

**2019**














**SERVICE MANUAL**

**MONKEY125/A**

## HOW TO USE THIS MANUAL

### 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: <ul style="list-style-type: none"> <li>• Molykote® BR-2 plus manufactured by Dow Corning U.S.A.</li> <li>• Multi-purpose M-2 manufactured by Mitsubishi Oil, Japan</li> </ul>
	Use molybdenum disulfide paste (containing more than 40% molybdenum disulfide, NLGI #2 or equivalent). Example: <ul style="list-style-type: none"> <li>• Molykote® G-n Paste manufactured by Dow Corning U.S.A.</li> <li>• Pro Honda M-77 Assembly Paste (Moly) (U.S.A. only)</li> <li>• Rocol ASP manufactured by Rocol Limited, U.K.</li> <li>• Rocol Paste manufactured by Sumico Lubricant, Japan</li> </ul>
	Use silicone grease.
	Apply 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.

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**MEMO**

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# 1. GENERAL INFORMATION

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## 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 1-17).
9. Do not bend or twist control cables. Damaged control cables will not operate smoothly and may stick or bind.

### ABBREVIATION

Throughout this manual, the following abbreviations are used to identify the respective parts or systems.

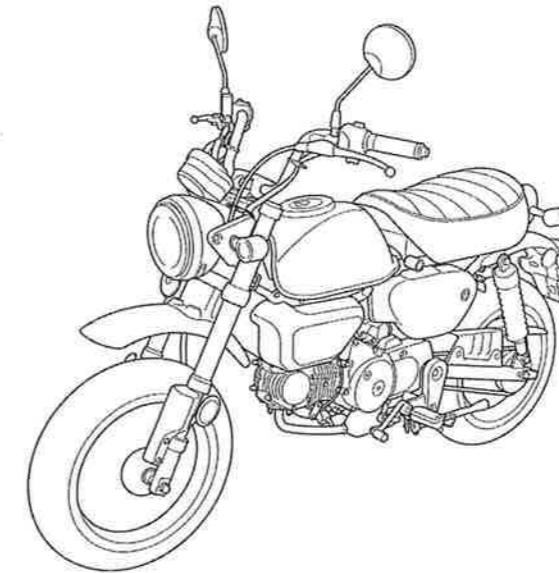
Abbrev. term	Full term
ABS	Anti-lock Brake System
CKP sensor	Crankshaft Position sensor
DLC	Data Link Connector
DTC	Diagnostic Trouble Code
ECM	Engine Control Module
EOT sensor	Engine Oil Temperature sensor
IAT sensor	Intake Air Temperature sensor
IMU	Inertia Measuring Unit
MIL	Malfunction Indicator Lamp
MCS	Motorcycle Communication System
PGM-FI	Programmed Fuel Injection
SCS service connector	Service Check Signal service connector
TP sensor	Throttle Position sensor
VS sensor	Vehicle Speed sensor

### DESTINATION CODE

Throughout this manual, the following codes are used to identify individual types for each region.

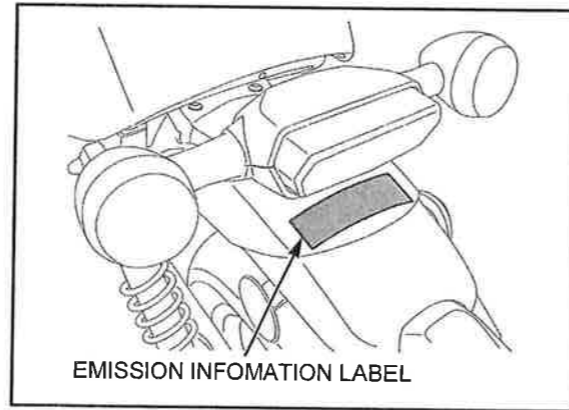
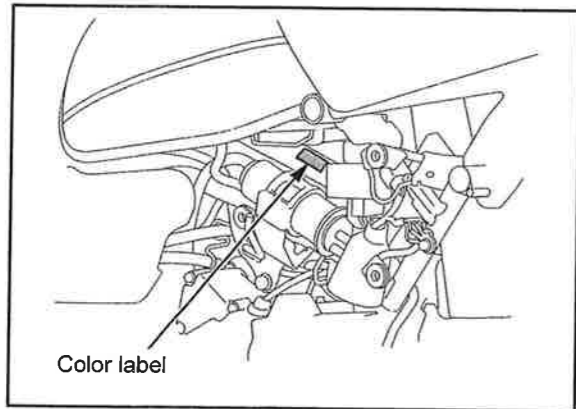
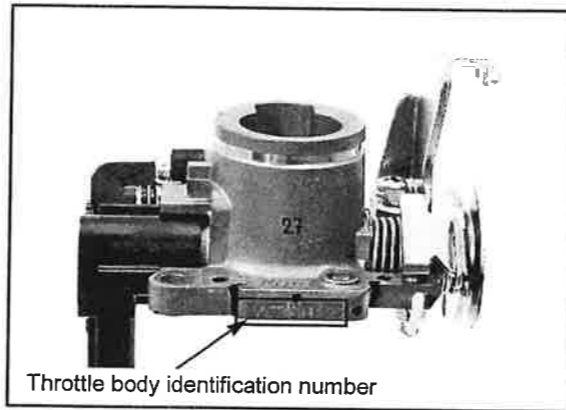
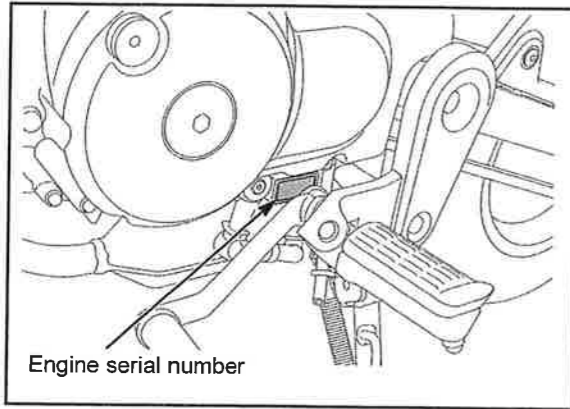
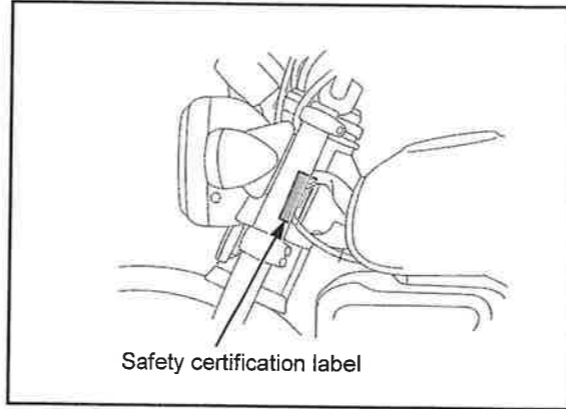
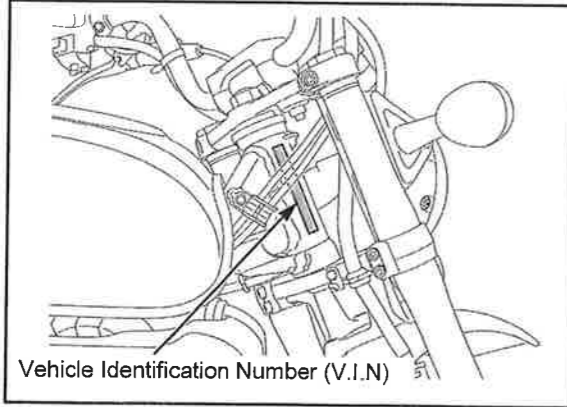
DESTINATION CODE	REGION
AC	50-States (meets California)

### MODEL IDENTIFICATION



GENERAL INFORMATION

SERIAL NUMBERS AND LABELS



## GENERAL INFORMATION

### SPECIFICATIONS

#### GENERAL SPECIFICATIONS

ITEM		SPECIFICATION	
DIMENSIONS	Overall length	1,710 mm (67.3 in)	
	Overall width	755 mm (29.7 in)	
	Overall height	1,030 mm (40.6 in)	
	Wheelbase	1,155 mm (45.5 in)	
	Seat height	776 mm (30.6 in)	
	Footpeg height	286 mm (11.3 in)	
	Ground clearance	160 mm (6.3 in)	
	Curb weight	MONKEY125 MONKEY125A	105 kg (231 lbs) 107 kg (236 lbs)
	Maximum weight		105 kg (231 lbs)
	FRAME	Frame type	Back bone type
Front suspension		Telescopic fork	
Front axle travel		100 mm (3.9 in)	
Rear suspension		Swingarm	
Rear axle travel		104 mm (4.1 in)	
Tire size		Front Rear	120/80-12 65J 130/80-12 69J
Tire brand			V133 (VEE RUBBER)
Front brake			Hydraulic single disc
Rear brake			Hydraulic single disc
Caster angle			25° 00'
Trail length			82 mm (3.2 in)
Fuel tank capacity			5.6 liters (1.48 US gal, 1.23 Imp gal)
ENGINE		Cylinder arrangement	Single cylinder inclined 80° from vertical
		Bore and stroke	52.4 x 57.9 mm (2.06 x 2.28 in)
	Displacement	125 cm <sup>3</sup> (7.6 cu-in)	
	Compression ratio	9.3:1	
	Valve train	Chain driven, OHC	
	Intake valve	opens closes	at 1.0 mm lift at 1.0 mm lift
	Exhaust valve	opens closes	at 1.0 mm lift at 1.0 mm lift
	Lubrication system		Forced pressure and wet sump
	Oil pump type		Trochoid
	Cooling system		Air cooled
	Air filtration		Viscous paper element
	Engine dry weight		23.9 kg (52.7 lbs)
	FUEL DELIVERY SYSTEM	Type	PGM-FI
		Throttle bore	24 mm (0.9 in)
DRIVE TRAIN	Clutch system	Multi-plate, wet	
	Clutch operation system	Cable operating	
	Transmission	Constant mesh, 4 speeds	
	Primary reduction	3.350 (67/20)	
	Final reduction	2.266 (34/15)	
	Gear ratio	1st 2nd 3rd 4th	2.500 (35/14) 1.550 (31/20) 1.150 (23/20) 0.923 (24/26)
	Gearshift pattern		Left foot operated return system, 1 - N - 2 - 3 - 4
	ELECTRICAL	Ignition system	Computer-controlled digital transistorized with electric advance
Starting system		Electric starter motor	
Charging system		Single phase output alternator	
Regulator/rectifier		SCR opened, single phase half-wave rectification	
Lighting system		Battery	



## GENERAL INFORMATION

### PGM-FI SYSTEM SPECIFICATIONS

ITEM	SPECIFICATIONS
IAT sensor resistance (40°C/104°F)	1.0 – 1.2 kΩ
EOT sensor resistance (20°C/68°F)	2.5 – 2.8 kΩ
Fuel injector resistance (24°C/75°F)	11 – 13 Ω
Fast idle solenoid valve resistance (at 20°C/68°F)	24 – 27 Ω
EVAP purge control solenoid valve resistance (at 20°C/68°F)	30 – 34 Ω

### IGNITION SYSTEM SPECIFICATIONS

ITEM	SPECIFICATIONS
Spark plug	Standard CPR6EA-9 (NGK) U20EPR9 (DENSO)
	Optional CPR7EA-9 (NGK) U22EPR9 (DENSO)
Spark plug gap	0.8 – 0.9 mm (0.03 - 0.04 in)
Ignition coil peak voltage	100 V minimum
CKP sensor peak voltage	0.7 V minimum
Ignition timing	10° BTDC at idle speed

### FUEL SYSTEM SPECIFICATIONS

ITEM	SPECIFICATIONS
Throttle body identification number	GQYJB
Engine idle speed	1,400 ± 100 rpm
Idle air screw standard opening	2 turns out from the fully seated position
Throttle grip freeplay	2 – 6 mm (1/16 – 1/4 in)
Fuel pressure at idle	263 – 316 kPa (2.7 – 3.2 kgf/cm <sup>2</sup> , 38 – 46 psi)
Fuel pump flow (at 12 V)	82 cm <sup>3</sup> (2.8 US oz, 2.9 Imp oz) minimum/10 seconds

### LUBRICATION SYSTEM SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	At draining	0.9 liters (1.0 US qt, 0.8 Imp qt)	–
	At disassembly	1.1 liters (1.2 US qt, 1.0 Imp qt)	–
Recommended engine oil		Pro Honda GN4 4-stroke oil (U.S.A. & Canada) or equivalent motorcycle oil API service classification: SG or higher JASO T903 standard: MA Viscosity: SAE 10W-30	–
Oil pump rotor	Tip clearance	0.15 (0.006)	0.20 (0.008)

Unit: mm (in)

### CYLINDER HEAD/VALVES SPECIFICATIONS

ITEM			STANDARD	SERVICE LIMIT
Cylinder compression at 600 rpm			1,098 kPa (11.2 kgf/cm <sup>2</sup> , 159 psi)	–
Cylinder head warpage			–	0.10 (0.004)
Camshaft	Cam lobe height	IN	32.657 – 32.897 (1.2857 - 1.2952)	32.627 (1.2845)
		EX	32.481 – 32.721 (1.2788 - 1.2882)	32.451 (1.2776)
Valve, valve guide	Valve clearance	IN	0.10 ± 0.02 (0.004 ± 0.001)	–
		EX	0.17 ± 0.02 (0.007 ± 0.001)	–
	Valve stem O.D.	IN	4.975 – 4.990 (0.1959 - 0.1965)	4.965 (0.1955)
		EX	4.955 – 4.970 (0.1951 - 0.1957)	4.945 (0.1947)
	Valve guide I.D.	IN/EX	5.000 – 5.012 (0.1969 - 0.1973)	5.042 (0.1985)
	Valve guide projection	IN/EX	10.1 – 10.3 (0.40 - 0.41)	–
Valve seat width	IN/EX	0.7 (0.028)	1.5 (0.06)	
Valve spring free length			33.14 (1.305)	32.5 (1.280)

Unit: mm (in)

## GENERAL INFORMATION

### CYLINDER/PISTON SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT	
Cylinder	I.D.	52.405 – 52.415 (2.0632 - 2.0636)	52.500 (2.0669)	
	Warpage	–	0.10 (0.004)	
Piston, piston rings, piston pin	Piston O.D. at 6.5 (0.26) from bottom	52.380 – 52.395 (2.0622 - 2.0628)	52.300 (2.0591)	
	Piston pin bore I.D.	13.002 – 13.008 (0.5119 - 0.5121)	13.02 (0.513)	
	Piston pin O.D.	12.994 – 13.000 (0.5116 - 0.5118)	12.98 (0.511)	
	Piston ring-to-ring groove clearance	Top	0.030 – 0.065 (0.0012 - 0.0026)	–
		Second	0.015 – 0.050 (0.0006 - 0.0020)	–
	Piston ring end gap	Top	0.10 – 0.25 (0.004 - 0.010)	0.35 (0.014)
		Second	0.10 – 0.30 (0.004 - 0.012)	0.40 (0.016)
Oil (side rail)		0.20 – 0.70 (0.008 - 0.028)	0.90 (0.035)	
Connecting rod small end I.D.		13.010 – 13.028 (0.5122 - 0.5129)	13.038 (0.5133)	

### CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT	
Manual clutch	Clutch lever free play	10 – 20 (3/8 - 13/16)	–	
	Disc thickness	2.50 – 2.70 (0.098 - 0.106)	2.3 (0.09)	
	Plate warpage	–	0.15 (0.006)	
	Clutch spring free length	27.4 (1.08)	26.4 (1.04)	
	Clutch outer I.D.	23.000 – 23.013 (0.9055 - 0.9060)	–	
	Clutch outer guide	I.D.	16.991 – 17.009 (0.6689 - 0.6696)	–
		O.D.	22.959 – 22.980 (0.9039 - 0.9047)	–
	Mainshaft O.D. at clutch outer guide	16.966 – 16.984 (0.6680 - 0.6687)	–	

### ALTERNATOR/STARTER CLUTCH SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Starter driven gear	I.D.	26.987 – 27.003 (1.0625 - 1.0631)	–
	O.D.	45.660 – 45.673 (1.7976 - 1.7981)	–

### CRANKCASE/TRANSMISSION/CRANKSHAFT SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod side clearance	0.10 – 0.35 (0.004 - 0.014)	0.45 (0.018)
	Connecting rod radial clearance	0 – 0.012 (0 - 0.0005)	0.05 (0.002)
	Runout	–	See page 13-7
Transmission	Gear I.D.	M2, M3	17.000 – 17.018 (0.6693 - 0.6700)
		C1	18.000 – 18.018 (0.7087 - 0.7094)
		C4	20.000 – 20.021 (0.7874 - 0.7882)
	Bushing O.D.	C1	17.966 – 17.984 (0.7073 - 0.7080)
	Bushing I.D.	C1	15.000 – 15.018 (0.5906 - 0.5913)
	Mainshaft O.D.	at M3	16.966 – 16.984 (0.6680 - 0.6687)
	Countershaft O.D.	at C1 bushing	14.966 – 14.984 (0.5892 - 0.5899)
Shift fork/ Shift drum	Shift fork I.D.	10.000 – 10.018 (0.3937 - 0.3944)	–
	Shift fork claw thickness	4.93 – 5.00 (0.194 - 0.197)	4.83 (0.190)
	Shift fork shaft O.D.	9.986 – 9.995 (0.3931 - 0.3935)	–

## GENERAL INFORMATION

### FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cold tire pressure		200 kPa (2.00 kgf/cm <sup>2</sup> , 29 psi)	—
Axle runout		—	0.2 (0.01)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Fork	Spring free length	318.2 (12.53)	311.8 (12.28)
	Recommended fork fluid	Pro Honda Suspension Fluid SS-8 (10W)	—
	Fluid level	75 (2.95)	—
	Fluid capacity	216 ± 1.5 cm <sup>3</sup> (7.31 ± 0.05 US oz, 7.60 ± 0.05 Imp oz)	—

### REAR WHEEL/SUSPENSION SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cold tire pressure		200 kPa (2.00 kgf/cm <sup>2</sup> , 29 psi)	—
Axle runout		—	0.2 (0.01)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Drive chain	Size/link	DID	DID420D2-98RB
		RK	RK420SB2TK-98RJ
	Slack	30 – 40 (1-3/16 - 1-9/16)	50 (2.0)

### HYDRAULIC BRAKE SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Front	Specified brake fluid	DOT 3 or DOT 4	—
	Brake disc thickness	3.3 – 3.7 (0.13 - 0.15)	3.0 (0.12)
	Brake disc warpage	—	0.30 (0.012)
	Master cylinder I.D.	12.700 – 12.743 (0.5000 - 0.5017)	—
	Master piston O.D.	12.657 – 12.684 (0.4983 - 0.4994)	—
	Caliper cylinder I.D.	25.400 – 25.450 (1.0000 - 1.0020)	—
	Caliper piston O.D.	25.335 – 25.368 (0.9974 - 0.9987)	—
Rear	Specified brake fluid	DOT 3 or DOT 4	—
	Brake disc thickness	3.8 – 4.2 (0.15 - 0.17)	3.5 (0.14)
	Brake disc warpage	—	0.30 (0.012)
	Master cylinder I.D.	12.700 – 12.743 (0.5000 - 0.5017)	—
	Master piston O.D.	12.657 – 12.684 (0.4983 - 0.4994)	—
	Caliper cylinder I.D.	27.000 – 27.050 (1.0630 - 1.0650)	—
	Caliper piston O.D.	26.935 – 26.968 (1.0604 - 1.0617)	—

### ANTI-LOCK BRAKE SYSTEM (ABS) SPECIFICATION

ITEM	STANDARD	SERVICE LIMIT
Air gap	0.1 – 1.4 mm (0.004 – 0.055 in)	—

**GENERAL INFORMATION**

**BATTERY/CHARGING SYSTEM SPECIFICATIONS**

ITEM		SPECIFICATIONS	
Battery	Type	YTZ5S	
	Capacity	12 V - 3.5 Ah (10 HR)/3.7 Ah (20 HR)	
	Current leakage	0.1 mA	
	Voltage (20°C/68°F)	Fully charged	13.0 – 13.2 V
		Needs charging	Below 12.3 V
	Charging current	Normal	0.4 A/5 – 10 h
Quick		3.0 A/0.5 h	
Alternator	Capacity	0.15 kW/5,000 rpm	
	Charging coil resistance (20°C/68°F)	0.2 – 1.0 Ω	

**LIGHTS/METERS/SWITCHES SPECIFICATIONS**

ITEM		SPECIFICATION
Bulbs	Headlight (High/Low)	LED
	Brake/tail light	LED
	Turn signal light	12V - 21W x 4
	License light	LED
	Meter light	LED
	Turn signal indicator	LED
	High beam indicator	LED
	Neutral indicator	LED
	ABS indicator (MONKEY125A)	LED
	Fuse	Main fuse
Sub fuse		10 A x 3
ABS main fuse (MONKEY125A)		15 A
ABS sub fuse (MONKEY125A)		10 A
Fuel level sensor resistance	FULL	7 – 11 Ω
	EMPTY	384 – 396 Ω

**GENERAL INFORMATION**

**TORQUE VALUES**

**STANDARD TORQUE VALUES**

FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)	FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)
5 mm bolt and nut	5.2 (0.5, 3.8)	5 mm screw	4.2 (0.4, 3.1)
6 mm bolt and nut (Include SH flange bolt)	10 (1.0, 7)	6 mm screw	9.0 (0.9, 6.6)
8 mm bolt and nut	22 (2.2, 16)	6 mm flange bolt	12 (1.2, 9)
10 mm bolt and nut	34 (3.5, 25)	(Include NSHF) and nut	
12 mm bolt and nut	54 (5.5, 40)	8 mm flange bolt and nut	27 (2.8, 20)
		10 mm flange bolt and nut	39 (4.0, 29)

**ENGINE & FRAME TORQUE VALUES**

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

**BODY PANELS/EXHAUST SYSTEM**

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Exhaust joint pipe cover bolt	2	6	10 (1.0, 7)	
Exhaust pipe joint nut	2	8	27 (2.8, 20)	
Exhaust pipe mounting bolt	1	8	27 (2.8, 20)	
Exhaust pipe stud bolt	2	8	-	See page 2-11
Muffler band bolt	1	8	20 (2.0, 15)	
Muffler mounting bolt	2	8	27 (2.8, 20)	
Muffler protector bolt	1	6	10 (1.0, 7)	
Muffler tail cap bolt	2	6	10 (1.0, 7)	
Sidestand pivot bolt	1	10	10 (1.0, 7)	
Sidestand pivot nut	1	10	30 (3.1, 22)	Self-lock nut
Rear fender B mounting socket bolt	4	6	12 (1.2, 9)	
Rear side reflector nut	2	6	1.5 (0.2, 1.1)	Self-lock nut
Front side reflector nut	2	6	1.5 (0.2, 1.1)	Self-lock nut
Front side reflector stay bolt	2	6	12 (1.2, 9)	

**MAINTENANCE**

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Spark plug	1	10	16 (1.6, 12)	
Oil drain bolt	1	12	24 (2.4, 18)	
Oil centrifugal filter cover bolt	3	6	12 (1.2, 9)	Apply locking agent to the threads.
Air cleaner housing cover screw	8	5	1.1 (0.1, 0.8)	
Air cleaner element screw	1	5	1.1 (0.1, 0.8)	
Timing hole cap	1	14	6.0 (0.6, 4.4)	
Crankshaft hole cap	1	30	8.0 (0.8, 5.9)	
Tappet adjusting screw lock nut	2	5	9.0 (0.9, 7.0)	Apply engine oil to the threads and seating surface.
Drive sprocket fixing plate bolt	2	6	12 (1.2, 9)	
Driven sprocket nut	4	8	32 (3.3, 24)	Self-lock nut
Rear axle nut	1	12	59 (6.0, 44)	Self-lock nut
Headlight aim adjusting bolt	1	4	2.0 (0.2, 1.5)	
Throttle cable adjuster lock nut	1	6	4.5 (0.5, 3.3)	
Front master cylinder reservoir cover screw	2	4	1.5 (0.2, 1.1)	
Rear master cylinder reservoir mounting bolt	1	6	10 (1.0, 7)	
Rear master cylinder push rod lock nut	1	8	17 (1.7, 13)	

**PGM-FI SYSTEM**

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
IAT sensor mounting screw	2	5	1.1 (0.1, 0.8)	
EOT sensor	1	10	14.5 (1.5, 11)	
O <sub>2</sub> sensor	1	12	24.5 (2.5, 18)	

## GENERAL INFORMATION

### IGNITION SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Timing hole cap	1	14	6.0 (0.6, 4.4)	

### ELECTRIC STARTER SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Starter motor terminal nut	1	6	7.0 (0.7, 5.2)	
Starter motor case bolt	2	—	4.9 (0.5, 3.6)	

### FUEL SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Fuel pump guard nut	2	6	12 (1.2, 9)	For tightening sequence See page 7-10
Fuel pump setting plate nut	2	6	12 (1.2, 9)	
Fuel pump setting plate special nut	2	6	12 (1.2, 9)	
Fuel filler cap socket bolt	3	4	1.8 (0.2, 1.3)	
Connecting hose band screw	1	4	1.5 (0.2, 1.1)	
Fast idle solenoid valve torx screw	2	5	3.4 (0.3, 2.5)	

### LUBRICATION SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Oil pump assembly bolt	2	5	5.2 (0.5, 3.8)	

### CYLINDER HEAD/VALVES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Cylinder head cap bolt	4	8	24 (2.4, 18)	Apply engine oil to the threads and seating surface.
Cam sprocket washer bolt	1	8	27 (2.8, 20)	Apply engine oil to the threads and seating surface.
Cam chain tensioner sealing bolt	1	14	22 (2.2, 16)	
Cam chain tensioner arm pivot bolt	1	8	16 (1.6, 12)	
Cam chain guide lower roller pivot bolt	1	8	10 (1.0, 7)	
Timing hole cap	1	14	6.0 (0.6, 4.4)	
Crankshaft hole cap	1	30	8.0 (0.8, 5.9)	

### CYLINDER/PISTON

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Cam chain guide roller pin bolt	1	8	10 (1.0, 7)	
Cylinder stud bolt	4	8	—	See page 10-5

## GENERAL INFORMATION

### CLUTCH/GEARSHIFT LINKAGE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Right crankcase cover protector bolt	3	6	7.0 (0.7, 5.2)	
Shift drum stopper arm bolt	1	6	12 (1.2, 9)	Apply locking agent to the threads.
Gearshift return spring pin	1	8	30 (3.1, 22)	
Gearshift cam plate socket bolt	1	6	10 (1.0, 7)	Apply locking agent to the threads.
Centrifugal filter rotor lock nut	1	14	64 (6.5, 47)	Apply engine oil to the threads and seating surface.
Clutch center lock nut	1	14	64 (6.5, 47)	Apply engine oil to the threads and seating surface.
Clutch lifter plate bolt	3	6	12 (1.2, 9)	
Step holder mounting bolt	2	8	31 (3.2, 23)	
Swingarm pivot nut	1	12	54 (5.5, 40)	Self-lock nut

### ALTERNATOR

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Flywheel nut	1	12	64 (6.5, 47)	Apply engine oil to the threads and seating surface.
Starter clutch mounting torx bolt	6	6	16 (1.6, 12)	Apply locking agent to the threads.

### ENGINE REMOVAL/INSTALLATION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS	
Engine hanger nut	(upper)	1	10	54 (5.5, 40)	
	(lower)	1	10	54 (5.5, 40)	
	(front)	1	10	54 (5.5, 40)	
Drive sprocket fixing plate bolt	2	6	12 (1.2, 9)		
Step holder mounting bolt	2	8	31 (3.2, 23)		
Swingarm pivot nut	1	12	54 (5.5, 40)	Self-lock nut	

### FRONT WHEEL/SUSPENSION/STEERING

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS	
Clutch lever pivot bolt	1	6	1.0 (0.1, 0.7)		
Clutch lever pivot nut	1	6	5.9 (0.6, 4.4)		
Steering stem nut	1	24	88 (9.0, 65)	See page 15-23	
Steering stem adjusting nut	1	26	1.5 (0.2, 1.1)	See page 15-23	
Top bridge pinch bolt	2	8	27 (2.8, 20)		
Bottom bridge pinch bolt	4	8	27 (2.8, 20)		
Handlebar holder socket bolt	4	8	27 (2.8, 20)		
Handlebar holder mounting nut	2	8	27 (2.8, 20)		
Left handlebar switch screw	2	5	2.5 (0.3, 1.8)		
Right handlebar switch screw	2	5	2.5 (0.3, 1.8)		
Front master cylinder holder bolt	2	6	10 (1.0, 7)		
Front axle nut	1	12	69 (7.0, 51)	Self-lock nut	
Front wheel pulser ring bolt (MONKEY125A)	3	5	7 (0.7, 5.2)	Pre-coated (ALOC) bolt, replace with a new one.	
Front brake disc bolt	MONKEY125	4	8	42 (4.3, 31)	Pre-coated (ALOC) bolt, replace with a new one.
	MONKEY125A	5	6	20 (2.0, 15)	
Fork bolt	2	36	30 (3.1, 22)		
Fork lock nut	2	12	27.5 (2.8, 20)		
Front brake caliper mounting bolt	2	8	30 (3.1, 22)	Pre-coated (ALOC) bolt, replace with a new one.	

## GENERAL INFORMATION

### REAR WHEEL/SUSPENSION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Rear axle nut	1	12	59 (6.0, 44)	Self-lock nut
Driven sprocket nut	4	8	32 (3.3, 24)	Self-lock nut
Rear brake disc bolt	4	8	42 (4.3, 31)	Pre-coated (ALOC) bolt, replace with a new one.
Shock absorber upper mounting cap nut	2	10	29 (3.0, 21)	
Shock absorber lower mounting cap nut	2	10	29 (3.0, 21)	
Step holder mounting bolt	2	8	31 (3.2, 23)	
Swingarm pivot nut	1	12	54 (5.5, 40)	Self-lock nut
Driven sprocket stud bolt	4	8	-	See page 16-8

### HYDRAULIC BRAKE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Brake caliper bleed valve	2	8	5.4 (0.6, 4.0)	
Brake lever pivot bolt	1	6	1.0 (0.1, 0.7)	
Brake lever pivot nut	1	6	5.9 (0.6, 4.4)	
Brake hose oil bolt	4	10	34 (3.5, 25)	
Front master cylinder reservoir cover screw	2	4	1.5 (0.2, 1.1)	
Brake pad hanger pin	2	10	17 (1.7, 13)	
Front brake caliper pin bolt	1	8	17 (1.7, 13)	Pre-coated (ALOC) bolt, replace with a new one.
Front brake light switch screw	1	4	1.2 (0.1, 0.9)	
Front brake caliper mounting bolt	2	8	30 (3.1, 22)	Pre-coated (ALOC) bolt, replace with a new one.
Front master cylinder holder bolt	2	6	10 (1.0, 7)	
Rear master cylinder reservoir mounting bolt	1	6	10 (1.0, 7)	
Rear master cylinder mounting bolt	2	6	12 (1.2, 9)	Pre-coated (ALOC) bolt, replace with a new one.
Rear master cylinder push rod lock nut	1	8	17 (1.7, 13)	
Rear master cylinder hose joint screw	1	4	1.5 (0.2, 1.1)	Apply locking agent to the threads.

### ANTI-LOCK BRAKE SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Brake pipe joint nut	2	10	14 (1.4, 10)	Apply brake fluid to the threads.

### LIGHTS/METERS/SWITCHES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Ignition switch mounting bolt	2	8	27 (2.8, 20)	Replace with a new one.
Headlight unit mounting socket bolt	2	6	12 (1.2, 9)	
Taillight unit mounting cap nut	3	6	12 (1.2, 9)	
License light mounting screw	2	4	0.9 (0.1, 0.7)	
Brake/taillight unit mounting nut	2	6	10 (1.0, 0.7)	

### OTHERS

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Combination meter screw	1	5	1.0 (0.1, 0.7)	
Seat stay mounting nut	2	6	12 (1.2, 9)	
Throttle cable lock nut A (Throttle grip side)	1	10	3.0 (0.3, 2.2)	
Throttle cable lock nut B (Throttle grip side)	1	12	3.0 (0.3, 2.2)	



**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 <sup>3</sup>
	IN/EX valve stem outer surface and stem end	
	Camshaft whole surface	
	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	
	Clutch outer guide outer surface	
	Clutch disc whole surface	
	Gearshift spindle journal	
	Shift fork shaft whole surface	
	Shift drum whole surface	
	Cam chain tensioner push rod inside	4.0 cm <sup>3</sup> minimum
	Cam chain guide roller pin bolt sliding surface	
	Gearshift cam outer surface	
	Starter reduction gear both journal area	
	Starter reduction gear shaft whole surface	
	Starter clutch rolling surface	
	Each bearing rolling surface	
Each O-ring		
Locking agent	Mainshaft bearing set plate bolt threads	Coating width: 6.5 mm (0.26 in) from tip
	Gearshift cam plate socket bolt threads	Coating width: 6.5 mm (0.26 in) from tip
	Shift drum stopper arm pivot bolt threads	Coating width: 6.5 mm (0.26 in) from tip
	Starter clutch outer socket bolt threads	Coating width: 6.5 mm (0.26 in) from tip
	Oil centrifugal filter cover bolt threads	Coating width: 4.5 mm (0.18 in) from tip
Molybdenum disulfide oil (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease)	Decompressor cam and arm sliding area	
	Each transmission rotating gear inner surface	
	C1 gear bushing whole surface	
	M4, C3 gear shift fork groove	
	Clutch lifter arm outer surface	
	Clutch lifter rod surface	
Sealant (Three bond 1215 or equivalent)	Left crankcase mating surface	See page 13-12
	Alternator wire grommet seating surface	
Multi-purpose grease	Gearshift spindle oil seal lip	
	Countershaft oil seal lip	
Degreasing	Flywheel and left crankshaft contact areas	

## GENERAL INFORMATION

### FRAME

MATERIAL	LOCATION	REMARKS
Urea based multi-purpose grease with extreme pressure NLGI#2 (example: ALVANIA EP2 manufactured by Shell or EXCELITE EP2 manufactured by Kyodo Yushi CO., LTD. or equivalent)	Steering head bearing rolling surface	3 – 5 g (0.1 – 0.2 oz) each
	Steering head bearing dust seal lips	
Multi-purpose grease	Sidestand pivot sliding area	
	Gearshift pedal pivot sliding area	
	Gearshift tie rod sliding area	
	Throttle grip pipe flange sliding area	
	Throttle cable (Throttle grip side)	See page 15-7
	Clutch lever pivot bolt sliding area	
	Brake pedal pivot sliding area	
	Wheel dust seal lip	
	Main step pivot pin sliding area	
	Rear wheel dust seal lip	
	Each dust seal lips	
Silicone grease	Each O-ring	
	Brake caliper pin bolt sliding surface	0.4 g minimum
	Brake caliper dust seal	
	Brake pad hanger pin O-ring	
	Brake lever pivot bolt sliding surface	0.1 g
	Brake lever contacting area (master piston)	0.1 g minimum
	Rear master cylinder push rod contacting area (master cylinder piston and boot)	0.1 g each
DOT 3 or DOT 4 brake fluid	Turn signal relay mounting rubber inner side (Turn signal relay contacting area)	
	Brake master piston sliding area	
	Brake caliper piston sliding area and piston seal	
Locking agent	ABS brake pipe joint nut threads (MONKEY125A)	
	Rear master cylinder hose joint screw threads	
Pro Honda Suspension Fluid SS-8 (10W)	Driven sprocket stud bolt threads	
	Fork bolt O-ring	
Pro Honda HP Chain Lube or an equivalent	Fork oil seal lips	
	Drive chain entire surface	
Honda Bond A or Honda Hand Grip Cement (U.S.A. only)	Left handlebar grip rubber inside	
	Air cleaner connecting hose mating surface	

GENERAL INFORMATION

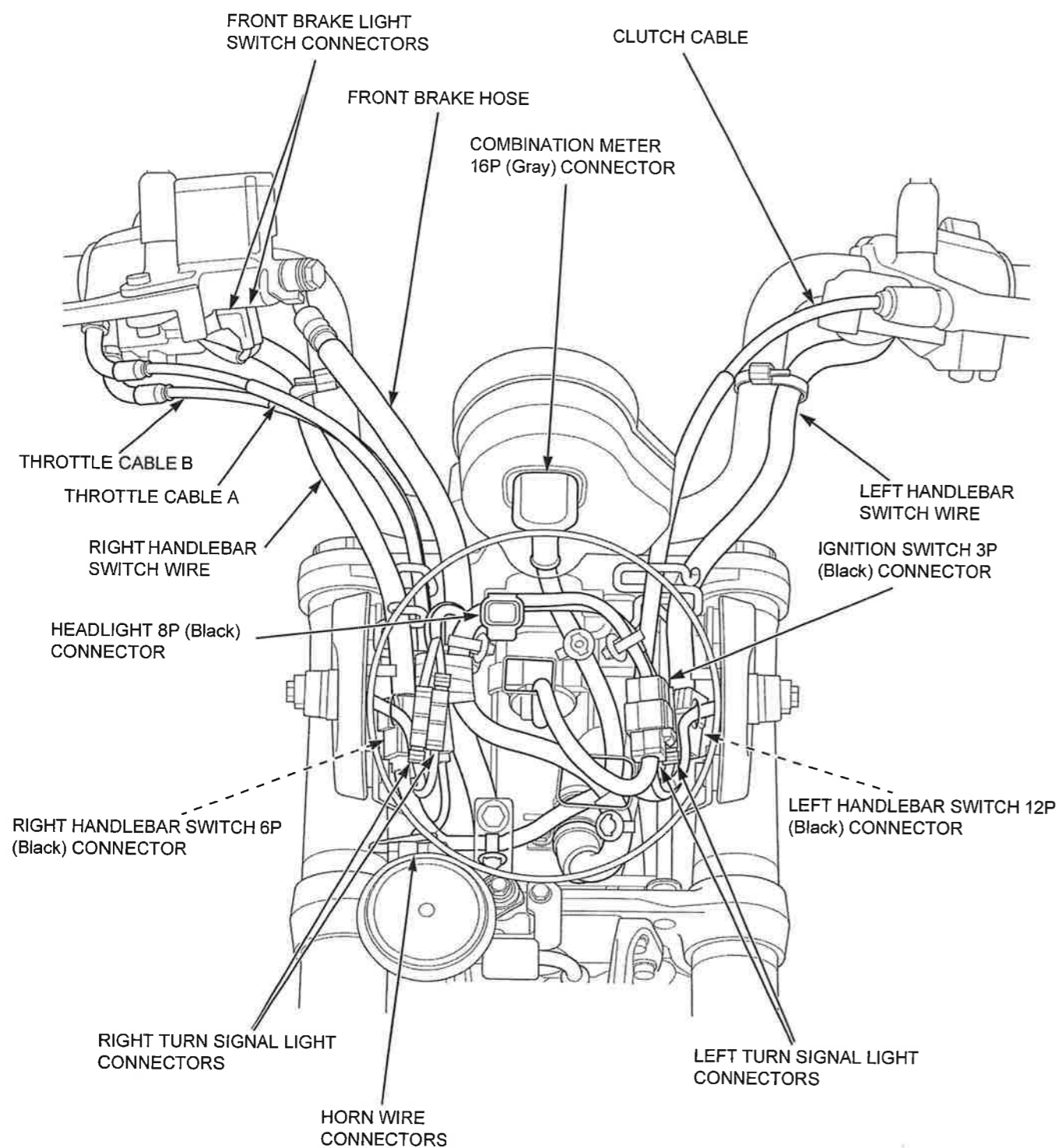
SPECIAL TOOL LIST

TITLE	TOOL No	TOOL NAME	
MAINTENANCE	07708-0030400 07908-3290200 (U.S.A. only)	Valve adjusting wrench	
	07708-0030100 or equivalent commercially available in the U.S.A.	Lock nut wrench, 8 x 9	
PGM-FI SYSTEM	070PZ-ZY30100	SCS service connector	
	07ZAJ-RDJA110	Pin probe male (2 pack)	
IGNITION SYSTEM	07HGJ-0020100	Peak voltage adaptor or equivalent commercially available in the U.S.A.	
	07ZAJ-RDJA110	Pin probe male (2 pack)	
FUEL SYSTEM	07406-0040004 or 07406-004000C (U.S.A. only) or 07406-004000B (U.S.A. only)	Fuel pressure gauge	
	070MJ-K260100 (Not available in the U.S.A.)	Fuel pressure gauge attachment set	
	070MF-KVS0300	Fuel pump case remover	
	07AMJ-HW3A100 (U.S.A. only)	Pressure manifold hose	
	07AAJ-S6MA200 (U.S.A. only)	Adaptor B, male	
	07AMJ-K26A100 (U.S.A. only)	Fuel adaptor 90 degree	
CYLINDER HEAD/ VALVES	07725-0030000	Universal holder	
	07757-0010000	Valve spring compressor	
	07959-KM30101	Valve spring compressor attachment	
	07942-MA60000	Valve guide driver, 5.0 mm	
	07743-0020000 (Not available in U.S.A.)	Valve guide adjusting driver	
	07984-MA60001 or 07984-MA6000D	Valve guide reamer, 5.0 mm	
	07781-0010400 or equivalent commercially available in the U.S.A.	Cutter holder, 5.0 mm	
	07780-0010200 or equivalent commercially available in the U.S.A.	Seat cutter, 27.5 mm (45° IN)	
	07780-0010701 or equivalent commercially available in the U.S.A.	Seat cutter, 22 mm (45° EX)	
	07780-0013300 or equivalent commercially available in the U.S.A.	Flat cutter, 27 mm (32° IN)	
	07780-0012601 or equivalent commercially available in the U.S.A.	Flat cutter, 22 mm (32° EX)	
	07780-0014500 or equivalent commercially available in the U.S.A.	Interior cutter, 26 mm (60° IN)	
	07780-0014202 or equivalent commercially available in the U.S.A.	Interior cutter, 22 mm (60° EX)	
	CLUTCH/ GEARSHIFT LINKAGE	07936-1660101 or 07936-166010A (U.S.A. only)	Bearing remover set, 12mm
		07936-1660120 (Not available in U.S.A.)	Bearing remover shaft, 12 mm
07936-1660110 (Not available in U.S.A.)		Bearing remover head, 12mm	
07741-0010201 or 07936-371020A or 07936-3710200 (U.S.A. only)		Remover weight	
07749-0010000		Driver	
07946-1870100		Attachment, 28 x 30 mm	
07746-0040200		Pilot, 12 mm	
07916-6390001		Lock nut wrench, 5.5 x 30 mm	
07725-0030000		Universal holder	
07724-0010100 or 07724-001A100 (U.S.A. only)		Gear holder 2.5mm	
07716-0020100		Lock nut wrench, 20 x 24 mm	
07716-0020500 or equivalent commercially available in the U.S.A.		Extension bar	
07725-0040001		Flywheel holder	
ALTERNATOR/ STARTER CLUTCH	07725-0040001	Flywheel holder	
	07KMC-HE00100	Flywheel puller, 30mm	

## GENERAL INFORMATION

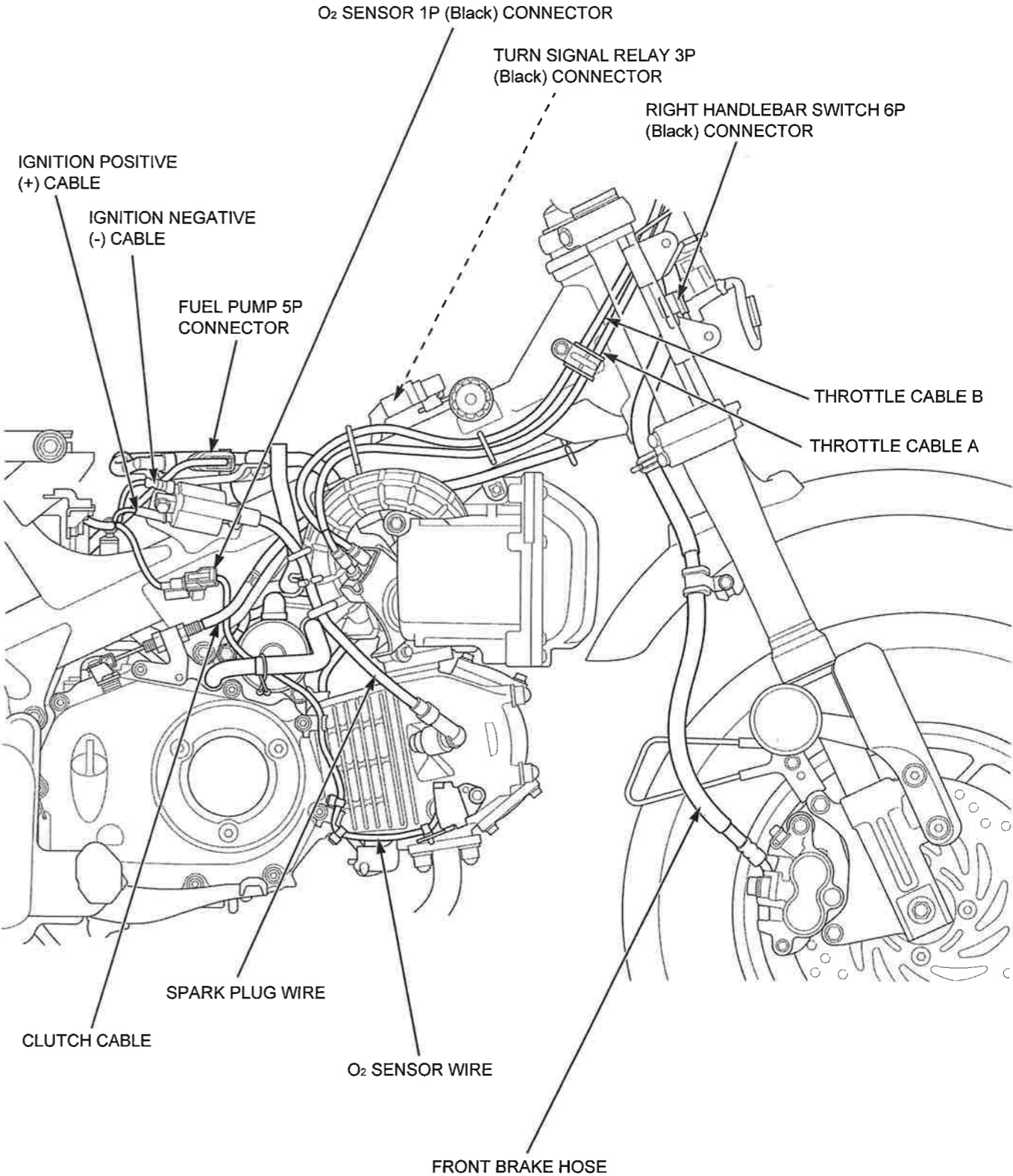
TITLE	TOOL No	TOOL NAME
CRANK CASE/ TRANSMISSION/ CRANKSHAFT	07631-0010000 or equivalent commercially available in the U.S.A.	Universal bearing puller
	07749-0010000	Driver
	07746-0010400	Attachment, 52 x 55 mm
	07746-0041000	Pilot, 22 mm
	07JMF-KW70100 (Not available in the U.S.A.)	Assembly set, 14 mm
	07936-1660101 or 07936-1660100A (U.S.A. only)	Bearing remover set, 12 mm
	07936-1660120 (Not available in the U.S.A.)	Bearing remover shaft, 12 mm
	07936-1660110 (Not available in the U.S.A.)	Bearing remover head, 12 mm
	07741-0010201 or 07936-370102A or 07936-3710200 (U.S.A. only)	Remover weight
	07946-1870100	Attachment, 28 x 30 mm
	07746-0040200	Pilot, 12 mm
	07746-0010200	Attachment, 37 x 40 mm
	07746-0040400	Pilot, 17 mm
	07746-0010100	Attachment, 32 x 35 mm
	07931-ME4010B (U.S.A. only)	Installer shaft
	07931-HB3020A (U.S.A. only)	Special nut
	07AMF-K26A100 (U.S.A. only)	Threaded adapter
	07YMF-KPB100 (U.S.A. only)	Assembly collar
FRONT WHEEL/ SUSPENSION/ STEERING	07746-0050300	Remover head, 12 mm
	07746-0050100	Bearing remover shaft
	07749-0010000	Driver
	07746-0010200	Attachment, 37 x 40 mm
	07746-0040200	Pilot, 12 mm
	070MD-K200100 or 070MD-K20A100 (U.S.A. only)	Oil seal driver, 31mm
	07916-3710101	Steering stem socket
	07WMF-GCM0100 or 07931-ME9010 (U.S.A. only)	Shaft installer
	07WMF-GCM0200 or 07WMF-GCMA200 (U.S.A. only)	Head base
	07WMF-GCM0300 or 07WMF-GCMA300 (U.S.A. only)	Base
	07WMF-GCM0400 or 07WMF-GCMA400 (U.S.A. only)	Driver attachment 48.5 mm
	07WMF-GCM0600 or 07WMF-GCMA600 (U.S.A. only)	Remover 35 mm
	07747-0010300	Driver attachment
	REAR WHEEL/ SUSPENSION	07746-0050300
07746-0050100		Bearing remover shaft
07749-0010000		Driver
07746-0010200		Attachment, 37 x 40 mm
07746-0040200		Pilot, 12 mm
07746-0040400		Pilot, 17 mm
HYDRAULIC BRAKE	07914-SA50001	Snap ring pliers
ANTI-LOCK BRAKE SYSTEM (ABS)	070PZ-ZY30100	SCS service connector
	07ZAJ-RDJA110	Pin probe male (2 pack)
BATTERY/ CHARGING SYSTEM	MTRMDX604P (U.S.A. only)	Honda MDX-604P Battery Tester
	TMNTS53 (U.S.A. only)	OptiMate PRO-4 Battery charger
LIGHT/METERS/ SWITCHES	07ZAJ-RDJA110	Pin probe male (2 pack)
	07HGJ-0020100 or equivalent commercially available in the U.S.A.	Peak voltage adaptor

CABLE & HARNESS ROUTING



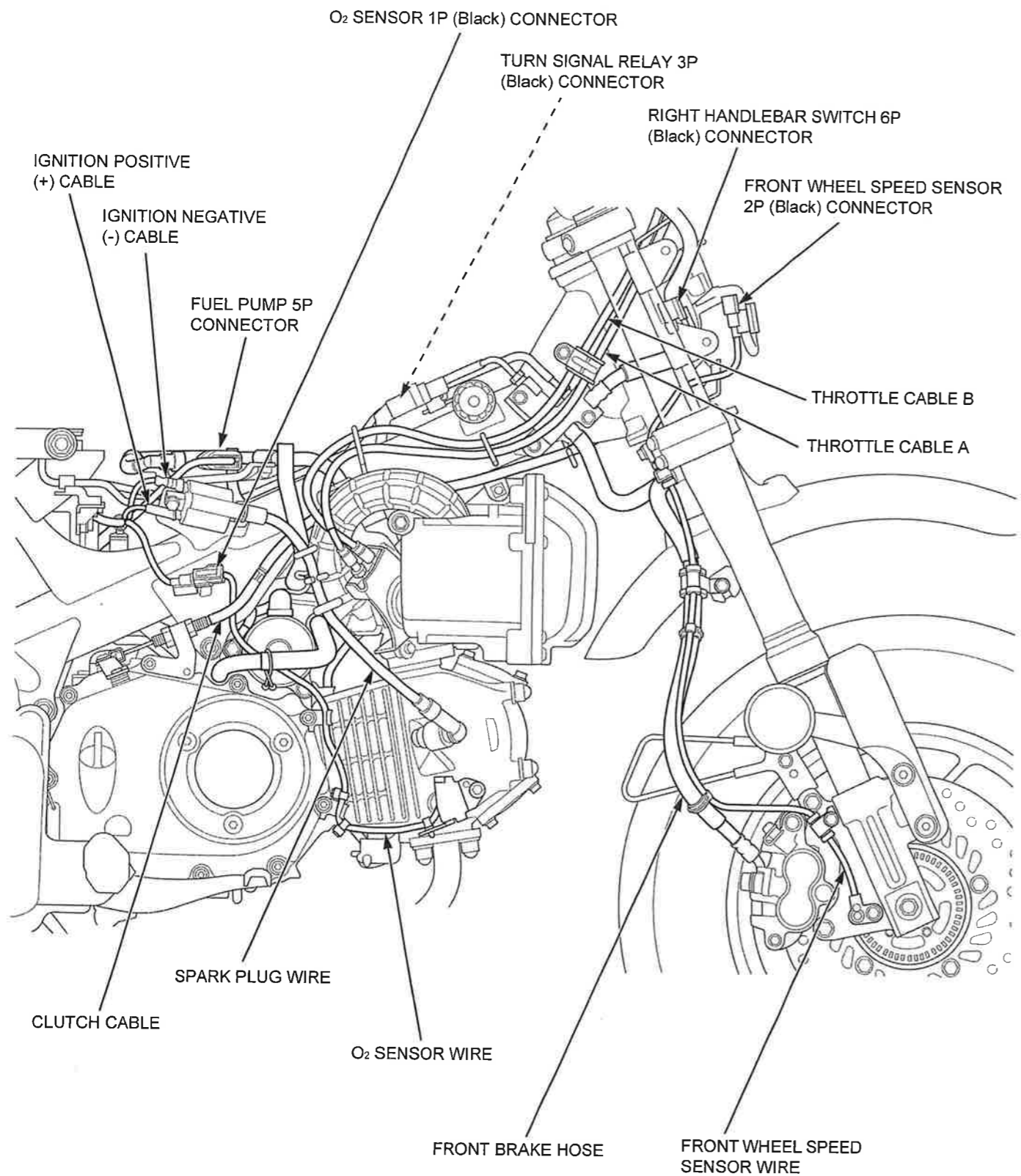
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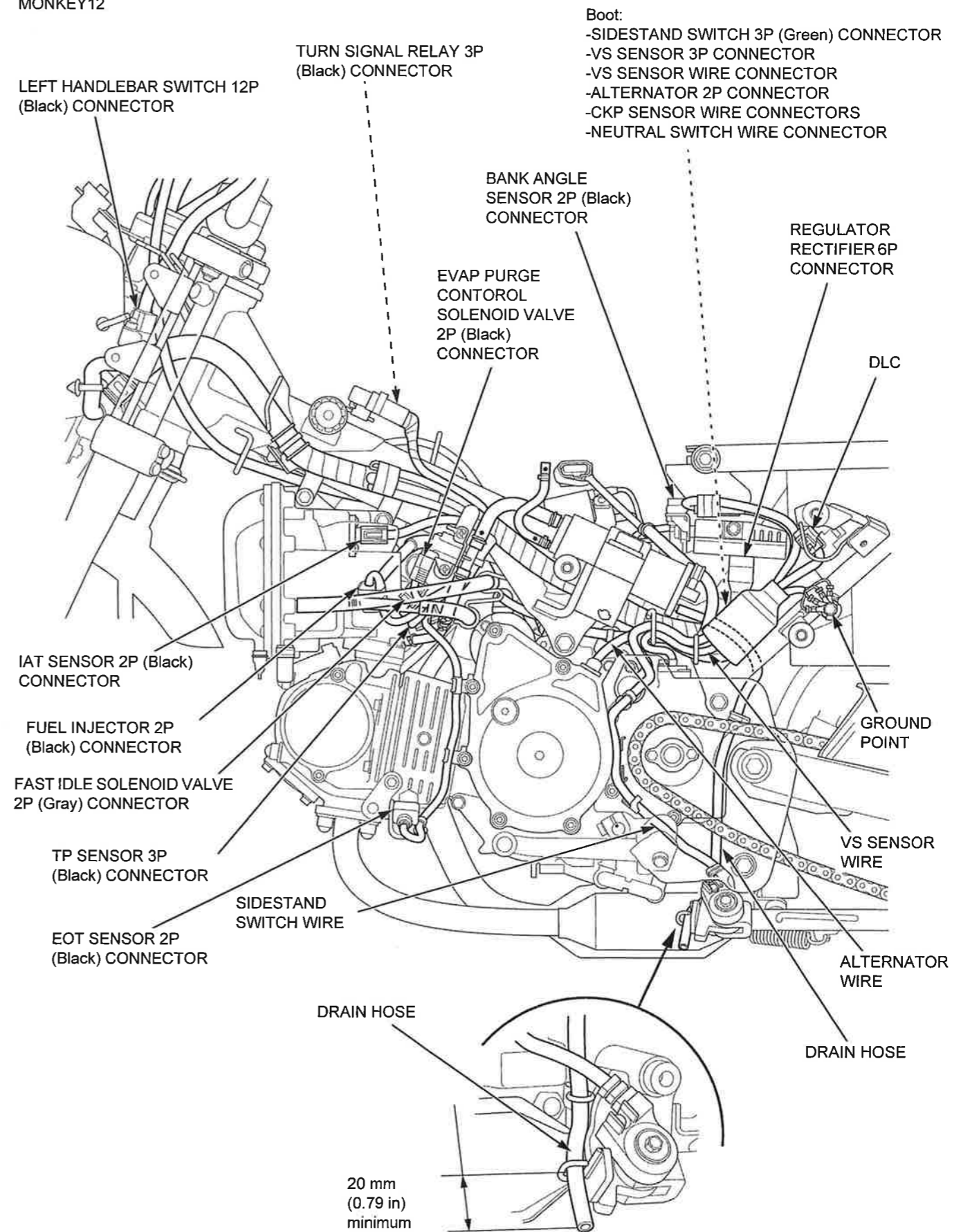
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## GENERAL INFORMATION

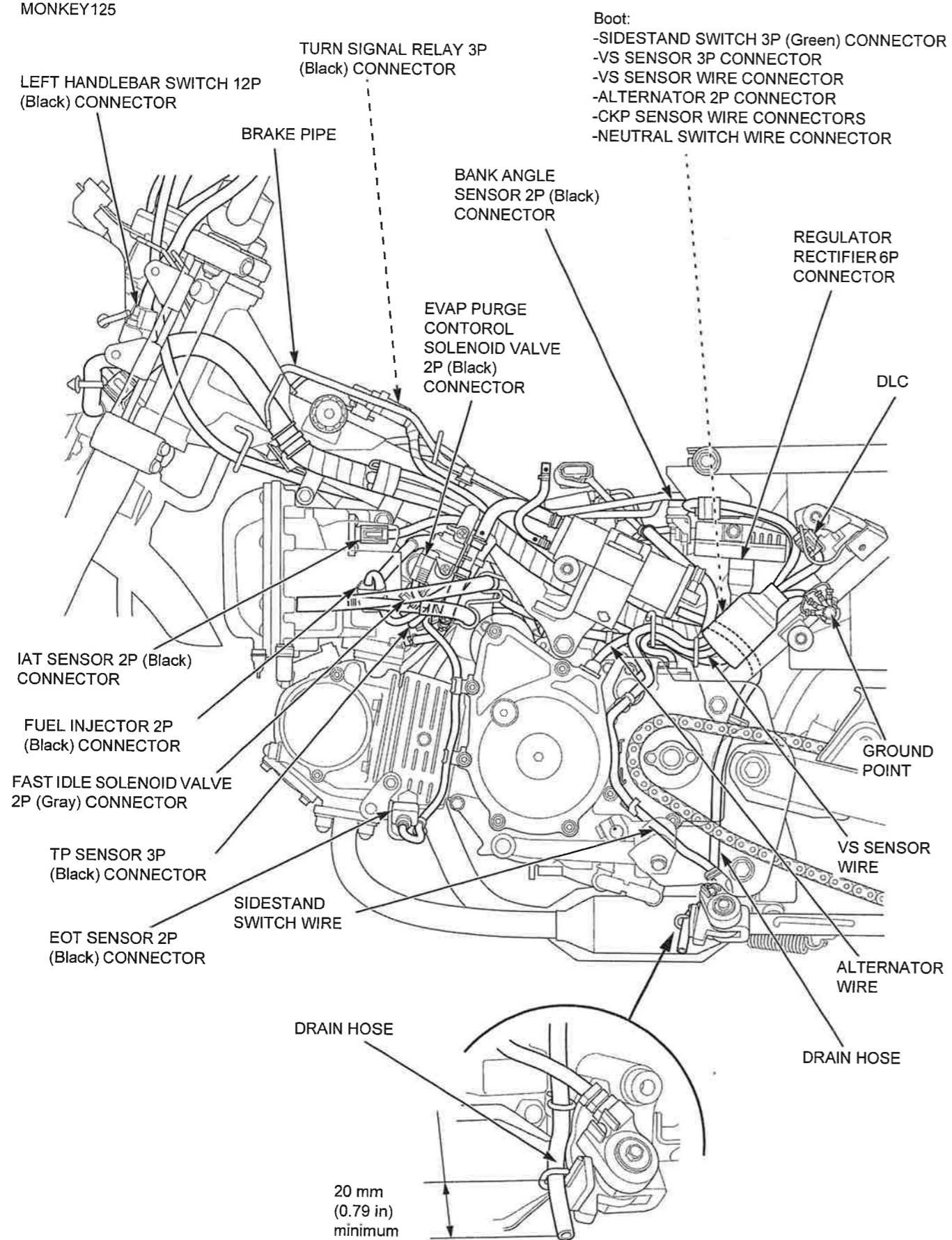
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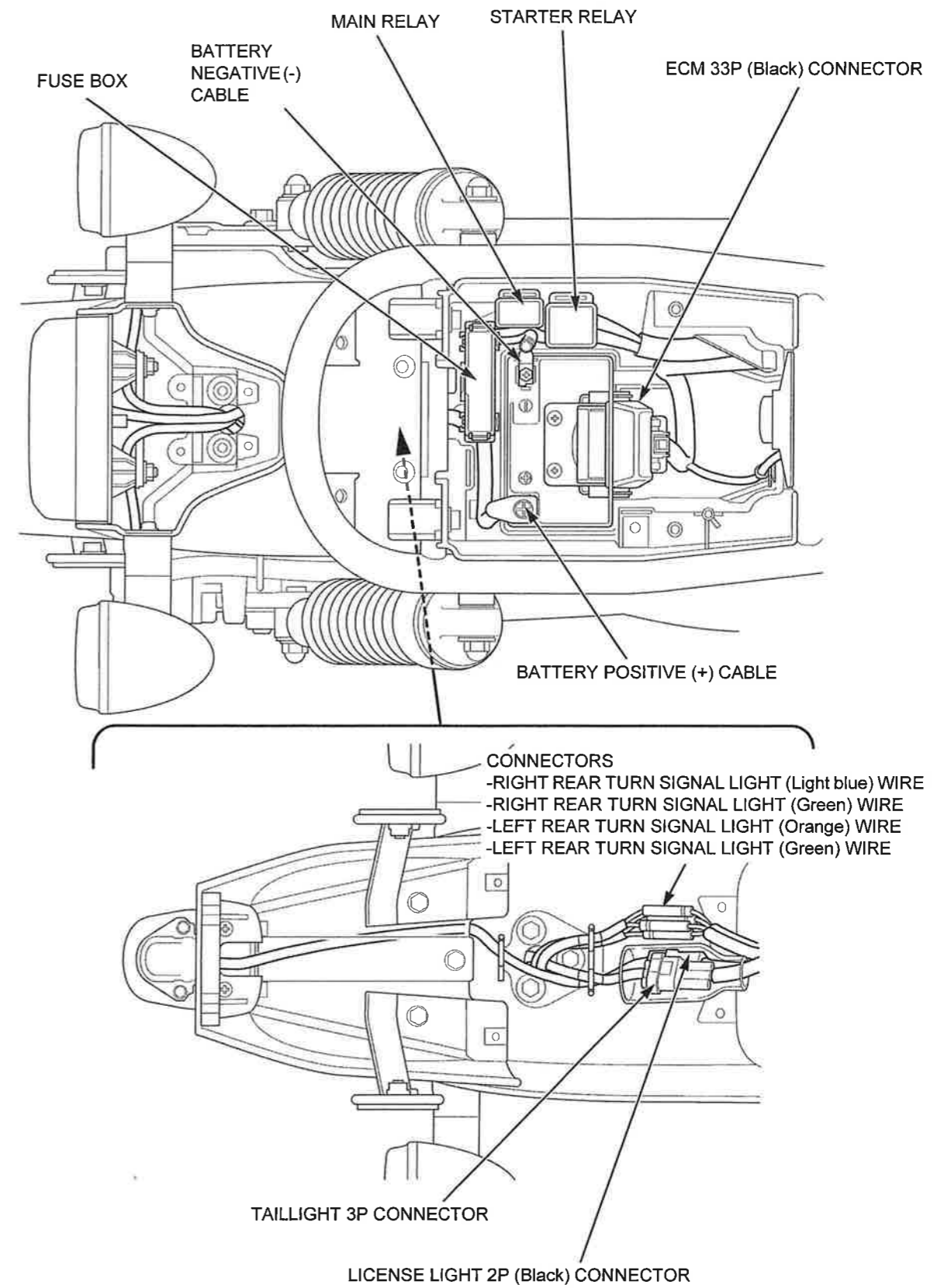
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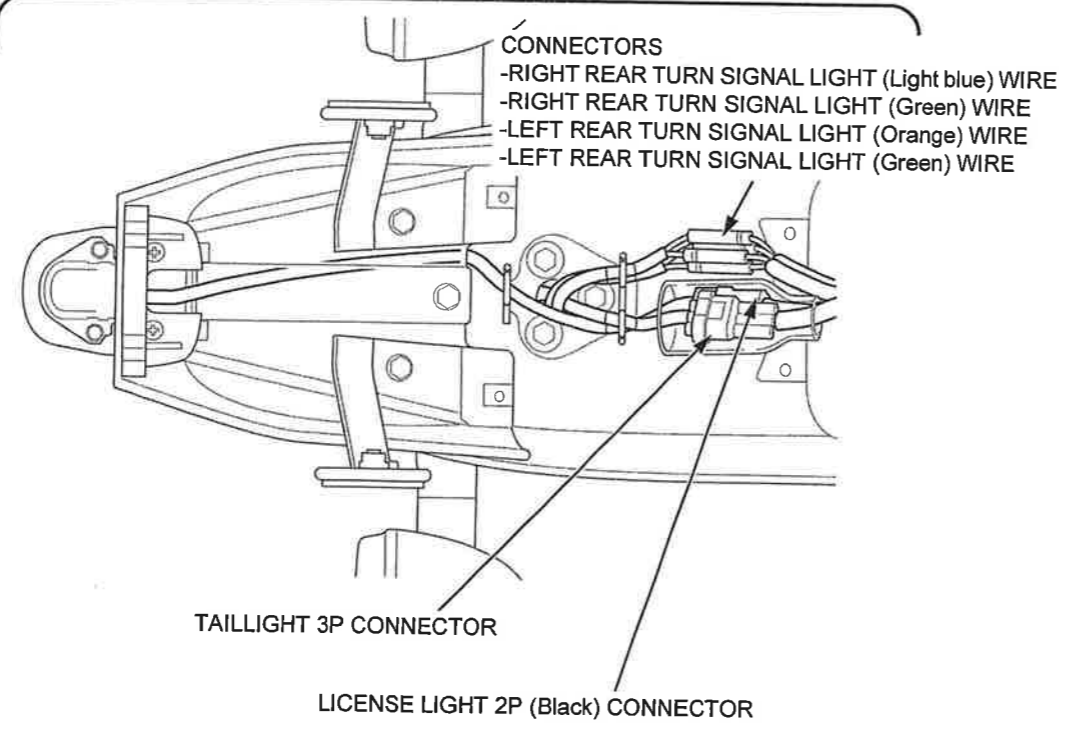
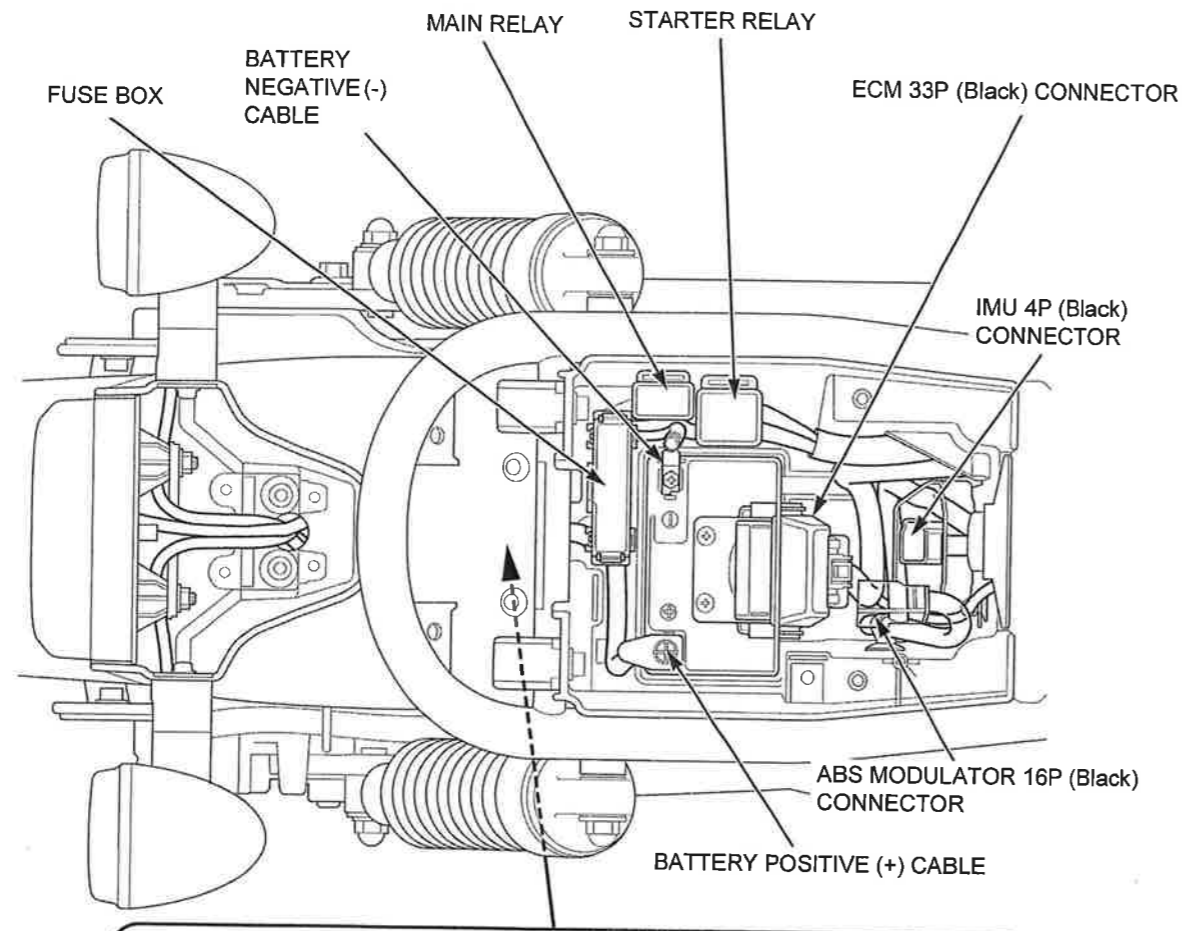
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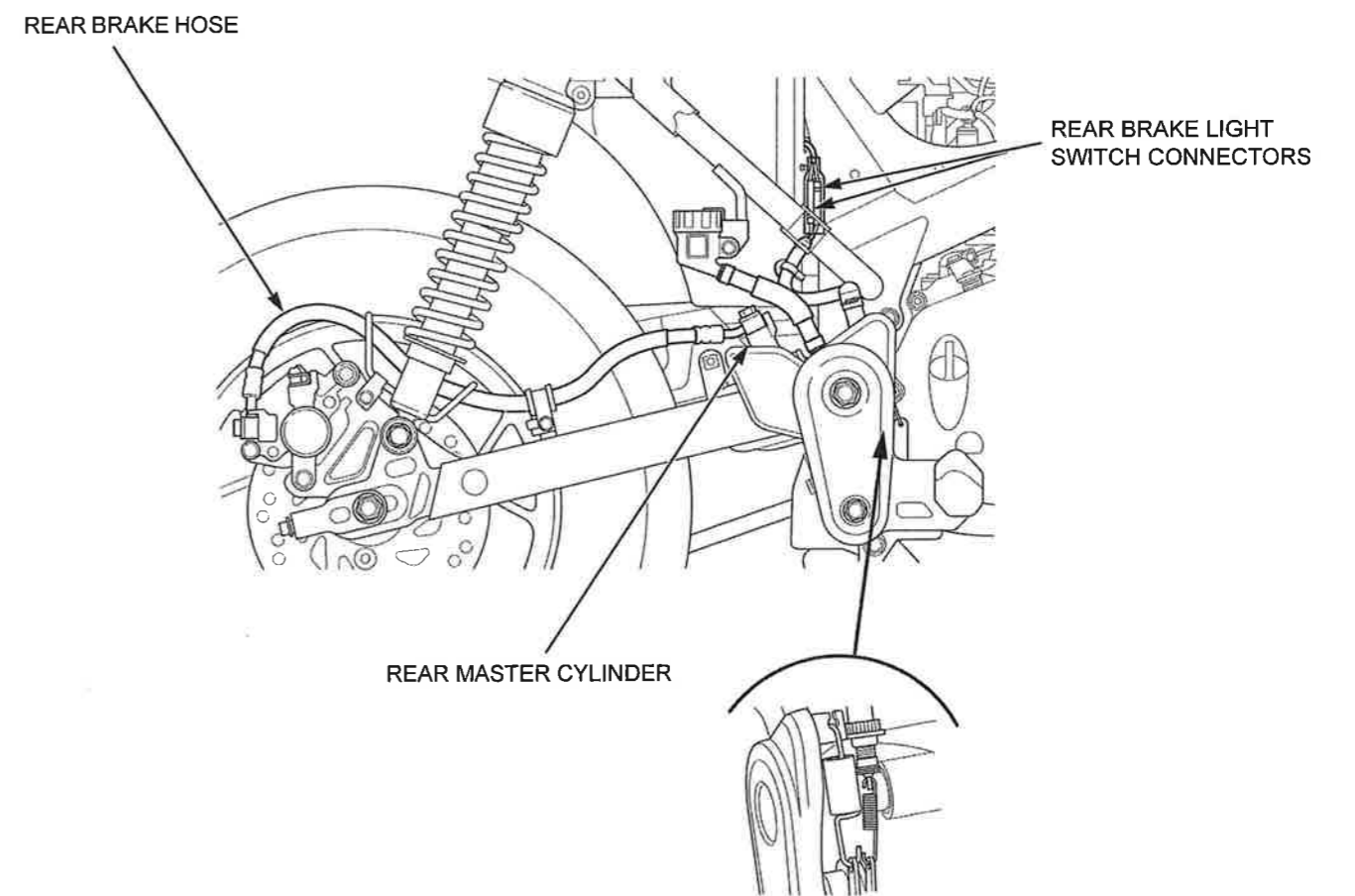
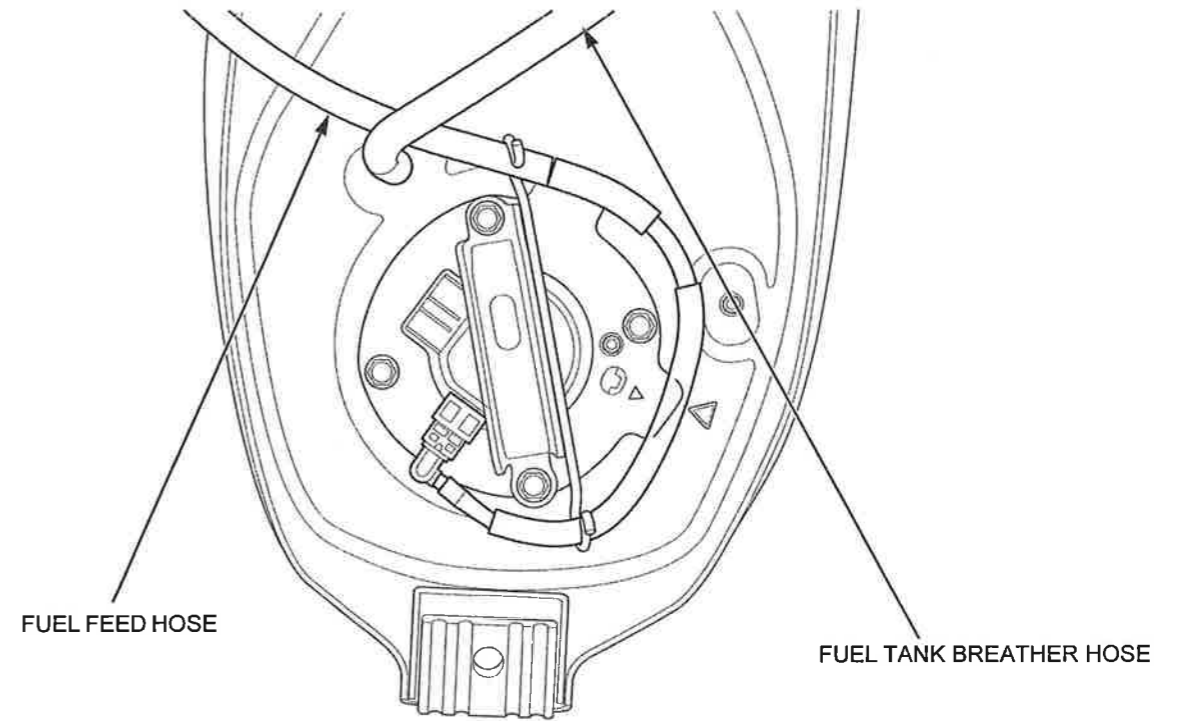
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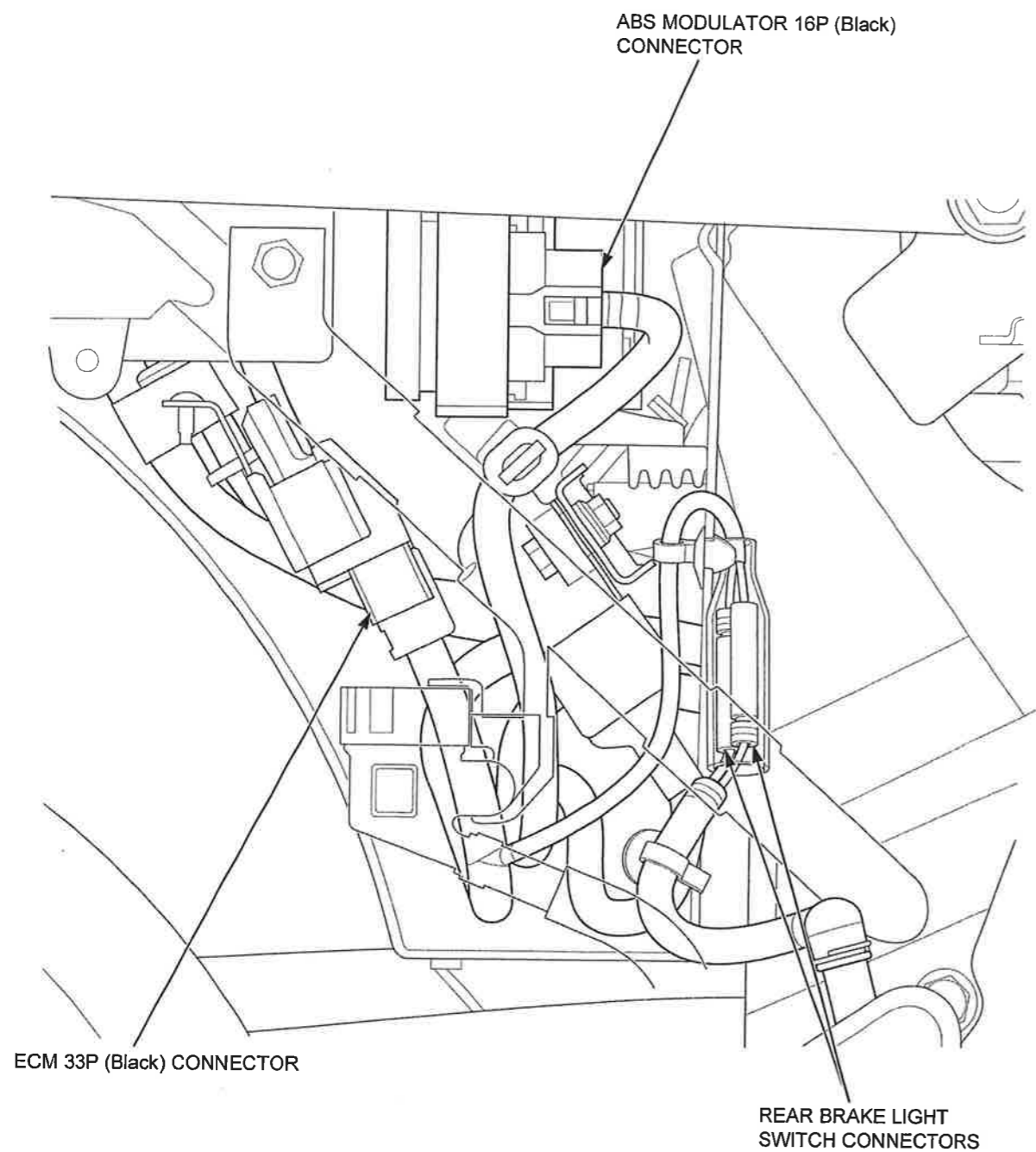
**GENERAL INFORMATION**

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**GENERAL INFORMATION**

MONKEY125



## GENERAL INFORMATION

# EMISSION CONTROL SYSTEMS

## EXHAUST EMISSION REQUIREMENT

The U.S. Environmental Protection Agency (EPA) and California Air Resources Board (CARB) require manufacturers to certify that their motorcycles comply with applicable exhaust emissions standards during their useful life, when operated and maintained according to the instructions provided.

## NOISE EMISSION REQUIREMENT

The EPA also requires that motorcycle built after January 1, 1983 comply with applicable noise emission standards for one year or 3,730 miles (6,000 km) after the time of sale to the ultimate purchaser, when operated and maintained according to the instructions provided.

## WARRANTY COMPLIANCE

Compliance with the terms of the Distributor's Limited Warranty for Honda Motorcycle Emission Control Systems is necessary in order to keep the emissions system warranty in effect.

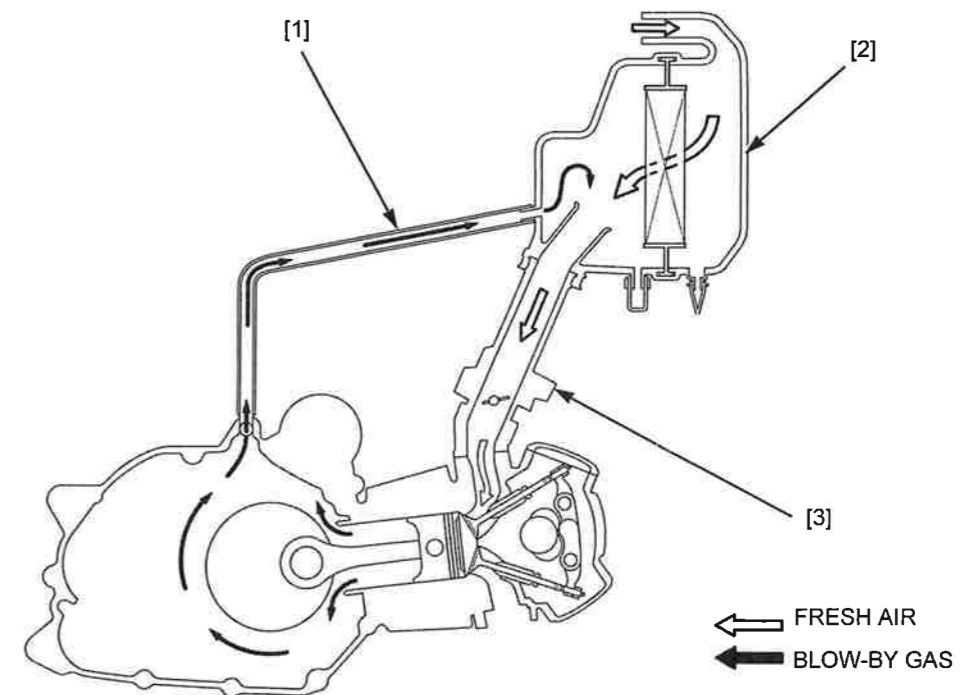
## SOURCE OF EMISSIONS

Fuel evaporation and the combustion process produces carbon monoxide (CO), oxides of nitrogen (NOx), and hydrocarbons (HC). The control of hydrocarbons and oxides of nitrogen is very important because, under certain conditions, they react to form photochemical smog when subjected to sunlight. Carbon monoxide does not react in the same way, but it is toxic. Uncontrolled fuel evaporation also releases hydrocarbons to the atmosphere.

Honda Motor Co., Ltd. utilizes various systems 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 throttle body [3].



## EXHAUST EMISSION CONTROL SYSTEM

The exhaust emission control system is composed of a three-way catalytic converter and PGM-FI system.

The exhaust emission control system is separate from the crankcase emission control system.

### 3-WAY CATALYTIC CONVERTER

This motorcycle is equipped with a three-way catalytic converter.

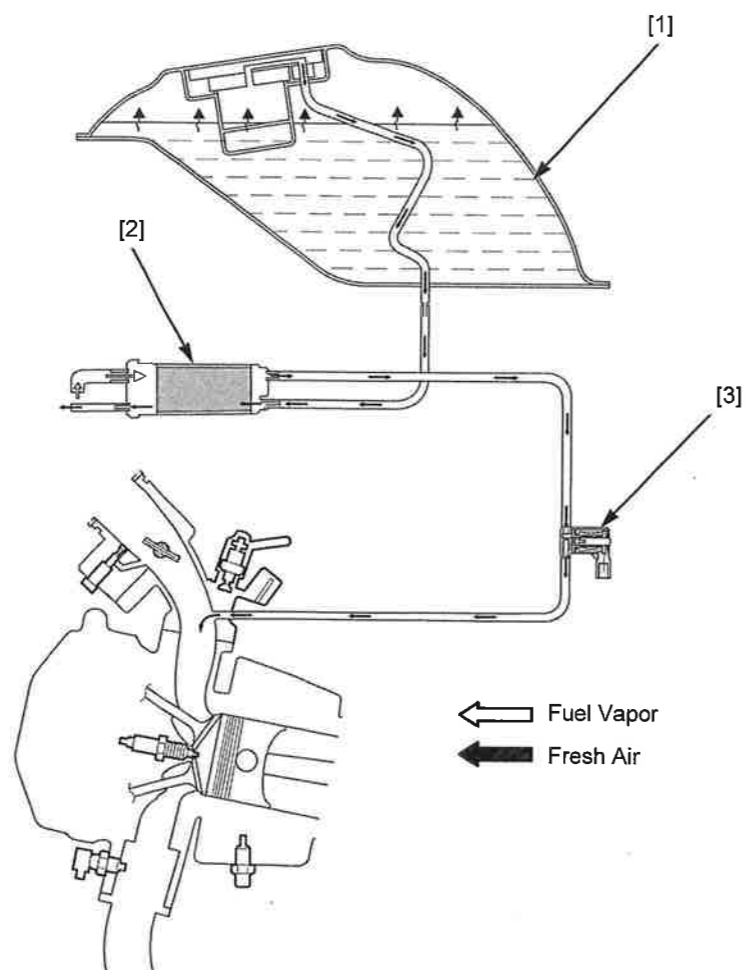
The three-way catalytic converter is in the exhaust system. Through chemical reactions, it converts HC, CO, and NOx in the engine's exhaust to carbon dioxide (CO<sub>2</sub>), nitrogen (N<sub>2</sub>), and water vapor.

No adjustment to these systems should be made although periodic inspection of the components is recommended.

## GENERAL INFORMATION

### EVAPORATIVE EMISSION CONTROL SYSTEM

This model complies with California Air Resources Board (CARB) evaporative emission requirements. Fuel vapor from the fuel tank [1] is routed into the EVAP canister [2] where it is absorbed and stored while the engine is stopped. When the engine is running and the EVAP purge control solenoid valve [3] is open, fuel vapor in the EVAP canister is drawn into the engine.



### NOISE EMISSION CONTROL SYSTEM

**TAMPERING WITH THE NOISE CONTROL SYSTEM IS PROHIBITED:** U.S. Federal law prohibits, or Canadian provincial 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. Removing or disabling any emissions compliance component, or replacing any compliance component with a non-compliant component.

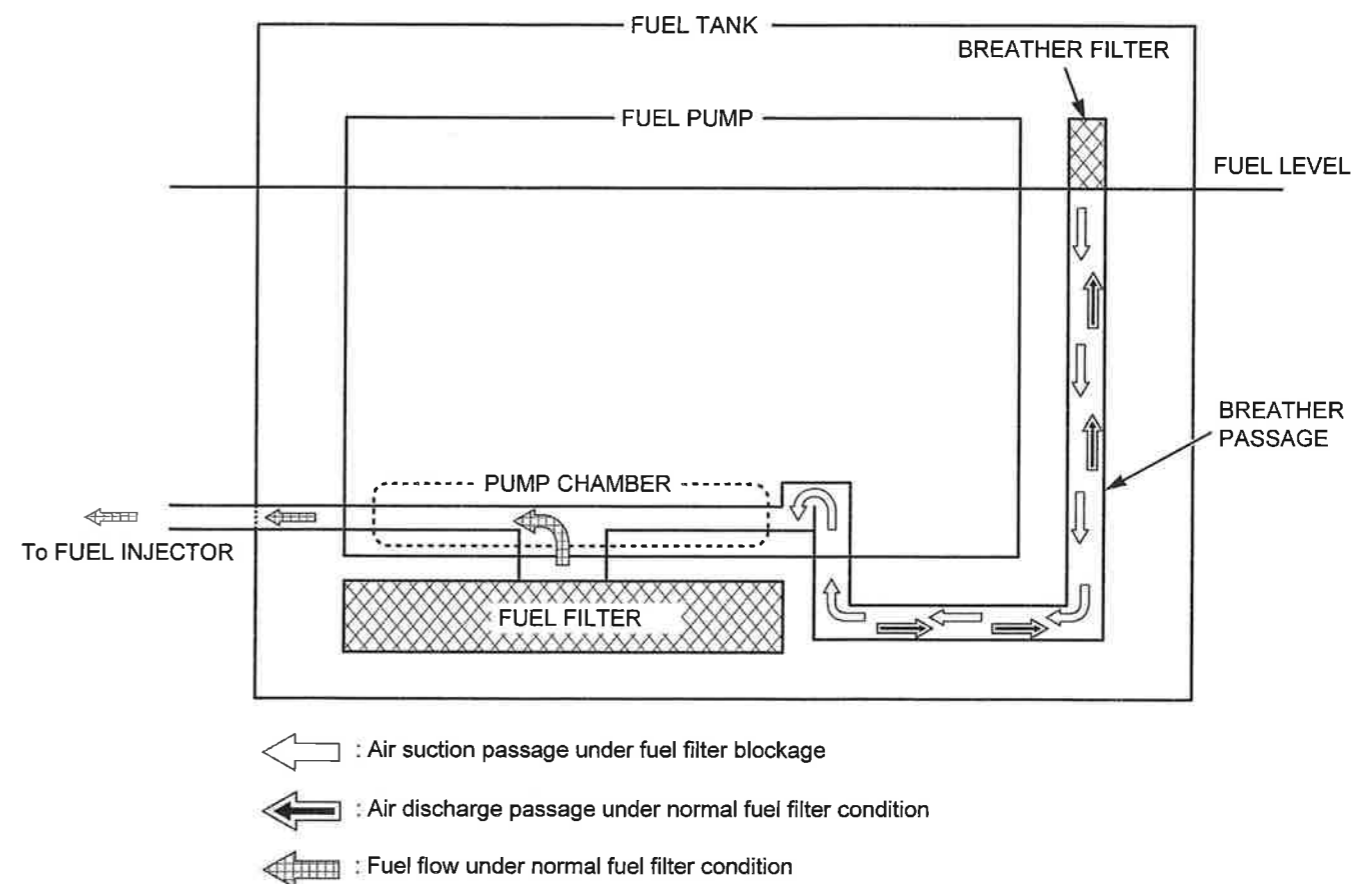
### FUEL PERMEATION EMISSION CONTROL SYSTEM

This motorcycle complies with the Fuel Permeation Emission Control regulations of the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and Environment and Climate Change Canada (ECCC). The fuel tank, fuel hoses, and fuel vapor charge hoses used on this motorcycle incorporate fuel permeation control technologies. Tampering with the fuel tank, fuel hoses, or fuel vapor charge hoses to reduce or defeat the effectiveness of the fuel permeation technologies is prohibited by federal regulations.

## GENERAL INFORMATION

### TECHNICAL FEATURES

#### FUEL PUMP SYSTEM WITH A FUEL FILTER BLOCKAGE REMINDER FUNCTION



The fuel pump system of this model consists of the following components:

- Fuel pump chamber
- Fuel filter
- Breather passage
- Breather filter

Under normal condition, the fuel pump chamber sucks fuel through the fuel filter and then supplies it to the injector.

When the fuel filter is clogged, the fuel is sucked into the pump chamber through the breather passage in order to keep the vehicle running. The breather filter is located in the upper inner side of fuel tank. When the fuel is consumed to the point where the breather filter is exposed above the fuel level, a certain amount of air will be drawn into the pump chamber via the breather filter and breather passage. This incoming air produces "a lack of fuel", which impairs engine performance in order to notify the rider of the fuel filter blockage. This symptom works as a reminder for filter replacement.

This system eliminates the need of fuel filter replacement according to a fixed interval, as the rider will experience the symptom and notice the filter blockage during vehicle usage.

The driveability remains normal as long as the fuel tank level is maintained above the breather filter. This is due to the fuel level exceeding the breather filter's height, preventing air from being drawn into the pump chamber, even though the fuel filter is clogged.

If the fuel in the tank is sufficient, but symptoms such as poor engine performance, lack of fuel, or engine start failure exist, perform the fuel supply test (page 7-7).

If the fuel filter is replaced, the ECM must be initialized to avoid an overly rich fuel delivery.



## GENERAL INFORMATION

### MIL SYSTEM

#### MIL INDICATION

In previous generation PGM-FI systems, if the PGM-FI system detects a present malfunction, the Malfunction Indicator Light (MIL) blinks while the engine is idling or the sidestand is down (sidestand switch ON). However, in this next generation PGM-FI system, if it detects a malfunction, it turns the MIL ON without blinking.

To read out the specific Diagnostic Trouble Code (DTC), connect the MCS Tester to the Data Link Connector (DLC). If the MCS Tester is not available, use the SCS service connector to read out the DTC by MIL blink pattern. See PGM-FI SYSTEM for specific troubleshooting procedures.

	Previous PGM-FI SYSTEM			New PGM-FI SYSTEM		
	At Idle	Riding	SCS short	At Idle	Riding	SCS short
Current trouble	Blinking	ON	Blinking	ON	ON	Blinking
Past trouble	OFF	OFF	Blinking	*ON	*ON	*Blinking

\* This system turns off the MIL if the system does not detect the same trouble again in three riding cycles (three repeated times of ignition-ON, riding and ignition-OFF).

## GENERAL INFORMATION

### ABS (ANTI-LOCK BRAKE SYSTEM) ON FRONT WHEEL WITH IMU

#### SUMMARY

This model is equipped with ABS (Anti-lock Brake System) on the front wheel.

This ABS includes only the front brake hydraulic circuit. the rear brake system does not have an ABS function.

The system calculates estimated speed from the front wheel speed sensor.

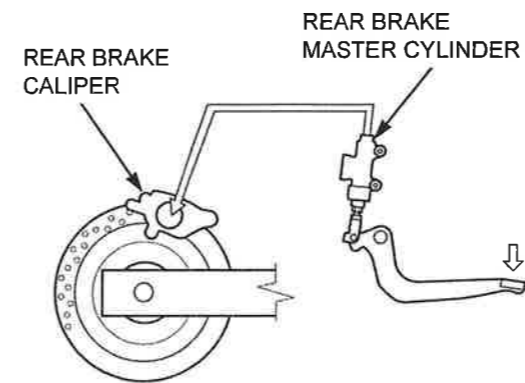
When the system detects that the front wheel is about to lock when the estimated speed is high, the ABS modulator prevents front wheel lock up by controlling the front brake caliper fluid pressure.

This vehicle is also equipped with an IMU to prevent rear wheel lift during hard braking.

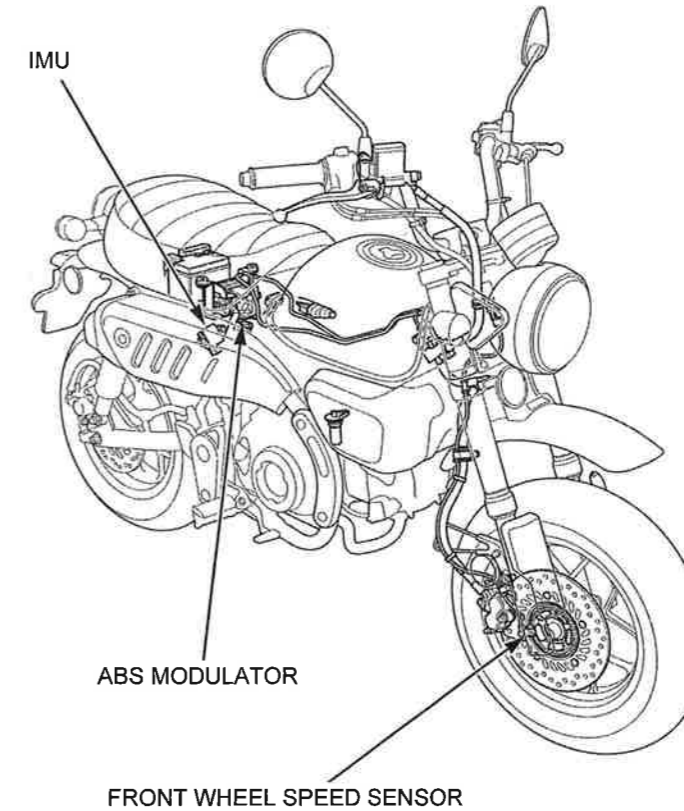
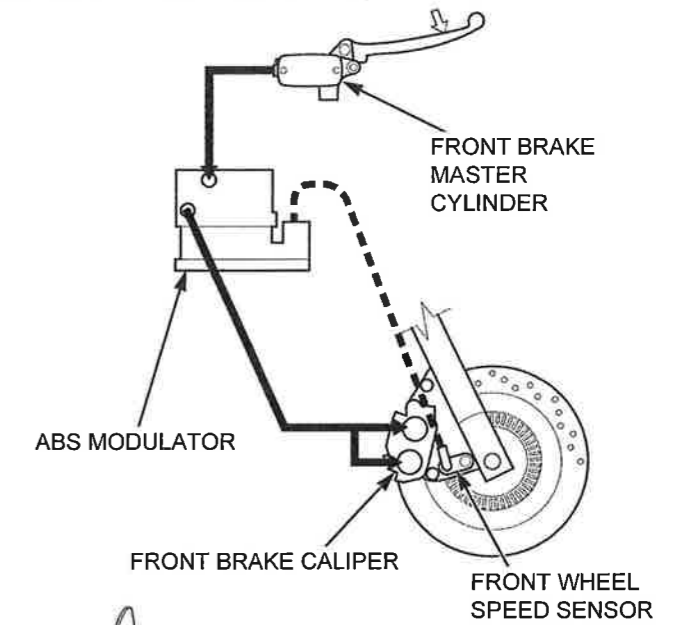
The IMU detects the vertical and horizontal acceleration and computes the inertia affecting the center of gravity of the vehicle.

When the vehicle experiences nose dive caused by abrupt brake application, resulting in measured direction and/or speed of the deceleration reaching a certain threshold. The ABS modulator minimizes rear wheel lift by slightly reducing the brake fluid pressure.

REAR BRAKE HYDRAULIC SYSTEM:  
(separated from ABS)



FRONT BRAKE HYDRAULIC SYSTEM:



## 2. BODY PANELS/EXHAUST SYSTEM

---



SERVICE INFORMATION.....	2-2	REAR FENDER D .....	2-6
TROUBLESHOOTING .....	2-2	REAR FENDER A .....	2-6
BODY PANEL LOCATIONS.....	2-3	REAR FENDER B .....	2-7
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SIDE COVER .....	2-5		

## BODY PANELS/EXHAUST SYSTEM

---

### SERVICE INFORMATION

#### GENERAL

- This section covers removal and installation of the body panels and exhaust system.
- Serious burns may result if the exhaust system is not allowed to cool before components are removed or serviced.
- Always replace the exhaust pipe gasket with new ones after removing the exhaust pipe from the engine.
- When installing the exhaust system, loosely install all of the exhaust pipe fasteners. Always tighten the exhaust pipe joint nuts first, then tighten the mounting bolt and nuts.
- Always inspect the exhaust system for leaks after installation.

### TROUBLESHOOTING

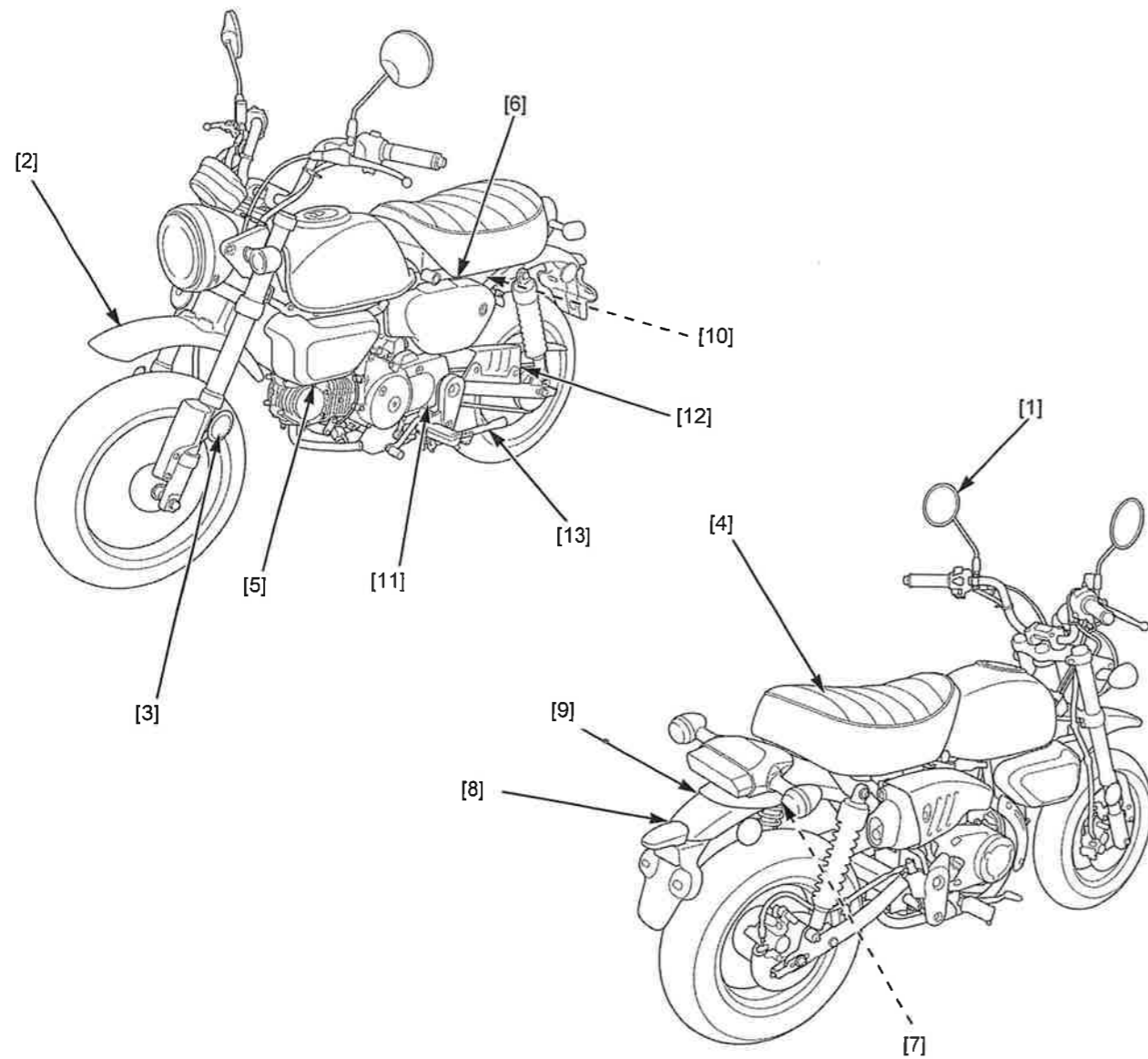
#### Excessive exhaust noise

- Broken exhaust system
- Exhaust gas leak

#### Poor performance

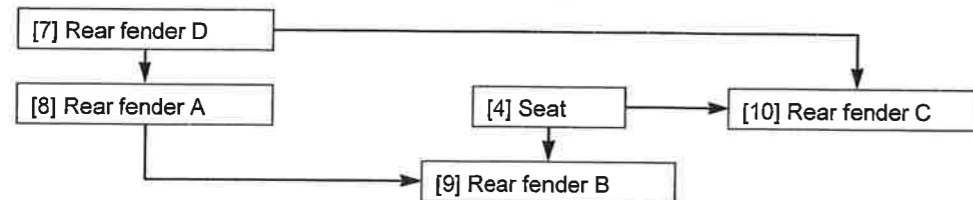
- Deformed exhaust system
- Exhaust gas leak
- Clogged muffler

BODY PANEL LOCATIONS



- [1] Rearview mirror (page 2-4)
- [2] Front fender (page 2-4)
- [3] Front side reflector (page 2-4)
- [4] Seat (page 2-5)
- [5] Garnish (page 2-5)
- [6] Side cover (page 2-5)
- [7] Rear fender D (page 2-6)
- [8] Rear fender A (page 2-6)
- [9] Rear fender B (page 2-7)
- [10] Rear fender C (page 2-8)
- [11] Drive sprocket cover (page 2-9)
- [12] Drive chain cover (page 2-9)
- [13] Sidestand (page 2-9)

• This chart shows removal order of frame covers by means of arrow.



## BODY PANELS/EXHAUST SYSTEM

### REARVIEW MIRROR

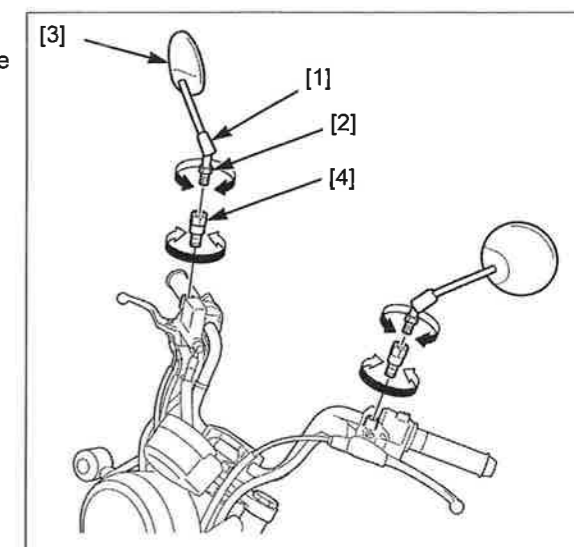
#### REMOVAL/INSTALLATION

Slide the boot [1] off from the lock nut [2].

Loosen the lock nut (left-hand threads) and remove the rearview mirror [3].

Remove the mirror adaptor bolt [4].

Installation is in the reverse order of removal.



### FRONT FENDER

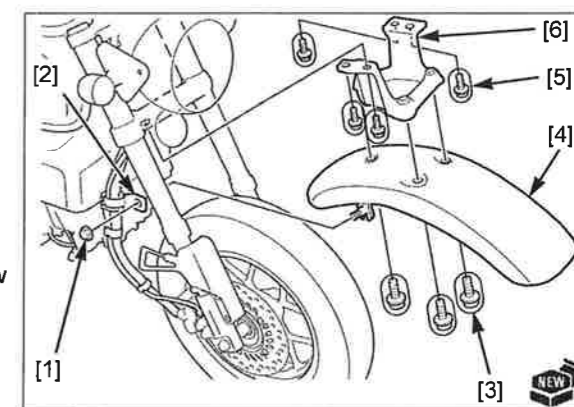
#### REMOVAL/INSTALLATION

Remove the following:

- Cap nut [1]
- Brake hose clamp [2]
- Three bolts [3]
- Front fender [4]
- Four socket bolts [5]
- Bracket [6]

Installation is in the reverse order of removal.

- Replace the front fender mounting bolts with new ones.



### FRONT SIDE REFLECTOR

#### REMOVAL/INSTALLATION

Remove the following:

- Bolts [1]
- Front fork cover [2]
- Collars [3]
- Front side reflector stay [4]
- Front side reflector [5]
- Nut [6]

Installation is in the reverse order of removal.

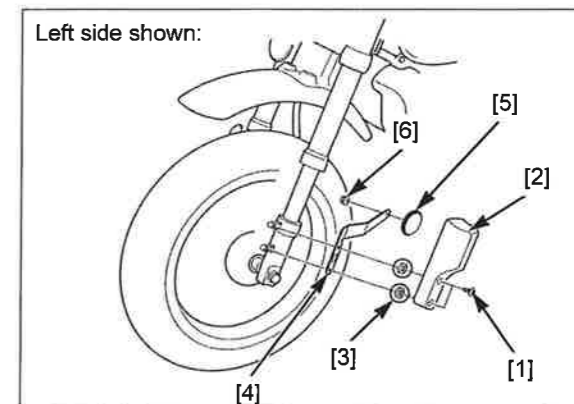
#### TORQUE:

Front side reflector nut:

1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)

Front side reflector stay bolt:

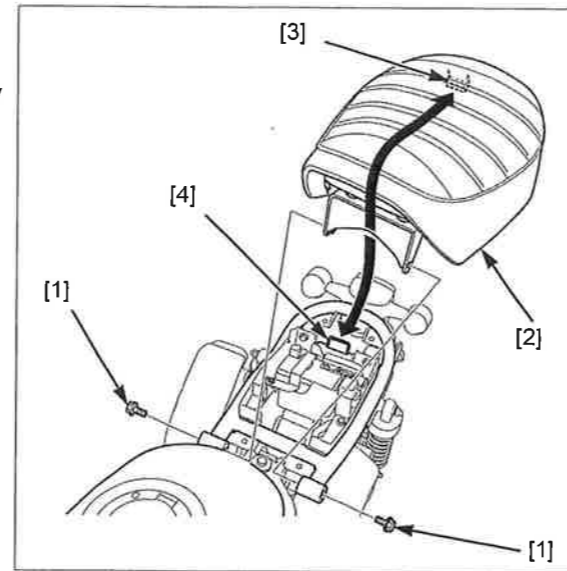
12 N·m (1.2 kgf·m, 9 lbf·ft)



**SEAT**

**REMOVAL/INSTALLATION**

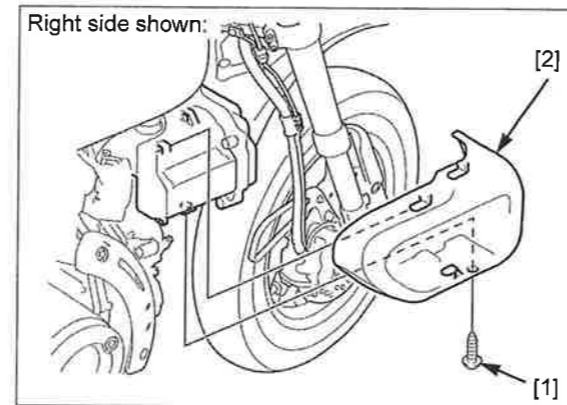
Remove the socket bolts [1].  
Remove the seat [2] by pulling it rearward.  
Install the seat by inserting its rear hook [3] into the stay [4] of the frame.  
Installation is in the reverse order of removal.



**GARNISH**

**REMOVAL/INSTALLATION**

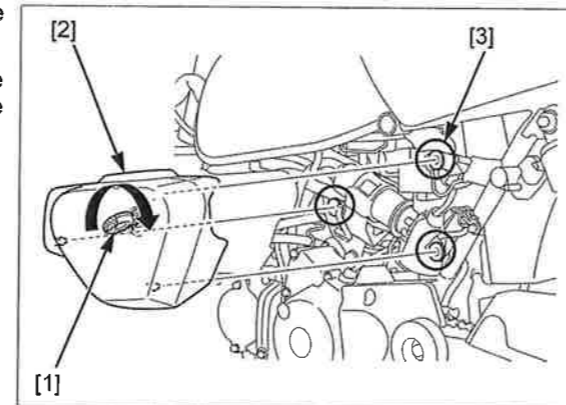
Remove the screw [1].  
Slide the garnish [2] forward and remove it.  
Installation is in the reverse order of removal.



**SIDE COVER**

**REMOVAL/INSTALLATION**

Insert the ignition key [1] into the key cylinder of the side cover [2].  
Remove the side cover by releasing it from the grommets [3] while holding the key turned to clockwise direction.  
Installation is in the reverse order of removal.



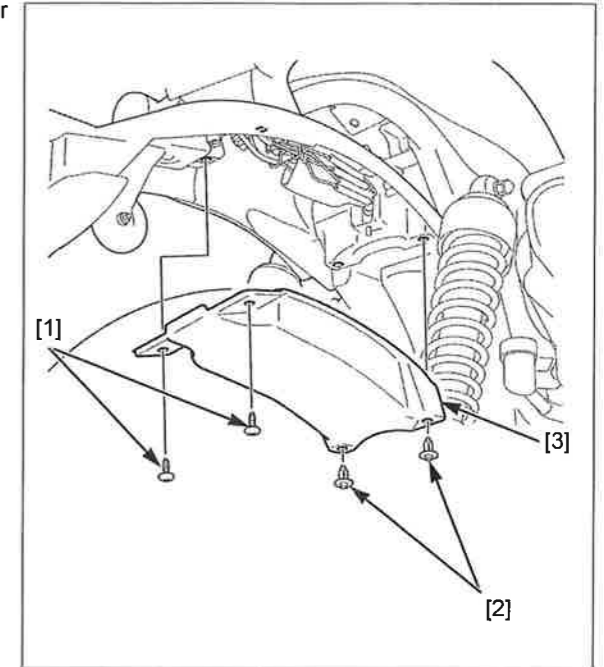
## BODY PANELS/EXHAUST SYSTEM

### REAR FENDER D

#### REMOVAL/INSTALLATION

Remove the two screws [1], two trim clips [2] and rear fender D [3].

Installation is in the reverse order of removal.



### REAR FENDER A

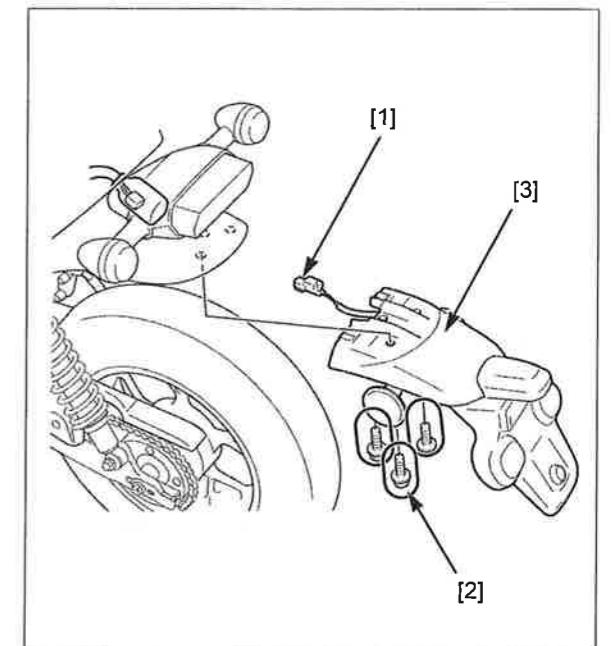
#### REMOVAL/INSTALLATION

Remove the rear fender D (page 2-6).

Disconnect the license light 2P (Black) connector [1].

Remove the three bolts [2] and rear fender A [3].

Installation is in the reverse order of removal.





**DISASSEMBLY/ASSEMBLY**

Remove the following:

- Two screws [1]
- Bracket [2]
- Two screws [3]
- License light [4]
- Nut [5]
- Rear reflector [6]
- Two nuts [7]
- Two rear side reflectors [8]
- Rubber [9]

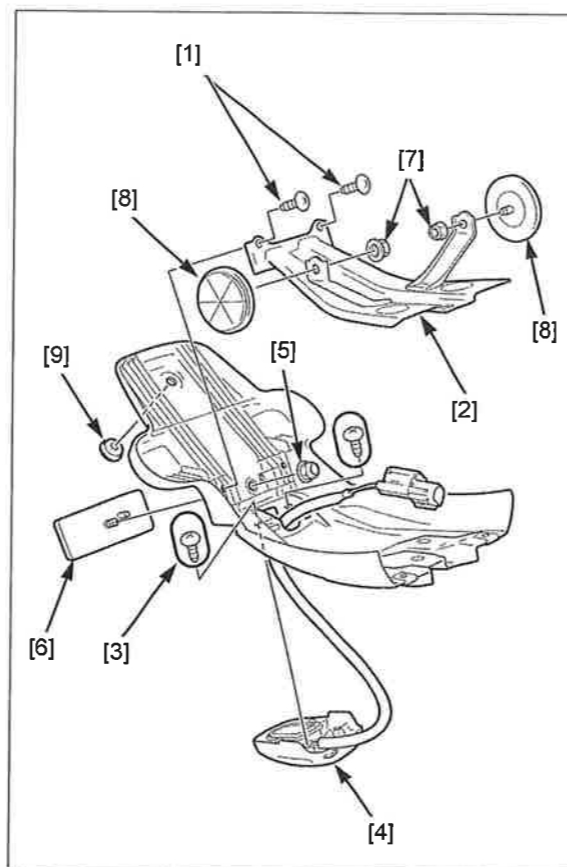
Assembly is in the reverse order of disassembly.

**TORQUE:**

**Rear side reflector nut**  
**1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)**

**NOTE:**

Align the reflector tab with the hole of the rear fender A.



**REAR FENDER B**

**REMOVAL/INSTALLATION**

Remove the following:

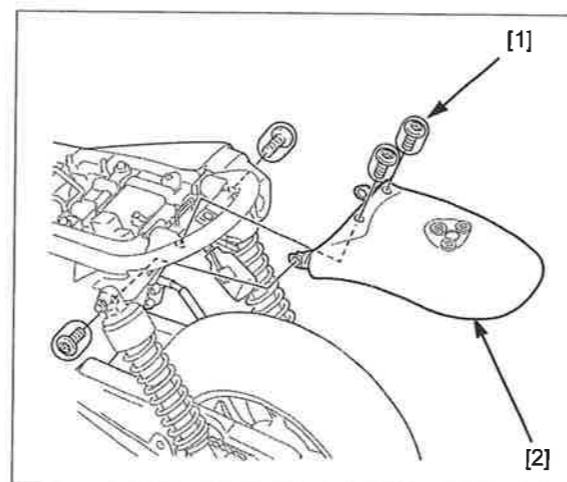
- Seat (page 2-5)
- Rear fender A (page 2-6)
- Brake/taillight unit (page 20-6)

Remove the rear fender socket bolts [1] and rear fender B [2].

Installation is in the reverse order of removal.

**TORQUE:**

**Rear fender B mounting socket bolt:**  
**12 N·m (1.2 kgf·m, 9 lbf·ft)**



## BODY PANELS/EXHAUST SYSTEM

### REAR FENDER C

#### REMOVAL/INSTALLATION

Remove the following:

- Rear fender D (page 2-6)
- Battery (page 19-5)
- ECM (page 4-31)
- Starter relay (page 6-9)
- Main relay (page 20-19)
- IMU (page 18-24)

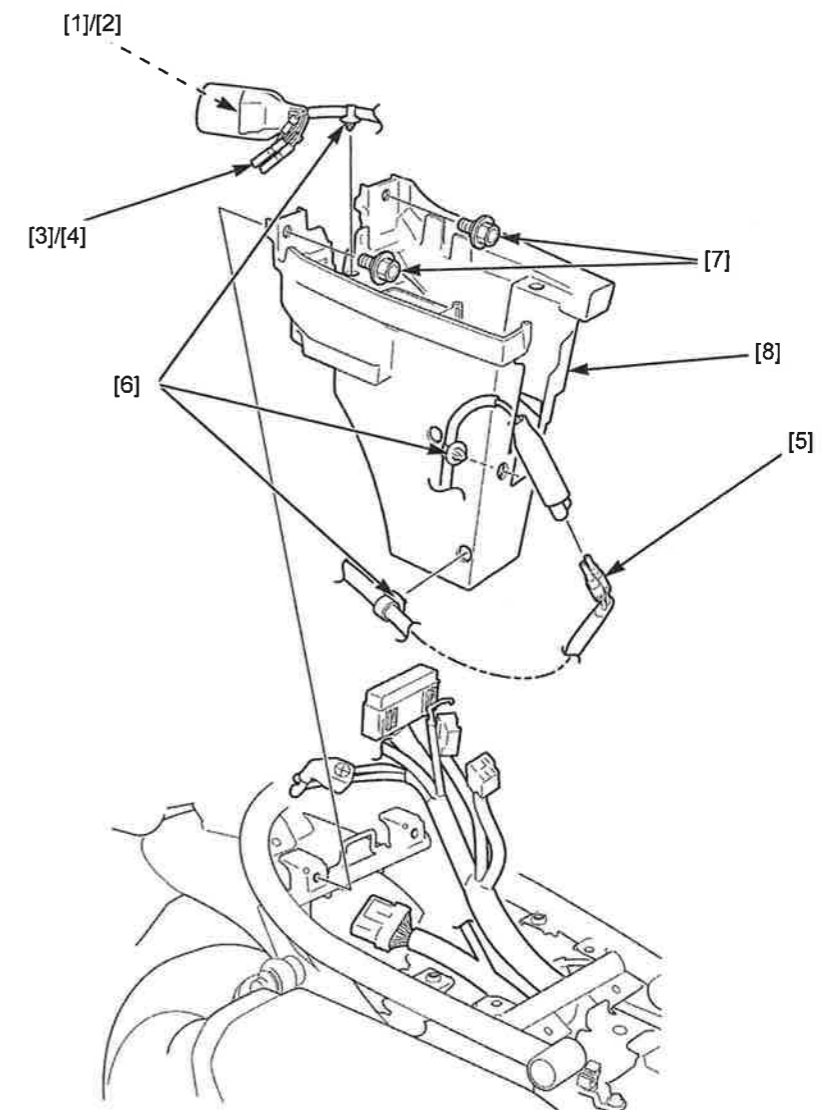
Disconnect the following:

- Brake/taillight unit 3P connector [1]
- License light 2P (Black) connector [2]
- Right rear turn signal wire connectors [3]
- Left rear turn signal wire connectors [4]
- Rear brake light switch wire connectors [5]

Release the three wire clips [6].

Remove the two bolts [7] and rear fender C [8].

Installation is in the reverse order of removal.



