Cylinder head cover rubber seal (semicircular area)	See page 8-5
Sealant (Three bond 1215 or 1207B or equivalent)	Alternator wire grommet seating surface	
Multi-purpose grease	Gearshift spindle oil seal lips	
	Countershaft oil seal lips	
	Kickstarter spindle oil seal lips	
Degreasing	Flywheel and left crankshaft contact areas	

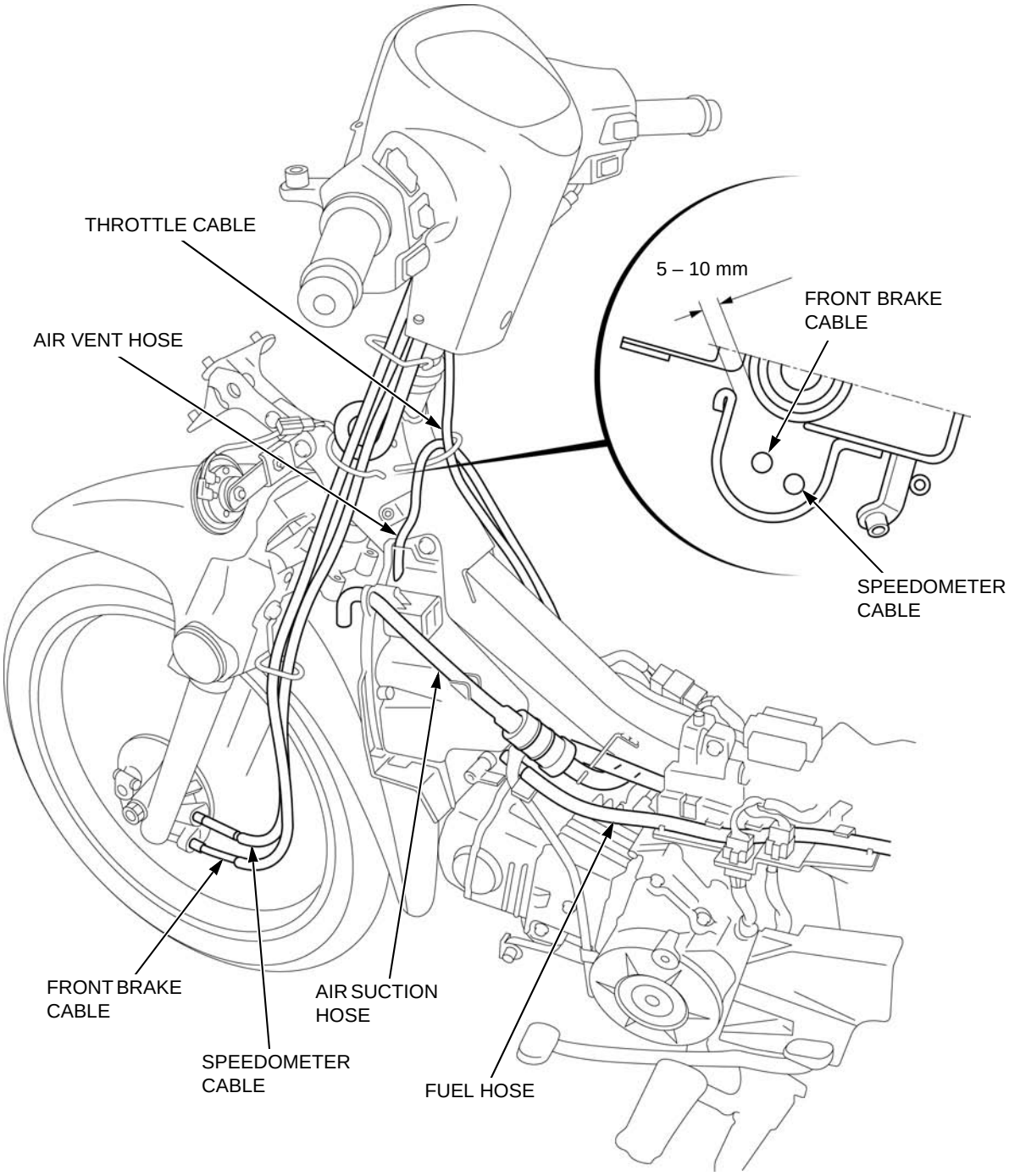
FRAME

MATERIAL	LOCATION		REMARKS
Urea based multipurpose grease with extreme pressure (example: Kyodo Yushi EXCELITE EP2, Shell ALVANIA EP2 or equivalent)	Steering stem dust seal lips		Apply 0.2 – 0.3 g
	Upper inner and outer bearing races	(Except NR, IINR, IIINR type)	Apply 2 – 3 g
		(NR, IINR, IIINR type)	Apply 3 – 5 g
	Lower inner and outer bearing races	(Except NR, IINR, IIINR type)	Apply 2 – 3 g
		(NR, IINR, IIINR type)	Apply 3 – 5 g
Grease (Daphne EPONEX NO.0, Shell BEARING GREASE HD, Pertamina 366903 or equivalent)	Speedometer gear teeth		Apply approx. 3 g
	Speedometer gear inner surface		Apply 0.2 – 0.3 g
	Speedometer pinion gear shaft		Apply 0.2 – 0.3 g
	Speedometer/pinion gear dust seal lips		
Multi-purpose grease	Front brake panel anchor pin		Apply 0.2 – 0.3 g
	Front brake lever pivot bolt sliding surface		
	Rear brake panel anchor pin		Apply 0.02 – 0.04 g
	Front brake cam sliding and rolling surface		Apply 0.2 – 0.3 g
	Rear brake cam sliding surface		Apply 0.06 – 0.08 g
	Front brake cam brake shoe contact area		Apply 0.2 – 0.3 g
	Rear brake cam brake shoe contact area		Apply 0.03 – 0.05 g
	Front wheel dust seal lips		Apply 0.3 – 0.4 g
	Throttle pipe flange groove and throttle pipe slot		Apply 0.1 – 0.2 g
	Rear wheel driven flange dust seal lips		Apply 0.2 – 0.3 g
	Rear wheel hub O-ring		Apply 0.3 – 0.5 g
	Handle lock sliding area		
	Seat lock sliding area		
	Sidestand pivot sliding surface		
	Kickstarter pedal sliding surface		
	Rear brake pedal/centerstand pivot sliding surface		
Honda Bond A or equivalent	Handlebar grip rubber inside		
	Air cleaner connecting hose-to-housing mating area		
	Step rubber inside		
Fork fluid	Fork oil seal lips		
	Fork dust seal lips		
	Fork cap O-ring		
SAE #80 or 90 gear oil or drive chain lubricant	Drive chain		
Gear oil	Front brake cam felt seal		
	Rear brake cam felt seal		
Cable lubricant	Brake cable boot inside		

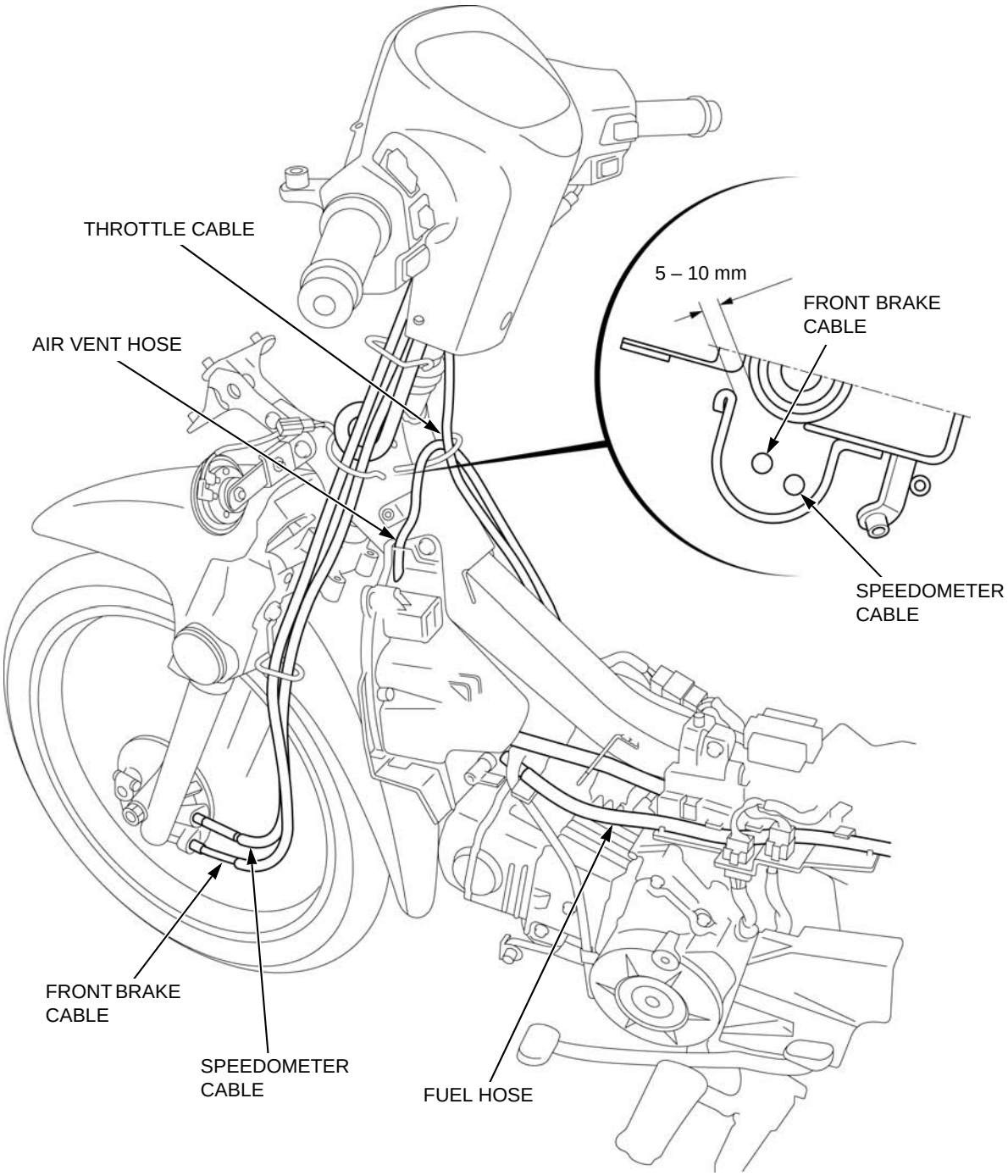
CABLE & HARNESS ROUTING



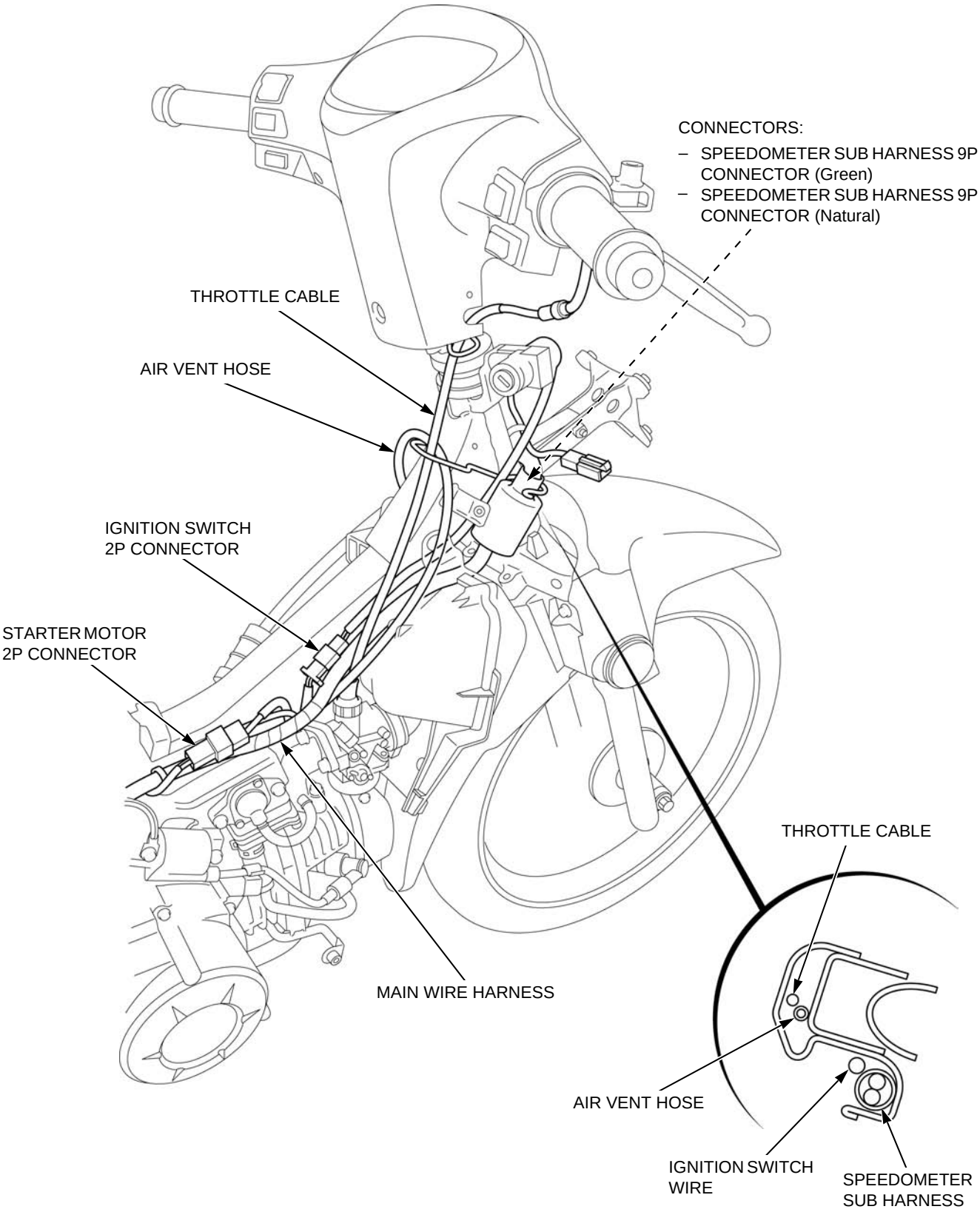
With Secondary Air Supply System type (with starter motor type shown:)



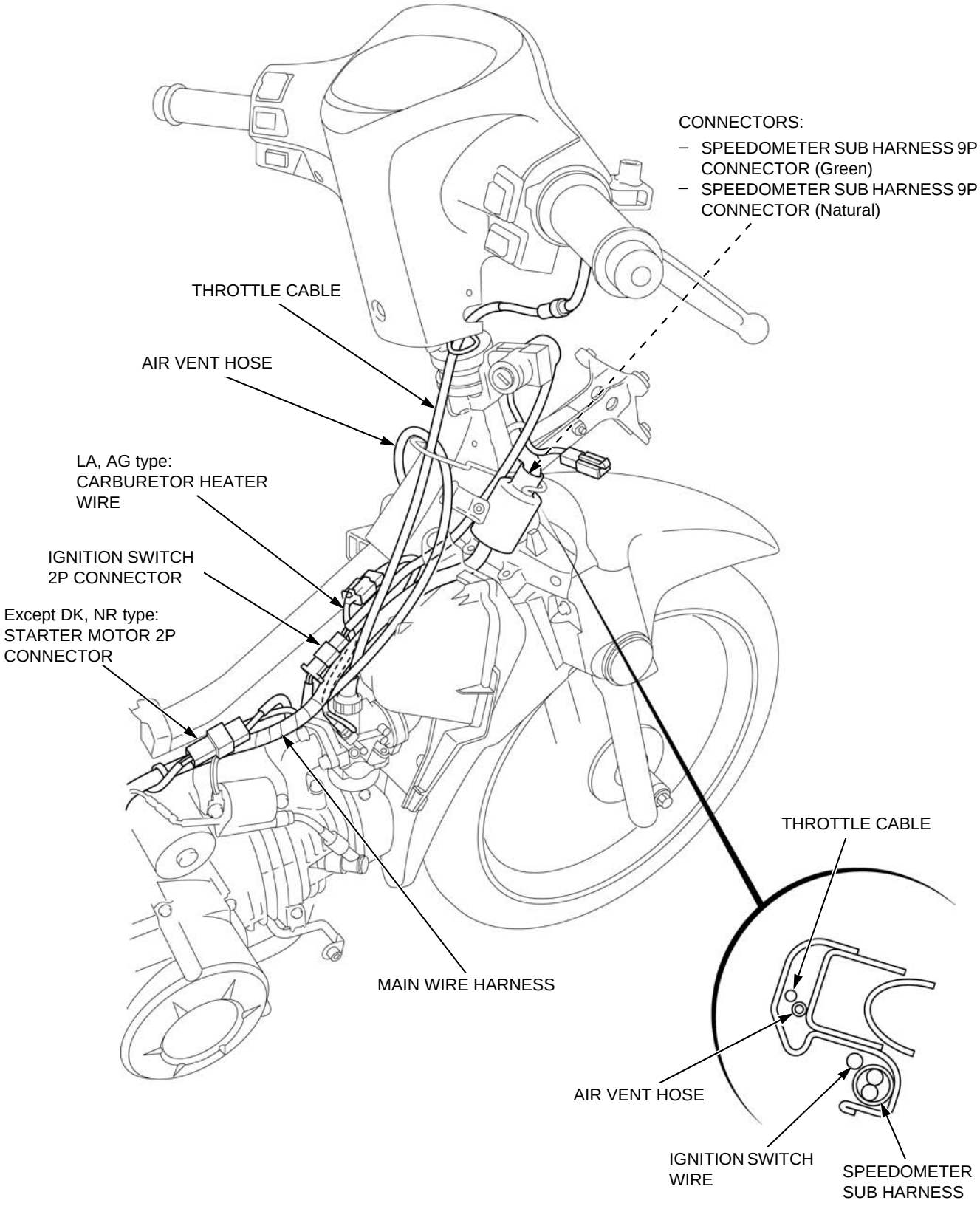
Without Secondary Air Supply System type
(with starter motor type shown:)



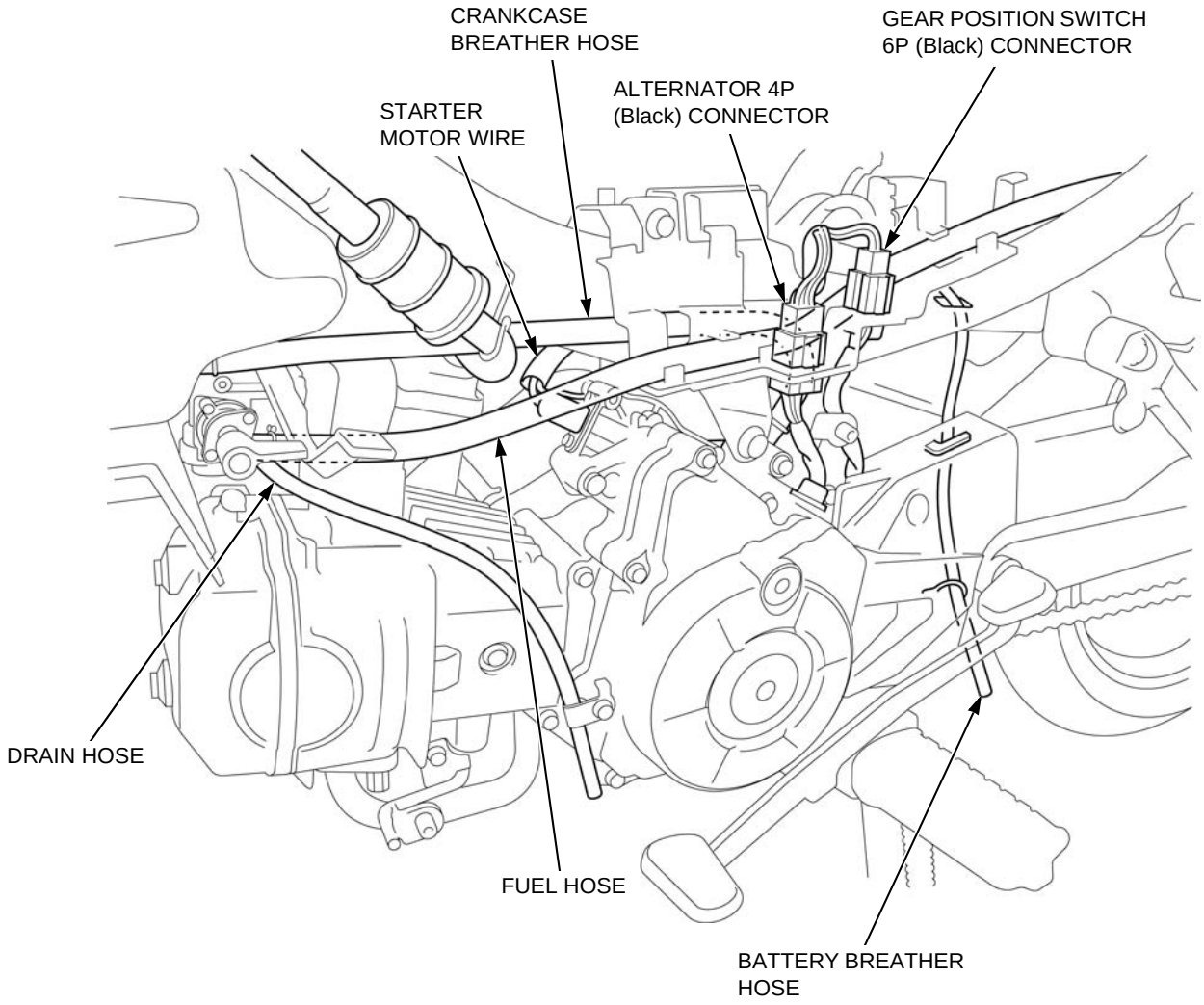
With Secondary Air Supply System type



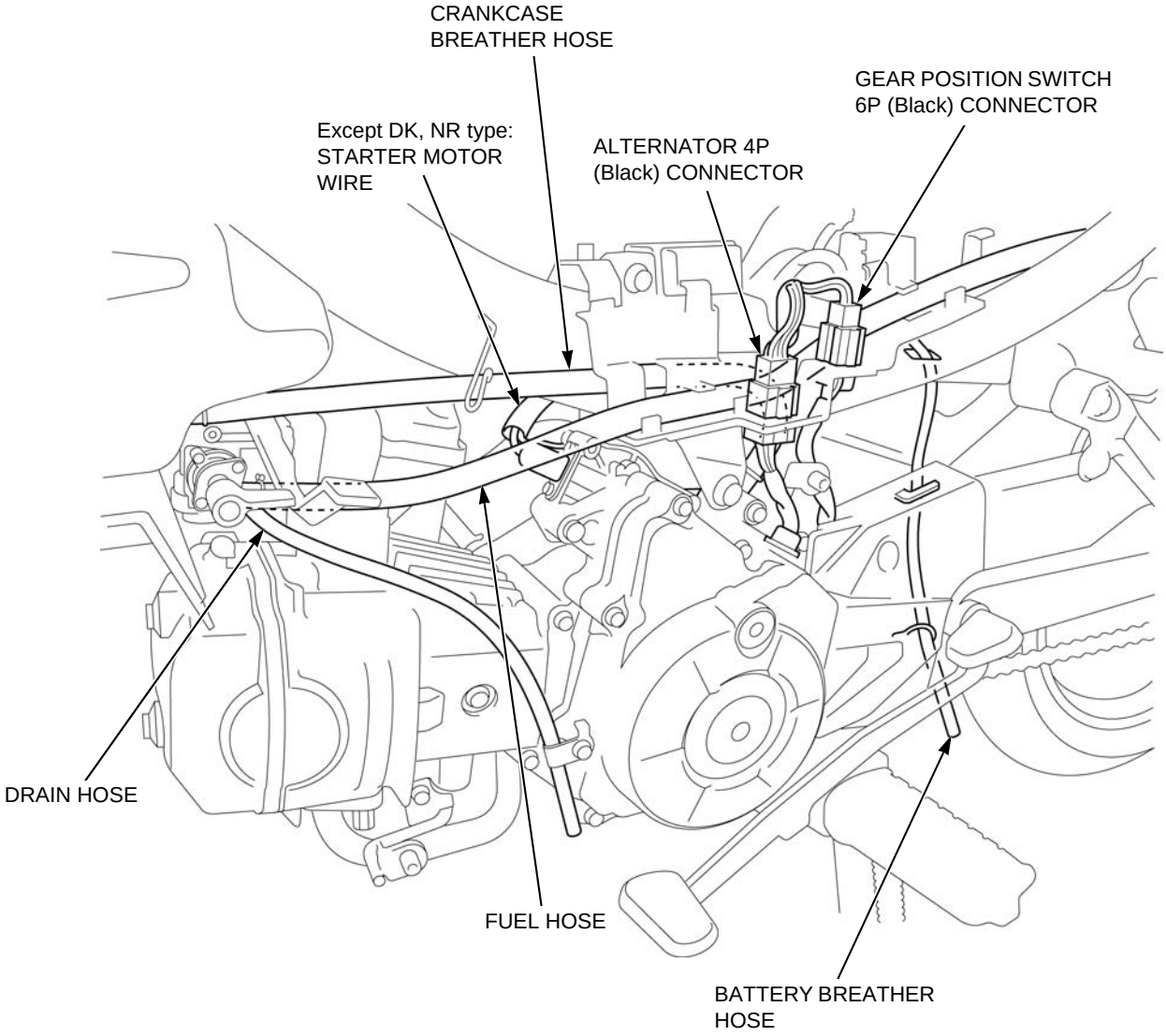
Without Secondary Air Supply System type
(with starter motor type shown:)



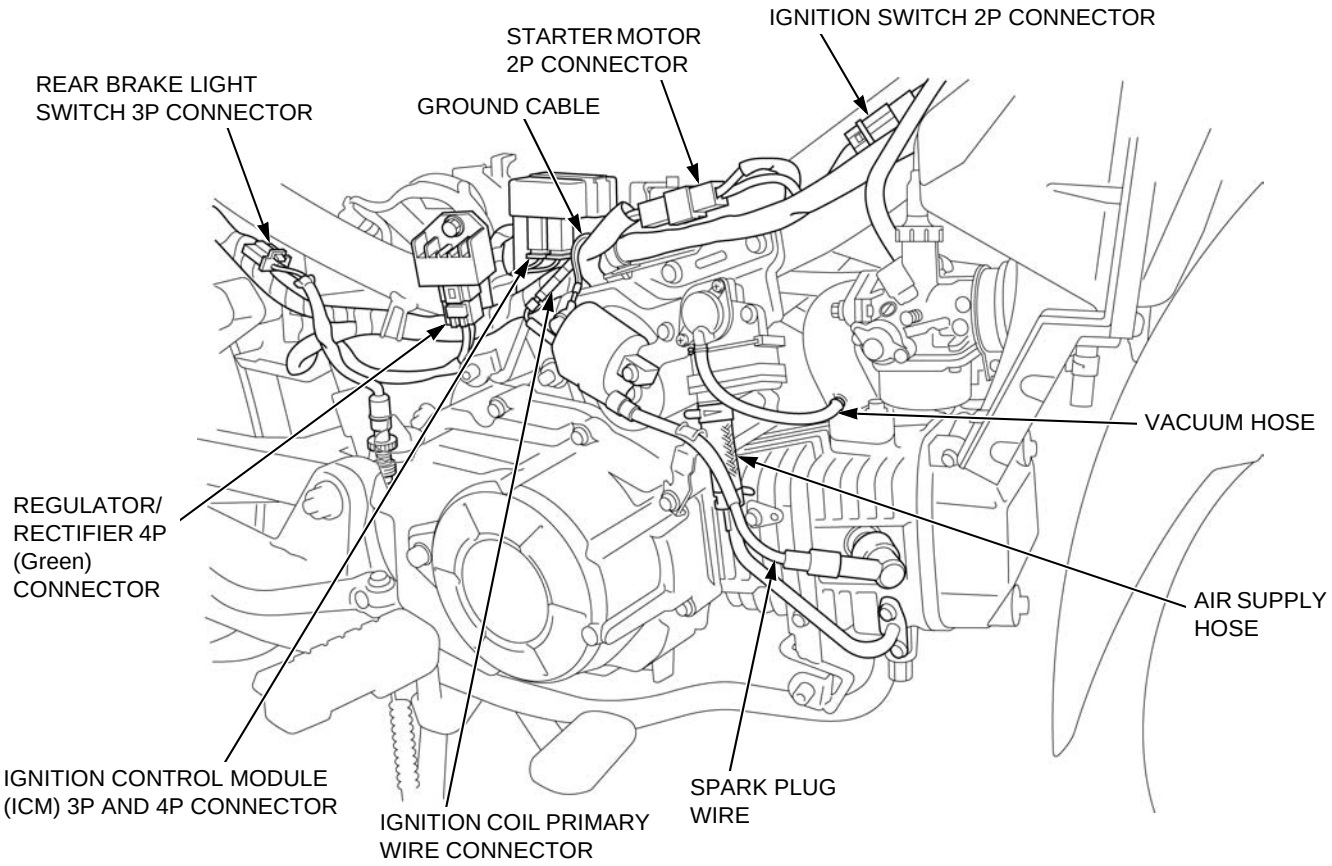
With Secondary Air Supply System type



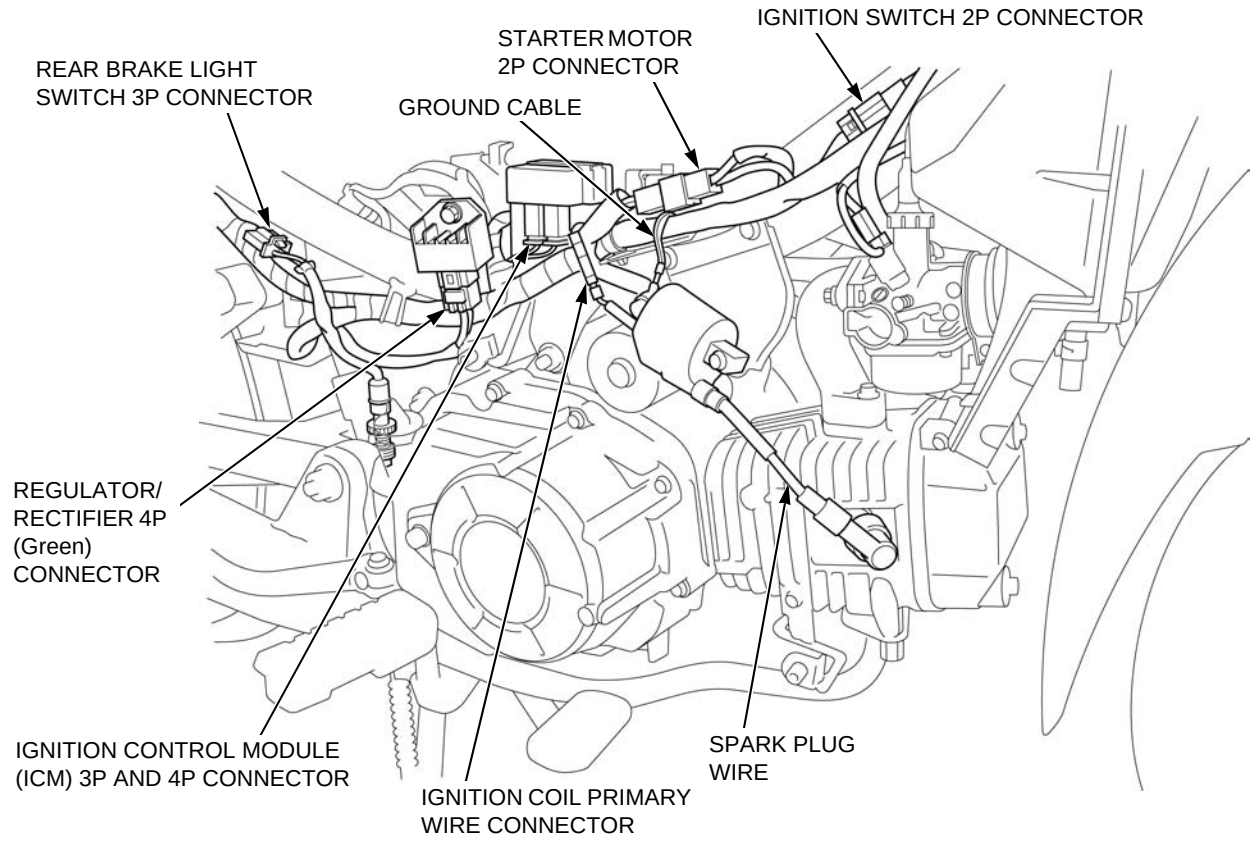
Without Secondary Air Supply System type
(with starter motor type shown:)



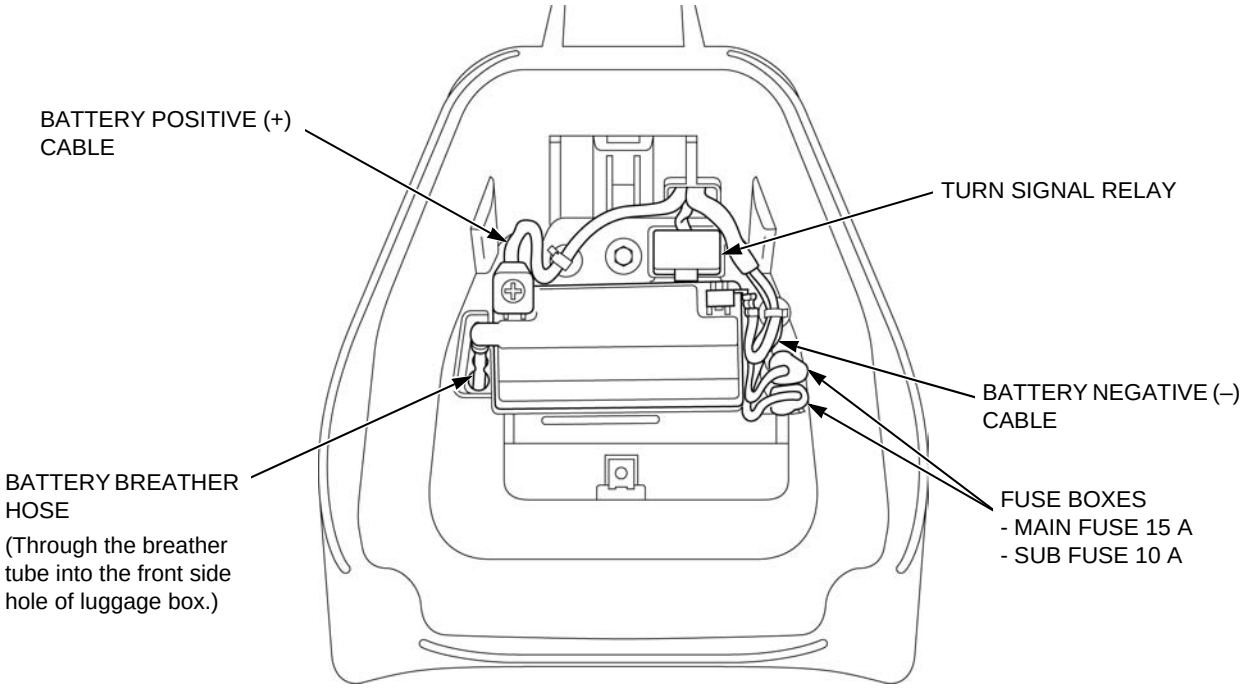
With Secondary Air Supply System type



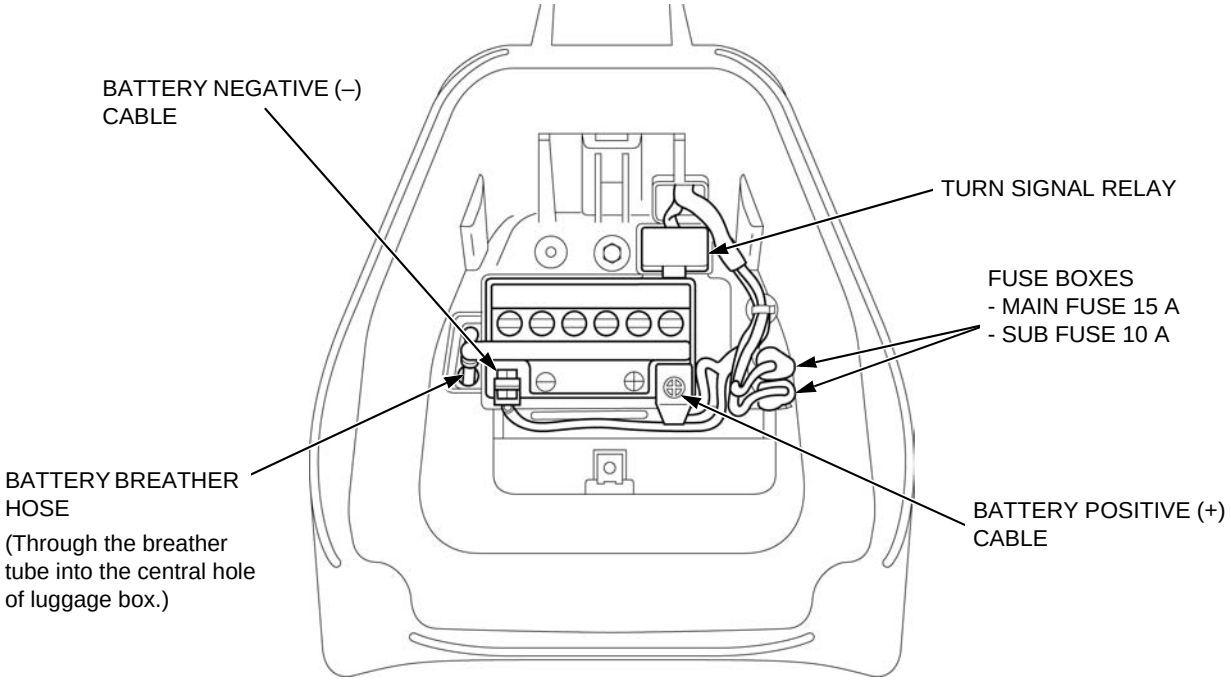
Without Secondary Air Supply System type (with starter motor type shown:)

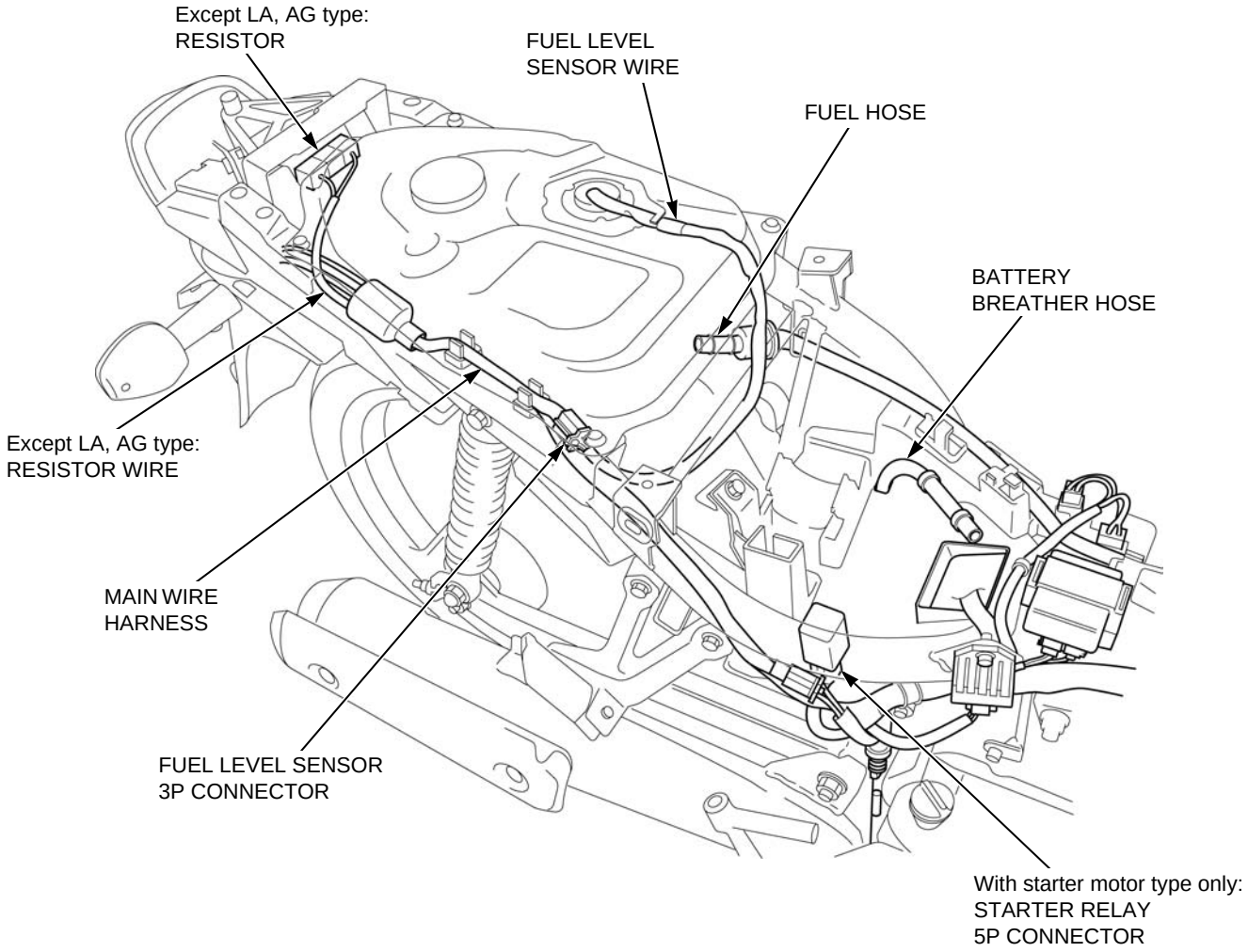


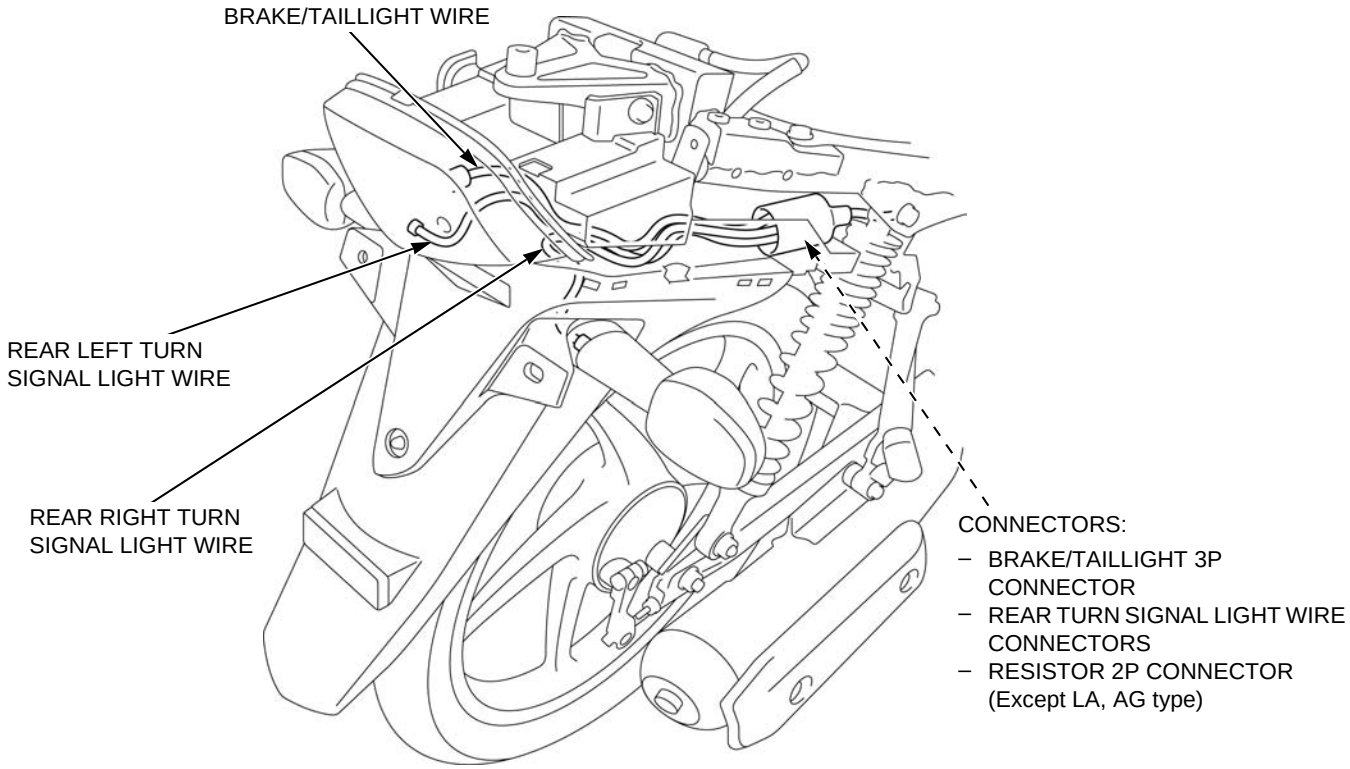
With Starter Motor type



Without Starter Motor type




Except LA, AG type:
RESISTOR
FUEL LEVEL
SENSOR WIRE
FUEL HOSE
BATTERY
BREATHER HOSE
Except LA, AG type:
RESISTOR WIRE
MAIN WIRE
HARNESS
FUEL LEVEL SENSOR
3P CONNECTOR
With starter motor type only:
STARTER RELAY
5P CONNECTOR


BRAKE/TAILLIGHT WIRE
REAR LEFT TURN
SIGNAL LIGHT WIRE
REAR RIGHT TURN
SIGNAL LIGHT WIRE
CONNECTORS:
– BRAKE/TAILLIGHT 3P
CONNECTOR
– REAR TURN SIGNAL LIGHT WIRE
CONNECTORS
– RESISTOR 2P CONNECTOR
(Except LA, AG type)

EMISSION CONTROL SYSTEMS

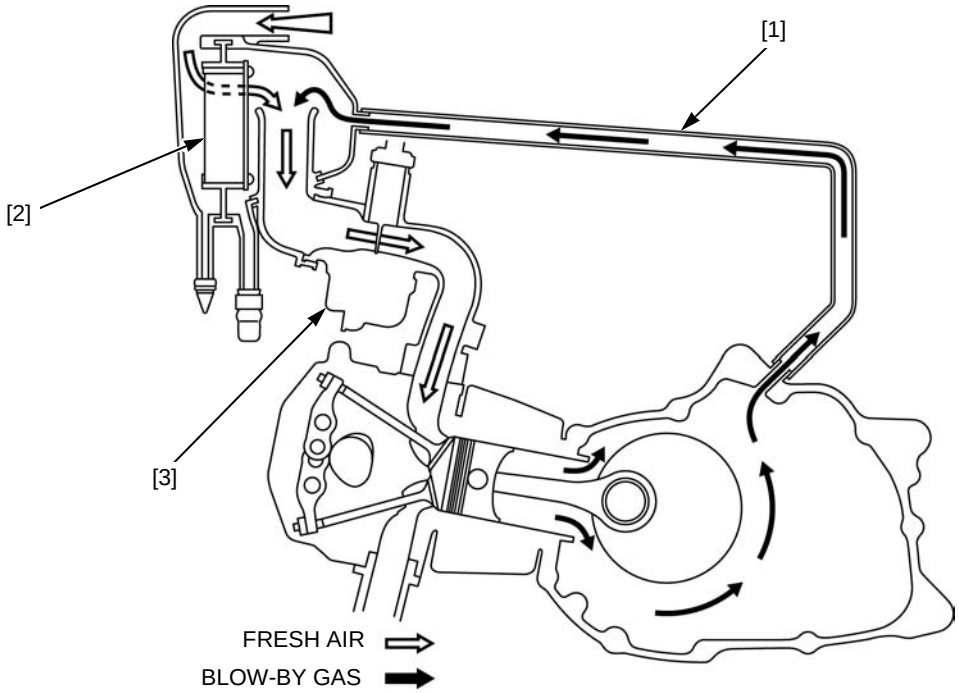
SOURCE OF EMISSIONS

The combustion process produces carbon monoxide (CO) and hydrocarbons (HC). Controlling hydrocarbon emission is very important because, under certain conditions, they react to form photochemical smog when subject to sunlight. Carbon monoxide does not react in the same way, but it is toxic.

Honda Motor Co., Ltd. utilizes various systems (page 1-27), to reduce carbon monoxide, oxides of nitrogen and hydrocarbons.

CRANKCASE EMISSION CONTROL SYSTEM

The engine is equipped with a closed crankcase system to prevent discharging crankcase emissions into the atmosphere. Blow-by gas is returned to the combustion chamber through the crankcase breather hose [1], air cleaner [2] and carburetor [3].



EXHAUST EMISSION CONTROL SYSTEM

The exhaust emission control system is composed of a pulsed secondary air supply system and lean carburetor [1] settings.

No adjustment should be made except idle speed adjustment with the throttle stop screw. The exhaust emission control system is separate from the crankcase emission control system.

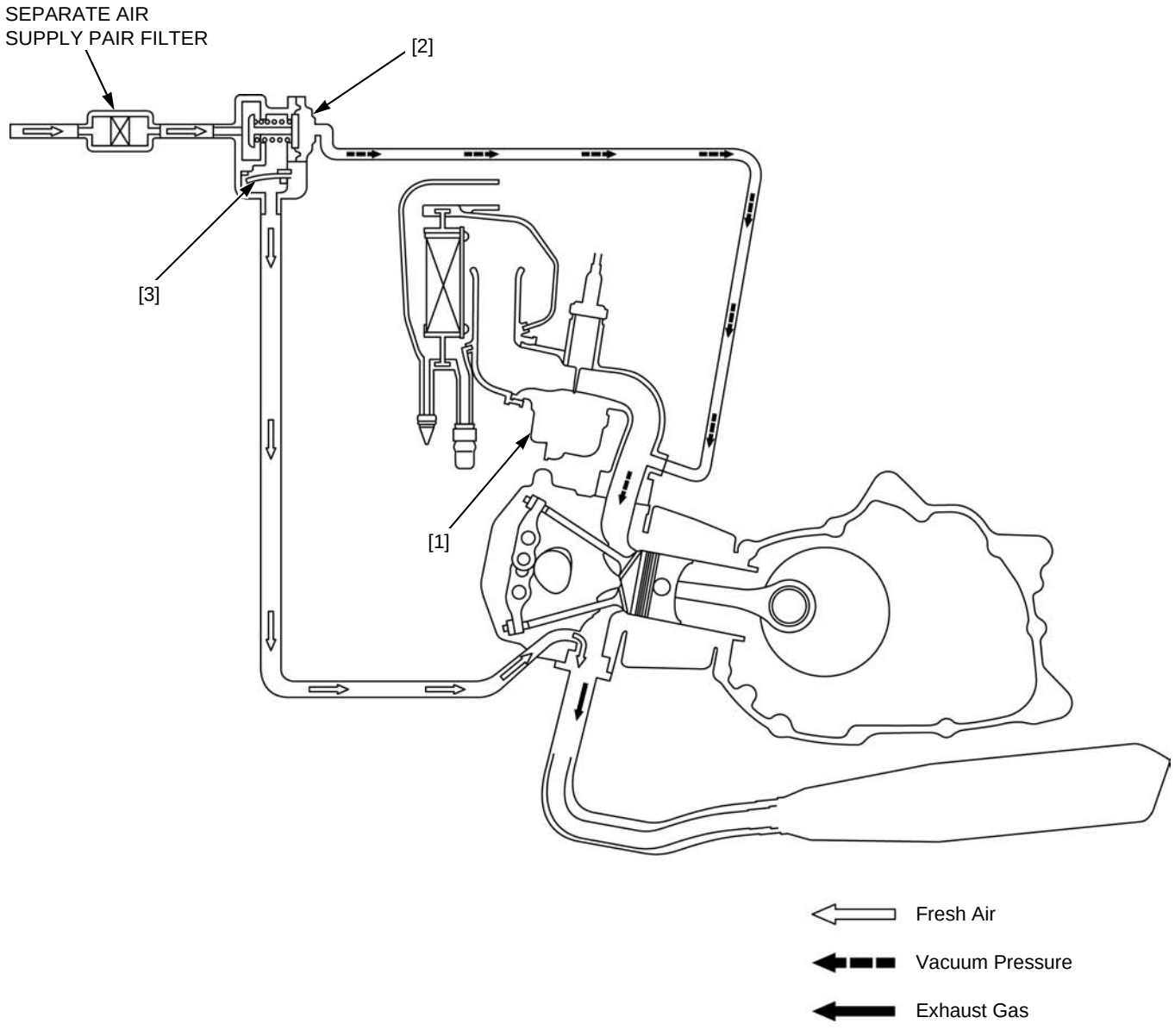
SECONDARY AIR SUPPLY SYSTEM

The pulsed secondary air supply system introduces filtered air into the exhaust gases in the exhaust port. Fresh air is drawn into the exhaust port by the function of the Pulsed Secondary Air Injection (PAIR) control valve [2].

This charge of fresh air promotes burning of the unburned exhaust gases and changes a considerable amount of hydrocarbons and carbon monoxide into relatively harmless carbon dioxide and water vapor.

This model has a pulse secondary air injection (PAIR) check valve [3]. It prevents reverse air flow through the system.

No adjustments to the secondary air supply system should be made, although periodic inspection of the components is recommended.



NOISE EMISSION CONTROL SYSTEM

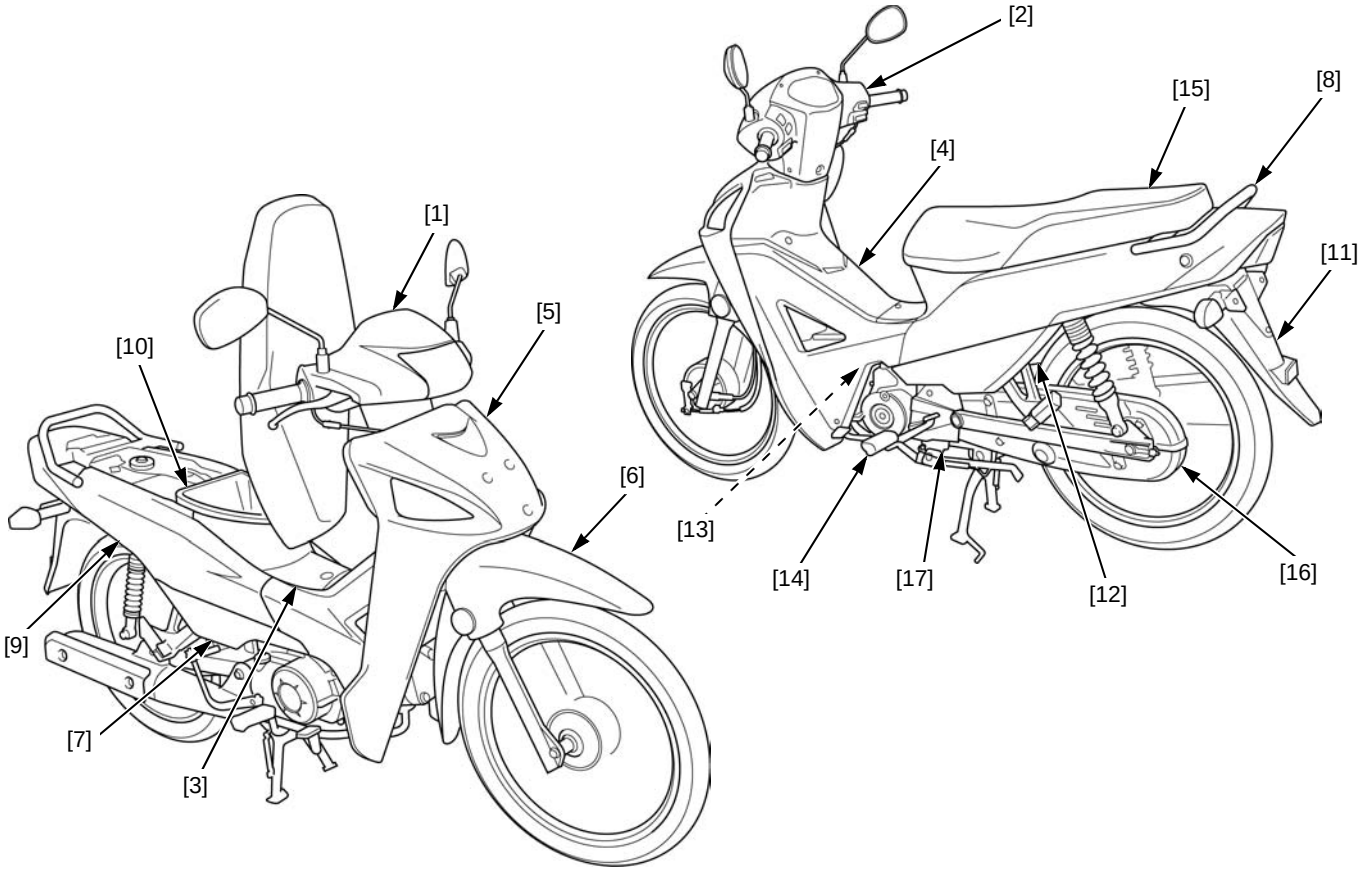
TAMPERING WITH THE NOISE CONTROL SYSTEM IS PROHIBITED: Local law may prohibit the following acts or the causing thereof: (1) The removal or rendering inoperative by any person, other than for purposes of maintenance, repair or replacement, of any device or element of design incorporated into any vehicle for the purpose of noise control prior to its sale or delivery to the ultimate customer or while it is in use; (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

AMONG THOSE ACTS PRESUMED TO CONSTITUTE TAMPERING ARE THE ACTS LISTED BELOW:

1. Removal of, or puncturing of the muffler, baffles, header pipes or any other component which conducts exhaust gases.
2. Removal of, or puncturing of any part of the intake system.
3. Lack of proper maintenance.
4. Replacing any moving parts of the vehicle, or parts of the exhaust or intake system, with parts other than those specified by the manufacturer.

2. FRAME/BODY PANELS/EXHAUST SYSTEM

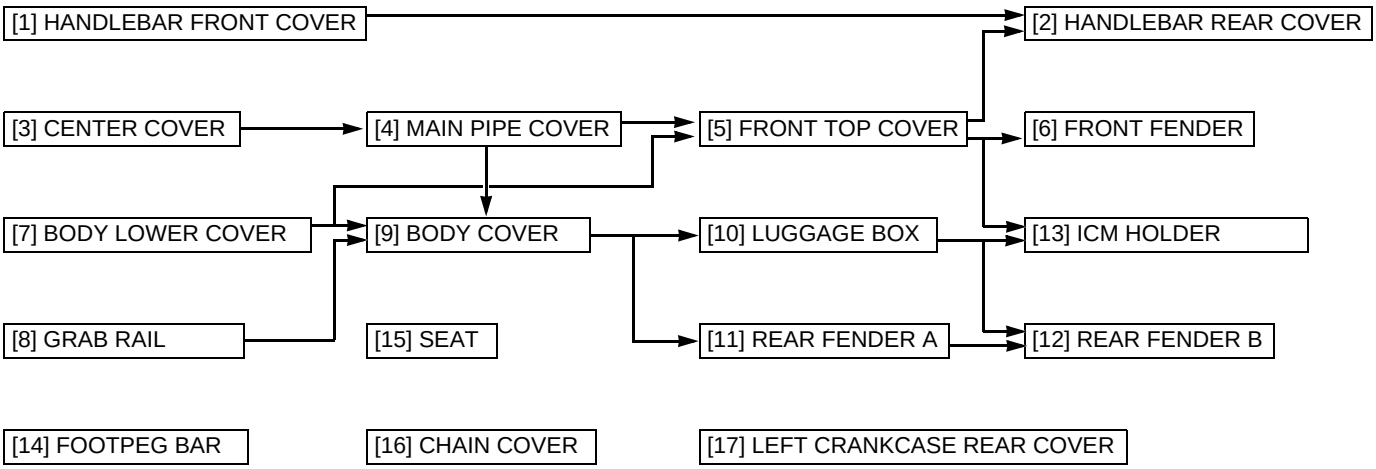
BODY PANEL LOCATIONS



[1] Handlebar front cover (page 2-3)
[2] Handlebar rear cover (page 2-4)
[3] Center cover (page 2-7)
[4] Main pipe cover (page 2-7)
[5] Front top cover (page 2-5)
[6] Front fender (page 2-6)
[7] Body lower cover (page 2-7)
[8] Grab rail (page 2-12)
[9] Body cover (page 2-8)
[10] Luggage box (page 2-9)
[11] Rear fender A (page 2-10)
[12] Rear fender B (page 2-11)
[13] ICM holder (page 2-9)
[14] Footpeg bar (page 2-10)
[15] Seat (page 2-4)
[16] Chain cover (page 2-12)
[17] Left crankcase rear cover (page 2-12)

BODY PANEL REMOVAL CHART

- This chart shows removal order of frame covers.

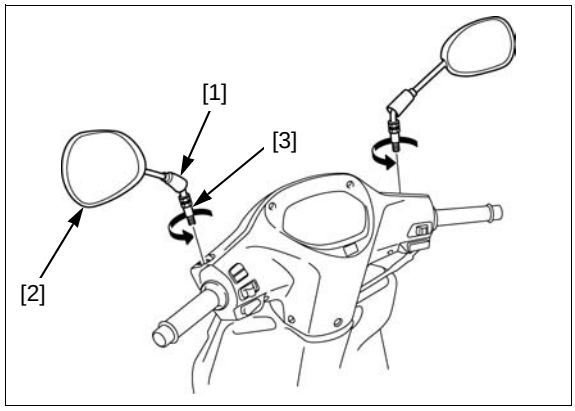


HANDLEBAR FRONT COVER

REMOVAL/INSTALLATION

Pull off the dust covers [1].

Remove the rearview mirrors [2] by turning the adaptor [3] counterclockwise.



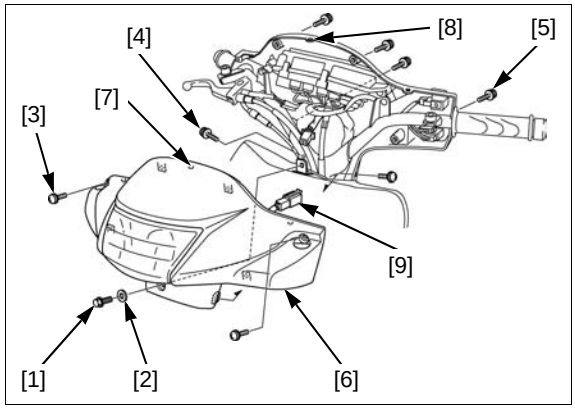
Remove the following:

- Bolt [1] and collar [2] from the front side
- Two screw/washers from the front side [3]
- Two screw/washers from the right and left side [4]
- Four screw/washers from the rear side [5]

Remove the handlebar front cover [6] by releasing the bosses [7] from the holes [8] of the handlebar rear cover.

Disconnect the headlight 4P connector [9].

Installation is in the reverse order of removal.



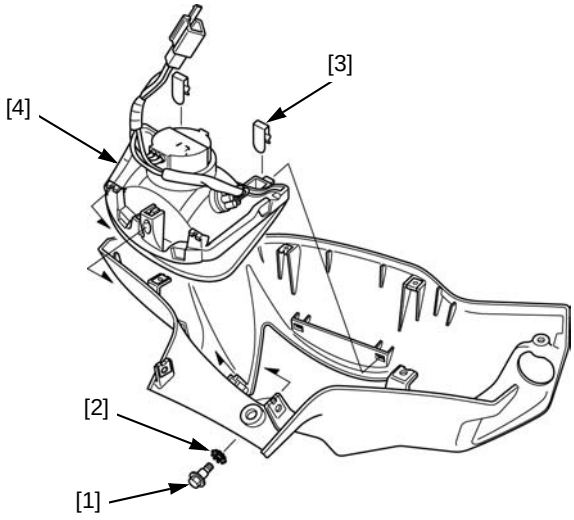
HANDLEBAR FRONT COVER DISASSEMBLY/ASSEMBLY

Remove the handlebar front cover (page 2-3).

Remove the special bolt [1], washer [2], clips [3] and headlight assembly [4].

Assembly is in the reverse order of disassembly.

After assembly, adjust the headlight aim (page 3-13).



HANDLEBAR REAR COVER

REMOVAL/INSTALLATION

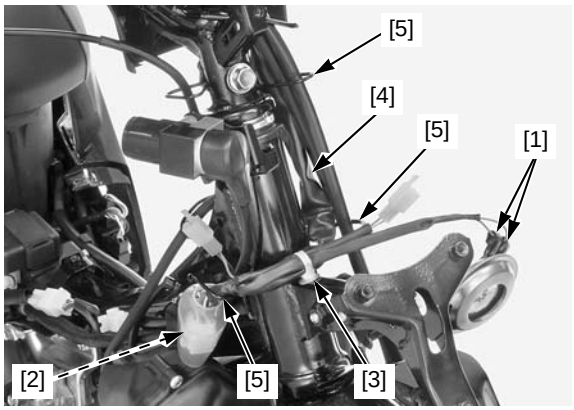
Remove the following:

– Handlebar front cover (page 2-3)
– Front top cover (page 2-5)

Disconnect the following connectors:

– Horn wire connectors [1]
– Speedometer sub harness 9P connectors [2]

Release the wire band boss [3] from the frame.
Release the speedometer sub harness [4] from the cable guides [5].

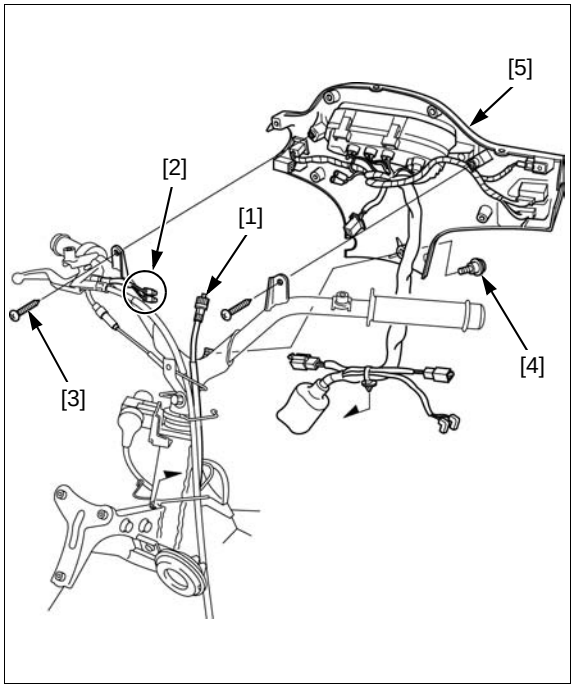


Disconnect the speedometer cable [1] from the speedometer unit.

Disconnect the front brake light switch wire connectors [2].

Remove the two tapping screws [3] and special screw [4], then release the handlebar rear cover [5] from the handlebar.

Installation is in the reverse order of removal.



SEAT

REMOVAL/INSTALLATION

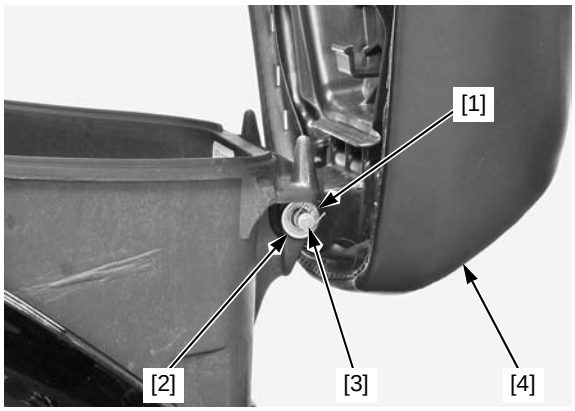
Open the seat using the ignition key.

Support the seat while removing the seat.

Remove the following:

– Cotter pin [1]
– Washer [2]
– Shaft [3]
– Seat [4]

Installation is in the reverse order of removal.



FRONT TOP COVER

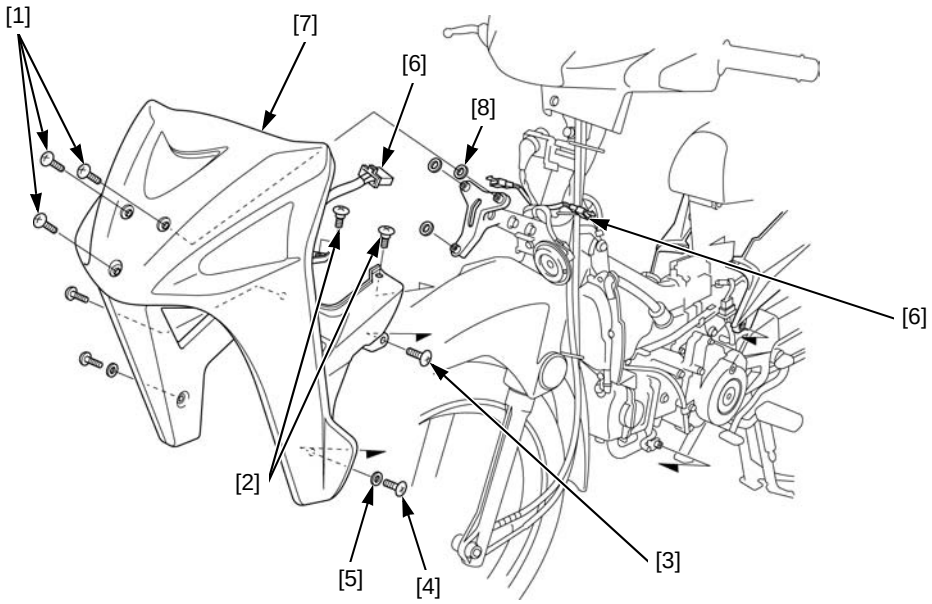
REMOVAL/INSTALLATION

Remove the following:

– Main pipe cover (page 2-7)
– Body lower cover (page 2-7)
– Three screws [1] from the front side
– Two special screws [2] and two screws [3] from the rear side
– Screws [4] and washers [5] from right and left side

Disconnect the front turn signal light 2P connectors [6] and remove the front top cover [7].
Remove the three rubbers [8] from the front top cover stay.

Installation is in the reverse order of removal.

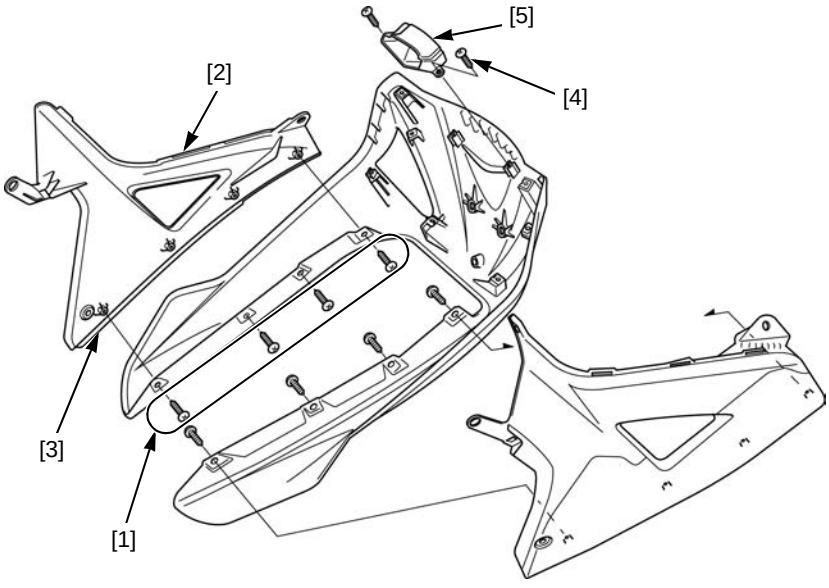


DISASSEMBLY/ASSEMBLY

Remove the front turn signal light unit (page 17-6)

Remove the eight screws [1] and main pipe side covers [2] by releasing the tabs [3] from the grooves of the front top cover.
Remove the two screws [4] and duct [5].

Installation is in the reverse order of removal.



FRONT FENDER

FRONT FENDER A

REMOVAL/INSTALLATION

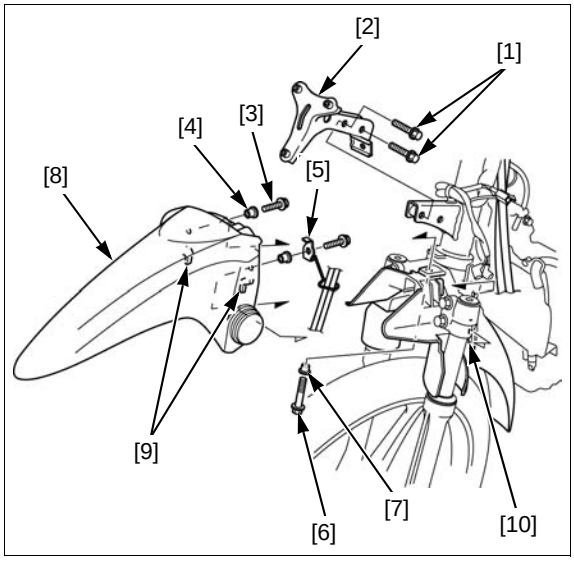
Remove the following:

– Front top cover (page 2-5)
– Horn (page 17-13)

Remove the following:

– Two bolts [1] and front top cover stay [2].
– Two bolts [3], collars [4] and speedometer cable guide [5]
– Bolt [6] and collar [7]

Remove the front fender A [8] by releasing the two hooks [9] from the slots [10] of the front fender B.



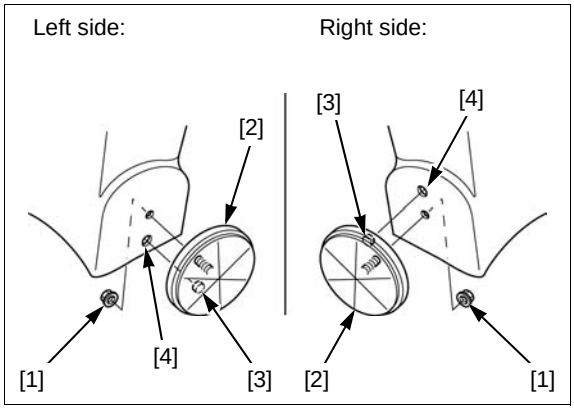
FRONT REFLEX REFLECTOR REMOVAL/INSTALLATION

Remove the nuts [1] and front reflex reflectors [2].

Installation is in the reverse order of removal.

- When installing the reflex reflector, align the boss [3] with the fender hole [4].

TORQUE:
Front reflex reflector mounting nut:
1.8 N·m (0.2 kgf·m)



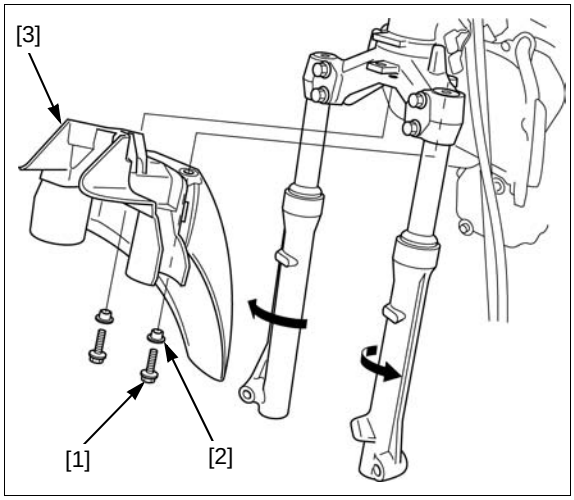
FRONT FENDER B REMOVAL/INSTALLATION

Remove the following:

– Front fender A (page 2-6)
– Front wheel (page 14-4)

Remove the two bolts [1] and collars [2].
Remove the rear fender B [3] by turning the forks as shown.

Installation is in the reverse order of removal.



MAIN PIPE COVER

REMOVAL/INSTALLATION

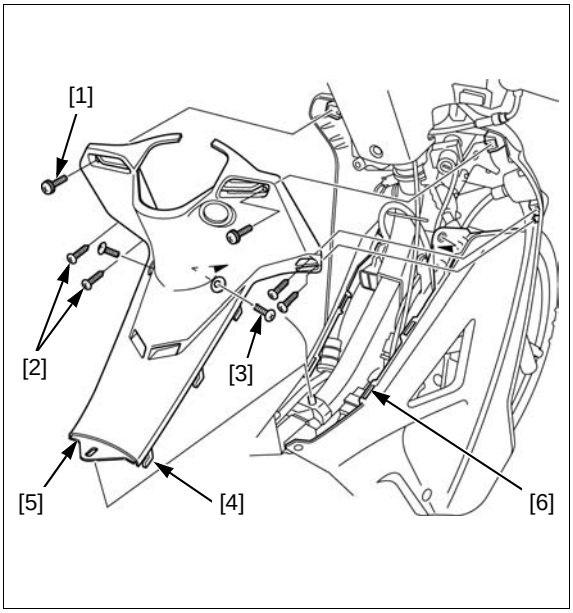
Remove the center cover (page 2-7)

Remove the following:

– Two screw/washers [1]
– Four tapping screws [2]
– Two screws [3]

Release the hooks [4] of the main pipe cover [5] from the slots [6] of the main pipe side cover by pulling it backward, then remove it.

Installation is in the reverse order of removal.



CENTER COVER

REMOVAL/INSTALLATION

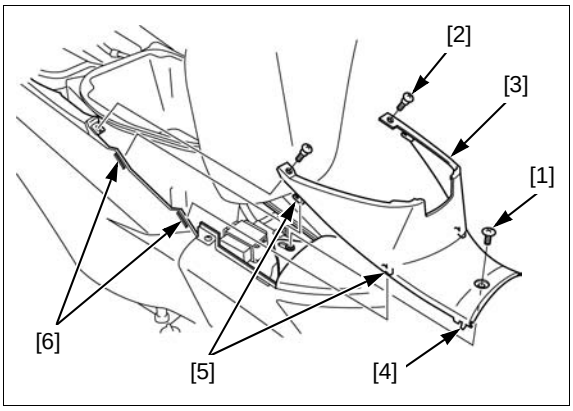
Open the seat using the ignition key.

Remove the following:

– Screw [1]
– Two special screws [2]

Slightly pull up the front side of the center cover [3] and release the tabs [4].
Remove the center cover by pulling it forward and releasing the hooks [5] from the slots [6] of the body cover.

Installation is in the reverse order of removal.

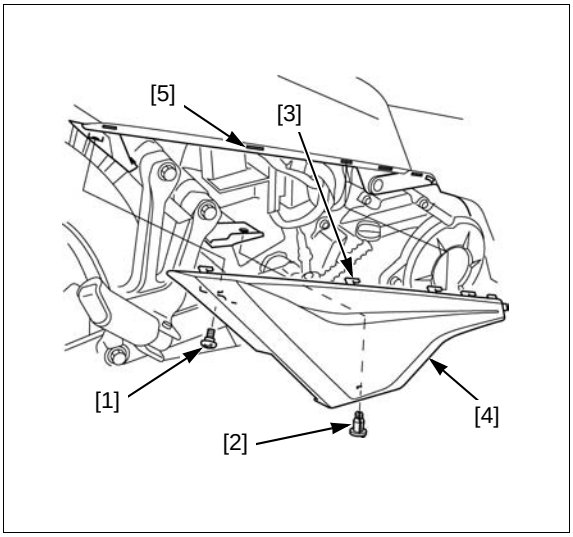


BODY LOWER COVER

Right side: Remove the special screw [1] and trim clip [2].

Left side: Remove the special screw [1].

Release the hooks [3] of the body lower cover [4] from the slots [5] of the body cover.



BODY COVER

REMOVAL/INSTALLATION

Remove the following:

– Center cover (page 2-7)
– Main pipe cover (page 2-7)
– Body lower cover (page 2-7)
– Grab rail (page 2-12)

Remove the following:

– Two screws [1] and washers [2] from the right and left side
– Two screws [3] from the right and left side
– Three special screws [4] from the front side and rear side
– Four special screws [5] from the lower side
– Rubber [6] from the rear upper side

Release the following:

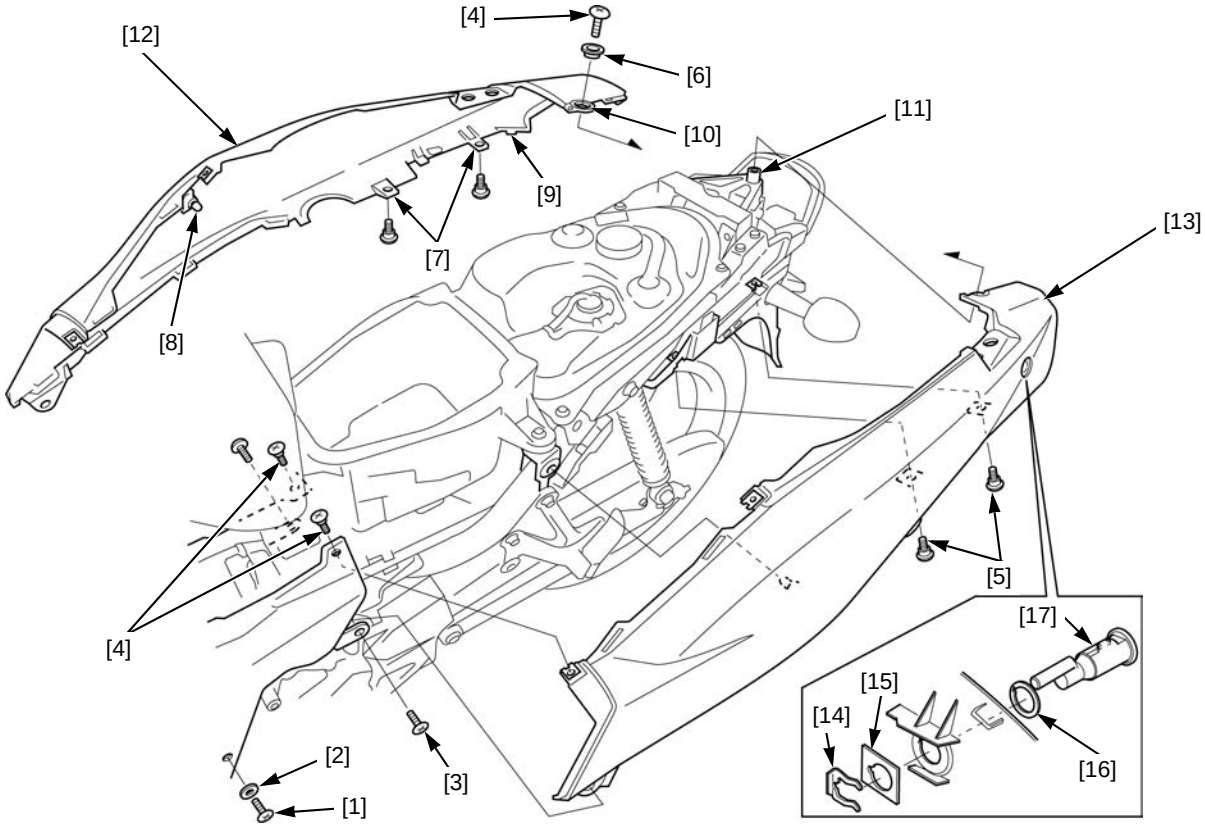
– Tabs [7] of the rear lower side of the body cover
– Bosses [8] of the body cover from the grommets of the passenger footpeg holder
– Hooks [9] of the rear side of the body cover
– Hole [10] of the body cover from the boss [11] of the frame

Remove the right body cover [12] and left body cover [13].

Remove the following:

– Retainer [14]
– Setting plate [15]
– Packing [16]
– Key cylinder [17]

Installation is in the reverse order of removal.



LUGGAGE BOX

REMOVAL/INSTALLATION

Remove the following:

– Body cover (page 2-8)
– Battery (page 16-5)
– Turn signal relay (page 17-14)

Remove the three bolts [1] and collars [2].

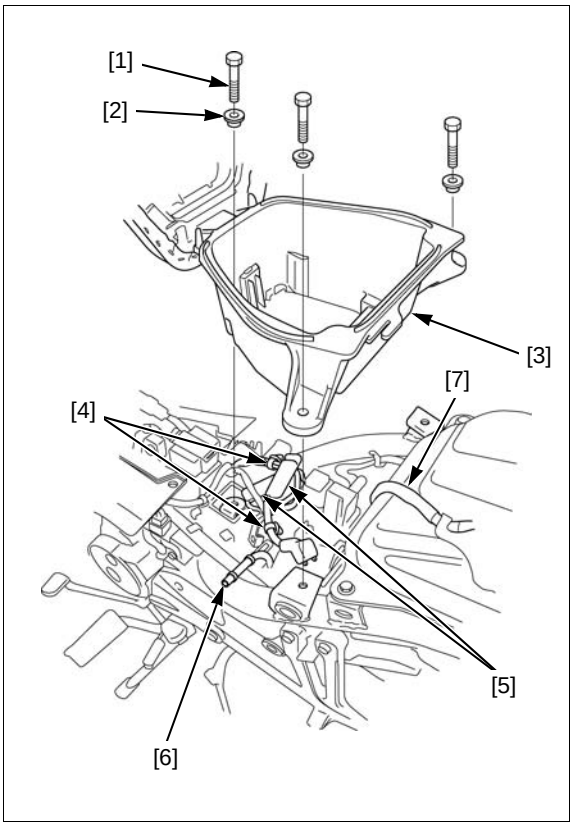
Release the following parts from the luggage box [3]:

– Wire bands [4]
– Fuse boxes [5]
– Battery breather hose [6]

Raise the luggage box while pulling out the wire harness [7].

