

2013 - 2016

HONDA

SERVICE MANUAL

CB1100/A/SA

How To Use This Manual

This manual describes the service procedures for the CB1100/A/SA.

Sections 1 and 3 apply to the whole motorcycle. Section 2 illustrates procedures for removal/installation of components that may be required to perform service described in the following sections.

Section 4 through 19 describe parts of the motorcycle, grouped according to location.

Follow the Maintenance Schedule recommendations to ensure that the motorcycle is in peak operating condition.

Performing the first scheduled maintenance is very important. It compensates for the initial wear that occurs during the break-in period.

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

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

If you don't know the source of the trouble, go to Troubleshooting Section 21.

Your safety, and the safety of others, is very important. To help you make informed decisions we have provided safety messages and other information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing this vehicle.

You must use your own good judgement.

You will find important safety information in a variety of forms including:

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

These signal words mean:

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

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

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

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

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

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: • Molykote® BR-2 plus manufactured by Dow Corning U.S.A. • Multi-purpose M-2 manufactured by Mitsubishi Oil, Japan
	Use molybdenum disulfide paste (containing more than 40% molybdenum disulfide, NLGI #2 or equivalent). Example: • Molykote® G-n Paste manufactured by Dow Corning U.S.A. • Honda Moly 60 (U.S.A. only) • Rocol ASP manufactured by Rocol Limited, U.K. • Rocol Paste manufactured by Sumico Lubricant, Japan
	Use silicone grease.
	Apply locking agent. Use a medium strength locking agent unless otherwise specified.
	Apply sealant.
	Use DOT 4 brake fluid. Use the recommended brake fluid unless otherwise specified.
	Use fork or suspension fluid.

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GENERAL INFORMATION

SERVICE RULES

1. Use Honda Genuine or Honda-recommended parts and lubricants or their equivalents. Parts that don't 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 show in the Cable and Harness Routing (page 1-21).

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
CBS	Combined Braking System
CKP sensor	Crankshaft Position sensor
DLC	Data Link Connector
DTC	Diagnostic Trouble Code
ECM	Engine Control Module
EOT sensor	Engine Oil Temperature sensor
EOP switch	Engine Oil Pressure switch
IACV	Idle Air Control Valve
IAT sensor	Intake Air Temperature sensor
MAP sensor	Manifold Absolute Pressure sensor
MCS	Motorcycle Communication System
MIL	Malfunction Indicator Lamp
O ₂ sensor	Oxygen sensor
PAIR	Pulse Secondary Air Injection
PCV	Proportional Control Valve
PGM-FI	Programmed Fuel Injection
SCS service connector	Service Check Short connector
TP sensor	Throttle Position sensor

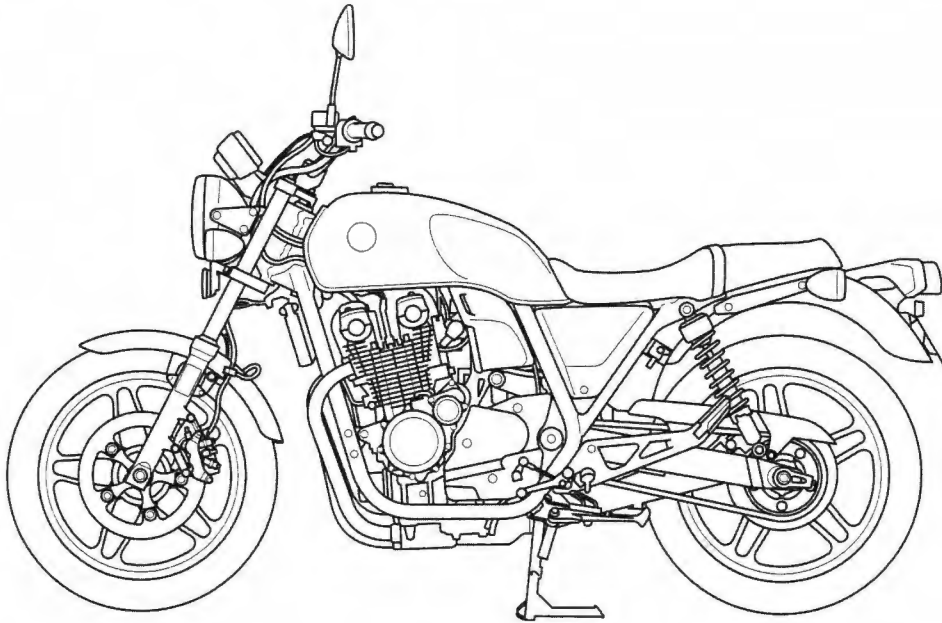
DESTINATION CODE

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

DESTINATION CODE	REGION
A	49-State
AC	50-State (meets California emissions standards)
CM	Canada

MODEL IDENTIFICATION

CB1100A shown:



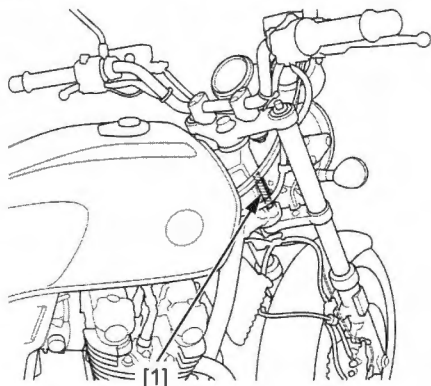
CB1100SA shown:



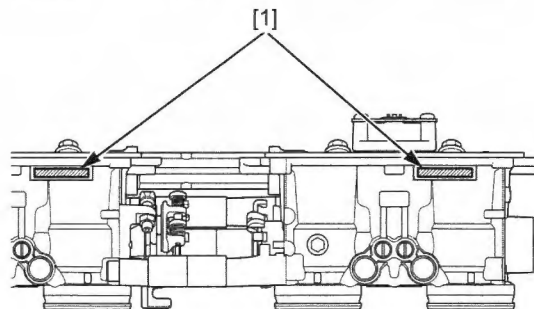
GENERAL INFORMATION

SERIAL NUMBERS/LABELS

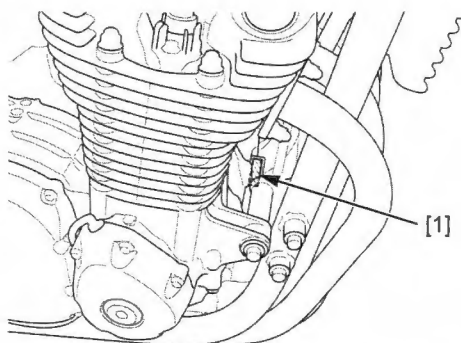
The Vehicle Identification Number (V.I.N.) [1] is stamped on the right side of the steering head.



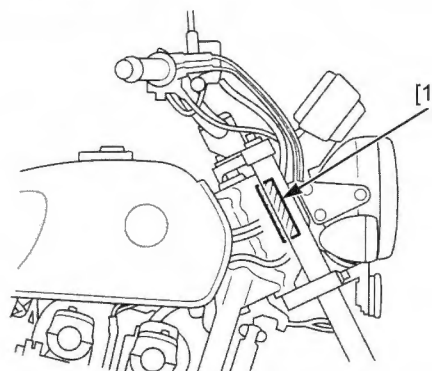
The throttle body identification numbers [1] are stamped on both sides of the throttle body.



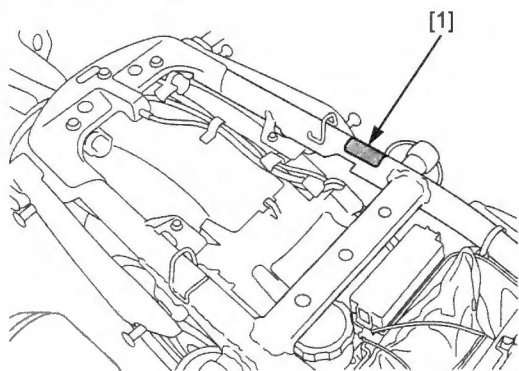
The engine serial number [1] is stamped on the front side of the lower crankcase.



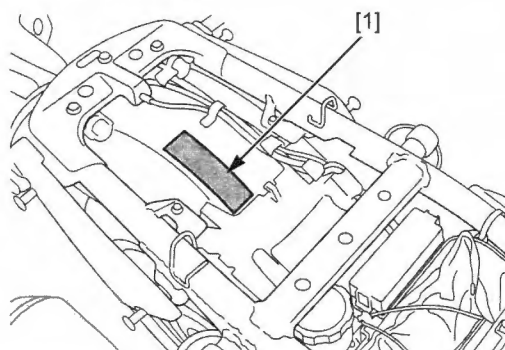
The safety certification label [1] is located on right front side of the steering head.



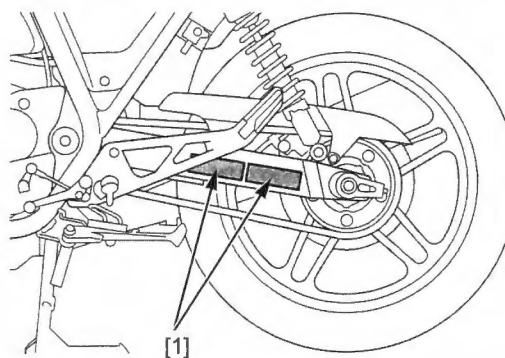
The color label [1] is attached to the frame under the seat. When ordering color-coded parts, always specify the designated color code.



The Emission Control Information Label [1] is attached on the rear fender B (U.S.A. types).



The Emission Control Information Labels [1] are attached on left side of swingarm (Canada type).



SPECIFICATIONS

GENERAL SPECIFICATIONS

ITEM		SPECIFICATIONS
DIMENSIONS	Overall length	2,210 mm (87.0 in)
	Overall width	835 mm (32.9 in)
	Overall height	1,130 mm (44.5 in)
	Wheelbase	1,490 mm (58.7 in)
	Seat height	795 mm (31.3 in)
	Footpeg height	323 mm (12.7 in)
	Ground clearance	CB1100/A: 125 mm (4.9 in)
		CB1100SA: 135 mm (5.3 in)
	Curb weight	CB1100: 245 kg (540 lbs)
		'13 CB1100A: 249 kg (549 lbs)
		After '13 CB1100/A: 247 kg (545 lbs)
FRAME		CB1100SA: 259 kg (571 lbs)
	Maximum weight capacity	159 kg (351 lbs)
	Frame type	Double cradle
	Front suspension	Telescopic fork
	Front axle travel	107 mm (4.21 in)
	Rear suspension	Swingarm
	Rear axle travel	'13 114 mm (4.49 in)
		After '13 113 mm (4.45 in)
	Front tire size	110/80R18M/C 58V
	Rear tire size	140/70R18M/C 67V
	Front tire brand	BT-54F RADIAL G (BRIDGESTONE)
		D205F (DUNLOP)
	Rear tire brand	BT-54R RADIAL G (BRIDGESTONE)
		D205 (DUNLOP)
	Front brake	Hydraulic double disc
	Rear brake	Hydraulic single disc
	Caster angle	27° 00'
	Trail length	114 mm (4.5 in)
	Fuel tank capacity	CB1100/A: 14.6 liter (3.86 US gal, 3.21 Imp gal)
		CB1100SA: 17.5 liter (4.62 US gal, 3.85 Imp gal)
ENGINE	Cylinder arrangement	4 cylinders in-line, inclined 13° from vertical
	Bore and stroke	73.5 X 67.2 mm (2.89 X 2.65 in)
	Displacement	1,140 cm ³ (69.5 cu-in)
	Compression ratio	9.5 : 1
	Valve train	Chain driven, DOHC
	Intake valve	opens: at 1 mm (0.04 in) lift 5° ATDC
		closes: at 1 mm (0.04 in) lift 28° ABDC
		(# 1, # 2)
		closes: at 1 mm (0.04 in) lift 38° ABDC
		(# 3, # 4)
	Exhaust valve	opens: at 1 mm (0.04 in) lift 42° BBDC
		closes: at 1 mm (0.04 in) lift 10° BTDC
	Lubrication system	Forced pressure and wet sump
	Oil pump type	Trochoid
	Cooling system	Air cooled
	Air filtration	Paper filter
	Engine dry weight	'13 86.9 kg (191.6 lbs)
		After '13 87.5 kg (192.9 lbs)
	Firing order	1 - 2 - 4 - 3
FUEL DELIVERY SYSTEM	Type	PGM-FI
	Throttle bore	32 mm (1.26 in)

GENERAL INFORMATION

ITEM			SPECIFICATIONS	
DRIVE TRAIN	Clutch system		Multi-plate, wet	
	Clutch operation system		Hydraulic operating	
	Transmission	'13	Constant mesh, 5-speeds	
		After '13	Constant mesh, 6-speeds	
	Primary reduction		1.652 (76/46)	
	Final reduction	'13	2.166 (39/18)	
		After '13	2.222 (40/18)	
	Gear ratio	'13	1st	3.166 (38/12)
			2nd	2.062 (33/16)
			3rd	1.545 (34/22)
			4th	1.250 (25/20)
			5th	1.111 (30/27)
		After '13	1st	3.083 (37/12)
			2nd	1.941 (33/17)
			3rd	1.478 (34/23)
			4th	1.240 (31/25)
5th			1.074 (29/27)	
6th			0.964 (27/28)	
Gearshift pattern		Left foot operated return system		
		'13	1 - N - 2 - 3 - 4 - 5	
		After '13	1 - N - 2 - 3 - 4 - 5 - 6	
ELECTRICAL	Ignition system		Computer-controlled digital transistorized with electric advance	
	Starting system		Electric starter motor	
	Charging system		Triple phase output alternator	
	Regulator/rectifier		FET shorted/triple phase, full wave rectification	
	Lighting system		Battery	

LUBRICATION SYSTEM SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Engine oil capacity		After draining	3.8 liter (4.0 US qt, 3.3 Imp qt)	—
		After draining/filter change	3.9 liter (4.1 US qt, 3.4 Imp qt)	—
		After disassembly	4.9 liter (5.2 US qt, 4.3 Imp qt)	—
Recommended engine oil			Pro Honda GN4 4-stroke oil (U.S.A. and Canada) or equivalent motor oil API service classification: SG or Higher JASO T 903 standard: MA Viscosity: SAE 10W-30	—
Oil pressure at EOP switch			490 – 588 kPa (5.0 – 6.0 kgf/cm ² , 71 – 85 psi) at 5,000 rpm/(80°C/176°F)	—
Oil pump rotor	Feed pump	Tip clearance	0.15 (0.006)	0.20 (0.008)
		Body clearance	0.15 – 0.23 (0.006 – 0.009)	0.35 (0.014)
		Side clearance	0.02 – 0.07 (0.001 – 0.003)	0.17 (0.007)
	Cooler pump	Tip clearance	0.15 (0.006)	0.20 (0.008)
		Body clearance	0.15 – 0.21 (0.006 – 0.008)	0.35 (0.014)
		Side clearance	0.02 – 0.07 (0.001 – 0.003)	0.17 (0.007)

FUEL SYSTEM (PGM-FI) SPECIFICATIONS

ITEM		SPECIFICATIONS
Throttle body identification number		GQ8FB
Idle speed		1,100 ± 100 rpm
Throttle grip freeplay		2 – 6 mm (0.08 – 0.24 in)
IAT sensor resistance (at 20°C/68°F)		1 – 4 kΩ
EOT sensor resistance (at 20°C/68°F)		2.4 – 2.9 kΩ
Fuel injector resistance (at 20°C/68°F)		11.4 – 12.6 Ω
PAIR control solenoid valve resistance (at 20°C/68°F)		23 – 27 Ω
EVAP purge control solenoid valve resistance (at 20°C/68°F) (U.S.A. type only)		30 – 34 Ω
Fuel pressure at idle		343 kPa (3.5 kgf/cm ² , 50 psi)
Fuel pump flow (at 12 V)	'13	290 cm ³ (9.8 US oz, 10.2 Imp oz) minimum/10 seconds
	After '13	393 cm ³ (13.3 US oz, 13.8 Imp oz) minimum/10 seconds

CYLINDER HEAD/VALVES SPECIFICATIONS

ITEM			STANDARD	SERVICE LIMIT
Cylinder compression			1,245 kPa (12.7 kgf/cm ² , 181 psi) at 250 rpm	—
Valve clearance		IN	0.15 ± 0.03 (0.006 ± 0.001)	—
		EX	0.28 ± 0.03 (0.011 ± 0.001)	—
Camshaft	Cam lobe height	IN	37.43 – 37.67 (1.474 – 1.483)	37.39 (1.472)
		EX	37.36 – 37.60 (1.471 – 1.477)	37.32 (1.469)
	Runout		—	0.05 (0.002)
	Oil clearance		0.020 – 0.062 (0.0008 – 0.0024)	0.10 (0.004)
Valve lifter	Valve lifter O.D.		25.978 – 25.993 (1.0228 – 1.0233)	25.97 (1.022)
	Valve lifter bore I.D.		26.010 – 26.026 (1.0240 – 1.0246)	26.04 (1.025)
Valve, valve guide	Valve stem O.D.	IN	4.970 – 4.995 (0.1957 – 0.1967)	4.960 (0.1953)
		EX	4.950 – 4.975 (0.1949 – 0.1959)	4.940 (0.1945)
	Valve guide I.D.	IN/EX	5.000 – 5.012 (0.1969 – 0.1973)	5.040 (0.1984)
	Stem-to-guide clearance	IN	0.005 – 0.042 (0.0002 – 0.0017)	0.08 (0.003)
		EX	0.025 – 0.062 (0.0010 – 0.0024)	0.10 (0.004)
	Valve seat width	IN	0.90 – 1.10 (0.035 – 0.043)	1.5 (0.06)
	EX	1.30 – 1.50 (0.051 – 0.059)	1.9 (0.07)	
Valve spring free length		IN/EX	44.85 (1.766)	43.95 (1.730)
Cylinder head warpage			—	0.15 (0.006)