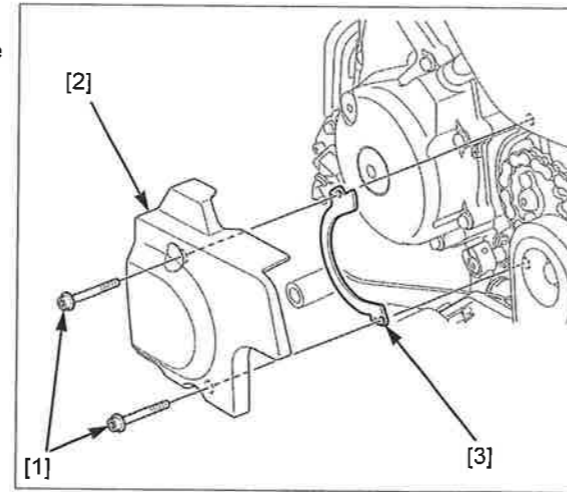
## DRIVE SPROCKET COVER

### REMOVAL/INSTALLATION

Remove the bolts [1] and drive sprocket cover [2].

Remove the drive chain guide plate [3] from the drive sprocket cover.

Installation is in the reverse order of removal.

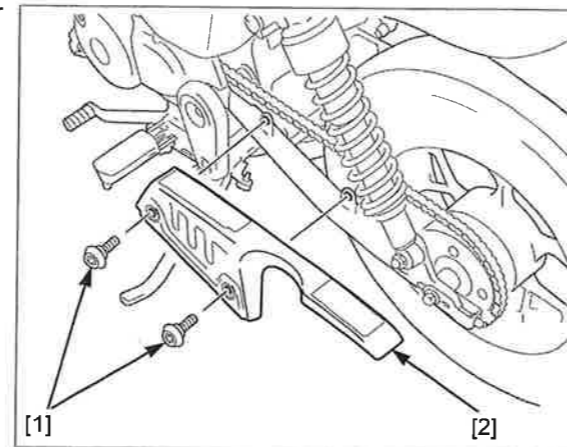


## DRIVE CHAIN COVER

### REMOVAL/INSTALLATION

Remove the two socket bolts [1] and drive chain cover [2].

Installation is in the reverse order of removal.



## SIDESTAND

### REMOVAL/INSTALLATION

Remove the sidestand switch from the sidestand pivot bolt (page 20-14).

Retract the sidestand and remove the following:

- Spring [1]
- Pivot nut [2]
- Pivot bolt [3]
- Sidestand [4]

Installation is in the reverse order of removal.

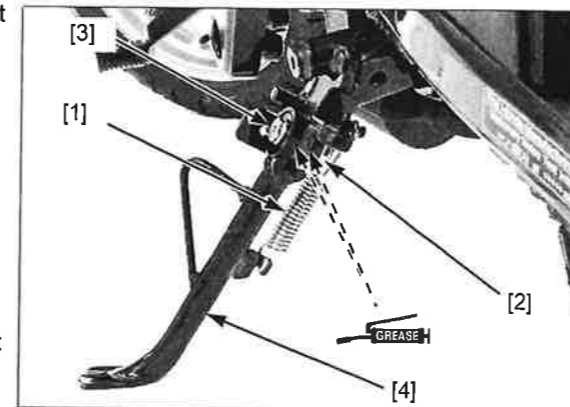
#### NOTE:

- Apply grease to the pivot area.
- When tightening the pivot nut, hold the pivot bolt securely.
- The spring is installed in the direction as shown.

#### TORQUE:

Sidestand pivot bolt: 10 N·m (1.0 kgf·m, 7 lbf·ft)

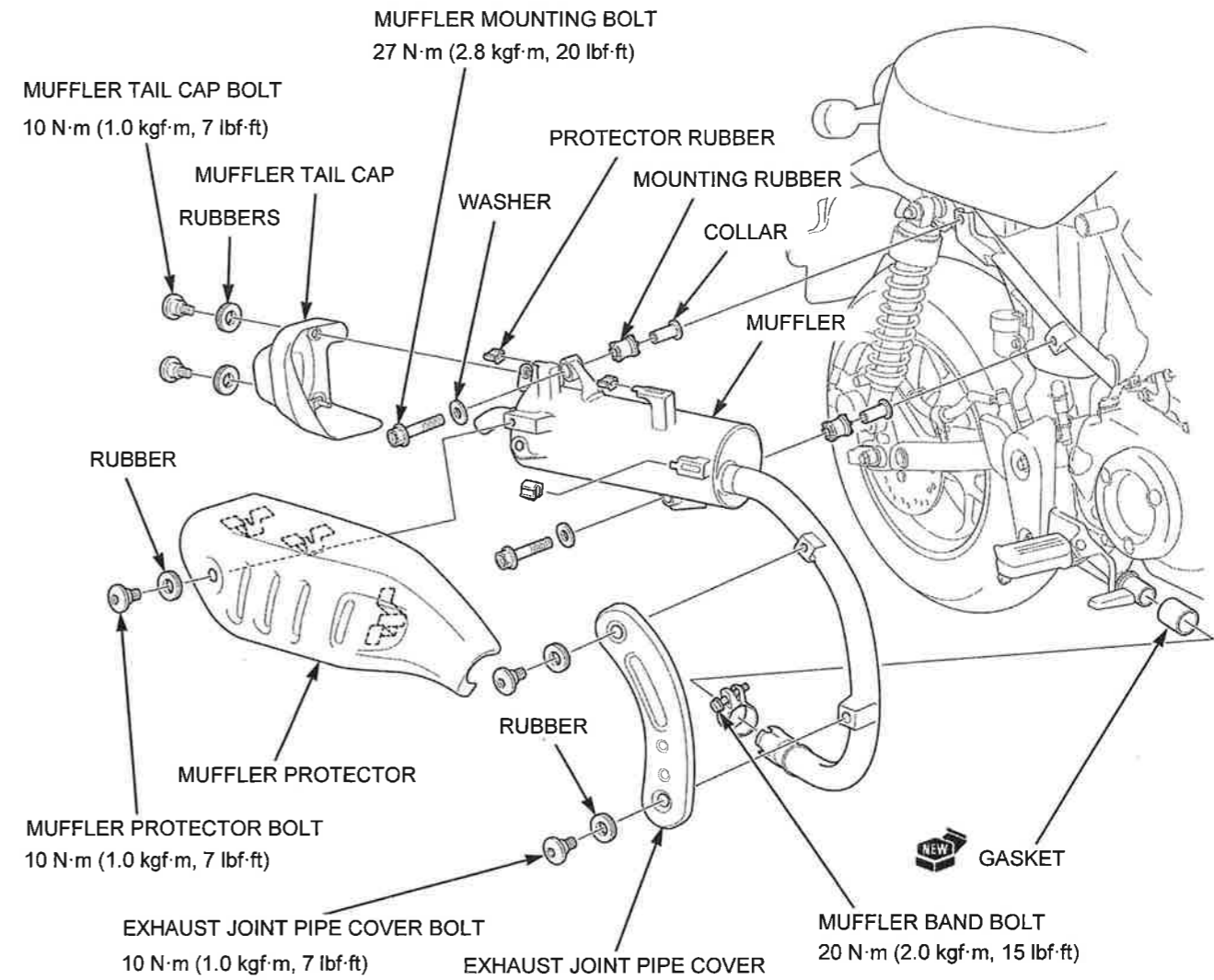
Sidestand pivot nut: 30 N·m (3.1 kgf·m, 22 lbf·ft)



**BODY PANELS/EXHAUST SYSTEM**

**EXHAUST PIPE/MUFFLER**

**MUFFLER REMOVAL/INSTALLATION**

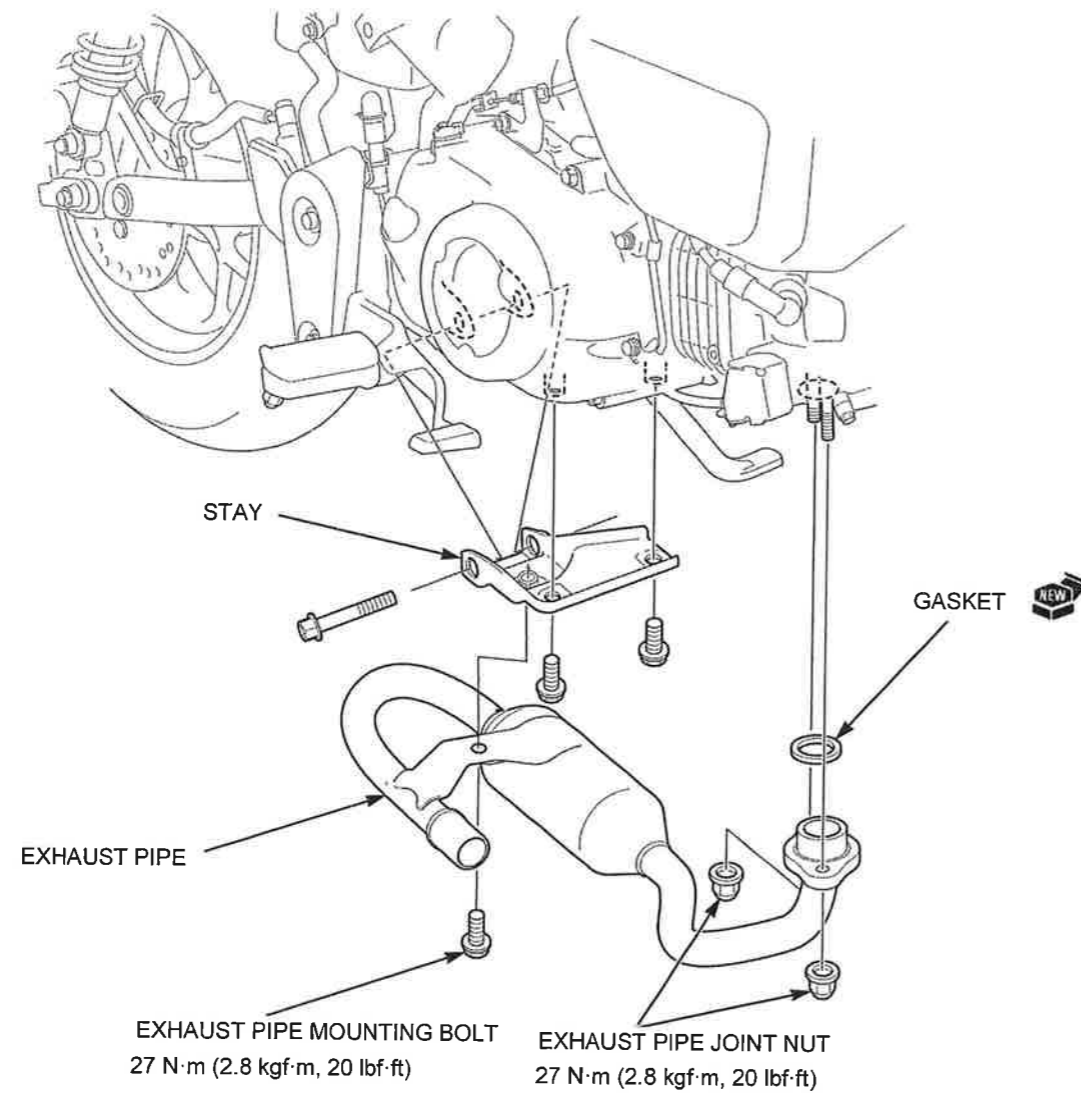


**NOTE:**

- Always replace the muffler gasket with a new one whenever the muffler is removed.
- Loosely install the muffler with the washer and bolt, and always tighten the muffler band bolt first, then tighten the mounting bolts.

**EXHAUST PIPE REMOVAL/INSTALLATION**

Remove the muffler (page 2-10).



**NOTE:**

- Always replace the exhaust pipe gasket with a new one whenever the exhaust pipe is removed.

**STUD BOLT REPLACEMENT**

Remove the exhaust pipe (page 2-11).

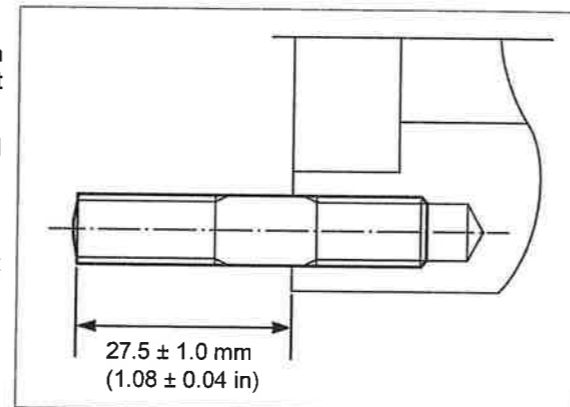
Thread two nuts onto the stud and tighten them together, and use a wrench on them to turn the stud bolt out.

Install and tighten new stud bolts to the specified torque.

**TORQUE: 11 N·m (1.1 kgf·m, 8 lbf·ft)**

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

Install the exhaust pipe (page 2-11).



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MEMO

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# 3. MAINTENANCE

---



SERVICE INFORMATION.....	3-2	DRIVE CHAIN .....	3-12
MAINTENANCE SCHEDULE .....	3-3	BRAKE FLUID .....	3-15
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VALVE CLEARANCE .....	3-7	SIDESTAND .....	3-19
ENGINE OIL .....	3-9	SUSPENSION .....	3-19
ENGINE OIL STRAINER SCREEN .....	3-10	NUTS, BOLTS, FASTENERS .....	3-19
ENGINE OIL CENTRIFUGAL FILTER.....	3-10	WHEELS/TIRES .....	3-20
ENGINE IDLE SPEED.....	3-11	STEERING HEAD BEARINGS .....	3-20
EVAPORATIVE EMISSION CONTROL SYSTEM.....	3-12		

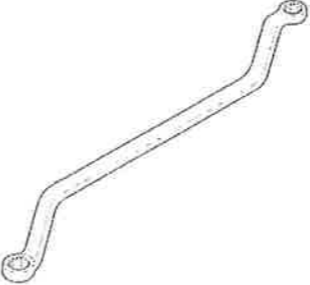
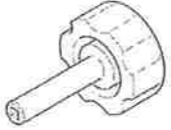
## MAINTENANCE

### SERVICE INFORMATION

#### GENERAL

- Place the motorcycle on a level ground before starting any work.
- Gasoline is extremely flammable and is explosive under certain conditions.
- Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where the gasoline is stored can cause a fire or explosion.
- The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and may lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.

#### TOOLS

<p>Locknut Wrench 8 x 9 mm 07708-0030100</p>  <p>Commercially available in the U.S.A.</p>	<p>Tappet Adjusting Wrench 07708-0030400</p>  <p>07908-3290200 (U.S.A. only)</p>
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# 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.

ITEMS	NOTE	FREQUENCY (NOTE 1)								REGULAR REPLACE	REFER TO PAGE	
		x 1,000 mi	0.6	4	8	12	16	20	24			
		x 1,000 km	1	6.4	12.8	19.2	25.6	32.0	38.4			
EMISSION RELATED ITEMS	* FUEL LINE			I	I	I	I	I	I		3-4	
	* THROTTLE OPERATION			I	I	I	I	I	I		3-4	
	AIR CLEANER	NOTE 2				R			R		3-5	
	CRANKCASE BREATHER	NOTE 3		C	C	C	C	C	C		3-5	
	SPARK PLUG			I	R	I	R	I	R		3-6	
	* VALVE CLEARANCE			I	I	I	I	I	I		3-7	
	ENGINE OIL		R	R	R	R	R	R	R	1 year	3-9	
	** ENGINE STRAINER SCREEN				C		C		C		3-10	
	** ENGINE OIL CENTRIFUGAL FILTER				C		C		C		3-10	
	* ENGINE IDLE SPEED		I	I	I	I	I	I	I		3-11	
	EVAPORATIVE EMISSION CONTROL SYSTEM	NOTE 4				I			I		3-12	
	NON-EMISSION RELATED ITEMS	DRIVE CHAIN		EVERY 300 mi (500 km) I, L								
BRAKE FLUID		NOTE 5		I	I	I	I	I	I	2 year	3-15	
BRAKE PADS WEAR				I	I	I	I	I	I		3-16	
BRAKE SYSTEM				I	I	I	I	I	I		3-17	
BRAKE LIGHT SWITCH				I	I	I	I	I	I		3-17	
HEADLIGHT AIM				I	I	I	I	I	I		3-18	
CLUTCH SYSTEM				I	I	I	I	I	I		3-18	
SIDESTAND				I	I	I	I	I	I		3-19	
* SUSPENSION				I	I	I	I	I	I		3-19	
* NUTS, BOLTS, FASTENERS					I		I		I		3-19	
** WHEELS/TIRES				I	I	I	I	I	I		3-20	
** STEERING HEAD BEARINGS					I		I		I		3-20	

\* 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 readings, 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. 50-State (meets California)
5. Replacement requires mechanical skill.

## MAINTENANCE

### FUEL LINE

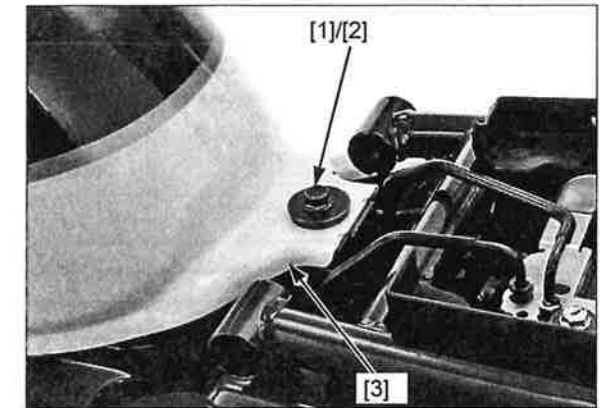
#### FUEL TANK LIFTING/LOWERING

Remove the seat (page 2-5).

Remove the bolt [1] and collar [2].

Lift up the rear side of the fuel tank [3] and support it.

Install the fuel tank in the reverse order of removal.



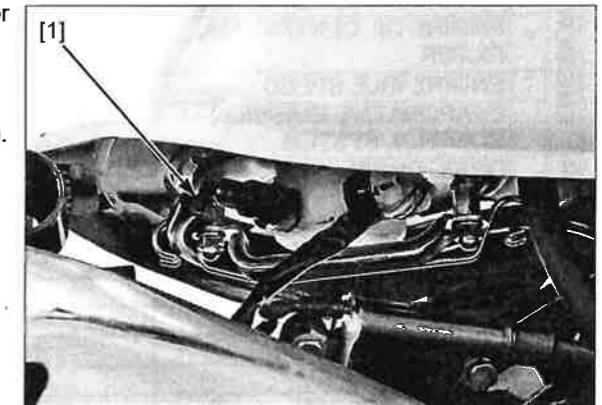
#### INSPECTION

Check the fuel line [1] for deterioration, damage or leakage.

Replace the fuel line if necessary.

Check the fuel pump mounting area for leakage.

Replace the fuel pump packing if necessary (page 7-9).



### THROTTLE OPERATION

#### INSPECTION

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 [1] does not return properly overhaul and lubricate the throttle grip housing.

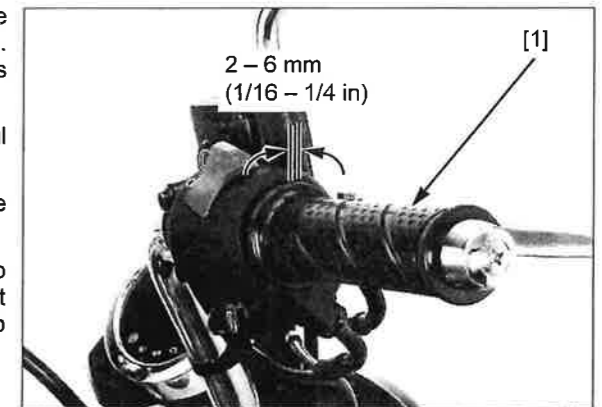
If the throttle grip still does not return properly, replace the throttle cable.

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 grip flange.

**FREEPLAY: 2 – 6 mm (1/16 – 1/4 in)**

If the freeplay is out of specification, adjust as follows.

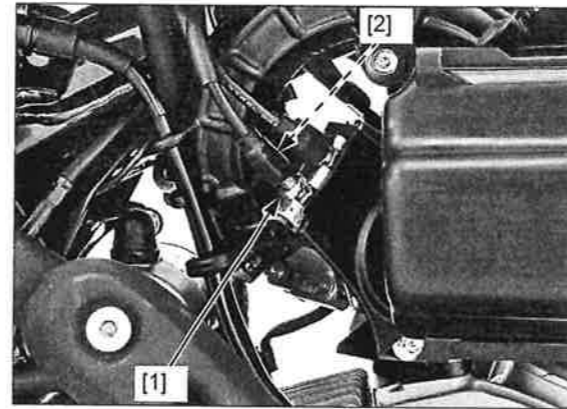


**ADJUSTMENT**

Loosen the lock nut [1] and turn the adjuster [2].  
Tighten the lock nut to the specified torque while holding the adjuster.

**TORQUE: 4.5 N·m (0.5 kgf·m, 3.3 lbf·ft)**

Recheck the throttle operation.



**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.

Remove the garnishes (page 2-5).

Remove the screws [1] and air cleaner housing cover [2].

Remove the screw [3] and air cleaner element [4].

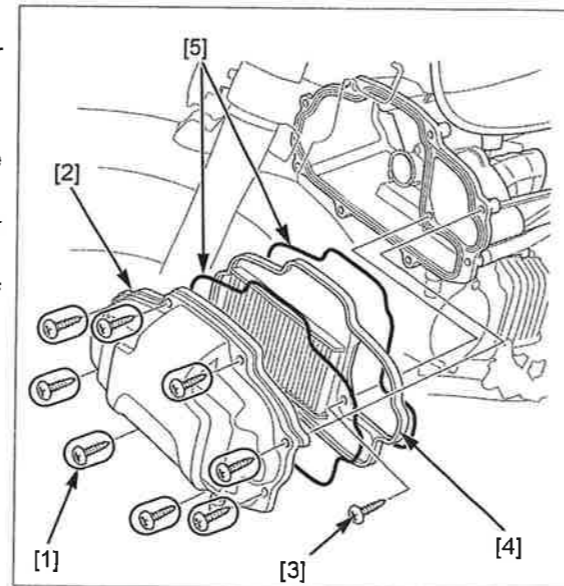
Discard the air cleaner element in accordance with the maintenance schedule (page 3-3).

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

Install the removed parts in the reverse order of removal.

- Make sure the seals [5] are properly positioned in the grooves on air cleaner housing and cover.

**TORQUE: Air cleaner housing cover screw**  
**1.1 N·m (0.1 kgf·m, 0.8 lbf·ft)**  
**Air cleaner element screw**  
**1.1 N·m (0.1 kgf·m, 0.8 lbf·ft)**



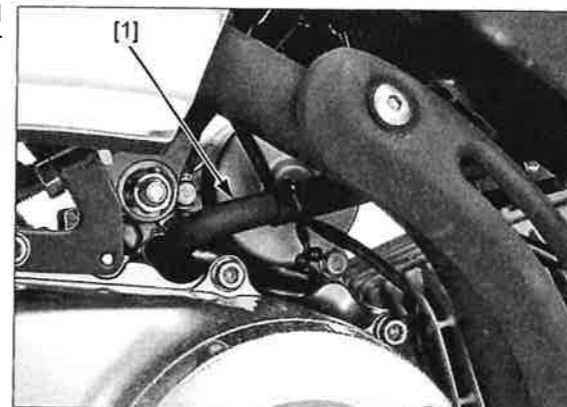
**CRANKCASE BREATHER**

**NOTE:**

- Service more frequently when ridden in rain, at full throttle, or after the motorcycle is washed or overturned.

Check the crankcase breather hose [1] for deterioration, damage or loose connection. Make sure that the hoses are not kinked, pinched or cracked.

Replace the crankcase breather hose if necessary.



## MAINTENANCE

### NOTE:

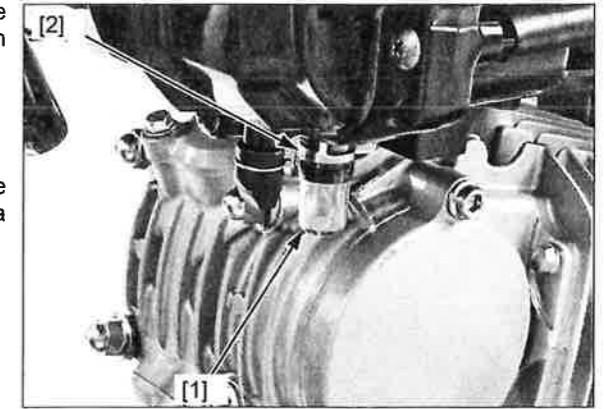
- Service if the deposits level can be seen in the transparent section of the air cleaner housing drain hose.

Remove the left garnish (page 2-5).

Check the breather drain plug [1].

If necessary, remove the breather drain plug from the air cleaner housing and drain the deposits into a suitable container.

Reinstall the drain plug with the clip [2] securely.



## SPARK PLUG

### REMOVAL/INSTALLATION

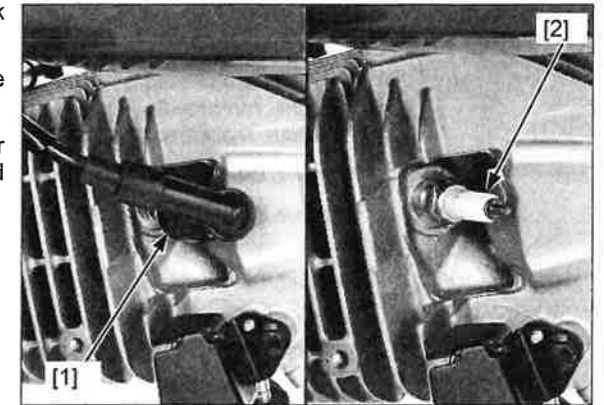
*Clean around the spark plug base with compressed air before removing the spark plug, and be sure that no debris is allowed to enter into the combustion chamber.*

Disconnect the spark plug cap [1] and remove the spark plug [2].

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

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, 12 lbf·ft)**



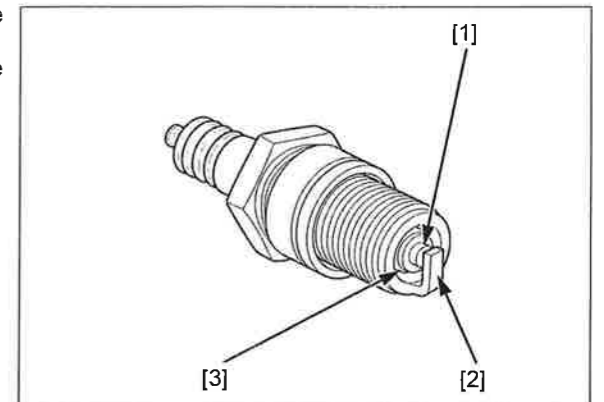
### INSPECTION

Clean the spark plug center electrode [1] and side electrode [2] with a wire brush or special plug cleaner. Check the insulator [3] for cracks or damage, and the electrodes for wear, fouling or discoloration.

#### SPECIFIED SPARK PLUG:

##### STANDARD:

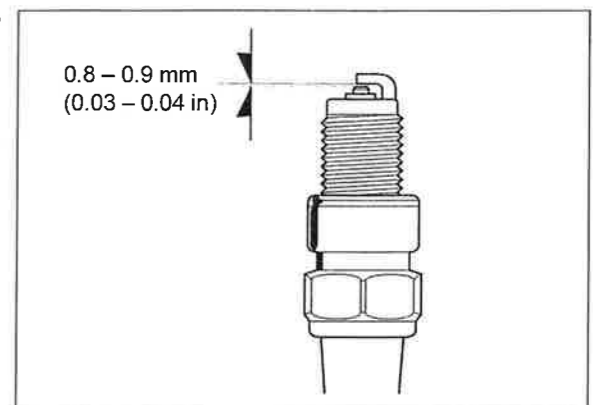
**NGK: CPR6EA-9 (NGK)**  
**DENSO: U20EPR9 (DENSO)**



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

**SPARK PLUG GAP: 0.8 – 0.9 mm (0.03 - 0.04 in)**

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



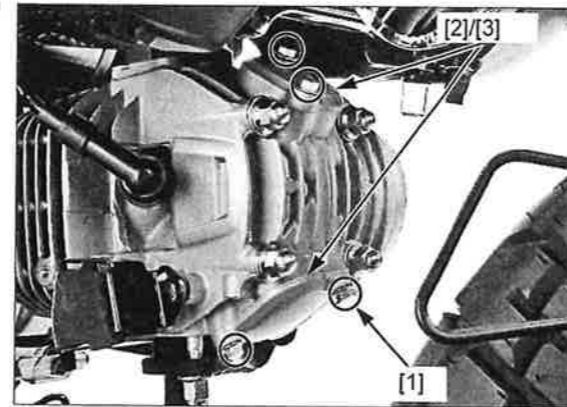
## VALVE CLEARANCE

**NOTE:**

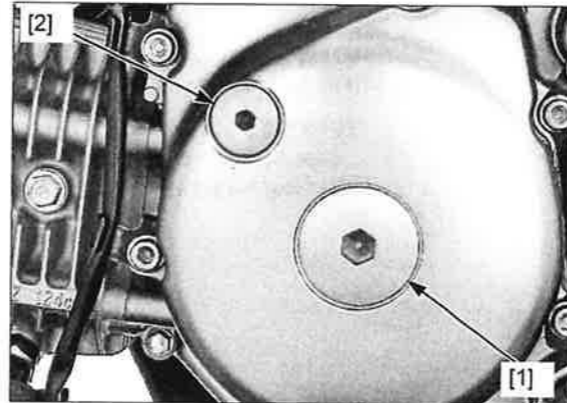
- Inspect and adjust the valve clearance while the engine is cold (below 35°C/95°F).
- After the valve clearance inspection, check the engine idle speed (page 3-11).
- Inspect and adjust the valve clearance can be serviced with the engine installed in the frame.

### INSPECTION/ADJUSTMENT

Remove the bolts [1], valve adjusting hole caps [2] and O-rings [3].



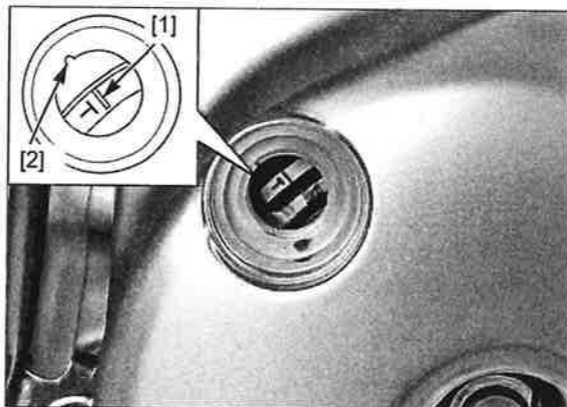
Remove the crankshaft hole cap [1] and timing hole cap [2] from the left crankcase cover.



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 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.



## MAINTENANCE

Check each valve clearance by inserting a feeler gauge [1] between the valve adjusting screw and valve stem.

### VALVE CLEARANCE:

IN:  $0.10 \pm 0.02$  mm ( $0.004 \pm 0.001$  in)

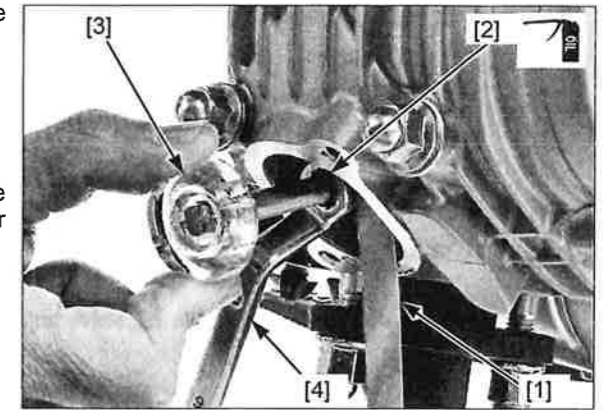
EX:  $0.17 \pm 0.02$  mm ( $0.007 \pm 0.001$  in)

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

### TOOLS:

Valve adjusting wrench [3] 07708-0030400 or 07908-3290200 (U.S.A only)

Lock nut wrench, 8 x 9 [4] 07708-0030100 or equivalent commercially available in the U.S.A.



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

**TORQUE: 8.0 N·m (0.8 kgf·m, 5.9 lbf·ft)**

Recheck the valve clearance.

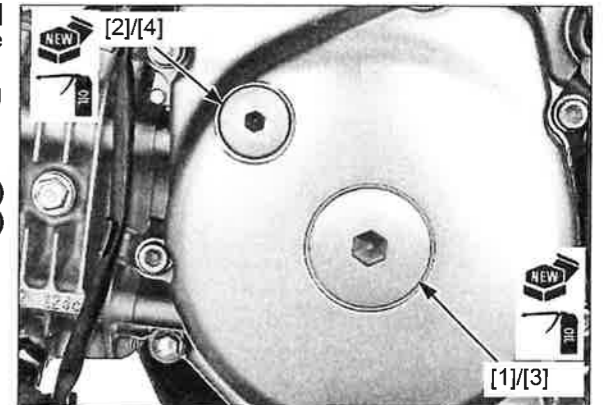
Apply engine oil to a new crankshaft hole cap O-ring [1] and timing hole cap O-ring [2], then install them to the caps.

Install and tighten the crankshaft hole cap [3] and timing hole cap [4] to the specified torque.

### TORQUE:

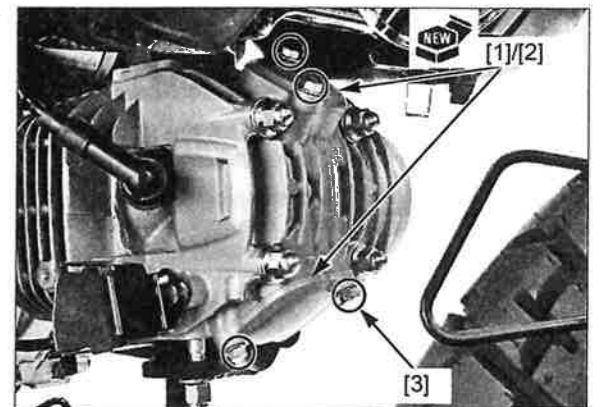
Crankshaft hole cap 8.0 N·m (0.8 kgf·m, 5.9 lbf·ft)

Timing hole cap 6.0 N·m (0.6 kgf·m, 4.4 lbf·ft)



Install the new O-rings [1] into grooves of the valve adjusting hole caps [2].

Install the valve adjusting hole caps to the cylinder head and tighten the bolts [3].



## ENGINE OIL

### OIL LEVEL CHECK

Start the engine and let it idle for 3 – 5 minutes.  
Stop the engine and wait 2 – 3 minutes.

Support the motorcycle in an upright position on a level surface.

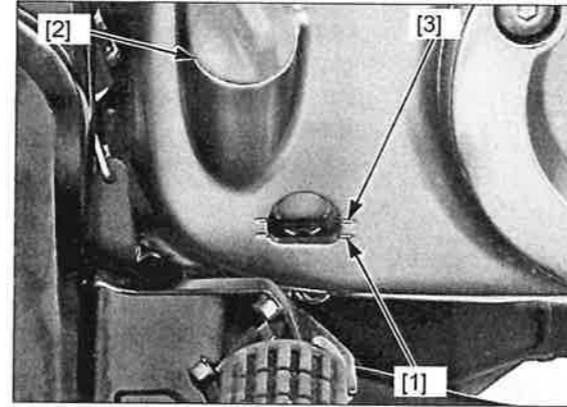
Check the oil level through the inspection window.

If the level is below the lower level line [1], remove the oil filler cap [2] and fill the crankcase with the recommended engine oil up to the upper level line [3].

#### RECOMMENDED ENGINE OIL:

**Pro Honda GN4 4-stroke oil (U.S.A. & Canada) or equivalent motorcycle oil**  
**API service classification: SG or higher**  
**JASO T903 standard: MA**  
**Viscosity: SAE 10W-30**

Check that the O-ring on the filler cap is in good condition, replace it if necessary.  
Apply engine oil to the O-ring.  
Install the filler cap.



### OIL CHANGE

Warm up the engine.

Stop the engine and remove the oil filler cap.

Remove the oil drain bolt [1] and sealing washer [2] to drain the engine oil.

After draining the oil completely, install the drain bolt with a new sealing washer.

Tighten the drain bolt to the specified torque.

**TORQUE: 24 N·m (2.4 kgf·m, 18 lbf·ft)**

Fill the crankcase with the recommended engine oil (page 3-9).

#### ENGINE OIL CAPACITY:

**0.9 liters (1.0 US qt, 0.8 Imp qt) at draining**

**1.1 liters (1.2 US qt, 1.0 Imp qt) at disassembly**

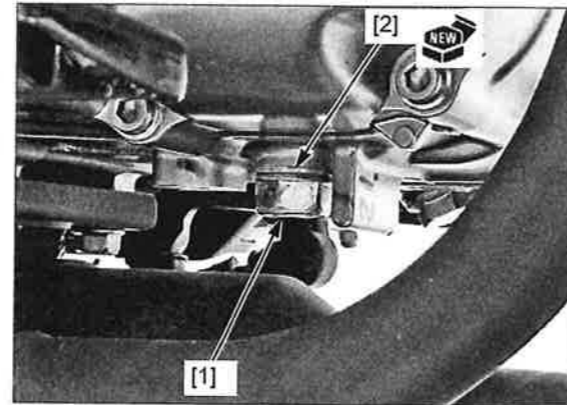
Check that the O-ring on the filler cap is in good condition, replace it if necessary.

Apply engine oil to the O-ring.

Install the filler cap.

Check the oil level (page 3-9).

Make sure there are no oil leaks.



## MAINTENANCE

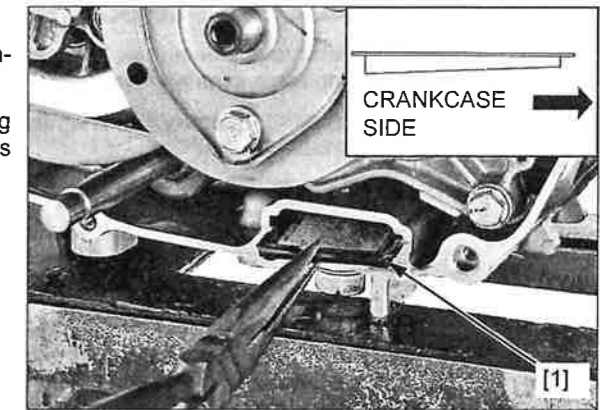
### ENGINE OIL STRAINER SCREEN

Remove the right crankcase cover (page 11-5).

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 11-7).

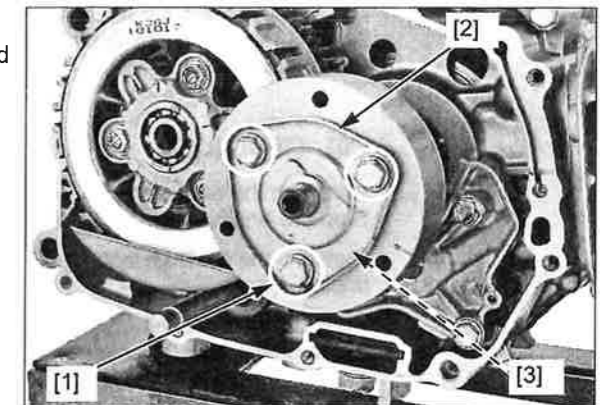


### ENGINE OIL CENTRIFUGAL FILTER

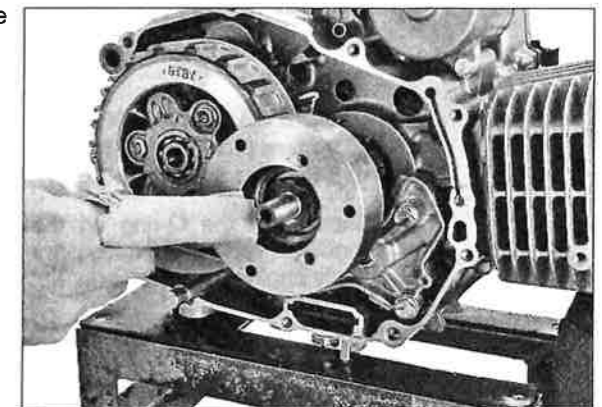
#### CLEANING

Remove the right crankcase cover (page 11-5).

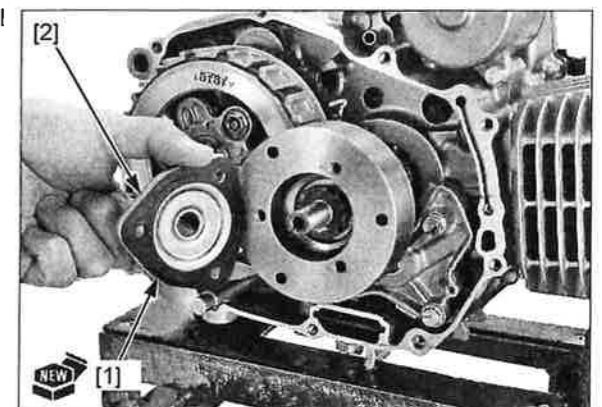
Remove the bolts [1], oil centrifugal filter cover [2] and gasket [3].



Clean the oil centrifugal filter cover and inside of the filter rotor using a clean lint-free cloth.



Install a new gasket [1] with its sealed side facing the oil centrifugal filter cover [2].



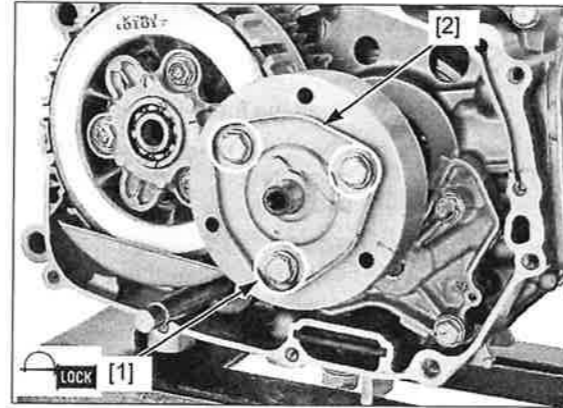


Apply locking agent to the oil centrifugal filter cover bolt [1] threads.

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

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Install the right crankcase cover (page 11-7).



## ENGINE IDLE SPEED

### NOTICE

*Failure to properly follow instructions can cause the rough idling or the engine stall.*

- Before checking the engine idle speed, inspect following items.
  - No MIL lighting
  - Spark plug condition (page 3-6)
  - Air cleaner element condition (page 3-5)
  - Throttle operation and throttle grip freeplay (page 3-4)
- Inspect and adjust the engine idle speed after all other engine maintenance items have been performed and are within specifications.
- Use a tachometer with graduations of 50 rpm or smaller that will accurately indicate a 50 rpm change.

Start the engine and let it idle 20 minutes. Check the engine idle speed.

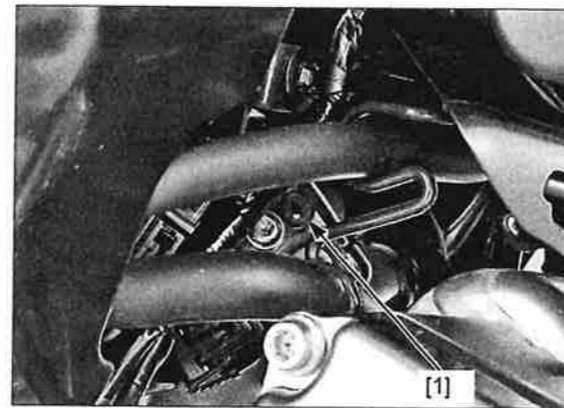
**IDLE SPEED: 1,400 ± 100 rpm**

If adjustment is necessary, turn the idle air screw [1] to obtain the specified engine idle speed.

#### NOTE:

- The idle air screw can be turned up to 1/4 turn per one try. Leave the engine idling for 10 seconds or more to confirm the idle speed after adjustment.
- If the idling speed is still not in the specified engine idle speed, repeat the steps above.

**IDLE AIR SCREW STANDARD OPENING:  
2 turns out from the fully seated position**



## MAINTENANCE

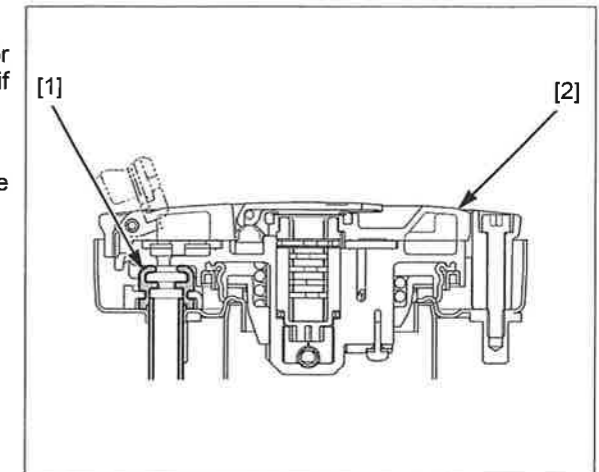
### EVAPORATIVE EMISSION CONTROL SYSTEM

Open the fuel filler cap.

Check the breather seal [1] in the fuel filler cap [2] for deterioration, cracks or damage. Replace it if necessary.

**NOTE:**

- Always replace the breather seal with a new one when the fuel filler cap is removed for service.



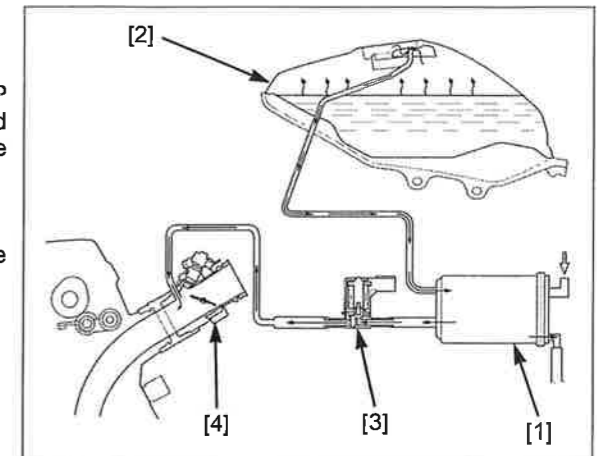
Remove the side cover (page 2-5).

Check the EVAP canister [1] for cracks or damage.

Check the hoses between the fuel tank [2], EVAP canister, EVAP purge control solenoid valve [3] and throttle body [4] for deterioration, damage or loose connections.

Also, check that the hoses are not kinked or pinched.

Refer to the Cable & Harness Routing for hose connections and routing (page 1-17).



### DRIVE CHAIN

#### **⚠ WARNING**

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

#### **INSPECTION**

##### **DRIVE CHAIN SLACK INSPECTION**

Turn the ignition switch OFF.

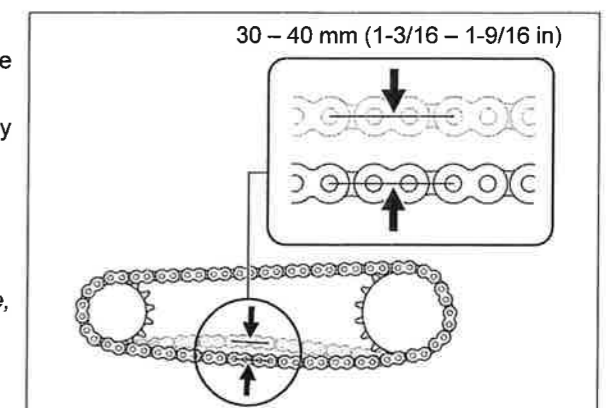
Support the motorcycle with the sidestand and shift the transmission into neutral.

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

**CHAIN SLACK: 30 – 40 mm (1-3/16 – 1-9/16 in)**

#### **NOTICE**

Excessive chain slack, 50 mm (1-15/16 in) or more, may damage the frame.



## MAINTENANCE

### CLEANING, LUBRICATION AND INSPECTION

Clean the chain with non-flammable or high flash point solvent [1] 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 Pro Honda HP Chain Lube or an equivalent.

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.

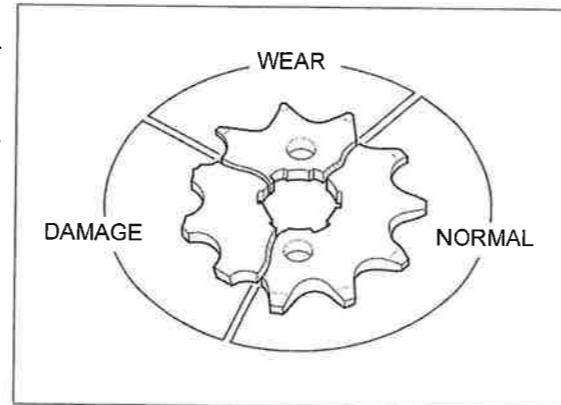
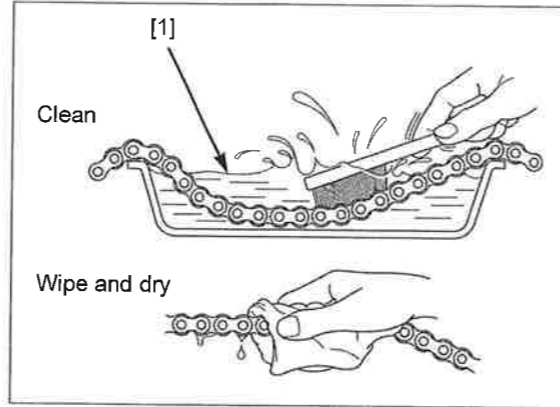
**DRIVE CHAIN LENGTH (41 pins/40 links)**  
**SERVICE LIMIT: 518 mm (20.4 in)**

### SPROCKET INSPECTION

Remove the drive sprocket cover (page 2-9).

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.



Check the drive sprocket fixing plate bolts [1] and driven sprocket nuts [2].

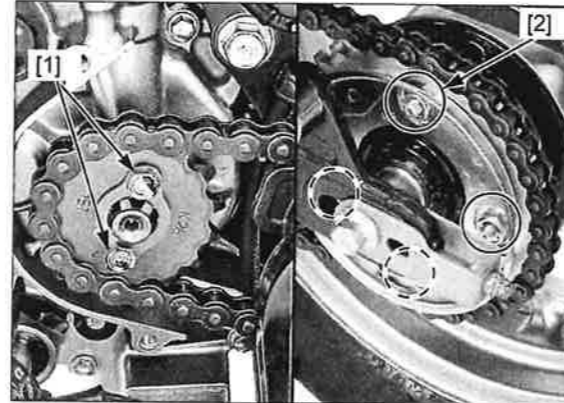
If any are loose, tighten them to the specified torque.

### TORQUE:

**Drive sprocket fixing plate bolt:**  
**12 N·m (1.2 kgf·m, 9 lbf·ft)**

**Driven sprocket nut:**  
**32 N·m (3.3 kgf·m, 24 lbf·ft)**

Install the drive sprocket cover (page 2-9).



## MAINTENANCE

### ADJUSTMENT

Loosen the rear axle nut [1].

Turn both drive chain adjusting bolts [2] until the correct drive chain slack is obtained.

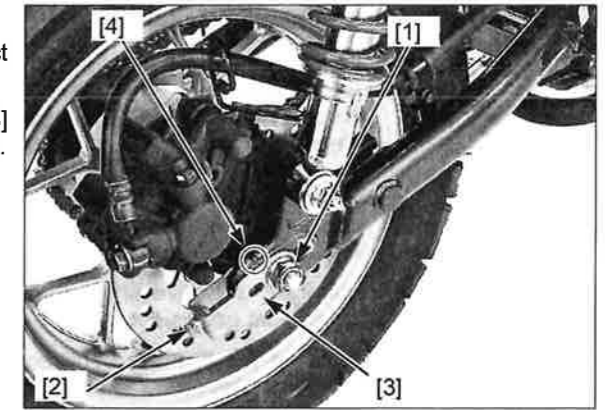
Make sure the same index lines of both adjusters [3] are aligned with the triangle marks [4] on the swingarm.

Tighten the rear axle nut to the specified torque.

**TORQUE: 59 N·m (6.0 kgf·m, 44 lbf·ft)**

Tighten both drive chain adjusting bolts securely.

Recheck the drive chain slack and free wheel rotation.



### REMOVAL/INSTALLATION

Support the motorcycle with the sidestand and shift the transmission into neutral.

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

Remove the drive sprocket cover (page 2-9).

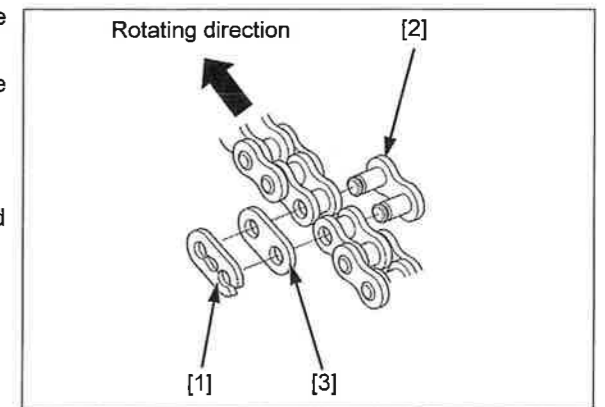
Carefully remove the retaining clip [1] with pliers.

Remove the master link [2] and link plate [3], and disconnect the drive chain.

Remove the drive chain.

Install the drive chain in the reverse order of removal.

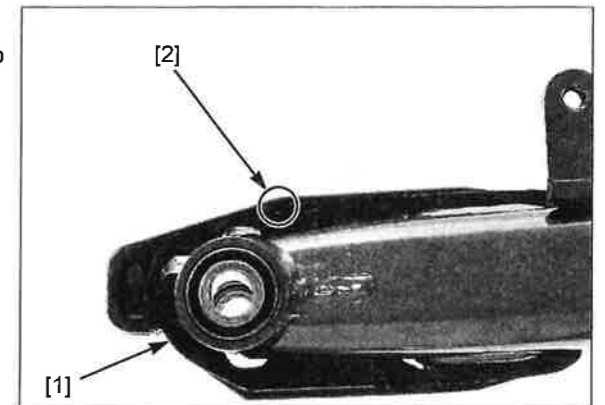
Adjust the drive chain slack (page 3-14).



### DRIVE CHAIN SLIDER INSPECTION

Check the drive chain slider [1] for wear or damage.

The drive chain slider must be replaced if it is worn to the wear limit indicator [2] (page 16-9).



## BRAKE FLUID

### NOTICE

Spilled fluid can damage painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.

### NOTE:

- Do not mix different types of fluid, as they are not compatible with each other.
- Do not allow foreign material to enter the system when filling the reservoir.
- When the fluid level is low, check the brake pads for wear (page 3-16).
- A low fluid level may be due to wear of the brake pads. If the brake pads are worn and caliper pistons are pushed out, this accounts for a low fluid level. If the brake pads are not worn and fluid level is low, check the entire system for leaks (page 3-17).

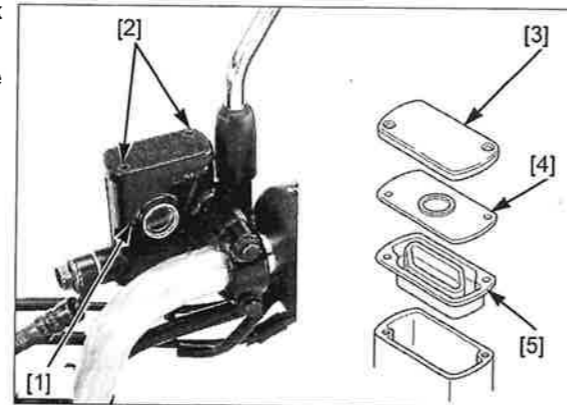
### FRONT BRAKE

Turn the handlebar so the reservoir is level and check the front brake fluid level through the sight glass.

If the level is near the "LOWER" level line [1], fill the brake fluid as follows.

Remove the following:

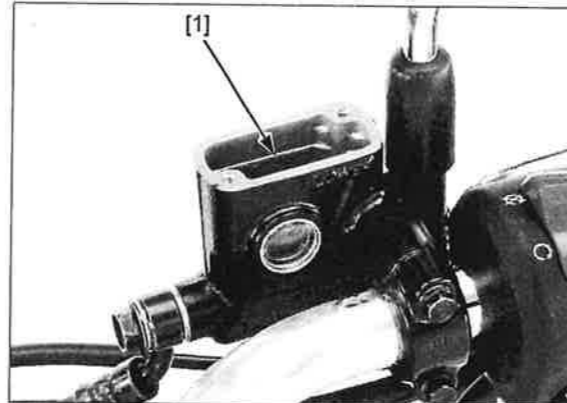
- Two screws [2]
- Reservoir cover [3]
- Set plate [4]
- Diaphragm [5]



Fill the reservoir with DOT 3 or DOT 4 brake fluid from a sealed container to the upper level line (casting ledge) [1].

Install the diaphragm, set plate and reservoir cover, and tighten the screws to the specified torque.

**TORQUE: 1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)**

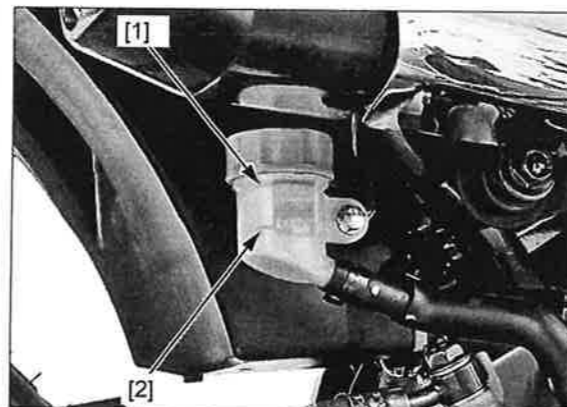


### REAR BRAKE

Support the motorcycle upright position on a level surface and check the rear brake fluid level.

Check that the fluid level is between the "UPPER" level line [1] and the "LOWER" level line [2].

If the level is near the "LOWER" level line, fill the brake fluid as follows.



## MAINTENANCE

*Take care not to spill the fluid out of the reservoir.*

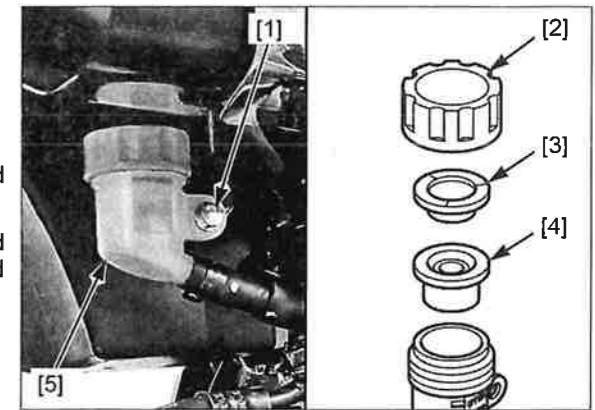
Remove the following:

- Reservoir mounting bolt [1]
- Reservoir cap [2]
- Set plate [3]
- Diaphragm [4]

Fill the reservoir [5] with DOT 3 or DOT 4 brake fluid from a sealed container to the "UPPER" level line.

Install the diaphragm, set plate, reservoir cap and tighten the reservoir mounting bolt to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**



## BRAKE PADS WEAR

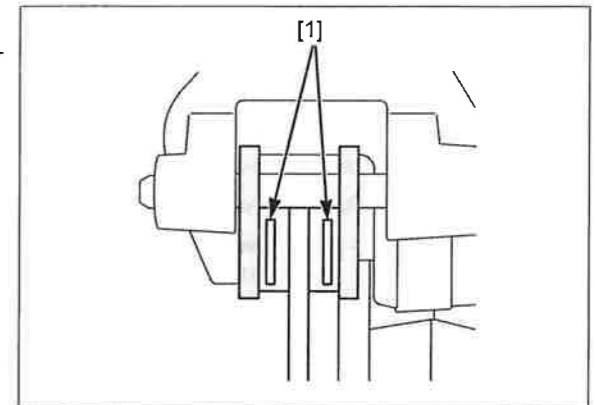
### FRONT BRAKE PADS

Check the brake pads for wear.

*Always replace the brake pads as a set to assure even disc pressure.*

Replace the brake pads if either pad is worn to the wear limit groove [1].

For brake pad removal/installation (page 17-7).



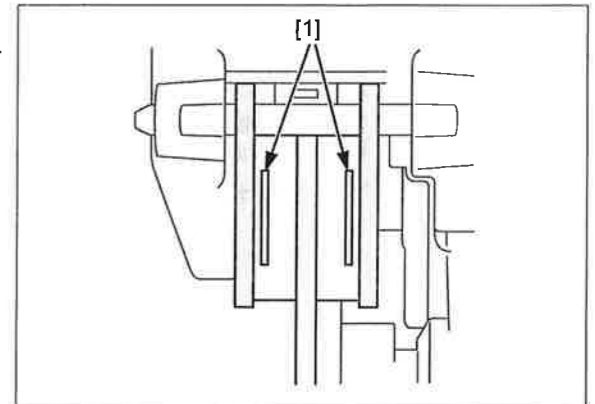
### REAR BRAKE PADS

Check the brake pads for wear.

*Always replace the brake pads as a set to assure even disc pressure.*

Replace the brake pads if either pad is worn to the wear limit groove [1].

For brake pad removal/installation (page 17-7).



## BRAKE SYSTEM

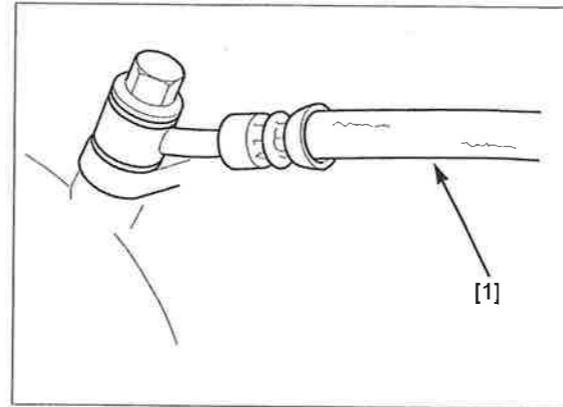
### INSPECTION

Firmly apply the brake lever and pedal to check that no air has entered the system.

If the lever or pedal feels soft or spongy when operated, bleed the air from the system (page 17-5).

Inspect the brake hose [1] and fittings for deterioration, cracks and signs of leakage.  
Tighten any loose fittings.

Replace hoses and fittings as required.



### BRAKE PEDAL HEIGHT ADJUSTMENT

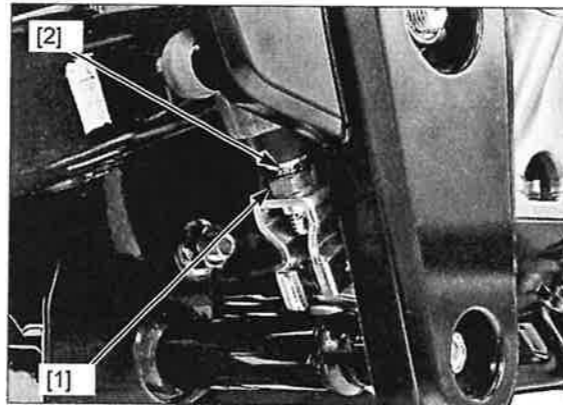
Loosen the lock nut [1] and turn the push rod [2] until the correct pedal height is obtained.

Tighten the lock nut to the specified torque.

**TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)**

#### NOTE:

After adjusting the brake pedal height, check the rear brake light switch operation (page 3-17).



## BRAKE LIGHT SWITCH

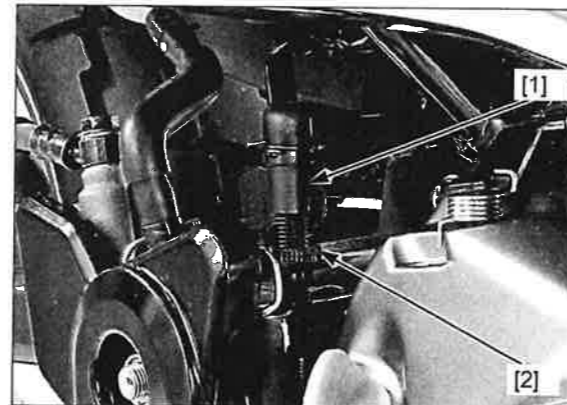
#### NOTE:

- The front brake light switch 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.

Check that the brake light comes on just prior to the brake actually being engaged.

*Hold the switch body and turn the adjusting nut.*  
If the light fails to come on, adjust the switch [1] by turning the adjusting nut [2] so that the light comes on at the proper time.

*Do not turn the switch body while turning the adjusting nut.*  
Recheck the brake light switch operation.



## MAINTENANCE

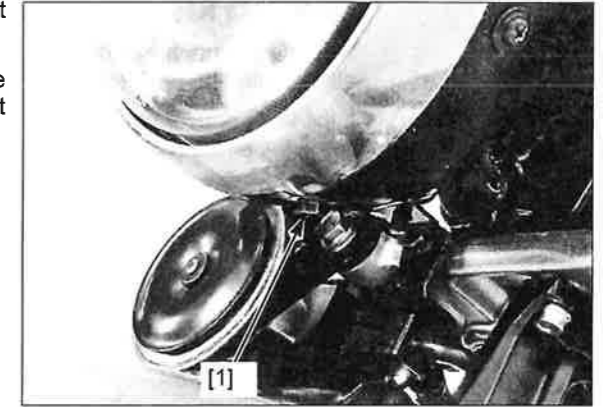
### HEADLIGHT AIM

Place the motorcycle on the level ground in an upright position.

*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, then tighten the bolt to the specified torque.

**TORQUE: 2.0 N·m (0.2 kgf·m, 1.5 lbf·ft)**

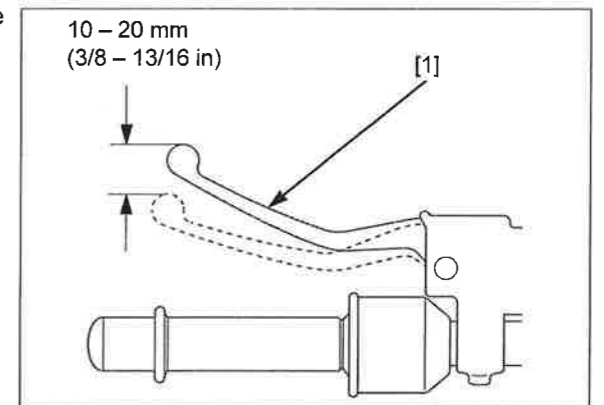


### CLUTCH SYSTEM

#### CLUTCH LEVER FREEPLAY

Measure the clutch lever freeplay at the end of the clutch lever [1].

**FREEPLAY: 10 – 20 mm (3/8 – 13/16 in)**

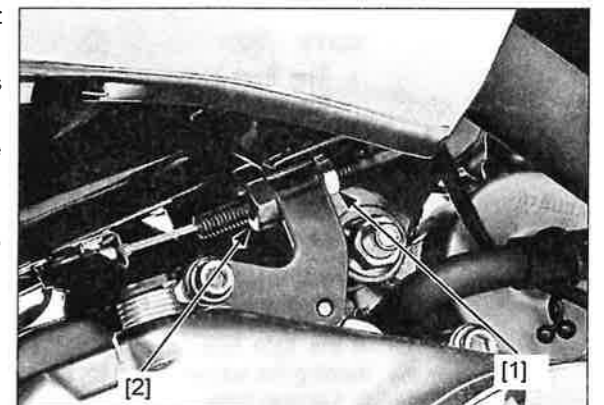


Major adjustment is made with the lower adjusting nut [1] at the clutch lifter arm.

Loosen the lock nut [2] and turn the adjusting nut as required.

After adjustment, tighten the lock nut while holding the adjusting nut.

If the proper freeplay cannot be obtained, or the clutch slips during test-ride, disassemble and inspect the clutch (page 11-8).



*The adjuster may be damaged if it is positioned too far out, leaving minimal thread engagement.*

Minor adjustment is made with the upper adjuster at the clutch lever.

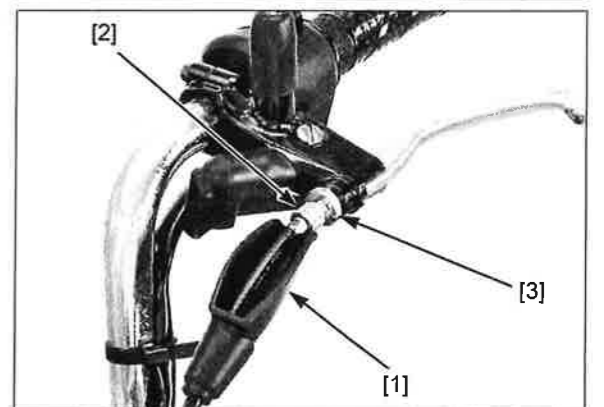
Slide the dust cover [1] from the adjuster [2].

Loosen the lock nut [3] and turn the adjuster.

Tighten the lock nut while holding the adjuster.

Recheck the clutch lever freeplay.

If the adjuster is threaded out near its limit and the correct freeplay cannot be obtained, turn the adjuster all the way in and back out one turn, then perform the adjustment at major adjuster.





## SIDESTAND

### INSPECTION

Support the motorcycle using a safety stand or hoist.

Check the sidestand spring [1] for damage or loss of tension.

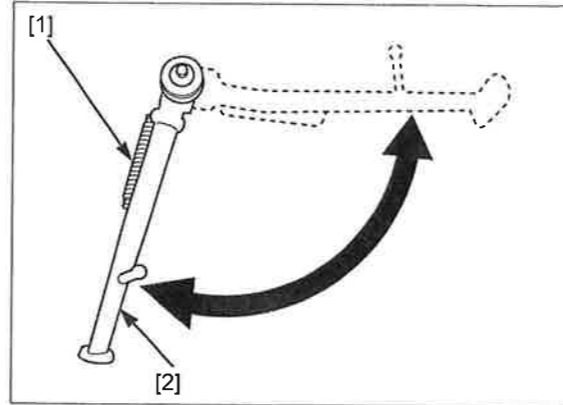
Check the sidestand [2] for movement and lubricate the sidestand pivot if necessary.

For sidestand removal/installation (page 2-9).

Check the sidestand ignition cut-off system:

1. Sit astride the motorcycle and retract the sidestand.
2. Start the engine with the transmission in neutral, then shift the transmission into gear while squeezing the clutch lever.
3. Fully lower the sidestand.
4. The engine should stop as the sidestand is lowered.

If there is a problem with the system, check the sidestand switch (page 20-14).



## SUSPENSION

### FRONT SUSPENSION INSPECTION

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

Replace damaged components which cannot be repaired.

Tighten all fasteners.

For fork service (page 15-13).

### REAR SUSPENSION INSPECTION

Check the action of the shock absorber by compressing them several times. Check the entire shock absorber assembly for leaks, damage or loose fasteners.

Replace damaged components which cannot be repaired.

Tighten all fasteners.

For shock absorber service (page 16-8).

Support the motorcycle using a hoist or equivalent and raise the rear wheel off the ground.

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.

For swingarm service (page 16-9).

## NUTS, BOLTS, FASTENERS

Check that all chassis nuts, screws and bolts are tightened to their correct torque values (page 1-9).  
Check that all cotter pins, safety clips, hose clamps and cable stays are in place and properly secured.

## MAINTENANCE

---

### WHEELS/TIRES

Support the motorcycle using a safety stand or hoist, raise the front wheel off the ground.

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

For front wheel service (page 15-10).

Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.

Hold the swingarm and move the rear wheel sideways with force to see if the wheel and driven flange bearings are worn.

For rear wheel service (page 16-5).

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

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

Check the front and rear wheels for trueness.

### STEERING HEAD BEARINGS

Support the motorcycle using a hoist or equivalent 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 the handlebar rotation.

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

If the handlebar moves unevenly, binds, or has vertical movement, inspect the steering bearings (page 15-20).

## 4. PGM-FI SYSTEM

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4

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## PGM-FI SYSTEM

### SERVICE INFORMATION

#### GENERAL

- A faulty PGM-FI system is often related to poorly connected or corroded connectors. Check those connections before proceeding.
- When checking the PGM-FI, always follow the steps in the troubleshooting flow chart.
- The PGM-FI system is provided with a fail-safe function to secure a minimum running capability even when there is any trouble in the system. When any abnormality is detected by the self-diagnosis function, running capability is secured by making use of the numerical values of a situation preset in the simulated program map.  
It must be remembered, however, that when any abnormality is detected in the fuel injector, the fail-safe function stops the engine to protect it from damage.
- Use a digital tester for PGM-FI system inspection.
- The following color codes are used throughout this section.

Bu = Blue  
Bl = Black

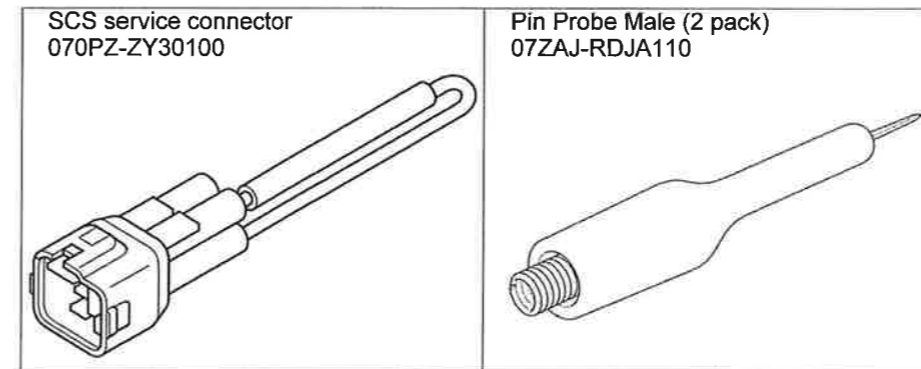
Br = Brown  
G = Green

Lg = Light Green  
O = Orange

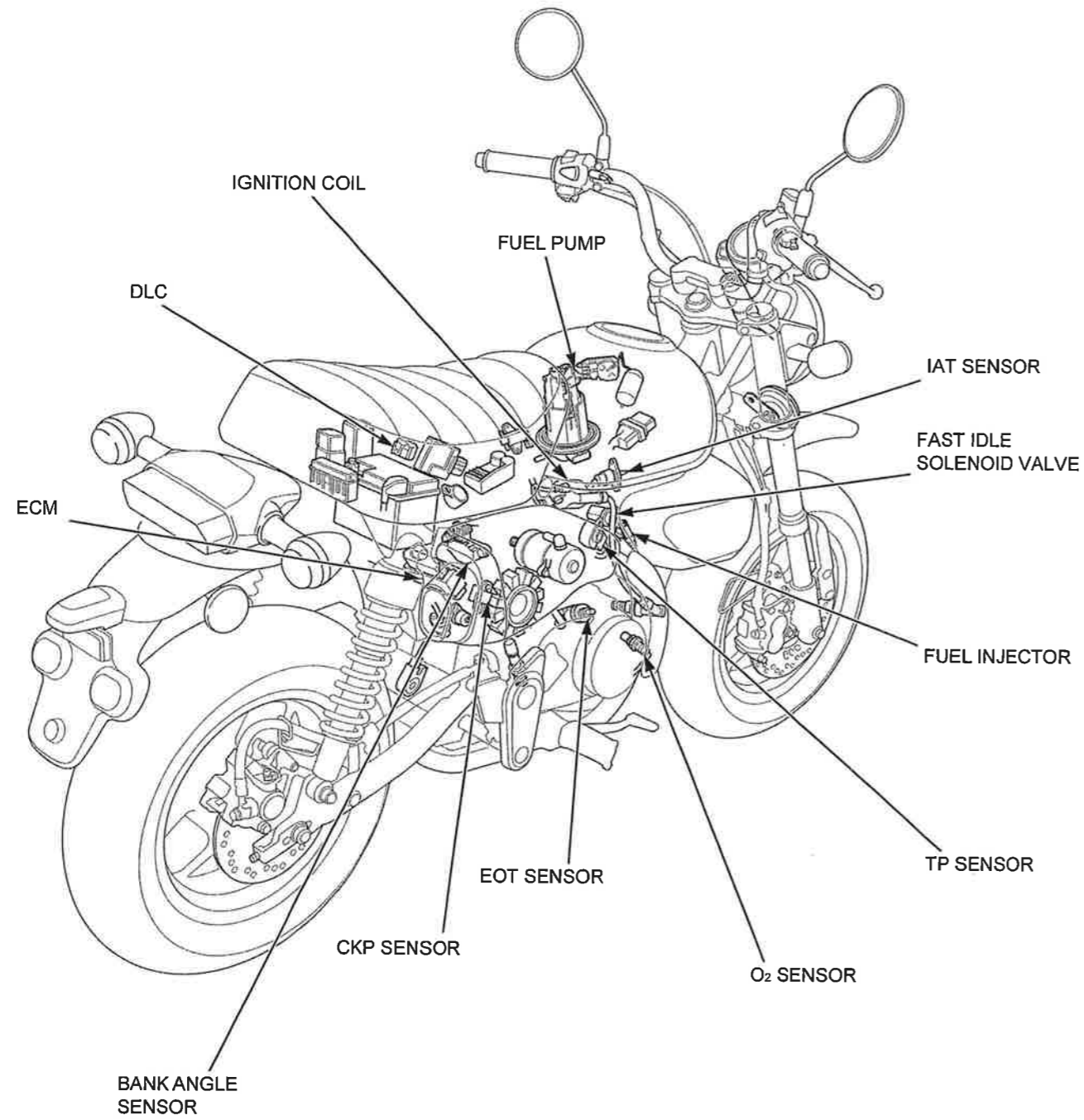
P = Pink  
R = Red

W = White  
Y = Yellow

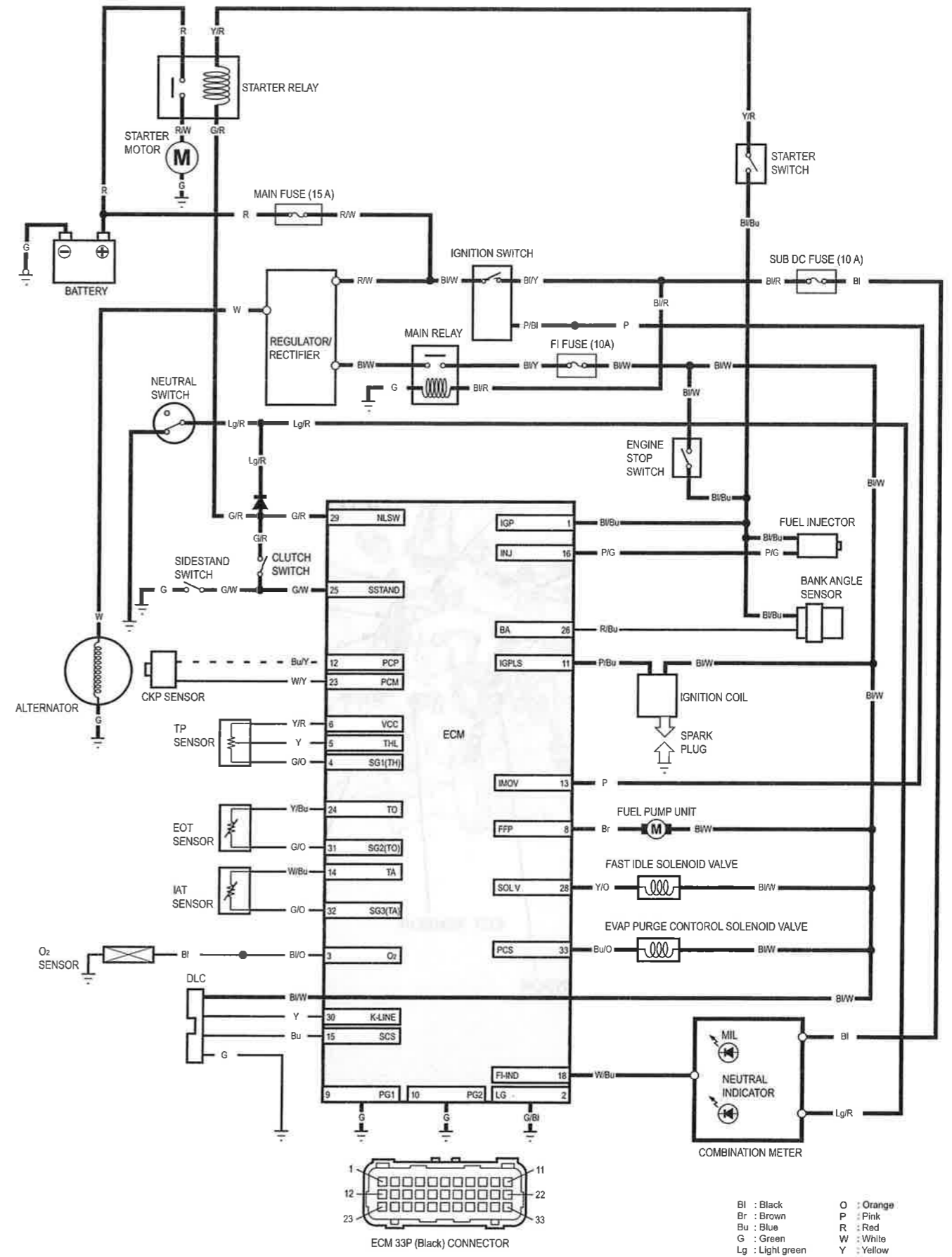
#### TOOLS



SYSTEM LOCATION



# PGM-FI SYSTEM SYSTEM DIAGRAM



## PGM-FI TROUBLESHOOTING INFORMATION

### GENERAL TROUBLESHOOTING

#### INTERMITTENT FAILURE

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the MIL does not come on, check for poor contact or loose pins at all connectors related to the circuit that of the troubleshooting. If the MIL was on, but then went out, the original problem may be intermittent.

#### OPENS AND SHORTS

"Opens" and "Shorts" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something will not work at all. With ECM this can sometimes mean something works, but not the way it's supposed to.

#### If the MIL has come on

Refer to DTC READOUT (page 4-6).

#### If the MIL did not stay on

If the MIL did not stay on, but there is a driveability problem, refer to the SYMPTOM TROUBLESHOOTING (page 4-8).

### SYSTEM DESCRIPTION

#### SELF-DIAGNOSIS SYSTEM

The PGM-FI system is equipped with the self-diagnostic system. When any abnormality occurs in the system, the ECM turns on the MIL (Malfunction Indicator Lamp) and stores a DTC in its erasable memory.

#### FAIL-SAFE FUNCTION

The PGM-FI system is provided with a fail-safe function to secure a minimum running capability even when there is trouble in the system. When any abnormality is detected by the self-diagnosis function, running capability is maintained by pre-programmed value in the simulated program map. When any abnormality is detected in the fuel injector and/or there is a short circuit in the TP sensor power line, the fail-safe function stops the engine to protect it from damage.

#### MIL Check

When the ignition switch is turned ON, the MIL will stay on for a few seconds, then go off. If the MIL does not come on or stay on (No DTC set), inspect the MIL circuit (page 4-27).

### MCS INFORMATION

- The MCS can readout the DTC, freeze data, current data and other ECM condition.

#### How to connect the MCS

Turn the ignition switch OFF.

Remove the side cover (page 2-5).

Remove the DLC [1] from the stay [2].

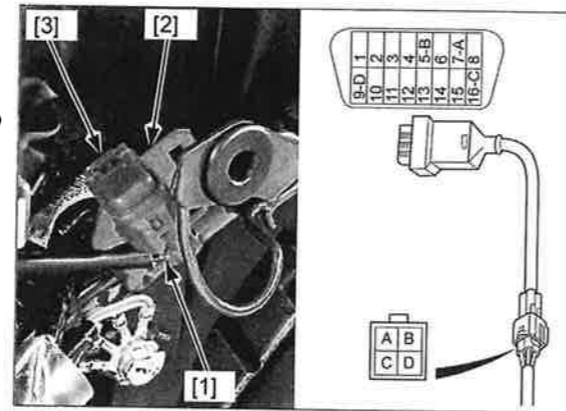
Remove the dummy connector [3] from the DLC and connect the MCS to the DLC.

Turn the ignition switch ON with the engine stop switch "O".

Check the DTC and freeze data.

#### NOTE:

- Freeze data indicates the engine conditions when the first malfunction was detected.



## PGM-FI SYSTEM

### DTC READOUT

Start the engine and check the MIL.

- If the engine will not start, turn the starter motor for more than 10 seconds and check the MIL.

If the MIL turns on, connect the MCS to the DLC, read the DTC, freeze data and follow the troubleshooting index (page 4-9).

To read the DTC with the MIL blinking, refer to the following procedure.

#### Reading DTC with the MIL

Turn the ignition switch OFF.

Remove the side cover (page 2-5).

Remove the DLC [1] from the stay [2].

Remove the dummy connector [3] from the DLC and short the DLC terminals using the special tool.

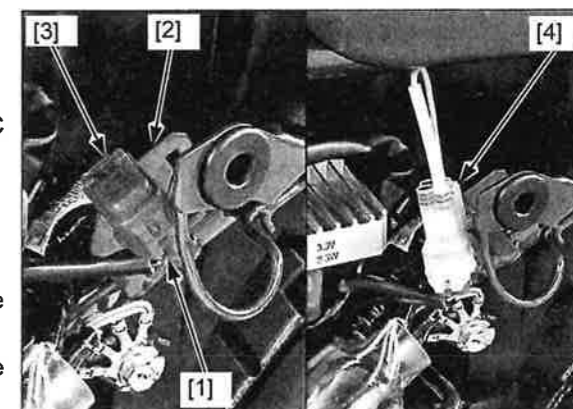
#### TOOL:

**SCS service connector [4] 070PZ-ZY30100**

**CONNECTION: Blue – Green**

Turn the ignition switch ON with the engine stop switch "O", read, note the MIL blinks and refer to the DTC index (page 4-9).

- The main code of Honda code (the number in front of hyphen) can be indicated as MIL blinking.
- The MIL has two types of blinks, a long blink and short blink. The long blinking lasts for 1.3 seconds, the short blinking lasts for 0.5 seconds. One long blink is the equivalent of ten short blinks. For example, when two long blinks are followed by five short blinks, the MIL is 25 (two long blinks = 20 blinks, plus five short blinks).



### ERASING DTC

Connect the MCS (page 4-5).

Erase the DTC with the MCS while the engine is stopped.

To erase the DTC without MCS, refer to the following procedure.

#### How to erase the DTC with SCS service connector

1. Turn the ignition switch OFF.
2. Remove the side cover (page 2-5).
3. Remove the DLC [1] from the stay.  
Remove the dummy connector from the DLC and short the DLC terminals using the special tool.

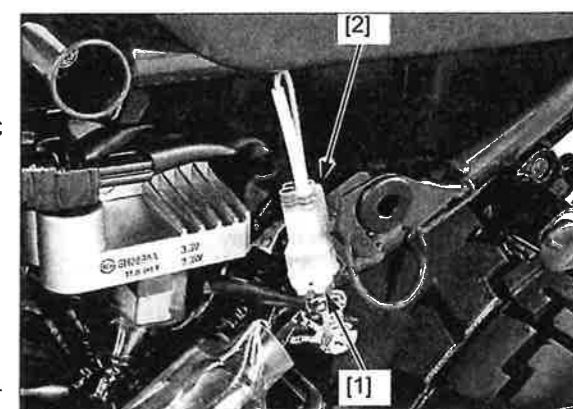
#### TOOL:

**SCS service connector [2] 070PZ-ZY30100**

**CONNECTION: Blue – Green**

4. Turn the ignition switch ON with the engine stop switch "O".
5. Disconnect the SCS service connector from the DLC.  
Connect the SCS service connector to the DLC again while the MIL stays ON about 5 seconds (reset receiving pattern).
6. The stored DTC is erased if the MIL goes off and starts blinking (successful pattern).

- The DLC must be jumped while the MIL lights. If not, the MIL will go off and stay on (unsuccessful pattern). In that case, turn the ignition switch OFF and try again from step 3.
- Note that the self-diagnostic memory cannot be erased if the ignition switch is turned "OFF" before the MIL starts blinking.





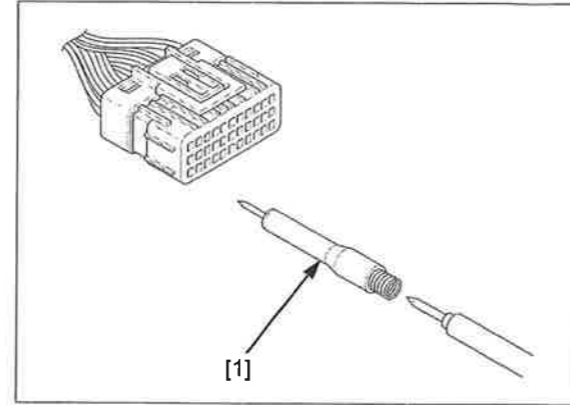
**CIRCUIT INSPECTION**

**INSPECTION AT ECM CONNECTOR**

- Always clean around and keep any foreign material away from the connector before disconnecting it.
- A faulty PGM-FI system is often related to poorly connected or corroded connections. Check those connections before proceeding.
- When testing at connector (wire harness side) terminal, always use the Pin probe male [1]. Insert the Pin probe male into the connector terminal, then connect the digital multimeter probe to the Pin probe male.

**TOOL:**

Pin probe male (2 pack) [1]07ZAJ-RDJA110



## PGM-FI SYSTEM

### PGM-FI SYMPTOM TROUBLESHOOTING

When the motorcycle has one of these symptoms, check the MIL lighting, refer to the DTC index (page 4-9) and begin the appropriate troubleshooting procedure. If there are no DTC stored in the ECM memory, do the diagnostic procedure for the symptom, in sequence listed below, until you find cause.

Symptom	Diagnosis procedure	Also check for
Engine cranks but won't start (MIL not lighting)	<ol style="list-style-type: none"> <li>1. ECM initializing (page 4-29).</li> <li>2. Check the spark plug condition (page 3-6).</li> <li>3. Inspect the ignition system (page 5-3).</li> <li>4. Check the cylinder compression (page 9-6).</li> <li>5. Check the idle air port/screw (page 7-18).</li> <li>6. Inspect the fuel supply system (page 7-4).</li> </ol>	<ul style="list-style-type: none"> <li>• No fuel to fuel injector <ul style="list-style-type: none"> <li>– Clogged fuel filter</li> <li>– Clogged fuel filler cap breather hole</li> <li>– Pinched or clogged fuel feed hose</li> <li>– Faulty fuel pump</li> <li>– Faulty fuel pump circuits</li> </ul> </li> <li>• Intake air leak</li> <li>• Contaminated/deteriorated fuel</li> <li>• Faulty fuel injector</li> <li>• Faulty CKP sensor or its related circuit</li> </ul>
Engine cranks but won't start (No fuel pump operation sound when turning the ignition ON)	<ol style="list-style-type: none"> <li>1. ECM power/ground circuits malfunction (page 4-32).</li> <li>2. Inspect the fuel pump system (page 7-7).</li> </ol>	<ul style="list-style-type: none"> <li>• Blown main fuse (15 A)</li> <li>• Blown FI, DC fuse (10 A)</li> </ul>
Engine stalls, hard to start, rough idling	<ol style="list-style-type: none"> <li>1. ECM initializing (page 4-29).</li> <li>2. Check the idle speed (page 3-11).</li> <li>3. Check the idle air port/screw (page 7-18).</li> <li>4. Inspect the fuel supply system (page 7-7).</li> <li>5. Inspect the battery/charging system (page 19-6).</li> <li>6. Inspect the ignition system (page 5-3).</li> </ol>	<ul style="list-style-type: none"> <li>• Restricted fuel feed hose</li> <li>• Clogged fuel filler cap breather hole</li> <li>• Contaminated/deteriorated fuel</li> <li>• Intake air leak</li> </ul>
Backfiring or misfiring during acceleration	Inspect the ignition system (page 5-3).	
Poor performance (driveability) and poor fuel economy	Inspect the fuel supply system (page 7-4).	
Poor performance, lack of fuel, or engine start failure with sufficient fuel stored in tank	Perform the fuel supply test (page 7-7).	
Idle speed is below specifications or fast idle too low (MIL not lighting)	<ol style="list-style-type: none"> <li>1. Check the idle speed (page 3-11).</li> <li>2. Check the idle air port/screw (page 7-18).</li> <li>3. Inspect the ignition system (page 5-3).</li> <li>4. Inspect the fuel supply system (page 7-4).</li> </ol>	
Idle speed is above specifications or fast idle too high (MIL not lighting)	<ol style="list-style-type: none"> <li>1. Check the idle speed (page 3-11).</li> <li>2. Check the idle air port/screw (page 7-18).</li> <li>3. Inspect the ignition system (page 5-3).</li> <li>4. Check the throttle operation and freeplay (page 3-4).</li> <li>5. Check the air cleaner element (page 3-5).</li> </ol>	<ul style="list-style-type: none"> <li>• Intake air leak</li> <li>• Engine top-end problem</li> </ul>
MIL stays ON but no DTCs set, or MIL never comes ON at all	Inspect the MIL circuit (page 4-27).	

## DTC INDEX

## NOTE:

- If not using the MCS, perform all inspections according to the relevant main code.

DTC	Function Failure	Symptom/Fail-safe function	Refer to
7-1	EOT sensor circuit low voltage (less than 0.07 V) • EOT sensor or its circuit malfunction	• Hard start at a low temperature • Pre-program value: 90°C/194°F	4-10
7-2	EOT sensor circuit high voltage (more than 4.93 V) • Loose or poor contact of the EOT sensor connector • EOT sensor or its circuit malfunction	• Hard start at a low temperature • Pre-program value: 90°C/194°F	4-11
8-1	TP sensor circuit low voltage (less than 0.22 V) • Loose or poor contact of the TP sensor connector • TP sensor or its circuit malfunction	• Poor engine acceleration • Pre-program value: 0°	4-12
8-2	TP sensor circuit high voltage (more than 4.93 V) • TP sensor or its circuit malfunction	• Poor engine acceleration • Pre-program value: 0°	4-14
9-1	IAT sensor circuit low voltage (more than 0.07 V) • IAT sensor or its circuit malfunction	• Engine operates normally • Pre-program value: 30°C/86°F	4-15
9-2	IAT sensor circuit high voltage (less than 4.93 V) • Loose or poor contact of the IAT sensor connector • IAT sensor or its circuit malfunction	• Engine operates normally • Pre-program value: 30°C/86°F	4-16
12-1	Fuel injector malfunction • Loose or poor contact of the fuel injector connector • Fuel injector or its circuit malfunction	• Engine does not start • Fuel injector, fuel pump and ignition coil shut down	4-16
21-1	O <sub>2</sub> sensor low voltage • Loose or poor contact of the O <sub>2</sub> sensor connector • O <sub>2</sub> sensor or its circuit malfunction	• Engine operates normally	4-18
21-2	O <sub>2</sub> sensor high voltage • Loose or poor contact of the O <sub>2</sub> sensor connector • O <sub>2</sub> sensor or its circuit malfunction	• Engine operates normally	4-19
33-2	EEPROM malfunction	• Engine stalls, hard to start, rough idling • Does not hold the self diagnosis data	4-20
54-1	Bank angle sensor circuit low voltage • Bank angle sensor or its circuit malfunction	• Engine operates normally • Bank angle sensor does not operate. (The engine keeps running when the vehicle falls.)	4-20
54-2	Bank angle sensor circuit high voltage • Loose or poor contact of the bank angle sensor connector • Bank angle sensor or its circuit malfunction	• Engine operates normally • Bank angle sensor does not operate. (The engine keeps running when the vehicle falls.)	4-22
82-1	Fast idle solenoid valve malfunction • Loose or poor contact of the fast idle solenoid valve connector • Fast idle solenoid valve or its circuit malfunction	• Engine operates normally • Rough idling	4-22
88-1	EVAP purge control solenoid valve malfunction • Loose or poor contact of the EVAP purge control solenoid valve connector • EVAP purge control solenoid valve or its circuit malfunction	• Engine operates normally • Rough idling	4-24
91-1	Ignition coil primary circuit malfunction • Loose or poor contact of the ignition coil connector • Ignition coil or its circuit malfunction	• Fuel injector and ignition shut down	4-25

**DTC TROUBLESHOOTING**

- Before starting the inspection, check for loose or poor contact on the related connector(s) and recheck the DTC.

**DTC 7-1 (EOT SENSOR LOW VOLTAGE)**

**1. EOT Sensor System Inspection**

Turn the ignition switch ON and engine stop switch "O".  
Check the EOT sensor with the MCS.

**Is about 0 V indicated?**

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

**2. EOT Sensor Inspection**

Turn the ignition switch OFF.  
Disconnect the EOT sensor 2P (Black) connector (page 4-32).

Turn the ignition switch ON and engine stop switch "O".  
Check the EOT sensor with the MCS.

**Is about 0 V indicated?**

**YES** – GO TO STEP 4.

**NO** – GO TO STEP 3.

**3. EOT Sensor Resistance Inspection**

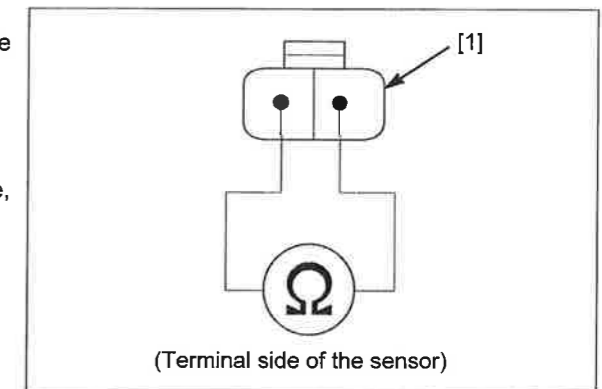
Turn the ignition switch OFF.  
Measure the resistance at the sensor side of the EOT sensor 2P connector [1] terminals.

**STANDARD: 2.5 – 2.8 kΩ (20°C/68°F)**

**Is the resistance within 2.5 – 2.8 kΩ?**

**YES** – Replace the ECM with a known good one, and recheck.

**NO** – Faulty EOT sensor



**4. EOT Sensor Output Line Short Circuit Inspection**

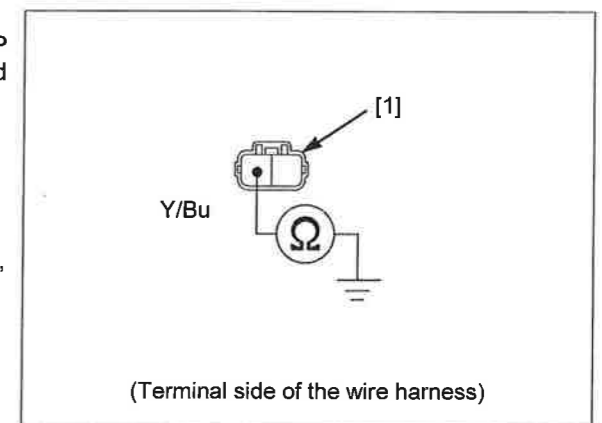
Turn the ignition switch OFF.  
Check the continuity between the EOT sensor 2P (Black) connector [1] of the wire harness side and ground.

**CONNECTION: Yellow/blue – Ground**

**Is there continuity?**

**YES** – Short circuit Yellow/blue wire

**NO** – Replace the ECM with a known good one, and recheck.



**DTC 7-2 (EOT SENSOR HIGH VOLTAGE)**

**1. EOT Sensor System Inspection**

Turn the ignition switch ON and engine stop switch "O".

Check the EOT sensor with the MCS.

**Is about 5 V indicated?**

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

**2. EOT Sensor Inspection**

Turn the ignition switch OFF.  
Disconnect the EOT sensor 2P (Black) connector (page 4-32).

Connect the EOT sensor 2P (Black) connector [1] terminals at the wire side with a jumper wire.

**CONNECTION: Yellow/blue – Green/orange**

Turn the ignition switch ON and engine stop switch "O".

Check the EOT sensor with the MCS.

**Is about 0 V indicated?**

**YES** – Faulty EOT sensor

**NO** – GO TO STEP 3.

**3. EOT Sensor Output Line Circuit Inspection**

Turn the ignition switch OFF.  
Remove the jumper wire.  
Disconnect the ECM 33P (Black) connector (page 4-31).

Check for continuity between the EOT sensor 2P (Black) connector [1] and ECM 33P (Black) connector [2] at the wire harness side.

**TOOL:**

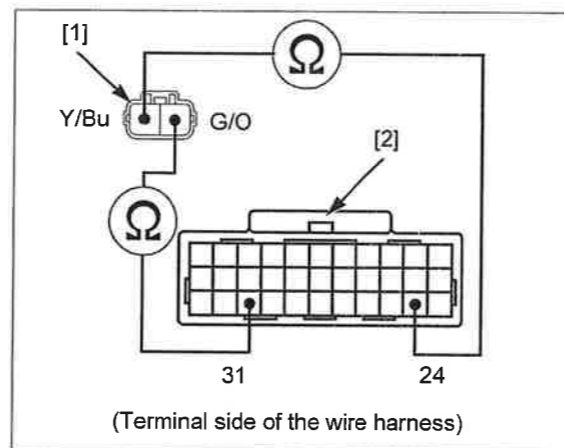
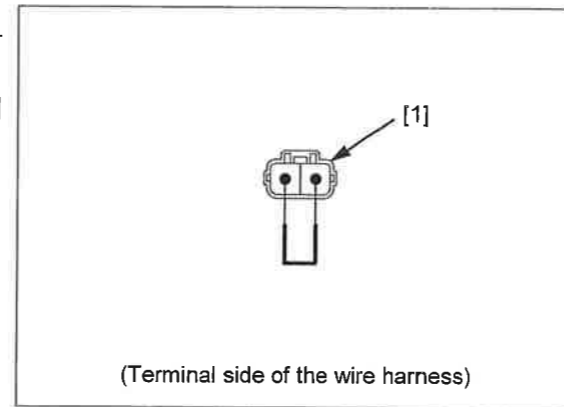
**Pin probe male (2 pack) 07ZAJ-RDJA110**

**CONNECTION: 24 – Yellow/blue  
31 – Green/orange**

**Is there continuity?**

**YES** – Replace the ECM with a known good one, and recheck

**NO** – • Open circuit in Yellow/blue wire  
• Open circuit Green/orange wire



**DTC 8-1 (TP SENSOR LOW VOLTAGE)**

**1. TP Sensor System Inspection**

Turn the ignition switch ON and engine stop switch "O".  
Check the TP sensor with the MCS when the throttle is fully closed.

**Is about 0 V indicated?**

**YES** – GO TO STEP 3.

**NO** – GO TO STEP 2.

**2. TP Sensor Inspection**

Check that the TP sensor voltage increases continuously when moving the throttle from fully closed to fully opened using the data list menu of the MCS.

**Does the voltage increase continuously?**

**YES** – Intermittent failure

**NO** – Faulty TP sensor

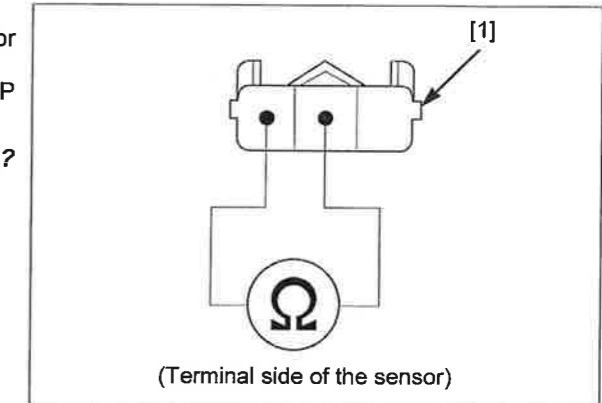
**3. TP Sensor Resistance Inspection**

Turn the ignition switch OFF.  
Disconnect the TP sensor 3P (Black) connector (page 7-15).  
Measure the resistance at the sensor side of the TP sensor 3P connector [1] terminals.

**Is the resistance within 0.5 – 1.5 k $\Omega$  (20°C/68°F)?**

**YES** – GO TO STEP 4.

**NO** – Faulty TP sensor



**4. TP Sensor Output Line Open Circuit Inspection**

Turn the ignition switch OFF.  
Disconnect the ECM 33P (Black) connector (page 4-31).  
Check for continuity between the TP sensor 3P (Black) connector [1] and ECM 33P (Black) connector [2] at the wire harness side.

**TOOL:**

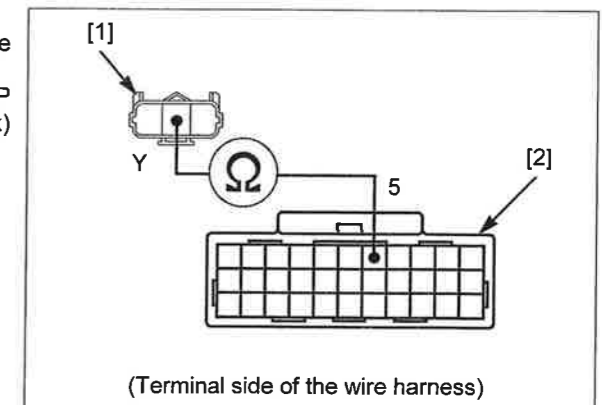
**Pin probe male (2 pack) 07ZAJ-RDJA110**

**CONNECTION: 5 – Yellow**

**Is there continuity?**

**YES** – GO TO STEP 5.

**NO** – Open circuit in yellow wire



**5. TP Sensor Output Line Short Circuit Inspection**

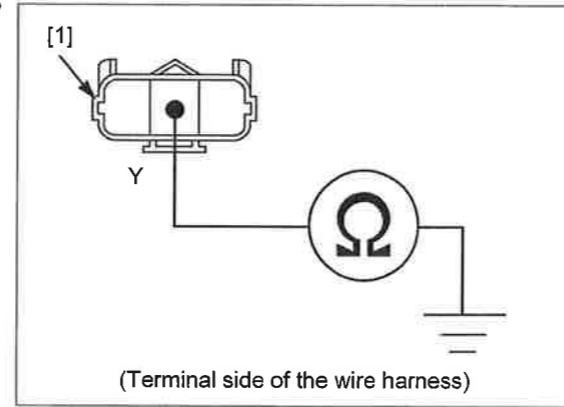
Check for continuity between the TP sensor 3P (Black) connector [1] at the wire side and ground.

**CONNECTION:** Yellow – Ground

*Is there continuity?*

**YES** – Short circuit in yellow wire

**NO** – GO TO STEP 6.



**6. TP Sensor Power Input Voltage Inspection**

Turn the ignition switch OFF.

Connect the ECM 33P (Black) connector (page 4-31).

Turn the ignition switch ON and engine stop switch "O".

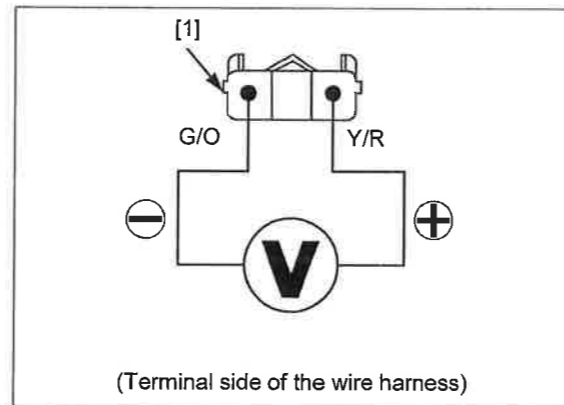
Measure the voltage at the TP sensor 3P (Black) connector [1] of the wire harness side.

**CONNECTION:** Yellow/red (+) – Green/orange (-)  
**STANDARD:** 4.75 – 5.25 V

*Is the voltage within 4.75 – 5.25 V?*

**YES** – Faulty TP sensor

**NO** – GO TO STEP 7.



**7. TP Sensor Input Line Circuit Inspection**

Turn the ignition switch OFF.

Disconnect the ECM 33P (Black) connector (page 4-31).

Check for continuity between the TP sensor 3P (Black) connector [1] and ECM 33P (Black) connector [2] of the wire harness side.

**TOOL:**

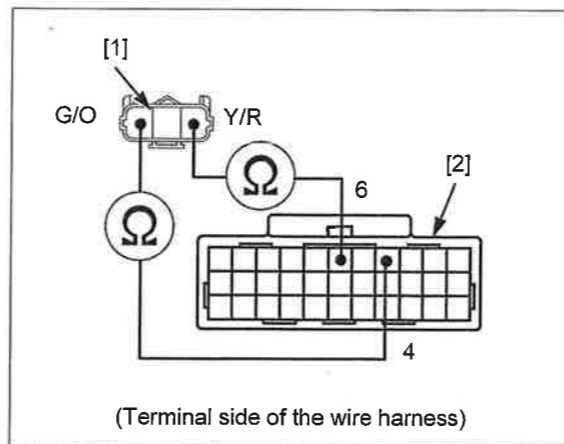
Pin probe male (2 pack) 07ZAJ-RDJA110

**CONNECTION:** 6 - Yellow/red  
4 - Green/orange

*Are there continuity?*

**YES** – Replace the ECM with a known good one, and recheck.

**NO** – • Open circuit in Yellow/red wire  
• Open circuit in Green/orange wire



**DTC 8-2 (TP SENSOR HIGH VOLTAGE)**

**1. TP Sensor System Inspection**

Turn the ignition switch ON and engine stop switch "O".  
Check the TP sensor with the MCS when the throttle is fully closed.

**Is about 0 V indicated?**

**YES** – GO TO STEP 3.

**NO** – GO TO STEP 2.

**2. TP Sensor Inspection**

Check that the TP sensor voltage increases continuously when moving the throttle from fully closed to fully opened using the data list menu of the MCS.

**Does the voltage increase continuously?**

**YES** – Intermittent failure

**NO** – Faulty TP sensor

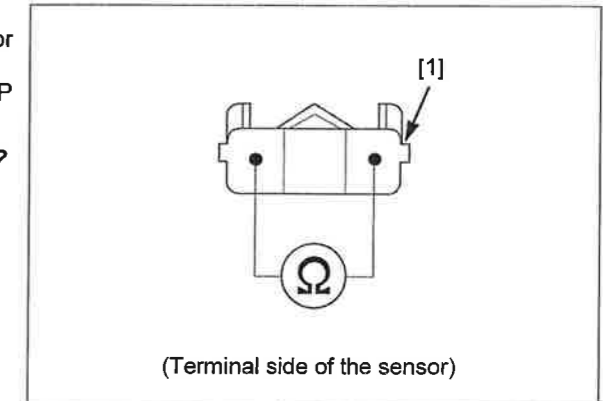
**3. TP Sensor Resistance Inspection**

Turn the ignition switch OFF.  
Disconnect the TP sensor 3P (Black) connector (page 7-15).  
Measure the resistance at the sensor side of the TP sensor 3P connector [1] terminals.

**Is the resistance within 0.5 - 1.5 kΩ (20°C/68°F)?**

**YES** – GO TO STEP 4.

**NO** – Faulty TP sensor



**4. TP Sensor Input Voltage Inspection**

Turn the ignition switch ON and engine stop switch "O".

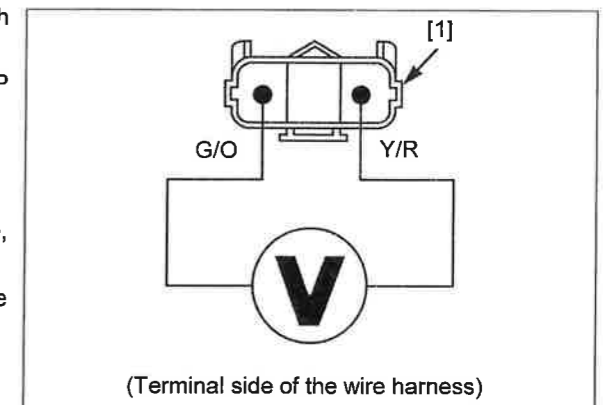
Measure the voltage at the wire side of the TP sensor 3P (Black) connector [1] terminals.

**Connection: Yellow/red – Green/orange**

**Is the voltage within 4.75 – 5.25 V?**

**YES** – Replace the ECM with a known good one, and recheck.

**NO** – Open circuit in Yellow/red or Green/orange wire





**DTC 9-1 (IAT SENSOR LOW VOLTAGE)**

**1. IAT Sensor System Inspection**

Turn the ignition switch ON and engine stop switch "O".

Check the IAT sensor with the MCS.

**Is about 0 V indicated?**

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

**2. IAT Sensor Inspection**

Turn the ignition switch OFF.

Disconnect the IAT sensor 2P (Black) connector (page 7-14).

Turn the ignition switch ON and engine stop switch "O".

Check the IAT sensor with the MCS.

**Is about 0 V indicated?**

**YES** – GO TO STEP 3.

**NO** – Faulty IAT sensor

**3. IAT Sensor Output Line Short Circuit Inspection**

Turn the ignition switch OFF.

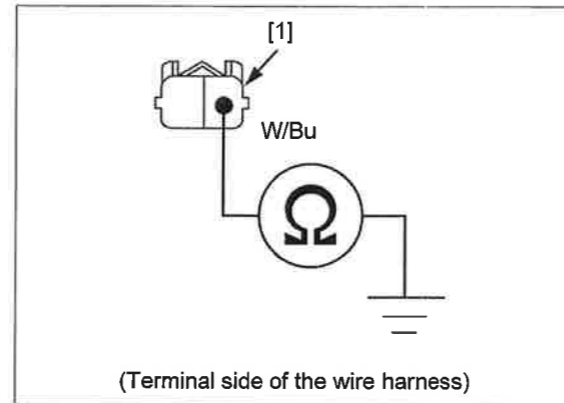
Check for continuity between the IAT sensor 2P (Black) connector [1] at the wire harness side and ground.

**Connection: White/blue – Ground**

**Is there continuity?**

**YES** – Short circuit in White/blue wire

**NO** – Replace the ECM with a known good one, and recheck



## PGM-FI SYSTEM

### DTC 9-2 (IAT SENSOR HIGH VOLTAGE)

#### 1. IAT Sensor System Inspection

Turn the ignition switch ON and engine stop switch "O".

Check the IAT sensor with the MCS.

**Is about 5 V indicated?**

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

#### 2. IAT Sensor Inspection

Turn the ignition switch OFF.

Disconnect the IAT sensor 2P (Black) connector (page 7-14).

Connect the IAT sensor 2P (Black) connector [1] terminals at the wire harness side with a jumper wire.

**Connection: White/blue – Green/orange**

Turn the ignition switch ON and engine stop switch "O".

Check the IAT sensor with the MCS.

**Is about 0 V indicated?**

**YES** – Faulty IAT sensor

**NO** – GO TO STEP 3.

#### 3. IAT Sensor Line Inspection

Turn the ignition switch OFF.

Remove the jumper wire.

Disconnect the ECM 33P (Black) connector (page 4-31).

Check for continuity between the IAT sensor 2P (Black) connector [1] and ECM 33P (Black) connector [2] at the wire harness side.

**Connection: 14 – White/blue  
32 – Green/orange**

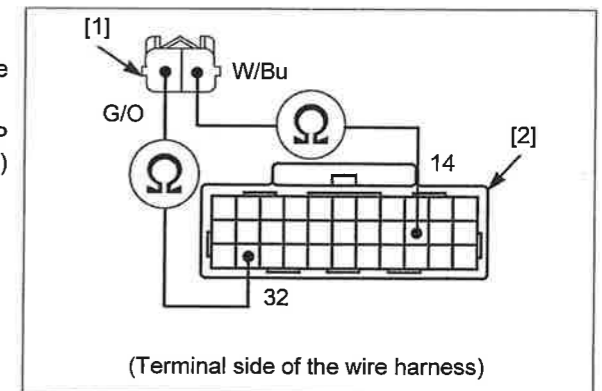
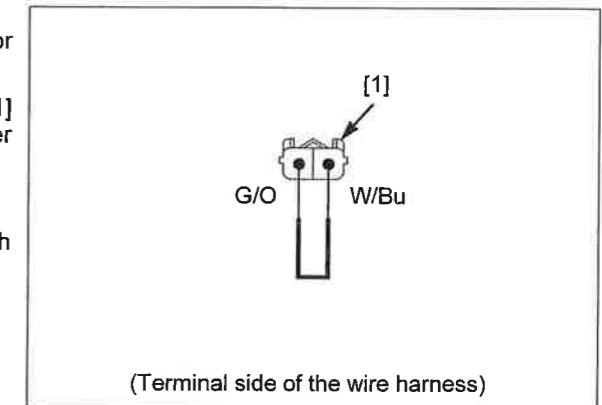
**TOOL:**

**Pin probe male (2 pack) 07ZAJ-RDJA110**

**Is there continuity?**

**YES** – Replace the ECM with a known good one, and recheck

**NO** – • Open circuit in White/blue wire  
• Open circuit in Green/orange wire



### DTC 12-1 (FUEL INJECTOR)

#### 1. Fuel Injector System Inspection

Erase the DTCs (page 4-6).

Start the engine and check the fuel injector with the MCS.

**Is DTC 12-1 indicated?**

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

**2. Fuel Injector Input Voltage Inspection**

Turn the ignition switch OFF.  
Disconnect the fuel injector 2P (Black) connector (page 7-20).

Turn the ignition switch ON and engine stop switch "O".

Measure the voltage between the fuel injector 2P (Black) connector [1] of the wire harness side and ground.

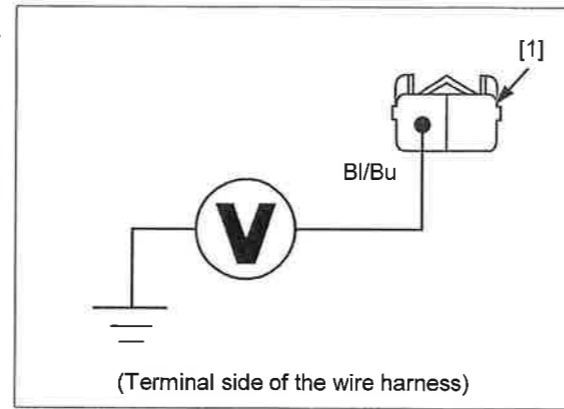
**CONNECTION: Black/blue (+) – Ground (-)**

**STANDARD: Battery voltage**

*Does the standard voltage exist?*

**YES** – GO TO STEP 3.

**NO** – Open or short circuit in Black/blue wire



**3. Fuel Injector Signal Line Short Circuit Inspection**

Turn the ignition switch OFF.

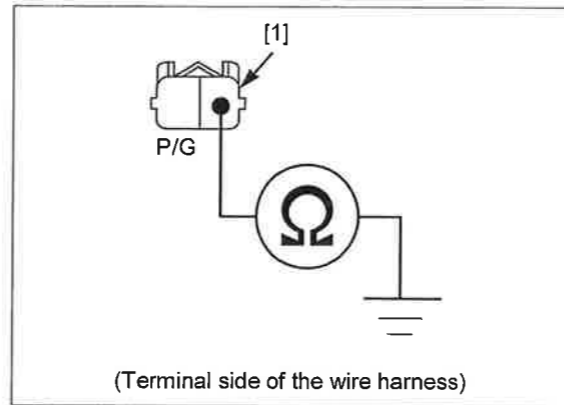
Check the continuity between the fuel injector 2P (Black) connector [1] of the wire harness side and ground.

**Connection: Pink/green – Ground**

*Is there continuity?*

**YES** – Short circuit in the Pink/green wire.

**NO** – GO TO STEP 4.



**4. Fuel Injector Resistance Inspection**

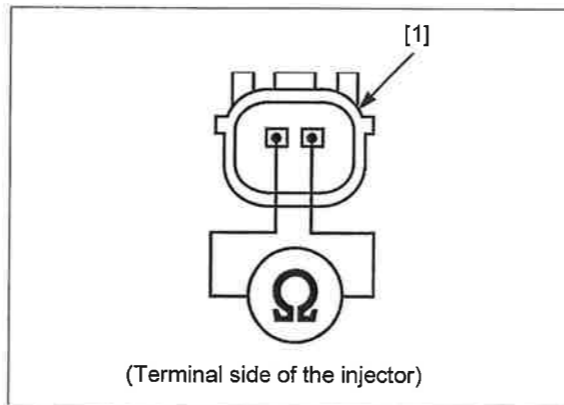
Measure the resistance between the terminals of the fuel injector side 2P connector [1].

**STANDARD: 11 - 13 Ω (24°C/75°F)**

*Is the resistance within 6 - 18 Ω (24°C/75°F)?*

**YES** – GO TO STEP 5.

**NO** – Faulty fuel injector



## PGM-FI SYSTEM

### 5. Fuel Injector Signal Line Open Circuit Inspection

Turn the ignition switch OFF.  
Disconnect the ECM 33P (Black) connector (page 4-31).

Check the continuity between the ECM 33P (Black) connector [1] and injector 2P (Black) connector [2] of the wire harness side.

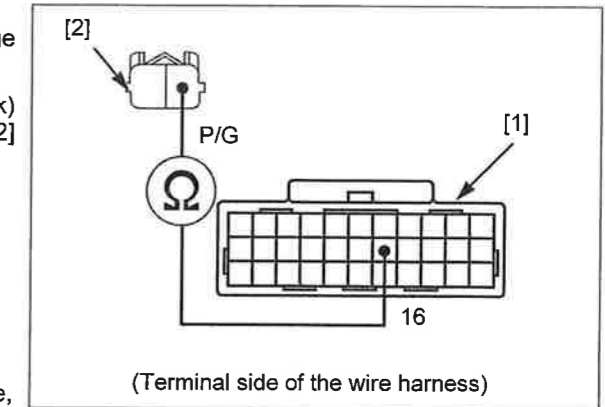
**TOOL:**  
Pin probe male (2 pack) 07ZAJ-RDJA110

**CONNECTION:** 16 – Pink/Green  
**STANDARD:** Continuity

*Are the above inspections normal?*

**YES** – Replace the ECM with a known good one, and recheck.

**NO** – Open circuit in Pink/green wire



### DTC 21-1 (O<sub>2</sub> SENSOR LOW VOLTAGE)

#### 1. O<sub>2</sub> Sensor System Inspection

Start the engine and warm it up to normal operating temperature.

Test-ride the motorcycle and check the O<sub>2</sub> sensor with the MCS.

*Is DTC 21-1 indicated?*

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

#### 2. O<sub>2</sub> Sensor Short Circuit Inspection

Disconnect the O<sub>2</sub> sensor 1P (Black) connector (page 4-34).

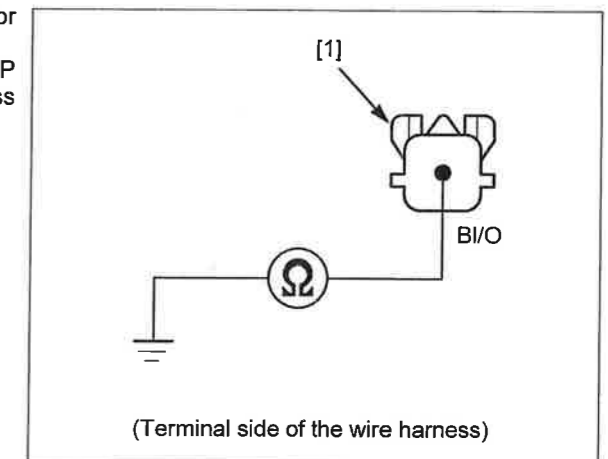
Check for continuity between the O<sub>2</sub> sensor 1P (Black) connector [1] terminal of the wire harness side and ground.