Installation is in the reverse order of removal.

• Route the battery breather hose properly (page 1-16).



ICM HOLDER

Remove the following:

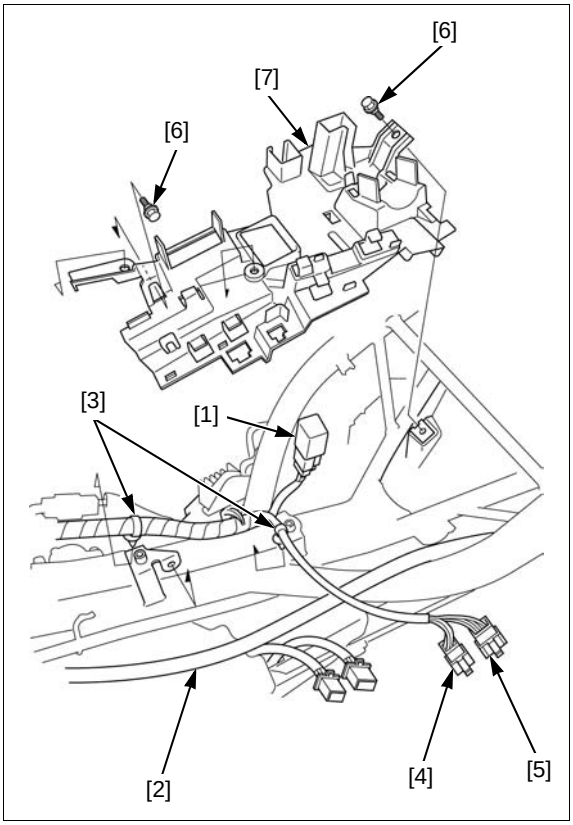
– Front top cover (page 2-5)
– Luggage box (page 2-9)
– Ignition control module (ICM) (page 4-6)

Release the following from the canister holder:

– Starter relay [1]
– Fuel hose [2]
– Two wire bands [3]

Disconnect the alternator 4P (Black) connector [4] and gear position switch 6P (Black) connector [5].

Remove the two special bolts [6] and canister holder [7].



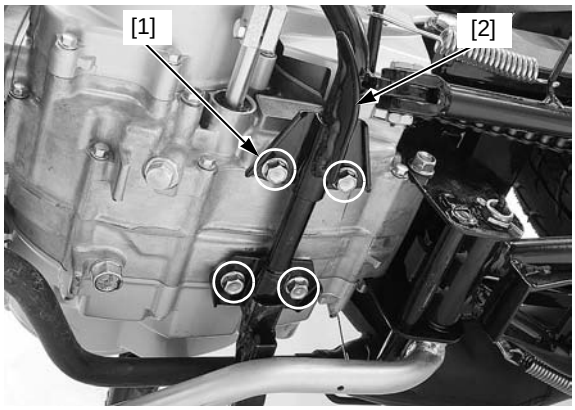
FOOTPEG BAR

REMOVAL/INSTALLATION

Remove the following:

– Four bolts [1]
– Footpeg bar [2]

Installation is in the reverse order of removal.



REAR FENDER A

REMOVAL/INSTALLATION

Remove the body cover (page 2-8)

Disconnect the following:

– Right and left turn signal wire connectors [1]
– Brake/taillight 3P connector [2]

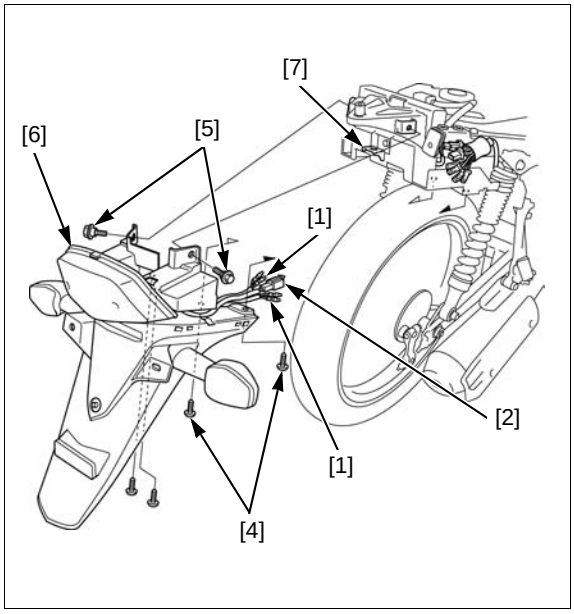
Remove the following:

– Four tapping screws [4]
– Two special bolts [5]

Remove the front fender A [6] by releasing the following:

– Holes of the front fender A (screw holes)
– Tab of the front fender B [7]

Installation is in the reverse order of removal.



DISASSEMBLY/ASSEMBLY

Remove the rear fender A (page 2-10).

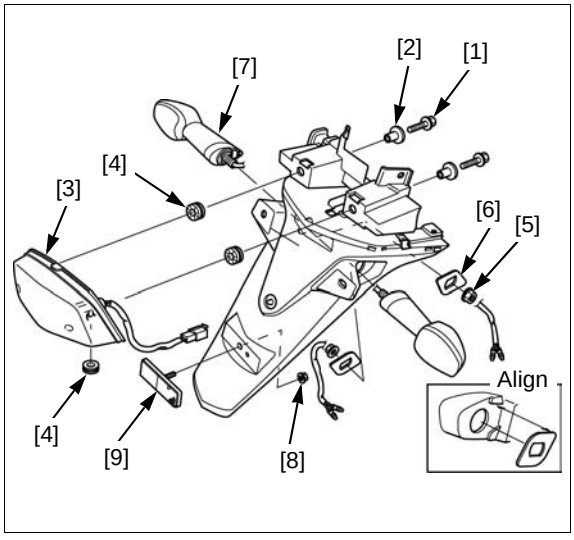
Remove the following:

– Two bolt/washers [1], flange collars [2], brake/taillight [3] and grommets [4]
– Flange nuts [5], setting plates [6], and turn signal lights [7]
– Nut [8] and rear reflex reflector [9]

Assembly is in the reverse order of disassembly.

• Align the flats of the setting plates and rear fender A as shown.

TORQUE:
Rear reflex reflector mounting nut:
1.8 N·m (0.2 kgf·m)
Rear turn signal light mounting nut:
5 N·m (0.5 kgf·m)



REAR FENDER B

REMOVAL/INSTALLATION

Remove the following:

– Luggage box (page 2-9)
– Rear fender A (page 2-10)
– Fuel tank (page 6-10)

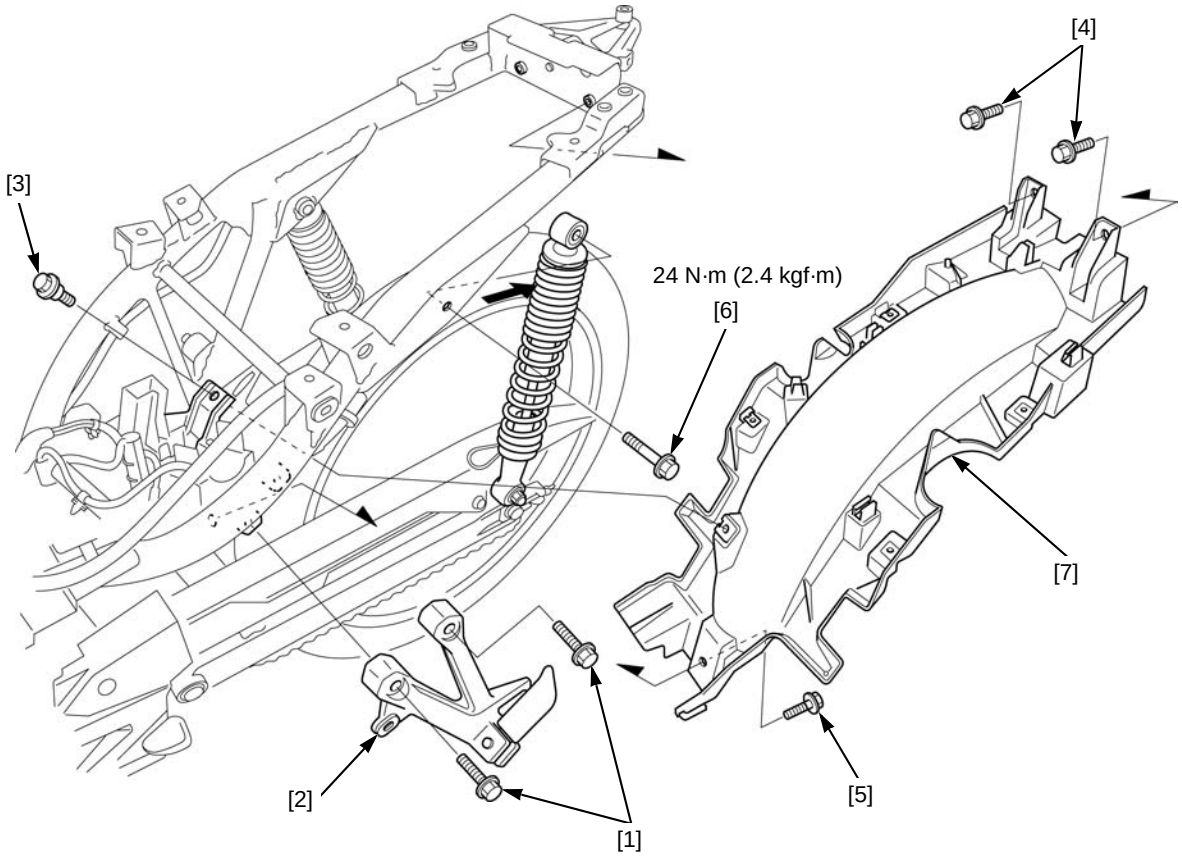
Remove the following:

– Two bolts [1] and left passenger footpeg holder [2]
– Special bolt [3] from the front side
– Two bolts [4] from the rear side
– Bolt [5] from the inner side
– Shock absorber left side upper mounting bolt [6]

Pivot the shock absorber and remove the rear fender B [7] as shown.

Installation is in the reverse order of removal.

TORQUE:
Shock absorber upper mounting bolt:
24 N·m (2.4 kgf·m)



GRAB RAIL

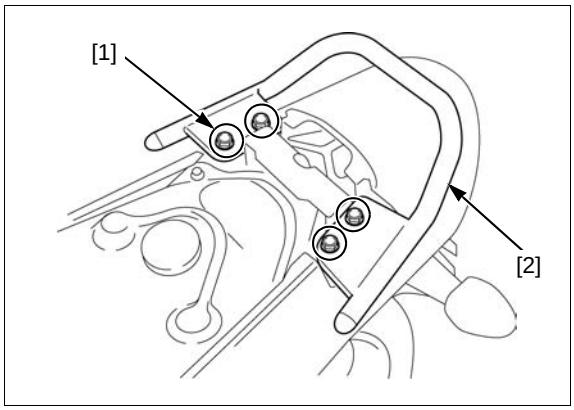
REMOVAL/INSTALLATION

Open the seat using the ignition key.

Support the grab rail while removing the bolts.

Remove the four mounting bolts [1] and grab rail [2].

Installation is in the reverse order of removal.

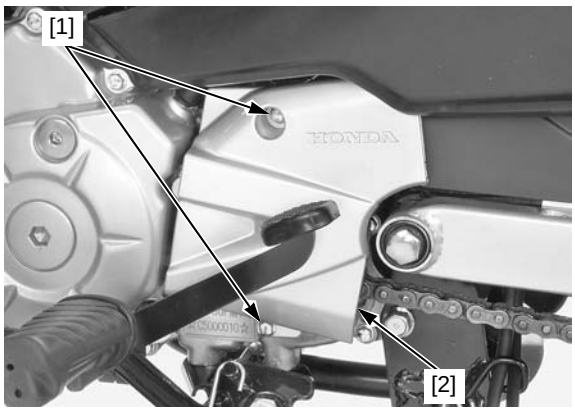


LEFT CRANKCASE REAR COVER

REMOVAL/INSTALLATION

Remove the two bolts [1] and left crankcase rear cover [2].

Installation is in the reverse order of removal.



CHAIN COVER

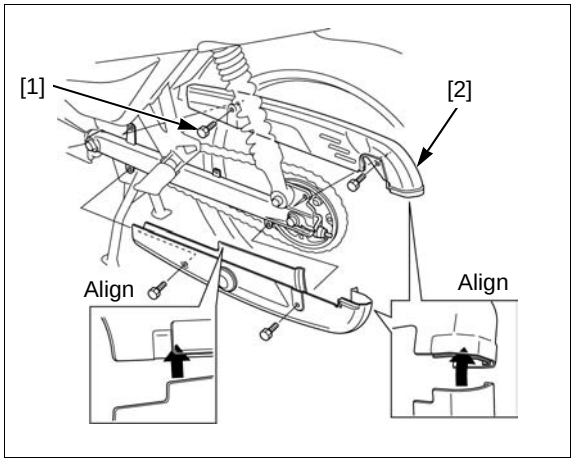
REMOVAL/INSTALLATION

Remove the bolts [1] and drive chain cases [2]

Install the drive chain covers by aligning the tabs with the grooves as shown.

Install and tighten the drive chain cover mounting bolts to the specified torque.

TORQUE: 7 N·m (0.7 kgf·m)



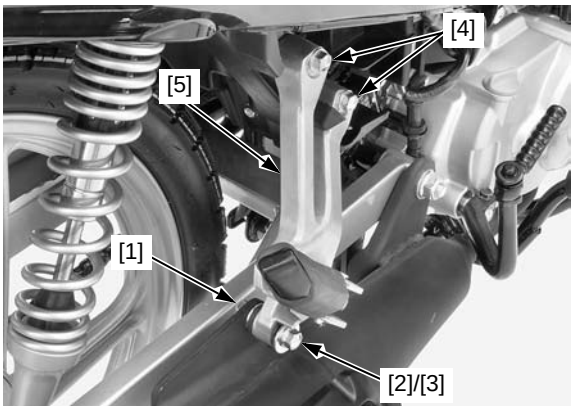
EXHAUST PIPE/MUFFLER

REMOVAL

Remove the right body lower cover (page 2-7).

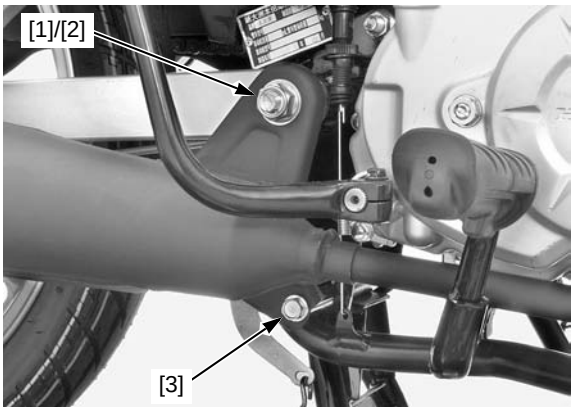
Remove the following:

– Muffler mounting nut [1]
– Muffler mounting bolt A [2]
– Washer [3]
– Two bolts [4]
– Right passenger footpeg holder [5]



Loosen the following:

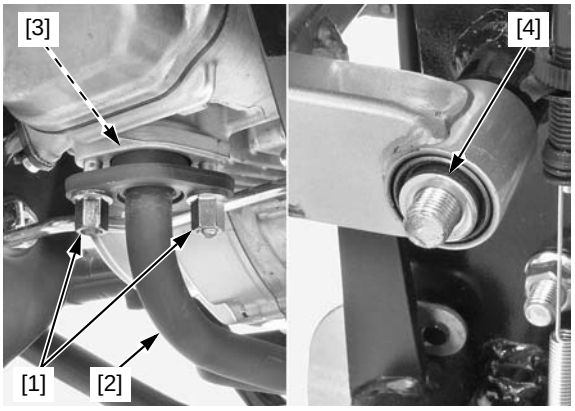
– Swingarm pivot nut [1] and washer [2]
– Muffler mounting bolt B [3]



Remove the joint nuts [1] and all loosened mounts.

Remove the following:

– Exhaust pipe/muffler [2]
– Exhaust pipe gasket [3]
– Washer [4] (from the swingarm pivot bolt)



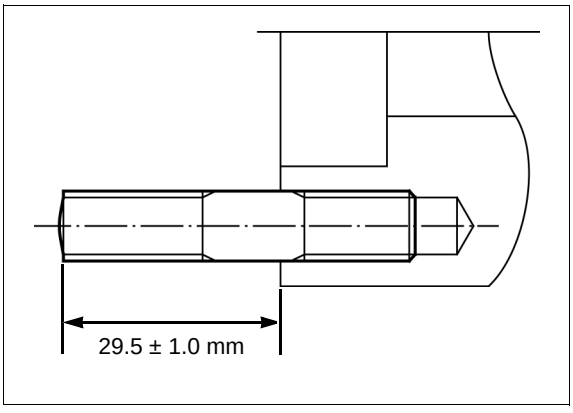
EXHAUST PIPE STUD BOLT

Thread two nuts to the stud bolt and tighten them together, then use a wrench on them to turn the stud bolt out.

Install and tighten new stud bolts into the cylinder head to the specified torque.

TORQUE: 11 N·m (1.1 kgf·m)

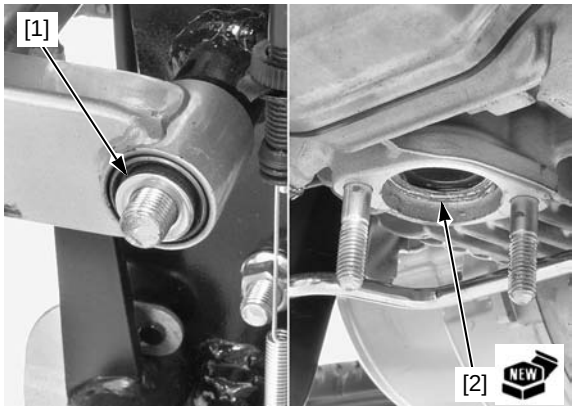
After tightening the stud bolts, check that the length from the bolt head to the cylinder head surface is within specification.



INSTALLATION

Install the washer [1] to the swingarm pivot bolt.

Install a new gasket [2] into the exhaust port of the cylinder head.



Install the exhaust pipe/muffler [1], then loosely install the joint nuts [2].

Loosely install the washer [3], swingarm pivot nut [4] and muffler mounting bolt B [5].

Loosely install the following:

– Right passenger footpeg holder [6] and two bolts [7]
– Muffler mounting bolt A [8], washer [9] and nut [10]

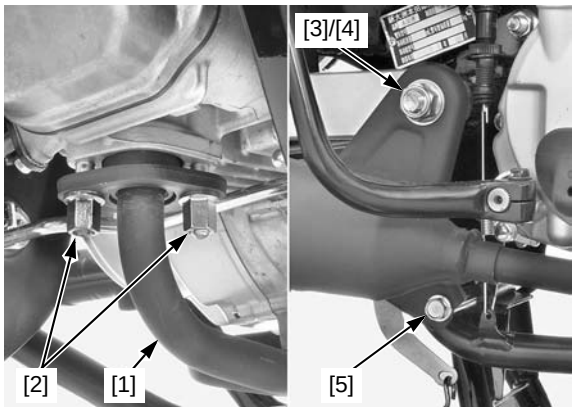
Tighten the exhaust pipe joint nuts [2] to the specified torque.

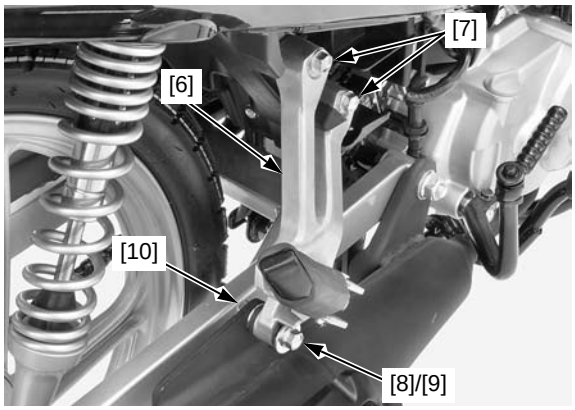
TORQUE: 27 N·m (2.8 kgf·m)

Retract the centerstand carefully and support the motorcycle securely, then tighten the swingarm pivot nut [4] to the specified torque.

TORQUE: 59 N·m (6.0 kgf·m)

Tighten all loosely installed mounts.





MAINTENANCE SCHEDULE

Perform the Pre-ride inspection in the Owner's Manual at each scheduled maintenance period.

I: Inspect and Clean, Adjust, Lubricate or Replace if necessary. C: Clean. R: Replace. A: Adjust. L: Lubricate.

The following items require some mechanical knowledge. Certain items (particularly those marked * and **) may require more technical information and tools. Consult a dealer.

	FREQUENCY / ITEMS	NOTE	ODOMETER READING (NOTE 1)								REFER TO PAGE
			x 1,000 km	1	4	8	12	16	20	24	
			x 1,000 mi	0.6	2.5	5	7.5	10	12.5	15	
*	FUEL LINE				I	I	I	I	I	I	–
*	FUEL STRAINER SCREEN				C	C	C	C	C	C	3-3
*	THROTTLE OPERATION				I	I	I	I	I	I	3-3
*	AIR CLEANER (LA, MX, PE, AG type)	NOTE2						R			3-4
	CRANKCASE BREATHER	NOTE3			C	C	C	C	C	C	3-4
	SPARK PLUG				I	R	I	R	I	R	3-5
*	VALVE CLEARANCE			I	I	I	I	I	I	I	3-5
	ENGINE OIL			R	R	R	R	R	R	R	3-6
**	ENGINE OIL STRAINER SCREEN						C			C	3-7
**	ENGINE OIL CENTRIFUGAL FILTER						C			C	3-7
*	ENGINE IDLE SPEED			I	I	I	I	I	I	I	3-8
*	SECONDARY AIR SUPPLY SYSTEM (MX, PE, CO type)						I			I	3-8
	SECONDARY AIR SUPPLY PAIR FILTER (MX, PE, CO type)	NOTE4								R	3-9
	DRIVE CHAIN			EVERY 500 km (300 mi) I, L							3-9
	BATTERY				I	I	I	I	I	I	3-11
	BRAKE SHOES WEAR				I	I	I	I	I	I	3-11
	BRAKE SYSTEM			I	I	I	I	I	I	I	3-12
	BRAKE LIGHT SWITCH				I	I	I	I	I	I	3-13
	HEADLIGHT AIM				I	I	I	I	I	I	3-13
*	CLUTCH SYSTEM			I	I	I	I	I	I	I	3-13
	SIDESTAND				I	I	I	I	I	I	3-13
*	SUSPENSION				I	I	I	I	I	I	3-14
*	NUTS, BOLTS, FASTENERS			I		I		I		I	3-14
**	WHEELS/TIRES (Cast wheel type)				I	I	I	I	I	I	3-14
**	WHEELS/TIRES (Spoke wheel type)			I	I	I	I	I	I	I	3-14
**	STEERING HEAD BEARINGS			I			I			I	3-15

*Should be serviced by a dealer, unless the owner has proper tools and service data and is mechanically qualified.

**In the interest of safety, we recommend these items be serviced only by a dealer.

Honda recommends that a dealer should road test your motorcycle after each periodic maintenance is carried out.

NOTES:

1. At higher odometer reading, repeat at the frequency interval established here.
2. Service more frequently when riding in unusually wet or dusty areas.
3. Service more frequently when riding in rain or at full throttle.
4. Replacement requires mechanical skill.

FUEL STRAINER SCREEN

Remove the front top cover (page 2-5).

Turn the fuel valve OFF.
Remove the fuel strainer cup [1], strainer screen [2] and O-rings [3].

Clean the strainer screen and strainer cup in non-flammable or high flash point solvent.
Replace the strainer screen if necessary.

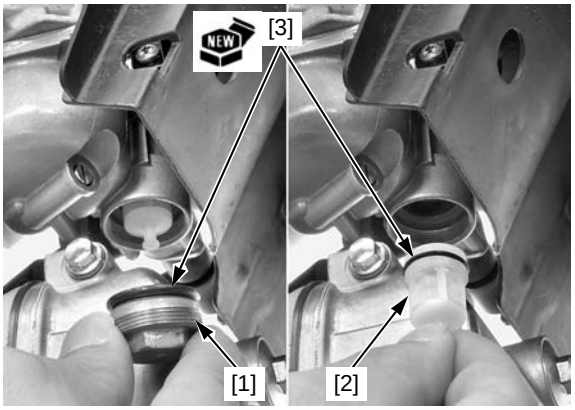
Install new O-rings, strainer screen and strainer cup.

Tighten the strainer cup to the specified torque.

TORQUE: 5.9 N·m (0.6 kgf·m)

Turn the fuel valve ON and make sure that there are no fuel leakage.

Install the front top cover (page 2-5).



THROTTLE OPERATION

Check for any deterioration or damage to the throttle cable. Check the throttle grip for smooth operation. Check that the throttle opens and automatically closes in all steering positions.

If the throttle grip does not return properly, overhaul and lubricate the throttle pipe.

Reusing a damaged, abnormally bent or kinked throttle cable can prevent proper throttle operation and may lead to a loss of throttle control while riding.

If the throttle grip still does not return properly, replace the throttle cable.

With the engine idling, turn the handlebar all the way to the right and left to ensure that the idle speed does not change. If idle speed increases, check the throttle grip freeplay and throttle cable connection.

Measure the throttle grip freeplay at the throttle grip flange.

FREEPLAY: 2 – 6 mm

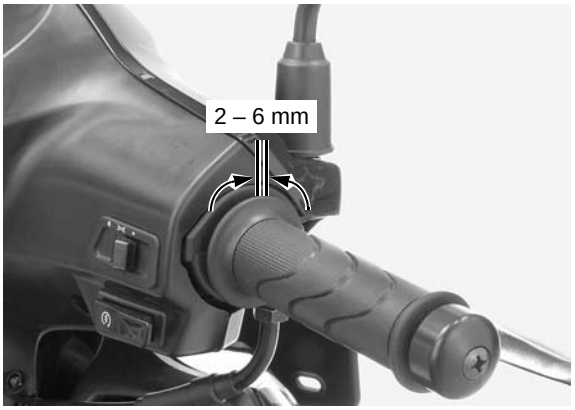
Throttle grip freeplay can be adjusted at throttle cable adjuster.

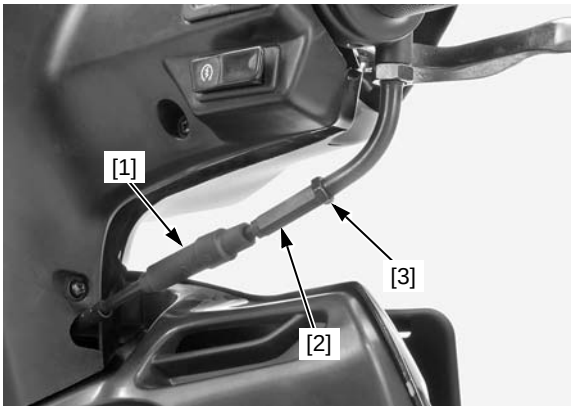
Remove the dust cover [1] from the adjuster [2].
Loosen the lock nut [3].
Adjust the freeplay by turning the adjuster.
Tighten the lock nut to the specified torque while holding the adjuster.

TORQUE: 3 N·m (0.3 kgf·m)

Install the dust cover to the adjuster.

Recheck the throttle operation.
Replace any damaged parts, if necessary.





AIR CLEANER

REMOVAL/INSTALLATION

NOTE:

- The viscous paper element cannot be cleaned because the element contains a dust adhesive.
- If the motorcycle is used in unusually wet or dusty areas, more frequent inspections are required.

Turn the handlebar right fully and remove the screws [1], air cleaner housing cover [2] and seals [3].

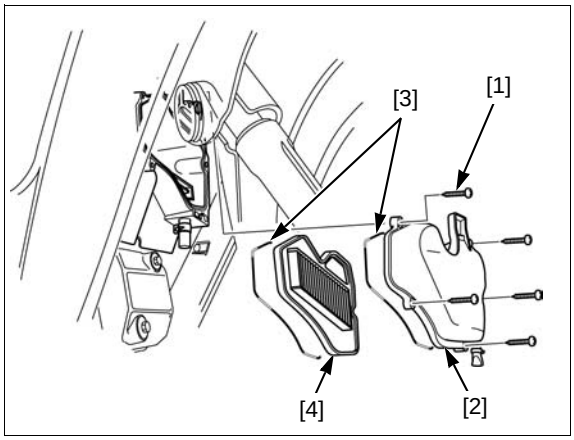
Remove and discard the air cleaner element [4] in accordance with the maintenance schedule (page 3-2).

Replace the element any time if it is excessively dirty or damaged.

Make sure the seals are properly positioned in the grooves on air cleaner housing and cover.

Install the removed parts in the reverse order of removal.

TORQUE:
Air cleaner housing cover screw:
1.1 N·m (0.1 kgf·m)

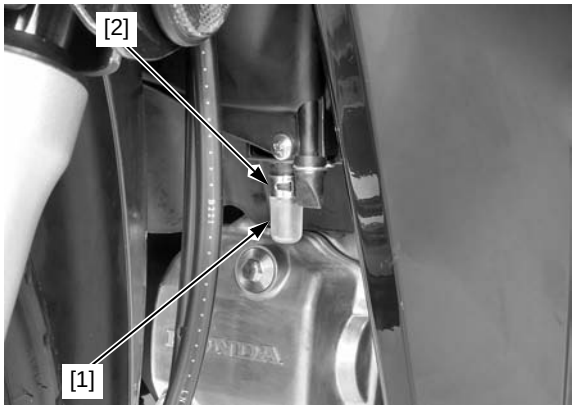


CRANKCASE BREATHER

NOTE:

Service more frequently when ridden in rain, at full throttle, or after the motorcycle is washed. Service if the deposit level can be seen in the drain cap.

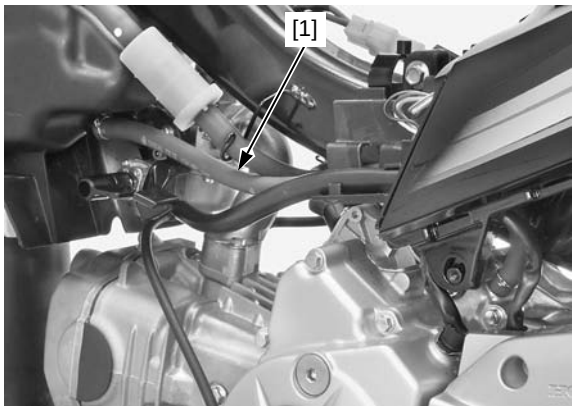
Check the crankcase breather drain cap [1].
If deposits has collected, remove the clip [2] and crankcase breather drain cap.
Drain deposits into the suitable container.
Install the crankcase breather drain cap and clip.



Remove the front top cover (page 2-5).

Check the crankcase breather hose [1] for deterioration, damage or leakage.

Install the removed parts in the reverse order of removal.



SPARK PLUG

REMOVAL/INSTALLATION

Disconnect the spark plug cap [1], and clean around the spark plug base.

Remove the spark plug [2].

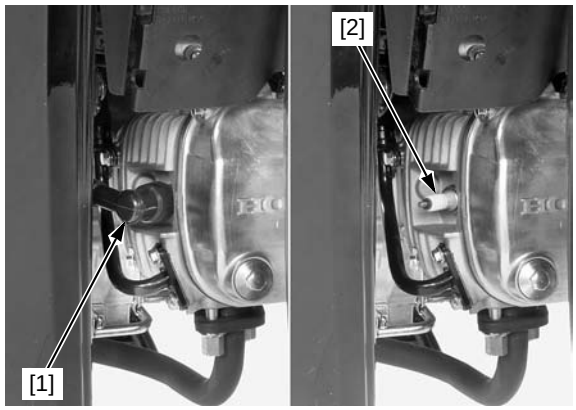
Inspect or replace as described in the maintenance schedule (page 3-2).

RECOMMENDED SPARK PLUG:
CPR6EA-9S (NGK)

Install and hand tighten the spark plug to the cylinder head, then tighten the spark plug to the specified torque.

TORQUE: 16 N·m (1.6 kgf·m)

Connect the spark plug cap.



INSPECTION

Check the following and replace if necessary.

- Insulator for cracks or damage
- Center electrode and side electrodes for wear
- Burning condition, coloration;
  - Dark to light brown indicates good condition
  - Excessive lightness indicates malfunctioning ignition system or lean mixture
  - Wet or black sooty deposit indicates over-rich mixture

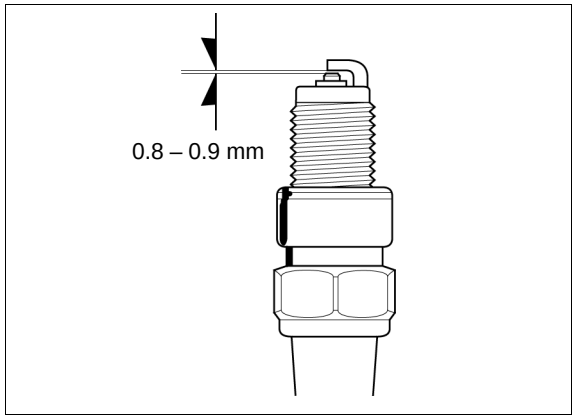
Clean the spark plug electrodes with a wire brush or special plug cleaner.

Measure the spark gap between the center and side electrodes with a feeler gauge.

Replace the plug if necessary.

SPARK PLUG GAP:
0.8 – 0.9 mm

If necessary, adjust the gap by bending the side electrode carefully.



VALVE CLEARANCE

NOTE:

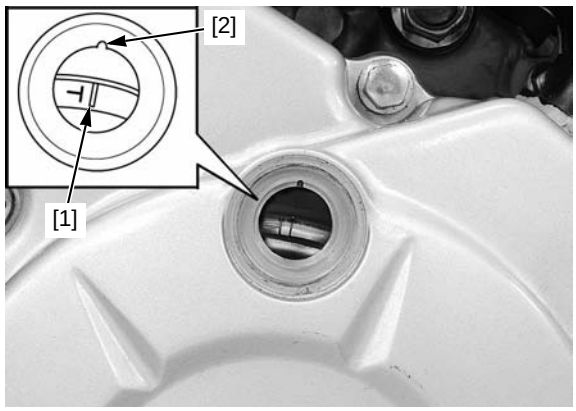
- Inspect and adjust the valve clearance while the engine is cold (below 35°C).

INSPECTION

Remove the cylinder head cover (page 8-4).

Remove the crankshaft hole cap and timing hole cap from the left crankcase cover.

Rotate the crankshaft counterclockwise until the "T" mark [1] on the flywheel is aligned with the index notch [2] on the left crankcase cover.

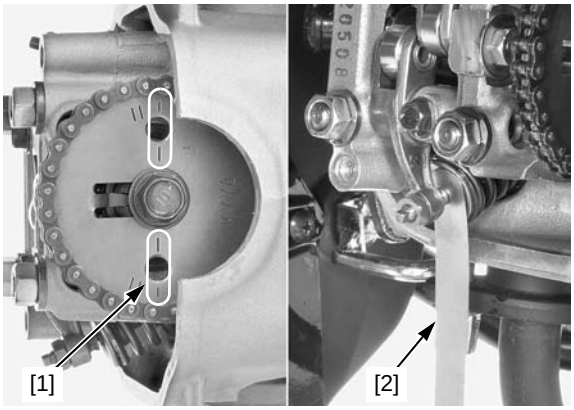


Make sure that the "I" lines [1] on the cam sprocket align with the cylinder head top surface and piston is at TDC (Top Dead Center) on the compression stroke.

This position can be obtained by confirming that there is slack in the rocker arms. If there is no slack, turn the crankshaft again until the correct position is obtained.

Check each valve clearance by inserting a feeler gauge [2] between the valve adjusting screw and valve stem.

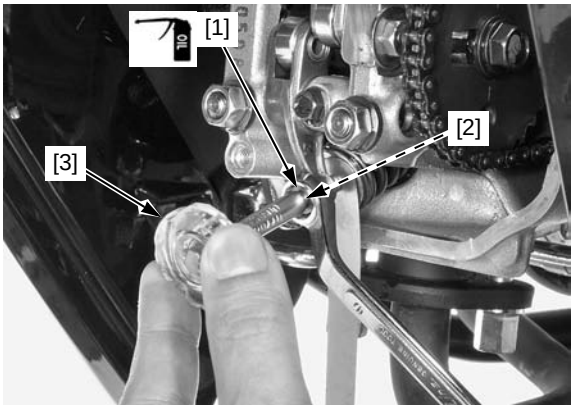
VALVE CLEARANCE:
IN/EX: 0.10 ± 0.02 mm



ADJUSTMENT

Adjust by loosening the lock nut [1] and turning the adjusting screw [2] until there is a slight drag on a feeler gauge.

TOOL:
[3] Tappet Adjusting Wrench (□3)
07708-0030400



Apply engine oil to the lock nut threads and seating surface.
Hold the adjusting screw and tighten the lock nut to the specified torque.

TORQUE: 9 N·m (0.9 kgf·m)

Recheck the valve clearance.

Apply engine oil to a new crankshaft hole cap O-ring and timing hole cap O-ring, then install them to the caps.
Install and tighten the crankshaft hole cap and timing hole cap to the specified torque.

TORQUE:

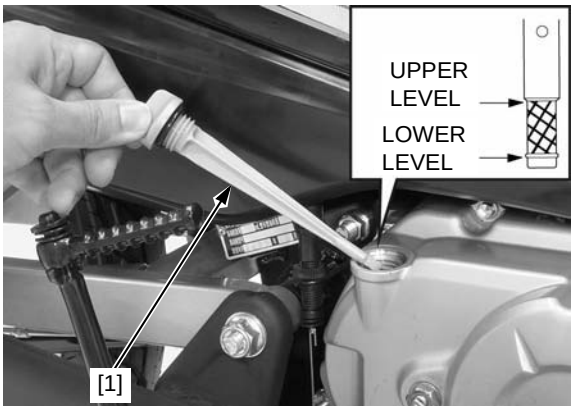
Crankshaft hole cap	**8 N·m (0.8 kgf·m)**
Timing hole cap	**10 N·m (1.0 kgf·m)**

Install the cylinder head cover (page 8-4)

ENGINE OIL

OIL LEVEL INSPECTION

Start the engine and let it idle for 3 – 5 minutes.
Stop the engine and wait 2 – 3 minutes.
Hold the motorcycle in an upright position.
Remove the oil filler cap/dipstick [1] and wipe oil from the dipstick with a clean cloth.
Insert the oil filler cap/dipstick without screwing it in, remove it and check the oil level.



If the level is below or near the lower level on the dipstick, add the recommended oil to the upper level.

RECOMMENDED ENGINE OIL:
Honda "4-stroke motorcycle oil" or an equivalent
API classification: SG or higher
(except oils labeled as energy conserving on the circular API service label)
Viscosity: SAE 10W-30
JASO T 903 standard: MA

Check that the O-ring on the oil filler cap is in good condition, and replace it if necessary.
Install the oil filler cap/dipstick.

ENGINE OIL CHANGE

Warm up the engine.
Stop the engine, remove the oil filler cap/dipstick and wipe oil from the dipstick with a clean cloth.

Remove the drain bolt [1] and sealing washer [2].
Drain oil completely.

Install the oil drain bolt with a new sealing washer and tighten it to the specified torque.

TORQUE: 24 N·m (2.4 kgf·m)

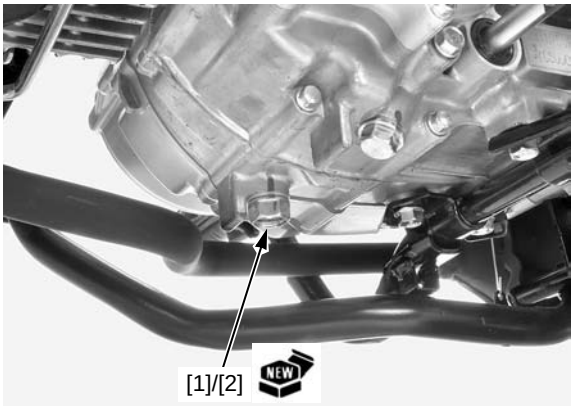
Fill the engine with recommended engine oil.

ENGINE OIL CAPACITY:
0.75 liter after draining
1.0 liter after disassembly

Install the oil filler cap/dipstick.

Make sure there are no oil leaks.

Check the engine oil level (page 3-6).



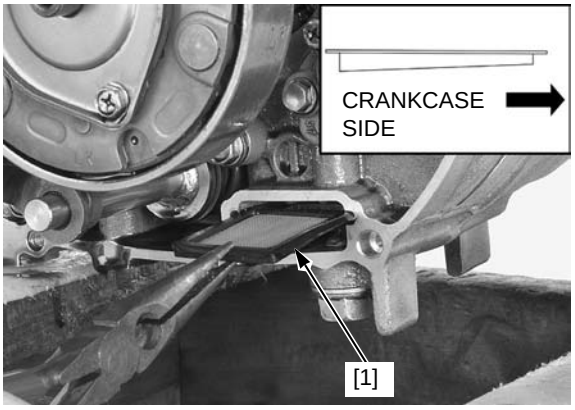
ENGINE OIL STRAINER SCREEN

Remove the right crankcase cover (page 10-3).

Remove the oil strainer screen [1] and clean it in non-flammable or high flash point solvent.

Install the oil strainer screen with its tapered side facing the crankcase side and thinner edge facing up as shown.

Install the right crankcase cover (page 10-4).



ENGINE OIL CENTRIFUGAL FILTER

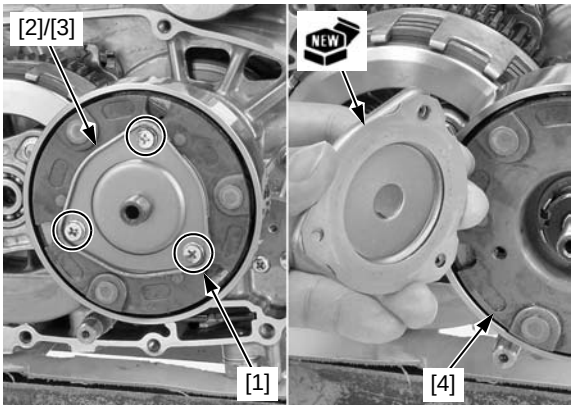
CLEANING

Remove the right crankcase cover (page 10-3).

Remove the bolts [1], oil centrifugal filter cover [2] and gasket [3].

Clean the oil centrifugal filter cover and inside of the drive plate [4] using a clean lint-free cloth.

Install a new gasket with its sealed side facing the oil centrifugal filter cover.

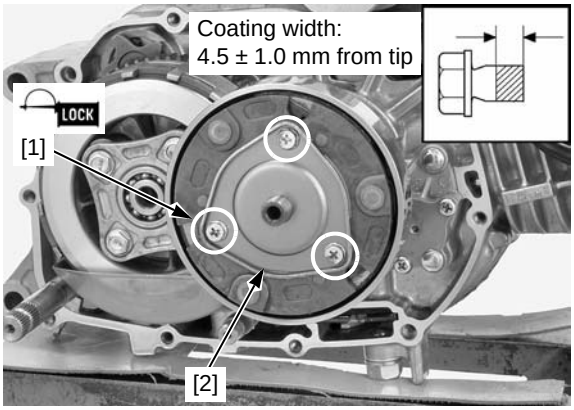


Apply locking agent to the oil centrifugal filter cover bolt [1] threads as shown.

Install the oil centrifugal filter cover [2] and bolts. Tighten the bolts to the specified torque.

TORQUE: 5 N·m (0.5 kgf·m)

Install the right crankcase cover (page 10-4).



ENGINE IDLE SPEED

NOTE:

- Inspect and adjust the engine idle speed after all other engine maintenance items have been performed and are within specifications.
- The engine must be warm for accurate engine idle speed inspection and adjustment.

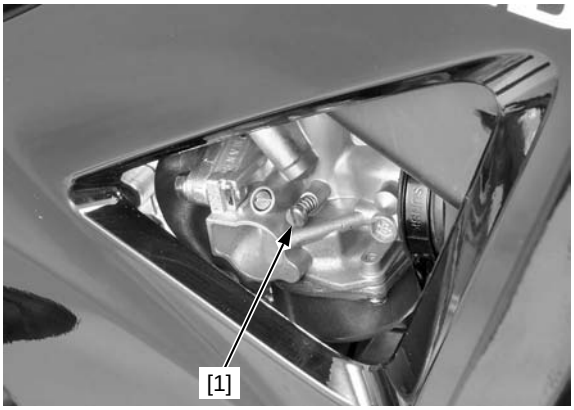
Warm up the engine for about 10 minutes.

Connect a tachometer according to the tachometer manufacturer's operating instructions.

Check the engine idle speed.

ENGINE IDLE SPEED: 1,400 ± 100 min^{-1}

Turn the throttle stop screw [1] as required to obtain the specified engine idle speed.



SECONDARY AIR SUPPLY SYSTEM (MX, PE, CO)

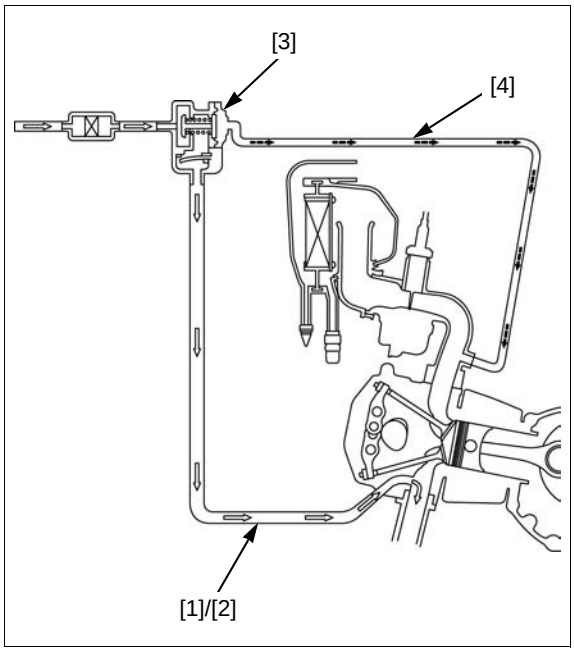
Remove the front top cover (page 2-5).

Check the air supply hose [1] and pipe [2] between the PAIR control valve [3] and exhaust port for cracks, deterioration, damage or loose connections.

Check the vacuum hose [4] between the PAIR control valve and inlet pipe vacuum joint for cracks, deterioration, damage or loose connections.

If there are carbon deposits in the air supply hoses, check the PAIR check valve (page 6-12).

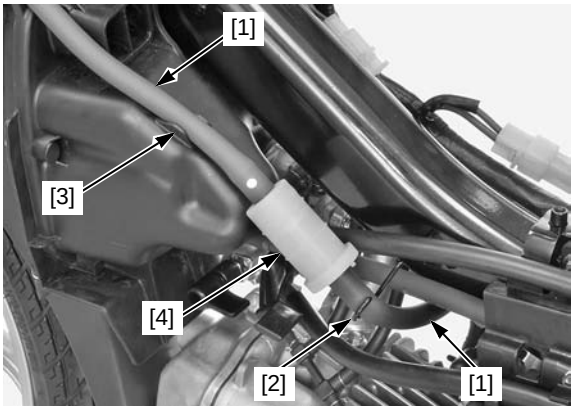
Install the removed parts in the reverse order of removal.



SECONDARY AIR SUPPLY PAIR FILTER (MX, PE, CO)

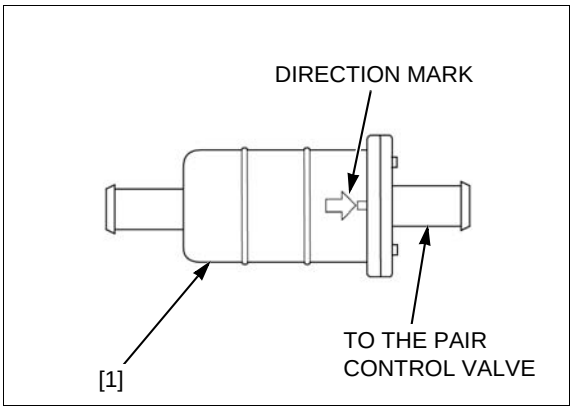
Remove the front top cover (page 2-5).

Release the air suction hoses [1] from the guide [2] and ribs [3].
Remove the secondary air supply PAIR filter [4] by disconnecting the air suction hoses.



Check the secondary air supply PAIR filter [1] and replace it if necessary.

Installation is in the reverse order of removal.



DRIVE CHAIN

DRIVE CHAIN SLACK INSPECTION

Never inspect and adjust the drive chain while the engine is running.

Support the motorcycle with its centerstand and shift the transmission into neutral.

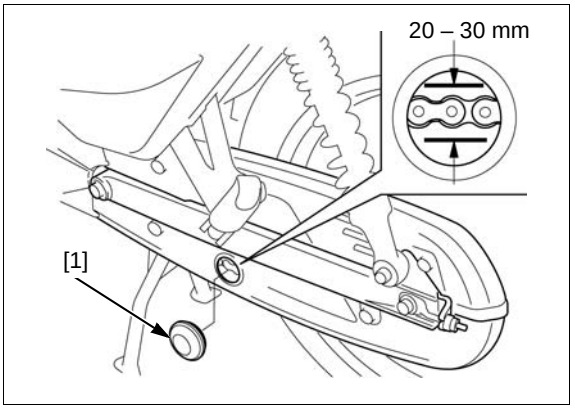
Remove the inspection hole cap [1].

Measure the drive chain slack, on the chain run midway between the sprockets.

CHAIN SLACK: 20 – 30 mm

NOTICE

Excessive chain slack, 50 mm or more, may damage the frame.



ADJUSTMENT

Loosen the rear axle nut [1] and both lock nuts [2].

Turn both drive chain adjusting nuts [3] until the correct drive chain slack is obtained.

Make sure the front end of both adjuster plates [4] are aligned with the same index lines [5] on the swingarm.

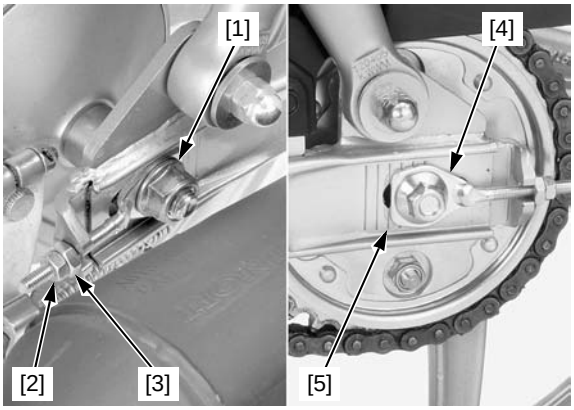
Tighten the rear axle nut to the specified torque.

TORQUE: 59 N·m (6.0 kgf·m)

Tighten the both drive chain lock nuts securely.

Recheck the drive chain slack and free wheel rotation.

Check the rear brake pedal freeplay (page 3-12) and adjust it if necessary.



REMOVAL/INSTALLATION

Support the motorcycle with its centerstand and shift the transmission into neutral.

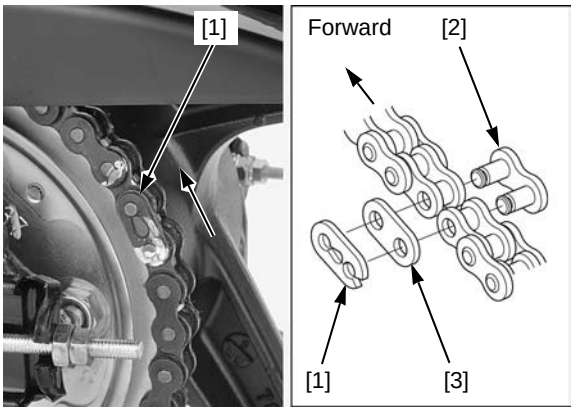
If the drive chain becomes extremely dirty, it should be removed and cleaned prior to lubrication.

Remove the left crankcase rear cover (page 2-12).

Carefully remove the retaining clip [1] with pliers.
Remove the master link [2] and link plate [3], and disconnect the drive chain.
Remove the drive chain.

Install the drive chain onto the sprockets.
Install the master link and link plate.
Install the retaining clip with its open end opposite the direction of chain travel.

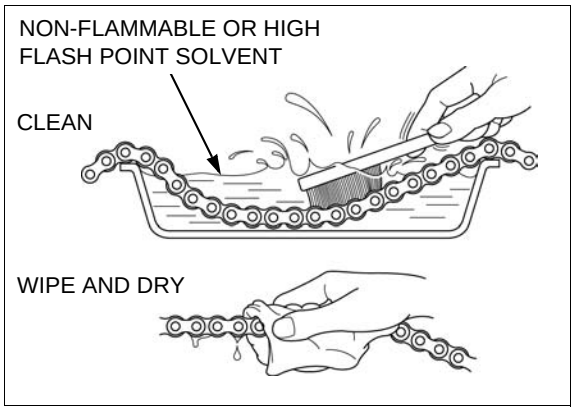
Adjust the drive chain slack (page 3-10).
Install the left crankcase rear cover (page 2-12).



CLEANING AND LUBRICATION

Clean the chain with non-flammable or high flash point solvent and wipe it dry.
Be sure the chain has dried completely before lubricating.
Inspect the drive chain for possible damage or wear.
Replace any chain that has damaged rollers, loose fitting links, or otherwise appears unserviceable.
Installing a new chain on badly worn sprockets will cause the new chain to wear quickly.
Inspect and replace the sprocket as necessary.

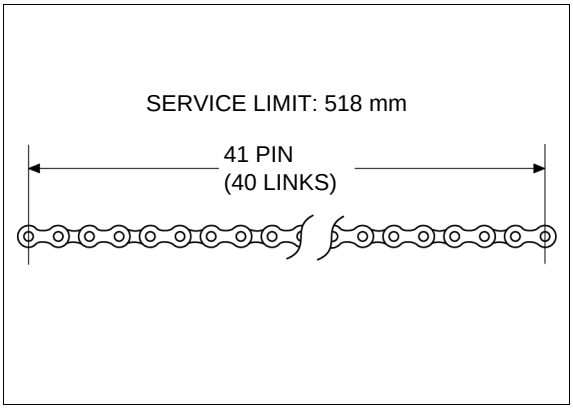
Lubricate the drive chain with #80 – 90 gear oil or drive chain lubricant. Wipe off any excess oil or chain lubricant.



INSPECTION

DRIVE CHAIN

Measure the distance between a span of 41 pins (40 links) from pin center to pin center by holding so that all links are straight.



DRIVE CHAIN LENGTH (41 pins/40 links)

STANDARD: 508 mm
SERVICE LIMIT: 518 mm

SPROCKET

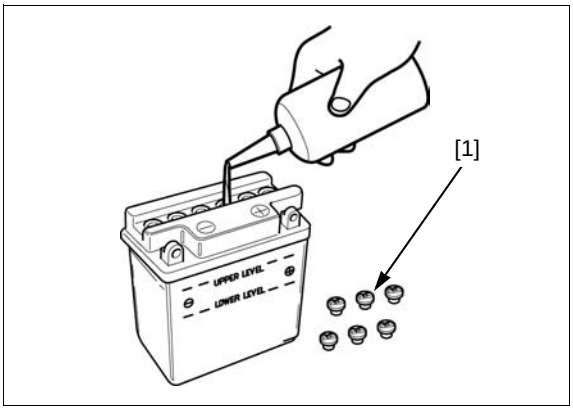
Inspect the drive and driven sprocket teeth for wear or damage, replace them if necessary.

Never use a new drive chain on worn sprockets.
Both chain and sprockets must be in good condition, or the new replacement chain will wear rapidly.

BATTERY

Remove the battery (page 16-5).

When the electrolyte level nears the lower level, remove the filler cap [1].



Add only distilled water. Tap water contains that will shorten the life of the battery.

Add distilled water to the upper level line.

After filling, install each filler cap firmly.

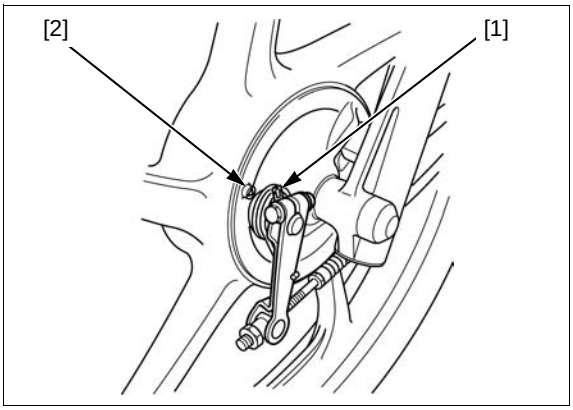
- Make sure that the battery breather hose is correctly positioned, and not kinked, trapped or bent in such away as to obstruct the passage of the air.
  – If the hose is blocked, the battery's internal pressure will not be relived, the breather may come off, or the battery crack as a result.
- Route the battery breather hose properly (page 1-16).

For the battery charging and specific gravity, See page 16-6.

BRAKE SHOES WEAR

FRONT BRAKE SHOES

Check the wear indicator position when the brake lever is applied.

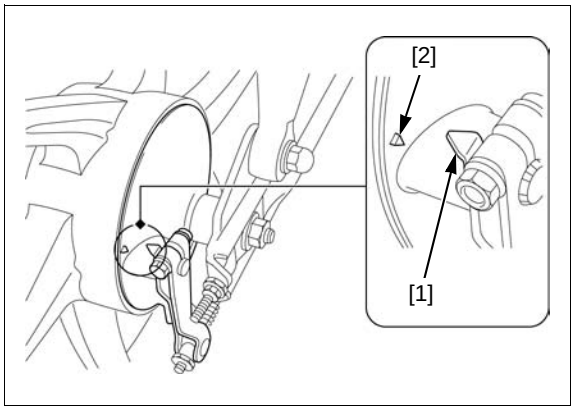


If the indicator plate [1] aligns with the "△" mark [2] on the brake panel, inspect the brake drum (page 14-4).
Replace the brake shoes if the drum I.D. is within service limit (page 14-7).

REAR BRAKE SHOES

Check the wear indicator position when the brake pedal is applied.

If the indicator plate [1] aligns with the "△" mark [2] on the brake panel, inspect the brake drum (page 15-4). Replace the brake shoes if the drum I.D. is within service limit (page 15-9).



BRAKE SYSTEM

BRAKE LEVER FREEPLAY

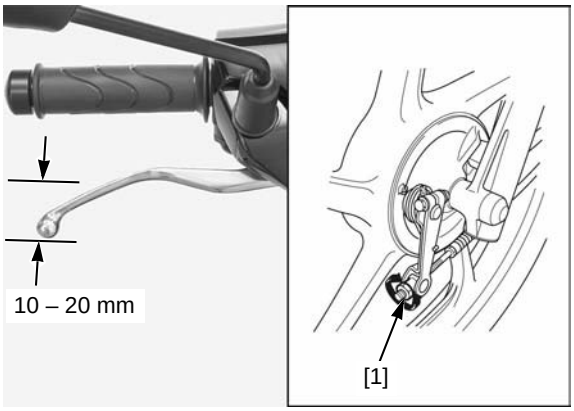
Check the brake cable and brake lever for loose connections, excessive play or other damage.
Replace or repair if necessary.

Measure the front brake lever freeplay at the end of the lever.

FREEPLAY: 10 – 20 mm

Make sure the cut-out of the adjusting nut is seated on the joint pin.

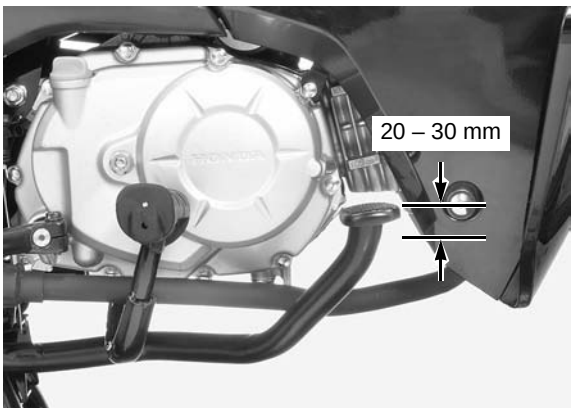
Adjust the front brake lever freeplay by turning the front brake adjusting nut [1].



BRAKE PEDAL FREEPLAY

Measure the rear brake pedal freeplay at the tip of the brake pedal.

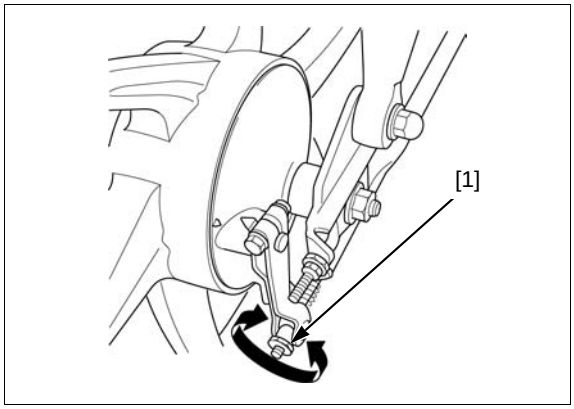
FREEPLAY: 20 – 30 mm



Make sure the cut-out of the adjusting nut is seated on the joint pin.

Adjust the brake pedal freeplay by turning the rear brake adjusting nut [1].

Recheck the freeplay, then check and adjust the rear brake light switch (page 3-13).



BRAKE LIGHT SWITCH

NOTE:

- The front brake light switch in the brake lever bracket of the handlebar cannot be adjusted. If the front brake light switch actuation and brake engagement are not synchronized, either replace the switch unit or the malfunctioning parts of the system.
- Adjust the rear brake light switch after the brake pedal freeplay adjustment.
- Do not turn switch body while turning the adjusting nut.

Check that the brake light comes on just prior to the brake actually being engaged.
If the light fails to come on, adjust the switch by turning the adjusting nut so that the light comes on at the proper time.

Hold the switch body and turn the adjusting nut.

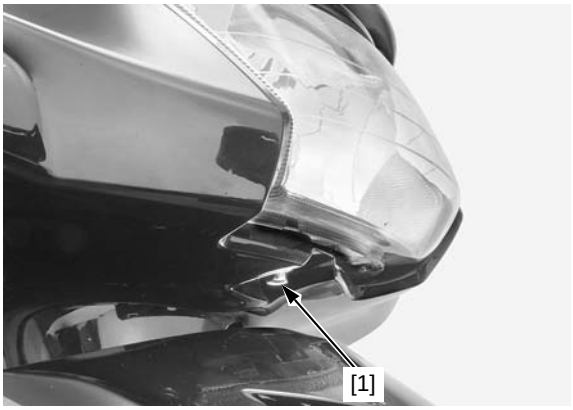
Recheck the brake light switch operation.

HEADLIGHT AIM

Place the motorcycle on the level ground using the centerstand.

Adjust the headlight beam as specified by local laws and regulations.

Adjust the headlight beam vertically by loosening the bolt [1] and moving the headlight unit, then tighten the bolt.



CLUTCH SYSTEM

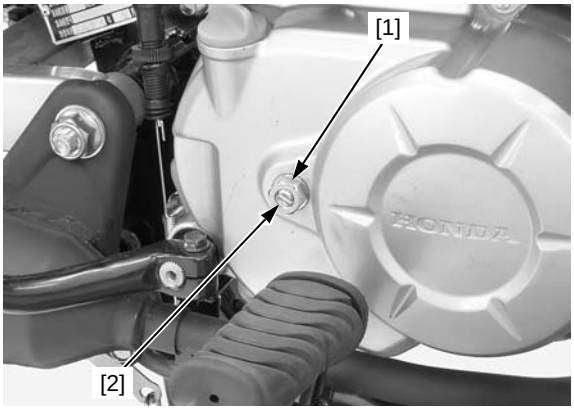
Loosen the clutch adjuster lock nut [1] and turn the clutch adjuster [2] clockwise one full turn; do not turn excessively.
Slowly turn the adjuster counterclockwise until resistance is felt.

Hold the adjuster while tightening the lock nut.

From this point, turn the adjuster clockwise 1/8 turn, and tighten the lock nut to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m)

- Check for clutch operation after adjustment.



SIDESTAND

Support the motorcycle with its centerstand.

Check the sidestand spring for damage or loss of tension.
Check the sidestand assembly for freedom of movement and lubricate the sidestand pivot if necessary.

SUSPENSION

FRONT SUSPENSION INSPECTION

Check the action of the forks by operating the front brake and compressing the front suspension several times.
Check the entire assembly for signs of leaks, damage or loose fasteners.

Replace damaged components which cannot be repaired.

Loose, worn or damaged suspension parts impair motorcycle stability and control.

Tighten all nuts and bolts.

For fork service (page 14-7).

REAR SUSPENSION INSPECTION

Check the action of the rear shock absorbers by compressing them several times.
Check the entire shock absorber assembly for signs of leaks, damage or loose fasteners.
Tighten all nuts and bolts.

For rear shock absorber service (page 15-12).

Support the motorcycle with its centerstand.

Check for worn swingarm bushings by grabbing the rear ends of the swingarm and attempting to move the swingarm side to side.

Replace the swingarm bushings if any looseness is noted (page 15-9).

NUTS, BOLTS, FASTENERS

Check that all chassis nuts and bolts are tightened to their correct torque values (page 1-10).
Check that all cotter pins, safety clips, hose clamps and cable stays are in place and properly secured.

WHEELS/TIRES

Support the motorcycle securely and raise the front wheel off the ground.

Hold the fork leg and move the front wheel sideways with force to see if the wheel bearings are worn.

Check for worn wheel bearings by holding the swingarm and move the rear wheel sideways.

Replace the wheel bearings if any looseness is noted.

– Front wheel (page 14-5)
– Rear wheel (page 15-5)

Check the tire pressure with a tire pressure gauge when the tires are cold.

RECOMMENDED TIRE PRESSURE AND SIZE:

Unit: kPa (psi)

ITEM		FRONT	REAR
Cold tire pressure	Driver only:	200 (29)	225 (33)
	Driver and Passenger:	200 (29)	280 (41)
Tire size		70/90-17M/C 38P	80/90-17M/C 50P
Tire brand	CST	C6016	C6016R
	DURO	DM-261B	DM-261B
	CORDIAL	P180	P180

Check the tires for cuts, embedded nails, or other damage.

Check the front and rear wheels for trueness.

Measure the tread depth at the center of the tires.
Replace the tires when the tread depth reaches the following limits.

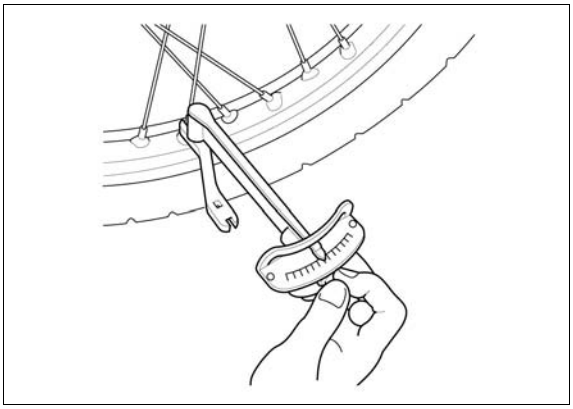
MINIMUM TIRE TREAD DEPTH: To indicator

Spoke wheel type: Inspect the wheel rims and spokes for damage.

Tighten any loose spokes to the specified torque using the special tool.

TOOL:
FRONT:
Spoke Wrench 4.5 x 5.1 mm 07701-0020200
REAR:
Spoke Wrench 5.8 x 6.1 mm 07701-0020300

TORQUE:
Front spoke: 3.2 N·m (0.3 kgf·m)
Rear spoke: 3.7 N·m (0.4 kgf·m)



STEERING HEAD BEARINGS

Support the motorcycle securely and raise the front wheel off the ground.

Check that the handlebar moves freely from side to side. Make sure the control cables do not interfere with handlebar rotation.

Check for steering stem bearings by grabbing the fork legs and attempting to move the front fork forward and backward.

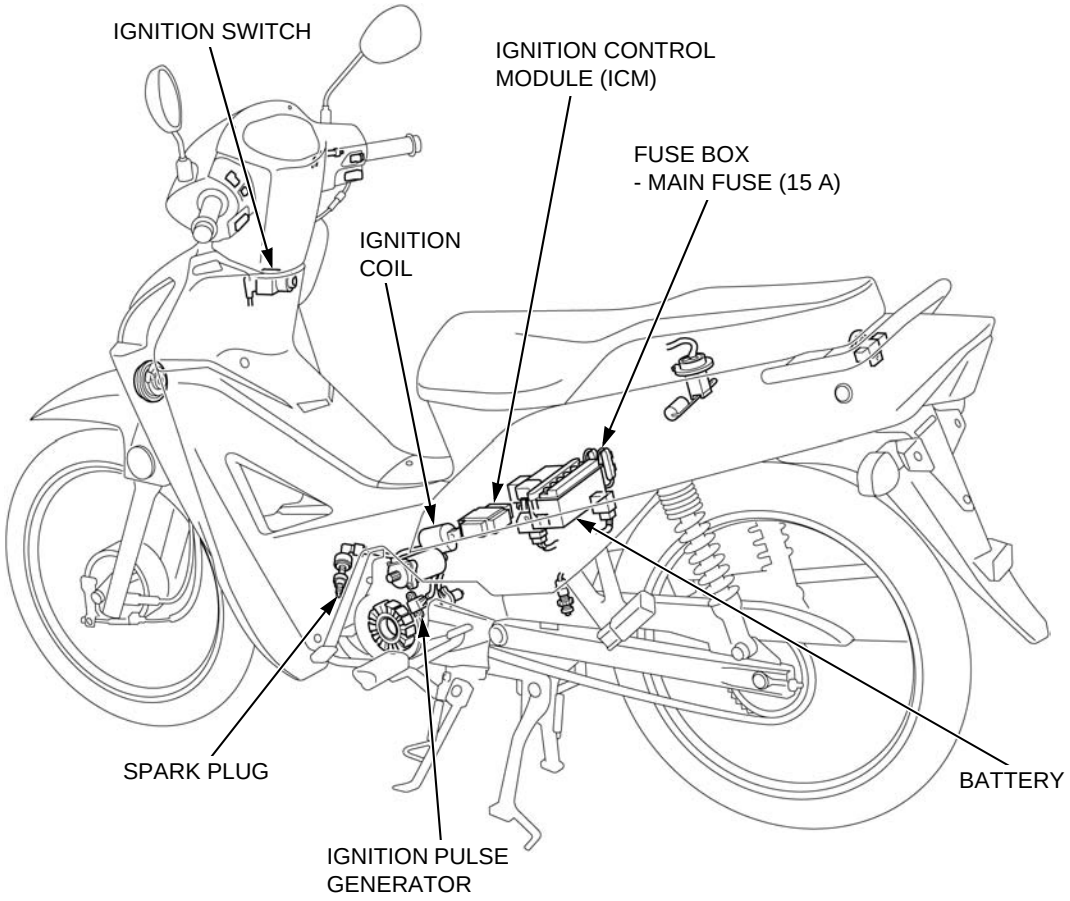
If the handlebar moves unevenly, binds, or has vertical movement, inspect the steering head bearings (page 14-16).

MEMO

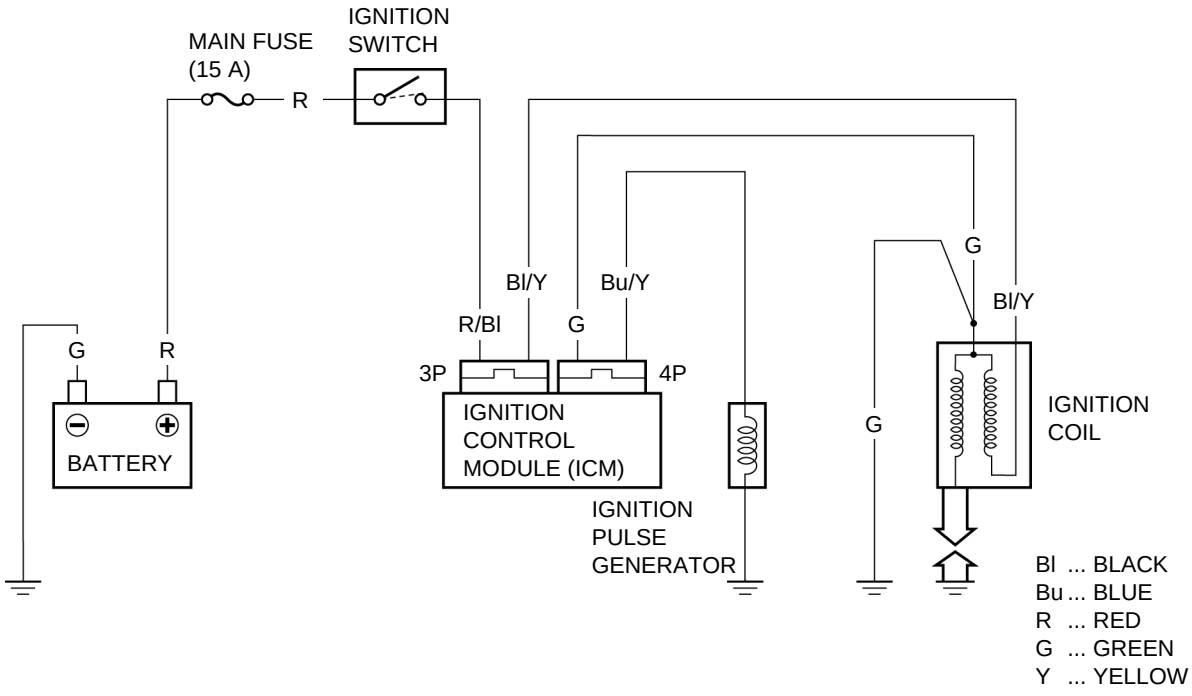
4. IGNITION SYSTEM

SYSTEM LOCATION

Starter motor type shown:



SYSTEM DIAGRAM



SERVICE INFORMATION

GENERAL

NOTICE

- *The Ignition Control Module (ICM) may be damaged if dropped. Also if the connector is disconnected when current is flowing, the excessive voltage may damage the module. Always turn off the ignition switch before servicing.*
- *Use spark plug of the correct heat range. Using spark plug with an incorrect heat range can damage the engine.*

- When servicing the ignition system, always follow the steps in the troubleshooting (page 4-3).
- The ignition timing cannot be adjusted since the ICM is factory preset.
- A faulty ignition system is often related to poor connections. Check those connections before proceeding.
- Make sure the battery is adequately charged. Using the starter motor with a weak battery results in a slower engine cranking speed as well as no spark at the spark plug.
- For ignition switch information (page 17-9).

TROUBLESHOOTING

- Inspect the following before diagnosing the system.
  – Faulty spark plug
  – Loose spark plug cap or spark plug wire connection
  – Water got into the spark plug cap (Leaking the ignition coil secondary voltage)
- If there is no spark at cylinder, temporarily exchange the ignition coil with a known-good one and perform the spark test. If there is spark, the original ignition coil is faulty.

No spark at plug

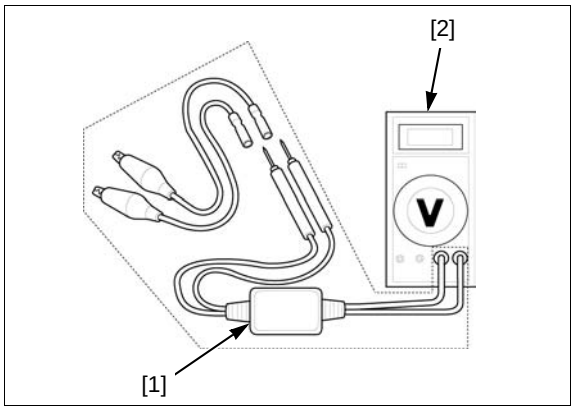
Unusual condition		Probable cause (check in numerical order)
Ignition coil primary voltage	Low peak voltage.	1. The multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed is too slow. (Battery is undercharged.) 3. The sampling time of the tester and measured pulse were not synchronized. (System is normal if measured voltage is over the standard voltage at least once.) 4. Poorly connected wire connector or an open circuit in the ignition system. 5. Faulty ignition coil. 6. Faulty ICM (in case when above No. 1 through 5 are normal).
	No peak voltage.	1. Incorrect peak voltage adaptor connections. (System is normal if measured voltage is over the specifications with reverse connections.) 2. Battery is undercharged. (Voltage drops largely when the engine is started.) 3. Faulty ignition switch. 4. Loose or poorly connected ICM connector(s). 5. No voltage at the Red/black wire of the ICM. 6. Open circuit or poor connection in the Green wire of the ICM. 7. Faulty peak voltage adapter. 8. Faulty ignition pulse generator. (Measure the peak voltage.) 9. Faulty ICM (in case when above No. 1 through 8 are normal).
	Peak voltage is normal, but no spark at the plug.	1. Faulty spark plug or leaking ignition coil secondary current. 2. Faulty ignition coil.
Ignition pulse generator	Low peak voltage.	1. The multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed is too slow. (Battery is undercharged.) 3. The sampling time of the tester and measured pulse were not synchronized. (System is normal if measured voltage is over the standard voltage at least once.) 4. Faulty ignition pulse generator (in case when above No. 1 through 3 are normal).
	No peak voltage.	1. Faulty peak voltage adapter. 2. Faulty ignition pulse generator.

IGNITION SYSTEM INSPECTION

NOTE:

- If there is no spark at the spark plug, check all connections for loose or poor contact before measuring the peak voltage.
- Use commercially available digital multimeter with an impedance of 10 MΩ/DCV minimum.
- The display value differs depending upon the internal impedance of the multimeter.
- If the imrie diagnostic tester (model 625) is used, follow the manufacturer's instructions.

Connect the peak voltage adaptor [1] to the digital multimeter [2], or use the Imrie diagnostic tester.



TOOLS:
Imrie diagnostic tester (model 625) or
Peak voltage adaptor 07HGJ-0020100
with commercially available digital multimeter (impedance 10 MΩ/DCV minimum)

IGNITION COIL PRIMARY PEAK VOLTAGE

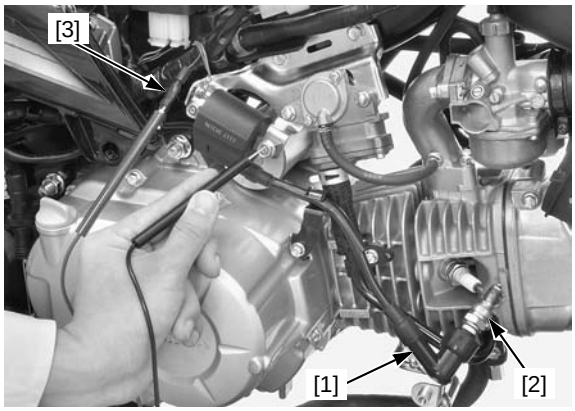
NOTE:

- Check all system connections before performing this inspection. Loose connectors can cause incorrect readings.
- Check cylinder compression and check that the spark plug is installed correctly.

Support the motorcycle with its centerstand.

Remove the front top cover (page 2-5).

Disconnect the spark plug cap [1] from the spark plug. Connect a known good spark plug [2] to the spark plug cap and ground the spark plug to the cylinder head as done in a spark test.

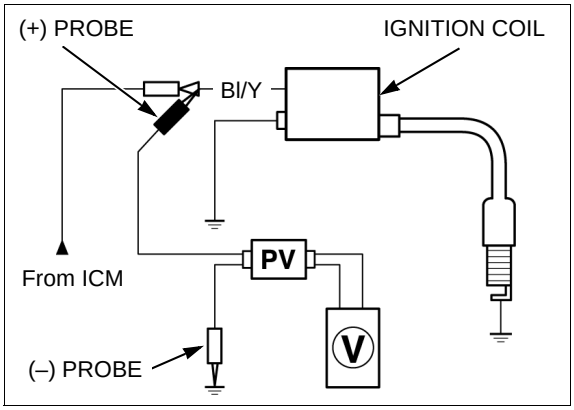


Do not disconnect the ignition coil primary wire.

With the ignition coil primary wire connected, connect the peak voltage adaptor or Imrie tester to the ignition coil primary wire connector [3] and ground.

TOOLS:
Imrie diagnostic tester (model 625) or
Peak voltage adaptor 07HGJ-0020100
with commercially available digital multimeter (impedance 10 MΩ/DCV minimum)

CONNECTION:
Black/yellow terminal (+) – Body ground (–)



Turn the ignition switch ON and shift the transmission into neutral.

Avoid touching the spark plug and tester probes to prevent electric shock.

Crank the engine with the electric starter with the throttle grip fully opened and read the ignition coil primary peak voltage.

PEAK VOLTAGE: 100 V minimum

If the peak voltage is abnormal, refer to the troubleshooting on page 4-3.

Install the removed parts in the reverse order of removal.

IGNITION PULSE GENERATOR PEAK VOLTAGE

NOTE:

- Check cylinder compression and check that the spark plug is installed correctly.

Remove the front top cover (page 2-5).

Disconnect the ICM 4P connector [1].

Connect the peak voltage adaptor or Imrie diagnostic tester to the ICM 4P connector terminal.

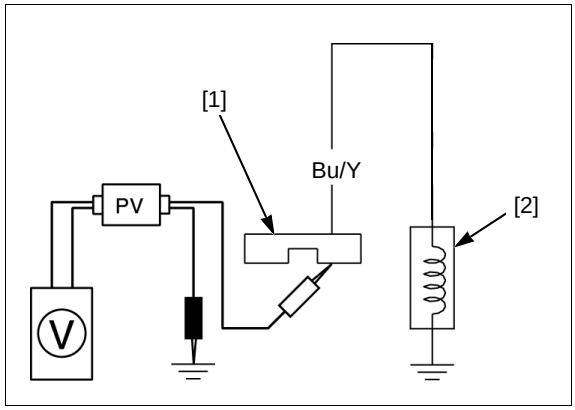
TOOLS:
Imrie diagnostic tester (model 625) or
Peak voltage adaptor 07HGJ-0020100
with commercially available digital multimeter
(impedance 10 MΩ/DCV minimum)

CONNECTION: Blue/yellow (+) – Body ground (–)

Turn the ignition switch ON and shift the transmission into neutral.

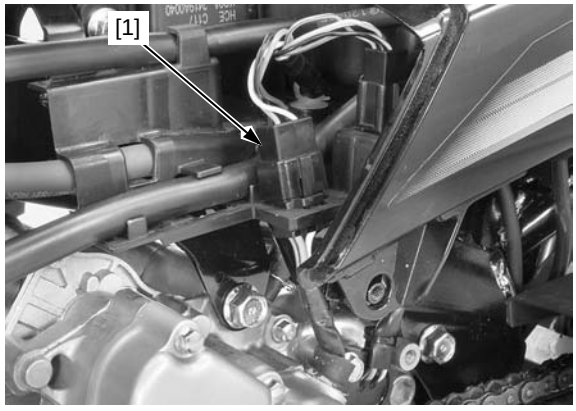
Crank the engine with the electric starter and measure the ignition pulse generator [2] peak voltage.

PEAK VOLTAGE: 0.7 V minimum



If the peak voltage measured at the ICM 4P connector is abnormal, measure the peak voltage at the alternator 4P (Black) connector.

Turn the ignition switch OFF.

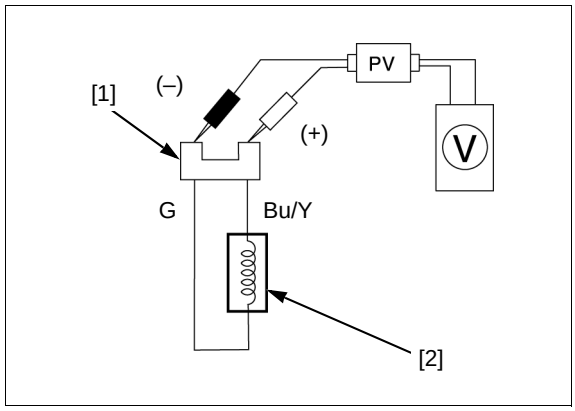


Disconnect the alternator 4P (Black) connector [1] and connect the peak voltage tester or adaptor probes to the connector terminals of the ignition pulse generator [2] side.