CYLINDER/PISTON SPECIFICATIONS

ITEM				STANDARD	SERVICE LIMIT
Piston, piston rings	Piston O.D. at 15 mm (0.6 in) from bottom			73.465 – 73.485 (2.8923 – 2.8931)	73.395 (2.8896)
	Piston pin bore I.D.			17.002 – 17.008 (0.6694 – 0.6696)	17.05 (0.671)
	Piston pin O.D.			16.994 – 17.000 (0.6691 – 0.6693)	16.98 (0.669)
	Piston to piston pin clearance			0.002 – 0.014 (0.0001 – 0.0006)	0.04 (0.002)
	Piston ring end gap	Top		0.23 – 0.38 (0.009 – 0.015)	0.48 (0.019)
		Second		0.38 – 0.53 (0.015 – 0.021)	0.73 (0.029)
		Oil (side rail)		0.20 – 0.50 (0.008 – 0.020)	0.7 (0.03)
	Piston ring-to-ring groove clearance	Top		0.015 – 0.050 (0.0006 – 0.0020)	0.09 (0.004)
		Second		0.015 – 0.050 (0.0006 – 0.0020)	0.09 (0.004)
Cylinder	I.D.			73.500 – 73.515 (2.8937 – 2.8943)	73.600 (2.8976)
	Out of round			–	0.10 (0.004)
	Taper			–	0.10 (0.004)
	Warpage			–	0.15 (0.006)
Cylinder-to-piston clearance				0.015 – 0.050 (0.0006 – 0.0020)	0.10 (0.004)
Connecting rod small end I.D.				17.030 – 17.051 (0.6705 – 0.6713)	17.061 (0.6717)
Connecting rod-to-piston pin clearance				0.030 – 0.057 (0.0012 – 0.0022)	0.08 (0.003)

GENERAL INFORMATION

CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Recommended clutch fluid		DOT 4 brake fluid	—
Clutch master cylinder I.D.		12.700 – 12.743 (0.5000 – 0.5017)	12.755 (0.5022)
Clutch master piston O.D.		12.657 – 12.684 (0.4983 – 0.4994)	12.645 (0.4978)
Clutch	Spring free length	53.1 (2.09)	50.1 (1.97)
	Disc thickness	3.72 – 3.88 (0.146 – 0.153)	3.5 (0.14)
	Plate warpage	—	0.30 (0.012)
Clutch outer guide	I.D.	27.995 – 28.012 (1.1022 – 1.1028)	28.08 (1.106)
	O.D.	39.992 – 40.008 (1.5745 – 1.5751)	39.93 (1.572)
Mainshaft O.D. at clutch outer guide		27.980 – 27.993 (1.1016 – 1.1021)	27.10 (1.067)

ALTERNATOR/STARTER CLUTCH SPECIFICATION

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Starter driven gear boss O.D.	51.699 – 51.718 (2.0354 – 2.0361)	51.684 (2.0348)

CRANKSHAFT/TRANSMISSION/BALANCER SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod side clearance		0.05 – 0.20 (0.002 – 0.008)	0.30 (0.012)
	Crankpin bearing oil clearance		0.028 – 0.052 (0.0011 – 0.0020)	0.08 (0.003)
	Main journal bearing oil clearance		0.016 – 0.040 (0.0006 – 0.0016)	0.08 (0.003)
	Runout		—	0.03 (0.001)
Shift fork, fork shaft	I.D.	'13	14.000 – 14.021 (0.5512 – 0.5520)	14.04 (0.553)
		After '13	14.000 – 14.018 (0.5512 – 0.5519)	14.04 (0.553)
	Claw thickness	'13	5.93 – 6.00 (0.233 – 0.236)	5.9 (0.23)
		After '13	5.93 – 6.00 (0.233 – 0.236)	5.83 (0.230)
	Shift fork shaft O.D.		13.957 – 13.968 (0.5495 – 0.5499)	13.90 (0.547)
Transmission ('13)	Gear I.D.	M4, M5	31.000 – 31.025 (1.2205 – 1.2215)	31.05 (1.222)
		C1	26.007 – 26.028 (1.0239 – 1.0247)	26.04 (1.025)
		C2, C3	33.000 – 33.025 (1.2992 – 1.3002)	33.05 (1.301)
	Gear busing O.D.	M4, M5	30.950 – 30.975 (1.2185 – 1.2195)	30.93 (1.218)
		C2	32.955 – 32.980 (1.2974 – 1.2984)	32.93 (1.296)
		C3	32.950 – 32.975 (1.2972 – 1.2982)	32.93 (1.296)
	Gear-to-bushing clearance	M4, M5	0.025 – 0.075 (0.0010 – 0.0030)	0.11 (0.004)
		C2	0.020 – 0.070 (0.0008 – 0.0028)	0.11 (0.004)
		C3	0.025 – 0.075 (0.0010 – 0.0030)	0.11 (0.004)
	Gear bushing I.D.	M4	28.000 – 28.021 (1.1024 – 1.1032)	28.04 (1.104)
		C2	29.985 – 30.006 (1.1805 – 1.1813)	30.02 (1.182)
	Mainshaft O.D.	at M4	27.980 – 27.993 (1.1016 – 1.1021)	27.97 (1.101)
	Countershaft O.D.	at C2	29.950 – 29.975 (1.1791 – 1.1801)	29.94 (1.179)
	Bushing-to-shaft clearance	M4	0.007 – 0.041 (0.0028 – 0.0016)	0.08 (0.003)
		C2	0.010 – 0.056 (0.0004 – 0.0022)	0.10 (0.004)
Transmission ('After 13)	Gear I.D.	M5, M6	31.000 – 31.025 (1.2205 – 1.2215)	31.035 (1.2218)
		C1	26.007 – 26.028 (1.0239 – 1.0247)	26.04 (1.025)
		C2, C3, C4	33.000 – 33.025 (1.2992 – 1.3002)	33.035 (1.3006)
	Gear busing O.D.	M5	30.955 – 30.980 (1.2187 – 1.2197)	30.93 (1.218)
		M6	30.950 – 30.975 (1.2185 – 1.2195)	30.94 (1.218)
		C2	32.955 – 32.980 (1.2974 – 1.2984)	32.93 (1.296)
		C3, C4	32.950 – 32.975 (1.2972 – 1.2982)	32.93 (1.296)
	Gear-to-bushing clearance	M5	0.020 – 0.070 (0.0008 – 0.0028)	0.11 (0.004)
		M6	0.025 – 0.075 (0.0010 – 0.0030)	0.095 (0.0037)
		C2	0.020 – 0.070 (0.0008 – 0.0028)	0.11 (0.004)
		C3	0.025 – 0.075 (0.0010 – 0.0030)	0.095 (0.0037)
	Gear bushing I.D.	M5	27.985 – 28.006 (1.1018 – 1.1026)	28.03 (1.104)
		C2	29.985 – 30.006 (1.1805 – 1.1813)	30.02 (1.182)
	Mainshaft O.D.	at M5	27.967 – 27.980 (1.1016 – 1.1021)	27.957 (1.1007)
	Countershaft O.D.	at C2	29.950 – 29.975 (1.1791 – 1.1801)	29.94 (1.179)
	Bushing-to-shaft clearance	M5	0.005 – 0.039 (0.0002 – 0.0015)	0.06 (0.002)
		C2	0.010 – 0.056 (0.0004 – 0.0022)	0.10 (0.004)

GENERAL INFORMATION

FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS

Unit: mm (in)

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Minimum tire tread depth			—	1.5 (0.06)
Cold tire pressure	Up to 90 kg (200 lbs) load		250 kPa (2.50 kgf/cm ² , 36 psi)	—
	Up to maximum weight capacity		250 kPa (2.50 kgf/cm ² , 36 psi)	—
Axle runout			—	0.2 (0.01)
Wheel rim runout	Radial		—	2.0 (0.08)
	Axial		—	2.0 (0.08)
Wheel balance weight			—	60 g (2.1 oz) max.
Fork	Spring free length	CB1100/A:	335.5 (13.21)	328.8 (12.94)
		CB1100SA right fork:	335.5 (13.21)	328.8 (12.94)
		CB1100SA left fork:	485.5 (19.11)	475.8 (18.73)
	Pipe runout		—	0.20 (0.008)
	Recommended fork fluid		Pro Honda Suspension Fluid SS-8 (10W) or equivalent	—
	Fluid level	CB1100/A:	117 (4.6)	—
		CB1100SA right fork:	111 (4.4)	
		CB1100SA left fork:	185 (7.3)	
	Fluid capacity	CB1100/A:	495 ± 2.5 cm ³ (16.7 ± 0.08 US oz, 17.4 ± 0.09 Imp oz)	—
		CB1100SA right fork:	506 ± 2.5 cm ³ (17.1 ± 0.08 US oz, 17.8 ± 0.09 Imp oz)	—
		CB1100SA left fork:	434 ± 2.5 cm ³ (14.7 ± 0.08 US oz, 15.3 ± 0.09 Imp oz)	—
	Pre-load adjuster initial setting		9 mm (0.4 in) from fork bolt top/3rd groove	—
	Steering head bearing pre-load		9.6 – 13.7 N (1.0 – 1.4 kgf, 2.2 – 3.1 lbf)	—

REAR WHEEL/SUSPENSION SPECIFICATIONS

Unit: mm (in)

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Minimum tire tread depth			—	2.0 (0.08)
Cold tire pressure	Up to 90 kg (200 lbs) load		290 kPa (2.90 kgf/cm ² , 42 psi)	—
	Up to maximum weight capacity		290 kPa (2.90 kgf/cm ² , 42 psi)	—
Axle runout			—	0.2 (0.01)
Wheel rim runout	Radial		—	2.0 (0.08)
	Axial		—	2.0 (0.08)
Wheel balance weight			—	60 g (2.1 oz) max.
Drive chain	Size/link ('13)	DID	DID50ZVM2/110L	—
		RK	RK50LFOZ2/110L	—
	Size/link (After '13)	DID	DID50VA11/110L	—
		RK	RK50HFOZ6/110L	—
	Slack		25 – 35 (1.0 – 1.4)	—
Shock absorber	Spring preload adjuster standard position		2nd position	—

GENERAL INFORMATION

HYDRAULIC BRAKE SPECIFICATIONS

Unit: mm (in)

ITEM				STANDARD	SERVICE LIMIT
Front	Specified brake fluid			DOT 4 brake fluid	—
	Brake disc thickness			4.5 ± 0.1 (0.18 ± 0.004)	3.5 (0.14)
	Brake disc runout			—	0.20 (0.008)
	Master cylinder I.D.			14.000 – 14.043 (0.5512 – 0.5529)	14.055 (0.5533)
	Master piston O.D.			13.957 – 13.984 (0.5495 – 0.5506)	13.945 (0.5490)
	'13 CB1100A:	Caliper cylinder I.D.	Upper	27.000 – 27.050 (1.0630 – 1.0650)	27.060 (1.0654)
			Center	22.650 – 22.700 (0.8917 – 0.8937)	22.712 (0.8942)
			Lower	27.000 – 27.050 (1.0630 – 1.0650)	27.060 (1.0654)
		Caliper piston O.D.	Upper	26.935 – 26.968 (1.0604 – 1.0617)	26.91 (1.059)
			Center	22.585 – 22.618 (0.8892 – 0.8905)	22.560 (0.8882)
			Lower	26.935 – 26.968 (1.0604 – 1.0617)	26.91 (1.059)
	Except '13 CB1100A:	Caliper cylinder I.D.	A	30.230 – 30.280 (1.1902 – 1.1921)	30.29 (1.193)
			B	32.030 – 32.080 (1.2610 – 1.2630)	32.090 (1.2634)
Caliper piston O.D.		A	30.148 – 30.198 (1.1869 – 1.1889)	30.14 (1.187)	
		B	31.948 – 31.998 (1.2578 – 1.2598)	31.94 (1.257)	
Rear	Specified brake fluid			DOT 4 brake fluid	—
	Master cylinder push rod standard length			67.5 ± 1.0 (2.66 ± 0.04)	—
	Brake disc thickness			6.0 ± 0.2 (0.24 ± 0.008)	5.0 (0.20)
	Brake disc runout.			—	0.30 (0.012)
	Master cylinder I.D.			14.000 – 14.043 (0.5512 – 0.5529)	14.055 (0.5533)
	Master piston O.D.			13.957 – 13.984 (0.5495 – 0.5506)	13.945 (0.5490)
	Caliper cylinder I.D.			38.18 – 38.23 (1.503 – 1.505)	38.24 (1.506)
	Caliper piston O.D.			38.115 – 38.148 (1.5006 – 1.5019)	38.09 (1.500)

BATTERY/CHARGING SYSTEM SPECIFICATIONS

ITEM			SPECIFICATIONS
Battery	Type		YTZ14S
	Capacity		12 V – 11.2 Ah (10 HR)/12 V – 11.8 Ah (20 HR)
	Current leakage		0.1 mA max.
	Voltage (20°C/68°F)	Fully charged	13.0 – 13.2 V
		Needs charging	Below 12.3 V
	Charging current	Normal	1.1 A/5 – 10 h
		Quick	5.5 A/1 h
Alternator	Capacity		0.336 kW/5,000 rpm
	Charging coil resistance (20°C/68°F)		0.1 – 1.0 Ω

IGNITION SYSTEM SPECIFICATIONS

ITEM			SPECIFICATIONS
Spark plug	NGK		LMAR8A-9S
Spark plug gap			0.80 – 0.90 mm (0.031 – 0.035 in)
Ignition coil peak voltage			100 V minimum
CKP sensor peak voltage			0.7 V minimum
Ignition timing ("F" mark)	'13		8° BTDC at idle
	After '13		10° BTDC at idle

ELECTRIC STARTER SPECIFICATION

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Starter motor brush length	12.0 (0.47)	6.5 (0.26)

LIGHTS/METERS/SWITCHES SPECIFICATIONS

ITEM			SPECIFICATIONS
Bulbs	Headlight	Hi	12 V – 60 W
		Lo	12 V – 55 W
	Tail/brake light		12 V – 5/21 W
	Turn signal light		12 V – 21 W x 4
	Instrument light		LED
	Turn signal indicator		LED
	High beam indicator		LED
	Oil temperature indicator		LED
	Neutral indicator		LED
	Oil pressure indicator		LED
	MIL		LED
	ABS indicator (CB1100A/SA)		LED
· Fuse	Main fuse		30 A
	Sub fuse		20 A x 1, 10 A x 5
	ABS solenoid fuse ('13 CB1100A)		30 A
	ABS motor fuse (CB1100A/SA)		30 A
	ABS main fuse (CB1100A/SA)		10 A
Tachometer peak voltage			10.5 V minimum

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 hex bolt and nut	5.2 (0.5, 3.8)	5 mm screw	4.2 (0.4, 3.1)
6 mm hex bolt and nut	10 (1.0, 7)	6 mm screw	9.0 (0.9, 6.6)
8 mm hex bolt and nut	22 (2.2, 16)	6 mm flange bolt (8 mm head, small flange)	10 (1.0, 7)
10 mm hex bolt and nut	34 (3.5, 25)	6 mm flange bolt (8 mm head, large flange)	12 (1.2, 9)
12 mm hex bolt and nut	54 (5.5, 40)	6 mm flange bolt (10 mm head) and nut	12 (1.2, 9)
		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.

FRAME/BODY PANELS/EXHAUST SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Grab rail mounting nut	2	8	26 (2.7, 19)	
Muffler guard bolt (CB1100/A)	1	6	12 (1.2, 9)	
Muffler guard bolt (CB1100SA)	2	6	12 (1.2, 9)	
Exhaust pipe joint nut	8	8	22 (2.2, 16)	
Exhaust pipe guard bolt (CB1100SA)	2	6	12 (1.2, 9)	
Muffler band bolt (CB1100/A)	1	8	20 (2.0, 15)	Apply engine oil to the threads and seating surface.
Muffler band bolt (CB1100SA)	2	8	20 (2.0, 15)	Apply engine oil to the threads and seating surface.
Exhaust pipe mounting bolt (CB1100/A)	1	8	21 (2.1, 15)	
Exhaust pipe mounting bolt (CB1100SA)	2	8	21 (2.1, 15)	
Muffler mounting nut (CB1100/A)	1	8	21 (2.1, 15)	
Muffler mounting nut (CB1100SA)	2	8	21 (2.1, 15)	
Centerstand pivot pipe mounting bolt	1	6	12 (1.2, 9)	ALOC bolt; replace with a new one.
Sidestand pivot bolt	1	10	10 (1.0, 7)	See page 2-24
Sidestand pivot nut	1	10	39 (4.0, 29)	See page 2-24

MAINTENANCE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Spark plug	4	10	16 (1.6, 12)	
Timing hole cap	1	30	10 (1.0, 7)	Apply grease to the threads.
Engine oil drain bolt	1	14	30 (3.1, 22)	
Engine oil filter boss	1	20	18 (1.8, 13)	Apply a locking agent to the threads.
Engine oil filter cartridge	1	20	26 (2.7, 19)	Apply oil to the threads and O- ring.