**Connection:** Black/orange – Ground

*Is there continuity?*

**YES** – Short circuit in Black/orange wire

**NO** – GO TO STEP 3.



#### 3. Fuel Pressure Test 1.

Perform the fuel pressure test (page 7-6).

**STANDARD:**  
263 – 316 kPa (2.68 – 3.22 kgf/cm<sup>2</sup>, 38 – 46 psi)

*Is the fuel pressure within specification?*

**YES** – GO TO STEP 5.

**NO** – GO TO STEP 4.

**4. Fuel Pressure Test 2.**

Check that there is any erratic swing or vibration of the gauge needle in the pressure gauge reading.

*Is there any erratic swing or vibration of the gauge needle?*

**YES** – Replace the fuel filter (page 7-12).

**NO** – Replace the fuel pump unit (page 7-9).

**5. Fuel Flow Test**

Adjust the fuel in the tank until the lowest segment [1] of the fuel level gauge is illuminated.

**Specified range:**

**One segment (Not blinking)**

Inspect the fuel flow (page 7-7).

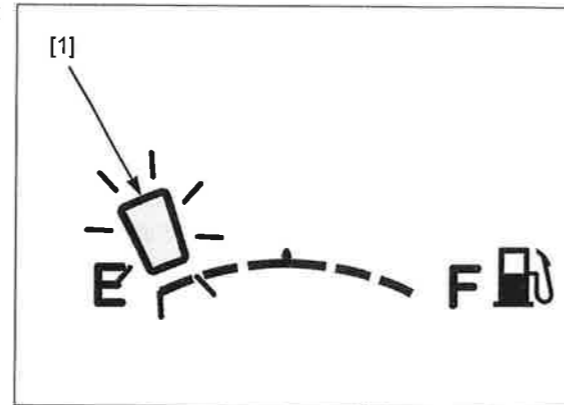
**AMOUNT OF FUEL FLOW:**

**82 cm<sup>3</sup> (2.8 US oz, 2.9 Imp oz) minimum/  
10 seconds at 12 V**

*Is the fuel flow above specification?*

**YES** – GO TO STEP 6.

**NO** – Replace the fuel filter (page 7-12).



**6. O<sub>2</sub> Sensor Inspection**

Replace the O<sub>2</sub> sensor with a known good one (page 4-34).

Perform the ECM initializing procedure (page 4-29).

Erase the self diagnosis memory data from the ECM (page 4-6).

Start the engine and warm it up to normal operating temperature.

Test-ride the motorcycle and recheck O<sub>2</sub> sensor with the MCS.

*Is DTC 21-1 indicated?*

**YES** – Replace the ECM with a known good one and recheck.

**NO** – Faulty original O<sub>2</sub> sensor

**DTC 21-2 (O<sub>2</sub> SENSOR HIGH VOLTAGE)**

**1. O<sub>2</sub> Sensor System Inspection**

Start the engine and warm it up to normal operating temperature.

Test-ride the motorcycle and check the O<sub>2</sub> sensor with the MCS.

*Is DTC 21-2 indicated?*

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

## PGM-FI SYSTEM

### 2. O<sub>2</sub> Sensor Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the O<sub>2</sub> sensor 1P (Black) connector (page 4-34).

Disconnect the ECM 33P (Black) connector (page 4-31).

Check for continuity between the ECM 33P (Black) connector [1] of the wire harness side and O<sub>2</sub> sensor 1P (Black) connector [2] of the wire harness side.

**TOOL:**

**Pin probe male (2 pack)      07ZAJ-RDJA110**

**Connection: 3 – Black/orange**

**Is there continuity?**

**YES** – GO TO STEP 3.

**NO** – Open circuit in Black/orange wire

### 3. O<sub>2</sub> Sensor Inspection

Replace the O<sub>2</sub> sensor with a known good one (page 4-34).

Perform the ECM initializing procedure (page 4-29).

Erase the self diagnosis memory data from the ECM (page 4-6).

Start the engine and warm it up to normal operating temperature.

Test-ride the motorcycle and recheck O<sub>2</sub> sensor with the MCS.

**Is DTC 21-2 indicated?**

**YES** – Replace the ECM with a known good one and recheck.

**NO** – Faulty original O<sub>2</sub> sensor

## DTC 33-2 (EEPROM)

### 1. Recheck MIL

Erase the DTC (page 4-6).

Perform the ECM initializing procedure (page 4-29).

**Is DTC 33-2 indicated?**

**YES** – Replace the ECM with a known good one, and recheck.

**NO** – Intermittent failure

## DTC 54-1 (BANK ANGLE SENSOR LOW VOLTAGE)

### 1. Bank Angle Sensor System Inspection

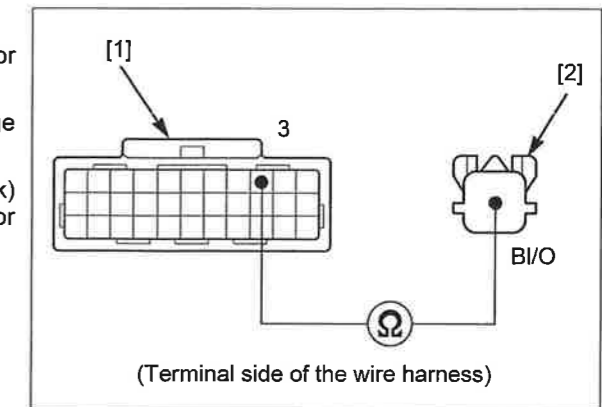
Erase the DTCs (page 4-6).

Check the bank angle sensor with the MCS.

**Is about 0 V indicated?**

**YES** – GO TO STEP 2.

**NO** – Intermittent failure



**2. Bank Angle Sensor Power Input Line Open Circuit Inspection**

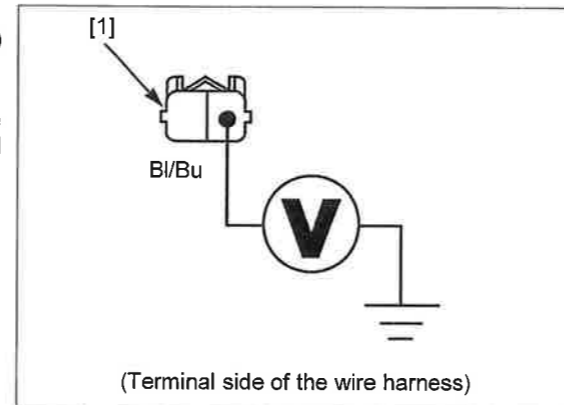
Turn the ignition switch OFF.  
 Disconnect the bank angle sensor 2P (Black) connector (page 4-33).  
 Turn the ignition switch ON.  
 Measure the voltage between the wire harness side bank angle sensor 2P (Black) connector [1] terminal and ground.

**Connection: Black/blue (+) – Ground (-)**

**Is there battery voltage?**

**YES** – GO TO STEP 3.

**NO** – Open circuit in the Black/blue wire



**3. Bank Angle Sensor Output Line Short Circuit Inspection**

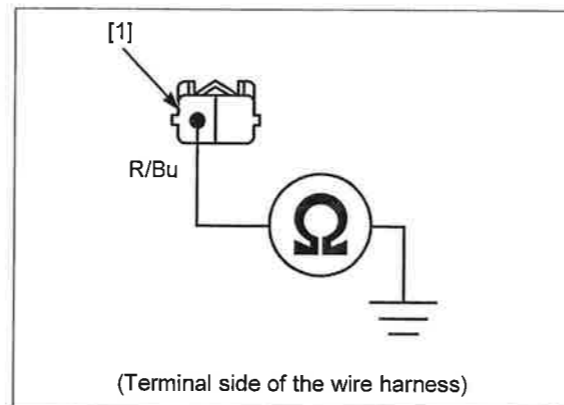
Turn the ignition switch OFF.  
 Disconnect the ECM 33P (Black) connector (page 4-31).  
 Check for continuity between the wire harness side bank angle sensor 2P (Black) connector [1] terminal and ground.

**Connection: Red/blue – Ground**

**Is there continuity?**

**YES** – Short circuit in the Red/blue wire

**NO** – GO TO STEP 4.



**4. Bank Angle Sensor Output Line Open Circuit Inspection**

Check for continuity between the wire harness side ECM 33P (Black) connector [1] and bank angle sensor 2P (Black) connector [2] terminals.

**Connection: 26 – Red/blue**

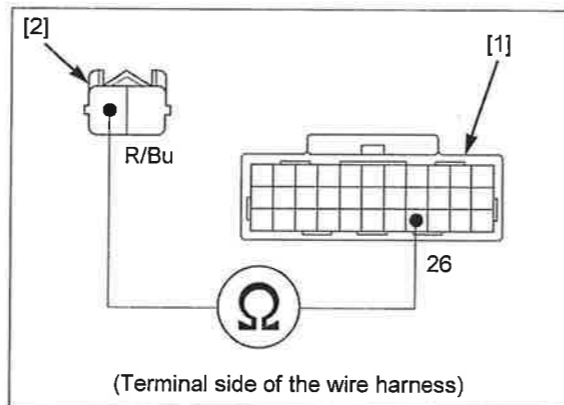
**TOOL:**

**Pin probe male (2 pack) 07ZAJ-RDJA110**

**Is there continuity?**

**YES** – GO TO STEP 5.

**NO** – Open circuit in the Red/blue wire



**5. Bank Angle Sensor Inspection**

Replace the bank angle sensor with a known good one (page 4-33).  
 Connect the bank angle sensor 2P (Black) connector and ECM 33P (Black) connector.  
 Erase the DTCs (page 4-6).  
 Check the bank angle sensor with the MCS.

**Is DTC 54-1 indicated?**

**YES** – Replace the ECM with a known good one, and recheck.

**NO** – Faulty original bank angle sensor

## PGM-FI SYSTEM

### DTC 54-2 (BANK ANGLE SENSOR HIGH VOLTAGE)

#### 1. Bank Angle Sensor System Inspection

Erase the DTCs (page 4-6).  
Check the bank angle sensor with the MCS.

**Does the battery voltage exist?**

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

#### 2. Bank Angle Sensor Inspection

Replace the bank angle sensor with a known good one (page 4-33).

Erase the DTCs (page 4-6).  
Check the bank angle sensor with the MCS.

**Is DTC 54-1 indicated?**

**YES** – Replace the ECM with a known good one, and recheck.

**NO** – Faulty original bank angle sensor

### DTC 82-1 (FAST IDLE SOLENOID VALVE)

#### 1. Recheck DTC

Erase the DTCs (page 4-6).  
Start the engine and check the fast idle solenoid valve with the MCS.

**Is DTC 82-1 indicated?**

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

#### 2. Fast Idle Solenoid Valve Power Line Inspection

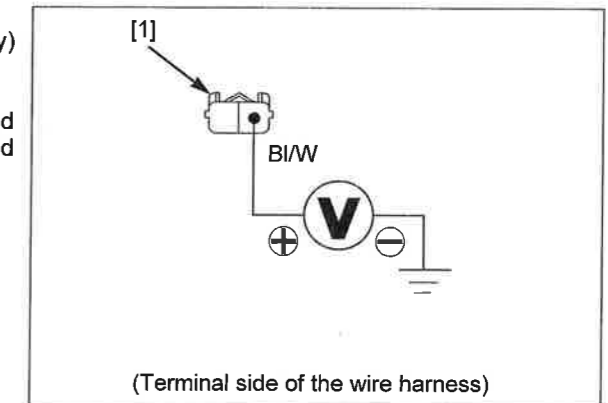
Turn the ignition switch OFF.  
Disconnect the fast idle solenoid valve 2P (Gray) connector (page 7-18).  
Turn the ignition switch ON.  
Check the voltage between the fast idle solenoid valve 2P (Gray) connector [1] of the wire side and ground.

**CONNECTION: Black/white (+) – Ground (-)**

**Is there battery voltage?**

**YES** – GO TO STEP 3.

**NO** – Open circuit in Black/white wire





**3. Fast Idle Solenoid Valve Ground Line Inspection**

Disconnect the ECM 33P (Black) connector (page 4-31).  
 Check for continuity between the wire harness side fast idle solenoid valve 2P (Gray) connector [1] and ECM 33P (Black) connector [2] terminals.  
 There should be continuity.

**TOOL:**

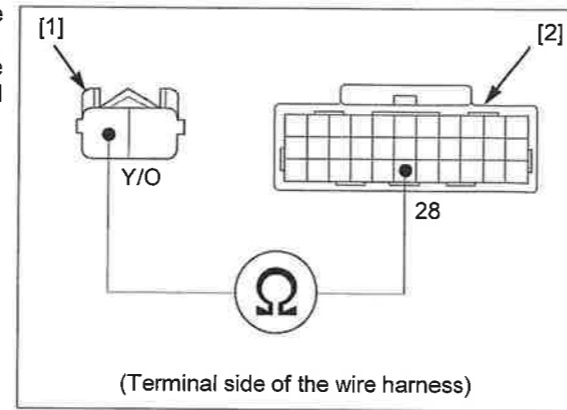
Pin probe male (2 pack) 07ZAJ-RDJA110

**CONNECTION:** Yellow/orange – 28

*Is there continuity?*

**YES** – GO TO STEP 4.

**NO** – Open circuit in Yellow/orange wire



**4. Fast Idle Solenoid Valve Resistance Inspection**

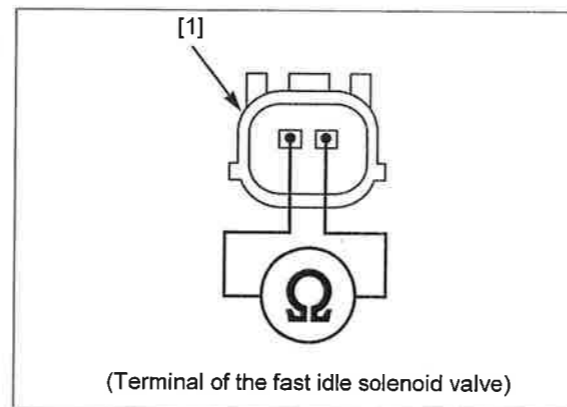
Turn the ignition switch OFF.  
 Measure the resistance between the fast idle solenoid valve 2P connector [1] terminals.

**STANDARD:** 24 – 27 Ω (20°C/68°F)

*Is the resistance within standard value?*

**YES** – GO TO STEP 5.

**NO** – Faulty fast idle solenoid valve



**5. Fast Idle Solenoid Valve Ground Line Short Circuit Inspection**

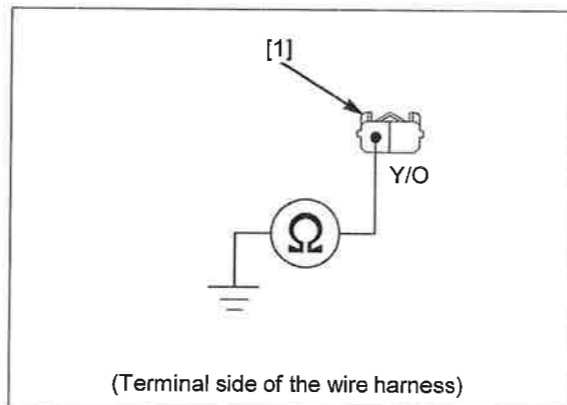
Check the continuity between the fast idle solenoid valve 2P (Gray) connector [1] of the wire side and ground.

**CONNECTION:** Yellow/orange – Ground

*Is there continuity?*

**YES** – Short circuit in Yellow/orange wire

**NO** – Replace the ECM with a known good one, and recheck.



**DTC 88-1 (EVAP PURGE CONTROL SOLENOID VALVE)**

NOTE:

- Before starting the inspection, check for loose or poor contact on the EVAP purge control solenoid valve 2P (Black) connector and ECM 33P (Black) connector, then recheck the DTC.

**1. EVAP Purge Control Solenoid Valve System Inspection**

Erase the DTC (page 4-5).

Start the engine and check the EVAP purge control solenoid valve with the MCS.

*Is the DTC 88-1 indicated?*

**YES** – GO TO STEP 2.

**NO** – Intermittent failure

**2. EVAP Purge Control Solenoid Valve Input Voltage Inspection**

Turn the ignition switch OFF.

Disconnect the EVAP purge control solenoid valve 2P (Black) connector [1] (page 4-35).

Turn the ignition switch ON and engine stop switch "O".

Measure the voltage between the EVAP purge control solenoid valve 2P (Black) connector of the wire harness side and ground.

**CONNECTION: Black/white (+) – Ground (-)**

*Does the battery voltage exist?*

**YES** – GO TO STEP 3.

**NO** – Open circuit in Black/white wire

**3. EVAP Purge Control Solenoid Valve Resistance Inspection**

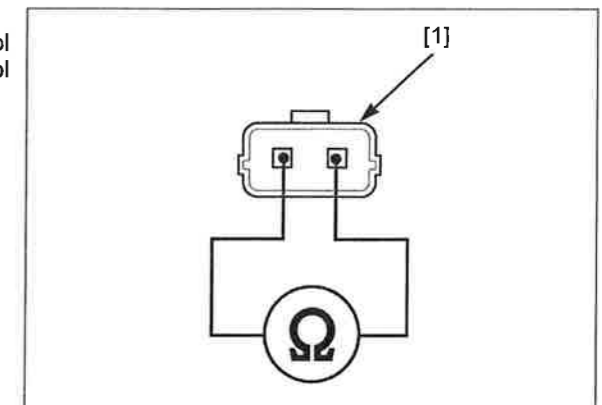
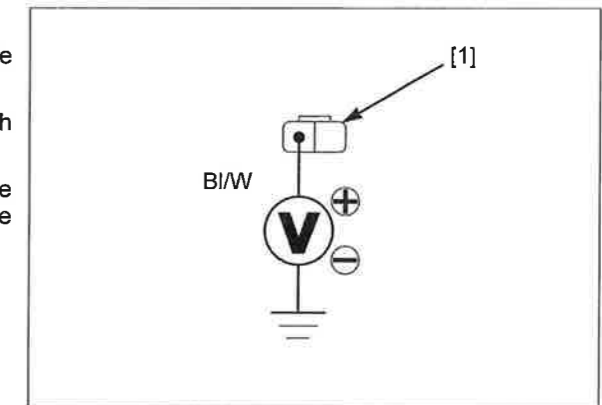
Turn the ignition switch OFF.

Measure the resistance at the EVAP purge control solenoid valve side of the EVAP purge control solenoid valve 2P connector [1] terminals.

*Is the resistance within 30 – 34 Ω (20°C/68°F)?*

**YES** – GO TO STEP 4.

**NO** – Faulty EVAP purge control solenoid valve



**4. EVAP Purge Control Solenoid Valve Signal Line Open Circuit Inspection**

Disconnect the ECM 33P (Black) connector [1] (page 4-31).  
Check the continuity between the EVAP purge control solenoid valve 2P (Black) connector [2] and ECM 33P (Black) connector of the wire harness side.

**CONNECTION: Blue/orange – 33**

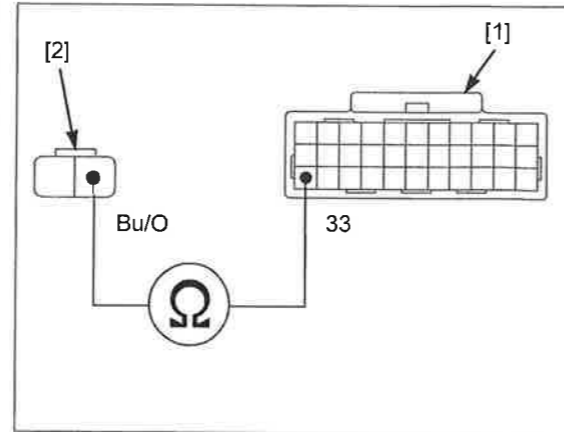
**TOOL:**

**Pin probe male 07ZAJ-RDJA110**

**Is there continuity?**

**YES – GO TO STEP 5.**

**NO – Open circuit in Blue/orange wire**



**5. EVAP Purge Control Solenoid Valve Signal Line Short Circuit Inspection**

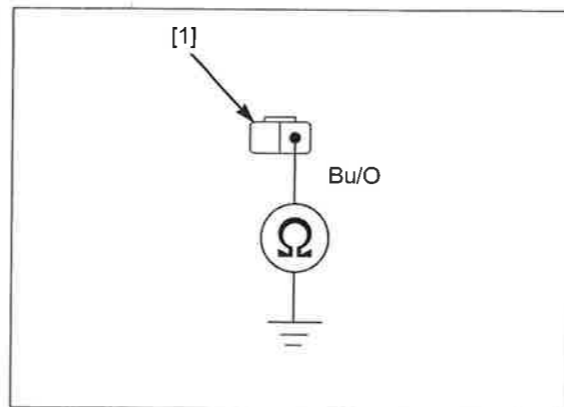
Check for continuity between the EVAP purge control solenoid valve 2P (Black) connector [1] and ground with the ECM 33P (Black) connector disconnected.

**CONNECTION: Blue/orange – Ground**

**Is there continuity?**

**YES – Short circuit in Blue/orange wire**

**NO – Replace the ECM with a known good one, and recheck.**



**DTC 91-1 (IGNITION COIL PRIMARY CIRCUIT)**

**1. Ignition Coil Primary Circuit System Inspection**

Erase the DTCs (page 4-6).

Start the engine and check the ignition coil primary circuit with the MCS.

**Is DTC 91-1 indicated?**

**YES – GO TO STEP 2.**

**NO – Intermittent failure**

**2. Ignition Coil Primary Circuit Input Voltage Inspection**

Turn the ignition switch OFF.

Disconnect the ignition coil wire connector (page 5-7).

Turn the ignition switch ON.

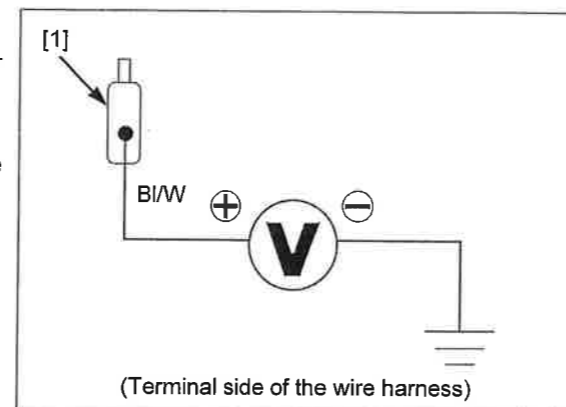
Measure the voltage between the ignition coil wire connector [1] of the wire harness side and ground.

**CONNECTION: Black/white (+) – Ground (-)**

**Does the battery voltage exist?**

**YES – GO TO STEP 3.**

**NO – Open circuit in Black/white wire**



## PGM-FI SYSTEM

### 3. Ignition Coil Primary Circuit Signal Line Open Circuit Inspection

Disconnect the ECM 33P (Black) connector (page 4-31).  
Check the continuity between the ignition coil wire connector [1] and ECM 33P (Black) connector [2] of the wire harness side.

**CONNECTION: 11 – Pink/blue**

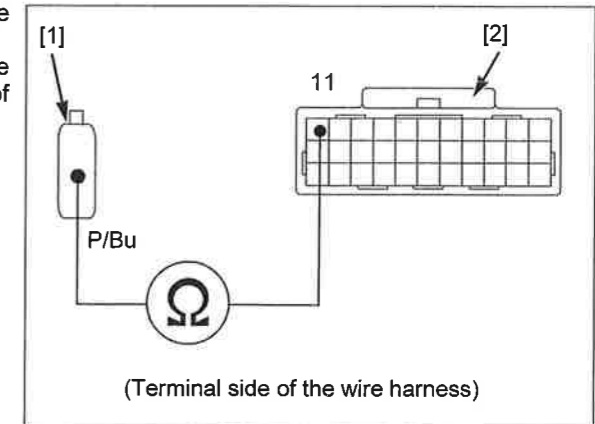
**TOOL:**

Pin probe male (2 pack) 07ZAJ-RDJA110

*Is there continuity?*

**YES** – GO TO STEP 4.

**NO** – Open circuit in Pink/blue wire



### 4. Ignition Coil Primary Circuit Signal Line Short Circuit Inspection

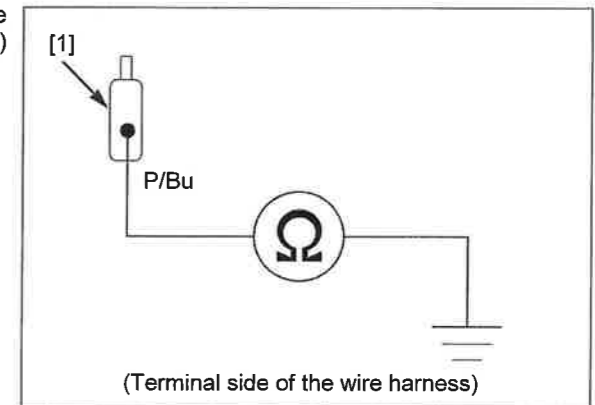
Check for continuity between the ignition coil wire connector [1] and ground with the ECM 33P (Black) connector disconnected.

**CONNECTION: Pink/blue – Ground**

*Is there continuity?*

**YES** – Short circuit in Pink/blue wire

**NO** – GO TO STEP 5.



### 5. Ignition Coil Primary Peak Voltage Inspection

Connect the ECM 33P (Black) connector and ignition coil primary connectors.  
Inspect the ignition coil primary peak voltage (page 5-5).

*Is the peak voltage normal?*

**YES** – Replace the ECM with a known good one and recheck.

**NO** – GO TO STEP 6.

### 6. Ignition Coil Inspection

Replace the ignition coil with a known good one (page 5-7).  
Erase the DTCs (page 4-6).  
Check the ignition coil with the MCS.

*Is DTC91-1 indicated?*

**YES** – Replace the ECM with a known good one and recheck.

**NO** – Faulty original ignition coil

## MIL CIRCUIT INSPECTION

### WHEN THE IGNITION SWITCH IS TURNED ON, THE MIL DOES NOT COME ON

Turn the ignition switch OFF.  
Disconnect the ECM 33P (Black) connector (page 4-31).

Ground the ECM 33P (Black) connector [1] terminal of the wire harness side with a jumper wire.

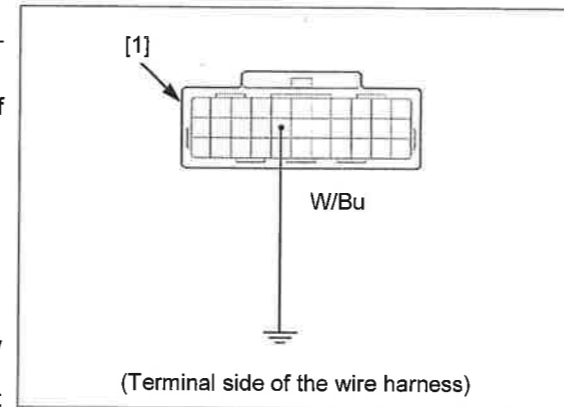
**CONNECTION: White/blue – Ground**

**TOOL:**

**Pin probe male (2 pack) 07ZAJ-RDJA110**

Turn the ignition switch ON, the MIL should come on.

- If the MIL comes on, replace the ECM with a new one, and recheck.
- If the MIL does not come on, check for open circuit in the White/blue wire between the combination meter and ECM.



### WHEN THE IGNITION SWITCH IS TURNED ON, THE MIL DOES NOT GO OFF WITHIN A FEW SECONDS (ENGINE STARTS)

Turn the ignition switch OFF.  
Disconnect the ECM 33P (Black) connector (page 4-31).

Turn the ignition switch ON, the MIL should turn off.

- If the MIL comes on, check for short circuit in the White/blue wire between the combination meter and ECM.
- If the MIL turns off, check the following.

Check for continuity between the ECM 33P (Black) connector [1] and ground.

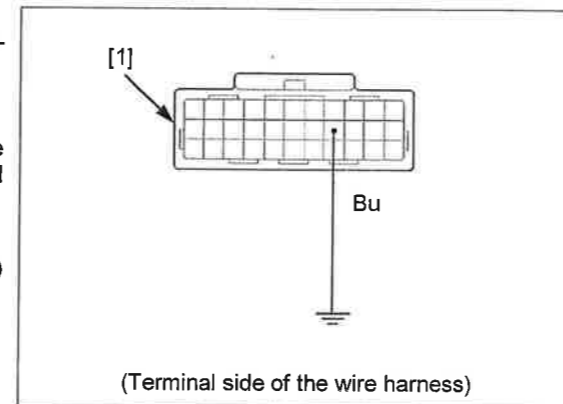
**CONNECTION: Blue – Ground**

**STANDARD: No continuity**

**TOOL:**

**Pin probe male (2 pack) 07ZAJ-RDJA110**

- If there is continuity, check for short circuit in the Blue wire between the DLC and ECM.
- If there is no continuity, replace the ECM with a new one, and recheck.



**TP SENSOR RESET PROCEDURE**

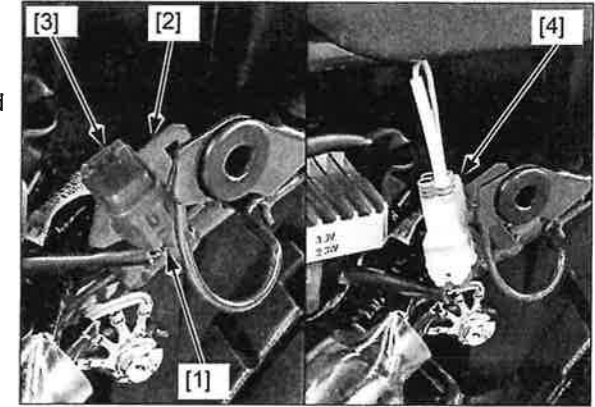
**NOTE:**

- Make sure that the DTC is not stored in ECM. If the DTC is stored in ECM, TP sensor reset mode won't start by following the procedure below.
- Perform this procedure when throttle body is replaced with a new one.

1. Turn the ignition switch OFF.  
Remove the side cover (page 2-5).  
Remove the DLC [1] from the stay [2].  
Remove the dummy connector [3] from the DLC and short the DLC terminals using the special tool.

**TOOL:**

**SCS service connector [4] 070PZ-ZY30100**  
**CONNECTION: Blue – Green**



2. Disconnect the EOT sensor 2P (Black) connector [1].  
Short the wire side connector terminals with jumper wire.

**CONNECTION: Yellow/blue – Green/orange**

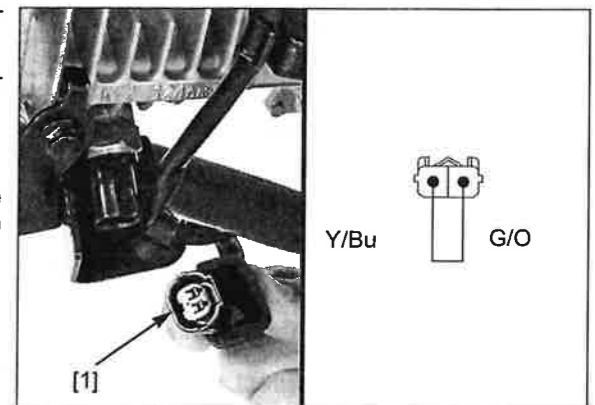
3. Turn the ignition switch ON then disconnect the jumper wire from the EOT sensor 2P (Black) connector while the MIL is blinking (reset receiving pattern) for 10 seconds.

4. Check if the MIL blinks.

After disconnection of the jumper wire, the MIL should start blinking. (successful pattern)

If the jumper wire is connected for more than 10 seconds, the MIL will stay on (unsuccessful pattern). Turn the ignition switch OFF and try again from the step 4.

5. Turn the ignition switch OFF.
6. Connect the EOT sensor 2P (Black) connector.
7. Disconnect the special tool from the DLC.  
Install the dummy connector to the DLC.
8. Turn the idle air screw to specified opening (page 3-11).
9. If altitude is higher than 2,000 m, perform the altitude setting (page 4-30).
10. Check the engine idle speed (page 3-11).  
Install the removed parts in the reverse order of removal.



## ECM INITIALIZING PROCEDURE

**NOTE:**

- Make sure that DTC is not stored in ECM. If the DTC is stored in ECM, ECM initializing mode won't start by following the procedure below.
- Perform this procedure when any of the following fuel related part is replaced with a new one.
  - Idle air screw (page 7-15)
  - Fuel pump (page 7-9)
  - Fuel filter (page 7-12)
  - Fuel injector (page 7-20)
  - O<sub>2</sub> sensor (page 4-34)
- Perform this procedure when any of the following engine part is replaced or is overhauled.
  - Cylinder head (page 9-11)
  - Valves/valve guides/valve seats (page 9-11)
  - Cylinder/piston/piston rings (page 10-4)

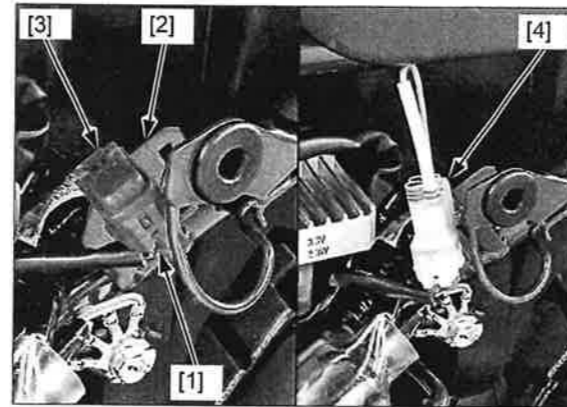
1. Turn the ignition switch OFF.  
Remove the side cover (page 2-5).

Remove the DLC [1] from the stay [2].  
Remove the dummy connector [3] from the DLC and short the DLC terminals using the special tool.

**TOOL:**

**SCS service connector [4] 070PZ-ZY30100**

**CONNECTION: Blue – Green**



2. Open the throttle grip fully and hold.  
Turn the ignition switch ON.

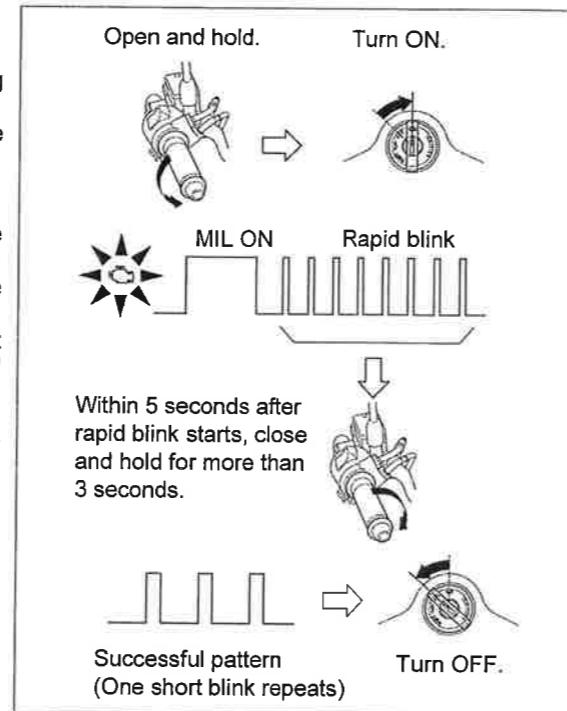
The MIL should come on and then start blinking rapidly.  
Within 5 seconds after rapid blink starts, close the throttle grip and hold for more than 3 seconds.

**NOTE:**

- If the MIL does not start blinking rapidly, turn the ignition switch OFF and try again.
- If you can not restart the procedure, recheck if the DTC is not stored in ECM.  
If the DTC is not stored but you still can not restart the procedure, replace the ECM with a known-good one and try again.

When the ECM is initialized successfully, the MIL will repeat one short blink.  
If the successful pattern is indicated, turn the ignition switch OFF.

3. Disconnect the special tool from the DLC.  
Install the dummy connector to the DLC.
4. Turn the idle air screw to specified opening.
5. If altitude is higher than 2,000 m, perform the altitude setting (page 4-30).
6. Check the engine idle speed (page 3-11).  
Install the side cover (page 2-5).



## PGM-FI SYSTEM

### ALTITUDE SETTING

- Make sure that DTC is not stored in ECM. If stored, the ECM cannot enter the setting mode.
- The setting will fail if the engine is started during the procedure.

Select the appropriate MODE which meets the situation described below.

**MODE 1: 0 - 2,000 m above sea level**

**MODE 2: 2,000 – 2,500 m above sea level**

**MODE 3: 2,500 – 3,500 m above sea level**

**MODE 4: 3,500 m or higher above sea level**

Turn the ignition switch OFF.

Remove the side cover (page 2-5).

Remove the DLC [1] from the stay [2].

Remove the dummy connector [3] from the DLC and short the DLC terminals using the special tool.

**TOOL:**

**SCS service connector [4] 070PZ-ZY30100**

**CONNECTION: Blue – Green**

Open the throttle grip fully and hold.

Turn the ignition switch ON.

The MIL should come on and then start blinking rapidly.

**MODE 1:** Within 5 seconds after rapid blink starts, close the throttle grip and hold for more than 3 seconds.

**MODE 2, 3, 4:** Within 5 seconds after rapid blink starts, snap the throttle grip (close for 0.5 second/open for 0.5 second) as specified times, then close and hold for more than 3 seconds.

**MODE 2: Snap 1 time**

**MODE 3: Snap 2 times**

**MODE 4: Snap 3 times**

**NOTE:**

- If the MIL does not start blinking rapidly, turn the ignition switch OFF and try again.
- If you can not restart the procedure, recheck if the DTC is not stored in ECM. If the DTC is not stored but you still can not restart the procedure, replace the ECM with a known-good one and try again.

The MIL will repeat the short blinks as the number of the selected MODE.

If the desired successful pattern is indicated, turn the ignition switch OFF.

**NOTE:**

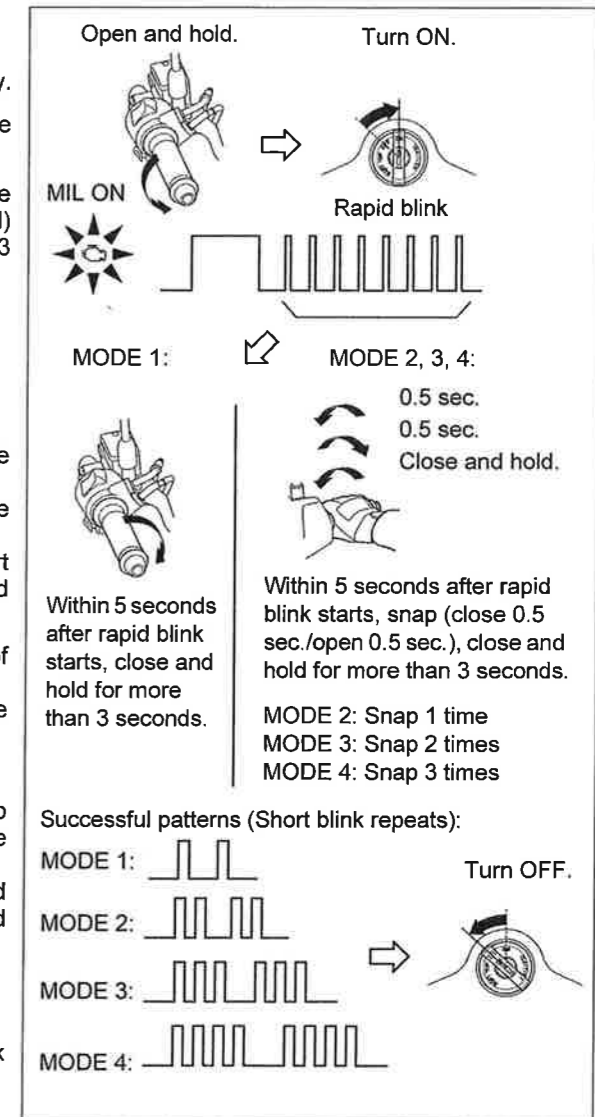
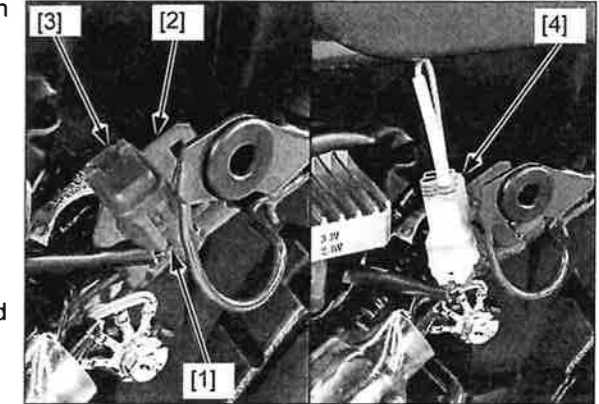
- If the MIL starts blinking slowly during this step before successful pattern is indicated, turn the ignition switch OFF and try again.
- If the number of MIL blink and the number of desired MODE is different, turn the ignition switch OFF and try again.

Disconnect the special tool from the DLC.

Install the dummy connector to the DLC.

Turn the idle air screw to specified opening and check the engine idle speed (page 3-11).

Install the side cover (page 2-5).





ECM

REMOVAL/INSTALLATION

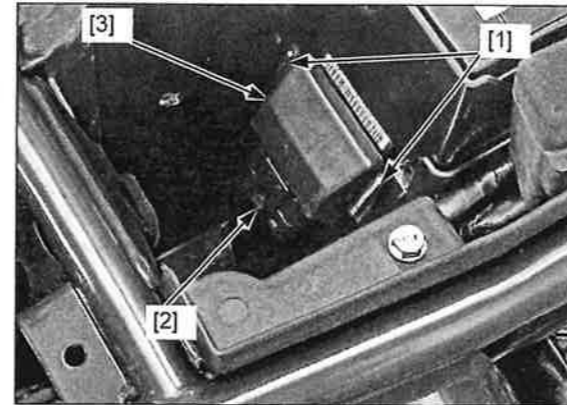
**MONKEY125**

Remove the seat (page 2-5).

Remove the rubber band from hook [1].

Disconnect the ECM 33P (Black) connector [2] and remove the ECM [3].

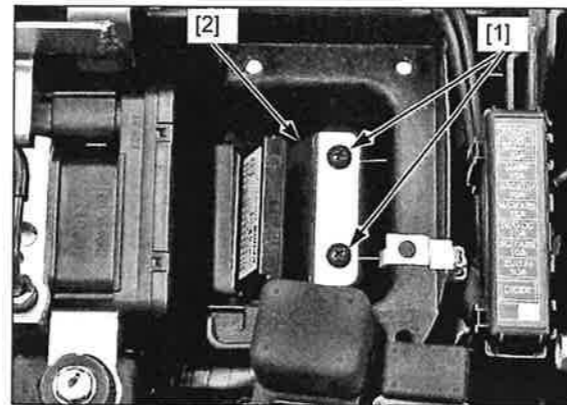
Installation is in the reverse order of removal.



**MONKEY125A**

Remove the battery (page 19-5).

Remove the screws [1] and ECM stay [2].

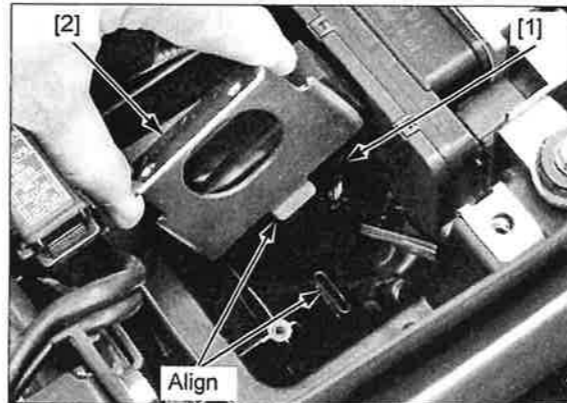


Disconnect the ECM 33P (Black) connector [1] and remove the ECM [2].

Installation is in the reverse order of removal.

**NOTE:**

Install the ECM while aligning the tab of the stay with the groove in the rear fender C.



**ECM POWER/GROUND LINE INSPECTION**

**1. ECM Ground Line Inspection**

- Before starting the inspection, check for loose or poor contact on the ECM 33P (Black) connector and recheck the MIL blinking.
- Make sure that the battery is fully charged.

Turn the ignition switch OFF.

Disconnect the ECM 33P (Black) connector (page 4-31).

Check for continuity between the ECM 33P (Black) connector [1] of the wire harness side and ground.

**TOOL:**

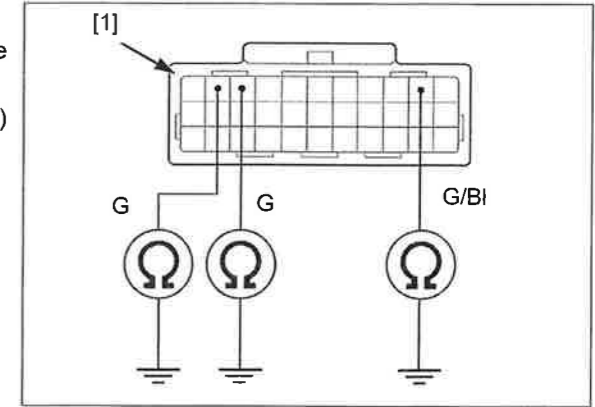
**Pin probe male (2 pack) 07ZAJ-RDJA110**

**CONNECTION: Green – Ground  
Green/black – Ground**

*Is there continuity?*

**YES** – GO TO STEP 2.

- NO** – • Open circuit in Green wire  
• Open circuit in Green/black wire



**2. ECM Power Line Inspection**

Turn the ignition switch ON.

Measure the voltage between the ECM 33P (Black) connector [1] of the wire harness side and ground.

**TOOL:**

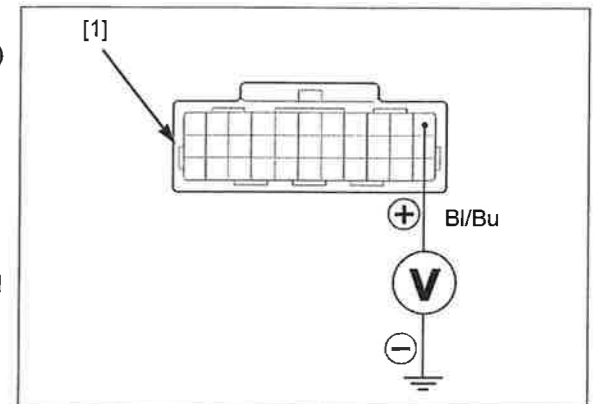
**Pin probe male (2 pack) 07ZAJ-RDJA110**

**CONNECTION: Black/blue (+) – Ground (-)**

*Does the battery voltage exist?*

**YES** – Replace the ECM with a new one, and recheck.

- NO** – Open circuit in Black/blue wire



**EOT SENSOR**

**REMOVAL/INSTALLATION**

- Replace the EOT sensor while the engine is cold.

Drain the engine oil (page 3-9).

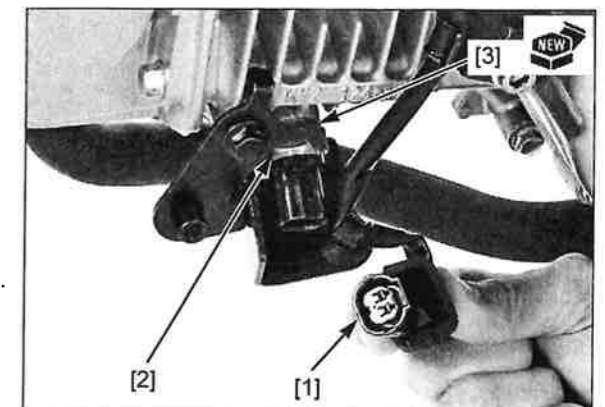
Disconnect the EOT sensor 2P (Black) connector [1]. Remove the EOT sensor [2] and sealing washer [3].

Install a new sealing washer and EOT sensor. Tighten the EOT sensor to the specified torque.

**TORQUE: 14.5 N·m (1.5 kgf·m, 11 lbf·ft)**

Connect the EOT sensor 2P (Black) connector.

Fill the engine with recommended engine oil (page 3-9).



## IAT SENSOR

### REMOVAL/INSTALLATION

Remove the air cleaner housing (page 7-14).

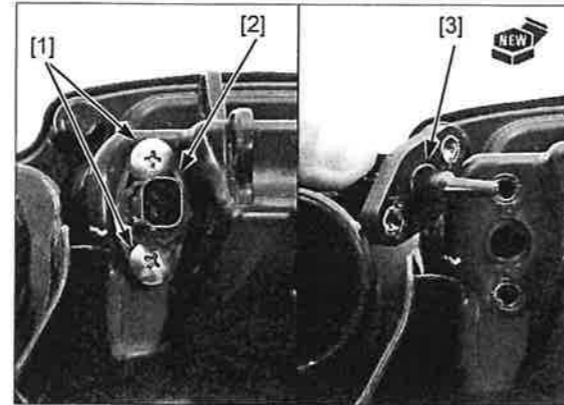
Remove the screws [1], IAT sensor [2] and O-ring [3]

Installation is in the reverse order of removal.

#### NOTE:

- Replace the O-ring with a new one. Do not apply engine oil to this O-ring.

**TORQUE: IAT sensor mounting screw**  
**1.1 N·m (0.1 kgf·m, 0.8 lbf·ft)**



## BANK ANGLE SENSOR

### REMOVAL/INSTALLATION

Remove the fuel tank (page 7-8).

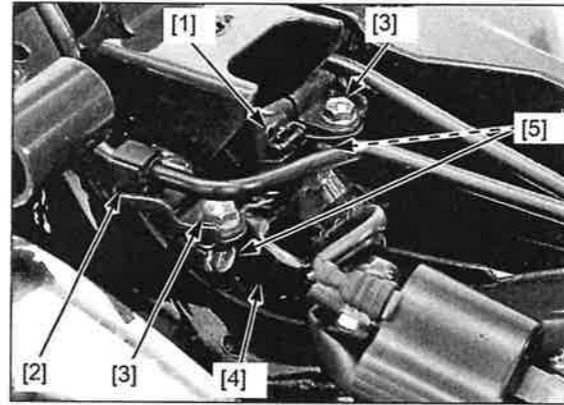
Disconnect the bank angle sensor 2P (Black) connector [1].

*MONKEY125A only:* Release the brake pipe from the brake pipe clamp [2].

Remove the bolts [3] and the bank angle sensor [4].

Remove the bolts [5] and stay from the bank angle sensor.

Installation is in the reverse order of removal.



### INSPECTION

Remove the bank angle sensor (page 4-33).

Connect the bank angle sensor 2P (Black) connector (page 4-33).

#### SYSTEM INSPECTION WITH MCS

Connect the MCS to the DLC (page 4-5).

Check the output voltage at each position of the sensor with the MCS.

#### STANDARD:

**Horizontal Position: 7.0 – 8.8 V**  
**Approx. 70°: 0.40 – 0.84 V**

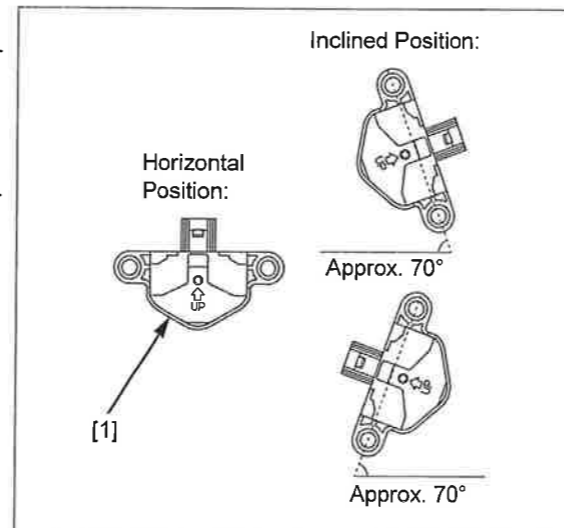
#### FUNCTION CHECK

Place the bank angle sensor [1] horizontally.

Start the engine.

Incline the bank angle sensor approximately 70° to the left or right.

The bank angle sensor is normal if the engine stops after a few seconds.



## PGM-FI SYSTEM

### O<sub>2</sub> SENSOR

#### NOTICE

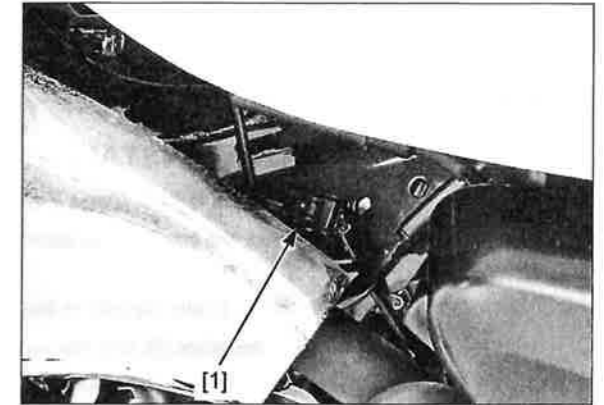
- Do not get grease, oil or other materials in the O<sub>2</sub> sensor air hole.
- The O<sub>2</sub> sensor may be damaged if dropped. Replace it with a new one, if dropped.
- Do not use an impact wrench while removing or installing the O<sub>2</sub> sensor, or it may be damaged.

#### NOTE:

- Do not service the O<sub>2</sub> sensor while it is hot.
- Be careful not to damage the O<sub>2</sub> sensor wire.

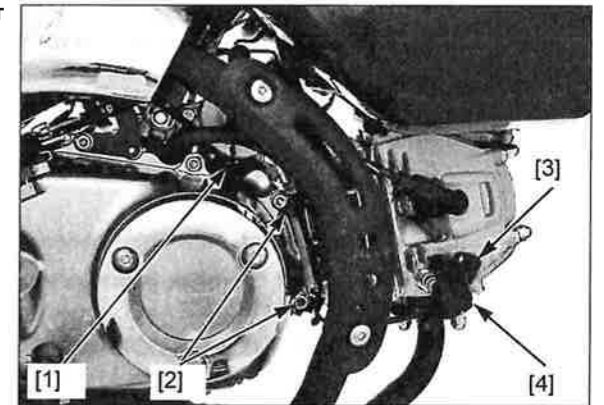
#### REMOVAL/INSTALLATION

Disconnect the O<sub>2</sub> sensor 1P (Black) connector [1].



Remove the hose band [1] and release the O<sub>2</sub> sensor wire from the clamps [2].

Remove the bolt [3] and O<sub>2</sub> sensor guard [4].

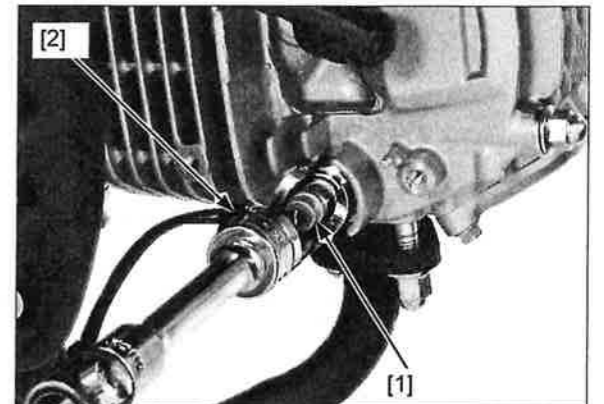


Remove the O<sub>2</sub> sensor [1] using the special tool.

**TOOL:**  
FRXM17 (Snap on) or equivalent commercially available in the U.S.A. [2]

Installation is in the reverse order of removal.

**TORQUE:**  
O<sub>2</sub> sensor: 24.5 N·m (2.5 kgf·m, 18 lbf·ft)



## EVAP PURGE CONTROL SOLENOID VALVE

### REMOVAL/INSTALLATION

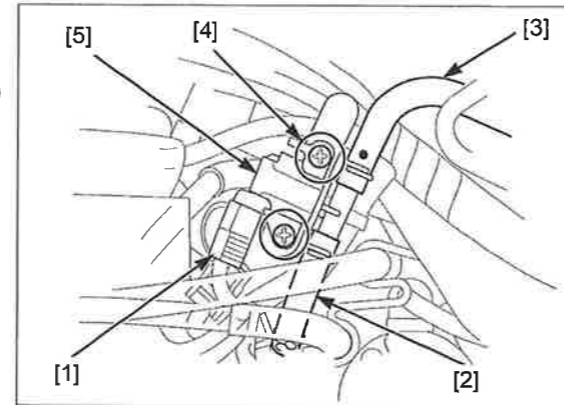
Remove the left side garnish (page 2-5).

Disconnect the following:

- EVAP purge control solenoid valve 2P (Black) connector [1]
- Purge hose [2]
- Canister-to-EVAP purge control solenoid valve hose [3]

Remove the screws [4] and the EVAP purge control solenoid valve [5].

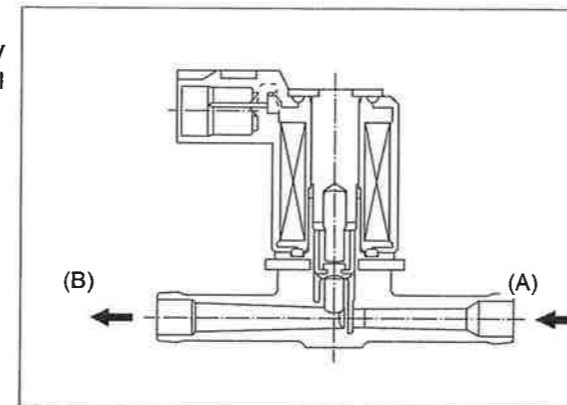
Installation is in the reverse order of removal.



### INSPECTION

Remove the EVAP purge control solenoid valve.

Check that air should flow (A) to (B), only when a 12 V battery is connected to the EVAP purge control solenoid valve terminals.



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**MEMO**

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# 5. IGNITION SYSTEM

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5

SERVICE INFORMATION.....	5-2	IGNITION SYSTEM INSPECTION .....	5-5
TROUBLESHOOTING .....	5-3	IGNITION COIL .....	5-7
SYSTEM LOCATION .....	5-4	IGNITION TIMING .....	5-8
SYSTEM DIAGRAM .....	5-4		

## IGNITION SYSTEM

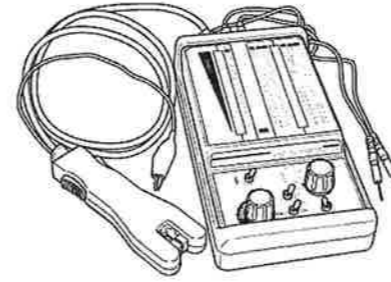
### SERVICE INFORMATION

#### GENERAL

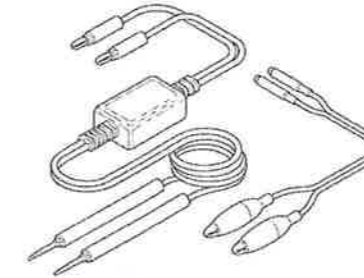
- When servicing the ignition system, always follow the steps in the troubleshooting (page 5-3).
- A faulty ignition system is often related to poorly connected or corroded connectors. Check those connections before proceeding.

#### TOOLS

IgnitionMate peak voltage tester  
MTP07-0286 (U.S.A. only)

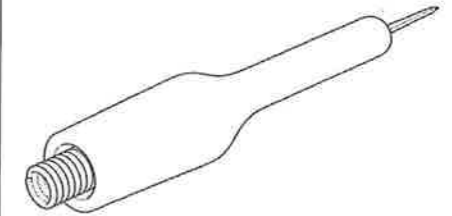


Peak voltage adaptor  
07HGJ-0020100  
(not available in U.S.A.)



with commercially available digital  
multimeter (impedance 10 M $\Omega$ /DCV  
minimum)

Test probe, 2pack  
07ZAJ-RDJA110





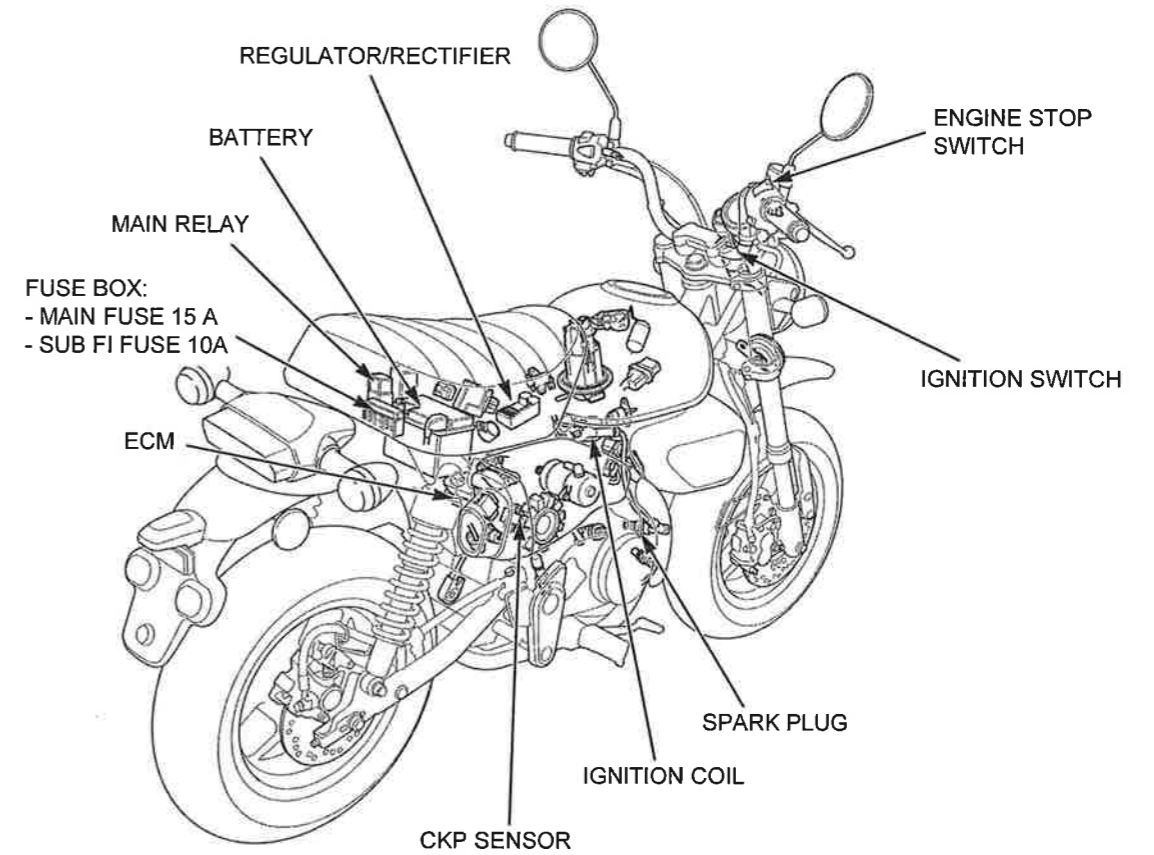
**TROUBLESHOOTING**

- 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.
- "Initial voltage" of the ignition primary coil is the battery voltage with the ignition switch turned ON.

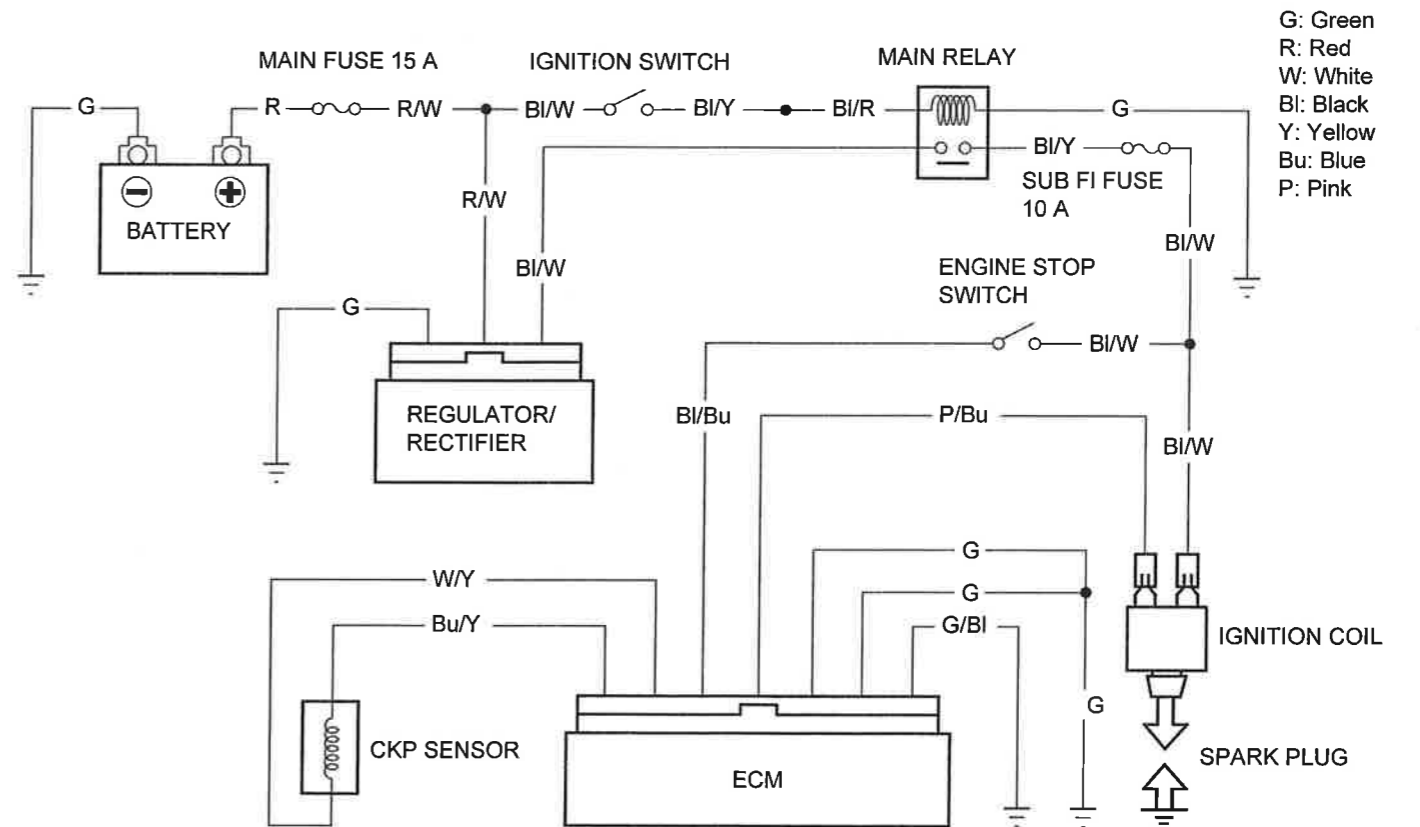
Unusual condition		Probable cause (Check in numerical order)
Ignition coil primary voltage	No initial voltage with the ignition switch turned ON and engine stop switch "O" (Other electrical components are normal).	1. Faulty ignition switch 2. Faulty main relay 3. An open circuit in Black/white wire between the ignition coil and engine stop switch 4. An open circuit in Black/white or Black/yellow wires between the engine stop switch and main relay 5. Loose or poor connection of the primary terminal, or an open circuit in the primary coil 6. Faulty ECM (in case when the initial voltage is normal with the ECM connector disconnected). 7. Faulty engine stop switch
	Initial voltage is normal, but it drops by 2 – 4 V while cranking the engine.	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. No voltage between the Black/blue (+) wire and body ground (-) at the ECM connector or poor connection of the ECM connector 4. An open circuit or loose connection in Green or Green/black wire at the ECM 5. An open circuit or loose connection in Pink/blue wire between the ignition coil and ECM 6. Faulty sidestand switch or neutral switch or related wires 7. Faulty CKP sensor (Measure peak voltage) 8. Faulty ECM (in case when above No. 1 through 7 are normal).
	Initial voltage is normal but there is no peak voltage while cranking the engine.	1. Incorrect peak voltage adaptor connections 2. Faulty peak voltage adaptor 3. Faulty CKP sensor 4. Faulty ECM (in case when above No. 1 through 3 are normal).
	Initial voltage is normal but peak voltage is lower than the standard value.	1. The multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed is too slow (Battery is undercharged). 3. The sampling timing 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 ECM (in case when above No. 1 through 3 are normal).
	Initial and peak voltages are normal but no spark jumps.	1. Faulty spark plug or leaking ignition coil secondary current 2. Faulty ignition coil
CKP sensor	Peak voltage is lower than standard value.	1. The multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed is too low. (Battery is undercharged.) 3. The sampling timing 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 CKP sensor (in case when above No.1 through 3 are normal).
	No peak voltage	1. Faulty peak voltage adapter 2. Faulty CKP sensor

# IGNITION SYSTEM

## SYSTEM LOCATION



## SYSTEM DIAGRAM



## IGNITION SYSTEM INSPECTION

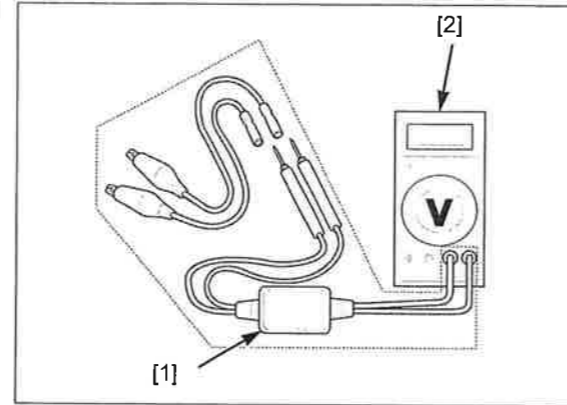
**NOTE:**

- 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 M $\Omega$ /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.

**TOOL:**

**IgnitionMate peak voltage tester MTP07-0286 (U.S.A. only) or 07HGJ-0020100 (not available in U.S.A.)**  
**Peak voltage adaptor with commercially available digital multimeter (impedance 10 M $\Omega$ /DCV minimum)**



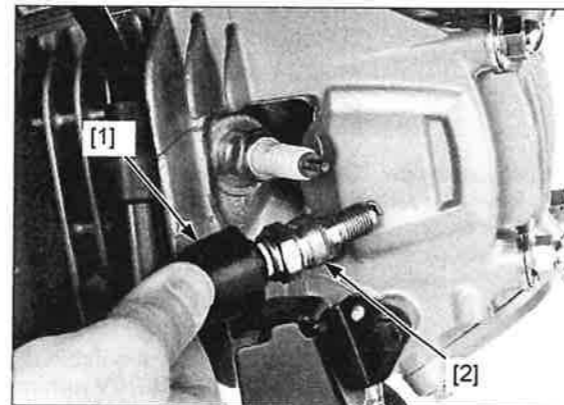
### IGNITION COIL PRIMARY PEAK VOLTAGE

**NOTE:**

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

Support the motorcycle with its sidestand.

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.



## IGNITION SYSTEM

With the connectors connected, connect the peak voltage adaptor [1] or Imrie tester probes to the ignition coil primary terminal [2] and ground.

### TOOL:

**IgnitionMate peak voltage tester** MTP07-0286  
(U.S.A. only) or  
**Peak voltage adaptor** 07HGJ-0020100  
with commercially available digital multimeter (impedance 10 M $\Omega$ /DCV minimum) (not available in U.S.A.)

### CONNECTION:

**Pink/blue terminal (+) – Body ground (-)**

Turn the ignition switch ON.  
Shift the transmission into neutral.  
Check the initial voltage at this time.  
The battery voltage should be measured.  
If the initial voltage cannot be measured, follow the checks in the troubleshooting table (page 5-3).

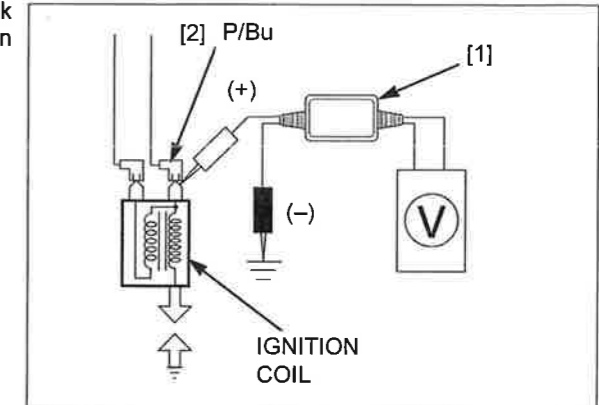
*Avoid touching the spark plug and tester probes to prevent electric shock.*

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 5-3.

Install the removed parts in the reverse order of removal.



## CKP SENSOR PEAK VOLTAGE

### NOTE:

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

Remove the side cover (page 2-5).

Disconnect the CKP sensor wire connectors [1].

Connect the peak voltage adaptor or Imrie tester probes to the CKP sensor wire connector terminals of the CKP sensor side.

*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.

### TOOL:

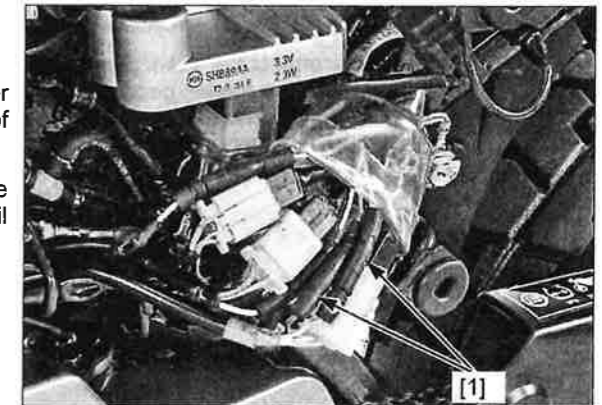
**Imrie diagnostic tester (model 625) or**  
**Peak voltage adaptor** 07HGJ-0020100  
with commercially available digital multimeter (impedance 10 M $\Omega$ /DCV minimum)

### CONNECTION:

**Blue/yellow (+) – White/yellow (-)**

**PEAK VOLTAGE: 0.7 V minimum**

If the peak voltage measured at the CKP sensor wire connectors is normal, check for an open or short circuit between the wire harness side CKP sensor wire connectors and the ECM 33P (Black) connector terminals.



## IGNITION SYSTEM

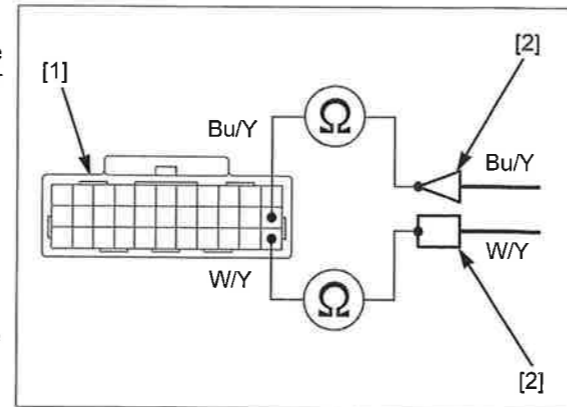
Disconnect the ECM 33P (Black) connector [1].

Check for continuity between the CKP sensor wire connector terminals [2] and ECM 33P (Black) connector at the wire harness side.

**TOOL:**  
Pin probe male (2 pack) 07ZAJ-RDJA110

**CONNECTION:**  
Blue/yellow – Blue/yellow  
White/yellow – White/yellow

If there is no continuity, there is an open circuit in the wire harness.

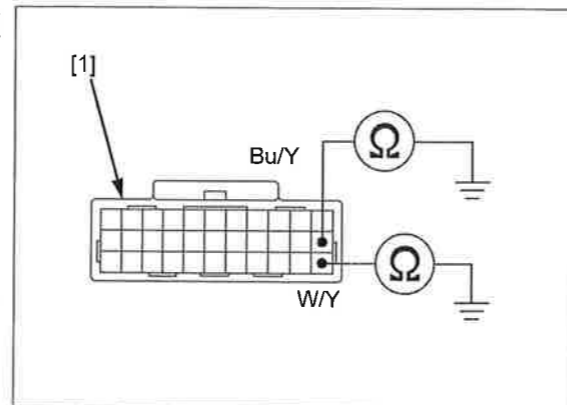


Check for short circuit between the CKP sensor wire connector terminals [2] and ECM 33P (Black) connector at the wire harness side.

**TOOL:**  
Pin probe male (2 pack) 07ZAJ-RDJA110

**CONNECTION:**  
Blue/yellow – Ground  
White/yellow – Ground

Install the removed parts in the reverse order of removal.



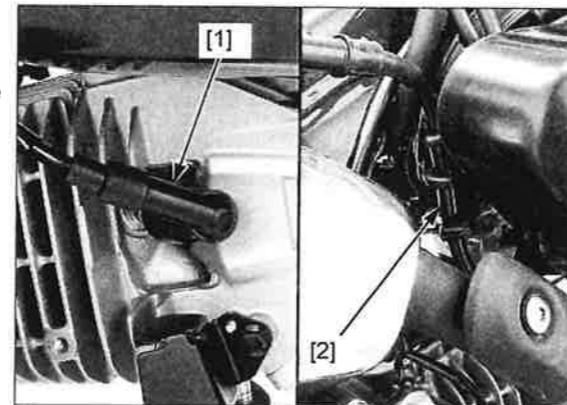
## IGNITION COIL

### REMOVAL/INSTALLATION

Remove the fuel tank (page 7-8).

Disconnect the spark plug cap [1] from the spark plug.

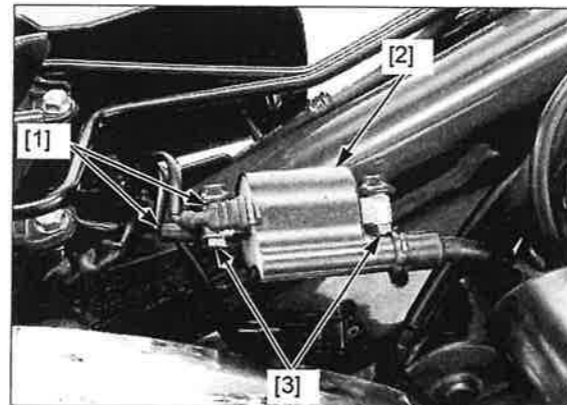
Release the spark plug wire [2] from the guides on the air cleaner connecting hose.



Disconnect the wire connectors [1] from the ignition coil [2].

Remove the bolts [3] and ignition coil.

Installation is in the reverse order of removal.



## IGNITION SYSTEM

### IGNITION TIMING

- The ignition timing can not be adjusted since the ECM is factory preset.
- Before inspection, make sure that the engine idle speed is within specification (page 3-11). If not, adjust the idle air screw before proceeding.

Start the engine, let it idle for about 20 minutes, depending on the air temperature and warm it up to the operating temperature.

*Read the manufacturer's instructions for timing light operation.*

Stop the engine and connect a timing light [1] to the spark plug wire.

Remove the timing hole cap from the left crankcase cover.

Start the engine and let it idle.

**IDLE SPEED: 1,400 ± 100 rpm**

If the engine idle speed is abnormal, inspect the idle air screw before proceeding.

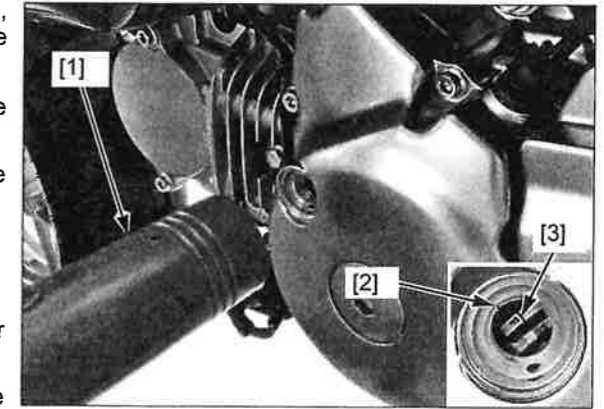
The ignition timing is correct if the index notch [2] on the left crankcase cover aligns with the "F" mark [3] on the flywheel.

If the ignition timing is incorrect, perform the ECM initializing procedure (page 4-29) and recheck the ignition timing.

If the ignition timing is still incorrect, replace the ECM with a known-good one and recheck.

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

**TORQUE: 6.0 N·m (0.6 kgf·m, 4.4 lbf·ft)**



# 6. ELECTRIC STARTER SYSTEM

---

SERVICE INFORMATION.....	6-2	SYSTEM DIAGRAM .....	6-3
TROUBLESHOOTING .....	6-2	STARTER MOTOR.....	6-4
SYSTEM LOCATION .....	6-3	STARTER RELAY.....	6-9

6

## ELECTRIC STARTER SYSTEM

### SERVICE INFORMATION

#### GENERAL

- A weak battery may be unable to turn the starter motor quickly enough, or supply adequate ignition current.
- When checking the starter system, always follow the steps in the troubleshooting.
- When servicing the starter system, always follow the steps in the troubleshooting flow chart (page 6-2).
- Refer to the following components information:
  - Ignition switch (page 20-10)
  - Starter switch (page 20-11)
  - Engine stop switch (page 20-11)
  - Neutral switch (page 20-12)
  - Sidestand switch (page 20-14)
  - Clutch switch (page 20-12)

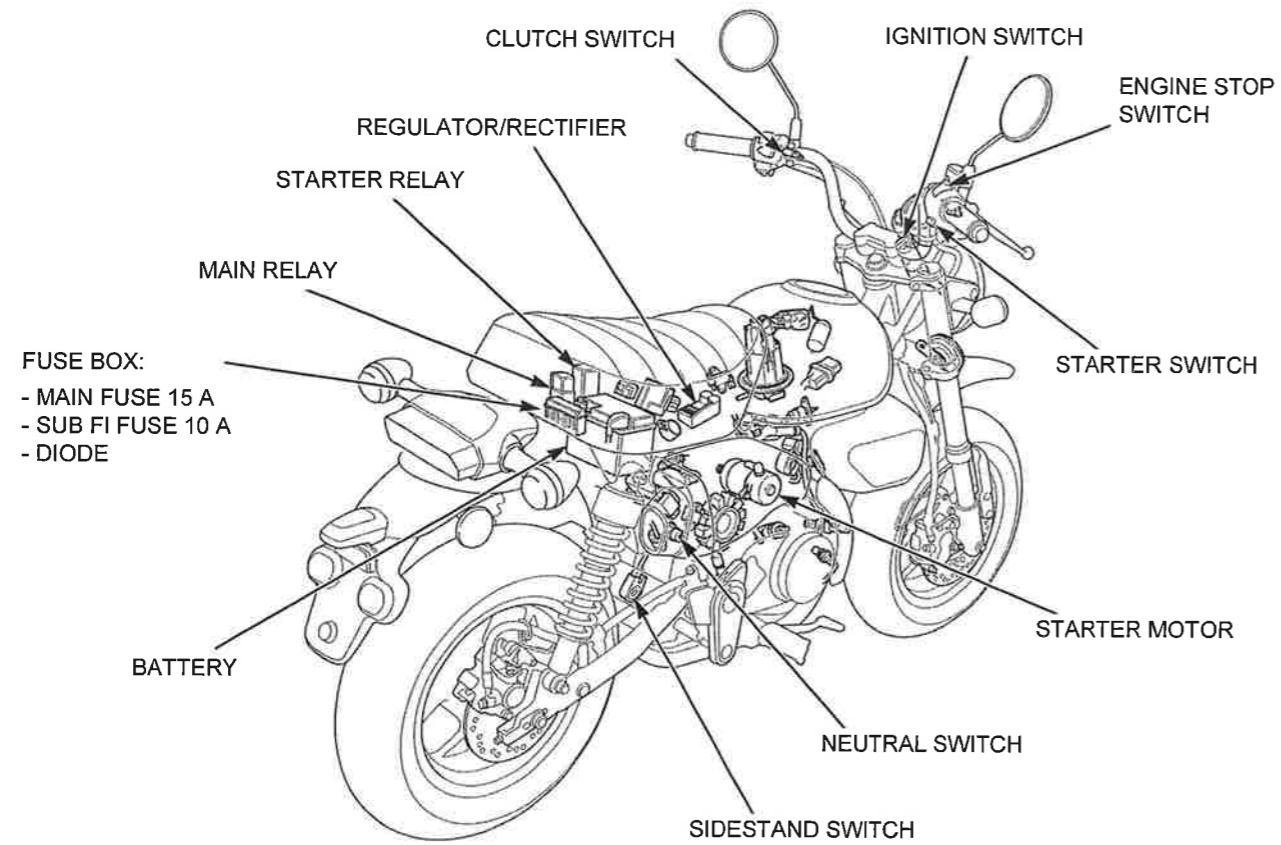
#### TROUBLESHOOTING

Unusual condition		Probable cause (Check in numerical order)
Starter motor	Starter motor does not turn	1. Loose or poor contact on related connectors and terminals 2. Fuse 3. Weak battery 4. Faulty starter relay switch 5. Faulty main relay 6. Faulty starter motor 7. Loose connection, open or short circuit in starter motor cable 8. Faulty starter switch 9. Open circuit in starter relay switch ground circuit 10. Open or short circuit in starter relay switch power circuit 11. Loose contact or open circuit in related wires
	Starter motor turns only when the transmission is in neutral (Starter motor does not turn when the transmission is in any gear with the sidestand retracted and clutch lever pulled in)	1. Loose or poor contact on related connectors and terminals 2. Faulty clutch switch 3. Faulty sidestand switch 4. Loose contact or open circuit in related wires
	Starter motor turns only when the transmission is in any gear with the sidestand retracted and clutch lever pulled in (Starter motor does not turn when the transmission is in neutral and clutch lever released)	1. Loose or poor contact on related connectors and terminals 2. Faulty diode 3. Faulty neutral switch 4. Loose contact or open circuit in related wires
	Starter motor turns slowly	1. Low battery voltage 2. Poorly connected battery terminal cable 3. Poorly connected starter motor cable 4. Faulty starter motor 5. Poorly connected battery ground cable
	Starter motor turns, but engine does not turn	1. Starter motor is running backwards – Case assembled improperly – Terminals connected improperly 2. Faulty starter clutch 3. Damaged or faulty starter idle gear and/or reduction gear
	Starter relay switch "Clicks", but engine does not turn over	1. Crankshaft does not turn due to engine problems

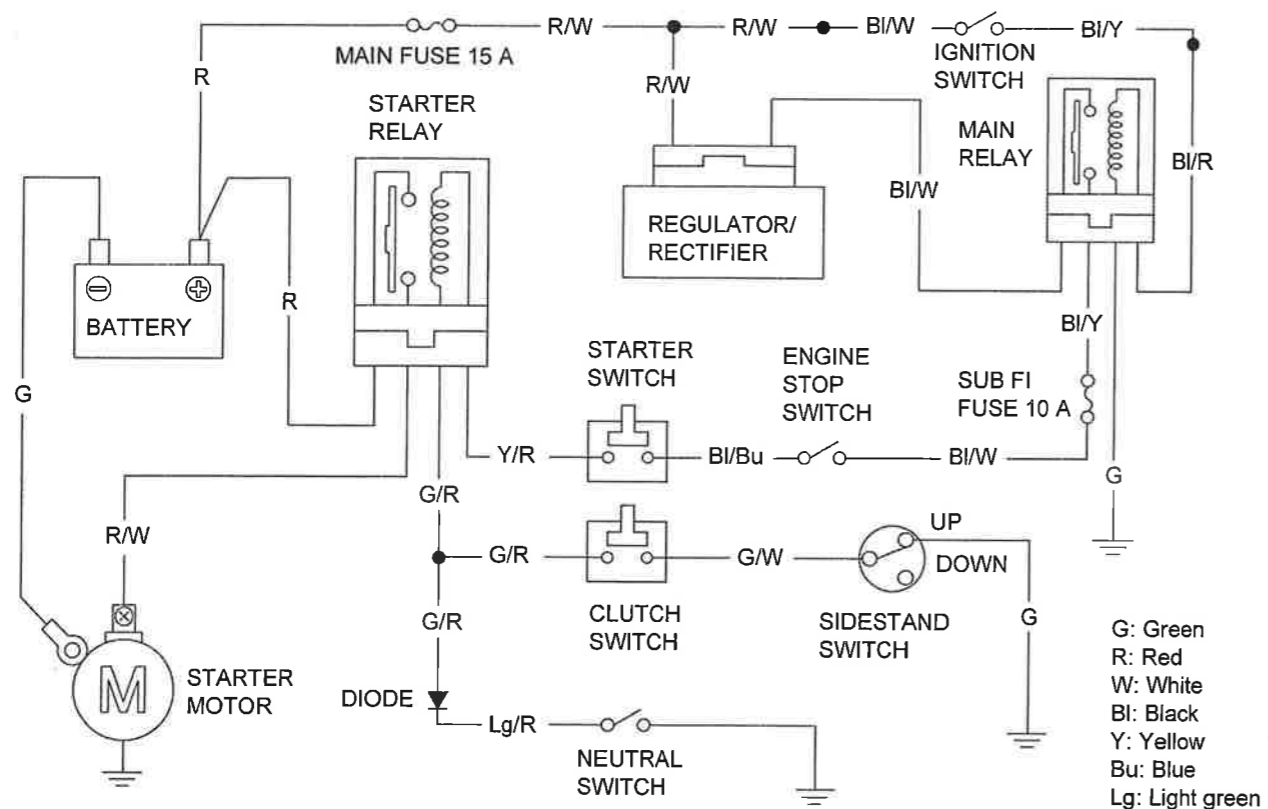


# ELECTRIC STARTER SYSTEM

## SYSTEM LOCATION



## SYSTEM DIAGRAM



## ELECTRIC STARTER SYSTEM

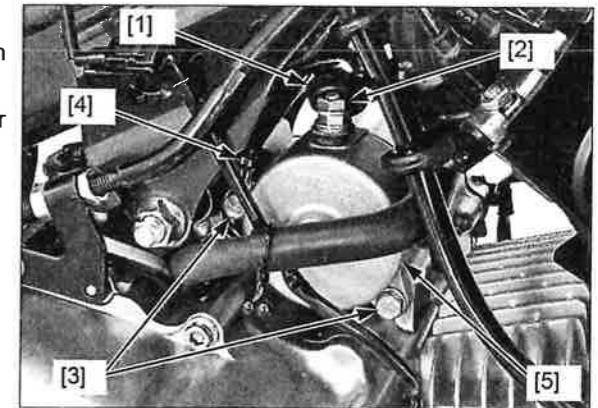
### STARTER MOTOR

#### REMOVAL/INSTALLATION

Remove the muffler (page 2-10).

Remove the rubber cap [1] and terminal nut [2], then disconnect the starter motor cable.

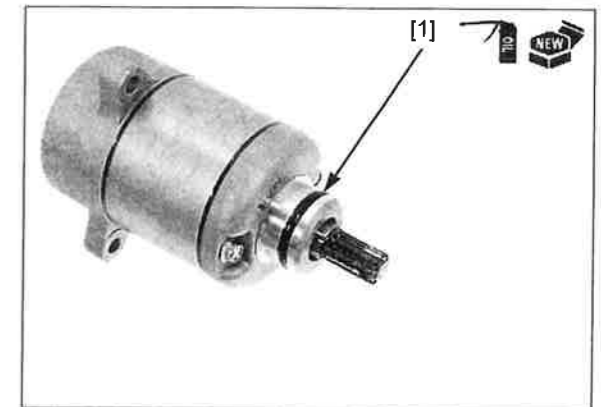
Remove the bolts [3], ground cable [4] and starter motor [5] from the engine.



Remove the O-ring [1] from the starter motor. Installation is in the reverse order of removal.

**TORQUE: Starter motor terminal nut**  
**7.0 N·m (0.7 kgf·m, 5.2 lbf·ft)**

- Replace the O-ring with a new one.
- Apply engine oil to the O-ring surface.



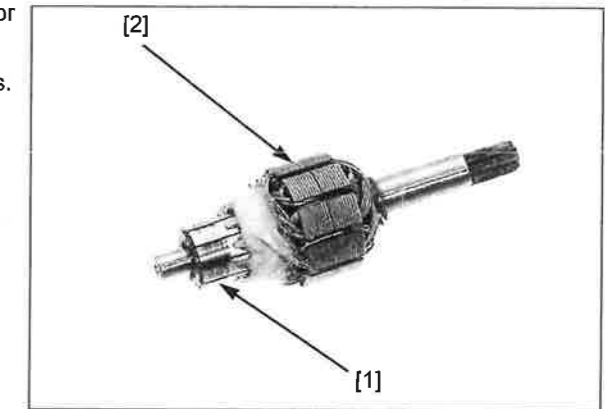


## ELECTRIC STARTER SYSTEM

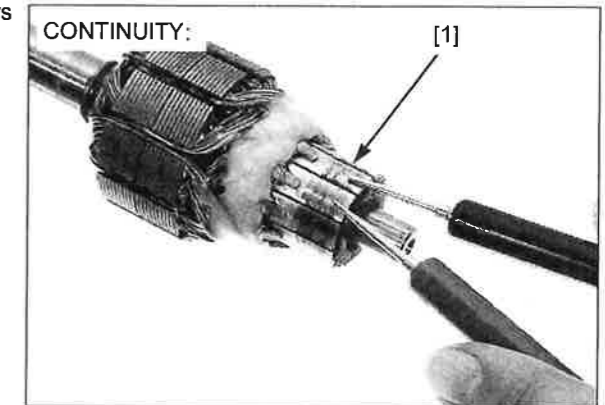
Check the commutator bars [1] of the armature [2] for discoloration, wear or damage.

*Do not use emery or sand paper on the commutator.*

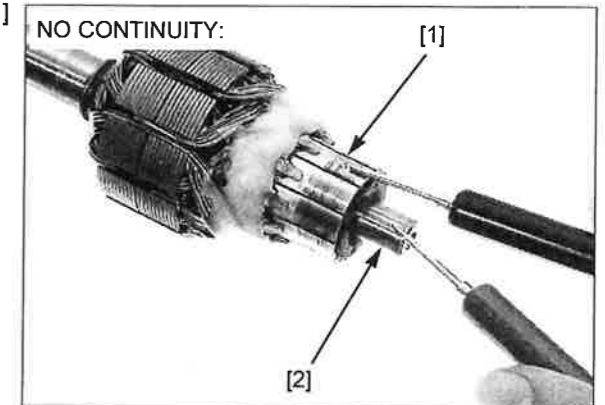
Clean the metallic debris off between commutator bars.  
Replace the armature with a new one if necessary.



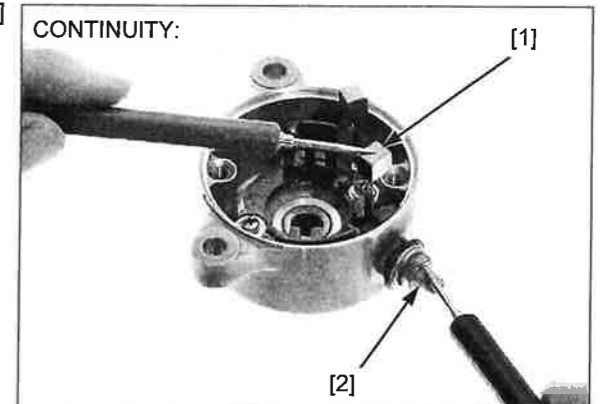
Check for continuity between pair of commutator bars [1].  
There should be continuity.



Check for continuity between each commutator bar [1] and the armature shaft [2].  
There should be no continuity.

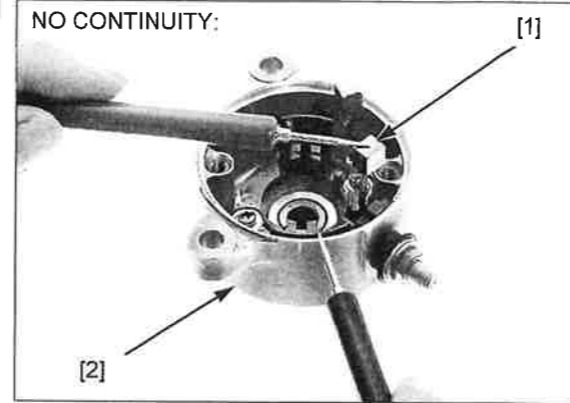


Check for continuity between the insulated brush [1] and cable terminal [2].  
There should be continuity.



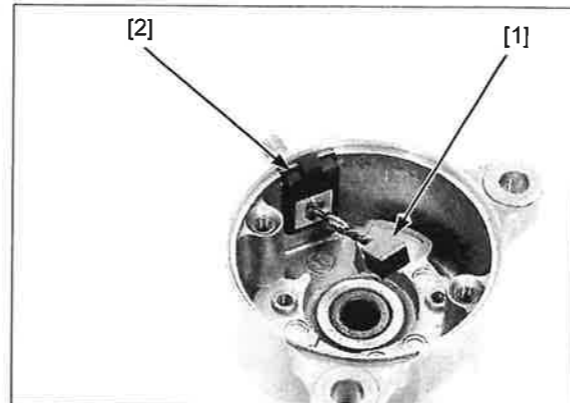
## ELECTRIC STARTER SYSTEM

Check for continuity between the insulated brush [1] and rear cover [2]. There should be no continuity.

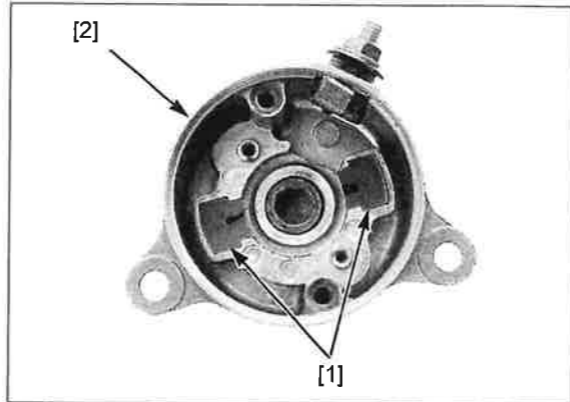


### ASSEMBLY

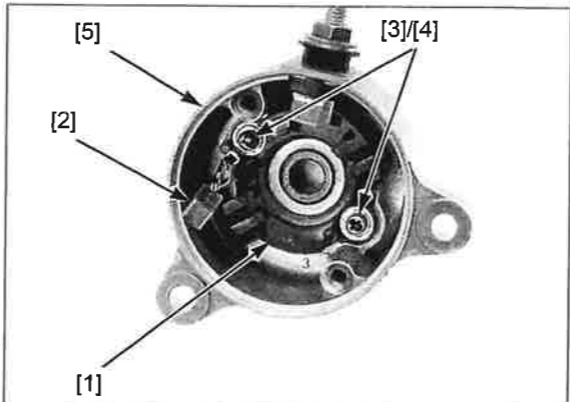
Install the brush [1] and brush set plate [2] into the rear cover.



Install the insulator plates [1] onto the rear cover [2].

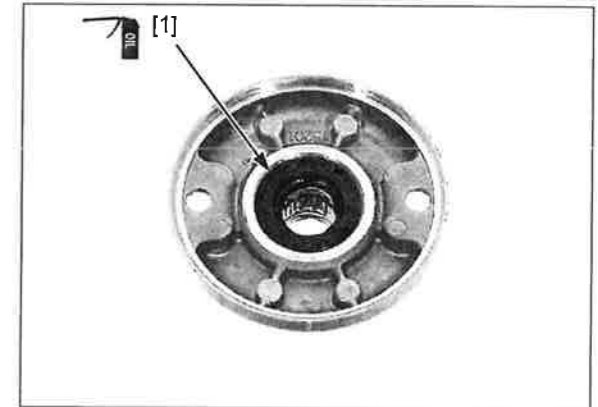


Install the brush holder [1], brush [2], washers [3] and screws [4] into the rear cover [5] as shown.



## ELECTRIC STARTER SYSTEM

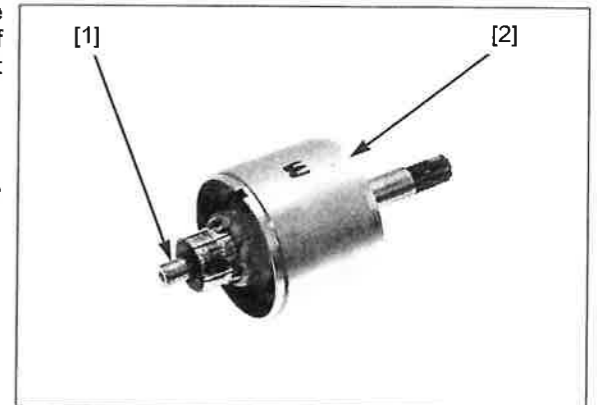
Apply oil to the oil seal lips [1].



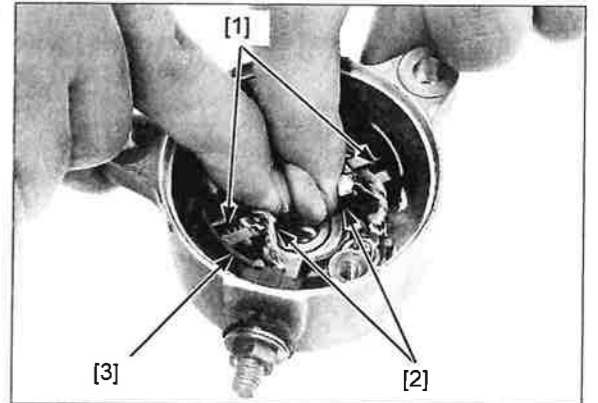
Install the armature [1] into the motor case [2] while holding the armature shaft tightly to keep the magnet of the motor case from pulling the armature shaft against it.

### NOTICE

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



Install the springs [1] and brushes [2] into the brush holder [3].

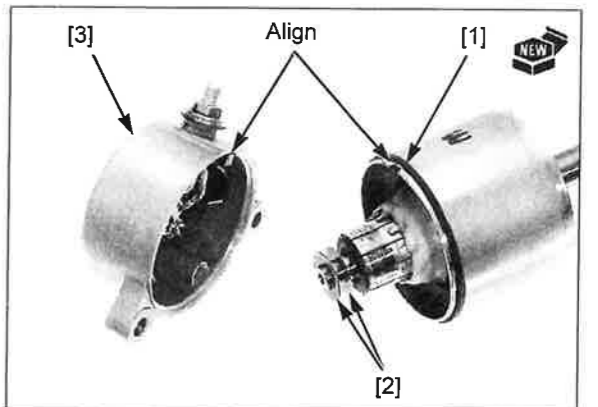


Install a new seal ring [1].

Install the shims [2] onto the armature shaft.

*Install the same number of shims in the same locations as noted during disassembly.*

Install the rear cover [3] while pushing the brushes into the brush holder and aligning the brush set plate tab with the motor case groove.



## ELECTRIC STARTER SYSTEM

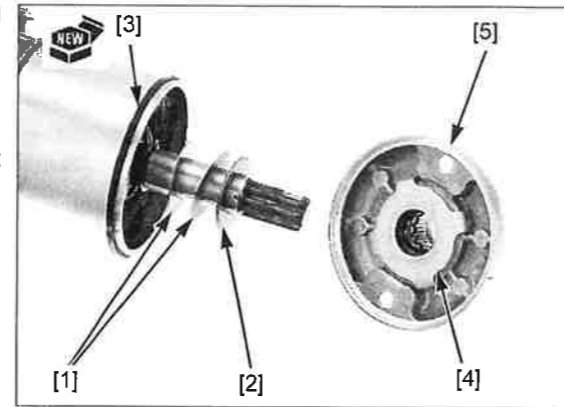
Install the same number of shims in the same locations as noted during disassembly.

Install the shims [1], insulator [2] and a new seal ring [3].

Install the lock washer [4] to the front cover [5].

Install the front cover.

- When installing the front cover, take care to prevent damaging the oil seal lip with the armature shaft.

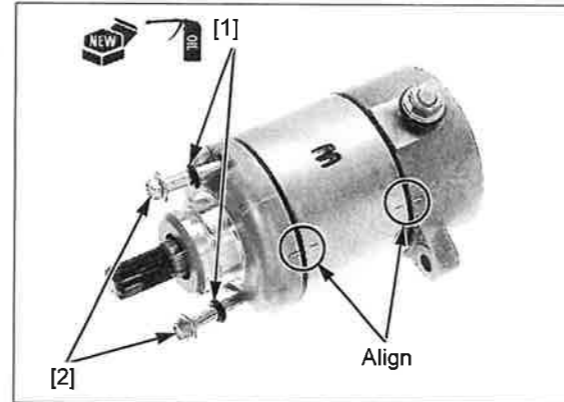


Align the index lines on the covers and motor case.

Apply oil to new O-rings [1] and install them onto the motor case bolts [2].

Install and tighten the starter motor case bolts to the specified torque.

**TORQUE: 4.9 N·m (0.5 kgf·m, 3.6 lbf·ft)**



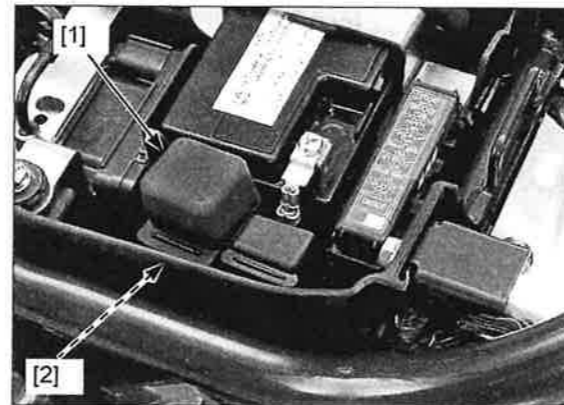
## STARTER RELAY

### REMOVAL/INSTALLATION

Remove the seat (page 2-5).

Remove the starter relay [1] from the stay. Disconnect the starter relay 5P connector [2].

Installation is in the reverse order of removal.



### OPERATION INSPECTION

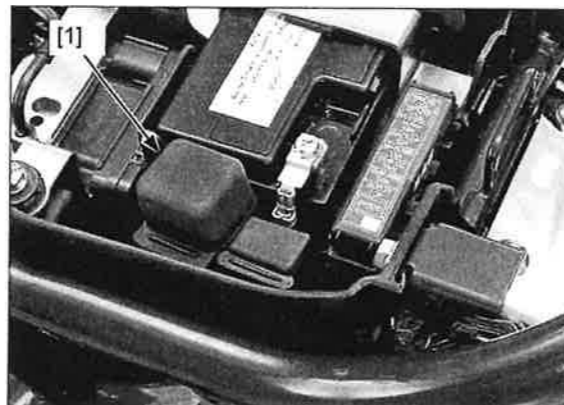
Remove the seat (page 2-5).

Shift the transmission in neutral.

Turn the ignition switch ON and engine stop switch "O". Push the starter switch.

The system is normal if the starter relay [1] clicks.

If you hear the relay "CLICK", but starter does not turn or If you don't hear the relay "CLICK", inspect the starter relay continuity (page 6-10).



## ELECTRIC STARTER SYSTEM

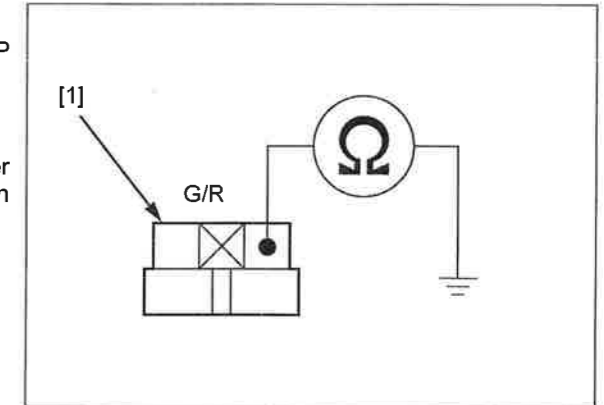
### STARTER GROUND LINE CIRCUIT INSPECTION

Remove the starter relay (page 6-9).

Measure the continuity between the starter relay 5P connector [1] of the wire harness side and ground

**CONNECTION: Green/red – Ground**

If the continuity appears only when the clutch lever pulled and sidestand retracted or transmission is in neutral, the circuit is normal.



### STARTER POWER LINE INSPECTION

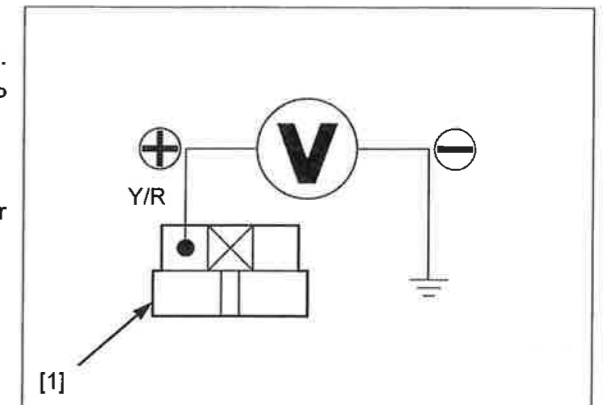
Remove the starter relay (page 6-9).

Turn the ignition switch ON and engine stop switch "O".

Measure the Voltage between the starter relay 5P connector [1] of the wire harness side and ground.

**CONNECTION: Yellow/red (+) – Ground (-)**

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



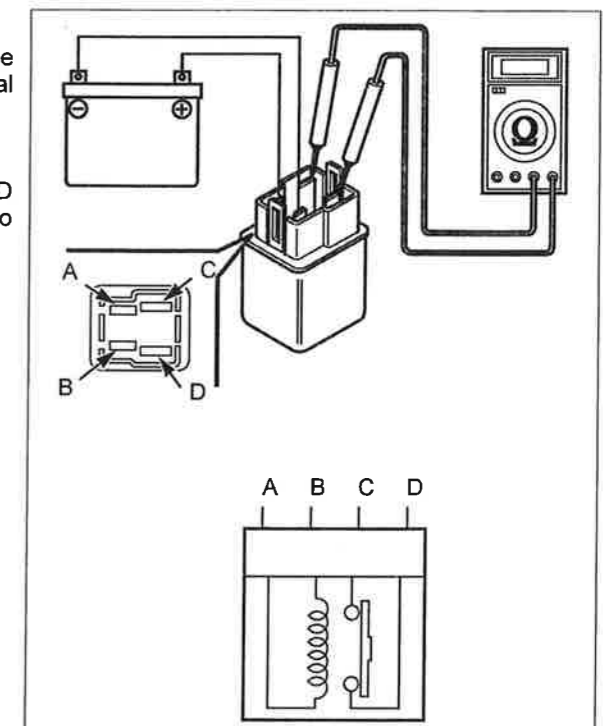
### STARTER RELAY CONTINUITY INSPECTION

Remove the starter relay (page 6-9).

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.





## 7. FUEL SYSTEM

---

SERVICE INFORMATION.....	7-2	FUEL FILTER/FUEL PUMP UNIT.....	7-9
COMPONENT LOCATION.....	7-3	AIR CLEANER HOUSING .....	7-14
FUEL LINE INSPECTION .....	7-4	THROTTLE BODY .....	7-15
FUEL SUPPLY TEST.....	7-7	FAST IDLE SOLENOID VALVE .....	7-18
FUEL TANK.....	7-8	FUEL INJECTOR .....	7-20
FUEL FILLER CAP .....	7-8		

## FUEL SYSTEM

### SERVICE INFORMATION

#### GENERAL

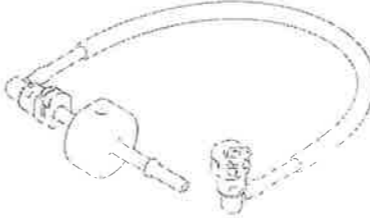
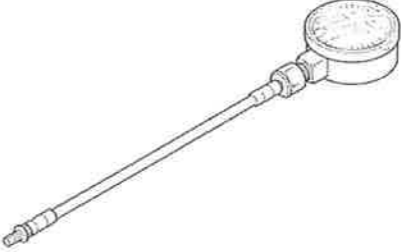
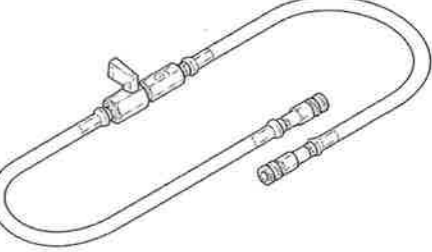
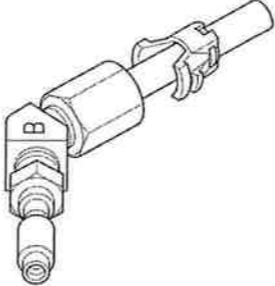

- Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where gasoline is stored can cause a fire or explosion.
- Before disconnecting the fuel feed hose, relieve fuel pressure from the system by disconnecting the quick connect fitting from the system (page 7-4).
- Bending or twisting the control cables will impair smooth operation and could cause the cables to stick or bind, resulting in loss of vehicle control.
- Do not snap the throttle valve from full open to full close after the throttle cable has been removed. It may cause incorrect idle operation.
- Seal the intake ports with tape or a clean cloth to keep dirt and debris from entering the engine after the throttle body has been removed.
- Do not damage the throttle body. It may cause incorrect throttle valve operation.
- Prevent dirt and debris from entering the throttle bore and air passages after the throttle body has been removed. Clean them using a compressed air if necessary.
- Do not loosen or tighten the white painted nut and screw of the throttle body. Loosening or tightening them can cause throttle valve and idle control failure.
- The parts of the throttle body not shown in this manual should not be disassembled.
- When disassembling the PGM-FI system parts, note the location of the O-rings. Replace them with new ones upon reassembly.
- For fuel level sensor inspection (page 20-10).

Bl = Black  
Br = Brown

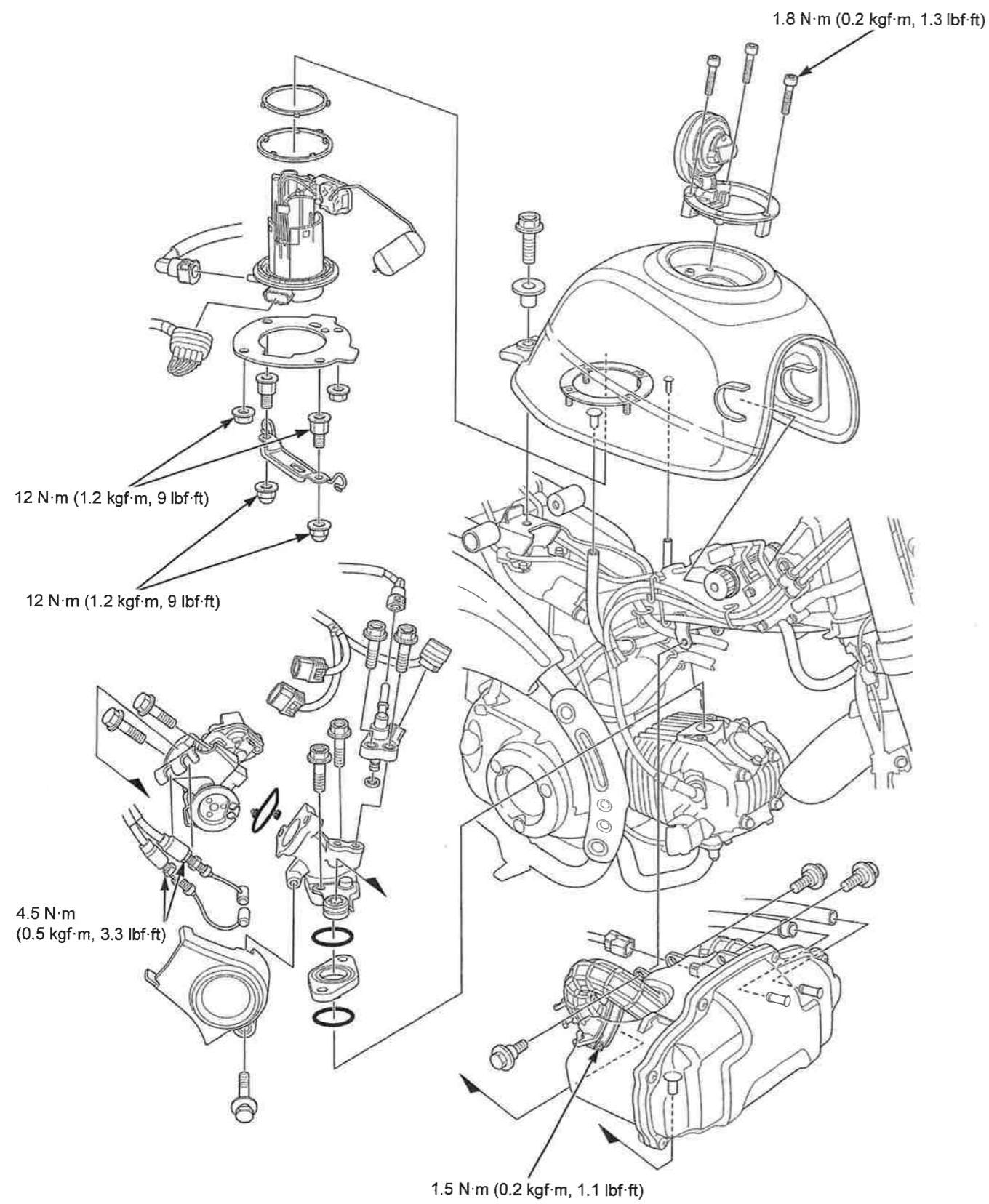
G = Green  
R = Red

W = White  
Y = Yellow

#### TOOLS

<p>Fuel Pressure Gauge Attachment Set 070MJ-K260100</p>  <p>Not available in U.S.A.</p>	<p>Fuel Pressure Gauge Set 07406-0040004</p>  <p>07406-004000C or 07406-004000B (U.S.A. only)</p>	<p>Fuel Pressure Manifold Hose 07AMJ-HW3A100 (U.S.A. only)</p> 
<p>Fuel Adapter Male "B" 07AAJ-S6MA200 (U.S.A. only)</p> 	<p>Fuel Adapter Female 90° 07AMJ-K26A100 (U.S.A. only)</p> 	

COMPONENT LOCATION



## FUEL SYSTEM

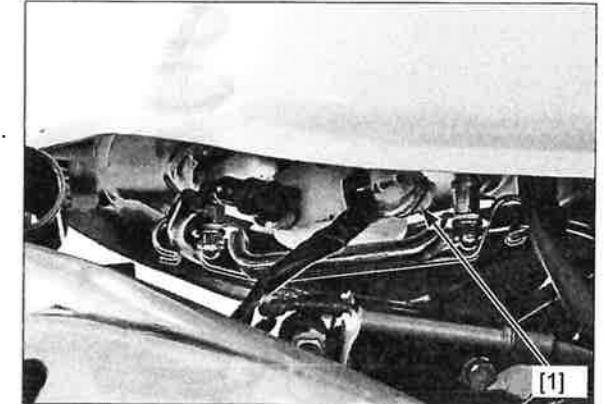
### FUEL LINE INSPECTION

#### FUEL PRESSURE RELIEVING

**NOTE:**

Before disconnecting fuel feed hose, relieve pressure from the system as follows.

1. Turn the ignition switch OFF.
2. Lift up and support the fuel tank (page 3-4).
3. Disconnect the fuel pump 5P connector [1].
4. Start the engine, and let it idle until the engine stalls.
5. Turn the ignition switch OFF.

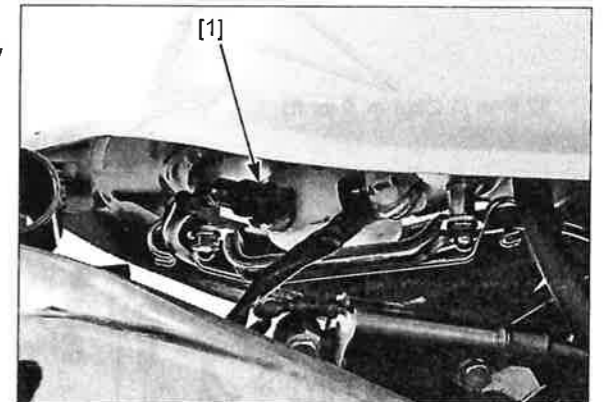


#### QUICK CONNECT FITTING REMOVAL

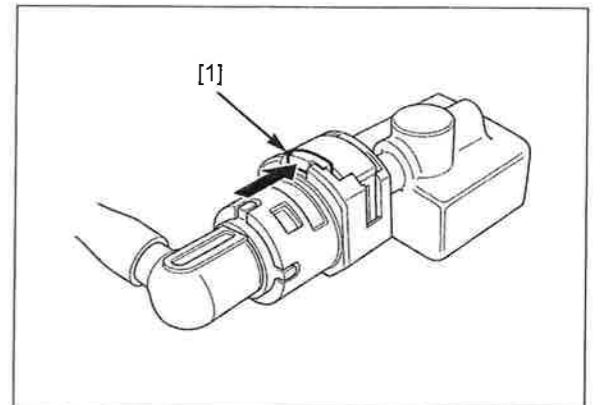
**NOTE:**

- Clean around the quick connect fitting before disconnecting the fuel feed hose, and be sure that no dirt is allowed to enter into the fuel system.
- Do not bend or twist the fuel feed hose.

1. Relieve the fuel pressure (page 7-4).
2. Disconnect the negative (-) cable from the battery (page 19-5).
3. Place a shop towel over the quick connect fitting [1].



4. Push the retainer tab [1] forward.



## FUEL SYSTEM

5. Press down the retainer [1] and hold.

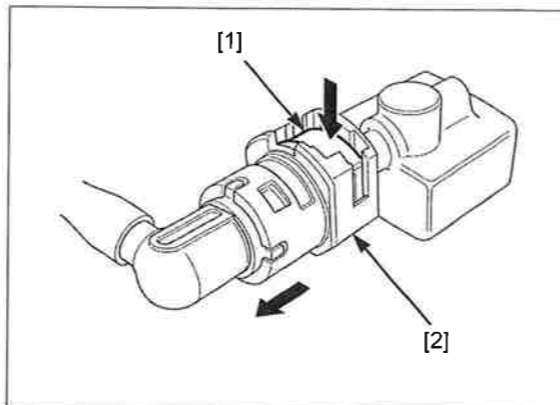
Disconnect the connector [2] from the fuel pump joint/fuel injector joint.

Check the retainer condition and replace it if necessary.

### NOTE:

- Prevent the remaining fuel in the fuel feed hose from flowing out, using a shop towel.
- Be careful not to damage the hose or other parts.
- Do not use tools.
- If the connector does not move, alternately pull and push the connector until it comes off easily.

6. To prevent damage and keep foreign matter out, cover the disconnected connector and pipe end with the plastic bags.



### QUICK CONNECT FITTING INSTALLATION

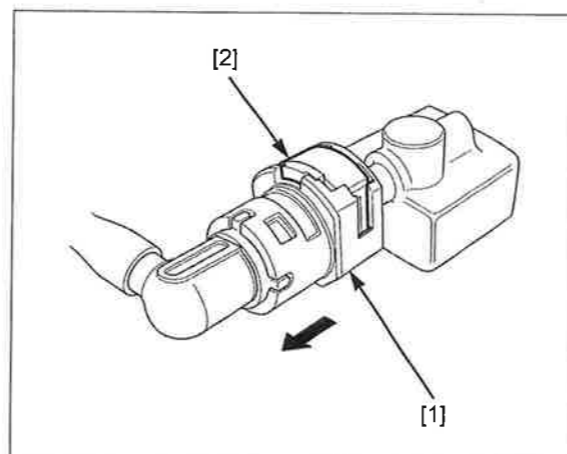
#### NOTE:

- Do not bend or twist the fuel feed hose.
- Align the quick connect fitting with the pipe.