CONNECTION: Blue/yellow (+) – Body ground (–)

In the same manner as at the ICM 4P connector, measure the peak voltage and compare it to the voltage measured at the ICM 4P connector.

- If the peak voltage measured at the ICM is abnormal and the one measured at the ignition pulse generator is normal, the wire harness has an open circuit or loose connection.
- If the peak voltage of the ignition pulse generator side is lower than standard value, follow the checks described in the troubleshooting on page 4-3.



If the ignition pulse generator is faulty, replace the ignition pulse generator (page 11-4).

Install the removed parts in the reverse order of removal.

IGNITION COIL

REMOVAL/INSTALLATION

Remove the front top cover (page 2-5).

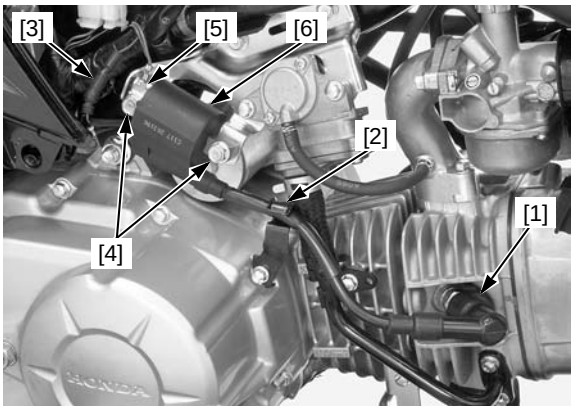
Disconnect the spark plug cap [1] from the spark plug and release the spark plug wire from the guide [2].

Disconnect the ignition coil primary wire connector [3].

Remove the bolts [4], ground terminal [5] and ignition coil [6] from the ignition coil stay.

Installation is in the reverse order of removal.

Route the wire harness properly (page 1-16).



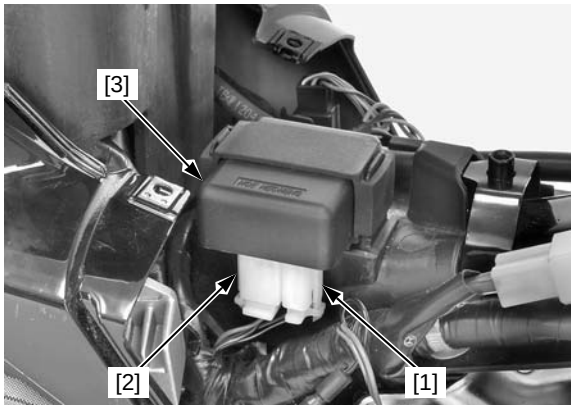
IGNITION CONTROL MODULE (ICM)

REMOVAL/INSTALLATION

Remove the front top cover (page 2-5).

Turn the ignition switch OFF.
Disconnect the ICM 3P [1] and 4P [2] connectors.
Remove the ICM [3].

Installation is in the reverse order of removal.



POWER/GROUND LINE INSPECTION

Remove the front top cover (page 2-5).

Disconnect the ICM 3P connector.

Turn the ignition switch [1] ON.

Measure the battery voltage between the ICM 3P connector [2] of the wire harness side and ground.

CONNECTION: Red/black (+) – Body ground (–)

There should be battery voltage with the ignition switch turned ON.

If there is no voltage with the ignition switch turned ON, check the following:

– Wire harness between the battery and ICM
– Ignition switch
– Main fuse (15 A)

Turn the ignition switch OFF.

Disconnect the ICM 4P connector [3].

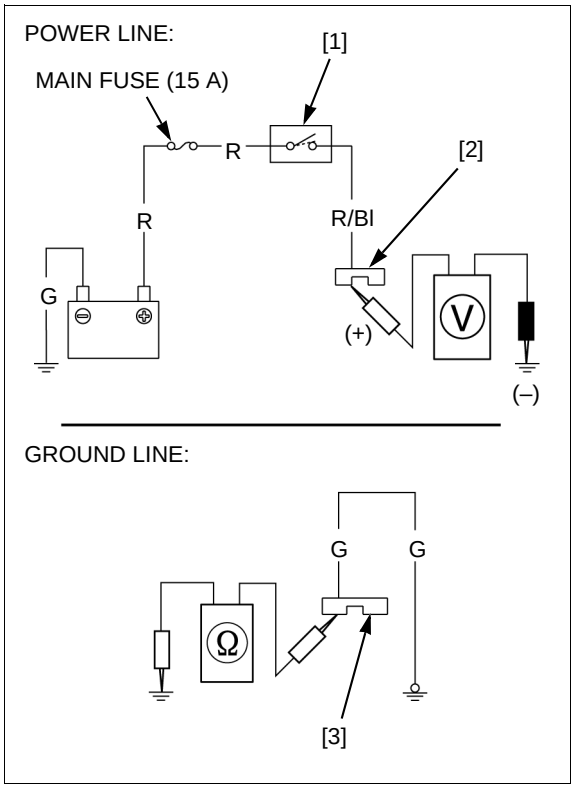
Check for continuity between the ICM 4P connector of the wire harness side and ground.

CONNECTION: Green – Body ground

There should be continuity at all time.

If there is no continuity, check the open circuit in green wire.

Route the wire harness properly (page 1-16).



IGNITION TIMING

Warm up the engine.
Stop the engine and remove the timing hole cap.

Connect a tachometer.

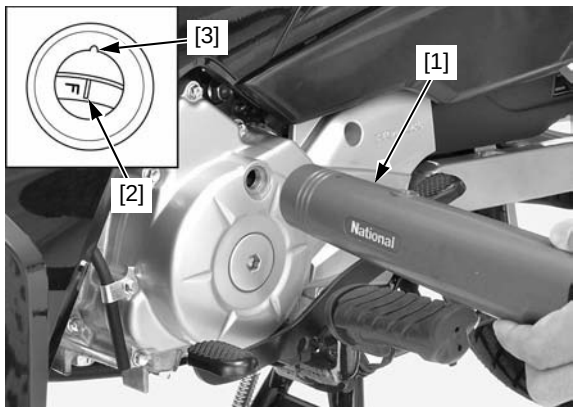
Read the manufacturer's instructions for timing light operation.

Connect the timing light [1] to the spark plug wire.

Start the engine and let it idle.

ENGINE IDLE SPEED: 1,400 ± 100 min^{-1}

The ignition timing is correct if the "F" mark [2] on the flywheel aligns with the index notch [3] on the left crankcase cover.



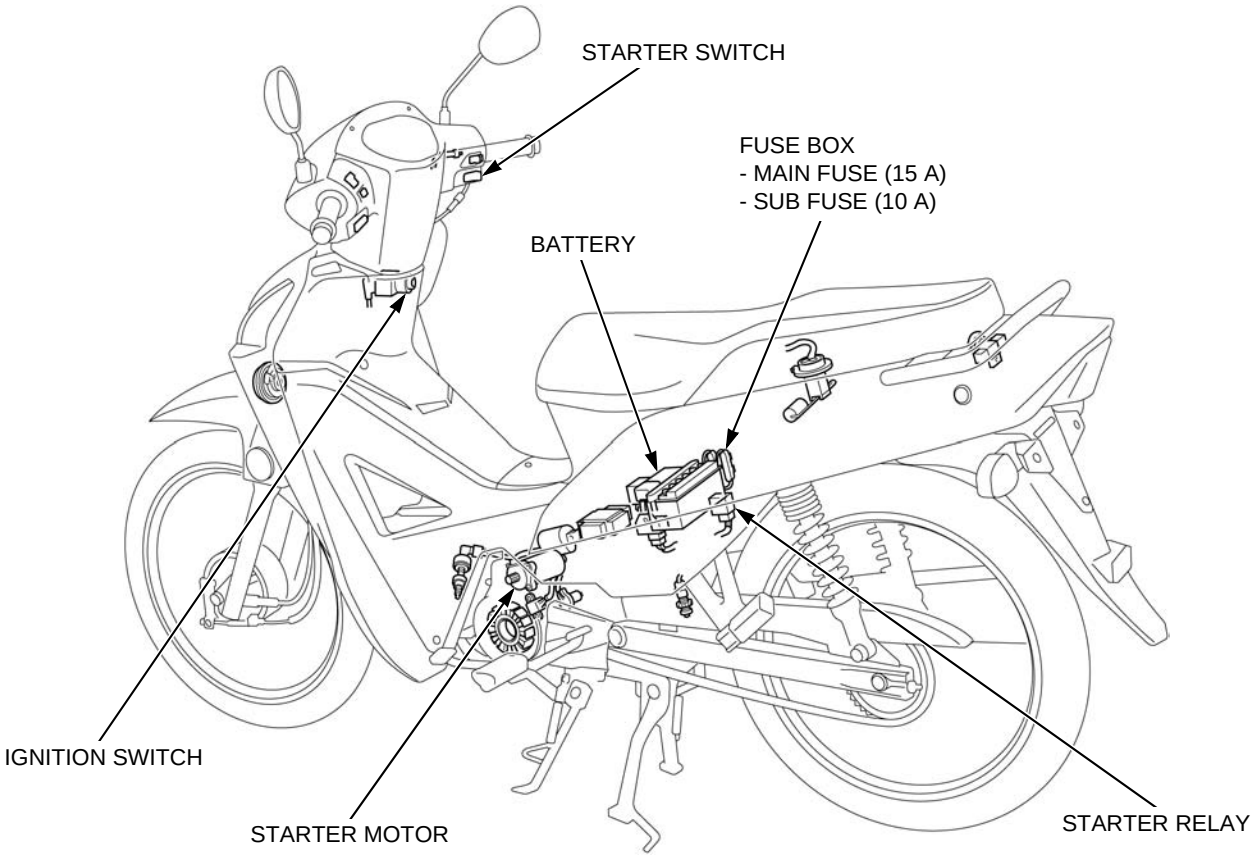
Apply engine oil to a new O-ring and install it to the timing hole cap.
Apply engine oil to the timing hole cap threads.
Install and tighten the timing hole cap to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m)

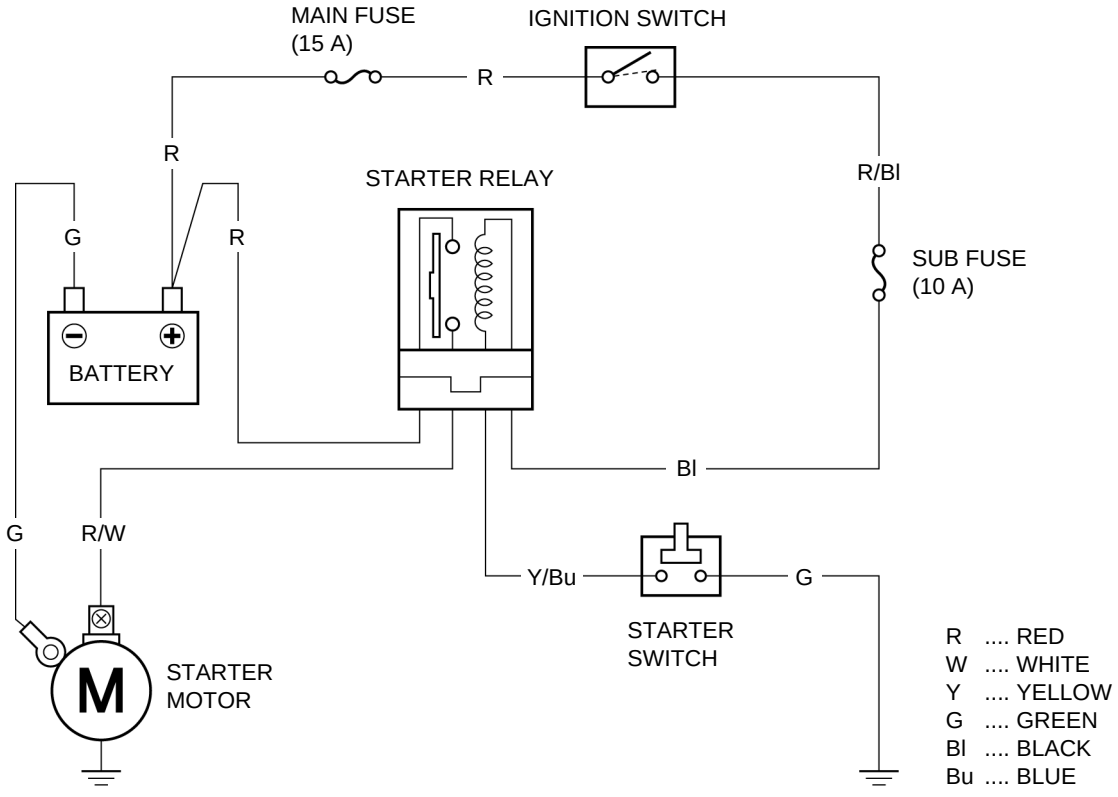
MEMO

5. ELECTRIC STARTER SYSTEM

SYSTEM LOCATION



SYSTEM DIAGRAM



SERVICE INFORMATION

GENERAL

NOTICE

If the current is kept flowing through the starter motor to turn it while the engine is not cranking over, the starter motor may be damaged.

- Always turn the ignition switch OFF before servicing the starter motor. The motor could suddenly start, causing serious injury.
- A weak battery may be unable to turn the starter motor quickly enough, or supply adequate ignition current.
- The starter motor can be serviced with the engine installed in the frame.
- When checking the starter system, always follow the steps in the troubleshooting (page 5-3).
- Refer to the following component information.
  – Ignition switch (page 17-9)
  – Starter switch (page 17-10)

TROUBLESHOOTING

Starter motor does not turn

1. Standard Inspection

Check for following:

– Battery condition
– Blown fuse(s)

Are the above items in good condition?

YES – GO TO STEP 2.

NO – Replace or repair the malfunction part(s).

2. Starter Relay Operation

Turn the ignition switch ON.
Push the starter switch.
You should hear the relay "CLICK" when the starter switch is depressed.

Is the "CLICK" heard?

YES – GO TO STEP 3.

NO – GO TO STEP 5.

3. Starter Motor Cable Inspection

Turn the ignition switch OFF.
Check for open circuit in starter motor cable.

Is the above cable in good condition?

YES – GO TO STEP 4.

NO –
- Loose or poorly connected starter motor cable and starter motor
- Open circuit in battery negative terminal.
- Open circuit in starter motor Red/white cable between the starter relay and starter motor.

4. Starter Motor Inspection

Apply battery voltage to the starter motor directly and check the operation.

Does the starter motor turn?

YES –
- Open circuit in Red wire between the starter relay and battery.
- Faulty starter relay.

NO – Faulty starter motor.

5. Starter Relay Coil Circuit Inspection

Disconnect the starter relay 5P connector.
Turn the ignition switch ON and push the starter switch.
Measure the battery voltage between the starter relay connector terminal of the wire harness side.

CONNECTION: Black (+) – Yellow/blue (–)

Does the battery voltage exist?

YES – GO TO STEP 6.

NO – • Loose or poorly connected connector.
• Open circuit in Red wire between the ignition switch and battery.
• Open circuit in Black and Red/black wire between the ignition switch and starter relay.
• Open circuit in Yellow/blue wire between the starter relay and starter switch.
• Open circuit in Green wire between the starter switch and ground.
• Faulty starter switch (page 17-10).

6. Starter Relay Continuity Inspection

Check the starter relay for continuity (page 5-7).

Is there continuity?

YES – Intermittent failure.

NO – Faulty starter relay.

Starter motor turns engine slowly
- Low battery voltage.
- Poorly connected battery terminal cable.
- Poorly connected starter motor cable.
- Faulty starter motor.
- Poorly connected battery ground cable.

Starter motor turns, but engine does not turn
- Starter motor is running backwards.
  – Case assembled improperly.
  – Terminals connected improperly.
- Faulty starter clutch.

Starter relay "CLICK", but engine does not turn
- Crankshaft does not turn due to engine problems.
- Faulty starter clutch.

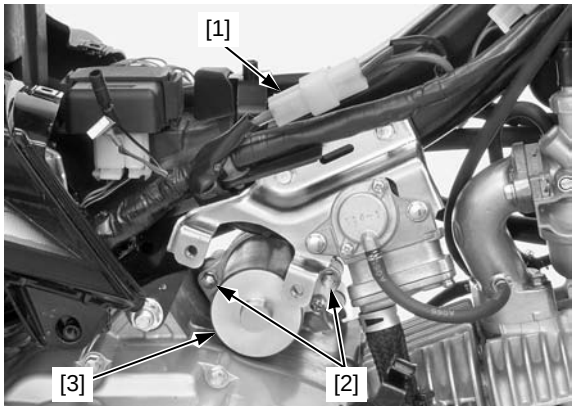
STARTER MOTOR

REMOVAL

Remove the ignition coil (page 4-6).

Disconnect the starter motor 2P connector [1].

Remove the bolts [2] and starter motor [3] from the engine.

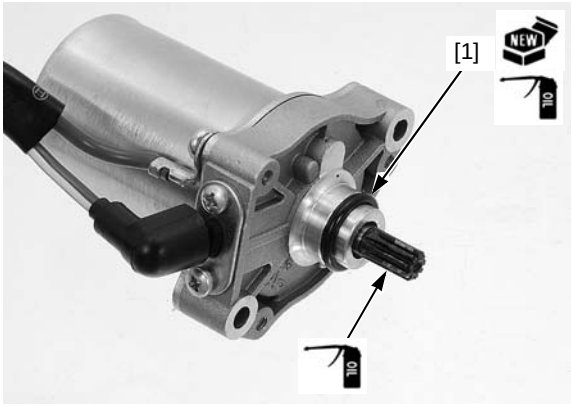


INSTALLATION

Remove the O-ring [1].

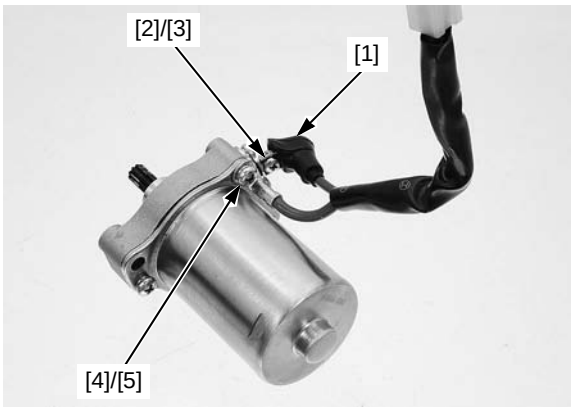
Coat a new O-ring with engine oil and install it into the starter motor groove.
Apply engine oil to the starter motor gear tooth.

Install the removed parts in the reverse order of removal.



DISASSEMBLY/ASSEMBLY

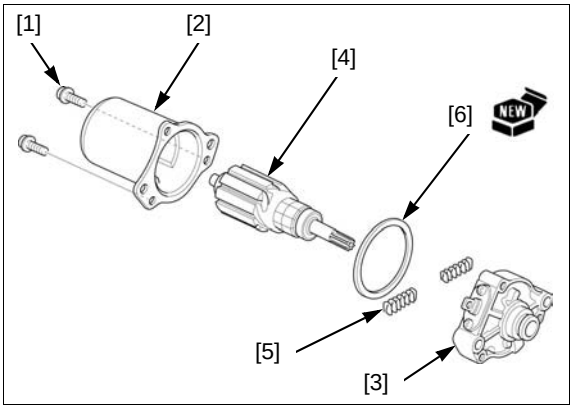
Pull off the dust cover [1].
Remove the screw [2] and starter motor cable terminal [3].
Remove the screw [4] and ground cable terminal [5].



The armature is magnetically attached to the motor case, be careful during removal.

Disassemble and assemble the starter motor as following:

- Screws [1]
- Starter motor case [2]
- Bracket [3]
- Armature [4]
- Springs [5]
- Gasket [6] (replace when assembling)



NOTICE

The coil may be damaged if the magnet pulls the armature against the case.

TORQUE:

Starter motor cable terminal screw:
2 N·m (0.2 kgf·m)

INSPECTION

Check the following:

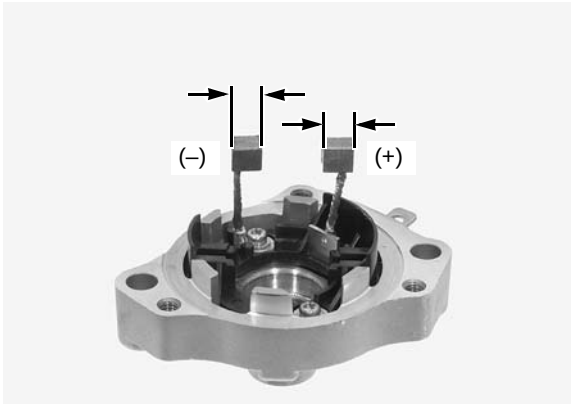
- Bushing in the motor case for wear or damage
- Oil seal in the bracket for deterioration, wear or damage
- Commutator bars of the armature for discoloration
  – Do not use emery or sand paper on the commutator.

Check continuity in each part of the starter motor as follows:

– Between pairs of commutator bars: should be continuity
– Between each commutator bar and the armature shaft: should be NO continuity
– Between the brush (+) and cable terminal: should be continuity
– Between the brush (–) and bracket: should be continuity
– Between the cable terminal and bracket: should be NO continuity

Inspect the brushes for damage and measure the brush length.

SERVICE LIMIT: 3.5 mm



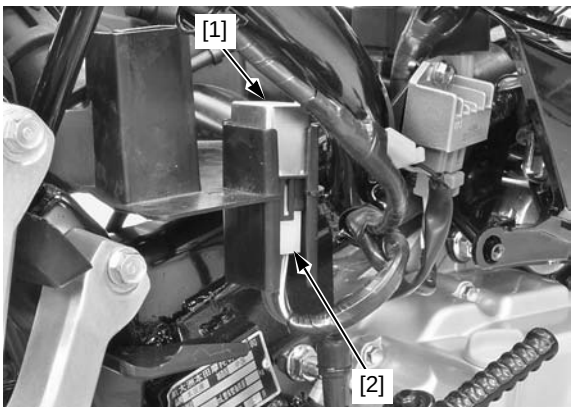
STARTER RELAY

REMOVAL/INSTALLATION

Remove the luggage box (page 2-9).

Pull out the starter relay [1] and disconnect the 5P connector [2].

Installation is in the reverse order of removal.



OPERATION INSPECTION

Remove the body cover (page 2-8).

Turn the ignition switch ON.
Push the starter switch.
The system is normal if the starter relay [1] clicks.

If you don't hear the relay "CLICK", inspect the following:

– Starter relay coil circuit (page 5-7)
– Battery testing (page 16-7)

If you hear the relay "CLICK", but starter does not turn, inspect the starter relay continuity inspection (page 5-7).

STARTER RELAY COIL CIRCUIT INSPECTION

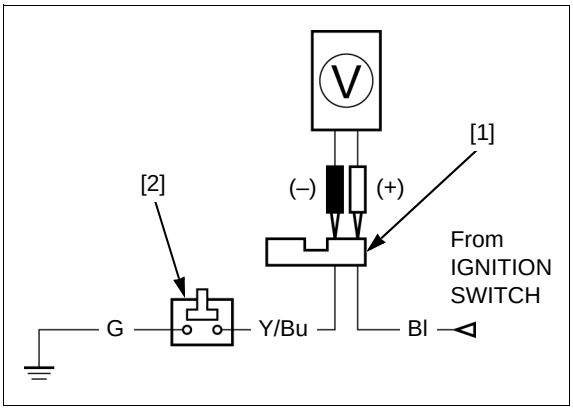
Remove the starter relay (page 5-6)

Temporarily connect the battery (page 16-5).
Turn the ignition switch ON.

Measure the voltage at the starter relay 5P connector [1] of the wire harness side while pressing and holding the starter switch [2].

CONNECTION: Black (+) – Yellow/blue (–)

If the battery voltage appears only when the ignition switch is ON and starter switch is pressed, the circuit is normal.



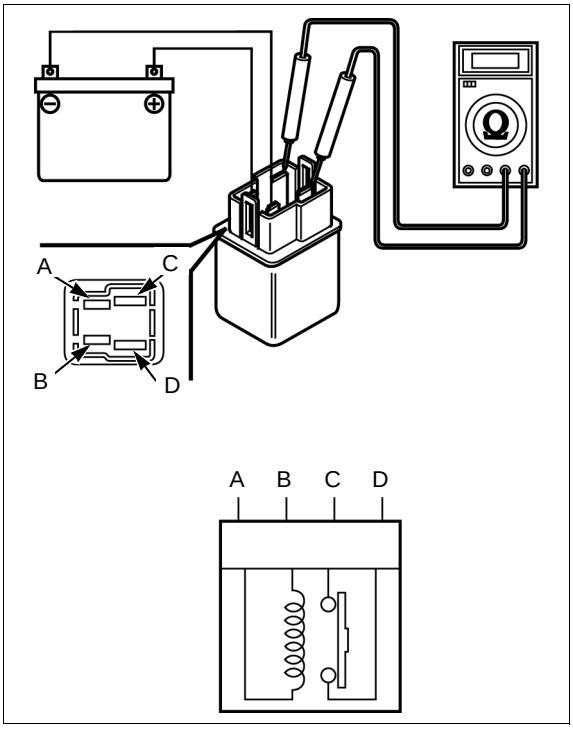
STARTER RELAY CONTINUITY INSPECTION

Remove the starter relay (page 5-6).

Connect a fully charged 12 V battery positive wire to the relay switch terminal A and negative wire to the terminal B.

Check for continuity at the terminal C and terminal D.

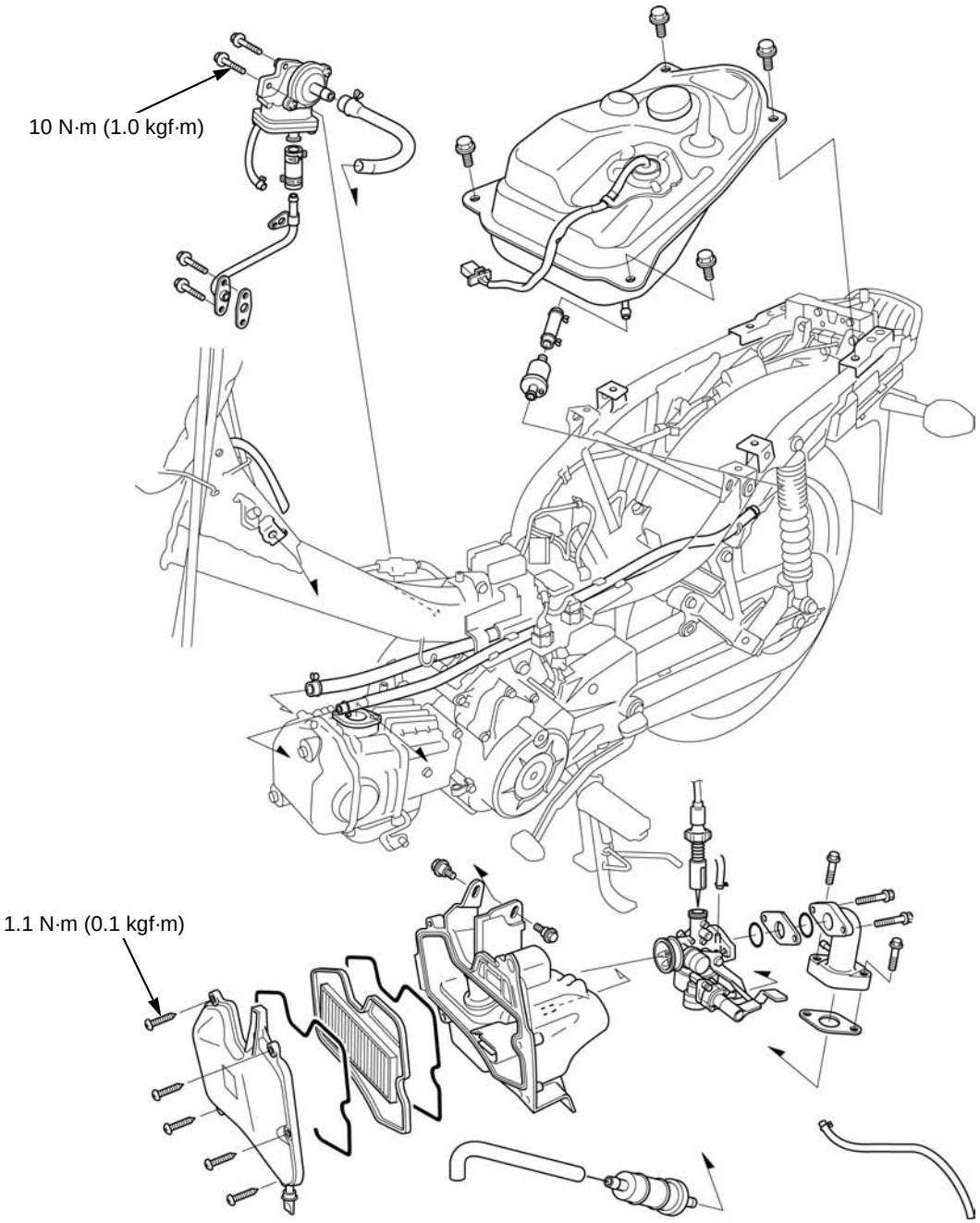
There should be continuity between the C and D terminals while the battery is connected, and no continuity when the battery is disconnected.



MEMO

6. FUEL SYSTEM

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- Bending or twisting the throttle cable will impair smooth operation and could cause the cable to stick or bind, resulting in loss of vehicle control.
- Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where gasoline is stored can cause a fire or explosion.
- If the vehicle is to be stored for more than one month, drain the float chamber. Fuel left in the float chamber may cause clogged jets, resulting in hard starting or poor drive ability.
- Before disassembling the carburetor, place an approved fuel container under the carburetor, loosen the drain screw and drain the carburetor.
- When disassembling the fuel system parts, note the locations of the O-rings. Replace them with new ones on reassembly.
- After removing the carburetor, wrap the intake port of the engine with a shop towel or cover it with a piece of tape to prevent any foreign material from dropping into the engine. Be sure to remove the cover when reinstalling the carburetor.

TROUBLESHOOTING

Engine won't start
- Too much fuel getting to the engine
  - Air cleaner clogged
  - Flooded carburetor
- Intake air leak
- Fuel contaminated/deteriorated
- No fuel to carburetor
  - Fuel filter clogged
  - Fuel strainer clogged
  - Fuel line clogged/bent
  - No fuel in tank

Lean mixture
- Fuel jets clogged
- Float valve faulty
- Float level too low
- Fuel line restricted
- Carburetor air vent hose clogged
- Intake air leak
- Throttle valve faulty

Rich mixture
- Carburetor choke stuck
- Float valve faulty
- Float level too high
- Air jets clogged
- Air cleaner element contaminated
- Flooded carburetor

Engine stall, hard to start, rough idling
- Fuel line restricted
- Ignition system malfunction
- Fuel mixture too lean/rich
- Fuel contaminated/deteriorated
- Intake air leak
- Idle speed misadjusted
- Air screw misadjusted
- Slow circuit clogged
- Improper choke operation
- Low cylinder compression
- Air cleaner clogged

Afterburn when engine braking is used
- Lean mixture in slow circuit
- Faulty pulse secondary air injection (PAIR) system
  - Faulty PAIR control valve
  - Clogged hose of the PAIR system
- Ignition system malfunction
- Faulty air cut-off valve

Backfiring or misfiring during acceleration
- Ignition system malfunction
- Fuel mixture too lean

Poor performance (driveability) and poor fuel economy
- Fuel system clogged
- Ignition system malfunction
- Air cleaner clogged

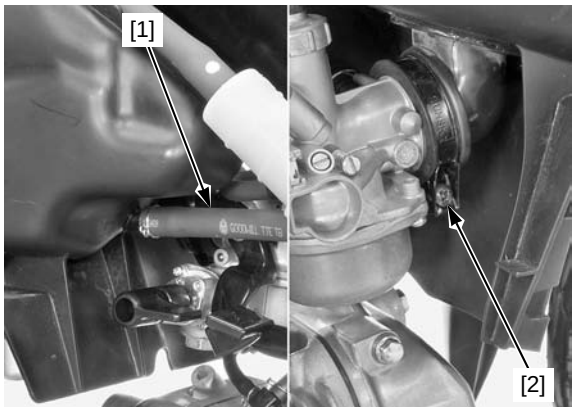
AIR CLEANER HOUSING

REMOVAL/INSTALLATION

Remove the following:

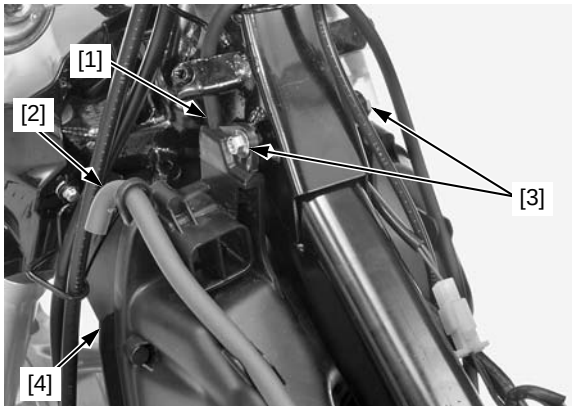
– Front top cover (page 2-5)
– Air cleaner element (page 3-4)

Disconnect the crankcase breather hose [1].
Loosen the connecting hose band screw [2].



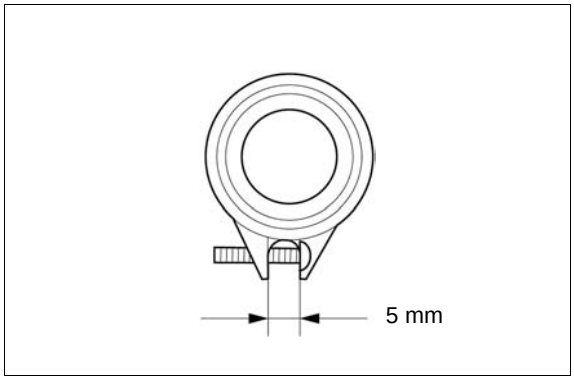
Release the air vent hose [1] and air suction hose [2].

Remove the bolts [3] and air cleaner housing assembly [4].



Installation is in the reverse order of removal.

- Tighten the connecting hose band screw so that the gap between the band ends is 5 mm.



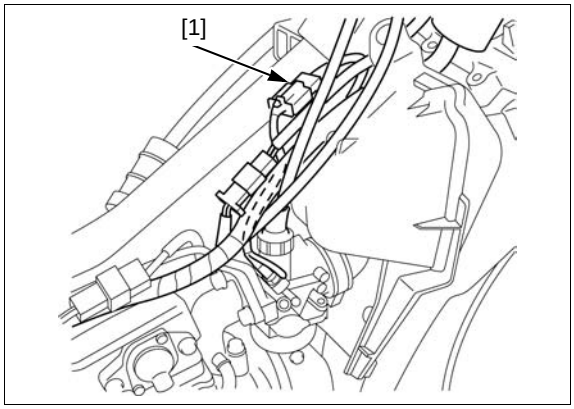
CARBURETOR

REMOVAL

THROTTLE VALVE

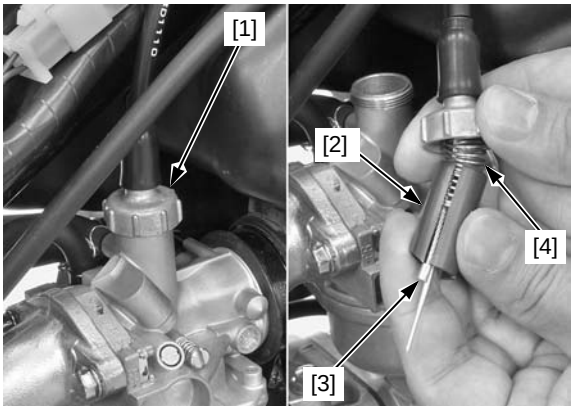
Remove the front top cover (page 2-5).

LA, AG type: Disconnect the carburetor heater 3P connector [1].



Remove the carburetor top [1] and throttle valve [2] from the carburetor.

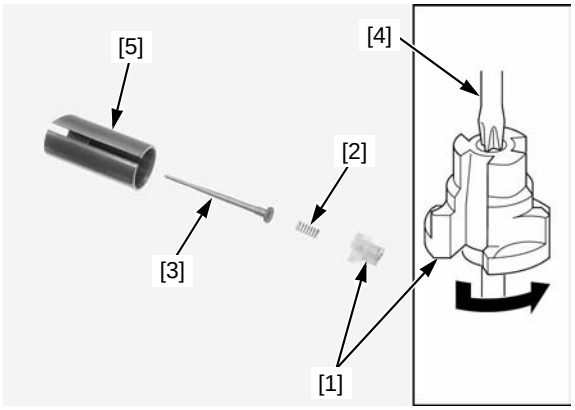
Remove the throttle cable [3] from the throttle valve while compressing the throttle valve spring [4].



Remove the retainer [1], spring [2] and jet needle [3] while pushing the retainer with a screwdriver [4] slightly and turning it counterclockwise.

Check the throttle valve [5] and jet needle for scratches, wear or damage.

Replace them if necessary.



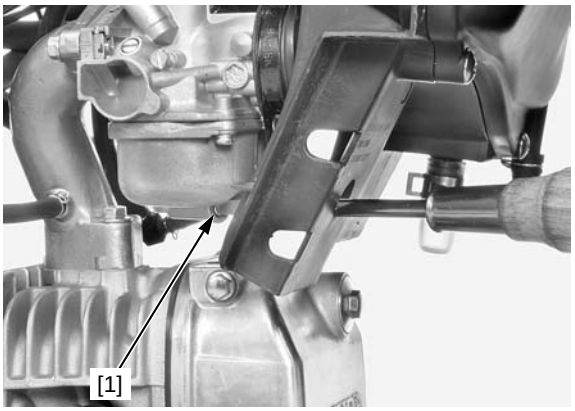
CARBURETOR BODY

Turn the fuel valve OFF.

Place a suitable container under the carburetor drain hose and drain fuel from the carburetor by loosening the drain screw [1].

Tighten the carburetor drain screw.

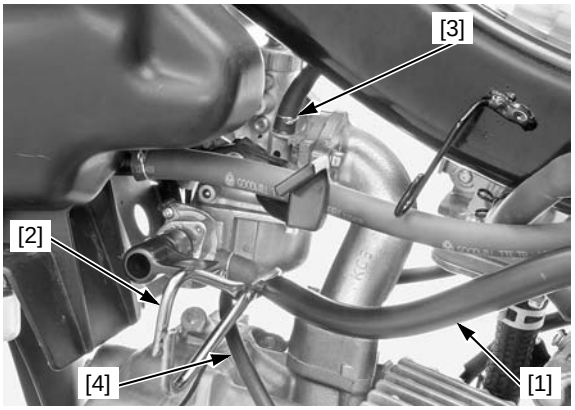
TORQUE: 1.5 N·m (0.2 kgf·m)



Pinch the fuel hose [1] with the hose clamp [2].

Disconnect the following:

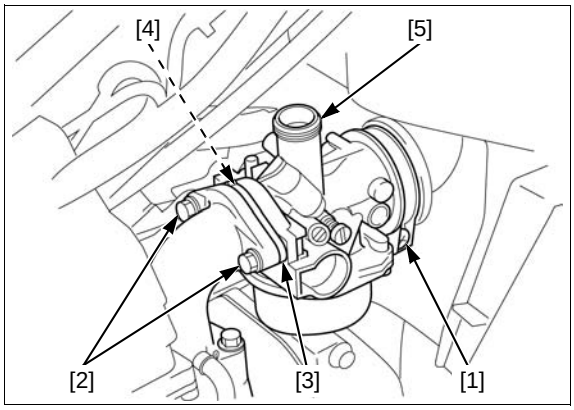
– Fuel hose
– Air vent hose [3]
– Drain hose [4]



Loosen the air cleaner connecting hose band screw [1].

Remove the carburetor mounting bolts [2], insulator [3] and O-rings [4].

Remove the carburetor [5] from the inlet pipe and air cleaner connecting hose.

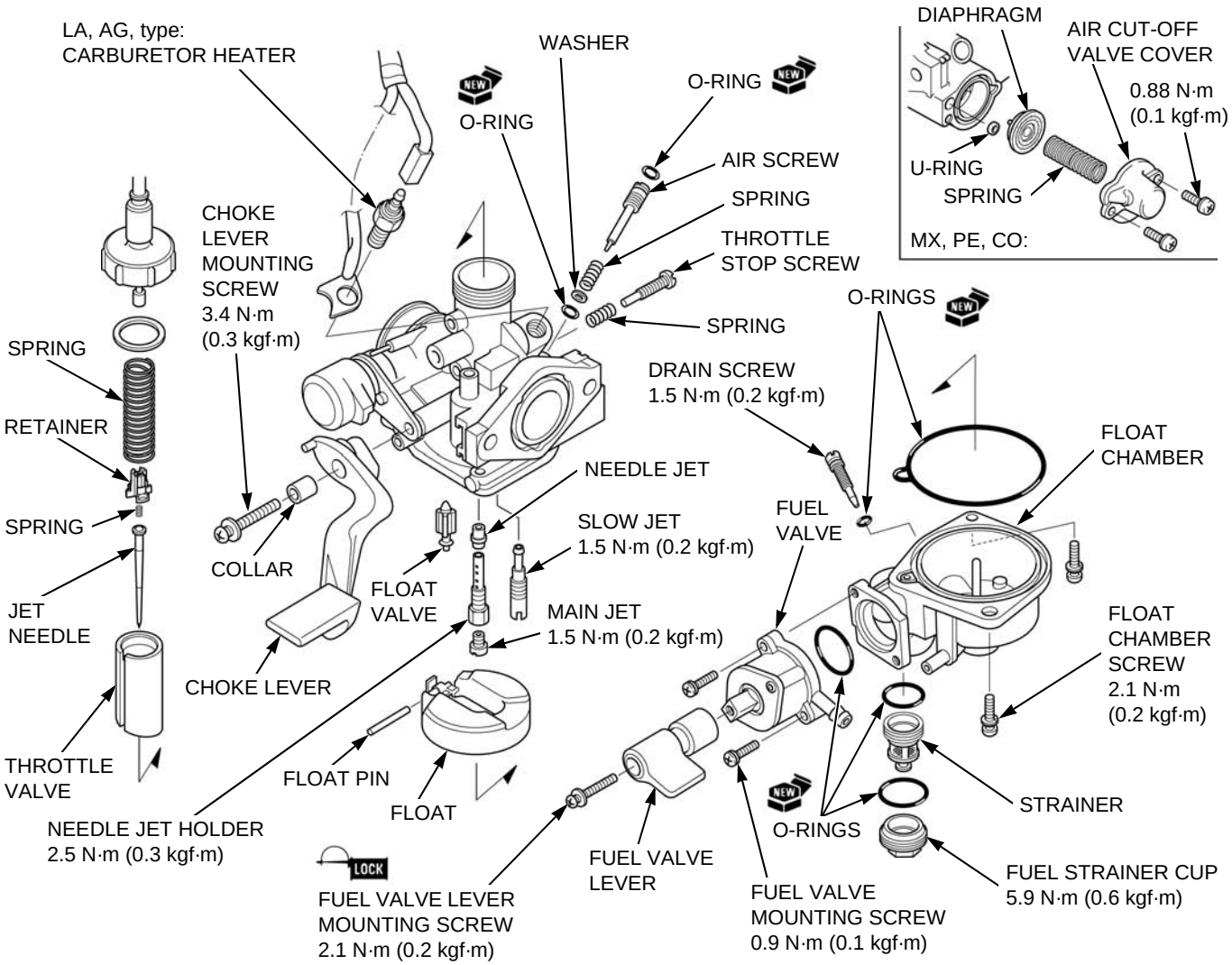


DISASSEMBLY/ASSEMBLY/ INSPECTION

Disassemble and assemble the carburetor as following illustration.

NOTE:

- Handle all jets with care. They can easily be scored or scratched.
- Blow open each air and fuel passage in the carburetor body with compressed air.
- When installing the U-ring with the flat side facing the carburetor side.



FLOAT VALVE INSPECTION

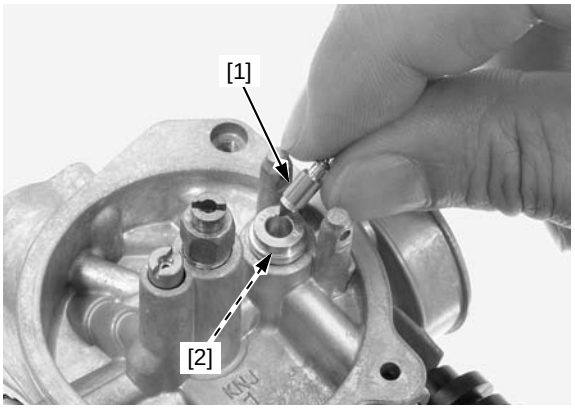
Remove the float valve [1].

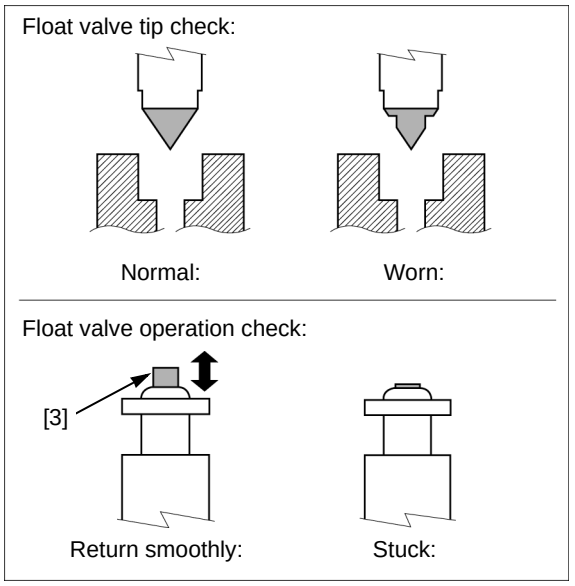
Inspect the float valve seat [2] for scratches, clogging and damage.

Check the tip of the float valve where it contacts the valve seat for stepped wear or contamination.

Check the float valve operation by pushing its end pin [3].
The pin should return smoothly.

Replace the valve if the tip is worn or contaminated.





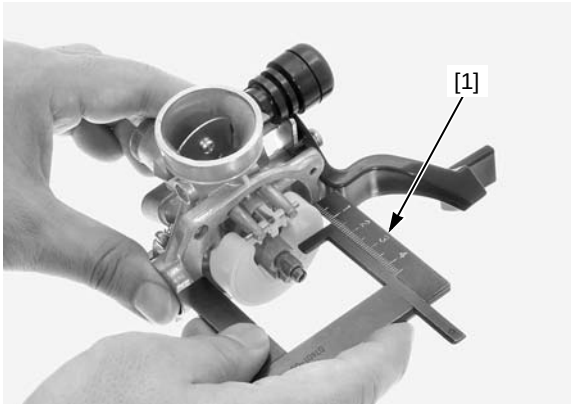
FLOAT LEVEL INSPECTION

With the float valve seated and the float arm just touching the valve, measure the float level with the float level gauge as shown.

FLOAT LEVEL: 10.7 mm

TOOL:
[1] Float Level Gauge 07401-0010000

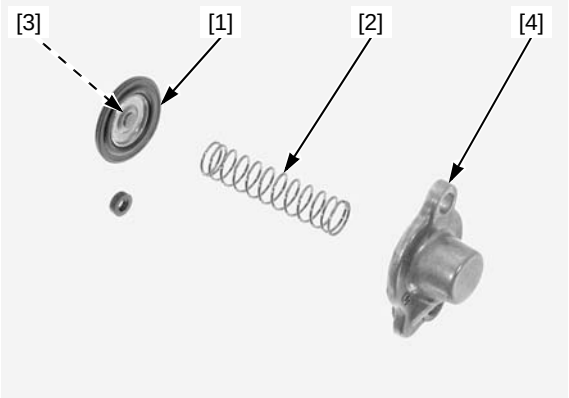
The float level cannot be adjusted.
Replace the float assembly if the float level is out of specification.



AIR CUT-OFF VALVE INSPECTION
(MX, PE, CO type)

Check the following:

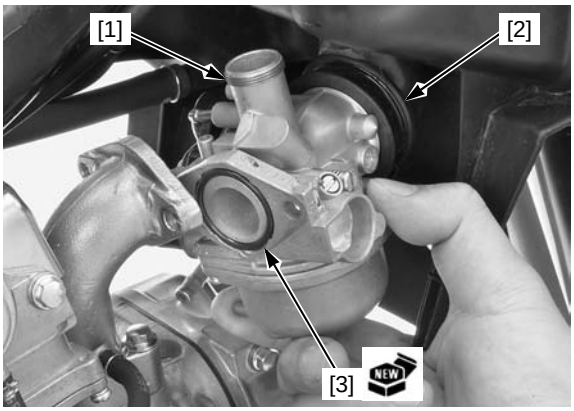
– Diaphragm [1] for pin holes, deterioration or damage
– Spring [2] for fatigue or damage
– Rod [3] of diaphragm for wear or damage
– Air cut-off valve cover [4] air passage for clogging



INSTALLATION

Install the carburetor body [1] to the air cleaner connecting hose [2].

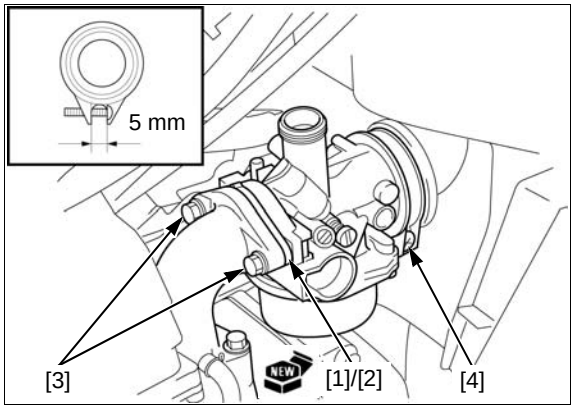
Install a new O-ring [3] into the carburetor body groove.



Install a new O-ring [1] into the insulator groove [2].

Install the insulator with its O-ring side facing to the carburetor and then tighten the bolts [3].

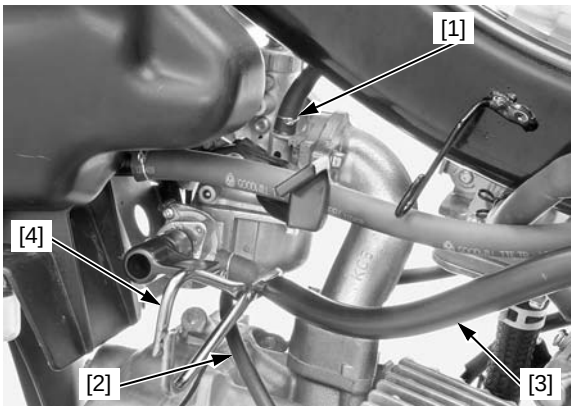
Tighten the connecting hose band screw [4] so that the gap between the band ends is 5 mm.



Connect the following:

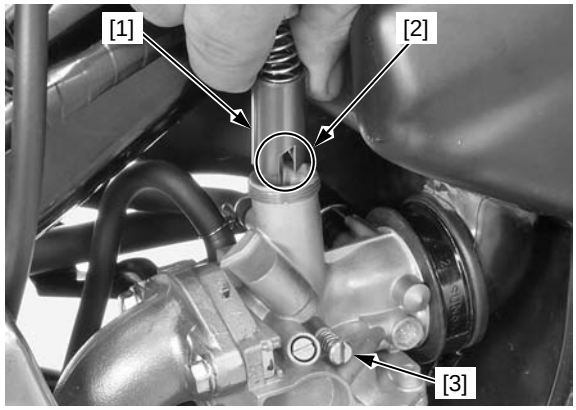
– Air vent hose [1]
– Drain hose [2]
– Fuel hose [3]

Remove the hose clamp [4].
Turn the fuel valve ON.



Assemble the throttle valve [1].

Install the throttle valve into the carburetor body by aligning its cut-out [2] with the throttle stop screw [3].

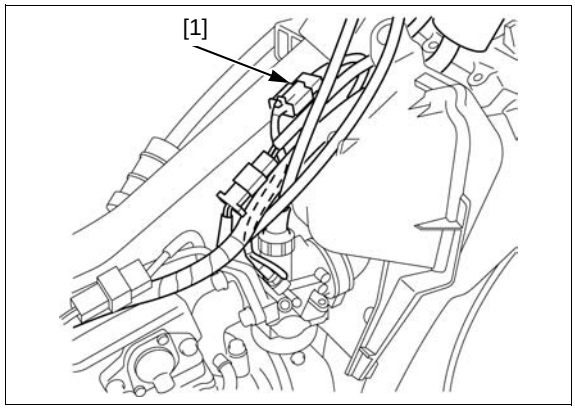


LA, AG type: Connect the carburetor heater 3P connector [1].

Install each part in the reverse order of removal.

After installing the carburetor, check for the following:

– Throttle grip freeplay (page 3-3)
– Engine idle speed (page 3-8)
– Air screw adjustment (page 6-9)



AIR SCREW ADJUSTMENT

IDLE DROP PROCEDURE

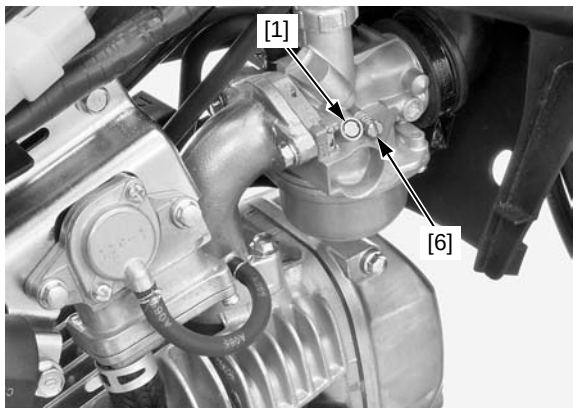
- The air screw is factory pre-set and no adjustment is necessary unless the carburetor is overhauled or the air screw is replaced.
- Use a tachometer with graduations of 50 min^{-1} or smaller that will accurately indicate a 50 min^{-1} change.

Remove the front top cover (page 2-5).

Damage to the air screw seat will occur if the air screw is tightened against the seat.

1. Turn the air screw [1] clockwise until it seats lightly, then back it out to specification given.
   This is an initial setting prior to the final air screw adjustment.

   INITIAL OPENING:
   All DK, NR types: 2-1/8 turns out
   LA, AG types: @@@
   MX, CO types: @@@
   PE type: @@@



2. Warm up the engine to operating temperature. Stop and go riding for 10 minutes is sufficient.
3. Stop the engine and connect the tachometer according to its manufacturer's instructions.

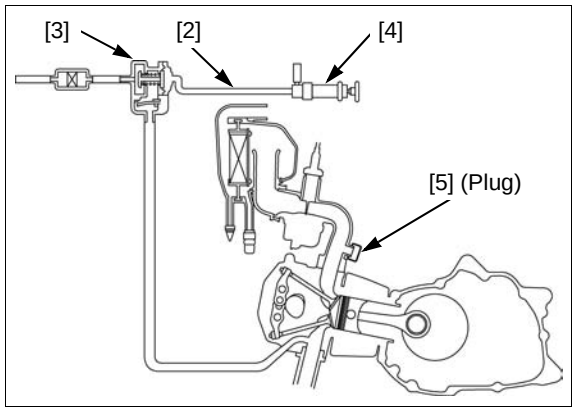
MX, PE, CO type:

4. Disconnect the vacuum hose [2] of PAIR control valve [3], then connect it to the vacuum pump [4] and plug the vacuum port [5].

MX, PE, CO type:

5. Apply the specified vacuum to the PAIR control valve vacuum hose more than 64 kPa (480 mmHg).
6. Start the engine and adjust the idle speed with the throttle stop screw [6].

   ENGINE IDLE SPEED: 1,400 ± 100 min^{-1}



7. Turn the air screw in or out slowly to obtain the highest engine speed.
8. Lightly open the throttle 2 or 3 times, then adjust the idle speed with the throttle stop screw.
9. Turn the air screw out until the engine speed drops by 50 min^{-1}.
10. Turn the air screw clockwise to the final opening from the position obtained step 9.

FINAL OPENING: 1/4 turns in

MX, PE, CO type:

11. Disconnect the plug from the vacuum port, then remove the vacuum pump and connect the vacuum hose of PAIR control valve.
12. Readjust the idle speed with the throttle stop screw.

ENGINE IDLE SPEED: 1,400 ± 100 min^{-1}

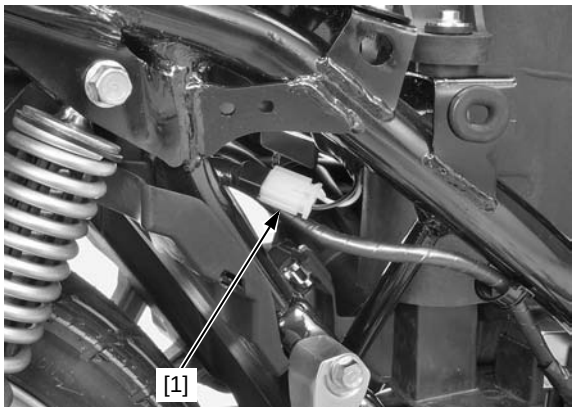
Install the front top cover (page 2-5).

FUEL TANK

REMOVAL/INSTALLATION

Remove the body cover (page 2-8).

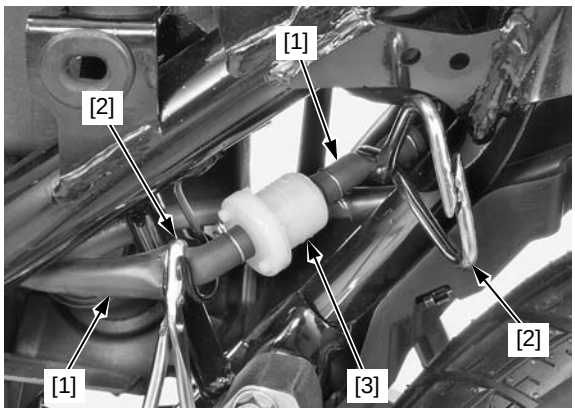
Disconnect the fuel level sensor 3P connector [1].



Clamp the fuel hoses [1] with the hose clamps [2].
Disconnect the fuel hose from the fuel filter [3].

NOTE:

- When the fuel hose is disconnected, gasoline spill out from the fuel filter. Place an approved gasoline container and drain the gasoline.
- Wipe off spilled gasoline.



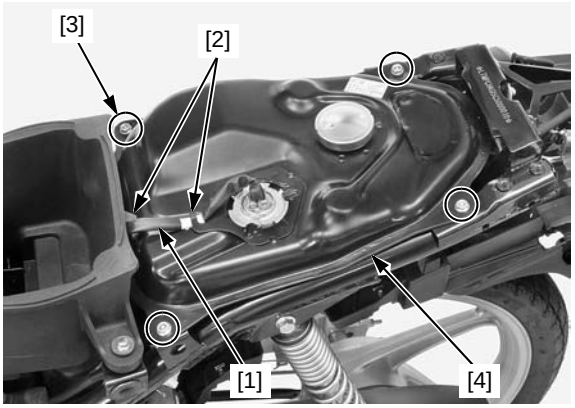
Release the fuel level sensor wire [1] from the guides [2].

Remove the mounting bolts [3] and fuel tank [4].

Installation is in the reverse order of removal.

NOTE:

- After installation, check the fuel line for leakage.



SECONDARY AIR SUPPLY SYSTEM (MX, PE, CO)

SYSTEM INSPECTION

Remove the front top cover (page 2-5).

Start the engine and warm it up to normal operating temperature and stop the engine.
Disconnect the air suction hose [1] from the secondary air supply PAIR filter (page 3-9).

Remove the PAIR check valve (page 6-12) and check the inside of PAIR control valve is clean and free of carbon deposits.
Check the PAIR check valve if the inside of PAIR control valve is carbon fouled.

Disconnect the PAIR control valve vacuum hose [2] from the inlet pipe and plug the hose joint [3].
Connect the vacuum pump [4] to the PAIR control valve vacuum hose.

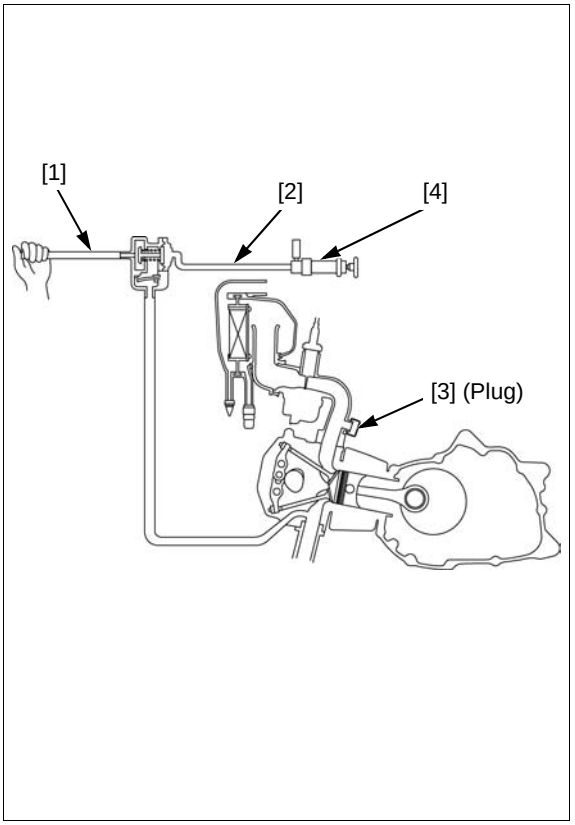
Start the engine and open the throttle slightly to be certain that air is sucked in through the air supply hose.
If the air is not drawn in, check the air supply hose for clogging.

With the engine running, gradually apply vacuum to the PAIR control valve vacuum hose.
Check that the air supply hose stops drawing air, and that the vacuum does not bleed.

SPECIFIED VACUUM: 64 kPa (480 mmHg)

If the air is drawn in or if the specified vacuum is not maintained, install a new PAIR control valve.
If afterburn occurs on deceleration, even when the secondary air supply system is normal, check the air cut-off valve.

Install the removed parts in the reverse order of removal.



PAIR (PULSE SECONDARY AIR INJECTION) CONTROL VALVE REMOVAL/INSTALLATION

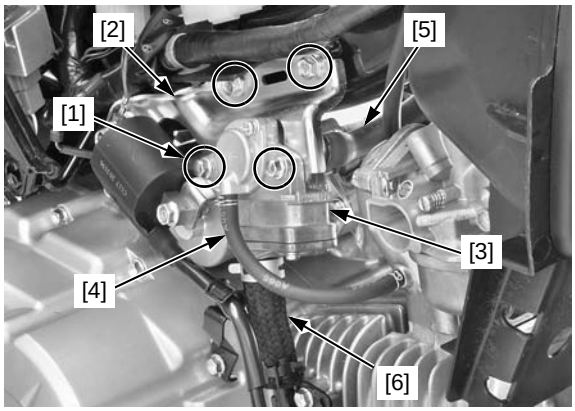
Remove the front top cover (page 2-5).

Do not suspend the ignition coil stay from the ignition coil wires.

Remove the bolts [1] and ignition coil stay [2].

Remove the PAIR control valve [3] by disconnecting the following hoses:

– Vacuum hose [4]
– Air suction hose [5]
– Air supply hose [6]



Installation is in the reverse order of removal.

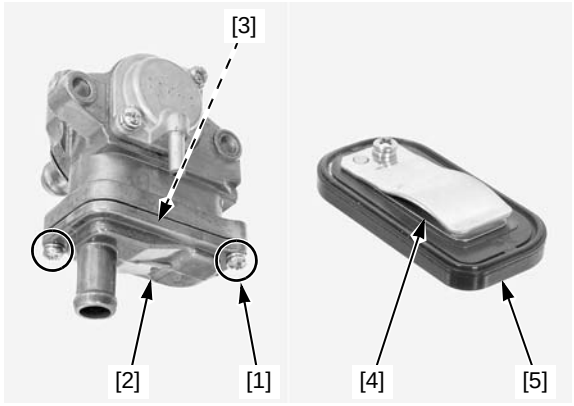
TORQUE:
PAIR control valve mounting bolt:
10 N·m (1.0 kgf·m)

PAIR CHECK VALVE INSPECTION

Remove the PAIR control valve (page 6-12).

Remove the screws [1] and check valve cover [2] from the PAIR control valve body.
Remove the check valve [3] from the PAIR control valve body.

Check the reed [4] for damage or fatigue, replace if necessary.
Replace the PAIR check valve if the rubber seal [5] is cracked, deteriorated or damaged, or if there is clearance between the reed and seat.



Installation is in the reverse order of removal.

TORQUE:
PAIR check valve cover screw:
1.8 N·m (0.2 kgf·m)

FUEL FILTER

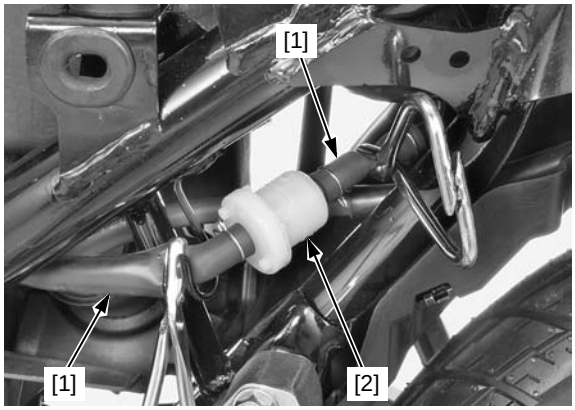
REMOVAL/INSTALLATION

Remove the body cover (page 2-8).

Clamp the fuel hoses [1] of the fuel tank side and fuel valve side.
Disconnect the fuel hoses and remove the fuel filter [2].

NOTE:

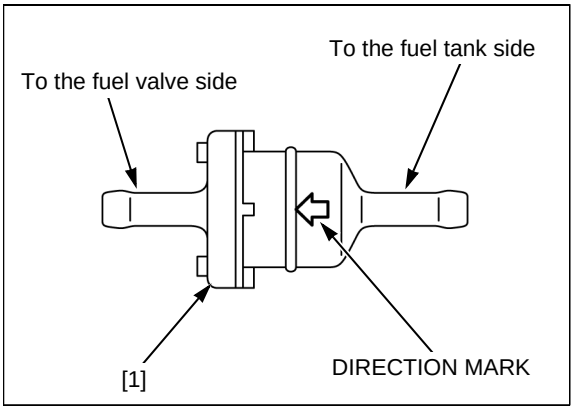
- When the fuel hose is disconnected, gasoline spill out from the fuel filter. Place an approved gasoline container and drain the gasoline.
- Wipe off spilled gasoline.



Check the fuel filter [1] for damage or contamination.

Replace the fuel filter if necessary.

Installation is in the reverse order of removal.

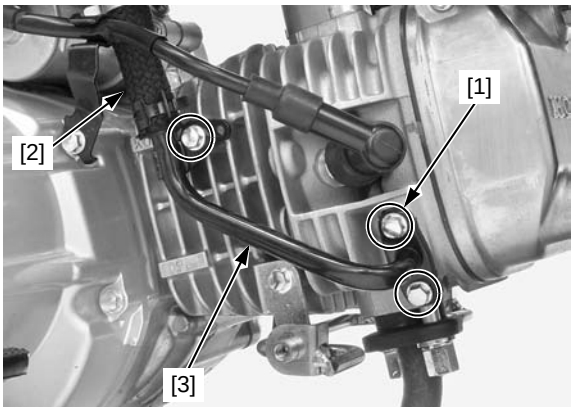


AIR SUPPLY PIPE (MX, PE, CO)

REMOVAL/INSTALLATION

Remove the front top cover (page 2-5).

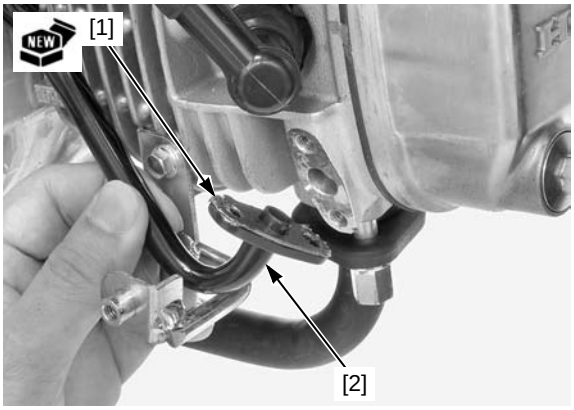
Remove the bolts [1].
Disconnect the air supply hose [2] and air supply pipe [3].



Remove the gasket [1] and clean the both mating surface.

Install a new gasket to the air supply pipe [2].

Install the removed parts in the reverse order of removal.



INLET PIPE

REMOVAL/INSTALLATION

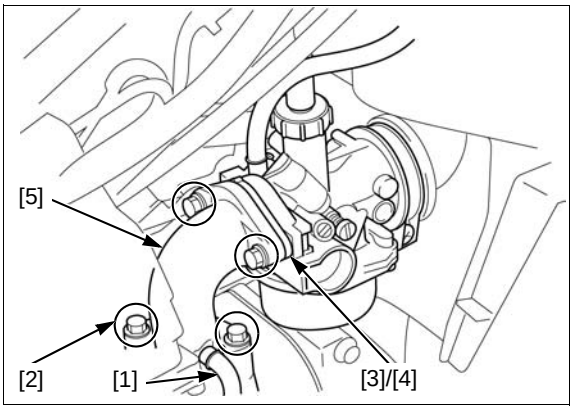
Remove the front top cover (page 2-5).

With secondary air supply system type:

Disconnect the vacuum hose [1].

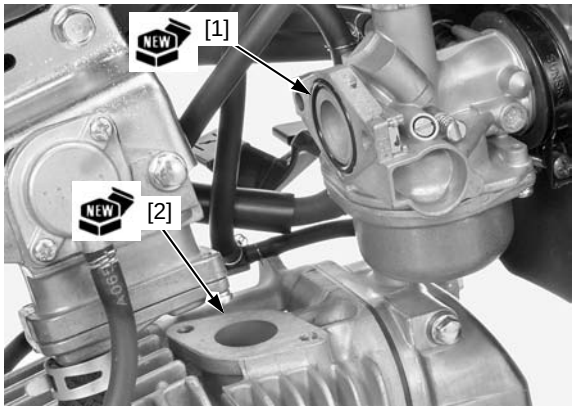
Remove the following:

– Bolts [2]
– Insulator [3] and O-ring [4]
– Inlet pipe [5]



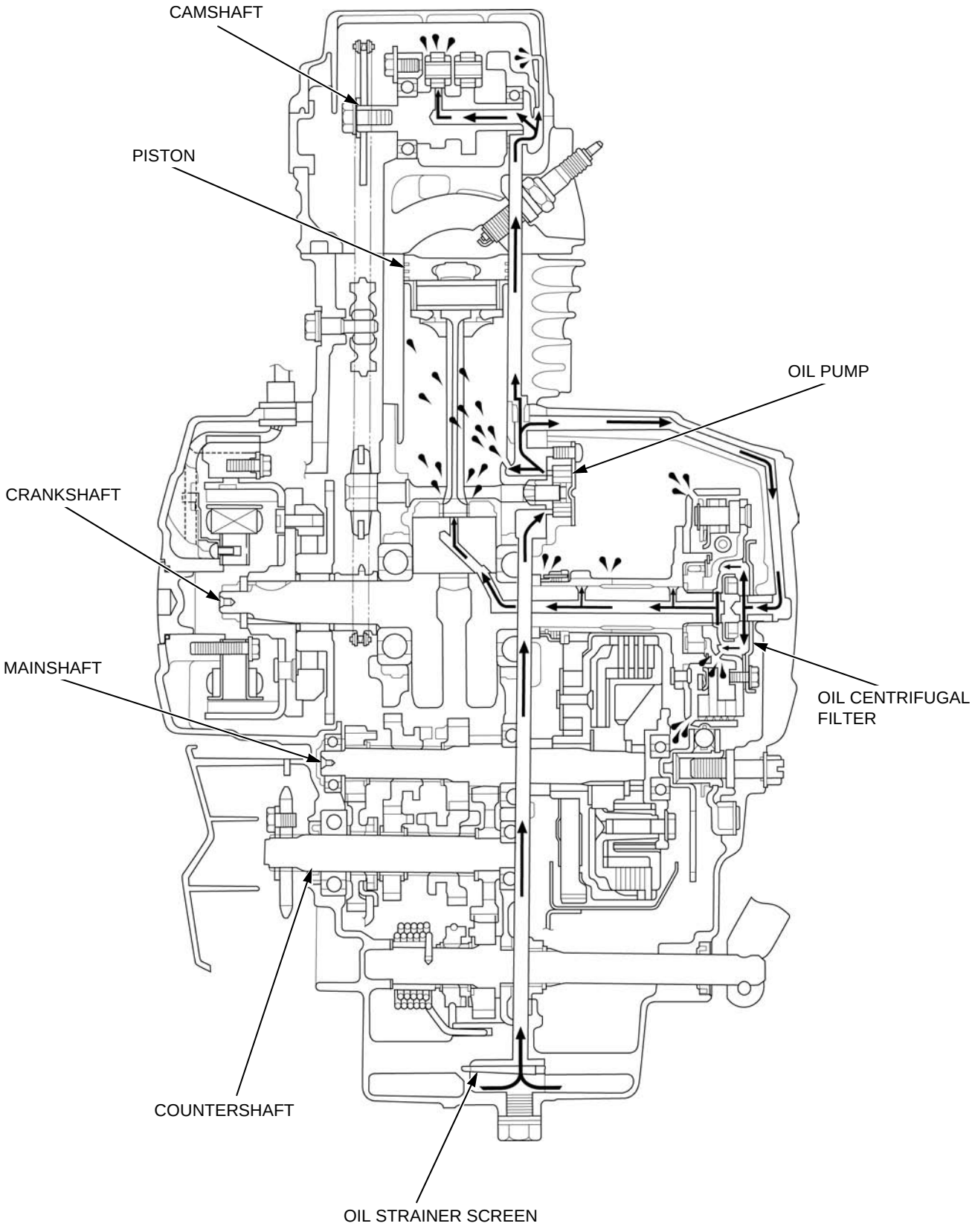
Installation is in the reverse order of removal.

- Replace the O-ring [1] and gasket [2] with new ones.



7. LUBRICATION SYSTEM

LUBRICATION SYSTEM DIAGRAM



SERVICE INFORMATION

GENERAL

⚠ CAUTION

Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

- This section covers service of the oil pump.
- The oil pump can be serviced with the engine installed in the frame.
- The service procedures in this section must be performed with the engine oil drained.
- When removing and installing the oil pump, use care not to allow dust or dirt to enter the engine.
- If any portion of the oil pump is worn beyond the specified service limits, replace the oil pump as an assembly.
- After the oil pump has been installed, check that there are no oil leaks.

TROUBLESHOOTING

Engine oil level too low
- Oil consumption
- External oil leak
- Worn piston rings (page 9-3)
- Improperly installed piston rings (page 9-4)
- Worn valve guide or stem seal (page 8-13)
- Worn cylinder (page 9-3)

Oil contamination
- Worn piston rings (page 9-3)
- Improperly installed piston rings (page 9-4)
- Worn valve guide or stem seal (page 8-13)
- Oil not changed frequently enough
- Clogged oil strainer screen

OIL PUMP

REMOVAL/INSTALLATION

Drain the engine oil (page 3-7).

Remove the following:

– Right crankcase cover (page 10-3)
– Three bolts [1]
– Oil pump [2]

Remove the gasket [3] from the oil pump [4].

Install a new gasket to the oil pump.

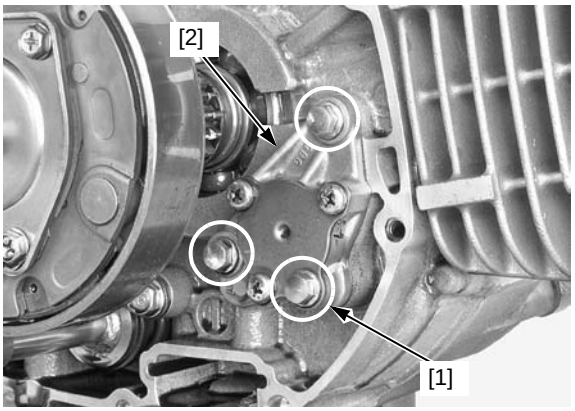
Install the oil pump to the crankcase aligning the oil pump shaft groove with the cam chain guide sprocket spindle.

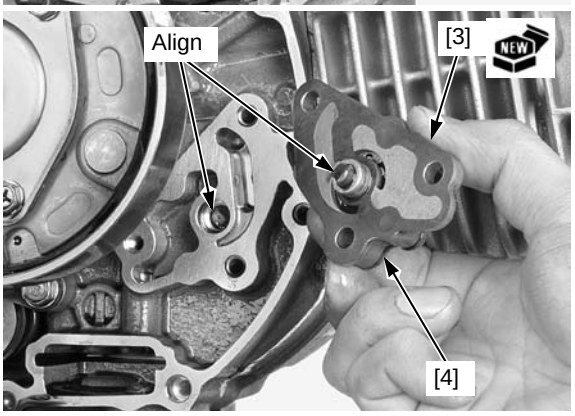
Install and tighten the three bolts.

Clean the oil strainer screen (page 3-7).

Install the right crankcase cover (page 10-4).

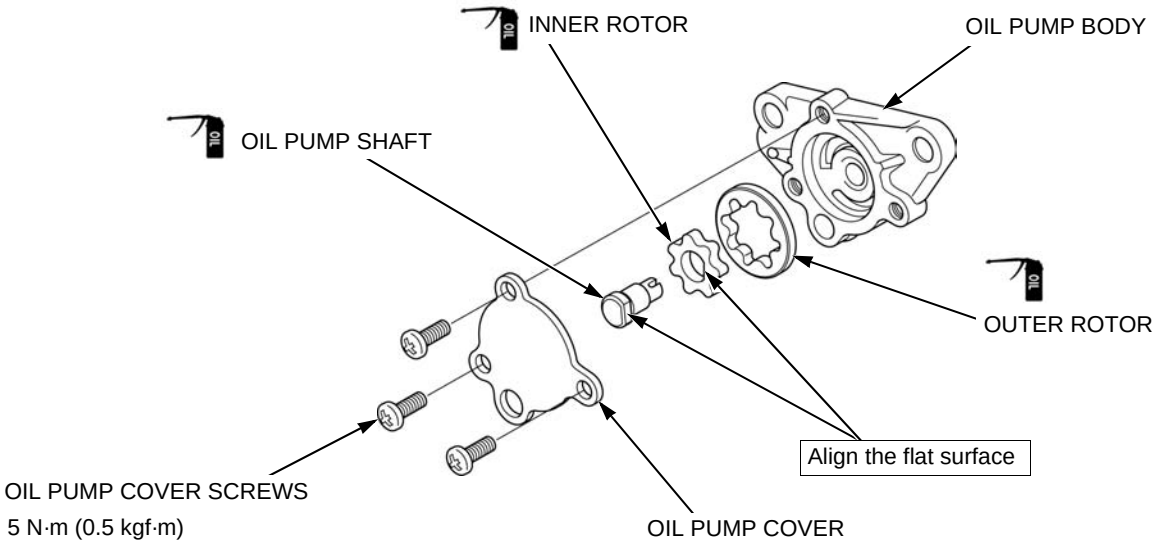
After installation, fill the crankcase with recommended engine oil (page 3-7) and check that there are no oil leaks.





DISASSEMBLY/ASSEMBLY

Disassemble and assemble the oil pump as following illustration.



INSPECTION

Disassemble the oil pump (page 7-4).

- Measure at several places and use the largest reading to compare to the service limit.
- If any portion of the oil pump is worn beyond the specified service limit, replace the oil pump and pump cover as an assembly.

Temporarily install the outer rotor, inner rotor and oil pump shaft into the oil pump body.

TIP CLEARANCE

Measure the tip clearance.

SERVICE LIMIT: 0.20 mm

BODY CLEARANCE

Measure the body clearance.

SERVICE LIMIT: 0.26 mm

SIDE CLEARANCE

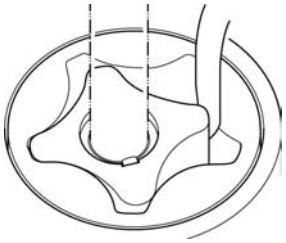
Remove the oil pump shaft.

Measure the side clearance using a straight edge and feeler gauge.

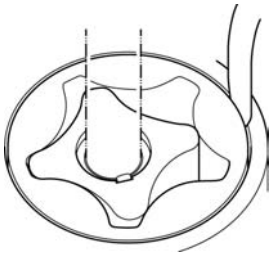
SERVICE LIMIT: 0.15 mm

Assemble the oil pump (page 7-4).

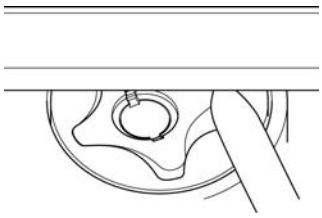
TIP CLEARANCE:



BODY CLEARANCE:

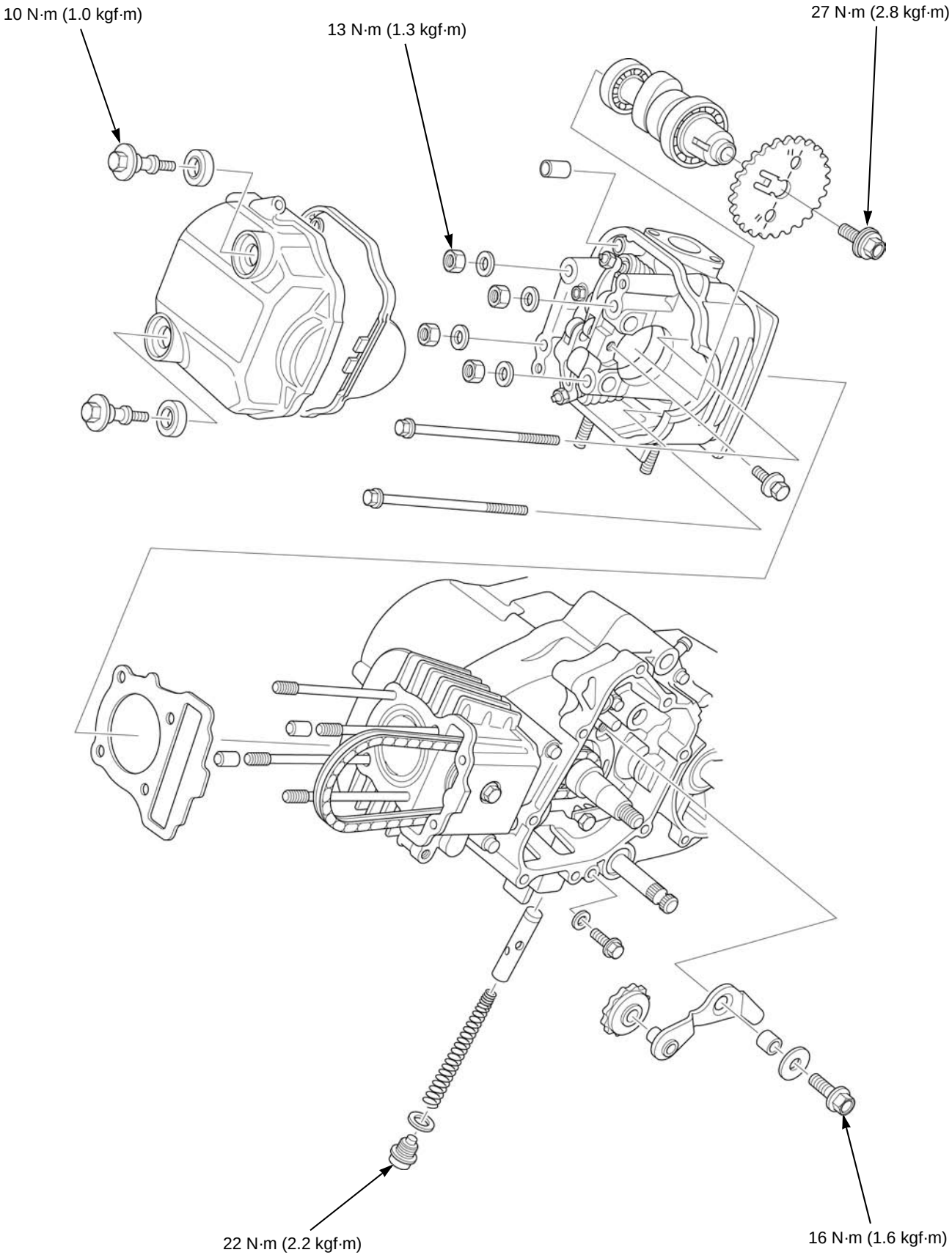


SIDE CLEARANCE:



8. CYLINDER HEAD/VALVES

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers service of the cylinder head, valves, camshaft and cam chain tensioner.
- The cylinder head, valves, camshaft and cam chain tensioner services can be done with the engine installed in the frame.
- When disassembling, mark and store the disassembled parts to ensure that they are reinstalled in their original locations.
- Clean all disassembled parts with cleaning solvent and dry them by blowing them off with compressed air before inspection.
- Camshaft lubricating oil is fed through oil passages in the cylinder head. Clean the oil passages before assembling cylinder head.
- Be careful not to damage the mating surfaces when removing the cylinder head.