LUBRICATION SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Oil pump assembly bolt	3	6	13 (1.3, 10)	CT bolt
Oil pump driven sprocket bolt	1	6	15 (1.5, 11)	Apply a locking agent to the threads.
EOP switch	1	PT 1/8	12 (1.2, 9)	Apply sealant to the threads.
EOP switch wire terminal bolt	1	4	2.2 (0.2, 1.6)	

FUEL SYSTEM (PGM-FI)

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
EOT sensor	1	10	14.5 (1.5, 11)	
Insulator band screw (Cylinder head side)	4	5	—	See page 5-63
Insulator band screw (Throttle body side)	4	5	—	See page 5-64
Fuel rail mounting bolt	4	5	5.1 (0.5, 3.8)	
IACV joint plate screw	1	4	2.1 (0.2, 1.5)	
IACV mounting screw	2	4	2.1 (0.2, 1.5)	
PAIR check reed valve cover bolt	4	6	12 (1.2, 9)	CT bolt
Fuel pump mounting nut ('13)	6	6	12 (1.2, 9)	See page 5-52
Fuel pump mounting cap nut (After '13)	6	6	12 (1.2, 9)	See page 5-52
Air cleaner housing connecting boot band screw	1	5	—	See page 5-57
Connector stay mounting screw	1	6	1.5 (0.2, 1.1)	
Air cleaner duct mounting screw	3	5	1.1 (0.1, 0.8)	
Air funnel mounting screw	6	5	4.2 (0.4, 3.1)	
MAP sensor mounting screw	1	5	1.1 (0.1, 0.8)	
Front air cleaner housing screw	7	4	0.8 (0.1, 0.6)	
IAT sensor mounting screw	2	5	1.1 (0.1, 0.8)	
Muffler cover mounting bolt	3	5	5.2 (0.5, 3.8)	
O ₂ sensor (CB1100/A)	1	12	24.5 (2.5, 18)	
O ₂ sensor (CB1100SA)	2	12	24.5 (2.5, 18)	

ENGINE REMOVAL/INSTALLATION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Left crankcase side cover bolt	3	6	6.0 (0.6, 4.4)	
Left crankcase rear cover bolt	2	6	12 (1.2, 9)	Apply a locking agent to the threads.
Drive sprocket bolt	1	10	54 (5.5, 40)	
Front engine bracket nut	4	10	49 (5.0, 36)	
Front engine hanger nut	2	10	59 (6.0, 44)	
Rear engine bracket bolt	2	10	59 (6.0, 44)	
Rear upper engine hanger nut	1	12	59 (6.0, 44)	
Rear lower engine hanger nut	1	12	59 (6.0, 44)	

CYLINDER HEAD/VALVES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Cylinder head cover bolt	8	6	10 (1.0, 7)	
Camshaft holder flange bolt	20	6	12 (1.2, 9)	Apply engine oil to the threads and seating surface.
Cam sprocket bolt	4	7	20 (2.0, 15)	Apply a locking agent to the threads.
Crankcase stud bolt	12	10	—	See page 7-27
Cylinder head stud bolt (exhaust pipe stud bolt)	8	8	—	See page 2-15
Cylinder head mounting nut	12	9	20 (2.0, 15) + 85°	Apply engine oil to the threads and seating surface. Sealing washer; replace with a new one. See page 7-28
Plug hole cover bolt	8	6	12 (1.2, 9)	

GENERAL INFORMATION

CLUTCH/GEARSHIFT LINKAGE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Clutch master cylinder reservoir cover screw	2	4	1.5 (0.2, 1.1)	
Clutch switch screw	1	4	1.2 (0.1, 0.9)	
Clutch lever pivot bolt	1	6	1.0 (0.1, 0.7)	
Clutch lever pivot nut	1	6	6.0 (0.6, 4.4)	
Clutch master cylinder holder bolt	2	6	12 (1.2, 9)	
Clutch hose oil bolt	2	10	34 (3.5, 25)	
Clutch cover damper rubber set plate bolt	1	6	12 (1.2, 9)	Apply a locking agent to the threads.
Clutch slave cylinder bleed valve	1	8	8.0 (0.8, 5.9)	
Clutch center lock nut	1	25	186 (19.0, 137)	Apply engine oil to the threads and seating surface. Stake.
Clutch spring bolt	6	6	12 (1.2, 9)	
Gearshift spindle return spring pin	1	8	23 (2.3, 17)	
Shift drum center bolt ('13)	1	8	23 (2.3, 17)	Apply a locking agent to the threads.
Shift drum lock bolt (After '13)	1	5	5.2 (0.5, 3.8)	Apply a locking agent to the threads.

ALTERNATOR/STARTER CLUTCH

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Stator mounting bolt	4	6	12 (1.2, 9)	
Alternator wire clamp bolt	1	6	12 (1.2, 9)	
Starter clutch assembly bolt	6	6	16 (1.6, 12)	Apply a locking agent to the threads.
Flywheel flange bolt	1	10	113 (11.5, 83)	Apply engine oil to the threads and seating surface.

CRANKCASE/TRANSMISSION/BALANCER

ITEM		Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Crankcase	9 mm bolt (main journal)	12	9	33 (3.4, 24)	Degrease and apply molybdenum disulfide oil to the threads and seating surface.
	10 mm bolt	1	10	39 (4.0, 29)	
	8 mm bolt	18	8	24 (2.4, 18)	
	6 mm bolt	3	6	12 (1.2, 9)	
Oil pass plate mounting bolt		3	6	12 (1.2, 9)	Apply a locking agent to the threads. Stake.
Connecting rod bearing cap nut		8	8	41 (4.2, 30)	Apply engine oil to the threads and seating surface.
Shift fork shaft stopper plate bolt		1	6	12 (1.2, 9)	Apply a locking agent to the threads.
Balancer shaft lock bolt		1	6	12 (1.2, 9)	

GENERAL INFORMATION

FRONT WHEEL/SUSPENSION/STEERING

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Handlebar upper holder bolt	4	8	21 (2.1, 15)	
Handlebar weight mounting screw	2	6	10 (1.0, 7)	ALOC screw; replace with a new one.
Rearview mirror adapter bolt	2	10	20 (2.0, 15)	
Rearview mirror lock nut	2	10	20 (2.0, 15)	Left hand threads.
Front brake disc bolt	10	6	20 (2.0, 15)	ALOC bolt; replace with a new one.
Front axle bolt	1	14	59 (6.0, 44)	
Front axle pinch bolt	4	8	26 (2.7, 19)	
Fork socket bolt	2	8	20 (2.0, 15)	Apply a locking agent to the threads.
Fork bolt	2	37	22 (2.2, 16)	
Fork bottom bridge pinch bolt ('13)	2	10	44 (4.5, 32)	
Fork bottom bridge pinch bolt (After '13)	2	10	39 (4.0, 29)	
Fork top bridge pinch bolt	2	8	23 (2.3, 17)	
Steering stem adjusting nut	1	26	29 (3.0, 21)	Apply engine oil to the threads and seating surface. See page 12-32
Steering stem adjusting lock nut	1	26	—	See page 12-32
Steering stem nut	1	24	103 (10.5, 76)	

REAR WHEEL/SUSPENSION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Driven sprocket nut	5	12	108 (11.0, 80)	
Rear brake disc bolt	5	8	42 (4.3, 31)	ALOC bolt; replace with a new one.
Rear pulser ring bolt	3	5	7.0 (0.7, 5.2)	ALOC bolt; replace with a new one.
Rear axle nut ('13)	1	22	113 (11.5, 83)	U-nut
Rear axle nut (After '13)	1	18	93 (9.5, 69)	U-nut
Rear shock absorber upper mounting bolt	2	6	9.0 (0.9, 6.6)	
Rear shock absorber lower mounting bolt	2	8	26 (2.7, 19)	
Drive chain slider screw	2	5	4.2 (0.4, 3.1)	ALOC screw; replace with a new one.
Swingarm pivot nut ('13)	1	18	108 (11.0, 80)	U-nut Apply engine oil to the threads and seating surface.
Swingarm pivot nut (After '13)	1	18	113 (11.5, 83)	U-nut Apply engine oil to the threads and seating surface.

GENERAL INFORMATION

HYDRAULIC BRAKE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Front brake caliper mounting bolt	4	8	31 (3.2, 23)	ALOC bolt; replace with a new one.
Front brake lever pivot bolt	1	6	1.0 (0.1, 0.7)	
Front brake lever pivot nut	1	6	6.0 (0.6, 4.4)	
Front master cylinder reservoir cover screw	2	4	1.5 (0.2, 1.1)	
Front brake light switch screw	1	4	1.2 (0.1, 0.9)	
Front master cylinder holder bolt	2	6	12 (1.2, 9)	
Brake hose oil bolt ('13 CB1100A)	6	10	34 (3.5, 25)	
Brake hose oil bolt (CB1100)	5	10	34 (3.5, 25)	
Brake hose oil bolt (After '13 CB1100A/SA)	9	10	34 (3.5, 25)	
Front brake caliper pad pin ('13 CB1100A)	2	10	17 (1.7, 13)	
Front brake caliper pad pin (Except '13 CB1100A)	4	10	17 (1.7, 13)	
Front brake caliper pin bolt ('13 CB1100A)	2	8	22 (2.2, 16)	Apply a locking agent to the threads.
Front brake caliper bracket pin bolt ('13 CB1100A)	2	8	12 (1.2, 9)	Apply a locking agent to the threads.
Front brake caliper assembly bolt (Except '13 CB1100A)	8	8	22 (2.2, 16)	Apply a locking agent to the threads.
Brake caliper bleed valve ('13 CB1100A)	4	8	5.4 (0.6, 4.0)	
Brake caliper bleed valve (Except '13 CB1100A)	3	8	5.4 (0.6, 4.0)	
Rear brake caliper pad pin	1	10	17 (1.7, 13)	
Rear brake caliper pin bolt	1	12	27 (2.8, 20)	
Rear brake caliper bolt	1	8	22 (2.2, 16)	ALOC bolt; replace with a new one.
Rear master cylinder push rod joint nut	1	8	17 (1.7, 13)	
Rear master cylinder reservoir hose joint screw	1	4	1.5 (0.2, 1.1)	Apply a locking agent to the threads.
Front brake hose stay bolt (CB1100A/SA)	2	6	12 (1.2, 9)	ALOC bolt; replace with a new one.

ANTI-LOCK BRAKE SYSTEM (CB1100A/SA)

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Brake line joint nut ('13)	14	10	14 (1.4, 10)	Apply brake fluid to the threads.
Brake line joint nut (After '13)	8	10	14 (1.4, 10)	Apply brake fluid to the threads.

BATTERY/CHARGING SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Battery cover screw	1	6	1.4 (0.1, 1.0)	

IGNITION SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
CKP sensor rotor flange bolt	1	10	75 (7.6, 55)	Apply engine oil to the threads and seating surface.

ELECTRIC STARTER

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Starter motor brush screw	1	5	3.7 (0.4, 2.7)	
Starter motor case bolt	2	5	4.9 (0.5, 3.6)	
Starter motor terminal nut	1	6	12 (1.2, 9)	

GENERAL INFORMATION

LIGHTS/METERS/SWITCHES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Tail/brake light lens bolt	2	6	9.8 (1.0, 7.2)	
Sidestand switch bolt	1	6	10 (1.0, 7)	ALOC bolt; replace with a new one.
Turn signal light lens screw	4	4	1.0 (0.1, 0.7)	
Turn signal light mounting bolt	4	6	5.1 (0.5, 3.8)	
Neutral switch	1	10	12 (1.2, 9)	
Gear position switch mounting bolt (After '13)	2	6	10 (1.0, 7)	

OTHERS

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Main step holder mounting bolt	4	8	37 (3.8, 27)	
Main step rubber set plate bolt	4	5	5.1 (0.5, 3.8)	ALOC bolt; replace with a new one.
Main step cap bolt	2	8	12 (1.2, 9)	
Gearshift pedal pivot bolt	1	8	21 (2.1, 15)	
Gearshift arm pinch bolt	1	6	12 (1.2, 9)	
Gearshift arm tie-rod lock nut (gearshift pedal side)	1	6	10 (1.0, 7)	
Gearshift arm tie-rod lock nut (gearshift arm side)	1	6	10 (1.0, 7)	Left hand threads.

GENERAL INFORMATION

LUBRICATION & SEAL POINTS

ENGINE

MATERIAL	LOCATION	REMARKS
Liquid sealant (Three Bond 1207B or equivalent)	Upper/lower crankcase mating surface	See page 11-32
	Right crankcase cover mating surface	See page 17-11
	Left crankcase cover mating surface	See page 10-11
	Oil pan/lower crankcase mating surface	See page 4-9
	Clutch cover/crankcase mating surface	See page 9-28
	EOP switch threads	See page 4-5
Liquid sealant (Three Bond 5211C or equivalent)	Cylinder head semi-circular cut-out	See page 7-8
	Alternator cover wire grommet	
	CKP sensor wire grommet	
Molybdenum disulfide oil (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease)	Main journal bearing surface	
	Connecting rod bearing surface	
	Connecting rod small end inner surface	
	Crankshaft thrust surface	
	Camshaft lobes, journals and thrust surface	
	Valve stem (valve guide sliding surface)	
	Valve lifter outer sliding surface	
	Piston pin sliding surface	
	Clutch outer/needle bearing sliding surface	
	Clutch outer guide sliding surface	
	M3, C4, C5 shifter gear (shift fork grooves); '13	
	M3/M4, C5, C6 shifter gear (shift fork grooves); After '13	
	Starter reduction gear shaft sliding surface	
	Main journal 9 mm bolt threads and seating surface (after degreasing)	
Engine oil	Piston and piston ring sliding surface	
	Clutch lifter piece sliding surface	
	Clutch disc entire surface	
	Clutch lifter rod outer surface (clutch side)	
	Oil strainer packing whole surface	
	Oil pass plate O-ring whole surface	
	Starter one-way clutch sliding surface	
	Starter driven gear inner surface	
	Starter reduction gear shaft sliding surface	
	CKP sensor rotor bolt threads and seating surface	
	Flywheel bolt threads and seating surface	
	Cylinder head mounting nut threads and seating surface	
	Cylinder head mounting bolt threads and seating surface	
	Connecting rod bolt/nut threads and seating surface	
	Camshaft holder bolt threads and seating surface	
	Oil filter cartridge threads and O-ring surface	
	Clutch center lock nut threads and seating surface	
	Each gear teeth and rotating surface	
	Each bearing rolling surface	
	Each O-ring whole surface	
	Other rotating area and sliding surface	
Multi-purpose grease	Balancer damper rubber fitting area	
	Timing hole cap threads	
	Each oil seal lips	
Silicone grease	Clutch slave cylinder piston O-ring	
	Clutch slave cylinder oil seal	
	Clutch lifter rod outer surface (slave cylinder side)	

GENERAL INFORMATION

MATERIAL	LOCATION	REMARKS
Locking agent	Cam sprocket bolt threads	Coating width: 6.5 ± 1 mm
	Oil pump chain guide bolt threads	Coating width: 6.5 ± 1 mm
	Oil pump driven sprocket bolt threads	Coating width: 6.5 ± 1 mm
	Oil pass plate bolt threads	Coating width: 6.5 ± 1 mm
	Oil pass line A,B, oil line mounting bolt threads	Coating width: 6.5 ± 1 mm
	Oil return line bolt threads	Coating width: 6.5 ± 1 mm
	Shift drum center bolt threads; '13	Coating width: 6.5 ± 1 mm
	Shift drum lock bolt threads; After '13	Coating width: 4.5 ± 1 mm
	Shift drum bearing set plate bolt threads	Coating width: 6.5 ± 1 mm
	Shift fork shaft stopper plate bolt threads	Coating width: 6.5 ± 1 mm
	Clutch cover damper rubber mounting bolt threads	Coating width: 6.5 ± 1 mm
	Oil filter boss threads (crank case side)	Coating width: 6.5 ± 1 mm
	Starter one-way clutch bolt threads	Coating width: 6.5 ± 1 mm
	Left crankcase rear cover bolt threads	

FRAME

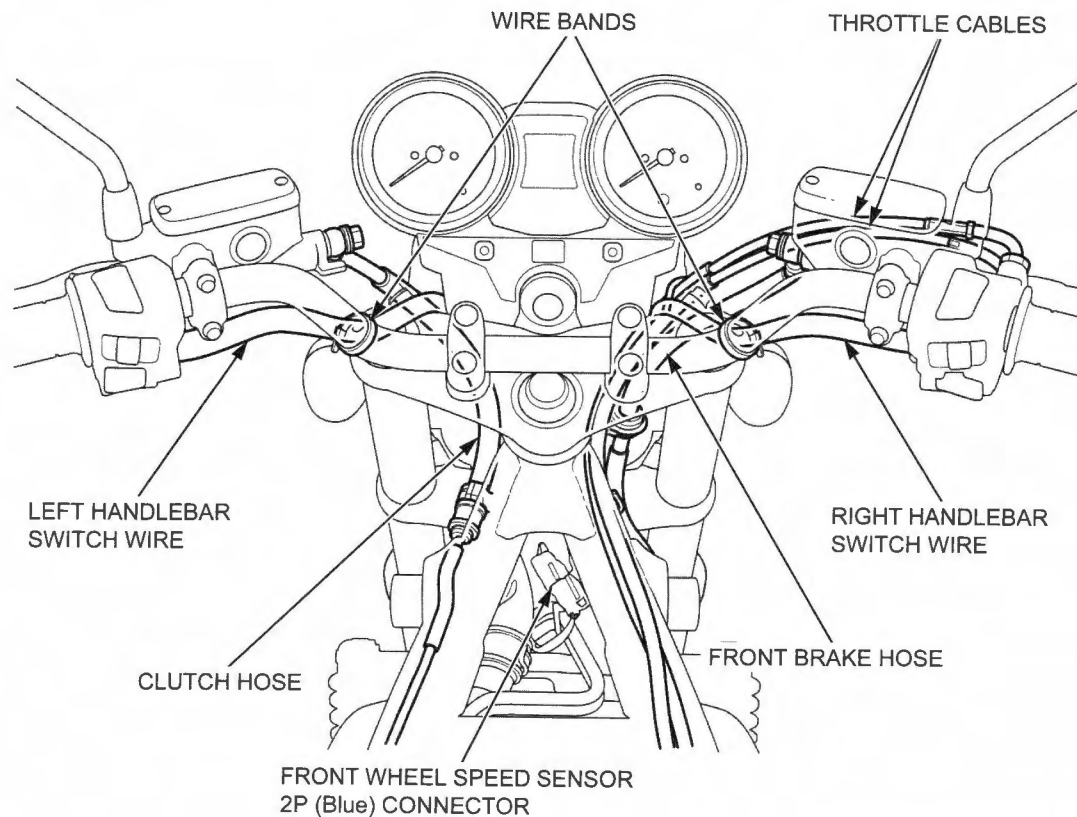
MATERIAL	LOCATION	REMARKS
Multi-purpose grease	Front wheel dust seal lips	
	Rear wheel dust seal lips	
	Rear wheel hub O-ring	
	Throttle grip pipe flange	
	Rear brake pedal pivot sliding area	
	Gearshift pedal tie-rod ball joints	
	Gearshift pedal pivot sliding area	
	Main step sliding area	
	Pillion step sliding area	
	Sidestand pivot sliding area	
	Centerstand pivot sliding area	
	Each dust seal lips	
Urea based multi-purpose grease with extreme pressure agent (example: EXCELITE EP2 manufactured by KYODO YUSHI, Japan) or equivalent	Upper and lower steering head bearing	Apply 3 – 5 g each
	Upper and lower steering head dust seal lips	
Multi-purpose grease (Shell Alvania EP2 or equivalent)	Swingarm pivot bearings	
	Swingarm pivot dust seal lips	
Cable lubricant	Throttle cable A, B casing inside	
Molybdenum paste	Shock absorber spring adjuster cam sliding area	
Pro Honda Handgrip cement, Honda bond A, Cemedine #540 or equivalent	Handlebar grip rubber inside	
Engine oil	Muffler band bolt threads and seating surface	
	Swingarm pivot nut threads and seating surface	
	Steering head bearing adjusting nut threads	
Silicone grease	Front brake lever pivot, adjuster and joint sliding area	Apply 0.1 g
	Front brake lever-to-master piston contact area	Apply 0.1 g
	Front brake master cylinder piston boot inside	
	Clutch lever pivot, adjuster and joint sliding area	Apply 0.1 g
	Clutch lever-to-master piston contact area	Apply 0.1 g
	Clutch master cylinder piston boot inside	
	Rear master cylinder push rod boot inside	Apply 0.1 g
	Brake caliper dust seals	
	Rear brake pad pin stopper ring	
	Rear brake caliper slide pin sliding surfaces	Apply 0.4 g
	Rear brake caliper pin boot inside	
	Front brake caliper slide pin sliding surfaces ('13 CB1100A)	Apply 0.4 g