1. Press the connector [1] onto the fuel pump joint/fuel injector joint until the retainer [2] locks with a "CLICK".

If it is hard to connect, put a small amount of engine oil on the pipe end.

2. Make sure the connection is secure; check visually and by pulling the connector.



### FUEL PRESSURE NORMALIZATION

1. Be sure the fuel pump 5P connector [1] is connected.
2. Turn the ignition switch ON with the engine stop switch "O".

#### NOTE:

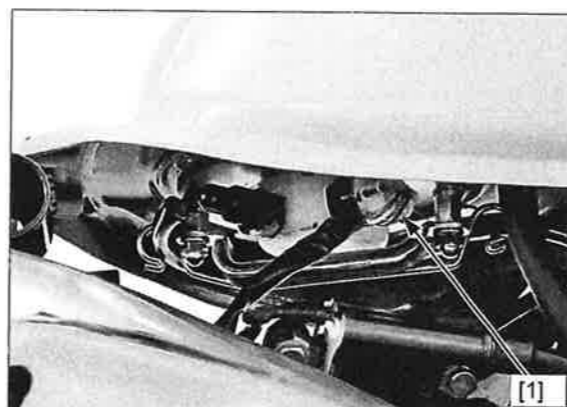
- Do not start the engine.

The fuel pump will run for about 2 seconds, and fuel pressure will rise.

Turn the ignition switch OFF.

Repeat step 2 two or three times, and check that there is no leakage.

3. Install the fuel tank (page 3-4).



## FUEL SYSTEM

### FUEL PRESSURE TEST

Disconnect the quick connect fitting from the fuel pump (page 7-4).

#### TOOLS:

[1]: Fuel pressure gauge 07406-0040004

[2]: Pressure gauge attachment 070MJ-K260100

#### U.S.A. TOOLS:

Fuel Pressure Gauge, 0-0100 psi 07406-004000C or 07406-004000B

Fuel Pressure Manifold Hose 07AMJ-HW3A100

Fuel Adapter Male "B" 07AAJ-S6MA200

Fuel Adapter Female 90° 07AMJ-K26A100

Temporarily connect the fuel pump 5P connector and battery negative (-) cable.

Start the engine and let it idle.

Read the fuel pressure.

#### STANDARD:

263 – 316 kPa (2.7 – 3.2 kgf/cm<sup>2</sup>, 38 – 46 psi)

If the fuel pressure is higher than specified pressure, replace the fuel pump unit.

If the fuel pressure is lower than specified pressure, inspect the following:

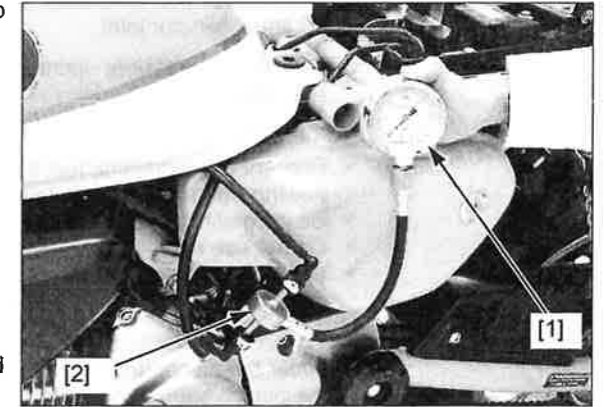
- Fuel line for leakage
- Fuel tank breather hose (fuel tank side) for bend or clog
- Fuel filter for clogs
- Fuel pump (page 7-9)

After inspection, relieve the fuel pressure (page 7-4).

Disconnect the negative (-) cable from the battery (page 19-5).

Remove the special tools.

Reconnect the quick connect fitting and normalize the fuel pressure (page 7-5).



**FUEL FLOW INSPECTION**

**NOTE:**

- Be sure that the fuel tank breather hose is not pinched or clogged while the fuel tank is lifted.

Disconnect the quick connect fitting from the throttle body (page 7-4).

*Wipe off spilled out gasoline.*

Place the end of the fuel feed hose [1] into an approved gasoline container [2].

Temporarily connect the fuel pump 5P connector and battery negative (-) cable.

Turn the ignition switch ON with engine stop switch "O". The fuel pump operates for 2 seconds. Repeat 5 times to meet the total measuring time.



**NOTE:**

- Return fuel to the fuel tank when the first fuel is flowed.

Measure the amount of fuel flow.

**Amount of fuel flow:**

**82 cm<sup>3</sup> (2.8 US oz, 2.9 Imp oz) minimum/  
10 seconds at 12 V**

If fuel flow is less than specified volume, inspect the following:

- Fuel feed hose for clogs
- Fuel tank breather hose (fuel tank side) for bend or clog
- Fuel filter for clogs
- Fuel pump (page 7-9)

Connect the quick connect fitting (page 7-5).

**FUEL SUPPLY TEST**

**1. Fuel Pressure Test 1.**

Perform the fuel pressure test (page 7-6).

**STANDARD:**

**263 – 316 kPa (2.7 – 3.2 kgf/cm<sup>2</sup>, 38 – 46 psi)**

*Is the fuel pressure within specification?*

**YES** – GO TO STEP 3.

**NO** – GO TO STEP 2.

**2. Fuel Pressure Test 2.**

Check that there is any erratic swing or vibration of the gauge needle in the pressure gauge reading.

*Is there any erratic swing or vibration of the gauge needle?*

**YES** – Replace the fuel filter (page 7-12).

**NO** – Replace the fuel pump unit (page 7-9).

## FUEL SYSTEM

### 3. Fuel Flow Test

Adjust the fuel in the tank until the lowest segment [1] of the fuel level gauge is illuminated.

**SPECIFIED RANGE:**

**THE LOWEST SEGMENT IS ILLUMINATED. (No blinking)**

Inspect the fuel flow (page 7-7).

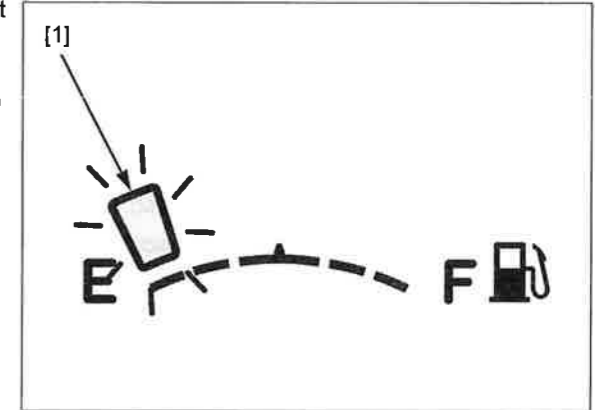
**AMOUNT OF FUEL FLOW:**

**82 cm<sup>3</sup> (2.8 US oz, 2.9 Imp oz) minimum/  
10 seconds at 12 V**

*Is the fuel flow above specification?*

**YES** – Check for other malfunctioning parts.

**NO** – Replace the fuel filter (page 7-12).



## FUEL TANK

### REMOVAL/INSTALLATION

Relieve the fuel pressure and disconnect the quick connect fitting (page 7-4).

Lift up the fuel tank [1] and release the fuel hose [2] from the hose clamp on the fuel pump set plate.

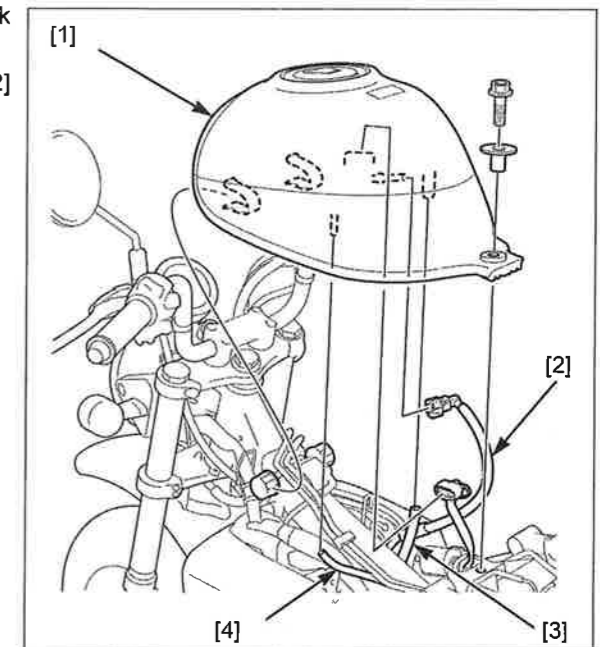
Disconnect the following from the fuel tank:

- Fuel tank drain hose [3]
- Fuel tank breather hose [4]

Remove the fuel tank.

Install the fuel tank in the reverse order of removal.

Connect the quick connect fitting (page 7-5).



## FUEL FILLER CAP

### REMOVAL/INSTALLATION

Remove the following:

- Socket bolt [1]
- Fuel filler cap [2]
- Breather seal [3]

A pressure release can be heard when opening the fuel cap, but this is not blockage of the passage.

If checking for clog in the passage of the fuel tank side is necessary, apply air pressure to the breather hose end with the fuel filler cap opened.

**NOTE:**

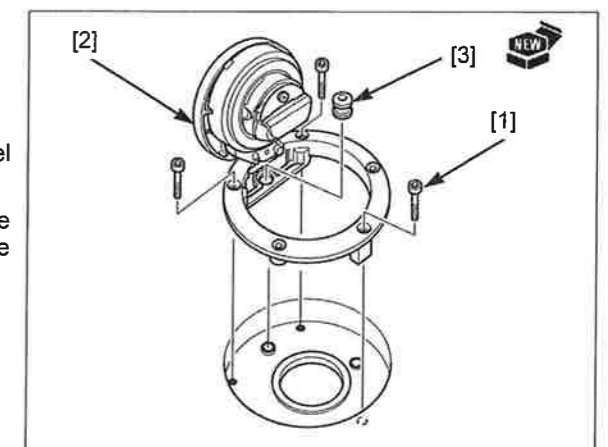
- Replace the breather seal with a new one.

Installation is in the reverse order of removal.

**TORQUE:**

**Fuel filler cap mounting socket bolt:**

**1.8 N·m (0.2 kgf·m, 1.3 lbf·ft)**





## FUEL FILTER/FUEL PUMP UNIT

### SYSTEM INSPECTION

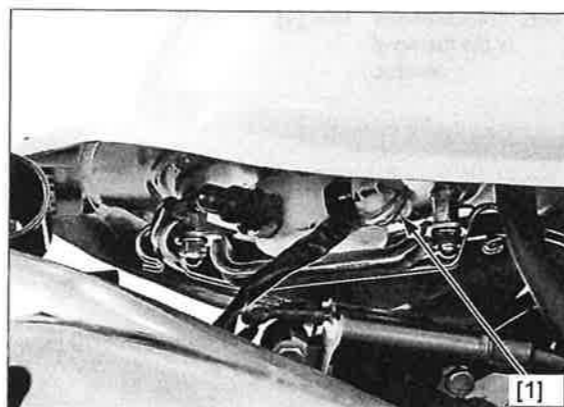
Turn the ignition switch ON with the engine stop switch "O" and confirm that the fuel pump operates for 2 seconds.

If the fuel pump does not operate, inspect as follows:

Turn the ignition switch OFF.

Lift up and support the fuel tank (page 3-4).

Disconnect the fuel pump 5P connector [1].



Turn the ignition switch ON with the engine stop switch "O".

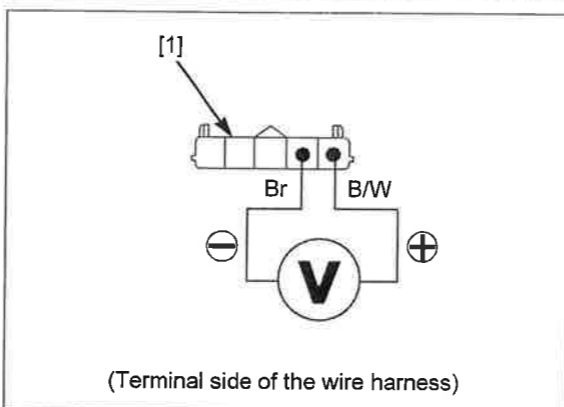
Measure the voltage at the fuel pump 5P connector [1] of the wire harness side.

**CONNECTION:** Black/white (+) – Brown (–)  
**STANDARD:** Battery voltage for a few seconds after the ignition switch is turned on

If there is battery voltage, the related circuit is normal.

If there is no voltage, inspect the following:

- Brown wire between the fuel pump and ECM for open circuit
- Black/white wire between the fuse box and fuel pump for open circuit
- ECM (page 4-31)

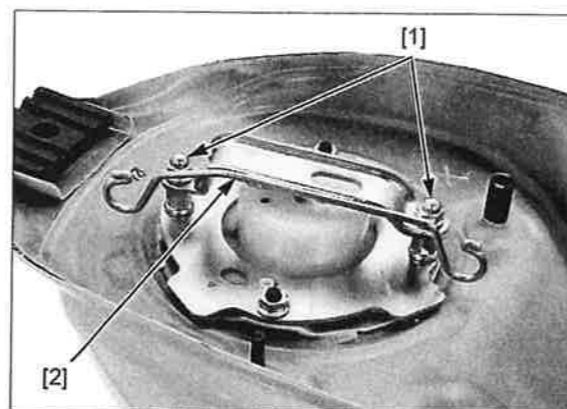


### REMOVAL

- Clean around the fuel pump.

Remove the fuel tank (page 7-8).

Remove the cap nuts [1] and fuel pump guard [2].

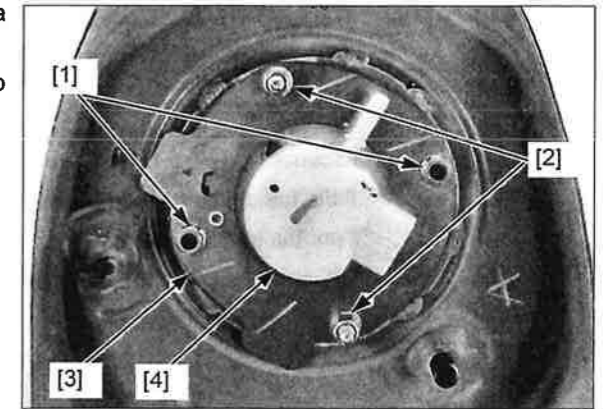


## FUEL SYSTEM

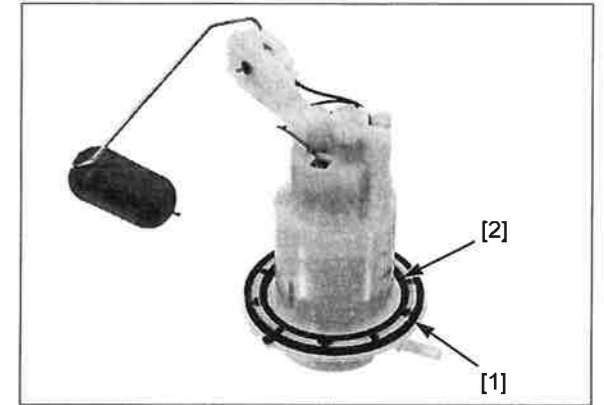
Loosen the mounting nuts [1] and special nuts [2] in a crisscross pattern in several steps and remove them.

*Be careful not to deform the float arm of the fuel level sensor.*

Remove the fuel pump setting plate [3] and fuel pump unit [4].



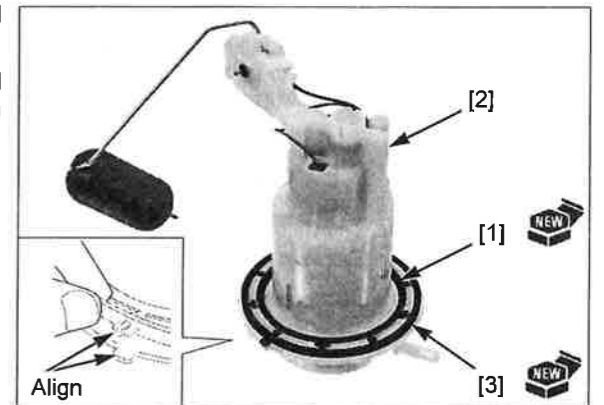
Remove the outer packing [1] and inner packing [2].



## INSTALLATION

Install a new inner packing [1] into the groove of the fuel pump unit [2].

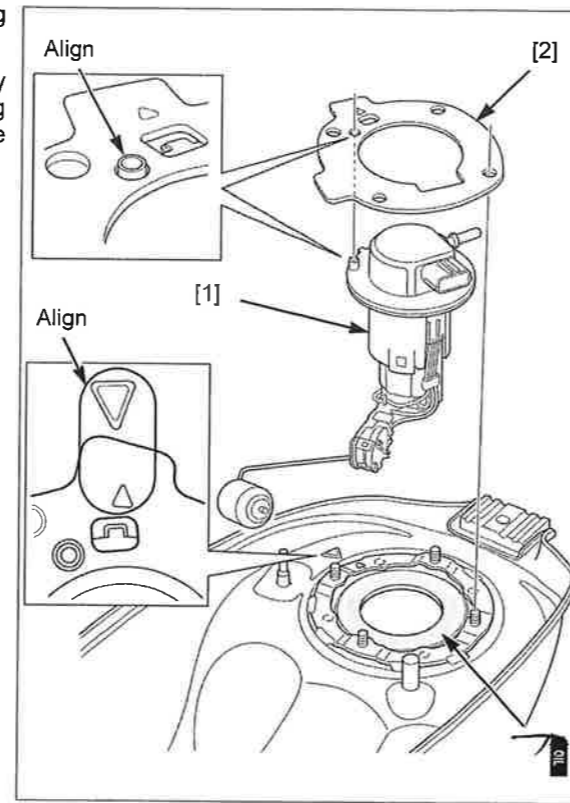
Install a new outer packing [3] into the groove of the fuel pump unit while aligning its tab with the projection on the circumference of the fuel pump unit.



## FUEL SYSTEM

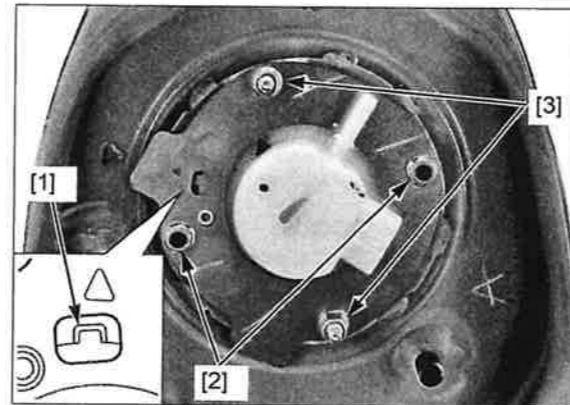
Apply a small amount of engine oil to the packing seating area of the fuel tank.

Install the fuel pump unit [1] into the fuel tank by aligning its boss with the hole of the fuel pump setting plate [2], and by aligning the triangle marks of the setting plate and fuel tank.



Make sure that the outer packing [1] is installed correctly through the check hole.

Loosely install the nuts [2] and special nuts [3].



Tighten the mounting nuts and special nuts to the specified torque in the sequence as shown.

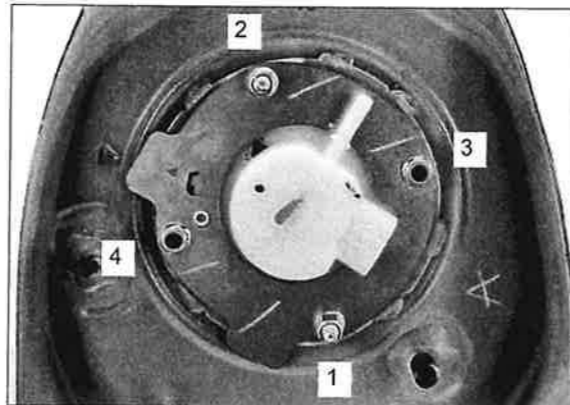
### TORQUE:

**Fuel pump setting plate nut:**

12 N·m (1.2 kgf·m, 9 lbf·ft)

**Fuel pump setting plate special nut:**

12 N·m (1.2 kgf·m, 9 lbf·ft)



## FUEL SYSTEM

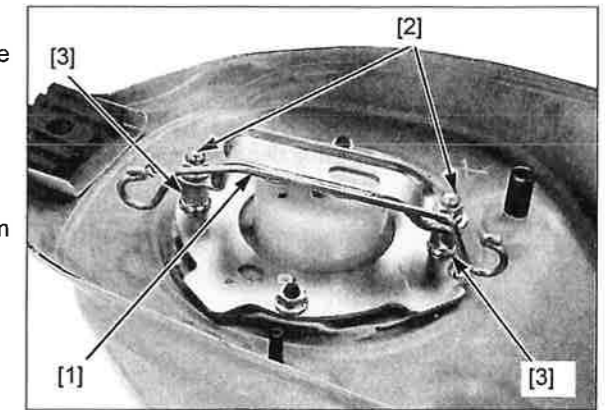
Install the fuel pump guard [1] and cap nuts [2].

Tighten the fuel pump guard nuts to the specified torque while holding the special nuts [3].

### TORQUE:

**Fuel pump guard nut:**  
**12 N·m (1.2 kgf·m, 9 lbf·ft)**

- If the fuel pump is replaced with a new one, perform the ECM initialization procedure (page 4-29).



## FUEL FILTER REPLACEMENT

### NOTE:

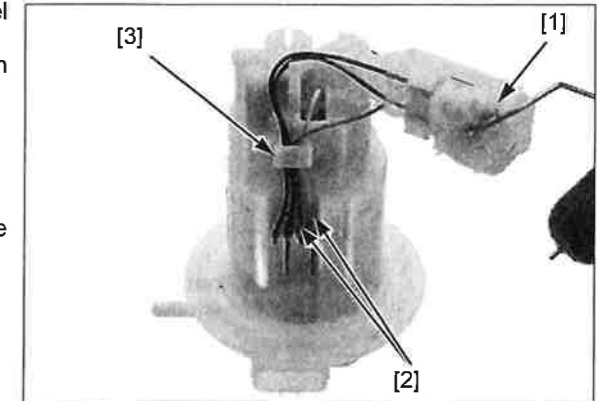
- To prevent dirt and debris from entering the fuel pump unit, always clean it before disassembly.
- Clean the fuel pump unit and fuel pump filter with clean gasoline. Never use commercially available carburetor cleaners.

Remove the fuel pump unit (page 7-9).

Remove the fuel level sensor [1].

Disconnect the fuel pump motor wires [2] and release them from the guide [3].

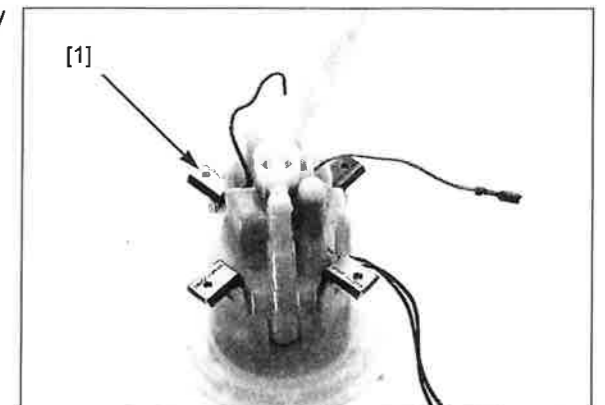
*Do not disconnect the fuel level sensor wires. If disconnected, replace the fuel level sensor with a new one.*



Release the hooks from the stoppers by slightly spreading the hooks using the special tool.

### TOOLS:

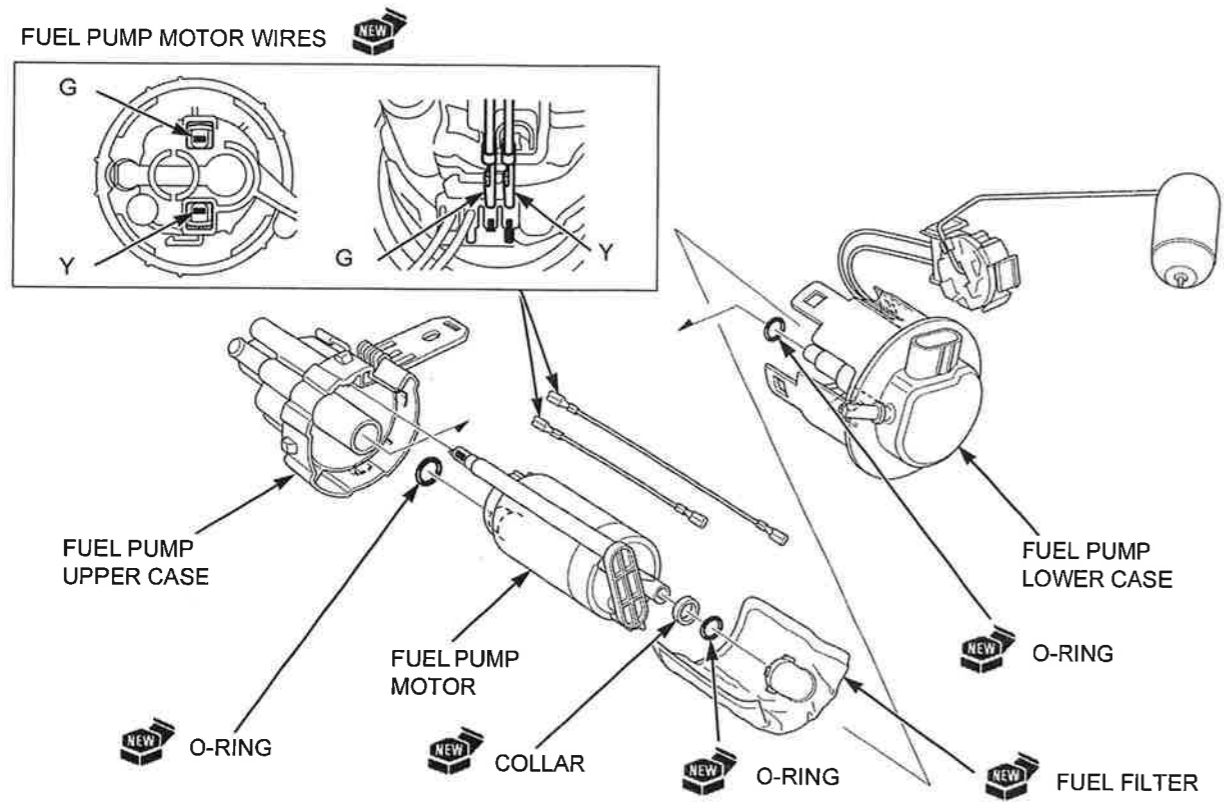
**Fuel pump case remover [1]      070MF-KVS0300**



## FUEL SYSTEM

Disassemble and assemble the fuel pump unit according to the illustration.

- Always replace the fuel pump wires with a new one.

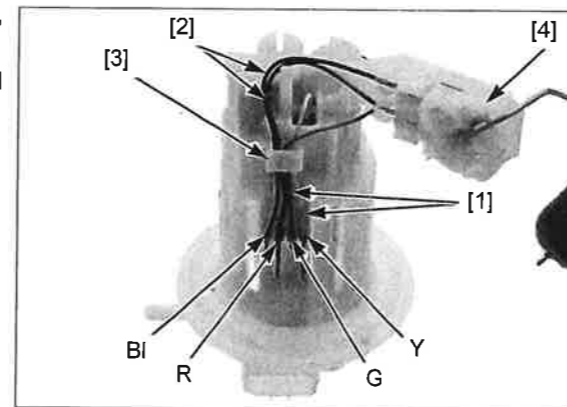


### NOTE:

- If the Red or Black wire connector is disconnected, replace the fuel level sensor with a new one.

Route the fuel pump motor wires [1] and fuel level sensor wires [2] into the guide [3] properly.

Install the fuel level sensor [4].



## FUEL SYSTEM

### AIR CLEANER HOUSING

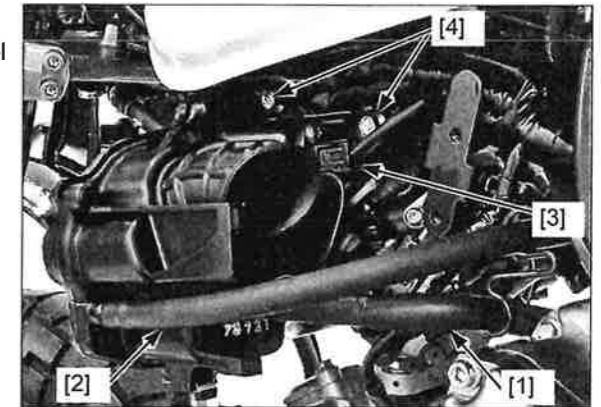
#### REMOVAL/INSTALLATION

Remove the garnishes (page 2-5).

Disconnect the crankcase breather hose [1] and fuel breather hose [2].

Disconnect the IAT sensor 2P (Black) connector [3].

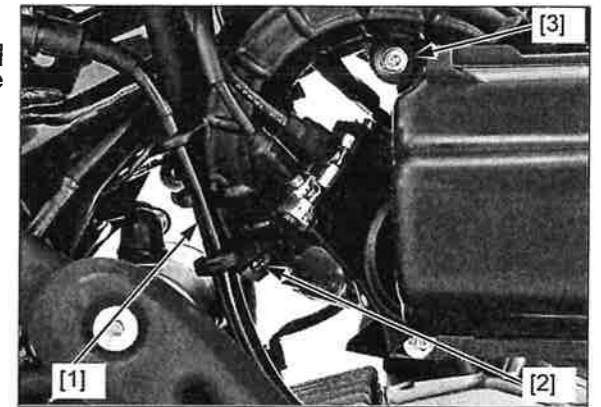
Remove the bolts [4].



Release the spark plug wire [1] from the guides.

Loosen the air cleaner connecting hose band screw [2] and disconnect the connecting hose from the throttle body.

Remove the bolts [3].



Release the boss [1] from the grommet on the stay.

Installation is in the reverse order of removal.

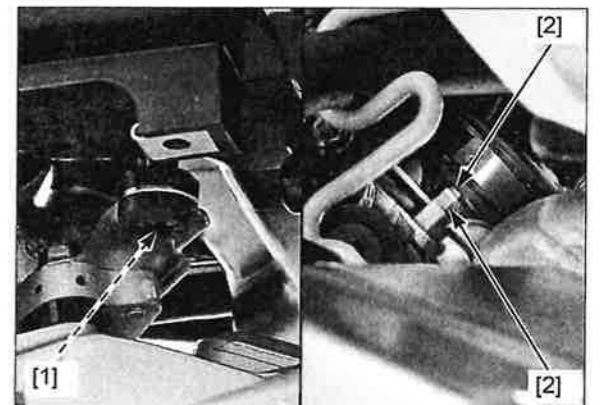
#### TORQUE:

Connecting hose band screw:

1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)

#### NOTE:

Connect the connecting hose to the throttle body by aligning its groove [2] with the tab [3] of the throttle body.



## THROTTLE BODY

### REMOVAL/INSTALLATION

- If the throttle body is disassembled or replaced with a new one, perform the ECM initialization procedure (page 4-29).

Relieve the fuel pressure and disconnect the quick connect fitting from the fuel injector joint (page 7-4).

Remove the air cleaner housing (page 7-14).

Remove the bolt/washer [1] and throttle drum cover [2].

Loosen the throttle cable lock nuts [3].

Release the throttle cables [4] from the cable bracket [5] and disconnect them from the throttle drum [6].

*Be careful not to damage the threads of the throttle cables.*

Disconnect the following:

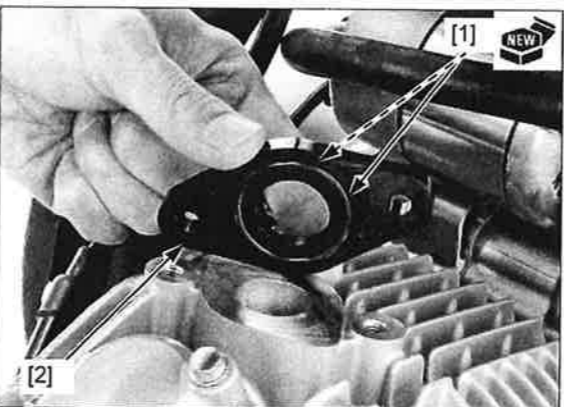
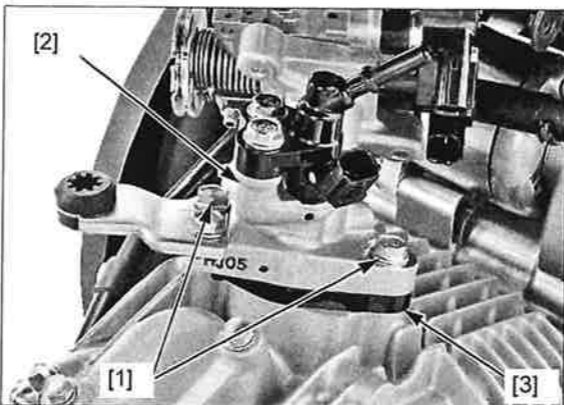
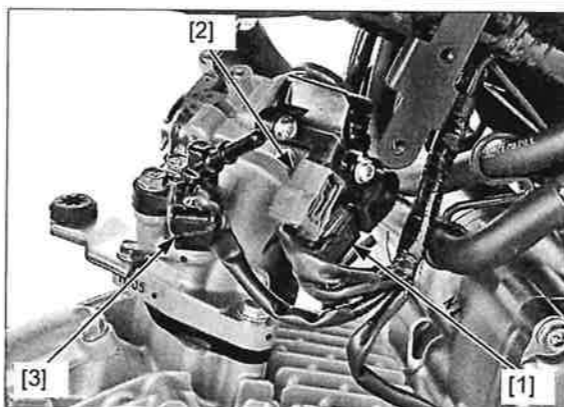
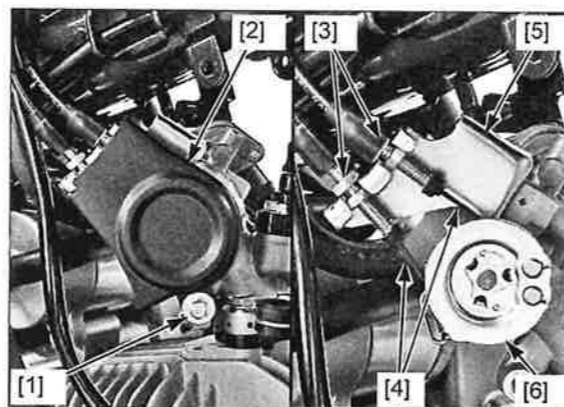
- TP sensor 3P (Black) connector [1]
- Fast idle solenoid valve 2P (Gray) connector [2]
- Fuel injector 2P (Black) connector [3]

Remove the following:

- Bolts [1]
- Throttle body/intake pipe [2]
- Insulator [3]

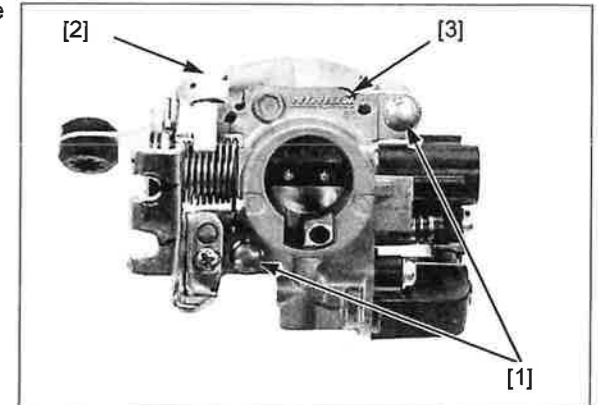
Remove the O-rings [1] from the insulator [2].

- Cover the intake port of the cylinder head with a clean cloth to prevent the foreign object from falling into the cylinder head.



## FUEL SYSTEM

Remove the bolts [1] and intake pipe [2] from the throttle body [3].



Remove the O-ring [1] from the throttle body [2].  
Installation is in the reverse order of removal.

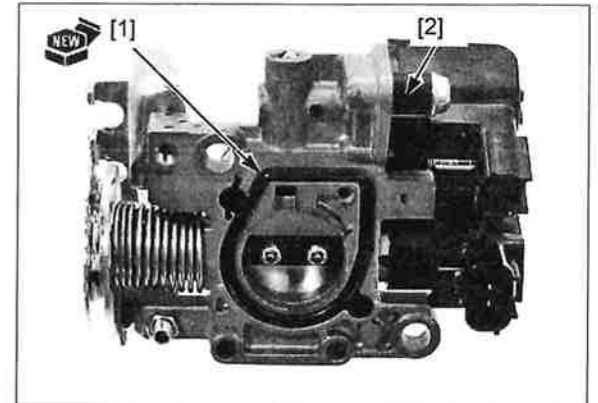
**TORQUE:**

**Throttle cable lock nut**  
**4.5 N·m (0.5 kgf·m, 3.3 lbf·ft)**

Adjust the throttle grip freeplay (page 3-4).

**NOTE:**

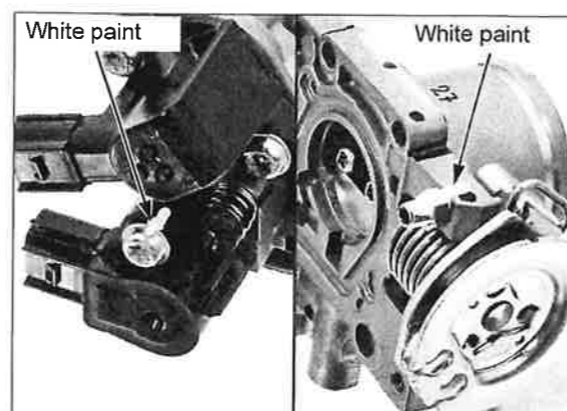
- Replace the O-rings with new ones.
- Install the insulator with its bosses facing the engine side.





**DISASSEMBLY/ASSEMBLY**

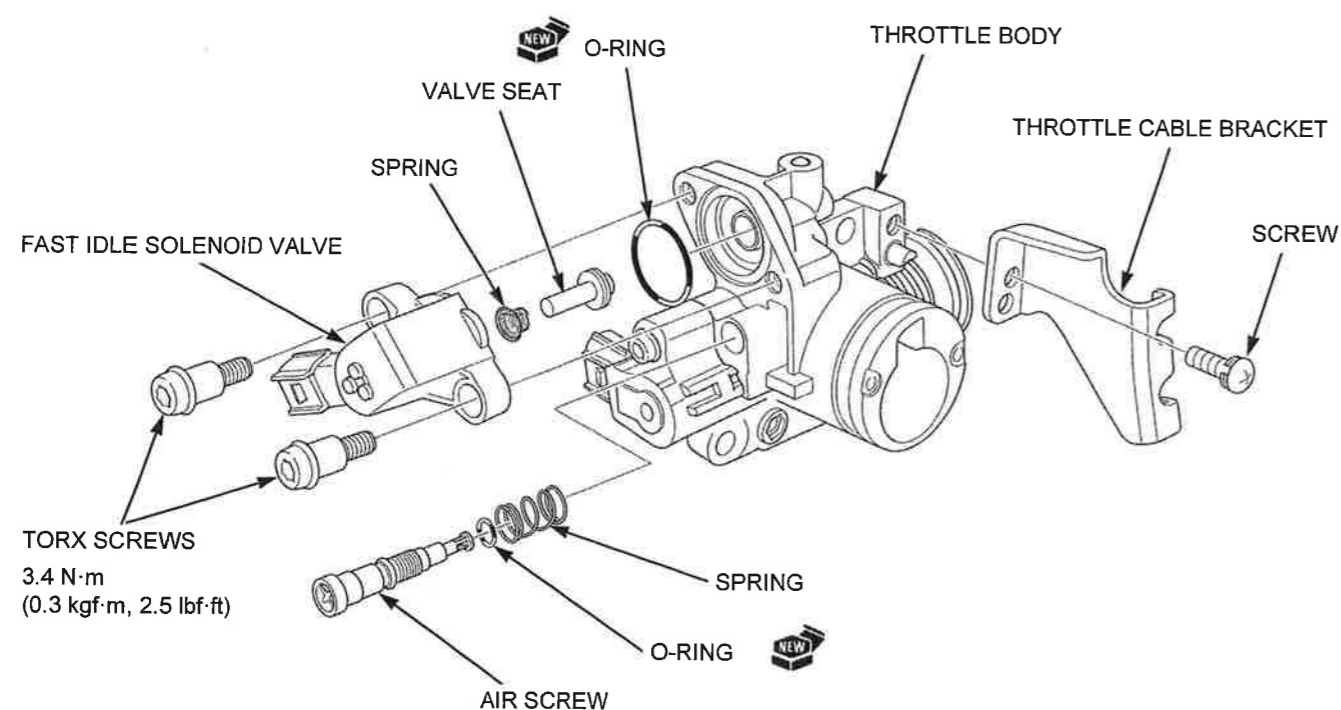
- The throttle body is factory pre-set. Do not disassemble in a way other than shown in this manual.
- Do not snap the throttle valve from full open to full close after the throttle cable has been removed. It may cause incorrect idle operation.
- Do not damage the throttle body. It may cause incorrect throttle valve operation.
- Do not loosen or tighten the white painted screw or nut. Removing them can cause throttle body malfunction.



Before removing the idle air screw [1], turn it in carefully to count the number of turns until it seats lightly. Make a note to use as a reference when reinstalling the idle air screw.

**IDLE AIR SCREW STANDARD OPENING:  
2 turns out from the fully seated position**

Disassemble and assemble the throttle body according to the illustration.



- After installation, perform the following:
- Engine idle speed inspection (page 3-11)
  - TP sensor reset (page 4-28)

## FUEL SYSTEM

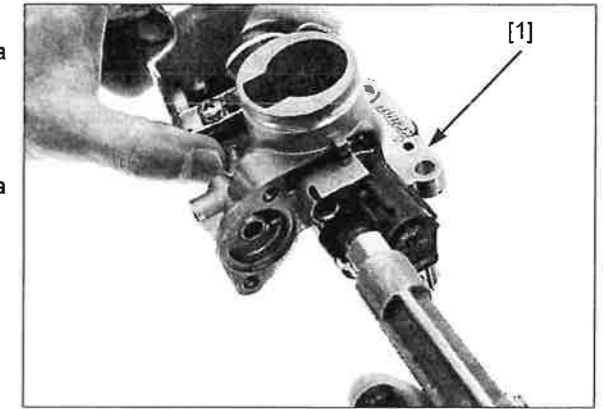
### CLEANING

Disassemble the throttle body (page 7-17).

Clean the air passage of the throttle body [1] using a compressed air.

Check the air passage for clogs.

- Do not increase the air pressure too high.
- Cleaning the air passages and sensor hole with a piece of wire will damage the throttle body.

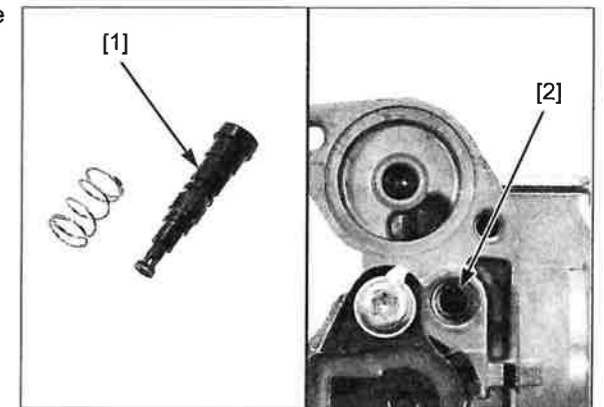


### IDLE AIR SCREW INSPECTION

Inspect the idle air screw [1] for carbon deposits on the tip and air passage.

Inspect the idle air port [2] for carbon deposits.

Clean it if necessary.

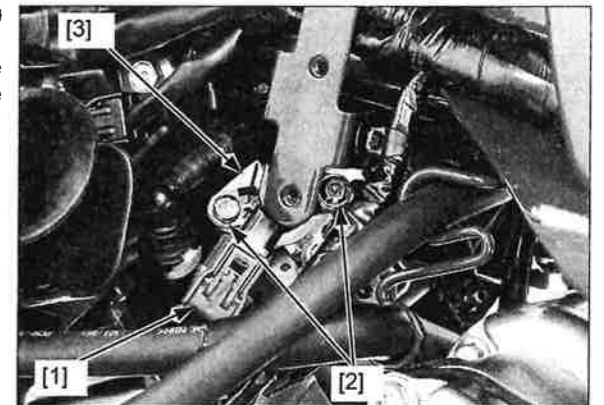


## FAST IDLE SOLENOID VALVE

### REMOVAL/INSTALLATION

Disconnect the fast idle solenoid valve 2P (Gray) connector [1].

Remove the torx screws [2] and fast idle solenoid valve [3] from the throttle body, being careful not to drop the valve seat and spring.



Remove the following:

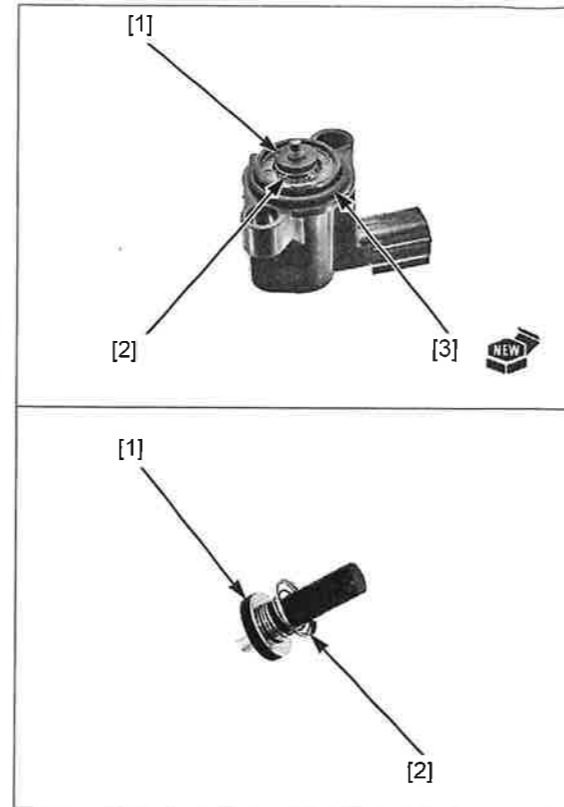
- Valve seat [1]
- Spring [2]
- O-ring [3]

Installation is in the reverse order of removal.

**TORQUE:**

**Fast idle solenoid valve torx screw:  
3.4 N·m (0.3 kgf·m, 2.5 lbf·ft)**

- Replace the O-ring with a new one.
- Instal the spring to the valve seat in the direction as shown.
- Be careful not to drop the valve seat and spring when installing the fast idle solenoid valve.



**OPERATION INSPECTION**

Remove the fast idle solenoid valve (page 7-18).

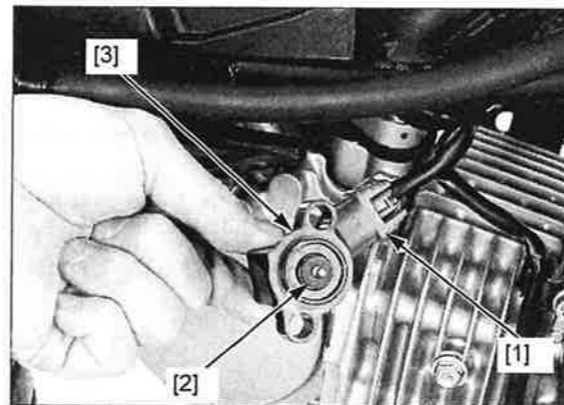
Temporarily connect the fast idle solenoid valve 2P (Gray) connector [1].

Shift the transmission in neutral.

Turn the ignition switch ON with the engine stop switch "O".

Push the starter switch.

It is normal if the valve seat [2] is pulled into the valve body [3] when the starter switch is pushed.



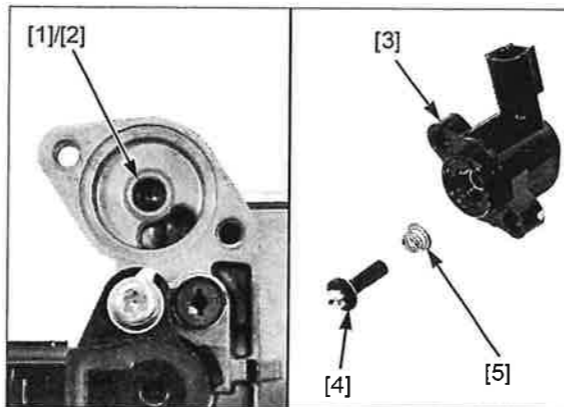
**FAST IDLE SOLENOID VALVE/VALVE SEAT INSPECTION**

Remove the fast idle solenoid valve (page 7-18).

Check for contamination or damage of the valve seat area [1] and air passage [2] of the throttle body. Clean if necessary.

Check for contamination or damage of the fast idle solenoid valve [3] and valve seat [4]. Clean if necessary.

Check for deterioration or damage of the spring [5].



## FUEL SYSTEM

### FUEL INJECTOR

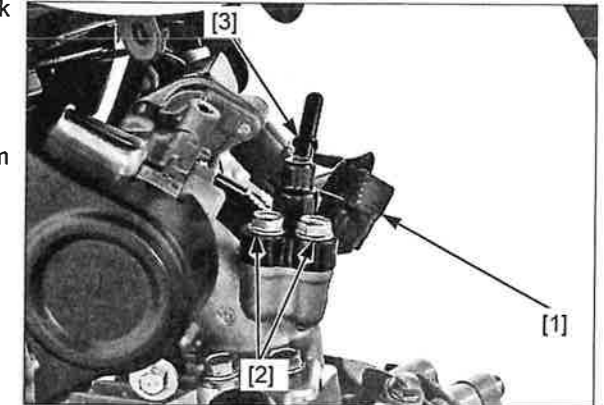
#### REMOVAL

Relieve the fuel pressure and disconnect the quick connect fitting from the fuel injector joint (page 7-4).

Remove the air cleaner housing (page 7-14).

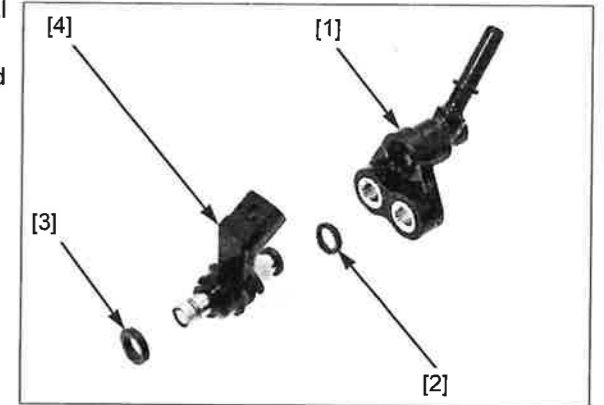
Disconnect the fuel injector 2P (Black) connector [1].

Remove the bolts [2] and fuel injector assembly [3] from the throttle body.



Remove the fuel injector joint [1], O-ring [2] and seal ring [3] from the fuel injector [4].

Check the removed parts for wear or damage and replace them if necessary.

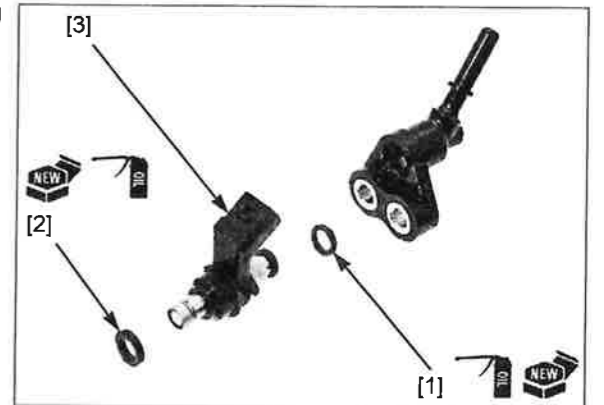


#### INSTALLATION

Apply engine oil to a new O-ring [1] and a new seal ring [2].

Install the O-ring and seal ring to the fuel injector [3], being careful not to damage them.

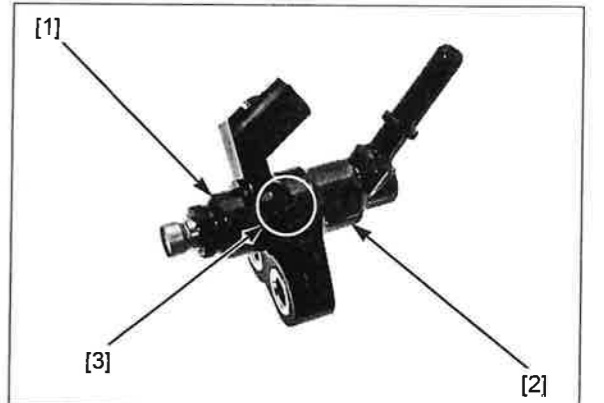
Install the O-ring to the fuel injector.



Install the fuel injector [1] into the fuel injector joint [2], being careful not to damage the O-ring.

#### NOTE:

Align the fuel injector body with the fuel injector joint tab [3] as shown.



## FUEL SYSTEM

Install the fuel injector assembly [1] to the intake pipe.  
Install and tighten the fuel injector joint mounting bolts [2] alternately.

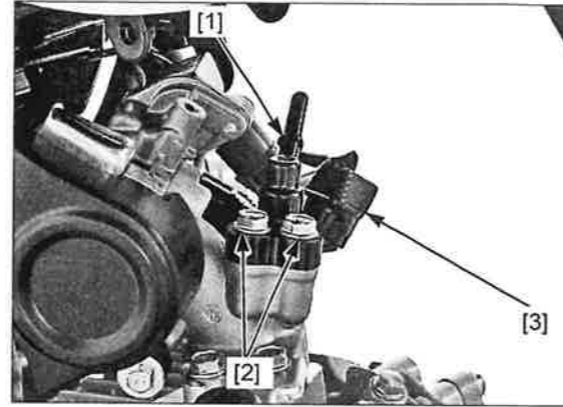
**NOTE:**

Be careful not to damage the seal ring.

Connect the fuel injector 2P (Black) connector [3].

Install the air cleaner housing (page 7-14).

Reconnect the quick connect fitting and normalize the fuel pressure (page 7-5).



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**MEMO**

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# 8. LUBRICATION SYSTEM

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SERVICE INFORMATION.....	8-2	OIL PUMP .....	8-4
TROUBLESHOOTING .....	8-2	OIL PUMP DRIVE GEAR .....	8-5
LUBRICATION SYSTEM DIAGRAM.....	8-3		

## LUBRICATION SYSTEM

---

### 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.

- 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**

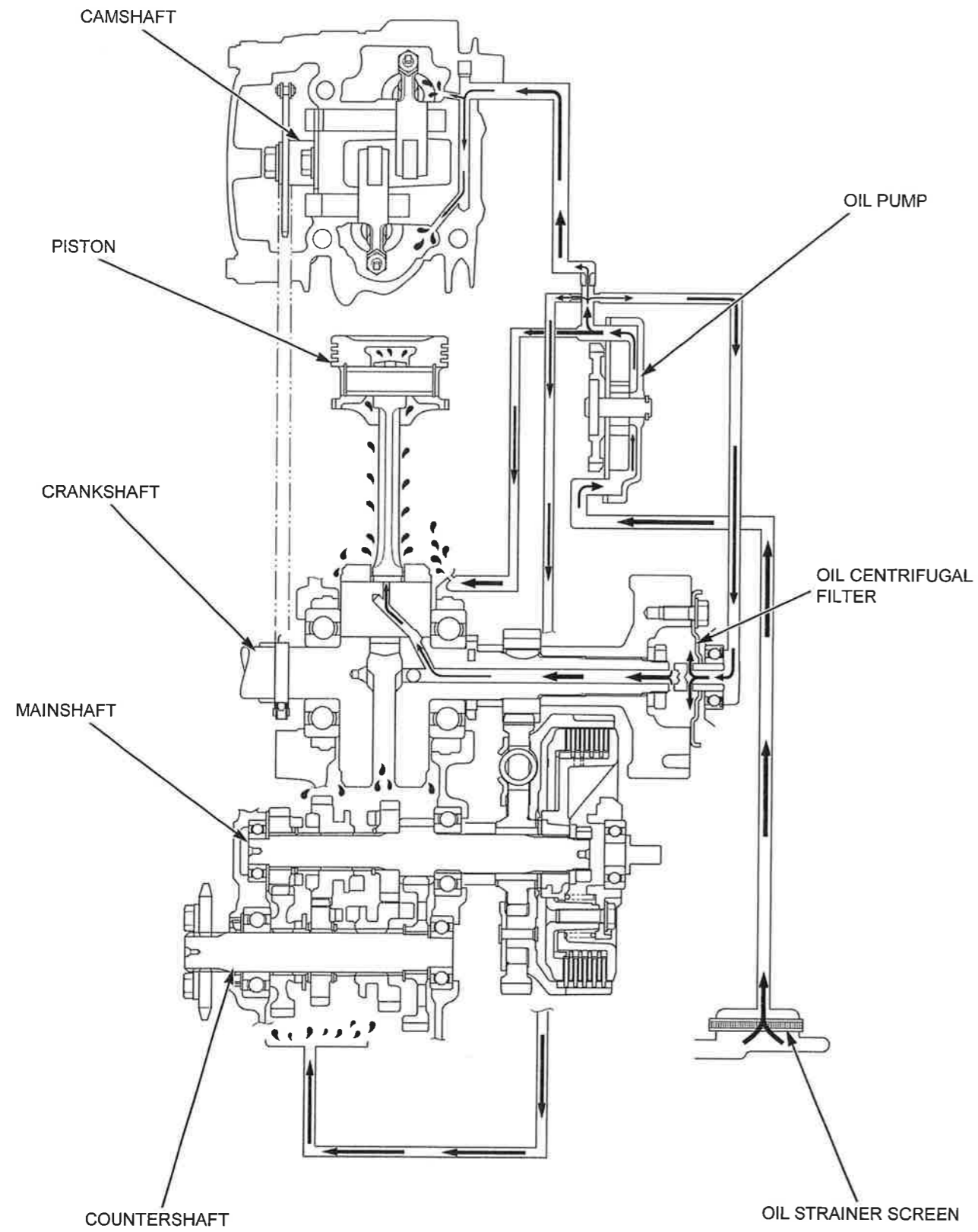
- Oil consumption
- External oil leak
- Worn piston rings
- Improperly installed piston rings
- Worn valve guide or stem seal
- Worn cylinder

##### **Oil contamination**

- Worn piston rings
- Improperly installed piston rings
- Worn valve guide or stem seal
- Oil not changed frequently enough
- Clogged oil strainer screen



LUBRICATION SYSTEM DIAGRAM



## LUBRICATION SYSTEM

### OIL PUMP

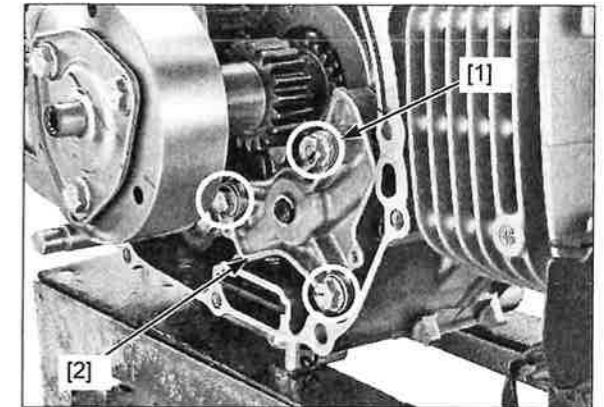
#### REMOVAL/INSTALLATION

Drain the engine oil (page 3-9).

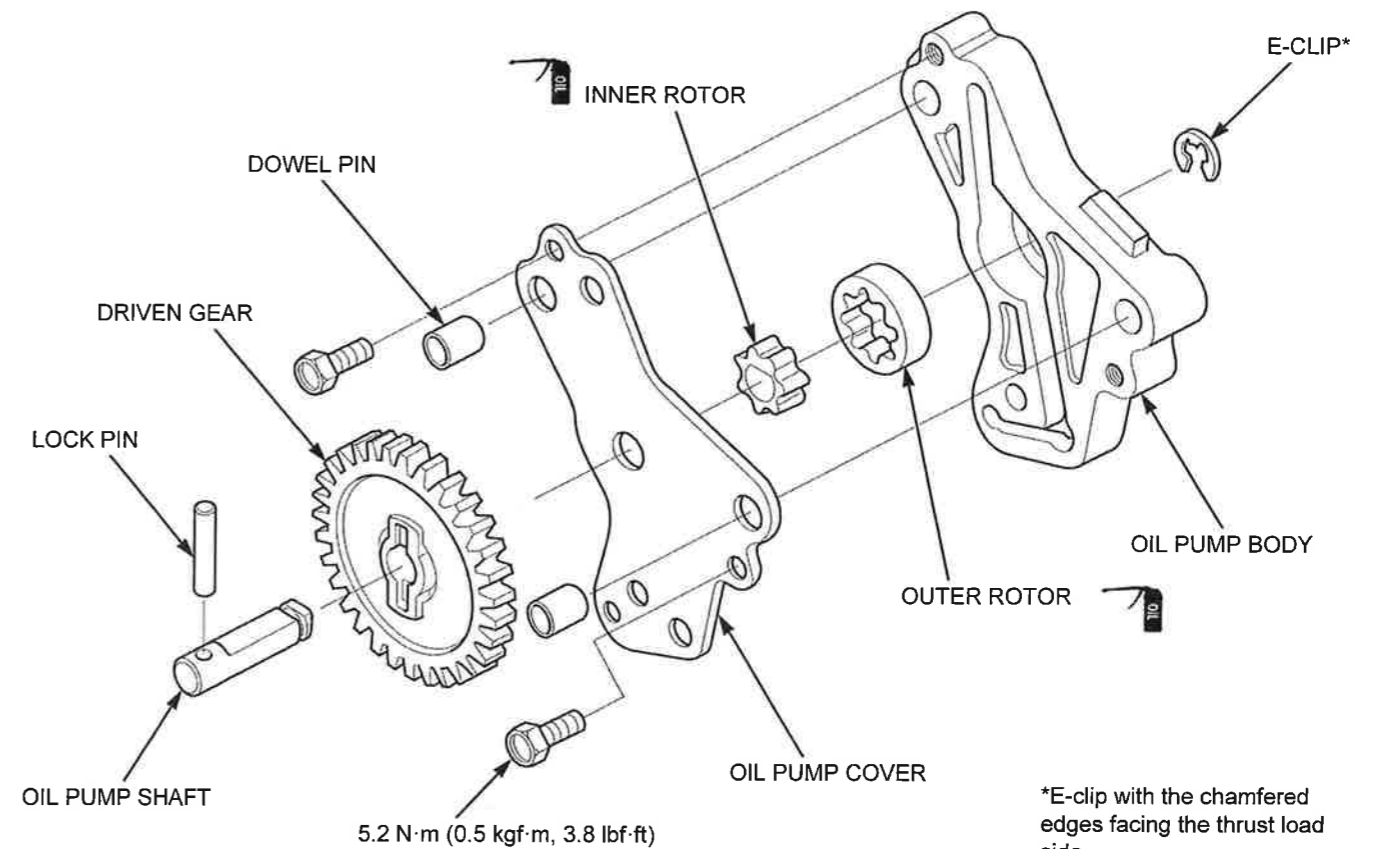
Remove the right crankcase cover (page 11-5).

Remove the bolts [1] and oil pump assembly [2].

Installation is in the reverse order of removal.



#### DISASSEMBLY/ASSEMBLY



#### INSPECTION

Inspect the following parts for damage, abnormal wear, deformation or burning.

- Oil pump driven gear
- Oil pump shaft
- Lock pin
- Inner rotor
- Outer rotor
- Oil pump body

Measure the oil pump clearances according to LUBRICATION SYSTEM SPECIFICATIONS (page 1-5).

If any of the measurement is out of the service limit, replace the oil pump as an assembly.

## OIL PUMP DRIVE GEAR

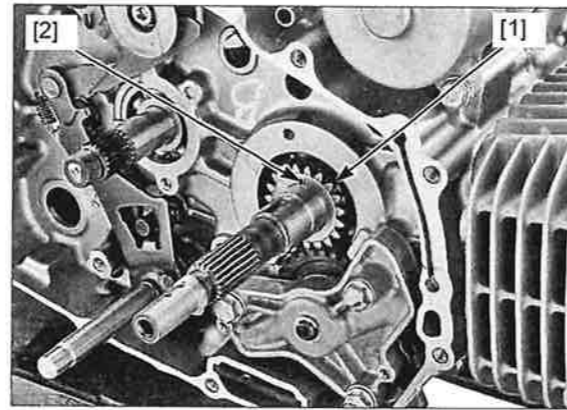
### REMOVAL/INSTALLATION

Remove the clutch assembly (page 11-8).

Remove the oil pump drive gear [1] and pin [2].  
Check the oil pump drive gear for damage and replace it if necessary.

Installation is in the reverse order of removal.

- Install the oil pump drive gear by aligning the gear groove with the pin.



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MEMO

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## 9. CYLINDER HEAD/VALVES

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SERVICE INFORMATION.....	9-2	CAMSHAFT/ROCKER ARM .....	9-6
TROUBLESHOOTING .....	9-4	CYLINDER HEAD .....	9-11
COMPONENT LOCATION .....	9-5	CAM CHAIN TENSIONER .....	9-17
CYLINDER COMPRESSION TEST.....	9-6		

9

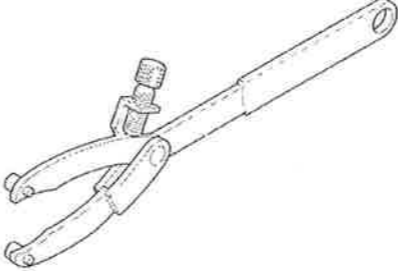
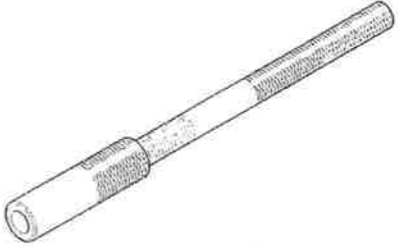
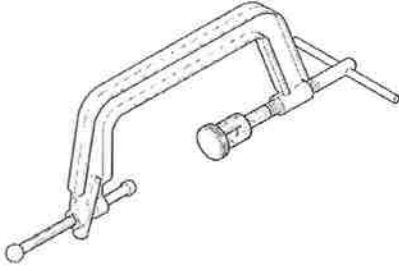






## CYLINDER HEAD/VALVES

### SERVICE INFORMATION

#### GENERAL

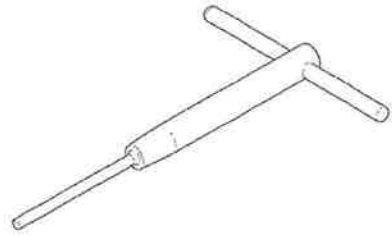
- This section covers service of the cylinder head, valves, camshaft and cam chain tensioner.
- The cylinder head, valves, camshaft and cam chain tensioner services can be done with the engine installed in the frame.
- When disassembling, mark and store the disassembled parts to ensure that they are 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.

#### TOOLS

<p>Universal holder 07725-0030000</p> 	<p>Valve guide driver adjusting driver 07743-0020000</p>  <p>Not available in the U.S.A.</p>	<p>Valve spring compressor 07757-0010000</p> 
<p>Seat cutter, 27.5 mm (45° IN) 07780-0010200</p>  <p>Equivalent commercially available in the U.S.A.</p>	<p>Seat cutter, 22 mm (45° EX) 07780-0010701</p>  <p>Equivalent commercially available in the U.S.A.</p>	<p>Flat cutter, 22 mm (32° EX) 07780-0012601</p>  <p>Equivalent commercially available in the U.S.A.</p>
<p>Flat cutter, 27 mm (32° IN) 07780-0013300</p>  <p>Equivalent commercially available in the U.S.A.</p>	<p>Interior cutter, 22 mm (60° EX) 07780-0014202</p>  <p>Equivalent commercially available in the U.S.A.</p>	<p>Interior cutter, 26 mm (60° IN) 07780-0014500</p>  <p>Equivalent commercially available in the U.S.A.</p>

### CYLINDER HEAD/VALVES

Cutter holder, 5.0 mm  
07781-0010400



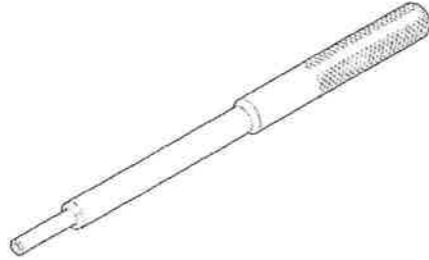
Equivalent commercially available in  
the U.S.A.

Valve guide reamer, 5.0 mm  
07984-MA60001

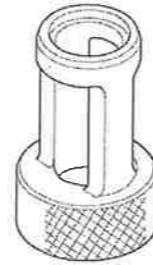


07984-MA6000D (U.S.A. only)

Valve guide driver, 5.0 mm  
07942-MA60000



Valve spring compressor  
Attachment  
07959-KM30101



## CYLINDER HEAD/VALVES

---

### 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 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 10-5).

#### **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
  - Leaking or damaged cylinder head gasket
  - Warped or cracked cylinder head
- Worn cylinder, piston or piston rings (page 10-5)

#### **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 10-5)

#### **Excessive noise**

- Cylinder head:
  - Incorrect valve clearance
  - Sticking valve or broken valve spring
  - Damaged or worn camshaft
  - 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
  - Faulty cam chain tensioner
- Worn cylinder, piston or piston rings (page 10-5)

#### **Rough idle**

- Low cylinder compression
- Faulty fuel system



COMPONENT LOCATION

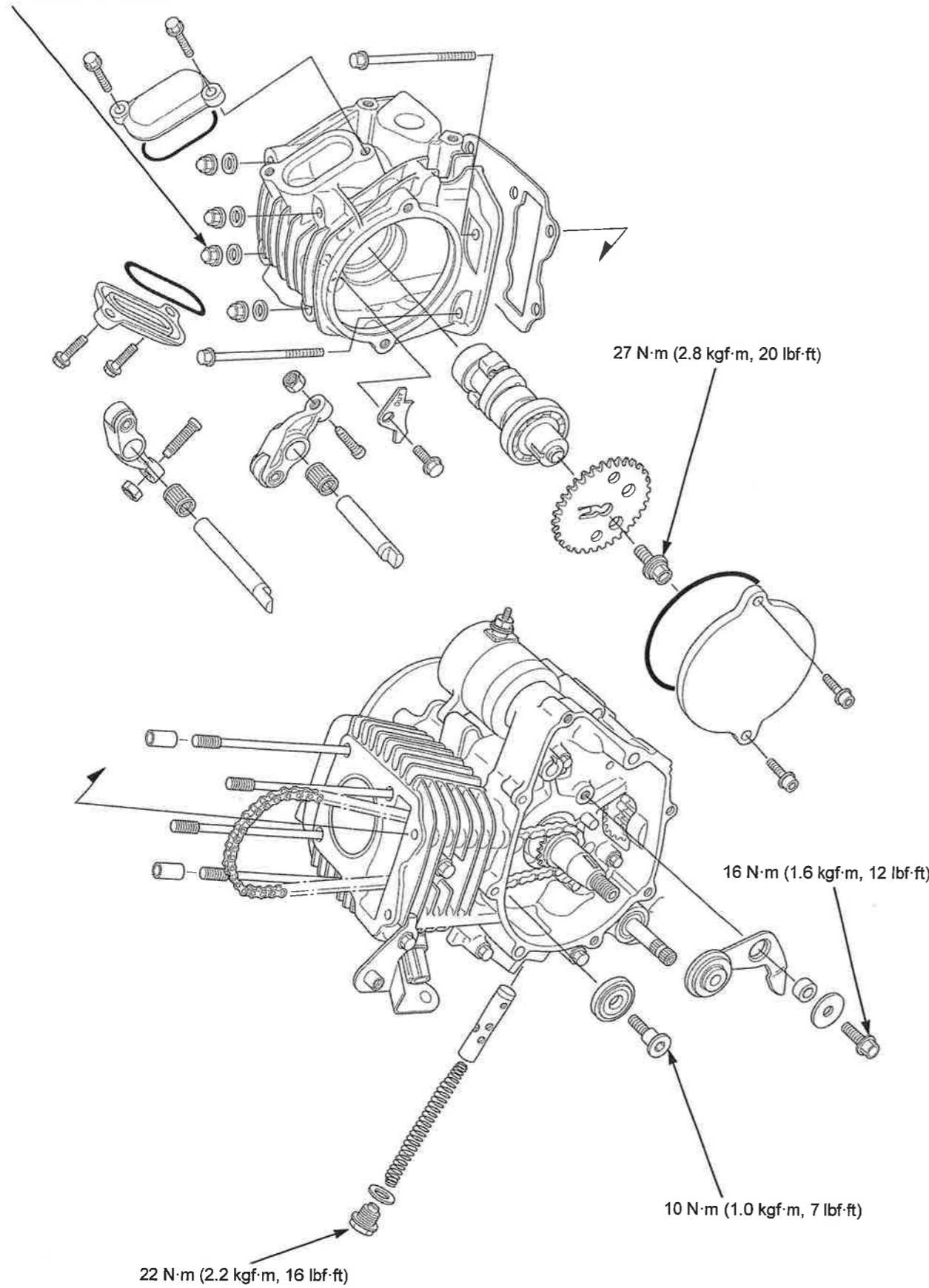
24 N·m (2.4 kgf·m, 18 lbf·ft)

27 N·m (2.8 kgf·m, 20 lbf·ft)

16 N·m (1.6 kgf·m, 12 lbf·ft)

10 N·m (1.0 kgf·m, 7 lbf·ft)

22 N·m (2.2 kgf·m, 16 lbf·ft)



## CYLINDER HEAD/VALVES

### CYLINDER COMPRESSION TEST

Warm up the engine to normal operating temperature.

Stop the engine and disconnect the spark plug cap.

Remove the spark plug (page 3-6).

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:

**1,098 kPa (11.2 kgf/cm<sup>2</sup>, 159 psi) at 600 rpm**

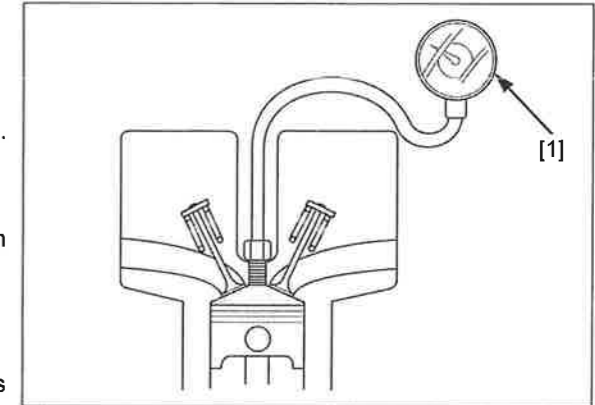
If compression is high, it indicates that carbon deposits have accumulated on the combustion chamber and/or the piston head.

If compression is low, pour 3 – 5 cm<sup>3</sup> (0.1 – 0.2 oz) 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.

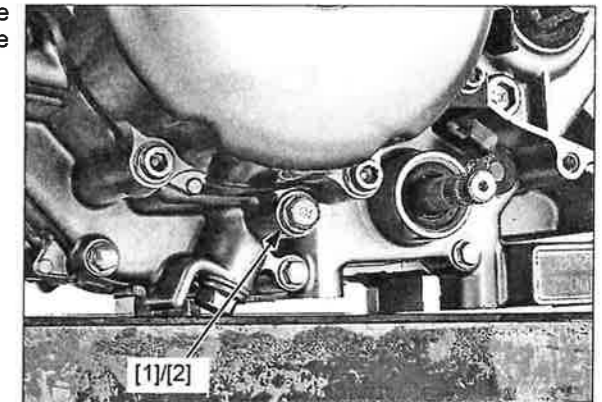


### CAMSHAFT/ROCKER ARM

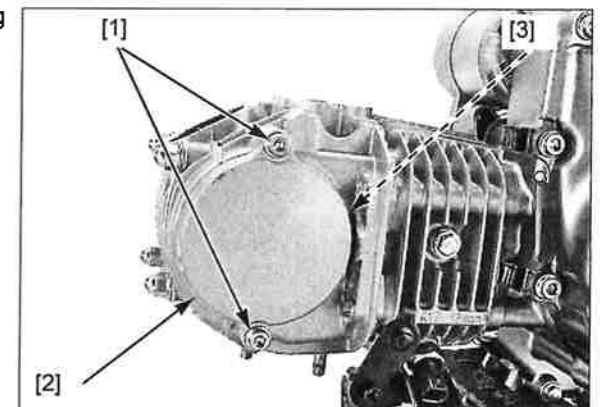
#### REMOVAL

Remove the valve adjusting hole caps and set the piston to the TDC (Top Dead Center) on the compression stroke (page 3-7).

Remove the bolt [1] and sealing washer [2].



Remove the bolts [1], cam sprocket cover [2] and O-ring [3].



## CYLINDER HEAD/VALVES

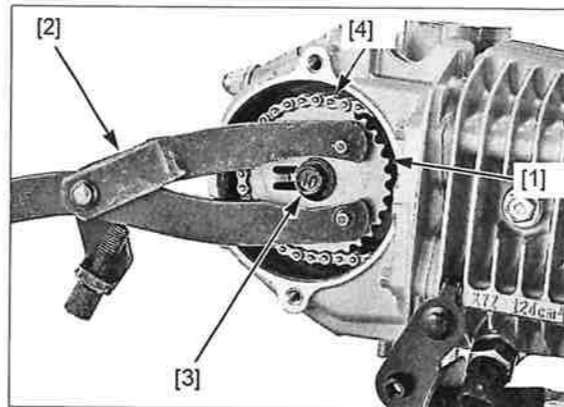
Hold the cam sprocket [1] by using the special tool.

**TOOLS:**

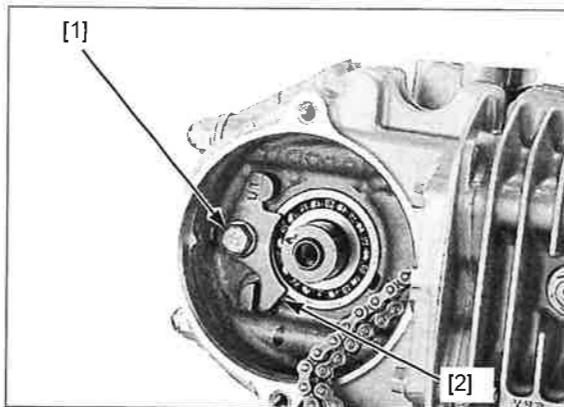
Universal holder [2]                    07725-0030000

Remove the washer bolt [3], cam sprocket from the camshaft and cam chain [4] off the cam sprocket.

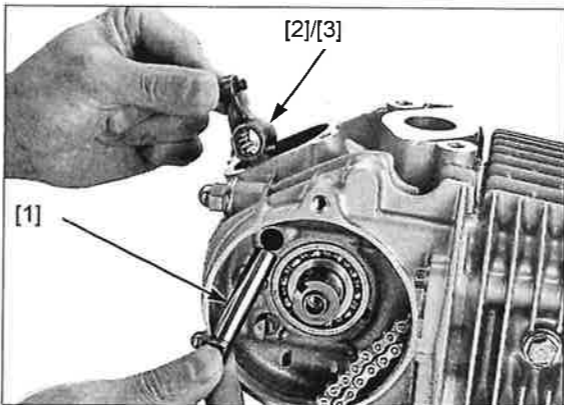
Attach a piece of wire to the cam chain to prevent it from falling into the crankcase.



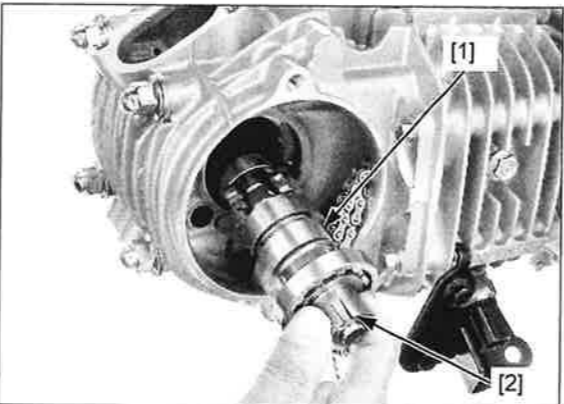
Remove the bolt [1] and rocker arm shaft set plate [2] from the cylinder head.



Remove the rocker arm shafts [1], rocker arms [2] and needle bearings [3].



Remove the camshaft [1] from the cylinder head while turning so its groove [2] is facing up as shown.

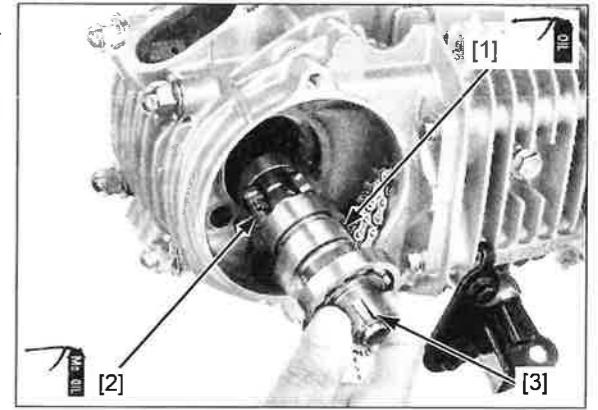


## CYLINDER HEAD/VALVES

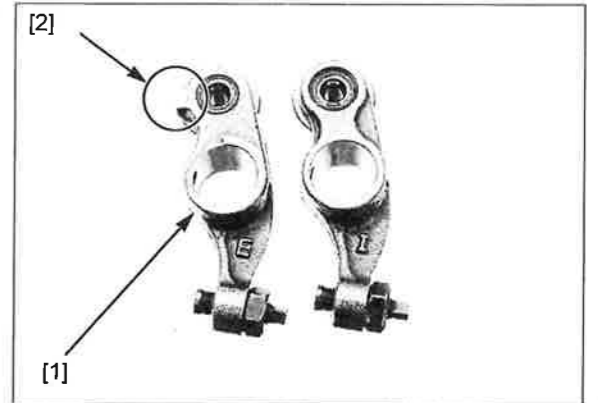
### INSTALLATION

Apply engine oil to the camshaft [1] whole surface.  
Apply molybdenum disulfide oil to the decompressor cam and arm sliding area [2].

Install the camshaft into the cylinder head with its groove [3] facing upward as shown.



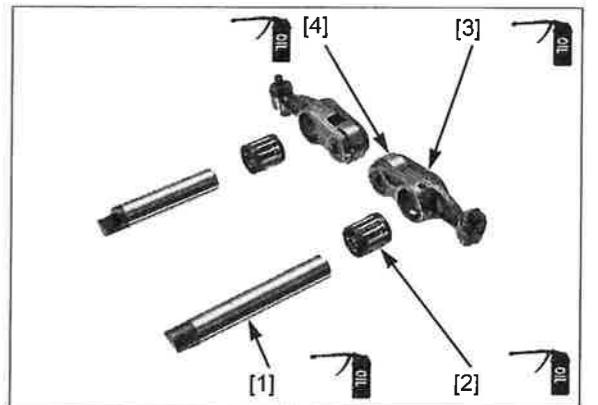
The exhaust rocker arm [1] has a projection [2] to push the decompressor cam.



Apply engine oil to the sliding surfaces of the rocker arm shafts [1] and needle bearings [2].

Apply engine oil to the inner surfaces of the rocker arms [3] and sliding surfaces of the rollers [4].

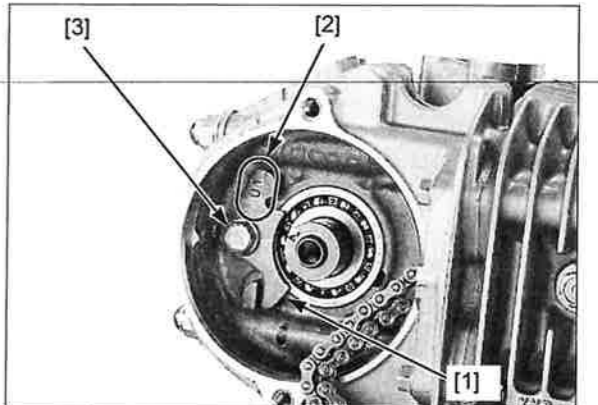
- The exhaust rocker arm shaft is longer than the intake rocker arm shaft.



Install the rocker arms, needle bearings and rocker arm shafts into the cylinder head.

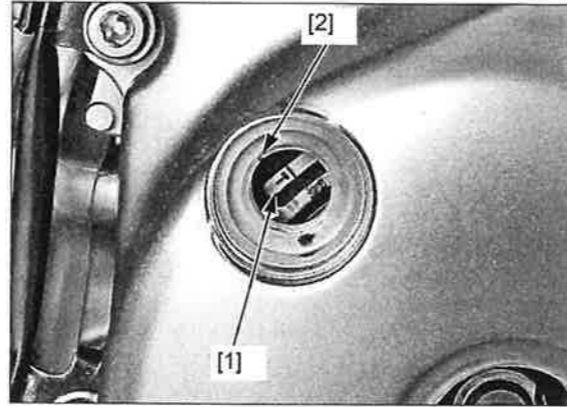
Install the rocker arm shaft set plate [1] with its "OUT" mark [2] facing out as shown.

Install and tighten the bolt [3].



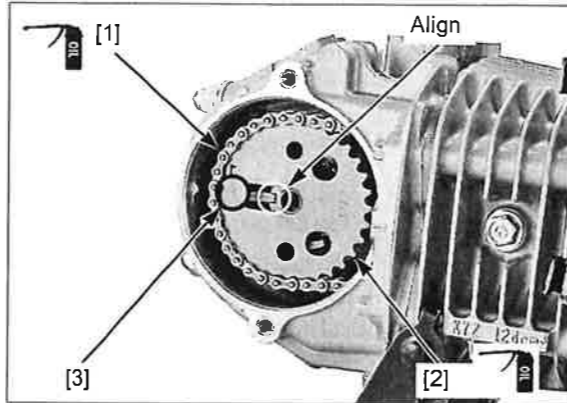
## CYLINDER HEAD/VALVES

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] and cam sprocket [2] teeth.

Install the cam chain on the cam sprocket with its "O" mark [3] facing out as shown by aligning its tab with the groove of the camshaft.  
Install the cam sprocket to the camshaft.



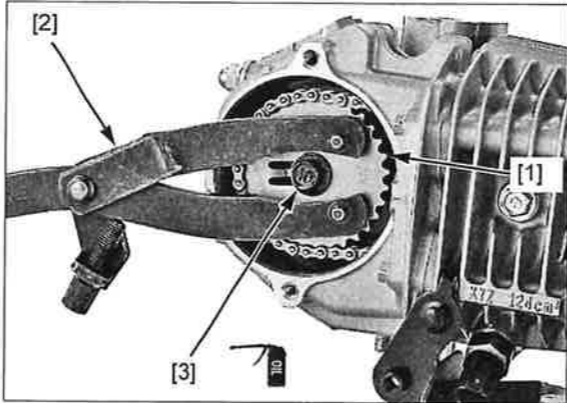
Hold the cam sprocket [1] by using the special tool.

**TOOL:**  
**Universal Holder [2]                    07725-0030000**

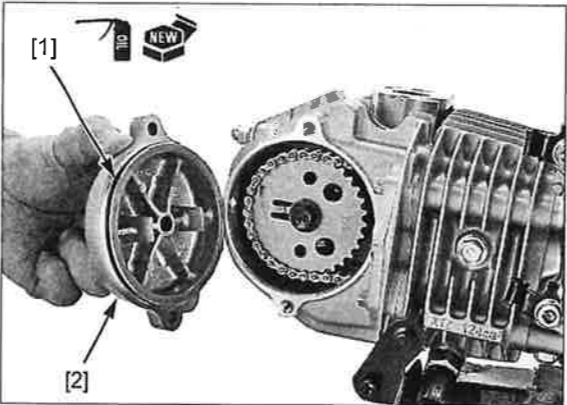
Apply engine oil to the cam sprocket washer bolt [3] threads and seating surface.

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

**TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)**

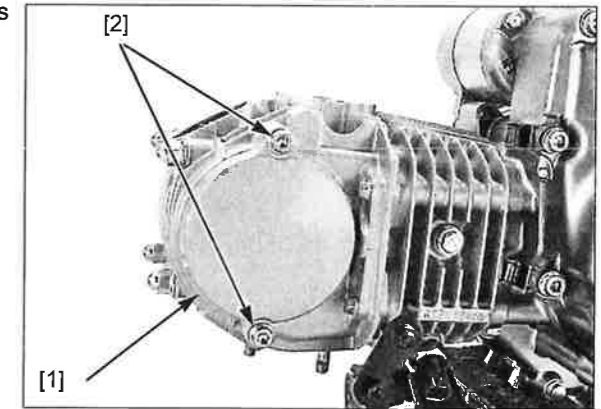


Apply engine oil to a new O-ring [1] and install it into the cam sprocket cover [2] groove.



## CYLINDER HEAD/VALVES

Install the cam sprocket cover [1] and tighten the bolts [2].



Pour 4.0 cm<sup>3</sup> minimum of engine oil into the push rod.

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

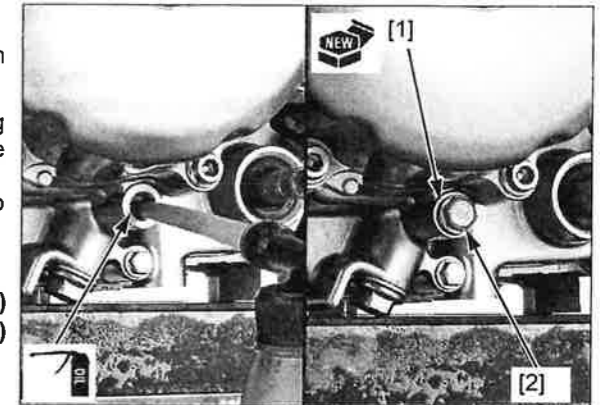
Apply engine oil to the new crankshaft hole cap O-ring and timing hole cap O-ring, then install them to the caps.

Install the crankshaft hole cap and timing hole cap to the left crankcase cover.

### TORQUE:

Crankshaft hole cap 8.0 N·m (0.8 kgf·m, 5.9 lbf·ft)  
Timing hole cap 6.0 N·m (0.6 kgf·m, 4.4 lbf·ft)

Install the valve adjusting hole caps (page 3-7).



### INSPECTION

Inspect the following parts for damage, abnormal wear, deformation, burning or clogs in oil passages.

- Rocker arms/shafts/needle bearings
- Cam sprocket
- Camshaft
- Camshaft bearings

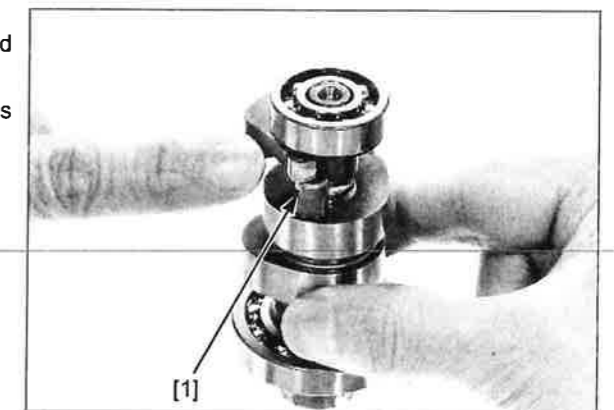
Measure each part according to CYLINDER HEAD/VALVES SPECIFICATIONS (page 1-5).

Replace any part if it is out of service limit.

### DECOMPRESSOR SYSTEM

Turn the decompressor weight [1] with your finger. Make sure the decompressor operates smoothly and returns to the original position by the spring.

If the decompressor is faulty, replace the camshaft as an assembly.



**CYLINDER HEAD**

**REMOVAL**

Perform the ECM initializing procedure if the cylinder head is replaced or is overhauled (page 4-29).

Remove the following:

- Cam sprocket (page 9-6)
- Exhaust pipe/muffler (page 2-10)
- O<sub>2</sub> sensor (page 4-34)
- Throttle body (page 7-15)

Disconnect the spark plug cap.

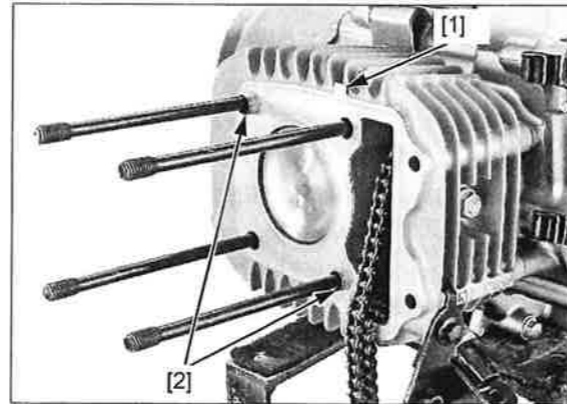
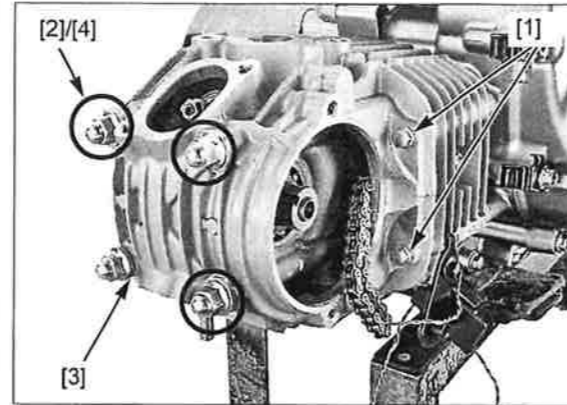
Remove the cylinder head bolts [1].

Loosen the cylinder head nuts [2] in a crisscross pattern in two or three steps.

Remove the four nuts, copper washer [3] and three washers [4].

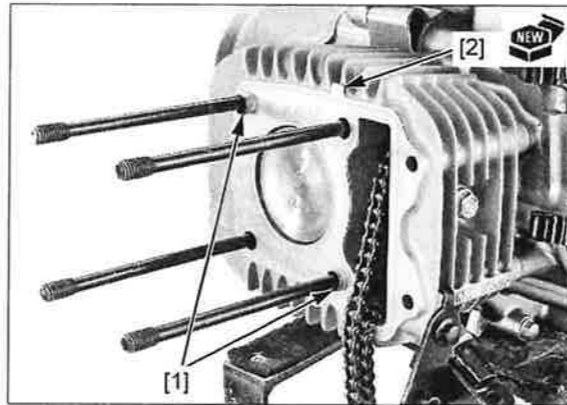
Remove the cylinder head.

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



**INSTALLATION**

Clean the cylinder and cylinder head mating surface. Install the dowel pins [1] and a new gasket [2] onto the cylinder.



## CYLINDER HEAD/VALVES

Install the cylinder head [1] onto the cylinder.

Apply engine oil to the seating surface and threads of the cylinder head nuts [2].

Install new copper washer [3], three washers [4] and tighten the cylinder head nuts to the specified torque in a crisscross pattern.

**TORQUE: 24 N·m (2.4 kgf·m, 18 lbf·ft)**

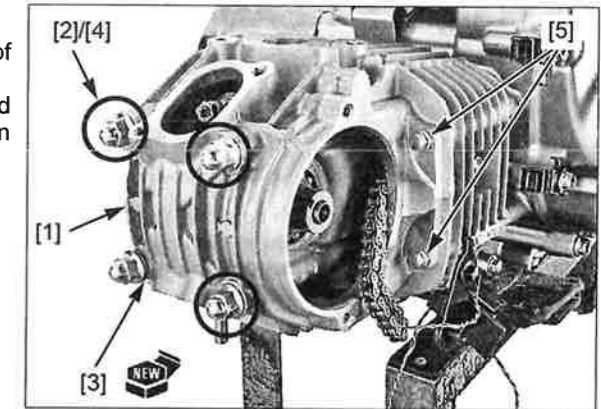
Install and tighten the cylinder head mounting bolts [5].

Connect the spark plug cap.

Install the following:

- Cam sprocket (page 9-8)
- Exhaust pipe/muffler (page 2-10)
- O<sub>2</sub> sensor (page 4-34)
- Throttle body (page 7-15)

Perform the ECM initializing procedure if the cylinder head is replaced or is overhauled (page 4-29).



### DISASSEMBLY

Remove the following:

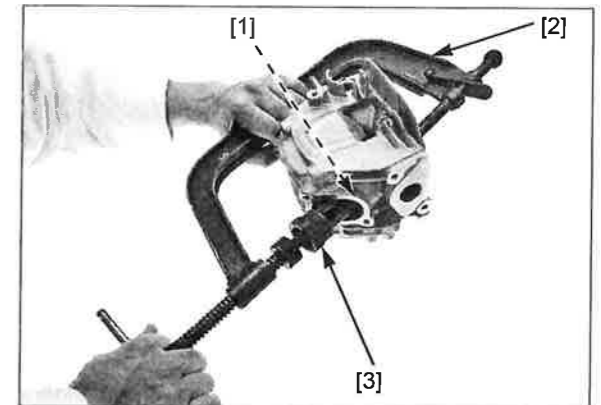
- Spark plug (page 3-6)
- Camshaft/rocker arm (page 9-6)

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

**TOOLS:**

- Valve spring compressor [2] 07757-0010000**
- Valve spring compressor attachment [3] 07959-KM30101**

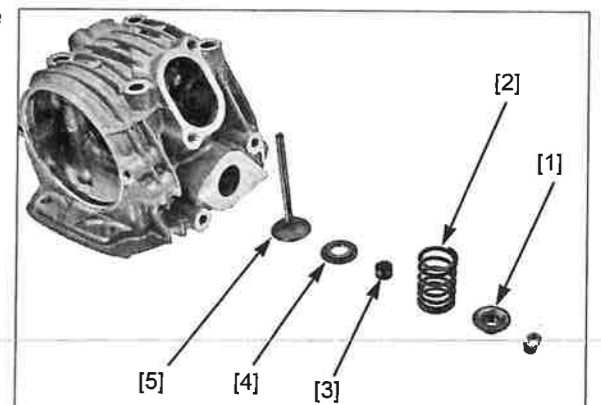
*To prevent loss of tension, do not compress the valve springs more than necessary to remove the cotters.*



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

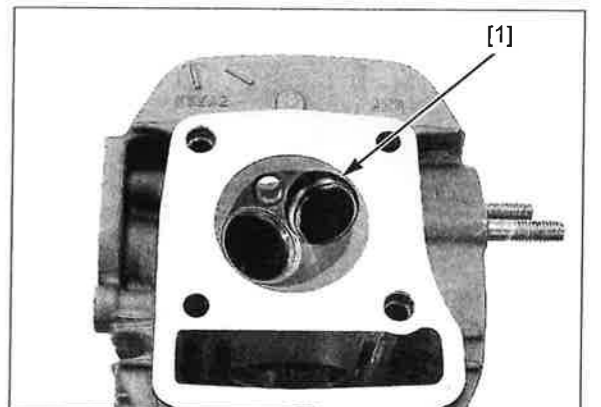
Remove the valve spring compressor and remove the following:

- Valve spring retainers [1]
- Valve springs [2]
- Valve stem seals [3]
- Valve spring seats [4]
- Valves [5]



*Avoid damaging the mating surface and valve seat surfaces.*

Remove the carbon deposits from the combustion chamber [1] and clean off the cylinder head gasket surface.





## CYLINDER HEAD/VALVES

### INSPECTION

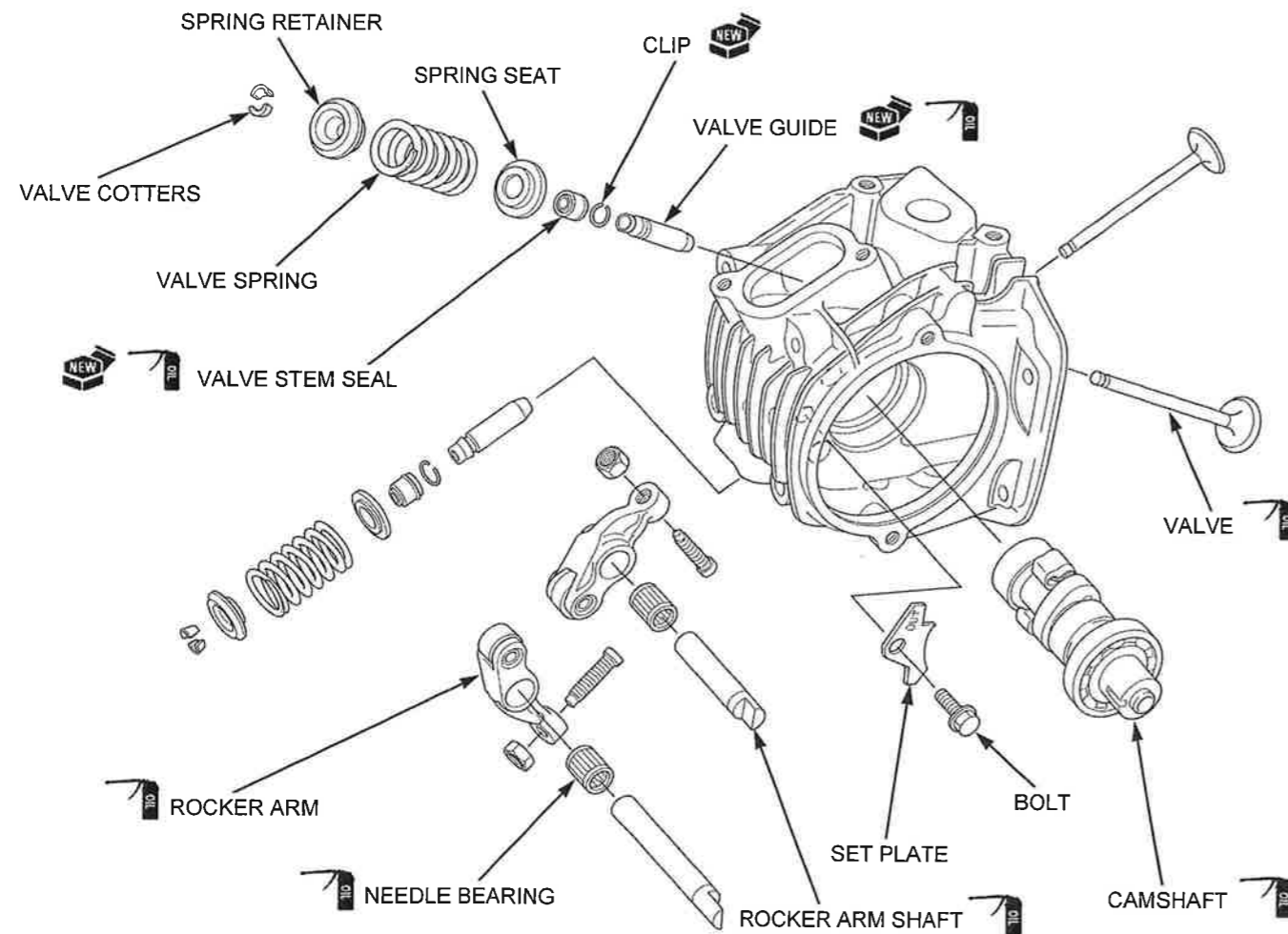
Inspect the following parts for damage, abnormal wear, deformation, burning or clogs in oil passages.

- Cylinder head
- Valve spring
- Valves
- Valve guides

Measure each part and clearance according to CYLINDER HEAD/VALVES SPECIFICATIONS (page 1-5).

Replace any part if it is out of service limit.

### ASSEMBLY



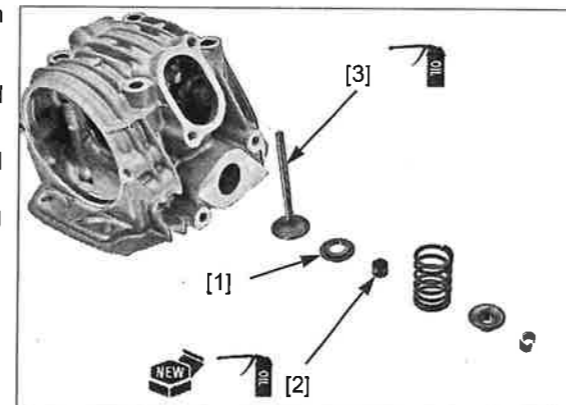
Blow through the oil passage in the cylinder head with compressed air.

Install the valve spring seats [1].

Apply engine oil to the new valve stem seals [2] and install them.

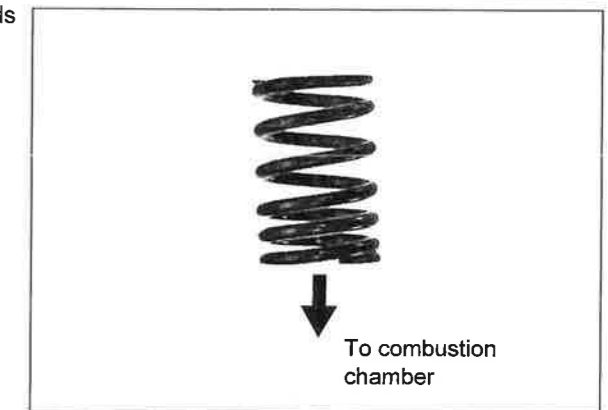
Apply engine oil to the valve stem [3] outer surface and stem end.

Insert the valves into the valve guides while turning them slowly to avoid damage to the valve stem seals.



## CYLINDER HEAD/VALVES

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

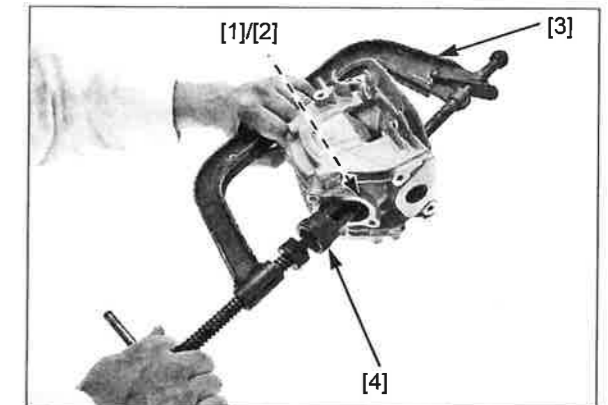


Install the valve spring retainer [1].

*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:**  
Valve spring compressor [3] 07757-0010000  
Valve spring compressor attachment [4] 07959-KM30101



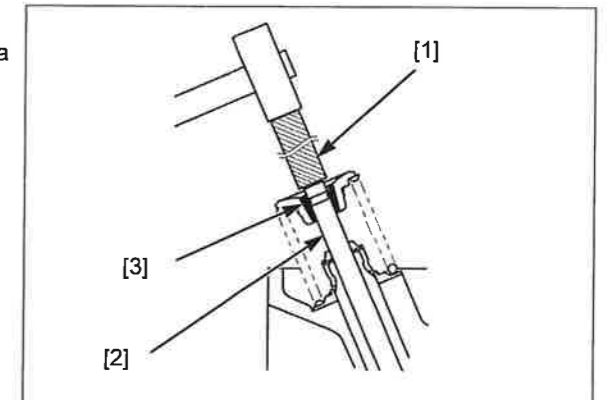
*Support the cylinder head above the work bench surface to prevent valve damage.*

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

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

Install the following:

- Camshaft/rocker arm (page 9-8)
- Spark plug (page 3-6)



## CYLINDER HEAD/VALVES

### VALVE GUIDE REPLACEMENT

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

**NOTE:**

- Be sure to wear heavy gloves to avoid burns when handling the heated cylinder head.
- Using a torch to heat the cylinder head may cause warpage.
- Drive new guides from the camshaft side while the cylinder head is still heated.
- Perform the ECM initializing procedure if the valve guide is replaced with a new one (page 4-29).

Heat the cylinder head to 130 – 140°C (275 – 290°F) with a hot plate or oven. Do not heat the cylinder head beyond 150°C (300°F). 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:**

Valve guide driver, 5.0 mm [2] 07942-MA60000  
or 07984-MA6000D  
(U.S.A. only)

Take out new valve guides from the freezer.

Drive new clips [1] and valve guides [2] into the cylinder head to the specified height from the cylinder head.

**TOOL:**

Valve guide adjusting driver [3] 07743-0020000 not  
available in the  
U.S.A.

**VALVE GUIDE PROJECTION:**

**IN/EX: 10.1 – 10.3 mm (0.40 – 0.41 in)**

Let the cylinder head cool to room temperature.

Ream new valve guides after installation.

**NOTE:**

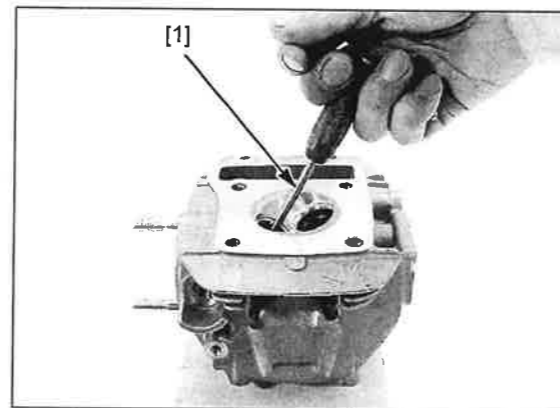
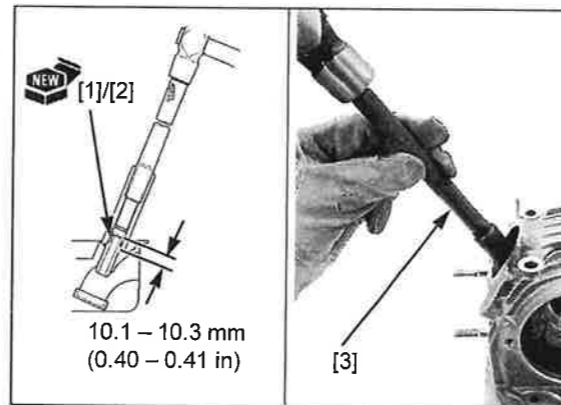
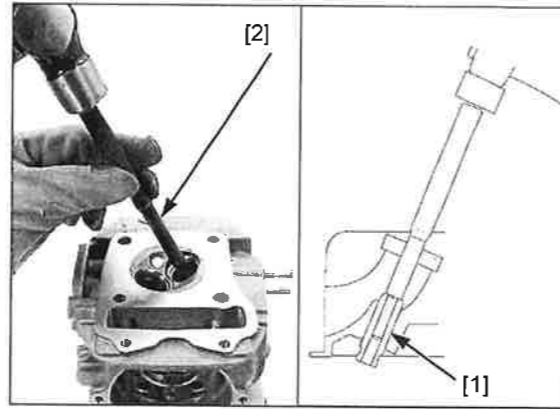
- Take care not to tilt or lean the reamer in the guide while reaming.
- Use cutting oil on the reamer during this operation.

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

**TOOL:**

Valve guide reamer, 5.0 mm [1] 07984-MA60001  
or 07984-MA6000D  
(U.S.A. only)

Clean the cylinder head thoroughly to remove any metal particles after reaming and reface the valve seat (page 9-16).



## CYLINDER HEAD/VALVES

### VALVE SEAT INSPECTION/REFACING

#### INSPECTION

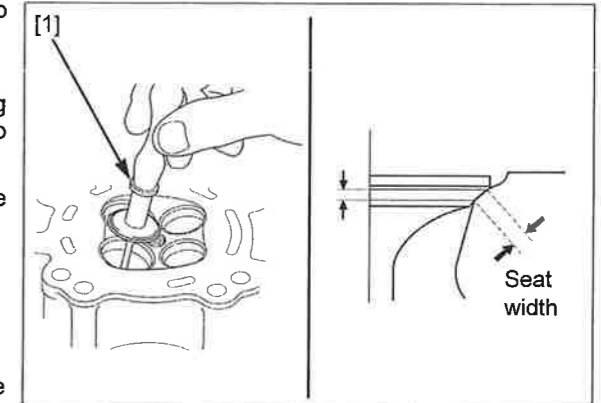
Clean the intake and exhaust valves thoroughly to remove carbon deposits.

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 [1], without rotating the valve to make a clear pattern.

Remove the valve and inspect the valve seat face width.

Inspect the valve seat face for:

- Damaged face:
  - Replace the valve and reface the valve seat
- Uneven seat width:
  - Bent or collapsed valve stem; Replace the valve and reface the valve seat
- Contact area (too low or too high area):
  - Reface the valve seat



#### REFACING

Reface the valve seat using the following tools.

<i>Equivalent commercially available in the U.S.A.</i>	<b>TOOLS:</b>	
	Cutter holder, 5.0 mm	07781-0010400
	Seat cutter, 27.5 mm (45° IN)	07780-0010200
	Seat cutter, 22 mm (45° EX)	07780-0010701
	Flat cutter, 27 mm (32° IN)	07780-0013300
	Flat cutter, 22 mm (32° EX)	07780-0012601
	Interior cutter, 26 mm (60° IN)	07780-0014500
Interior cutter, 22 mm (60° EX)	07780-0014202	

**VALVE SEAT WIDTH: 0.7 mm (0.028 in)**

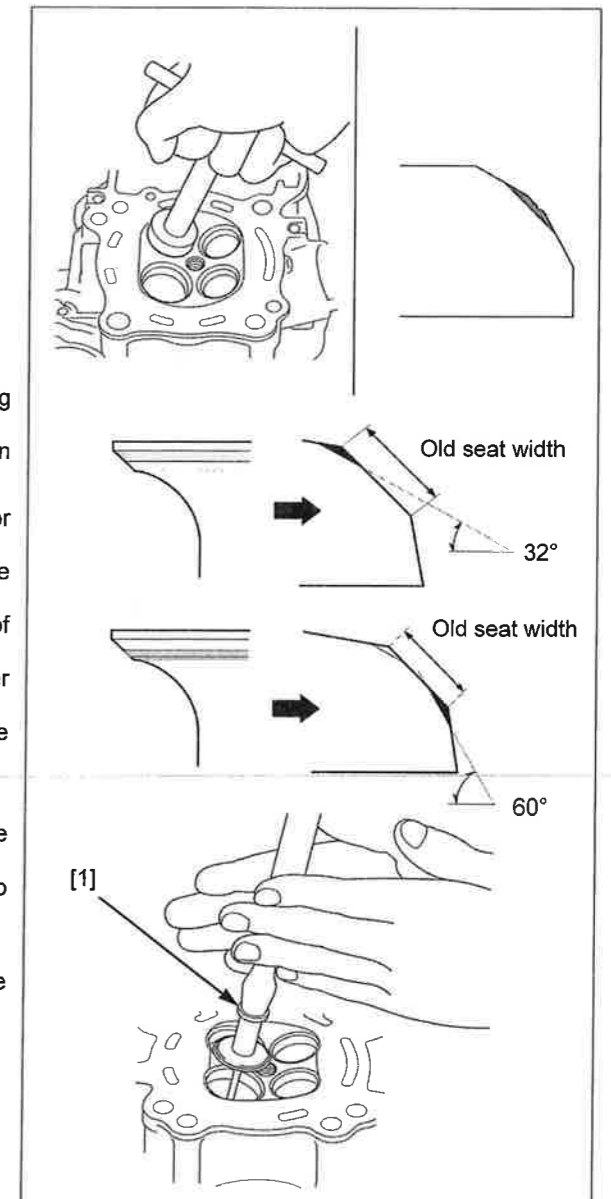
#### NOTE:

- Follow the refacer manufacturer's operating instructions.
  - Be careful not to grind the seat more than necessary.
1. Use a 45° seat cutter, remove any roughness or irregularities from the seat.
  2. Use a 32° flat cutter, remove the top 1/4 of the existing valve seat material.
  3. Use a 60° interior cutter, remove the bottom 1/4 of the existing valve seat material.
  4. Using a 45° seat cutter, cut the seat to the proper width.
  5. After cutting the seat, apply lapping compound to the valve face, and lap the valve using light pressure.

#### NOTE:

- Excessive lapping pressure may deform or damage the seat.
- Change the angle of lapping tool [1] frequently to prevent uneven seat wear.
- Do not allow lapping compound to enter the guides.

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

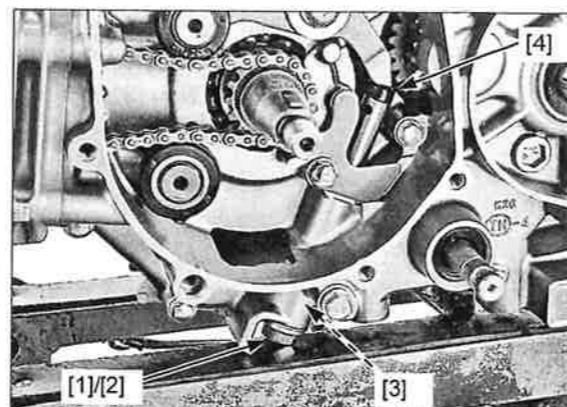


**CAM CHAIN TENSIONER****REMOVAL**

Remove the flywheel (page 12-5).

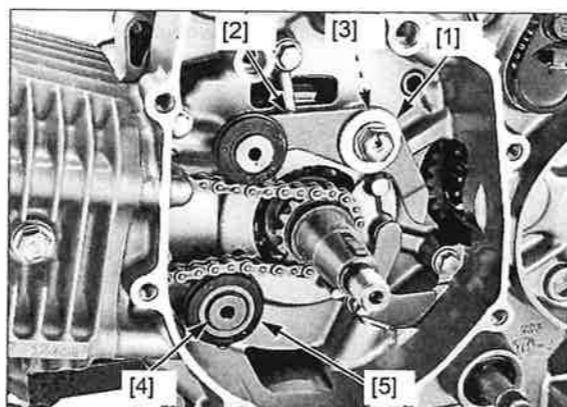
Remove the following:

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



Remove the following:

- Pivot bolt/washer [1]
- Tensioner arm/upper roller [2] and collar [3]
- Bolt [4] and lower roller [5]

**INSPECTION**

Inspect the following parts for damage, abnormal wear, deformation, burning or clogs in oil passages.

- Tensioner spring
- Push rod
- Upper roller/lower roller

Measure each part and clearance according to CYLINDER HEAD/VALVES SPECIFICATIONS (page 1-5).

Replace any part if it is out of service limit.

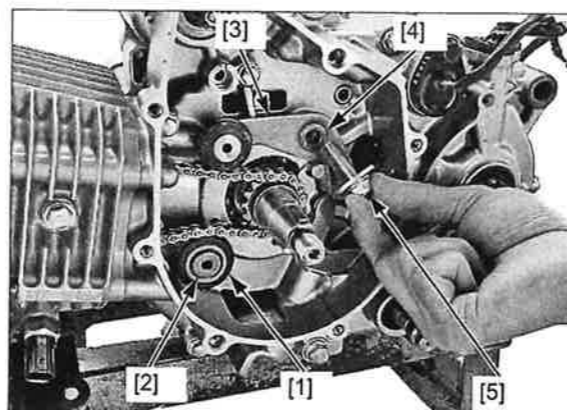
**INSTALLATION**

Install the cam chain tensioner lower roller [1] and tighten the pivot bolt [2] to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

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

**TORQUE: 16 N·m (1.6 kgf·m, 12 lbf·ft)**



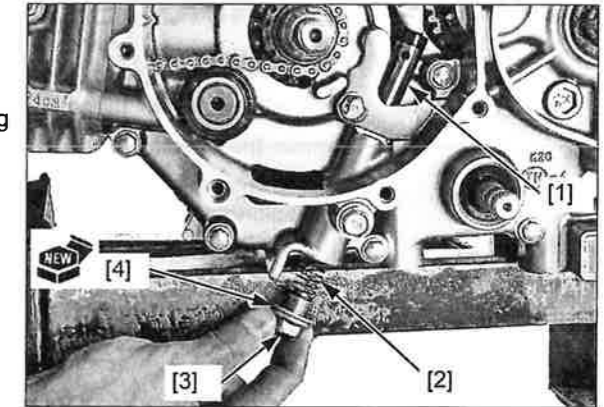
## CYLINDER HEAD/VALVES

Install the following:

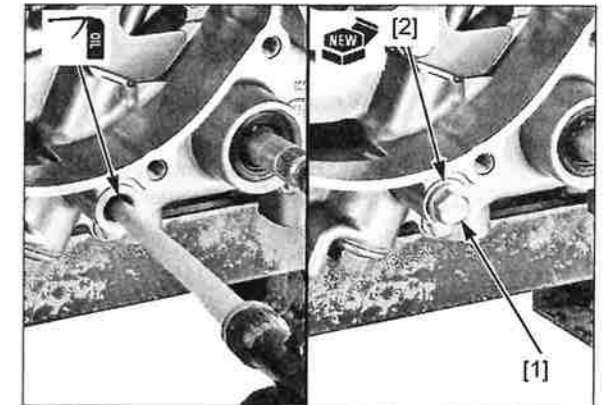
- Push rod [1]
- Tensioner spring [2]

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

**TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)**



Remove the bolt [1] and sealing washer [2].  
Pour 4.0 cm<sup>3</sup> minimum of engine oil into the push rod.  
Install and tighten the bolt with a new sealing washer.  
Install the flywheel (page 12-9).