TROUBLESHOOTING

- Engine top-end problems usually affect engine performance. These problem can be diagnosed by a compression test or by tracing engine noises to the top-end with a sounding rod or stethoscope.
- If the performance is poor at low speeds, check for white smoke in the crankcase breather hose. If the hose is smoky, check for a seized piston ring (page 9-3).

Compression too low, hard starting or poor performance at low speed

- Valves:
  - Incorrect valve clearance
  - Burned or bent valves
  - Incorrect valve timing
  - Broken valve spring
  - Valve stuck open
- Cylinder head:
  - Uneven valve seating
  - Loose spark plug
  - Leaking or damaged cylinder head gasket
  - Warped or cracked cylinder head
- Worn cylinder, piston or piston rings (page 9-3)

Compression too high, overheating or knocking

- Excessive carbon build-up on piston head or combustion chamber

Excessive smoke

- Cylinder head:
  - Worn valve stem or valve guide
  - Damaged stem seal
- Worn cylinder, piston or piston rings (page 9-3)

Excessive noise

- Cylinder head:
  - Incorrect valve clearance
  - Sticking valve or broken valve spring
  - Damaged or worn camshaft and/or bearing
  - Loose or worn cam chain
  - Worn or damaged cam chain guide roller/sprocket
  - Worn or damaged cam chain tensioner
  - Worn cam sprocket teeth
  - Worn rocker arm and/or shaft
- Worn cylinder, piston or piston rings (page 9-3)

Rough idle

- Low cylinder compression
- Faulty fuel system (page 6-3)

CYLINDER COMPRESSION

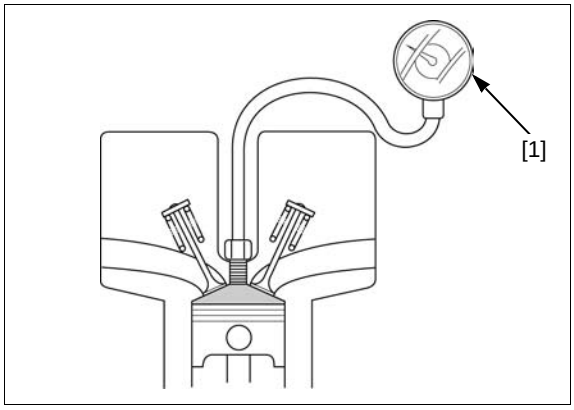
Warm up the engine to normal operating temperature.

Stop the engine and remove the spark plug (page 3-5).

Install the compression gauge [1] in the spark plug hole.

Turn the ignition switch ON.
Shift the transmission into neutral.

Open the throttle all the way and crank the engine with the electric starter until the gauge reading stops rising.



STANDARD:
1,412 KPa (205 psi) at 400 min^{-1}

If compression is high, it indicates that carbon deposits have accumulated on the combustion chamber and/or the piston head.

If compression is low, pour 3 – 5 cm^3 of engine oil into the cylinder through the spark plug hole and recheck the compression.

If the compression increases from the previous value, check the cylinder, piston and piston rings for the following:

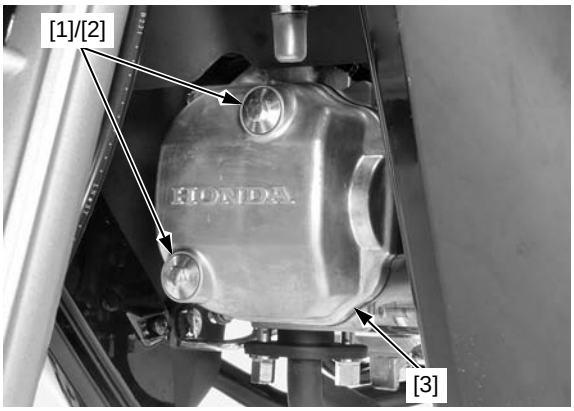
– Leaking cylinder head gasket
– Worn piston ring
– Worn cylinder and piston

If the compression is the same as the previous value, check the valves for leakage.

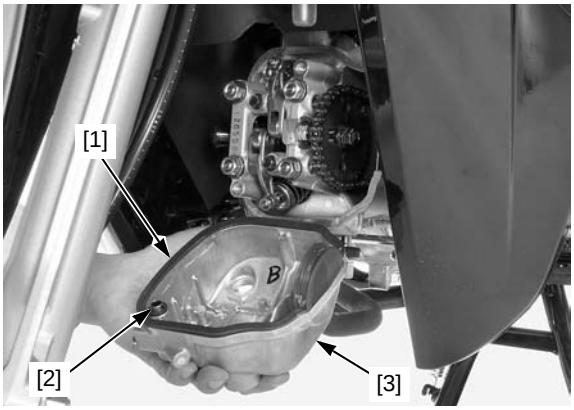
CYLINDER HEAD COVER

REMOVAL/INSTALLATION

Remove the special bolts [1], mounting rubbers [2] and cylinder head cover [3].



Remove the rubber seal [1] and dowel pin [2] from the cylinder head cover [3].

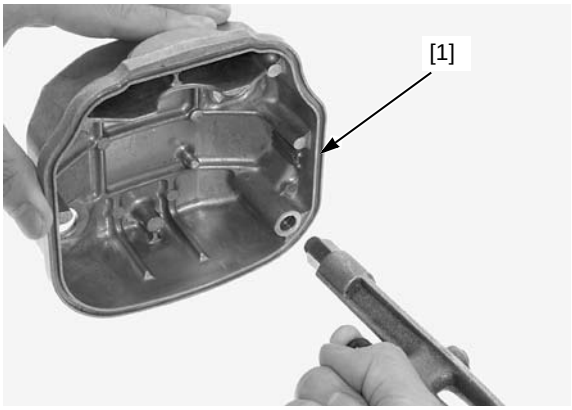


Blow open the oil passage in the cylinder head cover [1] with compressed air.

Make sure the rubber seal is in good condition and replace it if necessary.

Install the rubber seal into the groove on the cylinder head cover.

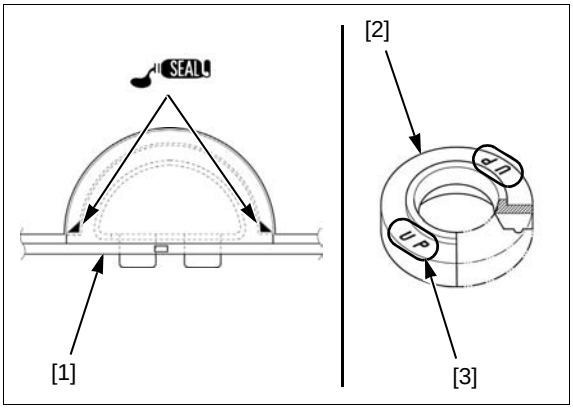
Install the dowel pin.



Installation is in the reverse order of removal.

- Apply liquid sealant (Three bond 1215 or equivalent) to the semicircular area of the rubber seal [1] as shown.
- Install the mounting rubbers [2] with their "UP" mark [3] facing up.

TORQUE:
Cylinder head cover special bolt:
10 N·m (1.0 kgf·m)



CAMSHAFT

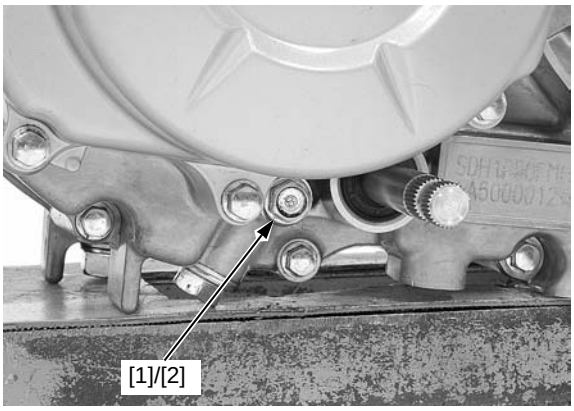
REMOVAL

Remove the following:

– Front top cover (page 2-5)
– Cylinder head cover (page 8-4)

Set the piston to the TDC (Top Dead Center) on the compression stroke (page 3-5).

Remove the cam chain tensioner sealing bolt [1] and washer [2].

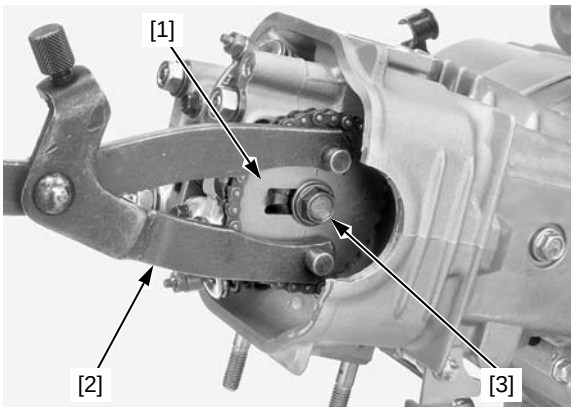


Hold the cam sprocket [1] using the special tool.

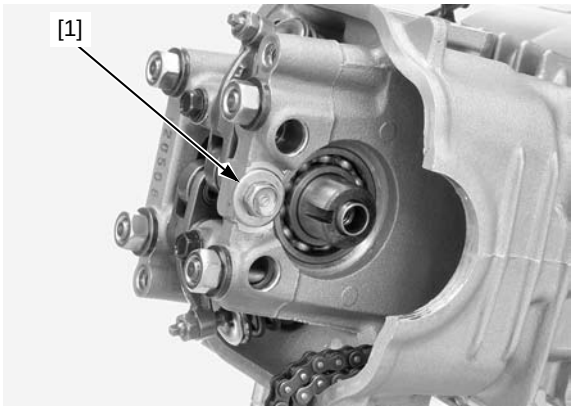
TOOL:
[2] Universal Holder 07725-0030000

Remove the washer bolt [3], cam sprocket from the camshaft and cam chain off the cam sprocket.

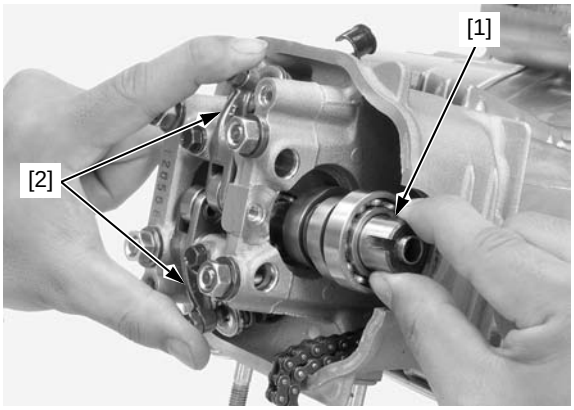
Attach a piece of wire to the cam chain to prevent it from falling into the crankcase.



Remove the bolt/washer [1] from the cylinder head.

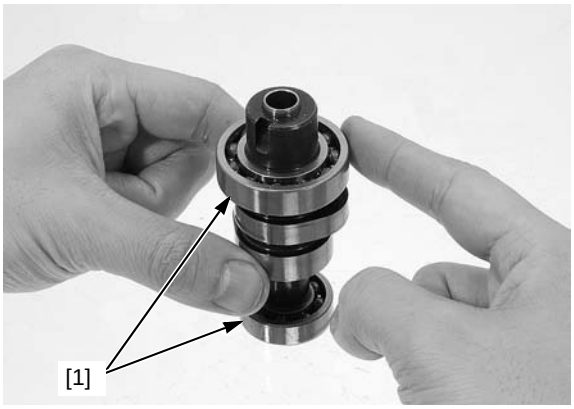


Remove the camshaft [1] from the cylinder head while holding the rocker arms [2] to ease removal.



INSPECTION

Turn the outer race of each camshaft bearing [1] with your finger. The bearing should turn smoothly and quietly.
Also check that the bearing inner race fits tightly on the camshaft.
Replace the camshaft assembly if the bearing does not turn smoothly, quietly, or if they fit loosely on the camshaft.



Measure the height of each cam lobe.

SERVICE LIMIT:
IN: 31.48 mm
EX: 31.34 mm

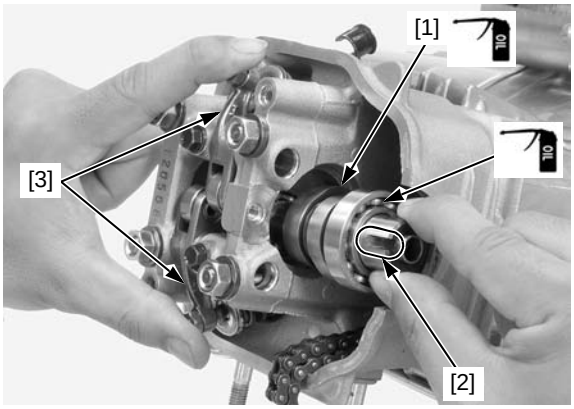
Check the cam lobes for excessive wear and damage.

Check the rocker arm if each cam lobe are worn or damage.

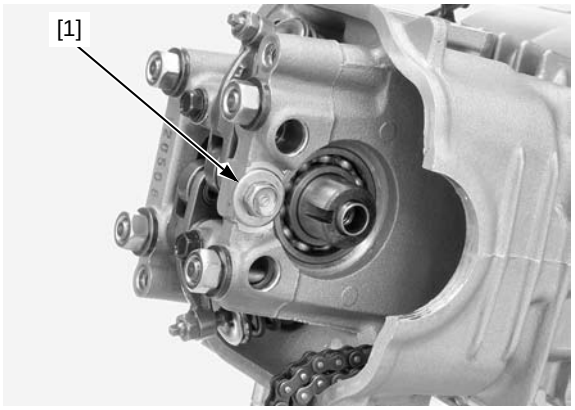
INSTALLATION

Apply engine oil to the camshaft lobes and bearings.

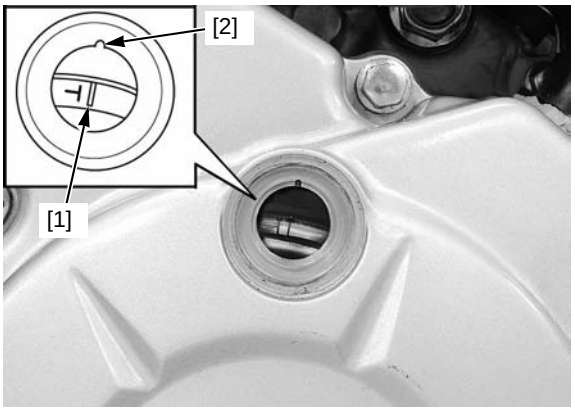
Install the camshaft [1] into the cylinder head with its groove [2] facing forward while holding the rocker arms [3] to ease installation.



Install and tighten the bolt/washer [1].

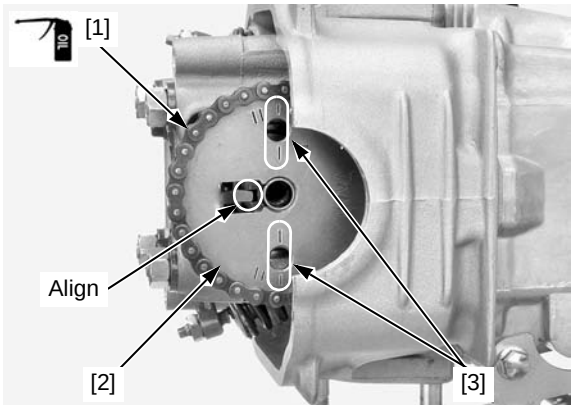


Rotate the crankshaft counterclockwise until the "T" mark [1] on the flywheel is aligned with the index notch [2] on the left crankcase cover.



Apply engine oil to the cam chain [1].

Install the cam sprocket [2] to the cam chain by aligning its index lines [3] with the top surface of the cylinder head as shown (TDC on the compression stroke).
Install the cam sprocket by aligning its tab with the groove of the camshaft.



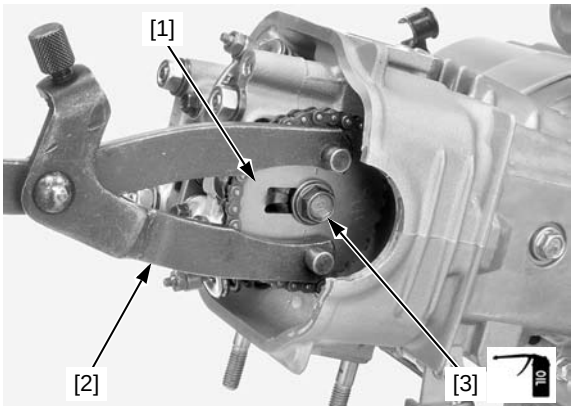
Hold the cam sprocket [1] using the special tool.

TOOL:
[2] Universal Holder 07725-0030000

Apply engine oil to the cam sprocket washer bolt [3] threads and seating surface.

Install and tighten the cam sprocket washer bolt to the specified torque.

TORQUE: 27 N·m (2.8 kgf·m)

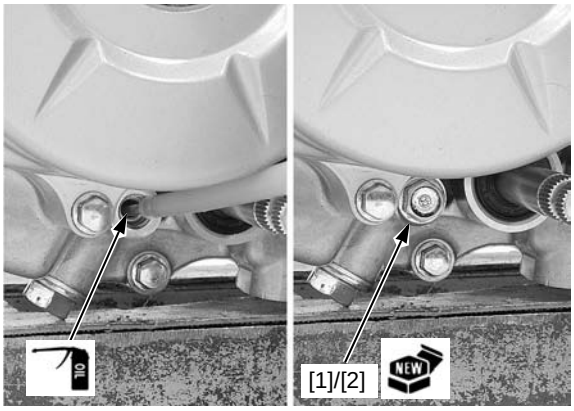


Pour 4.0 cm^3 minimum of engine oil into the push rod through the bolt hole.

Install the sealing bolt [1] with a new sealing washer [2], then tighten it.

Apply engine oil to new O-rings of the crankshaft hole cap and timing hole cap, then install them to the caps.
Install the crankshaft hole cap and timing hole cap to the left crankcase cover.

TORQUE:
Crankshaft hole cap: 8 N·m (0.8 kgf·m)
Timing hole cap: 10 N·m (1.0 kgf·m)



Install the following:

– Cylinder head cover (page 8-4)
– Front top cover (page 2-5)

CYLINDER HEAD

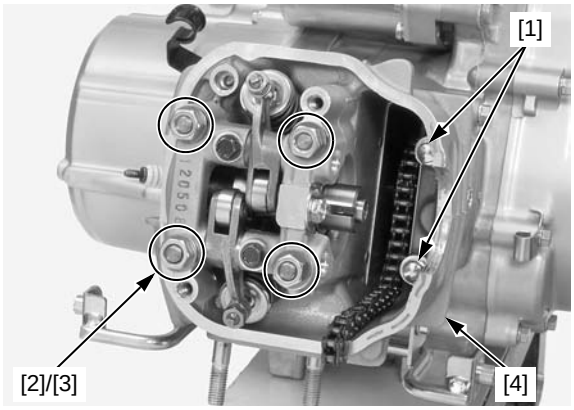
REMOVAL

Remove the following:

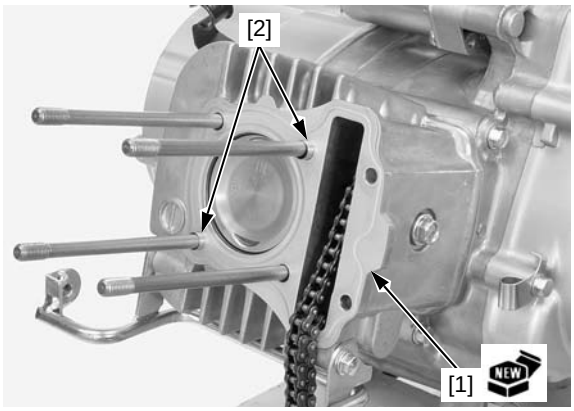
– Cam sprocket (page 8-5)
– Exhaust pipe/muffler (page 2-13)
– Air supply pipe (page 6-13)
– Inlet pipe (page 6-13)

Disconnect the spark plug cap.

Remove the cylinder head bolts [1].
Loosen the cylinder head nuts [2] in a crisscross pattern in two or three steps.
Remove the nuts and washers [3].
Remove the cylinder head [4] while holding the cam chain.



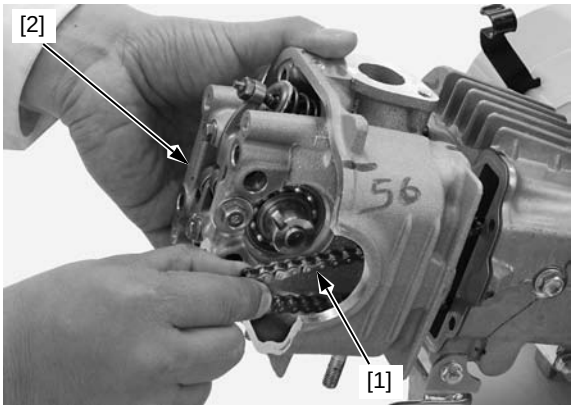
Remove the gasket [1] and dowel pins [2].



INSTALLATION

Clean the cylinder and cylinder head mating surface.
Install the dowel pins and a new gasket onto the cylinder.

Route the cam chain [1] through the cylinder head [2] and install the cylinder head onto the cylinder.

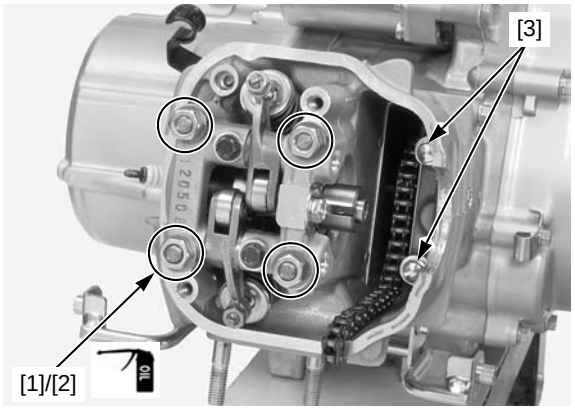


Apply engine oil to the seating surface and threads of the cylinder head nuts [1]. Install the washers [2] and tighten the cylinder head nuts to the specified torque in a crisscross pattern in several steps.

TORQUE: 13 N·m (1.3 kgf·m)

Install and tighten the cylinder head mounting bolts [3].

Install the removed parts in the reverse order of removal.

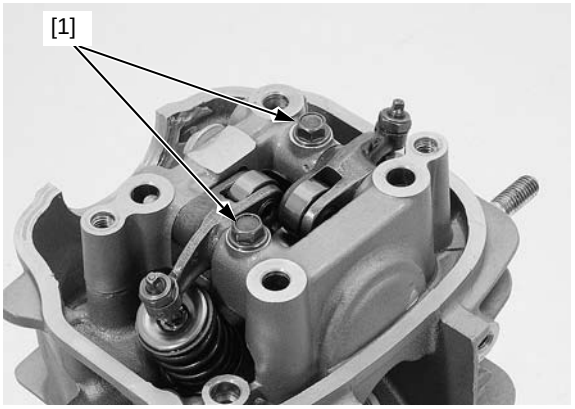


DISASSEMBLY

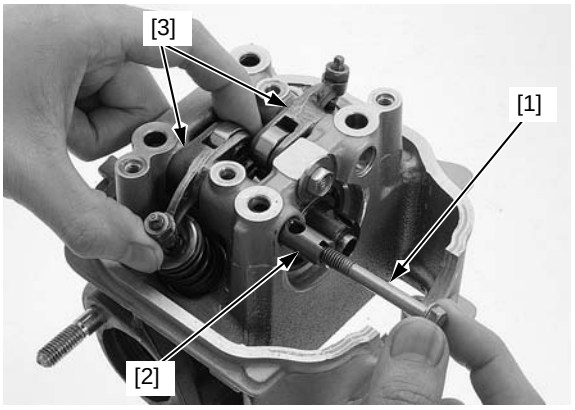
Remove the following:

– Spark plug (page 3-5)
– Cylinder head (page 8-8)
– Camshaft (page 8-5)

Remove the rocker arm shaft stopper bolts [1].



Screw a 6 mm bolt [1] into the threaded hole in the rocker arm shaft [2] and pull it out of the cylinder head. Remove the rocker arms [3].



To prevent loss of tension, do not compress the valve springs more than necessary to remove the cotters.

Remove the valve cotters [1] using the special tools.

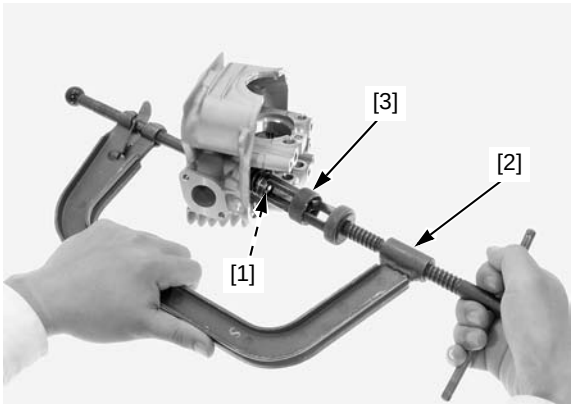
TOOLS:
[2] Valve spring compressor 07757-0010000
[3] Valve Spring Compressor Attachment 21 07959-KM30101

Mark all parts during disassembly so they can be placed back in their original locations.

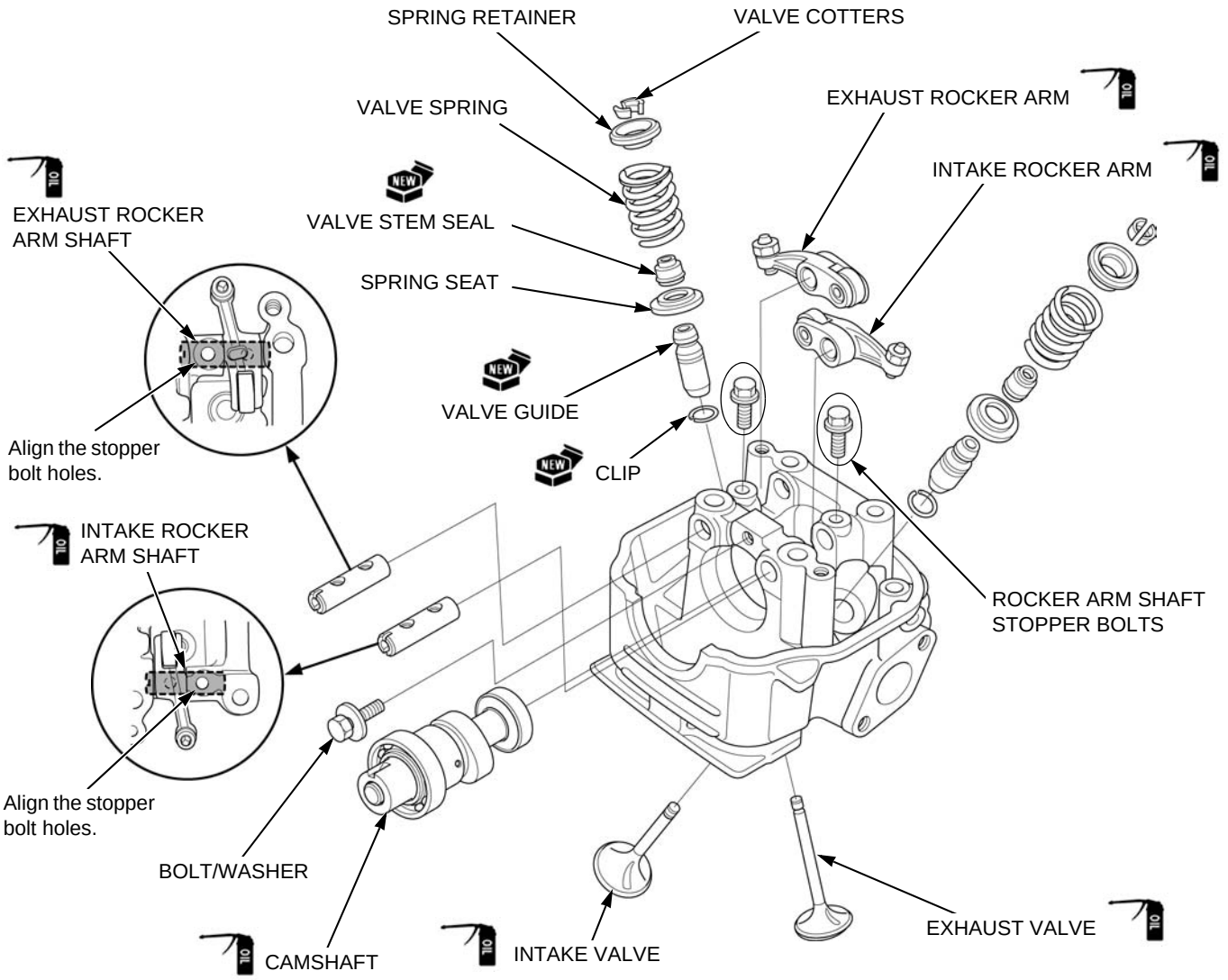
Remove the valve spring compressor and remove the following:

– Valve spring retainers
– Valve springs
– Valve spring seats
– Valves
– Valve stem seals

Remove the carbon deposits from the combustion chamber and clean off the cylinder head gasket surface.

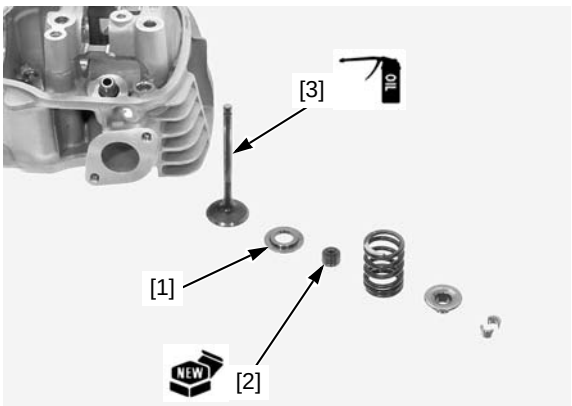


ASSEMBLY

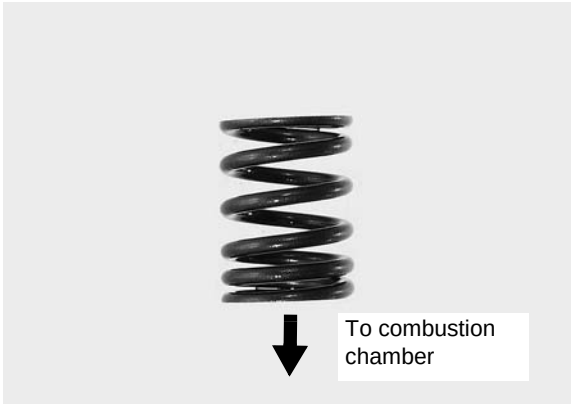


Blow through the oil passage in the cylinder head with compressed air.
Install the valve spring seats [1].
Install new valve stem seals [2].

Apply engine oil to the valve stem [3] outer surface and stem end.
Insert the valves into the valve guides while turning them slowly to avoid damage to the valve stem seals.



Install the valve springs with the tightly wound coils facing the combustion chamber.

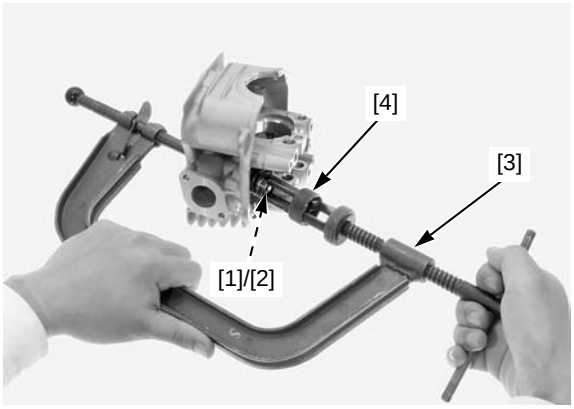


Install the valve spring retainer [1].

To prevent loss of tension, do not compress the valve spring more than necessary to install the cotters.

Install the valve cotters [2] using the special tools.

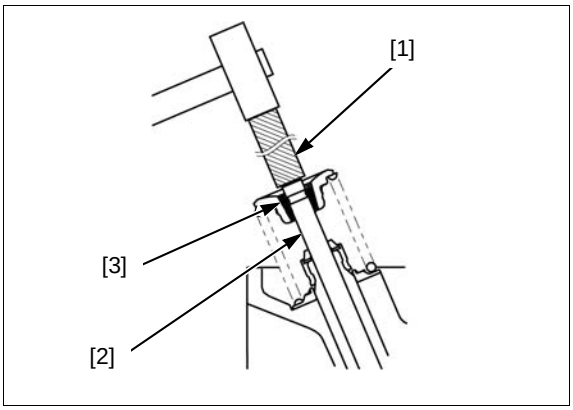
TOOLS:
[3] Valve spring compressor 07757-0010000
[4] Valve Spring Compressor Attachment 21 07959-KM30101



Support the cylinder head above the work bench surface to prevent valve damage.

Place a suitable tool [1] onto the valve stem [2].

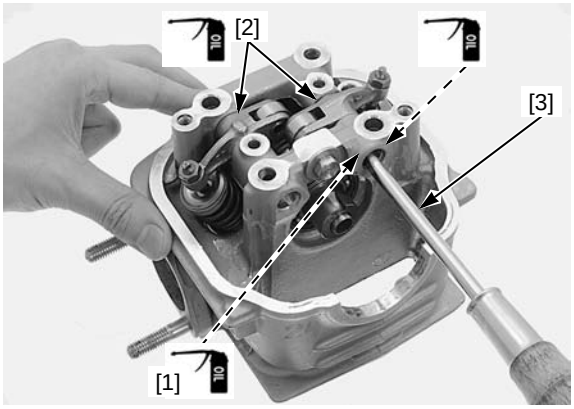
Tap the tool gently to seat the cotters [3] firmly using a plastic hammer.



Apply engine oil to the rocker arm shaft hole inner surface, rocker arm shaft [1] whole surface and rocker arm roller rolling area.

Install the rocker arms [2] to the cylinder head.

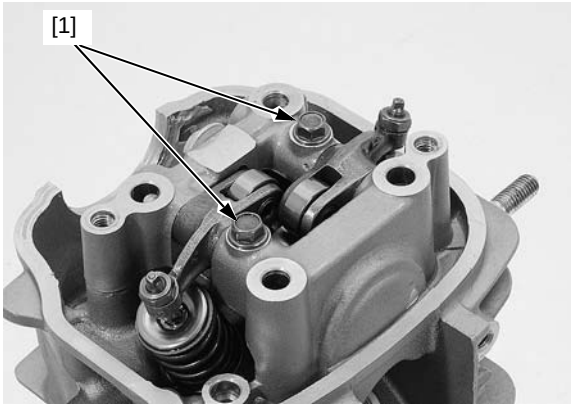
Insert the rocker arm shafts into the cylinder head using a screwdriver [3] while aligning the bolt holes of the shafts and cylinder head (page 8-10).



Install and tighten the rocker arm shaft stopper bolts [1].

Install the following:

– Spark plug (page 3-5)
– Cylinder head (page 8-8)
– Camshaft (page 8-5)

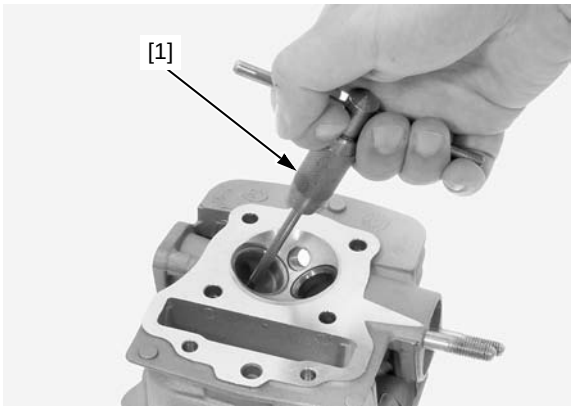


INSPECTION

Always rotate the reamer clockwise, never counterclockwise when inserting, removing and reaming.

Ream the valve guide to remove any carbon build up before measuring the guide.
Insert the reamer from the combustion chamber side of the cylinder head and always rotate the reamer clockwise.

TOOL:
[1] Valve Guide Reamer 5.010 07984-MA60001

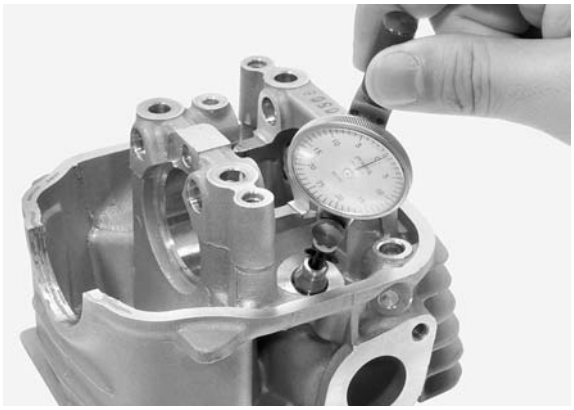


Measure each valve guide I.D. and record it.

SERVICE LIMIT: IN/EX: 5.03 mm

Subtract each valve stem O.D. from the corresponding guide I.D. to obtain the stem-to-guide clearance.

SERVICE LIMIT: IN: 0.065 mm
EX: 0.085 mm



Inspect and reface the valve seats whenever the valve guides are replaced (page 8-13).

If the stem-to-guide clearance exceeds the service limit, determine if a new guide with standard dimensions would bring the clearance within tolerance.
If so, replace any guides as necessary and ream to fit (page 8-12).
If the stem-to-guide clearance exceeds the service limit with new guide, also replace the valve.

VALVE GUIDE REPLACEMENT

Disassemble the cylinder head (page 8-9).

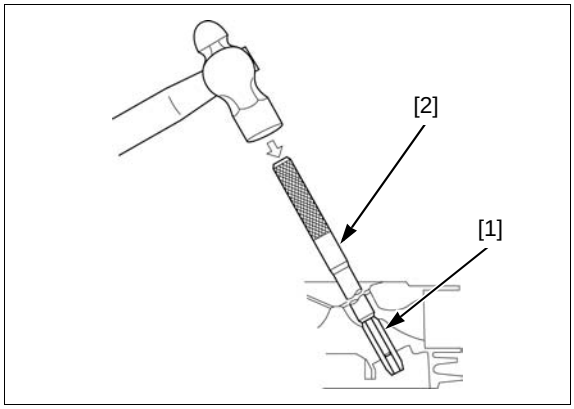
Chill new valve guides in a freezer for about 1 hour.

Wear insulated gloves to avoid burns when handling the heated cylinder head. Using a torch to heat the cylinder head may cause warpage.

Heat the cylinder head to 130 – 140°C with a hot plate or oven. Do not heat the cylinder head beyond 150°C. Use temperature indicator sticks, available from welding supply stores, to be sure the cylinder head is heated to the proper temperature.

Support the cylinder head and drive the valve guides [1] out of the cylinder head from the combustion chamber side.

TOOL:
[2] Valve Guide Driver 4.8 x 9.7 07942-MA60000



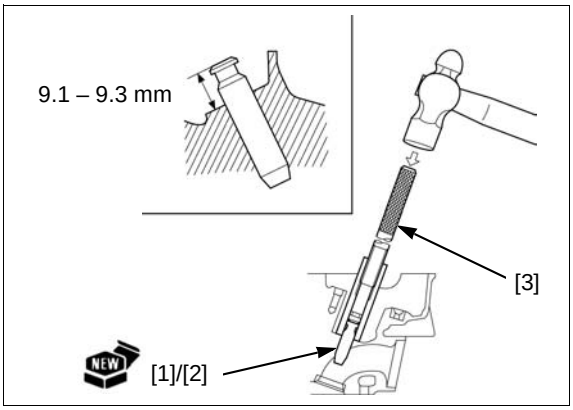
Take out new valve guides from the freezer.

Install new clips [1] onto the valve guide grooves.
Drive the valve guides [2] into the cylinder head to the specified height from the cylinder head.

TOOL:
[3] Valve Guide Driver Adjustable Type
07743-0020000

VALVE GUIDE PROJECTION:
IN/EX: 9.1 – 9.3 mm

Let the cylinder head cool to room temperature.



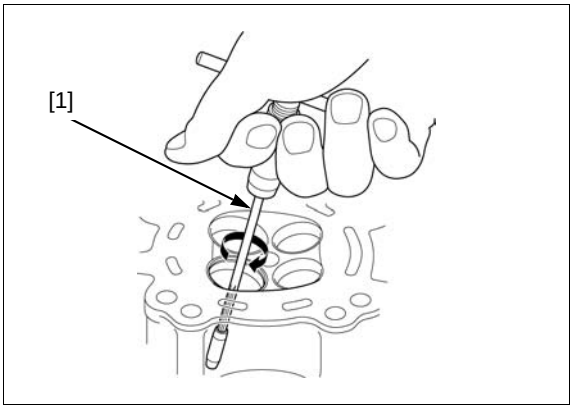
Ream new valve guides after installation.

NOTE:
- Take care not to tilt or lean the reamer in the guide while reaming.
- Use cutting oil on the reamer during this operation.

Insert the reamer from the combustion chamber side of the cylinder head and always rotate the reamer clockwise.

TOOL:
[1] Valve Guide Reamer 5.010 07984-MA60001

Clean the cylinder head thoroughly to remove any metal particles after reaming and reface the valve seat (page 8-13).

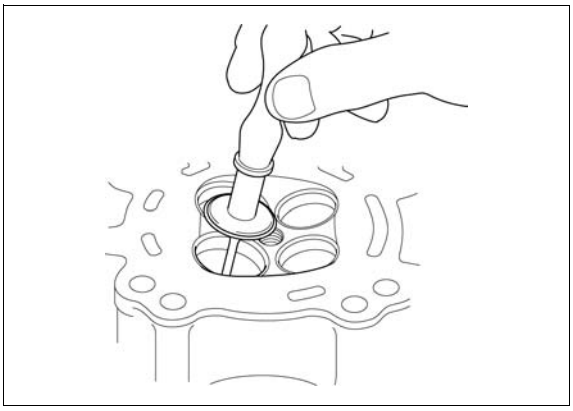


VALVE SEAT INSPECTION/REFACING

Disassemble the cylinder head (page 8-9).

Clean the intake and exhaust valves thoroughly to remove carbon deposits.

Apply a light coat of Prussian Blue to the valve seats.
Tap the valve against the valve seat several times using a hand-lapping tool, without rotating the valve to make a clear pattern.



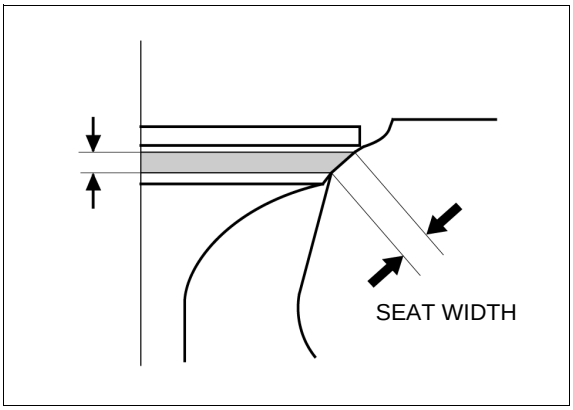
The valves cannot be ground. If the valve face is burned, badly worn or if it contacts the seat unevenly, replace the valve.

Remove the valve and inspect the valve seat face.

The valve seat contact should be within the specified width and even all around the circumference.

STANDARD: 0.9 – 1.1 mm
SERVICE LIMIT: 1.6 mm

If the valve seat width is not within specification, reface the valve seat (page 8-13).



Reface the seat with a 45° cutter whenever a valve guide is replaced.

Use a 45° seat cutter, remove any roughness or irregularities from the seat.

TOOLS:

Seat Cutter 27.5 mm (45° IN)	**07780-0010200**
Seat Cutter 24 mm (45° EX)	**07780-0010600**
Cutter Holder 5.0 mm	**07781-0010400**

Use a 32° flat cutter, remove the top 1/4 of the existing valve seat material.

TOOLS:

Flat Cutter 27 mm (32° IN)	**07780-0013300**
Flat Cutter 22 mm (32° EX)	**07780-0012601**
Cutter Holder 5.0 mm	**07781-0010400**

Use a 60° interior cutter, remove the bottom 1/4 of the existing valve seat material.

TOOLS:

Interior Cutter 26 mm (60° IN)	**07780-0014500**
Interior Cutter 22 mm (60° EX)	**07780-0014202**
Cutter Holder 5.0 mm	**07781-0010400**

Using a 45° seat cutter, cut the seat to the proper width.

VALVE SEAT WIDTH: 0.9 – 1.1 mm

Make sure that all pitting and irregularities are removed.

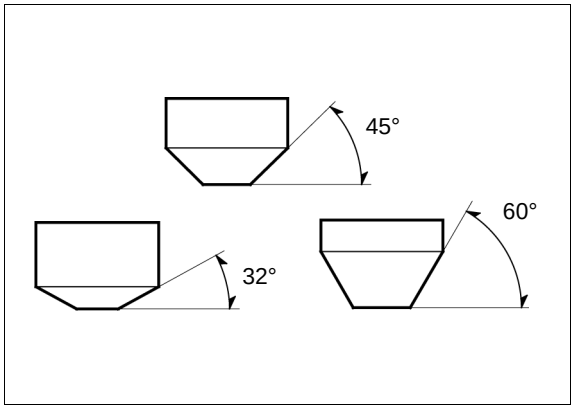
NOTE:

- Excessive lapping pressure may deform or damage the seat.
- Change the angle of lapping tool frequently to prevent uneven seat wear.
- Do not allow lapping compound to enter the guides.

After cutting the seat, apply lapping compound to the valve face, and lap the valve using light pressure.

After lapping, wash any residual compound off the cylinder head and valve and recheck the seat contact.

Assemble the cylinder head (page 8-10).



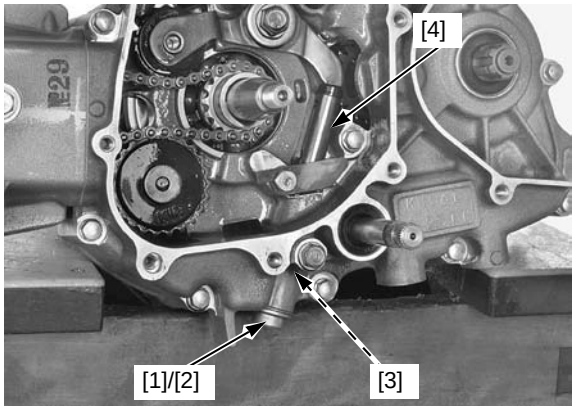
CAM CHAIN TENSIONER

REMOVAL

Remove the flywheel (page 11-4).

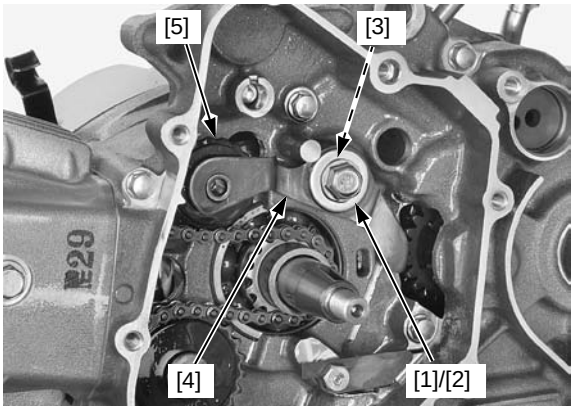
Remove the following:

– Cam chain tensioner sealing bolt [1]/washer [2]
– Tensioner spring [3]
– Push rod [4]



Remove the following:

– Pivot bolt [1]/washer [2]
– Collar [3]
– Tensioner arm [4]
– Tensioner roller [5]



INSPECTION

TENSIONER SPRING:

Measure the tensioner spring free length.

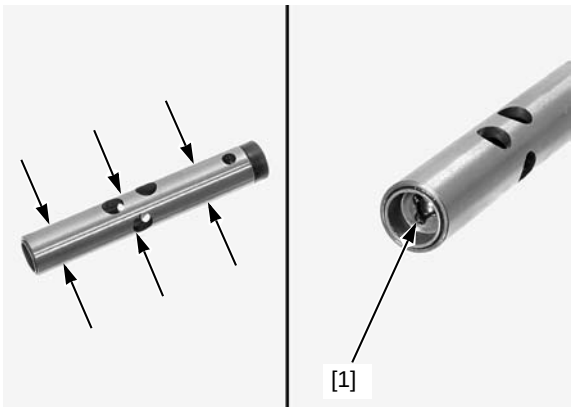
SERVICE LIMIT: 109 mm

PUSH ROD:

Check the push rod for wear or damage.
Measure the push rod O.D.

SERVICE LIMIT: 11.94 mm

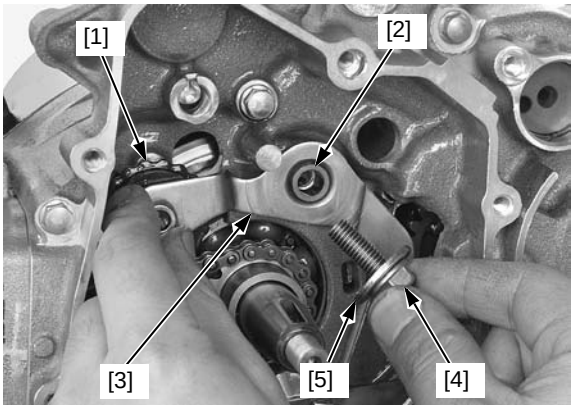
Inspect the check valve [1] in the push rod for wear or damage.



INSTALLATION

Install the cam chain tensioner roller [1], collar [2], tensioner arm [3], pivot bolt [4] and washer [5], then tighten it to the specified torque.

TORQUE: 16 N·m (1.6 kgf·m)

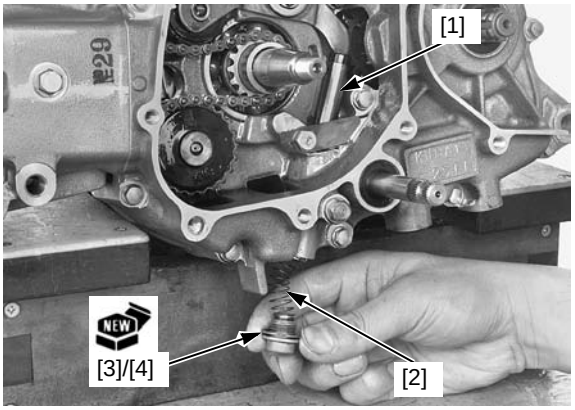


Install the following:

– Push rod [1]
– Tensioner spring [2]

Install the sealing bolt [3] with a new sealing washer [4] and tighten the bolt to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m)

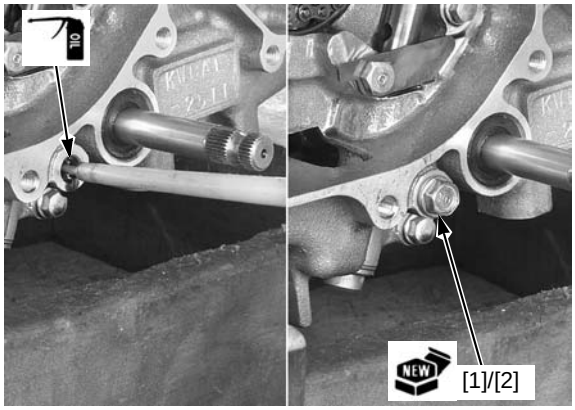


Remove the cam chain tensioner sealing bolt [1] and washer [2].

Pour 4.0 cm^3 minimum of engine oil into the push rod through the bolt hole.

Install and tighten the sealing bolt with a new sealing washer.

Install the flywheel (page 11-5).



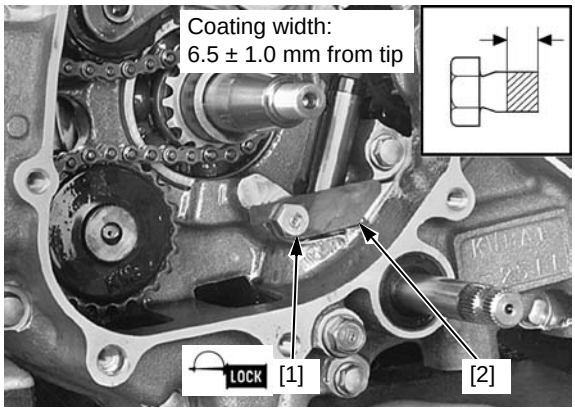
OIL STOPPER PLATE REMOVAL/ INSTALLATION

Remove the flywheel (page 11-4).

Remove the bolt [1] and oil stopper plate [2].

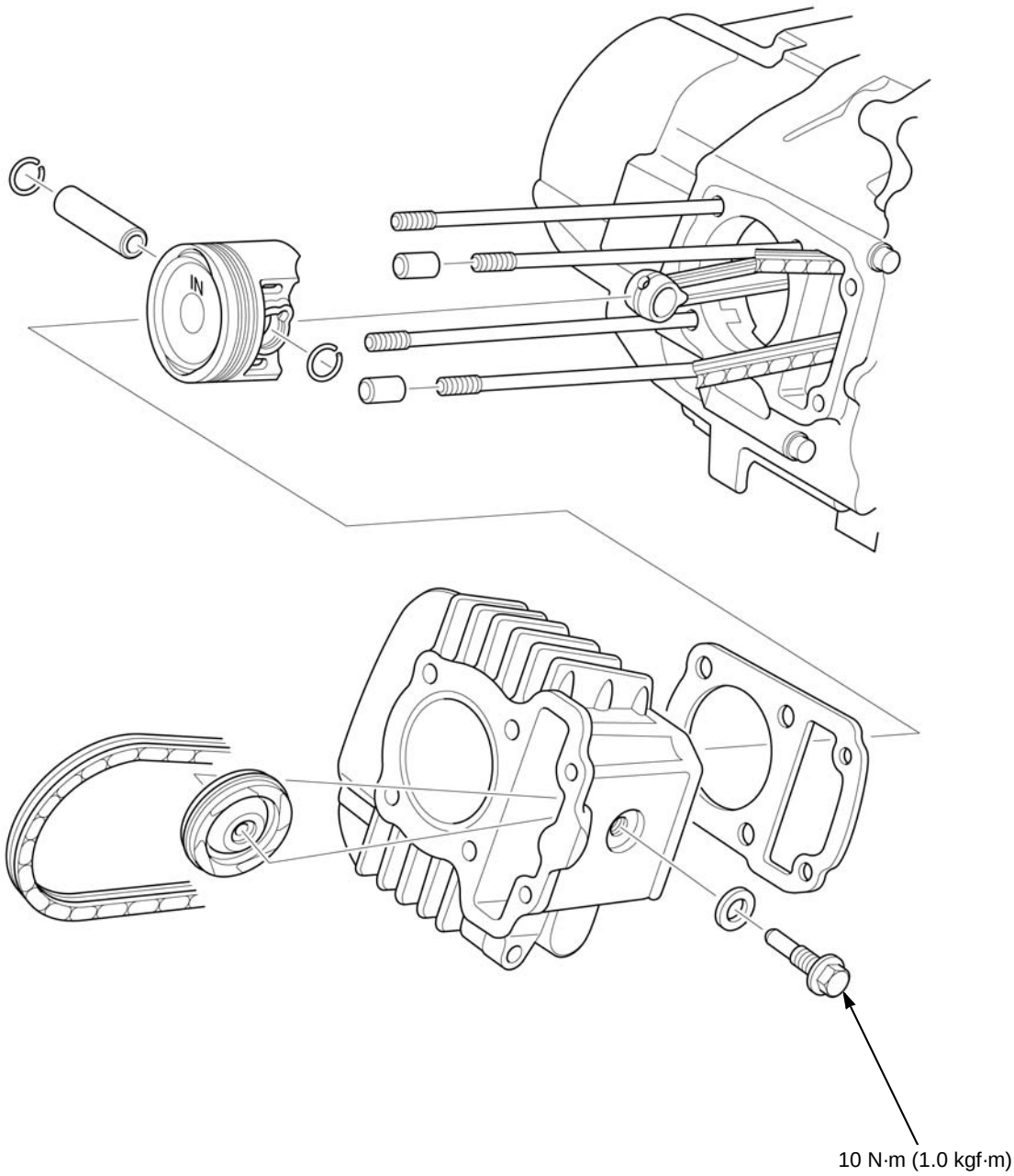
Apply locking agent to the bolt threads as specified. Install the oil stopper plate and tighten the bolt.

Install the flywheel (page 11-5).



9. CYLINDER/PISTON

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers service of the cylinder and piston. These services can be performed with the engine installed in the frame.
- Take care not to damage the cylinder wall and piston.
- Be careful not to damage the mating surfaces when removing the cylinder. Do not tap the cylinder too hard during removal.
- When disassembling, mark and store the disassembled parts to ensure that they are reinstalled in their original locations.
- Clean all disassembled parts with cleaning solvent and dry them by blowing them off with compressed air before inspection.

TROUBLESHOOTING

Compression too low, hard starting or poor performance at low speed
- Leaking cylinder head gasket
- Worn, stuck or broken piston ring
- Worn or damaged cylinder and piston
- Bent connecting rod

Compression too high, overheating or knocking
- Excessive carbon built-up on piston head or combustion chamber

Excessive smoke
- Worn cylinder, piston or piston rings
- Improper installation of piston rings
- Scored or scratched piston or cylinder wall
- Cylinder head/valve problem (page 8-3)

Abnormal noise
- Worn piston pin or piston pin hole
- Worn cylinder, piston or piston rings
- Worn connecting rod small end

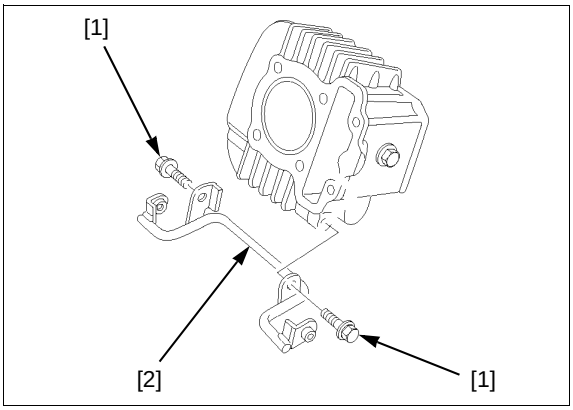
CYLINDER/PISTON

CYLINDER REMOVAL

NOTE:
- Cylinder and piston can be serviced with the engine installed on the frame.

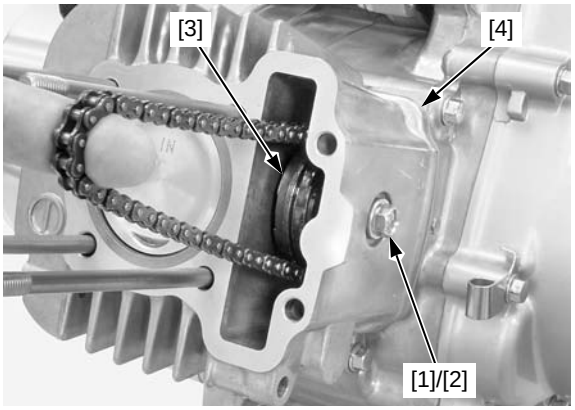
Remove the cylinder head (page 8-8).

Remove the bolts [1] and lower side cover stay [2].

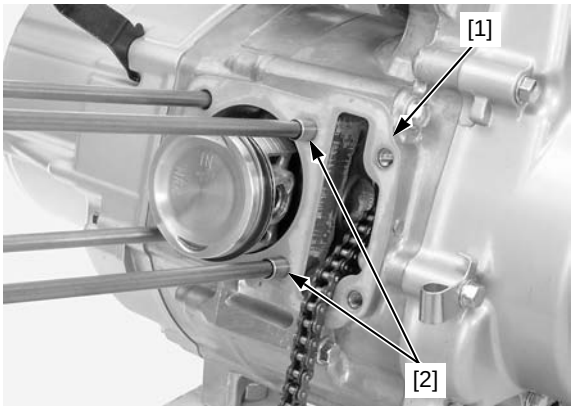


Be careful not to drop the guide roller into the crankcase.

Remove the following:
– Cam chain guide roller pin bolt [1] and sealing washer [2]
– Guide roller [3]
– Cylinder [4]



Remove the gasket [1] and dowel pins [2].

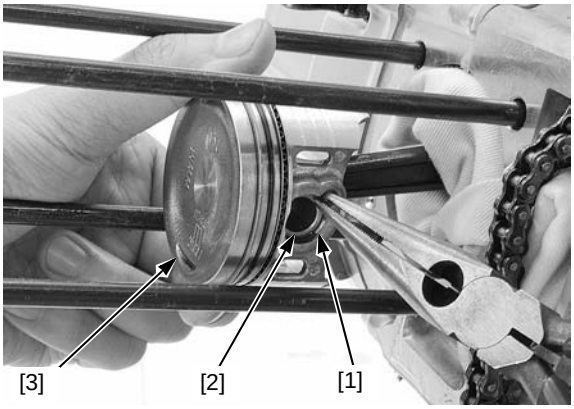


PISTON REMOVAL

Place a clean shop towel over the crankcase to prevent the clip from falling into the crankcase.

Remove the piston pin clip [1] with pliers.

Push the piston pin [2] out of the piston [3] and connecting rod, and remove the piston.



CYLINDER STUD BOLT REPLACEMENT

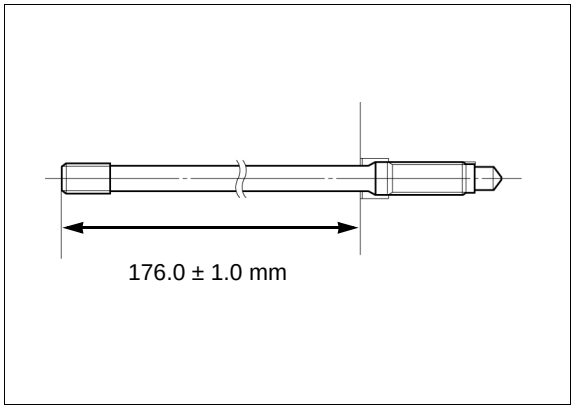
If replacing the cylinder stud bolts, be sure to install them as shown.

Thread two nuts onto the stud bolt, and tighten them together, then use a wrench on them to turn the stud bolt out.

Install and tighten new stud bolts to the specified torque.

TORQUE: 6 N·m (0.6 kgf·m)

After tightening the stud bolts, check that the length from the bolt head to the crankcase surface is within specification.

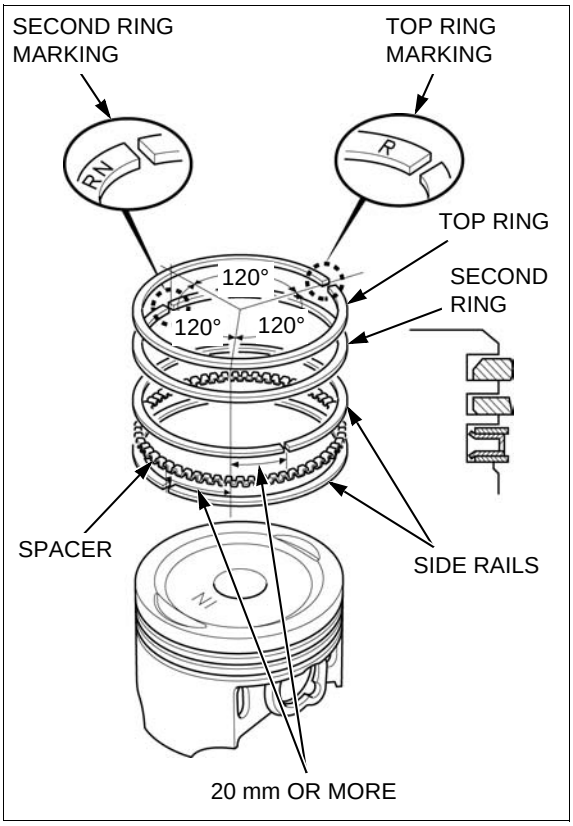


PISTON INSTALLATION

Clean the piston heads, ring grooves and skirts.
Carefully install the piston rings onto the piston with their markings facing up.

NOTE:

- Be careful not to damage the piston and piston rings during installation.
- Do not confuse the top and second rings.
- When installing the oil ring, install the spacer first and then the side rails.
- Space the ring end gaps 120 degrees apart.



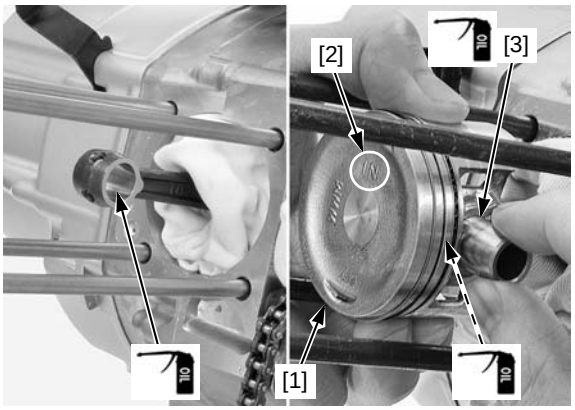
Place a clean shop towel over the crankcase to prevent the dirt, dust or piston pin clips from entering the crankcase.

Be careful not to damage the mating surfaces.

Clean the gasket mating surfaces of the crankcase and cylinder thoroughly.

Apply engine oil to the connecting rod small end inner surface.

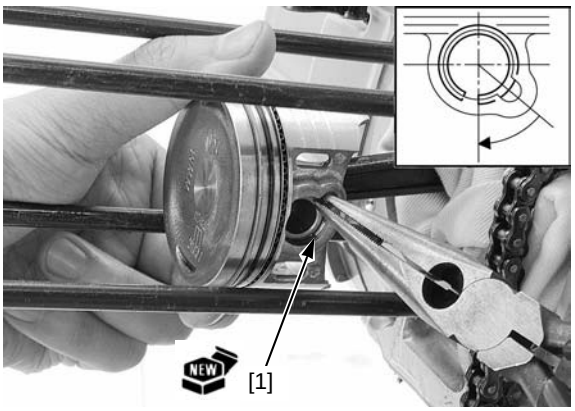
Apply engine oil to the piston pin hole inner surface and piston pin outer surface.
Install the piston [1] with the "IN" mark [2] facing the intake side.
Instal the piston pin [3].



Install new piston pin clip [1].

NOTE:

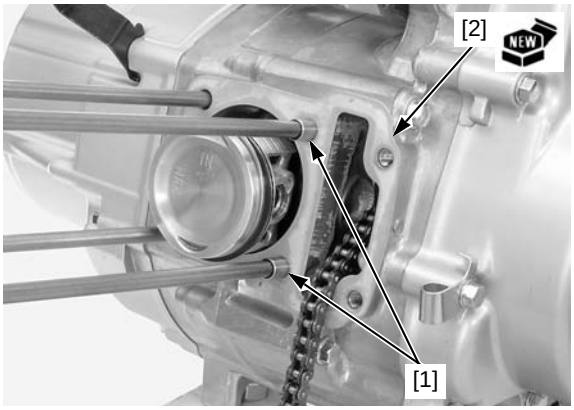
- Make sure the piston pin clips are seated securely.
- Do not align the piston pin clip end gap with the piston cutout.



CYLINDER INSTALLATION

Do not reuse the gasket, replace with a new one.

Install the dowel pins [1] and a new gasket [2].

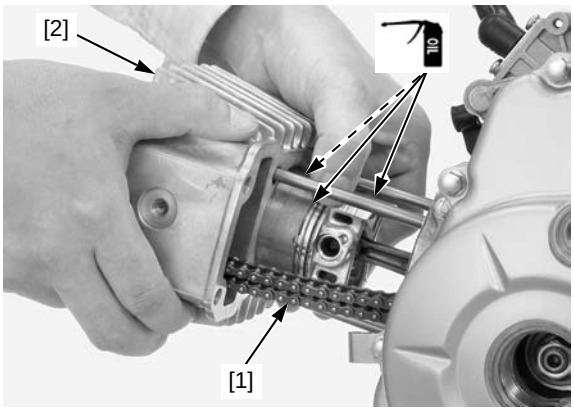


Apply engine oil to the cylinder bore, piston outer sliding area, piston ring grooves and piston rings whole surface.

Route the cam chain [1] through the cylinder [2].

Be careful not to damage the piston rings and cylinder bore.

Install the cylinder over the piston while compressing the piston rings with your fingers.

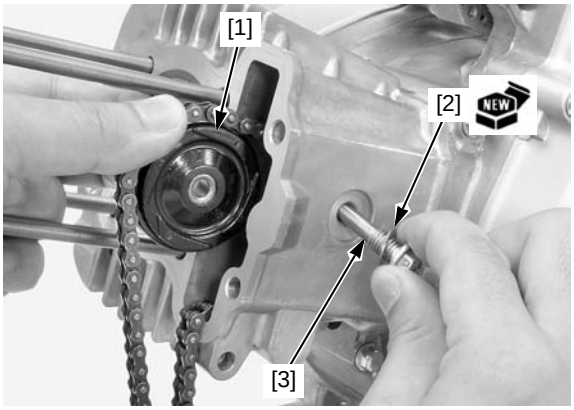


Be careful not to drop the guide roller into the crankcase.

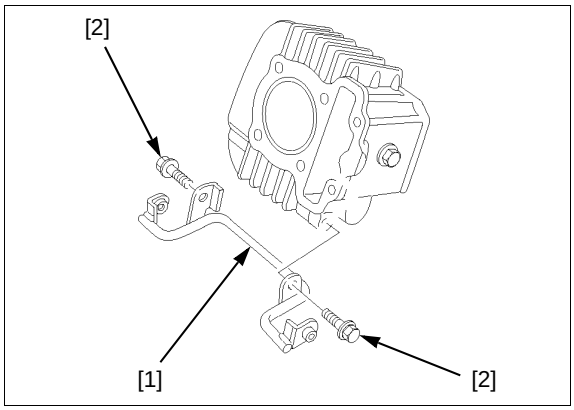
Install the cam chain guide roller [1], new sealing washer [2] and cam chain guide roller pin bolt [3]. Tighten the guide roller pin bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m)

Install the cylinder head (page 8-8).

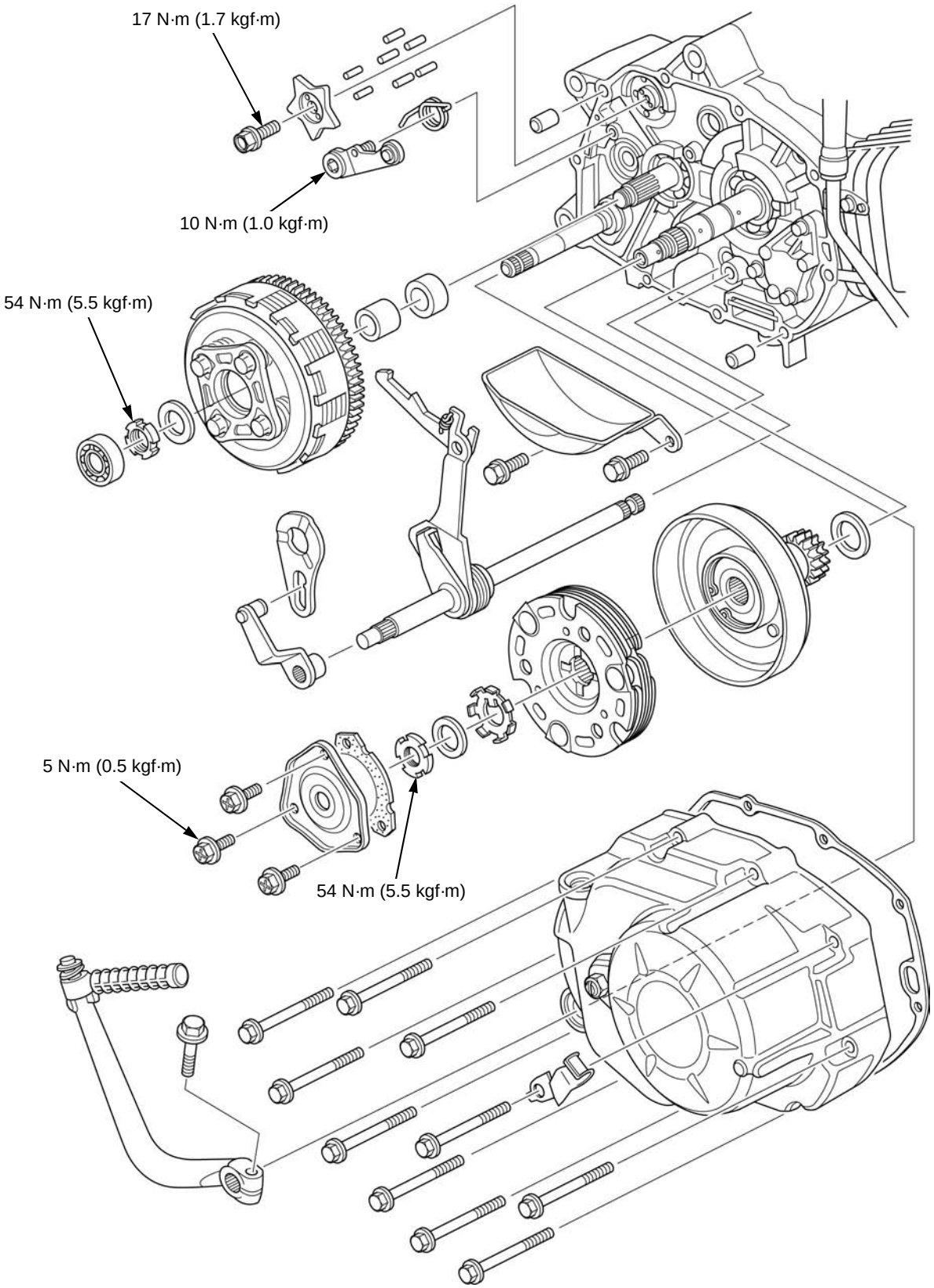


Install the lower side cover stay [1] and tighten the bolts [2].



10. CLUTCH/GEARSHIFT LINKAGE

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers service of the clutch (centrifugal clutch and manual clutch) and gearshift linkage. These service can be done with the engine installed in the frame.
- Engine oil viscosity, oil level and the use of oil additives have an effect on clutch operation. Oil additives of any kind are specifically not recommended.

TROUBLESHOOTING

Faulty clutch operation can usually be corrected by adjusting the clutch system.

Clutch slips when accelerating
- Incorrect clutch adjustment
- Worn clutch disc
- Weak clutch springs
- Faulty clutch weight
- Molybdenum or graphite additive

Motorcycle creeps (when idling)
- Faulty clutch weight springs
- Faulty clutch weights
- Idle speed too high (page 3-8)

Hard to shift
- Damaged gearshift spindle
- Damaged stopper plate and pin
- Loose stopper plate bolt
- Incorrect clutch adjustment
- Loose gearshift cam plate bolt

Transmission jumps out of gear
- Damaged stopper arm
- Damaged gearshift cam plate
- Loose gearshift cam plate bolt

Gearshift pedal will not return
- Weak or broken gearshift spindle return spring
- Bent gearshift spindle

RIGHT CRANKCASE COVER

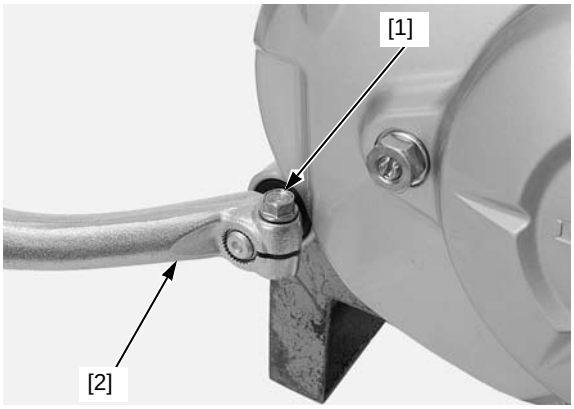
REMOVAL

Drain the engine oil (page 3-7).

Remove the footpeg bar (page 2-10).

When removing the kickstarter pedal, mark the pedal position to ensure the original position.

Remove the bolt [1] and kickstarter pedal [2].



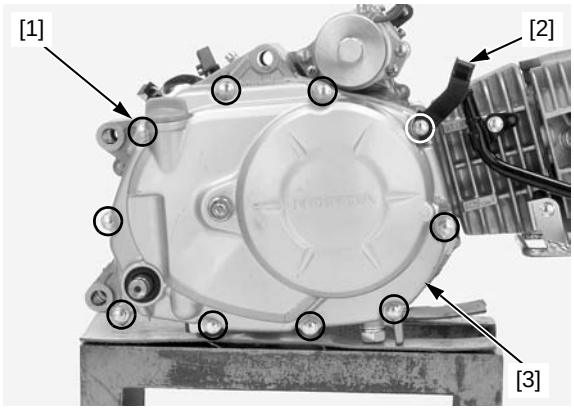
Loosen the bolts [1] in a crisscross pattern in several steps.

Remove the bolts and guide [2].

Be careful not to damage the mating surface.

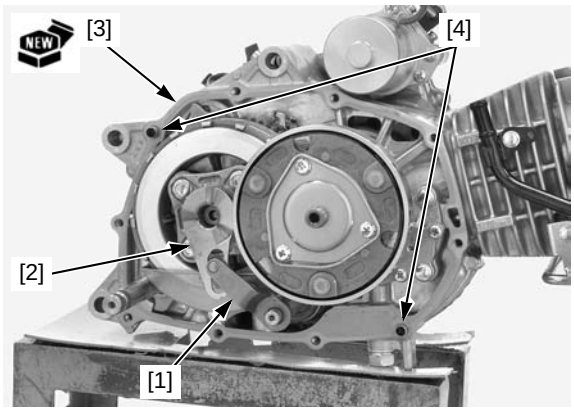
Remove the right crankcase cover [3].

Blow open the oil passage of the right crankcase cover with compressed air.
Check the oil passage for clog.



Remove the following:

– Clutch lever [1]
– Clutch lifter cam plate [2]
– Gasket [3]
– Dowel pins [4]



INSTALLATION

Install the clutch lifter cam plate [1] onto the clutch lifter bearing.

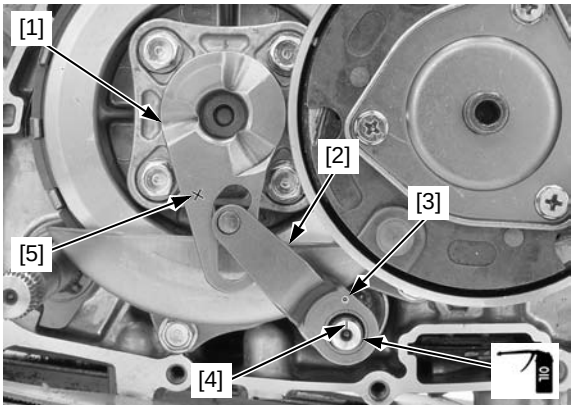
Apply engine oil to the gearshift spindle journal.

Align the clutch lever with the "+" mark [5] as shown.

Install the clutch lever [2] onto the gearshift spindle while aligning the punch mark [3] of the clutch lever with the marked line [4] of the gearshift spindle as shown.

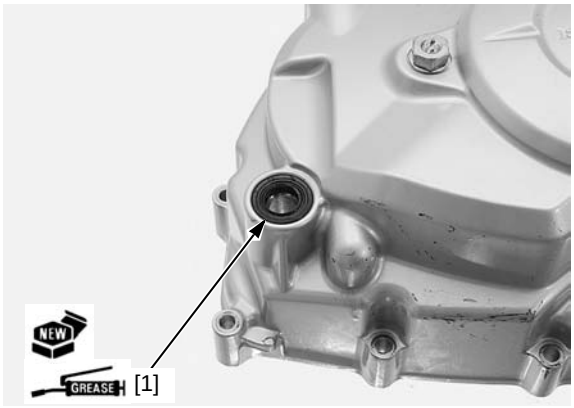
Clean the gasket mating surface of the crankcase and right crankcase cover, being careful not to damage them.

Install the dowel pins and a new gasket onto the crankcase.

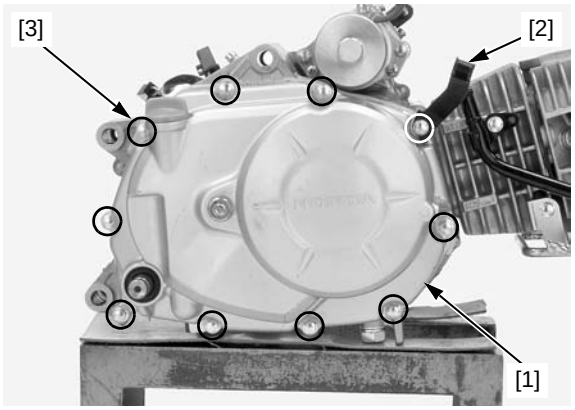


Install a new oil seal [1], install it until it is fully seated.

Apply grease to the kickstarter spindle oil seal lips.



Install the right crankcase cover [1].
Install the guide [2] and crankcase cover bolts [3].
Tighten the crankcase cover bolts in a crisscross pattern in several steps.

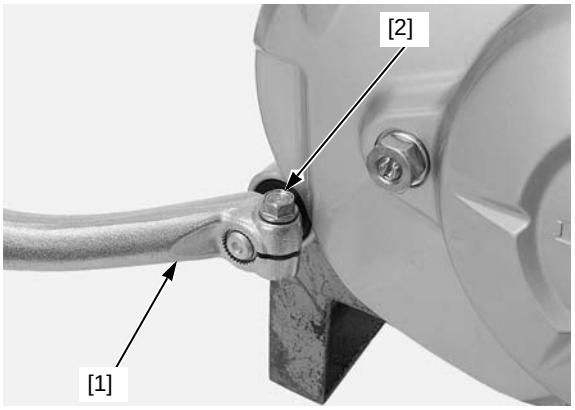


Install the kickstarter pedal [1] to its original position as marked during removal.
Install and tighten the bolt [2].

Install the footpeg bar (page 2-10).

Fill the engine with recommended engine oil (page 3-7).
Make sure there are no oil leaks.

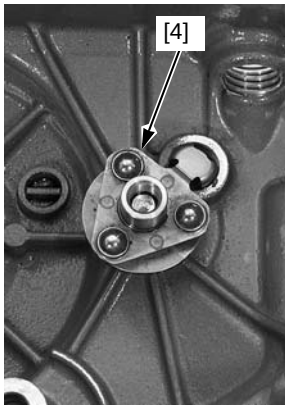
Check the clutch system adjustment (page 3-13).



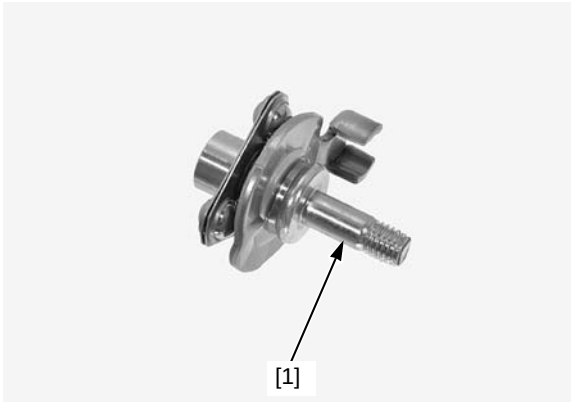
DISASSEMBLY

Remove the following:

– Clutch adjuster lock nut [1]
– Washer [2]
– O-ring [3]
– Clutch adjuster/lifter boss [4]

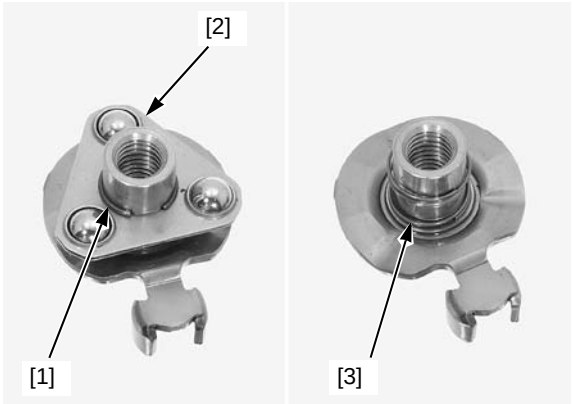


Remove the clutch adjuster bolt [1].