GENERAL INFORMATION

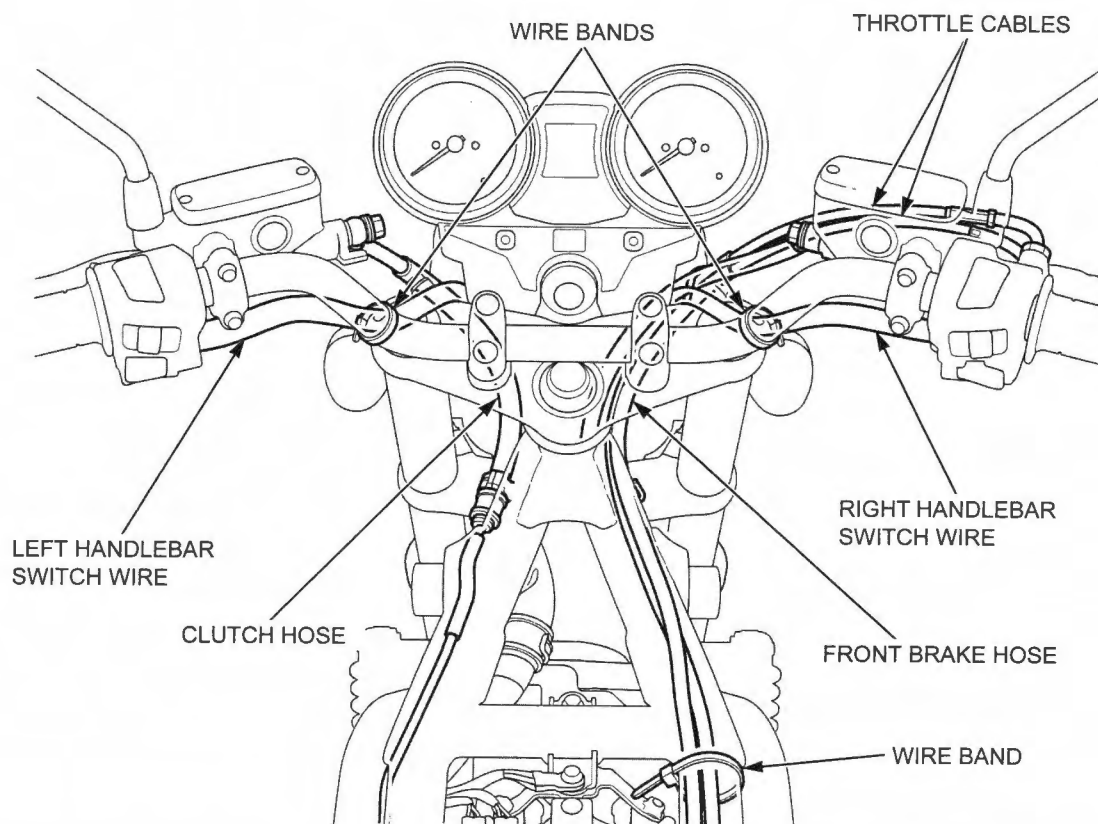
MATERIAL	LOCATION	REMARKS
DOT 4 brake fluid	Brake master cylinder inside	
	Brake master pistons and cups	
	Clutch master cylinder inside	
	Clutch master piston and cups	
	Brake caliper pistons and piston seals	
	Brake line joint nut threads (CB1100A/SA)	
Pro Honda Suspension Fluid SS-8 (10W) or equivalent	Fork cap O-ring	
	Fork dust seal and oil seal lips	
Locking agent	Front brake caliper pin bolt threads ('13 CB1100A)	
	Front brake caliper bracket pin bolt threads ('13 CB1100A)	
	Front brake caliper assembly bolt threads (Except '13 CB1100A)	
	Fork socket bolt threads	

CABLE & HARNESS ROUTING

'13 CB1100A:

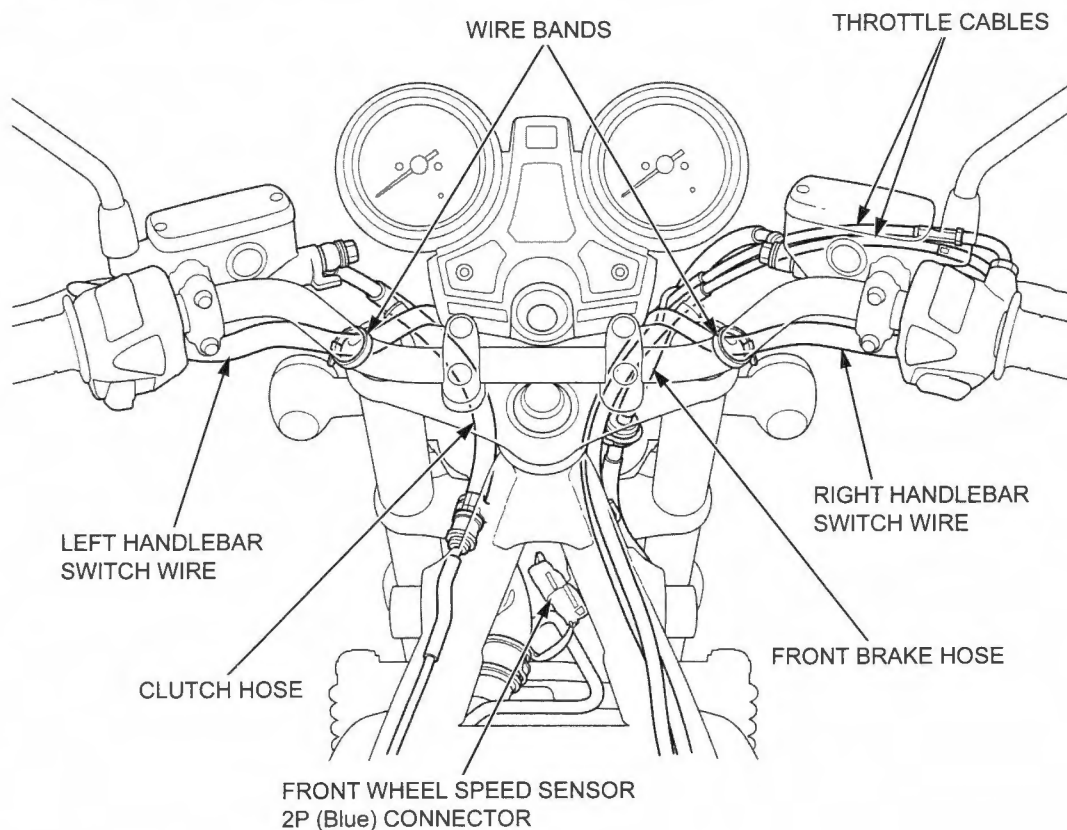


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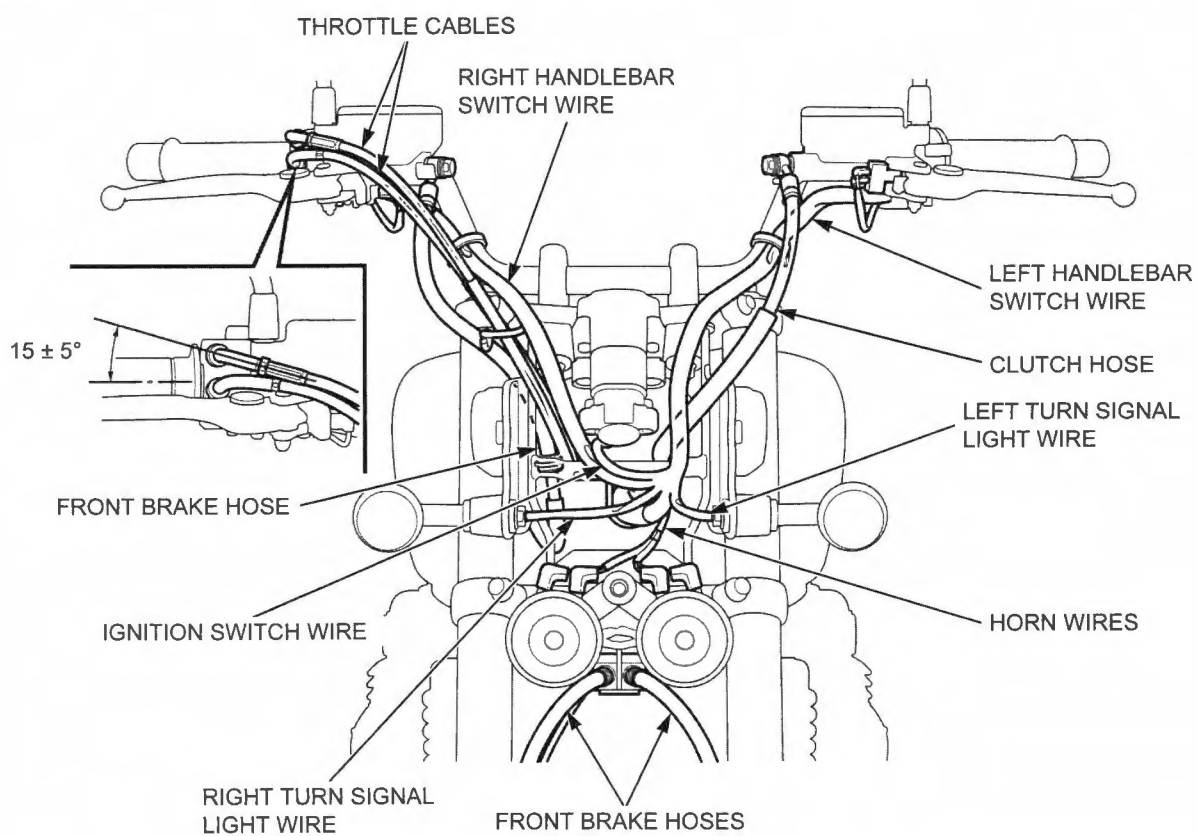


GENERAL INFORMATION

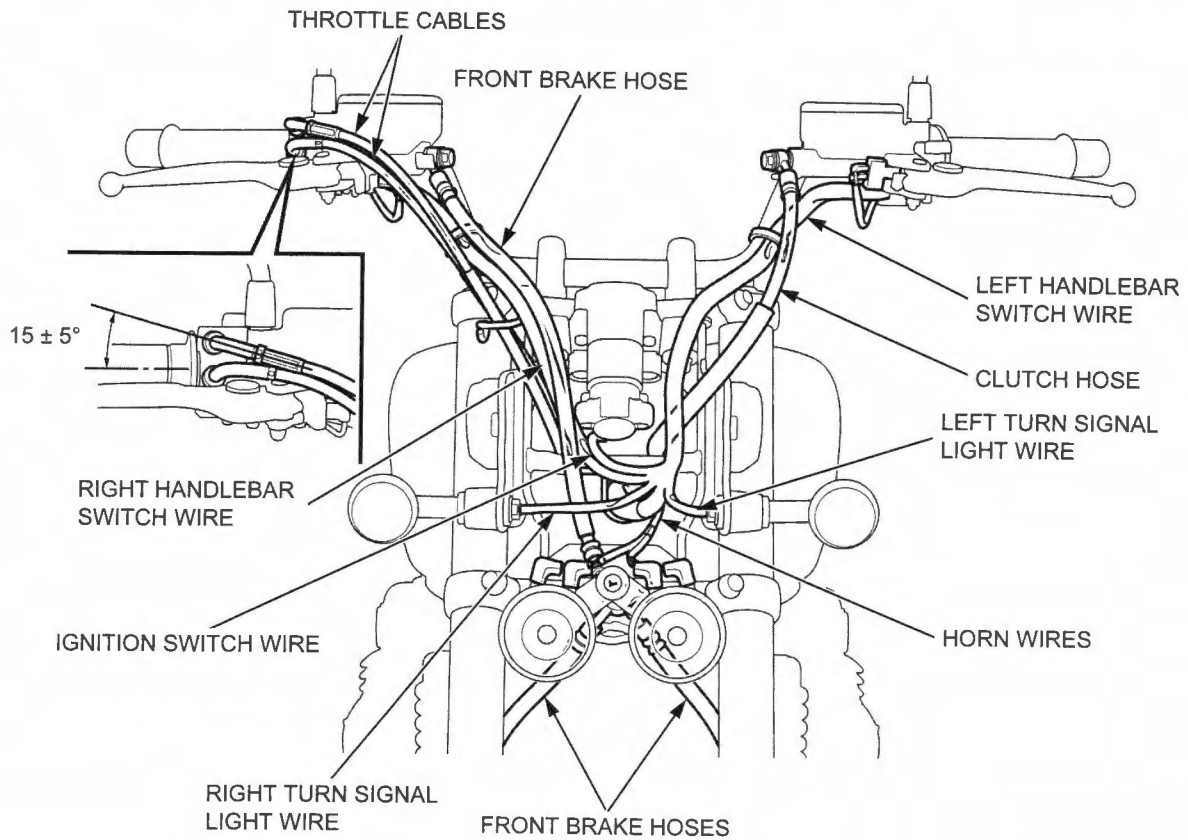
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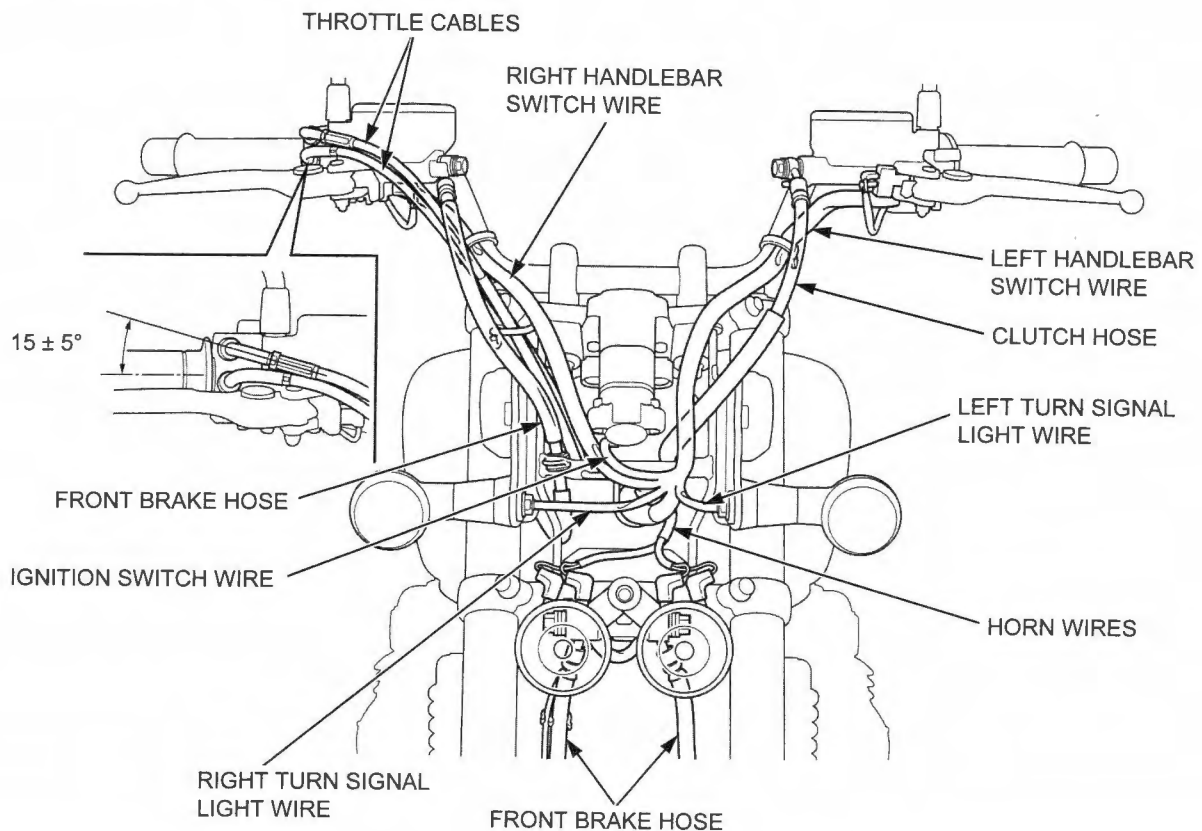
'13 CB1100A:



CB1100:

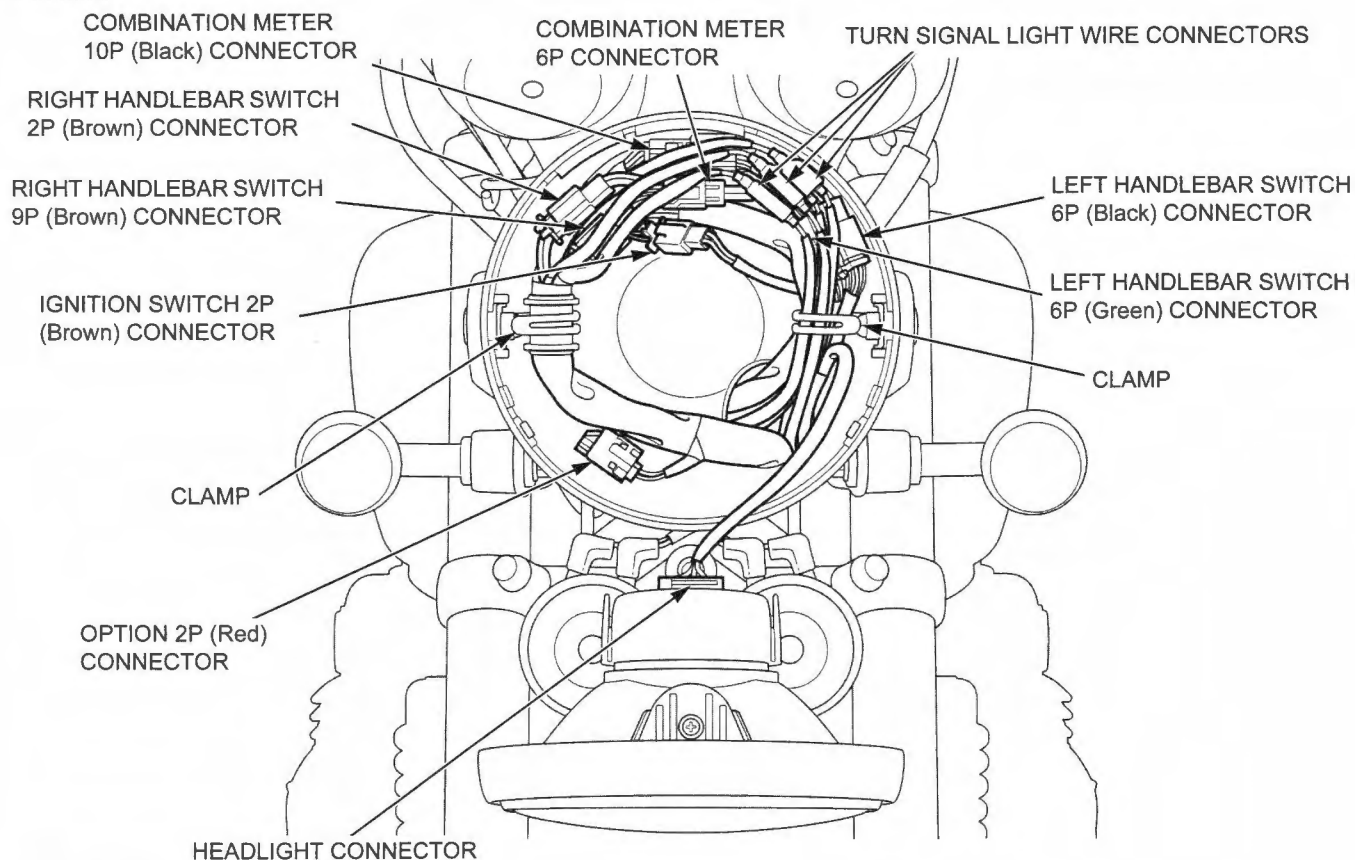


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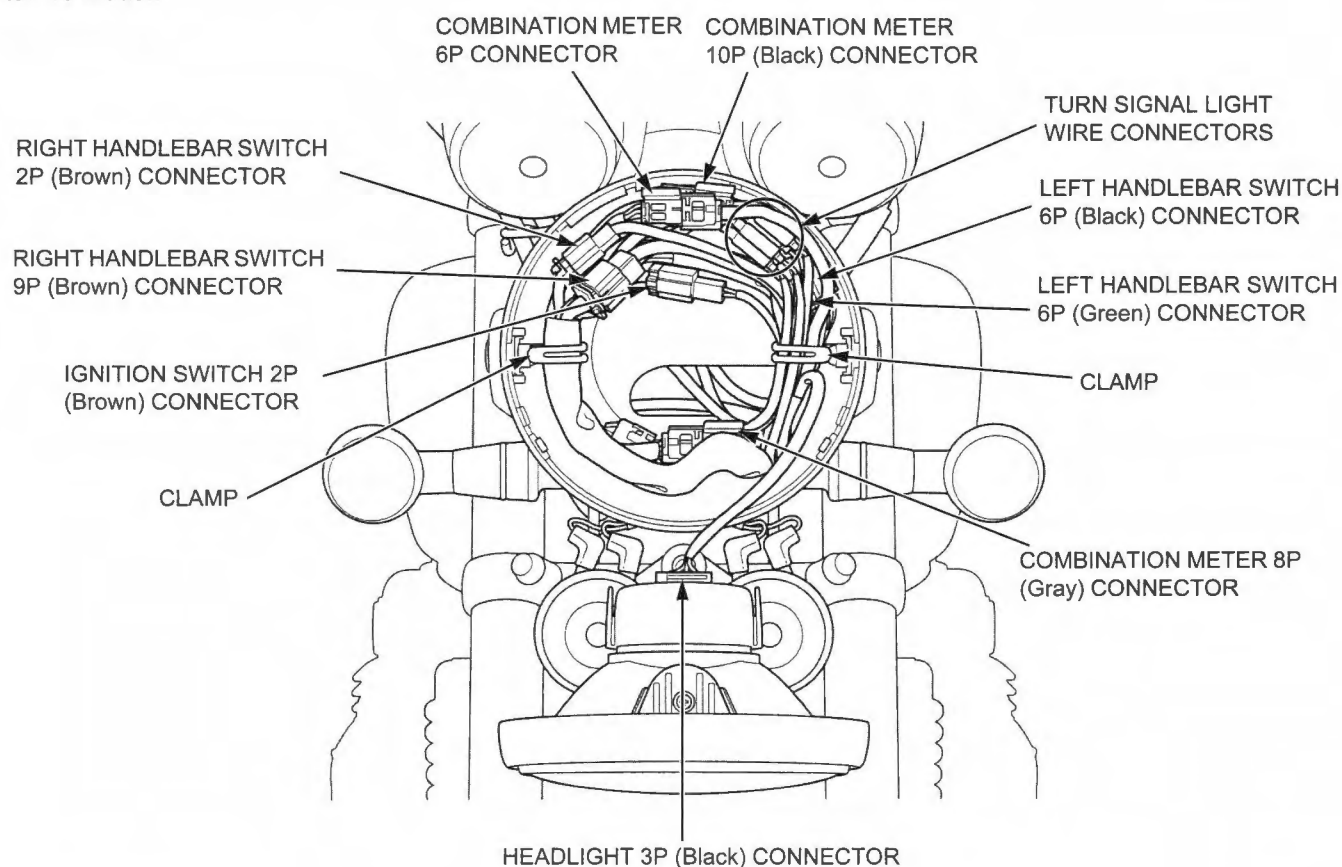


GENERAL INFORMATION

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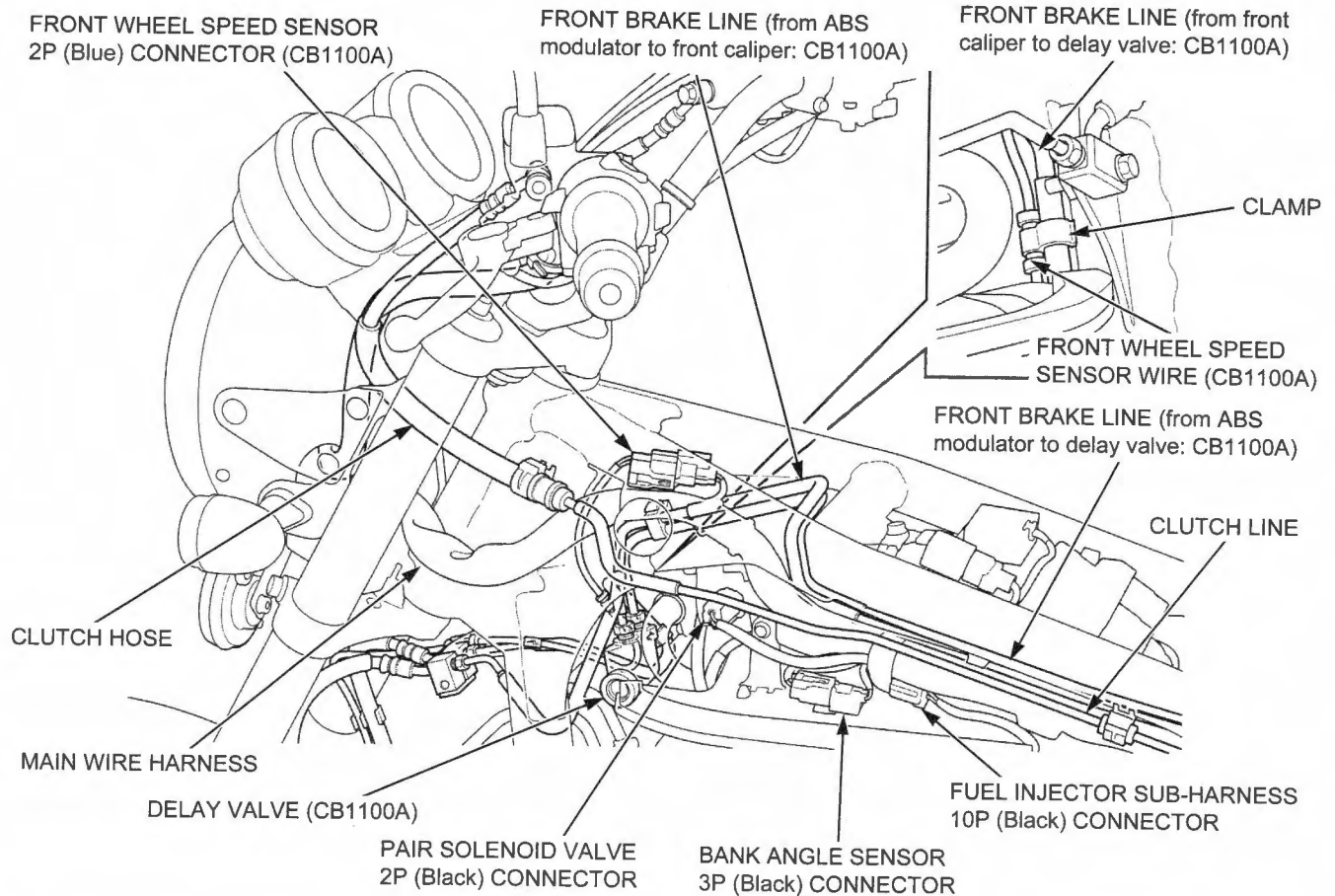


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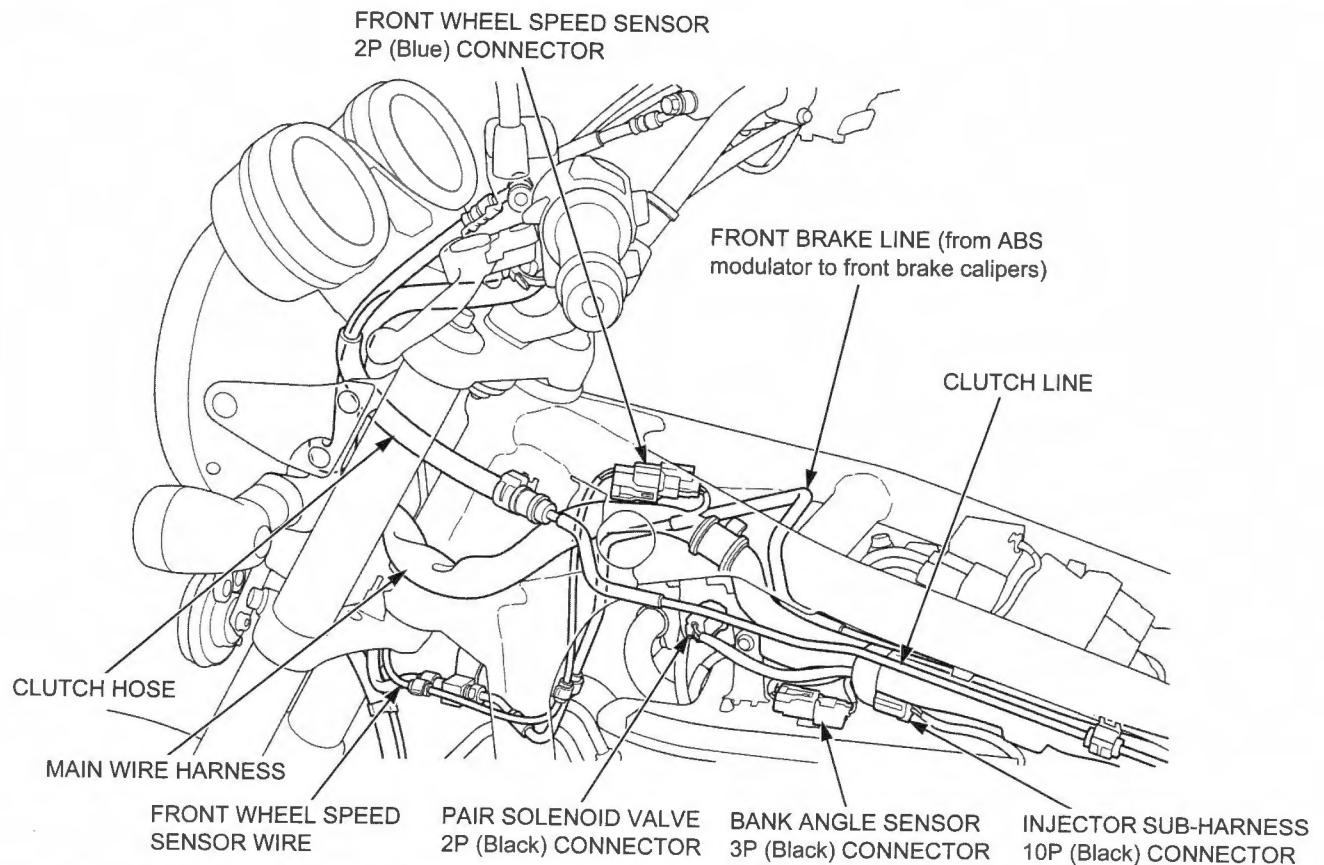


GENERAL INFORMATION

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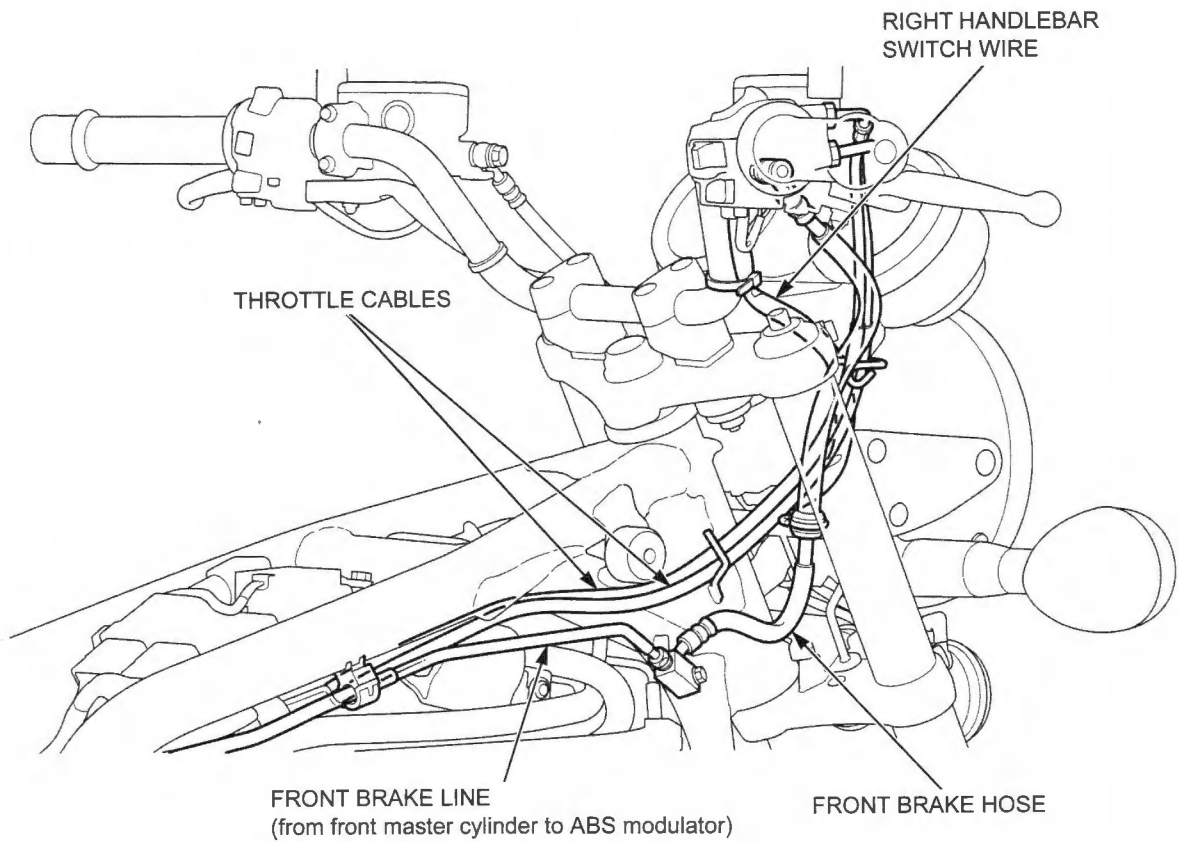