# 10. CYLINDER/PISTON

---

SERVICE INFORMATION.....	10-2	COMPONENT LOCATION.....	10-3
TROUBLESHOOTING .....	10-2	CYLINDER/PISTON .....	10-4

10

## CYLINDER/PISTON

---

### 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

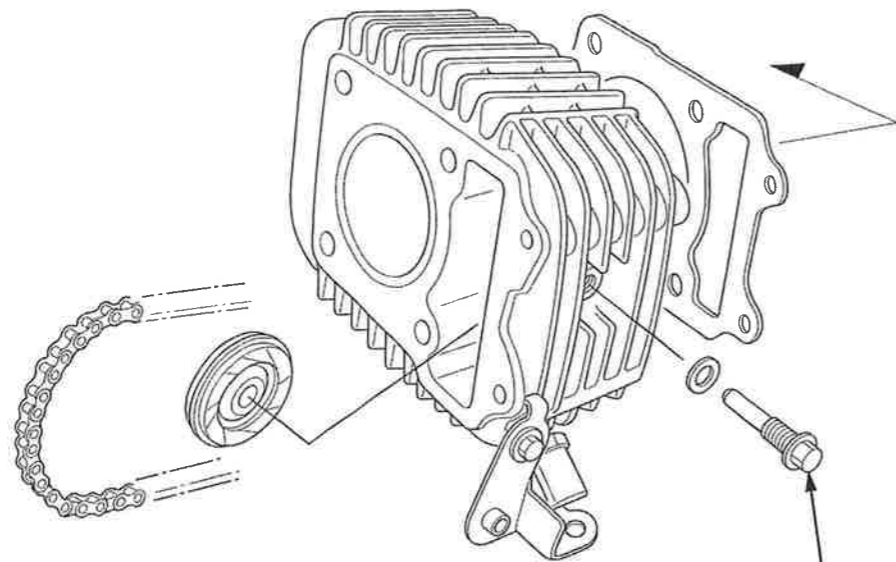
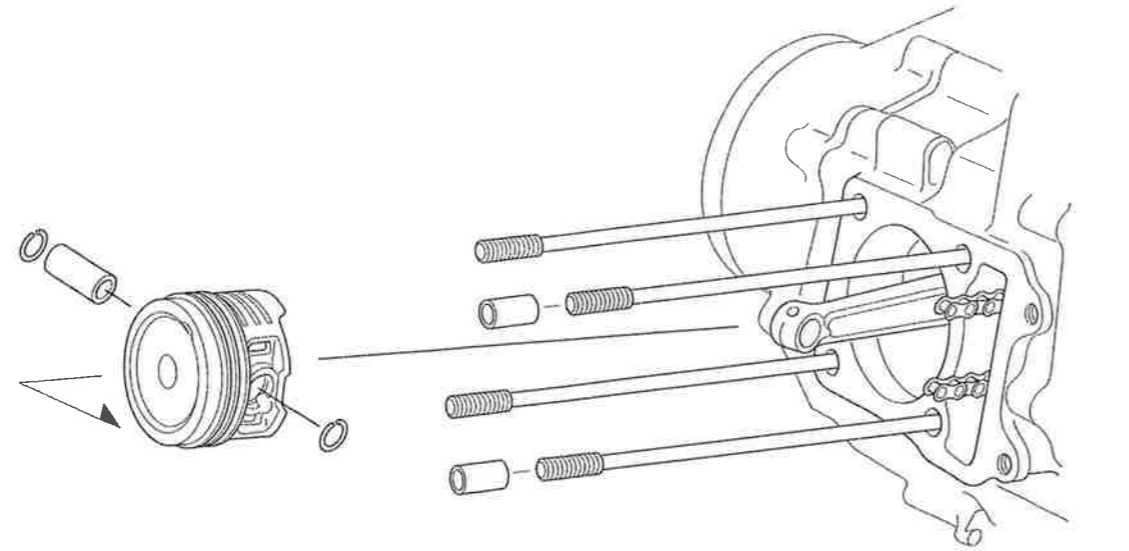
- Worn cylinder, piston or piston rings
- Improper installation of piston rings
- Scored or scratched piston or cylinder wall
- Cylinder head/valve problem (page 9-11)

#### Abnormal noise

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



COMPONENT LOCATION



10 N·m (1.0 kgf·m, 7 lbf·ft)

## CYLINDER/PISTON

### CYLINDER/PISTON

#### CYLINDER REMOVAL

NOTE:

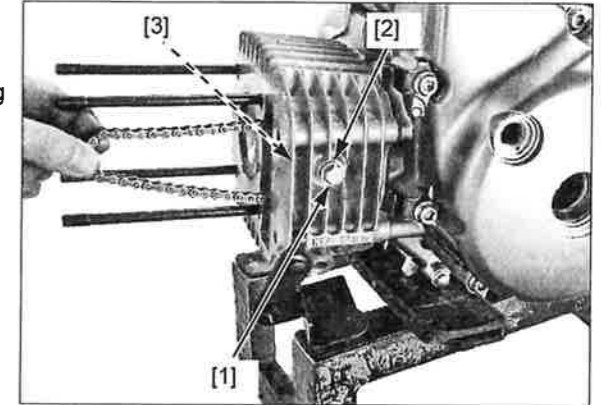
- Cylinder and piston can be serviced with the engine installed on the frame.
- Perform the ECM initializing procedure if the cylinder is replaced or is overhauled (page 4-29).

Remove the cylinder head (page 9-11).

Remove the following:

- Cam chain guide roller pin bolt [1] and sealing washer [2]
- Guide roller [3]

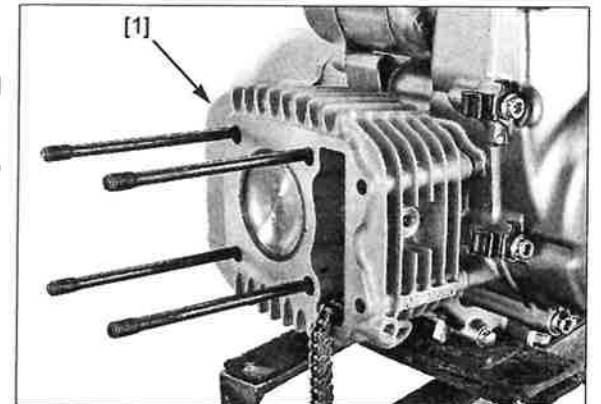
*Be careful not to drop the guide roller into the crankcase.*



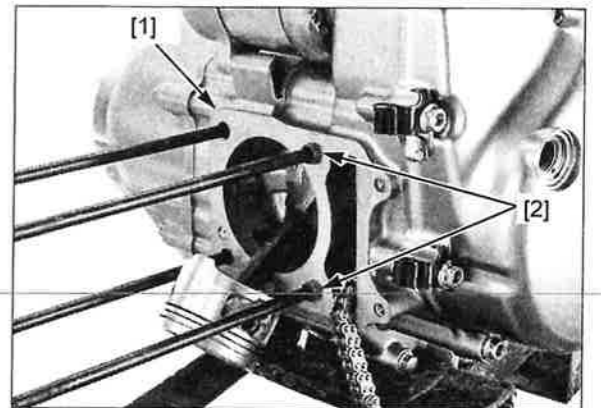
Remove the cylinder [1].

NOTE:

- 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.



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



**PISTON REMOVAL**

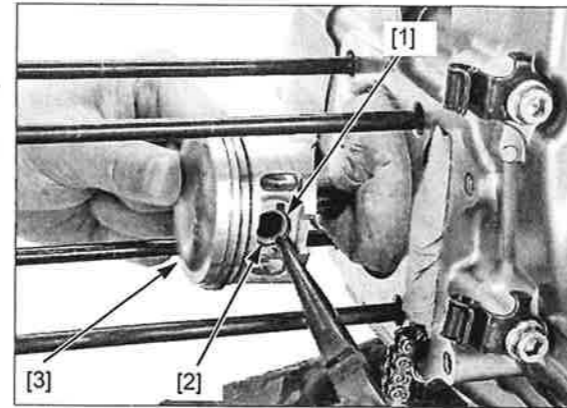
- Perform the ECM initializing procedure if the piston is replaced or is overhauled (page 4-29).

Remove the piston pin clip [1] with pliers.

**NOTE:**

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

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



Spread each piston ring [1] and remove it by lifting it up at a point just opposite the gap.

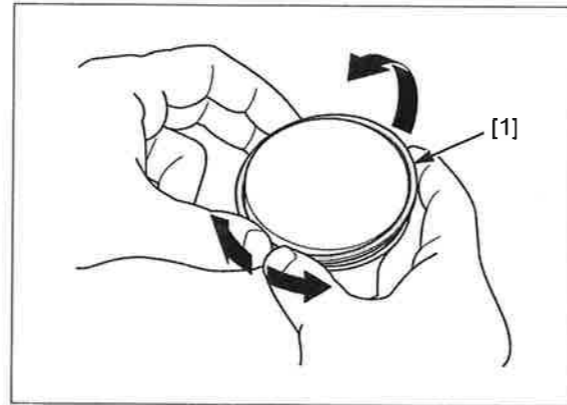
**NOTE:**

- Do not damage the piston ring by spreading the ends too far.

Clean carbon deposits from the piston ring grooves with a used piston ring [2] that will be discarded. Blow the oil passage with compressed air, if necessary.

**NOTE:**

- Never use a wire brush; it will damage the groove.



**INSPECTION**

Inspect the following parts for scratch, damage, abnormal wear, deformation, burning or clogs in oil passages.

- Cylinder
- Piston
- Piston rings
- Piston pin
- Connecting rod small end

Measure each part and calculate the clearance according to CYLINDER/PISTON SPECIFICATIONS (page 1-6).

Replace any part if it is out of service limit.

**CYLINDER STUD BOLT REPLACEMENT**

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

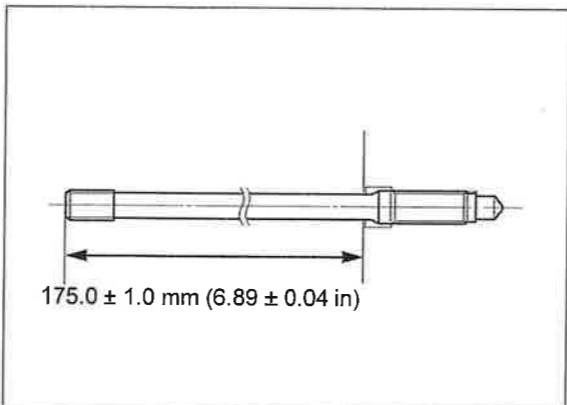
Thread two nuts onto the stud bolt, and tighten them together, then use a wrench on them to turn the stud bolt out.

Install and tighten new stud bolts to the specified torque.

**TORQUE: 11 N·m (1.1 kgf·m, 8 lbf·ft)**

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

**STANDARD: 175 ± 1 mm (6.89 ± 0.04 in)**



## CYLINDER/PISTON

### PISTON INSTALLATION

Clean the piston heads, ring grooves and skirts.

Apply engine oil to the piston ring surface and the ring grooves.

Carefully install the piston rings onto the piston with their markings facing up.

#### NOTE:

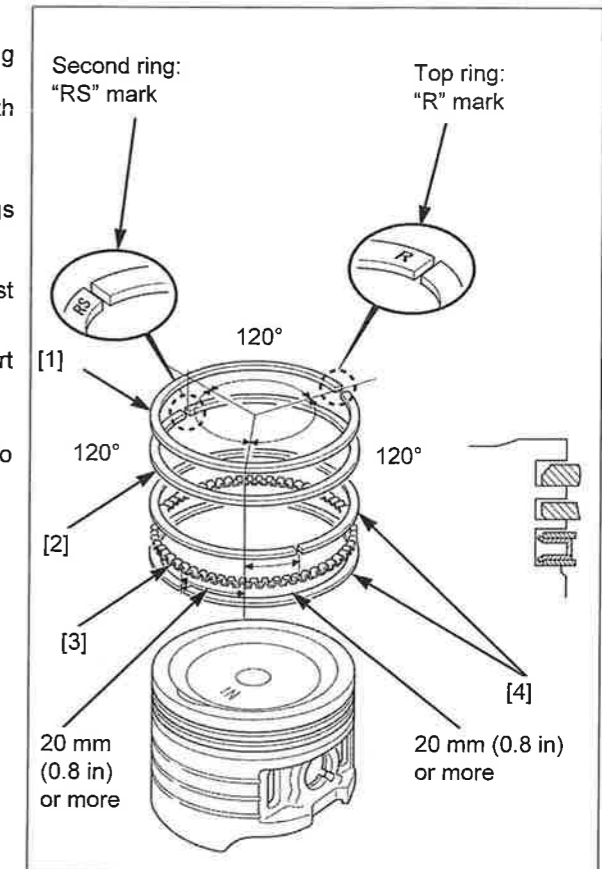
- Be careful not to damage the piston and piston rings during installation.
- Do not confuse the top ring [1] and second ring [2].
- When installing the oil ring [3], install the spacer first and then the side rails [4].

*Do not align the gaps of the oil ring side rails.*

Stagger the piston ring end gaps 120 degrees apart from each other as shown.

Stagger the side rails gaps as shown.

After installation, the piston rings should be free to rotate in the groove.



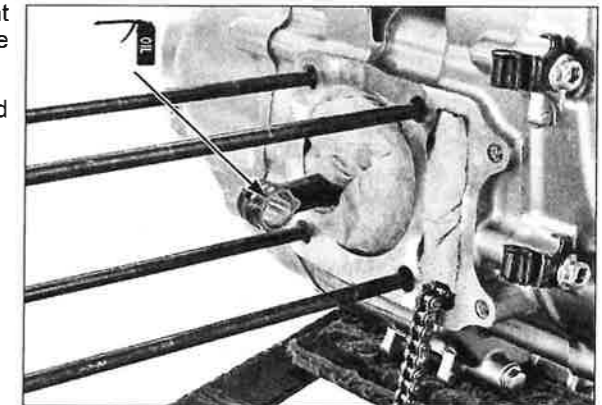
### PISTON INSTALLATION

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 gasket mating surfaces.*

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

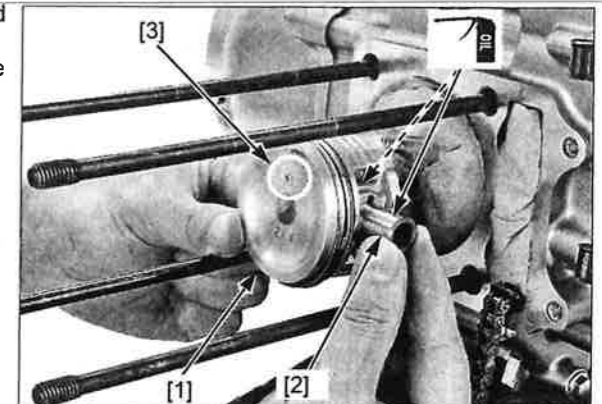
Apply oil to the connecting rod small end inner surface.



Apply oil to the piston [1] pin hole inner surface and piston pin [2] outer surface.

Install the piston with the "IN" mark [3] facing the intake side.

Install the piston pin.

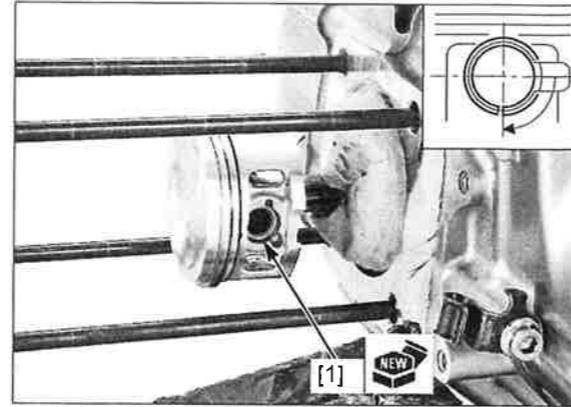


## CYLINDER/PISTON

Install the 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.
- Perform the ECM initializing procedure if the piston is replaced or is overhauled (page 4-29).

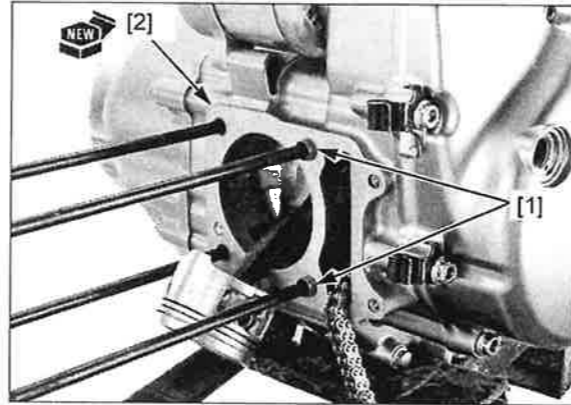


### CYLINDER INSTALLATION

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

**NOTE:**

- Be careful not to damage the mating surface.
- Place a clean shop towel over the crankcase to prevent the gasket materials from falling into the crankcase.
- Make sure that the oil passage is free from contamination.

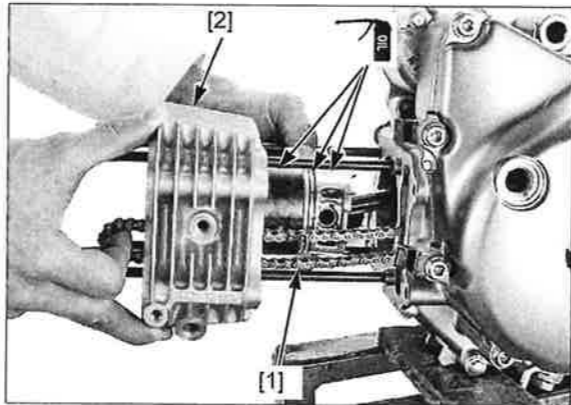


Apply oil to the cylinder bore, piston sliding area, piston ring grooves and piston rings whole surface.  
Route the cam chain [1] through the cylinder [2].

**NOTE:**

- 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.



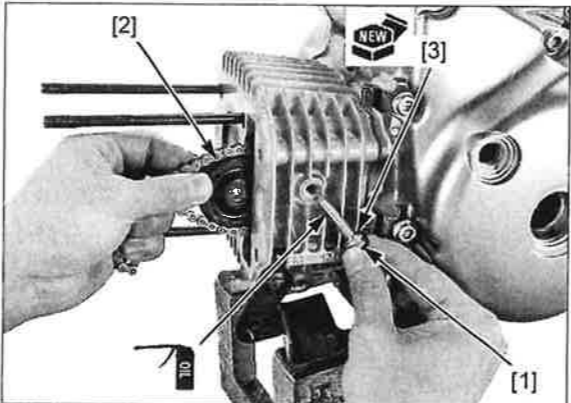
Apply engine oil to the sliding surface of the cam chain guide roller pin bolt [1].

Install the cam chain guide roller [2], new sealing washer [3] and cam chain guide roller pin bolt.

Tighten the roller pin bolt to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

Install the cylinder head (page 9-11).



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**MEMO**

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# 11. CLUTCH/GEARSHIFT LINKAGE

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SERVICE INFORMATION.....	11-2	CLUTCH .....	11-8
TROUBLESHOOTING .....	11-3	GEARSHIFT LINKAGE .....	11-12
COMPONENT LOCATION.....	11-4	GEARSHIFT PEDAL .....	11-15
RIGHT CRANKCASE COVER .....	11-5		

11


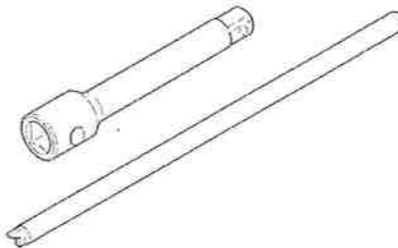
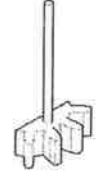
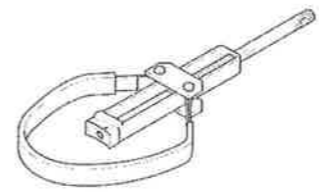
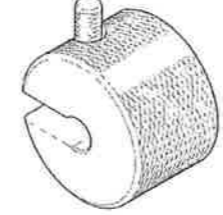

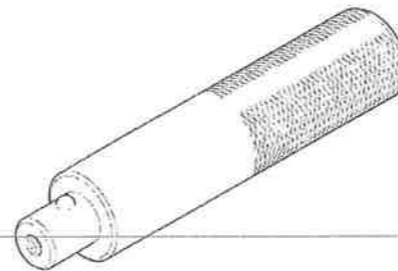
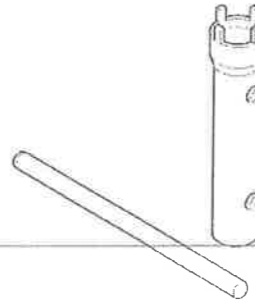
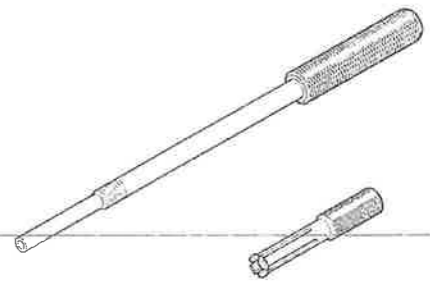
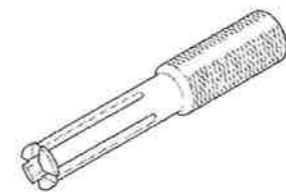
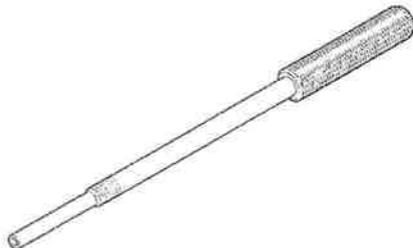

## CLUTCH/GEARSHIFT LINKAGE

### SERVICE INFORMATION

#### GENERAL

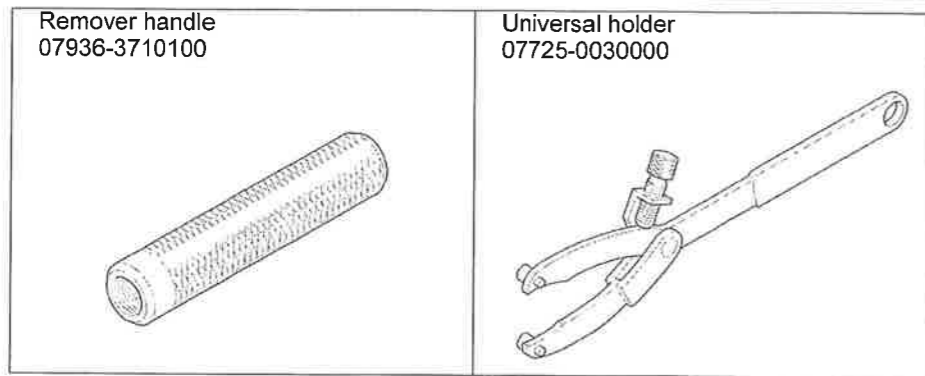
- This section covers service of the clutch and gearshift linkage. These service can be done with the engine installed in the frame.
- Engine oil viscosity, oil level and the use of oil additives have an effect on clutch operation. Oil additives of any kind are specifically not recommended. When the clutch does not disengage or the motorcycle creeps with clutch disengaged, inspect the engine oil and oil level before servicing the clutch system.

#### TOOLS

<p>Locknut wrench, 20 x 24 mm 07716-0020100</p> 	<p>Extension bar 07716-0020500</p>  <p>Equivalent commercially available in the U.S.A.</p>	<p>Gear holder, 2.5 mm 07724-0010100</p>  <p>07724-001A100 (U.S.A. only)</p>
<p>Flywheel holder 07725-0040001</p> 	<p>Remover weight 07741-0010201</p>  <p>07936-371020A or 07936-3710200</p>	<p>Pilot, 12 mm 07746-0040200</p> 
<p>Driver 07749-0010000</p> 	<p>Locknut wrench, 5.5 x 30 mm 07916-6390001</p> 	<p>Bearing remover shaft set, 12 mm 07936-1660101</p>  <p>07936-166010A (U.S.A. only)</p>
<p>Remover head, 12 mm 07936-1660110</p>  <p>Not available in U.S.A.</p>	<p>Remover shaft, 12 mm 07936-1660120</p>  <p>Not available in U.S.A.</p>	<p>Attachment, 28 x 30 mm 07946-1870100</p> 



## CLUTCH/GEARSHIFT LINKAGE



### TROUBLESHOOTING

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

#### Clutch lever too hard to pull in

- Damaged, kinked or dirty clutch cable
- Improperly routed clutch cable
- Damaged clutch lifter mechanism
- Faulty clutch pressure plate bearing

#### Clutch will not disengage or motorcycle creeps with clutch disengaged

- Excessive clutch lever freeplay
- Clutch plate warped
- Loose clutch center lock nut
- Engine oil level too high, improper oil viscosity or additive used

#### Clutch slips

- No clutch lever freeplay
- Worn clutch discs
- Weak clutch springs
- Clutch lifter sticking
- Engine oil level too low or oil additive used
- Faulty clutch operation
- Damaged clutch outer or clutch center grooves

#### Hard to shift

- Faulty clutch operation
- Engine oil viscosity too high
- Misadjusted clutch cable
- Bent or damaged gearshift spindle
- Damaged gearshift cam
- Bent shift fork shaft
- Damaged shift fork or shift drum

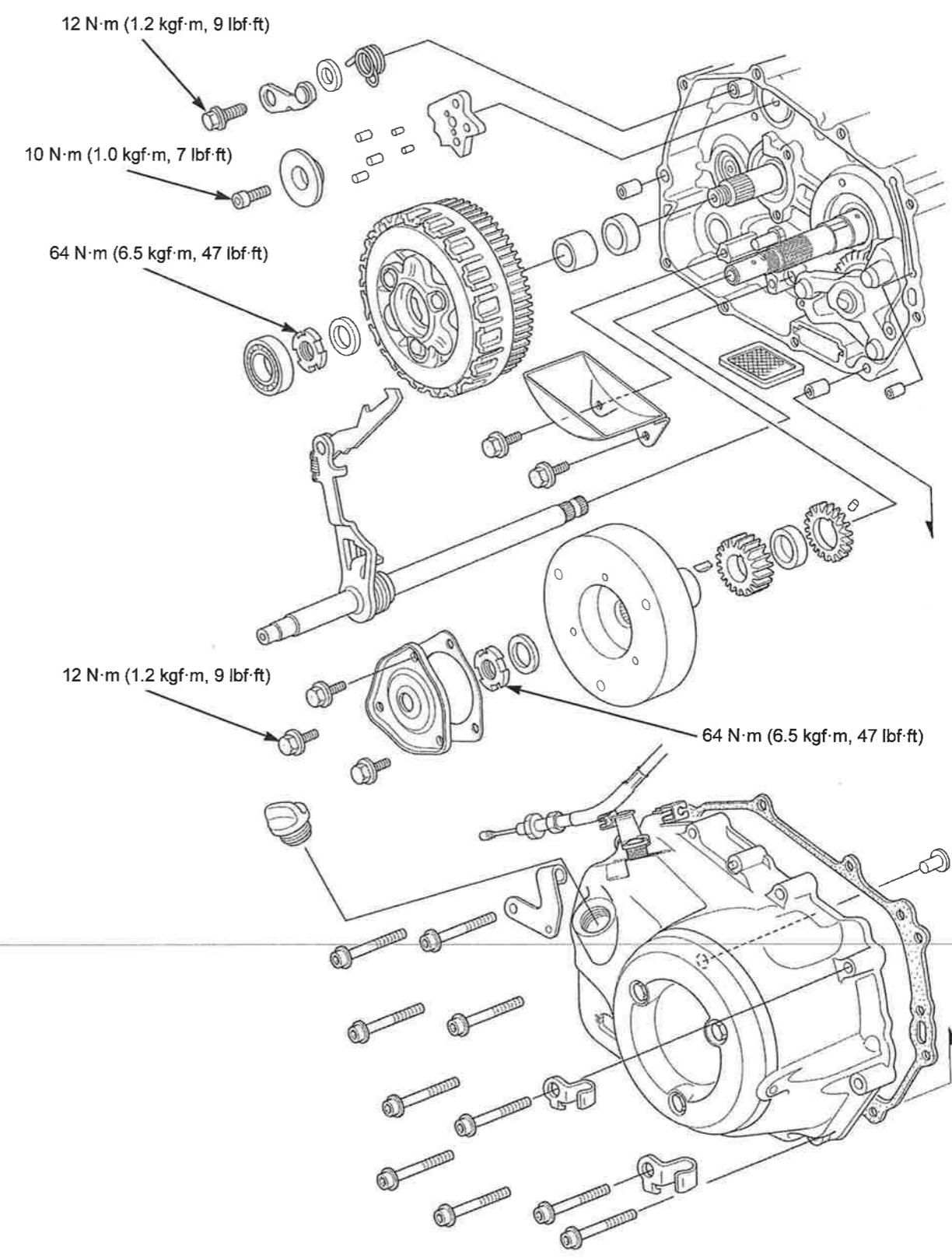
#### Transmission jumps out of gear

- Worn shift drum stopper arm
- Worn or broken gearshift spindle return spring
- Damaged or worn gearshift cam
- Bent shift fork shaft
- Damaged shift fork or shift drum
- Worn gear dogs or dog holes

#### Gearshift pedal will not return

- Weak or broken gearshift spindle return spring
- Bent gearshift spindle

**CLUTCH/GEARSHIFT LINKAGE  
COMPONENT LOCATION**

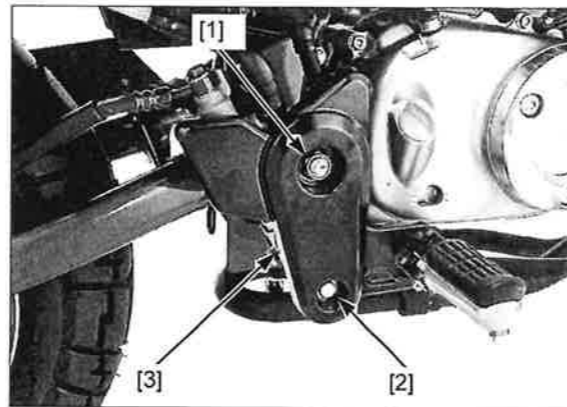


**RIGHT CRANKCASE COVER**

**REMOVAL**

Drain the engine oil (page 3-9).

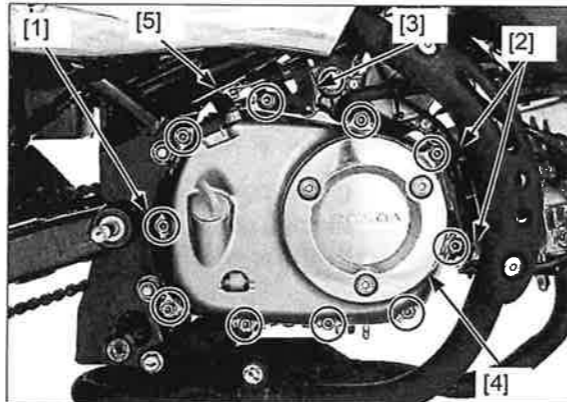
Remove the swingarm pivot nut [1], step holder mounting bolt [2] and right step holder [3].



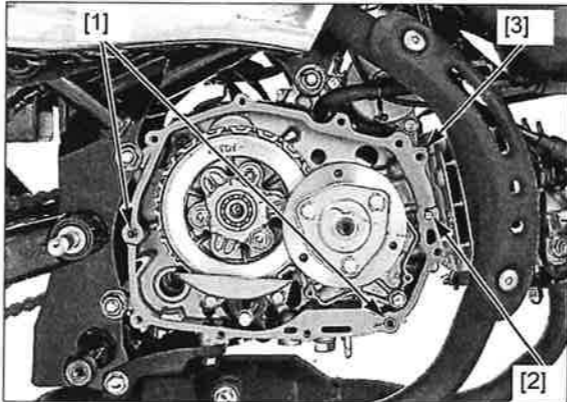
Loosen the bolts [1] in a crisscross pattern in several steps.

Remove the bolts, two clamps [2], clutch cable guide [3] and right crankcase cover [4].

Disconnect the clutch cable from the clutch lifter arm [5].



Remove the dowel pins [1], orifice [2] and gasket [3].



**DISASSEMBLY/CLEANING**

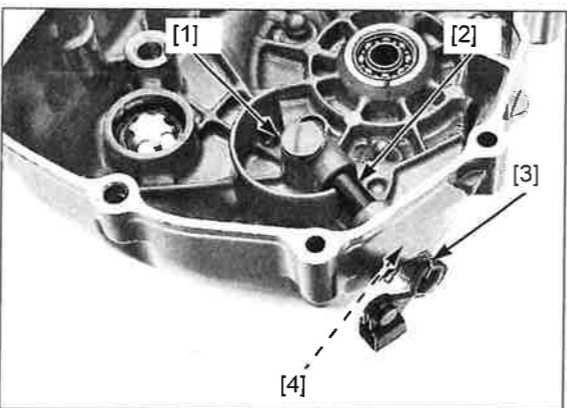
**CLUTCH LIFTER ARM REMOVAL**

Remove the clutch lifter [1].

Remove the clutch lifter arm [2], return spring [3] and O-ring [4].

Check the return spring for weakness or damage.

Check the clutch lifter arm for wear or damage.



## CLUTCH/GEARSHIFT LINKAGE

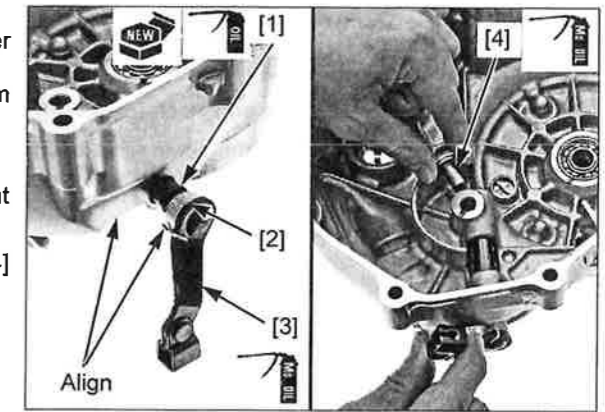
Apply engine oil to a new O-ring [1].  
Install the return spring [2] and O-ring to the clutch lifter arm [3].  
Apply molybdenum disulfide oil to the clutch lifter arm and install it to the right crank case cover.

### NOTE:

- Align the hook of the return spring with the right crankcase cover.

Apply molybdenum disulfide oil to the clutch lifter [4] whole surface.

Install the clutch lifter.



## CRANKSHAFT BEARING REPLACEMENT

Remove the crankshaft bearing [1] using the special tools as shown.

### TOOLS:

Bearing remover set, 12mm [2] 07936-1660101  
- Bearing remover shaft, 12 mm 07936-1660120  
- Bearing remover head, 12mm 07936-1660110  
Remover weight [3] 07741-0010201

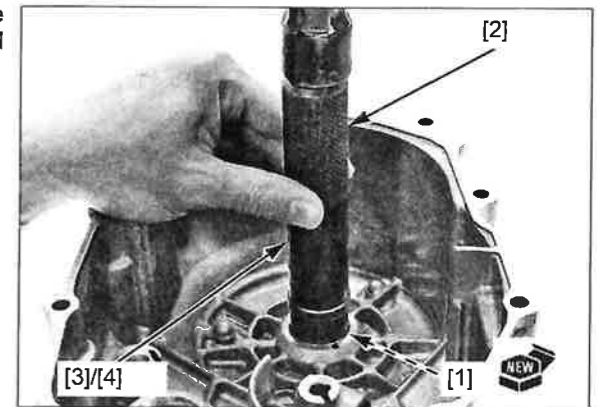
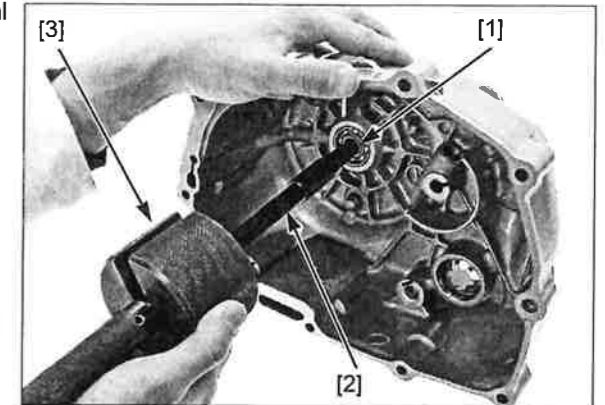
### U.S.A. TOOLS:

Bearing remover, 12 mm 07936-166010A  
Remover weight 07936-371020A or  
07936-3710200  
Bearing handle 07936-3710100

Install a new crankshaft bearing [1] with its sealed side facing down until it is fully seated using the special tools.

### TOOLS:

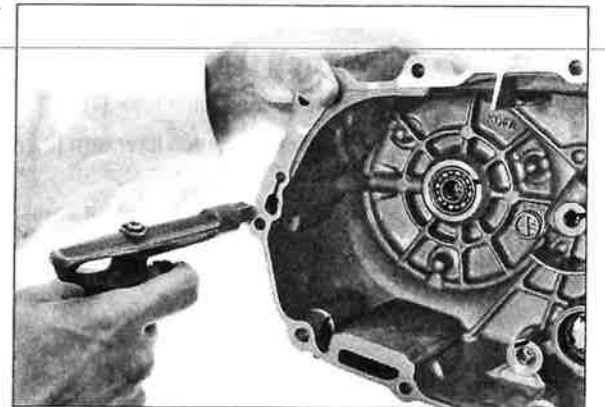
Driver [2] 07749-0010000  
Attachment, 28 x 30 mm [3] 07946-1870100  
Pilot, 12 mm [4] 07746-0040200



## OIL PASSAGE CLEANING/INSPECTION

Clean the oil passage of the right crankcase cover using the compressed air.

Check the oil passage for clogs.



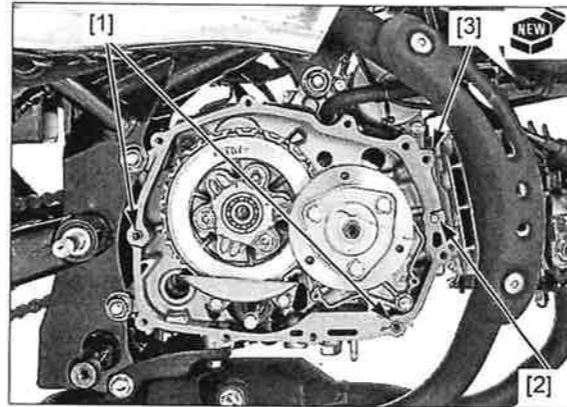
## CLUTCH/GEARSHIFT LINKAGE

### INSTALLATION

Clean off any gasket material from the right crankcase and cover mating surfaces.

#### NOTE:

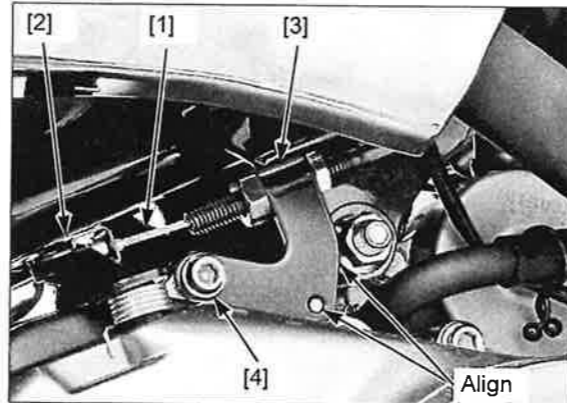
- Be careful not to damage the mating surfaces.
- Install the dowel pin [1], orifice [2] and a new gasket [3].



Install the right crankcase cover.

Connect the clutch cable [1] to the clutch lifter arm [2].

Install the clutch cable guide [3] by aligning its hole with the boss of the right crankcase cover, and then loosely install the clutch cable guide bolt [4].



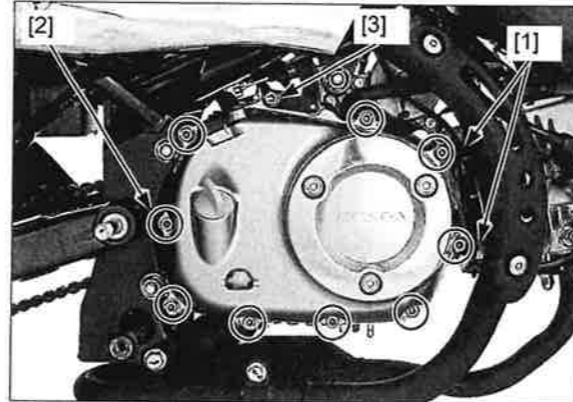
Install the two clamps [1] and cover bolts [2], and then tighten the cover bolts and clutch cable guide bolt [3] in a crisscross pattern in 2 or 3 steps.

Install the right step holder.

Fill the engine with the recommended engine oil (page 3-9).

#### TORQUE:

- Swingarm pivot nut:  
54 N·m (5.5 kgf·m, 40 lbf·ft)
- Step holder mounting bolt:  
31 N·m (3.2 kgf·m, 23 lbf·ft)

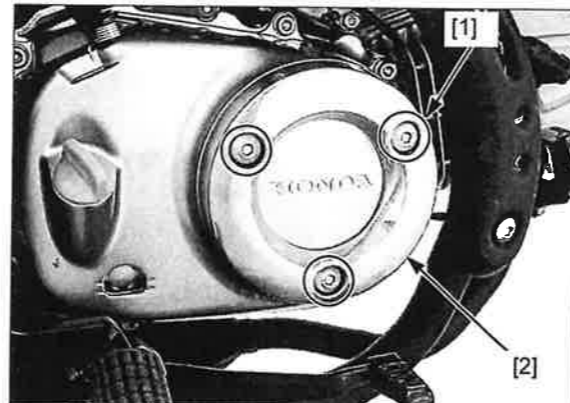


### RIGHT CRANKCASE COVER PROTECTOR REMOVAL/INSTALLATION

Remove the socket bolts [1] and right crankcase cover protector [2].

Installation is in the reverse order of removal.

**TORQUE: 7 N·m (0.7 kgf·m, 5.2 lbf·ft)**



## CLUTCH/GEARSHIFT LINKAGE

### CLUTCH

#### REMOVAL

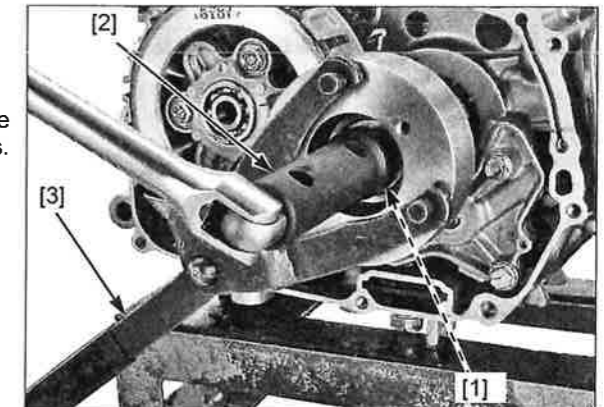
Remove the following:

- Right crankcase cover (page 11-5)
- Centrifugal filter cover (page 3-10)

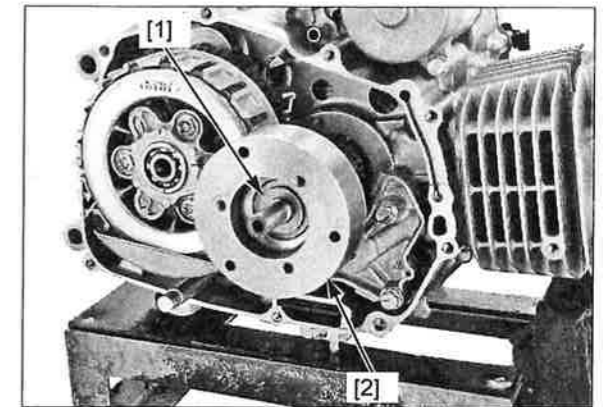
Hold the primary drive and driven gear, then remove the centrifugal filter rotor lock nut [1] using the special tools.

#### TOOLS:

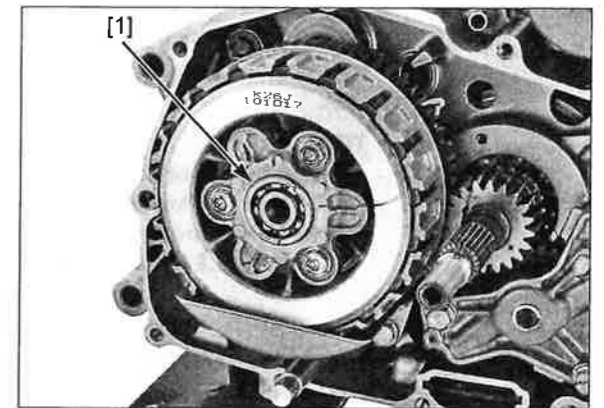
Lock nut wrench, 5.5 x 30 mm [2] 07916-6390001  
Universal holder [3] 07725-0030000



Remove the washer [1] and centrifugal filter rotor [2].



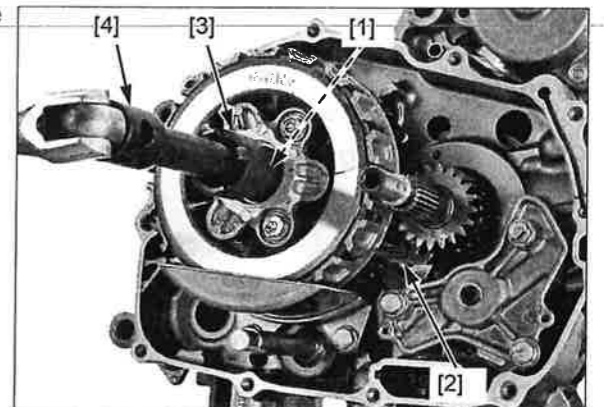
Remove the clutch lifter bearing [1].



Hold the primary drive and driven gear, then remove the clutch center lock nut [1] using the special tools.

#### TOOLS:

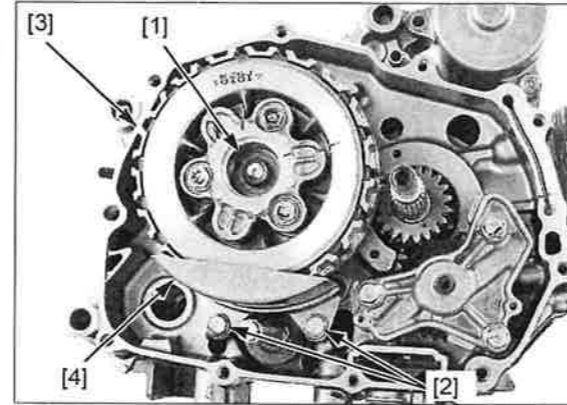
Gear holder 2.5mm [2] 07724-0010100 or  
07724-001A100  
(U.S.A. only)  
Lock nut wrench, 20 x 24 mm [3] 07716-0020100  
Extension bar [4] 07716-0020500  
Equivalent  
commercially  
available in the  
U.S.A.



## CLUTCH/GEARSHIFT LINKAGE

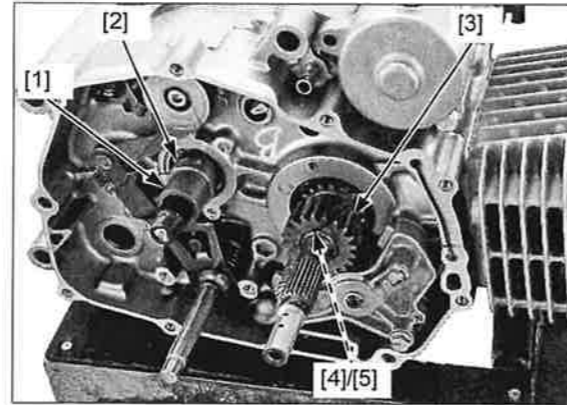
Remove the washer [1] and two bolts [2].

Remove the clutch assembly [3] and oil separator plate [4].



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

Remove the primary drive gear [3] from the crankshaft. Remove the woodruff key [4] and collar [5].



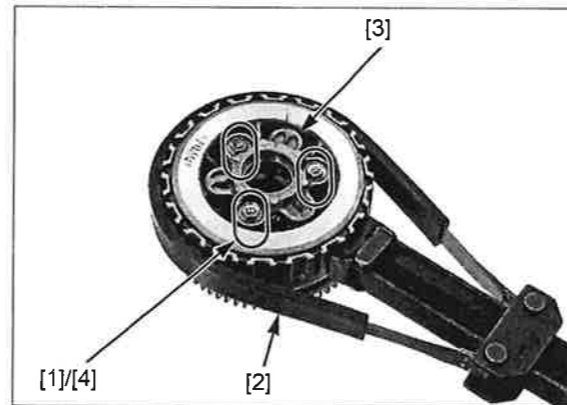
### CLUTCH DISASSEMBLY/ASSEMBLY

Hold the clutch outer using the special tool and loosen the bolts [1] in several steps.

#### TOOL:

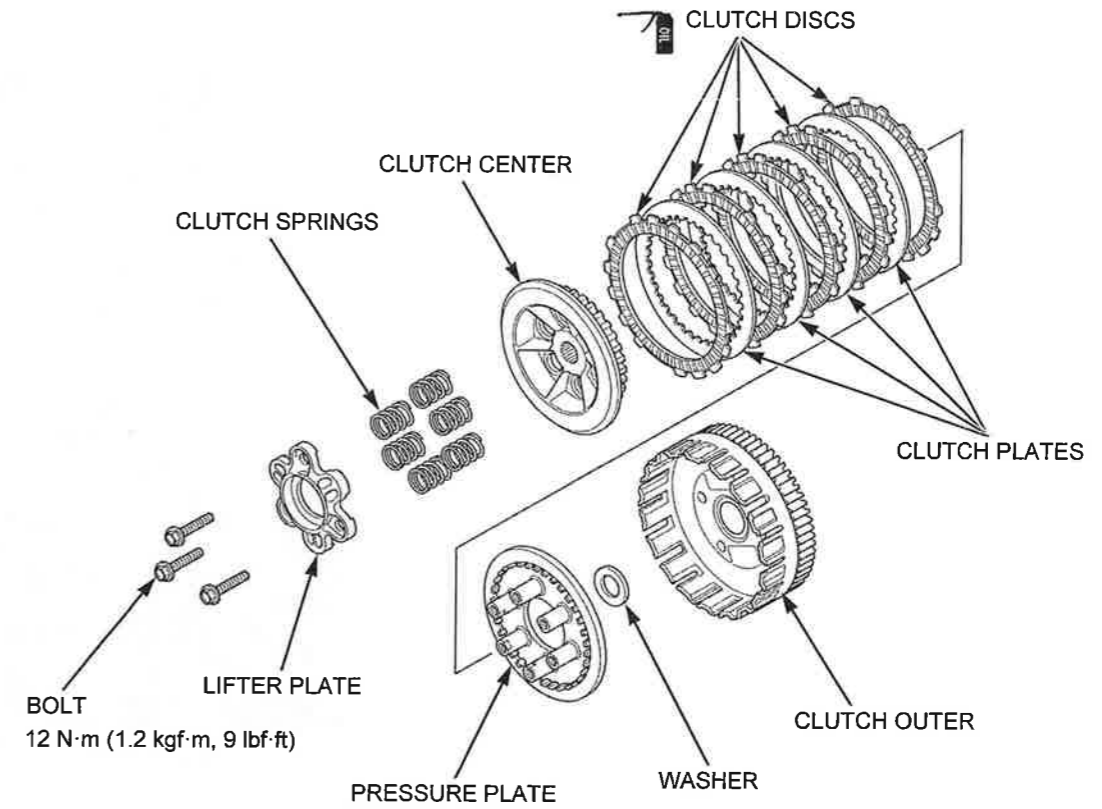
Flywheel holder [2]                      07725-0040001

Remove the bolts, clutch lifter plate [3] and clutch springs [4].



## CLUTCH/GEARSHIFT LINKAGE

Disassemble and assemble the clutch according to the illustration.



### INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation. Replace if necessary.

- Clutch lifter bearing
- Clutch springs
- Clutch center
- Clutch discs/plates
- Clutch outer
- Clutch outer guide
- Mainshaft
- Centrifugal filter rotor
- Primary drive gear (page 13-14)

Measure each part according to CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS (page 1-6).

Replace any part if it is out of service limit.

- Replace the clutch springs as a set.
- Replace the clutch discs and plates as a set.



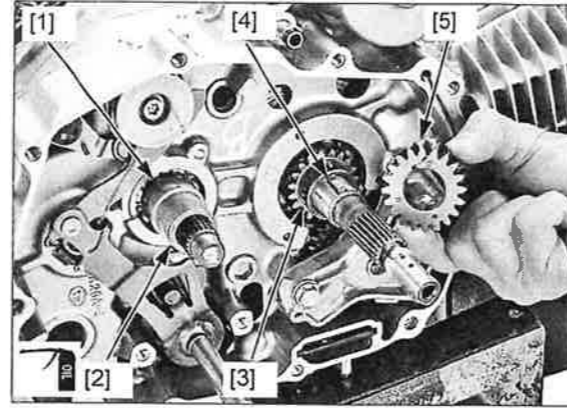
## CLUTCH/GEARSHIFT LINKAGE

### INSTALLATION

Install the collar [1] to the mainshaft.

Apply engine oil to the clutch outer guide [2] whole surface and install it to the mainshaft.

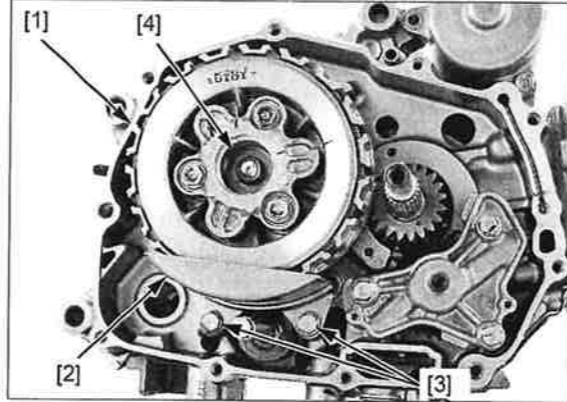
Install the collar [3] and woodruff key [4] to the crankshaft, and then install the primary drive gear [5].



Install the clutch assembly [1] together with the oil separator plate [2].

Install and tighten the two bolts [3].

Install the washer [4] to the mainshaft.



Apply engine oil to the clutch center lock nut [1] threads and seating surface and install it to the mainshaft.

Hold the primary drive and driven gear, then tighten the clutch center lock nut to the specified torque using the special tools.

#### TOOLS:

Gear holder, 2.5 mm [2]

07724-0010100  
or 07724-001A10  
(U.S.A. only)

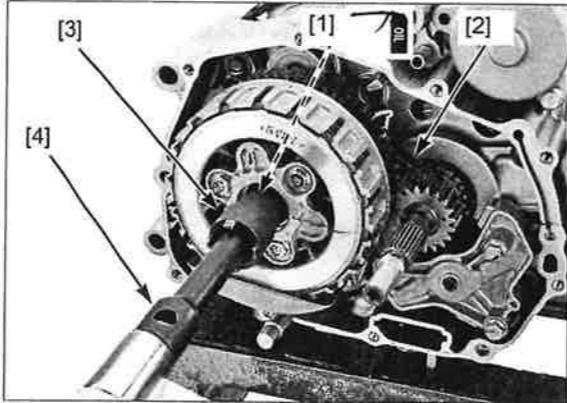
Lock nut wrench, 20 x 24 mm [3]

07716-0020100

Extension bar [4]

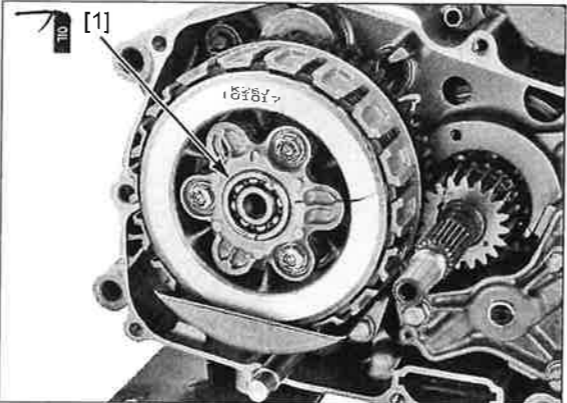
07716-0020500

Equivalent  
commercially  
available in the  
U.S.A.



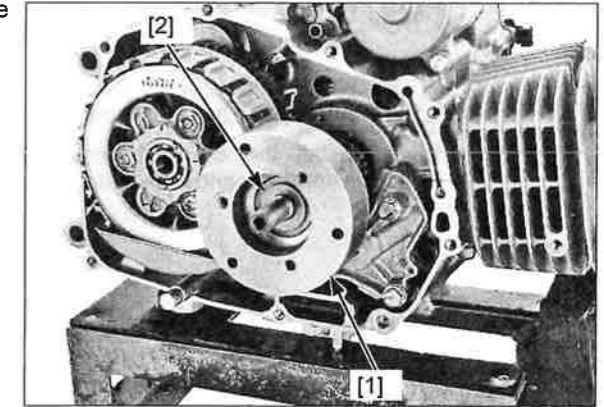
**TORQUE: 64 N·m (6.5 kgf·m, 47 lbf·ft)**

Apply engine oil to the clutch lifter bearing [1] and install it with its marked side facing out.



## CLUTCH/GEARSHIFT LINKAGE

Install the centrifugal filter rotor [1] and washer [2] to the crankshaft.



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

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

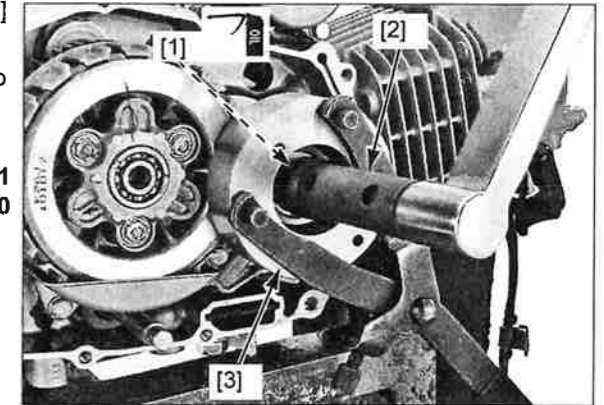
### TOOLS:

Lock nut wrench, 5.5×30 mm [2] 07916-6390001  
Universal holder [3] 07725-0030000

**TORQUE: 64 N·m (6.5 kgf·m, 47 lbf·ft)**

Install the following:

- Centrifugal filter cover (page 3-10)
- Right crankcase cover (page 11-7)



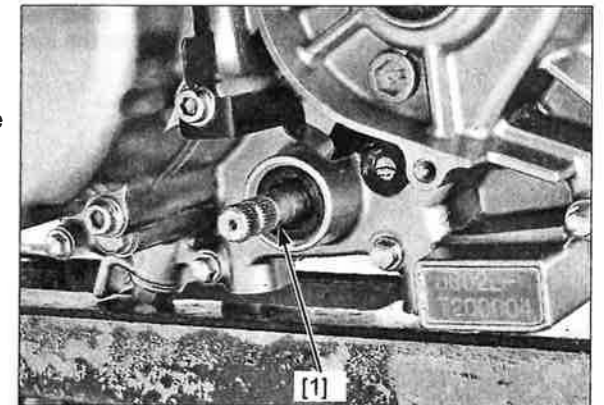
## GEARSHIFT LINKAGE

### REMOVAL

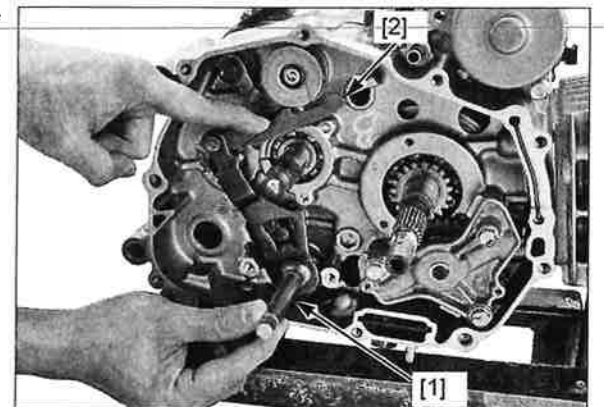
Remove the following:

- Clutch (page 11-8)
- Gearshift arm (page 11-15)

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

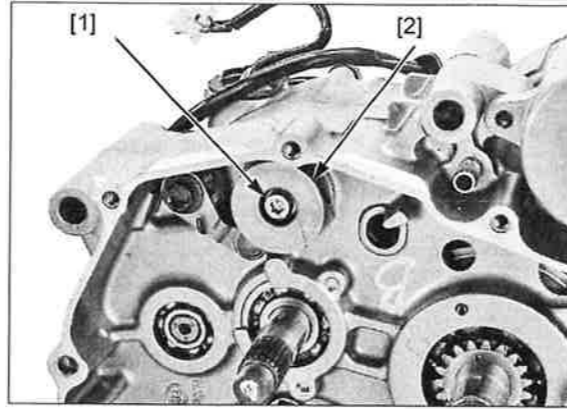


Remove the gearshift spindle [1] by holding down the arm [2] of the gearshift spindle as shown.

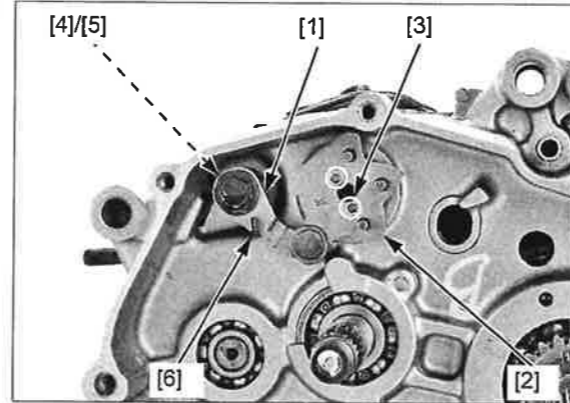


## CLUTCH/GEARSHIFT LINKAGE

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



Lower and hold the stopper arm [1], then remove the gearshift cam plate [2].  
Remove the gearshift drum pins [3].  
Remove the bolt [4], stopper arm, washer [5] and return spring [6].



### INSPECTION

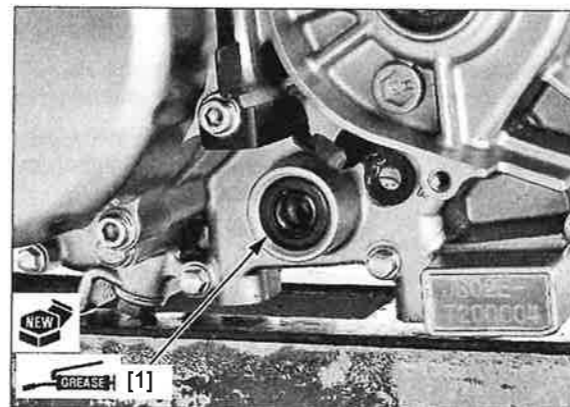
Inspect the following parts for scratch, damage, abnormal wear and deformation. Replace if necessary.

- Gearshift spindle
- Gearshift stopper arm spring
- Gearshift stopper arm

Measure each part according to CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS (page 1-6).  
Replace any part if it is out of service limit.

### INSTALLATION

Apply grease to a new gearshift spindle oil seal [1] lips.



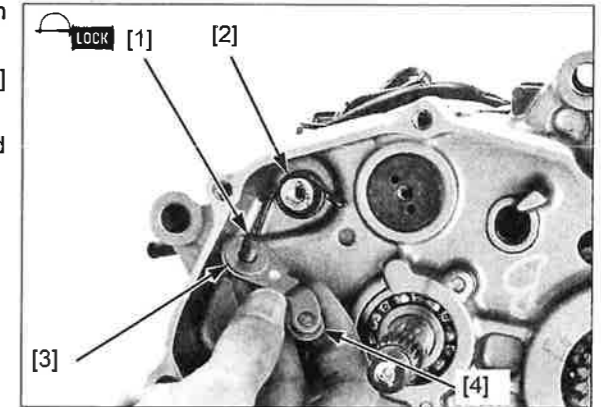
## CLUTCH/GEARSHIFT LINKAGE

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

Install the return spring [2], washer [3], stopper arm [4] and bolt.

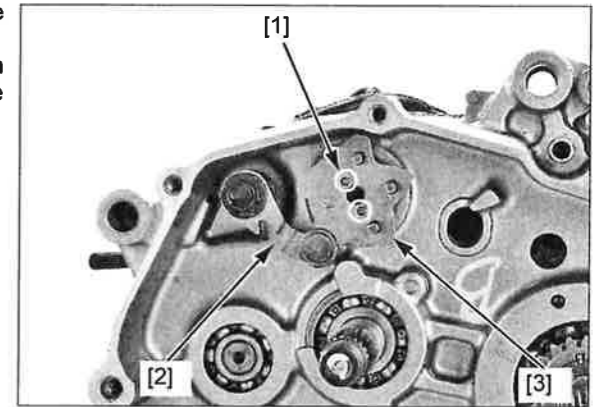
Tighten the shift drum stopper arm bolt to the specified torque.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**



Install the gearshift drum pins [1] into the holes on the gearshift drum.

Hold the stopper arm [2] then install the gearshift cam plate [3] by aligning the holes in the plate with the gearshift drum pins.

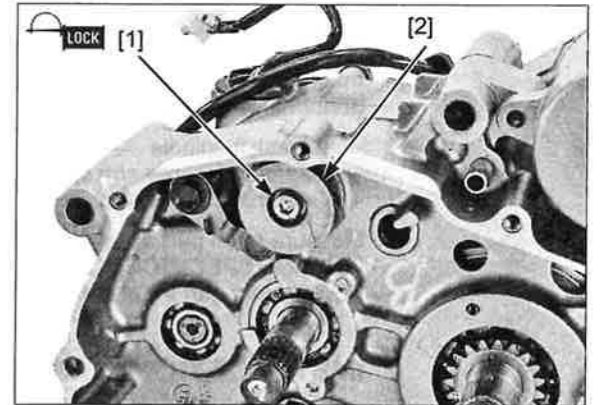


Apply locking agent to the threads of the gearshift cam plate socket bolt [1].

Install the washer [2] and bolt.

Tighten the bolt to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**



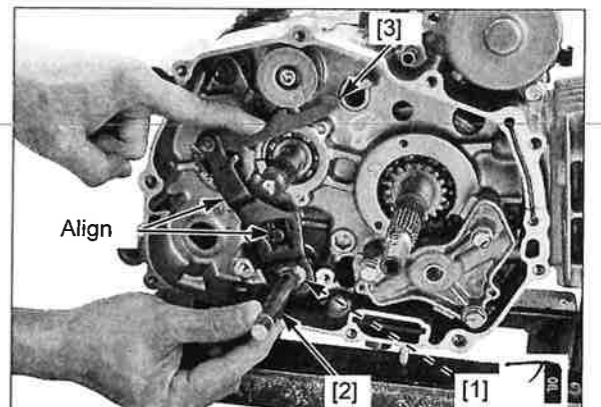
Apply engine oil to the gearshift spindle journal [1].

*Be careful not to damage the oil seal.* Install the gearshift spindle [2] by aligning its return spring ends with the shift return spring pin.

Hold down the arm [3] of the gearshift spindle as shown and engage it with the shift drum pins between the cam plate and gearshift drum.

Install the following:

- Clutch (page 11-11)
- Gearshift arm (page 11-15)



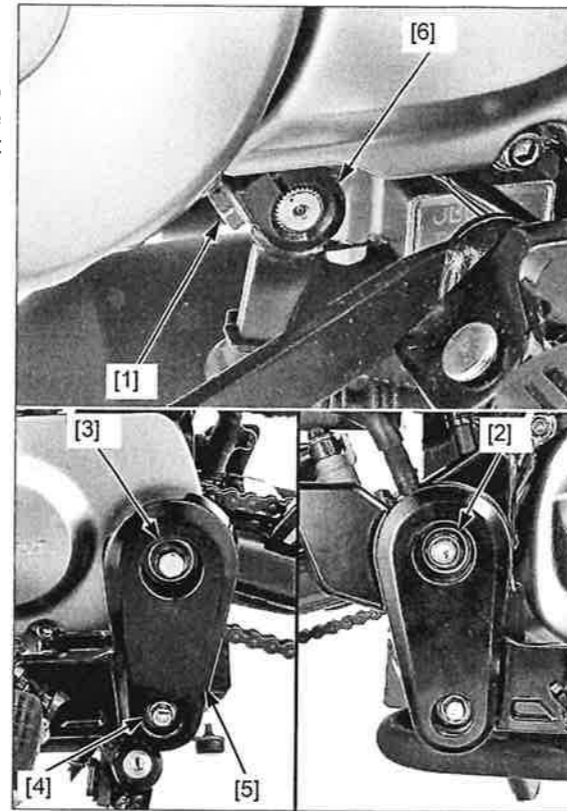
## GEARSHIFT PEDAL

## REMOVAL/INSTALLATION

Support the vehicle with a jack or an equivalent.

Remove the pinch bolt [1].

Remove the swingarm pivot nut [2], pivot shaft [3], step holder mounting bolt [4] and left step holder [5] while releasing the gearshift arm [6] from the gearshift spindle.



Remove the following:

- Snap ring [1]
- Washers [2]
- Gearshift pedal assembly [3]

Installation is in the reverse order of removal.

## NOTE:

- Apply grease to the gearshift pedal sliding surface.
- Align the slit of the gearshift arm [4] with the punch mark on the gearshift spindle.

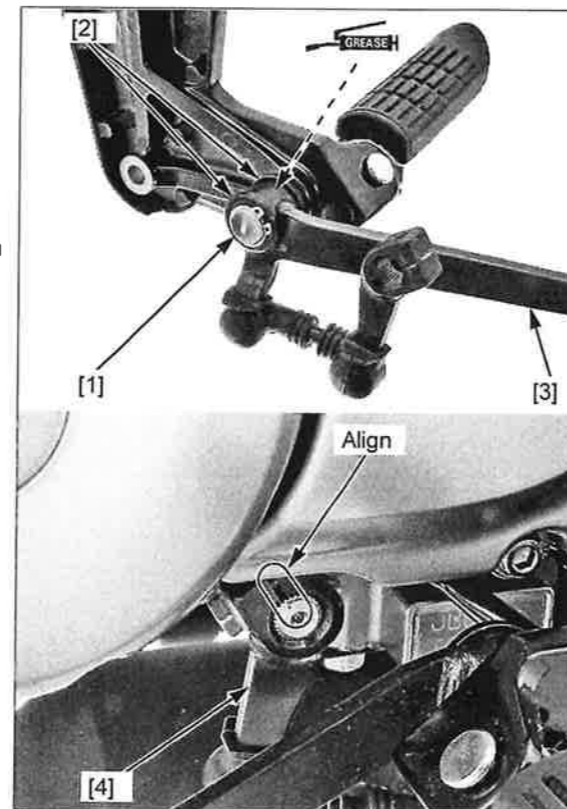
## TORQUE:

Swingarm pivot nut:

54 N·m (5.5 kgf·m, 40 lbf·ft)

Step holder mounting bolt:

31 N·m (3.2 kgf·m, 23 lbf·ft)



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**MEMO**

## 12. ALTERNATOR/STARTER CLUTCH

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SERVICE INFORMATION.....	12-2	STATOR .....	12-4
COMPONENT LOCATION.....	12-3	FLYWHEEL/STARTER CLUTCH .....	12-5
LEFT CRANKCASE COVER.....	12-4		

## ALTERNATOR/STARTER CLUTCH

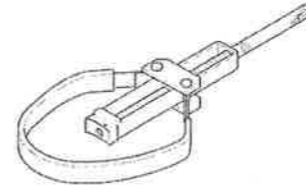
### SERVICE INFORMATION

#### GENERAL

- These services can be done with the engine installed in the frame.

#### TOOLS

Flywheel holder  
07725-0040001

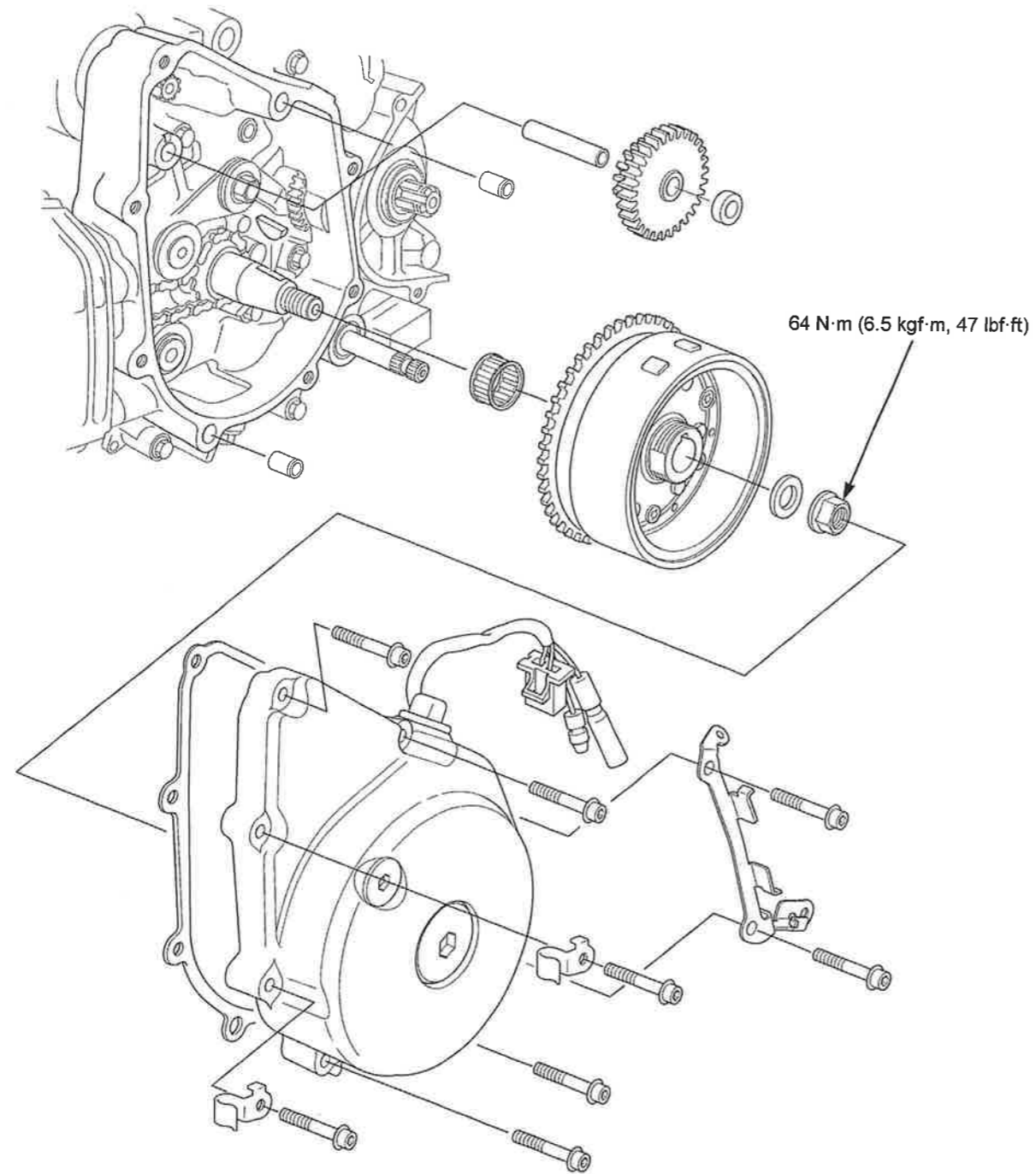


Flywheel puller, 30 mm  
07KMC-HE00100





COMPONENT LOCATION



## ALTERNATOR/STARTER CLUTCH

### LEFT CRANKCASE COVER

#### REMOVAL/INSTALLATION

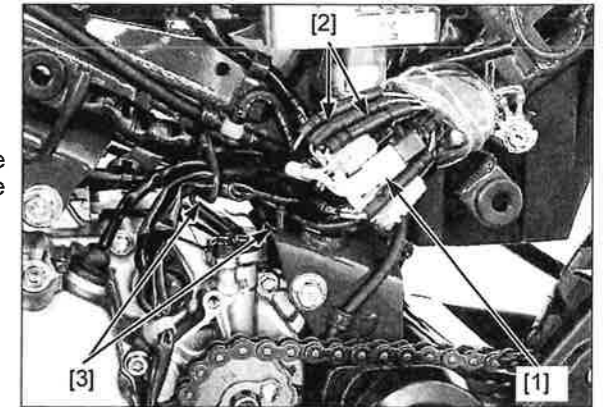
Drain the engine oil (page 3-9).

Remove the following:

- Side cover (page 2-5)
- Drive sprocket cover (page 2-9)

Pull back the connector cover and disconnect the alternator 2P connector [1] and CKP sensor wire connectors [2].

Release the wire from the guides [3].



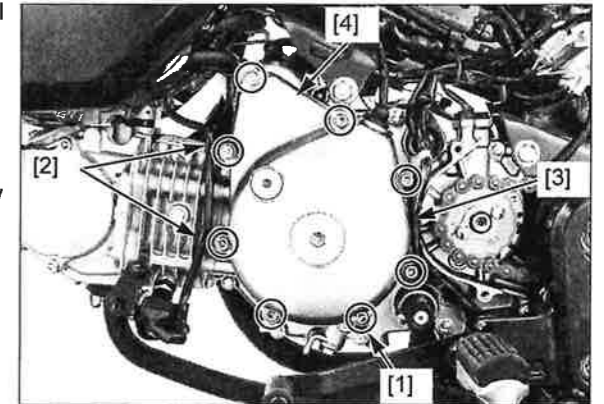
Loosen the bolts [1] in a crisscross pattern in several steps.

Remove the bolts, wire clamps [2] and wire stay [3].

Remove the left crankcase cover [4].

NOTE:

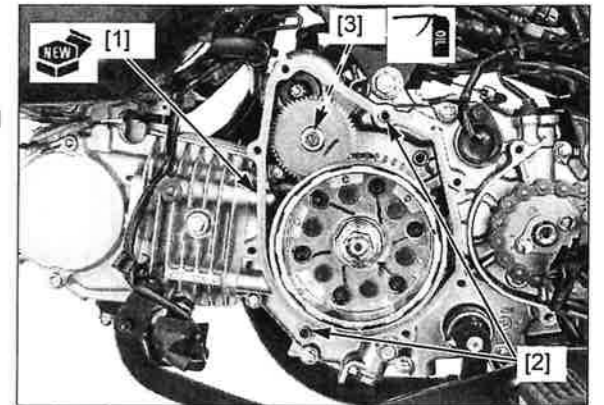
- The left crankcase cover (stator) is magnetically attached to the flywheel, be careful during removal.



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

Installation is in the reverse order of removal.

- Replace the gasket with a new one.
- Apply engine oil to the starter reduction gear journal [3].



### STATOR

#### REMOVAL/INSTALLATION

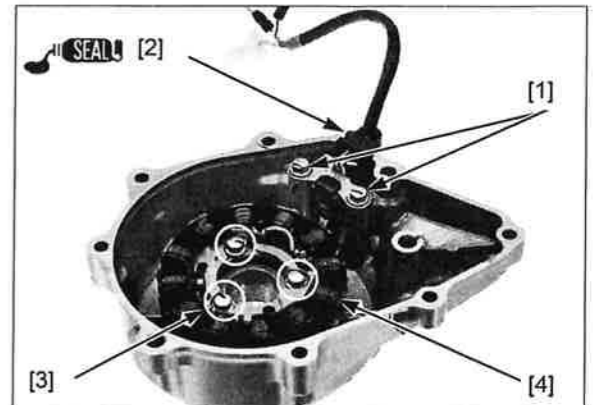
Remove the left crankcase cover (page 12-4).

Remove the CKP sensor mounting bolts [1] and release the wire grommet [2] from the left crankcase cover.

Remove the stator mounting bolts [3], then remove the stator [4] from the left crankcase cover.

Installation is in the reverse order of removal.

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

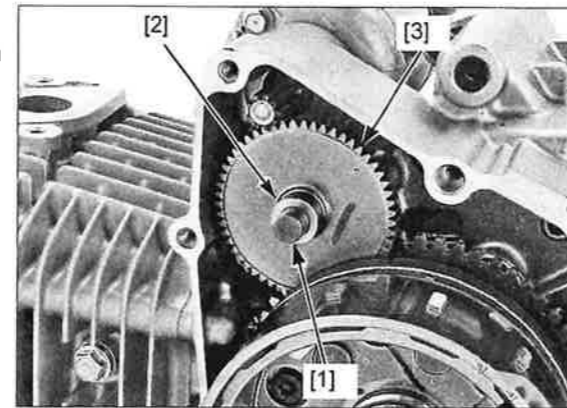


**FLYWHEEL/STARTER CLUTCH**

**REMOVAL**

Remove the left crankcase cover (page 12-4).

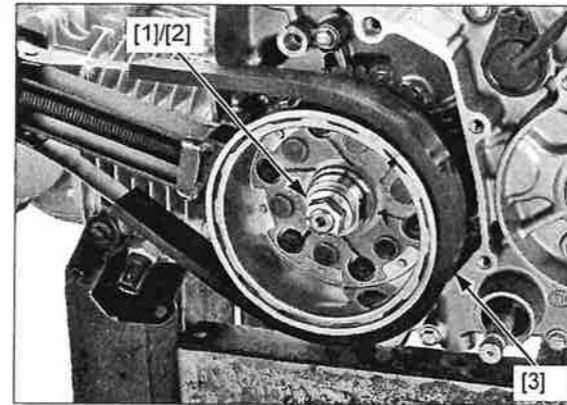
Remove the shaft [1], collar [2] and starter reduction gear [3].



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

**TOOL:**

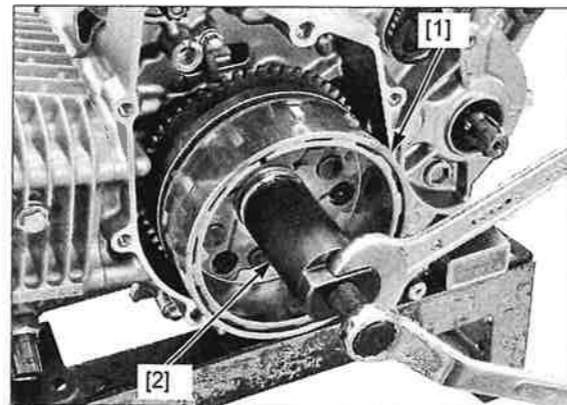
Flywheel holder [3]                    07725-0040001



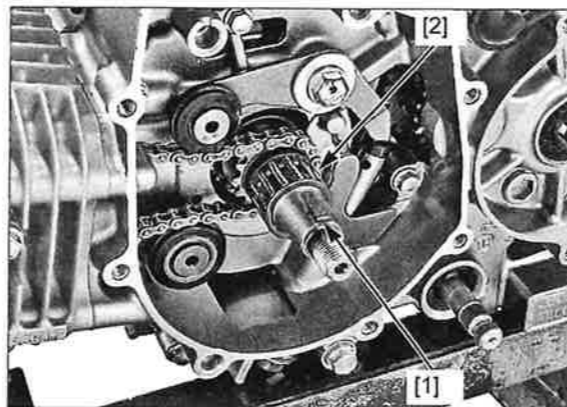
Remove the flywheel/starter clutch [1] using the special tool.

**TOOL:**

Flywheel puller, 30 mm [2]        07KMC-HE00100



*Be careful not to damage the key groove or crankshaft.* Remove the woodruff key [1] and needle bearing [2].

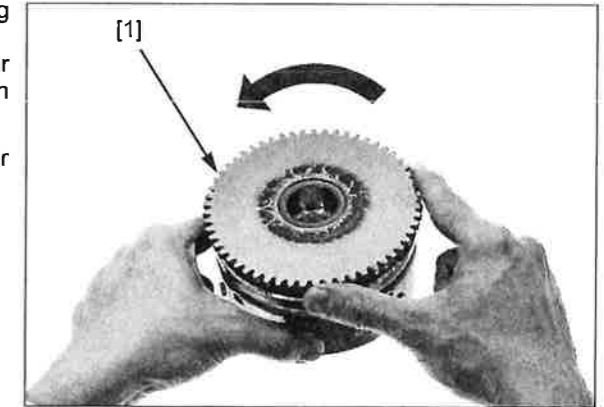


## ALTERNATOR/STARTER CLUTCH

### DISASSEMBLY

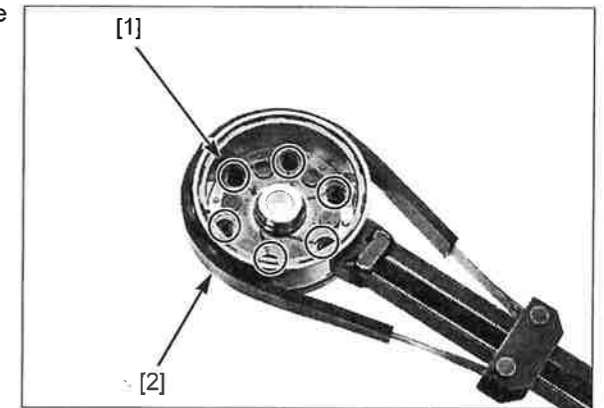
Check the operation of the one way clutch by turning the starter driven gear [1]. You should be able to turn the driven gear counterclockwise smoothly, but the gear should not turn clockwise.

Remove the starter driven gear from the flywheel/starter clutch while turning the driven gear counterclockwise.

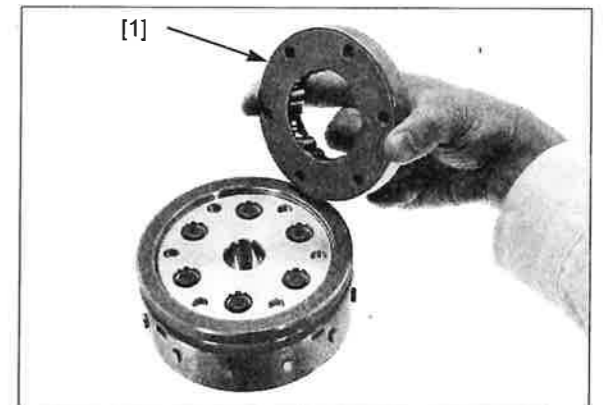


Hold the flywheel using the special tool and remove the starter clutch outer mounting torx bolts [1].

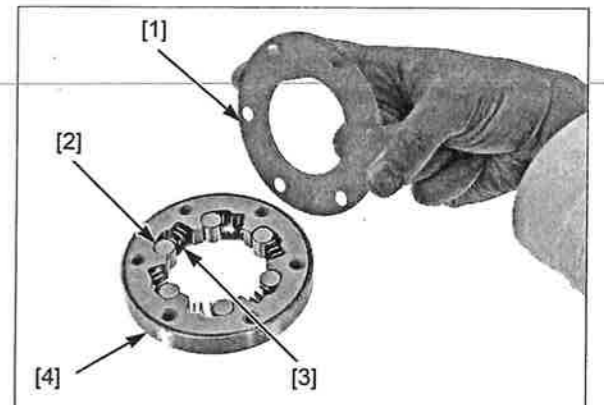
**TOOL:**  
Flywheel holder [2]                      07725-0040001



Remove the starter clutch assembly [1].



Remove the starter clutch cover [1], rollers [2] and springs [3] from the starter clutch outer [4].



## ALTERNATOR/STARTER CLUTCH

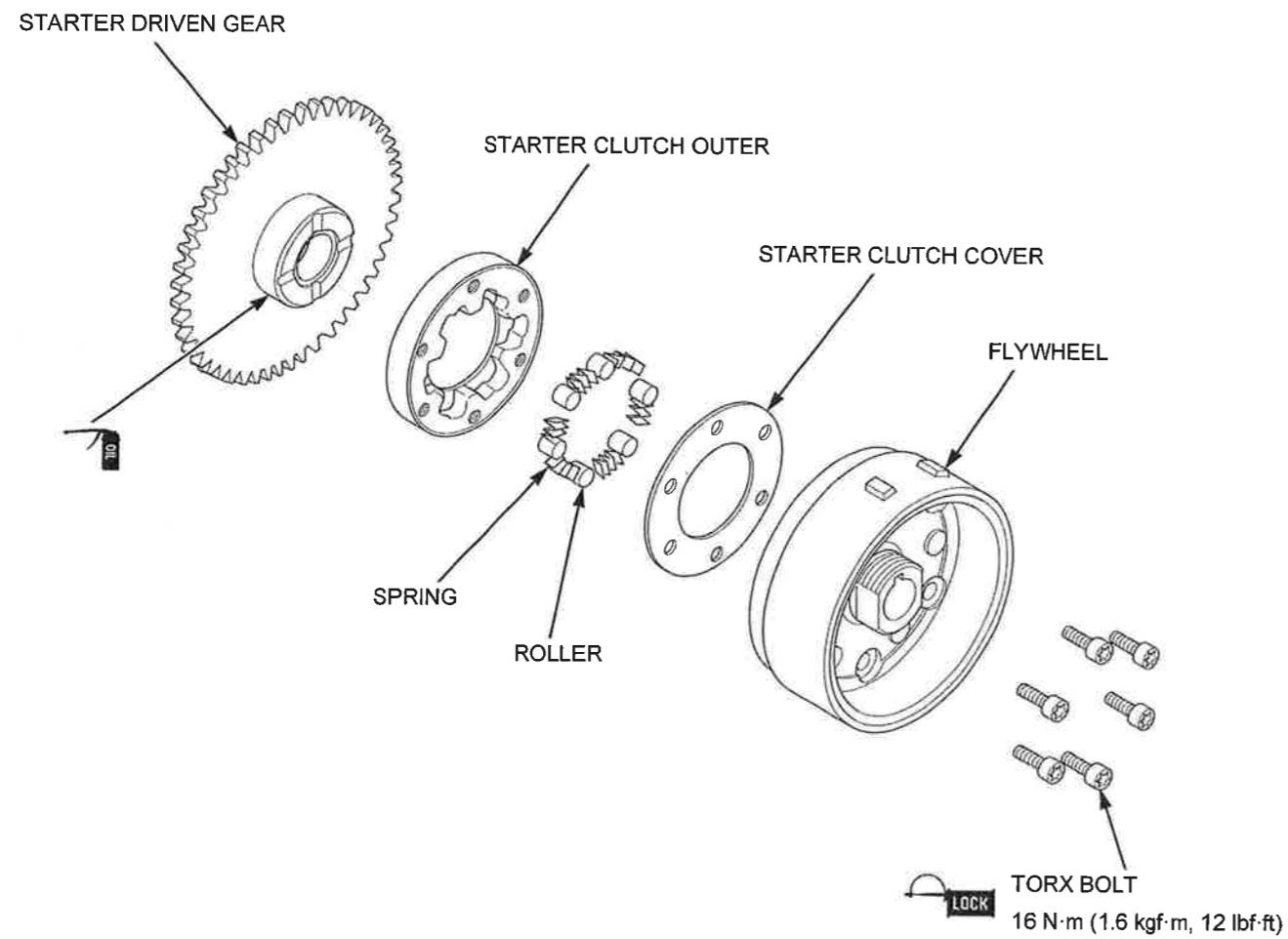
### INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation. Replace if necessary.

- Starter driven gear
- Rollers, springs and starter clutch outer
- Starter reduction gear and shaft
- Starter driven gear needle bearing

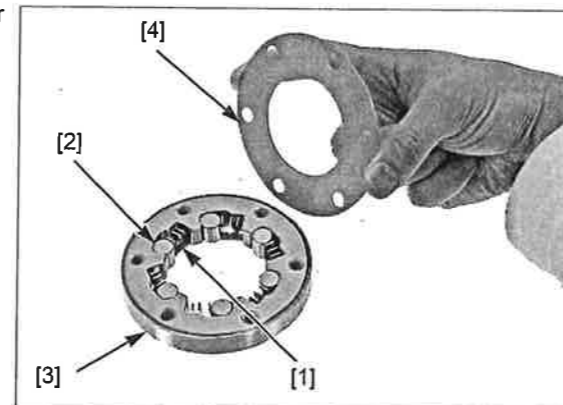
Measure each part according to ALTERNATOR/STARTER CLUTCH SPECIFICATIONS (page 1-6).  
Replace any part if it is out of service limit.

### ASSEMBLY



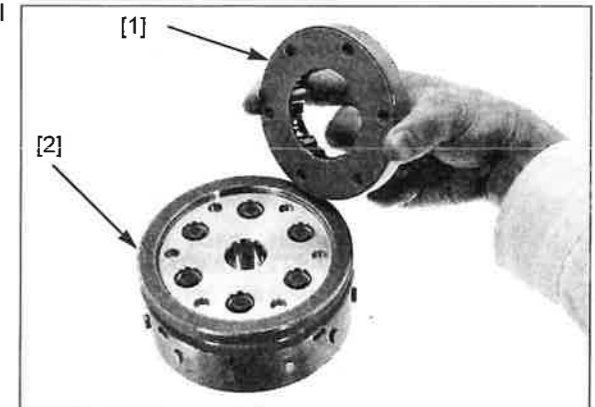
Install the springs [1] and rollers [2] into the starter clutch outer [3] as shown.

Install the starter clutch cover [4].



## ALTERNATOR/STARTER CLUTCH

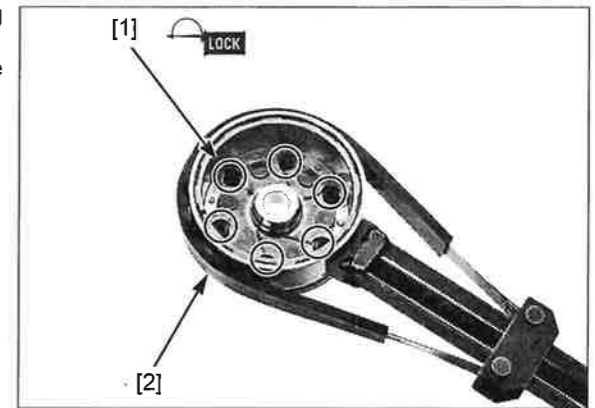
Install the starter clutch assembly [1] onto the flywheel [2].



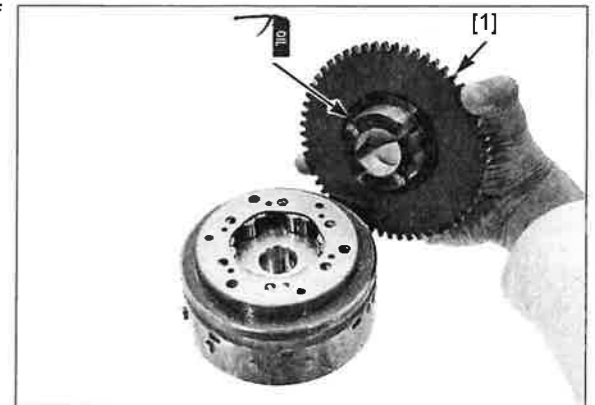
Apply locking agent to the starter clutch outer mounting torx bolt [1] threads.  
Hold the flywheel using the special tool and tighten the bolts to the specified torque.

**TOOL:**  
Flywheel holder [2]                      07725-0040001

**TORQUE: 16 N·m (1.6 kgf·m, 12 lbf·ft)**

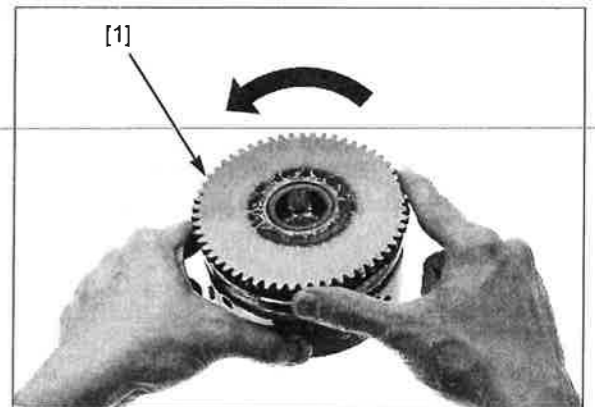


Apply engine oil to the starter clutch rolling surface of the driven gear [1].



Install the starter driven gear [1] to the flywheel/starter clutch while turning it counterclockwise.

Make sure that the starter driven gear turns counterclockwise smoothly and does not turn clockwise.



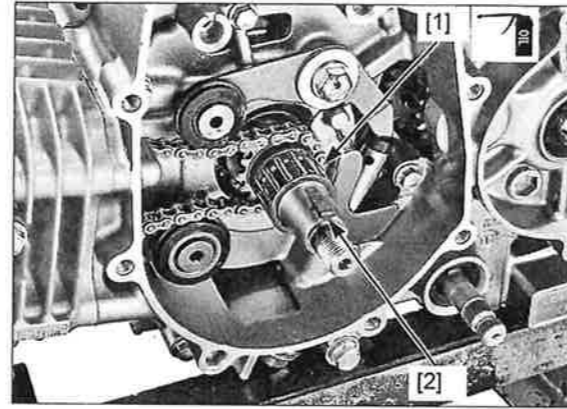
## ALTERNATOR/STARTER CLUTCH

### INSTALLATION

Apply engine oil to the needle bearing [1] whole surface and install it to the crankshaft.

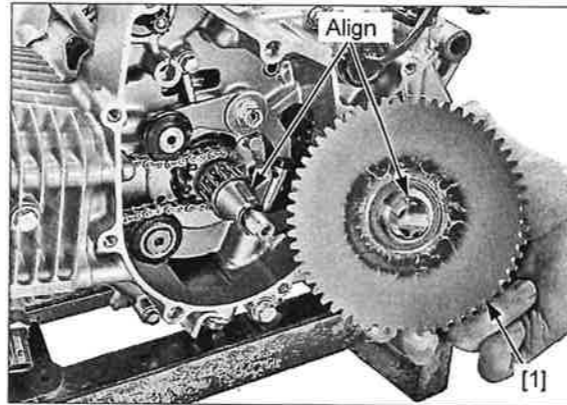
*Be careful not to damage the key groove or crankshaft.*

Install the woodruff key [2] in the crankshaft key groove.



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.



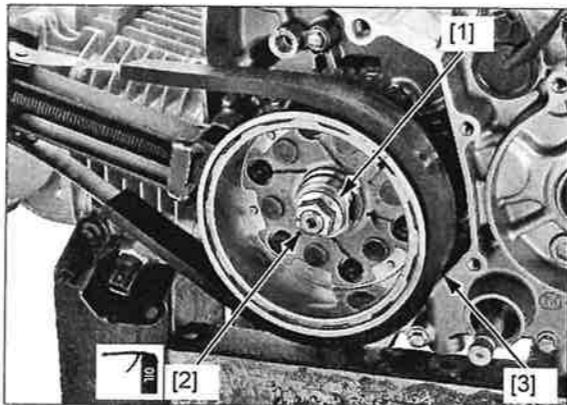
Install the washer [1].

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] Flywheel holder 07725-0040001

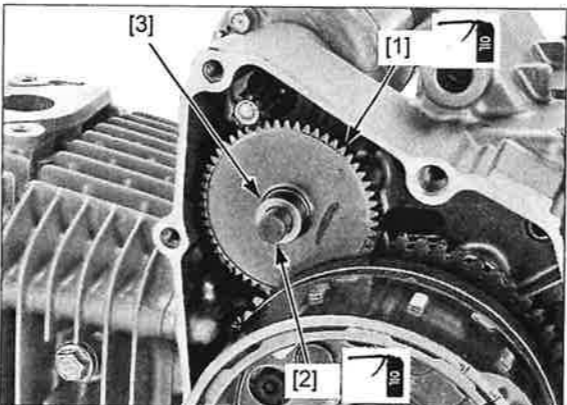
**TORQUE: 64 N·m (6.5 kgf·m, 47 lbf·ft)**



Apply engine oil to the starter reduction gear [1] teeth. Apply engine oil to the starter reduction gear shaft [2] journal area.

Install the starter reduction gear, collar [3] and gear shaft.

Install the left crankcase cover (page 12-4).



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**MEMO**

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# 13. CRANKCASE/TRANSMISSION/CRANKSHAFT

SERVICE INFORMATION.....	13-2	CRANKSHAFT.....	13-6
TROUBLESHOOTING.....	13-3	TRANSMISSION.....	13-8
COMPONENT LOCATION.....	13-4	CRANKCASE ASSEMBLY.....	13-12
CRANKCASE SEPARATION.....	13-5		

13

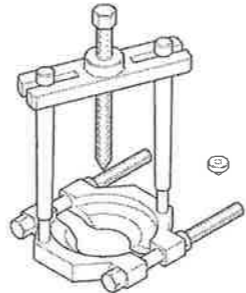
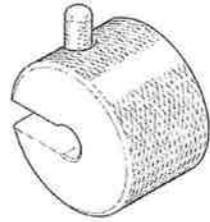
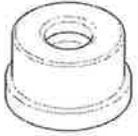
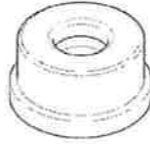
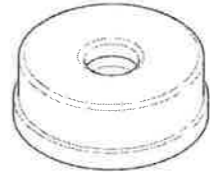



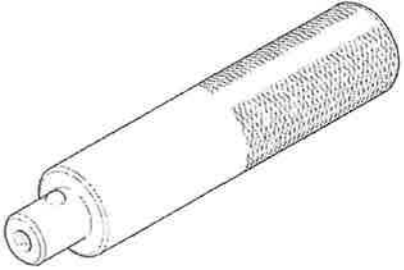
## CRANKCASE/TRANSMISSION/CRANKSHAFT

### SERVICE INFORMATION


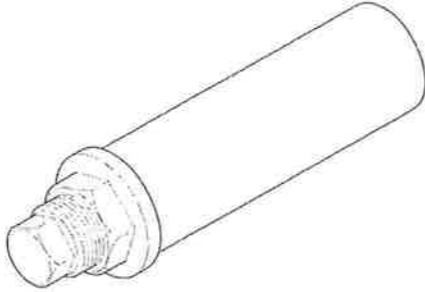
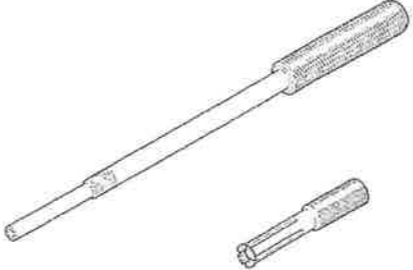
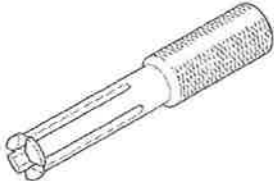
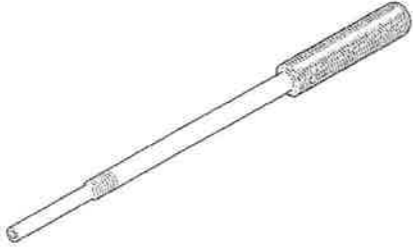
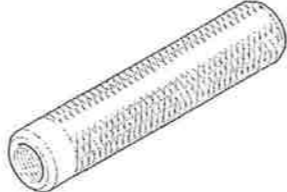
#### GENERAL

- The crankcase must be separated to service the crankshaft and transmission.
- The following parts must be removed before separating the crankcase.
  - Engine (page 14-4)
  - Flywheel/starter clutch (page 12-5)
  - Clutch (page 11-8)
  - Gearshift linkage (page 11-12)
  - Cylinder head (page 9-11)
  - Cam chain tensioner (page 9-17)
  - Cylinder/piston (page 10-4)
  - Oil pump (page 8-4)
  - Starter motor (page 6-4)
  - Neutral switch (page 20-12)
  - VS sensor (page 20-16)
- 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.

#### TOOLS

<p>Universal bearing puller 07631-0010000</p>  <p>Commercially available in U.S.A.</p>	<p>Remover Weight 07741-0010201</p>  <p>07936-371020A or 07936-3710200 U.S.A. only</p>	<p>Attachment, 32 x 35 mm 07746-0010100</p> 
<p>Attachment, 37 x 40 mm 07746-0010200</p> 	<p>Attachment, 52 x 55 mm 07746-0010400</p> 	<p>Pilot, 12 mm 07746-0040200</p> 
<p>Pilot, 17 mm 07746-0040400</p> 	<p>Pilot, 22 mm 07746-0041000</p> 	<p>Driver 07749-0010000</p> 

## CRANKCASE/TRANSMISSION/CRANKSHAFT

<p>Attachment, 28 x 30 mm 07946-1870100</p> 	<p>Assembly set, 14 mm 07JMF-KW70100</p>  <p>or 07931-ME4010B and 07931-HB3010A and 07AMF-K26A100 and 07YMF-KPB0100</p>	<p>Bearing remover set, 12 mm 07936-1660101</p>  <p>07936-1660100A U.S.A. only</p>
<p>Bearing remover head, 12 mm 07936-1660110</p>  <p>Not available in the U.S.A.</p>	<p>Bearing remover shaft, 12 mm 07936-1660120</p>  <p>Not available in the U.S.A.</p>	<p>Remover handle 07936-3710100</p> 

## TROUBLESHOOTING

### Hard to shift

- Incorrect clutch adjustment
- Bent shift forks
- Bent gearshift spindle
- Damaged shift drum cam grooves
- Incorrect engine oil viscosity

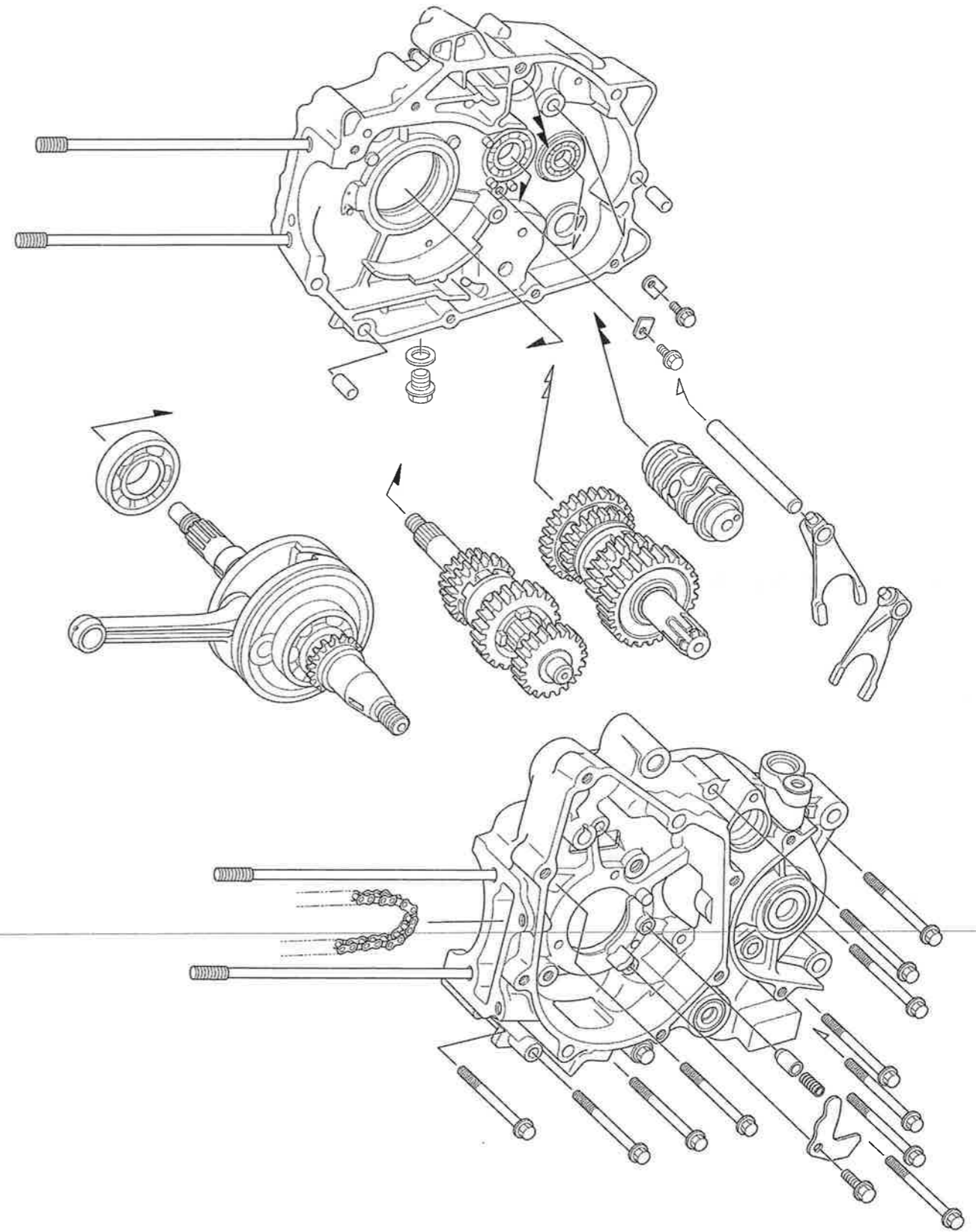
### Transmission jumps out of gear

- Worn gear dogs and dog holes
- Broken shift drum stopper arm
- Broken drum stopper arm spring
- Broken gearshift spindle return spring
- Worn or bent shift forks
- Worn gear shifter groove

### Excessive noise

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

**CRANKCASE/TRANSMISSION/CRANKSHAFT**  
**COMPONENT LOCATION**

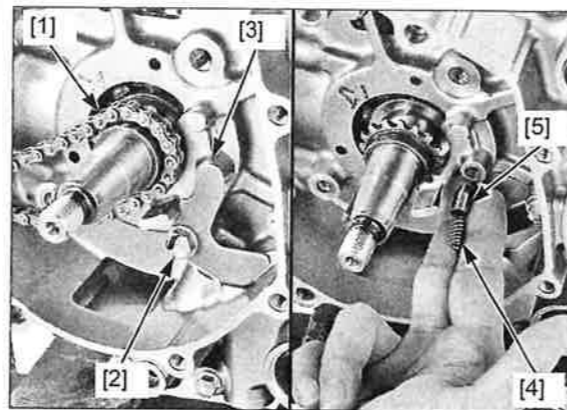


## CRANKCASE SEPARATION

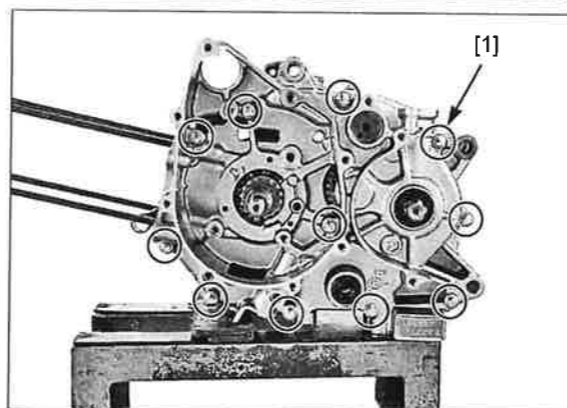
Refer to Service Information (page 13-2) for removal of necessary parts before separating the crankcase.

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

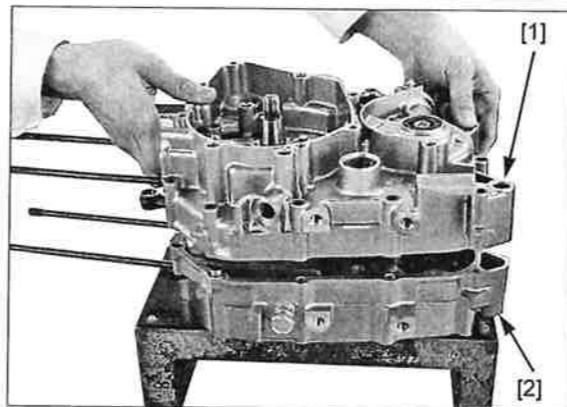
Remove the bolt [2], holder plate [3], spring [4] and bearing push plug [5].



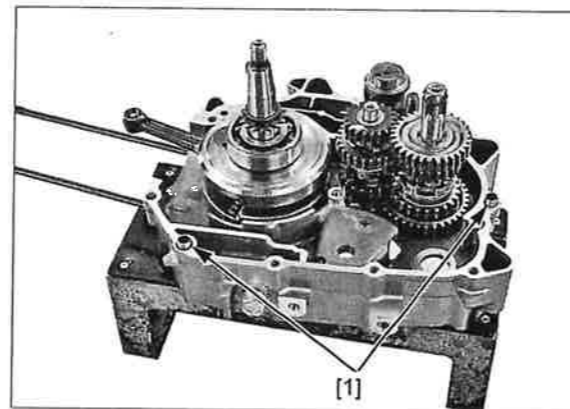
Loosen the crankcase bolts [1] in a crisscross pattern in several steps and remove them.



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

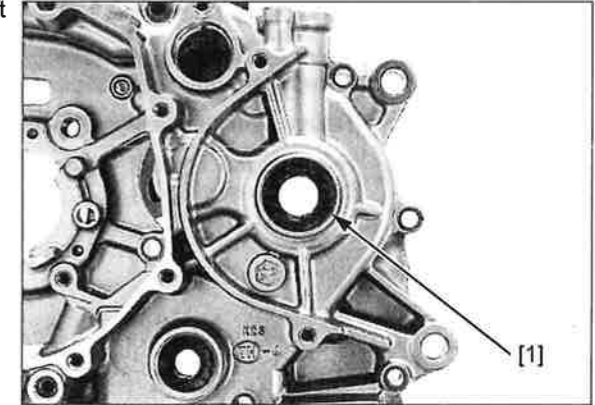


Remove the dowel pins [1].



## CRANKCASE/TRANSMISSION/CRANKSHAFT

Remove the countershaft oil seal [1] from the left crankcase.



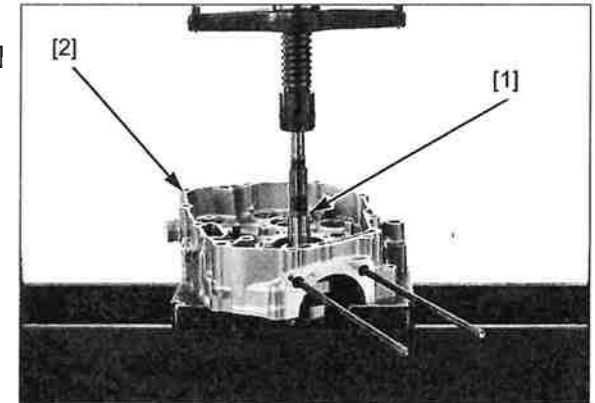
## CRANKSHAFT

### REMOVAL

Remove the transmission (page 13-8).

*Be careful not to drop the crankshaft.*

Remove the crankshaft [1] from the right crankcase [2] using a hydraulic press.



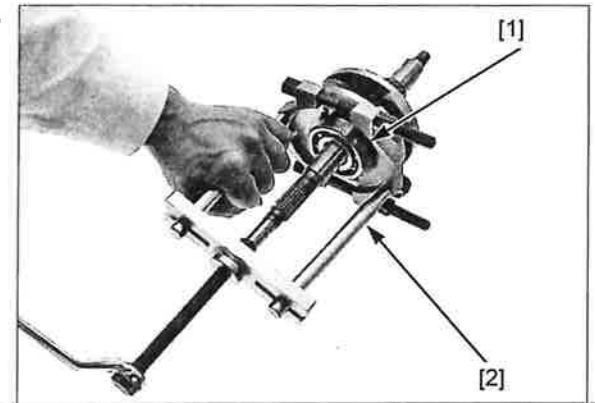
If the crankshaft bearing [1] remains on the crankshaft, remove it using a special tool as shown.

**TOOL:**  
Universal bearing puller [2]

**07631-0010000 or equivalent commercially available**

### NOTE:

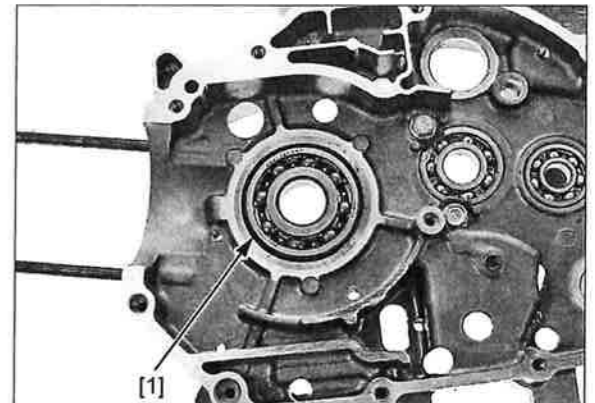
- Do not reuse the bearing.



If the bearing [1] remains in the right crankcase, drive it out from the outside.

### NOTE:

- Do not reuse the bearing.



## CRANKCASE/TRANSMISSION/CRANKSHAFT

### INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation. Replace if necessary.

- Crankshaft
- Connecting rod
- Timing sprocket
- Left crankshaft bearing

Measure each part according to CRANKCASE/TRANSMISSION/CRANKSHAFT SPECIFICATIONS (page 1-6).

Replace any part if it is out of service limit.

Place the crankshaft on a stand or V-blocks and measure the runout using a dial gauge.

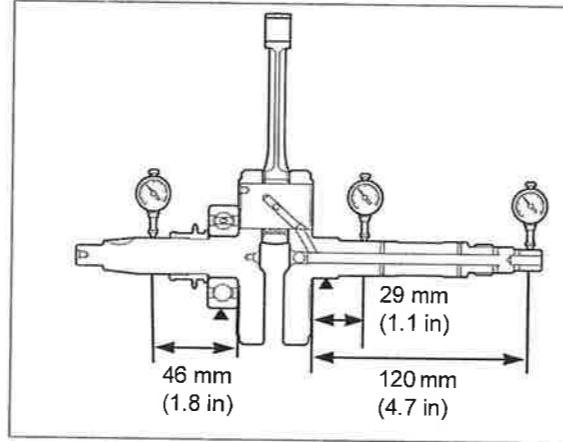
The measuring locations are shown in the illustration.

#### SERVICE LIMITS:

Right inner side: 0.02 mm (0.0008 in)

Right outer side: 0.10 mm (0.0039 in)

Left side: 0.03 mm (0.0012 in)



### INSTALLATION

Drive in the right crankshaft bearing [1] with its marked side facing up until it is fully seated, using the special tools.

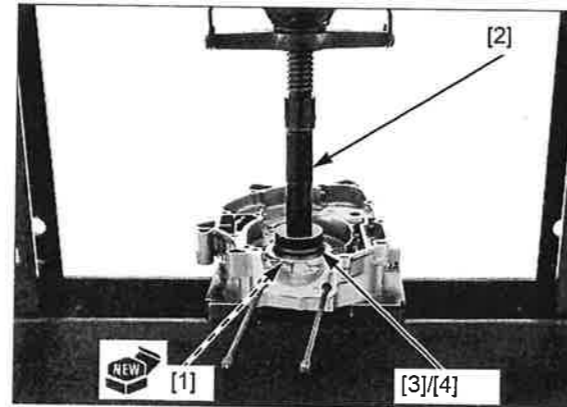
#### TOOLS:

Driver [2] 07749-0010000

Attachment, 52 x 55 mm [3] 07746-0010400

Pilot, 22 mm [4] 07746-0041000

*Be careful not to damage the crankcase.*



Apply 1 – 2 cm<sup>3</sup> of oil to the connecting rod big end.

*Be sure that the connecting rod is located in the crankcase opening.*

Pull the crankshaft [1] into the right crankcase [2] bearing inner race using the special tool.

#### TOOL:

Assembly set, 14 mm [3] 07JMF-KW70100

#### U.S.A. TOOLS:

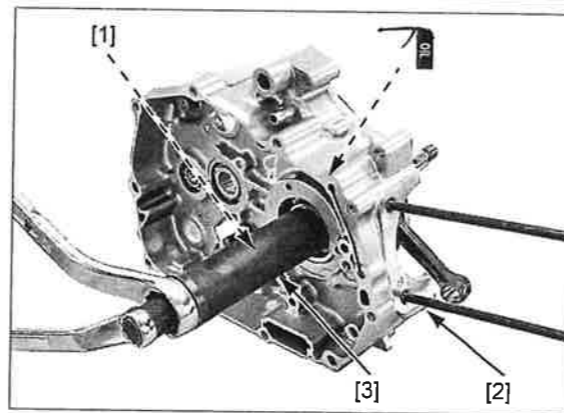
Installer shaft 07931-ME4010B

Special nut 07931-HB3010A

Threaded adapter 07AMF-K26A100

Assembly collar 07YMF-KPB0100

Install the transmission (page 13-12).



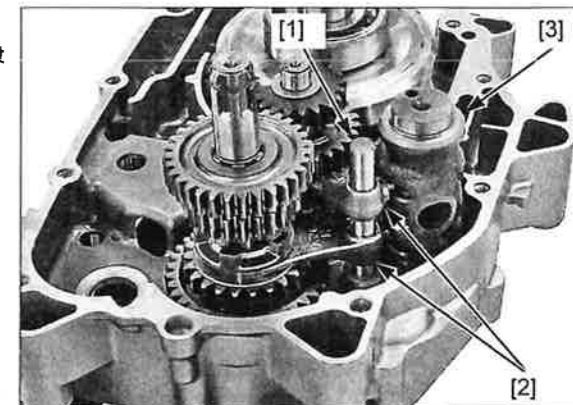
## CRANKCASE/TRANSMISSION/CRANKSHAFT

### TRANSMISSION

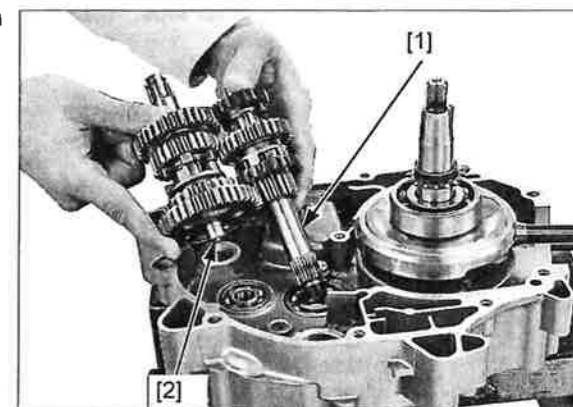
#### REMOVAL

Separate the crankcase (page 13-5).

Remove the shift fork shaft [1], shift forks [2] and shift drum [3].



Remove the mainshaft [1] and countershaft [2] as an assembly.



#### INSPECTION

Inspect the following parts for scratch, damage, abnormal wear and deformation. Replace if necessary.

- Transmission gears
- Transmission bushings
- Transmission bearings
- Shift drum/journal
- Shift forks
- Shift fork shaft
- Mainshaft
- Countershaft
- Gear shift spindle journal
- Oil passages

Measure each part and calculate the clearance according to CRANKCASE/TRANSMISSION/CRANKSHAFT SPECIFICATIONS (page 1-6).  
Replace any part if it is out of service limit.



## CRANKCASE/TRANSMISSION/CRANKSHAFT

### DISASSEMBLY/ASSEMBLY

Disassemble and assemble the mainshaft and countershaft according to the illustrations.

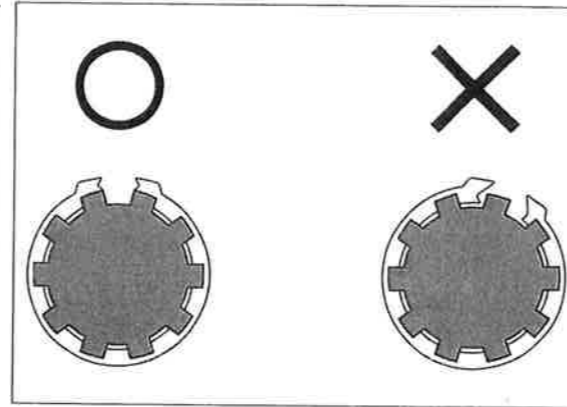
Clean all parts in solvent and dry them thoroughly.

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

Assemble all parts into their original positions.