Remove the following:

– Snap ring [1]
– Clutch lifter boss [2]
– Spring [3]

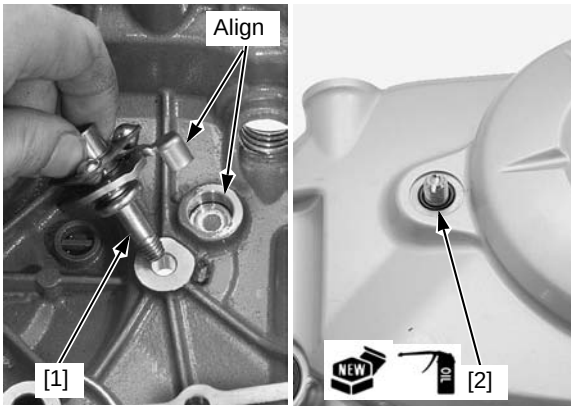


ASSEMBLY

Install the spring and clutch lifter boss, then secure them with the snap ring.

Install the clutch adjuster bolt [1].
Install the clutch adjuster/lifter boss into the right crankcase cover aligning its boss with the hole in the crankcase cover.
Apply engine oil to a new O-ring [2].
Install the O-ring onto the clutch adjuster/lifter boss.

Install the removed parts in the reverse order of removal.



CLUTCH

REMOVAL

NOTE:

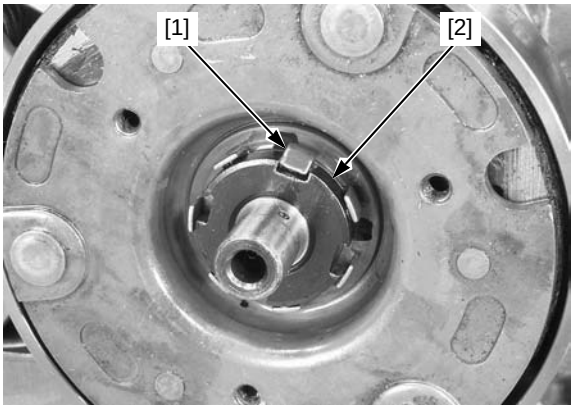
• Clutch system can be serviced with the engine installed in the frame.

Derail the drive chain from the drive sprocket (page 13-3)

Remove the following:

– Right crankcase cover (page 10-3)
– Engine oil centrifugal filter cover (page 3-7)

Bend up the tab [1] of the lock washer to clear the lock nut [2] groove.

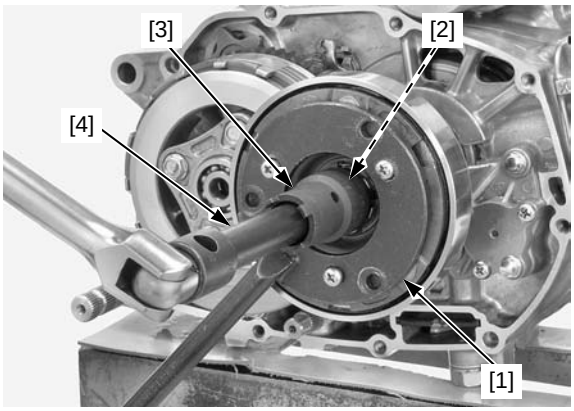


Install the special tool using proper bolts or screws.

TOOL:
[1] Clutch Holder P.D. 63/77 07HMB-HB70100

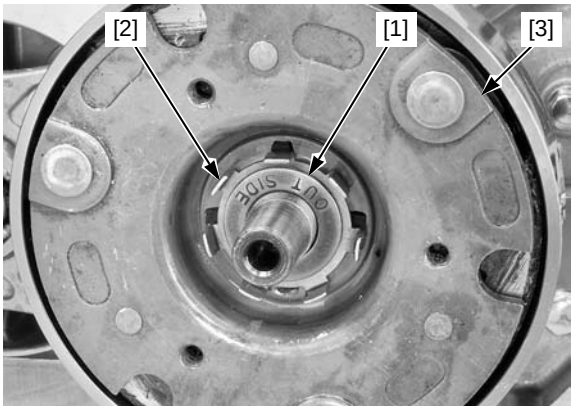
Remove the centrifugal clutch lock nut [2] using the special tools.

TOOLS:
[3] Locknut Wrench 5.5 x 2.5/30 mm 07716-0020100
[4] Extension Bar/Handle 07716-0020500

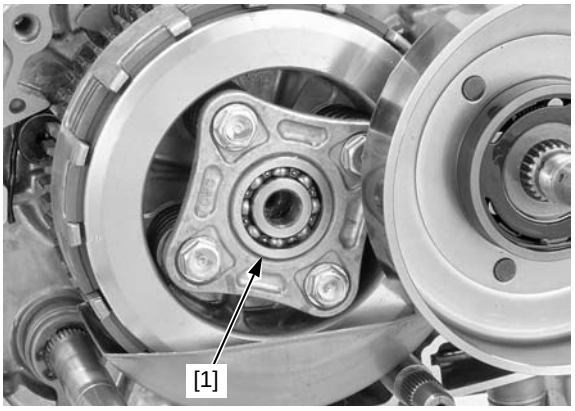


Remove the washer [1] and lock washer [2].

Remove the clutch weight assembly [3].



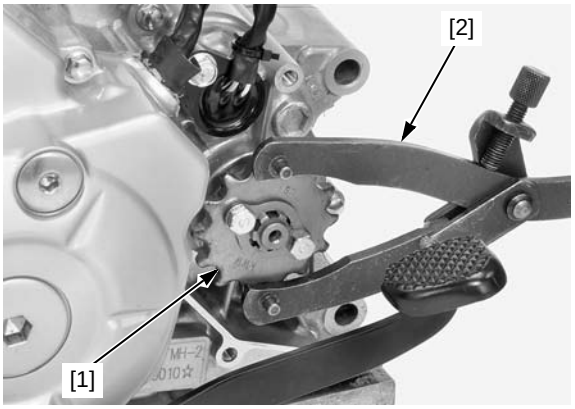
Remove the clutch lifter bearing [1].



Shift the transmission in gear.

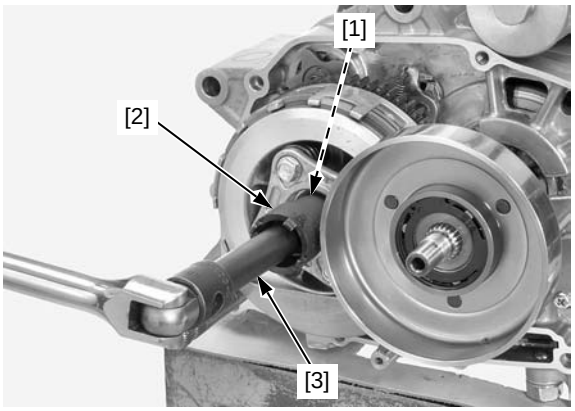
Hold the drive sprocket [1] using the special tool.

TOOL:
[2] Universal Holder 07725-0030000



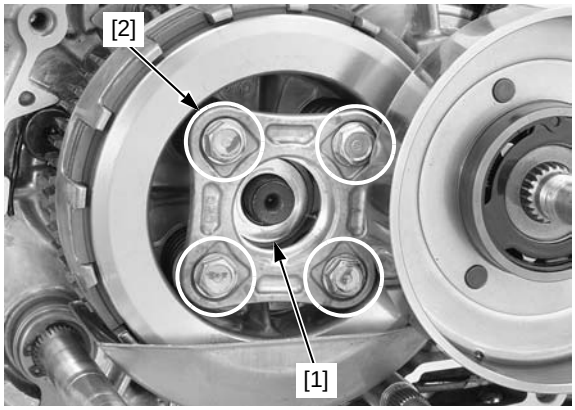
While holding the drive sprocket, remove the clutch center lock nut [1] using the special tools.

TOOLS:
[2] Locknut Wrench 5.5 x 2.5/30 mm 07716-0020100
[3] Extension Bar/Handle 07716-0020500

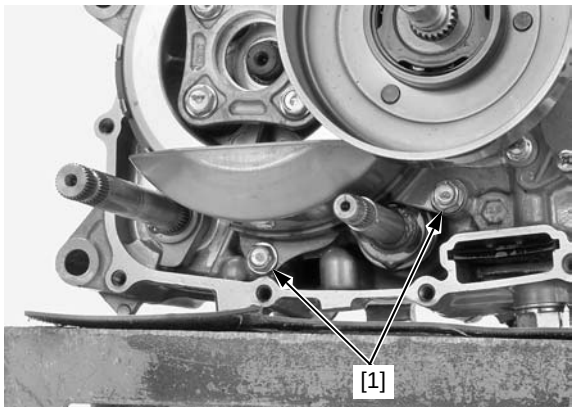


Remove the washer [1].

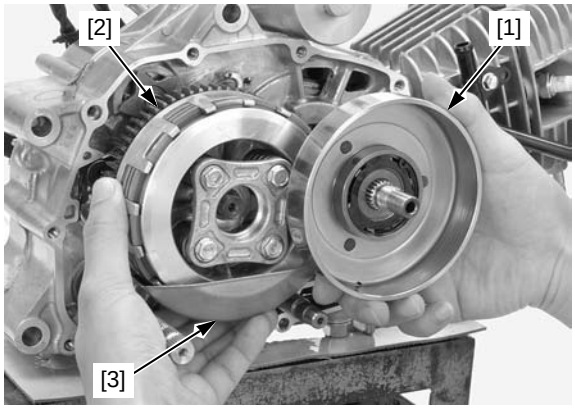
Loosen the clutch lifter plate bolts [2] alternately in several steps.



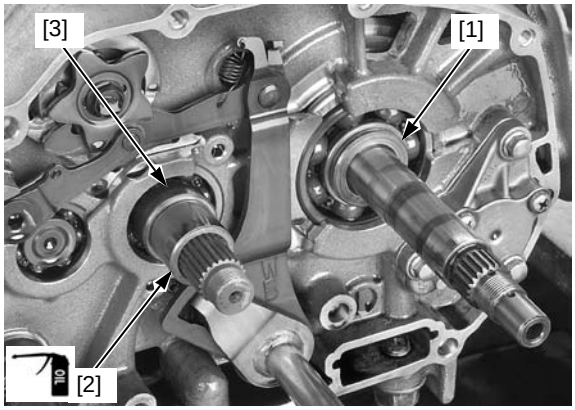
Remove the oil separator plate mounting bolts [1].



Remove the centrifugal clutch outer [1], manual clutch [2] and oil separator plate [3] as an assembly.



Remove the collar [1] from the crankshaft.
Remove the clutch outer guide [2] and collar [3] from the mainshaft.



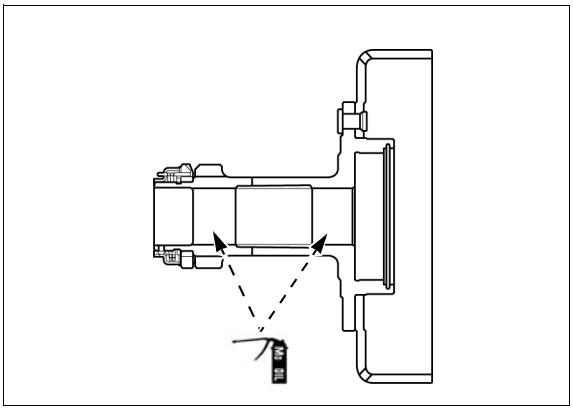
INSTALLATION

Install the collar onto the mainshaft [3].

Apply engine oil to the clutch outer guide [2] outer surface.
Install the clutch outer guide onto the mainshaft.

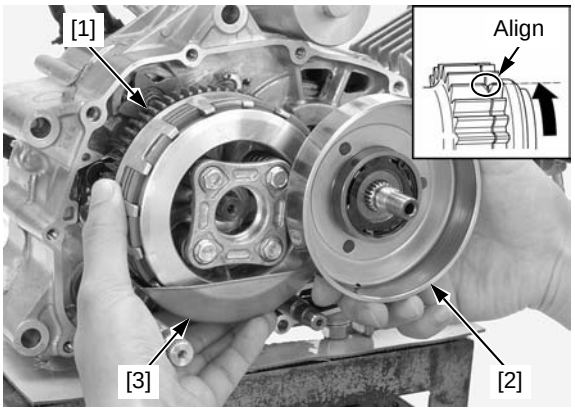
Install the collar [1] onto the crankshaft.

Apply molybdenum disulfide oil to the primary drive gear inner surface.

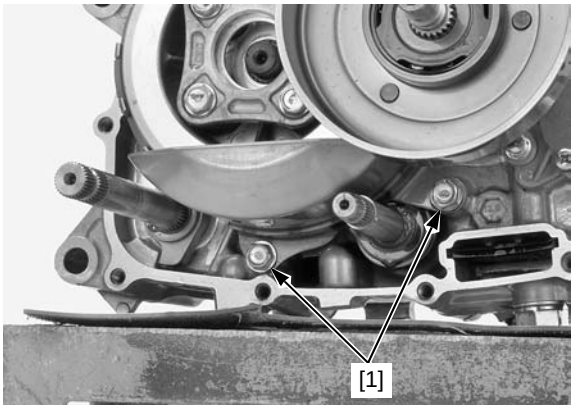


Align the cut-outs of the primary drive gear and sub-gear as shown, then engage the primary drive/driven gears.

Install the manual clutch [1], centrifugal clutch outer [2] and oil separator plate [3] as an assembly.



Install and tighten the oil separator plate mounting bolts [1].

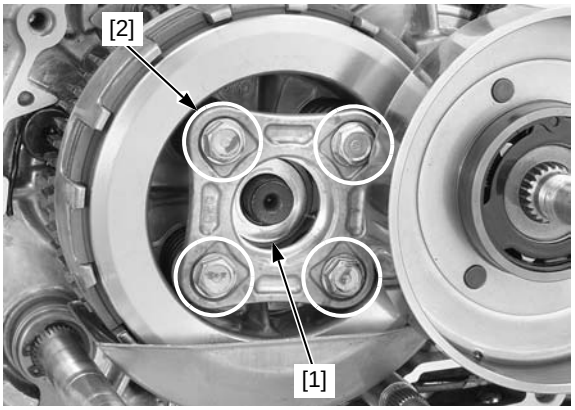


Install the washer [1] onto the mainshaft.

Tighten the bolts alternately in several steps.

Tighten the clutch lifter plate bolts [2] to the specified torque.

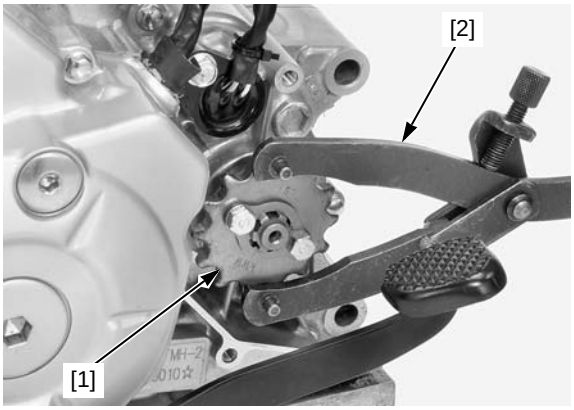
TORQUE: 12 N·m (1.2 kgf·m)



Shift the transmission in gear.

Hold the drive sprocket [1] using the special tool [2].

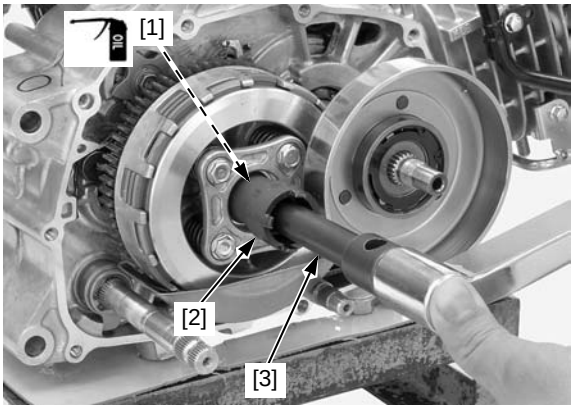
TOOL:
[2] Universal Holder 07725-0030000



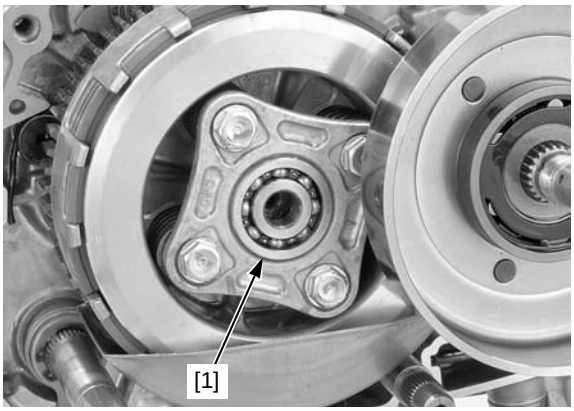
Apply engine oil to the clutch center lock nut [1] threads and seating surface.
Install the clutch center lock nut.
While holding the drive sprocket, tighten the clutch center lock nut to the specified torque using the special tools.

TOOLS:
[2] Locknut Wrench 5.5 x 2.5/30 mm 07716-0020100
[3] Extension Bar/Handle 07716-0020500

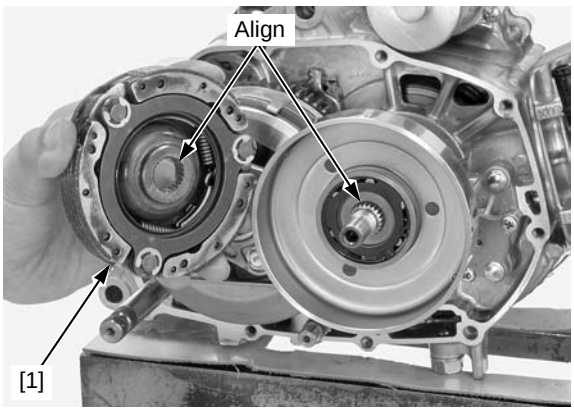
TORQUE: 54 N·m (5.5 kgf·m)



Install the clutch lifter bearing [1].

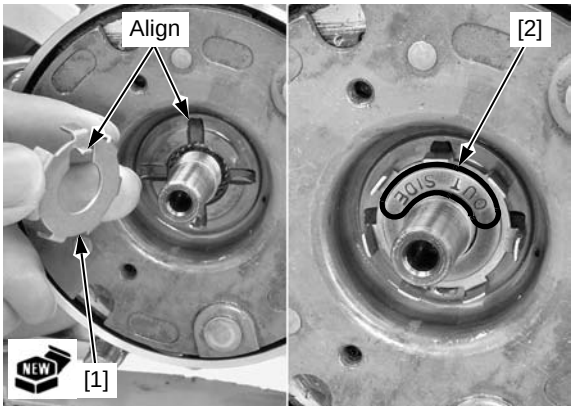


Install the clutch weight assembly [1] into the clutch outer while aligning the splines of the clutch weight assembly and crankshaft.



Install a new lock washer [1] onto the crankshaft aligning its inner tab with the groove of the clutch weight assembly.

Install the washer with its "OUT SIDE" mark [2] facing out.



Apply engine oil to the centrifugal clutch lock nut [1] threads and seating surface.

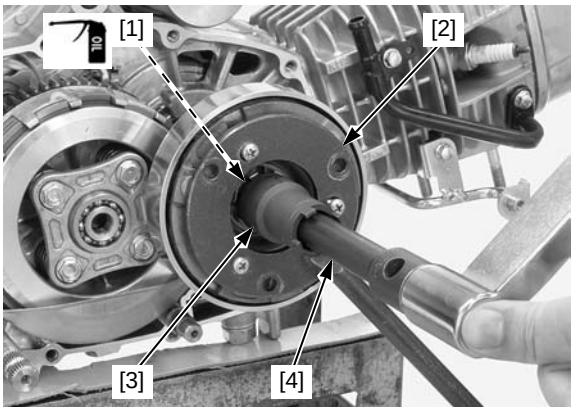
Install the special tool using proper bolts or screws.

TOOL:
[2] Clutch Holder P.D. 63/77 07HMB-HB70100

Install and tighten the centrifugal clutch lock nut to the specified torque using the special tools.

TOOLS:
[3] Locknut Wrench 5.5 x 2.5/30 mm 07716-0020100
[4] Extension Bar/Handle 07716-0020500

TORQUE: 54 N·m (5.5 kgf·m)



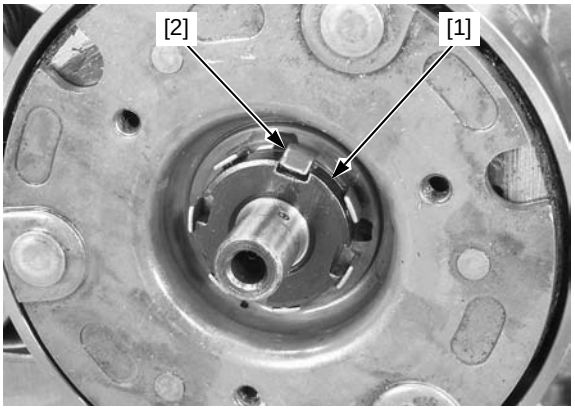
If any of the centrifugal clutch lock nut [1] groove is not aligned with the lock washer tab [2], further tighten the centrifugal clutch lock nut and align the centrifugal clutch lock nut groove with the lock washer tab.

Bend the lock washer tab against the centrifugal clutch lock nut groove.

Install the following:

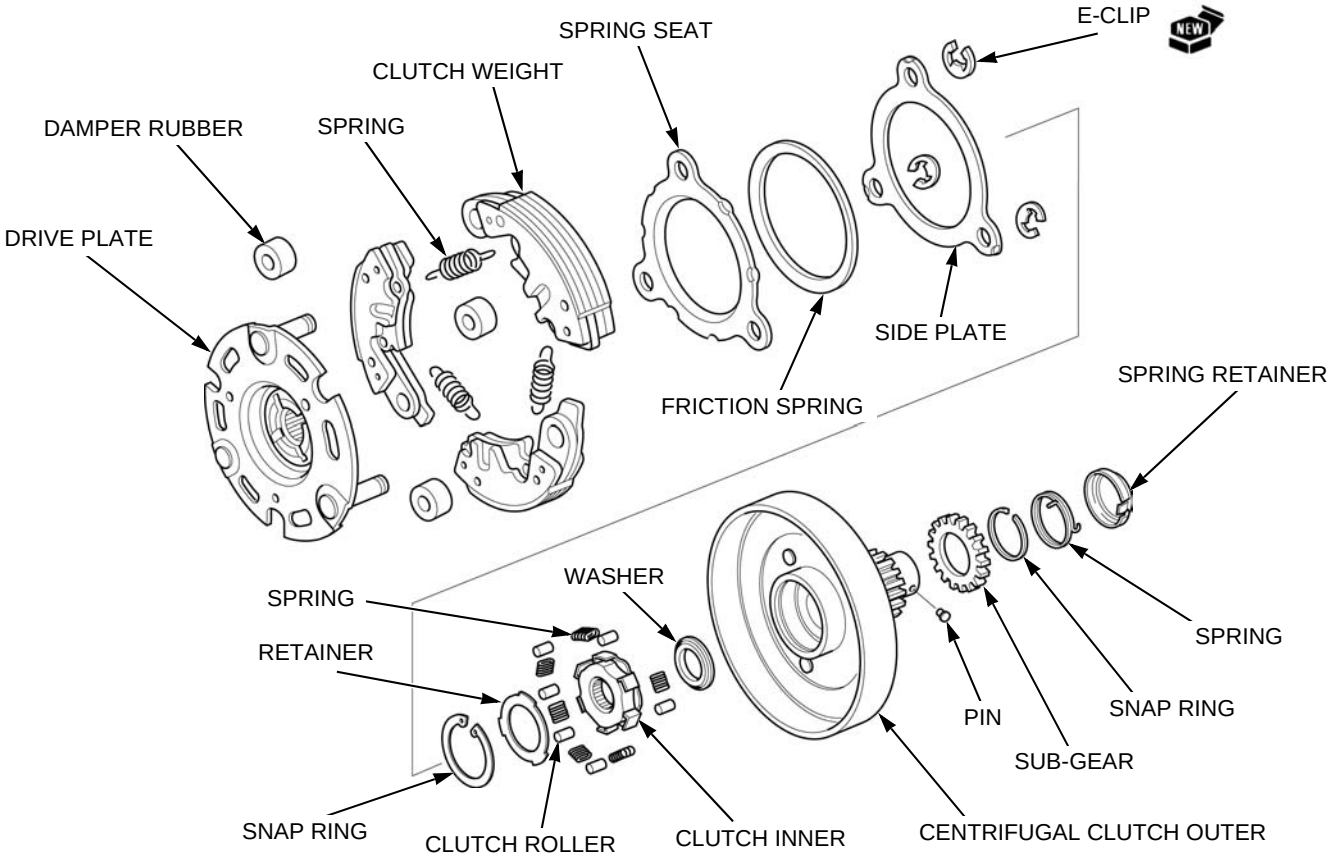
– Engine oil centrifugal filter cover (page 3-7)
– Right crankcase cover (page 10-4)
– Drive chain onto the drive sprocket (page 13-5)

Adjust the drive chain (page 3-10).



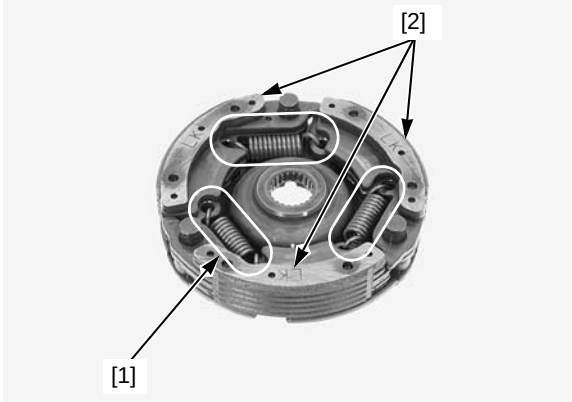
CENTRIFUGAL CLUTCH DISASSEMBLY/ASSEMBLY

Disassemble and assemble the centrifugal clutch as following illustration.

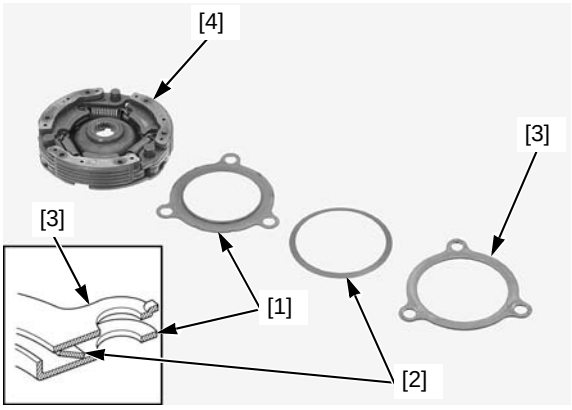


Hook the springs [1] to the clutch weights [2] so that their open ends facing the drive plate side.

Install the clutch weights and springs onto the drive plate as shown.

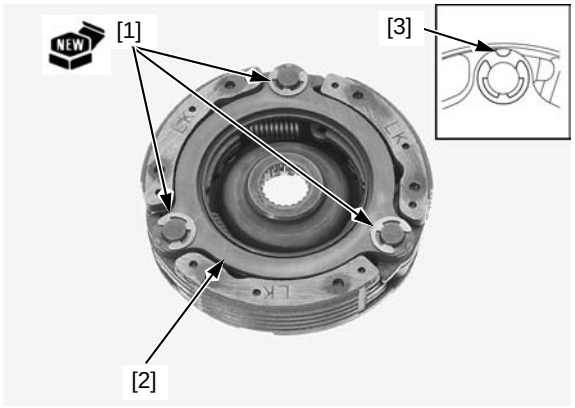


Install the spring seat [1], friction spring [2] and side plate [3] to the clutch weight assembly [4] as shown.



Align the open end of the E-clips and bosses [3] of the side plate.

Install new E-clips [1] while compressing the side plate [2].



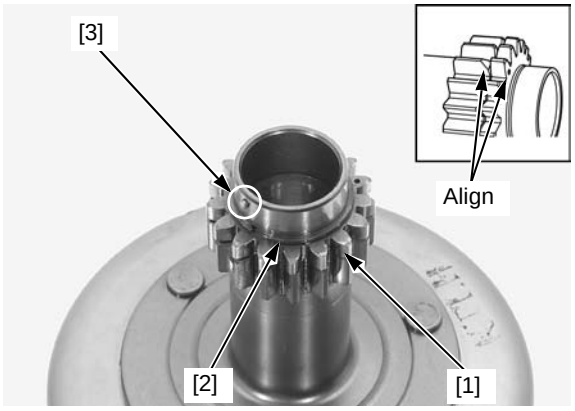
Install the sub-gear [1] by aligning its hole and primary drive gear cut-out.

Check that the snap ring is firmly seated in the groove.

Install the snap ring [2].

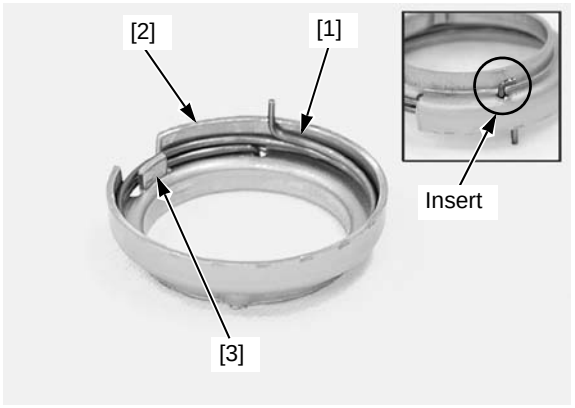
Be careful not to lose the pin.

Install the pin [3].

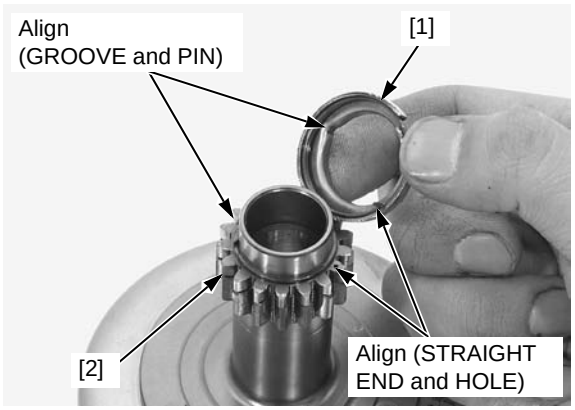


CLUTCH OUTER/SUB-GEAR

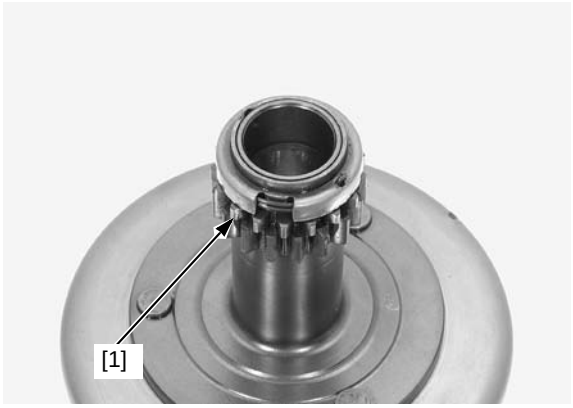
Insert the bent end of the spring [1] into the hole on the spring retainer [2].
Coil the spring into the spring retainer, making sure that the spring is set between the retainer and tab [3].



Install the spring retainer/spring [1] to the clutch outer while setting the straight end of the spring into the hole on the sub-gear [2] and aligning the retainer groove with the pin.



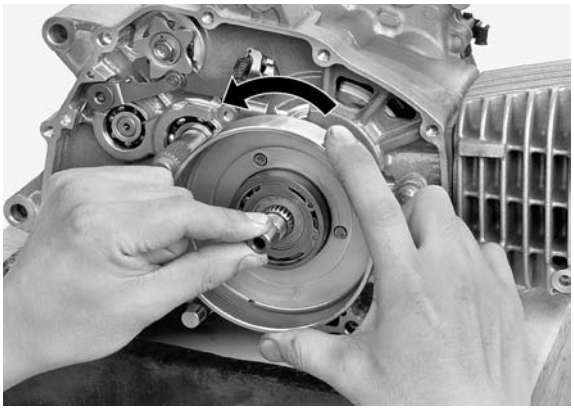
Check the sub-gear [1] operation by moving it and make sure that it returns without binding.



Temporarily install the centrifugal clutch outer to the crankshaft.

Hold the crankshaft and turn the centrifugal clutch outer by hand.
Make sure that the centrifugal clutch outer only turns counterclockwise as shown and does not turn clockwise.

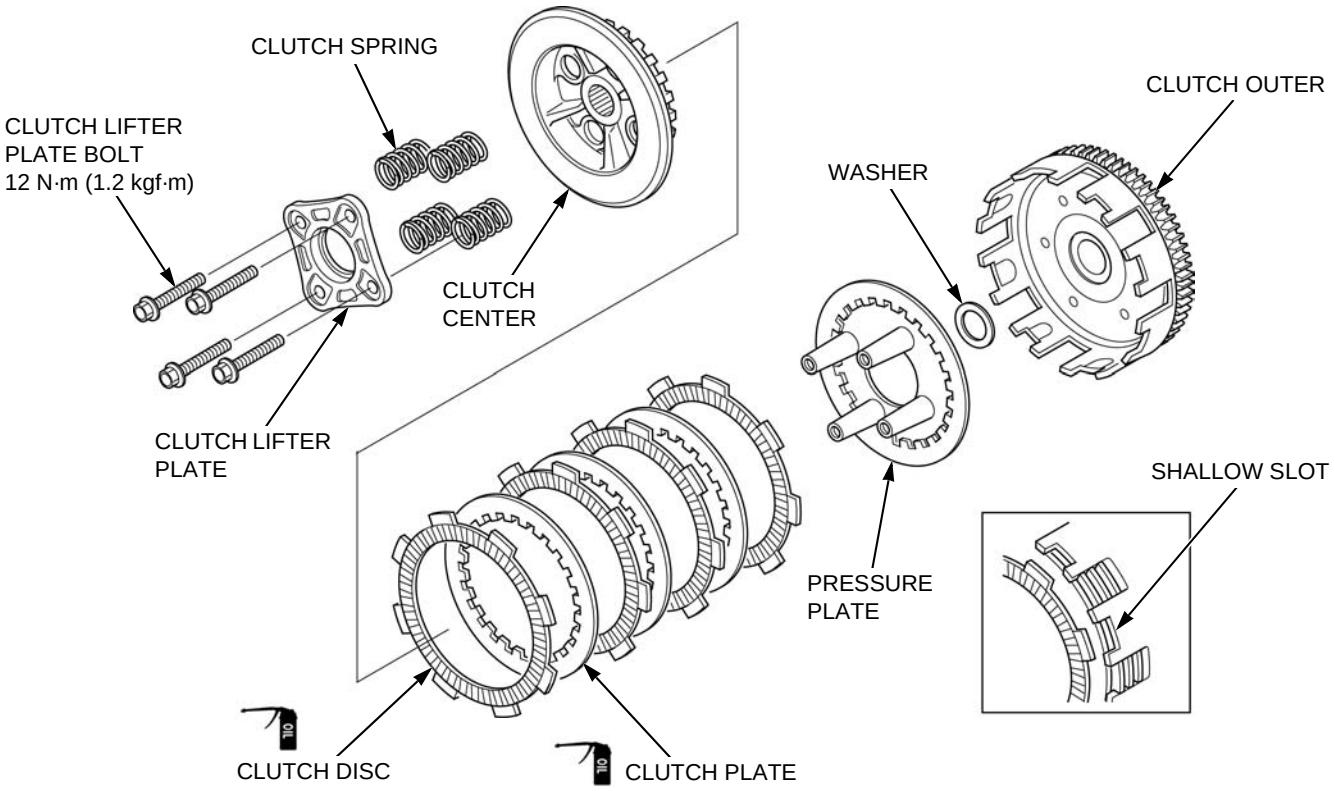
Remove the centrifugal clutch outer from the crankshaft.



MANUAL CLUTCH DISASSEMBLY/ ASSEMBLY

Disassemble and assemble the manual clutch as following illustration.

- Replace the clutch discs and plates as a set.
- Install the last one clutch disc to the shallow slots of the clutch outer.



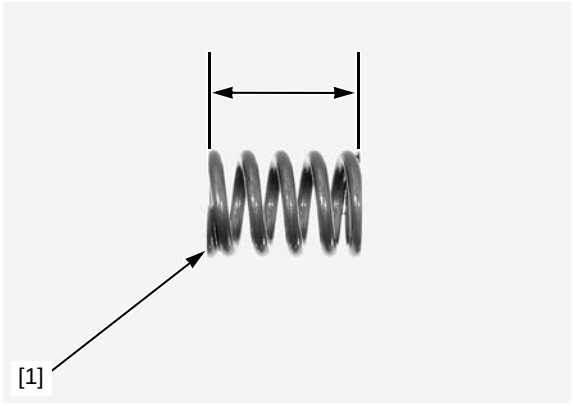
MANUAL CLUTCH INSPECTION

CLUTCH LIFTER BEARING

Temporarily install the clutch lifter bearing to the clutch lifter plate.

Turn the inner race of the clutch lifter bearing with your finger.
The bearing should turn smoothly and quietly.
Also check that the bearing outer race of the bearing fits tightly in the clutch lifter plate.

Replace the bearing if the inner race does not turn smoothly, quietly, or if the outer race fits loosely in the clutch lifter plate.

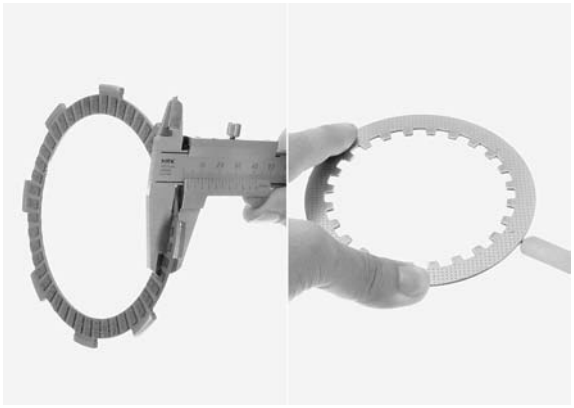


CLUTCH SPRING

Check the spring for fatigue or other damage.

Measure the clutch spring free length.

SERVICE LIMIT:
LA, MX, AG, PE, CO: 32.4 mm
DK, IIDK, IIIDK, NR, IINR, IIINR: 26.4 mm



CLUTCH DISC/PLATE

Replace the clutch discs and plates as a set.

Replace the clutch discs if they show signs of scoring or discoloration.

Measure the thickness of each clutch disc.

SERVICE LIMIT: 2.6 mm

Check each clutch plate for warpage on a surface plate using a feeler gauge.

SERVICE LIMIT: 0.20 mm

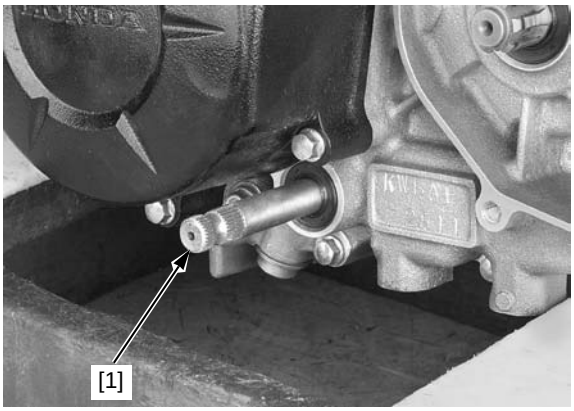
GEARSHIFT LINKAGE

REMOVAL

Remove the following:

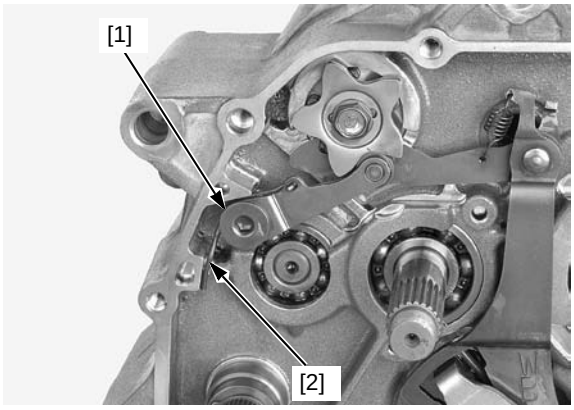
– Clutch (page 10-6)
– Gearshift pedal (page 11-3)

Clean the gearshift spindle [1] thoroughly to prevent the dirt or dust from entering the engine.

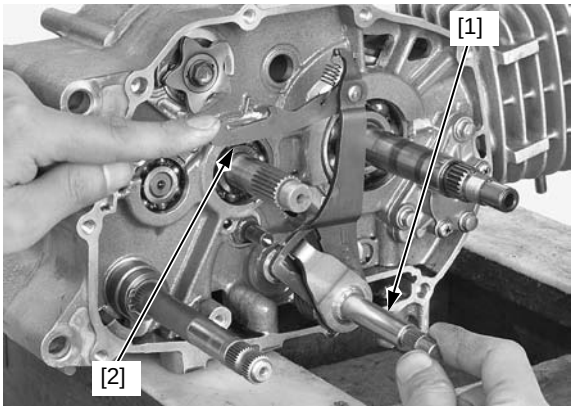


Remove the following:

– Shift drum stopper arm/bolt [1]
– Return spring [2]

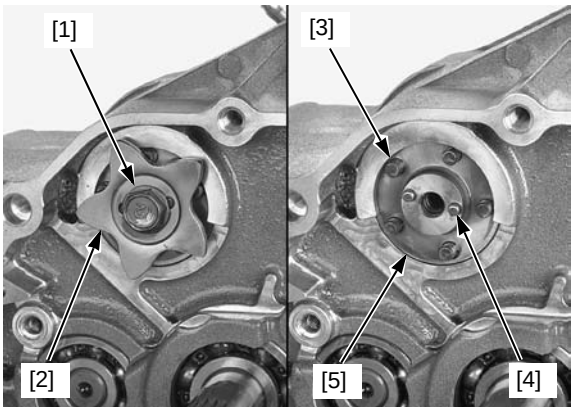


Remove the gearshift spindle [1] by holding down the gearshift arm [2] as shown.



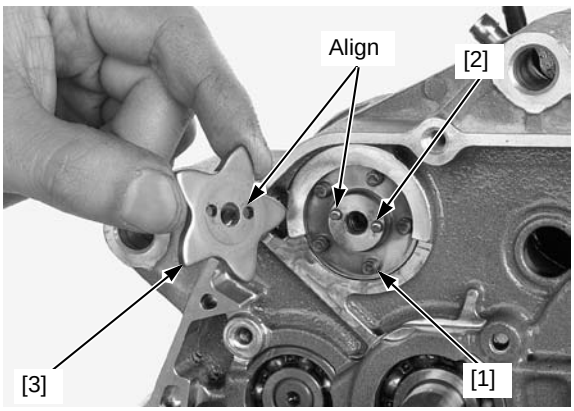
Remove the bolt [1] and the gearshift cam plate [2].

Remove the five gearshift drum pins [3] and two gearshift cam plate pins [4] from the gearshift drum [5].



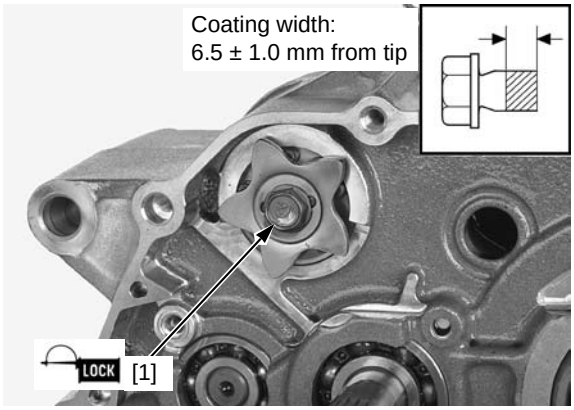
INSTALLATION

Install the five gearshift drum pins [1] and two gearshift cam plate pins [2] to the holes on the gearshift drum.
Install the gearshift cam plate [3] while aligning the holes on the plate with the gearshift cam plate pins.



Apply locking agent to the gearshift cam plate bolt [1] as specified, then install and tighten it to the specified torque.

TORQUE: 17 N·m (1.7 kgf·m)



Check the following:

– Gearshift spindle for bend, wear or damage
– Gearshift arm spring and return spring for damage or fatigue
– Gearshift arm for wear or damage

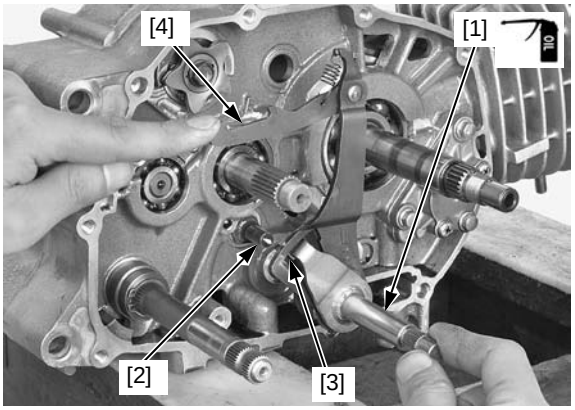
Inspect the gearshift spindle oil seal for deterioration or damage, replace if necessary.

Apply grease to the oil seal lip.

If replacing the oil seal, install it until it is fully seated.

Apply engine oil to the gearshift spindle journal.
Install the gearshift spindle [1] so that the shift return spring pin [2] is located between both ends [3] of the return spring as shown.

Insert the gearshift spindle completely while holding down the gearshift arm [4] as shown.



Apply locking agent to the threads of the shift drum stopper arm/bolt [1] as specified.

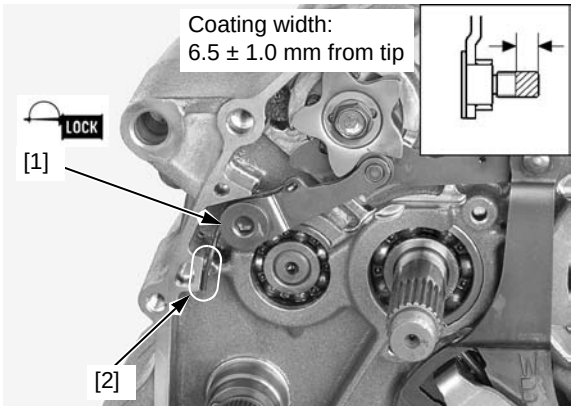
Set the return spring end [2] along the crankcase wall as shown.

Install the stopper arm/bolt, then tighten it to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m)

Install the following:

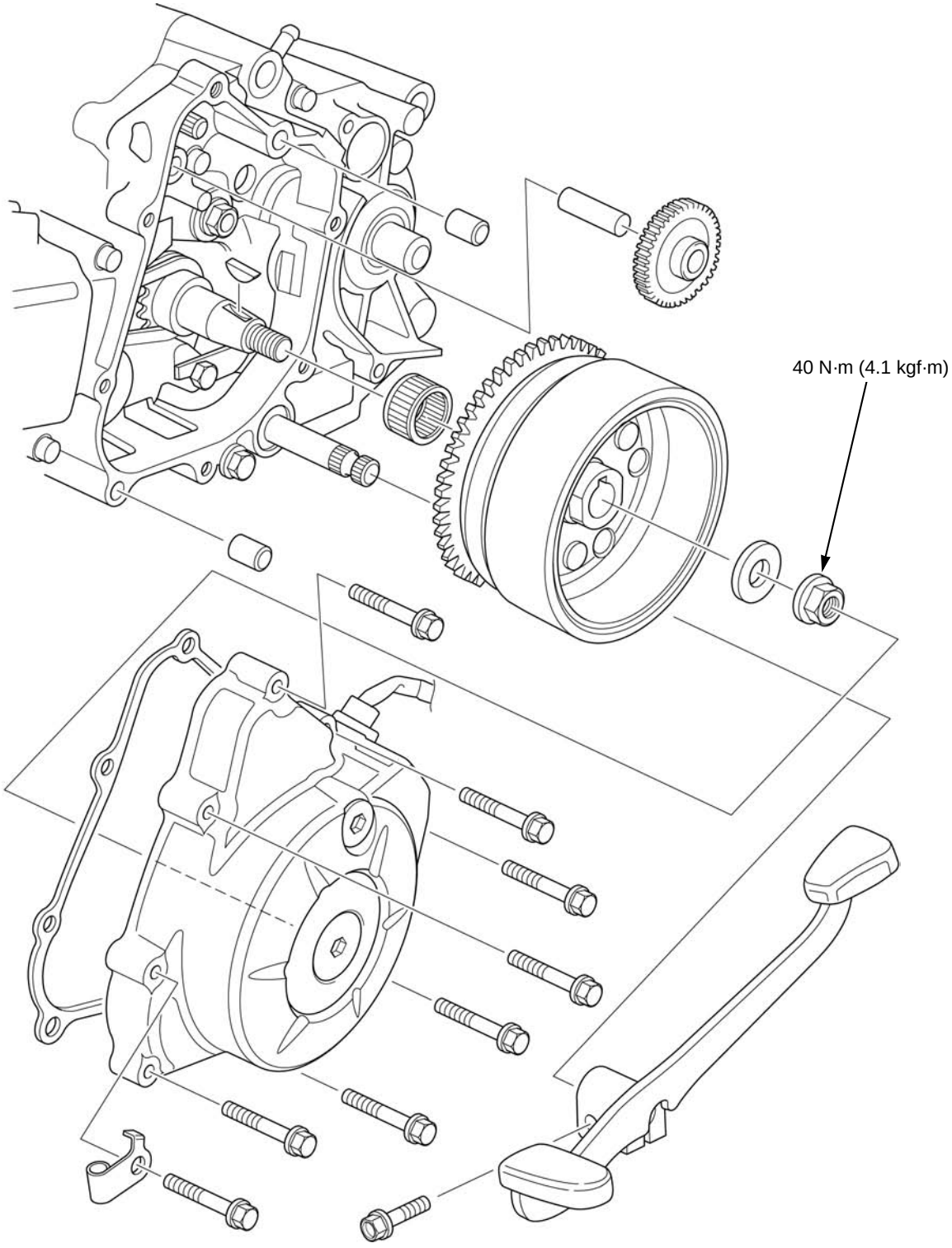
– Clutch (page 10-8)
– Gearshift pedal (page 11-4)



MEMO

11. ALTERNATOR/STARTER CLUTCH

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers service of the alternator and starter clutch.
- These services can be done with the engine installed in the frame.
- Refer to procedure for alternator inspection (page 16-8)
- Refer to procedure for ignition pulse generator inspection (page 4-5)

LEFT CRANKCASE COVER

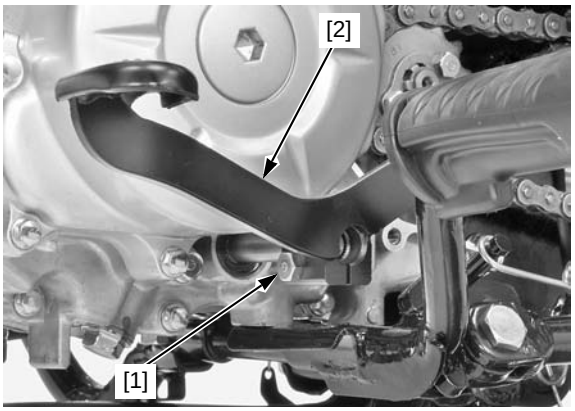
REMOVAL

Drain the engine oil (page 3-7).

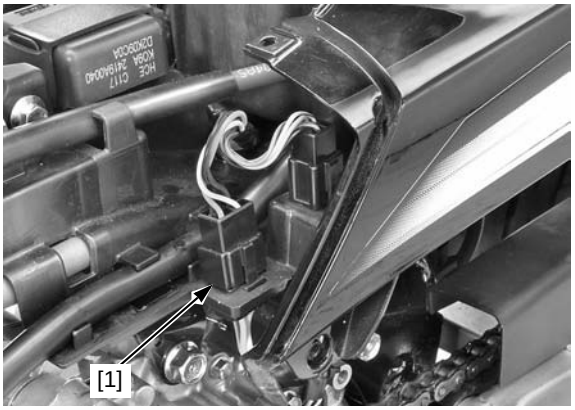
Remove the following:

– Front top cover (page 2-5)
– Left crankcase rear cover (page 2-12)

Remove the bolt [1] and gearshift pedal [2].



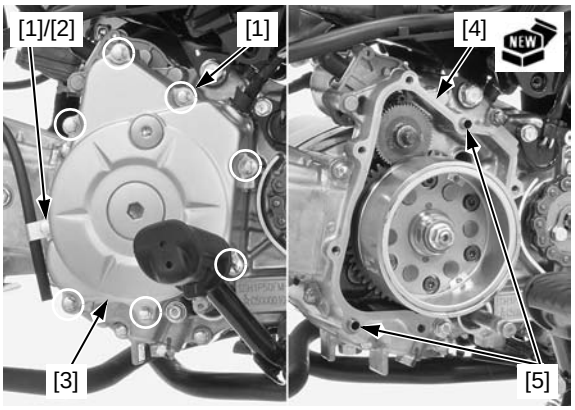
Disconnect the alternator 4P (Black) connector [1].



Loosen the left crankcase cover bolts [1] in a crisscross pattern in several steps.
Remove the bolts [1] and hose clamp [2].

The left crankcase cover (stator) is magnetically attracted to the flywheel, be careful during removal/ installation.

Remove the left crankcase cover [3], gasket [4] and dowel pins [5].



INSTALLATION

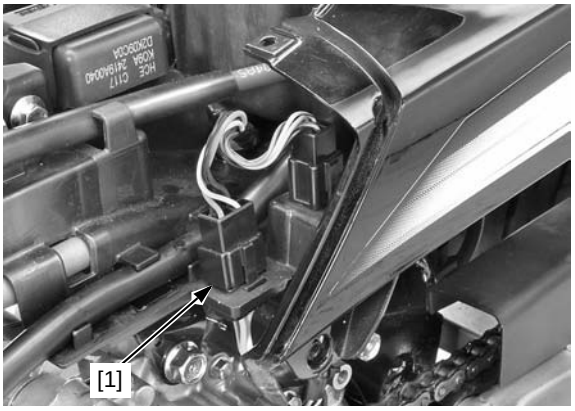
Clean any gasket material from the left crankcase cover mating surface.

Install the dowel pins and a new gasket.

Apply engine oil to the reduction gear journal of the left crankcase cover.

Install the left crankcase cover.
Install the clamp and bolts, then tighten the bolts in a crisscross pattern in several steps.

Connect the alternator 4P (Black) connector [1].

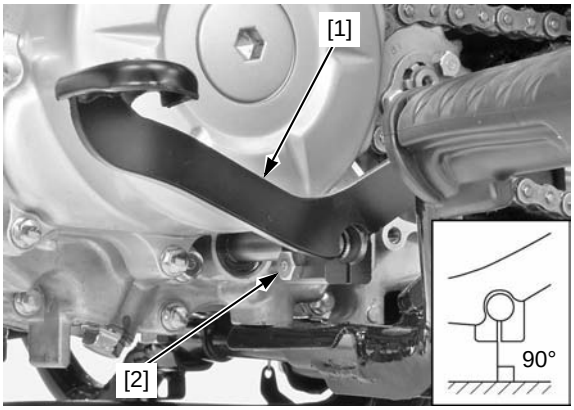


Install the gearshift pedal [1] so that the groove becomes perpendicular to ground as shown.
Install and tighten the bolt [2].

Install the following:

– Left crankcase rear cover (page 2-12)
– Front top cover (page 2-5)

Fill the engine with the recommended engine oil (page 3-7).

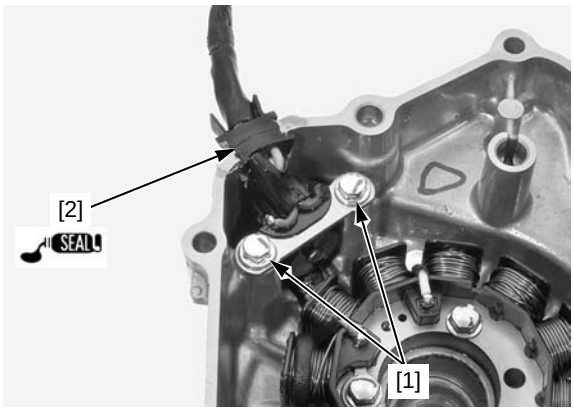


STATOR

REMOVAL/INSTALLATION

Remove the left crankcase cover (page 11-3).

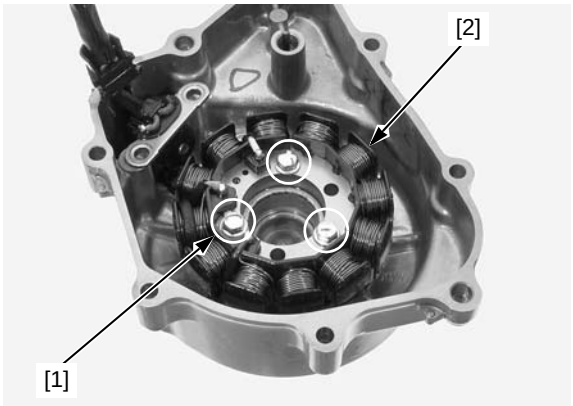
Remove the ignition pulse generator mounting bolts [1] and release the wire grommet [2] from the left crankcase cover.



Remove the stator mounting bolts [1], then remove the stator [2] from the left crankcase cover.

Installation is in the reverse order of removal.

- Apply liquid sealant (THREE BOND 1215 or 1207B or equivalent) to the wire grommet seating surface and install the grommet into the cover groove.

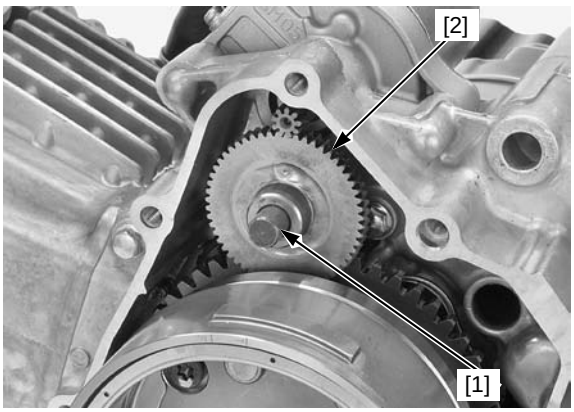


FLYWHEEL/STARTER CLUTCH

REMOVAL

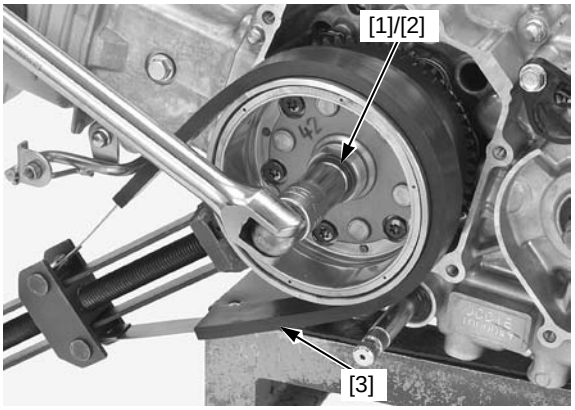
Remove the left crankcase cover (page 11-3).

Remove the shaft [1] and starter reduction gear [2].



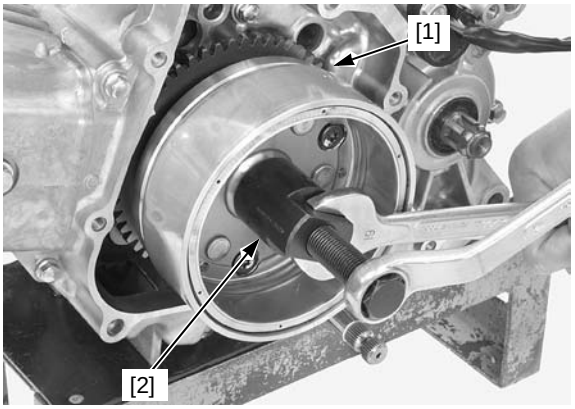
Remove the flywheel nut [1] and washer [2] using the special tool.

TOOL:
[3] Holder Fly Wheel 07725-0040001



Remove the flywheel/starter clutch [1] using the special tool.

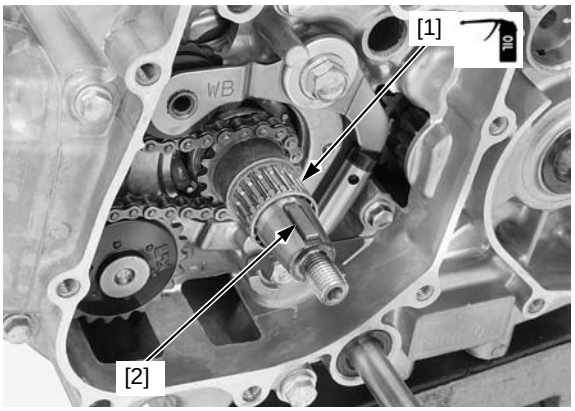
TOOL:
[2] Inside Screw Puller 30 x 1.5 07KMC-HE00100



Remove the needle bearing [1].

Be careful not to damage the key groove and crankshaft. Do not lose the woodruff key.

Remove the woodruff key [2] from the crankshaft groove.



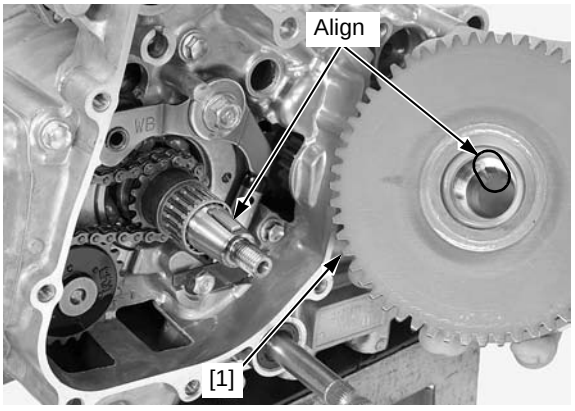
INSTALLATION

Install the woodruff key in the crankshaft key groove.

Apply engine oil to the needle bearing and install it to the crankshaft.

Wipe any oil off the mating surface of the crankshaft and flywheel.

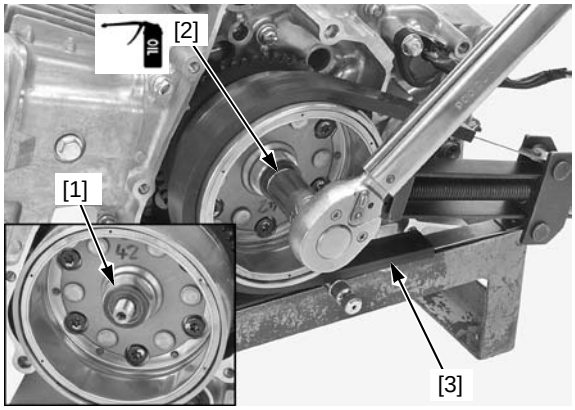
Install the flywheel/starter clutch [1] to the crankshaft, aligning the key way with the woodruff key.



Install the washer [1].
Apply engine oil to the flywheel nut [2] threads and seating surface, then install it.
Hold the flywheel using the special tool and tighten the flywheel nut to the specified torque.

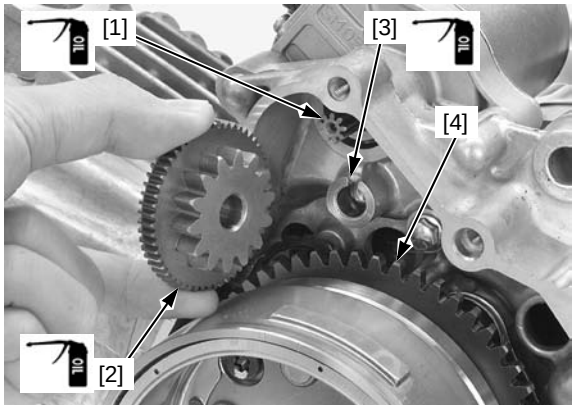
TOOL:
[3] Holder Fly Wheel 07725-0040001

TORQUE: 40 N·m (4.1 kgf·m)



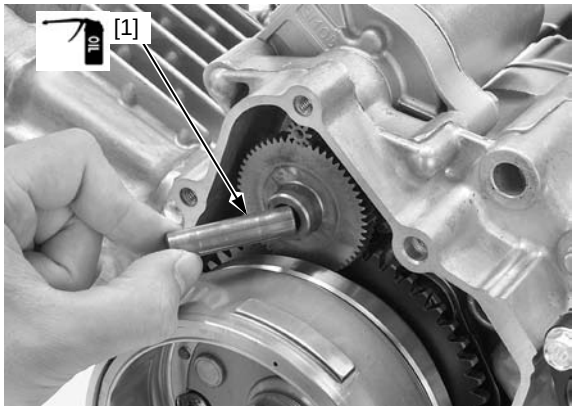
Apply engine oil to the starter motor gear [1] tooth.

Apply engine oil to the starter reduction gear [2] rolling surface and journal [3].
Install the starter reduction gear with aligning the starter motor gear and starter driven gear [4].



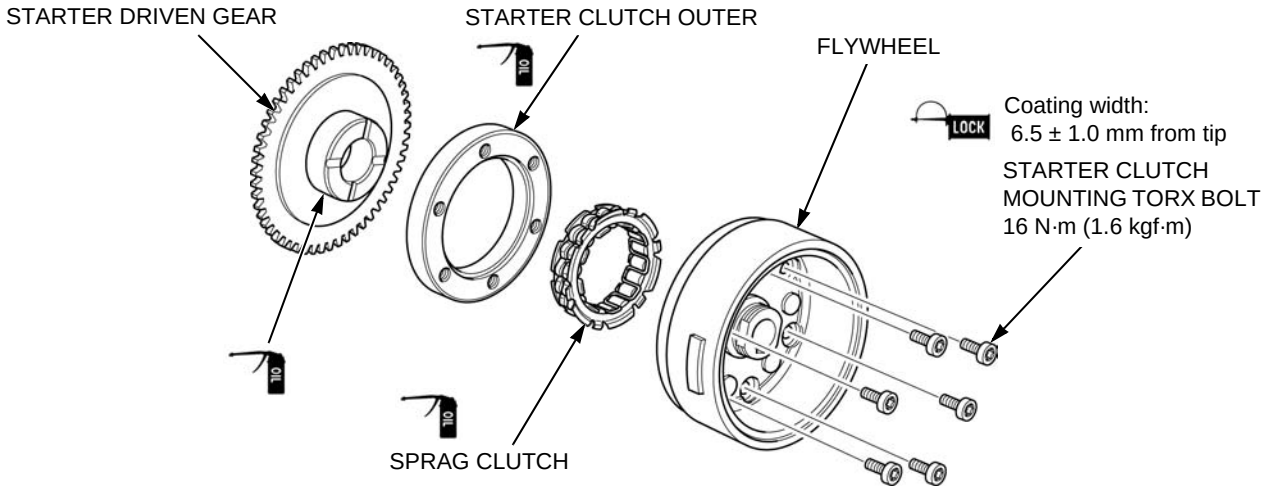
Apply engine oil to the starter reduction gear shaft [1] rolling surface.
Install the shaft into the reduction gear.

Install the left crankcase cover (page 11-3).



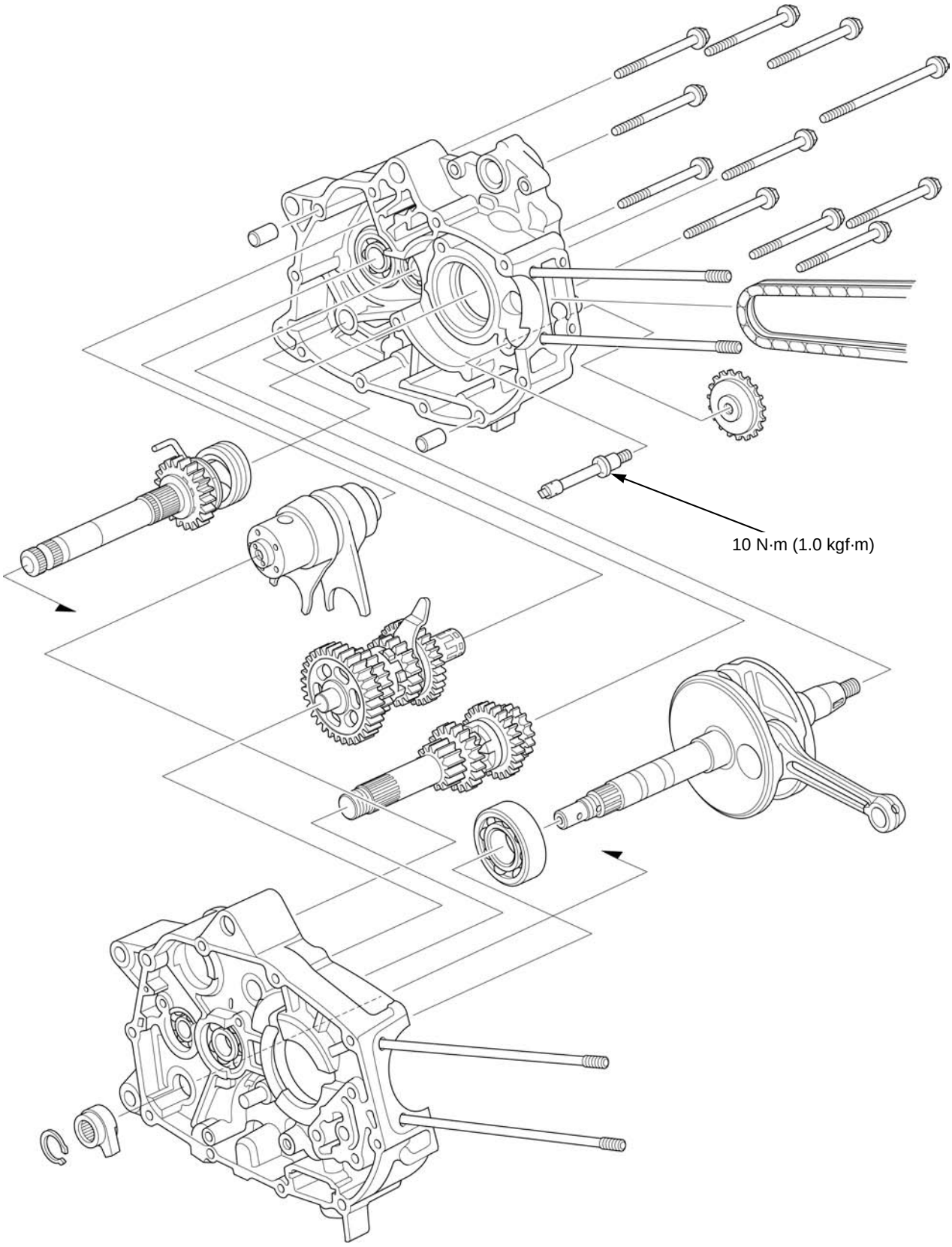
STARTER CLUTCH DISASSEMBLY/ASSEMBLY

Disassemble and assemble the starter clutch as following illustration.



12. CRANKSHAFT/TRANSMISSION/KICKSTARTER

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- The crankcase must be separated to service the crankshaft, transmission, kickstarter and cam chain guide sprocket.
- The following parts must be removed before separating the crankcase.
  - Engine (page 13-3)
  - Stator (page 11-4)
  - Flywheel (page 11-4)
  - Clutch (page 10-6)
  - Gearshift linkage (page 10-15)
  - Cam chain tensioner (page 8-14)
  - Cylinder head (page 8-8)
  - Cylinder/piston (page 9-3)
  - Oil pump (page 7-3)
  - Starter motor (page 5-4)
  - Gear position switch (page 17-12)
- Be careful not to damage the crankcase mating surfaces when servicing.
- Prior to assembling the crankcase halves, apply sealant to the mating surface. Wipe off excess sealant thoroughly.
- Clean all disassembled parts with clean solvent and dry them using compressed air before inspection.

TROUBLESHOOTING

Hard to shift
- Incorrect clutch adjustment (page 3-13)
- Bent shift forks
- Damaged shift fork
- Bent shift fork shaft
- Bent gearshift spindle (page 10-15)
- Damaged shift drum cam grooves
- Incorrect engine oil viscosity (page 3-7)

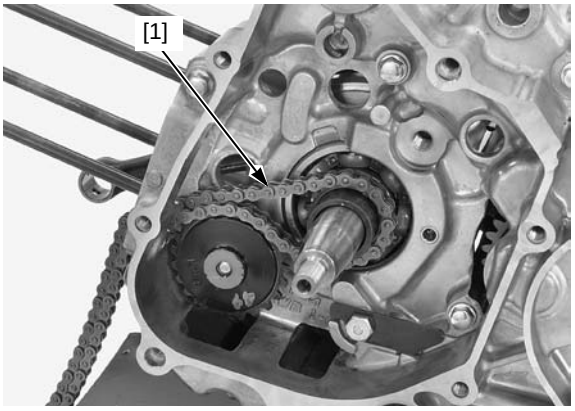
Transmission jumps out of gear
- Worn gear dogs and dog holes
- Broken shift drum stopper arm (page 10-15)
- Broken drum stopper arm spring (page 10-15)
- Broken gearshift spindle return spring (page 10-15)
- Worn or bent shift forks
- Worn gear shifter groove

Excessive noise
- Worn connecting rod big end bearing
- Worn crankshaft bearings
- Worn transmission bearings
- Worn or damaged transmission gears

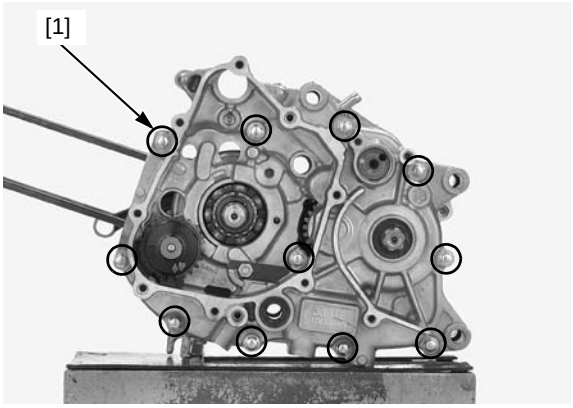
CRANKCASE SEPARATION/ASSEMBLY

Refer to Service Information (page 12-3) for removal of necessary parts before separating the crankcase.

Remove the cam chain [1] from the timing sprocket.



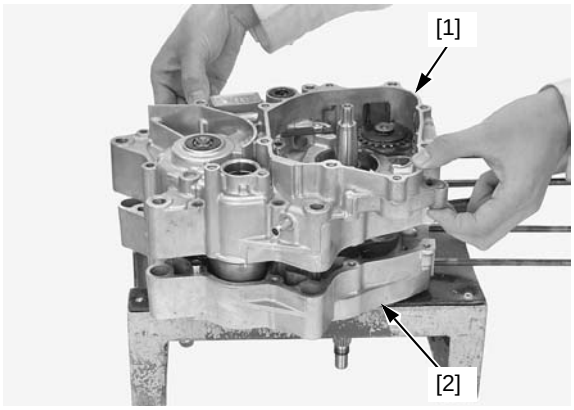
Loosen and remove the crankcase bolts [1] in a crisscross pattern in several steps.



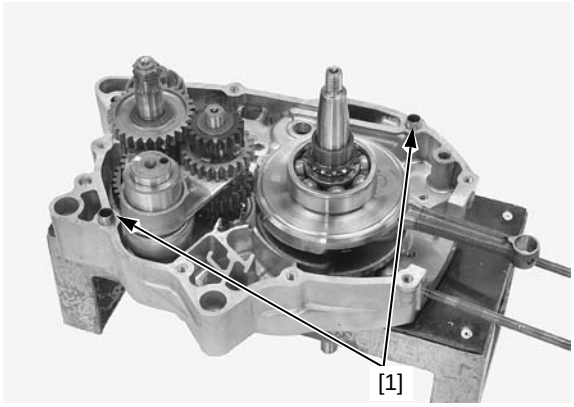
Place the left crankcase up.

Be careful not to damage the mating surfaces.

Carefully separate the left crankcase [1] from the right crankcase [2] while tapping them at several locations with a soft hammer.



Remove the dowel pins [1].



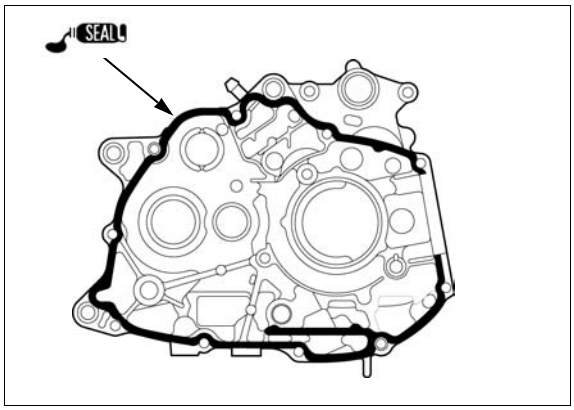
Clean off the left and right crankcase mating surfaces thoroughly, being careful not to damage them and check for damage.

Apply light but thorough coating of sealant (Three Bond 1215 or equivalent) to the left crankcase mating surface except the oil passage area as shown.

Assemble the crankcase in the reverse order of disassembly.

NOTE:

Refer to service information (page 12-3) for installation of the removed parts.

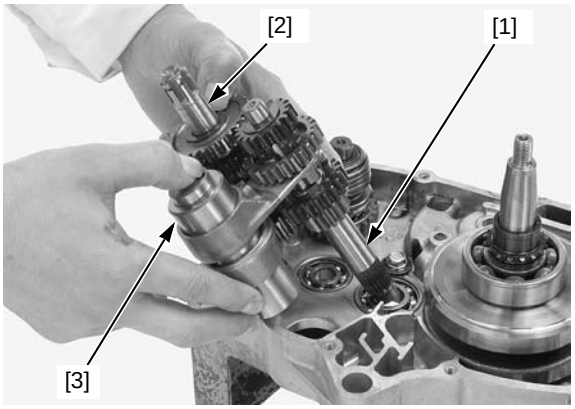


TRANSMISSION

REMOVAL

Separate the crankcase halves (page 12-3).

Remove the mainshaft [1], countershaft [2] and shift drum [3] as an assembly.



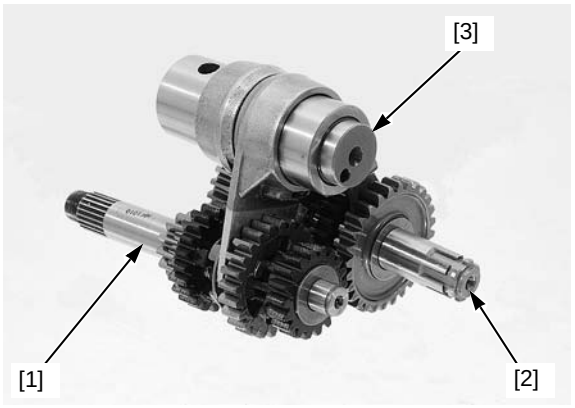
Do not expand the snap ring more than necessary for removal.

Disassemble the mainshaft [1], countershaft [2] and shift drum [3].

Clean all disassembled parts in solvent thoroughly.

NOTE:

Keep track of the disassembled parts (gears, bushings, drum lock plate, friction spring, washers and snap rings) by sliding them onto a tool or slipping them onto a piece of wire.



INSTALLATION

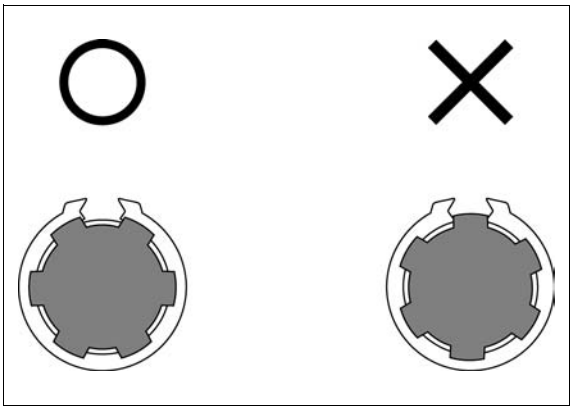
Clean all parts in solvent and dry them thoroughly.

Apply molybdenum disulfide oil to each rotating gear inner surface and C1 bushing whole surface to ensure initial lubrication.

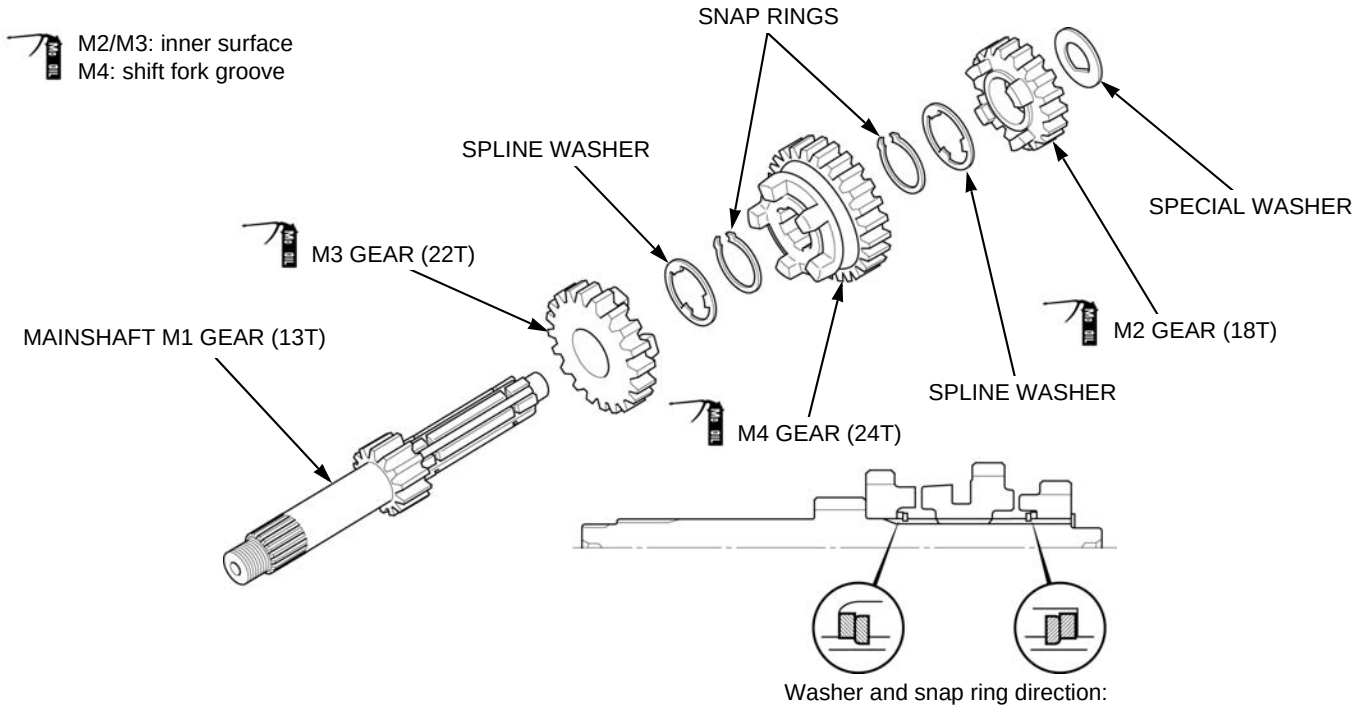
Assemble all parts into their original positions.

NOTE:

- Check the gears for freedom of movement or rotation on the shaft.
- Install the washers and snap rings with the chamfered edges facing the thrust load side.
- Do not reuse a worn snap ring which could easily spin in the groove.
- Check that the snap rings are seated in the grooves and align their end gaps with the grooves of the spline.
- Check the special washers are seated in the shaft grooves.
- Apply engine oil to the transmission gear teeth, bearing rolling surface, shift drum whole surface and shift fork inner surfaces.