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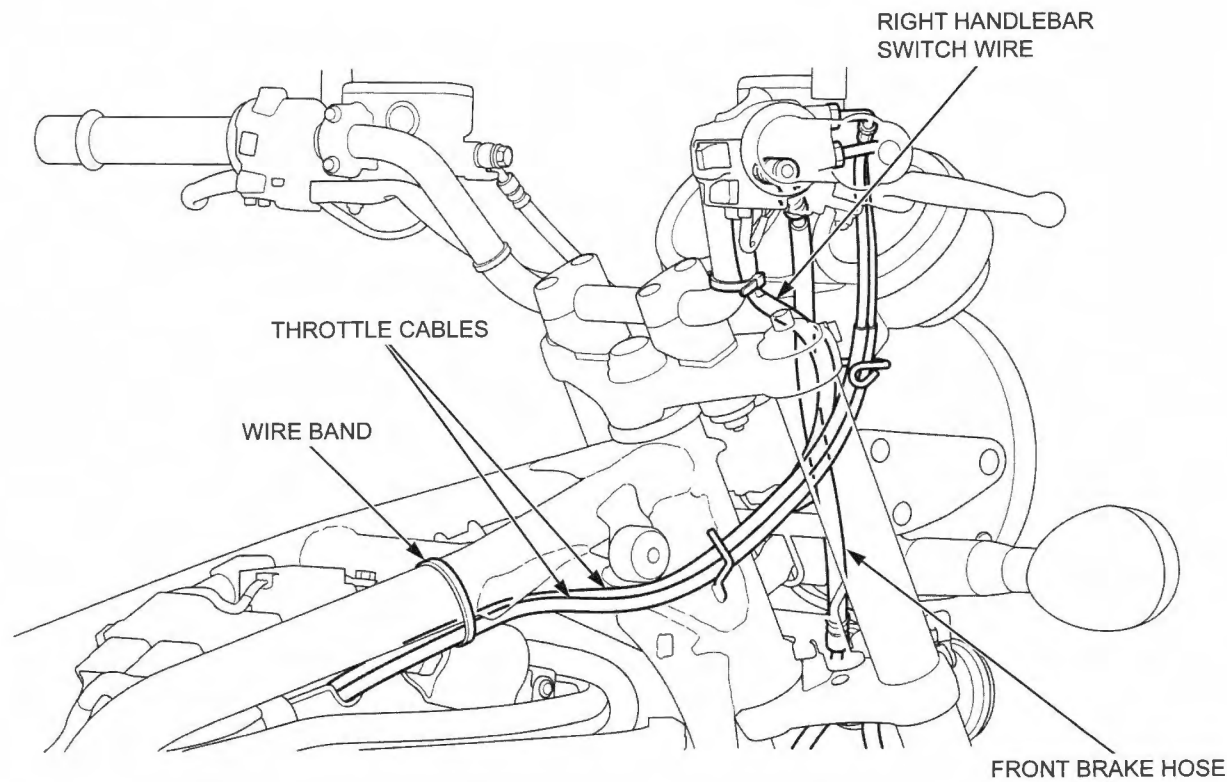


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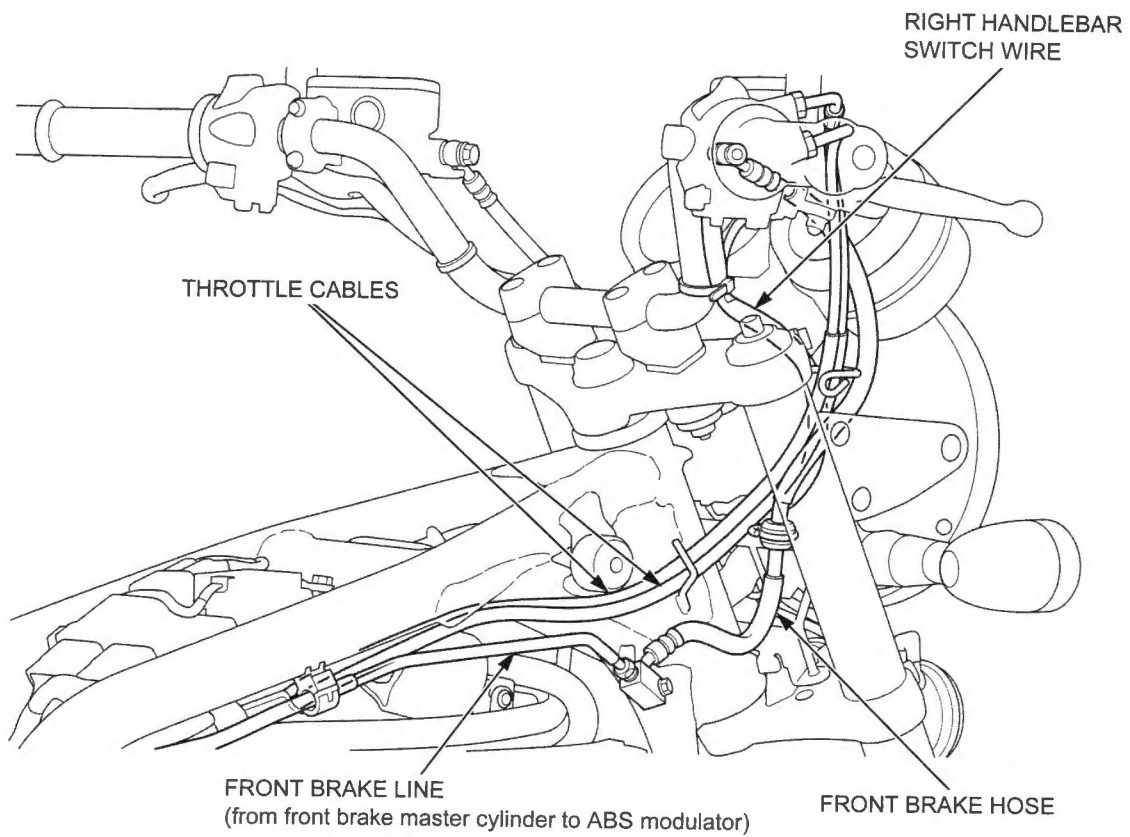
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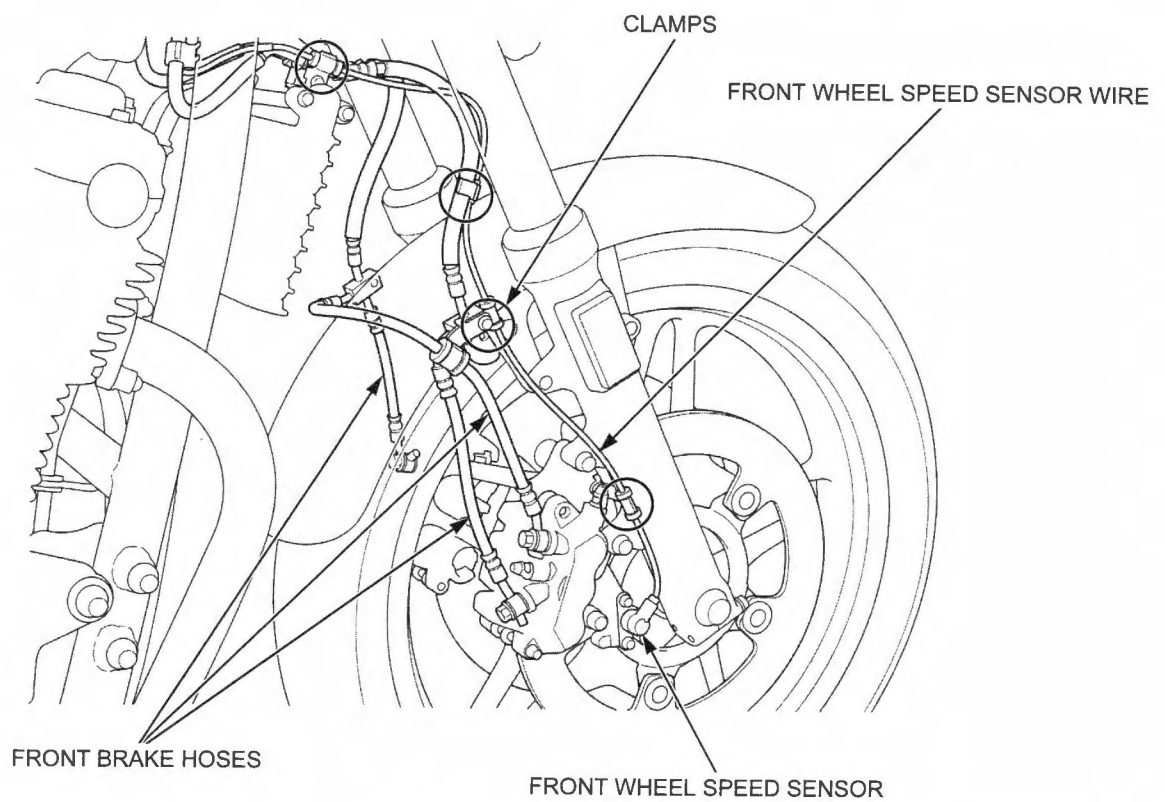
CB1100:



After '13 CB1100A/SA:

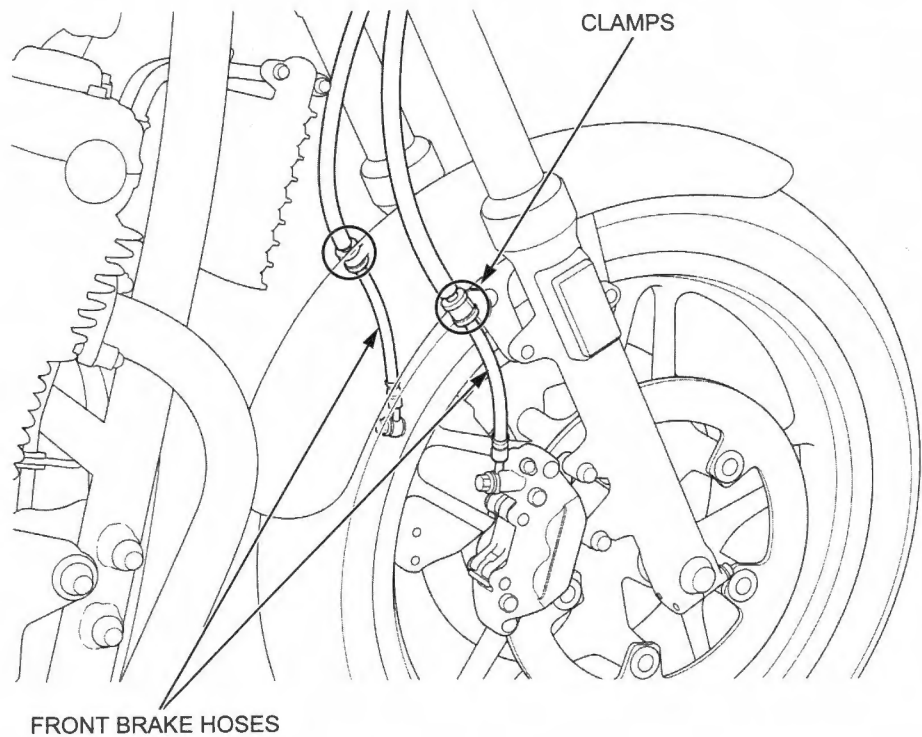


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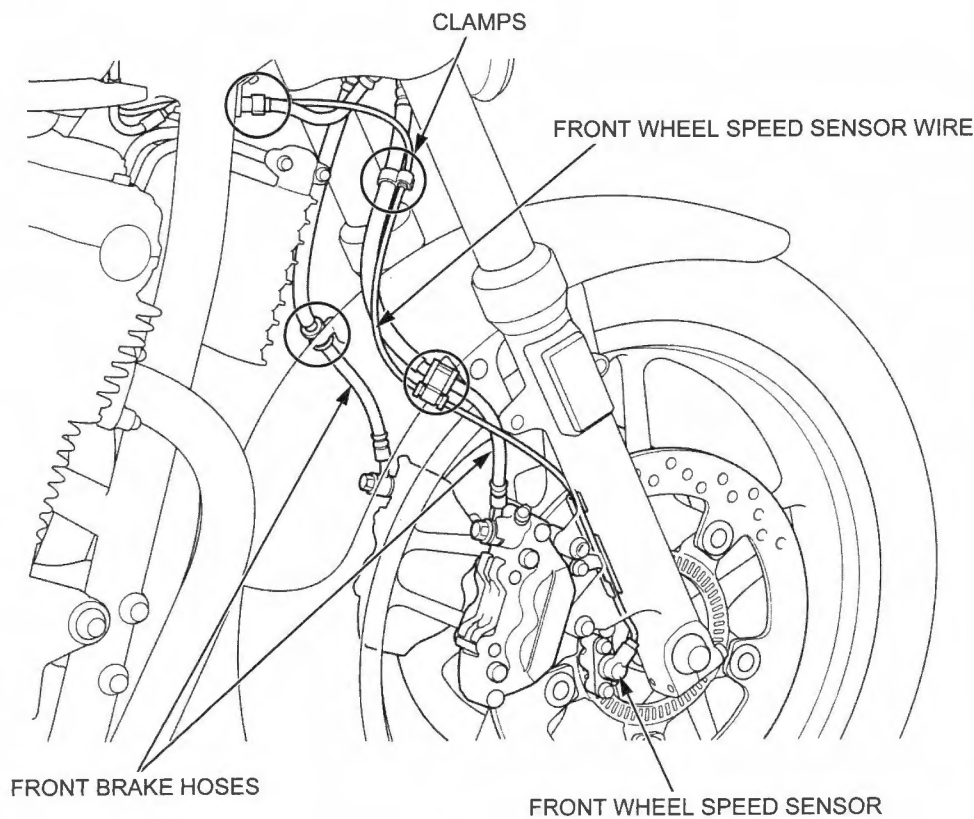


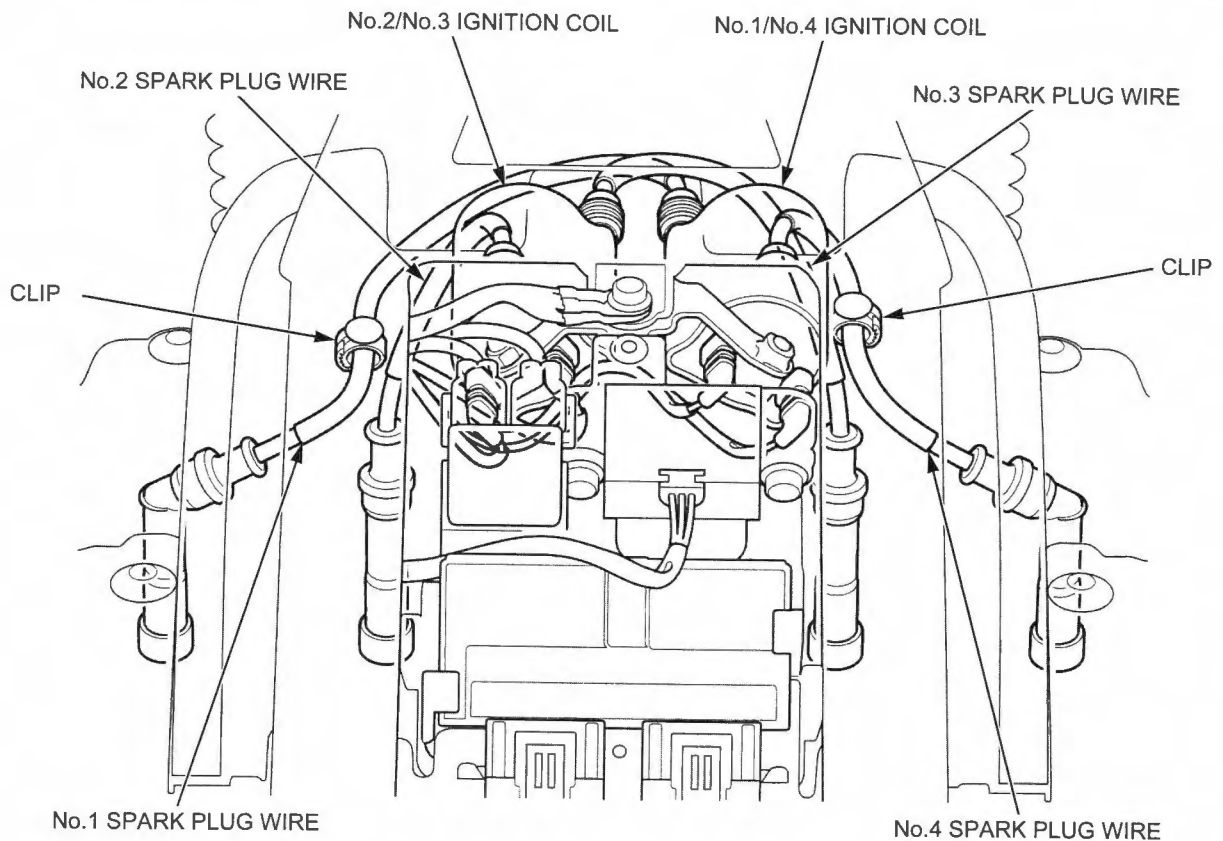
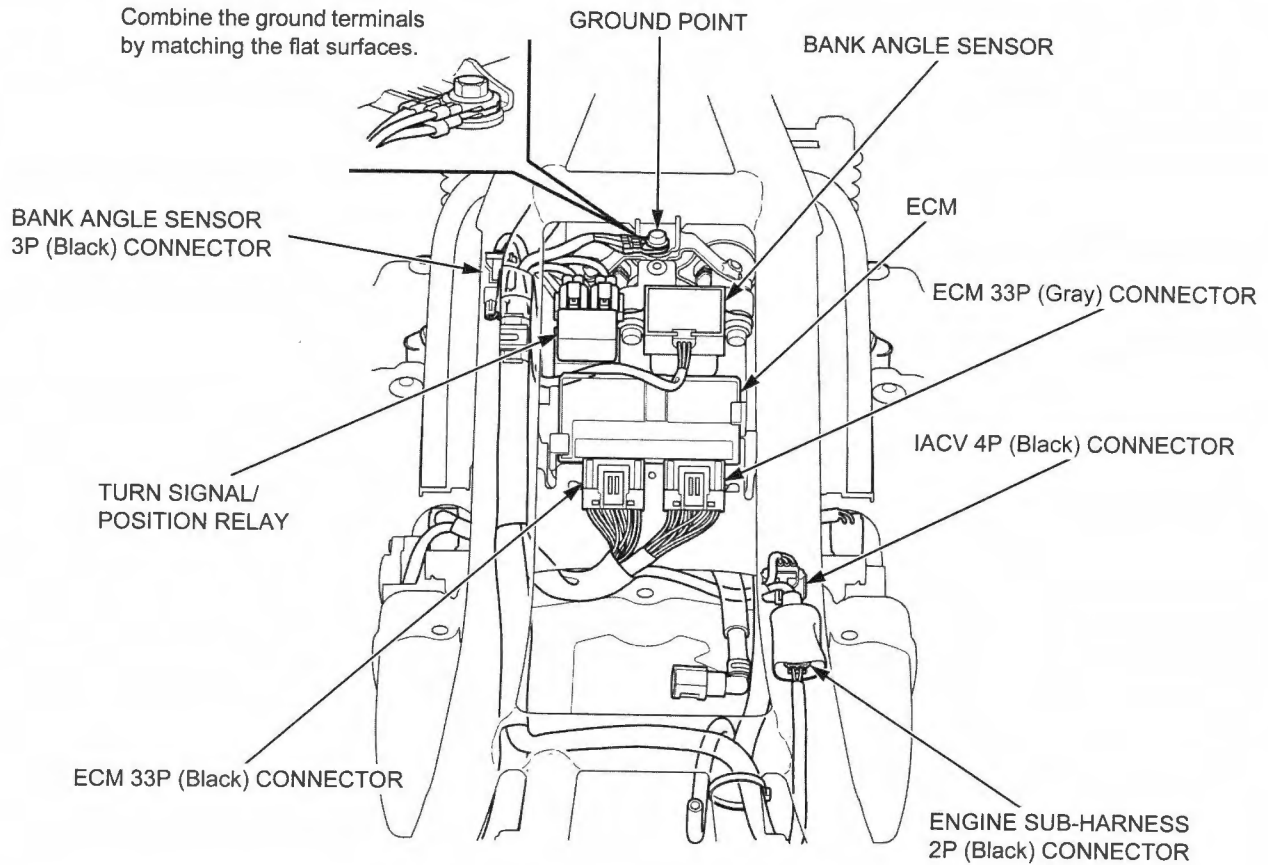
GENERAL INFORMATION