#### NOTE:

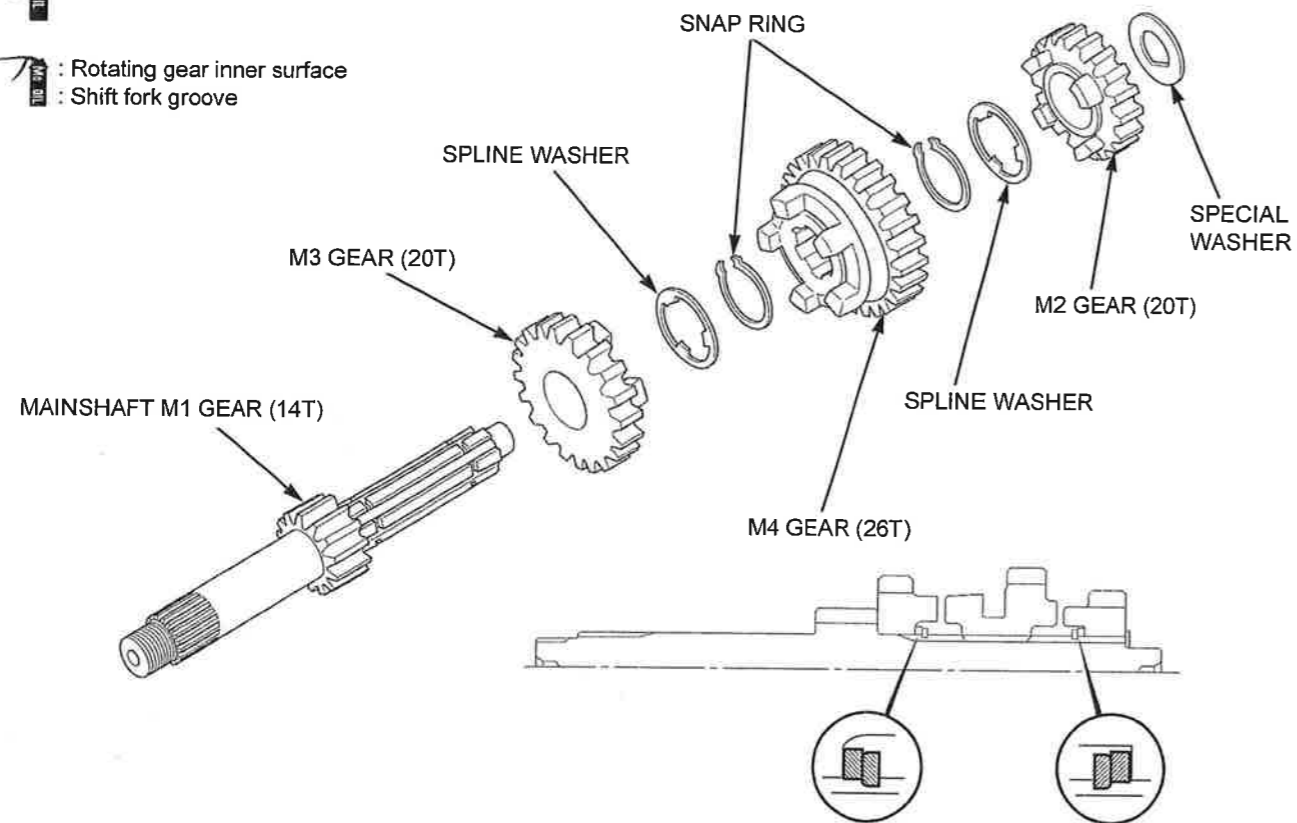
- Check the gears for freedom of movement or rotation on the shaft.
- Install the washers and snap rings with the chamfered edges facing the thrust load side.
- Do not reuse a worn snap ring which could easily spin in the groove.
- Check that the snap rings are seated in the grooves and align their end gaps with the grooves of the spline.
- Check the special washers are seated in the shaft grooves.



#### MAINSHAFT:

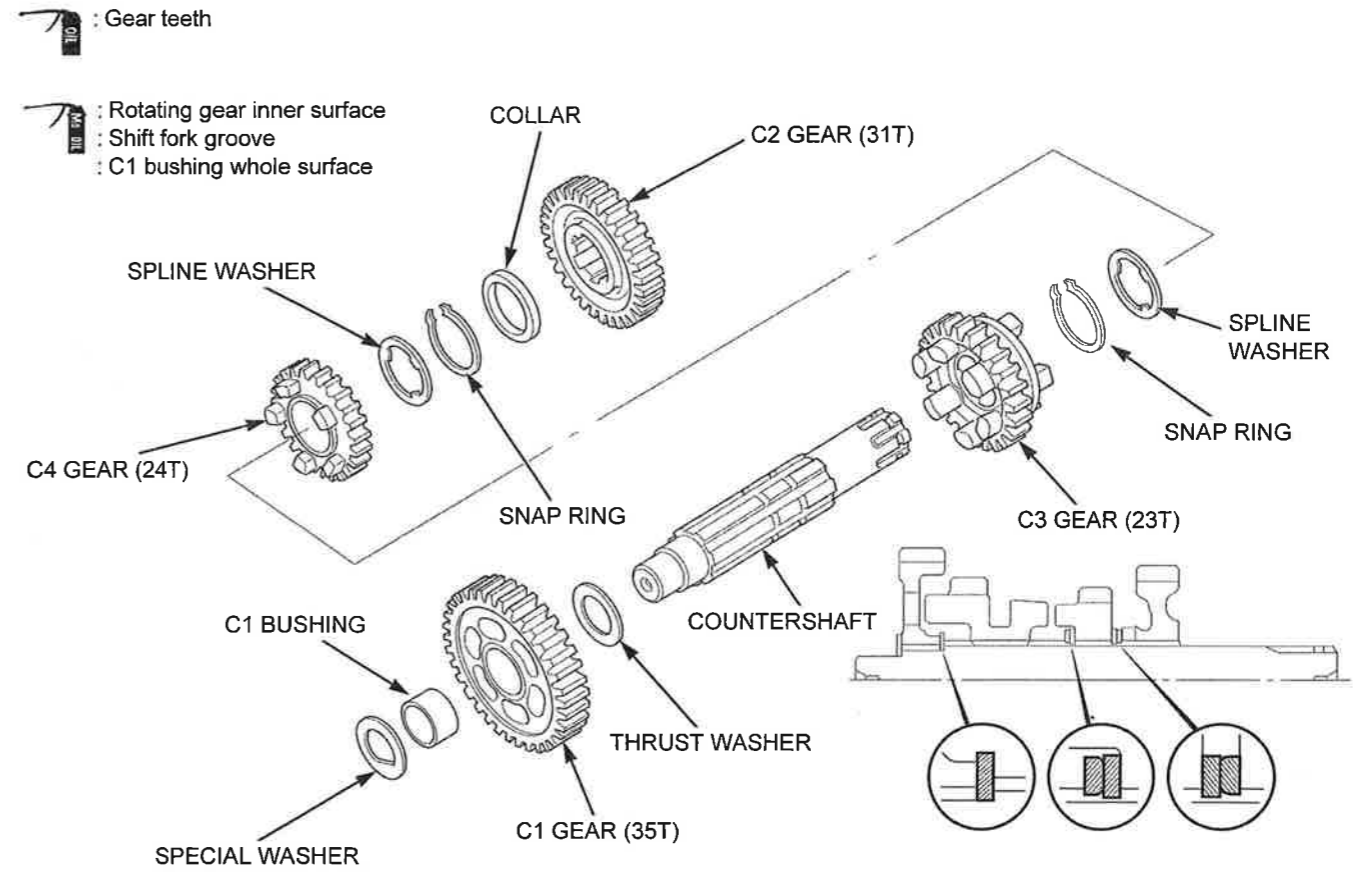
 : Gear teeth

 : Rotating gear inner surface  
 : Shift fork groove



# CRANKCASE/TRANSMISSION/CRANKSHAFT

## COUNTERSHAFT

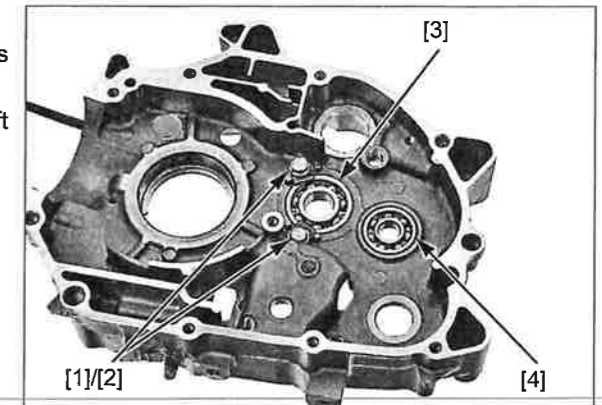


### BEARING REPLACEMENT

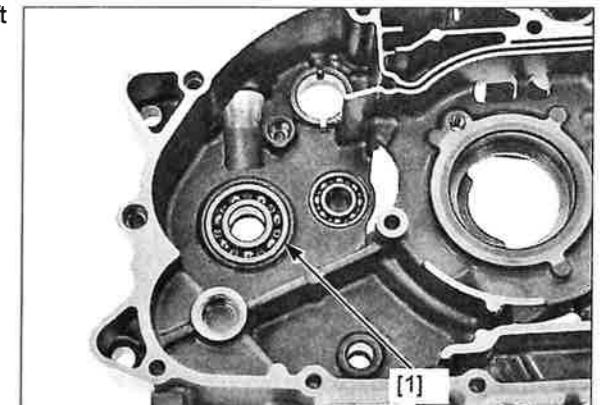
Remove the crankshaft (page 13-6).

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.



## CRANKCASE/TRANSMISSION/CRANKSHAFT

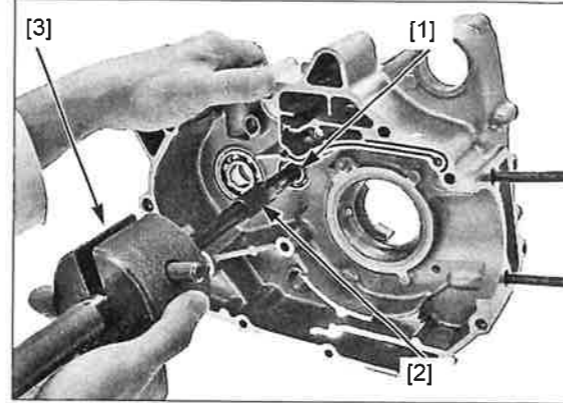
Remove the mainshaft bearing [1] from the left crankcase using the special tools.

**TOOLS:**

Bearing remover set, 12 mm [2] 07936-1660101  
 - Bearing remover shaft, 12 mm 07936-1660120  
 - Bearing remover head, 12 mm 07936-1660110  
 Remover weight [3] 07741-0010201

**U.S.A. TOOLS:**

Bearing remover, 12 mm 07936-166010A  
 Remover weight 07936-371020A or  
 07936-3710200  
 Remover handle 07936-3710100



Apply engine oil to the new bearing cavities.  
 Drive new bearings into the crankcase with their marked side facing up until they are fully seated using the special tools.

**TOOLS:**

**Left crankcase mainshaft bearing [1]:**

Driver [2] 07749-0010000  
 Attachment, 28 x 30 mm [3] 07946-1870100  
 Pilot, 12 mm [4] 07746-0040200

**Left crankcase countershaft bearing:**

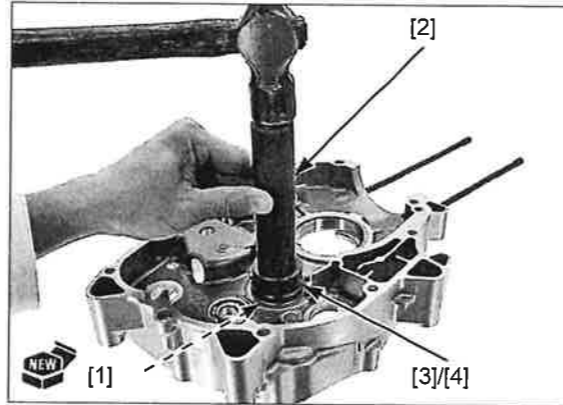
Driver 07749-0010000  
 Attachment, 37 x 40 mm 07746-0010200  
 Pilot, 17 mm 07746-0040400

**Right crankcase mainshaft bearing:**

Driver 07749-0010000  
 Attachment, 37 x 40 mm 07746-0010200  
 Pilot, 17 mm 07746-0040400

**Right crankcase countershaft bearing:**

Driver 07749-0010000  
 Attachment, 32 x 35 mm 07746-0010100  
 Pilot, 12 mm 07746-0040200

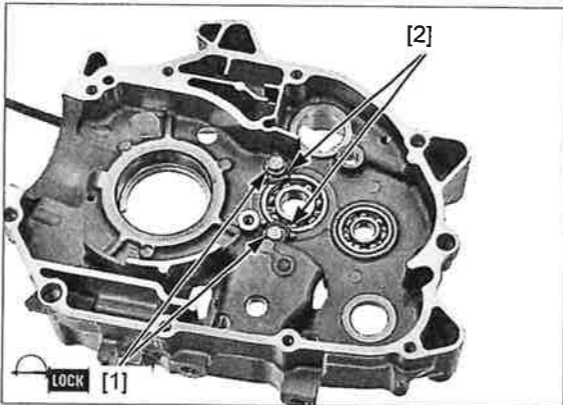


Coating width  $6.5 \pm 1.0 \text{ mm}$  ( $0.26 \pm 0.04 \text{ in}$ ) from the tip.

Apply locking agent to the threads of the mainshaft bearing set plate bolt [1].

Install the mainshaft bearing set plates [2] and bolts to the right crankcase and tighten the bolts securely.

Install the crankshaft (page 13-7).

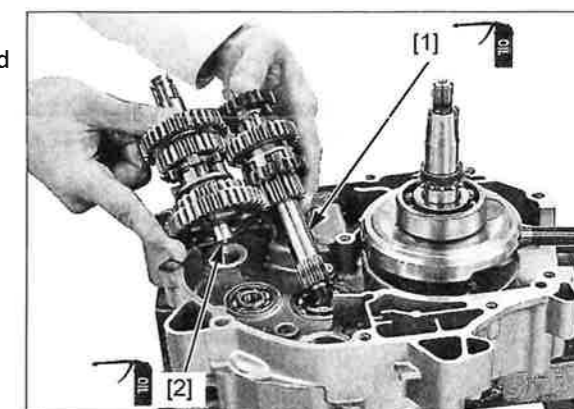


## CRANKCASE/TRANSMISSION/CRANKSHAFT

### INSTALLATION

Apply engine oil to the transmission gear teeth.

Engage the mainshaft [1] and countershaft [2] and install them into the right crankcase as an assembly.

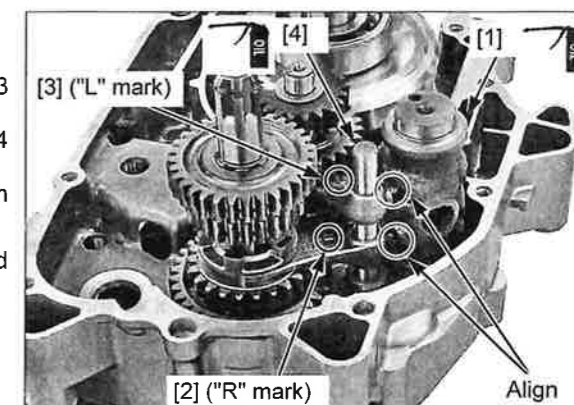


Apply engine oil to the shift drum [1] whole surface. Install the shift drum into the right crankcase.

Install the right shift fork [2] (with "R" mark) into the C3 shifter groove with its mark facing up. Install the left shift fork [3] (with "L" mark) into the M4 shifter groove with its mark facing up. Align the guide pins of the shift forks with the shift drum grooves.

Apply oil to the shift fork shaft [4] whole surface and install it.

Assemble the crankcase (page 13-12).

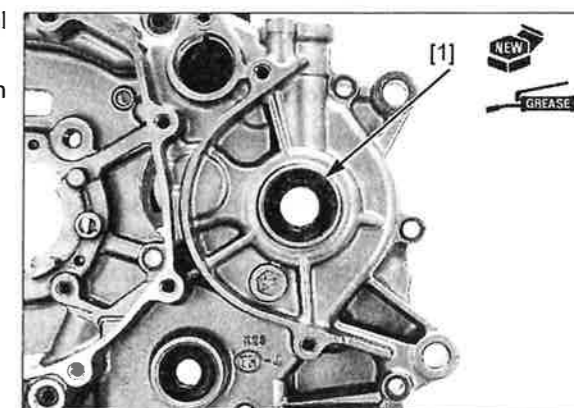


### CRANKCASE ASSEMBLY

Apply grease to the lips of a new countershaft oil seal [1].

*Be careful not to damage the oil seal lips.*

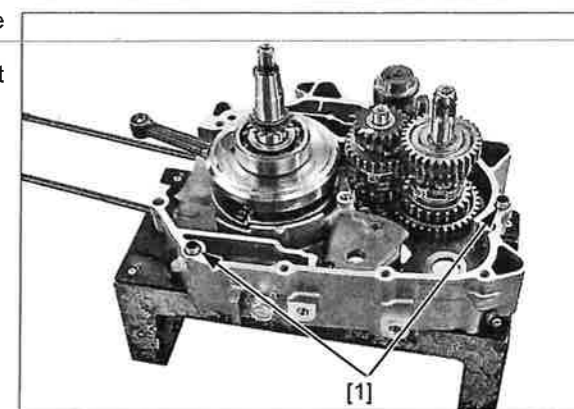
Install the oil seal to the left crankcase until it is flush with the left crankcase surface.



Clean off the sealant from the left and right crankcase mating surfaces.

If there is a scratch on the mating surfaces, repair it using an oil stone or equivalent.

Install the dowel pins [1] to the right crankcase.

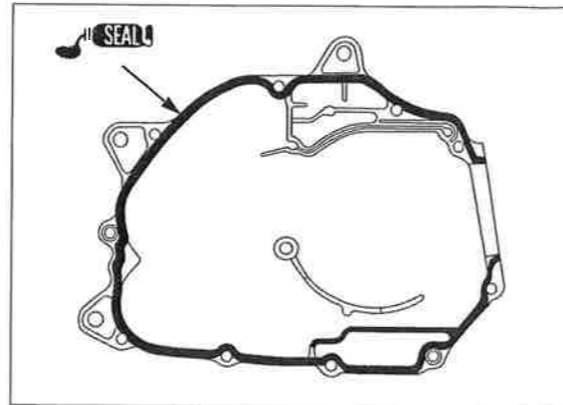


## CRANKCASE/TRANSMISSION/CRANKSHAFT

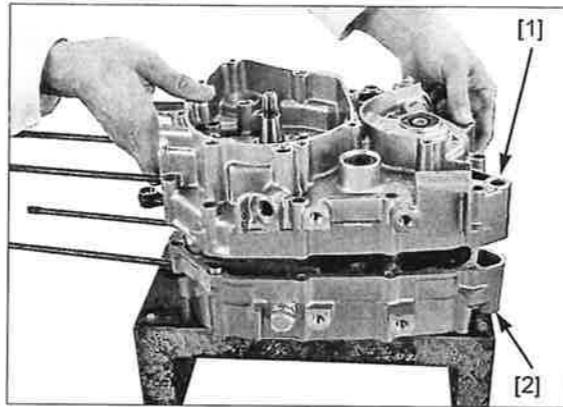
Apply light but thorough coating of sealant (THREE BOND 1215 or equivalent) to the left crankcase mating surface.

**NOTE:**

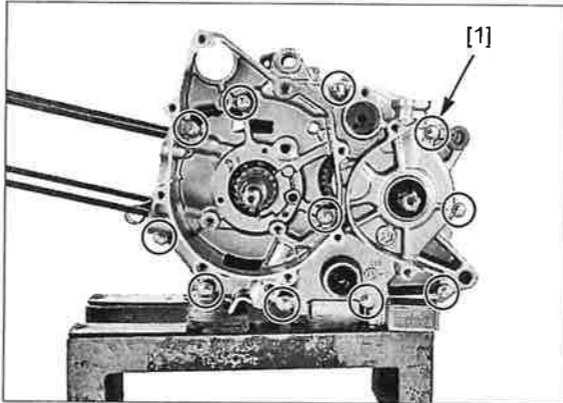
- Avoid applying the sealant around the oil passage area.



Install the left crankcase [1] to the right crankcase [2].



Install and tighten the crankcase bolts [1] in a crisscross pattern in several steps.

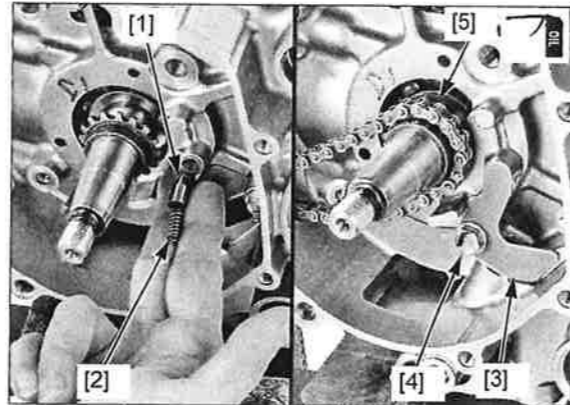


Install the bearing push plug [1], spring [2] and holder plate [3], then tighten the bolt [4].

Apply engine oil to the cam chain [5] whole surface.

Install the cam chain over the timing sprocket teeth.

Install the removed parts (page 13-2).



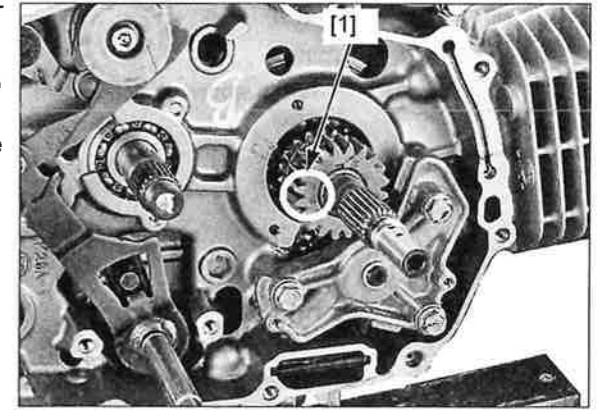
## CRANKCASE/TRANSMISSION/CRANKSHAFT

### PRIMARY DRIVE GEAR SELECTION

The primary drive gear has ID mark [1] on the gear surface.

If the primary drive gear is replaced with a new one, select the same marked gear as the original gear.

If the crankcase is replaced with a new one, select the "B" marked gear.



# 14. ENGINE REMOVAL/INSTALLATION

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SERVICE INFORMATION..... 14-2      ENGINE REMOVAL/INSTALLATION..... 14-4  
COMPONENT LOCATION..... 14-3

## ENGINE REMOVAL/INSTALLATION

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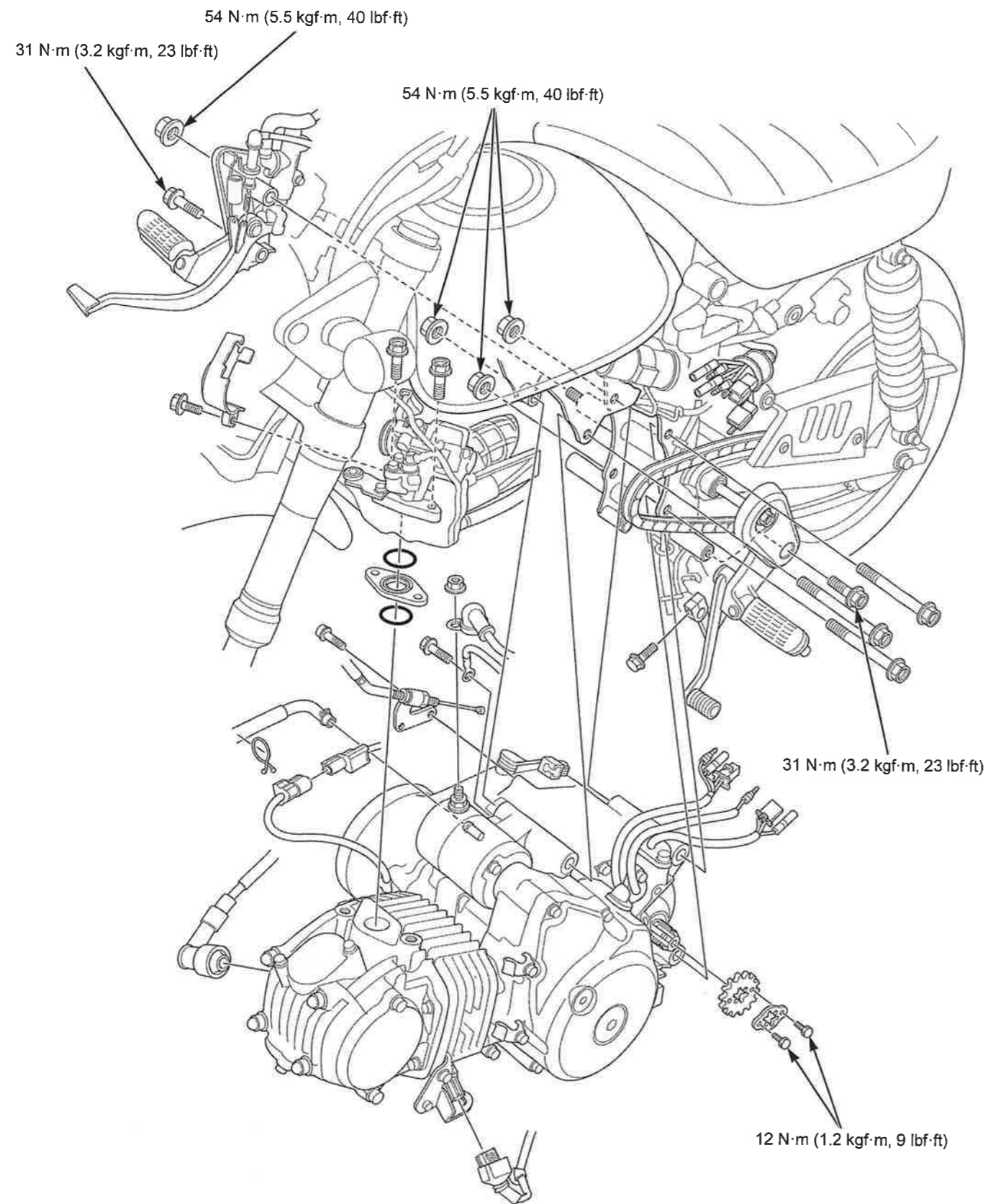
### SERVICE INFORMATION

#### GENERAL

- During engine removal and installation, place the motorcycle on a level surface.
- 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 12-5)
  - Clutch (page 11-8)
  - Gearshift linkage (page 11-12)
  - Cylinder head (page 9-11)
  - Cylinder/piston (page 10-4)
  - Oil pump (page 8-4)
- The following components require engine removal for service.
  - Crankshaft (page 13-6)
  - Transmission (page 13-8)
  - Shift forks/shift drum (page 13-8)



COMPONENT LOCATION



## ENGINE REMOVAL/INSTALLATION

### ENGINE REMOVAL/INSTALLATION

Support the motorcycle with its sidestand.

Drain the engine oil (page 3-9).

Remove the following:

- Garnishes (page 2-5)
- Side cover (page 2-5)
- Drive sprocket cover (page 2-9)
- Exhaust pipe (page 2-11)

Disconnect the spark plug cap [1].

Remove the band [2] and disconnect the O<sub>2</sub> sensor 1P (Black) connector [3].

Disconnect the crankcase breather hose [4].

#### NOTE:

- Connect the crankcase breather hose with its paint mark side facing up.

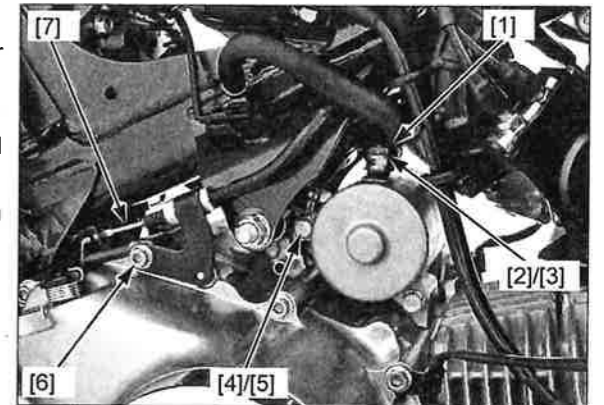
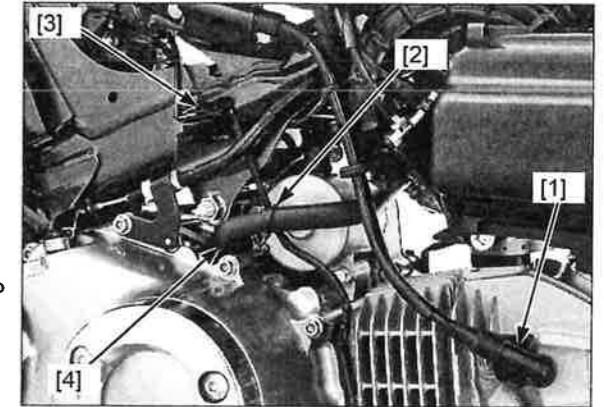
Disconnect the battery negative (-) cable (page 19-5).

Pull back the rubber cap [1] from the starter motor terminal.

Remove the terminal nut [2] and starter motor cable [3].

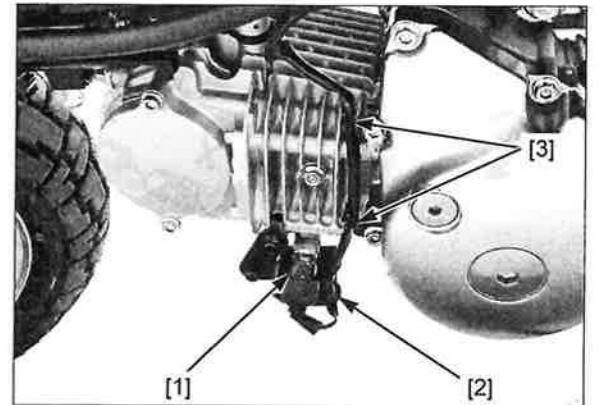
Remove the starter motor mounting bolt [4] and ground cable [5].

Remove the socket bolt [6] and disconnect the clutch cable [7] from the clutch lifter arm.



Disconnect the EOT sensor 2P (Black) connector [1].

Remove the wire clip [2] and release the wire from the clamps [3].

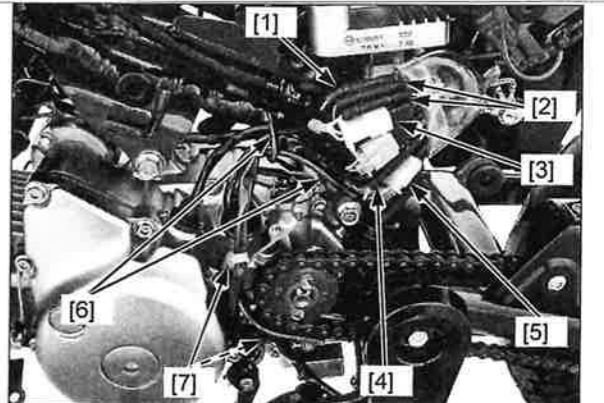


Disconnect the following:

- Neutral switch wire connector [1]
- CKP sensor wire connectors [2]
- Alternator 2P connector [3]
- VS sensor wire connector [4]
- VS sensor 3P connector [5]

Release the disconnected wires from the wire guides [6].

Remove the sidestand switch wire clips [7].



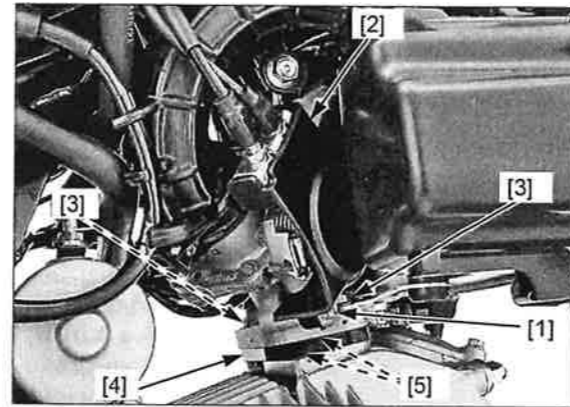
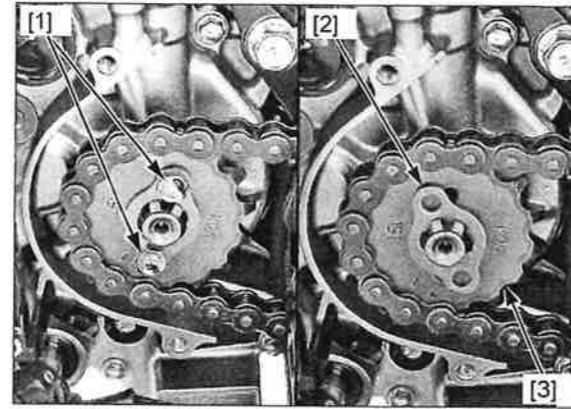
## ENGINE REMOVAL/INSTALLATION

Remove the drive sprocket fixing plate bolts [1].  
Turn and remove the fixing plate [2].

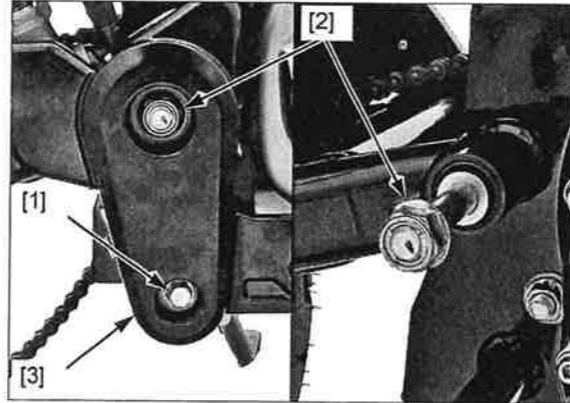
*MONKEY125A only:*  
*Using other than genuine drive sprocket causes ABS malfunction. Do not use it.*

Remove the following:

- Bolt/washer [1]
- Throttle drum cover [2]
- Intake pipe mounting bolts [3]
- Insulator [4]
- O-rings [5]



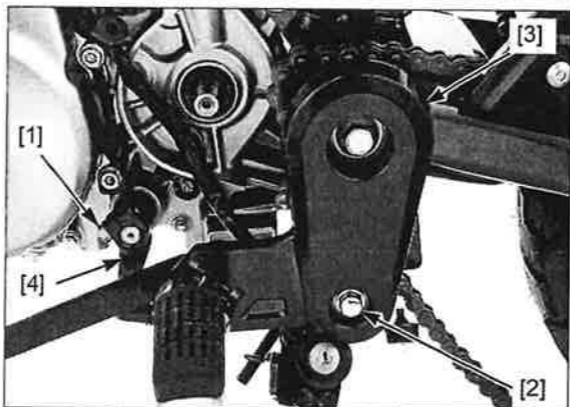
Remove the right step holder mounting bolt [1],  
swingarm pivot nut [2] and right step holder [3].  
Temporarily install the swingarm pivot nut.



Remove the gearshift arm pinch bolt [1].

Remove the left step holder mounting bolt [2].

Pull the left step holder [3] while releasing the gearshift  
arm [4] from the gearshift spindle.  
Swing the left step holder rearward.



## ENGINE REMOVAL/INSTALLATION

*Continuously adjust the jack height to relieve load to the mounting bolts.*

Support the engine using a jack or other adjustable support.

Remove the front engine hanger nut [1], rear upper engine hanger nut [2] and rear lower engine hanger nut [3].

Remove the engine hanger bolts [4] and engine from the frame.

- Cover the intake port with a shop towel or cover it with a piece of tape to prevent any foreign material from dropping into the engine.
- Note the direction of the hanger bolts.

Installation is in the reverse order of removal.

- Use a floor jack or other adjustable support, carefully place the engine into the frame and maneuver it into place.
- Route the wires and hoses properly (page 1-17).

### TORQUE:

**Rear upper engine hanger nut:**

**54 N·m (5.5 kgf·m, 40 lbf·ft)**

**Rear lower engine hanger nut:**

**54 N·m (5.5 kgf·m, 40 lbf·ft)**

**Front engine hanger nut:**

**54 N·m (5.5 kgf·m, 40 lbf·ft)**

**Drive sprocket fixing plate bolt:**

**12 N·m (1.2 kgf·m, 9 lbf·ft)**

**Step holder mounting bolt:**

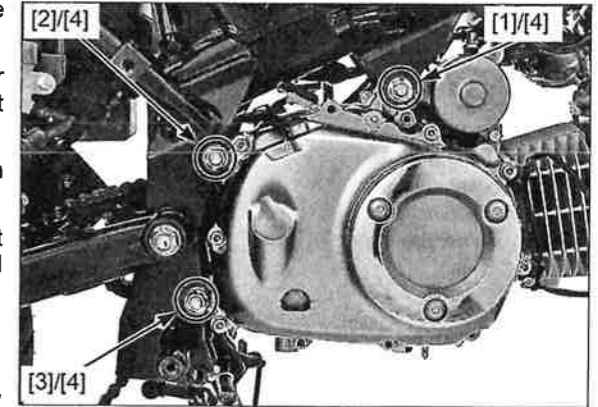
**31 N·m (3.2 kgf·m, 23 lbf·ft)**

**Swingarm pivot nut:**

**54 N·m (5.5 kgf·m, 40 lbf·ft)**

Fill the recommended engine oil up to the proper level (page 3-9).

Adjust the drive chain slack (page 3-14).



# 15. FRONT WHEEL/SUSPENSION/STEERING

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SERVICE INFORMATION.....	15-2	FRONT WHEEL.....	15-10
TROUBLESHOOTING .....	15-3	FORK .....	15-13
COMPONENT LOCATION.....	15-4	STEERING STEM .....	15-20
HANDLEBAR.....	15-5		

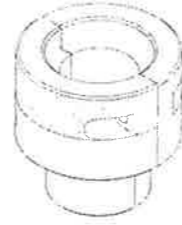
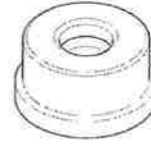
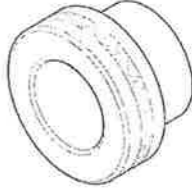

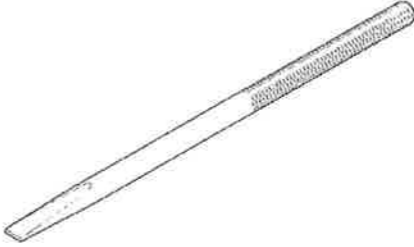

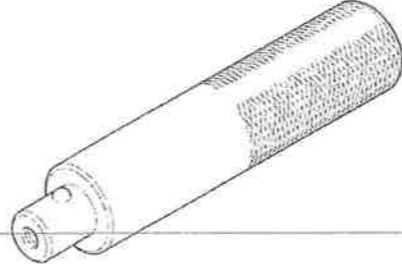
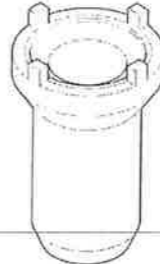
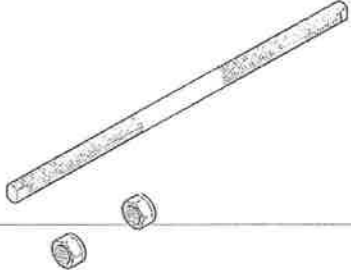


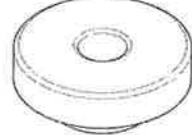
## FRONT WHEEL/SUSPENSION/STEERING

### SERVICE INFORMATION

#### GENERAL

- 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 disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- After the front wheel installation, check the brake operation by applying the brake lever.
- Use only the specified tire to avoid malfunctions of the IMU and ABS.

#### TOOLS

<p>Fork Seal Driver 31mm 070MD-K200100</p>  <p>or 070MD-K20A100 (U.S.A. only)</p>	<p>Attachment, 37 x 40 mm 07746-0010200</p> 	<p>Driver attachment 07747-0010300</p> 
<p>Pilot, 12 mm 07746-0040200</p> 	<p>Bearing Remover Shaft 07746-0050100</p> 	<p>Remover Head, 12 mm 07746-0050300</p> 
<p>Driver 07749-0010000</p> 	<p>Steering stem socket 07916-3710101</p> 	<p>Shaft Installer 07WMF-GCM0100</p> 
<p>Head Base 07WMF-GCM0200</p>  <p>07WMF-GCMA200 (U.S.A. only)</p>	<p>Base 07WMF-GCM0300</p>  <p>07WMF-GCMA300 (U.S.A. only)</p>	<p>Driver Attachment 48.5 mm 07WMF-GCM0400</p>  <p>or 07931-ME9010 (U.S.A. only) 07WMF-GCMA400 (U.S.A. only)</p>

Remover 35mm  
07WMF-GCM0600



07WMF-GCMA600 (U.S.A. only)

## 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
- Worn or damaged front wheel bearings

### 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

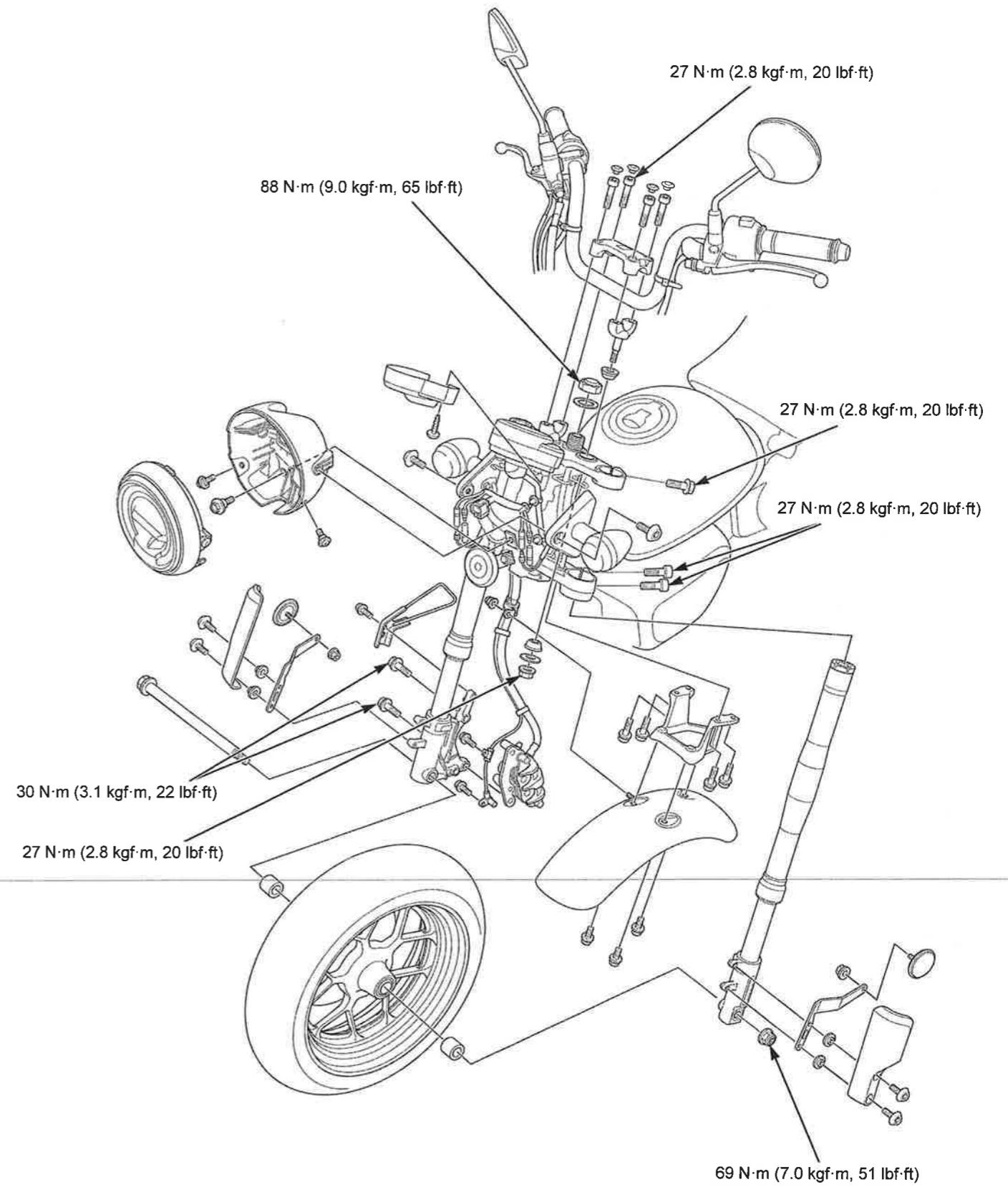
### Hard suspension

- 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

**FRONT WHEEL/SUSPENSION/STEERING**  
**COMPONENT LOCATION**

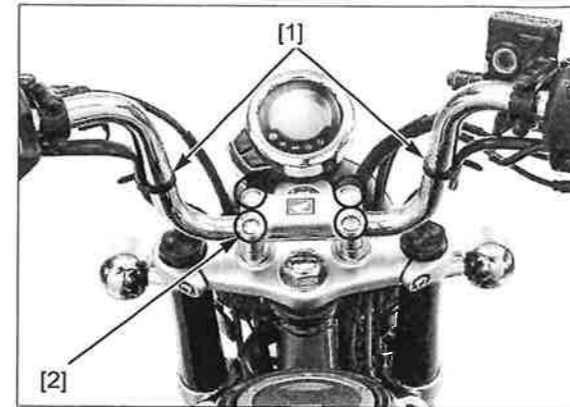




**HANDLEBAR**

**REMOVAL**

Remove the rearview mirrors (page 2-4).  
Remove the wire bands [1] and bolt caps [2].

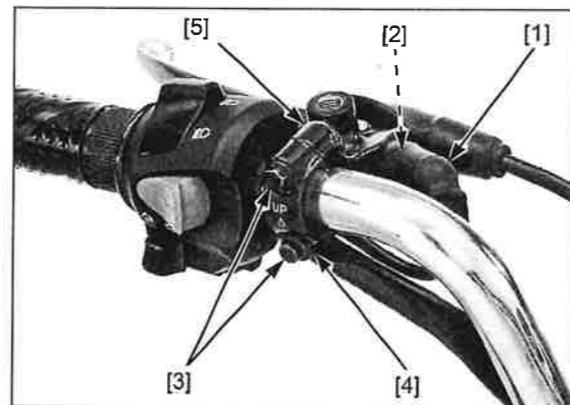


Remove the screws [1] and handlebar weights [2].

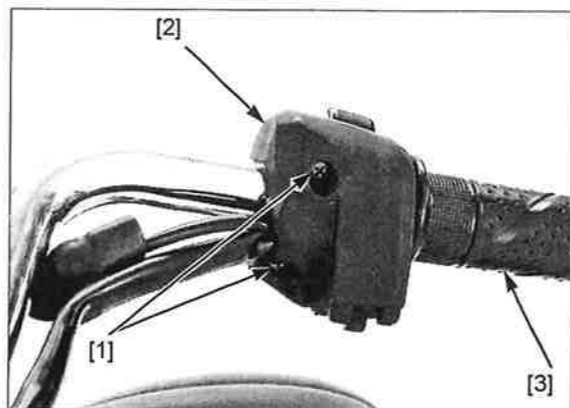


Remove the following:

- Connector boot [1]
- Clutch switch wire connectors [2]
- Two bolts [3]
- Bracket holder [4]
- Clutch lever bracket [5]



- Two screws [1]
- Left handlebar switch [2]
- Left handlebar grip [3]

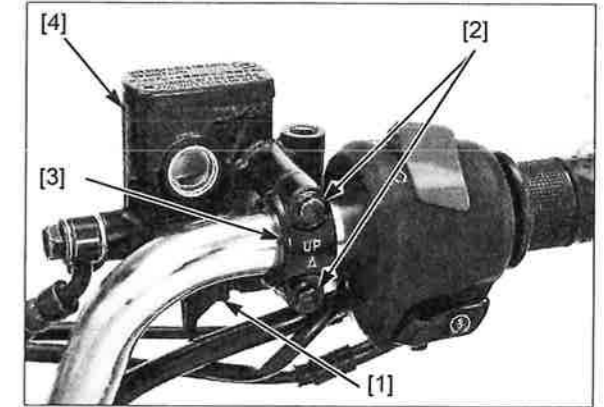


## FRONT WHEEL/SUSPENSION/STEERING

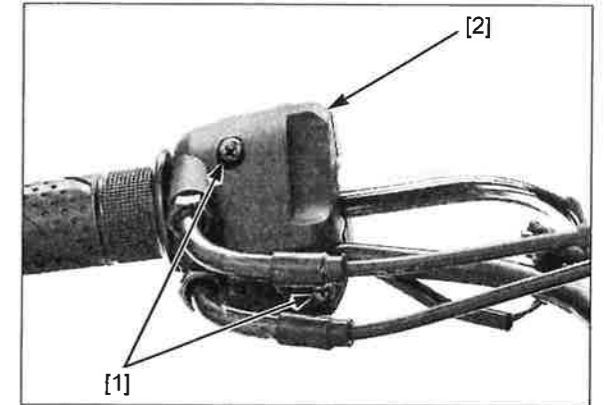
Keep the reservoir upright to prevent air from entering the hydraulic system.

Remove the following:

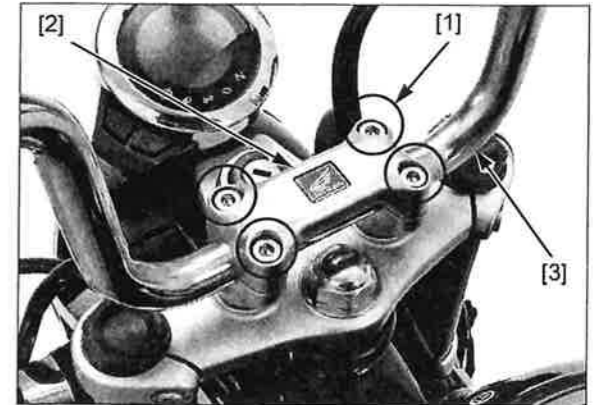
- Brake light switch wire connectors [1]
- Two bolts [2]
- Master cylinder holder [3]
- Front brake master cylinder [4]



- Two screws [1]
- Right handlebar switch [2]

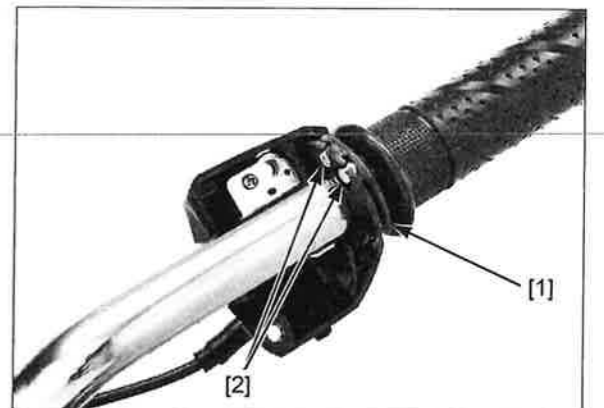


- Four socket bolts [1]
- Handlebar upper holder [2]
- Handlebar [3]



Remove the right handlebar switch and throttle pipe [1] from the handlebar.

Disconnect the throttle cables [2] from the throttle pipe.



**HANDLEBAR LOWER HOLDER  
REMOVAL/INSTALLATION**

Loosen the handlebar lower holder nuts [1].

Remove the bolt caps [2], socket bolts [3], handlebar upper holder [4] and handlebar [5].

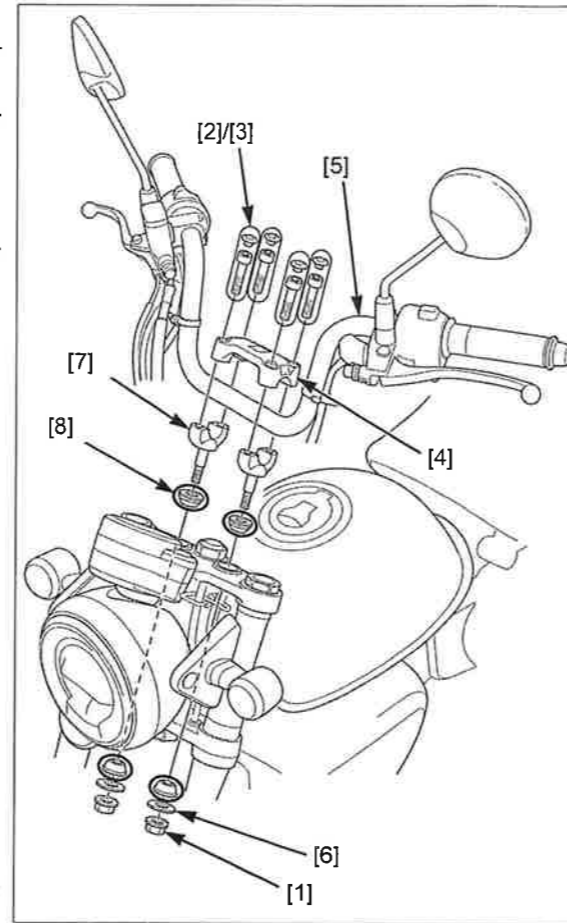
Remove the lower holder nuts, washers [6], handlebar lower holder [7] and damper rubbers [8].

Install the damper rubbers, handlebar lower holders, washers and lower holder nuts.

Temporarily install the handlebar, handlebar upper holder and socket bolts.

Tighten the lower holder nuts to the specified torque.

**TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)**

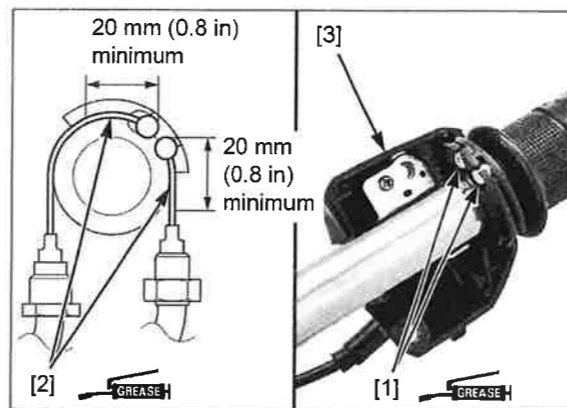


**INSTALLATION**

Apply 0.1 – 0.2 g (0.004 – 0.007 oz) of grease to the specified area and the cable ends [1] of the throttle cables [2].

Connect the throttle cable ends to the throttle pipe.

Set the throttle pipe into the right handlebar switch housing [3] and install the throttle pipe onto the handlebar.



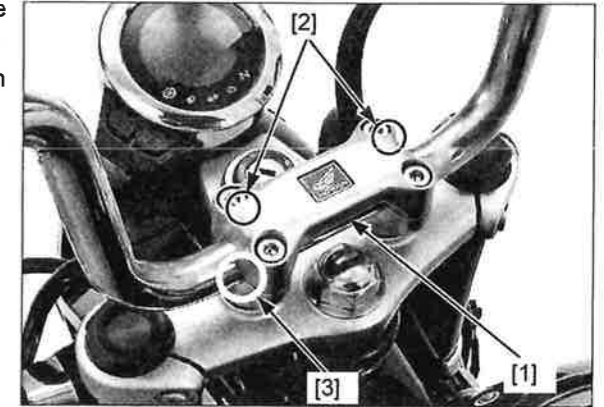
## FRONT WHEEL/SUSPENSION/STEERING

Install the handlebar to the lower holder and install the upper holder [1] with its punch marks [2] facing forward.

*Align the punch mark [3] with the edge of the lower holder.*

Install and tighten the front socket bolts first, then tighten the rear socket bolts to the specified torque.

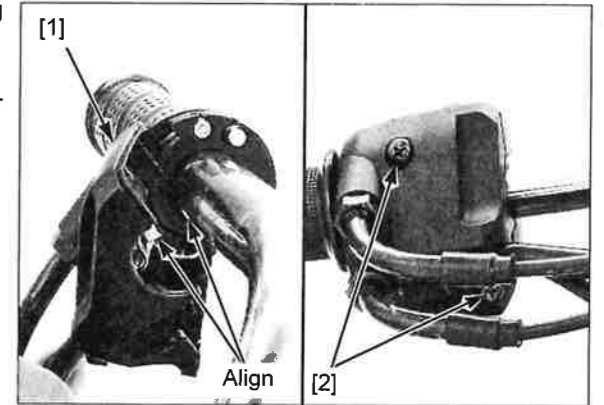
**TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)**



Install the right handlebar switch housing [1] by aligning the locating pin with the hole in the handlebar.

Install the right handlebar switch screws [2]. Tighten the upper screw first, and then tighten the lower screw to the specified torque.

**TORQUE: 2.5 N·m (0.3 kgf·m, 1.8 lbf·ft)**

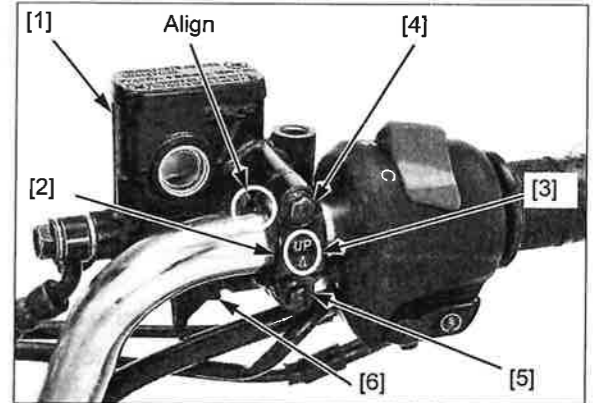


*Align the edge of the master cylinder with the punch mark on the handlebar.*

Install the master cylinder [1] and holder [2] with the "UP" mark [3] facing up. Install and tighten the upper bolt [4] first, then the lower bolt [5] to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

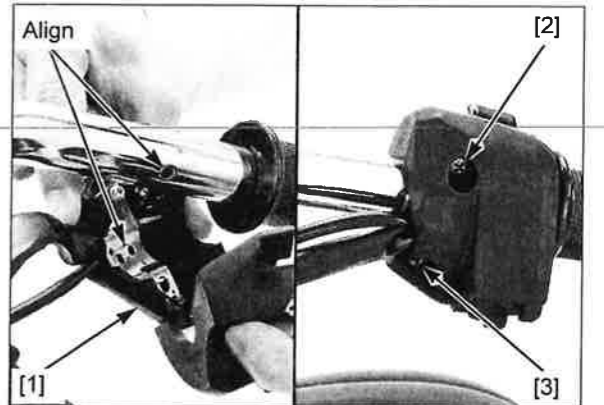
Connect the brake light switch connectors [6].



Install the left handlebar switch housing [1] by aligning the locating pin with the hole in the handlebar.

Install and tighten the upper screw [2] first, and then the lower screw [3] to the specified torque.

**TORQUE: 2.5 N·m (0.3 kgf·m, 1.8 lbf·ft)**



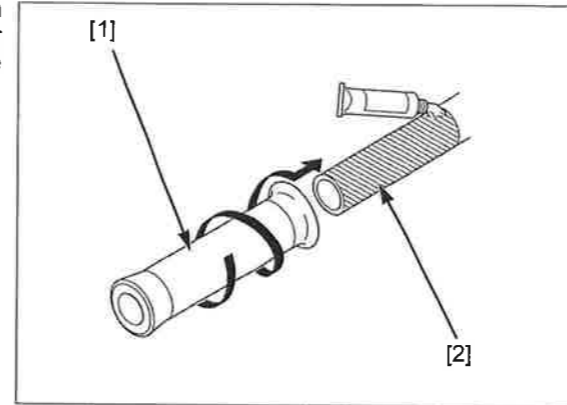
## FRONT WHEEL/SUSPENSION/STEERING

If the left handlebar grip [1] was removed, apply Honda Bond A or Honda Hand Grip Cement (U.S.A. only) or equivalent to the inside surface of the grip and to the clean surface of the 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.



*Align the edge of the bracket with the punch mark on the handlebar.*

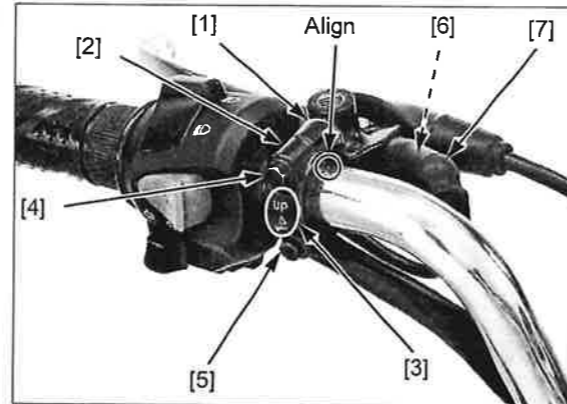
Install the clutch lever bracket [1] and holder [2] with the "UP" mark [3] facing up.

Tighten the upper bolt first [4], then the lower bolt [5].

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

Connect the clutch switch wire connectors [6].

Install the connector boot [7] over the bracket.



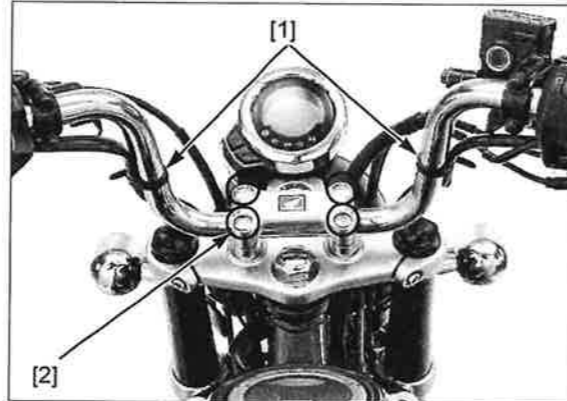
Secure the handlebar switch wires with the wire bands [1].

Install the four bolt caps [2].

Install the rearview mirrors (page 2-4).

Inspect the following:

- Clutch lever freeplay (page 3-18)
- Throttle grip freeplay (page 3-4)



## FRONT WHEEL/SUSPENSION/STEERING

### FRONT WHEEL

#### REMOVAL

##### NOTE:

- Support the motorcycle securely using a safety stand or hoist and raise the front wheel off the ground.
- Be careful not to damage the pulser ring.

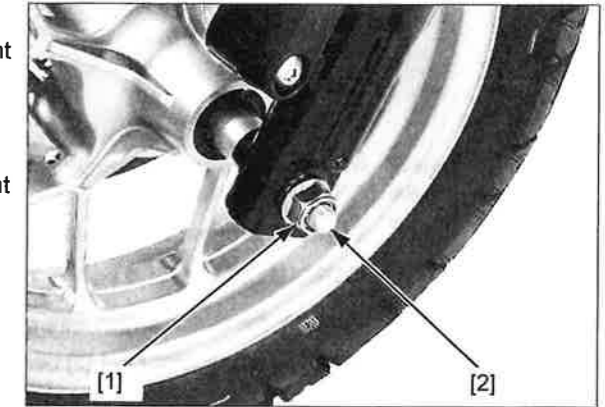
Loosen the front axle nut [1].

Support the motorcycle securely and raise the front wheel off the ground using a safety stand or a hoist.

Remove the front axle nut.

Remove the front axle [2] and the front wheel.

Remove the right and left side collars from the front wheel.



#### INSPECTION

##### WHEEL

Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

Replace the bearings if they do not turn smoothly, quietly, or if they fit loosely in the hub.

Inspect the following parts for damage, abnormal wear, deformation or bend.

- Front axle
- Wheel rim

Measure each part according to FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS (page 1-7).

Replace any part if it is out of service limit.

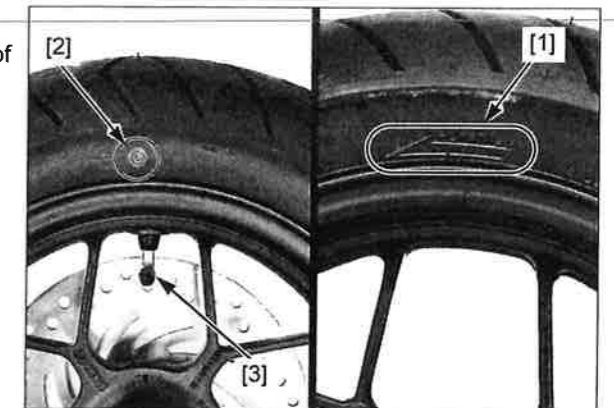
##### TIRE

#### NOTICE

*Wheel balance directly affects stability, handling and over all safety of the motorcycle. Always check balance when the tire has been removed from the rim.*

Note the rotating direction mark [1] on the tire.

When installing the tires align the balance mark [2] of the tire and valve [3] of the rim within 50 mm.



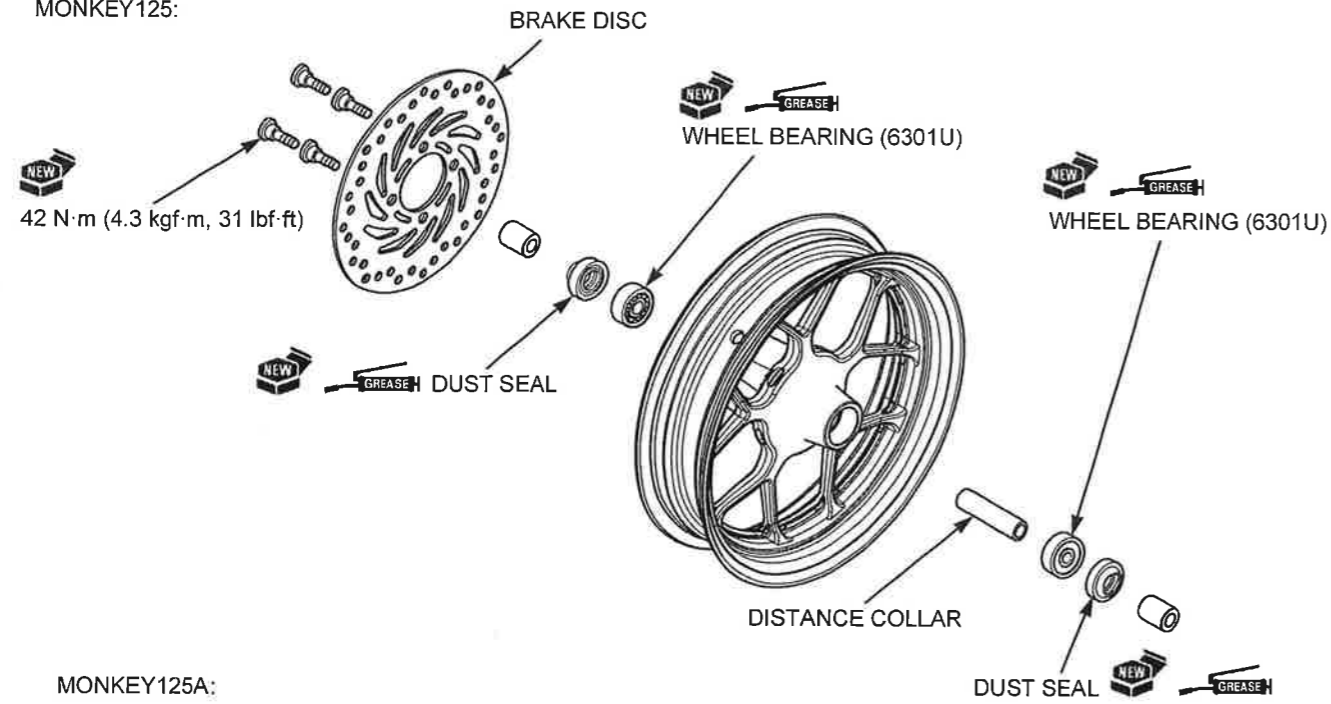
## FRONT WHEEL/SUSPENSION/STEERING

### DISASSEMBLY/ASSEMBLY

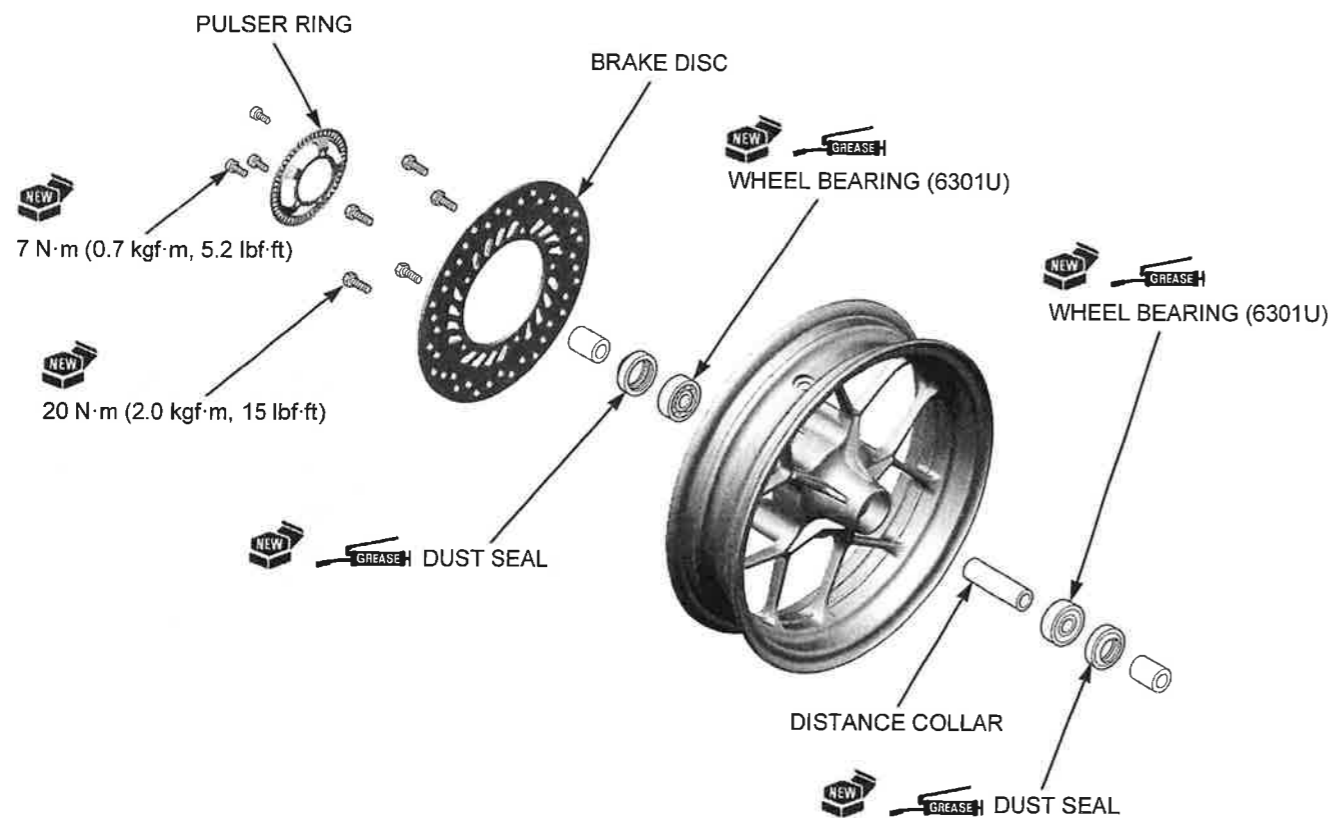
Disassemble and assemble the front wheel according to the illustration.

- Use only the specified tire to avoid malfunctions of the IMU and ABS (MONKEY125A only).
- Install each dust seal with the flat side facing out so that it is flush with the wheel hub.
- Install the brake disc with the rotation mark (arrow) facing out.

MONKEY125:



MONKEY125A:

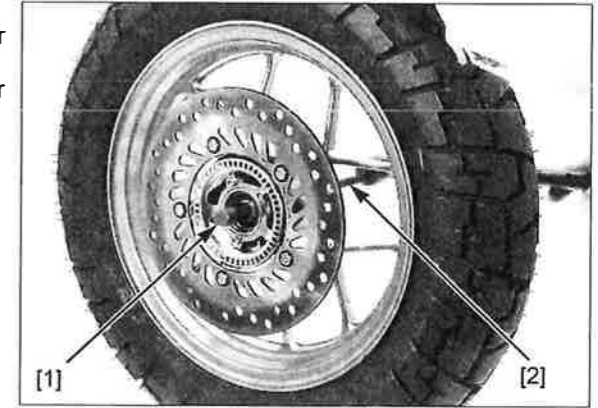


## FRONT WHEEL/SUSPENSION/STEERING

### BEARING REPLACEMENT

Install the bearing remover head into the bearing.  
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:**  
Remover head, 12 mm [1] 07746-0050300  
Bearing remover shaft [2] 07746-0050100

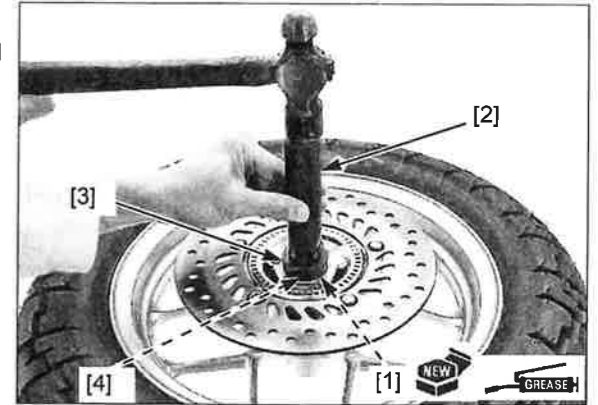


*Never install the old bearings. Once the bearings have been removed, the bearings must be replaced with new ones.*

Pack all bearing cavities with grease.

Drive in a new right bearing [1] squarely with its sealed side facing up until it is fully seated.

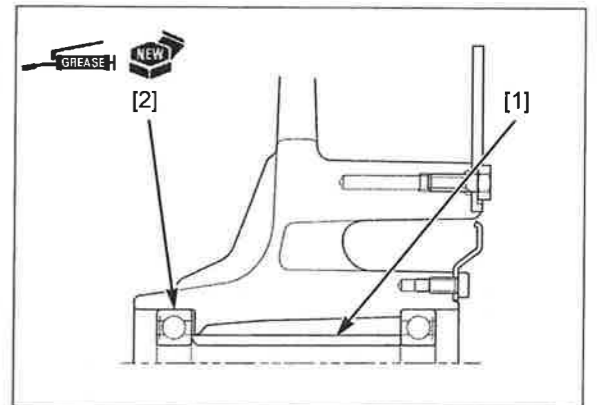
**TOOLS:**  
Driver [2] 07749-0010000  
Attachment, 37 x 40 mm [3] 07746-0010200  
Pilot, 12 mm [4] 07746-0040200



Install the distance collar [1].

Drive in a new left bearing [2] squarely with its sealed side facing up until its inner race is seated on the distance collar.

**TOOLS:**  
Driver 07749-0010000  
Attachment, 37 x 40 mm 07746-0010200  
Pilot, 12 mm 07746-0040200



### INSTALLATION

Install the right and left side collars.

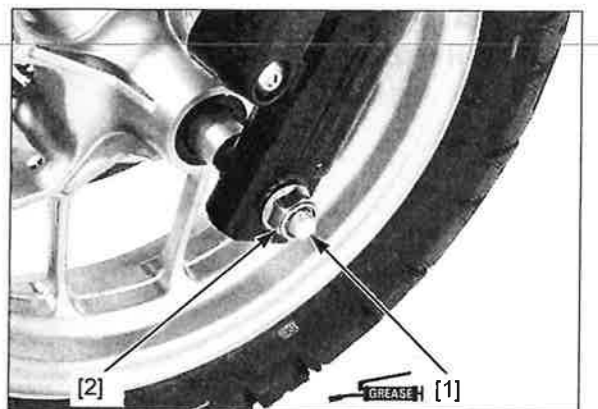
Install the front wheel between the fork legs.

Apply a small amount of grease to the axle shaft [1].  
Install the axle shaft from the right side.

Install the axle nut [2] and tighten it to the specified torque.

**TORQUE: 69 N·m (7.0 kgf·m, 51 lbf·ft)**

Check the brake operation by applying the brake lever several times.





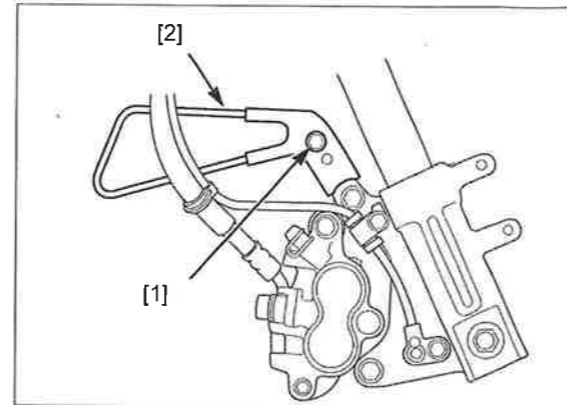
**FORK**

**REMOVAL**

Remove the following:

- Front fender (page 2-4)
- Front wheel (page 15-10)
- Front side reflector (page 2-4)

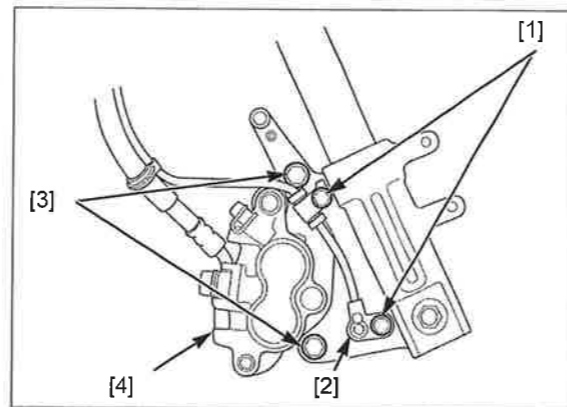
Remove the bolt [1] and front brake hose guide [2].



*MONKEY125A only:* Remove the bolts [1] and front wheel speed sensor [2] from the right fork leg.

*Support the front brake caliper with a piece of wire so that it does not hang from the front brake hose. Do not twist the brake hose.*

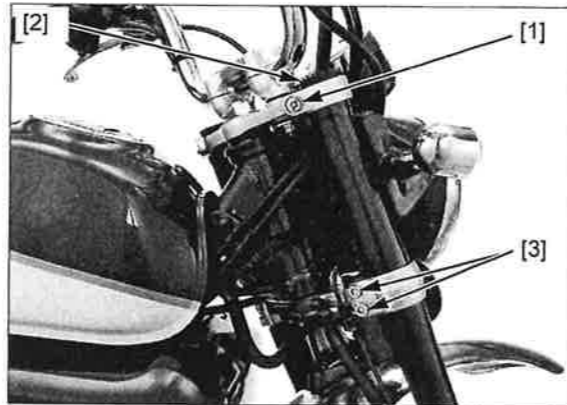
Remove the bolts [3] and front brake caliper [4] from the right fork leg.



Loosen the top bridge pinch bolt [1].

*Only when disassembling the fork:* Remove the handlebar (page 15-5). Loosen the fork bolt [2].

Loosen the bottom bridge pinch bolts [3] and remove the fork from the steering stem.



**DISASSEMBLY**

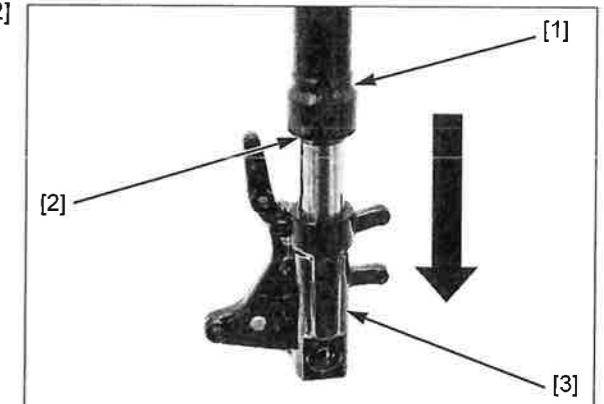
*Be careful not to damage the fork bolt during removal.*

Remove the fork bolt [1].

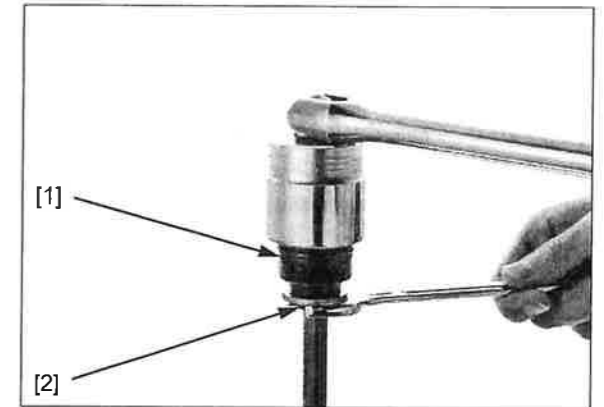


## FRONT WHEEL/SUSPENSION/STEERING

Lower the outer pipe [1] slowly until the dust seal [2] seats on the axle holder [3].

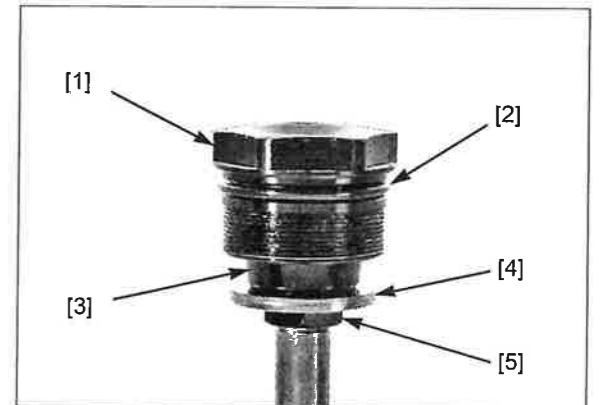


Hold the fork bolt [1] as shown.  
Loosen the fork lock nut [2].

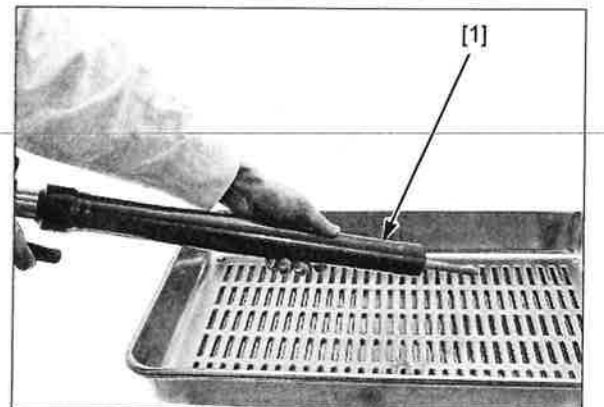


Remove the following:

- Fork bolt [1]
- O-ring [2]
- Stopper rubber [3]
- Seat [4]
- Fork lock nut [5]



Pour out the fork fluid by pumping the outer pipe [1] up and down several times.

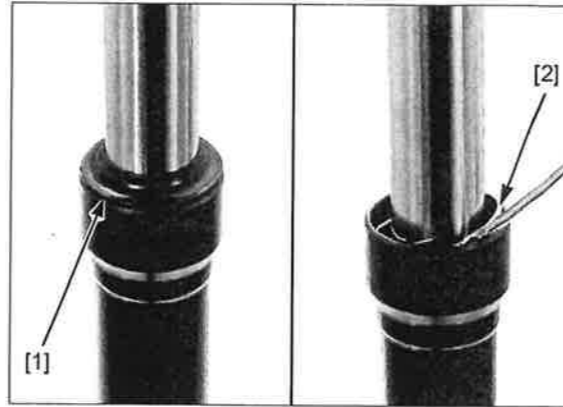


## FRONT WHEEL/SUSPENSION/STEERING

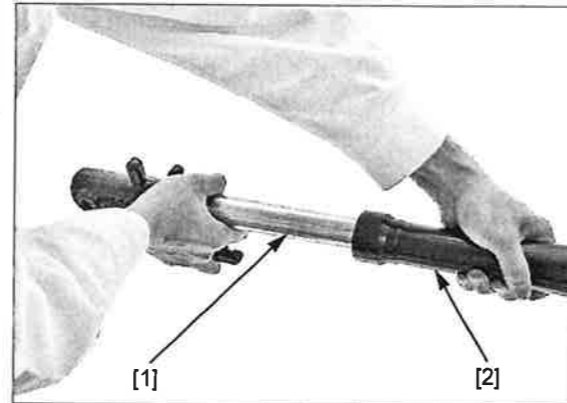
Remove the dust seal [1].

*Be careful not to damage the fork pipe sliding surface.*

Remove the oil seal stopper ring [2].



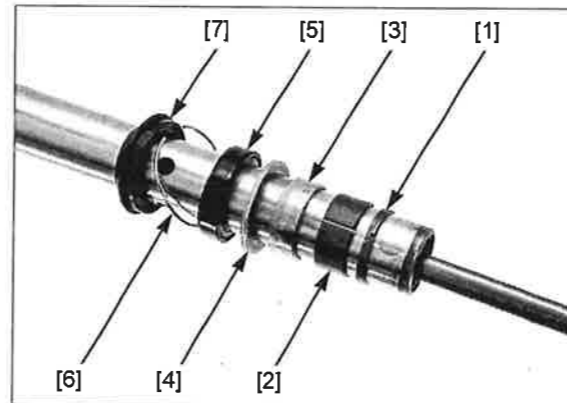
Pull the damper assembly [1] out until you feel resistance from the slider bushing. Then move it in and out, tapping the bushing lightly until the outer pipe [2] separates from the damper assembly. The guide bushing will be forced out by the slider bushing.



*Do not damage the slider bushing, especially the sliding surface. To prevent loss of tension, do not open the slider bushing more than necessary.*

Remove the following:

- Piston ring [1]
- Slider bushing [2]
- Guide bushing [3]
- Back-up ring [4]
- Oil seal [5]
- Stopper ring [6]
- Dust seal [7]



### INSPECTION

Inspect the following parts for damage, abnormal wear, bend, deformation, scoring and teflon coating wear.

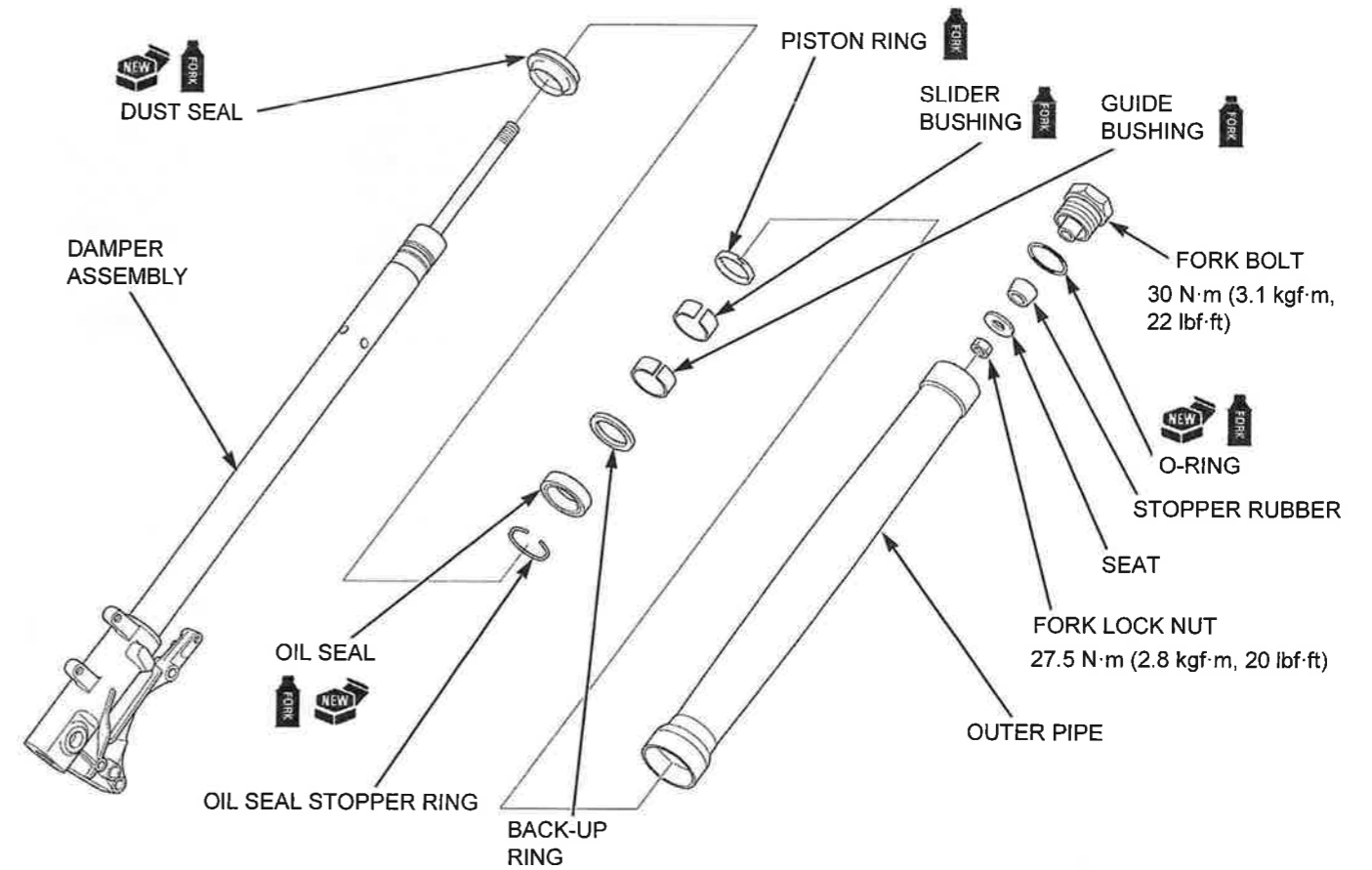
- Fork bolt
- Stopper rubber
- Outer pipe
- Damper assembly
- Piston ring
- Guide bushing
- Slider bushing
- Back-up ring

Measure the each part according to FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS (page 1-7).

Replace any part if it is out of service limit.

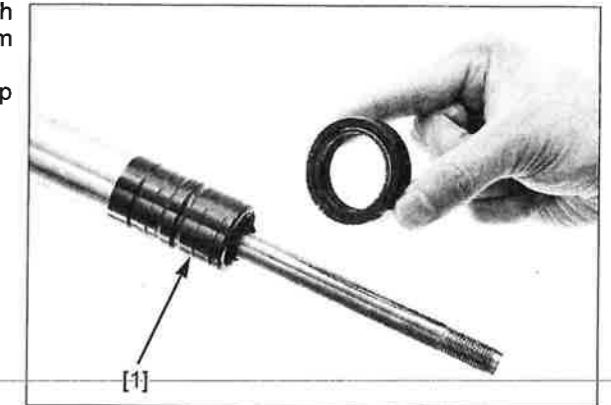
# FRONT WHEEL/SUSPENSION/STEERING

## ASSEMBLY



**NOTE:**

- Before assembly, wash all parts with a high flash point or non-flammable solvent and dry them thoroughly using a compressed air.
- When installing the fork dust seal and oil seal, wrap the edge and groove of the slide pipe with tape [1].



Apply fork fluid to new dust seal and oil seal lips.

*Install the oil seal with its marked side facing the axle holder.*

Install the dust seal [1], oil seal stopper ring [2] and oil seal [3].

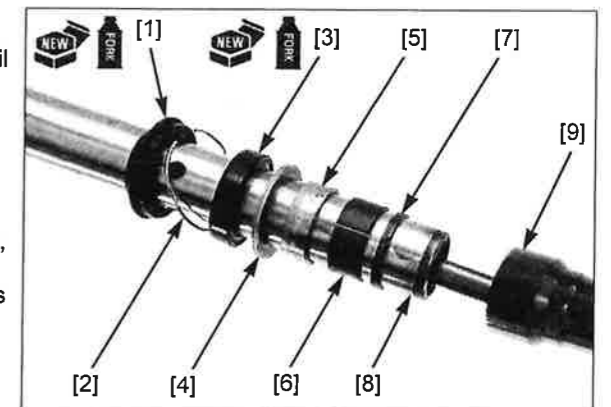
Install the back-up ring [4] and guide bushing [5].

Install the slider bushing [6] and piston ring [7].

**NOTE:**

- Remove any burrs from the bushing mating surface, being careful not to peel off the coating.
- Do not open the slider bushing and piston ring slits more than necessary.

Install the damper assembly [8] into the outer pipe [9].



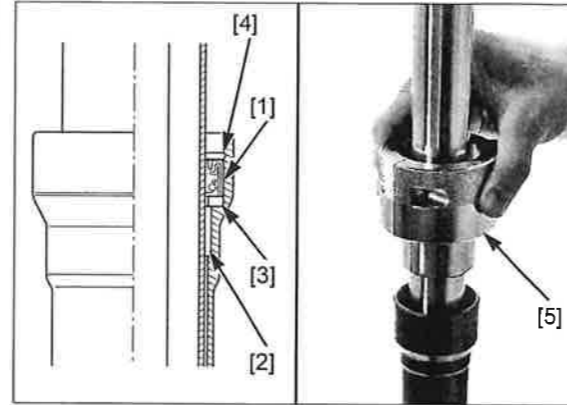
## FRONT WHEEL/SUSPENSION/STEERING

Drive the oil seal [1] with the guide bushing [2] and back-up ring [3] into the outer pipe until the stopper ring groove [4] is visible using the special tools.

**TOOL:**

Oil seal driver, 31mm [5]

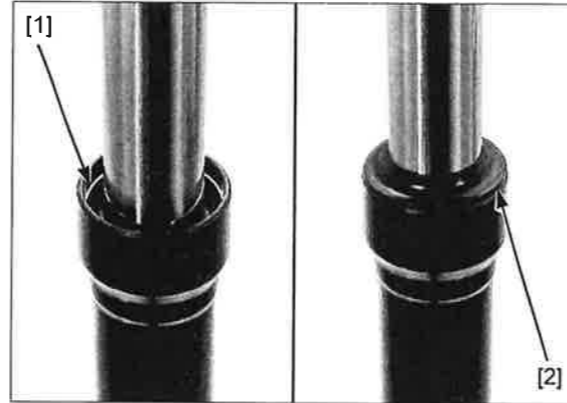
070MD-K200100  
or 070MD-K20A100  
(U.S.A. only)



*Be careful not to damage the fork pipe sliding surface.*

Install the oil seal stopper ring [1].

Install the dust seal [2].



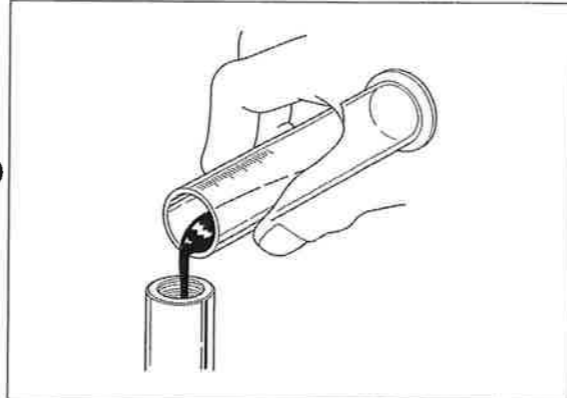
Pour the specified amount of recommended fork fluid into the fork pipe.

**RECOMMENDED FORK FLUID:**

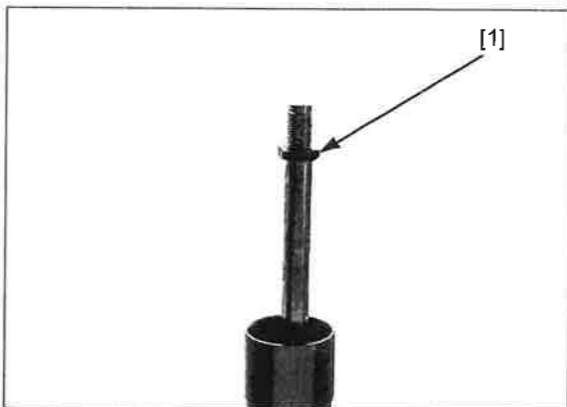
Pro Honda Suspension Fluid SS-8 (10W)

**FORK FLUID CAPACITY:**

$216 \pm 1.5 \text{ cm}^3$  ( $7.31 \pm 0.05 \text{ US oz}$ ,  $7.60 \pm 0.05 \text{ Imp oz}$ )



Install and tighten the lock nut [1] until it stops.



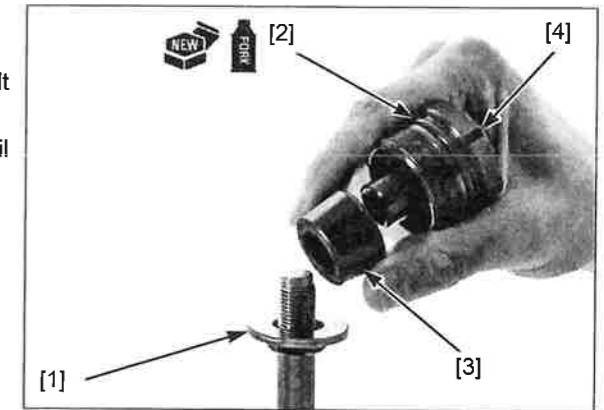
## FRONT WHEEL/SUSPENSION/STEERING

Install the seat [1].

*Install the stopper rubber in the direction as shown.*

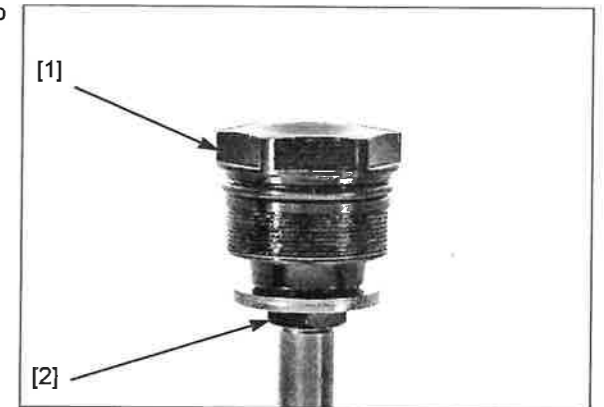
Apply fork fluid to a new O-ring [2].  
Install the stopper rubber [3] and O-ring to the fork bolt [4].

Install the fork bolt to the damper rod and tighten it until it is seated.

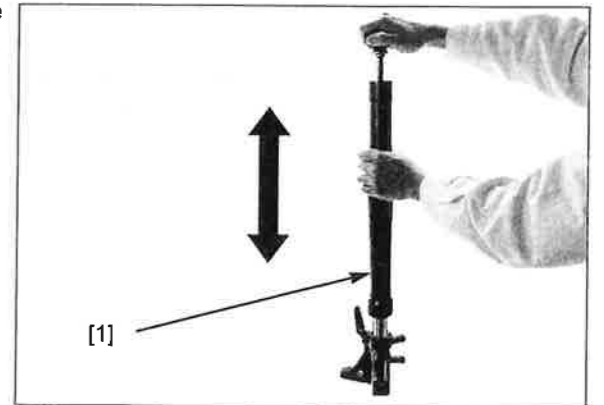


Hold the fork bolt [1] and tighten the fork lock nut [2] to the specified torque.

**TORQUE: 27.5 N·m (2.8 kgf·m, 20 lbf·ft)**



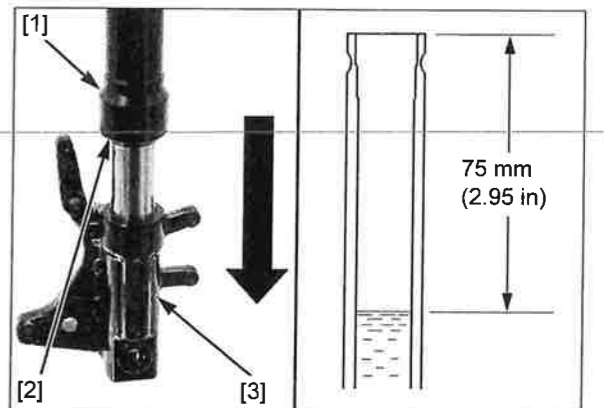
Pump the outer pipe [1] slowly several times to remove remaining air in the damper assembly.



Slowly push the outer tube [1], and gently seat the dust seal [2] onto the axle holder [3] and leave it for 5 minutes.

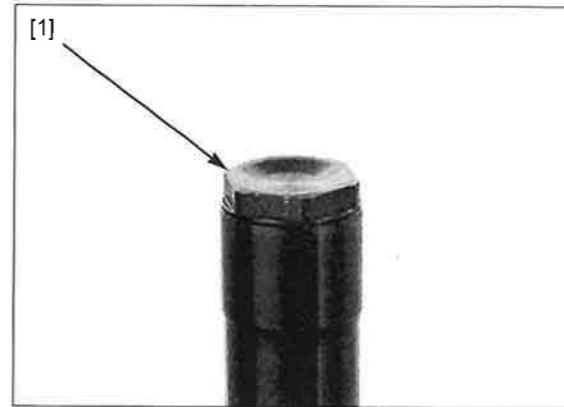
After the oil level stabilizes, measure the oil level from the top of the outer tube.

**FORK FLUID LEVEL: 75 mm (2.95 in)**



## FRONT WHEEL/SUSPENSION/STEERING

Tighten the fork bolt to the specified torque after installing the fork leg into the steering stem (page 15-19).



### INSTALLATION

Install the fork leg [1] into the bottom and top bridge [2]. Align the top of the outer pipe with the upper surface of the top bridge.

Tighten the bottom bridge pinch bolts [3] to the specified torque.

**TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)**

Tighten the top bridge pinch bolt [4] loosely.

Be careful not to damage the fork bolt.

Tighten the fork bolt [5] to the specified torque if the fork was disassembled.

**TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)**

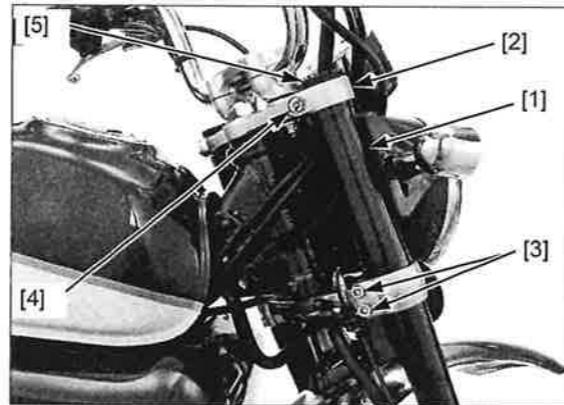
Tighten the top bridge pinch bolt to the specified torque.

**TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)**

Install the handlebar if it was removed (page 15-7).

Install the front brake caliper [1] and new mounting bolts [2] to the right fork leg, then tighten them to the specified torque.

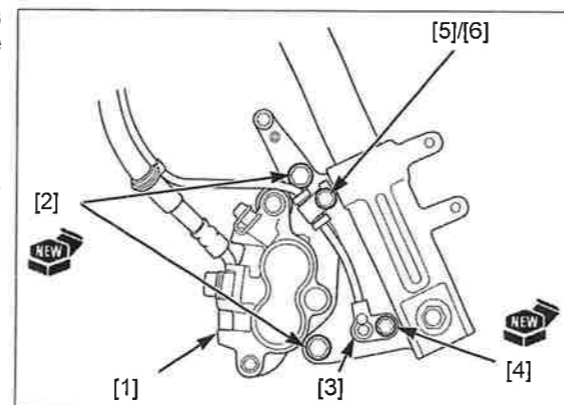
**TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)**



MONKEY125A only:

Install the front wheel speed sensor [3] and a new mounting bolt [4], then tighten it.

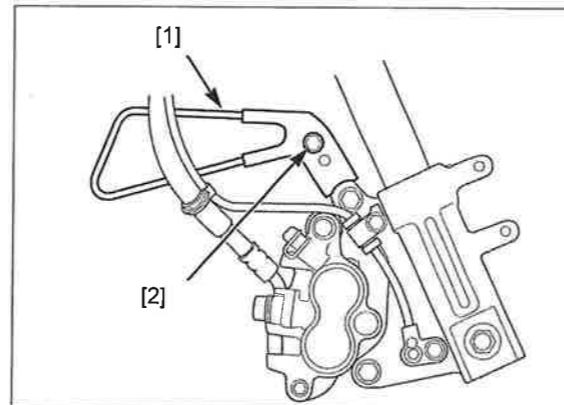
Install the wire clamp [5] and tighten the front wheel speed sensor wire clamp bolt [6].



Install the brake hose guide [1] to the right front fork and tighten the bolt [2].

Install the following:

- Front side reflector (page 2-4)
- Front wheel (page 15-12)
- Front fender (page 2-4)



## FRONT WHEEL/SUSPENSION/STEERING

### STEERING STEM

#### REMOVAL

Remove the following:

- Front fender (page 2-4)
- Horn (page 20-7)

Disconnect the following:

- Right handlebar switch 6P (Black) connector [1]
- Left handlebar switch 12P (Black) connector [2]

Remove the screws [3] and combination meter cover [4].

Disconnect the combination meter 16P (Gray) connector [5].

*MONKEY125A only:* Remove the bolt [1] and brake hose clamp [2].

Remove the handlebar (page 15-5).

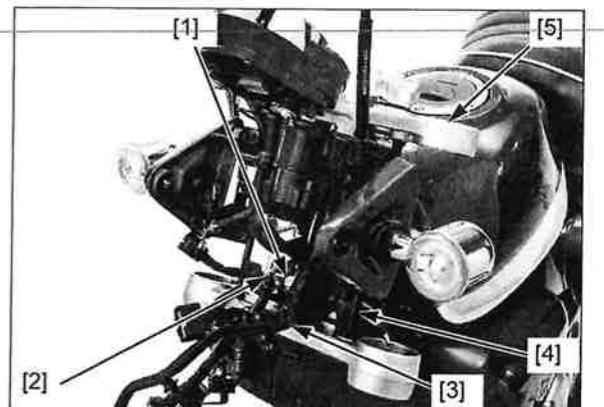
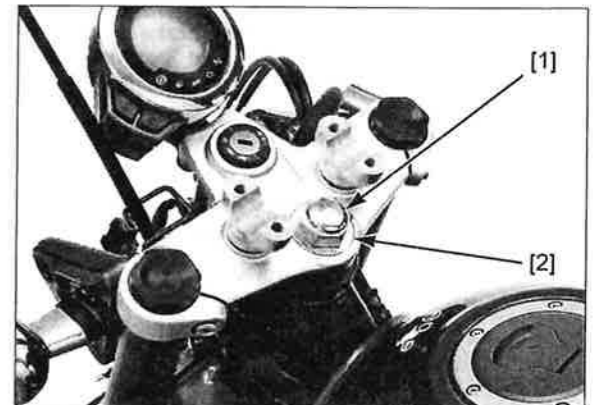
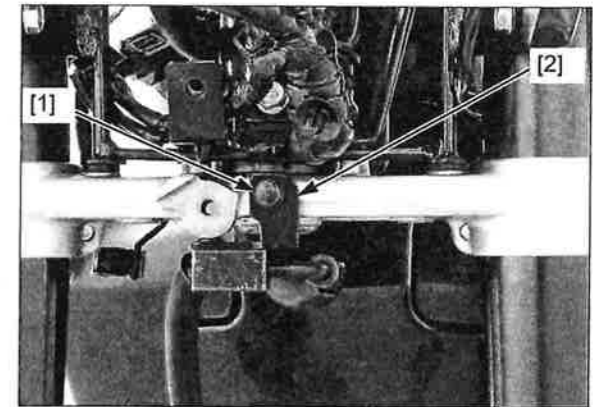
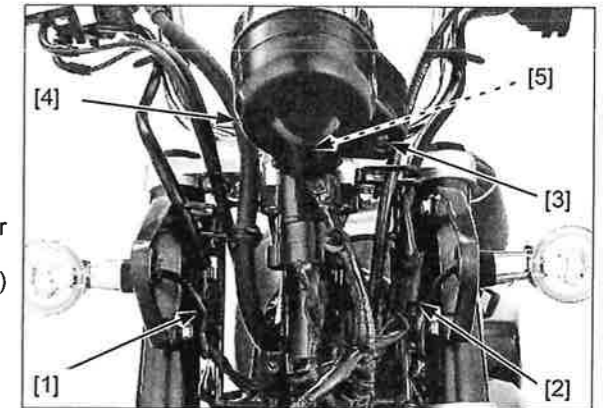
Loosen the steering stem nut [1].

Remove the forks (page 15-13).

Remove the steering stem nut and washer [2].

Remove the bolt [1] and wire clip [2], and then remove the wire harness [3] from the headlight bracket [4].

Remove the top bridge [5] and headlight bracket.





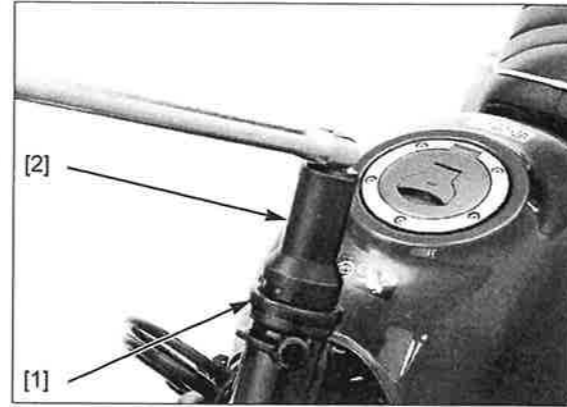
## FRONT WHEEL/SUSPENSION/STEERING

Loosen the steering stem adjusting nut [1] using a special tool.

**TOOL:**

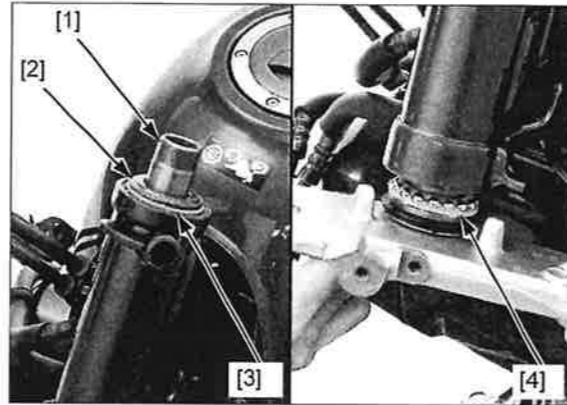
Steering stem socket [2]      07916-3710101

Hold the steering stem and remove the steering stem adjusting nut.



Remove the following:

- Steering stem [1]
- Upper inner race [2]
- Upper bearing [3]
- Lower bearing [4]



## FRONT WHEEL/SUSPENSION/STEERING

### BEARING REPLACEMENT

#### OUTER RACE

- Always replace the steel bearings and races as a set.

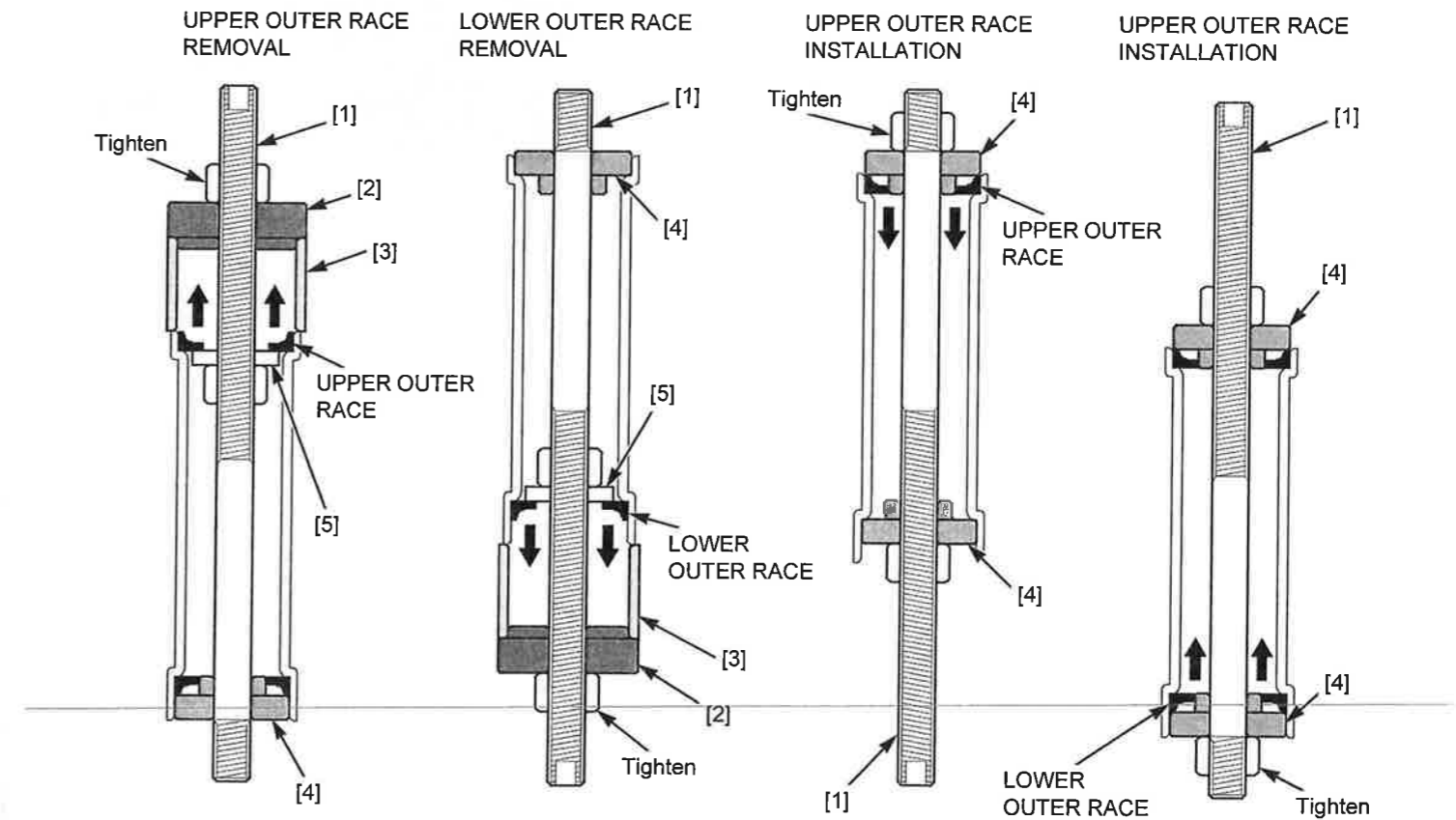
Replace the outer races using the special tools:

#### TOOL:

Shaft installer [1]	07WMF-GCM0100
Head base [2]	07WMF-GCM0200
Base [3]	07WMF-GCM0300
Driver attachment 48.5 mm (2 pieces) [4]	07WMF-GCM0400
Remover 35 mm [5]	07WMF-GCM0600

#### U.S.A. TOOLS:

Installer shaft	07WMF-KZ30200
Head base	07WMF-GCMA200
Base	07WMF-GCMA300
Driver attachment 48.5 mm	07WMF-GCMA400
Remover 35 mm	07WMF-GCMA600



## FRONT WHEEL/SUSPENSION/STEERING

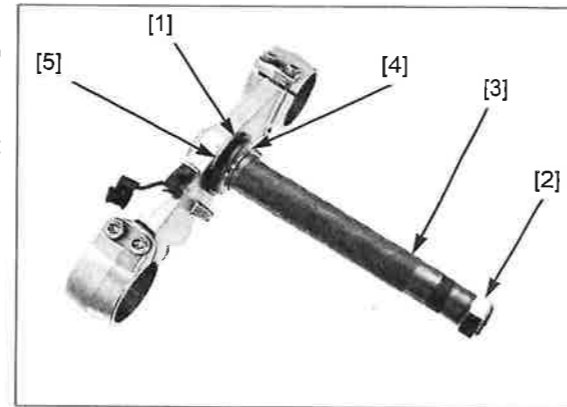
### LOWER INNER RACE

Remove the lower dust seal [1].

Install the stem nut [2] onto the steering stem [3] to prevent the threads from being damaged when removing the lower inner race [4].

Remove the lower inner race with a chisel or equivalent tool, being careful not to damage the stem.

Remove the washer [5].



Install the washer [1].

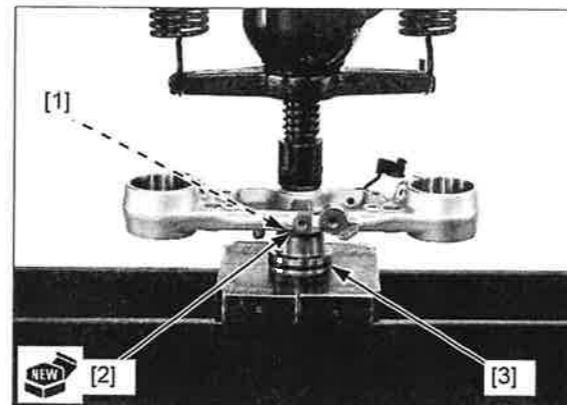
Press a new lower inner race [2] using the special tool.

#### TOOL:

Driver attachment [3]

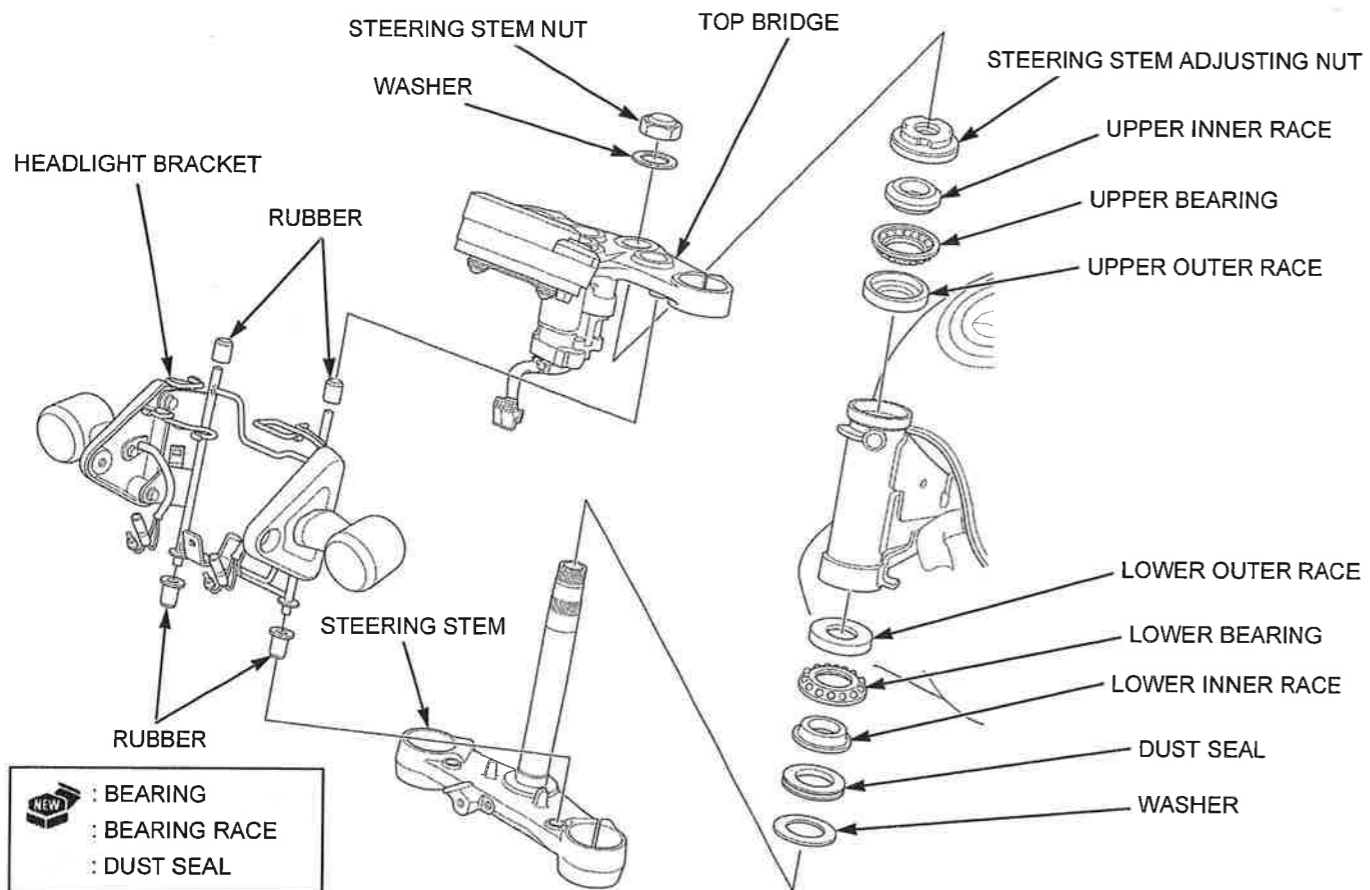
07747-0010300

Install a new lower dust seal.



### INSTALLATION

- Always replace the steel balls and races as a set.



## FRONT WHEEL/SUSPENSION/STEERING

### NOTE:

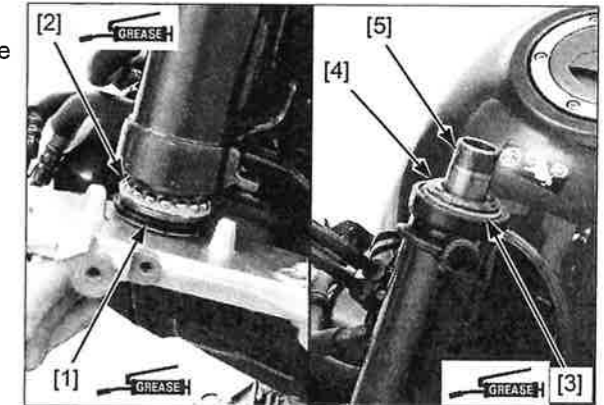
- Use urea based multi-purpose extreme pressure grease NLGI #2 (ALVANIA EP2 manufactured by SHELL or EXCELITE EP2 manufactured by KYODO YUSHI CO., LTD., or equivalent) for the bearing race sliding surface and dust seals.

Apply grease to the lip of the lower dust seal [1].

Apply 3 – 5 g (0.1 – 0.2 oz) (per each bearing) of grease to the bearing race rolling surfaces.

Install the following:

- Lower steering bearing [2]
- Upper steering bearing [3]
- Upper inner race [4]
- Steering stem [5]
- Steering stem adjusting nut

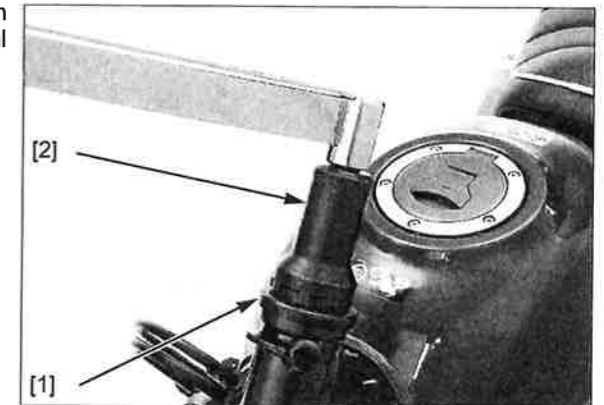


Hold the steering stem and tighten the steering stem adjusting nut [1] to the initial torque using the special tool.

### TOOL:

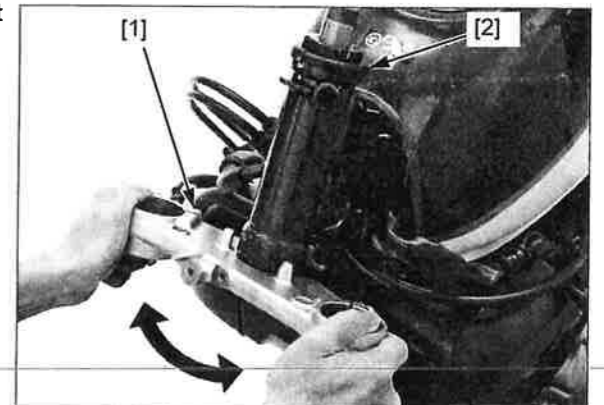
Steering stem socket [2] 07916-3710101

**TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)**



Turn the steering stem [1] left and right, lock-to-lock at least five times to seat the bearings.