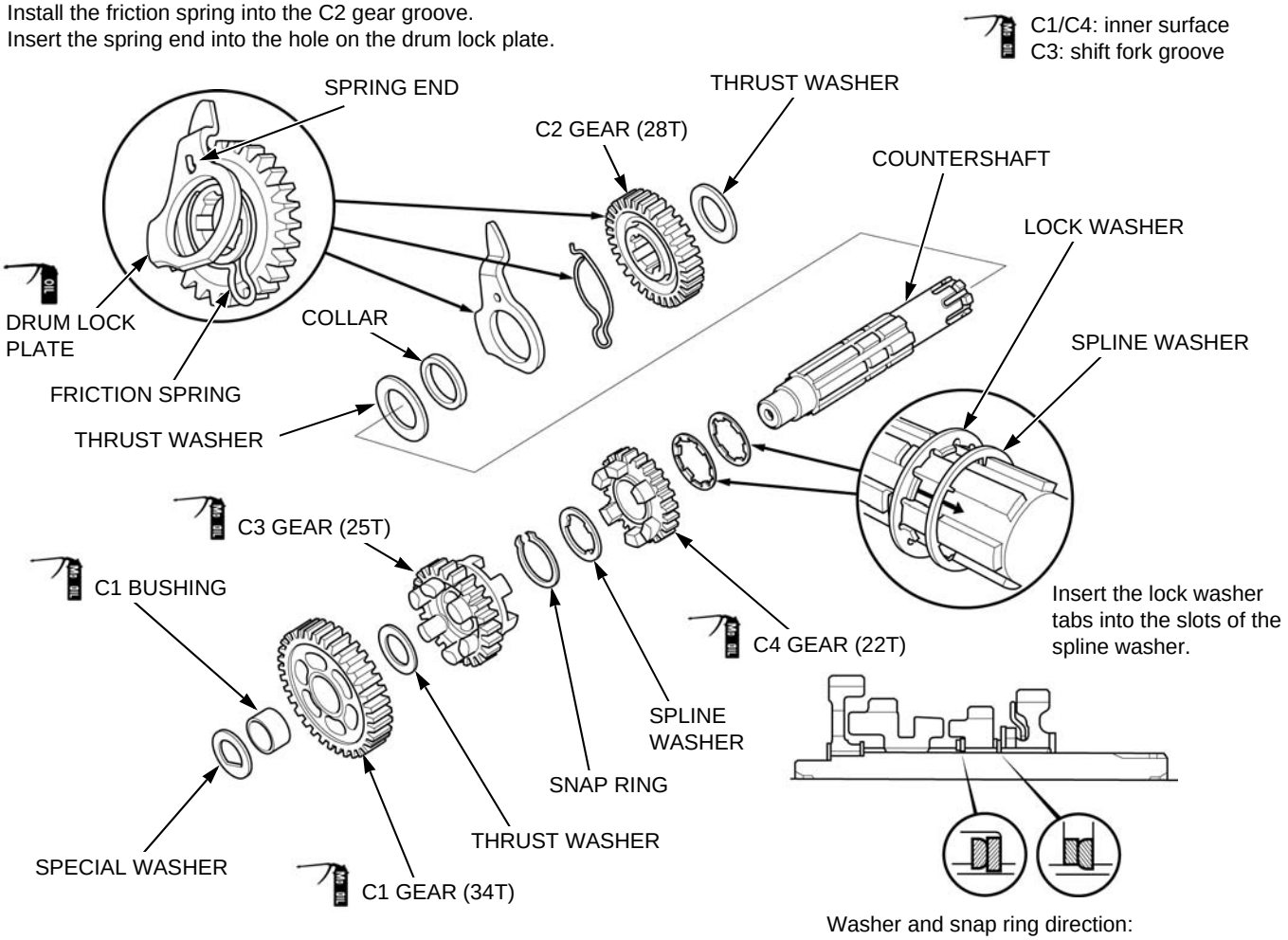


MAINSHAFT:

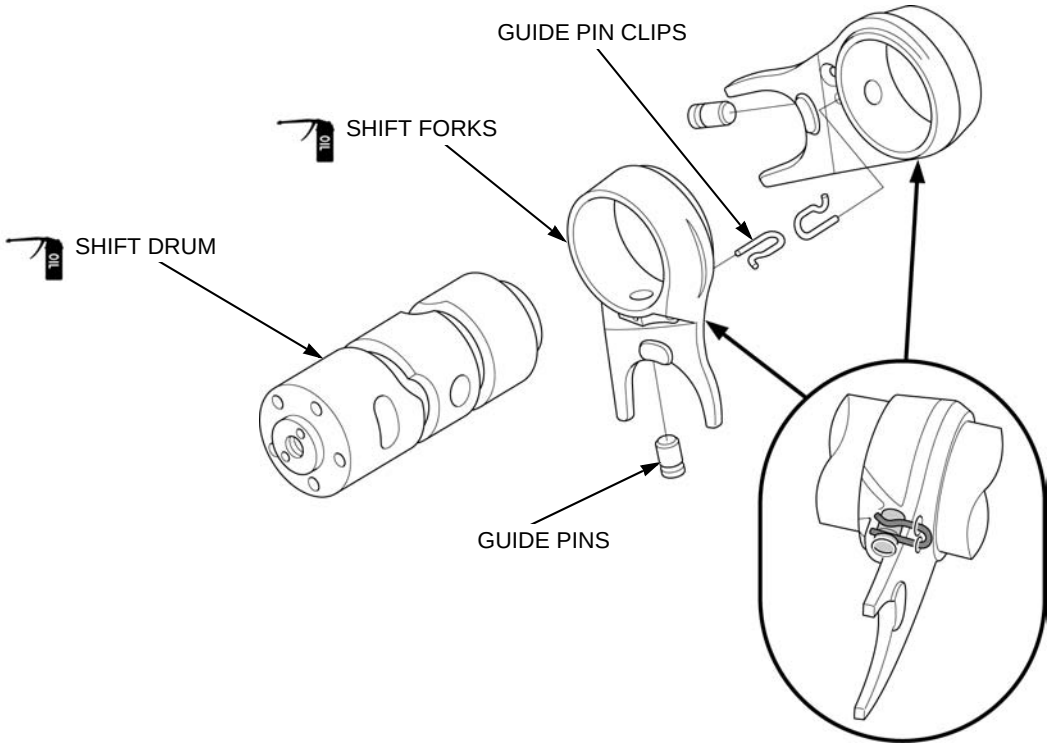


COUNTERSHAFT:

Install the friction spring into the C2 gear groove.
Insert the spring end into the hole on the drum lock plate.



SHIFT DRUM:

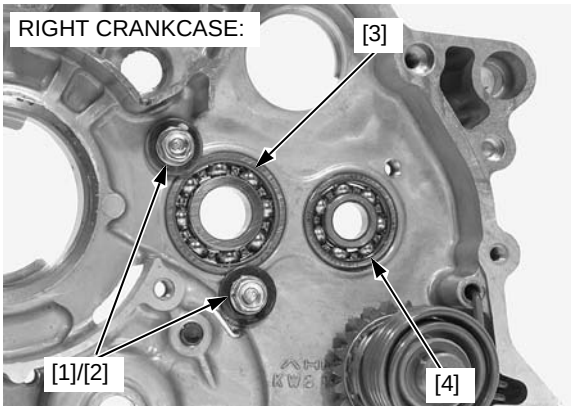


TRANSMISSION BEARING REPLACEMENT

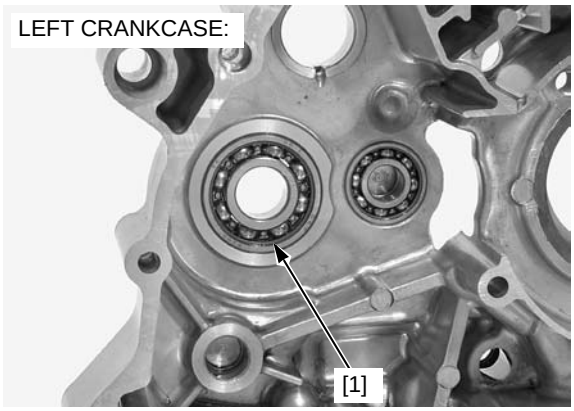
Remove the crankshaft (page 12-9).

Remove the bolts [1] and mainshaft bearing set plates [2].

Drive out the mainshaft bearing [3] and countershaft bearing [4] from the right crankcase.



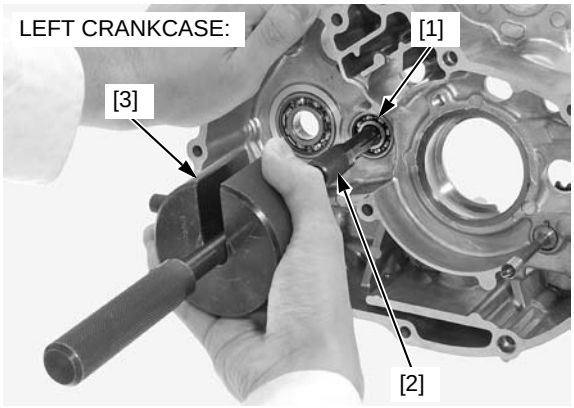
Drive out the countershaft bearing [1] from the left crankcase.



Remove the mainshaft bearing [1] from the left crankcase using the special tools.

TOOLS:

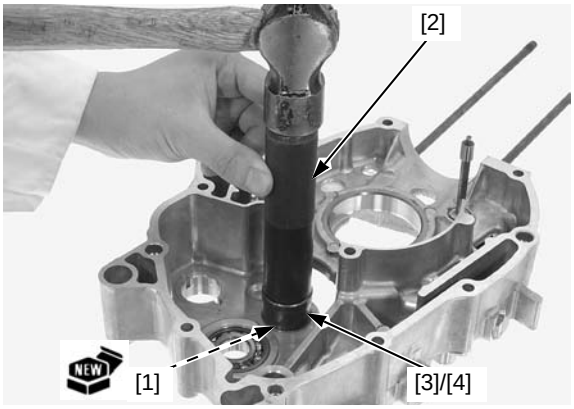
[2] Bearing Remover Shaft Set, 12 mm	
	07936-1660101
– Remover Shaft, 12 mm	**07936-1660120**
– Remover Head, 12 mm	**07936-1660110**
[3] Weight, Remover	**07741-0010201**



Drive new bearings into the crankcase with their marked side facing up until they are fully seated, using the special tools.

TOOLS:

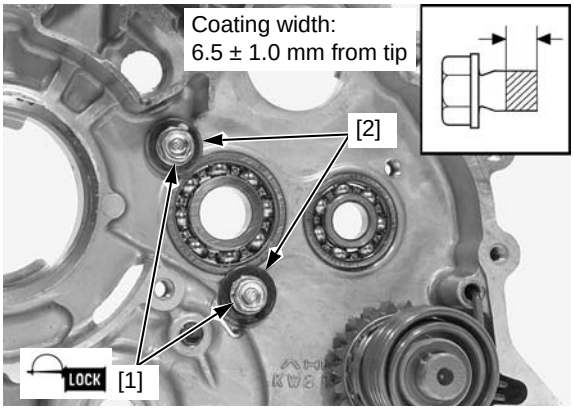
Right crankcase mainshaft bearing:	
Driver Handle, 15 x 135L	**07749-0010000**
Attachment, 37 x 40 mm	**07746-0010200**
Pilot 17 mm	**07746-0040400**
Right crankcase countershaft bearing:	
Driver Handle, 15 x 135L	**07749-0010000**
Attachment, 32 x 35 mm	**07746-0010100**
Pilot 12 mm	**07746-0040200**
[1] Left crankcase mainshaft bearing:	
[2] Driver Handle, 15 x 135L	**07749-0010000**
[3] Bearing Driver Attachment, 28 x 30	
	07946-1870100
[4] Pilot 12 mm	**07746-0040200**
Left crankcase countershaft bearing:	
Driver Handle, 15 x 135L	**07749-0010000**
Attachment, 37 x 40 mm	**07746-0010200**
Pilot 17 mm	**07746-0040400**



Apply locking agent to the mainshaft bearing set plate bolt [1] threads as specified.

Install the mainshaft bearing set plates [2] and bolts to the right crankcase and tighten the bolts.

Install the crankshaft (page 12-9).



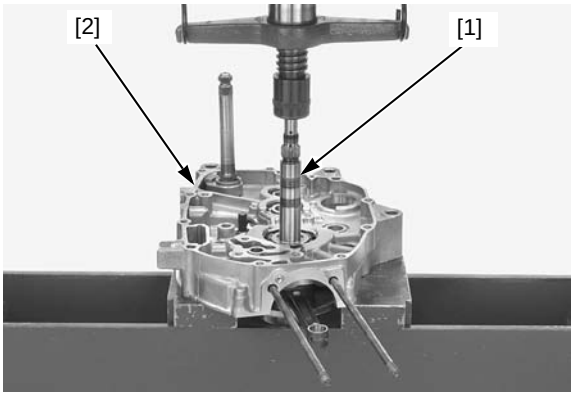
CRANKSHAFT

REMOVAL

Remove the transmission (page 12-5).

Be careful not to drop the crankshaft.

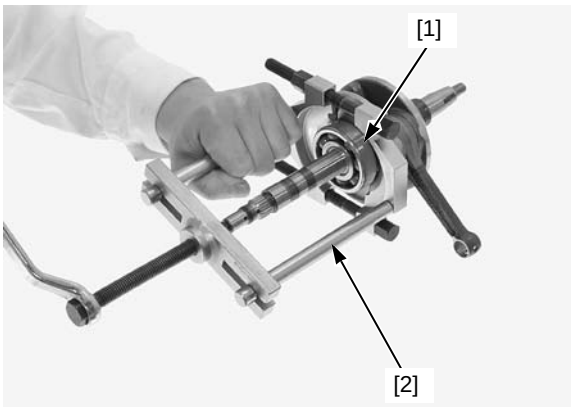
Remove the crankshaft [1] from the right crankcase [2] using a hydraulic press.



If the right crankshaft bearing [1] remains on the crankshaft, remove it using a special tool as shown.

TOOL:

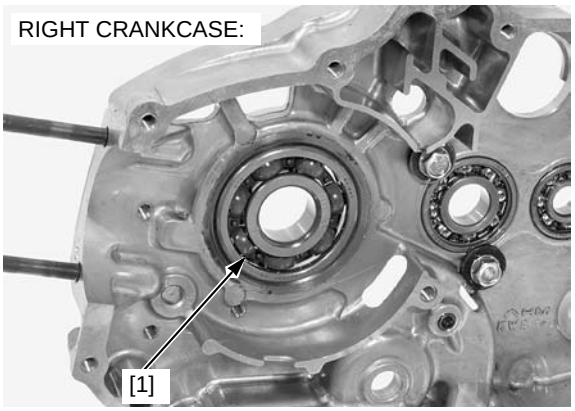
[2] Bearing Separator Set	**07631-0010000 or equivalent commercially available**



If the bearing remains in the right crankcase, drive it out from the outside.

Do not reuse the crankshaft bearing.

Discard the crankshaft bearing [1].



INSTALLATION

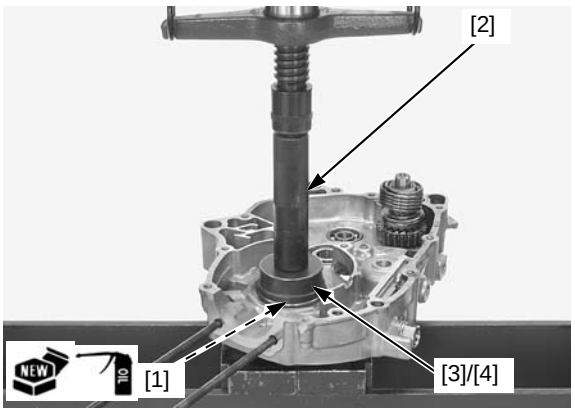
Apply engine oil to new right crankshaft bearing [1] rolling surface.

Be careful not to damage the crankcase.

Drive in the right crankshaft bearing with its marked side facing up until it is fully seated, using the special tools.

TOOLS:

[2] Driver Handle, 15 x 135L	**07749-0010000**
[3] Attachment, 52 x 55 mm	**07746-0010400**
[4] Pilot 22 mm	**07746-0041000**

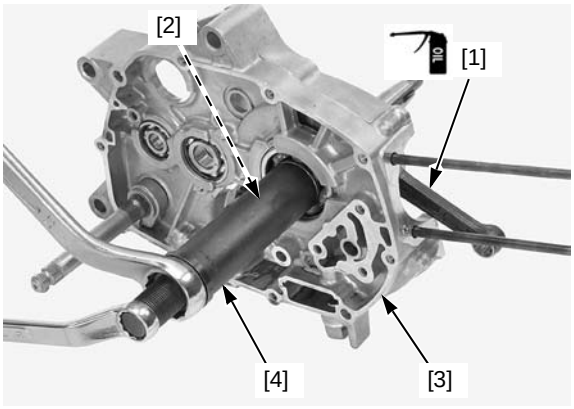


Apply 1 – 2 cm^3 of clean engine oil to the connecting rod [1] big end.

Be sure that the connecting rod is located in the crankcase opening.

Draw the crankshaft [2] into the right crankcase [3] bearing inner race using the special tool.

TOOLS:
[4] Shaft/Case Disassembly Set 14
07JMF-KW70100



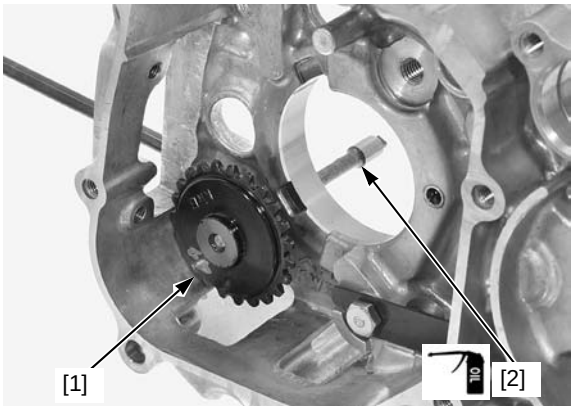
Install the transmission (page 12-5).
Assemble the crankcase halves (page 12-3).

CAM CHAIN GUIDE SPROCKET

REMOVAL

Separate the crankcase (page 12-3).

Hold the cam chain guide sprocket [1], turn the cam chain guide sprocket spindle [2] counterclockwise and remove them from the left crankcase.



INSTALLATION

Apply engine oil to the cam chain guide sprocket spindle whole surface.

Installation is in the reverse order of removal.

NOTE:
- Install the sprocket with its "KWW" mark facing out.
- Hold the sprocket and tighten the spindle.

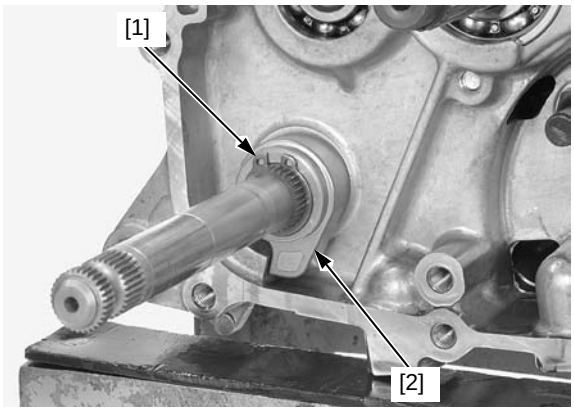
TORQUE:
Cam chain guide sprocket spindle:
10 N·m (1.0 kgf·m)

KICKSTARTER

REMOVAL

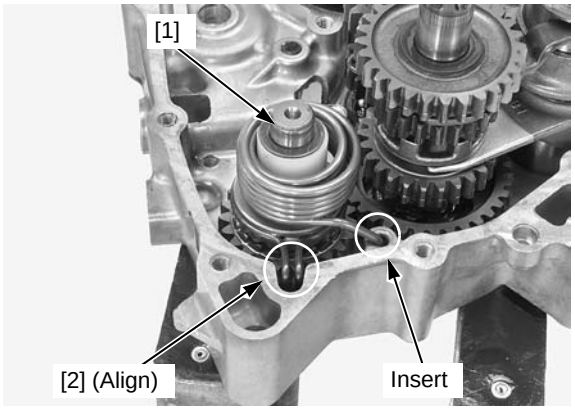
Remove the gearshift linkage (page 10-15).

Remove the snap ring [1] and retainer [2] from the kickstarter spindle.



Separate the crankcase (page 12-3).

Remove the kickstarter spindle [1] from the right crankcase.



INSTALLATION

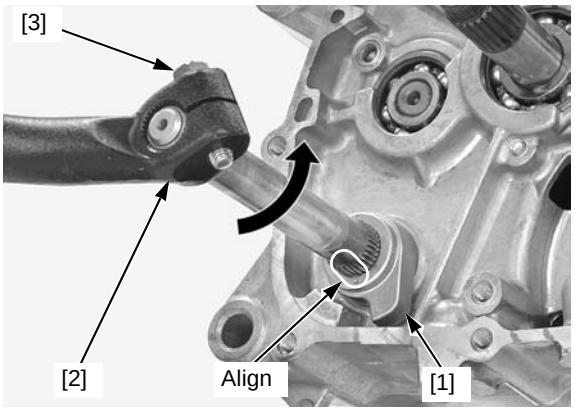
Install the kickstarter spindle while setting the ratchet spring [2] into the groove of the right crankcase as shown.

Insert the return spring end into the hole on the right crankcase as shown.

Assemble the crankcase halves (page 12-3).

Set the retainer [1] to the kickstarter spindle.

Temporarily install the kickstarter pedal [2] and bolt [3]. Turn the kickstarter pedal and completely install the retainer while aligning its wide tooth with the wide spline on the spindle.

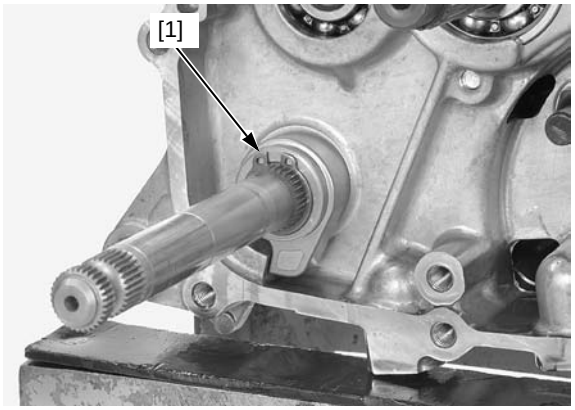


Release the kickstarter pedal.
Remove the bolt and kickstarter pedal.

Make sure that the snap ring is firmly seated in the groove.

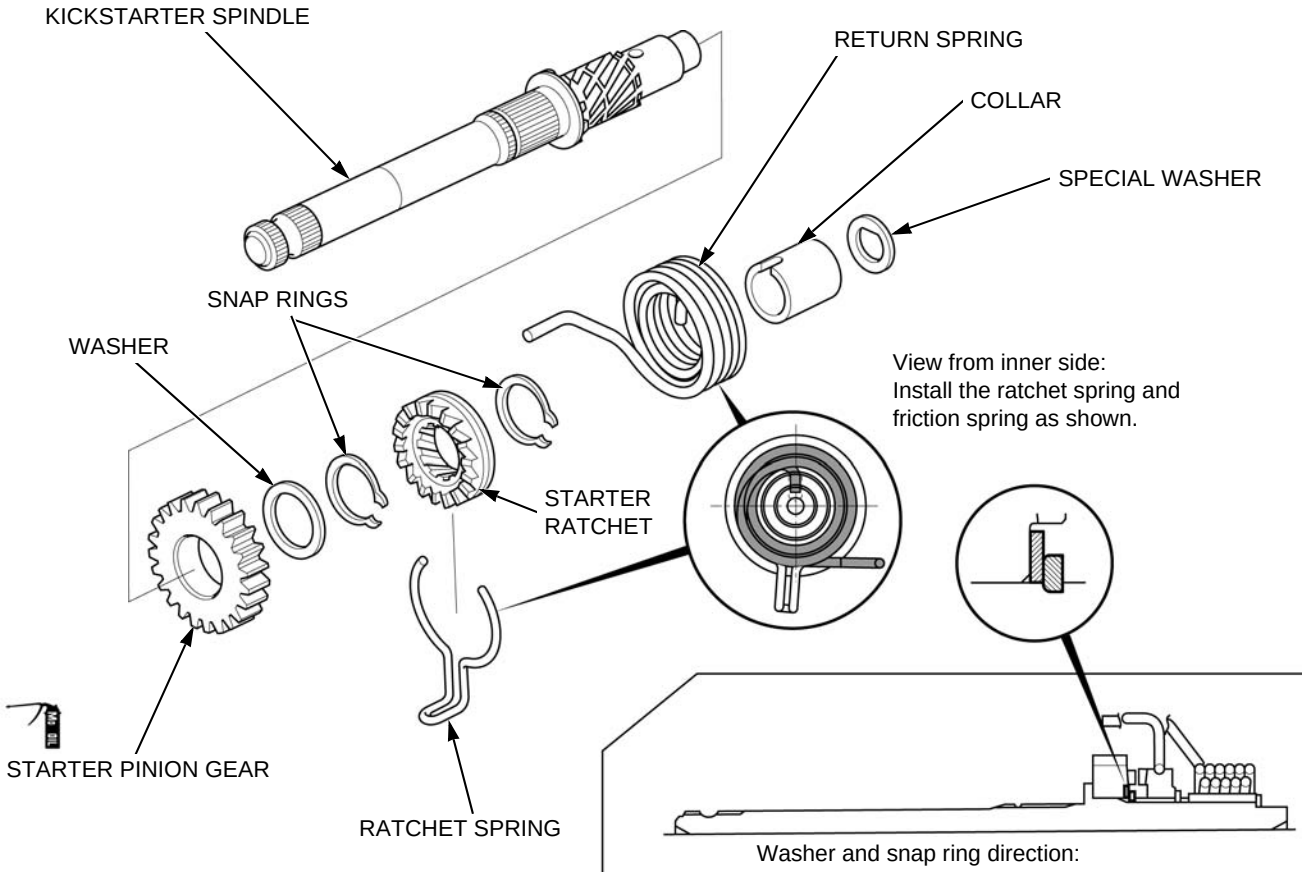
Install the snap ring [1] to the kickstarter spindle groove.

Install the gearshift linkage (page 10-16).

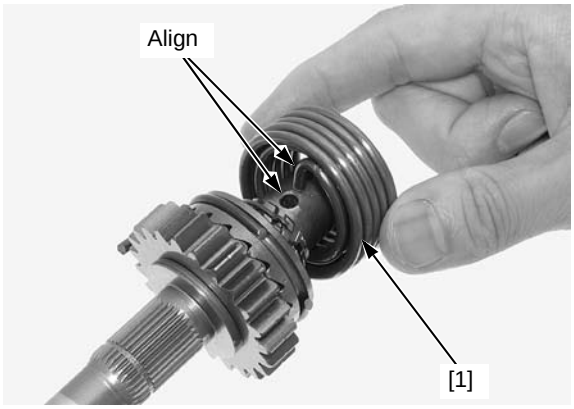


DISASSEMBLY/ASSEMBLY

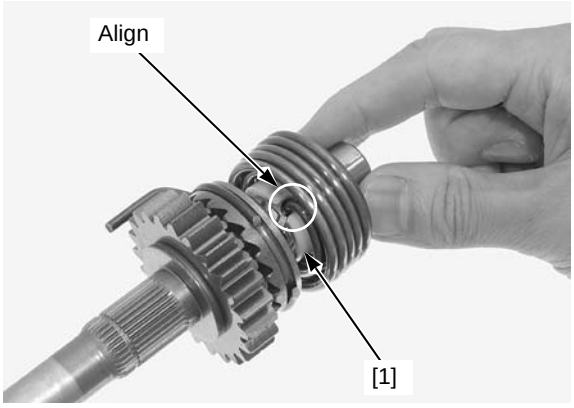
Disassemble and assemble the kickstarter as following illustration.



Install the return spring [1] to the kickstarter spindle while setting the spring end with the hole on the spindle.

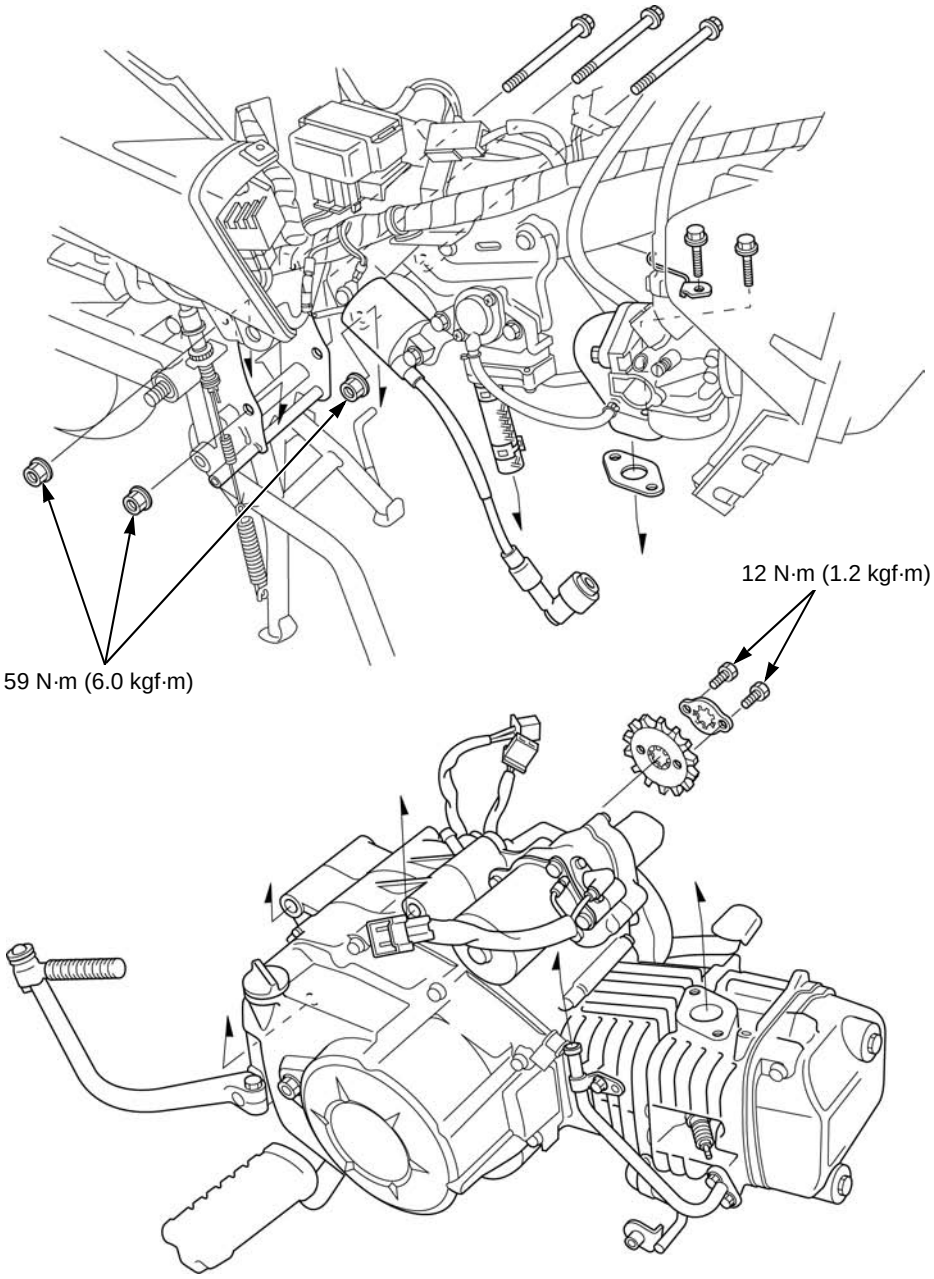


Install the collar [1] to the kickstarter spindle while aligning its groove with the return spring end.



13. ENGINE REMOVAL/INSTALLATION

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- During engine removal and installation, support the motorcycle with its centerstand.
- Support the engine using a jack or other adjustable support to ease of engine hanger bolts removal.
- The following components can be serviced with the engine installed in the frame.
  - Alternator (page 11-4)
  - Manual clutch and centrifugal clutch (page 10-6)
  - Gearshift linkage (page 10-15)
  - Cylinder head (page 8-8)
  - Cylinder/piston (page 9-3)
  - Oil pump (page 7-3)
- The following components require engine removal for service.
  - Crankshaft/transmission (page 12-9)
  - Shift forks/shift drum (page 12-5)
  - Cam chain guide sprocket (page 12-10)
  - Kickstarter (page 12-10)

ENGINE REMOVAL

Support the motorcycle with its centerstand.

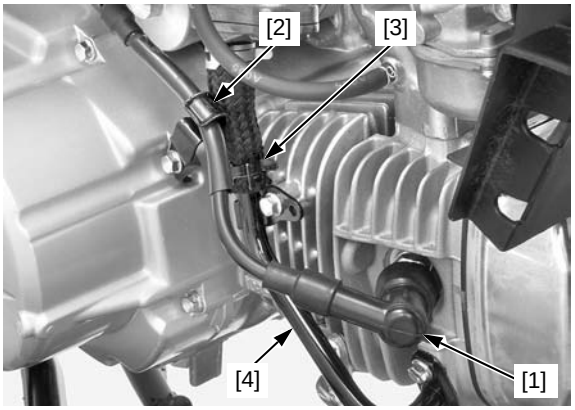
Drain the engine oil (page 3-7).

Remove the following:

– Front top cover (page 2-5)
– Left crankcase rear cover (page 2-12)
– Exhaust pipe/muffler (page 2-13)

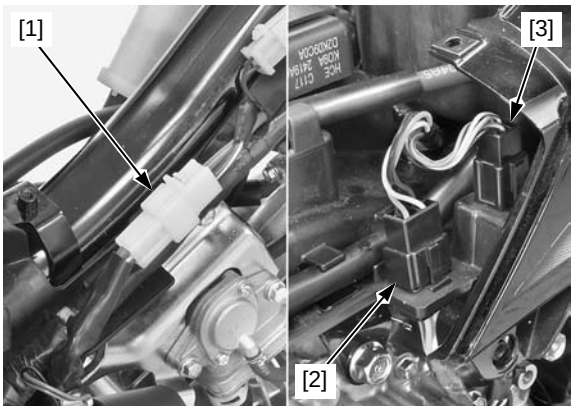
Disconnect the spark plug cap [1] and release the spark plug wire from the guide [2].

Release the hose band [3] from the air supply pipe [4].



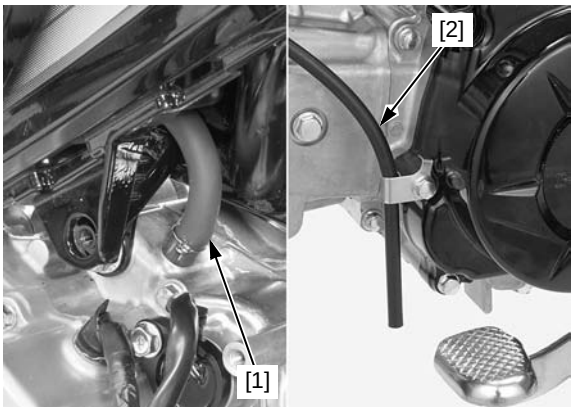
Disconnect the following connectors:

– Starter motor 2P connector [1]
– Alternator 4P (Black) connector [2]
– Gear position switch 6P (Black) connector [3]

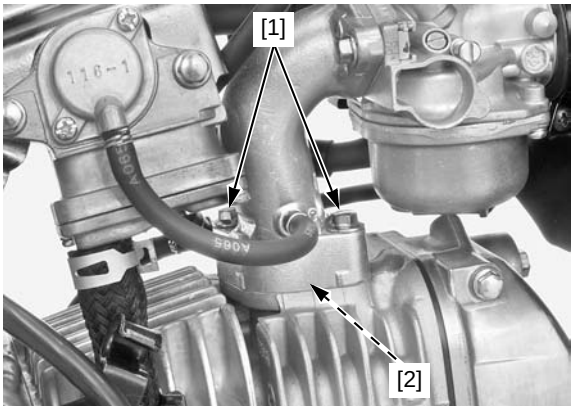


Disconnect the crankcase breather hose [1].

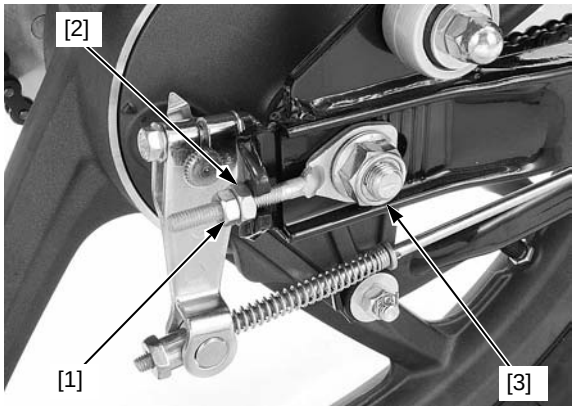
Release the carburetor drain hose [2] from the hose clamp.



Remove the inlet pipe mounting bolts [1] and gasket [2].

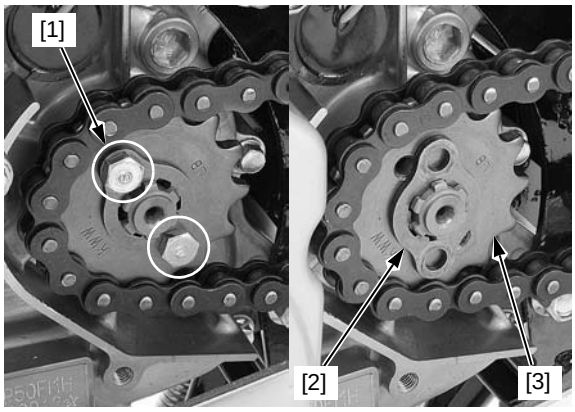


Loosen the lock nuts [1], drive chain adjusting nuts [2] and axle nut [3].
Push the rear wheel forward.



Remove the drive sprocket fixing plate bolts [1].
Turn and remove the fixing plate [2].

Remove the drive sprocket [3] from the countershaft and drive chain.



Support the engine using a jack or other adjustable support.

Remove the front engine hanger nut [1].
Remove the rear upper engine hanger nut [2] and rear lower engine hanger nut [3].

Remove the engine hanger bolts and engine from the frame.

- Wrap the intake manifold port with a shop towel or cover it with a piece of tape to prevent any foreign material from dropping into the engine.

ENGINE INSTALLATION

NOTE:

- Note the direction of the hanger bolts.
- Use a floor jack or other adjustable support, carefully place the engine into the frame and maneuver it into place.
- Carefully align the mounting points with the jack to prevent damage to engine, frame, wires, hoses and cables.
- All the engine mounting bolts and nuts loosely install, then tighten the bolts and nuts to the specified torque.

During engine installation, hold the engine securely and be careful not to damage the frame and engine.

Place the engine into the frame and support the engine using a jack or other adjustable support.

Install the engine hanger bolts and nuts.

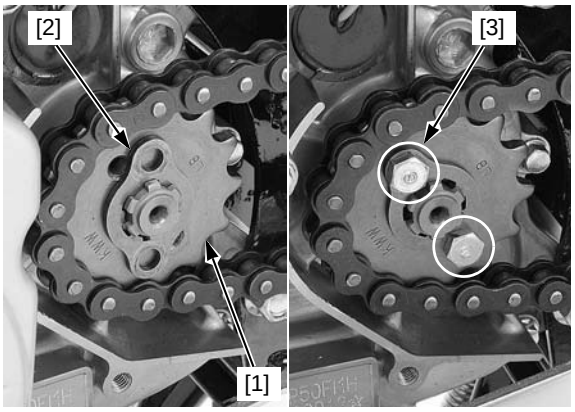
Tighten the rear upper engine hanger nut [1], the rear lower engine hanger nut [2] and the front engine hanger nut [3] to the specified torque.

TORQUE:

[1] Rear upper engine hanger nut
59 N·m (6.0 kgf·m)
[2] Rear lower engine hanger nut
59 N·m (6.0 kgf·m)
[3] Front engine hanger nut
59 N·m (6.0 kgf·m)

Install the drive chain onto the drive sprocket [1].
Install the drive sprocket onto the countershaft.

Install the fixing plate [2] to the countershaft while aligning their teeth.
Rotate the fixing plate and align their bolt holes.



Install and tighten the drive sprocket fixing plate bolts [3] alternately to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m)

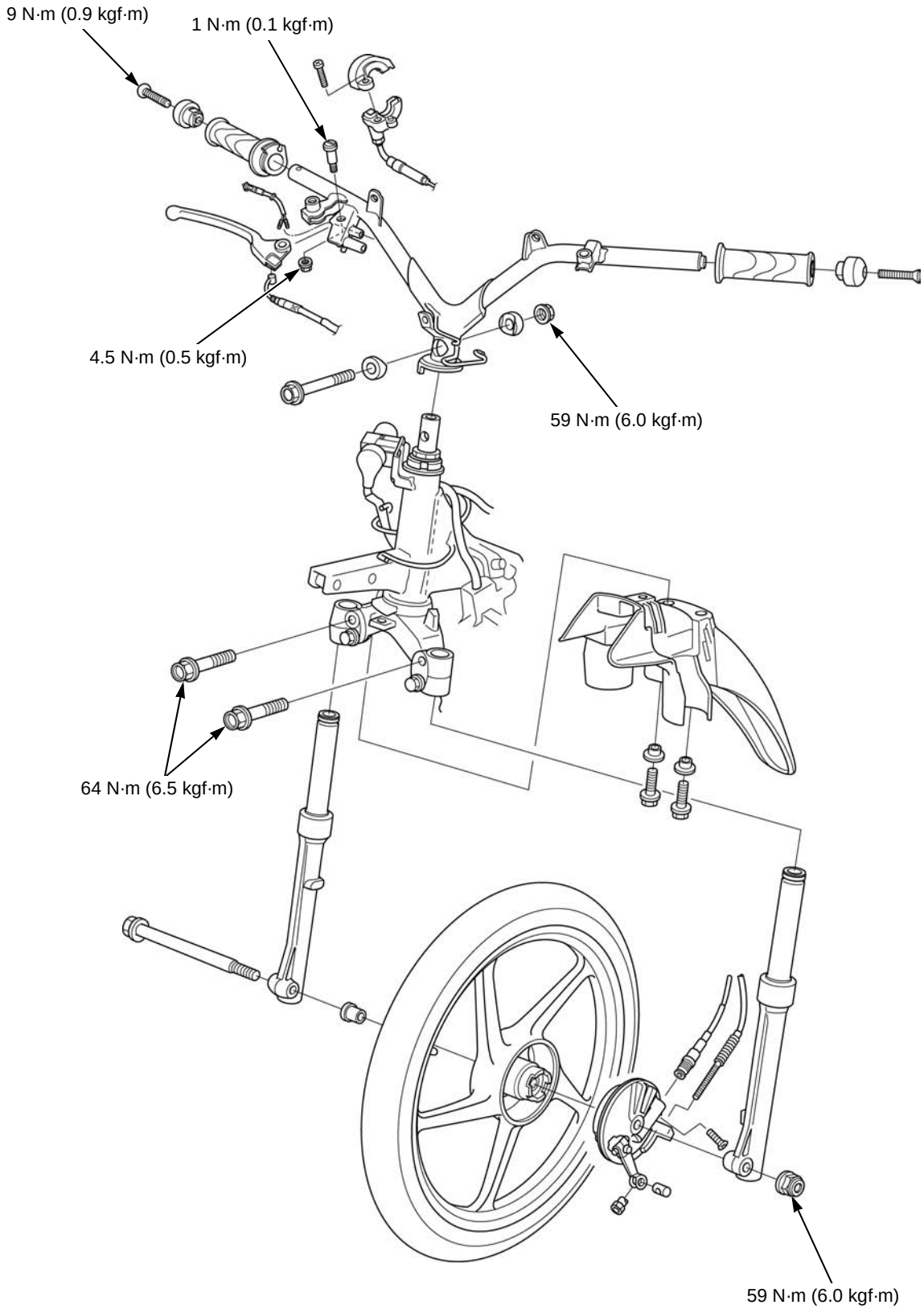
Install the removed parts in the reverse order of removal.

Fill the recommended engine oil up to the proper level (page 3-7).
Adjust the drive chain slack (page 3-10).

MEMO

14. FRONT WHEEL/BRAKE/SUSPENSION/STEERING

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

⚠ WARNING

Frequent inhalation of brake shoe dust, regardless of material composition could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

- This section covers the front wheel, fork, handlebar and steering stem.
- When servicing the front wheel, fork or steering stem, support the motorcycle using a jack or other support.
- A contaminated brake drum or shoe reduces stopping power. Discard contaminated shoes and clean a contaminated drum with a high quality brake degreasing agent.

TROUBLESHOOTING

Hard steering
- Insufficient tire pressure
- Faulty tire
- Steering stem lock nut too tight
- Faulty steering head bearing
- Faulty steering head bearing race
- Bent steering stem

Steers to one side or does not track straight
- Bent front axle
- Wheel installed incorrectly
- Worn or damaged front wheel bearings
- Bent fork
- Bent frame
- Faulty steering head bearing

Front wheel wobbles
- Loose front axle fasteners
- Bent rim
- Faulty tire
- Worn or damaged front wheel bearings
- Loose or distorted spokes (Spoke wheel type)

Front wheel turns hard
- Front brake drag
- Bent front axle
- Faulty front wheel bearings

Soft suspension
- Low tire pressure
- Deteriorated fork fluid
- Incorrect fork fluid weight
- Insufficient fluid in fork
- Weak fork spring

Stiff suspension
- High tire pressure
- Too much fluid in fork
- Incorrect fork fluid weight
- Bent fork pipes
- Clogged fork fluid passage

Suspension noisy
- Bent fork slider
- Insufficient fluid in fork
- Loose fork fasteners

Poor front brake performance
- Improper brake adjustment
- Worn brake linings
- Contaminated brake linings
- Worn brake cam
- Worn brake drum
- Brake arm serrations improperly engaged
- Worn brake shoes at cam contact faces

FRONT WHEEL

REMOVAL/INSTALLATION

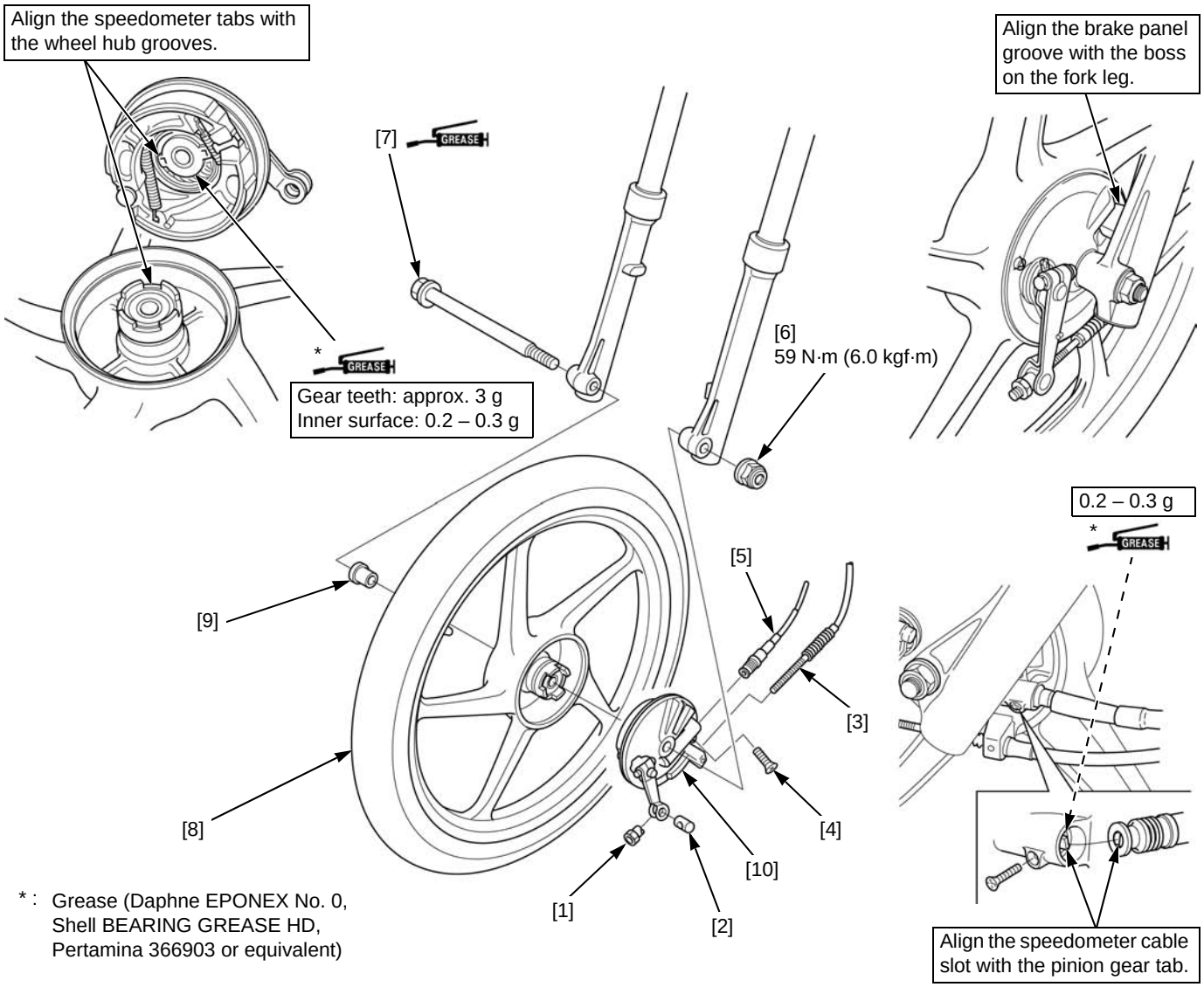
Support the motorcycle using a jack or other adjustable support.

Remove the following:

- Front brake adjusting nut [1]
- Brake arm joint pin [2]
- Brake cable [3]
- Screw [4]
- Speedometer cable [5]
- Axle nut [6]
- Front axle [7]
- Front wheel [8]
- Side collar [9]
- Brake panel [10]

Installation is in the reverse order of removal.

- Replace the speedometer cable O-ring with a new one.
- Apply grease to the front axle, speedometer cable gear teeth, inner surface, pinion shaft and O-ring.
- Adjust the front brake lever freeplay (page 3-12) and check the brake operation after installation.



* : Grease (Daphne EPONEX No. 0, Shell BEARING GREASE HD, Pertamina 366903 or equivalent)

DISASSEMBLY/ASSEMBLY

Remove/install the following:

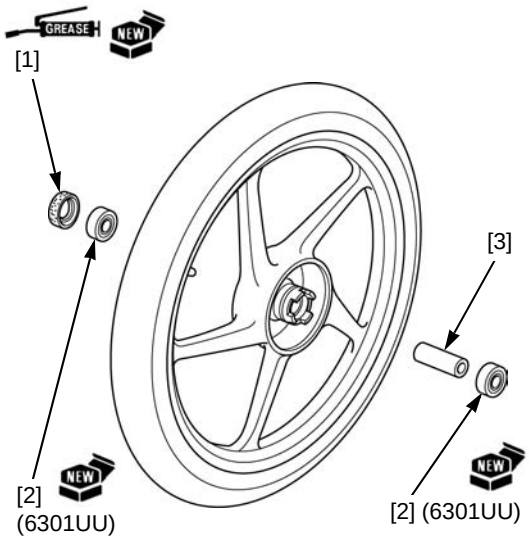
– Dust seal [1]
– Wheel bearings [2]
– Distance collar [3]

- Replace the bearings and dust seal with new ones.
- Apply 0.3 – 0.4 g of grease to the dust seal lips and bearing cavities.

For wheel bearing replacement (page 14-6).

Cast wheel type: Install the right dust seal until it is flush with the wheel end surface.

Spoke wheel type: Install the right dust seal until it is fully seated.



WHEEL CENTER ADJUSTMENT (SPOKE WHEEL TYPE)

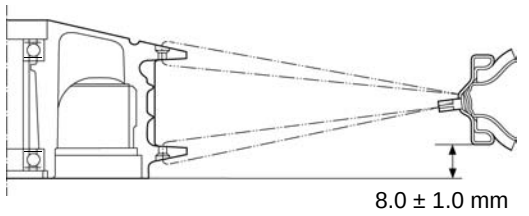
Place the rim on the work bench.
Place the wheel hub in the center of the rim and begin lacing with new spokes.

Adjust the wheel hub position so that the distance from the wheel hub left end surface to the side of rim is 8.0 ± 1.0 mm as shown.

TOOL:
Spoke Wrench 4.5 x 5.1 mm 07701-0020200

TORQUE: 3.2 N·m (0.3 kgf·m)

Check the rim runout.

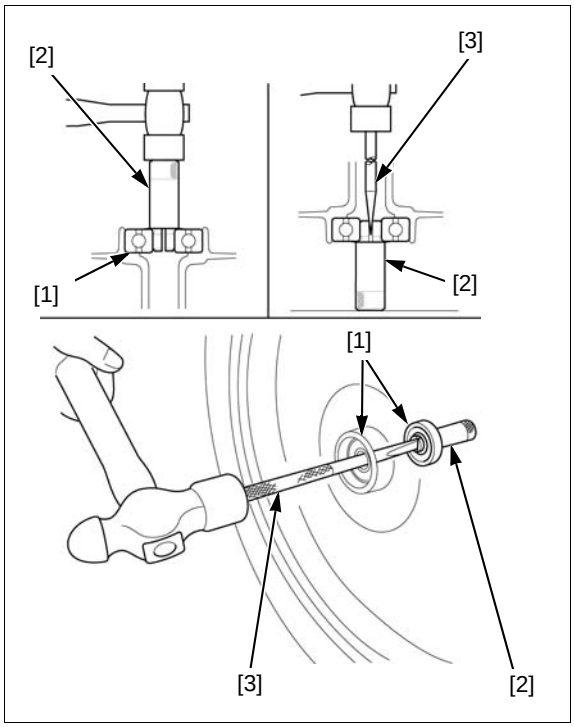


BEARING REMOVAL

Install the bearing remover head into the bearing [1].
From the opposite side, install the bearing remover shaft and drive the bearing out of the wheel hub.
Remove the distance collar and drive out the other bearing.

TOOLS:

[2] Remover Head 12 mm	**07746-0050300**
[3] Bearing Remover Shaft 9 x 200L	**07746-0050100**



BEARING INSTALLATION

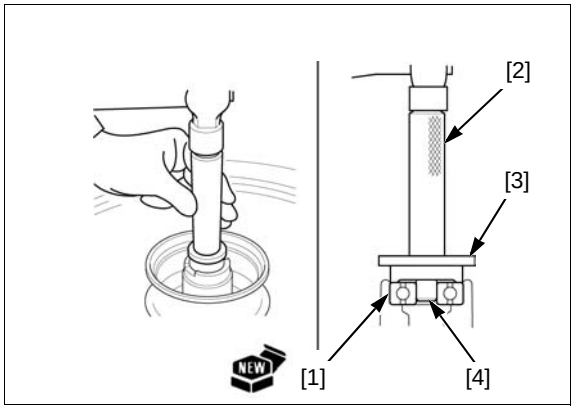
- Never install the old bearings. Once the bearings have been removed, the bearings must be replaced with new ones.

Spoke wheel type: Drive in a new right bearing [1] squarely with its marked side facing up until it is fully seated.

Cast wheel type: Drive in a new left (brake drum side) bearing [1] squarely with its marked side facing up until it is fully seated.

TOOLS:

[2] Driver Handle, 15 x 135L	**07749-0010000**
[3] Attachment, 37 x 40 mm	**07746-0010200**
[4] Pilot 12 mm	**07746-0040200**



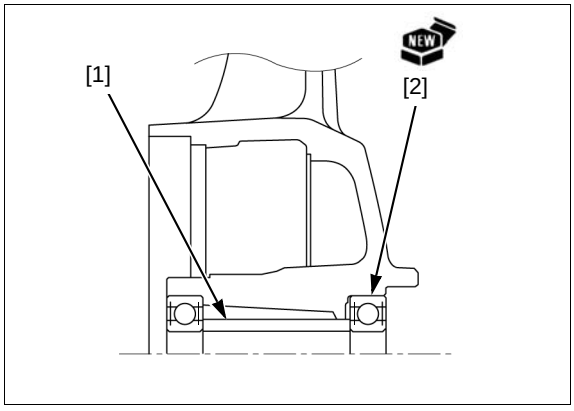
Install the distance collar [1].

Spoke wheel type: Drive in a new left bearing [2] squarely until it is seated on the distance collar.

Cast wheel type: Drive in a new right bearing [2] squarely until it is seated on the distance collar.

TOOLS:

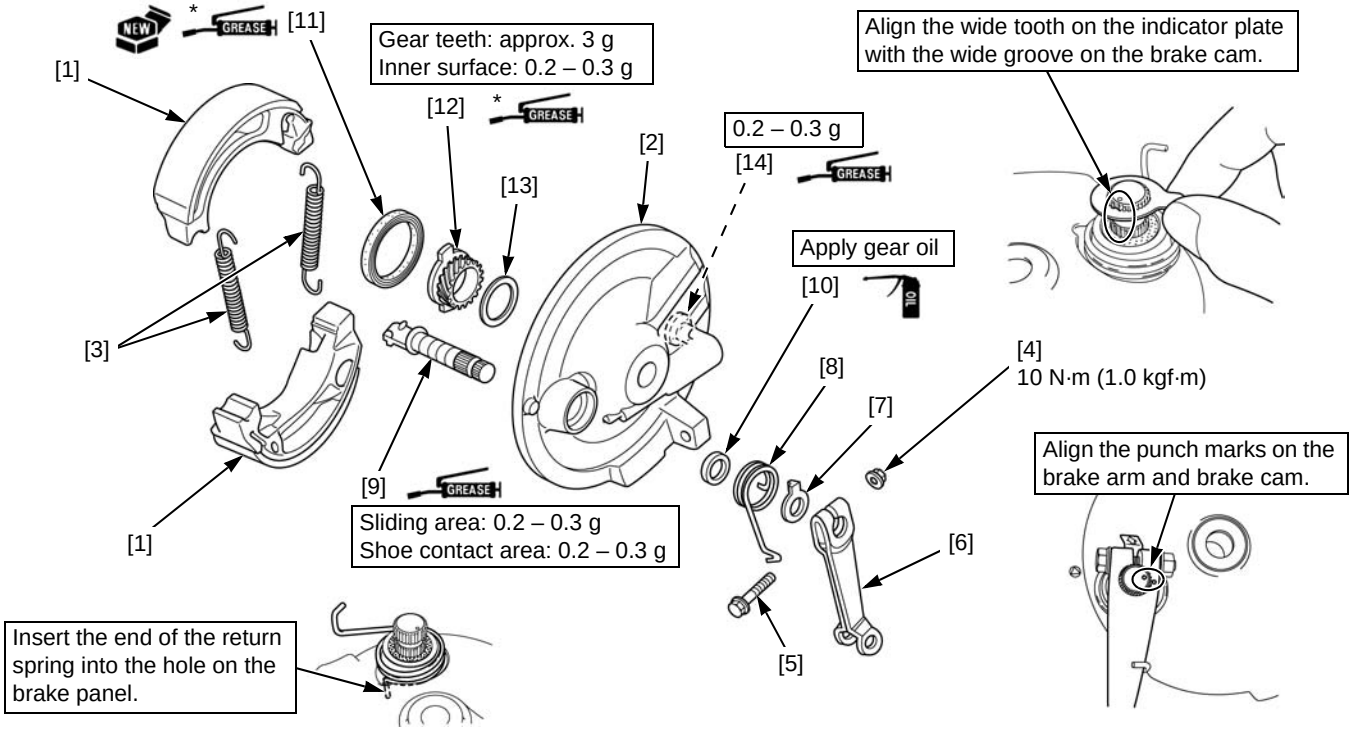
Driver Handle, 15 x 135L	**07749-0010000**
Attachment, 37 x 40 mm	**07746-0010200**
Pilot 12 mm	**07746-0040200**



FRONT BRAKE

DISASSEMBLY/ASSEMBLY

Disassemble and assemble the front brake panel as following illustration.



* : Grease (Daphne EPONEX No. 0, Shell BEARING GREASE HD, Pertamina 366903 or equivalent)

- Brake shoes [1]
- Brake panel [2]
- Brake shoe springs [3]
- Nut [4]
- Bolt [5]
- Brake arm [6]
- Indicator plate [7]
- Return spring [8]
- Brake cam [9]
- Felt seal [10]
- Dust seal [11]
- Speedometer gear [12]
- Shim [13]
- Anchor pin [14]

• Adjust the front brake lever freeplay (page 3-12).

FORK

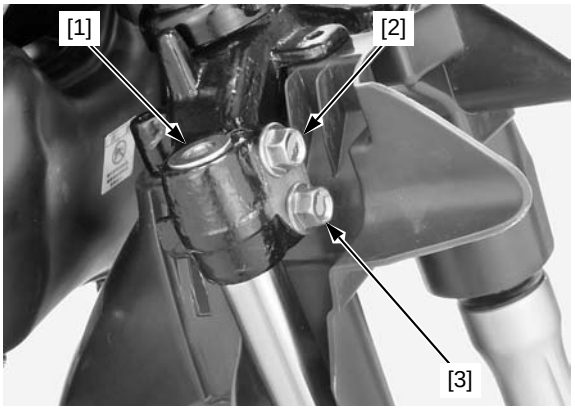
REMOVAL

Remove the following:

– Front fender A (page 2-6)
– Front wheel (page 14-4)

If you will disassemble the fork, loosen the fork cap bolt [1], but do not remove it yet.

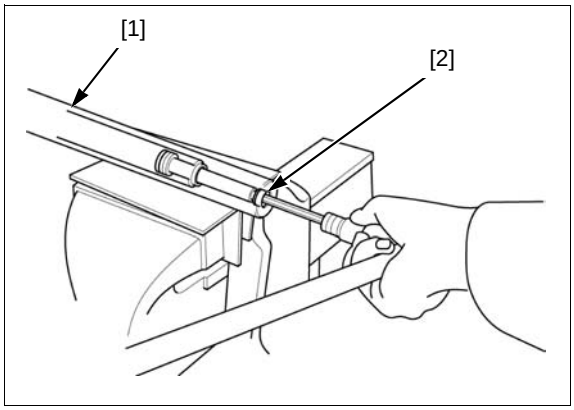
Remove the bottom bridge upper pinch bolt [2].
Loosen the bottom bridge lower pinch bolt [3] and remove the fork leg.



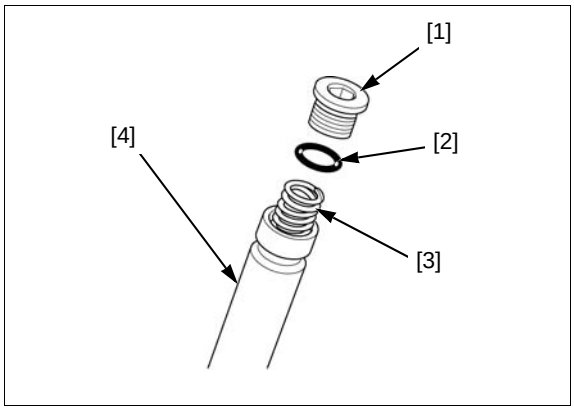
DISASSEMBLY

Hold the fork slider [1] in a vice with soft jaws or a shop towel.

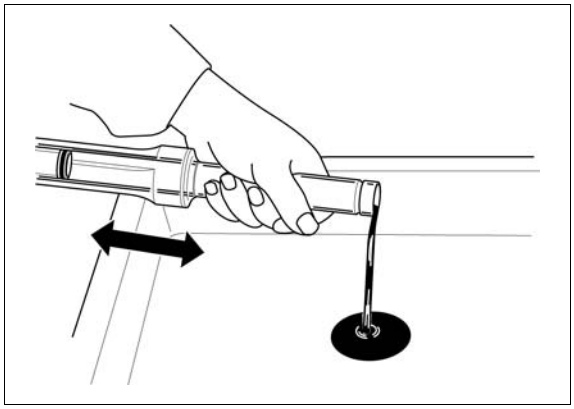
Loosen the fork socket bolt [2] but do not remove yet.



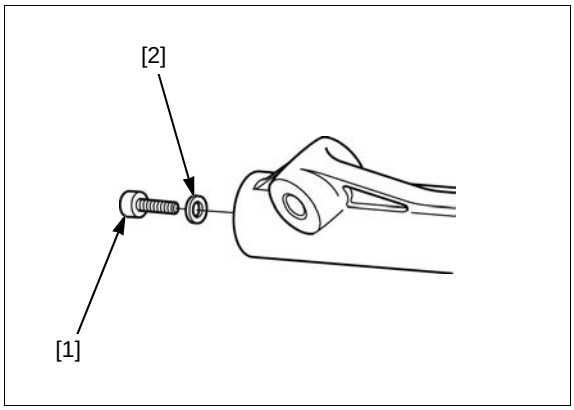
Remove the fork cap bolt [1], O-ring [2] and fork spring [3] from the fork pipe [4].



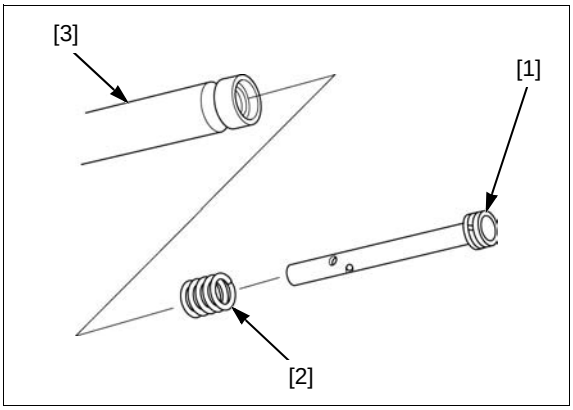
Pour out the fork fluid by pumping the fork pipe several times.



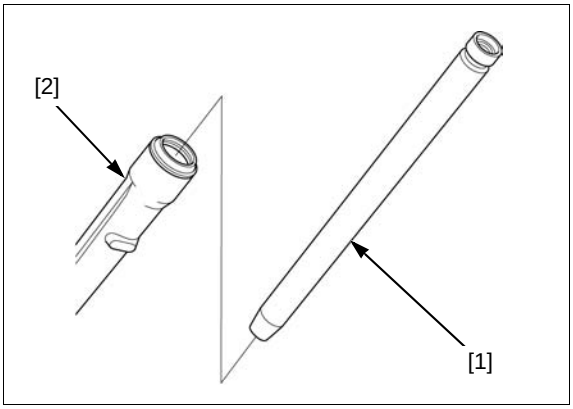
Remove the socket bolt [1] and sealing washer [2].



Remove the fork piston [1] and rebound spring [2] from the fork pipe [3].

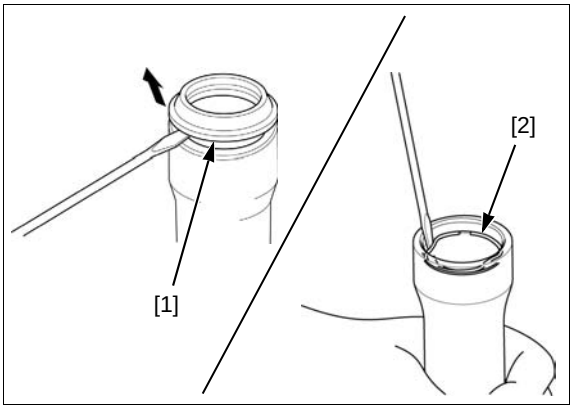


Pull the fork pipe [1] out from the fork slider [2].



Remove the dust seal [1].

Remove the oil seal stopper ring [2].

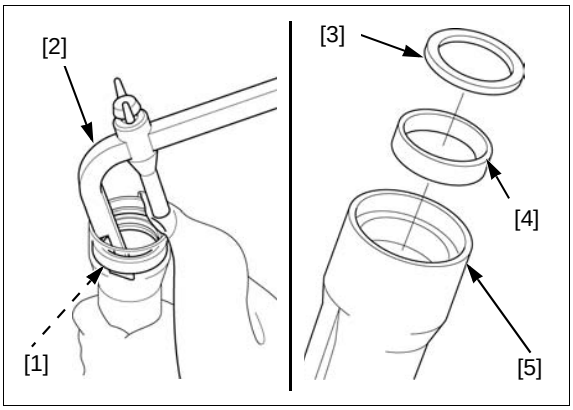


Remove the oil seal [1] using the special tool.

TOOL:

[2] Oil Seal Remover	**07748-0010001 or equivalent commercially available.**

Remove the back-up ring [3] and guide bushing [4] from the fork slider [5].



INSPECTION

FORK PIPE/SLIDER/PISTON

Check the fork pipe [1], fork slider [2] and fork piston [3] for score marks, scratches or abnormal wear.

Check the fork piston ring [4] for wear or damage.
Check the rebound spring [5] for fatigue or damage.

Replace the components if necessary.

Place the fork pipe on V-block and measure the runout.

Actual runout is 1/2 the total indicator reading.

SERVICE LIMIT: 0.2 mm

FORK SPRING

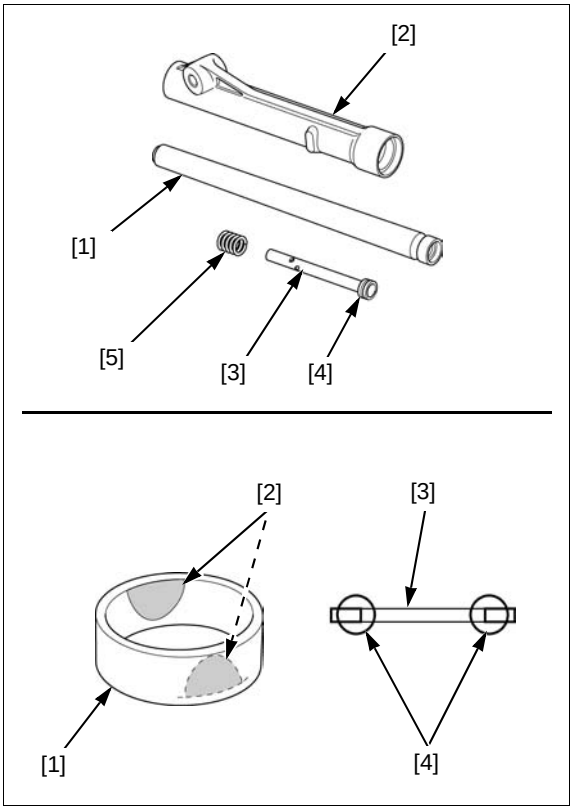
Check the fork spring for fatigue or damage, and replace it if necessary.

STANDARD: 291 mm

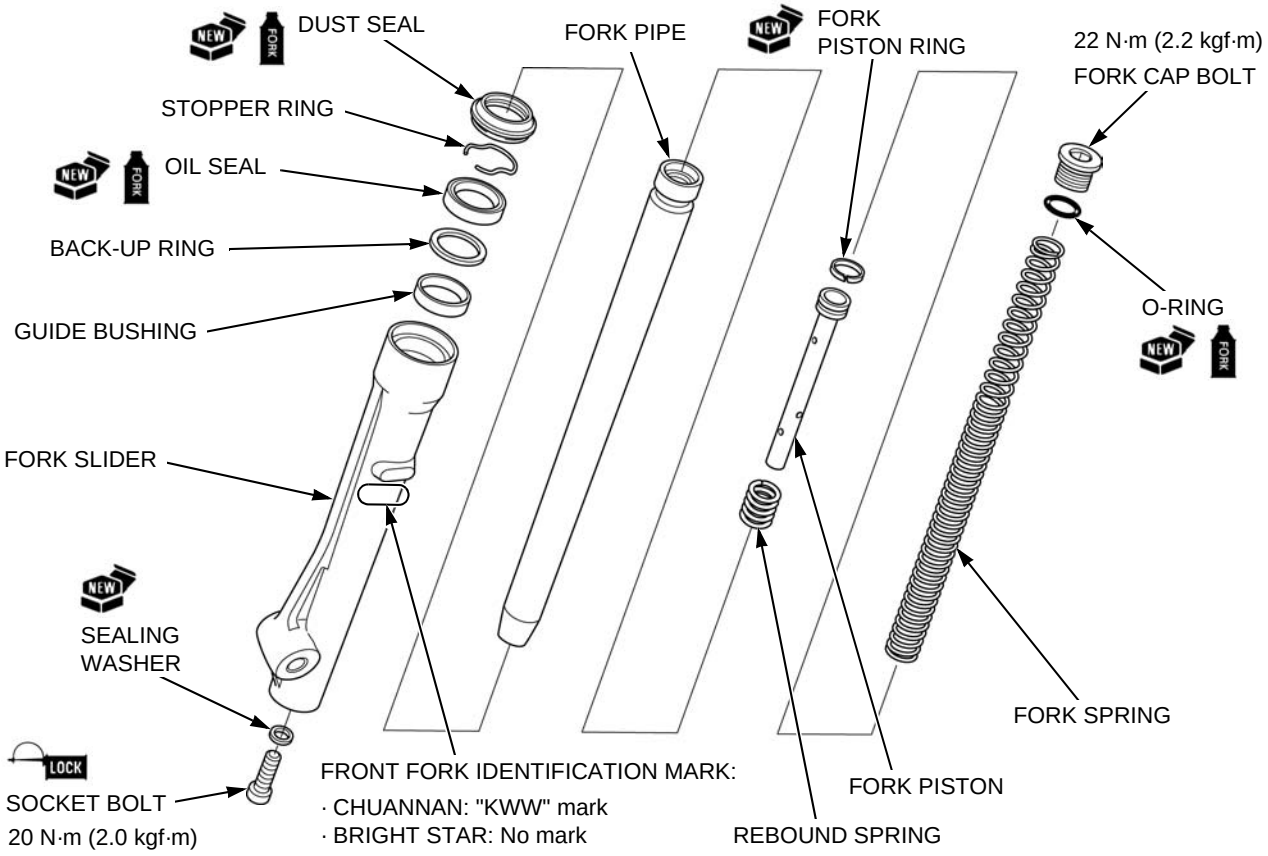
FORK PIPE BUSHING/BACK-UP RING

Visually inspect the guide bushing [1].
Replace the guide bushing if there is excessive scoring or scratching, or if the teflon is worn so that the copper surface [2] appears on more than 3/4 of the entire surface.

Check the back-up ring [3], replace it if there is any distortion at the points [4] indicated by arrows on the figure.

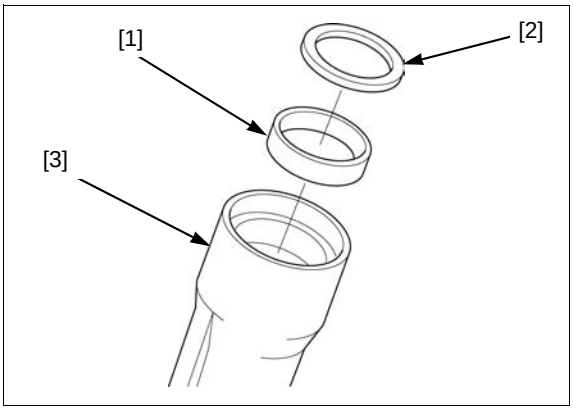


ASSEMBLY



Before assembly, wash all parts with high flash point or non-flammable solvent and wipe them dry.

Install the guide bushing [1] and back-up ring [2] into the fork slider [3].



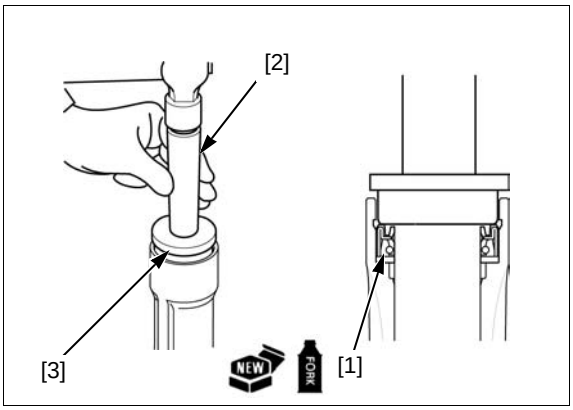
Apply fork fluid to the lip of a new oil seal [1].

Install the oil seal with its marked side facing up.

Drive the oil seal into the fork slider using the special tools until it is fully seated.

TOOLS:

[2] Driver Handle, 15 x 135L	**07749-0010000**
[3] Attachment, 37 x 40 mm	**07746-0010200**

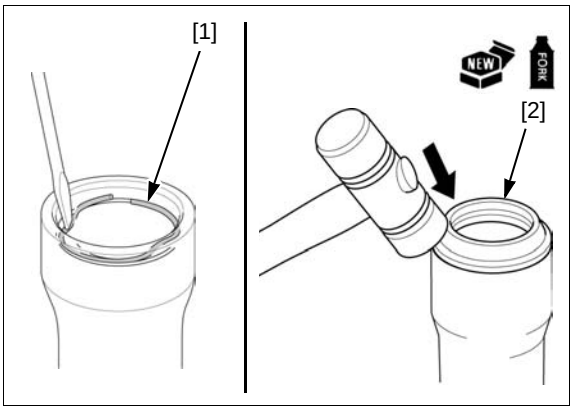


Install the oil seal stopper ring [1] into the groove on the fork slider.

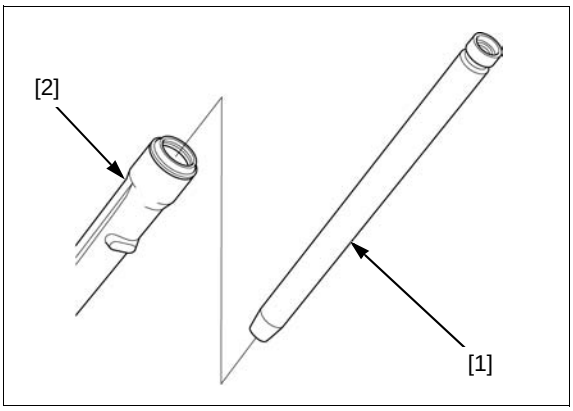
Apply fork fluid to lip of a new dust seal [2].

Do not tap the dust seal lip too hard.

Install the dust seal until it is fully seated.

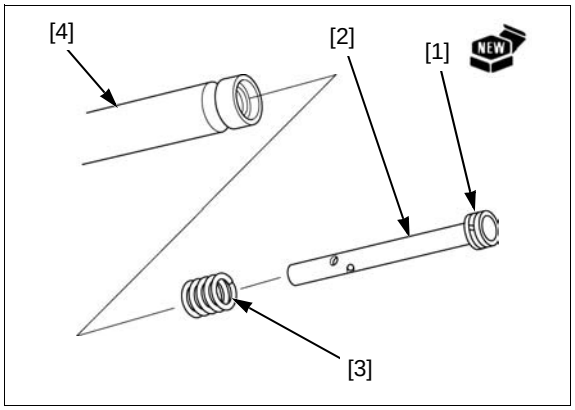


Install the fork pipe [1] into the fork slider [2].



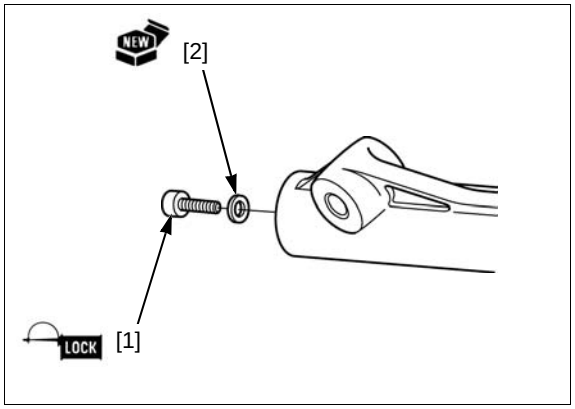
If the fork piston ring [1] is removed from the fork piston [2], install a new fork piston ring to the fork piston groove.

Install the rebound spring [3] and fork piston into the fork pipe [4].



Clean the socket bolt [1] threads and apply locking agent to the bolt threads.

Install and tighten the socket bolt with a new sealing washer [2] to the fork piston.



Before pouring the fork fluid, check the front fork identification mark (page 14-10).

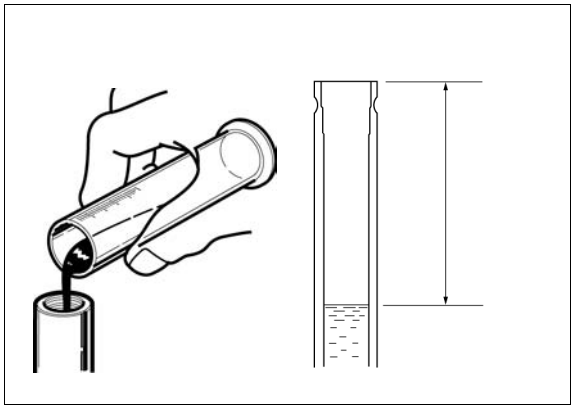
Pour the specified amount of recommended fork fluid into the fork pipe.

FORK FLUID CAPACITY:
BRIGHT STAR: 51 ± 1 cm³
CHUANNAN: 61 ± 1 cm³

Pump the fork pipe several times to remove trapped air from the lower portion of the fork pipe.

Compress the fork leg fully and measure the fluid level from the top of the fork pipe.

FORK FLUID LEVEL:
BRIGHT STAR: 90 mm
CHUANNAN: 93 mm

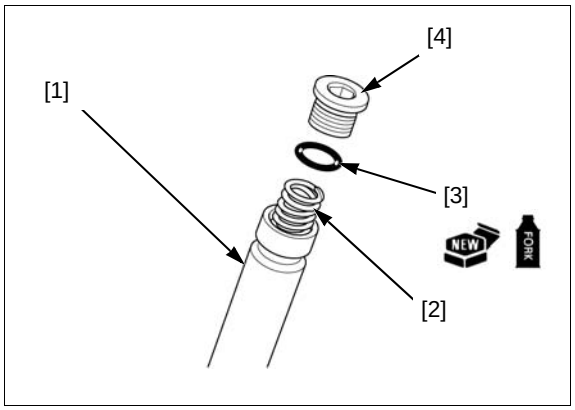


Pull the fork pipe [1] up and install the fork spring [2] with its tightly wound coil side facing down.

Coat a new O-ring [3] with fork fluid and install it into the groove in the fork cap bolt [4].

Do not forget to tighten the fork cap bolt to the specified torque.

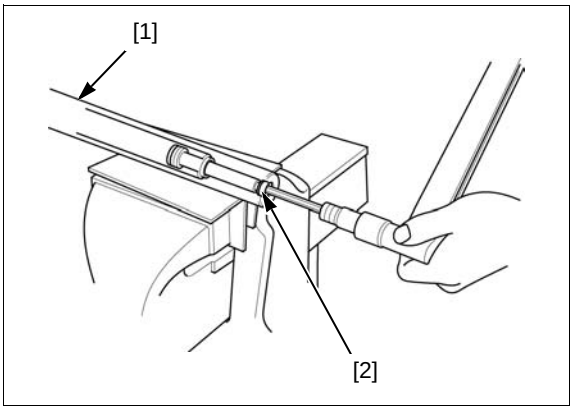
Extend the fork and hold the fork pipe, then install and temporarily tighten the fork cap bolt.



Hold the fork slider [1] in a vise with soft jaws or a shop towel.

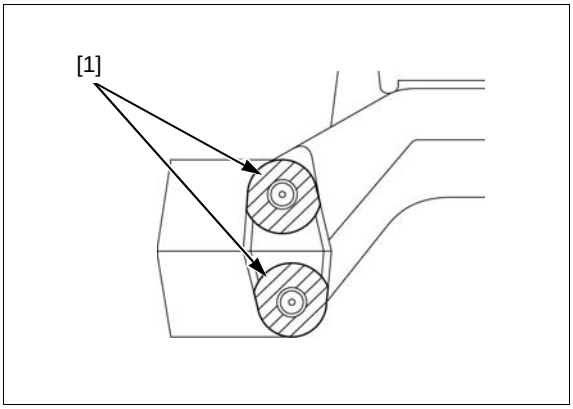
Tighten the fork socket bolt [2] to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m)

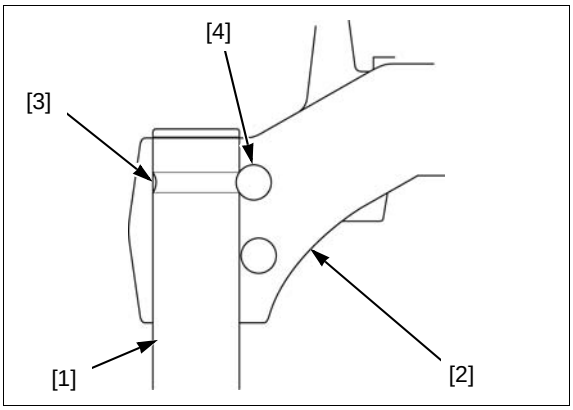


INSTALLATION

Clean the bottom bridge pinch bolt seating surface [1].



Install the fork pipe [1] into the steering stem [2] while aligning its groove [3] with the upper pinch bolt hole [4].