Completely loosen the adjusting nut [2].



Retighten the adjusting nut [1] to the specified torque using the special tool.

### TOOL:

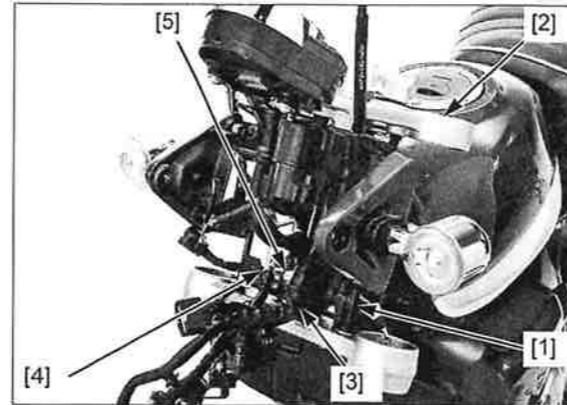
Steering stem socket [2] 07916-3710101

**TORQUE: 1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)**



## FRONT WHEEL/SUSPENSION/STEERING

Clean the threads of the stem with a degreasing agent.  
Install the headlight bracket [1] and top bridge [2].  
Set the wire harness [3] and wire clip [4].  
Install and tighten the bolt [5].



*Do not tighten the top bridge pinch bolts.*

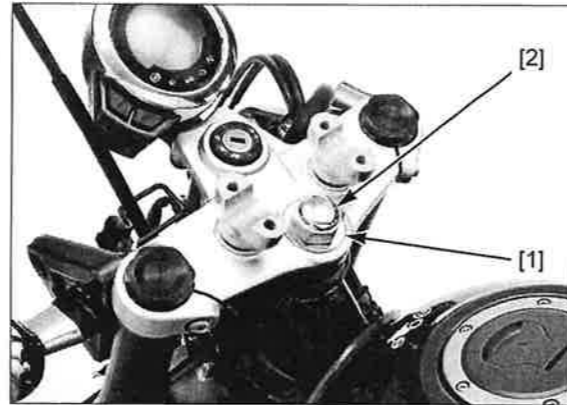
Install the washer [1] and steering stem nut [2].  
Temporarily install the fork legs into the bottom and top bridges by tightening the bottom bridge pinch bolts.  
Tighten the stem nut to the specified torque.

**TORQUE: 88 N·m (9.0 kgf·m, 65 lbf·ft)**

Make sure the steering stem moves smoothly, without play or binding.

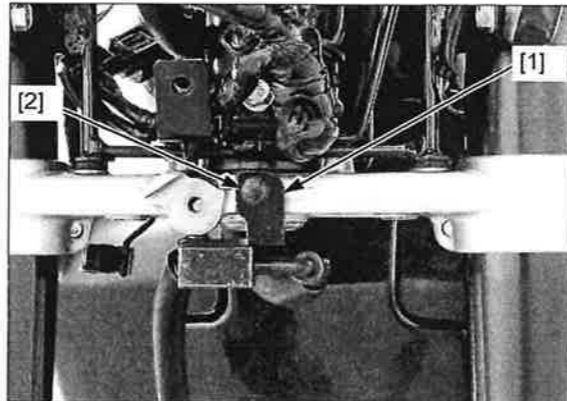
Install the front forks (page 15-19).

Install the handlebar (page 15-7).



*MONKEY125A only:*

Install the brake hose clamp [1] and tighten the bolt [2].



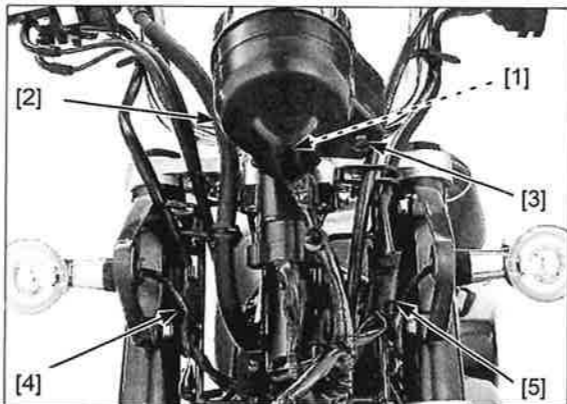
Connect the combination meter 16P (Gray) connector [1].  
Install the combination meter cover [2] and tighten the screw [3].

Connect the following:

- Right handlebar switch 6P (Black) connector [4]
- Left handlebar switch 12P (Black) connector [5]

Install the following:

- Horn (page 20-7)
- Front fender (page 2-4)



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MEMO

# 16. REAR WHEEL/SUSPENSION

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SERVICE INFORMATION.....	16-2	REAR WHEEL.....	16-5
TROUBLESHOOTING .....	16-3	SHOCK ABSORBER.....	16-8
COMPONENT LOCATION.....	16-4	SWINGARM.....	16-9

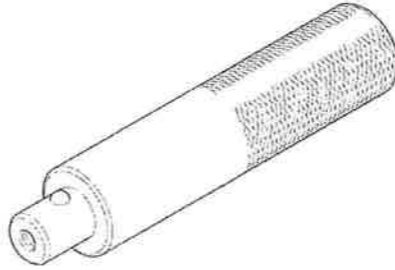
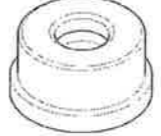


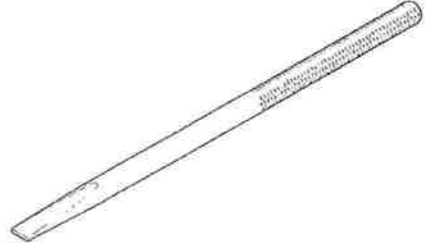

## REAR WHEEL/SUSPENSION

### SERVICE INFORMATION

#### GENERAL

- When servicing the rear wheel and suspension, support the motorcycle using a safety stand or hoist.
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- After the rear wheel installation, check the brake operation by applying the brake pedal.
- Use genuine Honda replacement bolts and nuts for all suspension pivot and mounting point.
- For brake system information (page 17-2).
- Use only the specified tire and driven sprocket to avoid malfunctions of the IMU and ABS.

#### TOOLS

<p>Driver 07749-0010000</p> 	<p>Attachment, 37 x 40 mm 07746-0010200</p> 	<p>Pilot, 12 mm 07746-0040200</p> 
<p>Pilot, 17 mm 07746-0040400</p> 	<p>Bearing remover shaft 07746-0050100</p> 	<p>Remover Head, 12 mm 07746-0050300</p> 



## TROUBLESHOOTING

### Steers to one side or does not track straight

- Drive chain adjusters not adjusted equally
- Bent axle
- Bent frame
- Worn swingarm pivot components

### Rear wheel wobbling

- Bent rim
- Worn wheel bearing
- Worn driven flange bearing
- Faulty tire
- Bent frame or swingarm
- Axle not tightened properly
- Unbalanced tire and wheel
- Insufficient tire pressure

### Wheel hard to turn

- Brake drag
- Faulty wheel bearing
- Faulty driven flange bearing
- Bent axle
- Drive chain too tight

### Soft suspension

- Weak shock absorber spring
- Oil leakage from damper unit
- Insufficient tire pressure

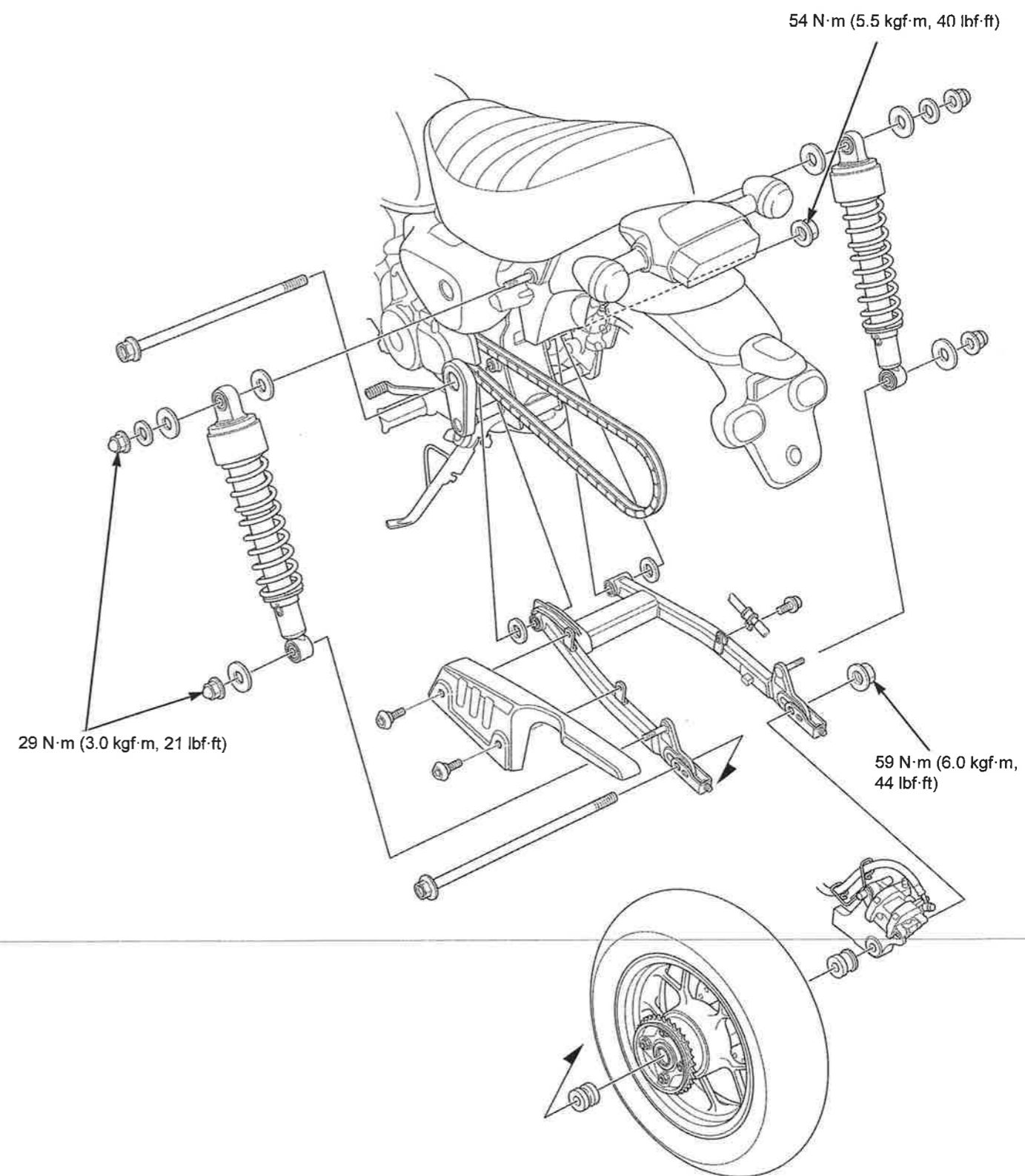
### Stiff suspension

- Bent shock absorber damper rod
- Damaged suspension or swingarm pivot bushing
- Bent swingarm pivot or frame

### Rear suspension noisy

- Loose suspension fasteners
- Faulty shock absorber

**REAR WHEEL/SUSPENSION**  
**COMPONENT LOCATION**



## REAR WHEEL

### REMOVAL

Loosen the axle nut [1].

Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.

Loosen the drive chain adjusting bolt [2].

Push the rear wheel forward.

Derail the drive chain [3] from the driven sprocket.

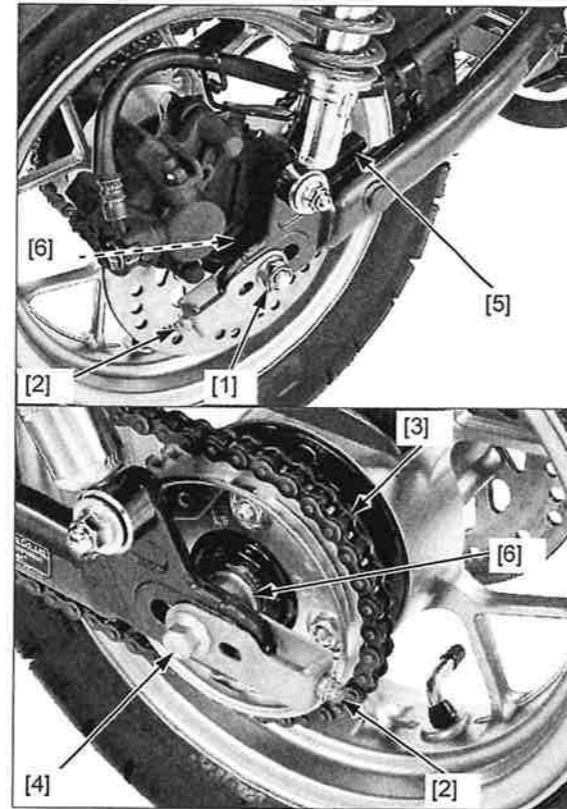
Remove the axle nut, axle [4] and rear wheel.

Remove the rear brake caliper/bracket [5] from the swingarm and then remove the rear wheel.

Remove the side collars [6].

#### NOTE:

- Do not operate the brake pedal after removing the wheel.



### INSPECTION

Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

Replace the bearings if they do not turn smoothly, quietly, or if they fit loosely in the hub.

Inspect the following parts for damage, abnormal wear, deformation or bend.

- Rear axle
- Wheel rim
- Driven sprocket (page 3-13)
- Damper rubbers (page 16-6)

Measure each part according to REAR WHEEL/SUSPENSION SPECIFICATIONS (page 1-7).

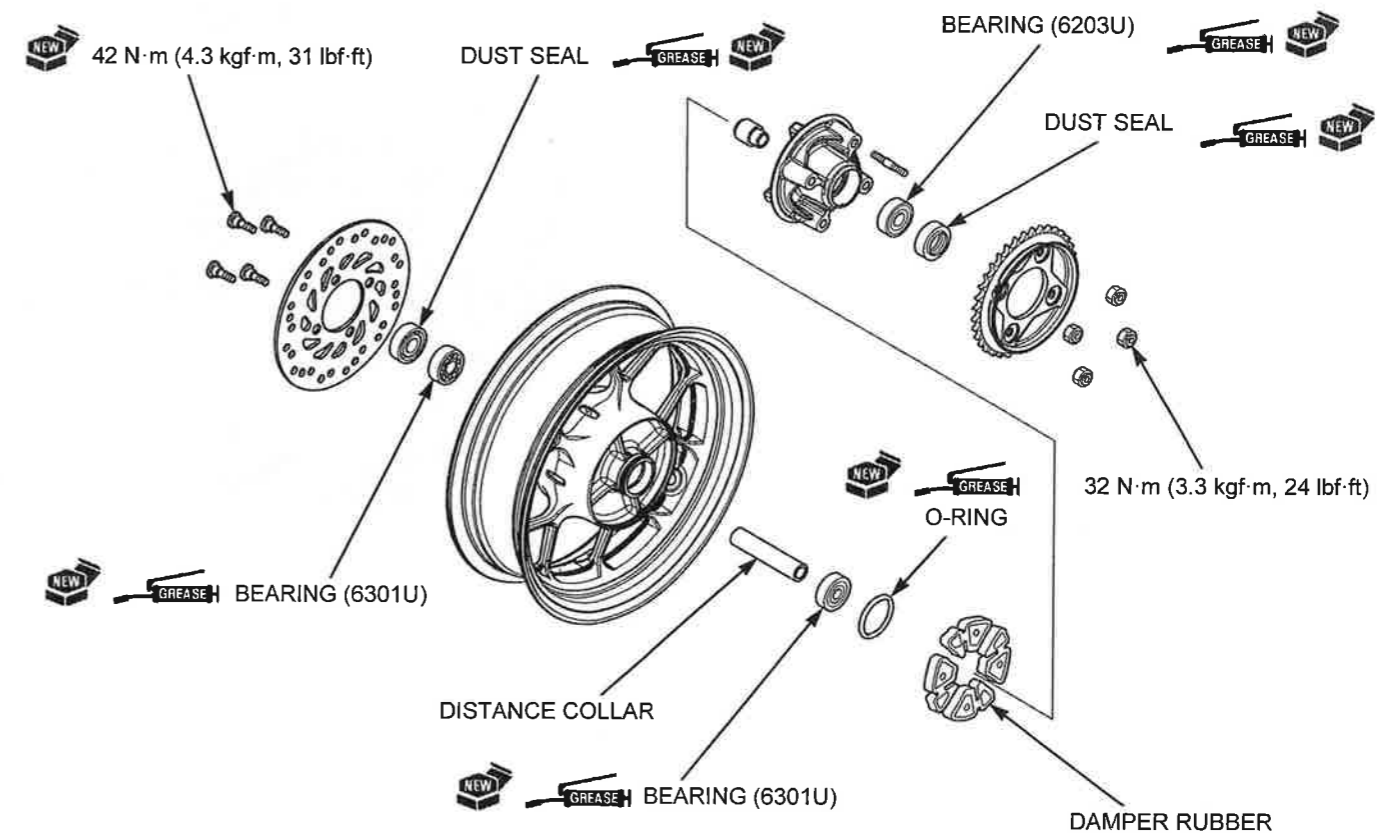
Replace any part if it is out of service limit.

## REAR WHEEL/SUSPENSION

### DISASSEMBLY/ASSEMBLY

Disassemble and assemble the rear wheel according to the illustration.

- Install each dust seal with the flat side facing out so that it is flush with the hub and driven flange end surfaces.
- Install the brake disc with the rotation mark (arrow) facing out.
- Use only the specified tire and driven sprocket to avoid malfunctions of the IMU and ABS (MONKEY125A only).



### BEARING REPLACEMENT

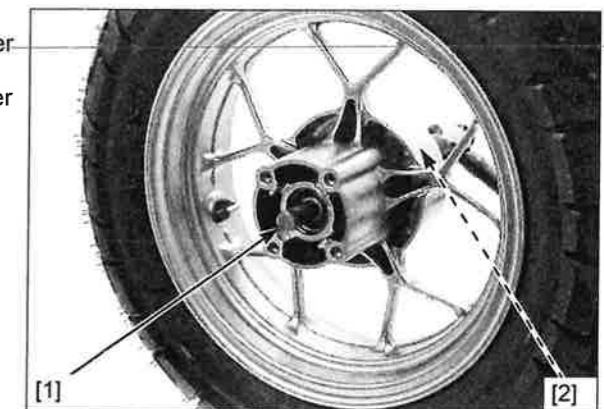
#### WHEEL BEARING

Install the bearing remover head into the bearing. 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:

Remover head, 12 mm [1]  
Bearing remover shaft [2]

07746-0050300  
07746-0050100



## REAR WHEEL/SUSPENSION

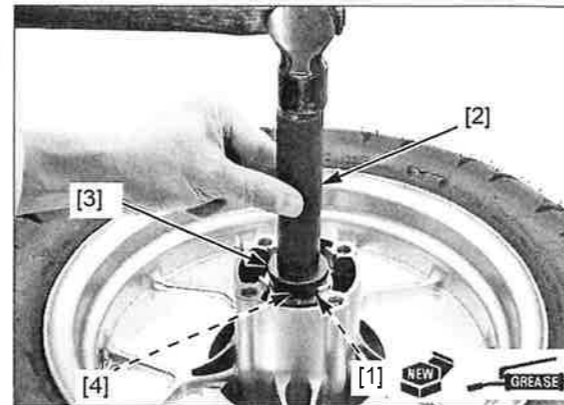
Pack all bearing cavities with grease.

*Never install the old bearings. Once the bearings have been removed, the bearings must be replaced with new ones.*

Drive in a new right bearing [1] squarely with its sealed side facing up until it is fully seated.

**TOOLS:**

**Driver [2]** 07749-0010000  
**Attachment, 37 x 40 mm [3]** 07746-0010200  
**Pilot, 12 mm [4]** 07746-0040200

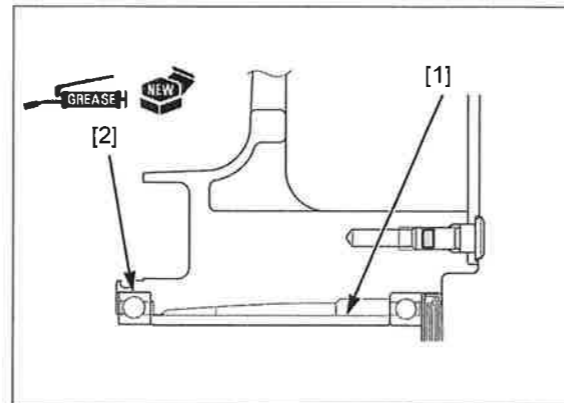


Install the distance collar [1].

Drive in a new left bearing [2] squarely with its sealed side facing up until its inner race is seated on the distance collar.

**TOOLS:**

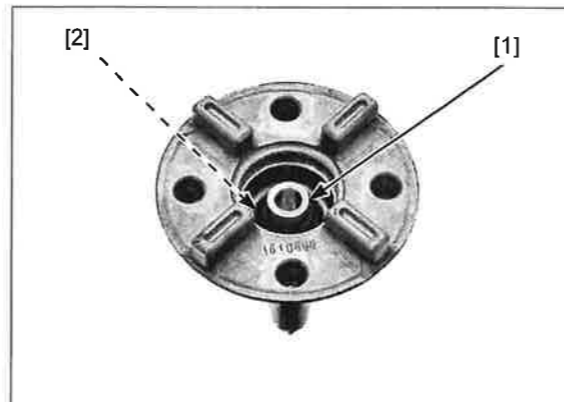
**Driver** 07749-0010000  
**Attachment, 37 x 40 mm** 07746-0010200  
**Pilot, 12 mm** 07746-0040200



**DRIVEN FLANGE**

Remove the driven flange collar [1].

Drive out the driven flange bearing [2].

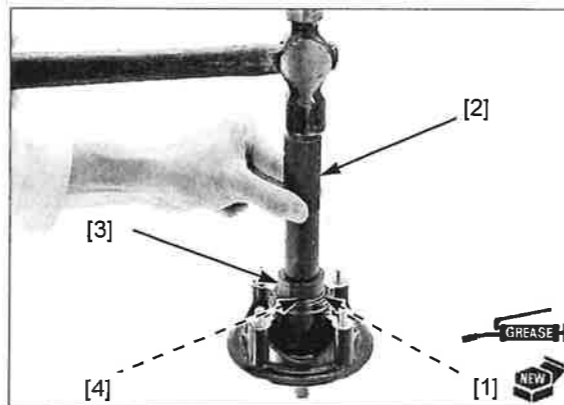


*Never install the old bearing, once the bearing has been removed, the bearing must be replaced with new ones.*

Drive in a new driven flange bearing [1] squarely until it is fully seated.

**TOOLS:**

**Driver [2]** 07749-0010000  
**Attachment, 37 x 40 mm [3]** 07746-0010200  
**Pilot, 17 mm [4]** 07746-0040400



## REAR WHEEL/SUSPENSION

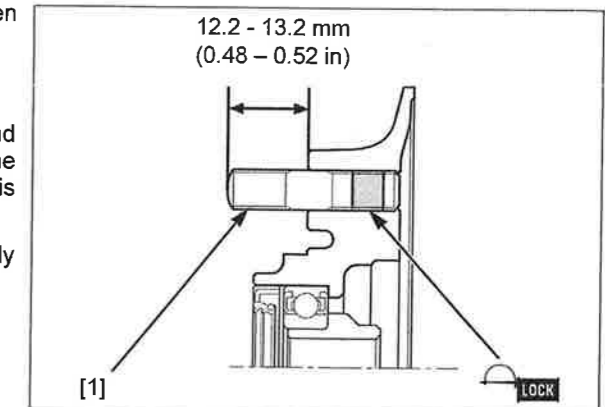
### DRIVEN FLANGE STUD BOLT REPLACEMENT

Check that the length from the bolt head to the driven flange surface is within specifications.

**STANDARD: 12.2 – 13.2 mm (0.48 – 0.52 in)**

When removing the driven flange stud bolts, install and tighten new stud bolts into the driven flange so that the length from the bolt head to the driven flange surface is within specifications.

- When installing the driven flange stud bolt, Apply locking agent to the stud bolt as shown.



### INSTALLATION

Install the brake caliper/bracket assembly so that the groove [1] is fitted on the boss [2] of the swingarm.

Install the side collars.

Install the rear wheel in the swingarm aligning the brake disc between the brake pads.

Install the drive chain over the driven sprocket.

Apply a thin coat of grease to the axle shaft [3] surface.

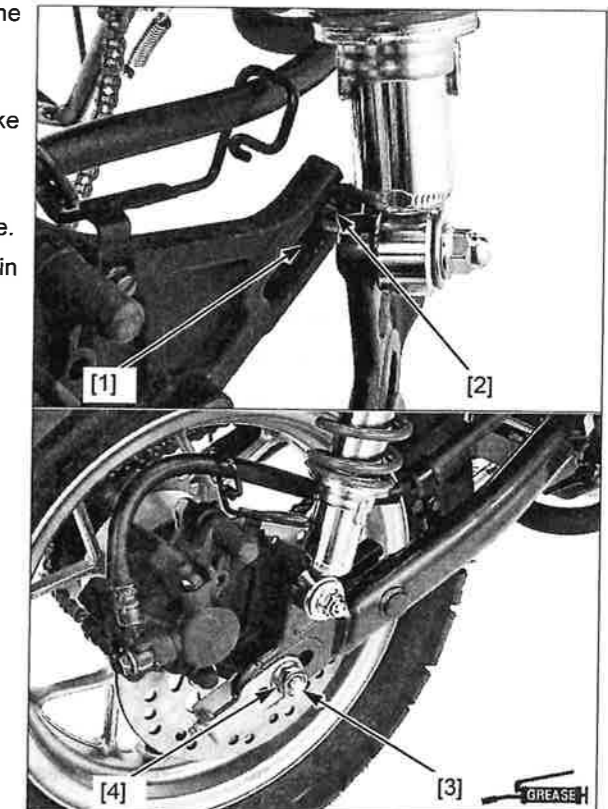
Install the axle from the left side through the drive chain adjuster plates, swingarm and rear wheel.

Install the axle nut [4].

Adjust the drive chain slack (page 3-14).

Tighten the axle nut to the specified torque.

**TORQUE: 59 N·m (6.0 kgf·m, 44 lbf·ft)**



## SHOCK ABSORBER

### REMOVAL/INSTALLATION

Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.

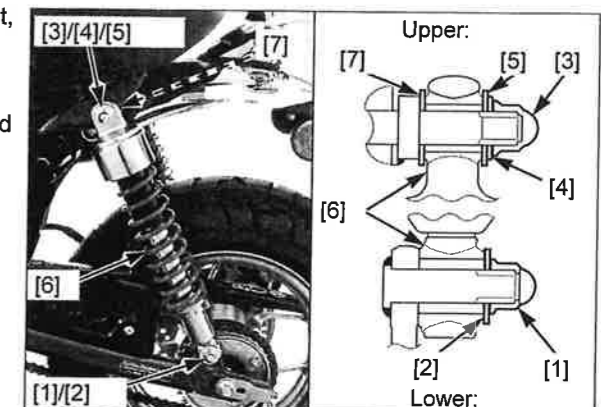
Remove the following:

- Shock absorber lower mounting cap nut [1] and lower washer A [2]
- Shock absorber upper mounting cap nut [3]
- Upper washer B [4] and upper washer A [5]
- Shock absorber [6]
- Upper washer A [7]

Installation is in the reverse order of removal.

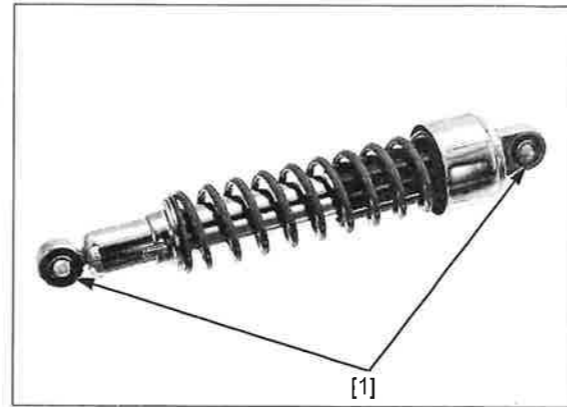
**TORQUE:**

**Shock absorber mounting cap nut (upper/lower)  
29 N·m (3.0 kgf·m, 21 lbf·ft)**



**INSPECTION**

Inspect the pivot bushings [1] for wear or damage  
Inspect the damper unit for oil leaks or damage.  
Replace the shock absorber as an assembly if necessary.



**SWINGARM**

**REMOVAL/INSTALLATION**

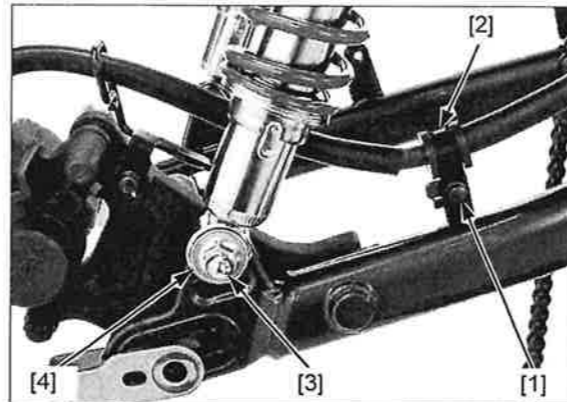
Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.

Remove the following:

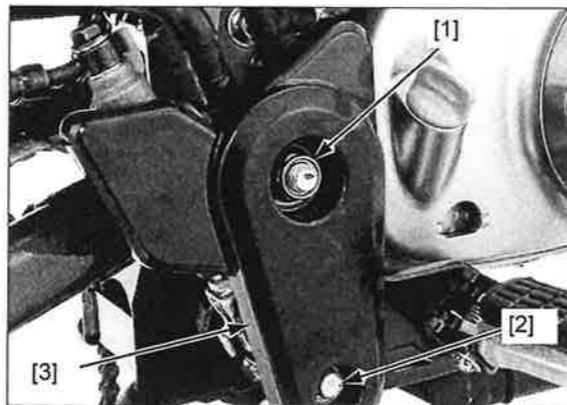
- Rear wheel (page 16-5)
- Drive chain cover (page 2-9)

Remove the bolt [1] and brake hose clamp [2].

Remove the shock absorber lower mounting cap nuts [3] and washers [4].



Remove the swingarm pivot nut [1], right step holder mounting bolt [2] and right step holder [3].



## REAR WHEEL/SUSPENSION

Release the shock absorber lower mounts from the swingarm [1].

Remove the pivot bolt [2], swingarm and collars [3].

Remove the drive chain slider [4] from the swingarm.

Installation is in the reverse order of removal.

### TORQUE:

**Swingarm pivot nut:**

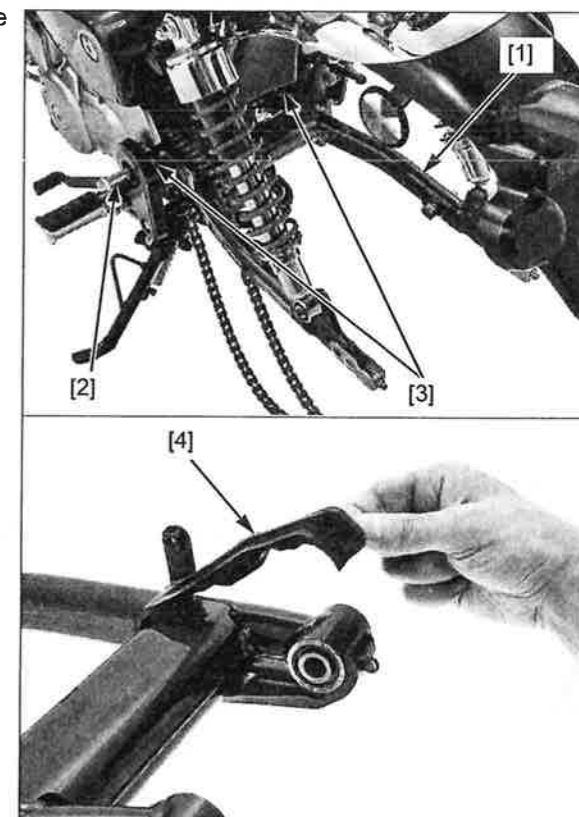
**54 N·m (5.5 kgf·m, 40 lbf·ft)**

**Step holder mounting bolt:**

**31 N·m (3.2 kgf·m, 23 lbf·ft)**

**Shock absorber lower mounting cap nut:**

**29 N·m (3.0 kgf·m, 21 lbf·ft)**



### INSPECTION

Inspect the following parts for damage, abnormal wear, or deformation and replace if necessary.

- Swingarm
- Pivot bolt



# 17. HYDRAULIC BRAKE

---

SERVICE INFORMATION.....	17-2	FRONT MASTER CYLINDER.....	17-8
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BRAKE PAD/DISC .....	17-7	BRAKE PEDAL .....	17-15

## HYDRAULIC BRAKE

### SERVICE INFORMATION

#### GENERAL

#### ⚠ CAUTION

Frequent inhalation of brake pad 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.

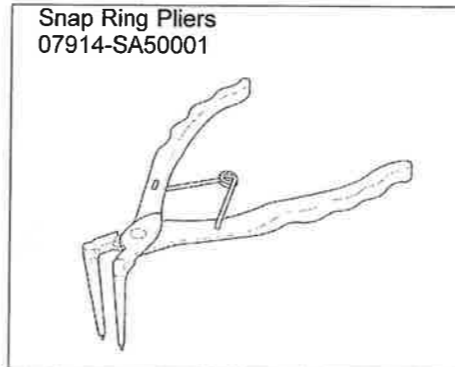
#### NOTICE

*Spilling brake fluid will severely damage instrument lenses and painted surface. It is also harmful to some rubber parts. Be careful whenever you remove the reservoir cover; make sure the front reservoir is horizontal first.*

- This section covers service of the conventional brake components of the brake system. For Anti-lock Brake System (ABS) service (page 18-2).
- This model is equipped with the ABS, however, the brake fluid replacement procedure is performed in the same manner as in the ordinary air bleeding procedure. Note that replacement and bleeding air from the brake fluid in the ABS modulator is not necessary, as it sealed in the modulator.
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- Always use fresh DOT 3 or DOT 4 brake fluid from a sealed container when servicing the system. Do not mix different types of fluid, they may not be compatible.
- Never allow contaminants (dirt, water, etc.) to get into an open reservoir.
- Once the hydraulic system has been opened, or if the brake feels spongy, the system must be bled.
- Always check brake operation before riding the motorcycle.
- When the wheel speed sensor is removed, be sure to check the air gap between the wheel speed sensor bracket of the fork and pulser ring after installing it (page 18-22).

#### TOOLS

Snap Ring Pliers  
07914-SA50001



## TROUBLESHOOTING

### Brake lever/pedal soft or spongy

- Air in hydraulic system
- Leaking hydraulic system
- Contaminated brake pad/disc
- Worn caliper piston seal
- Worn master piston cups
- Worn brake pad/disc
- Contaminated caliper
- Contaminated master cylinder
- Caliper not sliding properly
- Low brake fluid level
- Clogged fluid passage
- Warped/deformed brake disc
- Sticking/worn caliper piston
- Sticking/worn master piston
- Bent brake lever/pedal

### Brake lever/pedal hard

- Clogged/restricted fluid passage
- Sticking/worn caliper piston
- Caliper not sliding properly
- Worn caliper piston seal
- Sticking/worn master piston
- Bent brake lever/pedal

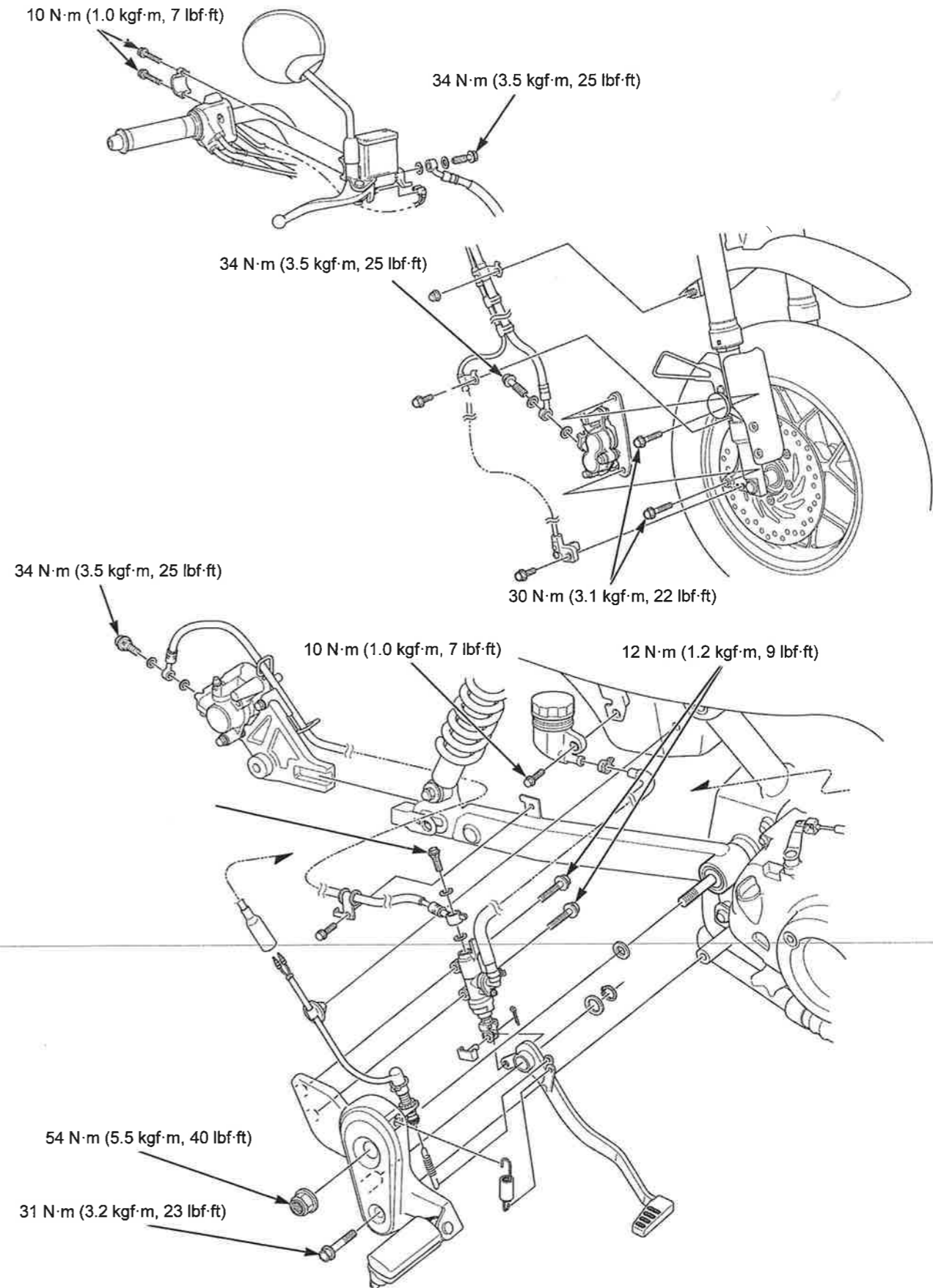
### Brake drags

- Contaminated brake pad/disc
- Misaligned wheel
- Badly worn brake pad/disc
- Warped/deformed brake disc
- Caliper not sliding properly
- Clogged/restricted fluid passage
- Sticking caliper piston

## HYDRAULIC BRAKE

### COMPONENT LOCATION

MONKEY125A shown:



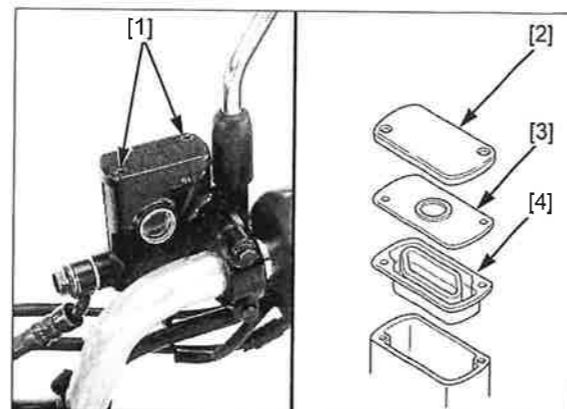
## BRAKE FLUID REPLACEMENT/AIR BLEEDING

### BRAKE FLUID DRAINING

*For front brake:* Turn the handlebar so the reservoir is level.

Remove the following:

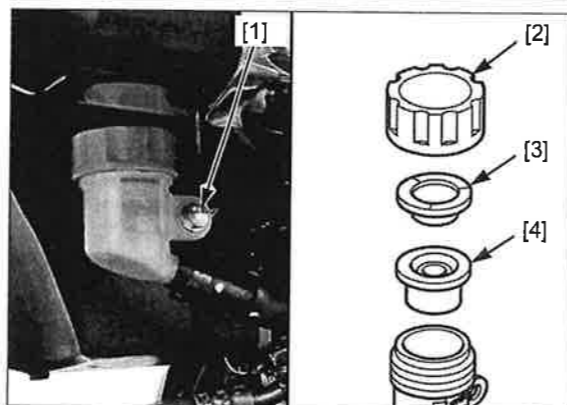
- Two screws [1]
- Reservoir cover [2]
- Set plate [3]
- Diaphragm [4]



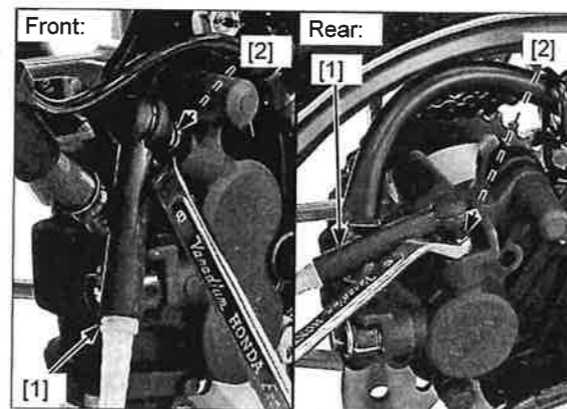
*For rear brake:* Remove the following:

- Reservoir mounting bolt [1]
- Reservoir cap [2]
- Set plate [3]
- Diaphragm [4]

*Take care not to spill the fluid out of the reservoir.* Temporarily install the reservoir onto the frame with the mounting bolt so the reservoir is level.



Connect a bleed hose [1] to the caliper bleed valve [2].  
Loosen the bleed valve and pump the brake lever or pedal until no more fluid flows out of the bleed valve.  
Close the bleed valve.



## HYDRAULIC BRAKE

### BRAKE FLUID FILLING/AIR BLEEDING

Fill the reservoir to the upper level line [1] with DOT 3 or DOT 4 brake fluid from a sealed container.

Connect a commercially available brake bleeder to the bleed valve.

Operate the brake bleeder and loosen the bleed valve.

If an automatic refill system is not used, add fluid when the fluid level in the reservoir is low.

Perform the bleeding procedure until the system is completely flushed/bled.

Close the bleed valve and operate the brake lever or pedal. If it still feels spongy, bleed the system again.

If the brake bleeder is not available, use the following procedure.

Connect a bleed hose to the bleed valve.

Pump up the system pressure with the brake lever/pedal until the lever/pedal resistance is felt.

1. Squeeze the brake lever or depress the brake pedal all the way, and loosen the bleed valve 1/4 of a turn. Wait several seconds and then close it.
2. Release the brake lever/pedal slowly and wait several seconds after it reaches the end of its travel.
3. Repeat the steps 1 and 2 until there are no air bubbles in the bleed hose.

After bleeding the system completely, tighten the bleed valve to the specified torque.

**TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)**

Fill the reservoir to the upper level line with DOT 3 or DOT 4 brake fluid.

*For front brake:* Install the diaphragm, set plate, reservoir cover and tighten the screws to the specified torque.

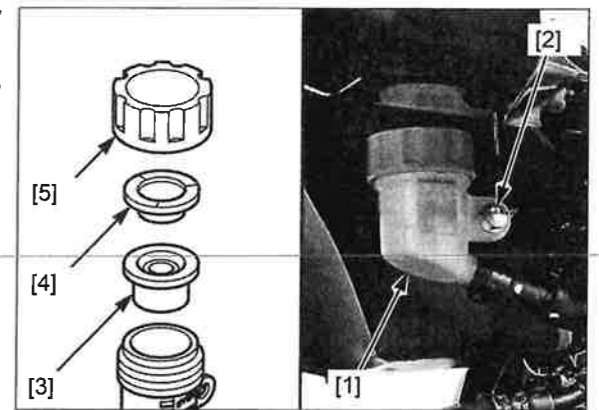
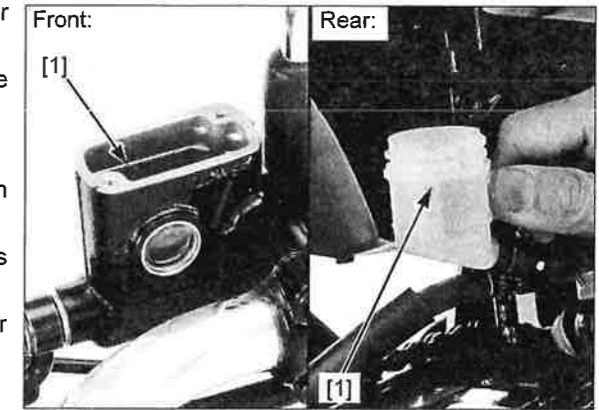
**TORQUE: 1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)**

*For rear brake:* Carefully remove the reservoir [1] from the frame by removing the mounting bolt [2].

*Take care not to spill the fluid out of the reservoir.* Install the diaphragm [3], set plate [4] and reservoir cap [5].

Install and tighten the reservoir mounting bolt to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**



**BRAKE PAD/DISC**

**BRAKE PAD REMOVAL/  
INSTALLATION**

**NOTE:**

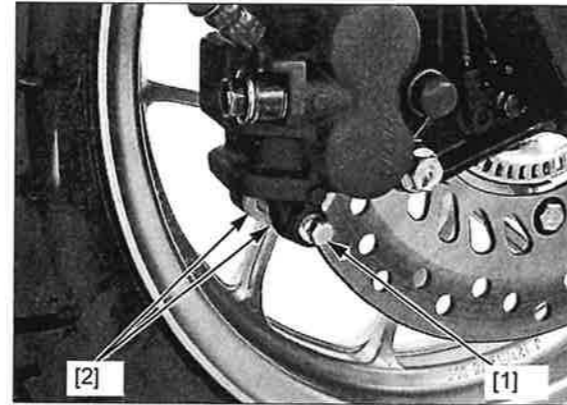
*Check the fluid level in the reservoir as this operation causes the fluid level to rise.*

- If you replace the brake pads with new ones, push the caliper pistons all the way in by pushing the caliper body inward to allow installation of new brake pads before removing the pads. Always replace the brake pads in pairs to ensure even disc pressure.

**FRONT**

*Do not operate the brake lever after removing the pads.*

Remove the brake pad hanger pin [1] and brake pads [2].



Make sure that the retainer and pad spring [1] are installed to the brake caliper.

Be sure the stopper ring [2] on the pad pin [3] is in good condition, and replace it with a new one if necessary. Apply silicone grease to the stopper ring and install it to the hanger pin groove.

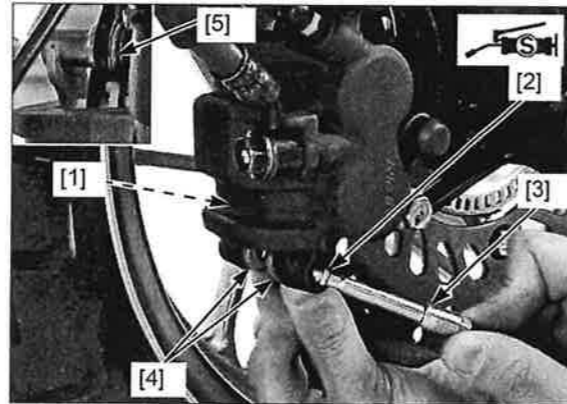
Install the brake pads [4] by aligning their ends against the caliper bracket [5].

Install the brake pad hanger pin by pushing the pads against the pad spring to align the hanger pin holes in the pads and brake caliper.

Tighten the brake pad hanger pin to the specified torque.

**TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)**

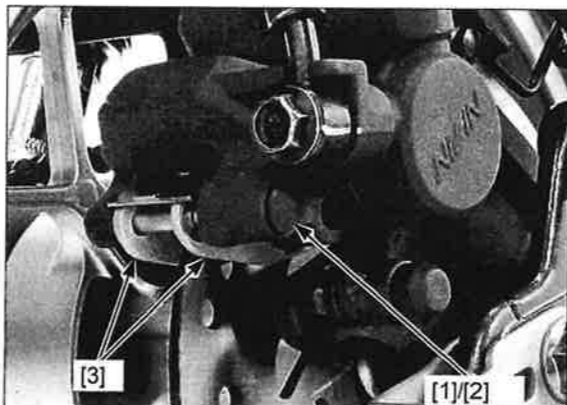
Operate the brake lever to seat the caliper pistons against the pads.



**REAR**

Remove the pad pin plug [1] and loosen the pad pin [2].

Pull the pad pin out of the caliper body while pushing in the pads against the pad spring, and then remove the brake pads [3].



## HYDRAULIC BRAKE

Make sure that the retainer and pad spring [1] are installed to the brake caliper.

Be sure the stopper ring [2] on the pad pin [3] is in good condition, and replace it with a new one if necessary. Apply silicone grease to the stopper ring and install it to the hanger pin groove.

Install the brake pads [4] by aligning their ends against the caliper bracket [5].

Install the brake pad hanger pin by pushing the pads against the pad spring to align the hanger pin holes in the pads and brake caliper.

Tighten the brake pad hanger pin to the specified torque.

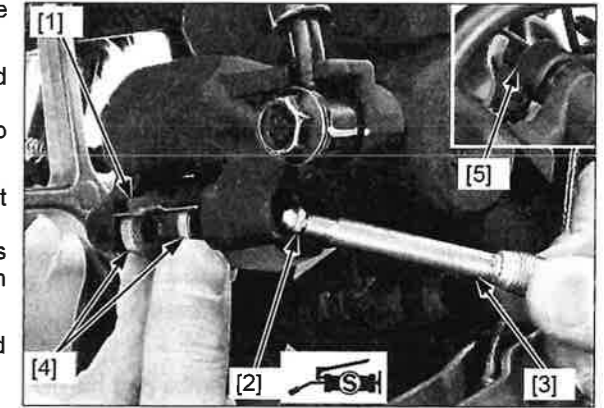
**TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)**

Operate the brake pedal to seat the caliper piston against the pads.

### BRAKE DISC INSPECTION

Visually inspect the brake disc for damage or cracks.

Measure the brake disc according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-7) and replace if necessary.



## FRONT MASTER CYLINDER

### REMOVAL/INSTALLATION

Drain the brake fluid from the front brake hydraulic system (page 17-5).

Remove the right rearview mirror (page 2-4).

*When removing the oil bolt, cover the end of the brake hose to prevent contamination.*

Remove the following:

- Brake light switch connectors [1]
- Oil bolt [2]
- Sealing washers [3]
- Brake hose [4]
- Two bolts [5]
- Master cylinder holder [6]
- Master cylinder [7]

Installation is in the reverse order of removal.

#### NOTE:

- Replace the sealing washers with new ones.
- Seat the brake hose joint against the stopper of the master cylinder when tightening the oil bolt.
- Install the master cylinder holder with the "UP" mark [8] facing up.
- Align the edge of the master cylinder with the punch mark on the handlebar, and tighten the upper bolt first then tighten the lower bolt.

#### TORQUE:

**Front master cylinder holder bolt:**

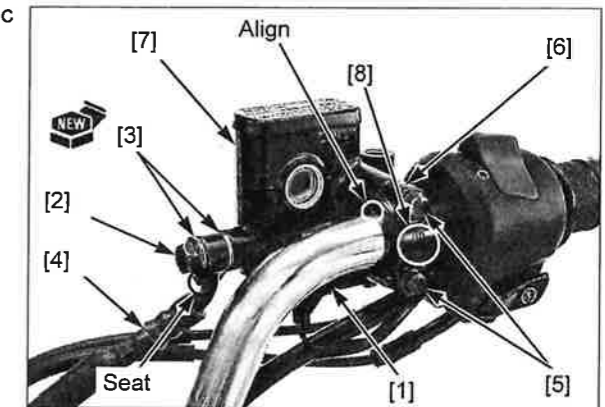
**10 N·m (1.0 kgf·m, 7 lbf·ft)**

**Oil bolt:**

**34 N·m (3.5 kgf·m, 25 lbf·ft)**

Install the right rearview mirror (page 2-4).

Fill and bleed the front brake hydraulic system (page 17-6).





## HYDRAULIC BRAKE

### DISASSEMBLY/ASSEMBLY

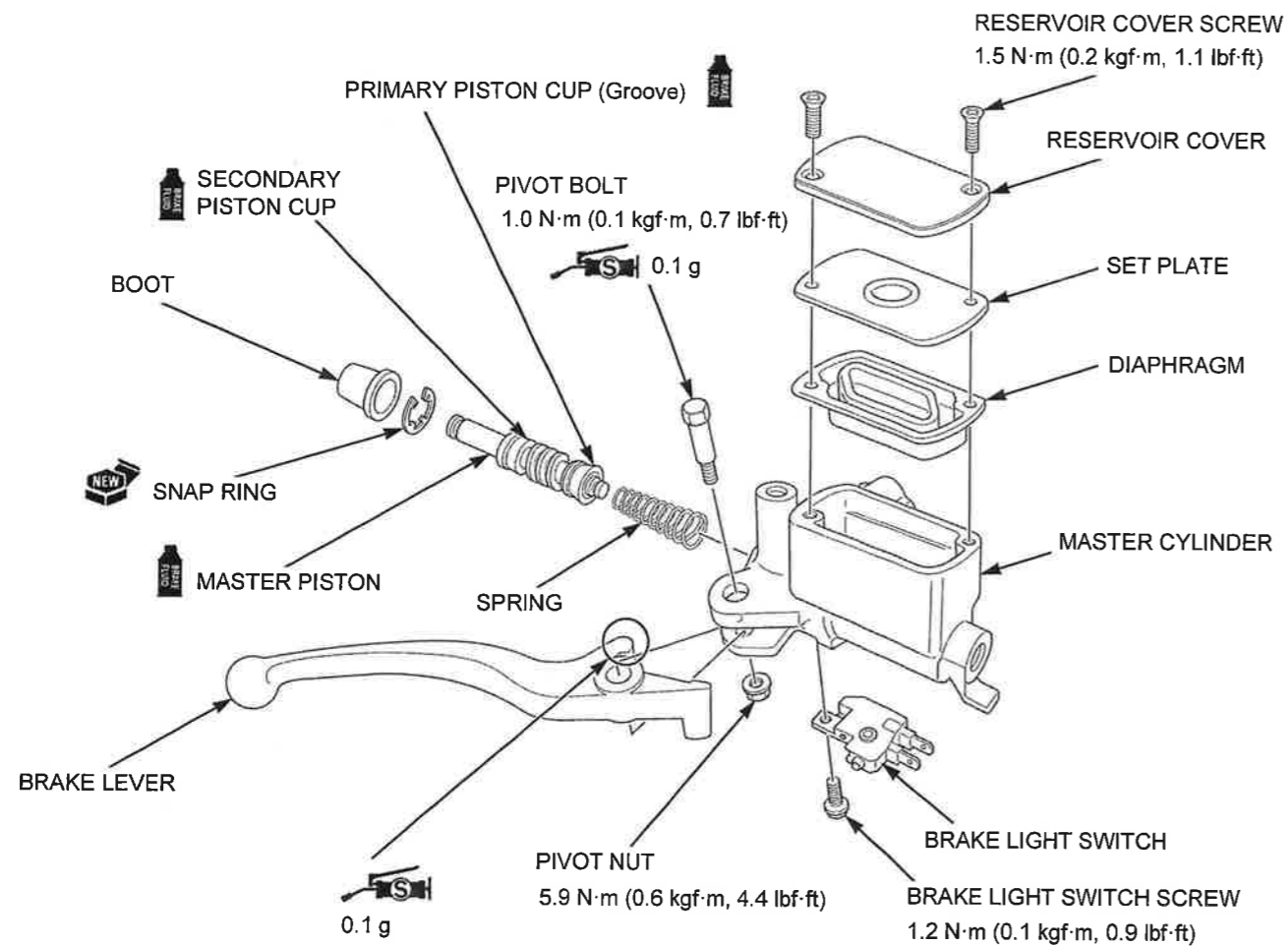
Disassemble and assemble the front master cylinder according to the illustration.

- When removing and installing the snap ring, use the special tool.

#### TOOL:

Snap ring pliers 07914-SA50001

- Do not allow the piston cup lips to turn inside out.
- Install the snap ring with the chamfered edge facing the thrust load side and be certain it is firmly seated in the groove. Do not reuse the snap ring which could easily spin in the groove.
- Align the switch boss with the master cylinder hole properly.
- When tightening the pivot nut, hold the pivot bolt securely.



### INSPECTION

Check the following parts for scoring, scratches, deterioration or damage.

- Master cylinder
- Master piston
- Piston cups
- Spring
- Boot
- Diaphragm

Measure the parts according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-7) and replace if necessary.

## HYDRAULIC BRAKE

### REAR MASTER CYLINDER

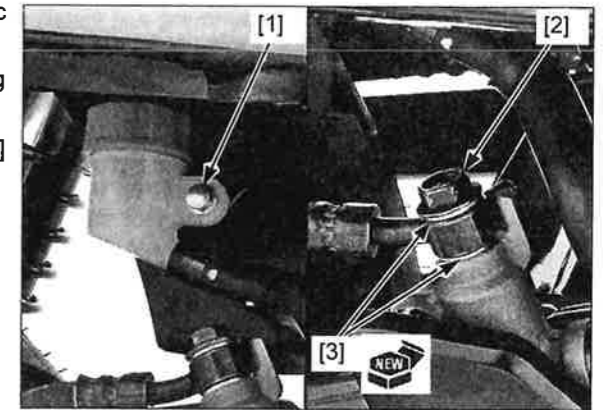
#### REMOVAL/INSTALLATION

Drain the brake fluid from the rear brake hydraulic system (page 17-5).

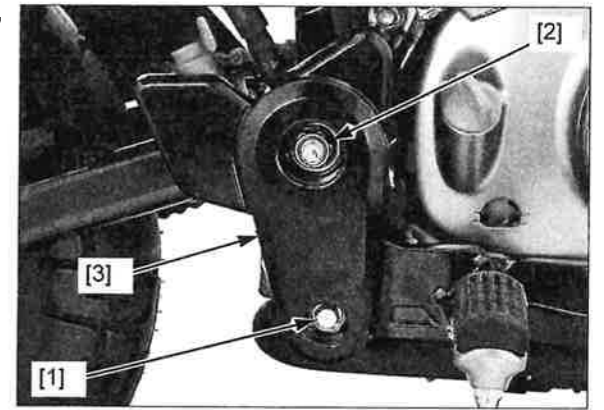
Remove the rear master cylinder reservoir mounting bolt [1].

Remove the brake hose oil bolt [2], sealing washers [3] and brake hose.

*When removing the oil bolt, cover the end of the brake hose to prevent contamination.*



Remove the right step holder mounting bolt [1], swingarm pivot nut [2] and right step holder [3].



Remove the brake pedal joint cotter pin [1].

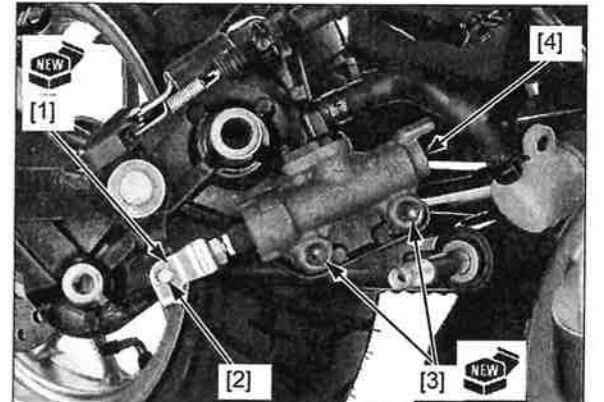
Remove the joint pin [2] and disconnect the push rod lower joint from the brake pedal.

Remove the bolts [3] and rear master cylinder [4] from the right step holder.

Installation is in the reverse order of removal.

#### NOTE:

- Replace the rear master cylinder mounting bolts, sealing washers and cotter pin with new ones.
- Be sure to rest the eyelet stopper pin against the stopper when tightening the oil bolt.



#### TORQUE:

**Swingarm pivot nut:**

54 N·m (5.5 kgf·m, 40 lbf·ft)

**Step holder mounting bolt:**

31 N·m (3.2 kgf·m, 23 lbf·ft)

**Rear master cylinder mounting bolt:**

12 N·m (1.2 kgf·m, 9 lbf·ft)

**Oil bolt:**

34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill and bleed the rear brake hydraulic system (page 17-6).

## HYDRAULIC BRAKE

### DISASSEMBLY/ASSEMBLY

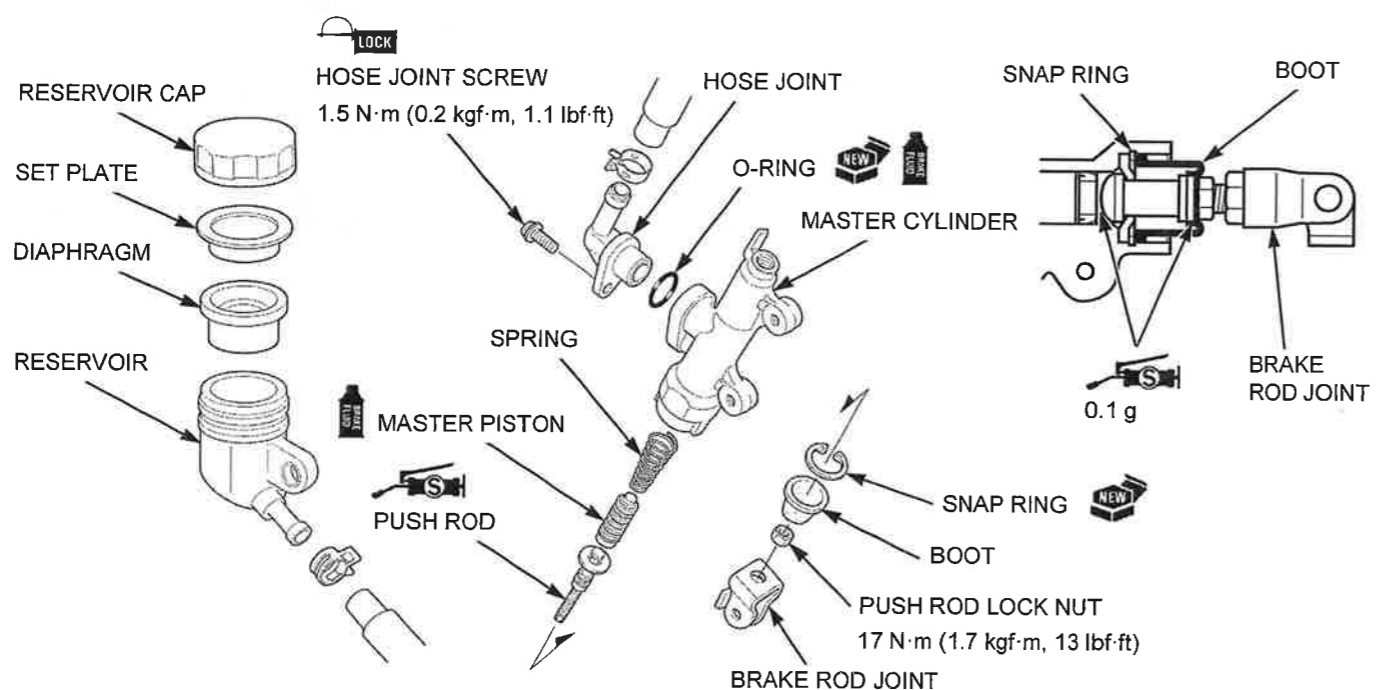
Disassemble and assemble the rear master cylinder as following illustration.

- When removing and installing the snap ring, use the special tool.

#### TOOL:

**Snap ring pliers**                      **07914-SA50001**

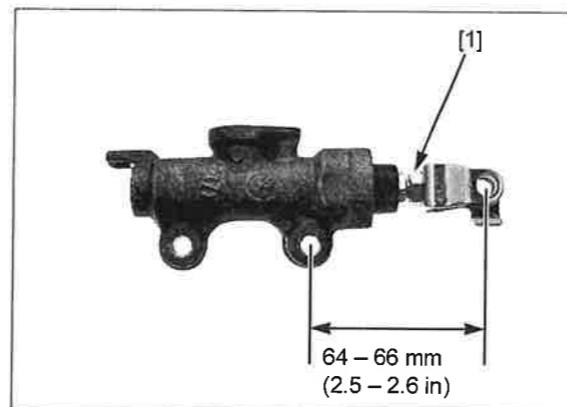
- Adjust the push rod length between the center of the lower mounting bolt hole and center of the joint pin hole when installing the push rod joint.
- Do not allow the piston cup lips to turn inside out.
- Install the snap ring with the chamfered edge facing the thrust load side and be certain it is firmly seated in the groove. Do not reuse the snap ring which could easily spin in the groove.



If the push rod joint is reinstalled, adjust the push rod length so that the distance from the center of the master cylinder lower mounting hole to the center of the joint pin hole is 64 – 66 mm (2.5 – 2.6 in) as shown.

After adjustment tighten the push rod lock nut [1] to the specified torque.

**TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)**



## HYDRAULIC BRAKE

---

### INSPECTION

Check the following parts for scoring, scratches, deterioration or damage.

- Master cylinder
- Master piston
- Piston cups
- Spring
- Boot
- Rod joint

Measure the parts according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-7) and replace if necessary.

## FRONT BRAKE CALIPER

### REMOVAL/INSTALLATION

Drain the brake fluid from the front brake hydraulic system (page 17-5).

Remove the following:

- When removing the oil bolt, cover the end of brake hose to prevent contamination.*
- Oil bolt [1]
  - Sealing washers [2]
  - Brake hose [3]
  - Brake caliper mounting bolts [4]
  - Brake caliper [5]

Installation is in the reverse order of removal.

#### NOTE:

- Replace the brake caliper mounting bolts and sealing washers with new ones.
- Be sure to rest the eyelet stopper pin against the caliper body when tightening the oil bolt.

#### TORQUE:

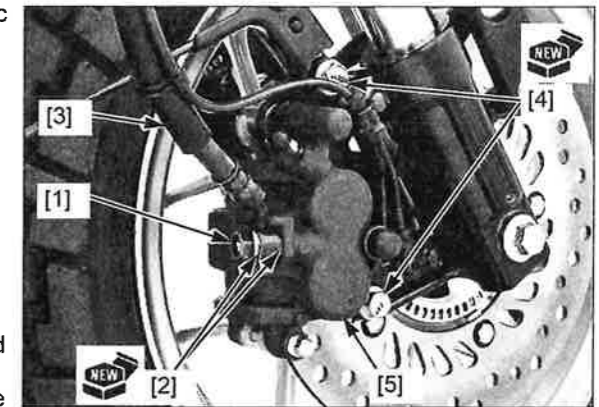
**Front brake caliper mounting bolt:**

**30 N·m (3.1 kgf·m, 22 lbf·ft)**

**Oil bolt:**

**34 N·m (3.5 kgf·m, 25 lbf·ft)**

Fill and bleed the front brake hydraulic system (page 17-6).



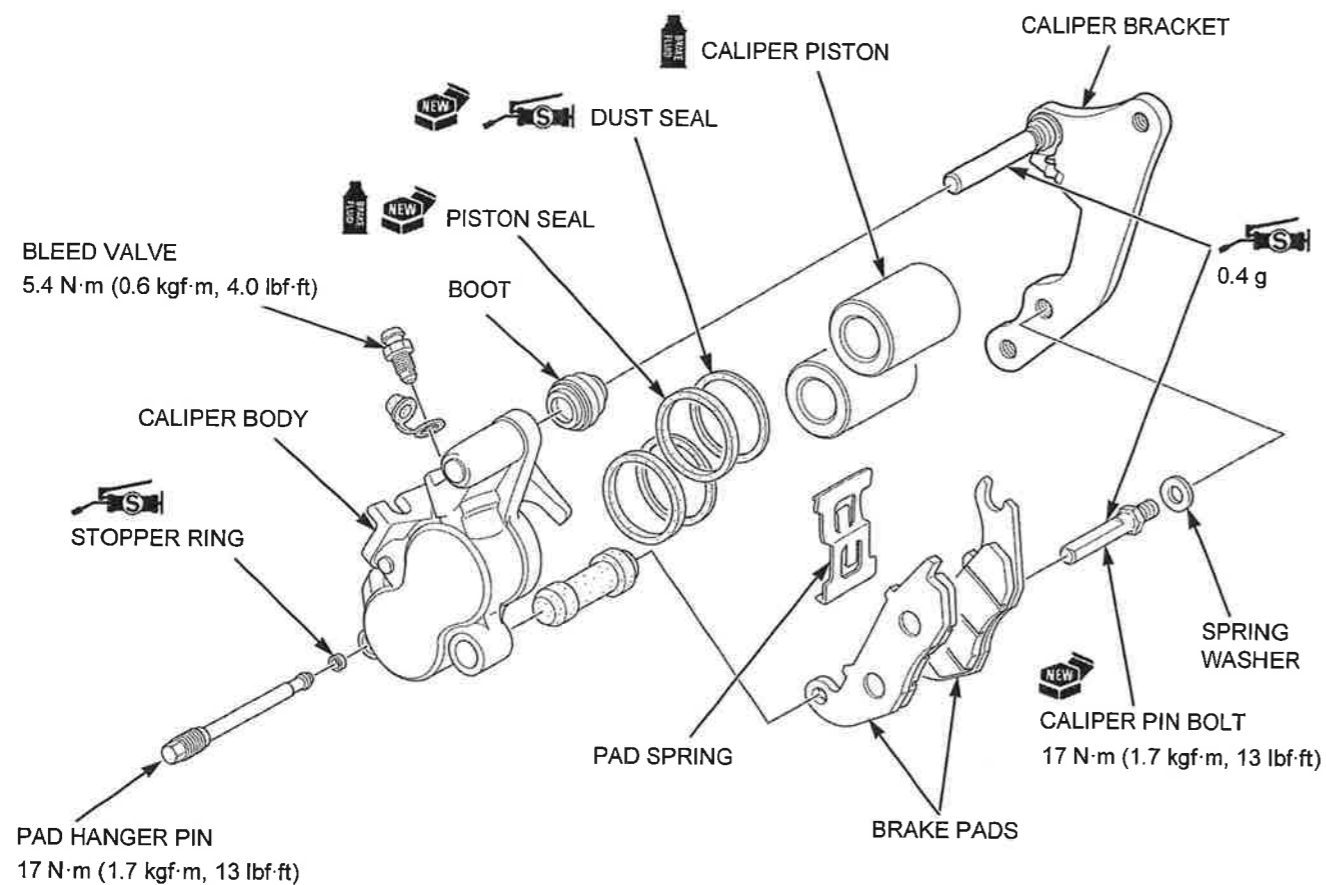
## HYDRAULIC BRAKE

### DISASSEMBLY/ASSEMBLY

Disassemble and assemble the front brake caliper according to the illustration.

For brake pad removal/installation (page 17-7).

- Mark the pistons to ensure that they are reinstalled in their original locations.
- When removing the caliper pistons with compressed air, place a shop towel over the pistons to prevent damaging the pistons and caliper body. Do not use high pressure or bring the nozzle too close to the fluid inlet.
- Install the pistons with the opening toward the pads.



### INSPECTION

Check the following parts for scoring, scratches, deterioration or damage.

- Caliper cylinders
- Caliper pistons

Measure the parts according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-7) and replace if necessary.

## HYDRAULIC BRAKE

### REAR BRAKE CALIPER

#### REMOVAL/INSTALLATION

Drain the brake fluid from the rear brake hydraulic system (page 17-5).

Remove the following:

- Rear wheel (page 16-5)
- Oil bolt [1]
- Sealing washers [2]
- Brake hose [3]
- Brake caliper [4]

*When removing the oil bolt, cover the end of brake hose to prevent contamination.*

Installation is in the reverse order of removal.

#### NOTE:

- Replace the sealing washers with new ones.
- Be sure to rest the eyelet stopper pin against the caliper body when tightening the oil bolt.



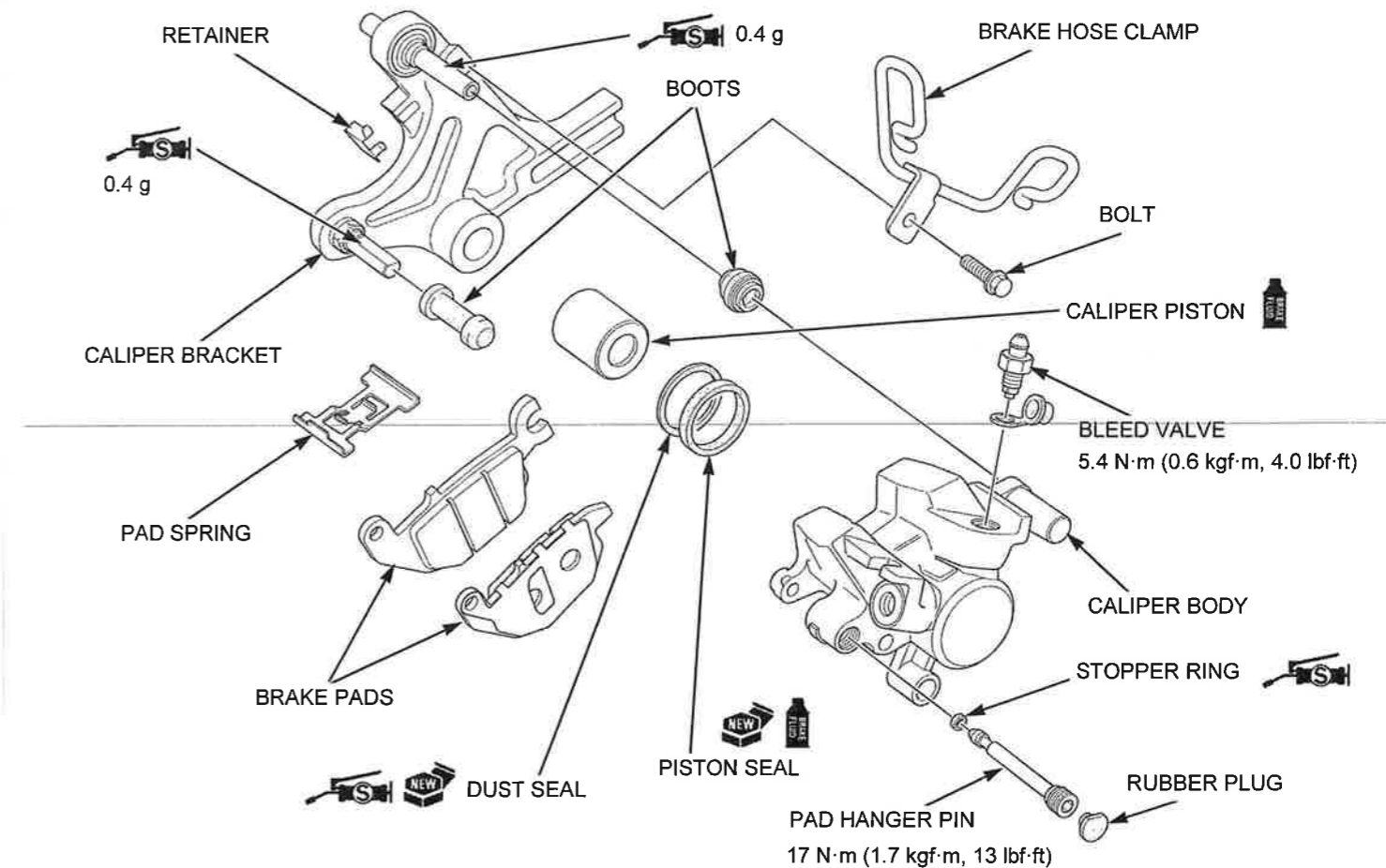
**TORQUE:** Oil bolt: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill and bleed the rear brake hydraulic system (page 17-6).

#### DISASSEMBLY/ASSEMBLY

Disassemble and assemble the rear brake caliper according to the illustration.

- When removing the caliper piston with compressed air, place a shop towel over the piston to prevent damaging the piston and caliper body. Do not use high pressure or bring the nozzle too close to the fluid inlet.
- Install the piston with the opening toward the pads.



### INSPECTION

Check the following parts for scoring, scratches, deterioration or damage.

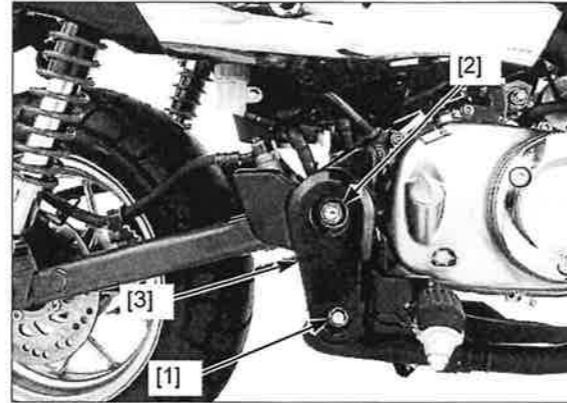
- Caliper cylinder
- Caliper piston

Measure the parts according to HYDRAULIC BRAKE SPECIFICATIONS (page 1-7) and replace if necessary.

## BRAKE PEDAL

### REMOVAL/INSTALLATION

Remove the right step holder mounting bolt [1], swingarm pivot nut [2] and right step holder [3].



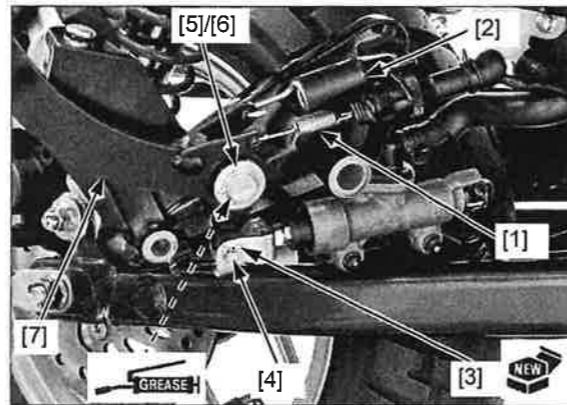
Remove the following:

- Rear brake light switch spring [1]
- Brake pedal return spring [2]
- Cotter pin [3]
- Joint pin [4]
- Snap ring [5]
- Washer [6]
- Brake pedal [7]

Installation is in the reverse order of removal.

#### NOTE:

- Apply grease to the brake pedal pivot sliding area (grease groove).
- Replace the cotter pin with a new one.
- Install the each spring in the direction as shown.



#### TORQUE:

**Swingarm pivot nut:**

**54 N·m (5.5 kgf·m, 40 lbf·ft)**

**Step holder mounting bolt:**

**31 N·m (3.2 kgf·m, 23 lbf·ft)**

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MEMO



# **18. ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)**

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<b>SERVICE INFORMATION</b> .....	<b>18-2</b>	<b>ABS INDICATOR CIRCUIT TROUBLESHOOTING</b> .....	<b>18-11</b>
<b>ABS SYSTEM LOCATION</b> .....	<b>18-3</b>	<b>ABS TROUBLESHOOTING</b> .....	<b>18-14</b>
<b>SYSTEM DIAGRAM</b> .....	<b>18-4</b>	<b>FRONT WHEEL SPEED SENSOR</b> .....	<b>18-22</b>
<b>ABS TROUBLESHOOTING INFORMATION</b> .....	<b>18-5</b>	<b>IMU</b> .....	<b>18-24</b>
<b>DTC INDEX</b> .....	<b>18-9</b>	<b>ABS MODULATOR</b> .....	<b>18-25</b>

## SERVICE INFORMATION

### GENERAL

#### NOTICE

- The ABS modulator may be damaged if dropped. Also if a connector is disconnected when current is flowing, the excessive voltage may damage the control unit. Always turn off the ignition switch before servicing.
- Spilling brake fluid will severely damage plastic parts and painted surfaces. It is also harmful to some rubber parts.
- This section covers service of the Anti-lock Brake System (ABS). For conventional brake service (page 17-2).
- The ABS control unit is integrated in the ABS modulator. Do not disassemble the ABS modulator. Replace the ABS modulator as an assembly when it is faulty.
- The ABS control unit performs pre-start self-diagnosis to check whether the ABS functions normally until the vehicle speed reaches 10 km/h (6 mph). After pre-start self-diagnosis, the ABS control unit monitors the ABS functions and vehicle running condition constantly until the ignition switch is turned OFF (ordinary self-diagnosis).
- When the ABS control unit detects a problem, it stops the ABS function, switches back to the conventional brake operation, and turns on or blinks the ABS indicator. Take care during the test-ride.
- Read "ABS TROUBLESHOOTING INFORMATION" carefully, inspect and troubleshoot the ABS according to the diagnostic troubleshooting flow chart. Observe each step of the procedures one by one. Write down the DTC and probable faulty part before starting diagnosis and troubleshooting.
- Use a fully charged battery. Do not diagnose with a charger connected to the battery.
- After troubleshooting, erase the DTC and test-ride the motorcycle to check that the ABS indicator operates normally during pre-start self-diagnosis (page 18-5).
- Problems not caused by the faulty ABS (e.g. brake disc squeak, unevenly worn brake pad) cannot be detected by the ABS diagnosis system.
- When the wheel speed sensor and/or pulser ring is removed, be sure to check the air gap after installing them (page 18-22).
- Be careful not to damage the wheel speed sensor and pulser ring when removing and installing the wheel.
- For front wheel pulser ring service (page 15-10).
- The following color codes are used throughout this section.

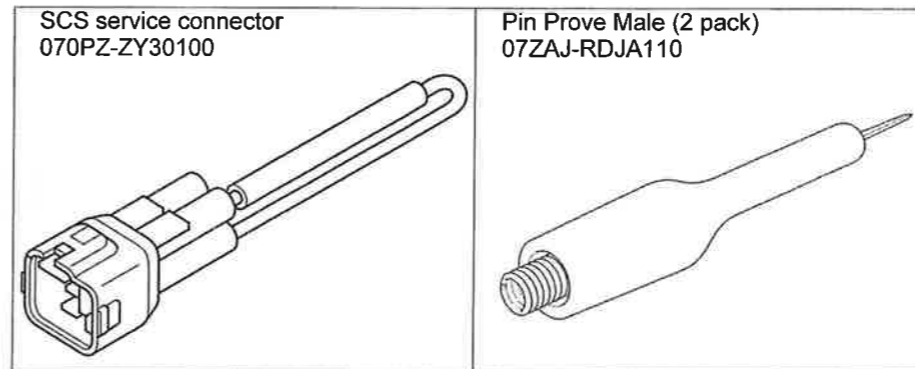
Bl: Black  
Bu: Blue

W: White  
G: Green

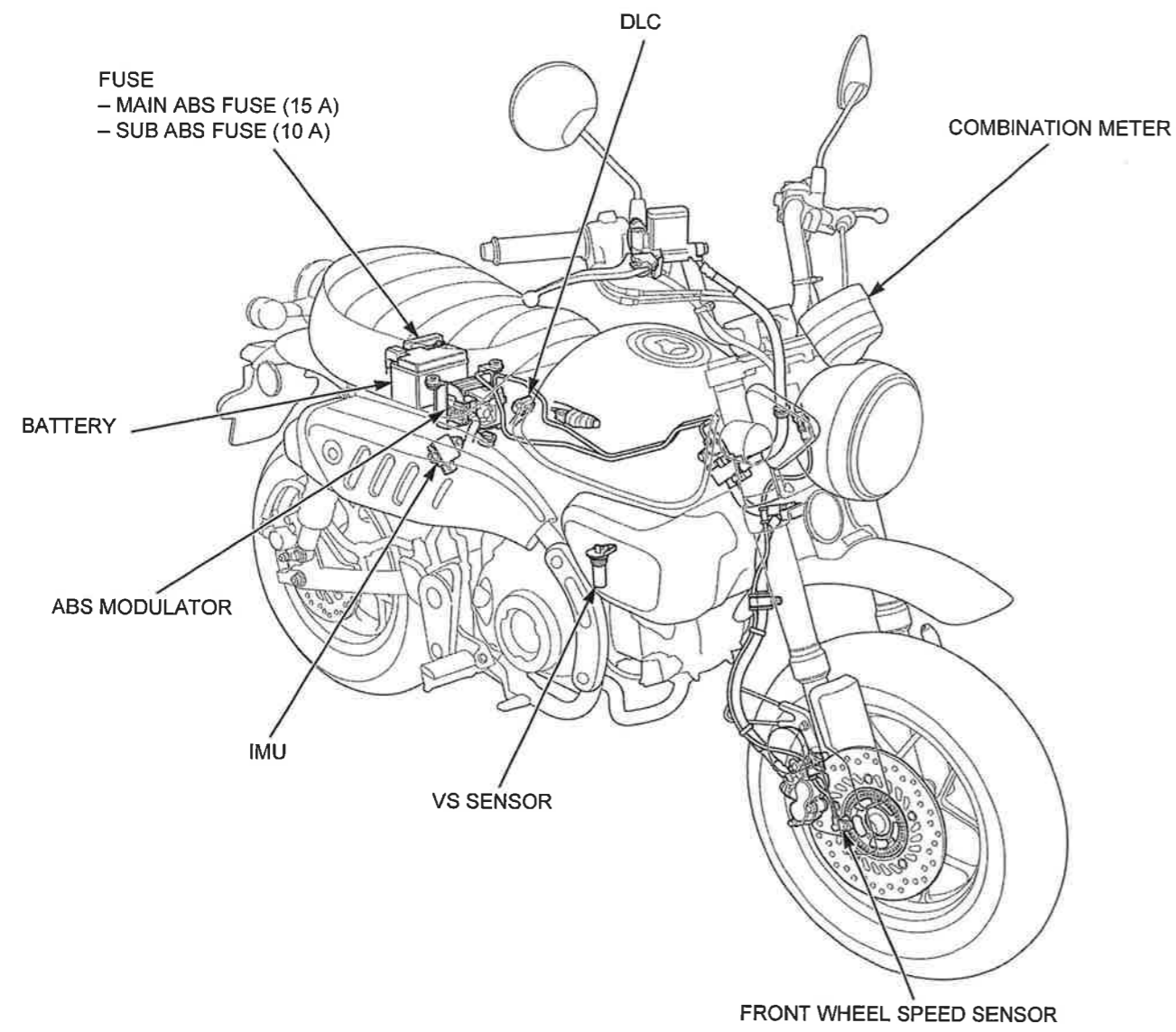
R: Red  
P: Pink

Y: Yellow

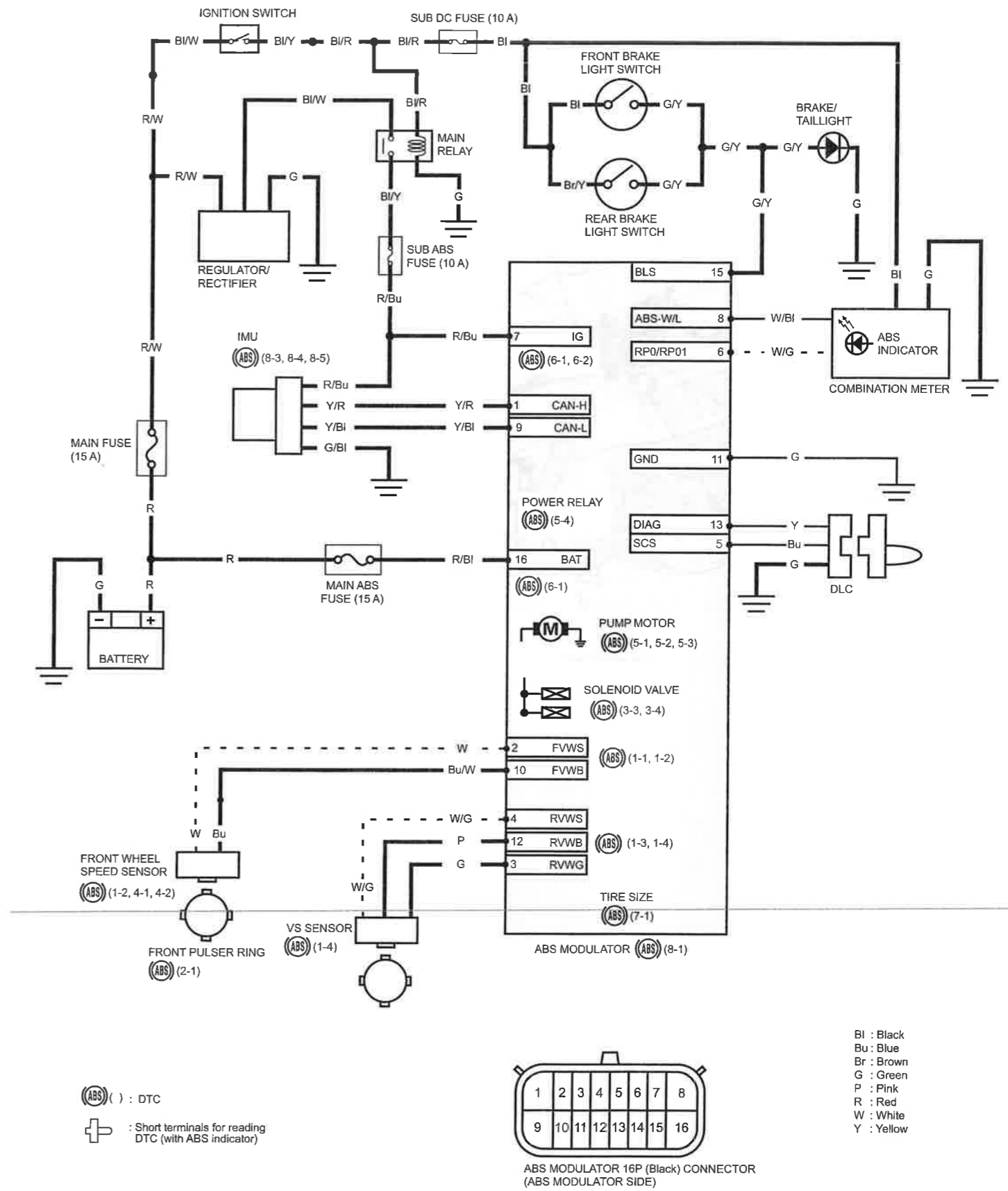
### TOOLS



ABS SYSTEM LOCATION



# ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A) SYSTEM DIAGRAM



## ABS TROUBLESHOOTING INFORMATION

### SYSTEM DESCRIPTION

#### SUMMARY OF ABS PRE-START SELF-DIAGNOSIS SYSTEM

The ABS pre-start self-diagnosis system diagnoses the electrical system as well as the operating status of the modulator. When there is any abnormality, the problem and the associated part can be detected by reading the Diagnostic Trouble Code (DTC).

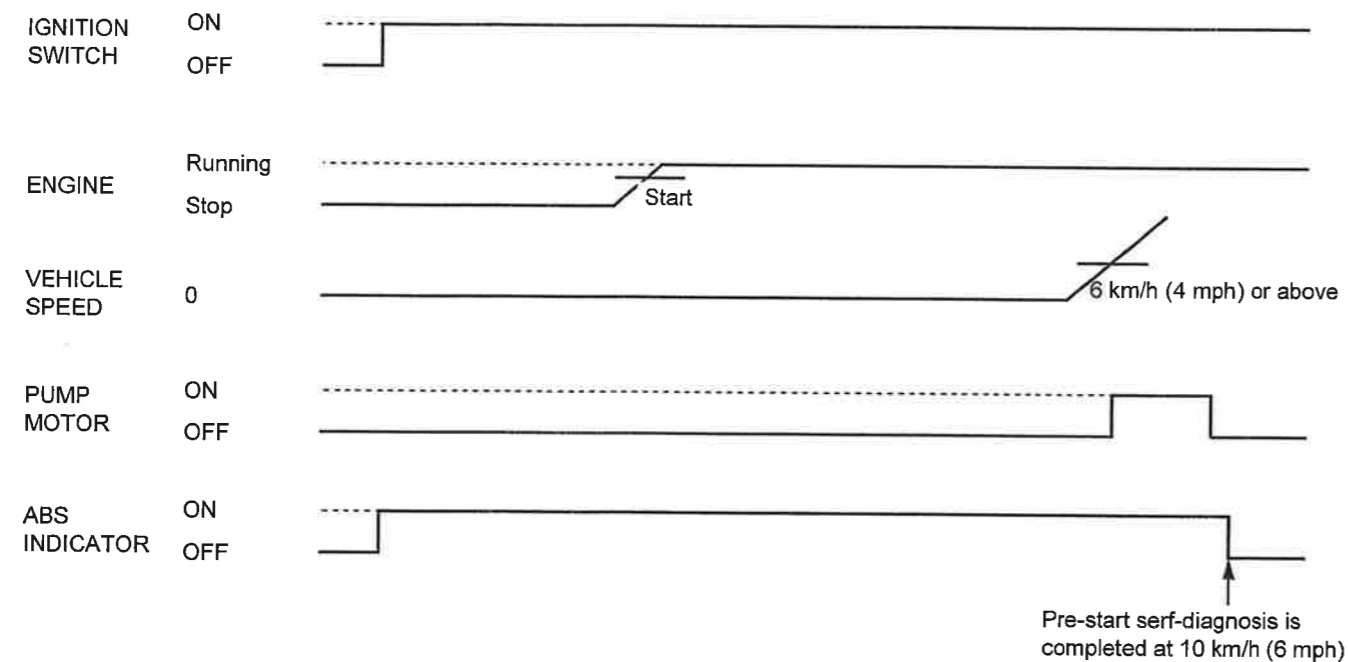
When the motorcycle is running, pulse signal generated at the front wheel speed sensor is sent to the ABS control unit. When the vehicle speed reaches approximately 6 km/h (4 mph), the ABS control unit operates the pump motor to check it. When the vehicle speed reaches 10 km/h (6 mph), the ABS control unit turns off the ABS indicator if the system is normal and the pre-start self-diagnosis is completed.

If any problem is detected, the ABS indicator blinks or comes on and stays on to notify the rider of the problem.

The ordinary self-diagnosis is also made while the motorcycle is running after the pre-start diagnosis is completed. When the ABS indicator blinks or stays on, the cause of the problem can be identified by retrieving the DTC (page 18-9).

If the ABS indicator does not come on when the ignition switch is turned ON, or the ABS indicator stays on after the pre-start self-diagnosis is completed although the ABS is normal, the ABS indicator circuit may be faulty. Follow the troubleshooting (page 18-11).

Pre-start self-diagnosis when the system is normal:



#### PRE-START SELF-DIAGNOSIS PROCEDURE (Daily check)

1. Turn the ignition switch ON with the engine stop switch "O".
2. Make sure the ABS indicator comes on.
3. Start the engine.
4. Ride the motorcycle and increase the vehicle speed to approximately 10 km/h (6 mph).
5. The ABS is normal if the ABS indicator goes off.

## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

### MCS INFORMATION

- The MCS can readout and erase the DTC.

#### How to connect the MCS

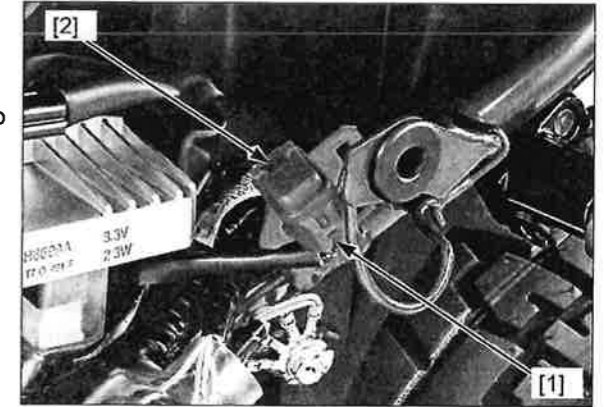
Turn the ignition switch OFF.

Remove the side cover (page 2-5).

Remove the DLC [1] from the stay [2].

Remove the dummy connector [3] from the DLC and connect the MCS to the DLC.

Turn the ignition switch ON with the engine stop switch "○".  
Check the DTC and freeze data.



### DTC READOUT

#### NOTE:

- The DTC is not erased by turning the ignition switch OFF while the DTC is being output. Note that turning the ignition switch ON again does not indicate the DTC. To show the DTC again, repeat the DTC readout procedures from the beginning.
- Be sure to record the indicated DTC.
- After diagnostic troubleshooting, erase the DTC and perform the pre-start self-diagnosis procedure to be sure that there is no problem in the ABS (page 18-5).
- Do not apply the brake during DTC readout.

Connect the MCS to the DLC (page 18-6).

Read the DTC, stored data and follow the DTC index (page 18-9).

- If the MCS is not available, perform the following.

#### Reading DTC with the ABS indicator

1. Turn the ignition switch OFF.

Remove the side cover (page 2-5).

Remove the DLC [1] from the stay [2].

Remove the dummy connector [3] from the DLC and connect the special tool to the DLC.

#### TOOL:

**SCS service connector [3] 070PZ-ZY30100**

**CONNECTION: Blue – Green**

2. Turn the ignition switch ON with the engine stop switch "○".

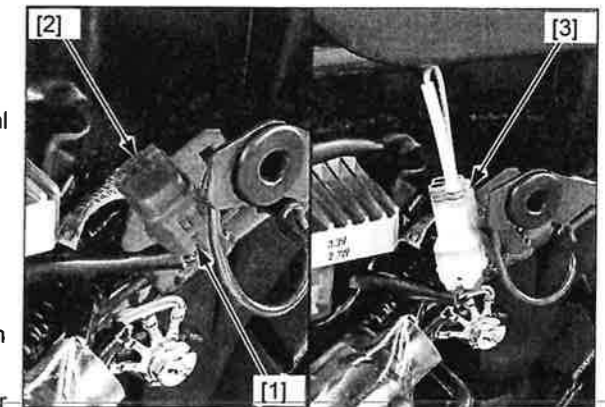
The ABS indicator should come on for 2 seconds (start signal), then goes off for 3.6 seconds and starts DTC indication.

The DTC is indicated by the number of the times of the ABS indicator blinking.

If the DTC is not stored, the ABS indicator stays on.

3. Turn the ignition switch OFF and remove the SCS service connector from the DLC.

Install the removed parts in the reverse order of removal.

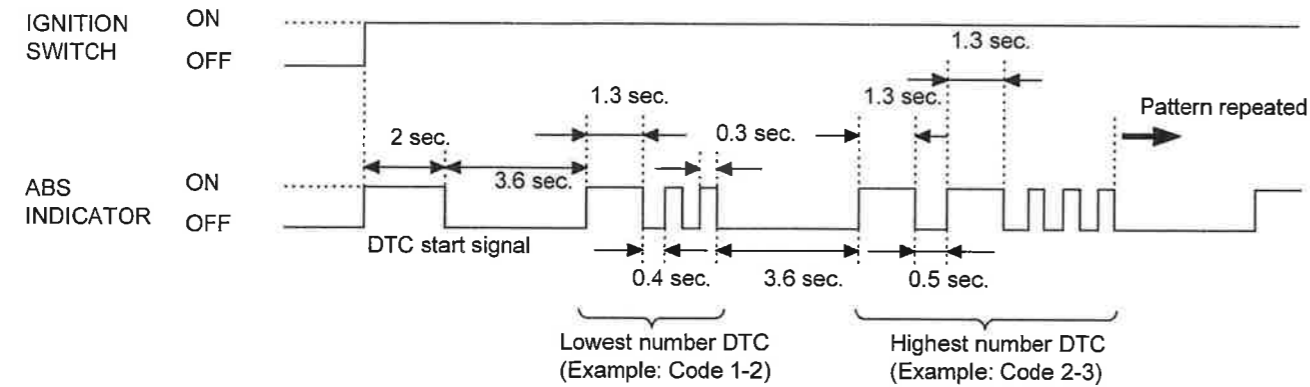


## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

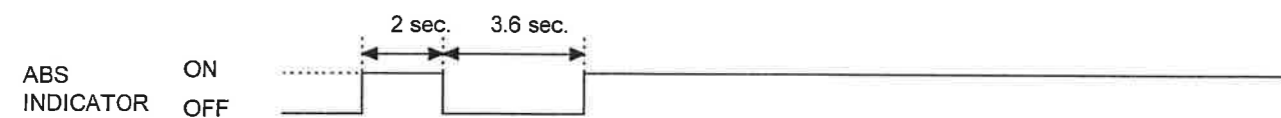
### DTC INDICATION PATTERN

#### NOTE:

- The ABS indicator indicates the DTC by blinking a specified number of times. The indicator has two types of blinking, a long blink and short blink. The long blink lasts for 1.3 seconds, the short blink lasts for 0.3 seconds. For example, when one long blink is followed by two short blinks, the DTC is 1-2 (one long blink = 1 blink, plus two short blinks = 2 blinks).
- When the ABS control unit stores some DTCs, the ABS indicator shows the DTCs in the order from the lowest number to highest number. For example, when the ABS indicator indicates code 1-2, then indicates code 2-3, two failures have occurred.



When the DTC is not stored:



### ERASING STORED DTC

#### NOTE:

- The stored DTC can not be erased by simply disconnecting the battery negative cable.

Connect the MCS to the DLC (page 18-6).

Erase the DTC with the MCS while the engine is stopped.

To erase the DTC without MCS, refer to the following procedure.

#### How to erase the DTC without MCS

- Short the DLC terminals using the SCS service connector [1] (page 18-6).
- Turn the ignition switch ON with the engine stop switch "O" while squeezing the brake lever.  
The ABS indicator should come on for 2 seconds and go off.
- Release the brake lever immediately after the ABS indicator goes off. The ABS indicator should come on.
- Squeeze the brake lever immediately after the ABS indicator comes on. The ABS indicator should go off.
- Release the brake lever immediately after the ABS indicator goes off.  
When the DTC is erased, the ABS indicator blinks 2 times and stays on.  
If the ABS indicator does not blink 2 times, the self-diagnostic memory has not been erased, so try again.
- Turn the ignition switch OFF and disconnect the SCS service connector.  
Install the removed parts in the reverse order of removal.



## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

### CIRCUIT INSPECTION

#### INSPECTION AT ABS MODULATOR CONNECTOR

Turn the ignition switch OFF.

Lift up the ABS modulator (page 18-24).

Disconnecting procedure:

Move the slide retainer [1] forward, press and hold the lock tab [2] and disconnect the ABS modulator 16P (Black) connector [3]. Pull out the connector to the right side of the vehicle.

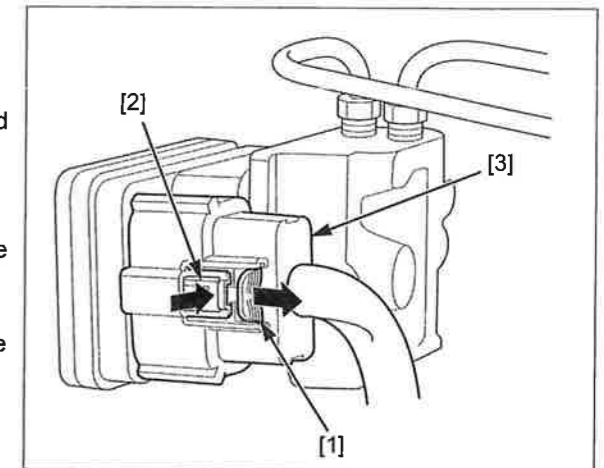
NOTE:

- Always clean around and keep any foreign material away from the connector before disconnecting it.

Connecting procedure:

Connect the ABS modulator 16P (Black) connector fully, and then move the slide retainer rearward.

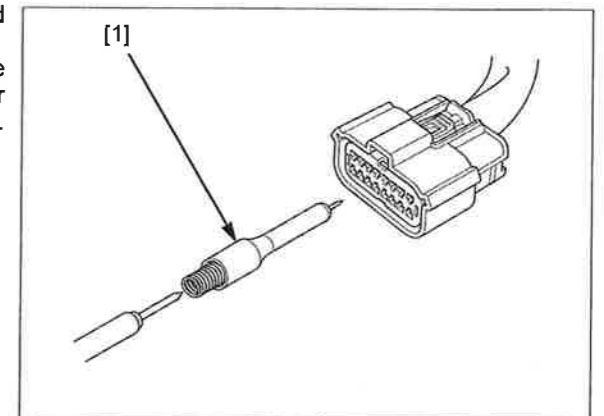
Make sure the connector is locked securely.



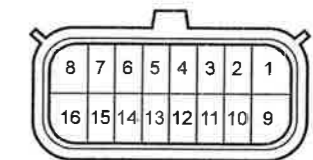
- A faulty ABS is often related to poorly connected or corroded connections. Check those connections before proceeding.
- In testing at ABS modulator 16P (Black) connector terminals, always use the Pin probe male [1]. Insert the Pin probe male into the connector terminal, then connect the digital multimeter probe to the Pin probe male.

TOOL:

Pin probe male (2 pack) [1] 07ZAJ-RDJA110



TERMINAL LAYOUT:



(Terminal side of the wire harness)



## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

### DTC INDEX

**NOTE:**

- The ABS indicator might blink in the following cases. Correct the faulty part.
  - Incorrect tire pressure.
  - Tires not recommended for the motorcycle were installed (incorrect tire size).
  - Deformation of the wheel or tire.
  - Sprockets not recommended for the vehicle are installed (Incorrect sprocket gear ratio).
- The ABS indicator might blink while riding under the following conditions. This is temporary failure. Be sure to erase the DTC (page 18-7).
  - Test-ride the motorcycle above 30 km/h (19 mph) and check the DTC (page 18-9). Ask the rider for the riding conditions in detail when the motorcycle is brought in for inspection.
  - The motorcycle has continuously run bumpy roads.
  - The front wheel leaves the ground for a long time when riding (wheelie).
  - Only either the front or rear wheel rotates.
  - The ABS operates continuously.
  - The ABS control unit has been disrupted by an extremely powerful radio wave (electromagnetic interference).

DTC	Function failure	Detection		Symptom/Fail-safe function	Refer to
		A	B		
-	ABS indicator malfunction • ABS modulator voltage input line • Indicator related wires • Combination meter • ABS modulator • SUB ABS fuse (10 A)			• ABS indicator never comes ON at all	18-11
				• ABS indicator stays ON	18-11
1-1	Front wheel speed sensor circuit malfunction • Wheel speed sensor or related wires	○	○	• Stops ABS operation	18-14
1-2	Front wheel speed sensor malfunction • Wheel speed sensor, pulser ring or related wires • Electromagnetic interference		○	• Stops ABS operation	
1-3	VS sensor circuit malfunction • VS sensor or related wires	○	○	• Stops ABS operation	18-16
1-4	VS sensor malfunction • VS sensor or related wires • Electromagnetic interference		○	• Stops ABS operation	
2-1	Front wheel pulser ring • Pulser ring or related wires		○	• Stops ABS operation	18-14
3-3	Solenoid valve malfunction (ABS modulator)	○	○	• Stops ABS operation	18-17
3-4					
4-1	Front wheel lock • Riding condition		○	• Stops ABS operation	18-14
4-2	Front wheel lock (Wheelie) • Riding condition		○		
5-1	Pump motor lock • Pump motor (ABS modulator) or related wires • MAIN ABS fuse (15 A)	○	○	• Stops ABS operation	18-17
5-2	Pump motor stuck off • Pump motor (ABS modulator) or related wires • MAIN ABS fuse (15 A)	○	○	• Stops ABS operation	
5-3	Pump motor stuck on • Pump motor (ABS modulator) or related wires • MAIN ABS fuse (15 A)	○	○	• Stops ABS operation	
5-4	Power supply relay malfunction • Power supply relay (ABS modulator) or related wires • MAIN ABS fuse (15 A)	○	○	• Stops ABS operation	
6-1	Power circuit under voltage • Input voltage (too low) • MAIN ABS fuse (15 A) • SUB ABS fuse (10 A)	○	○	• Stops ABS operation	18-18
6-2	Power circuit over voltage • Input voltage (too high)	○	○	• Stops ABS operation	

**ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)**

DTC	Function failure	Detection		Symptom/Fail-safe function	Refer to
		A	B		
7-1	Tire malfunction • Tire size • Incorrect sprocket gear ratio (Sprockets not recommended for the vehicle are installed.)		○	• Stops ABS operation	18-20
8-1	ABS control unit • ABS control unit malfunction (ABS modulator)	○	○	• Stops ABS operation	18-20
8-3	IMU acceleration malfunction • IMU or related wires • SUB ABS fuse (10 A)	○	○	• Stops ABS operation	18-20
8-4	IMU angle rate malfunction • IMU or related wires • SUB ABS fuse (10 A)	○	○	• Stops ABS operation	
8-5	IMU circuit malfunction • IMU or related wires • SUB ABS fuse (10 A)	○	○	• Stops ABS operation	

(A) Pre-start self-diagnosis (page 18-5)

(B) Ordinary self-diagnosis: diagnoses while the motorcycle is running (after pre-start self-diagnosis)

## ABS INDICATOR CIRCUIT TROUBLESHOOTING

### ABS INDICATOR DOES NOT COME ON (when the ignition switch turned ON)

**NOTE:**

- Before starting this inspection, check the initial function of the combination meter (page 20-7).

**1. Indicator Operation Inspection**

Turn the ignition switch OFF.

Disconnect the ABS modulator 16P (Black) connector (page 18-8).

Turn the ignition switch ON with the engine stop switch "○".

Check the ABS indicator.

**Does the ABS indicator come on?**

**YES** – Faulty ABS modulator

**NO** – GO TO STEP 2.

**2. Indicator Signal Line Short Circuit Inspection**

Turn the ignition switch OFF.

Check for continuity between the wire harness side ABS modulator 16P (Black) connector [1] terminal and ground.

**TOOL:**

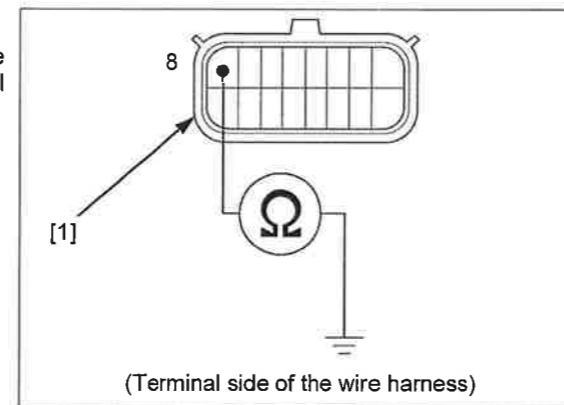
Pin probe male (2 pack) 07ZAJ-RDJA110

**CONNECTION:** 8 – Ground

**Is there continuity?**

**YES** – Short circuit in the White/black wire

**NO** – Faulty combination meter



### ABS INDICATOR STAYS ON (Indicator does not go off when the motorcycle is running, but DTC is not stored)

**1. Service Check Line Short Circuit Inspection**

Turn the ignition switch OFF.

Disconnect the ABS modulator 16P (Black) connector (page 18-8).

Check for continuity between the wire harness side ABS modulator 16P (Black) connector [1] terminal and ground.

**TOOL:**

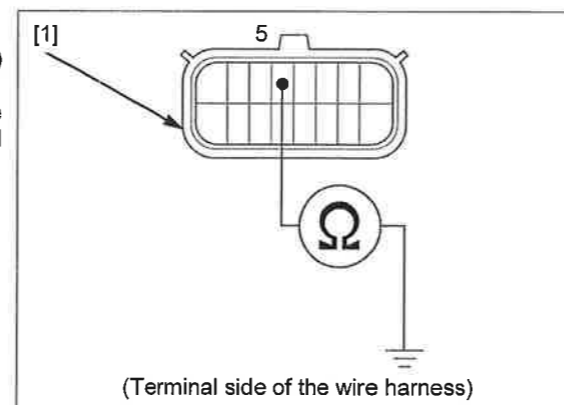
Pin probe male (2 pack) 07ZAJ-RDJA110

**CONNECTION:** 5 – Ground

**Is there continuity?**

**YES** – Short circuit in the Blue wire

**NO** – GO TO STEP 2.



## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

### 2. Indicator Signal Line Open Circuit Inspection

Short the wire harness side ABS modulator 16P (Black) connector [1] terminal to the ground with a jumper wire [2].

**TOOL:**

Pin probe male (2 pack) 07ZAJ-RDJA110

**CONNECTION: 8 – Ground**

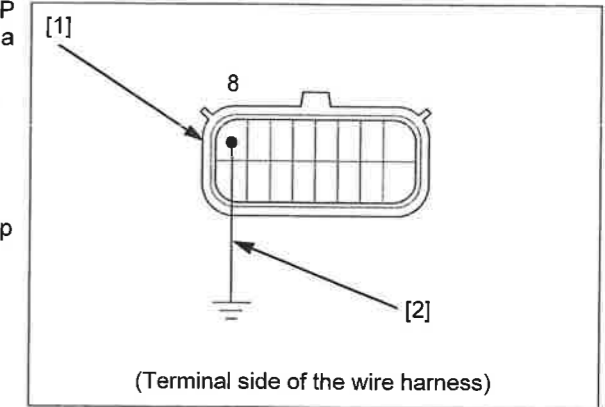
Turn the ignition switch ON with the engine stop switch "○".

Check the ABS indicator.

**Does it go off?**

**YES** – GO TO STEP 3.

**NO** – • Open circuit in the White/black wire  
• Faulty combination meter (if the White/black wire is OK)



### 3. Modulator Ground Line Open Circuit Inspection

Turn the ignition switch OFF.

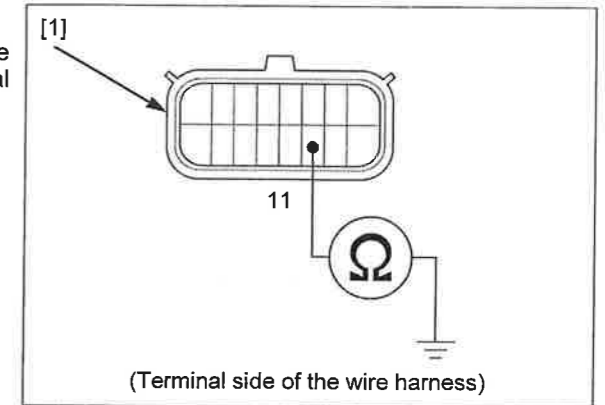
Check for continuity between the wire harness side ABS modulator 16P (Black) connector [1] terminal and ground.

**CONNECTION: 11 – Ground**

**Is there continuity?**

**YES** – GO TO STEP 4.

**NO** – Open circuit in the Green wire



### 4. Fuse Inspection

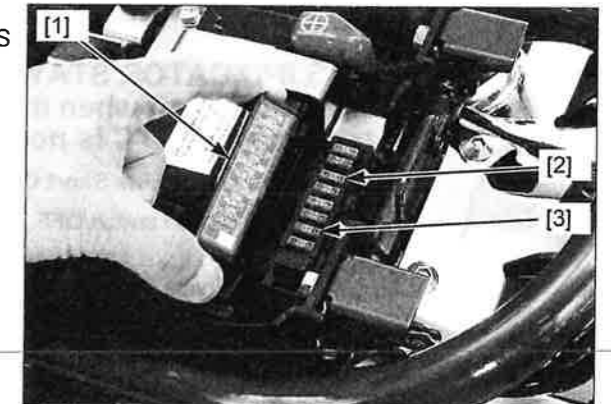
Open the fuse box cover [1].

Check the MAIN ABS fuse (15 A) [2] and SUB ABS fuse (10 A) [3] in the fuse box.

**Is the fuse(s) blown?**

**YES** – GO TO STEP 5.

**NO** – GO TO STEP 6.



## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

### 5. Power Input Line Short Circuit Inspection

With the MAIN ABS fuse (15 A) and SUB ABS fuse (10 A) removed, check for continuity between the wire harness side ABS modulator 16P (Black) connector [1] and ground.

**TOOL:**

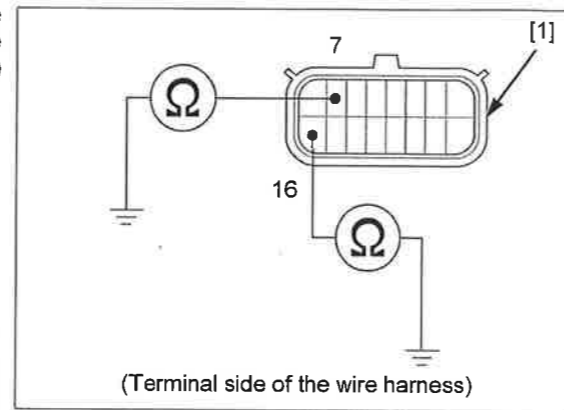
Pin probe male (2 pack)      07ZAJ-RDJA110

**CONNECTION:** 7 – Ground  
16 – Ground

*Is there continuity?*

**YES** – Short circuit in Red/blue or Red/black wire

**NO** – Intermittent failure. Replace the MAIN ABS fuse (15 A) and/or SUB ABS fuse (10 A) with a new one, and recheck.



### 6. Power Input Line Open Circuit Inspection

Install the MAIN ABS fuse (15 A) and SUB ABS fuse (10 A).

Turn the ignition switch ON with the engine stop switch "C".

Measure the voltage between the wire harness side ABS modulator 16P (Black) connector [1] terminal and ground.

**TOOL:**

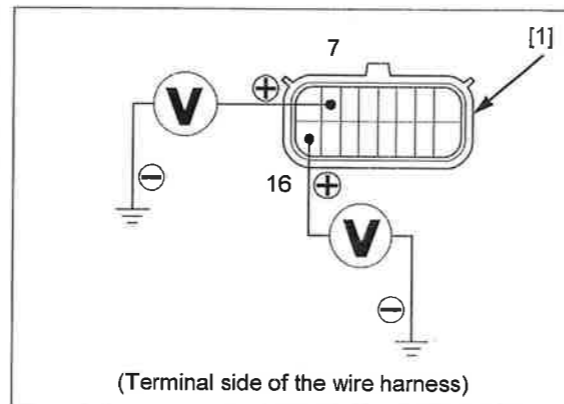
Pin probe male (2 pack)      07ZAJ-RDJA110

**CONNECTION:** 7 (+) – Ground (-)  
16 (+) – Ground (-)

*Is there battery voltage?*

**YES** – Faulty ABS modulator

**NO** – Open circuit in Red/blue or Red/black wire



## ABS TROUBLESHOOTING

NOTE:

- Perform inspection with the ignition switch OFF, unless otherwise specified.
- All connector diagrams in the troubleshooting are viewed from the terminal side.
- Use a fully charged battery. Do not diagnose with a charger connected to the battery.
- When the ABS modulator assembly is detected to be faulty, recheck the wire harness and connector connections closely before replacing it.
- After diagnostic troubleshooting, erase the DTC (page 18-7).  
Test-ride the motorcycle to check that the ABS indicator operates normally during pre-start self-diagnosis (page 18-5).

### DTC 1-1, 1-2, 2-1, 4-1 or 4-2 (Front Wheel Speed Sensor Circuit/Front Wheel Speed Sensor/Front Pulser Ring/Front Wheel Lock)

NOTE:

- The ABS indicator might blink under unusual riding conditions (page 18-9). This is temporary failure. Erase the DTC (page 18-7).  
Test-ride the motorcycle above 30 km/h (19 mph).  
Recheck the DTC (page 18-6).
- If DTC 4-1 is indicated, check the front brake for drag.

#### 1. Speed Sensor Air Gap Inspection

Measure the air gap between the front wheel speed sensor and pulser ring (page 18-22).

*Is the air gap correct?*

**YES** – GO TO STEP 2.

**NO** – Check each part for deformation and looseness and correct accordingly.  
Recheck the air gap.

#### 2. Speed Sensor Condition Inspection

Inspect the area around the front wheel speed sensor.

Check that there is iron or other magnetic deposits between the pulser ring [1] and wheel speed sensor [2], and the pulser ring slots for obstructions.

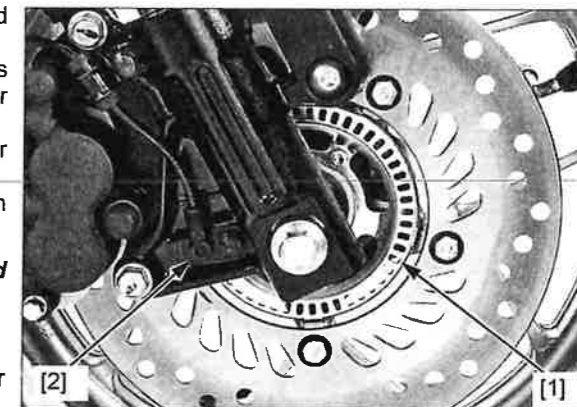
Check the installation condition of the pulser ring or wheel speed sensor for looseness.

Check the pulser ring and sensor tip for deformation or damage.

*Are the sensor and pulser ring in good condition?*

**YES** – GO TO STEP 3.

**NO** – Remove any deposits. Install properly or replace faulty part.



## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

### 3. Front Wheel Speed Sensor Line Short Circuit Inspection (at sensor side)

Turn the ignition switch OFF.

Disconnect the front wheel speed sensor 2P (Black) connector (page 18-23).

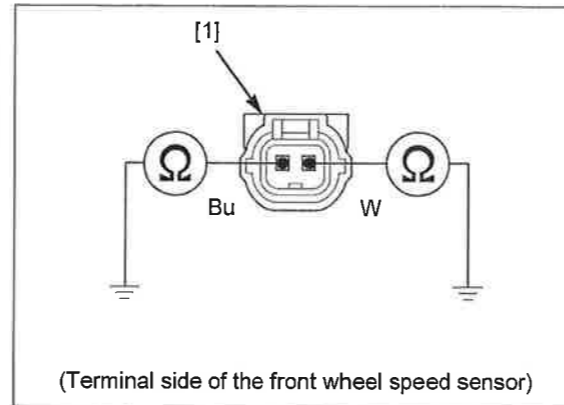
Check for continuity between each terminal of the sensor side front wheel speed sensor 2P (Black) connector [1] and ground.

**CONNECTION: Blue – Ground**  
**White – Ground**

*Is there continuity?*

**YES** – Faulty front wheel speed sensor

**NO** – GO TO STEP 4.



(Terminal side of the front wheel speed sensor)

### 4. Front Wheel Speed Sensor Line Short Circuit Inspection

Disconnect the ABS modulator 16P (Black) connector (page 18-8).