Install the bottom bridge upper pinch bolt [1].
Tighten the bottom bridge upper pinch bolt and lower pinch bolt [2] to the specified torque.

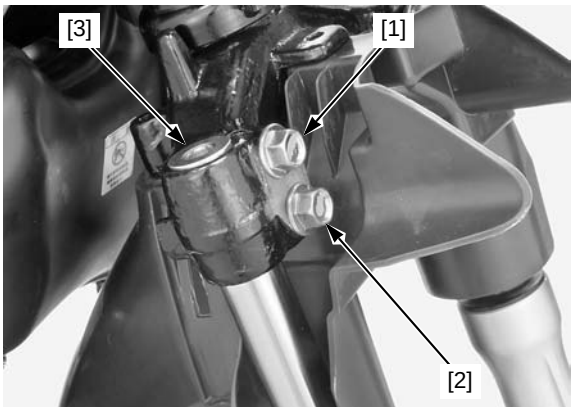
TORQUE: 64 N·m (6.5 kgf·m)

If you disassembled the fork, tighten the fork cap bolt [3] to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m)

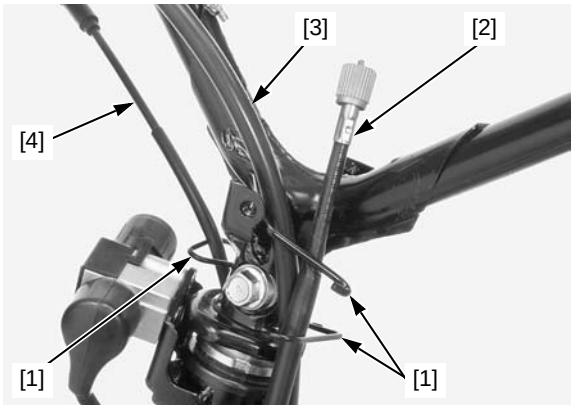
Install the following:

– Front wheel (page 14-4)
– Front fender A (page 2-6)



HANDLEBAR

REMOVAL/INSTALLATION



Remove the following:

- Front top cover (page 2-5)
- Handlebar rear cover (page 2-4)

Release the following cables from the handlebar guides [1]:

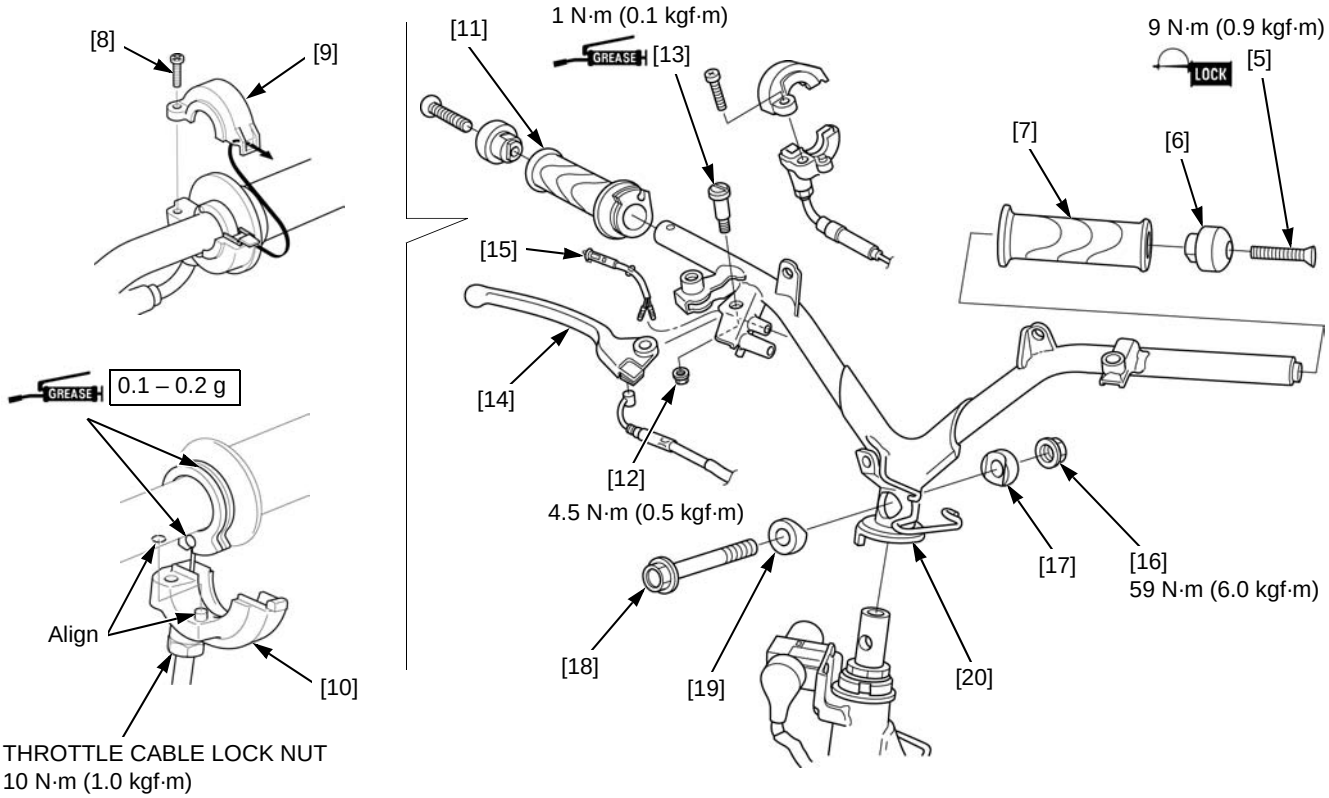
- Speedometer cable [2]
- Brake cable [3]
- Throttle cable [4]

Remove the following:

- Screws [5] and handlebar weights [6]
- Handlebar grip [7] from the left side
- Screw [8], throttle upper housing [9] and lower housing [10]
- Throttle pipe [11]
- Brake lever pivot nut [12], bolt [13] and brake lever [14]
- Front brake light switch [15]
- Nut [16], rear collar (Black) [17], bolt [18], front collar (Silver) [19] and handlebar post [20]

Installation is in the reverse order of removal.

- Apply locking agent to the handlebar weight screw threads.
- For handlebar post/handlebar grip installation (page 14-15).
- Route the wires/cables properly (page 1-16).
- Adjust the brake lever freeplay (page 3-12)
- Check the front brake light switch (page 3-13)



HANDLEBAR POST INSTALLATION

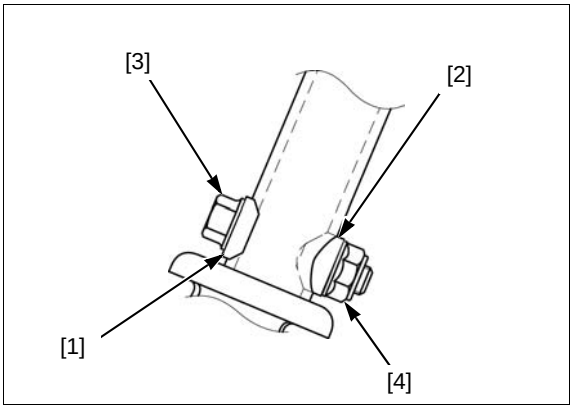
Install the handlebar post onto the steering stem while aligning the bolt holes.

Install the following:

– Front collar (Silver) [1]
– Rear collar (Black) [2]
– Bolt [3]
– Nut [4]

Tighten the nut to the specified torque.

TORQUE: 59 N·m (6.0 kgf·m)



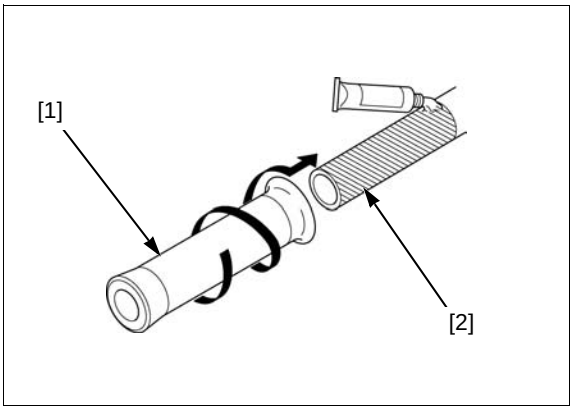
HANDLEBAR GRIP INSTALLATION

If the handlebar grips [1] were removed, apply Honda Bond A or equivalent to the inside of the grip and to the clean surfaces of the left handlebar [2].

Wait 3 – 5 minutes and install the grip.

Allow the adhesive to dry for 1 hour before using.

Rotate the grip for even application of the adhesive.

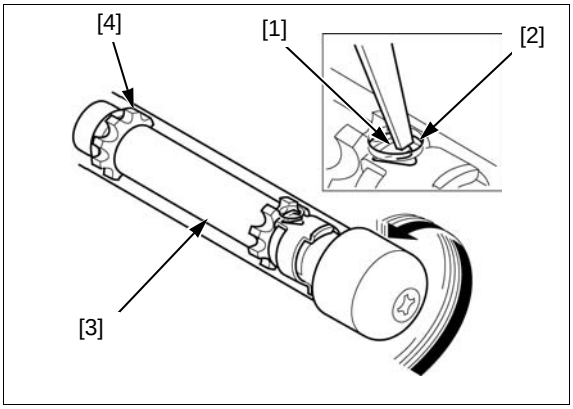


HANDLEBAR INNER WEIGHT REPLACEMENT

Push the retainer tab [1] through the handlebar hole [2] with a screwdriver or punch.

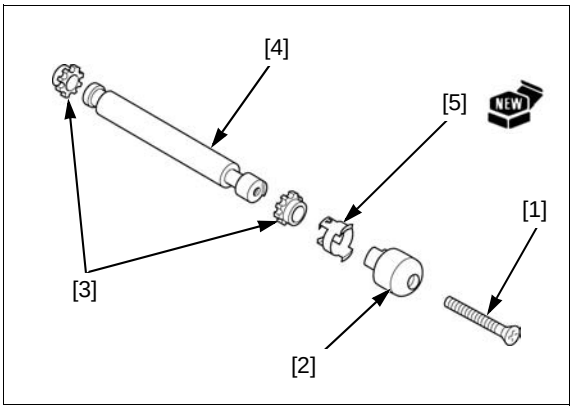
Apply lubricant spray through the handlebar hole to the rubber [4] for easy removal.

Temporarily install the handlebar weight and screw, then remove the inner weight [3] assembly by turning the handlebar weight.



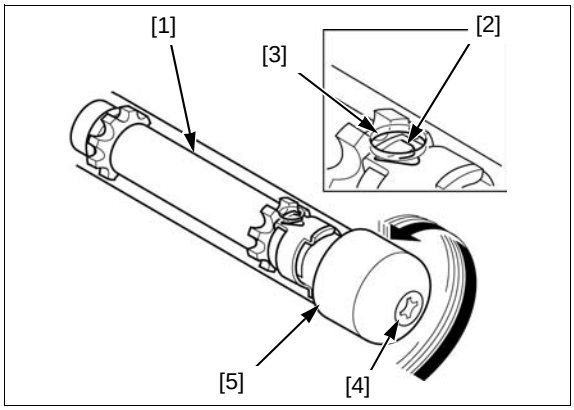
Remove the screw [1], handlebar weight [2] and rubber cushions [3] from the inner weight [4].
Discard the retainer [5].
Check that the condition of the rubber cushions, replace them if necessary.

Install the rubber cushions and a new retainer onto the inner weight.
Install the handlebar weight onto the inner weight aligning its boss with groove each other.
Install the handlebar weight screw.



Insert the inner weight assembly [1] into the handlebar. Turn the inner weight and hook the retainer tab [2] with the hole [3] in the handlebar.

Remove the screw [4] and handlebar weight [5].



STEERING STEM

REMOVAL

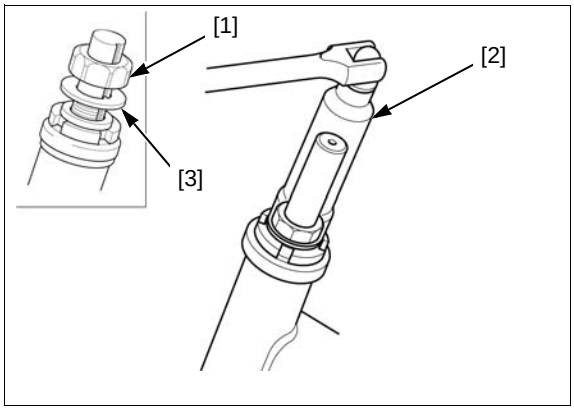
Remove the following:

– Fork (page 14-7)
– Handlebar (page 14-14)

Loosen the steering stem lock nut [1] using the special tool.

TOOL:
[2] Socket Wrench 32 (octagon) 07916-KM10000

Remove the steering stem lock nut and lock washer [3].

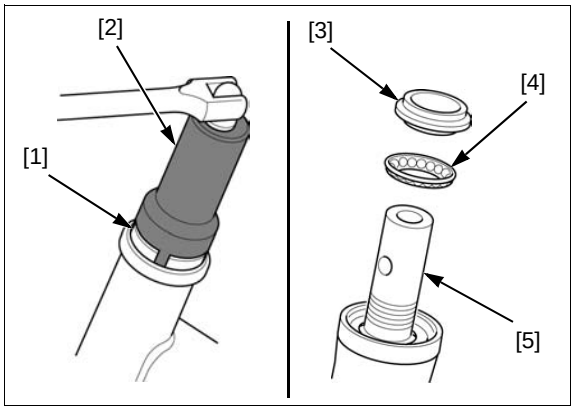


Be careful not to drop the steering stem.

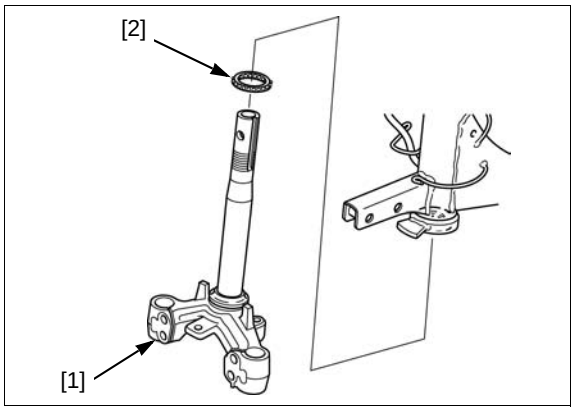
Hold the steering stem and loosen the top thread [1] using the special tool.

TOOL:
[2] Locknut Wrench 5.7 x 50 07916-3710101

Remove the upper bearing inner race [3] and upper bearing [4] while holding the steering stem [5].



Remove the steering stem [1] and lower bearing [2].



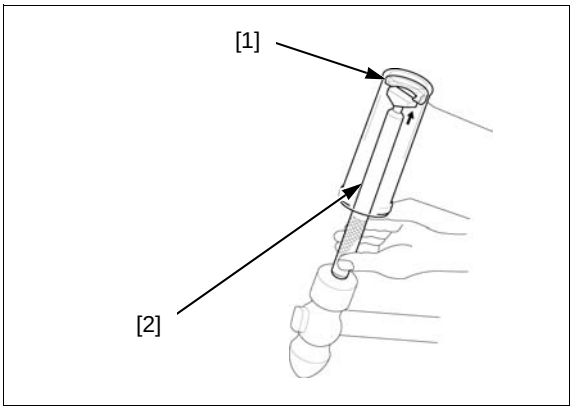
STEERING STEM BEARINGS REPLACEMENT

- Always replace the bearings and races as a set.

Remove the steering stem (page 14-16).

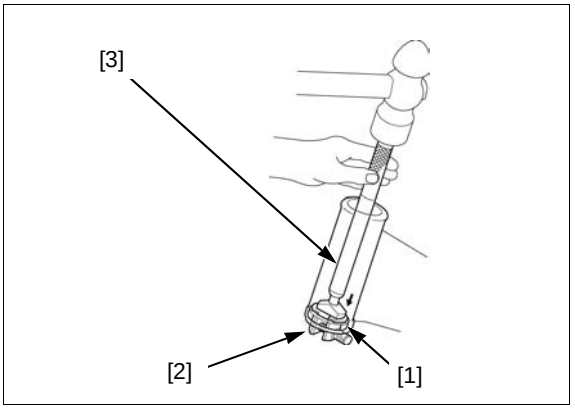
Remove the upper bearing outer race [1] using the following tool.

TOOL:
[2] Ball Race Remover 36 x 340L 07GMD-KS40100



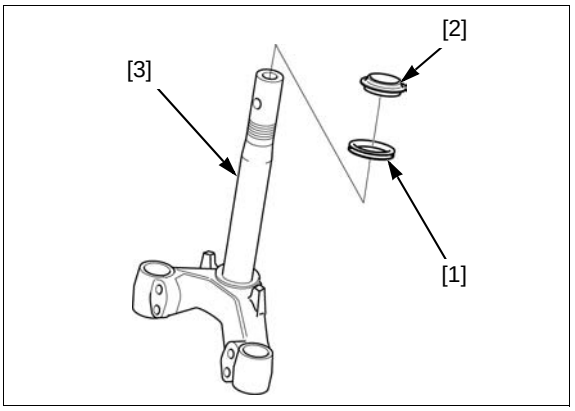
Remove the lower bearing outer race [1] using the following tools.

TOOLS:
[2] Ball Race Remover 34.5 07948-4630100
[3] Ball Race Remover 36 x 340L 07GMD-KS40100



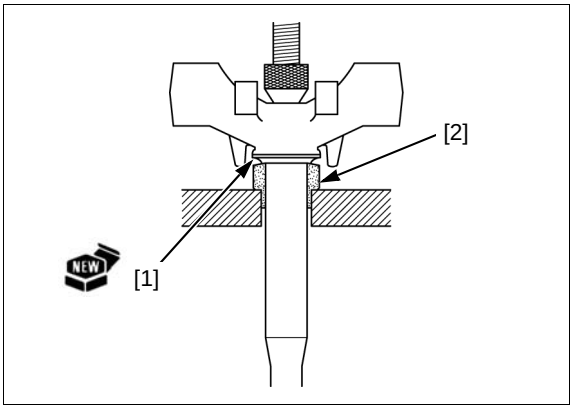
Remove the dust seal [1] from the steering stem lower bearing inner race [2].

Remove the lower bearing inner race with a chisel or equivalent tool being careful not to damage the stem [3].

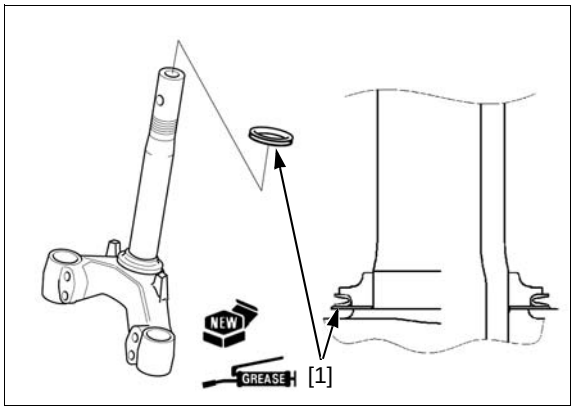


Install a new lower bearing inner race [1] using the following tool and hydraulic press.

TOOL:
[2] Attachment, 35 mm I.D. 07746-0030400

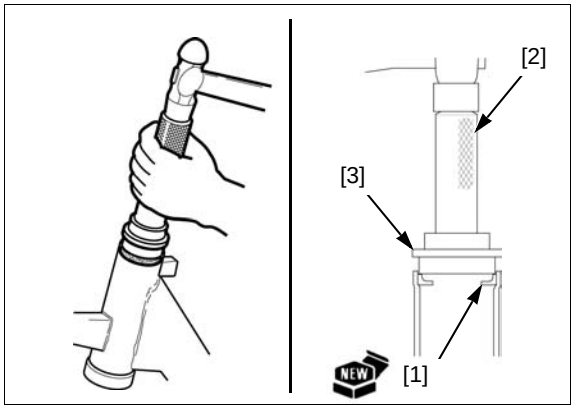


Apply 0.2 – 0.3 g of grease with extreme pressure agent (recommended: EXCELIGHT EP2 manufactured by KYODO YUSHI, japan or Shell ALVANIA EP2 or equivalent) to the lip of a new dust seal [1] then install it to the lower bearing inner race.



Drive a new upper bearing outer race [1] into the head pipe using the following tools.

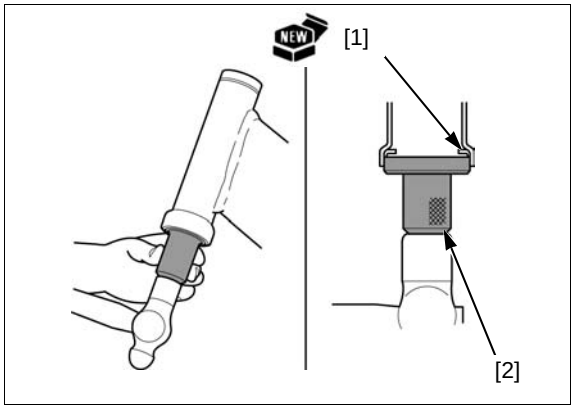
TOOLS:
[2] Driver Handle, 15 x 135L 07749-0010000
[3] Bearing Driver Attachment 55 07946-3710701



Drive a new lower bearing outer race [1] into the head pipe using the following tools.

TOOL:
[2] Oil Seal Driver 53.5 07947-SB00200

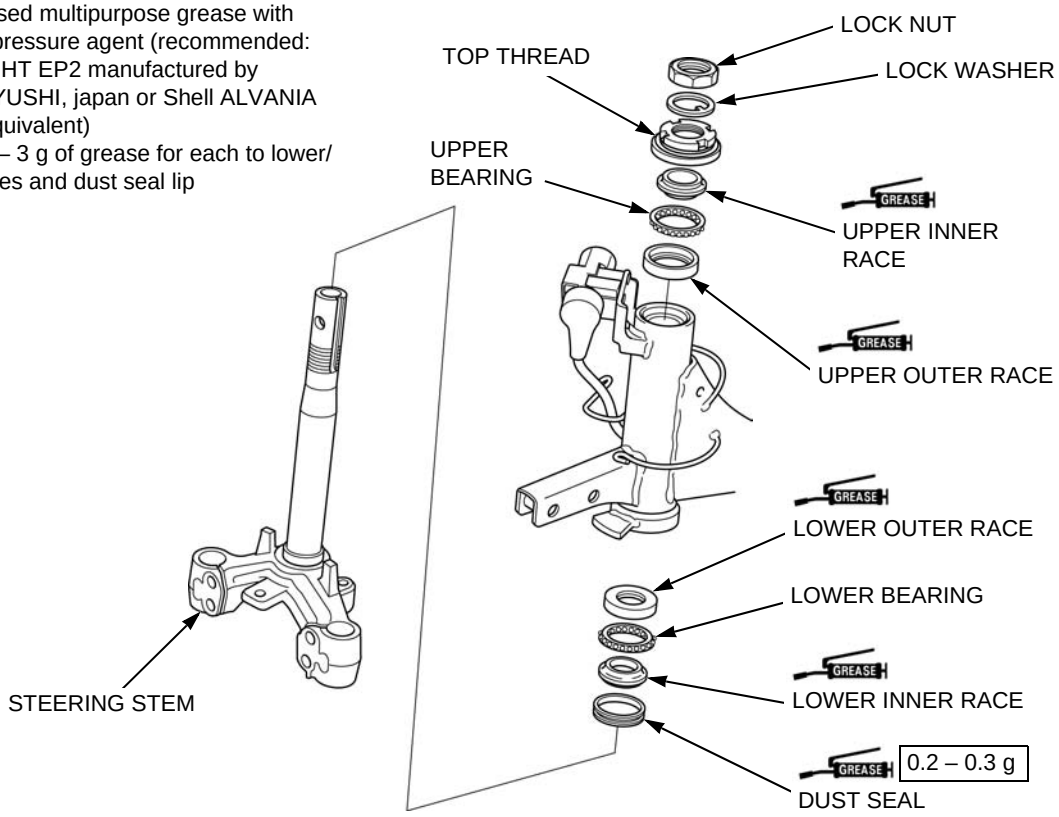
Install the steering stem (page 14-19).



INSTALLATION

For steering stem bearing replacement (page 14-17).

GREASE : Urea based multipurpose grease with extreme pressure agent (recommended: EXCELIGHT EP2 manufactured by KYODO YUSHI, japan or Shell ALVANIA EP2 or equivalent)
: Apply 2 – 3 g of grease for each to lower/ upper races and dust seal lip

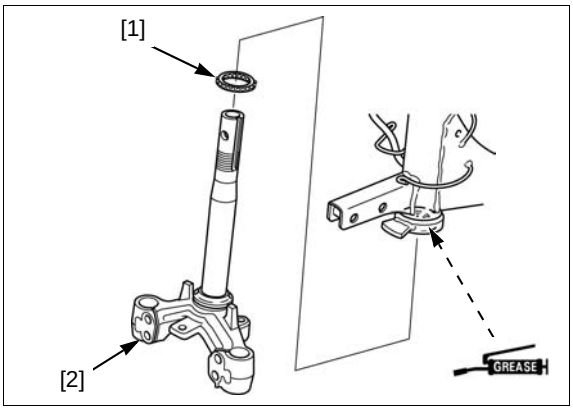


Apply 2 – 3 g of grease with extreme pressure agent (recommended: EXCELIGHT EP2 manufactured by KYODO YUSHI, japan or Shell ALVANIA EP2 or equivalent) to the lower bearing races.

Replace the races and bearing as a set.

Install the lower bearing [1] to the steering stem [2].

Insert the steering stem into the steering head pipe.

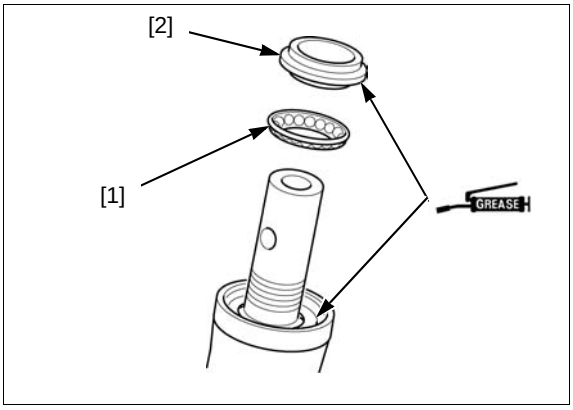


Apply 2 – 3 g of grease with extreme pressure agent (recommended: EXCELIGHT EP2 manufactured by KYODO YUSHI, japan or Shell ALVANIA EP2 or equivalent) to the upper bearing races.

Replace the races and bearing as a set.

Install the upper bearing [1] onto the upper bearing outer race.

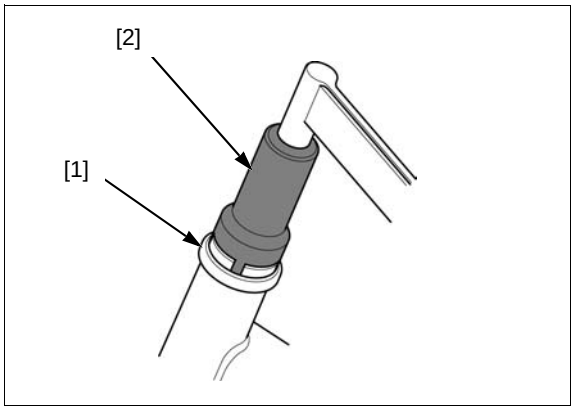
Install the upper bearing inner race [2] onto the stem.



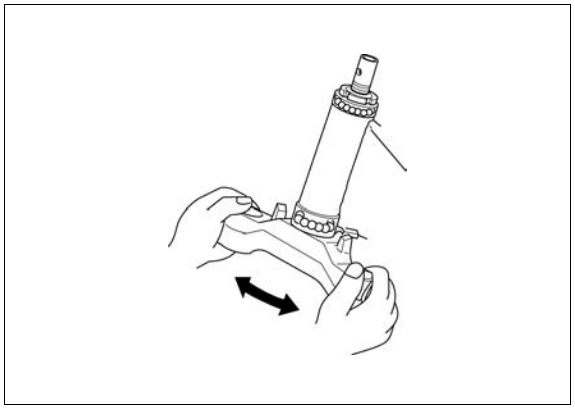
Install the top thread [1].
Hold the steering stem and tighten the stem top thread to the initial torque using the special tool.

TOOL:
[2] Locknut Wrench 5.7 x 50 07916-3710101

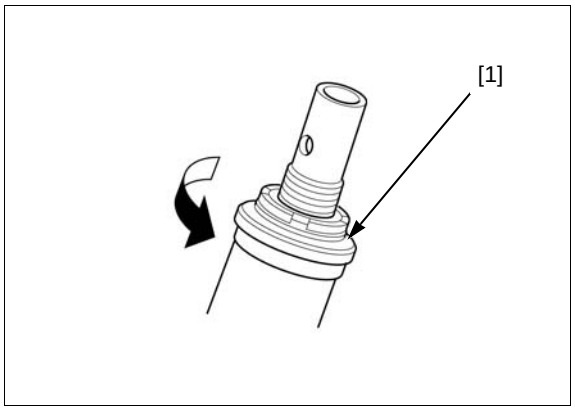
TORQUE: 25 N·m (2.5 kgf·m)



Turn the steering stem lock-to-lock several times to seat the bearing.



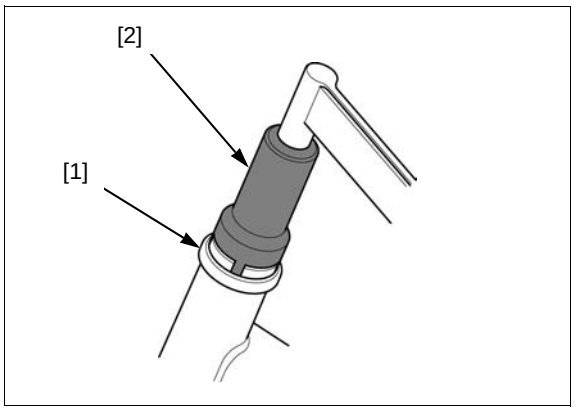
Completely loosen the top thread [1].



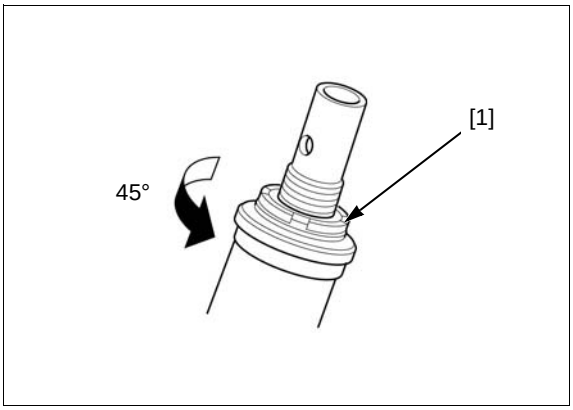
Hold the steering stem and tighten the stem top thread [1] to the specified torque using the special tool.

TOOL:
[2] Locknut Wrench 5.7 x 50 07916-3710101

TORQUE: 2.5 N·m (0.3 kgf·m)



Turn the top thread [1] counterclockwise about 45° degrees.

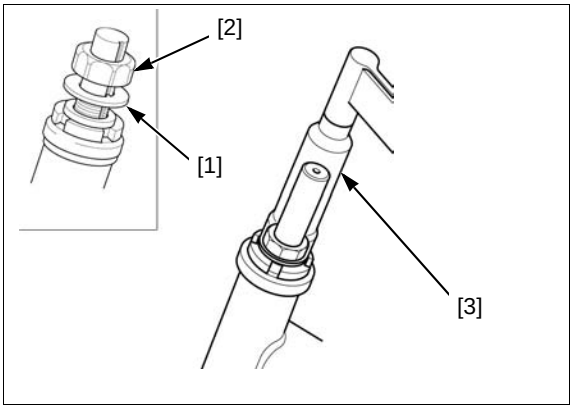


Install the lock washer [1] by aligning its tab with the steering stem groove.

Hold the top thread using the pin spanner and tighten the steering stem lock nut [2] to the specified torque.

TOOL:
[3] Socket Wrench 32 (octagon) 07916-KM10000

TORQUE: 83 N·m (8.5 kgf·m)



Turn the steering stem lock-to-lock several times.
Make sure the steering stem moves smoothly without play or binding.

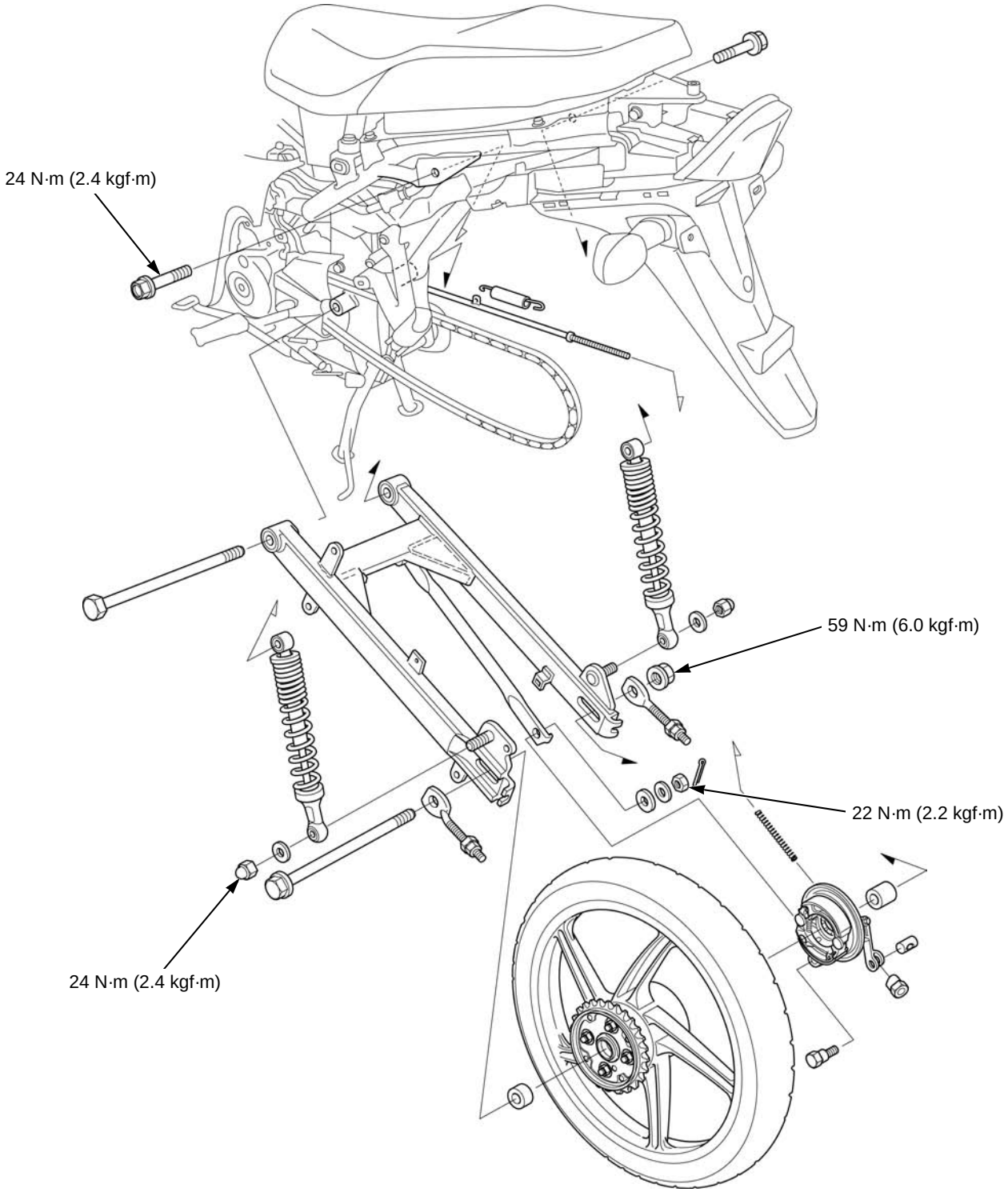
Install the following:

– Fork (page 14-13)
– Front wheel (page 14-4)
– Handlebar (page 14-14)

MEMO

15. REAR WHEEL/BRAKE/SUSPENSION

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

⚠ CAUTION

Frequent inhalation of brake shoe dust, regardless of material composition could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

- This section covers service of the rear wheel, rear brake, swingarm, shock absorber and brake pedal.
- A contaminated brake drum or shoe reduces stopping power. Discard contaminated shoes and clean a contaminated drum with a high quality brake degreasing agent.
- When servicing the rear wheel and suspension, support the motorcycle with its centerstand.
- Use only genuine Honda replacement bolts and nuts for all suspension pivots and mounting points.

TROUBLESHOOTING

Rear wheel wobbles
- Bent rim
- Worn wheel bearings
- Loose or distorted spokes (Spoke wheel type)
- Faulty tire
- Improperly tightened axle fasteners
- Faulty swingarm pivot bushings
- Insufficient tire pressure

Soft suspension
- Weak shock absorber springs
- Oil leakage from damper unit
- Low tire pressure

Stiff suspension
- Bent shock absorber damper rod
- Damaged swingarm pivot bushings
- Bent swingarm pivot
- High tire pressure
- Damaged shock absorber bushings

Steers to one side or does not track straight
- Bent rear axle
- Bent frame
- Damaged swingarm pivot bushing
- Axle alignment/chain adjustment not equal on both sides

Poor brake performance
- Improper brake adjustment
- Worn brake linings
- Contaminated brake linings
- Worn brake cam
- Worn brake drum
- Brake arm serrations improperly engaged
- Worn brake shoes at cam contact faces

REAR WHEEL

REMOVAL

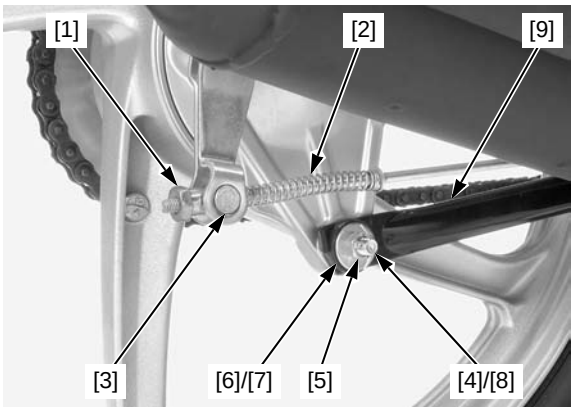
Support the motorcycle with its centerstand.

Remove the chain cover (page 2-12).

Remove the following:

– Brake adjusting nut [1]
– Spring [2]
– Joint pin [3]
– Cotter pin [4]
– Nut [5]
– Washer [6]
– Rubber washer [7]

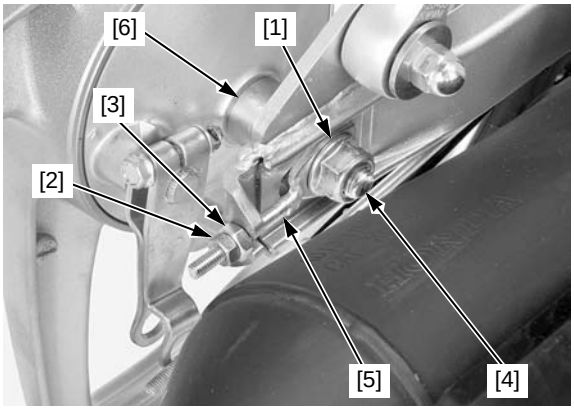
Remove the bolt [8] and release the stopper arm [9] from the brake panel.



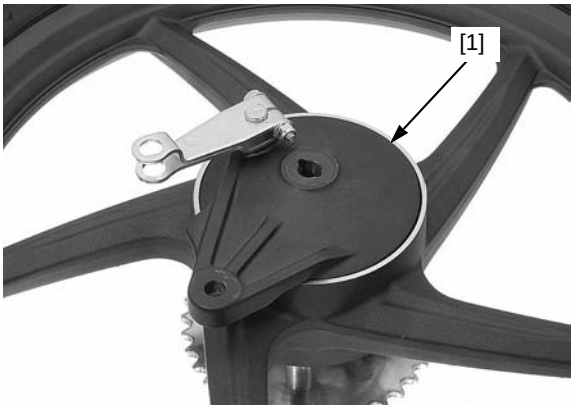
Loosen the axle nut [1].
Loosen both lock nuts [2] and adjusting nuts [3].
Push the rear wheel forward and release the drive chain.

Remove the following:

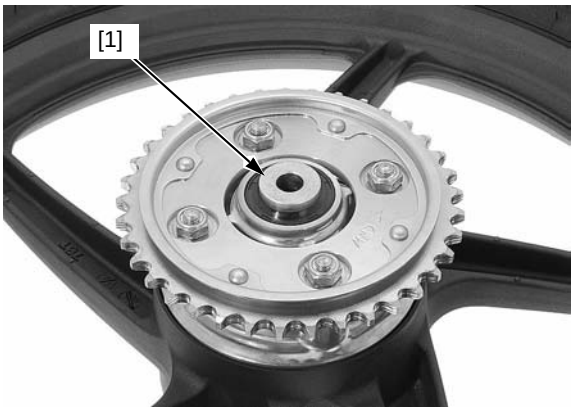
– Axle nut
– Rear axle [4]
– Adjuster plates [5]
– Rear wheel
– Right side collar [6]



Remove the brake panel assembly [1] from the right wheel hub.



Remove the side collar [1] from the left side.



DISASSEMBLY/ASSEMBLY

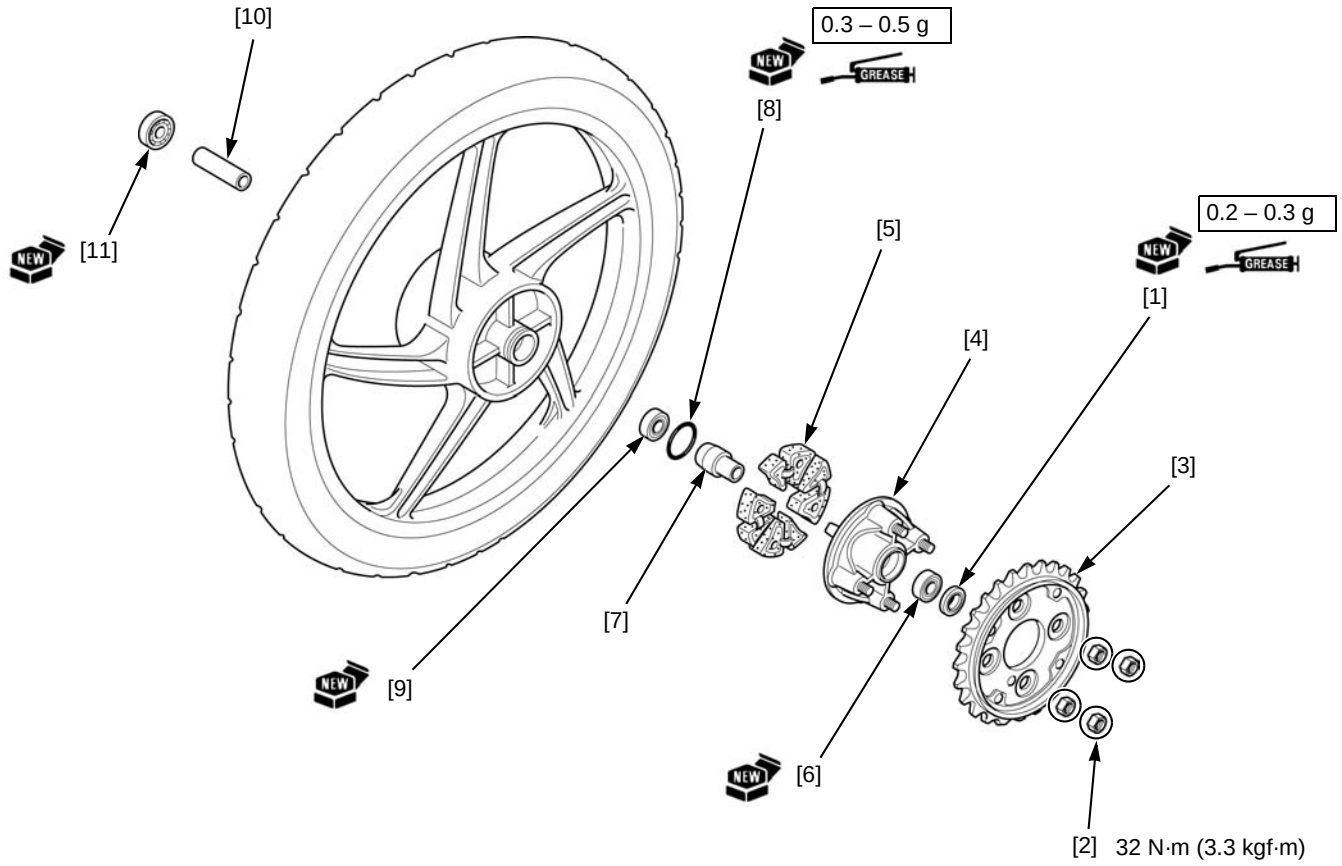
Remove/install the following:

– Dust seal [1]
– Driven flange [4]
– Driven flange collar [7]
– Distance collar [10]
– Nuts [2]
– Damper rubbers [5]
– O-ring [8]
– Right wheel bearing (6301UU) [11]
– Driven sprocket (37T) [3]
– Driven flange bearing (6203UU) [6]
– Left wheel bearing (6201UU) [9]

- Replace the bearings, dust seal and O-ring with new ones.
- Apply grease to the dust seal lip, O-ring and bearing cavities.

Refer to procedures for bearing replacement:

– Wheel bearing (page 15-6)
– Driven flange bearing (page 15-7)



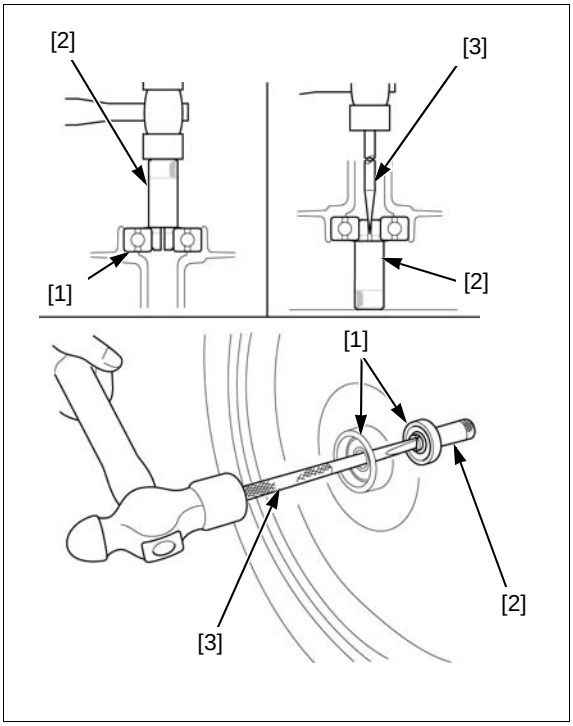
WHEEL BEARING REPLACEMENT

Replace the wheel bearings in pairs. Do not reuse the old bearings.

Install the bearing remover head into the wheel bearing [1].
From opposite side install the bearing remover shaft and drive the bearing out of the wheel hub.
Remove the distance collar and drive out the other bearing.

TOOLS:

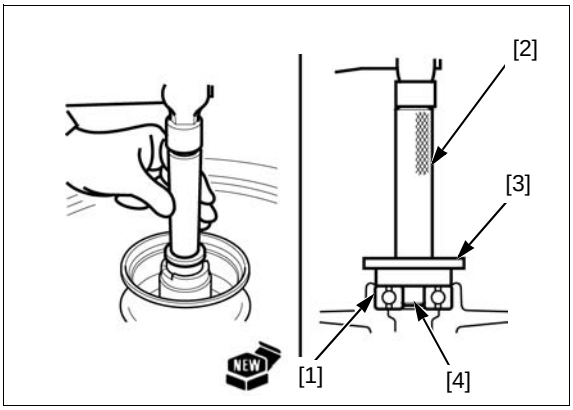
[2] Remover Head 12 mm	**07746-0050300**
[3] Bearing Remover Shaft 9 x 200L	**07746-0050100**



Drive in a new right bearing [1] squarely with its marked side facing up until it is fully seated.

TOOLS:

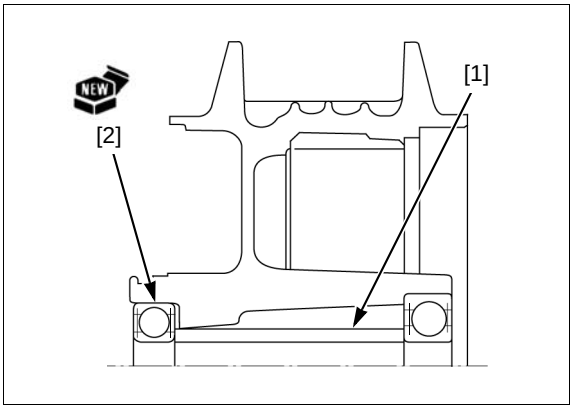
[2] Driver Handle, 15 x 135L	**07749-0010000**
[3] Attachment, 37 x 40 mm	**07746-0010200**
[4] Pilot 12 mm	**07746-0040200**



Install the distance collar [1].
Drive in a new left bearing [2] squarely with its marked side facing up until it is seated on the distance collar.

TOOLS:

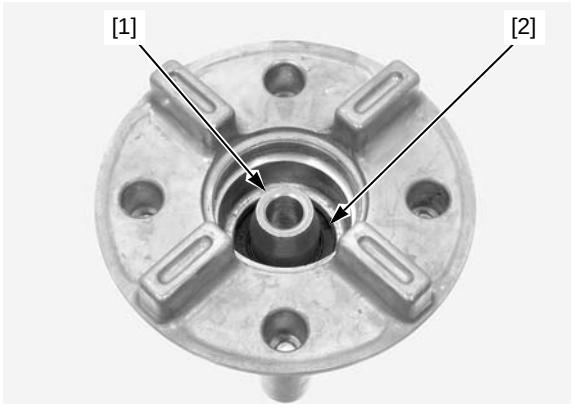
Driver Handle, 15 x 135L	**07749-0010000**
Attachment, 32 x 35 mm	**07746-0010100**
Pilot 12 mm	**07746-0040200**



DRIVEN FLANGE BEARING REPLACEMENT

Remove the driven flange collar [1].

Drive out the driven flange bearing [2].

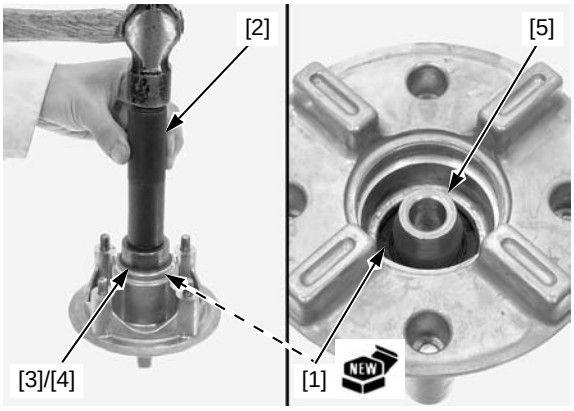


Install a new driven flange bearing [1] squarely with its marked side facing up until it is fully seated.

TOOLS:

[2] Driver Handle, 15 x 135L	**07749-0010000**
[3] Attachment, 37 x 40 mm	**07746-0010200**
[4] Pilot 17 mm	**07746-0040400**

Install the driven flange collar [5] into the driven flange bearing.



WHEEL CENTER ADJUSTMENT (SPOKE WHEEL TYPE)

Place the wheel rim on the work bench.
Place the wheel hub in the center of the rim and begin lacing with new spokes.

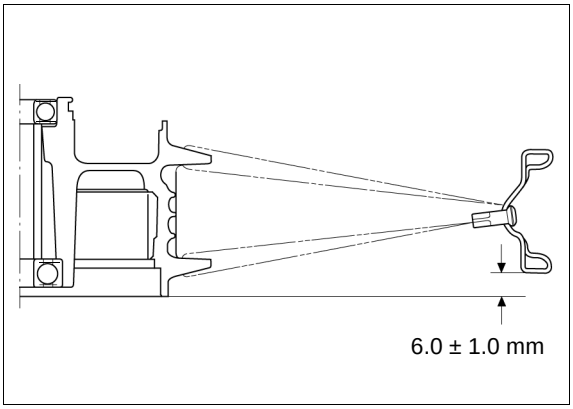
Adjust the wheel hub position so that the distance from the wheel hub right end surface to the side of rim is 6.0 ± 1.0 mm as shown.

TOOL:

Spoke Wrench 5.8 x 6.1 mm	**07701-0020300**

TORQUE: 3.7 N·m (0.4 kgf·m)

Check the rim runout.

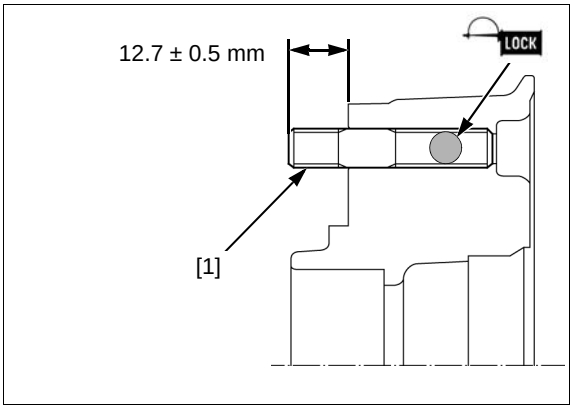


DRIVEN FLANGE STUD BOLT

Apply locking agent to the driven flange stud bolt [1] threads if the stud bolts are removed.

Install and tighten the driven flange stud bolt.

After installing the stud bolts, check that the height from the bolt head to the driven flange surface is within specification.

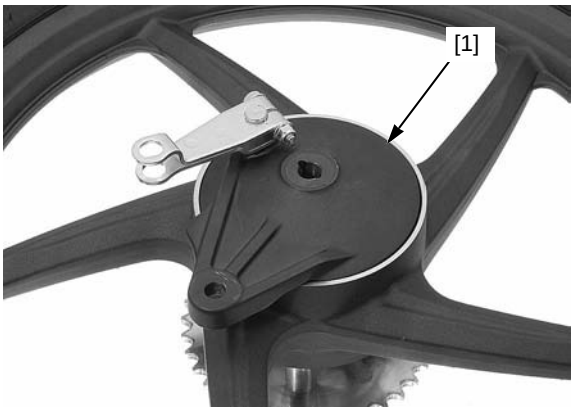


INSTALLATION

Install the side collar [1] into the driven flange.

Do not get grease on the brake drum or stopping power will be reduced.

Install the brake panel assembly [1] into the wheel hub.



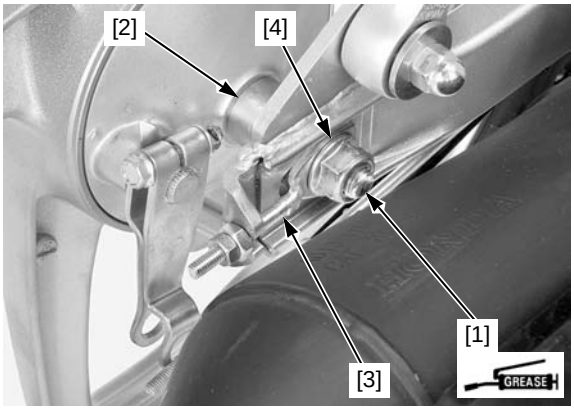
Place the rear wheel between the swingarm.

Install the drive chain over the driven sprocket.

Apply grease to the rear axle [1] surface.

Install the following:

- Left adjuster plate
- Rear axle
- Right side collar [2]
- Right adjuster plate [3]
- Axle nut [4]



Install the stopper arm [1] to the brake panel with bolt [2], rubber washer [3], washer [4] and nut [5].

Tighten the nut to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m)

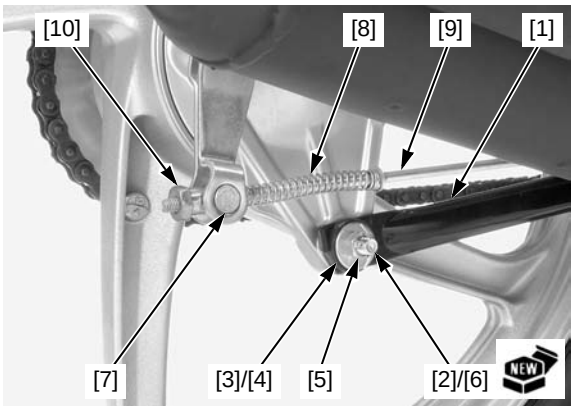
Install a new cotter pin [6].

Install the joint pin [7] into the brake arm, then install the spring [8], brake rod [9] and adjusting nut [10].

Install the chain cover (page 2-12).

Adjust the drive chain slack (page 3-10).

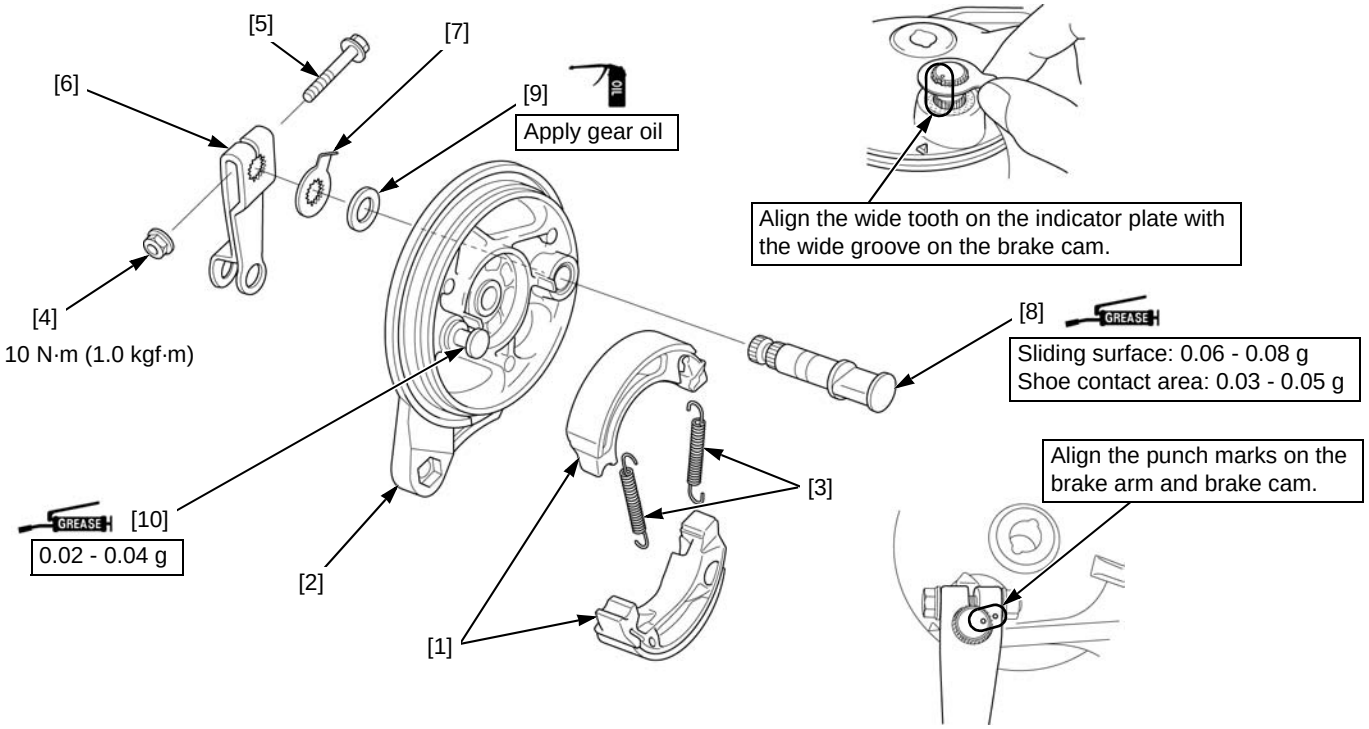
Adjust the brake pedal freeplay (page 3-12).



REAR BRAKE

DISASSEMBLY/ASSEMBLY

Disassemble and assemble the rear brake panel as following illustration.



- Brake shoes [1]
- Brake panel [2]
- Brake shoe springs [3]
- Nut [4]/ Bolt [5]
- Brake arm [6]
- Indicator plate [7]
- Brake cam [8]
- Felt seal [9]
- Anchor pin [10]

- Adjust the rear brake pedal freeplay after installing the brake panel (page 3-12).

SWINGARM

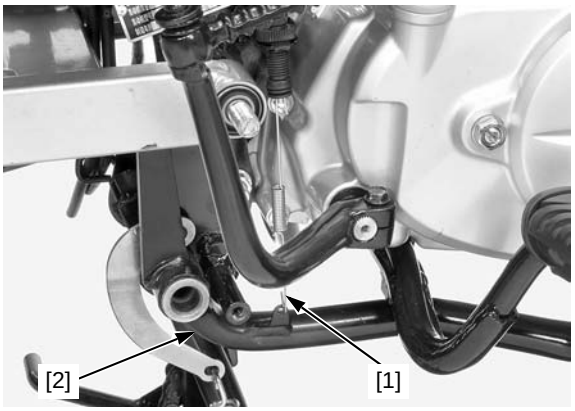
REMOVAL

Support the motorcycle with its centerstand.

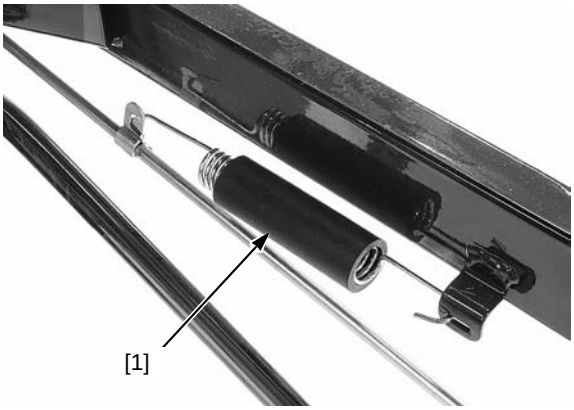
Remove the following:

– Exhaust pipe/muffler (page 2-13)
– Rear wheel (page 15-4)

Unhook the brake light switch spring [1] from the brake pedal [2].

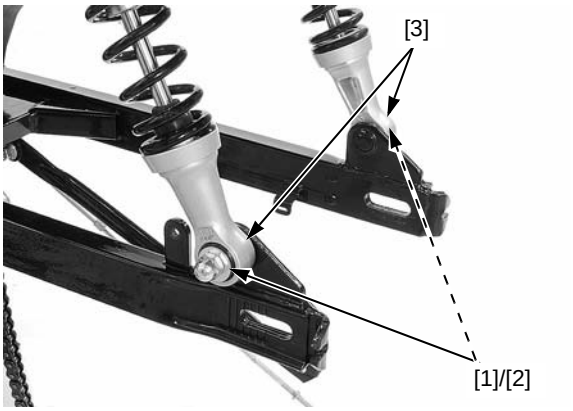


Unhook the brake pedal return spring [1] from the swingarm.

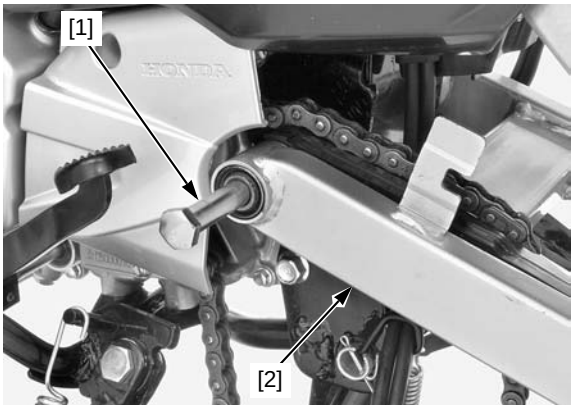


Remove the rear shock absorber lower mounting cap nuts [1] and washers [2].

Release both shock absorber lower mounts [3] from the swingarm studs.



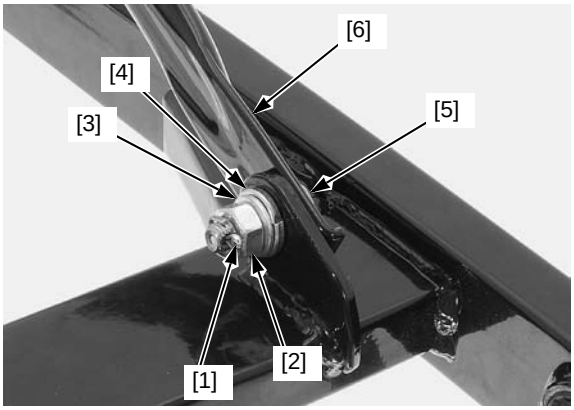
Remove the swingarm pivot bolt [1] and swingarm [2].



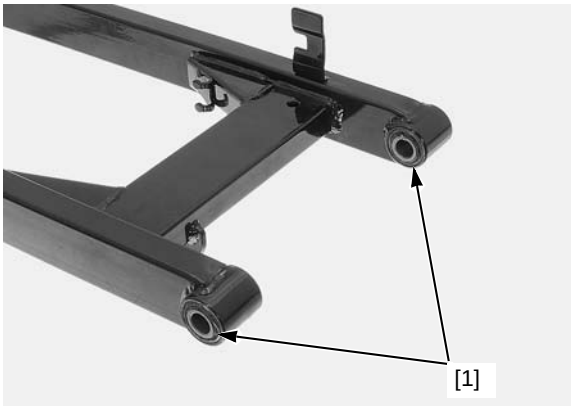
DISASSEMBLY/ASSEMBLY/ INSPECTION

Remove the following:

- Cotter pin [1]
- Nut [2]
- Washer [3]
- Spring washer [4]
- Bolt [5]
- Stopper arm [6]



Check the pivot bushings [1] for wear or damage.
Check the swingarm for cracks or damage.



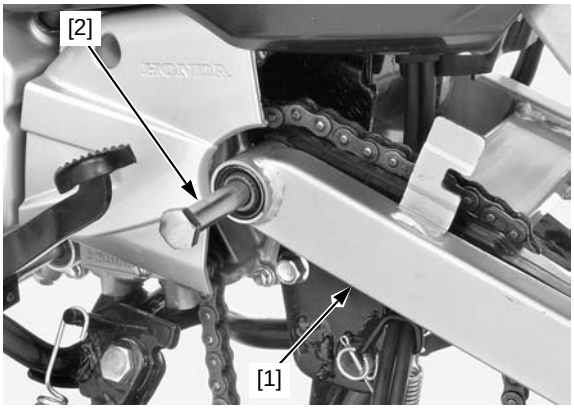
Secure the stopper arm nut with new cotter pin.

Install the removed parts in the parts in the reserved order of removal.

TORQUE:
Rear brake stopper arm nut:
22 N·m (2.2 kgf·m)

INSTALLATION

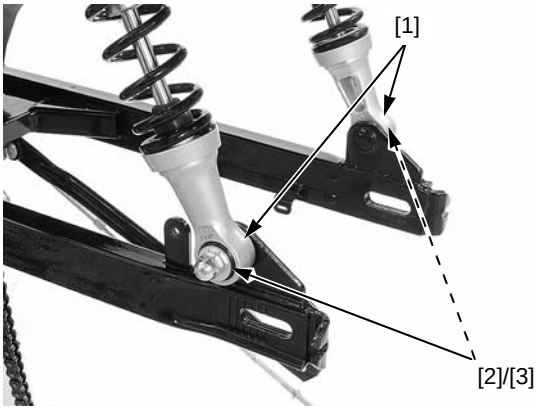
Route the drive chain and install the swingarm [1] into the frame.
Insert the swingarm pivot bolt [2] from the left side.



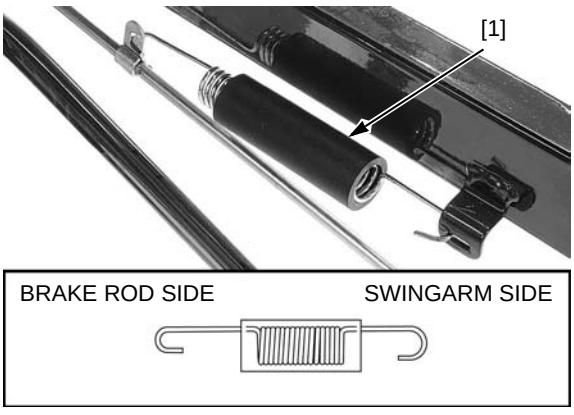
Hook the rear shock absorber lower mounts [1] onto the pivots, then install the washers [2] and lower mounting cap nuts [3].

Tighten the rear shock absorber lower mounting cap nuts to the specified torque.

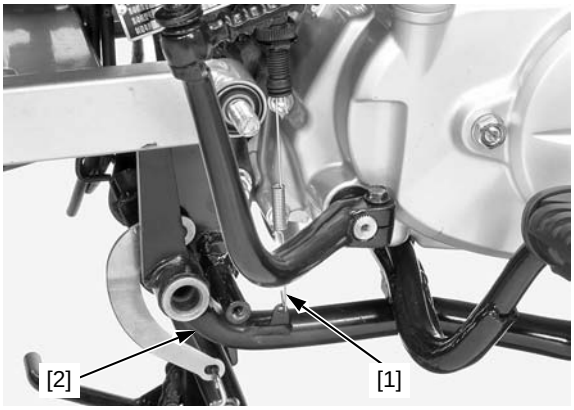
TORQUE: 24 N·m (2.4 kgf·m)



Hook the brake pedal return spring [1] to the swingarm as shown direction.



Hook the brake light switch spring [1] to the brake pedal [2].



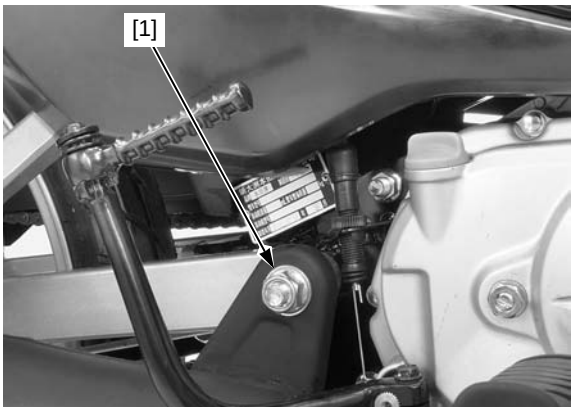
Install the following:

– Rear wheel (page 15-8)
– Exhaust pipe/muffler (page 2-14)

Retract the centerstand carefully and support the motorcycle securely, then tighten the swingarm pivot nut [1] to the specified torque.

TORQUE: 59 N·m (6.0 kgf·m)

Support the motorcycle with its centerstand.



SHOCK ABSORBER

REMOVAL/INSTALLATION

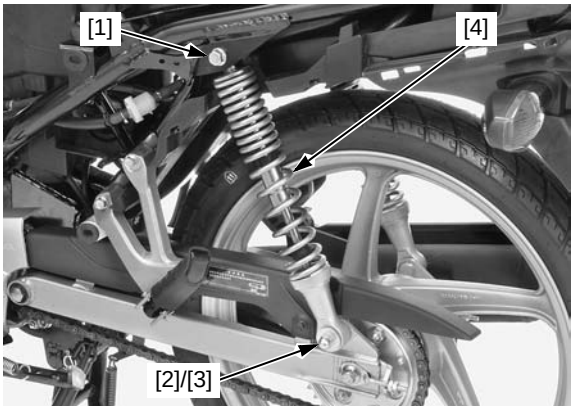
Support the motorcycle with its centerstand.

Remove the body cover (page 2-8).

Remove the shock absorber upper mounting bolts [1]. Remove the shock absorber lower mounting cap nuts [2] and washers [3], then remove the shock absorbers [4].

Installation is in the reverse order of removal.

TORQUE:
Shock absorber upper mounting bolt:
24 N·m (2.4 kgf·m)
Shock absorber lower mounting cap nut:
24 N·m (2.4 kgf·m)



INSPECTION

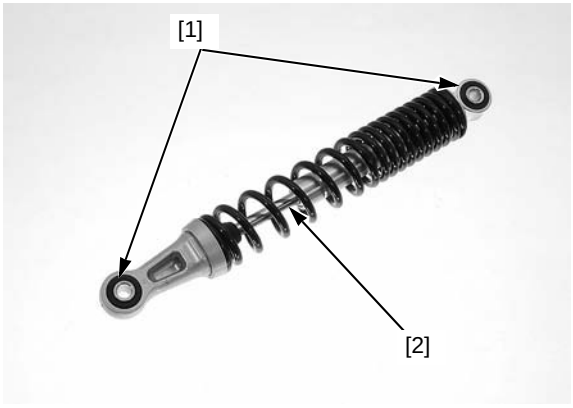
Do not disassemble the shock absorber. Replace the shock absorbers as a set.

Visually inspect the shock absorber for wear or damage.

Check the following:

– Deformation or oil leakage
– Bushings [1] for wear or damage
– Damper rod [2] for bend or damage

Check the smooth damper operation.



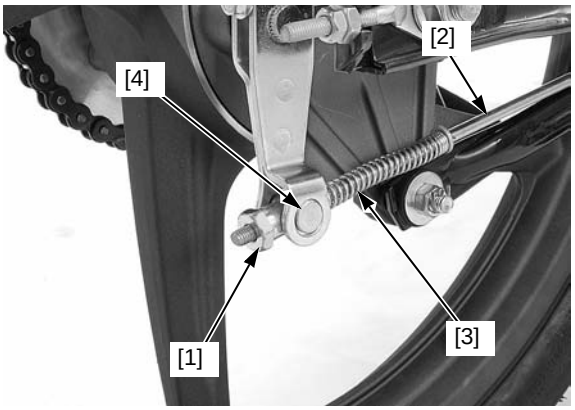
BRAKE PEDAL

REMOVAL/INSTALLATION

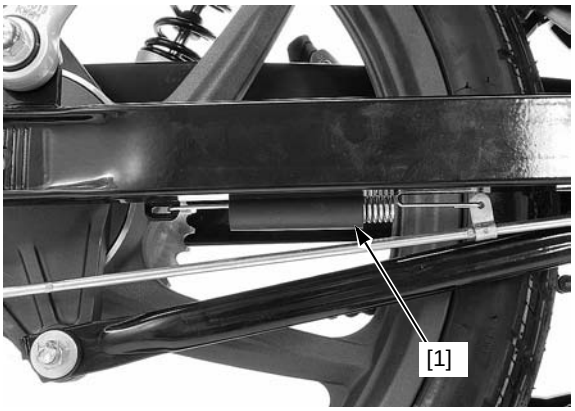
Remove the exhaust pipe/muffler (page 2-13).

Support the motorcycle using a safety stand or hoist.

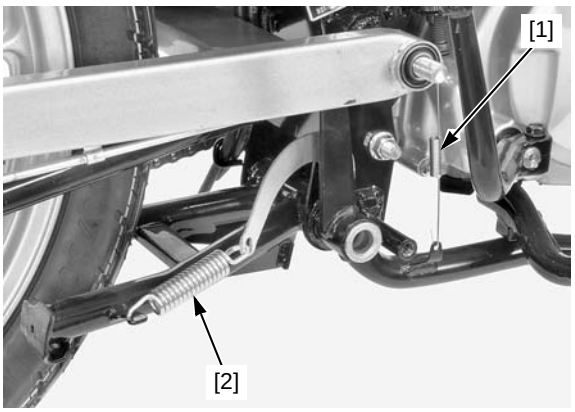
Remove the brake adjusting nut [1], brake rod [2], spring [3] and joint pin [4] from the brake arm.



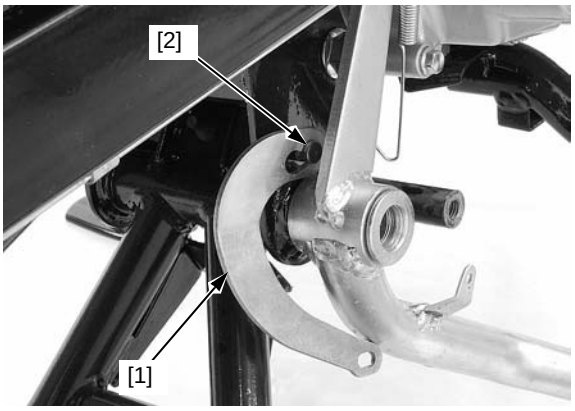
Unhook the brake pedal return spring [1].



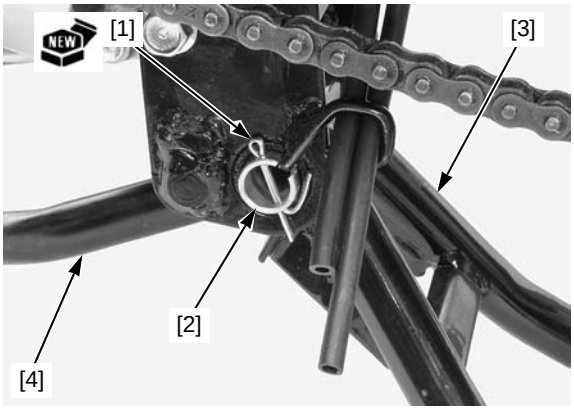
Unhook the brake light switch spring [1] and centerstand spring [2].



Remove the centerstand spring plate [1] from the boss [2] of the frame.



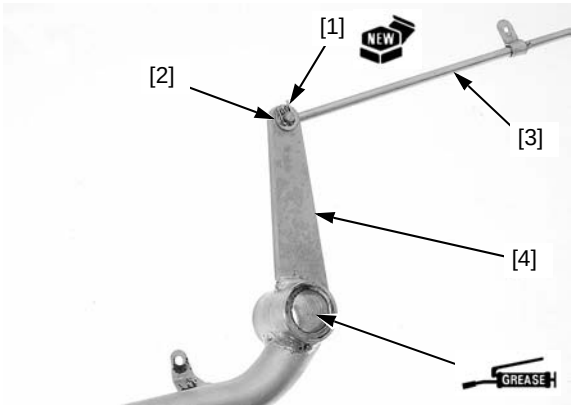
Remove the cotter pin [1], then remove the centerstand pivot [2].
Remove the centerstand [3] and brake pedal [4].



Remove the cotter pin [1], washer [2], and separate the brake rod [3] from the brake pedal [4].

Installation is in the reverse order of removal.

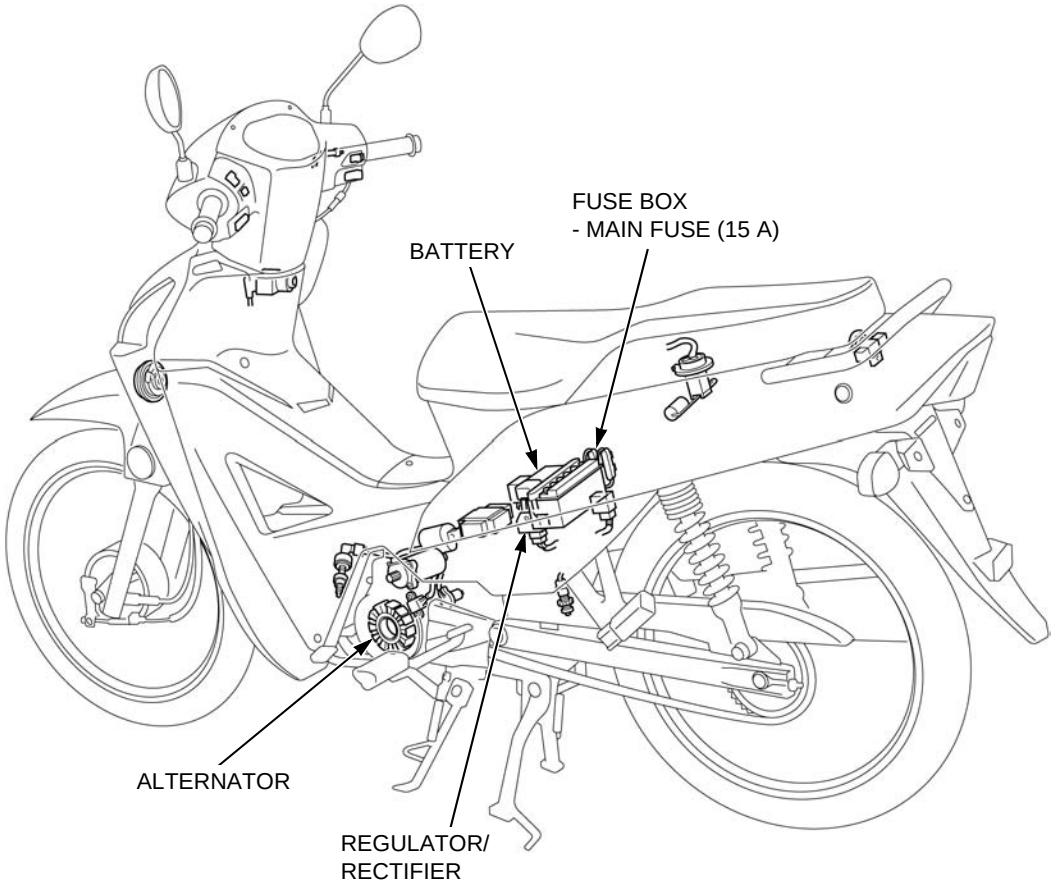
- Replace the cotter pins with new ones.
- Apply grease to the brake pedal/centerstand pivot sliding surface.
- Insert the centerstand pivot while aligning its groove with the stopper of the frame.
- Install the springs in the correct directions.



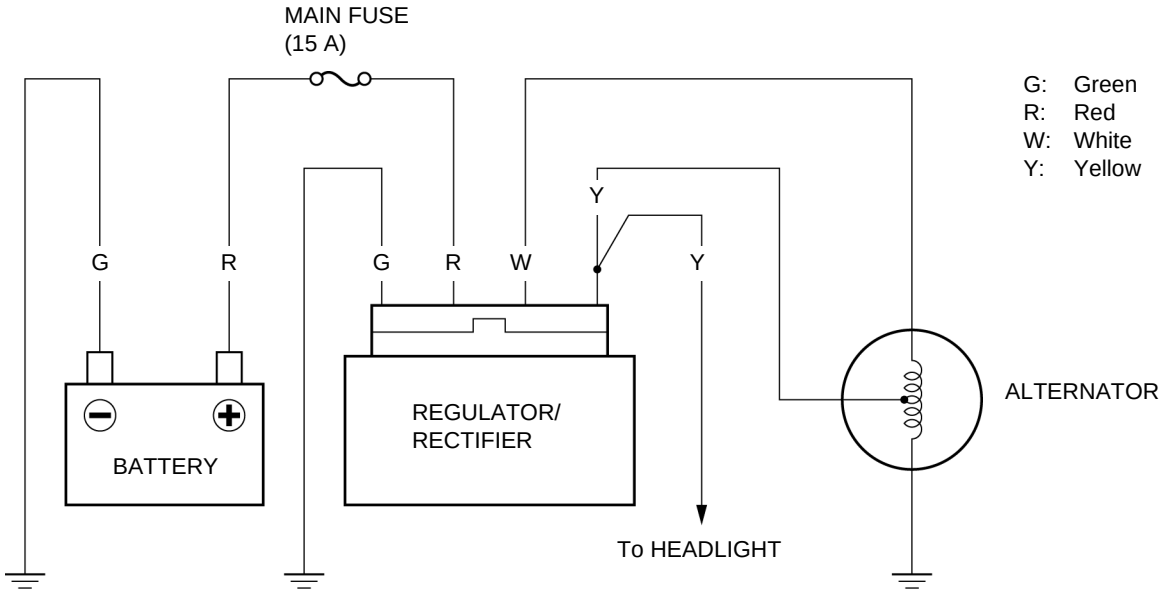
16. BATTERY/CHARGING SYSTEM

SYSTEM LOCATION

Starter motor type shown:



SYSTEM DIAGRAM



SERVICE INFORMATION

GENERAL

⚠ WARNING

- The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging.
- The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.
  – If electrolyte gets on your skin, flush with water.
  – If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician immediately.
- Electrolyte is poisonous.
  – If swallowed, drink large quantities of water or milk and call your local Poison Control Center or a call a physician immediately.

NOTICE

- *Always turn OFF the ignition switch before disconnecting any electrical component.*
- *Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is ON and current is present.*

- For extended storage, remove the battery, give it a full charge, and store it in a cool, dry space. For maximum service life, charge the stored battery every two weeks.
- For a battery remaining in a stored motorcycle, disconnect the negative battery cable from the battery terminal.
- The battery can be damaged if overcharged or undercharged, or if left to discharge for long period. These same conditions contribute to shortening the "life span" of the battery. Even under normal use, the performance of the battery deteriorates after 2 – 3 years.
- Battery voltage may recover after battery charging, but under heavy load, the battery voltage will drop quickly and eventually die out. For this reason, the charging system is often suspected as the problem. Battery overcharge often results from problems in the battery itself, which may appear to be an overcharging symptom. If one of the battery cells is shorted and battery voltage does not increase, the regulator/rectifier supplies excess voltage to the battery. Under these conditions, the electrolyte level goes down quickly.
- Before troubleshooting the charging system, check for proper use and maintenance of the battery. Check if the battery is frequently under heavy load, such as having the headlight and taillight ON for long periods of time without riding the motorcycle.
- The battery will self-discharge when the motorcycle is not in use. For this reason, charge the battery every two weeks to prevent sulfation from occurring.
- Filling a new battery with electrolyte will produce some voltage, but in order to achieve its maximum performance, always charge the battery. Also, the battery life is lengthened when it is initially charged.
- When checking the charging system, always follow the steps in the troubleshooting (page 16-4).
- For alternator service (page 11-2).

BATTERY CHARGING

- Turn power ON/OFF at the charger, not at the battery terminal.
- For battery charging, do not exceed the charging current and time specified on the battery. Using excessive current or extending the charging time may damage the battery.
- Quick charging should only be done in an emergency; slow charging is preferred.

BATTERY TESTING

Refer to the instruction of the Operation Manual for the recommended battery tester for details about battery testing. The recommended battery tester puts a "load" on the battery so that the actual battery condition during load can be measured.

Recommended battery tester: BM-210 or BATTERY MATE or equivalent

TROUBLESHOOTING

BATTERY IS DAMAGED OR WEAK

1. BATTERY TEST

Remove the battery (page 16-5).

Check the battery condition using the recommended battery tester (page 16-7).

RECOMMENDED BATTERY TESTER: BM-210 or BATTERY MATE or equivalent

Is the battery in good condition?

YES – GO TO STEP 2.

NO – Faulty battery

2. CURRENT LEAKAGE TEST

Install the battery (page 16-5).

Check the battery current leakage (page 16-7).

Is the current leakage below 0.1 mA?

YES – GO TO STEP 4.

NO – GO TO STEP 3.

3. CURRENT LEAKAGE TEST WITHOUT REGULATOR/RECTIFIER CONNECTED

Disconnect the regulator/rectifier connector and recheck the battery current leakage.

Is the current leakage below 0.1 mA?

YES – Faulty regulator/rectifier

NO –
- Shorted wire harness
- Faulty ignition switch

4. ALTERNATOR CHARGING COIL INSPECTION

Check the alternator charging coil (page 16-8).

Is the alternator charging coil resistance within 0.2 – 1.0 Ω (20°C/68°F)?

YES – GO TO STEP 5.

NO – Faulty charging coil

5. CHARGING VOLTAGE INSPECTION

Measure and record the battery voltage using a digital multimeter (page 16-6).

Start the engine.

Measure the charging voltage (page 16-8).

Compare the measurements to result of the following calculation.

STANDARD: Measured BV < Measured CV < 15.5 V
- **BV = Battery Voltage (page 16-6)**
- **CV = Charging Voltage**

Is the measured charging voltage within the standard voltage?

YES – Faulty battery

NO – GO TO STEP 6.

6. REGULATOR/RECTIFIER SYSTEM INSPECTION

Check the voltage and resistance at the regulator/rectifier connectors (page 16-9).

Are the results of checked voltage and resistance correct?

YES – Faulty regulator/rectifier

NO –
- Open circuit in related wire
- Loose or poor contacts of related terminal
- Shorted wire harness

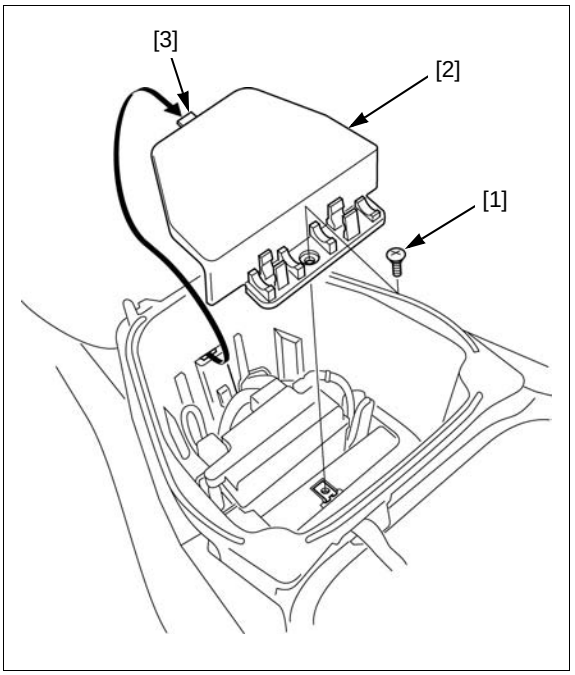
BATTERY

REMOVAL/INSTALLATION

- Always turn the ignition switch OFF before removing the battery.

Open the seat using the ignition key.

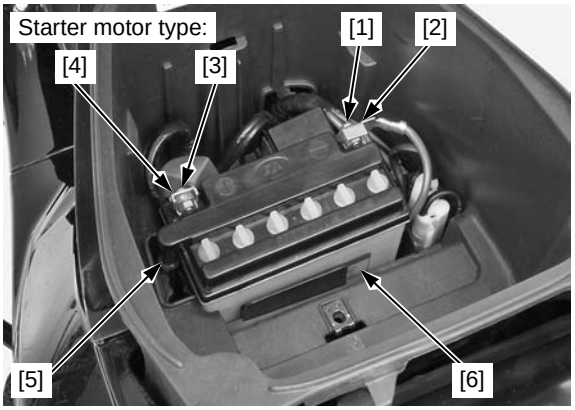
Remove the special screw [1] and battery cover [2] while releasing the battery cover tab [3] from slot of the luggage box.



Always disconnect the negative terminal first.

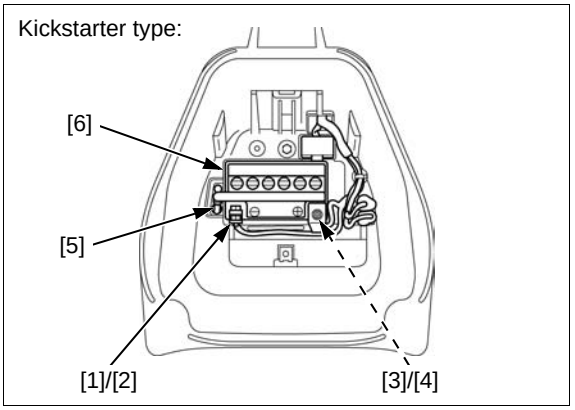
Remove the bolt [1] and disconnect the negative (–) cable [2].
Pull back the positive terminal cover.
Remove the bolt [3] and disconnect the positive (+) cable [4].

Disconnect the battery breather hose [5] and remove the battery [6] out of the luggage box.



Installation is in the reverse order of removal.

- Connect the positive (+) cable to the battery first, then connect the negative (–) cable.
- After installing the battery, coat the terminals with clean grease.
- Make sure that the battery breather hose is correctly positioned, and not kinked, trapped or bent in such away as to obstruct the passage of the air.
  – If the hose is blocked, the battery's internal pressure will not be relived, the breather may come off, or the battery crack as a result.
- Route the battery breather hose properly (page 1-16).



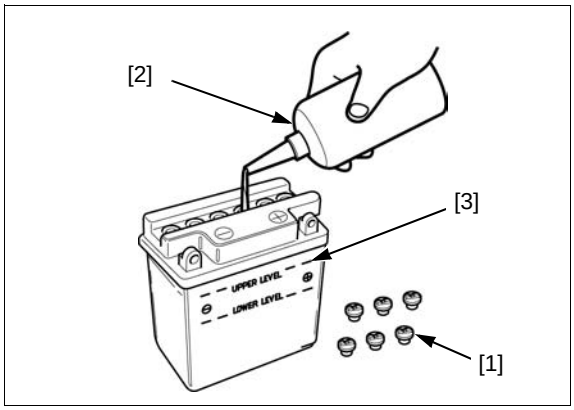
BATTERY INSPECTION

Remove the battery (page 16-5).

Check for cracked or broken case or caps [1].
Replace the battery if damaged or sulfated.

Check each cell's electrolyte level.
If low, remove the caps and add distilled water [2] to bring the level to the upper level line [3].
Replace the battery if damaged or sulfated.

- In order to obtain an accurate test reading when checking the charging system, the battery must be fully charged and in good condition. Perform the following inspections and tests before attempting to troubleshooting charging system problems.



SPECIFIC GRAVITY

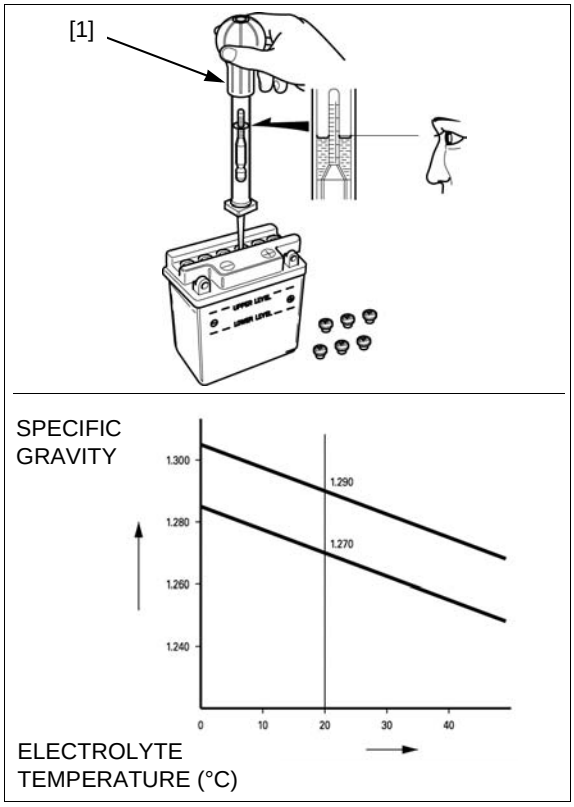
- The battery electrolyte contains sulfuric acid. Avoid contact with skin, eyes or clothing.

The specific gravity must be checked with a hydro meter [1].

Test each cell by drawing electrolyte into the hydrometer.

SPECIFIC GRAVITY (20°C/68°F):
Fully charged: 1.270 – 1.290
Needs charging: Below 1.230

- If the difference in specific gravity between cells exceeds 0.01, re-charge the battery. If the difference in specific gravity is excessive, replace the battery.
- There is a change in specific gravity of approximately 0.007 per 10°C change in temperature. Be sure to consider this when taking measurements.
- Reading of the hydrometer's fluid level should be taken horizontally.



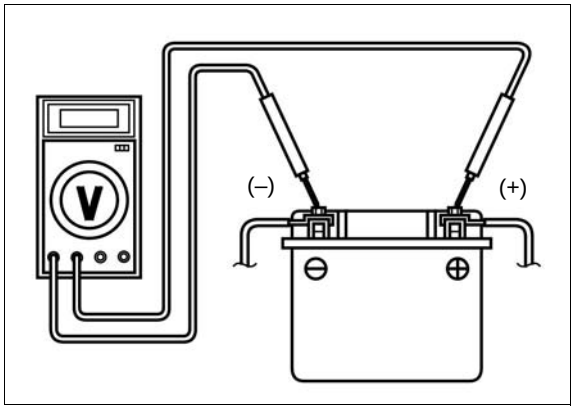
VOLTAGE INSPECTION

Measure the battery voltage using a commercially available digital multimeter.

VOLTAGE (20°C/68°F):
Fully charged: 13.0 – 13.2 V
Needs charging: Below 12.4 V

NOTE:

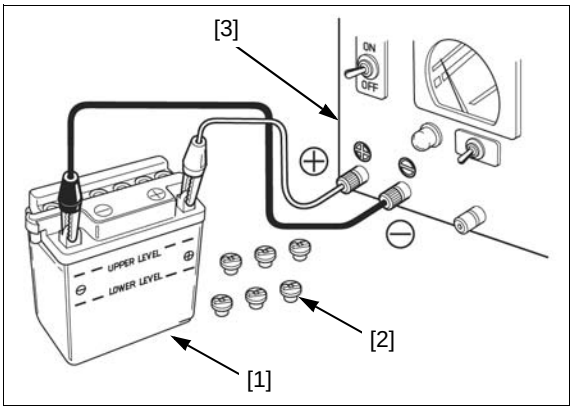
- When measuring the battery voltage after charging, leave it for at least 30 minutes, or the accurate results cannot be obtained because the battery voltage fluctuates just after charging.



BATTERY CHARGING

Remove the battery [1] (page 16-5).

Remove the cell caps [2].
Fill the cells with distilled water to the upper level line, if necessary.



Turn power ON/ OFF at the charger, not at the battery terminals to prevent sparks.

Connect the charger [3] positive (+) cable to the battery positive (+) terminal.
Connect the charger negative (–) cable to the battery negative (–) terminal.

CHARGING CURRENT/TIME:

12N5S-3B:

Normal:	**0.5 A/5 – 10 h**
Quick:	**5.0 A/0.5 h**

CB3L-A:

Normal:	**0.3 A/5 – 10 h**
Quick:	**3.0 A/0.5 h**

NOTE:

- Quick-charging should only be done in an emergency; slow charging is preferred.
- For battery charging, do not exceed the charging current and time specified on the battery. Using excessive current or extending the charging time may damage the battery.

BATTERY TESTING

Refer to the instructions that are appropriate to the battery testing equipment available to you.

TOOL:

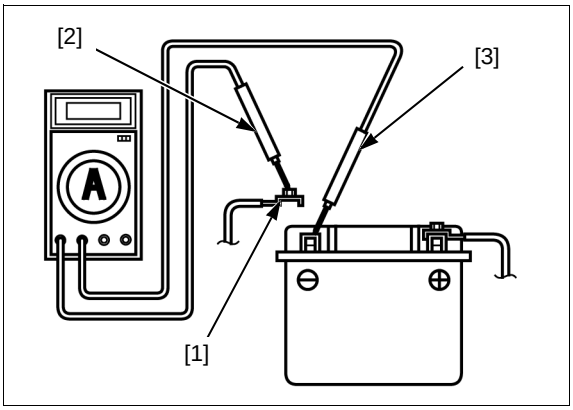
Battery tester	**BM-210, BATTERY MATE or equivalent**

CHARGING SYSTEM INSPECTION

CURRENT LEAKAGE TEST

Remove the battery cover (page 16-5).

Turn the ignition switch OFF and disconnect the negative (–) cable [1] from the battery.
Connect the ammeter (+) probe [2] to the negative (–) cable and the ammeter (–) probe [3] to the battery (–) terminal.
With the ignition switch turned OFF, check for current leakage.



NOTE:

- When measuring current using a tester, set it to a high range, and then bring the range down to an appropriate level. Current flow higher than the range selected may blow the fuse in the tester.
- While measuring current, do not turn the ignition switch ON, A sudden surge of current may blow the fuse in the tester.

SPECIFIED CURRENT LEAKAGE: 0.1 mA max.

If current leakage exceeds the specified value, a shorted circuit is the probable cause.
Locate the short by disconnecting connections one by one and measuring the current.

CHARGING VOLTAGE INSPECTION

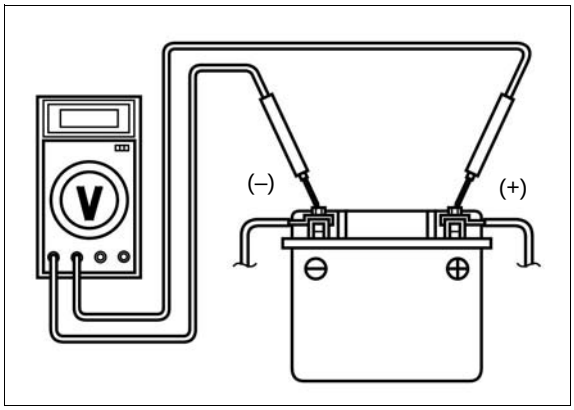
Remove the battery cover (page 16-5).

NOTE:

Make sure the battery is in good condition before performing this inspection.

Do not disconnect the battery or any cable in the charging system without first switching OFF the ignition switch. Failure to follow this precaution can damage the tester or electrical components.

Warm up the engine to normal operating temperature. Stop the engine and connect the multimeter as shown.



NOTE:

To prevent a short, make absolutely certain which are the positive and negative terminals or cables.

Connect a tachometer according to its manufacturer's instructions.

Restart the engine.

Measure the voltage on the multimeter when the engine runs at 5,000 min^{-1}.

STANDARD:

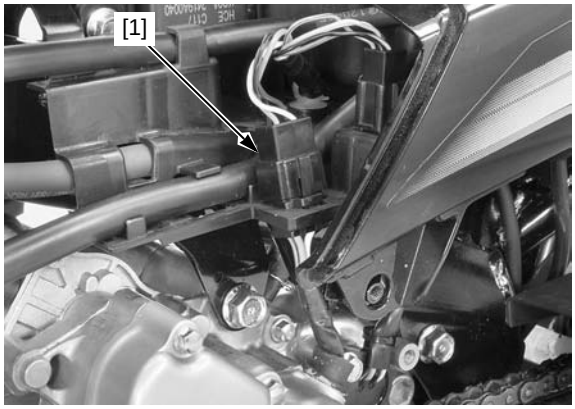
Measured BV < Measured CV < 15.5 V

- **BV = Battery Voltage (page 16-6)**
- **CV = Charging Voltage**

ALTERNATOR INSPECTION

Remove the front top cover (page 2-5).

Disconnect the alternator 4P (Black) connector [1].



Check the resistance at the alternator 4P (Black) connector [1] of the alternator side.

STANDARD:

Charging coil (White – Green):
0.2 – 1.0 Ω (at 20°C)
Lighting coil (Yellow – Green):
0.1 – 0.8 Ω (at 20°C)

Replace the stator if the resistance is out of specification.

For stator removal (page 11-4).

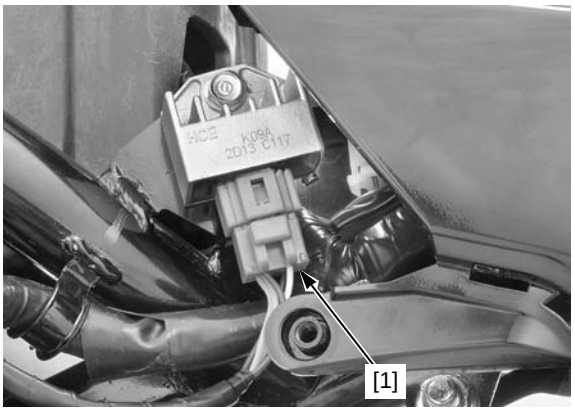
Install the front top cover (page 2-5).

REGULATOR/RECTIFIER

SYSTEM INSPECTION

Remove the body cover (page 2-8).

Turn the ignition switch OFF.
Disconnect the regulator/rectifier 4P (Green) connector [1], and check it for loose contact or corroded terminals.



If the charging voltage reading (page 16-8) is out of the specification, inspect the regulator/rectifier 4P (Green) connector terminals (wire harness side) as follows:

Item	Terminal	Specification
Battery charging line	Red (+) and Ground (–)	Battery voltage should appear
Charging coil line	White and Green	0.2 – 1.0 Ω (at 20°C)
Ground line	Green and Ground	Continuity should exist
Lighting coil line	Yellow and Green	0.1 – 0.8 Ω (at 20°C)

If all components of the charging system is normal and there are no loose connections at the regulator/rectifier 4P (Green) connector, replace the regulator/rectifier unit (page 16-9).

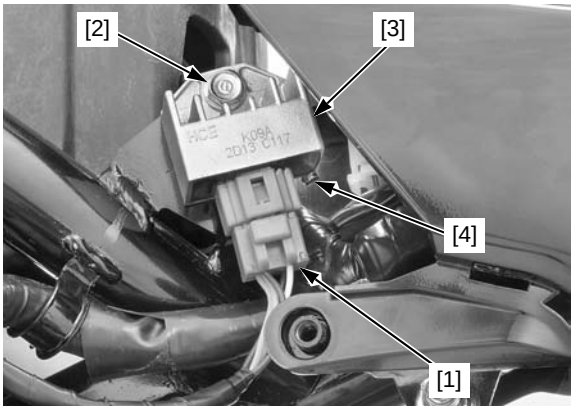
Install the body cover (page 2-8).

REMOVAL/INSTALLATION

Remove the body cover (page 2-8).

Turn the ignition switch OFF.

Disconnect the regulator/rectifier 4P (Green) connector [1].
Remove the bolt [2] and regulator/rectifier [3] from the frame.



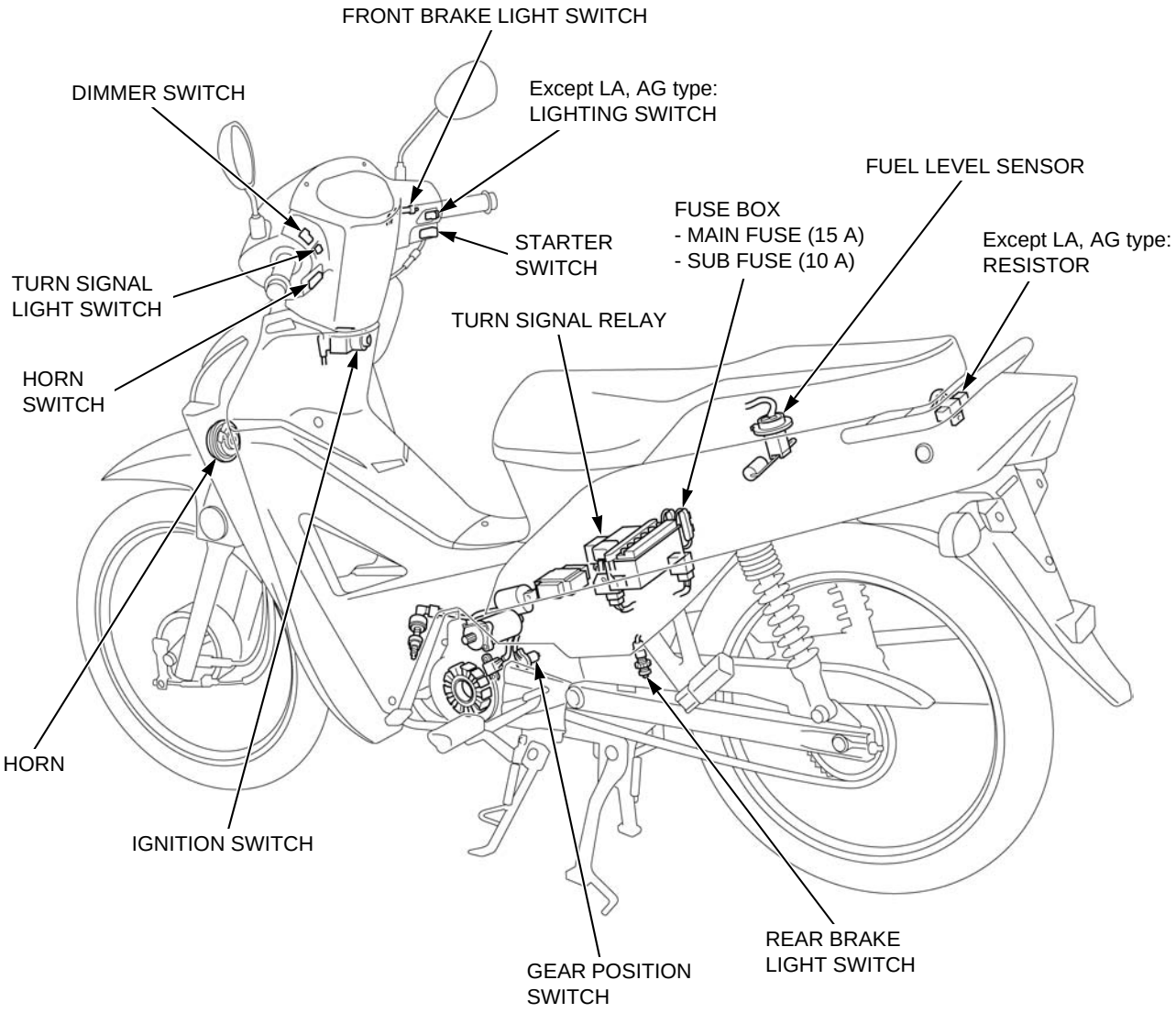
Installation is in the reverse order of removal.

- Align the regulator/rectifier with the tab [4] of the frame.

MEMO

17. LIGHTS/METERS/SWITCHES

SYSTEM LOCATION



SERVICE INFORMATION

GENERAL

NOTICE

- *Note the following when replacing the halogen headlight bulb.*
  - *Wear clean gloves while replacing the bulb. Do not put fingerprints on the headlight bulb, as they may create hot spots on the bulb and cause it to fail.*
  - *If you touch the bulb with your bare hands, clean it with a cloth moistened with alcohol to prevent its early failure.*
- Be sure to install the dust cover after replacing the bulb.
- Check the battery condition before performing any inspection that requires proper battery voltage.
- A continuity test can be made with the switches installed on the motorcycle.
- The following color codes are used throughout this section.

Bu = Blue	G = Green	Lg = Light green	R = Red
Bl = Black	Gr = Gray	O = Orange	W = White
Br = Brown	Lb = Light blue	P = Pink	Y = Yellow

LIGHTING SYSTEM INSPECTION

HEADLIGHT DOES NOT COME ON OR IS WEAK

Standard Inspection

Check the following:

– Burned out bulb or bulb with unspecified wattage
– Loose connectors
– Dimmer switch (page 17-10)
– Lighting switch (page 17-10)

If the above items are normal, check as follows:

1. Lighting Voltage Inspection (at Headlight)

Remove the handlebar front cover (page 2-3).

- Do not disconnect the headlight connector.

Turn the lighting switch to left position (Headlight ON) and dimmer switch to Lo position.
Connect a tachometer according to its manufacturer's instructions.
Turn the ignition switch ON.
Start the engine and measure the voltage at the headlight socket [1] with selecting the AC range on the multimeter.

CONNECTION: White – Green
STANDARD: 12.6 – 13.6 V at 5000 min^{-1}

Is the voltage within standard?

YES – Intermittent failure

NO – GO TO STEP 2.

2. Lighting Voltage Inspection (at Alternator)

Turn the ignition switch OFF.
Remove the front top cover (page 2-5).
Turn the ignition switch ON
Start the engine and measure the voltage at the alternator 4P (Black) connector [1].

- Do not disconnect the alternator 4P (Black) connector.

CONNECTION: Yellow – Green
STANDARD: 12.6 – 13.6 V at 5000 min^{-1}

Is the voltage within standard?

YES – GO TO STEP 3.

NO – Inspect the alternator (lighting coil) (page 16-8).

3. Lighting Circuit Inspection

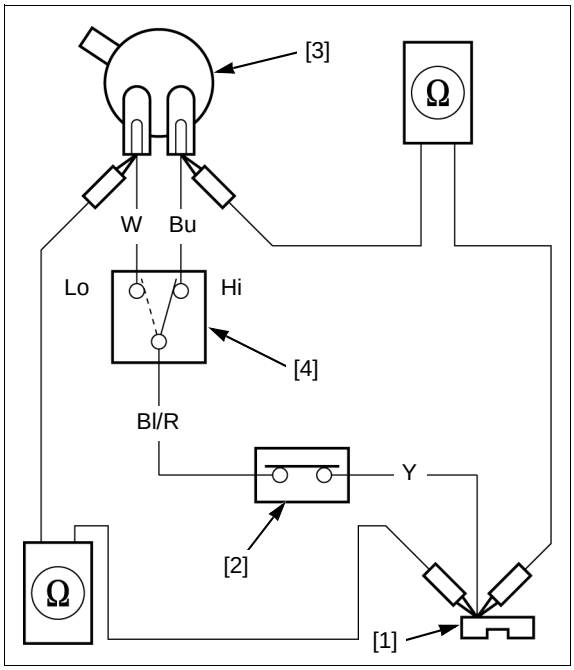
Turn the ignition switch OFF.
Disconnect the regulator/rectifier 4P (Green) connector [1].
Turn the lighting switch [2] ON.
Check the continuity between the regulator/rectifier 4P (Green) and headlight socket [3] with the dimmer switch [4] turned each position.

CONNECTION: Yellow – White
(Dimmer switch: Lo position)
Yellow – Blue
(Dimmer switch: Hi position)

Is there continuity?

YES – GO TO STEP 4.

NO – • Open circuit in White wire (Lo position)
• Open circuit in Blue wire (Hi position)
• Open circuit in Black/red and/or Yellow wire



4. Ground Line Inspection

Check the continuity between the Green terminal of the headlight socket [1] and ground.

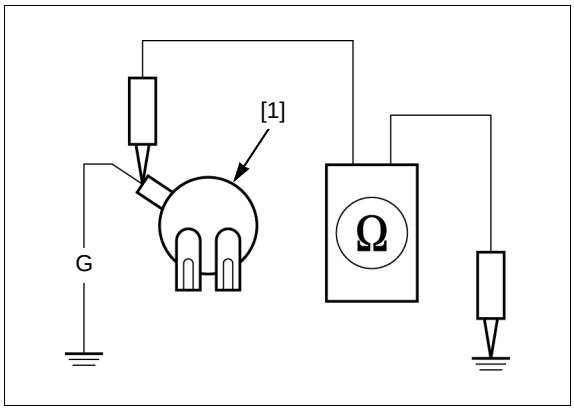
CONNECTION: Green – Body ground

Install the removed parts in the reverse order of removal.

Is there continuity?

YES – Inspect the regulator/rectifier system (page 16-9).

NO – Open circuit in Green wire



HEADLIGHT

HEADLIGHT BULB REPLACEMENT

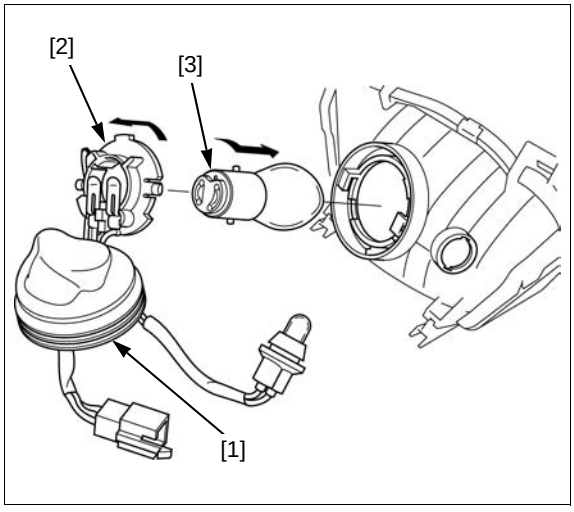
Remove the handlebar front cover (page 2-3).

Remove the dust cover [1].
Turn the headlight bulb socket [2] counterclockwise and remove it.
While pushing the bulb [3] in, turn it counterclockwise and remove it.

If you touch the bulb with your bare hands, clean it with a cloth moistened with alcohol to prevent its early failure.

Install a headlight bulb in the reverse order of removal.

Install the handlebar front cover (page 2-3).
For headlight assembly removal/installation (page 2-3).

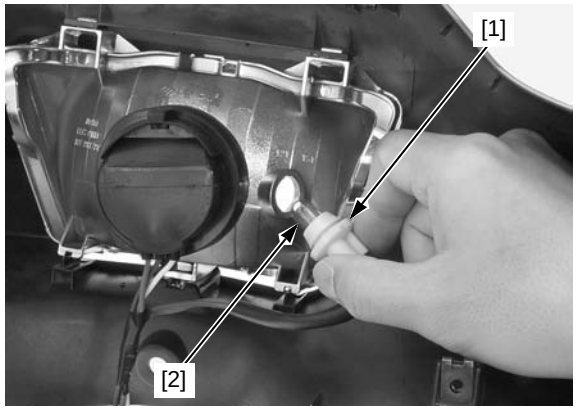


POSITION BULB REPLACEMENT

Remove the handlebar front cover (page 2-3).

Remove the bulb socket [1], then pull out the position light bulb [2] from the socket.

Install a bulb in the reverse order of removal.



TURN SIGNAL LIGHT

BULB REPLACEMENT

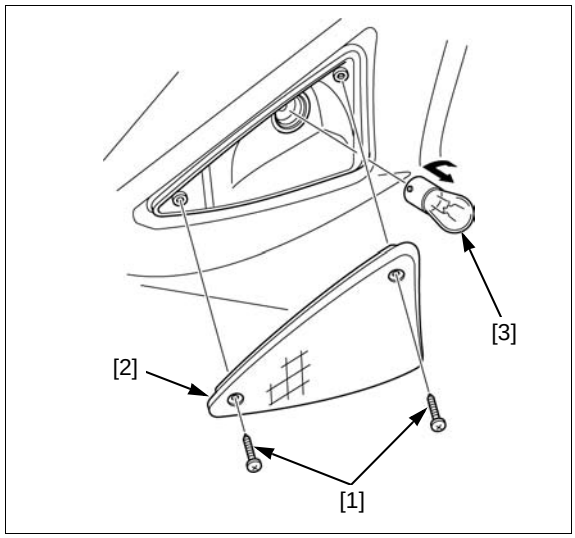
FRONT TURN SIGNAL LIGHT

Remove the screws [1] and front turn signal lens [2].

While pushing the bulb [3] in, turn it counterclockwise and remove it.

Make sure the lens packing is installed in position and is in good condition, replace it if necessary.

Install a bulb in the reverse order of removal.



REAR TURN SIGNAL LIGHT

Be careful not to damage the lens.

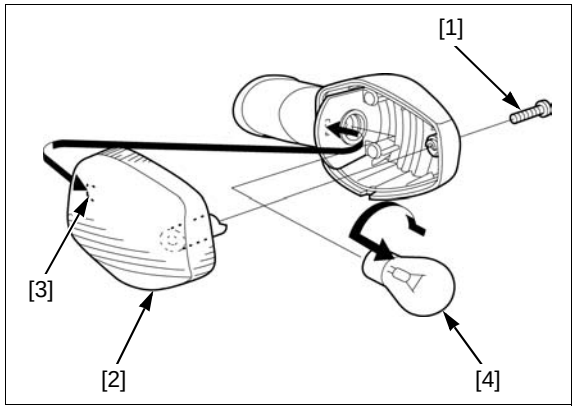
Remove the screw [1] and rear turn signal lens [2] by releasing the tab [3].

While pushing the bulb [4] in, turn it counterclockwise and remove it.

Make sure the lens packing is installed in position and is in good condition, replace it if necessary.

Install a bulb in the reverse order of removal.

For rear turn signal light removal/installation see (page 2-10).

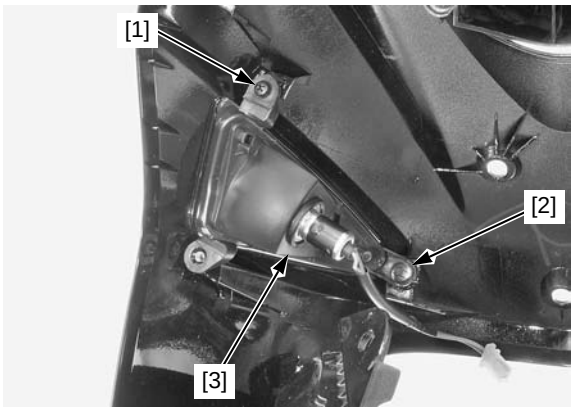


FRONT TURN SIGNAL LIGHT UNIT REMOVAL/INSTALLATION

Remove the front top cover (page 2-5).

Remove the screw [1], trim clip [2] and front turn signal light unit [3] from the front top cover.

Installation is in the reverse order of removal.



BRAKE/TAILLIGHT

BULB REPLACEMENT

Be careful not to damage the lens.

Remove the screws [1] and brake/taillight lens [2].

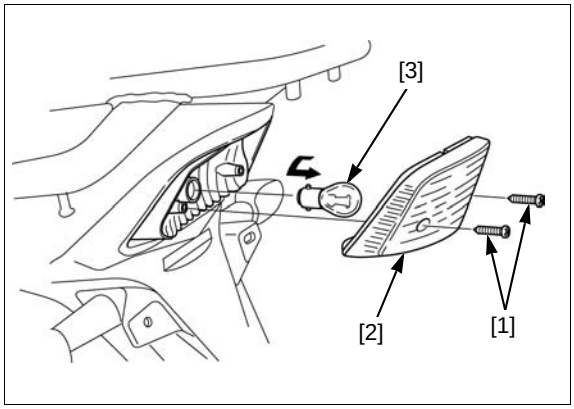
While pushing the bulb [3] in, turn it counterclockwise and remove it.

Make sure the lens packing is installed in position and is in good condition, replace it if necessary.

Install a bulb in the reverse order of removal.

TORQUE:
Brake/taillight unit lens screw:
1 N·m (0.1 kgf·m)

For brake/taillight removal/installation (page 2-10).



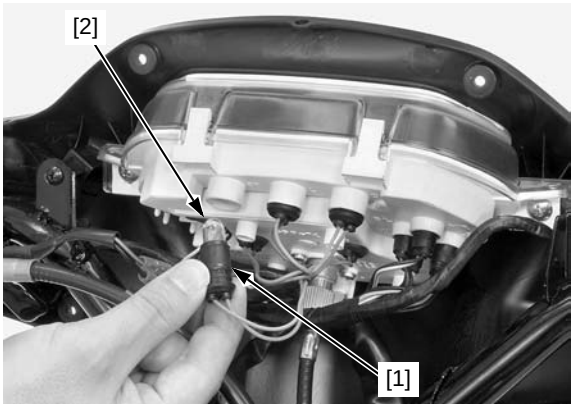
SPEEDOMETER

BULB REPLACEMENT

Remove the handlebar front cover (page 2-3).

Pull out the bulb socket [1] from the speedometer. Remove the bulb [2] from the socket and replace it.

Installation is in the reverse order of removal.



REMOVAL/INSTALLATION

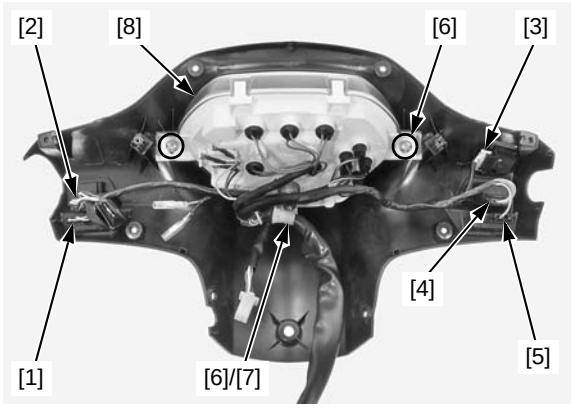
Remove the handlebar rear cover (page 2-4).

Disconnect the following connectors:

– Starter switch 3P (Black) connector [1] (if equipped)
– Lighting switch 3P (Natural) and 3P (Red) connectors [2] (if equipped)
– Dimmer switch 3P connector [3]
– Turn signal light switch 3P (Red) connector [4]
– Horn switch 3P (Black) connector [5]

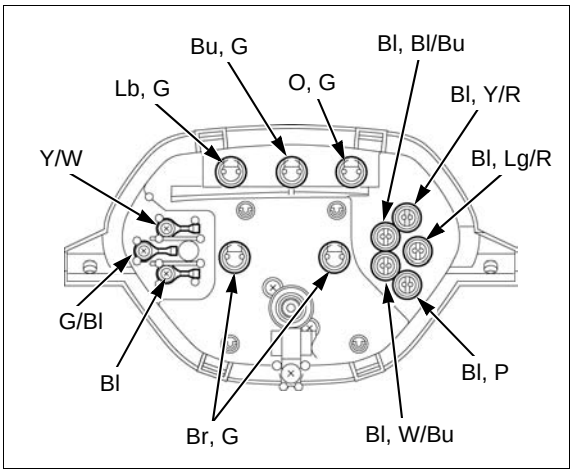
Remove the three screws [6], wire band [7] and speedometer [8].

Installation is in the reverse order of removal.



DISASSEMBLY/ASSEMBLY

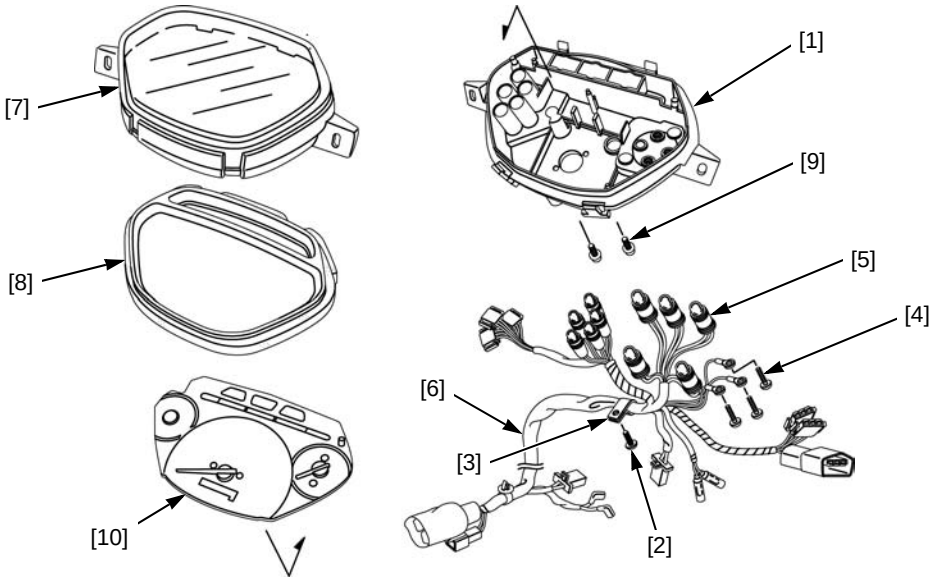
- Be careful not to put fingerprints on the meter panel.
- Be careful not to damage the retainer tabs when removing the lens.
- Route the speedometer sub harness properly.



Remove the following from the meter case [1]:

– Screw [2] and wire band [3]
– Three terminal screws [4]
– Bulb sockets [5] and speedometer sub harness [6]
– Lens [7] and meter plate [8]
– Two screw/washers [9]
– Meter panel [10]

Assembly is in the reverse order of disassembly.



FUEL LEVEL SENSOR/FUEL METER

SYSTEM INSPECTION

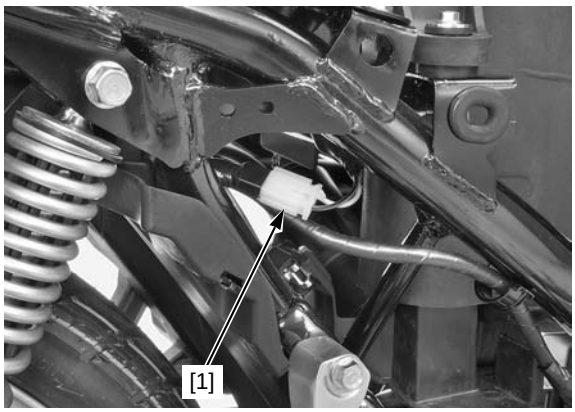
FUEL METER DOES NOT MOVE

Before performing the system inspection, check the following:

- Main fuse (15 A) and/or sub fuse (10 A)
- Loose connectors
- Ignition switch (page 17-9)
- Horn and brake light operation
- Gear position indicator operation

If above items are normal, remove the body cover (page 2-8).

Disconnect the fuel level sensor 3P connector [1].



Short the connector terminals of the wire harness side with the jumper wire.

CONNECTION: Yellow/white – Green/black

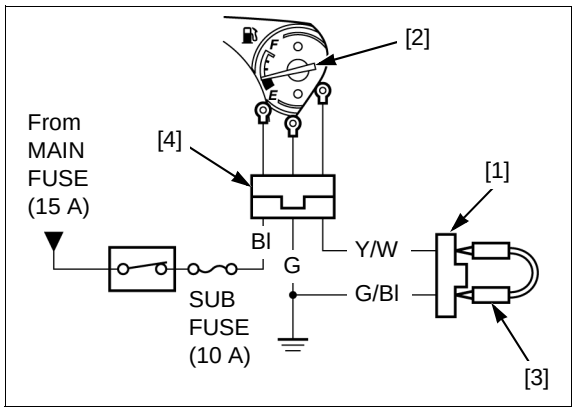
Do not leave the terminals connected with jumper wire [3] for a long time, as it causes damage to the fuel meter.

Turn the ignition switch ON and check if the fuel meter needle [2] moves to "F".

The needle moves if the circuit is normal.
If the needle does not move, check the following:

- Yellow/white wire between the fuel level sensor and fuel meter for open or short circuit
- Black wire between the speedometer 9P connector [4] and fuel meter for open or short circuit
- Green/black wire between the fuel level sensor and ground for open circuit
- Fuel level sensor (page 17-9)

If above items are normal, replace the speedometer panel with a new one and recheck.

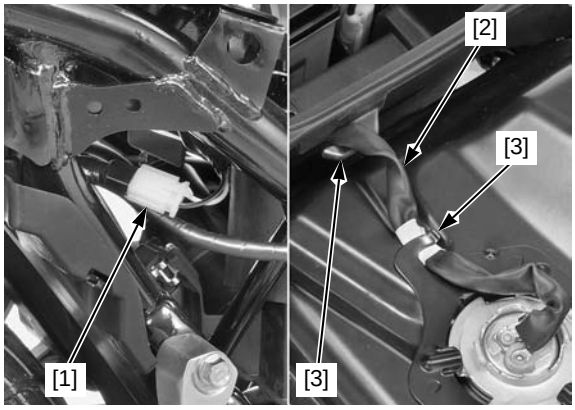


REMOVAL

Remove the body cover (page 2-8).

Disconnect the fuel level sensor 3P connector [1].

Release the fuel level sensor wire [2] from the guides [3].



Turn the fuel unit holder plate [1] counterclockwise with a pair of needle nose pliers and remove it.

Be careful not to damage the float arm.

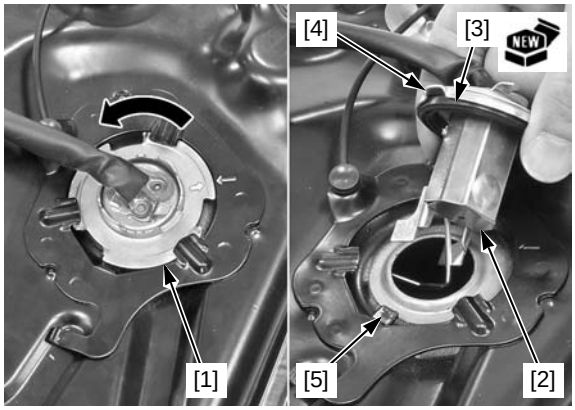
Remove the fuel level sensor [2] and O-ring [3].

INSTALLATION

Install a new O-ring to the fuel level sensor.

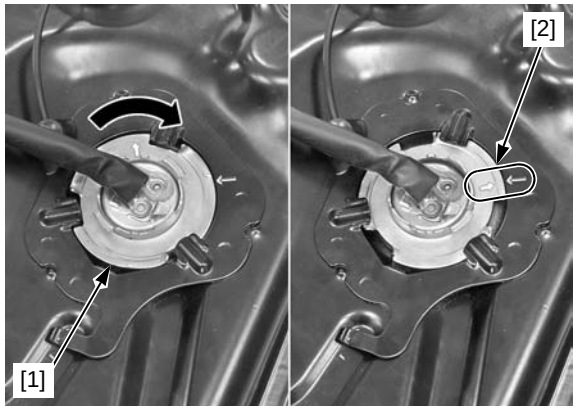
Be careful not to damage the float arm.

Install the fuel level sensor while aligning its groove [4] with the tab [5] on the fuel tank.



Set the fuel unit holder plate [1] as shown.

Turn the holder plate clockwise until the arrow marks [2] on the holder plate and the fuel tank are aligned.

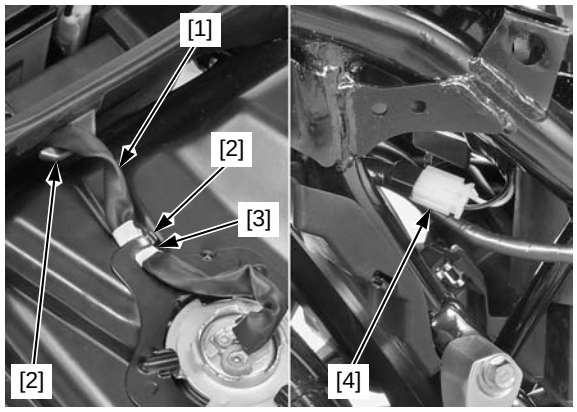


Secure the white tape [3] with the guide as shown.

Route the fuel level sensor wire [1] through the guides [2] properly.

Connect the fuel level sensor 3P connector [4].

Install the body cover (page 2-8).



FUEL LEVEL SENSOR INSPECTION

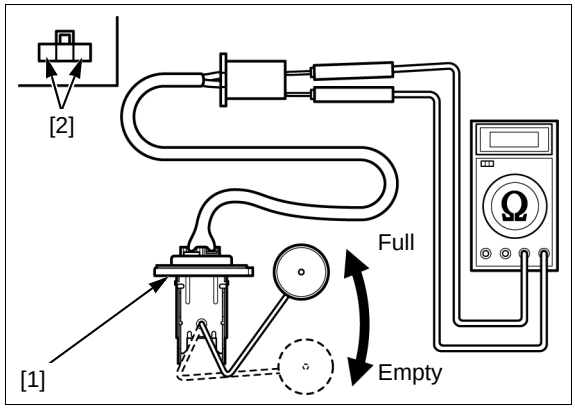
Remove the fuel level sensor (page 17-8).

Measure the resistance at the fuel level sensor [1] 3P connector terminals [2] with the float positioned at upper (full) and lower (empty).

Float position:	FULL	EMPTY
Resistance:	6 – 10 Ω	90 – 100 Ω

Replace the fuel level sensor if it is out of specification.

Install the fuel level sensor (page 17-8).



IGNITION SWITCH

INSPECTION

Remove the main pipe cover (page 2-7).

Turn the ignition switch OFF.
Disconnect the ignition switch 2P connector [1].

Check for continuity between the switch side connector terminals in each switch position according to the chart (page 18-2).

Install the main pipe cover (page 2-7).

REMOVAL/INSTALLATION

Remove the steering stem (page 14-16).

Disconnect the ignition switch 2P connector [1].

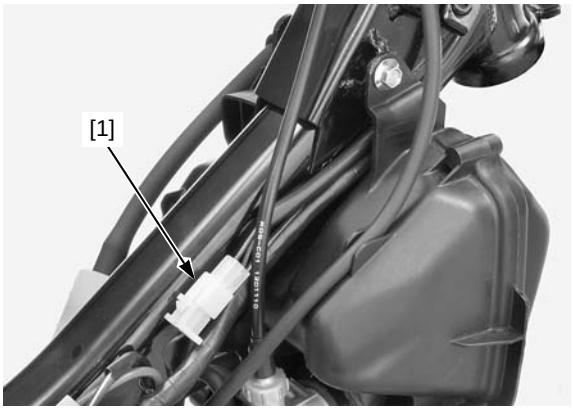
Remove the two screws [2] and ignition switch [3].

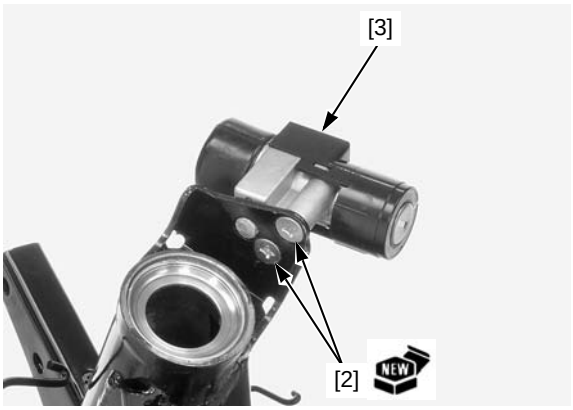
Set the ignition switch in position.
Install and tighten new screws to the specified torque.

TORQUE: 9 N·m (0.9 kgf·m)

Connect the ignition switch 2P connector.

Install the steering stem (page 14-19).





HANDLEBAR SWITCHES

LEFT HANDLEBAR SWITCH

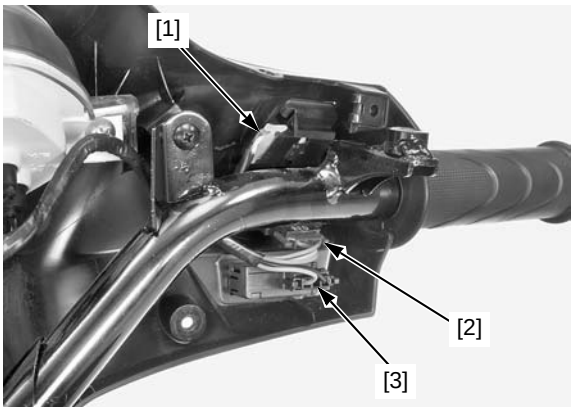
Remove the handlebar front cover (page 2-3).

Disconnect the following connectors:

– Dimmer switch 3P connector [1]
– Turn signal light switch 3P (Red) connector [2]
– Horn switch 3P (Black) connector [3]

Check for continuity between the connector terminals in each switch position according to the chart (page 18-2).

Install the handlebar front cover (page 2-3).



RIGHT HANDLEBAR SWITCH

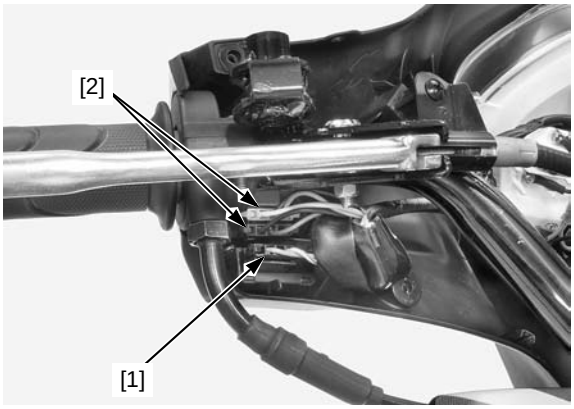
Remove the handlebar front cover (page 2-3).

Disconnect the following connectors:

– Starter switch 3P (Black) connector [1] (if equipped)
– Lighting switch 3P (Natural) and 3P (Red) connectors [2] (if equipped)

Check for continuity between the connector terminals in each switch position according to the chart (page 18-2).

Install the handlebar front cover (page 2-3).



BRAKE LIGHT SWITCH

FRONT

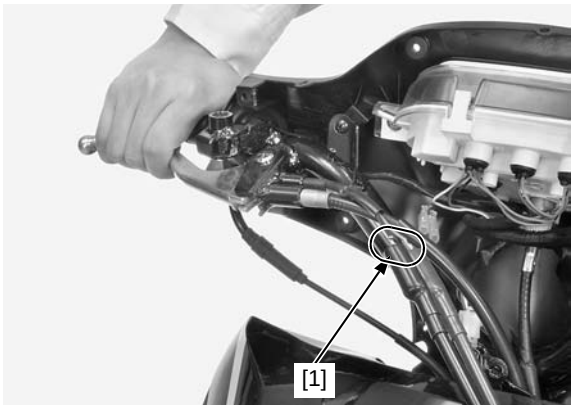
Remove the handlebar front cover (page 2-3).

Disconnect the front brake light switch wire connectors and check for continuity between the switch terminals [1].

There should be continuity with the brake lever squeezed and no continuity with the lever released.

Install the handlebar front cover (page 2-3).

For front brake light switch removal (page 14-14).



REAR

Remove the right body lower cover (page 2-7).

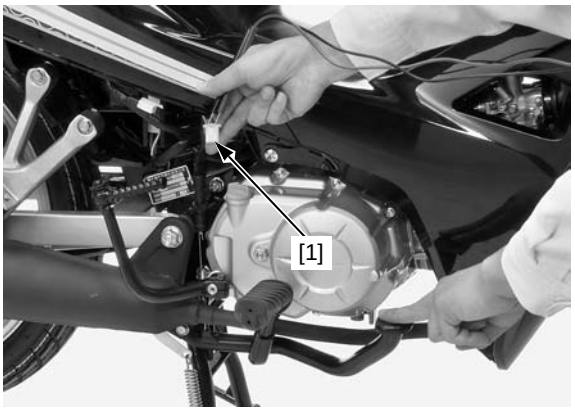
Disconnect the rear brake light switch 3P connector [1].

Check for continuity between the switch side connector terminals.

There should be continuity with the brake pedal applied and no continuity with the pedal released.

Install the right body lower cover (page 2-7).

For rear brake light adjustment (page 3-13).

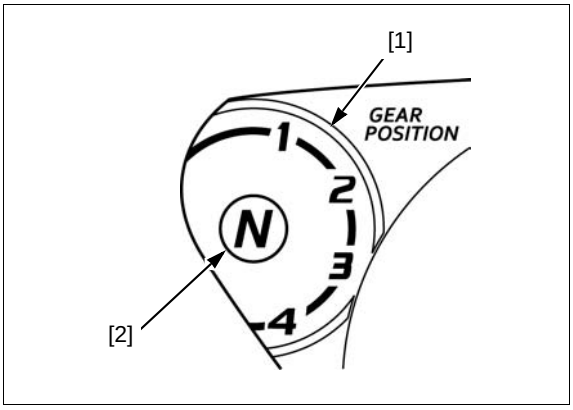


GEAR POSITION SWITCH

INSPECTION

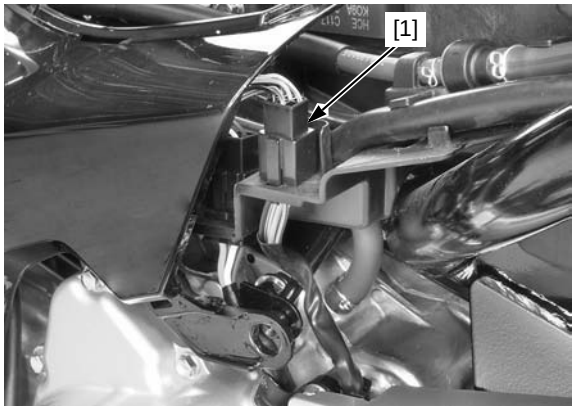
Turn the ignition switch ON, and shift the transmission into each gear position.

Check the operation of the gear position indicator [1] and neutral indicator [2] at each gear position.
If all the indicator bulbs are normal but the gear position indicator does not light, check as follows:



Remove the body cover (page 2-8).

Disconnect the gear position switch 6P (Black) connector [1].



Check for continuity between the terminals at each gear position.

The gear position switch is normal if the continuity exist between the color coded wires as shown in the chart.

Install the body cover (page 2-8).

GEAR	GROUND	Lg/R	Y/R	Bl/Bu	W/Bu	P
N	○	○				
1	○		○			
2	○			○		
3	○				○	
4	○					○

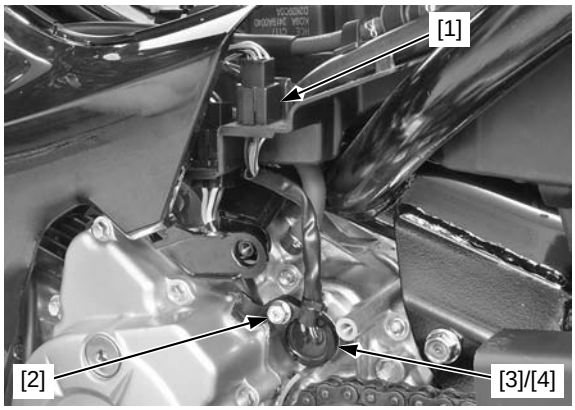
REMOVAL

Remove the following:

– Body cover (page 2-8)
– Left crankcase rear cover (page 2-12)

Disconnect the gear position switch 6P (Black) connector [1].

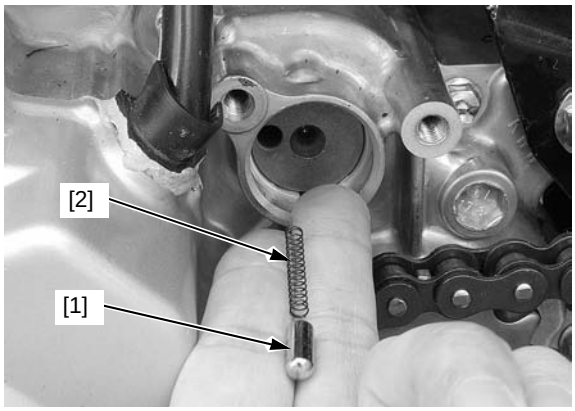
Remove the bolt [2], gear position switch [3] and O-ring [4].



Remove the contact switch cap [1] and spring [2] from the shift drum.

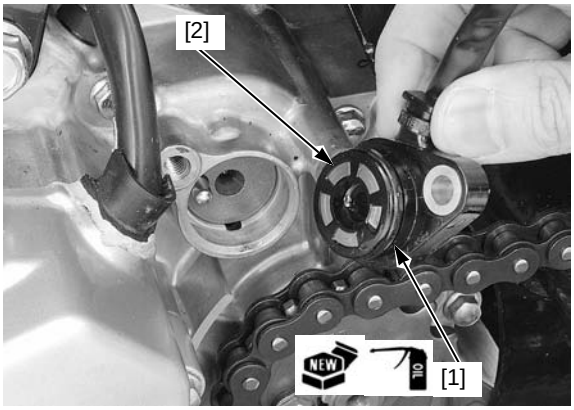
INSTALLATION

Install the spring and contact switch cap into the shift drum.



Apply engine oil to a new O-ring [1] and install it to the gear position switch [2].

Install the gear position switch to the crankcase.

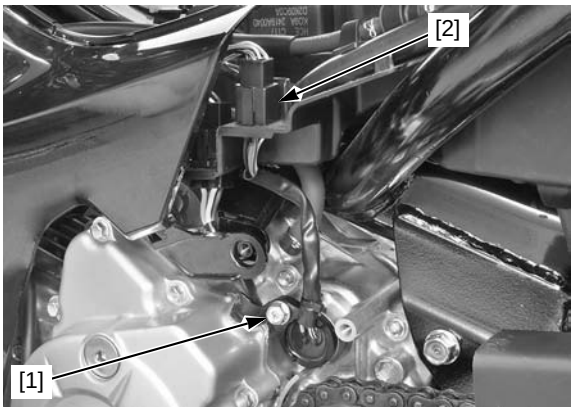


Install and tighten the bolt [1].

Connect the gear position switch 6P (Black) connector [2].

Install the following:

– Body cover (page 2-8)
– Left crankcase rear cover (page 2-12)



HORN

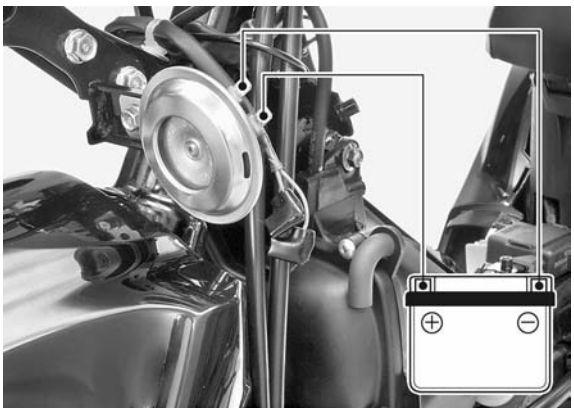
INSPECTION

Remove the front top cover (page 2-5).

Disconnect the horn wire connectors.
Connect the 12 V battery to the horn terminals.

The horn is normal if it sounds when the 12 V battery is connected to the horn terminals.

Install the front top cover (page 2-5).



REMOVAL/INSTALLATION

Remove the front top cover (page 2-5).

Disconnect the horn wire connectors [1].
Remove the bolt [2] and horn [3].

Installation is in the reverse order of removal.

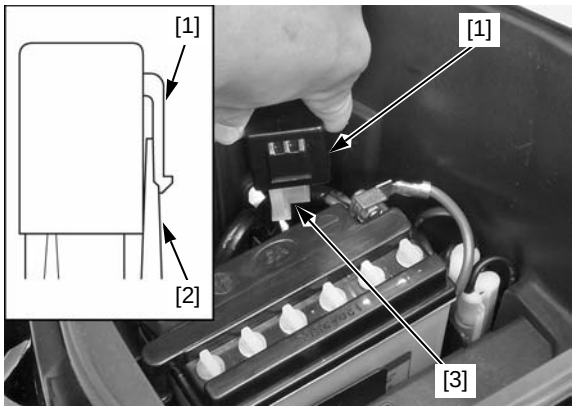
TURN SIGNAL RELAY

REMOVAL/INSTALLATION

Remove the battery cover (page 16-5).

Remove the turn signal relay [1] from the rib [2] of the luggage box and disconnect the turn signal relay 2P connector [3].

Installation is in the reverse order of removal.



INSPECTION

Check the following:

– Main fuse (15 A) and/or Sub fuse (10 A)
– Loose connectors
– Ignition switch (page 17-9)
– Turn signal light switch (page 17-10)

If above items are all normal, check the following:

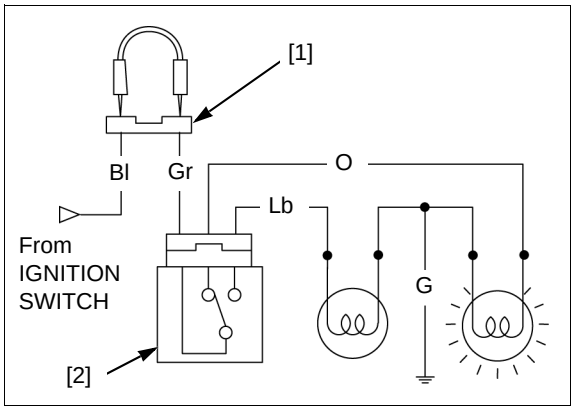
Remove the turn signal relay (page 17-14).

Short the Black and Gray terminals of the harness side 2P connector [1] with the jumper wire.

Turn the ignition switch ON.
Check the turn signal light by moving the turn signal light switch [2] to the right and left.

- If the turn signal light does not come on, there is open circuit in wire harness.
- If the lights come on, the circuit is normal.
  Replace the turn signal relay (page 17-14).

Install the removed parts in the reverse order of removal.

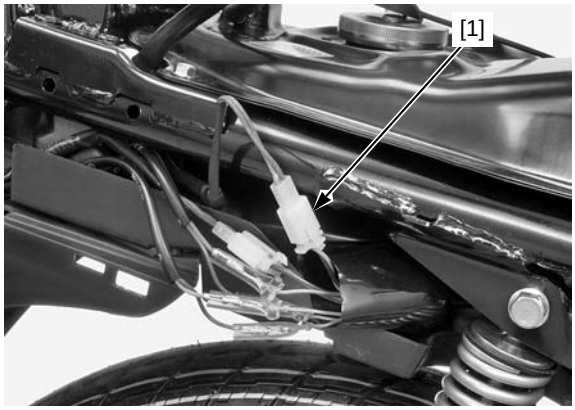


RESISTOR (Except LA, AG)

INSPECTION

Remove the body cover (page 2-8).

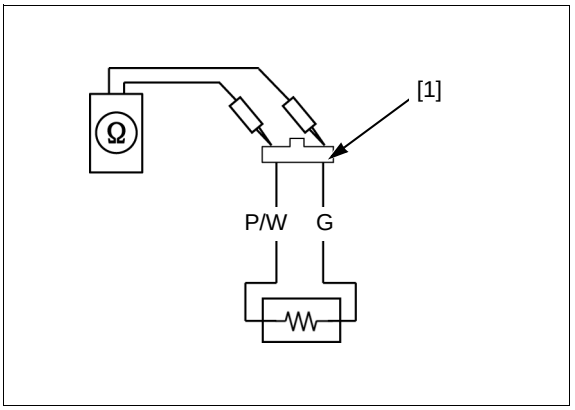
Disconnect the resistor 2P connector [1].



Measure the resistance between the resistor 2P connector [1] of the resistor side.

CONNECTION	STANDARD
Pink/white – Green	15.1 – 16.7 Ω (20°C)

If the measured value is far beyond the standard, replace the resistor.

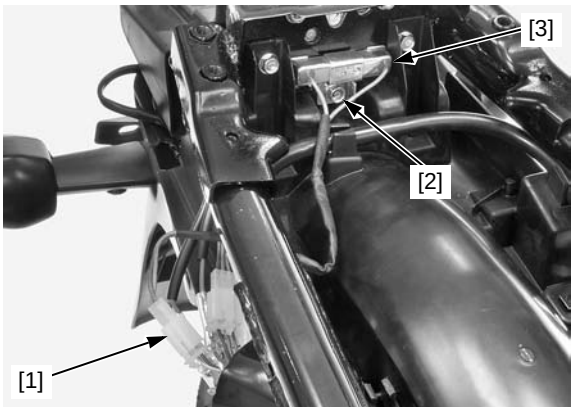


REMOVAL/INSTALLATION

Remove the fuel tank (page 6-10).

Disconnect the resistor 2P connector [1].
Remove the bolt [2] and resistor [3].

Installation is in the reverse order of removal.

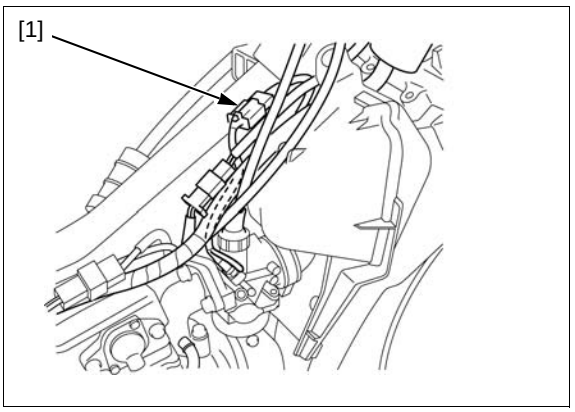


CARBURETOR HEATER (LA, AG)

SYSTEM INSPECTION

Remove the front top cover (page 2-5).

Disconnect the carburetor heater 3P connector [1].

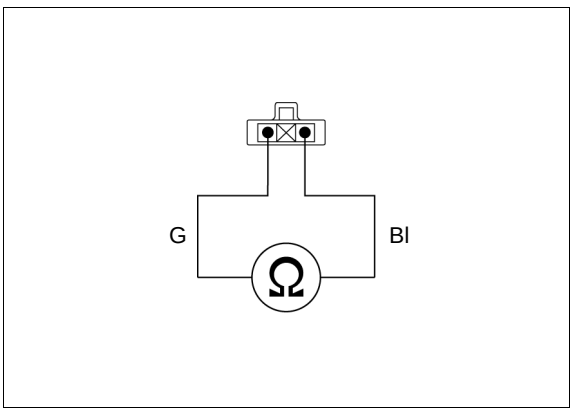


Measure the resistance between heater side connector terminals.

TORQUE: 7.5 – 18 Ω at 25°C (77°F)

Check for continuity between the Green wire terminal of the wire harness side wire connector and ground.
There should be continuity.

Install the front top cover (page 2-5).

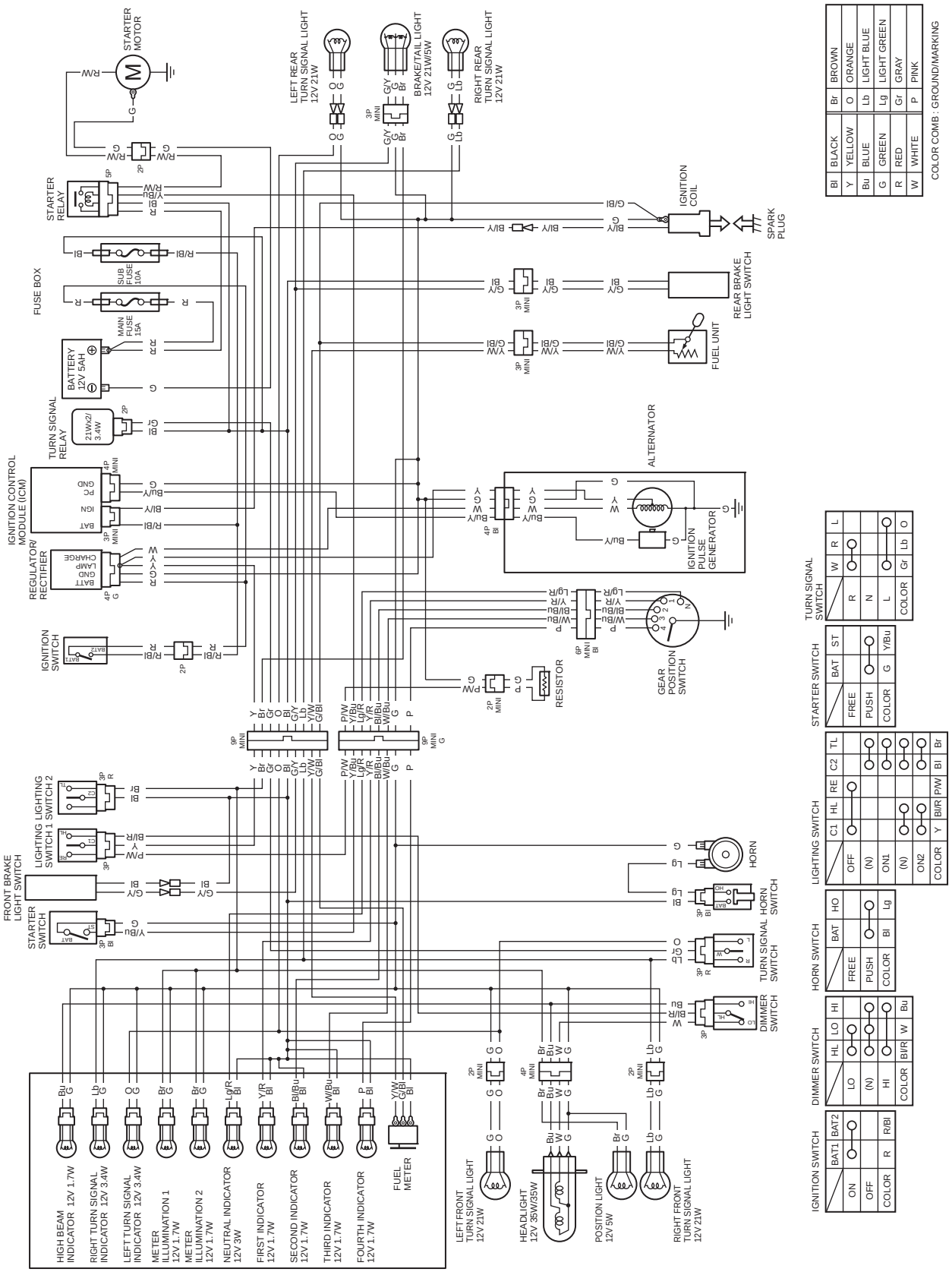


MEMO

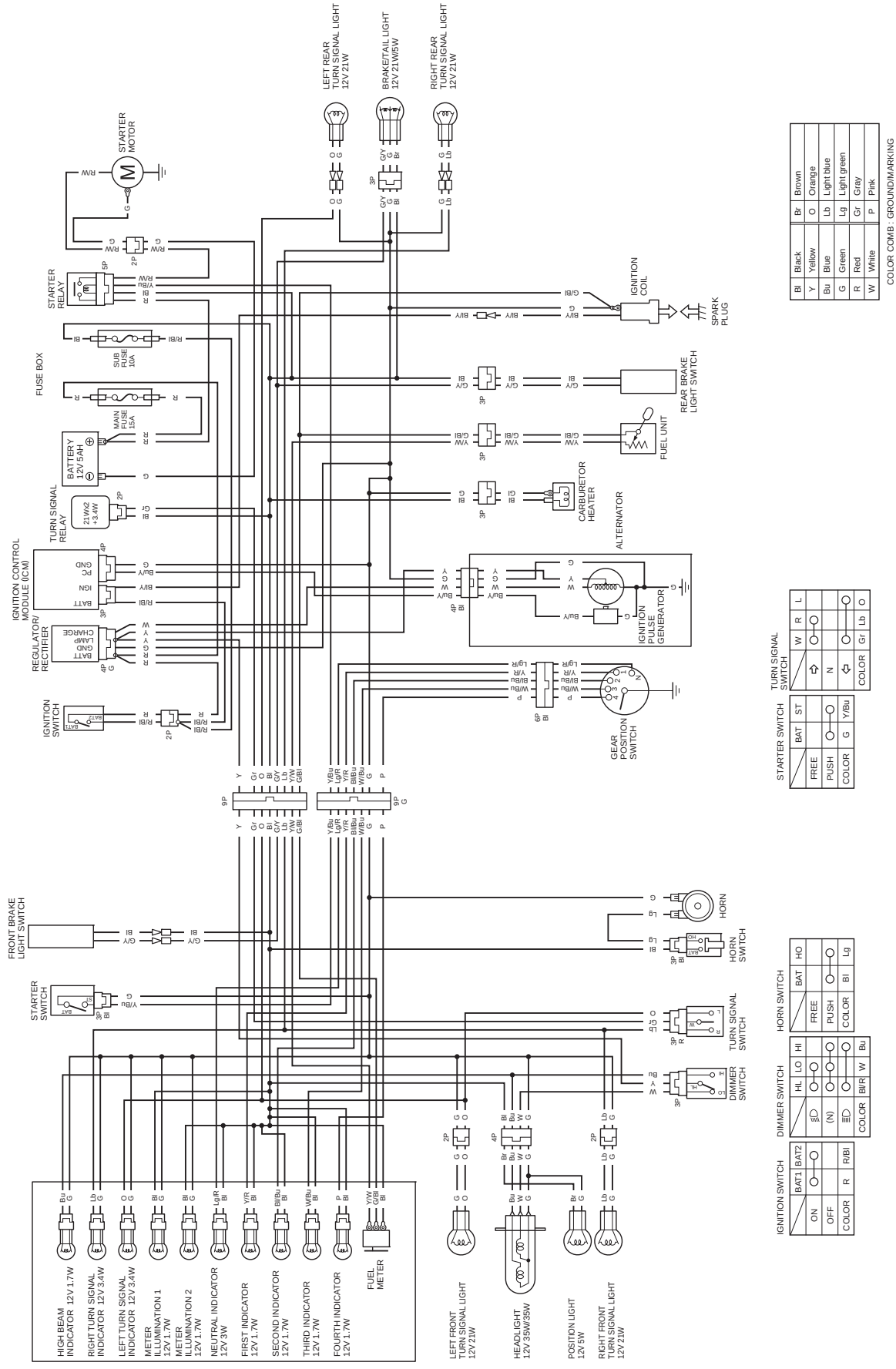
18. WIRING DIAGRAM

WIRING DIAGRAMS

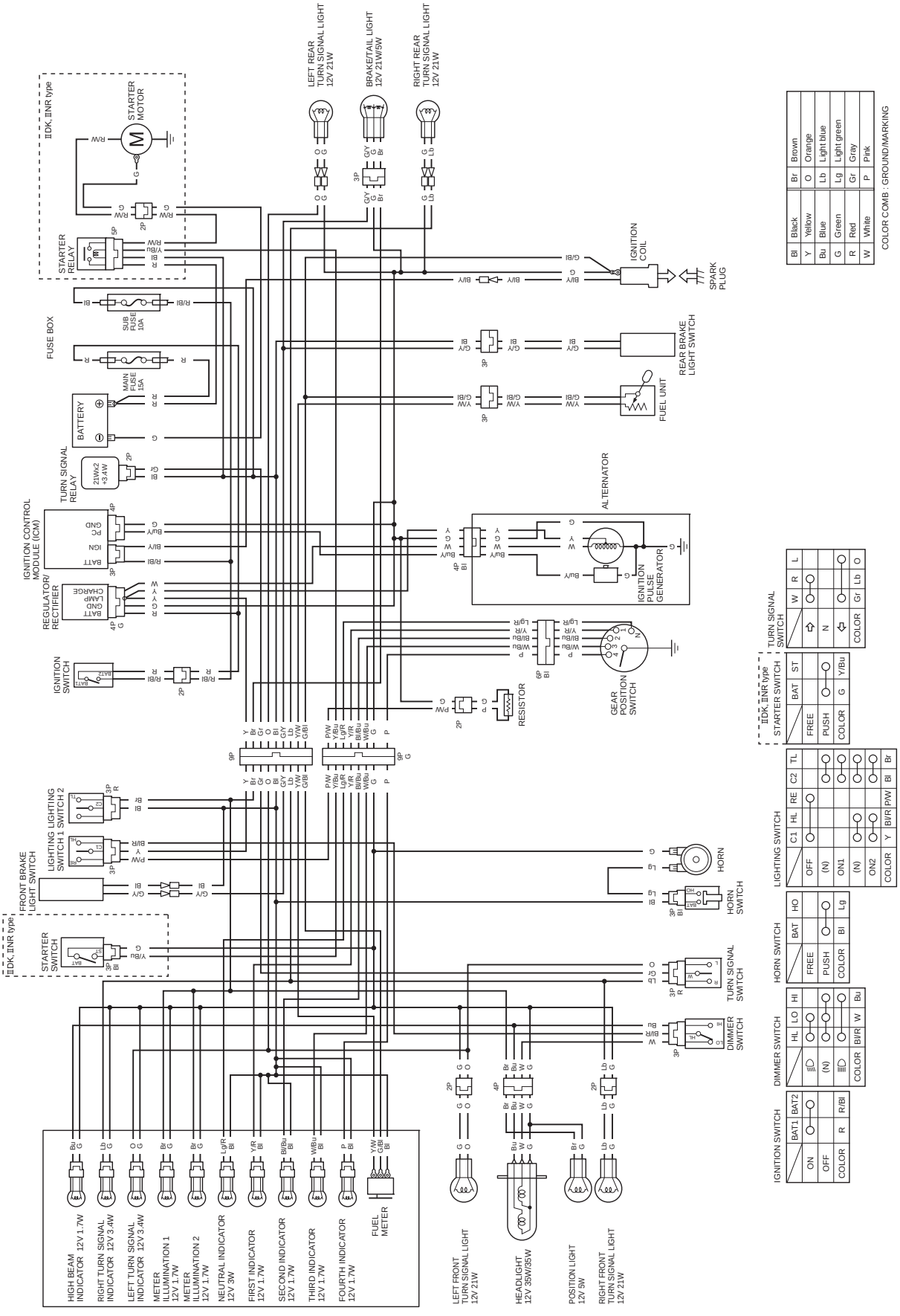
CO, PE, MX type



LA, AG type


LEFT REAR TURN SIGNAL LIGHT 12V 21W
BRAKE/TAIL LIGHT 12V 21W/5W
RIGHT REAR TURN SIGNAL LIGHT 12V 21W
STARTER MOTOR
STARTER RELAY
SUB FUSE 10A
FUSE BOX
MAIN FUSE 15A
BATTERY 12V 5AH
TURN SIGNAL RELAY 21W x2 +3.4W
IGNITION CONTROL MODULE (ICM)
REGULATOR/ RECTIFIER
IGNITION SWITCH
IGNITION COIL
SPARK PLUG
REAR BRAKE LIGHT SWITCH
FUEL UNIT
CARBURETOR HEATER
ALTERNATOR
IGNITION PULSE GENERATOR
GEAR POSITION SWITCH
FRONT BRAKE LIGHT SWITCH
STARTER SWITCH
HORN
HORN SWITCH
TURN SIGNAL SWITCH
DIMMER SWITCH
HIGH BEAM INDICATOR 12V 1.7W
RIGHT TURN SIGNAL INDICATOR 12V 3.4W
LEFT TURN SIGNAL INDICATOR 12V 3.4W
METER ILLUMINATION 1 12V 1.7W
METER ILLUMINATION 2 12V 1.7W
NEUTRAL INDICATOR 12V 3W
FIRST INDICATOR 12V 1.7W
SECOND INDICATOR 12V 1.7W
THIRD INDICATOR 12V 1.7W
FOURTH INDICATOR 12V 1.7W
FUEL METER
LEFT FRONT TURN SIGNAL LIGHT 12V 21W
HEADLIGHT 12V 35W/35W
POSITION LIGHT 12V 5W
RIGHT FRONT TURN SIGNAL LIGHT 12V 21W
COLOR COMB : GROUND/MARKING
Bl Black
Y Yellow
Bu Blue
G Green
R Red
W White
Br Brown
O Orange
Lb Light blue
Lg Light green
Gr Gray
P Pink
STARTER SWITCH
FREE
PUSH
COLOR
BAT
ST
G
Y/Bu
TURN SIGNAL SWITCH
W
R
L
N
Gr
Lb
O
HORN SWITCH
HO
Lg
DIMMER SWITCH
HI
LO
HL
W
Bu
Bl/R
IGNITION SWITCH
BAT1
BAT2
ON
OFF
R
R/Bl

DK, IIDK, IIIDK NR, IINR, IIINR type



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