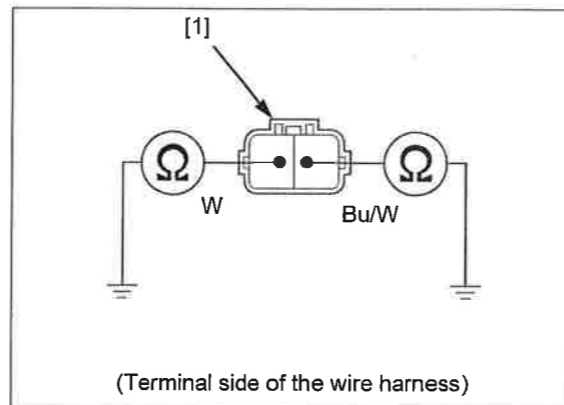
Check for continuity between each terminal of the wire harness side front wheel speed sensor 2P (Black) connector [1] and ground.

**CONNECTION: White – Ground**  
**Blue/white – Ground**

*Is there continuity?*

**YES** – • Short circuit in the White wire  
• Short circuit in the Blue/white wire

**NO** – GO TO STEP 5.



(Terminal side of the wire harness)

### 5. Speed Sensor Line Open Circuit Inspection

Short the wire harness side ABS modulator 16P (Black) connector [1] terminals with a jumper wire [2].

**CONNECTION: 2 – 10**

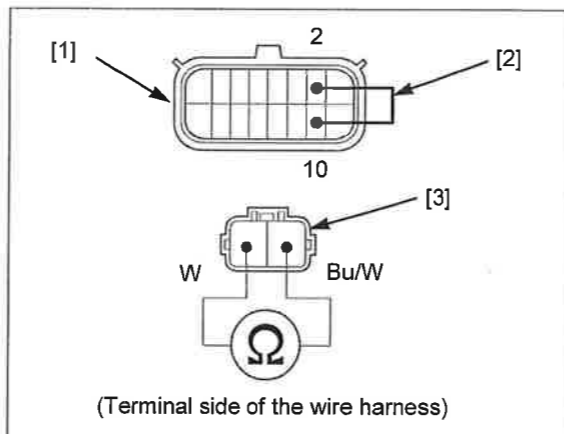
Check for continuity between the wire harness side front wheel speed sensor 2P (Black) connector [3] terminals.

**CONNECTION: White – Blue/white**

*Is there continuity?*

**YES** – GO TO STEP 6.

**NO** – Open circuit in the White or Blue/white wire



(Terminal side of the wire harness)

### 6. Failure Reproduction with a New Speed Sensor

Replace the front wheel speed sensor with a new one (page 18-23)

Connect the ABS modulator 16P (Black) and front wheel speed sensor 2P (Black) connectors.

Erase the DTC (page 18-7).

Test-ride the motorcycle above 30 km/h (19 mph).

Recheck the DTC (page 18-6).

*Is the DTC 1-1, 1-2, 2-1, 4-1 or 4-2 indicated?*

**YES** – Faulty ABS modulator

**NO** – Faulty original wheel speed sensor

## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

### DTC 1-3 or 1-4 (VS Sensor Circuit/VS Sensor)

#### NOTE:

- The ABS indicator might blink under unusual riding conditions (page 18-9). This is temporary failure. Erase the DTC (page 18-7) and test-ride the motorcycle above 30 km/h (19 mph). Recheck the DTC (page 18-6).

#### 1. VS Sensor Line Inspection 1

Turn the ignition switch OFF.  
Disconnect the following:

- ABS modulator 16P (Black) connector (page 18-8)
- VS sensor 3P and wire connectors (page 20-16)

Short the wire harness side ABS modulator 16P (Black) connector [1] terminals with a jumper wire [2].

**CONNECTION: 4 – 12**

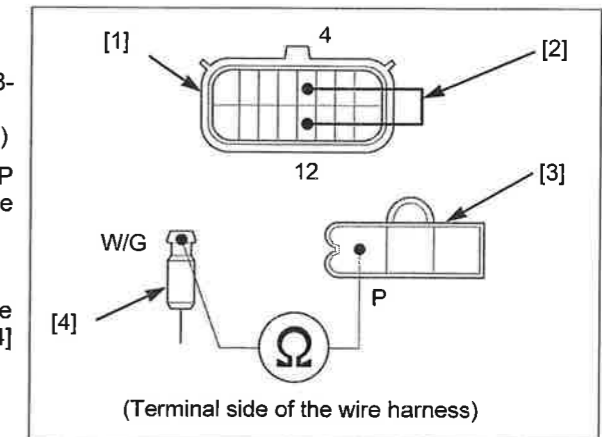
Check for continuity between the wire harness side VS sensor 3P connector [3] and wire connector [4] terminals.

**CONNECTION: Pink – White/green**

*Is there continuity?*

**YES** – GO TO STEP 2.

**NO** – Open circuit in the Pink or White/green wire



#### 2. VS Sensor Line Inspection 2

Disconnect the jumper wire.

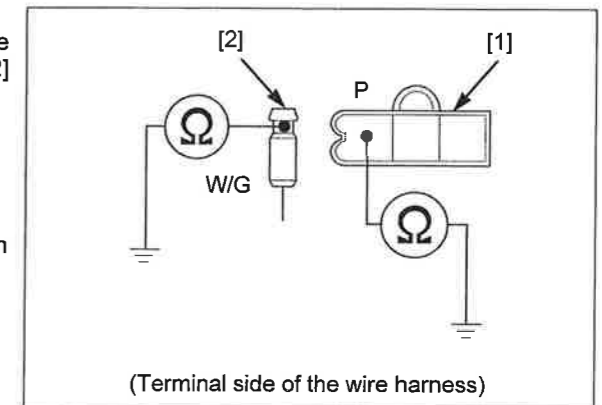
Check for continuity between the wire harness side VS sensor 3P connector [1] and wire connector [2] terminals and ground.

**CONNECTION: Pink – Ground  
White/green – Ground**

*Is there continuity?*

**YES** – Short circuit in the Pink or White/green wire

**NO** – GO TO STEP 3.



#### 3. VS Sensor Ground Line Inspection

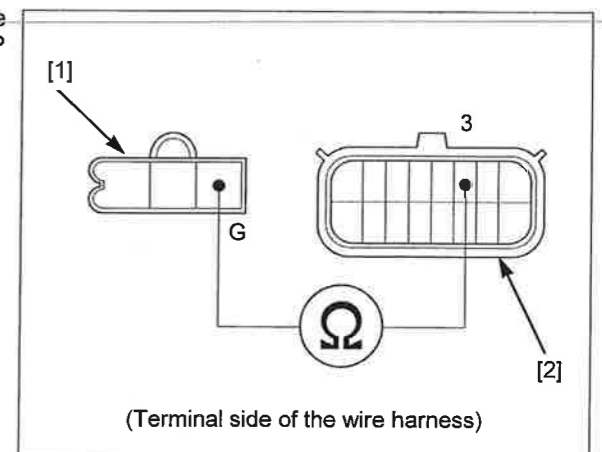
Check for continuity between the wire harness side VS sensor 3P connector [1] and ABS modulator 16P (Black) connector [2] terminals.

**CONNECTION: Green – 3**

*Is there continuity?*

**YES** – GO TO STEP 4.

**NO** – Open circuit in the Green wire





## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

### 4. Failure Reproduction with a New VS Sensor

Replace the VS sensor with a new one (page 20-17).

Connect the ABS modulator 16P (Black) and VS sensor 3P and wire connectors.

Erase the DTC (page 18-7).

Test-ride the motorcycle above 30 km/h (19 mph).

Recheck the DTC (page 18-6).

**Is the DTC 1-3 or 1-4 indicated?**

**YES** – Faulty ABS modulator

**NO** – Faulty original VS sensor

### DTC 3-3 or 3-4 (Solenoid Valve Malfunction)

#### 1. Failure Reproduction

Erase the DTC (page 18-7).

Test-ride the motorcycle above 30 km/h (19 mph).

Recheck the DTC (page 18-6).

**Is the DTC 3-3 or 3-4 indicated?**

**YES** – Faulty ABS modulator

**NO** – Solenoid valve is normal (intermittent failure).

### DTC 5-1, 5-2, 5-3 or 5-4 (Pump Motor Lock/Power Supply Relay)

#### 1. Fuse Inspection

Turn the ignition switch OFF.

Remove the seat (page 2-5).

Open the fuse box cover [1].

Check the MAIN ABS fuse (15 A) [2] in the fuse box.

**Is the fuse blown?**

**YES** – GO TO STEP 2.

**NO** – GO TO STEP 3.



#### 2. Motor Power Input Line Short Circuit Inspection

Disconnect the ABS modulator 16P (Black) connector (page 18-8).

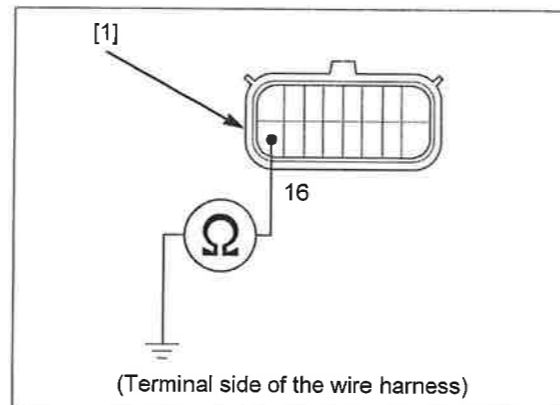
With the MAIN ABS fuse (15 A) removed, check for continuity between the wire harness side ABS modulator 16P (Black) connector [1] terminal and ground.

**CONNECTION: 16 – Ground**

**Is there continuity?**

**YES** – Short circuit in the Red/black wire between the fuse box and ABS modulator 16P (Black) connector

**NO** – Intermittent failure. Replace the MAIN ABS fuse (15 A) with a new one, and recheck.



## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

### 3. Motor Power Input Line Open Circuit Inspection

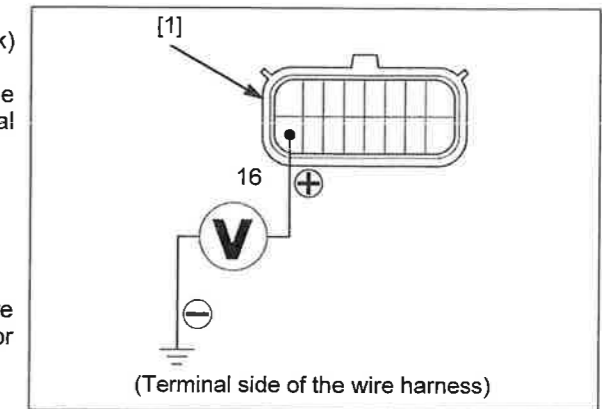
Install the ABS MAIN fuse (15 A).  
Disconnect the ABS modulator 16P (Black) connector (page 18-8).  
Measure the voltage between the wire harness side ABS modulator 16P (Black) connector [1] terminal and ground.

**CONNECTION: 16 (+) – Ground (-)**

**Is there battery voltage?**

**YES** – GO TO STEP 4.

**NO** – Open circuit in the Red/black or Red wire between the battery and ABS modulator 16P (Black) connector



### 4. Failure Reproduction

Turn the ignition switch OFF.  
Connect the ABS modulator 16P (Black) connector.  
Erase the DTC (page 18-7).  
Test-ride the motorcycle above 30 km/h (19 mph).  
Recheck the DTC (page 18-6).

**Is the DTC 5-1, 5-2, 5-3 or 5-4 indicated?**

**YES** – Faulty ABS modulator

**NO** – Pump motor is normal (intermittent failure).

## DTC 6-1 or 6-2 (Power Circuit Under Voltage/Over Voltage)

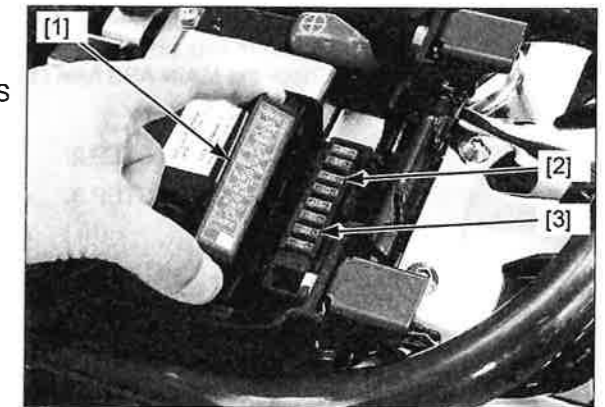
### 1. Fuse Inspection

Turn the ignition switch OFF.  
Remove the seat (page 2-5).  
Open the fuse box cover [1].  
Check the MAIN ABS fuse (15 A) [2] and SUB ABS fuse (10 A) [3] in the fuse box.

**Is the fuse(s) blown?**

**YES** – GO TO STEP 2.

**NO** – GO TO STEP 3.



## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

### 2. Power Input Line Short Circuit Inspection

Disconnect the ABS modulator 16P (Black) connector (page 18-8).  
With the MAIN ABS fuse (15 A) and SUB ABS fuse (10 A) removed, check for continuity between the wire harness side ABS modulator 16P (Black) connector [1] and ground.

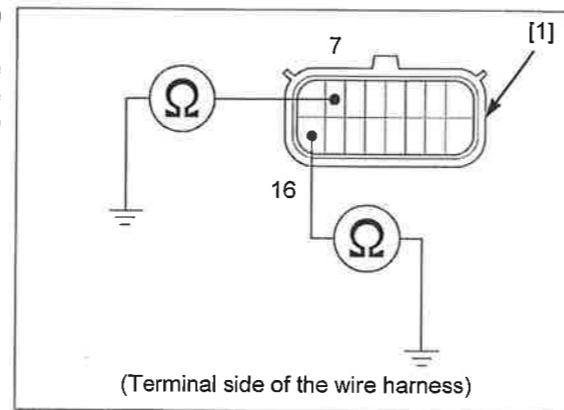
**TOOL:**

Pin probe male (2 pack)      07ZAJ-RDJA110

**CONNECTION:** 7 – Ground  
16 – Ground

**Is there continuity?**

- YES** – Short circuit in Red/blue or Red/black wire  
**NO** – Intermittent failure. Replace the MAIN ABS fuse (15 A) and/or SUB ABS fuse (10 A) with a new one, and recheck.



### 3. Power Input Line Open Circuit Inspection

Install the MAIN ABS fuse (15 A) and SUB ABS fuse (10 A).  
Disconnect the ABS modulator 16P (Black) connector (page 18-8).  
Turn the ignition switch ON with the engine stop switch "O".  
Measure the voltage between the wire harness side ABS modulator 16P (Black) connector [1] terminal and ground.

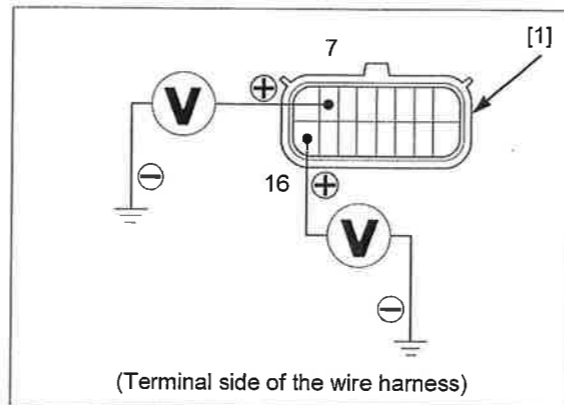
**TOOL:**

Pin probe male (2 pack)      07ZAJ-RDJA110

**CONNECTION:** 7 (+) – Ground (-)  
16 (+) – Ground (-)

**Is there battery voltage?**

- YES** – GO TO STEP 4.  
**NO** – Open circuit in Red/blue or Red/black wire



### 4. Failure Reproduction

Turn the ignition switch OFF.  
Connect the ABS modulator 16P (Black) connector.  
Erase the DTC (page 18-7).  
Test-ride the motorcycle above 30 km/h (19 mph).  
Recheck the DTC (page 18-6).

**Is the DTC 6-1 or 6-2 indicated?**

- YES** – Faulty ABS modulator  
**NO** – Power circuit is normal (intermittent failure)

## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

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### DTC 7-1 (Tire Size)

#### NOTE:

- Check the following and correct the faulty part.
  - Incorrect tire pressure.
  - Tires not recommended for the motorcycle were installed (incorrect tire size).
  - Deformation of the wheel or tire.
  - Sprockets not recommended for the vehicle were installed. (incorrect sprocket gear ratio)

#### 1. Failure Reproduction

If the above items are normal, recheck the DTC:  
Erase the DTC (page 18-7).  
Test-ride the motorcycle above 30 km/h (19 mph).  
Recheck the DTC (page 18-6).

#### *Is the DTC 7-1 indicated?*

**YES** – Faulty ABS modulator

**NO** – Tire size is normal (intermittent failure)

### DTC 8-1 (ABS Control Unit)

#### 1. Failure Reproduction

Erase the DTC (page 18-7).  
Test-ride the motorcycle above 30 km/h (19 mph).  
Recheck the DTC (page 18-6).

#### *Is the DTC 8-1 indicated?*

**YES** – Faulty ABS modulator

**NO** – ABS control unit is normal (intermittent failure)

### DTC 8-3, 8-4 or 8-5 (IMU Acceleration Malfunction/IMU Angle Rate Malfunction/IMU Circuit Malfunction)

#### NOTE:

- The ABS indicator might blink under unusual riding conditions (page 18-9). This is temporary failure.  
Erase the DTC (page 18-7) and test-ride the motorcycle above 30 km/h (19 mph).  
Recheck the DTC (page 18-5).

#### 1. IMU Installation Condition Inspection

Inspect the installation condition of the IMU (page 18-24).

#### *Is the IMU installation condition normal?*

**YES** – GO TO STEP 2.

**NO** – Install the IMU properly or replace the faulty part.

## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

### 2. IMU Power Input Line Short Circuit Inspection

Turn the ignition switch OFF.

Disconnect the following:

- ABS modulator 16P (Black) connector (page 18-8)
- IMU 4P (Black) connector (page 18-24)

Check for continuity between the wire harness side IMU 4P (Black) connector [1] and ground.

**TOOL:**

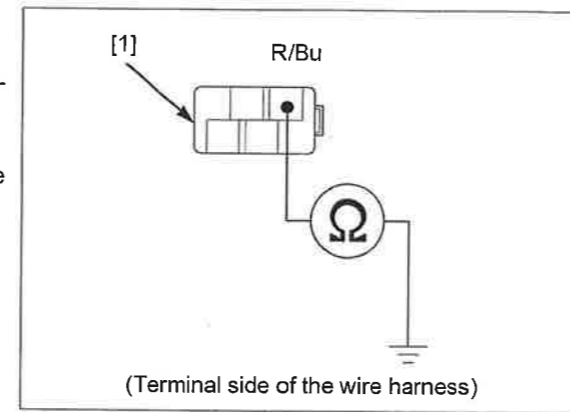
Pin probe male (2 pack) 07ZAJ-RDJA110

**CONNECTION:** Red/blue – Ground

*Is there continuity?*

**YES** – Short circuit in Red/blue wire

**NO** – GO TO STEP 3.



### 3. IMU Power and Ground Line Open Circuit Inspection

Turn the ignition switch ON with the engine stop switch "O".

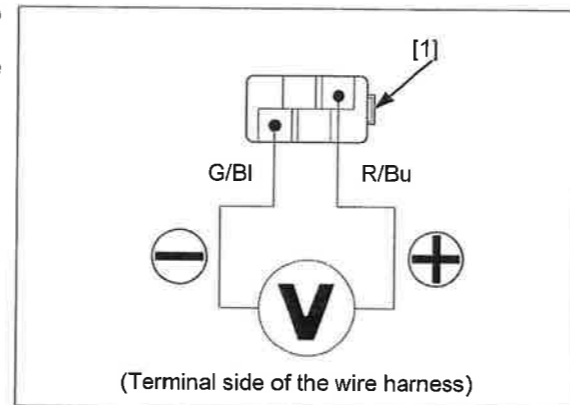
Check the voltage between the terminals of the wire harness side IMU 4P (Black) connector [1].

**CONNECTION:** Red/blue (+) – Green/black (-)

*Is there battery voltage?*

**YES** – GO TO STEP 4.

**NO** – Open circuit in Red/blue or Green/black wire



### 4. IMU Signal Line Open Circuit Inspection

Turn the ignition switch OFF.

Short the wire harness side ABS modulator 16P (Black) connector [1] terminals with a jumper wire [2].

**CONNECTION:** 1 – 9

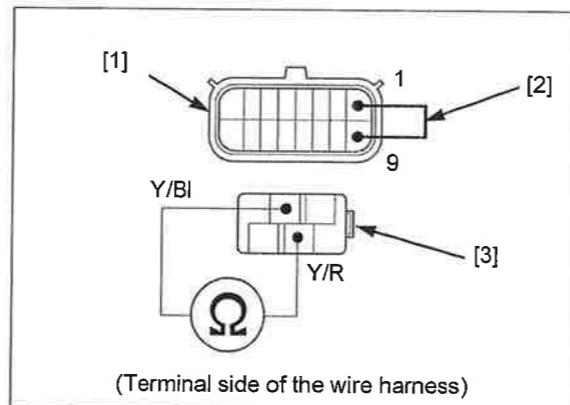
Check for continuity between the wire harness side IMU 4P (Black) connector [3] terminals.

**CONNECTION:** Yellow/red – Yellow/black

*Is there continuity?*

**YES** – GO TO STEP 5.

**NO** – Open circuit in the Yellow/red or Yellow/black wire



## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

### 5. IMU Signal Line Short Circuit Inspection

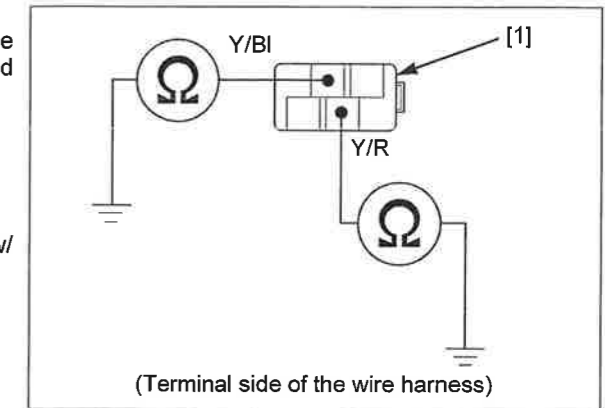
Disconnect the jumper wire.  
Check for continuity between the wire harness side terminals of the IMU 4P (Black) connector [1] and ground.

**CONNECTION: Yellow/red – Ground  
Yellow/black – Ground**

*Is there continuity?*

**YES** – Short circuit in the Yellow/red or Yellow/black wire

**NO** – GO TO STEP 6.



### 6. Failure Reproduction with a New IMU

Replace the IMU with a new one (page 18-24).  
Connect the ABS modulator 16P (Black) and IMU 4P (Black) connectors.  
Erase the DTC (page 18-7).  
Test-ride the motorcycle above 30 km/h (19 mph).  
Recheck the DTC (page 18-6).

*Is the DTC 8-3, 8-4 or 8-5 indicated?*

**YES** – Faulty ABS modulator

**NO** – Faulty original IMU

## FRONT WHEEL SPEED SENSOR

### AIR GAP INSPECTION

Support the motorcycle securely using a hoist or equivalent and raise the wheel off the ground.

Measure the clearance (air gap) between the fork bracket and pulser ring at several points by turning the wheel slowly.

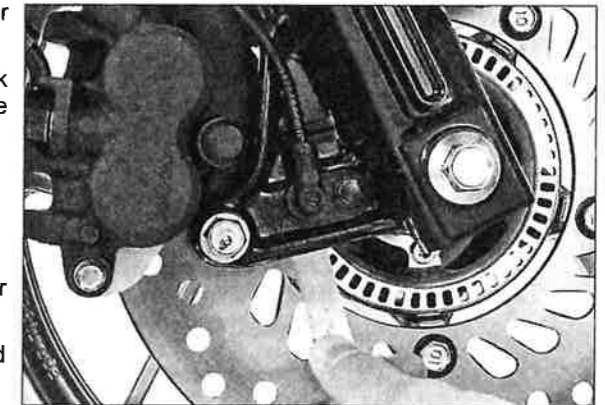
It must be within specification.

**STANDARD: 0.1 – 1.4 mm (0.004 – 0.055 in)**

The clearance (air gap) cannot be adjusted.  
If it is not within specification, check each part for deformation, looseness or damage.

Check the wheel speed sensor for damage, and replace if necessary.

Check the pulser ring for deformation or damage, and replace if necessary.



## ANTI-LOCK BRAKE SYSTEM (ABS; MONKEY125A)

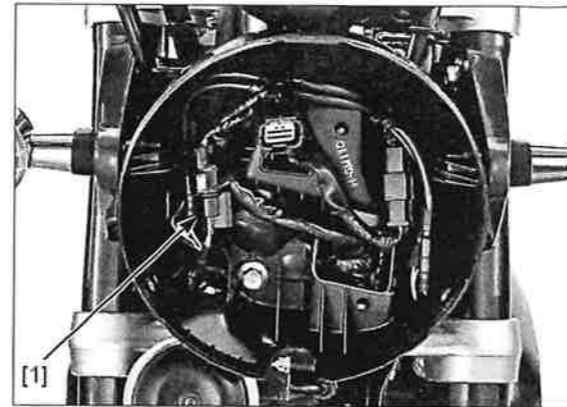
### REMOVAL/INSTALLATION

#### NOTE:

- For pulser ring removal/installation (page 15-10).

Remove the headlight (page 20-3).

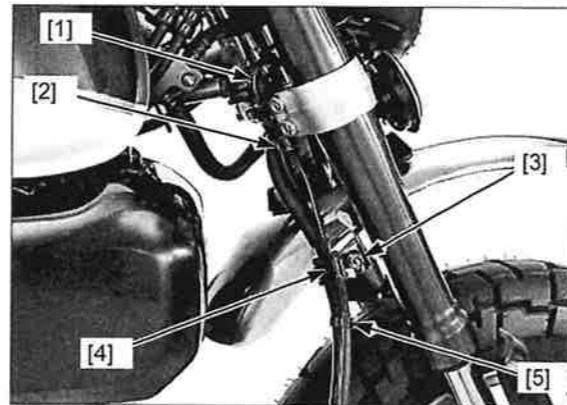
Disconnect the front wheel speed sensor 2P (Black) connector [1].



Release the sensor wire [1] from the clamp [2].

Remove the nut [3] and wire clamp [4].

Release the sensor wire from the wire clip [5].



Release the sensor wire [1] from the wire clip [2].

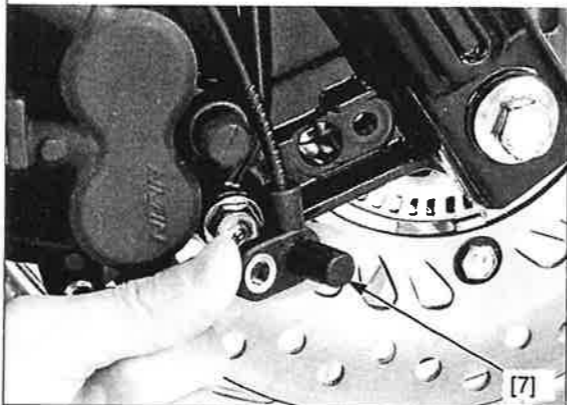
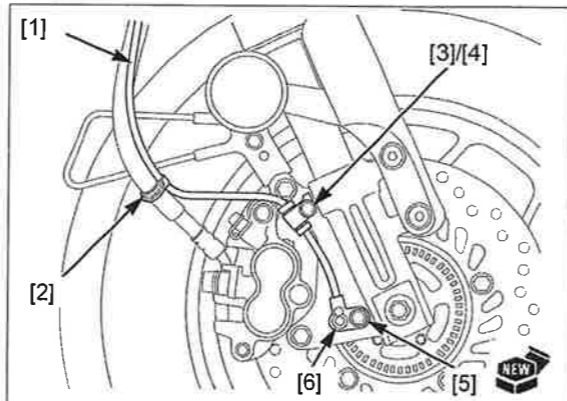
Remove the wire clamp bolt [3], wire clamp [4], front wheel speed sensor mounting bolt [5] and front wheel speed sensor [6] from the right fork leg.

Wipe the sensor tip [7] and mounting area to remove any foreign material.

Installation is in the reverse order of removal.

#### NOTE:

- Replace the front wheel speed sensor mounting bolt with a new one.
- After installation, check the air gap (page 18-22).



## IMU

### REMOVAL/INSTALLATION

Remove the following:

- Battery (page 19-5)
- Fuel tank (page 7-8)

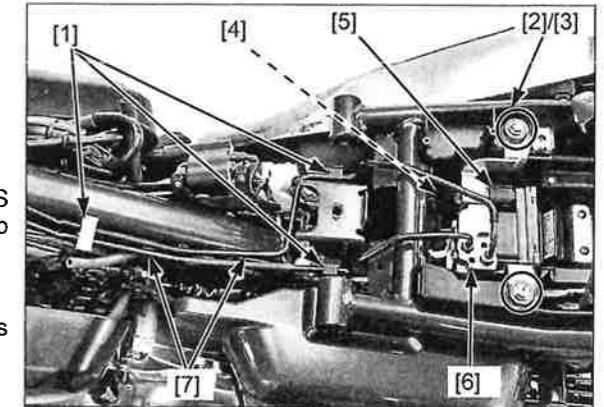
Release the brake pipe clamps [1].

Remove the bolts [2] and collars [3].

Release the wire clip [4] and disconnect the ABS modulator 16P (Black) connector [5], and then pull up the ABS modulator [6].

NOTE:

- Be careful not to bend or damage the brake pipes [7].



Remove the side cover (page 2-5).

Remove the bolts [1].

Disconnect the IMU 4P (Black) connector [2] and remove the IMU stay [3].

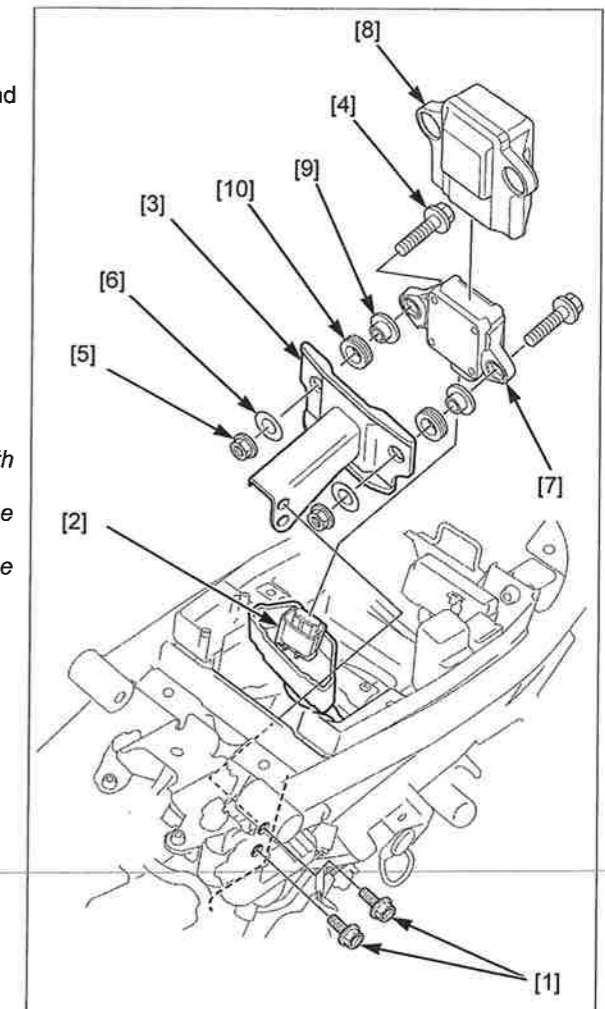
Remove the following from the IMU stay:

- Bolts [4]
- Nuts [5]
- Washers [6]
- IMU [7]
- IMU protector [8]
- Collar [9]
- Rubber [10]

### NOTICE

- Handle the IMU with care. If dropped, replace it with a new one.
- Do not use an impact wrench when installing the IMU.
- Do not apply any strong impact when installing the IMU.

Installation is in the reverse order of removal.





## ABS MODULATOR

### REMOVAL/INSTALLATION

Drain the front brake line hydraulic system (page 17-5).

Remove the following:

- Battery (page 19-5)
- Fuel tank (page 7-8)

Release the brake pipe clamps [1].

*When loosening the joint nuts, cover the ends of the brake pipes to prevent contamination. Be careful not to bend or damage the brake pipes.*

Loosen the brake pipe joint nuts [2] and disconnect the pipes [3] from the ABS modulator [4].

Remove the bolts [5] and collars [6].

Release the wire clip [7] and disconnect the ABS modulator 16P (Black) connector [8].

Remove the bolts [9] and bracket [10] from the modulator.

Installation is in the reverse order of removal.

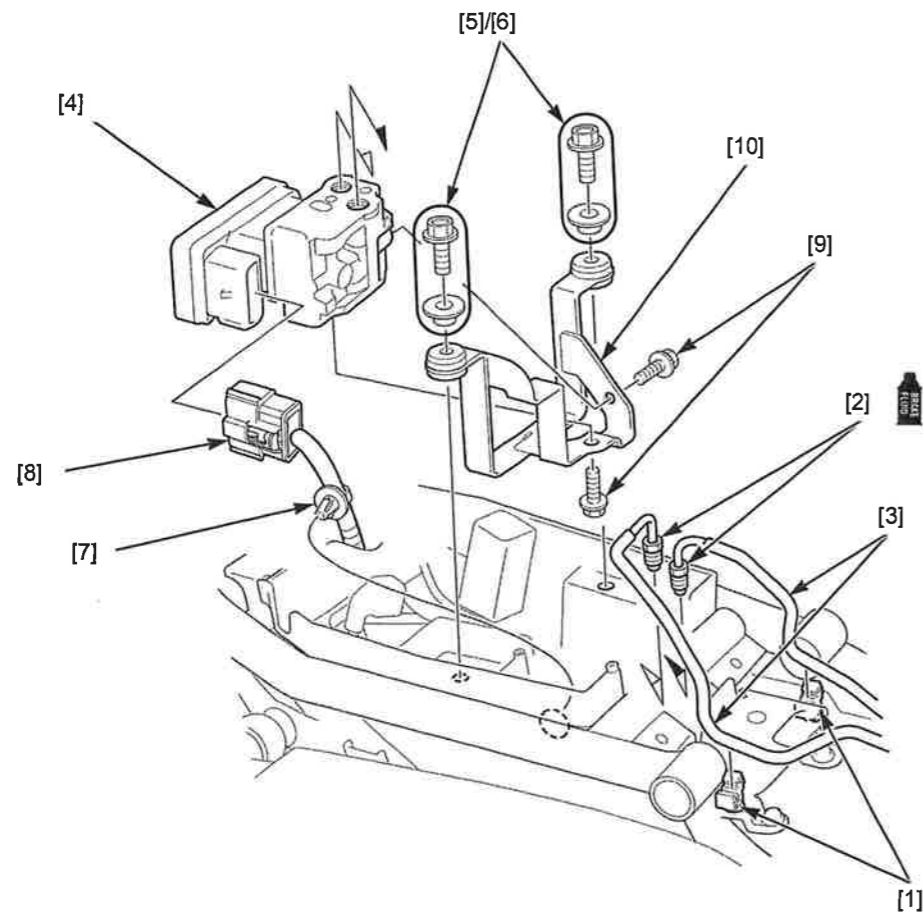
### TORQUE:

**Brake pipe joint nut:**

**14 N·m (1.4 kgf·m, 10 lbf·ft)**

- Apply brake fluid to the brake pipe joint nut threads.

Fill and bleed the front brake line hydraulic system (page 17-6).



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**MEMO**

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# 19. BATTERY/CHARGING SYSTEM

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SERVICE INFORMATION.....	19-2	BATTERY.....	19-5
TROUBLESHOOTING .....	19-3	CHARGING SYSTEM INSPECTION .....	19-6
SYSTEM LOCATION .....	19-4	ALTERNATOR CHARGING COIL .....	19-7
SYSTEM DIAGRAM .....	19-4	REGULATOR/RECTIFIER .....	19-7

## BATTERY/CHARGING SYSTEM

### 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 position 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 maintenance free (MF) battery must be replaced when it reaches the end of its service life.
- 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 turn signal and brake lights 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.
- When checking the charging system, always follow the steps in the troubleshooting.

#### 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.

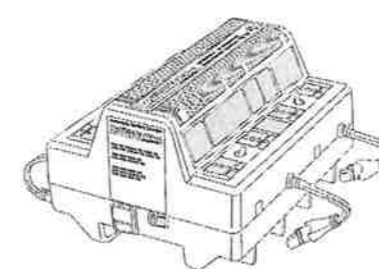
**Recommended battery tester: Honda MDX-604P Battery Tester (U.S.A. only).**

#### TOOLS

Motorcycle Battery Tester  
Honda MDX-604P (U.S.A. only)



Optimate PRO-4 Battery Charger  
TMNTS53 (U.S.A. only)



**TROUBLESHOOTING**

**BATTERY IS DAMAGED OR WEAK**

**1. BATTERY TEST**

Remove the battery (page 19-5).

Check the battery condition using a recommended battery tester.

**Honda MDX-604P Battery Tester (U.S.A. only).**

*Is the battery in good condition?*

**YES** – GO TO STEP 2.

**NO** – Faulty battery

**2. CURRENT LEAKAGE TEST**

Install the battery (page 19-5).

Check the battery current leakage test (Leak test; page 19-6).

*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 6P 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. CHARGING VOLTAGE INSPECTION**

Measure and record the battery voltage using a digital multimeter (page 19-5).

Start the engine.

Measure the charging voltage (page 19-6).

Compare the measurements to the results of the following calculation.

**STANDARD:**

**Measured BV < Measured CV < 15.5 V**

- **BV = Battery Voltage**
- **CV = Charging Voltage**

*Is the measured charging voltage within the standard voltage?*

**YES** – Faulty battery

**NO** – GO TO STEP 5.

**5. ALTERNATOR CHARGING COIL INSPECTION**

Check the alternator charging coil (page 19-7).

*Is the alternator charging coil resistance within 0.2 – 1.0 Ω (20°C/68°F)?*

**YES** – Faulty charging coil

**NO** – GO TO STEP 6.

**6. REGULATOR/RECTIFIER SYSTEM INSPECTION**

Check the voltage and resistance at the regulator/rectifier 6P connector (page 19-7).

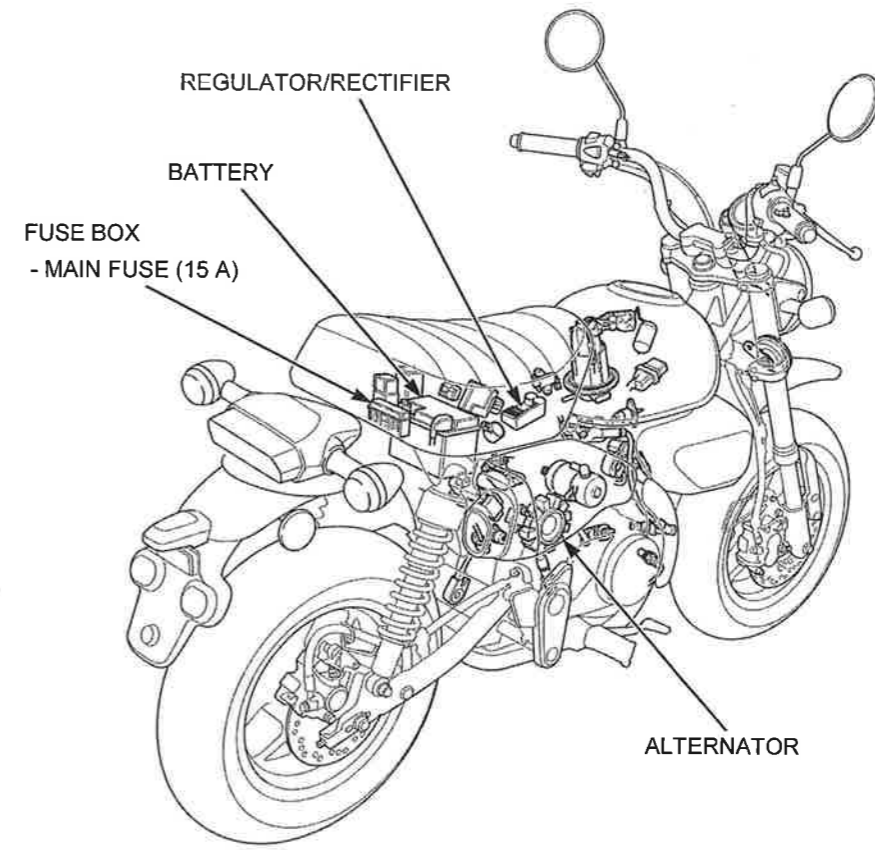
*Are the measurements correct?*

**YES** – Faulty regulator/rectifier

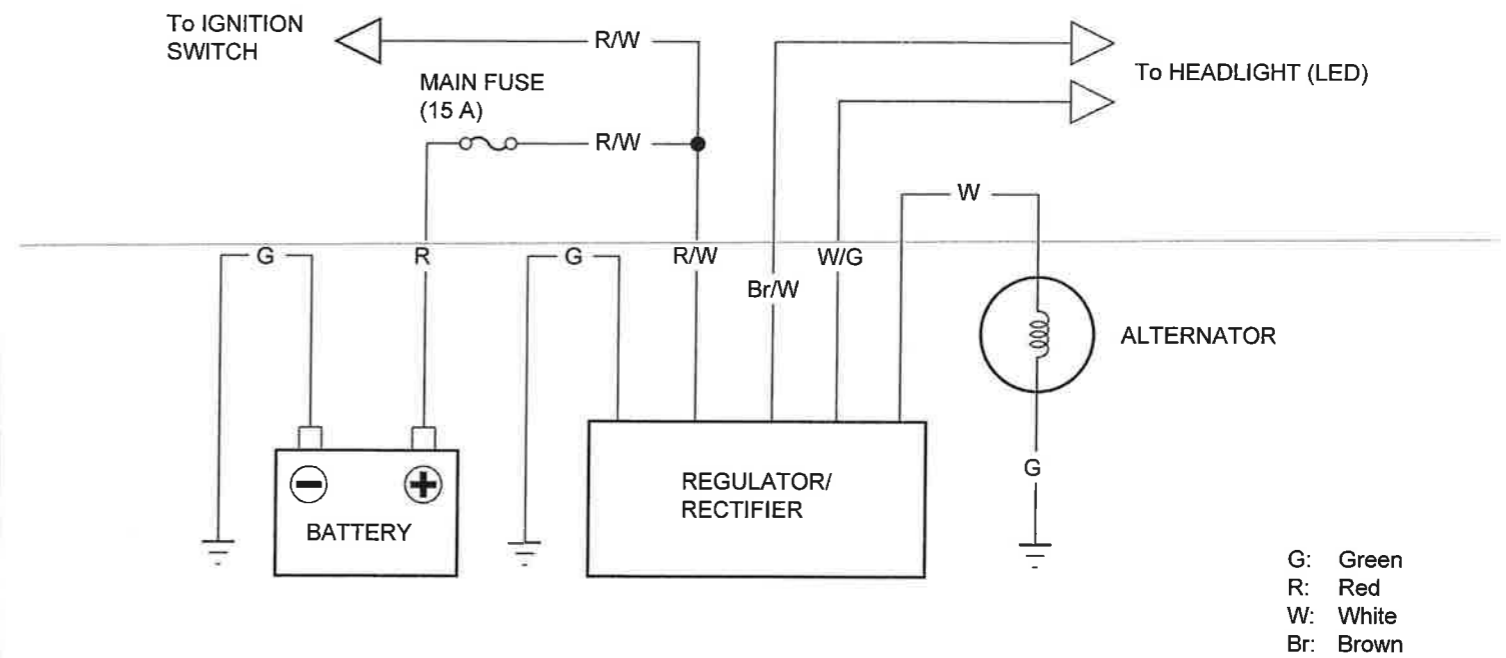
**NO** – • Open circuit in related wire  
• Loose or poor contacts of related terminal  
• Shorted wire harness

# BATTERY/CHARGING SYSTEM

## SYSTEM LOCATION



## SYSTEM DIAGRAM



## BATTERY

### REMOVAL/INSTALLATION

- Always turn the ignition switch OFF before removing the battery.
- Always disconnect the negative (-) terminal first.
- Connect the positive (+) cable to the battery first, then connect the negative (-) cable.

Remove the seat (page 2-5).

Remove the terminal bolt [1] and disconnect the battery negative (-) terminal.

Remove the terminal bolt [2] and disconnect the battery (+) terminal.

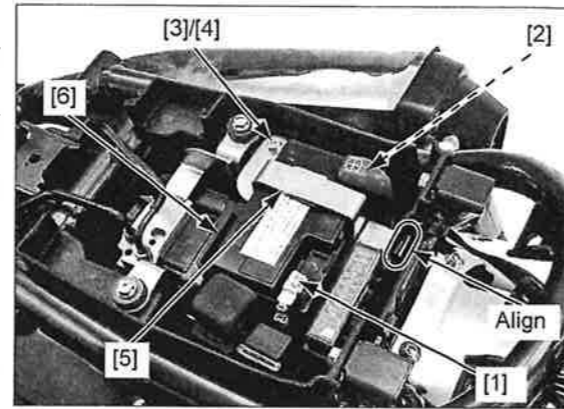
Remove the bolt [3], washer [4] and battery holder plate [5] and battery [6].

Remove the battery case.

Installation is in the reverse order of removal.

#### NOTE:

- Install the battery holder plate by aligning its hook with the slit of the rear fender.



### VOLTAGE INSPECTION

Remove the seat (page 2-5).

Measure the battery voltage using a commercially available digital multimeter.

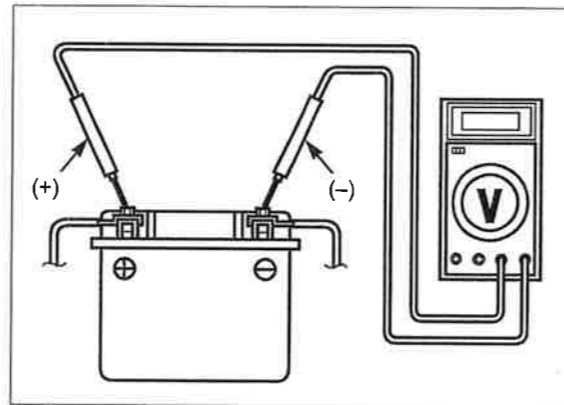
#### NOTE:

- Always use a digital tester for maintenance free (MF) battery inspection.
- When measuring the battery voltage after charging, leave it for least 30 minutes, or the accurate results cannot be obtained because the battery voltage fluctuates just after charging.

#### VOLTAGE (20°C/68°F):

Fully charged: 13.0 – 13.2 V

Needs charging: Below 12.4 V



### BATTERY TESTING

Refer to the instructions that are appropriate to the battery testing equipment available to you.

#### TOOL:

Battery tester Honda MDX-604P Battery Tester (U.S.A. only).

### BATTERY CHARGING (U.S.A. only)

Remove the battery (page 19-5).

Refer to the instructions that are appropriate to the battery charging equipment available to you.

#### TOOL:

Optimate PRO-4 battery charger TMNTS53 (U.S.A. only)

**CHARGING SYSTEM INSPECTION**

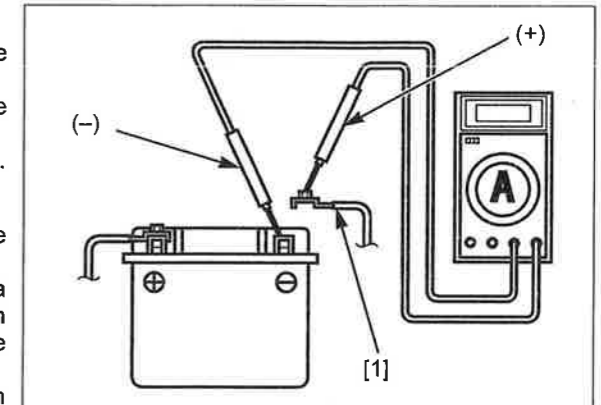
**CURRENT LEAKAGE TEST**

Remove the seat (page 2-5).

Turn the ignition switch OFF and disconnect the negative (-) cable [1] from the battery. Connect the ammeter (+) probe to the negative cable and the ammeter (-) probe to the battery (-) terminal. With the ignition switch OFF, check for current leakage.

**NOTE:**

- Always use a digital tester for maintenance free (MF) battery inspection.
- 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**

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 seat (page 2-5).

*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. Connect a tachometer according to its manufacturer's instructions.

**NOTE:**

To prevent a short, make absolutely certain which are the positive and negative terminals or cables.

Restart the engine.

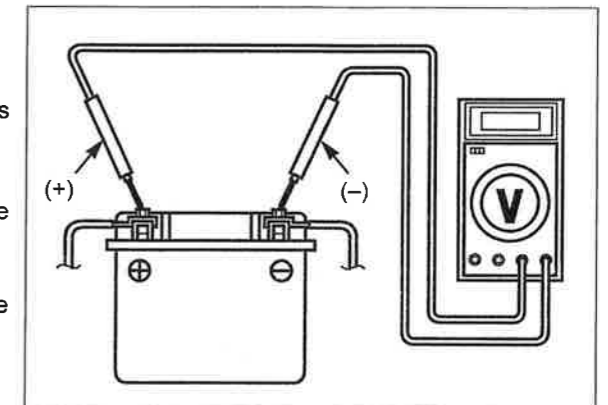
Measure the voltage on the multimeter when the engine runs at 5,000 min<sup>-1</sup> (rpm).

**STANDARD:**

**Measured BV < Measured CV < 15.5 V**

- **BV = Battery Voltage (page 19-5)**
- **CV = Charging Voltage**

The charging voltage is normal if the measurement falls within the specified range above.

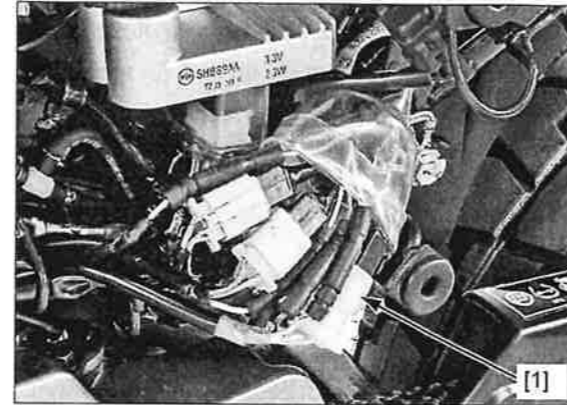




## ALTERNATOR CHARGING COIL

### INSPECTION

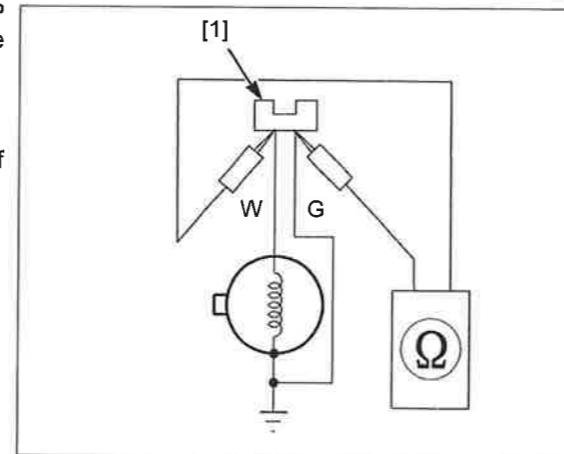
Remove the side cover (page 2-5).  
Disconnect the alternator 2P connector [1].



Check the resistance between the alternator 2P connector [1] White and Green wire terminals of the alternator side.

**STANDARD: 0.2 – 1.0 Ω (at 20°C/68°F)**

Replace the stator if the resistance is out of specification (page 12-4).



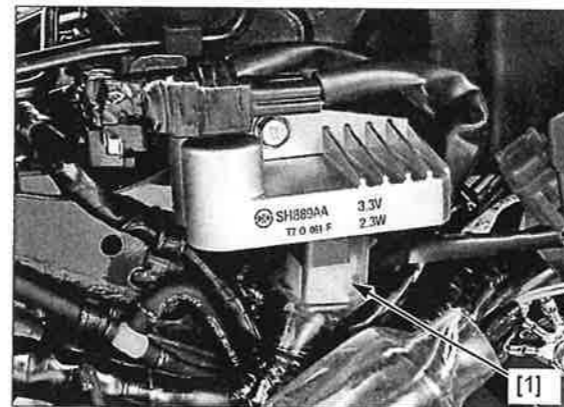
## REGULATOR/RECTIFIER

### SYSTEM INSPECTION

Remove the side cover (page 2-5).  
Turn the ignition switch OFF.  
Disconnect the regulator/rectifier 6P connector [1].  
Check it for loose contact or corroded terminals.

If the charging voltage reading (page 19-6) is out of the specification, inspect the regulator/rectifier connector terminals (wire harness side) as follows:

Item	Terminal	Specification
Battery charging line	Red/white (+) and Ground (-)	Battery voltage should appear
Charging coil line	White and Green	0.2 – 1.0 Ω (at 20°C/68°F)
Ground line	Green and Ground	Continuity should exist



If all components of the charging system is normal and there are no loose connections at the regulator/rectifier connector, replace the regulator/rectifier unit.

Install the side cover (page 2-5).

## BATTERY/CHARGING SYSTEM

---

### REMOVAL/INSTALLATION

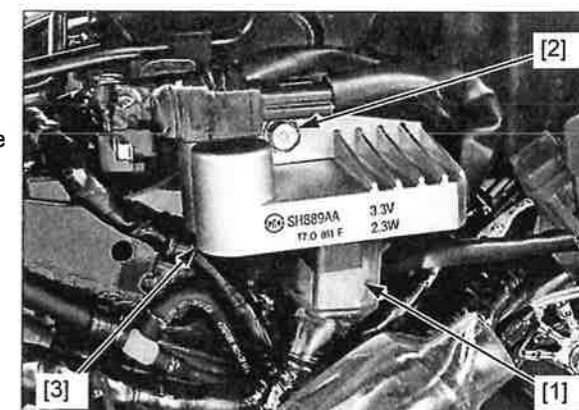
Remove the side cover (page 2-5).

Turn the ignition switch OFF.

Disconnect the regulator/rectifier 6P connector [1].

Remove the bolt [2] and regulator/rectifier [3] from the frame.

Installation is in the reverse order of removal.



## 20. LIGHTS/METER/SWITCHES

---

SERVICE INFORMATION.....	20-2	HANDLEBAR SWITCH .....	20-11
SYSTEM LOCATION .....	20-2	BRAKE LIGHT SWITCH.....	20-11
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TURN SIGNAL LIGHT .....	20-5	NEUTRAL SWITCH.....	20-12
BRAKE/TAILLIGHT.....	20-6	SIDESTAND SWITCH.....	20-14
HORN.....	20-6	VS SENSOR .....	20-16
COMBINATION METER .....	20-7	TURN SIGNAL RELAY .....	20-18
FUEL GAUGE/FUEL LEVEL SENSOR .....	20-9	MAIN RELAY .....	20-19
IGNITION SWITCH.....	20-10		

## LIGHTS/METER/SWITCHES

### SERVICE INFORMATION

#### GENERAL

#### NOTICE

- 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  
Bl = Black

Br = Brown  
G = Green

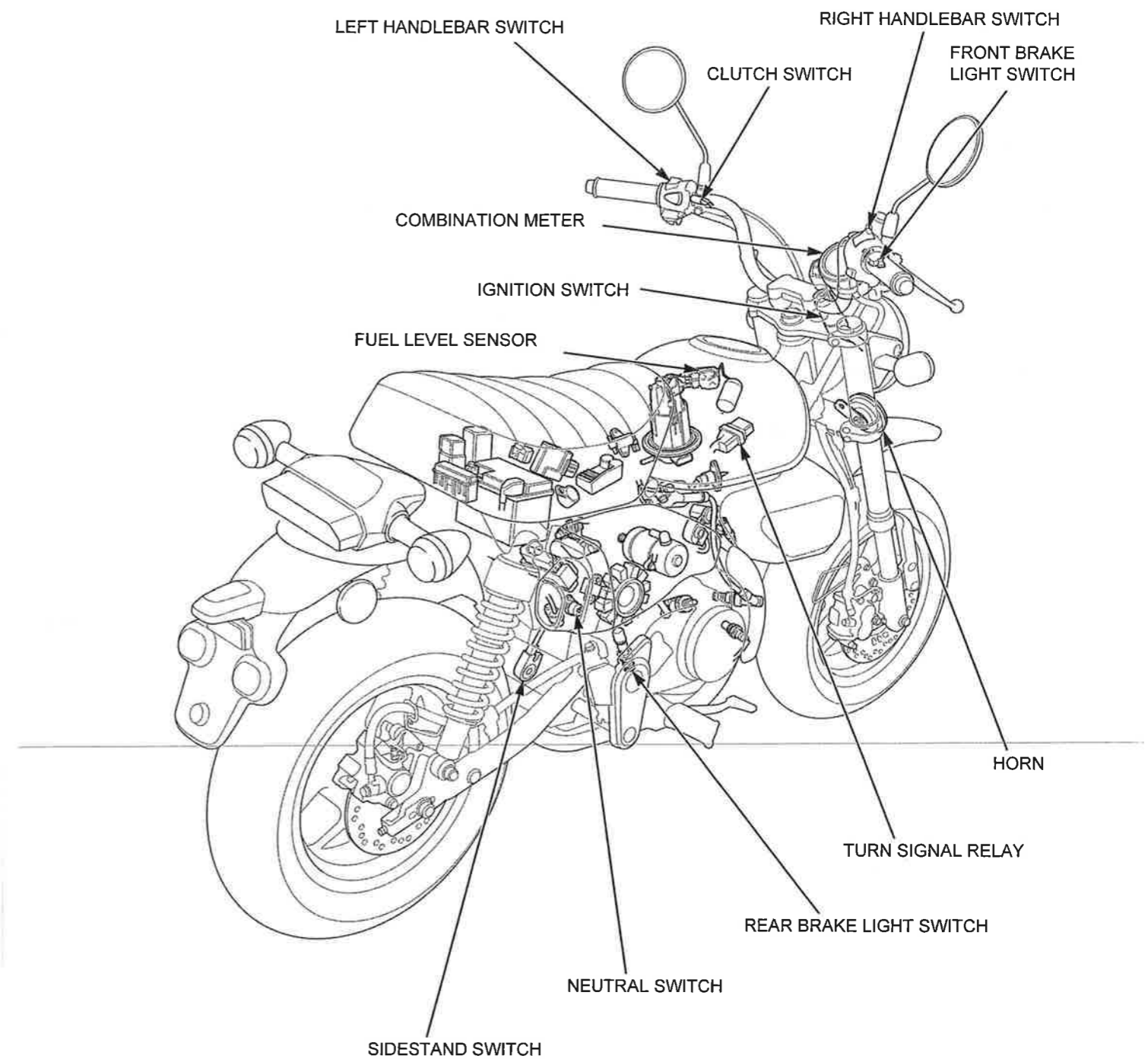
Gr = Gray  
Lb = Light Blue

Lg = Light Green  
O = Orange

P = Pink  
R = Red

W = White  
Y = Yellow

#### SYSTEM LOCATION



## HEADLIGHT

### HEADLIGHT REMOVAL/INSTALLATION

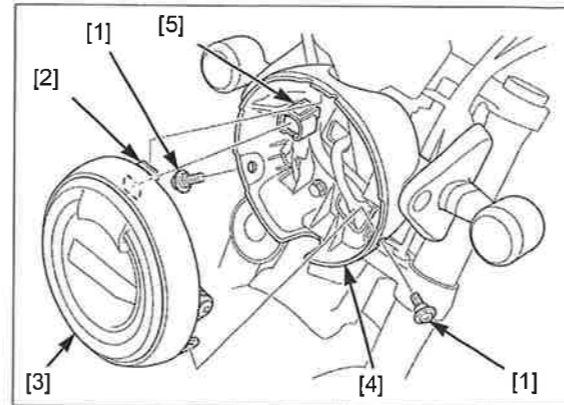
Remove the screws [1].

Release the hook [2] and remove the headlight [3] from the headlight case [4].

Hold the headlight and disconnect the headlight 8P (Black) connector [5].

Installation is in the reverse order of removal.

Check the headlight aim after installation (page 3-18).



### HEADLIGHT CASE REMOVAL/INSTALLATION

Remove the headlight (page 20-3).

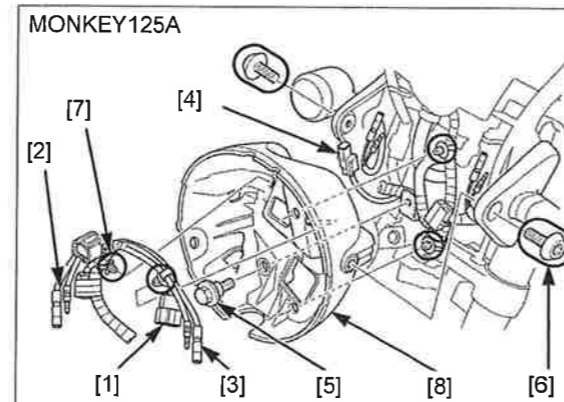
Disconnect the following:

- Ignition switch 3P (Black) connector [1]
- Right front turn signal wire connectors [2]
- Left front turn signal wire connectors [3]
- Front wheel speed sensor 2P (Black) connector [4] (MONKEY125A only)

Remove the following:

- Bolt [5]
- Two socket bolts [6]
- Four wire clips [7]
- Headlight case [8]

Installation is in the reverse order of removal.



### TORQUE:

Headlight case mounting socket bolt:  
12 N·m (1.2 kgf·m, 9 lbf·ft)

## HEADLIGHT TROUBLESHOOTING

### HEADLIGHT DOES NOT TURN ON WHEN THE ENGINE IS STARTED

#### 1. Headlight Input Voltage Inspection

Disconnect the headlight 8P (Black) connector (page 20-3).

Turn the ignition switch ON and start the engine.

Measure the voltage between the wire harness side headlight 8P (Black) connector [1] terminals.

#### TOOL:

Pin probe male (2 pack) 07ZAJ-RDJA110

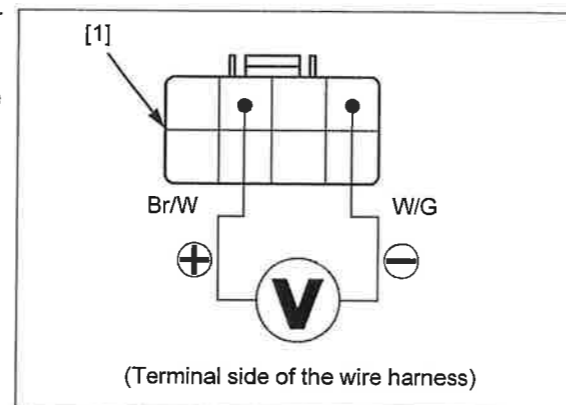
#### CONNECTION:

Brown/white (+) – White/green (-)

Is the voltage above 18 V?

YES – Faulty headlight

NO – GO TO STEP 2.



## LIGHTS/METER/SWITCHES

### 2. Headlight Power Line Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the regulator/rectifier 6P connector (page 19-7).

Check the continuity between the wire harness side headlight 8P (Black) connector [1] and regulator/rectifier 6P connector [2].

**TOOL:**

**Pin probe male (2 pack) 07ZAJ-RDJA110**

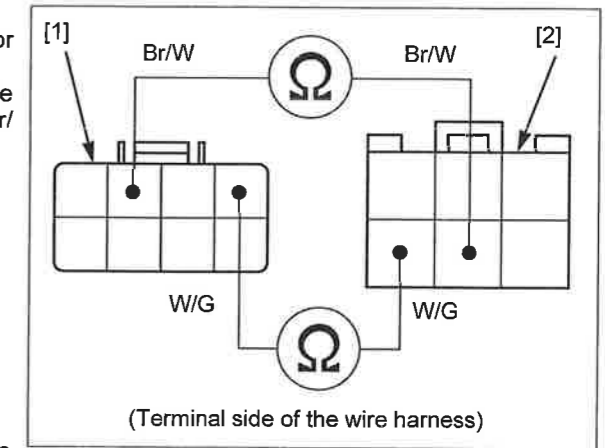
**CONNECTION:**

**Brown/white – Brown/white**  
**White/green – White/green**

*Is there continuity?*

**YES** – GO TO STEP 3.

**NO** – Open circuit in Brown/white or White/green wire



### 3. Regulator/Rectifier Line Open Circuit Inspection

Disconnect the alternator 2P connector (page 19-7).

Check the continuity between the regulator/rectifier 6P connector [1] and alternator 2P connector [2].

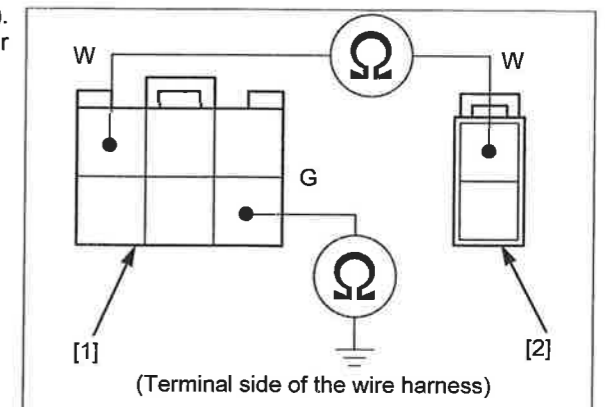
**CONNECTION:**

**White – White**  
**Green – Ground**

*Is there continuity?*

**YES** – GO TO STEP 4.

**NO** – Open circuit in White or Green wire



### 4. Alternator Inspection

Inspect the alternator charging coil (page 19-7).

*Is the resistance 0.2 - 1.0 Ω (20°C/68°F)?*

**YES** – Faulty regulator/rectifier

**NO** – Faulty alternator charging coil.

### Headlight Flickers

- Faulty regulator/rectifier
- Faulty headlight

### Headlight High Beam or Low Beam Does Not Turn On When the Engine Is Running And Dimmer Switch Is Operated

- Open circuit in White/green wire between the regulator rectifier and headlight
- Faulty regulator/rectifier
- Faulty headlight
- Faulty dimmer switch

### High Beam Does Not Turn On When the Dimmer Switch Is Operated

- Open circuit in White wire between the dimmer switch and headlight
- Faulty regulator/rectifier
- Faulty headlight
- Faulty dimmer switch

## TURN SIGNAL LIGHT

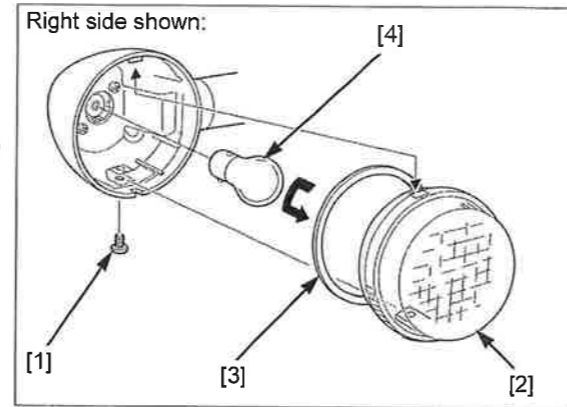
### TURN SIGNAL LIGHT BULB REMOVAL/INSTALLATION

Remove the following:

- Screw [1]
- Turn signal light lens [2]
- Lens packing [3]

While pushing the bulb [4] in, turn it counterclockwise to remove it.

Installation is in the reverse order of removal.



### TURN SIGNAL LIGHT REMOVAL/ INSTALLATION

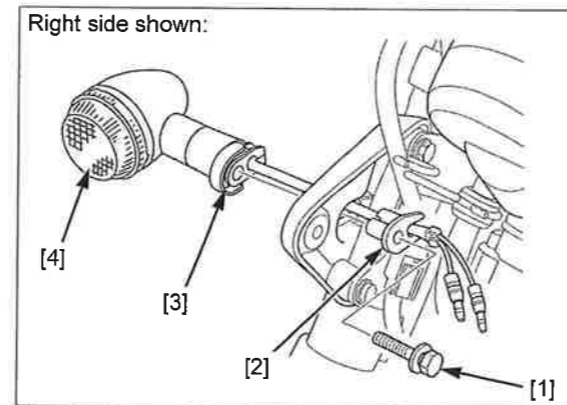
#### FRONT:

Remove the headlight case (page 20-3).

Remove the following:

- Bolt/washer [1]
- Collar [2]
- Turn signal mounting rubber [3]
- Front turn signal light [4]

Installation is in the reverse order of removal.

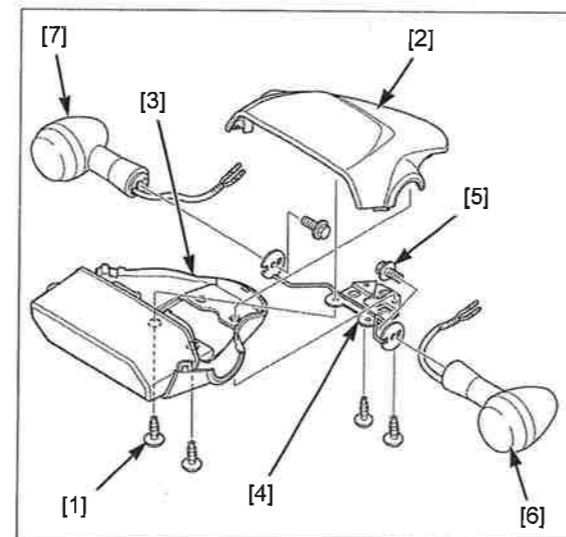


#### REAR:

Remove the following:

- Four screws [1]
- Upper taillight base [2]
- Lower taillight base [3]
- Taillight stay [4]
- Two bolt/washers [5]
- Right rear turn signal light [6]
- Left rear turn signal light [7]

Installation is in the reverse order of removal.



## BRAKE/TAILLIGHT

### REMOVAL/INSTALLATION

Remove the rear fender D (page 2-6).

Disconnect the following:

- Brake/taillight 3P connector [1]
- Right rear turn signal light wire connectors [2]
- Left rear turn signal light wire connectors [3]

Remove the following:

- Cap nuts [4]
- Collars [5]
- Brake/taillight unit [6]
- Rubber packing [7]
- Grommets [8]

Installation is in the reverse order of removal.

### TORQUE:

**Taillight unit mounting cap nut:**  
12 N·m (1.2 kgf·m, 9 lbf·ft)

### DISASSEMBLY/ASSEMBLY

Remove the brake/taillight unit (page 20-6).

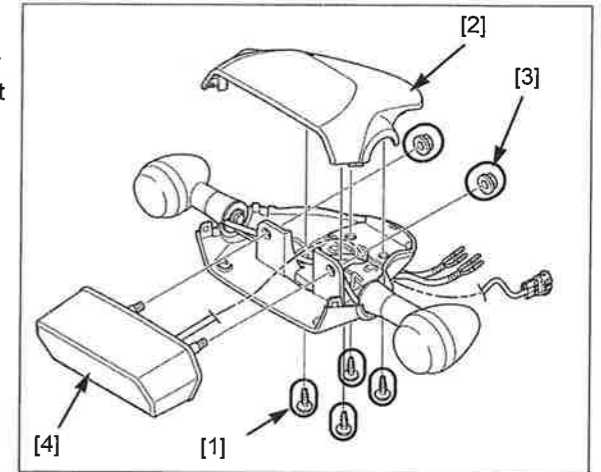
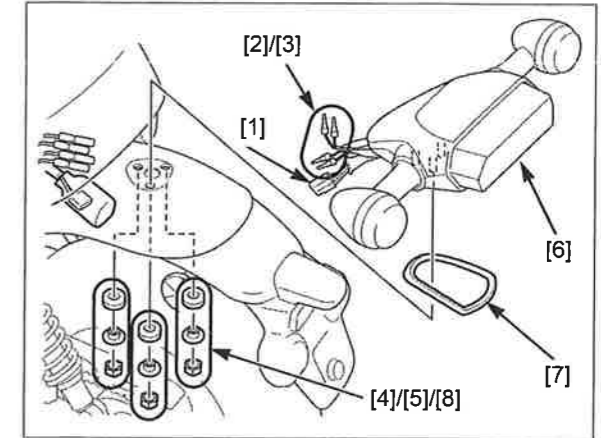
Remove the four screws [1] and upper taillight base [2].

Remove the two mounting nuts [3] and brake/taillight unit [4] from the lower taillight base.

Assembly is in the reverse order of disassembly.

### TORQUE:

**Brake/taillight unit mounting nut:**  
10 N·m (1.0 kgf·m, 7 lbf·ft)

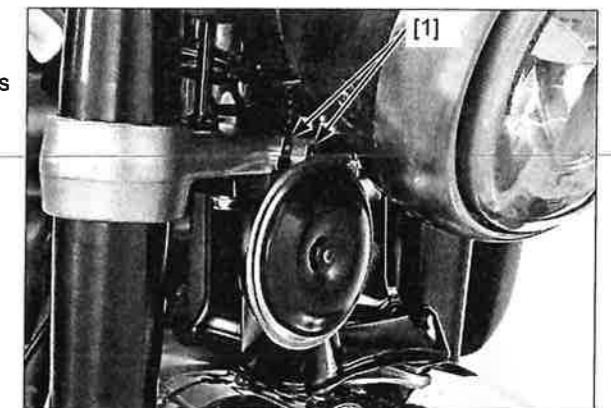


## HORN

### INSPECTION

Disconnect the horn wire connectors.  
Connect a 12 V battery to the horn terminals [1].

The horn is normal if it sounds when the 12 V battery is connected to the horn terminals.





**REMOVAL/INSTALLATION**

Remove the headlight case (page 20-3).

Disconnect the horn wire connectors [1].

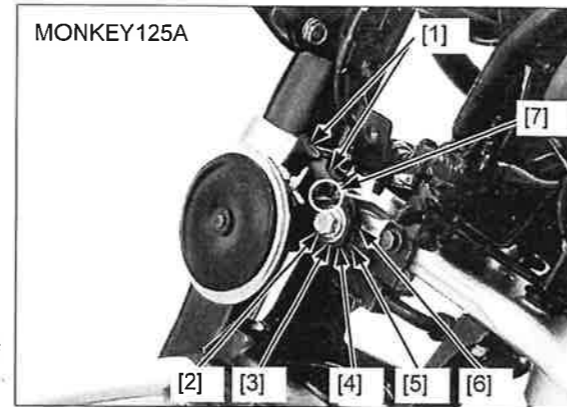
Remove the following:

- Bolt [2]
- Collar [3]
- Rubber [4]
- Horn [5]
- Rubber [6]

Installation is in the reverse order of removal.

**NOTE:**

When tightening the mounting bolt, align the stay end of the horn with the tab [7] of the horn stay.



**COMBINATION METER**

**SYSTEM INSPECTION**

**NOTE:**

Check for loose or poor contact terminals at the combination meter 16P (Gray) connector.

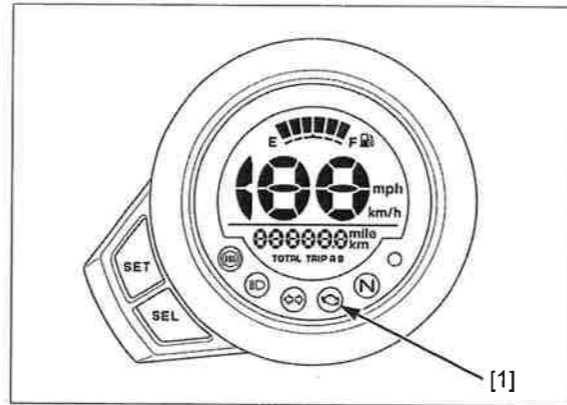
When the ignition switch is turned ON with the engine stop switch "O", the combination meter will show the entire digital display.

**NOTE:**

- If the MIL [1] stays on but no DTCs set and it does not go off, refer to MIL circuit troubleshooting (page 4-27).

If the digital display does not function at all, inspect the combination meter power/ground line (page 20-7).

If the power and ground lines are OK, replace the combination meter (page 20-8).



**POWER/GROUND LINES INSPECTION**

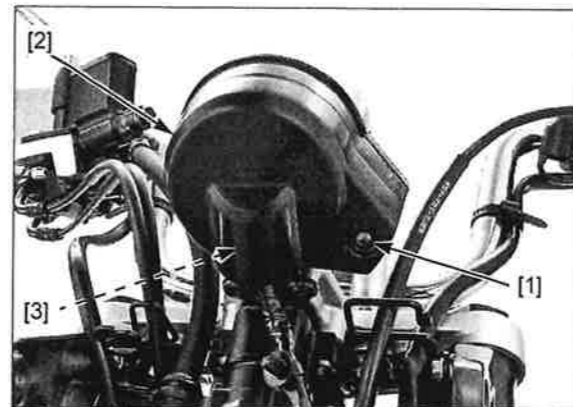
**NOTE:**

- Check the following at the wire harness side connector of the combination meter.
- After inspection, reposition the dust cover securely.

Remove the headlight case (page 20-3).

Remove the screw [1] and meter cover [2].

Disconnect the combination meter 16P (Gray) connector [3].



## LIGHTS/METER/SWITCHES

### POWER INPUT LINE

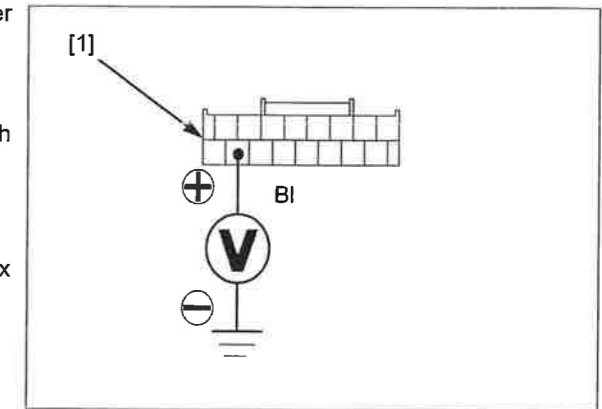
Measure the voltage between the combination meter 16P (Gray) connector [1] and ground.

**CONNECTION: Black (+) – Ground (-)**

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

If there is no battery voltage, check the following:

- Open circuit in the Black wire
- Open circuit in Black/red wire between the fuse box and ignition switch
- Blown SUB DC fuse (10 A)



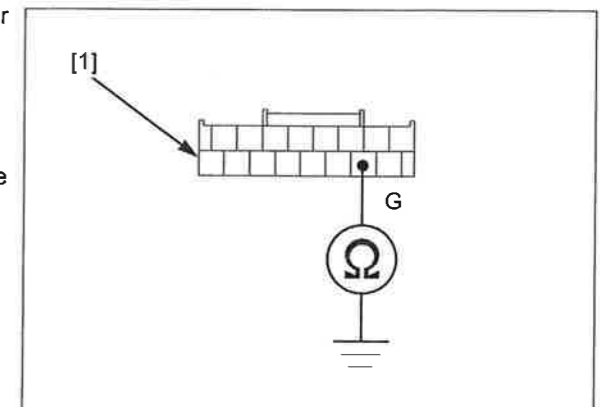
### GROUND LINE

Check for continuity between the combination meter 16P (Gray) connector [1] and ground.

**CONNECTION: Green – Ground**

There should be continuity at all times.

If there is no continuity, check for an open circuit in the Green wire.



### BACK-UP VOLTAGE LINE

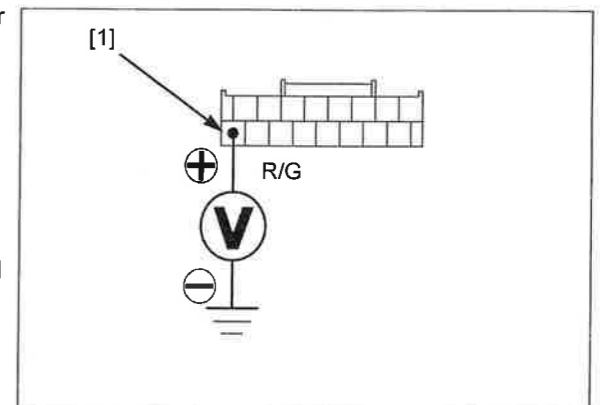
Measure the voltage between the combination meter 16P (Gray) connector [1] and ground.

**CONNECTION: Red/green (+) – Ground (-)**

There should be battery voltage at all times.

If there is no battery voltage, check the following:

- Open circuit in the Red/green wire
- Blown BACK UP fuse (10 A)
- Open circuit in Red wire between the fuse box and battery



### REMOVAL/INSTALLATION

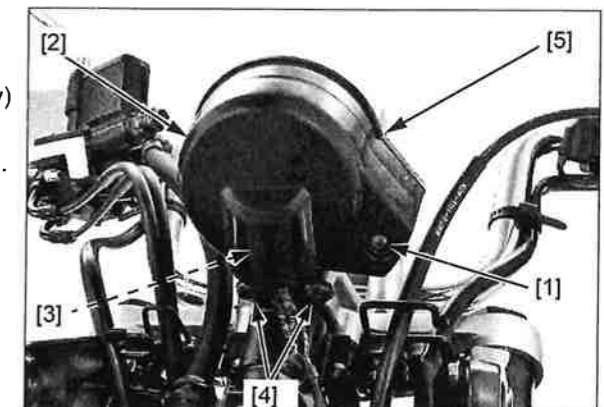
Remove the headlight case (page 20-3).

Remove the screw [1] and meter cover [2].

Disconnect the combination meter 16P (Gray) connector [3].

Remove the socket bolts [4] and combination meter [5].

Installation is in the reverse order of removal.



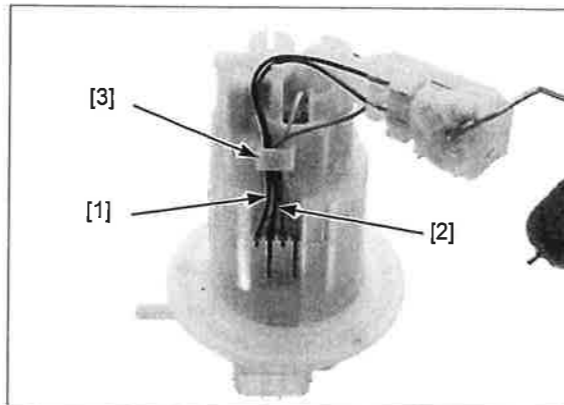
## FUEL GAUGE/FUEL LEVEL SENSOR

### FUEL LEVEL SENSOR REPLACEMENT

Remove the fuel pump unit (page 7-9).

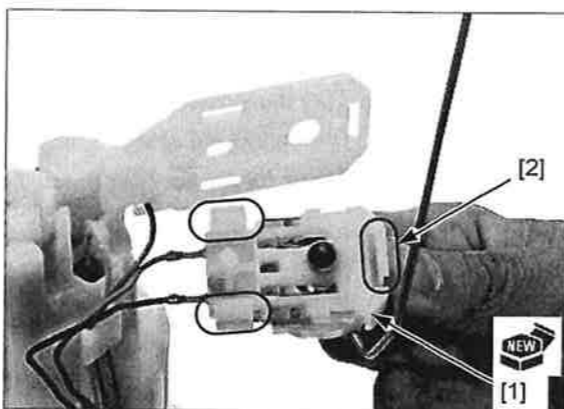
Disconnect the fuel level sensor Black [1] and Red [2] wire connectors.

Release the wires from the guides [3] of the fuel pump unit.



Remove the fuel level sensor [1] from the fuel pump unit by releasing the three hooks [2].

Install a new fuel level sensor in the reverse order of removal.

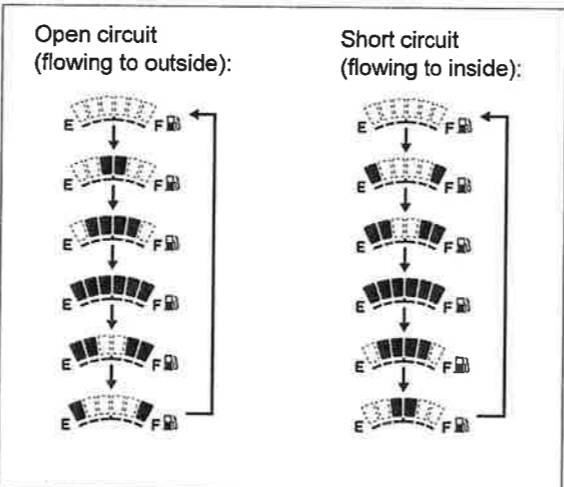


### FUEL GAUGE INSPECTION

When the circuit malfunction occurs, the combination meter displays the flow pattern in the fuel gauge. If it is indicated, check for open or short circuit in the Yellow/white wire between the combination meter and fuel pump unit.

If the Yellow/white wire is OK, check the fuel level sensor (page 20-10).

If the fuel level sensor is OK, replace the combination meter (page 20-8).



## LIGHTS/METER/SWITCHES

### FUEL LEVEL SENSOR INSPECTION

Remove the fuel pump unit (page 7-9).

*Do not disconnect the fuel level sensor wires. If disconnected, replace the fuel level sensor with a new one.*

Connect the ohmmeter to the fuel pump unit 5P connector terminals [1].

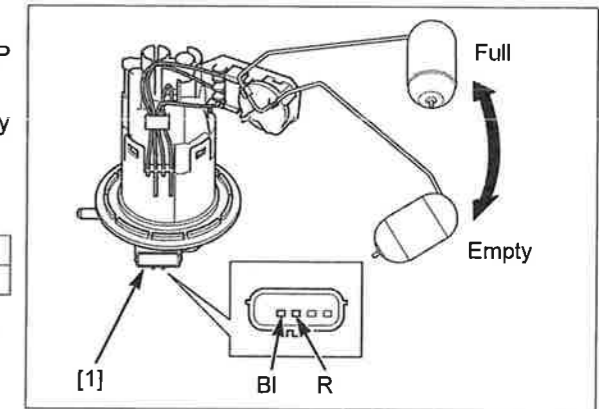
Inspect the resistance of the float at the full and empty positions.

**CONNECTION: Red – Black**

FLOAT POSITION	Full	Empty
RESISTANCE	7 – 11 $\Omega$	384 – 396 $\Omega$

Replace the fuel level sensor if it is out of specification.

Install the fuel pump unit (page 7-10).



### IGNITION SWITCH

#### INSPECTION

Remove the headlight (page 20-3).

Turn the ignition switch OFF.

Disconnect the ignition switch 3P (Black) connector [1].

Check for continuity between the switch side connector terminals in each switch position according to the chart (page 21-2).

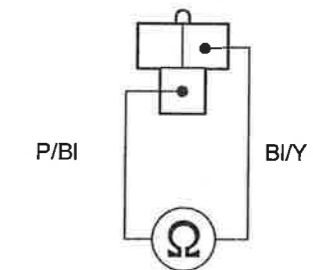
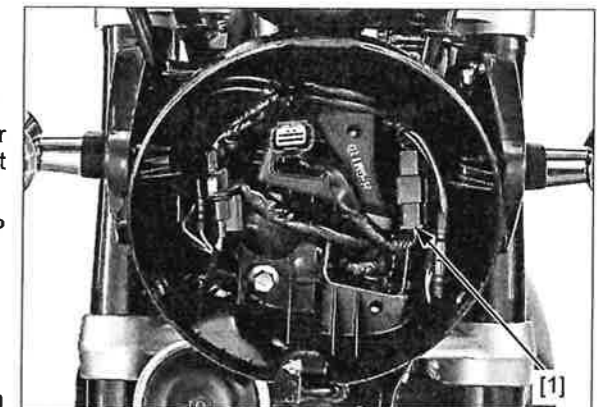
Check for continuity between the ignition switch 3P (Black) connector terminals of the ignition switch side.

**CONNECTION: Black/yellow (+) – Pink/black (-)  
Black/yellow (-) – Pink/black (+)**

It is normal if there is continuity in one direction. The ignition switch is faulty if there is continuity in both directions.

Connect the ignition switch 3P (Black) connector.

Install the headlight (page 20-3).



(Terminal side of the ignition switch)

#### REMOVAL/INSTALLATION

Remove the top bridge (page 15-20).

Remove the one-way bolts [1] and ignition switch [2].

**NOTE:**

- Use a drill or an equivalent tool when removing the ignition switch one-way bolts.

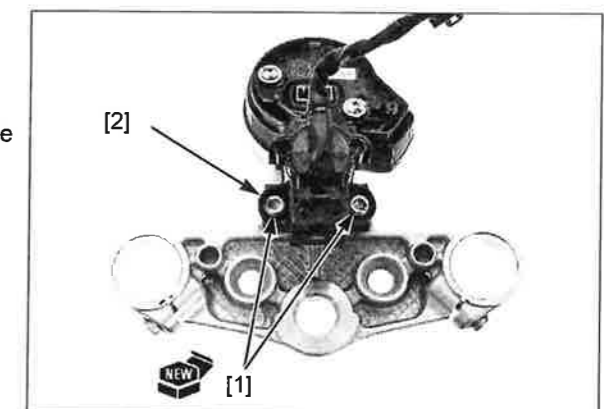
Installation is in the reverse order of removal.

**NOTE:**

- Replace the ignition switch bolts with new ones.

**TORQUE:**

**Ignition switch one-way bolt:**  
27 N·m (2.8 kgf·m, 20 lbf·ft)



### HANDLEBAR SWITCH

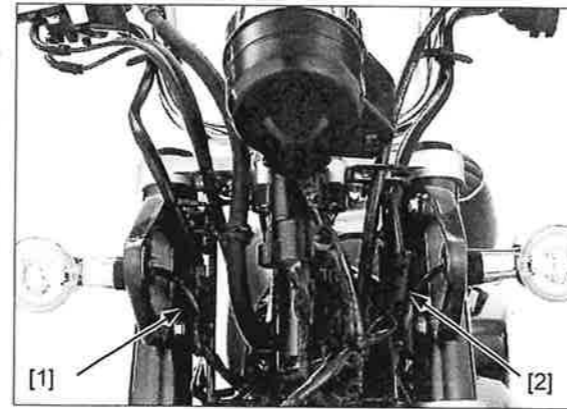
Remove the headlight case (page 20-3).

Disconnect the right handlebar switch 6P (Black) connector [1].

Disconnect the left handlebar switch 12P (Black) connector [2].

Check for continuity between the wire terminals of the handlebar switch connector in each switch position.

Refer to the wiring diagram for the terminals and switch status (page 21-2).

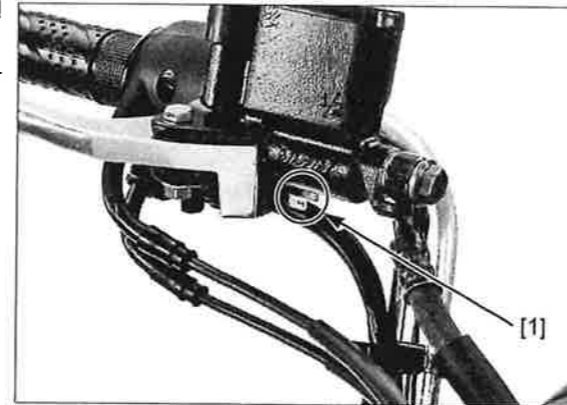


### BRAKE LIGHT SWITCH

#### FRONT

Disconnect the front brake light switch 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.

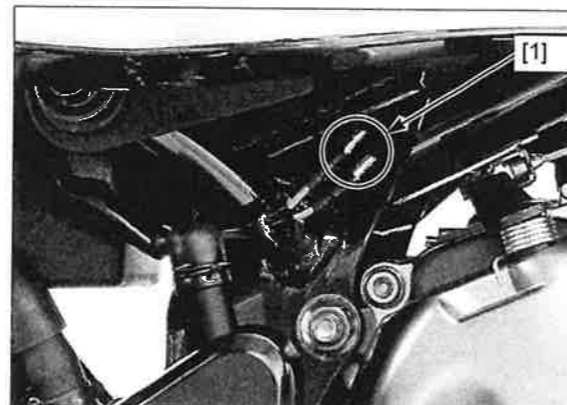


#### REAR

Disconnect the rear brake light switch wire connectors [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.



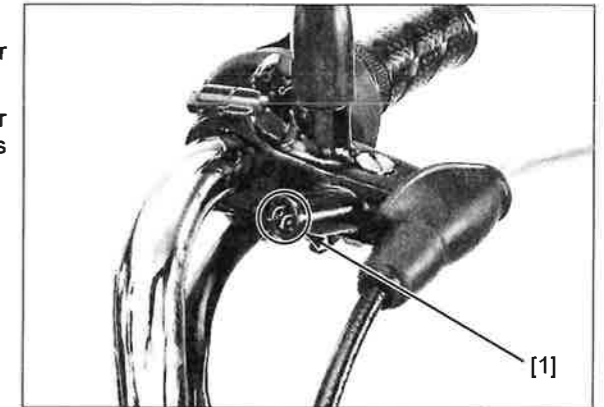
## LIGHTS/METER/SWITCHES

### CLUTCH SWITCH

Remove the connector boot from the bracket sleeve.

Disconnect the clutch switch connectors and check for continuity between the switch terminals [1].

There should be continuity with the clutch lever squeezed, and no continuity when the clutch lever is released.



### NEUTRAL SWITCH

#### INSPECTION

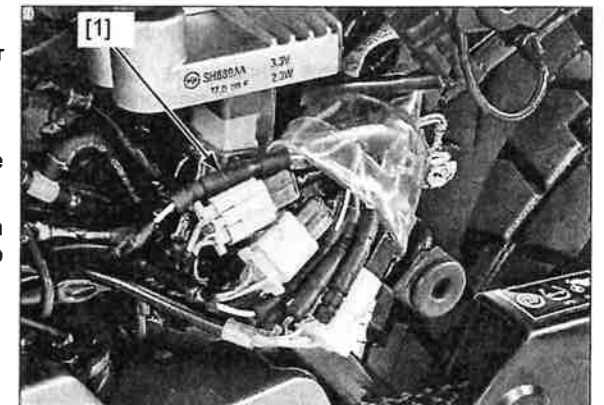
Remove the side cover (page 2-5).

Check the neutral indicator operation in each gear position.

Disconnect the neutral switch wire connector [1].

Check for continuity between the switch side wire connector terminal and engine ground.

There should be continuity with the transmission in neutral, and no continuity when the transmission is into gear.

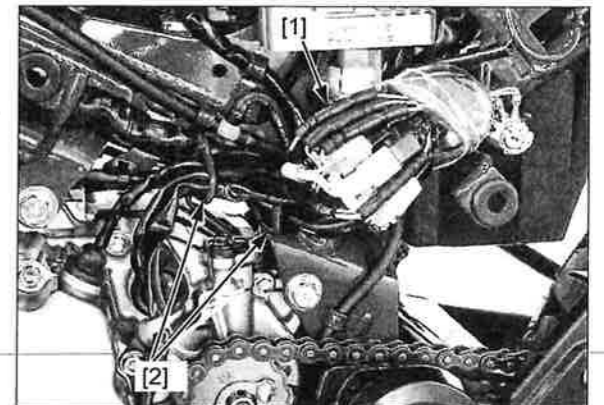


#### REMOVAL

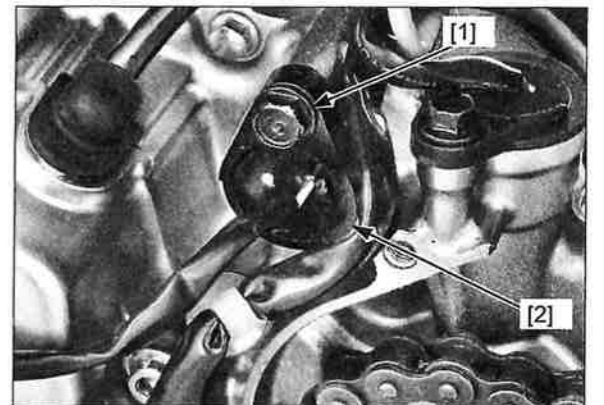
Remove the following:

- Side cover (page 2-5)
- Drive sprocket cover (page 2-9)

Disconnect the neutral switch wire connector [1] and release the wire from the wire guides [2].



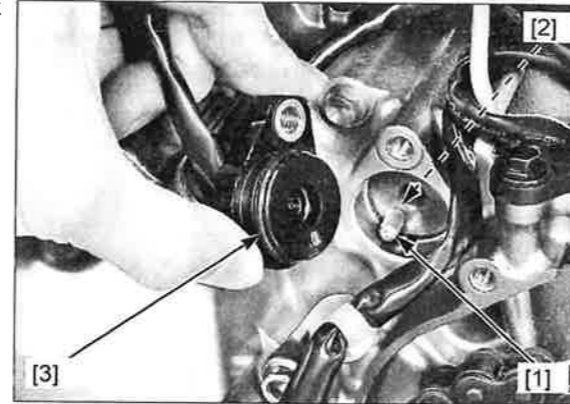
Remove the bolt [1] and neutral switch [2].



## LIGHTS/METER/SWITCHES

Remove the spring cap [1] and spring [2] from the shift drum hole.

Remove the O-ring [3] from the neutral switch



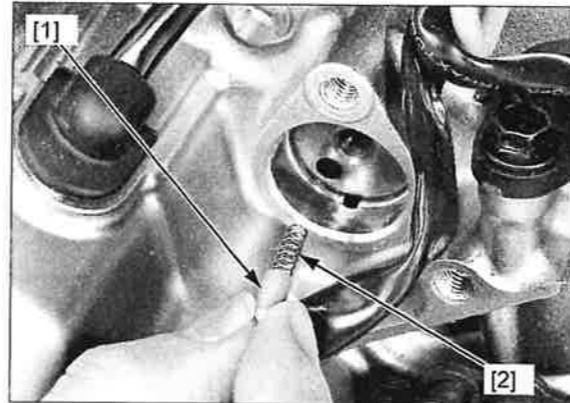
### INSTALLATION

Check the spring cap [1] for wear or damage. Replace it if necessary.

#### NOTE:

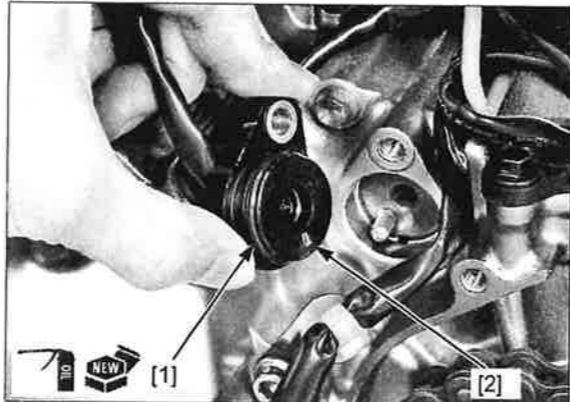
The bent or distorted spring cap will cause a loss of the continuity.

Install the spring [2] into the spring cap and install them into the shift drum hole.

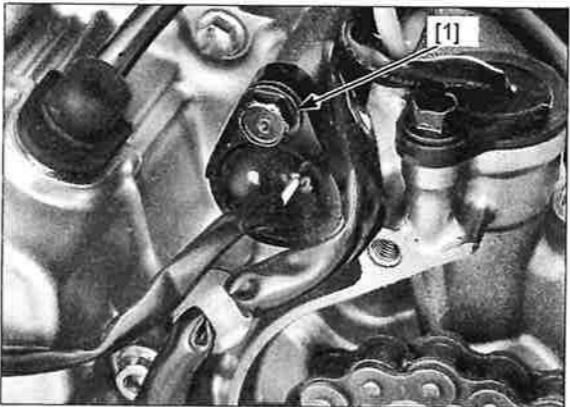


Apply engine oil to a new O-ring [1] and install it to the neutral switch [2].

Install the neutral switch.



Install and tighten the neutral switch mounting bolt [1].

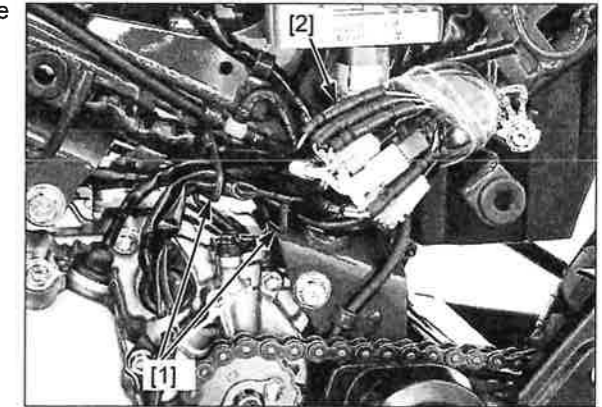


## LIGHTS/METER/SWITCHES

Set the wire to the wire guides [1] and connect the neutral switch wire connector [2].

Install the following:

- Drive sprocket cover (page 2-9)
- Side cover (page 2-5)



## SIDESTAND SWITCH

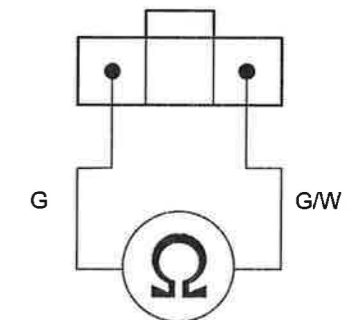
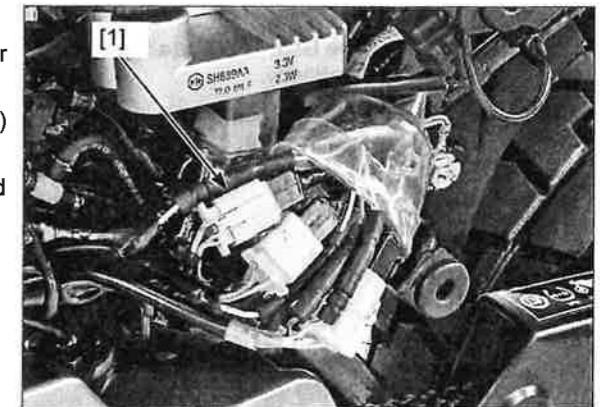
### INSPECTION

Remove the side cover (page 2-5).

Disconnect the sidestand switch 3P (Green) connector [1].

Check the continuity at the sidestand switch 3P (Green) connector of the switch side connector.

There should be continuity with the sidestand retracted and no continuity with the sidestand lowered.



(Terminal side of the sidestand switch)

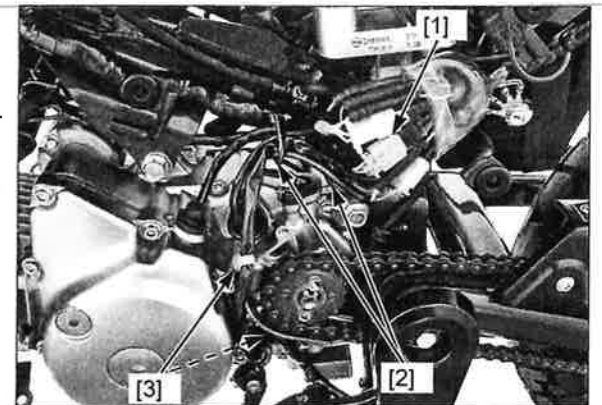
### REMOVAL/INSTALLATION

Remove the following:

- Side cover (page 2-5)
- Drive sprocket cover (page 2-9)

Disconnect the sidestand switch 3P (Green) connector [1].

Release the wire from the wire guides [2] and remove the wire clips [3].

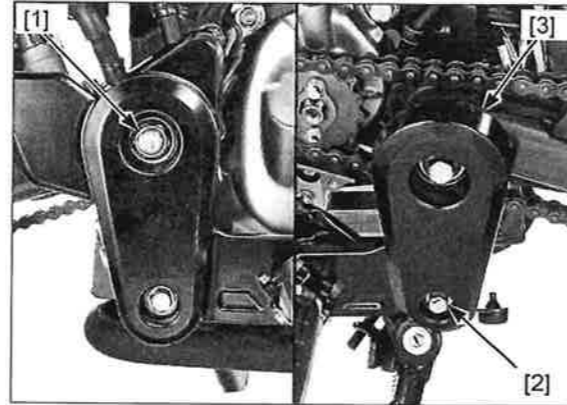




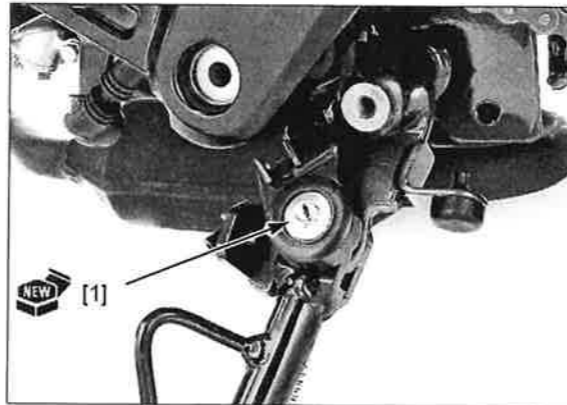
## LIGHTS/METER/SWITCHES

Remove the swingarm pivot nut [1].

Remove the left step holder mounting bolt [2] and slightly pull the left step holder [3] to gain clearance.



Remove the sidestand switch mounting bolt [1].

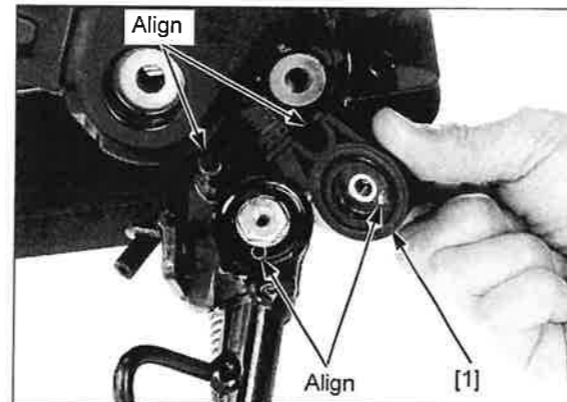


Remove the sidestand switch [1].

Installation is in the reverse order of removal.

### NOTE:

- Align the switch pin with the hole in the sidestand and the switch groove with the return spring pin.
- Replace the sidestand switch mounting bolt with a new one.



**VS SENSOR**

**INSPECTION**

**1. VS Sensor Power Voltage Inspection**

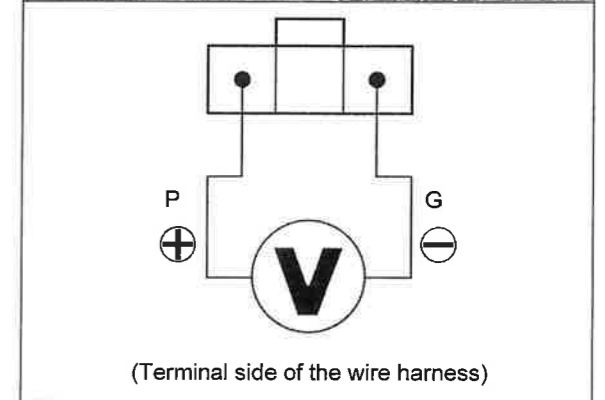
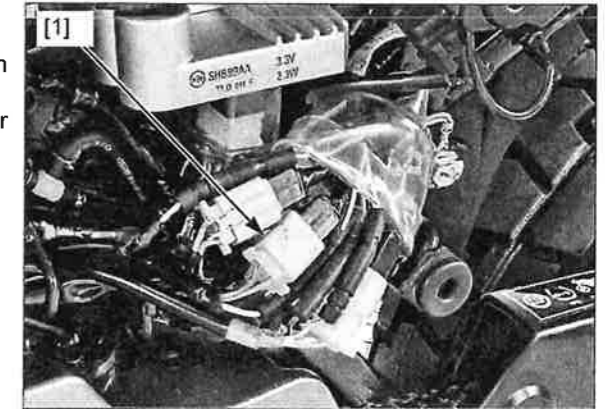
Remove the side cover (page 2-5).  
 Disconnect the VS sensor 3P connector [1].  
 Turn the ignition switch ON and engine stop switch "O".  
 Measure the voltage at the VS sensor 3P connector of the wire harness side.

**CONNECTION: Pink (+) – Green (-)**  
**STANDARD: Battery voltage**

*Does the standard voltage exist?*

**YES** – GO TO STEP 2.

**NO** – Open circuit in Pink or Green wire



**2. VS Sensor Signal Line Open Circuit Inspection**

Turn the ignition switch OFF.  
 Disconnect the VS sensor wire connector [1].

**MONKEY125:**  
 Disconnect the combination meter 16P (Gray) connector (page 20-7).  
 Check for continuity between the VS sensor wire connector and combination meter 16P (Gray) connector at the wire harness side.

**TOOL:**  
 Pin probe male (2 pack) 07ZAJ-RDJA110

**CONNECTION:**  
 White/green – White/green

**MONKEY125A:**  
 Disconnect the ABS modulator 16P (Black) connector (page 18-8).  
 Check for continuity between the VS sensor wire connector and ABS modulator 16P (Black) connector at the wire harness side.

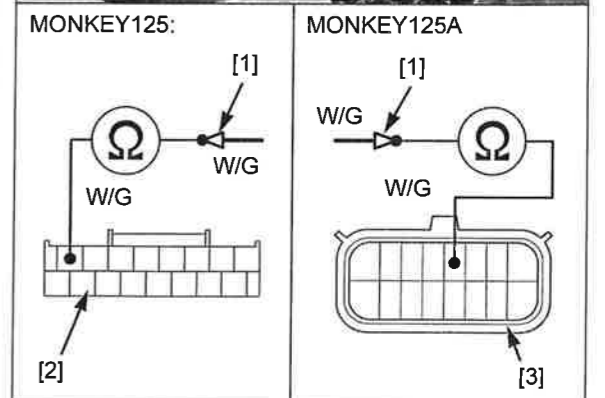
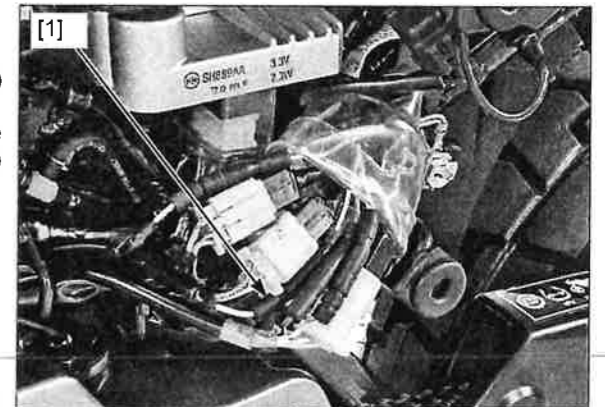
**TOOL:**  
 Pin probe male (2 pack) 07ZAJ-RDJA110

**CONNECTION:**  
 White/green – White/green

*Is there continuity?*

**YES** – Faulty VS sensor

**NO** – Open circuit in White/green wire



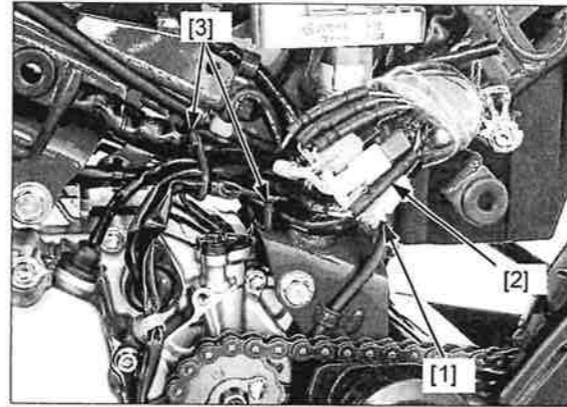
**REMOVAL/INSTALLATION**

Remove the following:

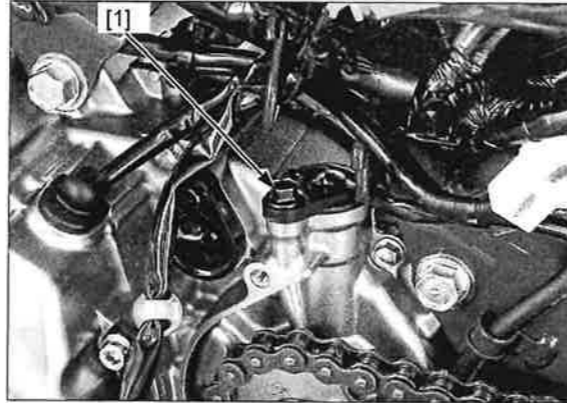
- Side cover (page 2-5)
- Drive sprocket cover (page 2-9)

Disconnect the VS sensor 3P connector [1] and wire connector [2].

Release the wire from the wire guides [3].



Remove the VS sensor mounting bolt [1].



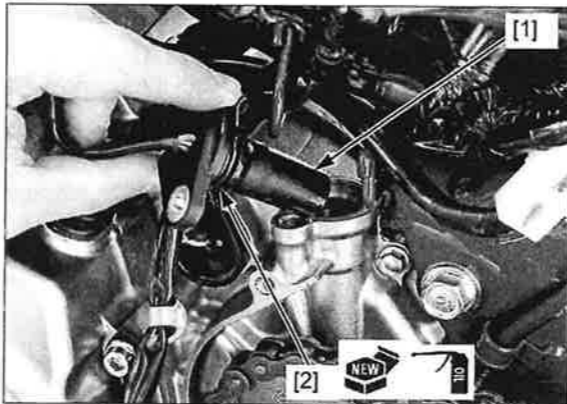
Remove the VS sensor [1].

Remove the O-ring [2].

Installation is in the reverse order of removal.

**NOTE:**

- Apply engine oil to a new O-ring and install it to the VS sensor.



## TURN SIGNAL RELAY

### REMOVAL/INSTALLATION

Remove the fuel tank (page 7-8).

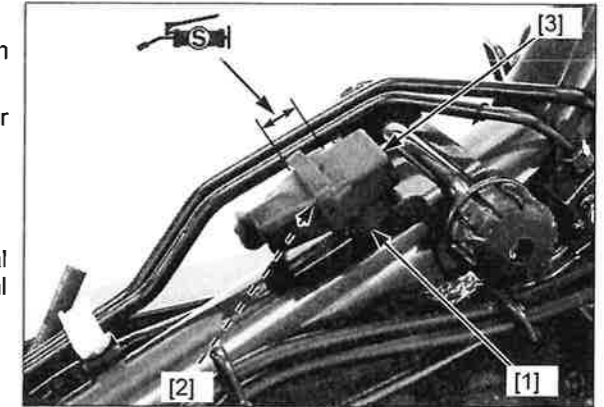
Release the turn signal relay mounting rubber [1] from the frame.

Disconnect the turn signal relay 3P (Black) connector [2] and remove the turn signal relay [3]

Installation is in the reverse order of removal.

#### NOTE:

Apply silicone grease to the inner side of the turn signal relay mounting rubber where it contacts the turn signal relay.



### INSPECTION

Check the following:

- Battery condition
- SUB DC fuse (10 A)
- Ignition switch (page 20-10)
- Turn signal switch (page 20-11)
- Loose connectors

If above items are all normal, check the following:

Turn the ignition switch ON and turn signal light switch ON.

Measure the voltage between the following terminals of the wire harness side connector.

#### NOTE:

- Measure with the connector connected.

**CONNECTION:** A (Gray) (+) – B (Green) (-)

#### STANDARD:

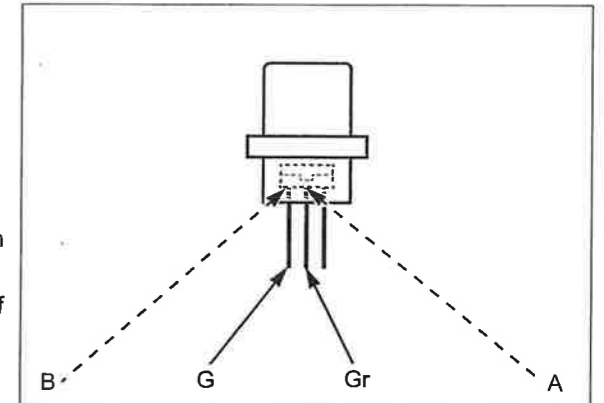
Battery voltage – peak voltage = 1.5 V maximum

#### TOOL:

IgnitionMate peak voltage tester MTP07-0286  
(U.S.A. only) or  
Peak voltage adaptor 07HGJ-0020100  
with commercially available (not available in  
digital multimeter (impedance U.S.A.)  
10 MΩ/DCV minimum)

If there is no standard voltage, inspect the open or short circuit in Gray and Green wires.

If there is standard voltage, replace the turn signal relay with a known good one (page 20-18), and recheck.



## MAIN RELAY

### REMOVAL/INSTALLATION

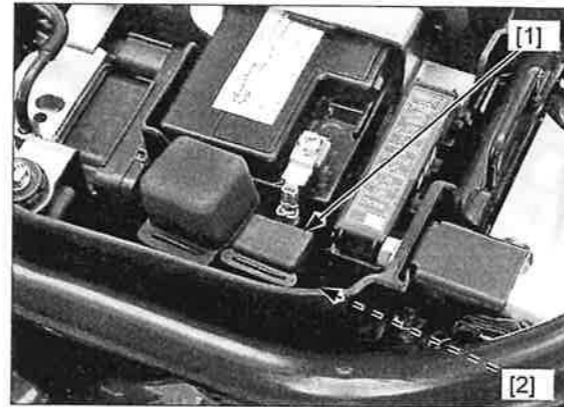
Remove the seat (page 2-5).

Turn the ignition switch OFF.

Remove the main relay [1] from the stay.

Disconnect the main relay 4P connector [2] and remove the main relay.

Installation is in the reverse order of removal.



### INSPECTION

#### RELAY COIL INPUT VOLTAGE

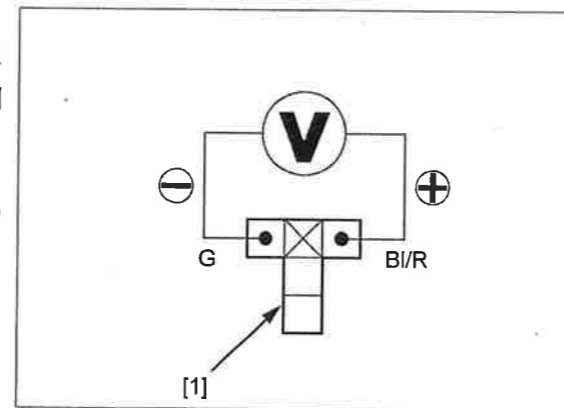
Remove the main relay (page 20-19).

Turn the ignition switch ON and engine stop switch "O".

Measure the voltage at the main relay 4P connector [1] of the wire harness side.

**CONNECTION: Black/red (+) – Green (-)**

It is normal if the battery voltage is measured when the ignition switch is turned ON.

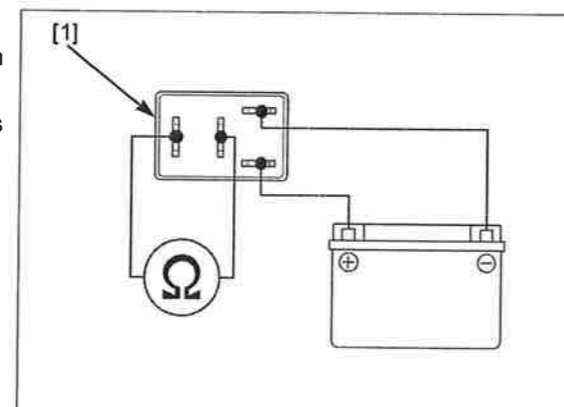


#### MAIN RELAY INSPECTION

Remove the main relay (page 20-19).

Connect an ohmmeter and a 12 V battery to the main relay [1] terminals as shown.

There should be continuity only when 12 V battery is connected.



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**MEMO**

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# 21. WIRING DIAGRAM

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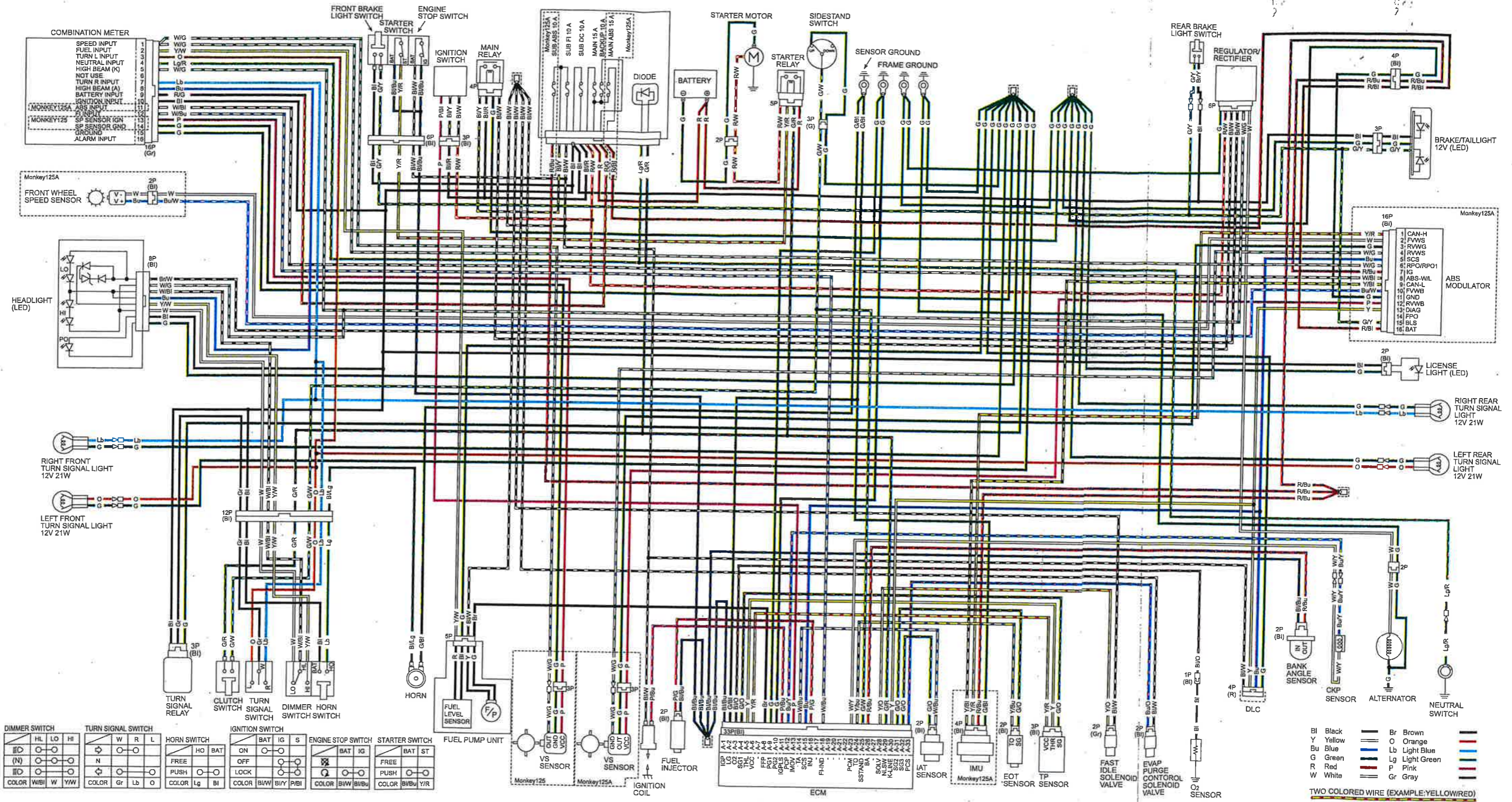
WIRING DIAGRAM ..... 21-2

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# WIRING DIAGRAM



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