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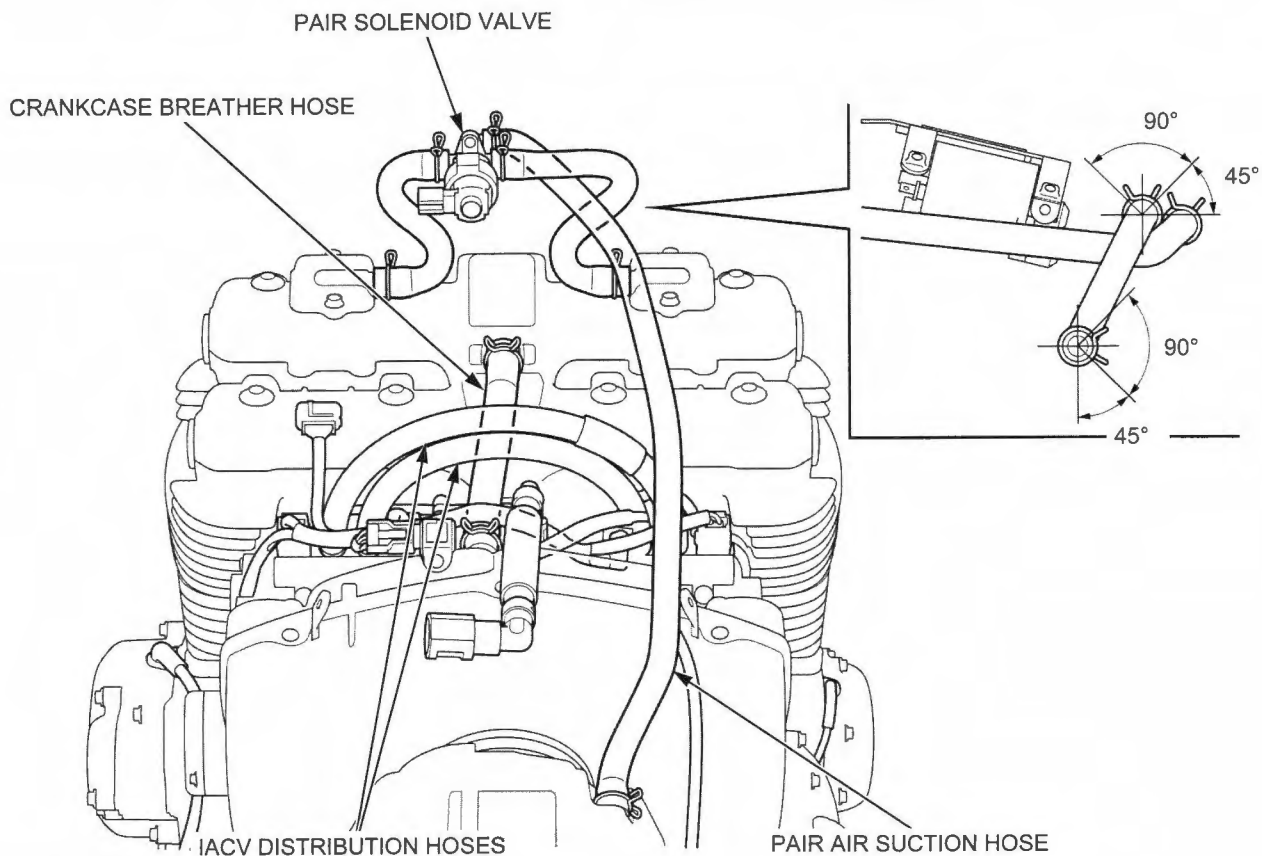


After '13 CB1100A/SA:

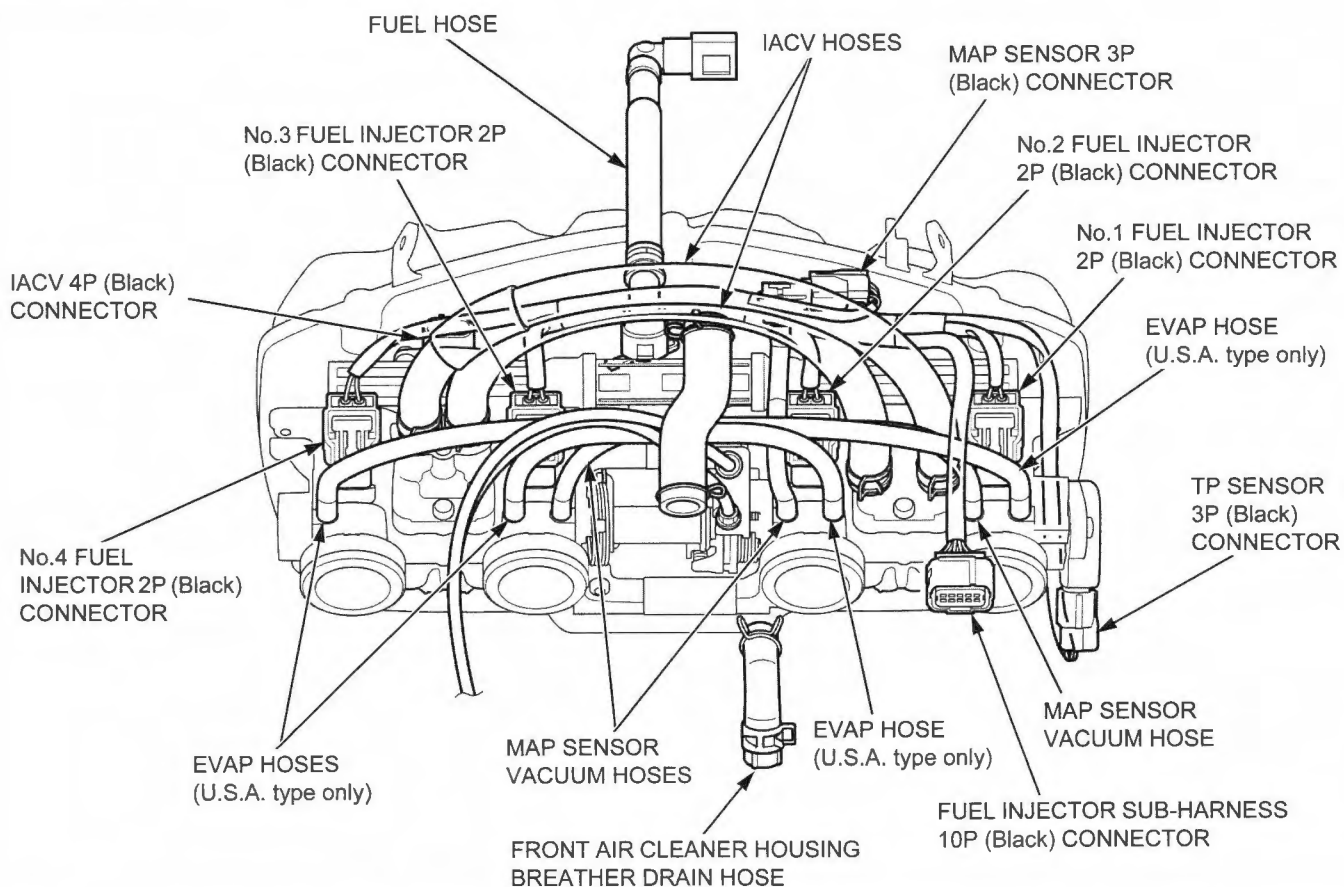




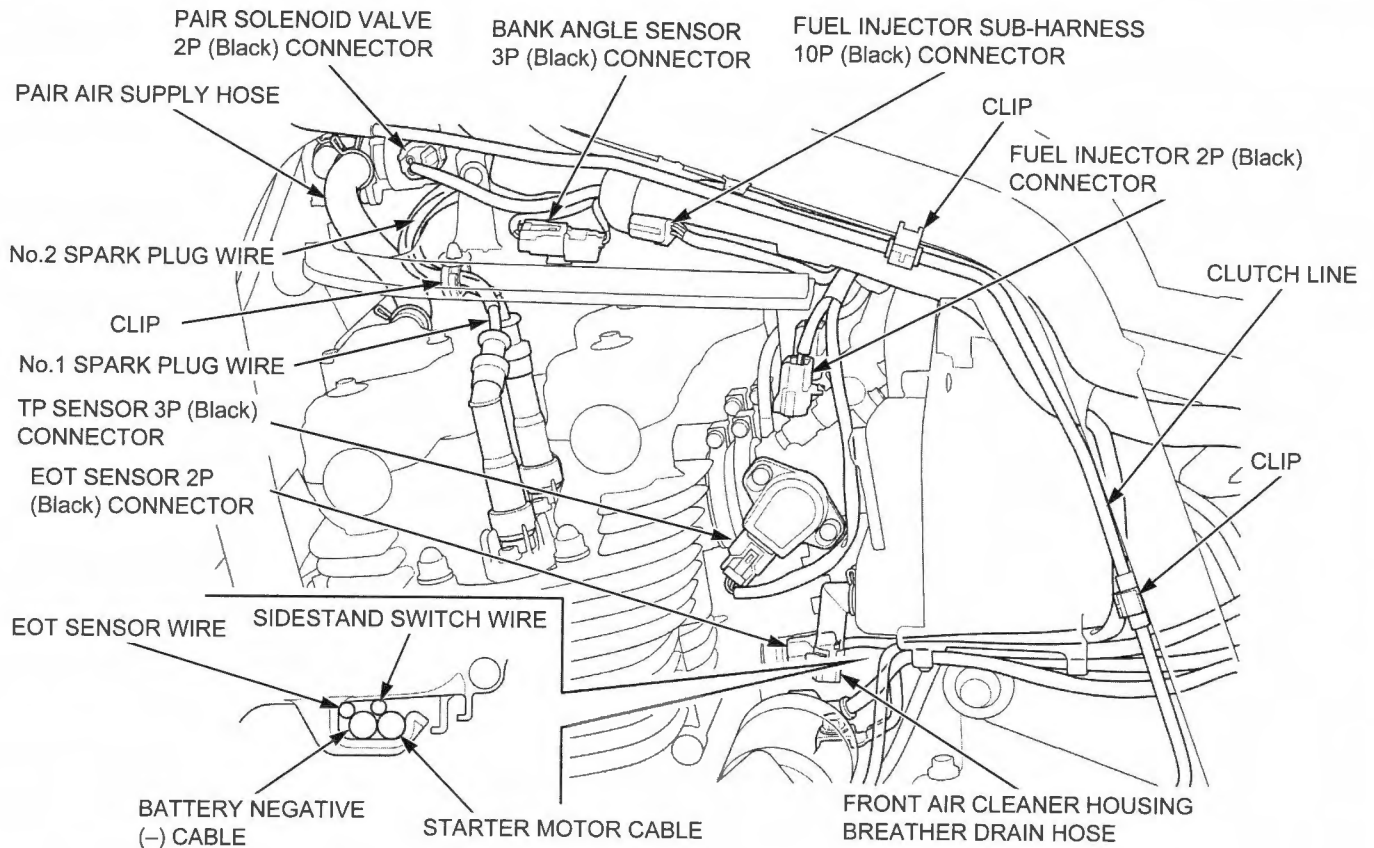
GENERAL INFORMATION



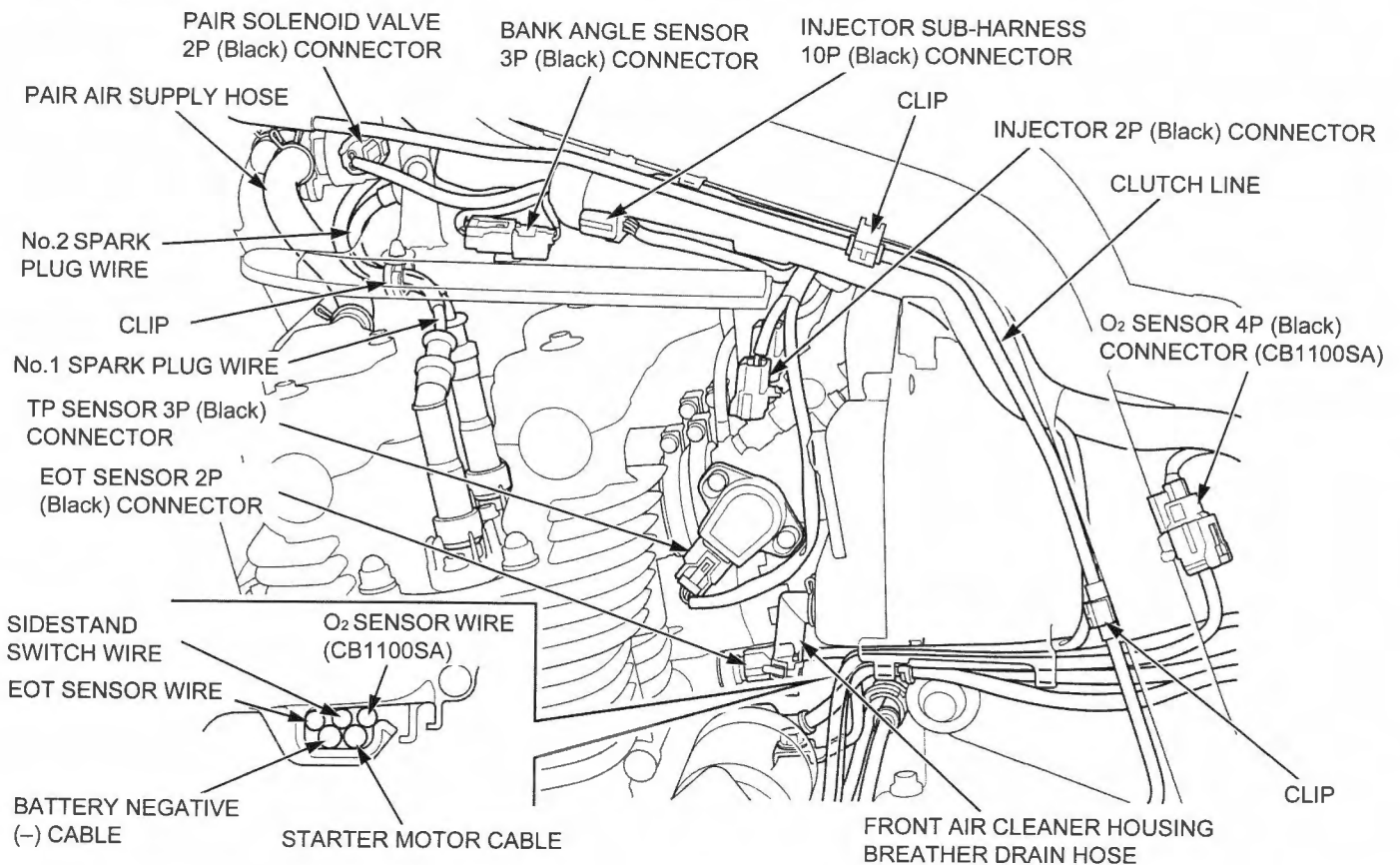
U.S.A. type shown:



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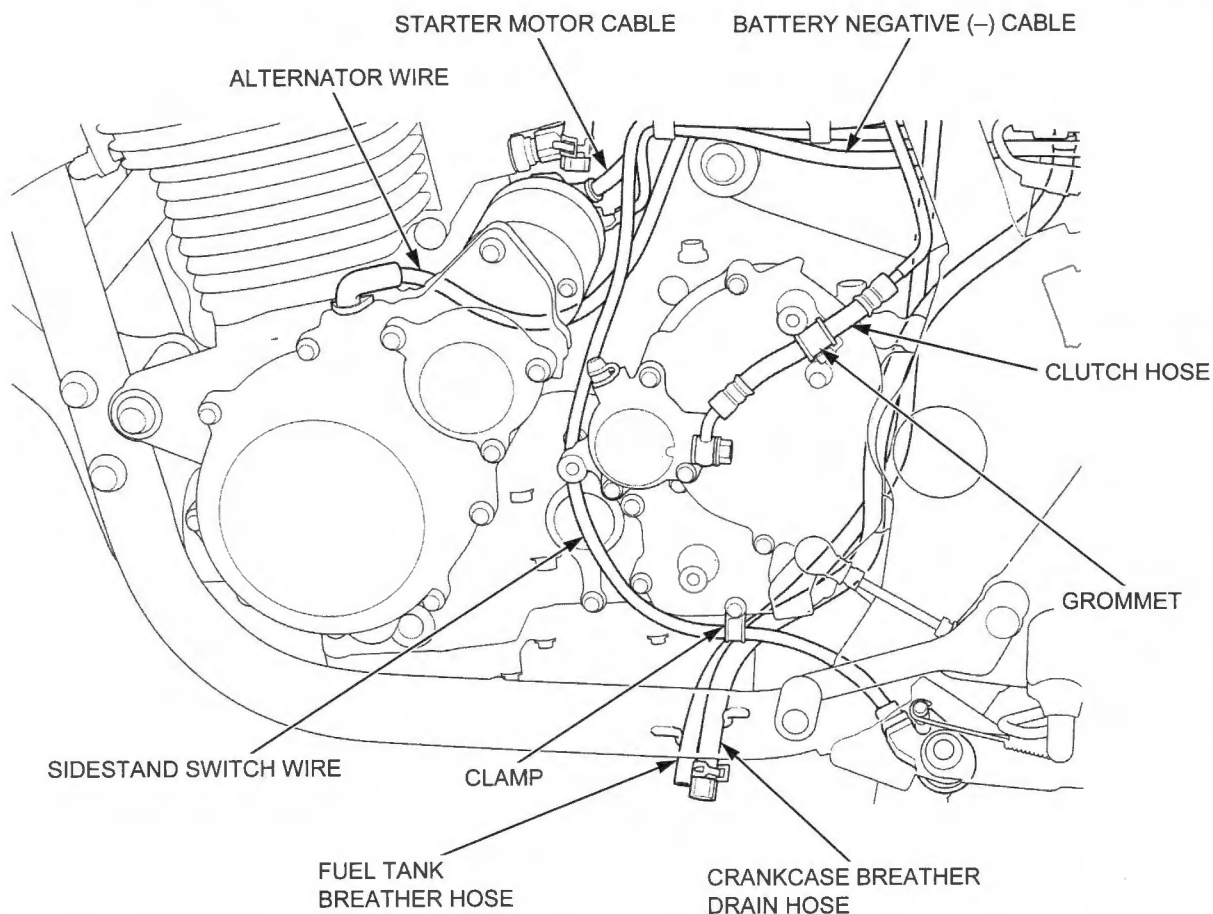


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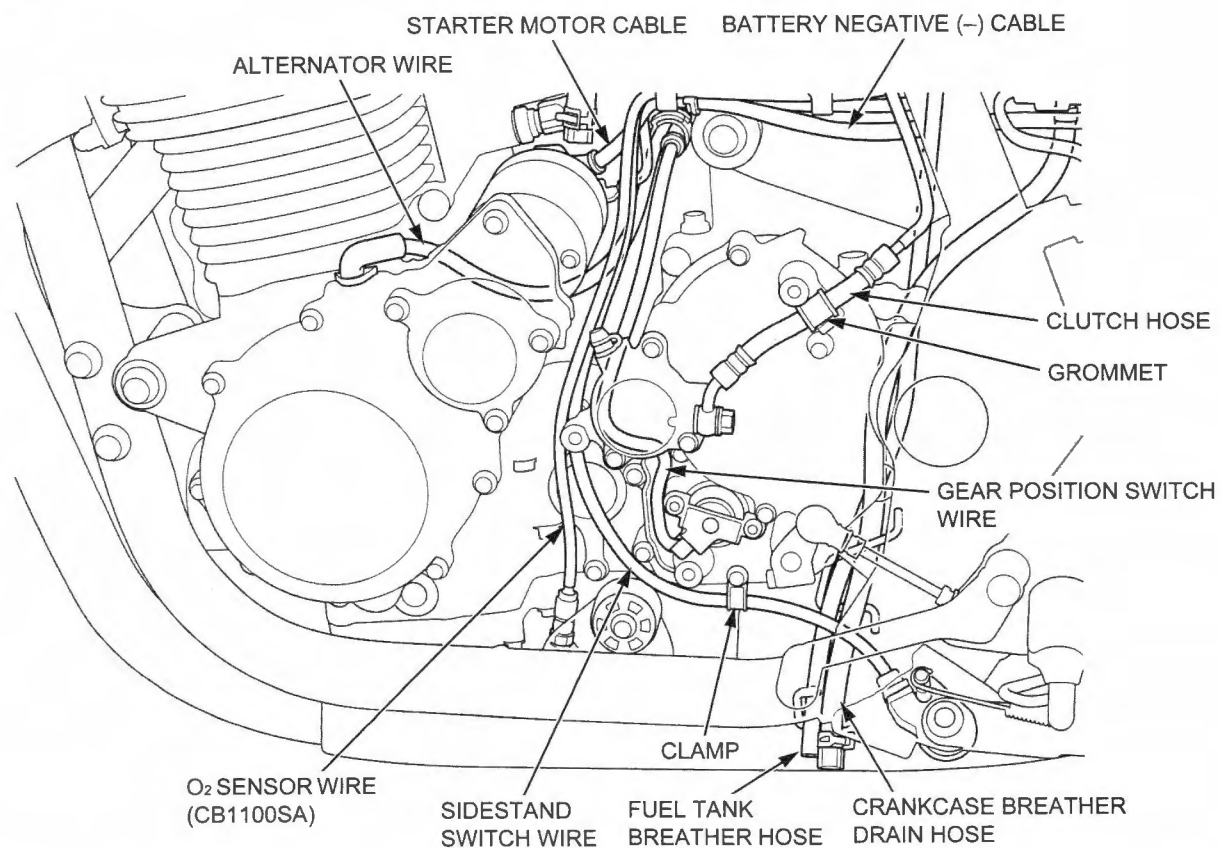


GENERAL INFORMATION

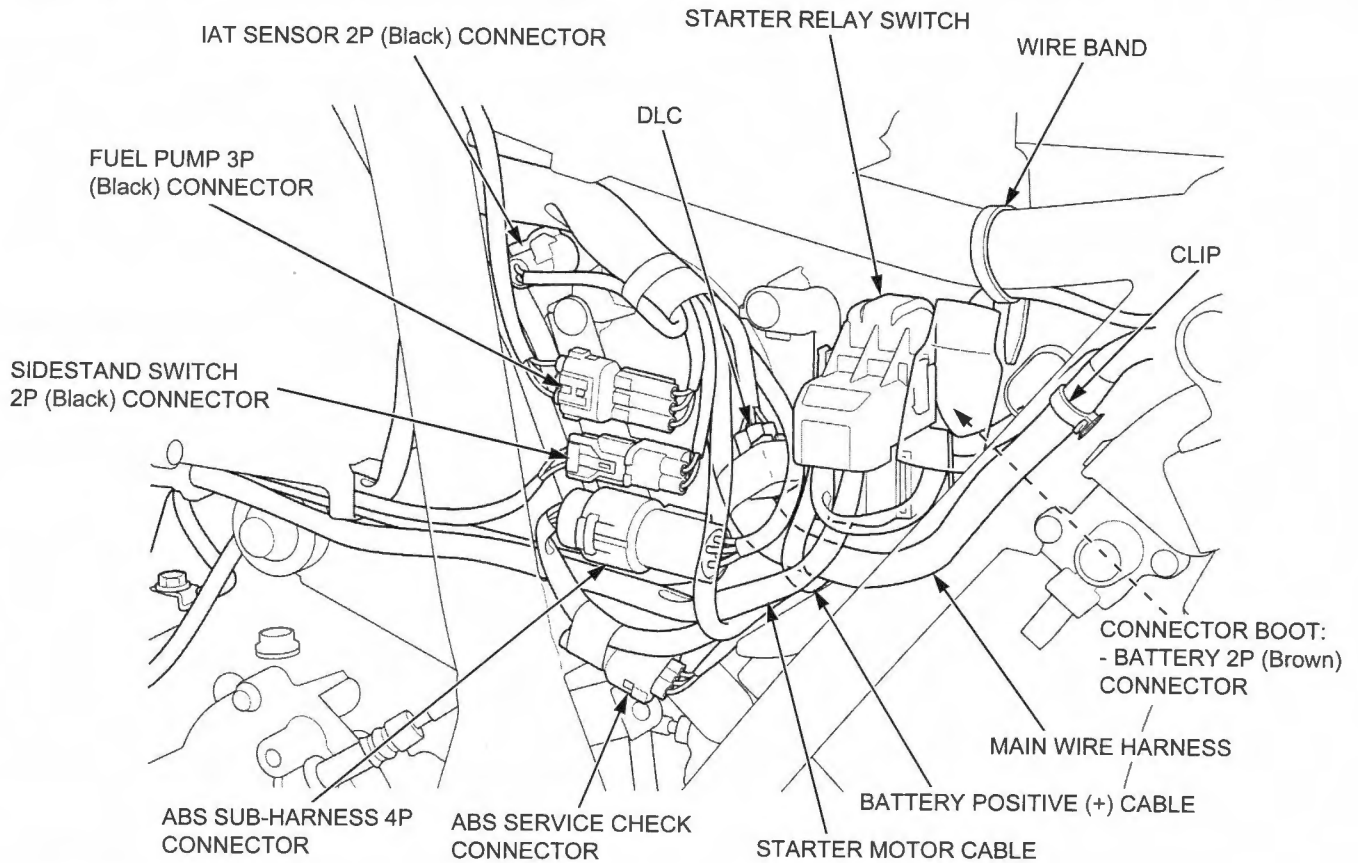
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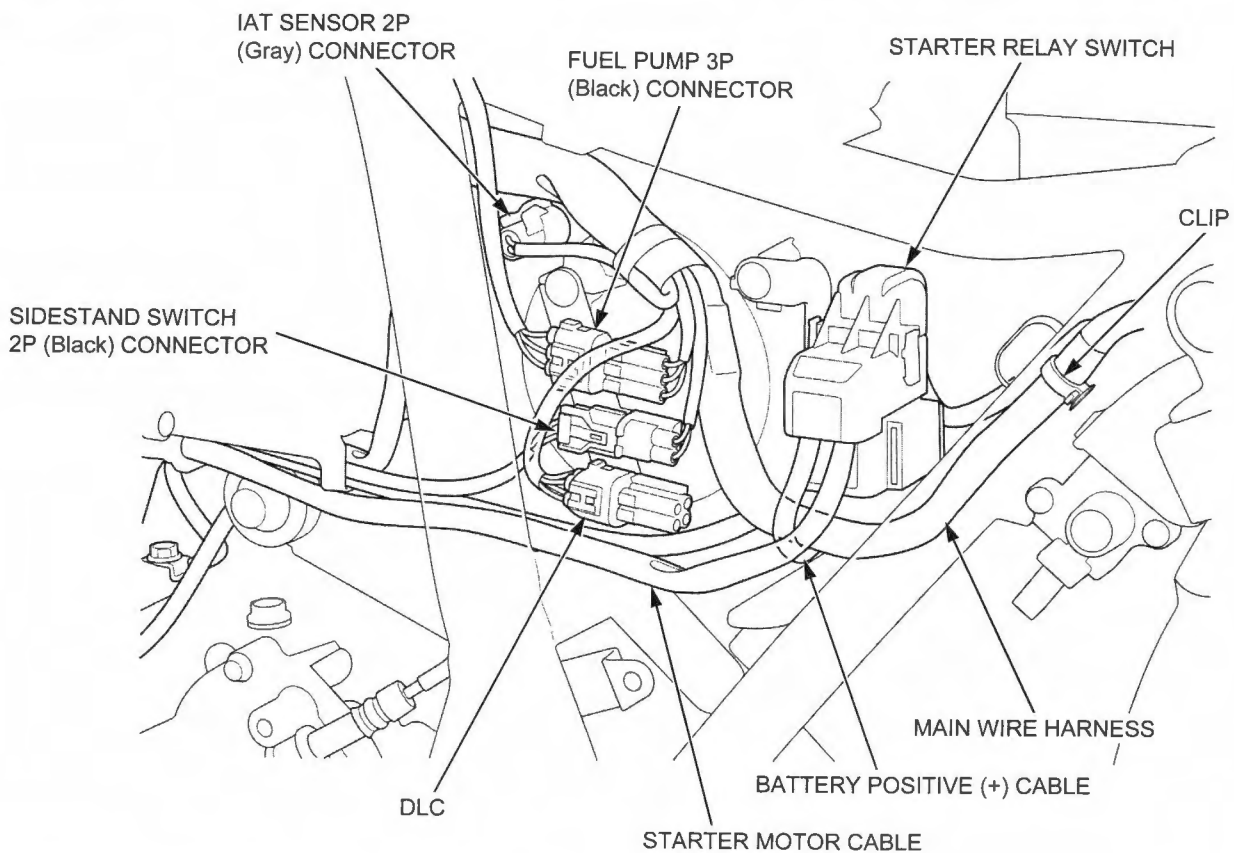
After '13 model:



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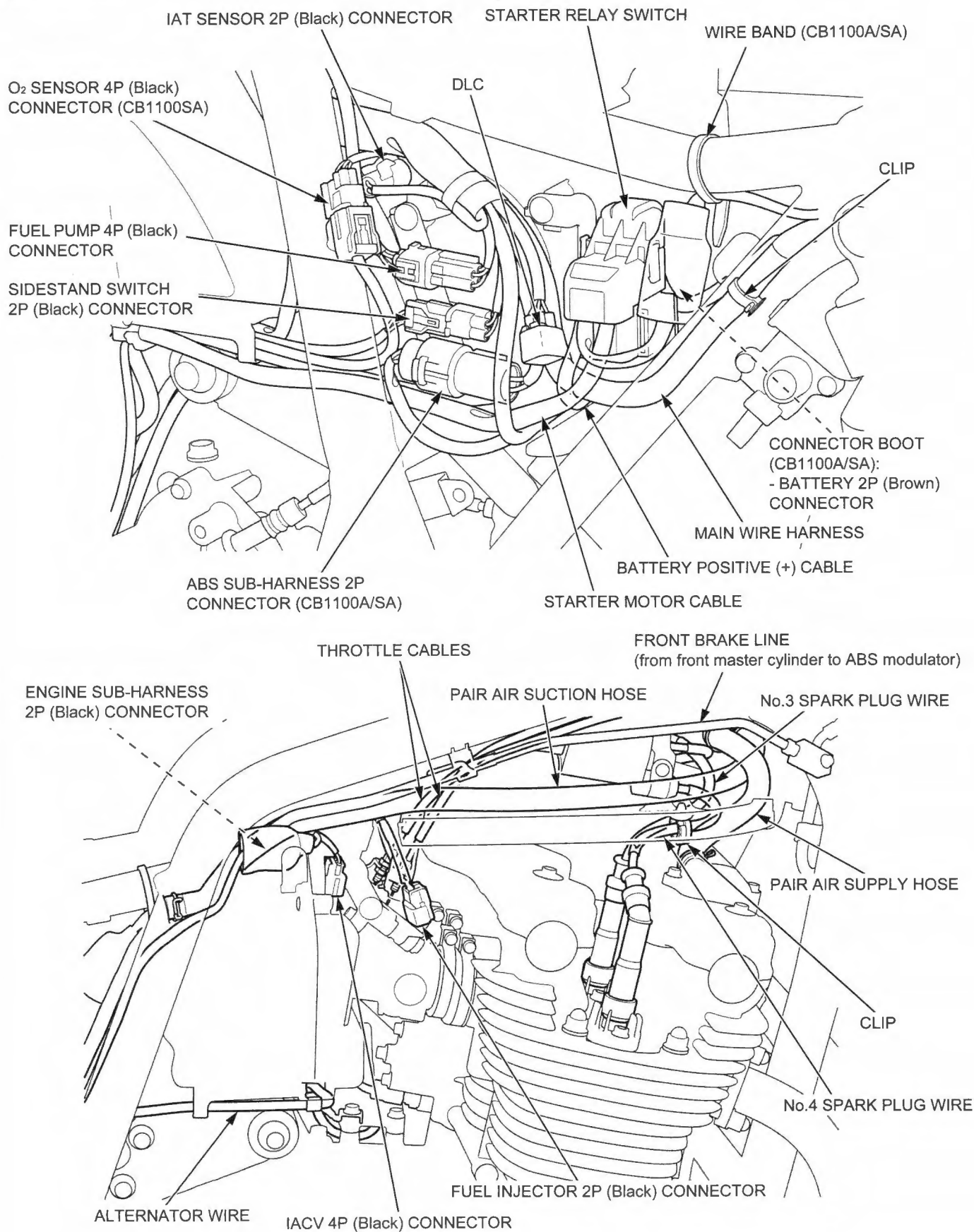


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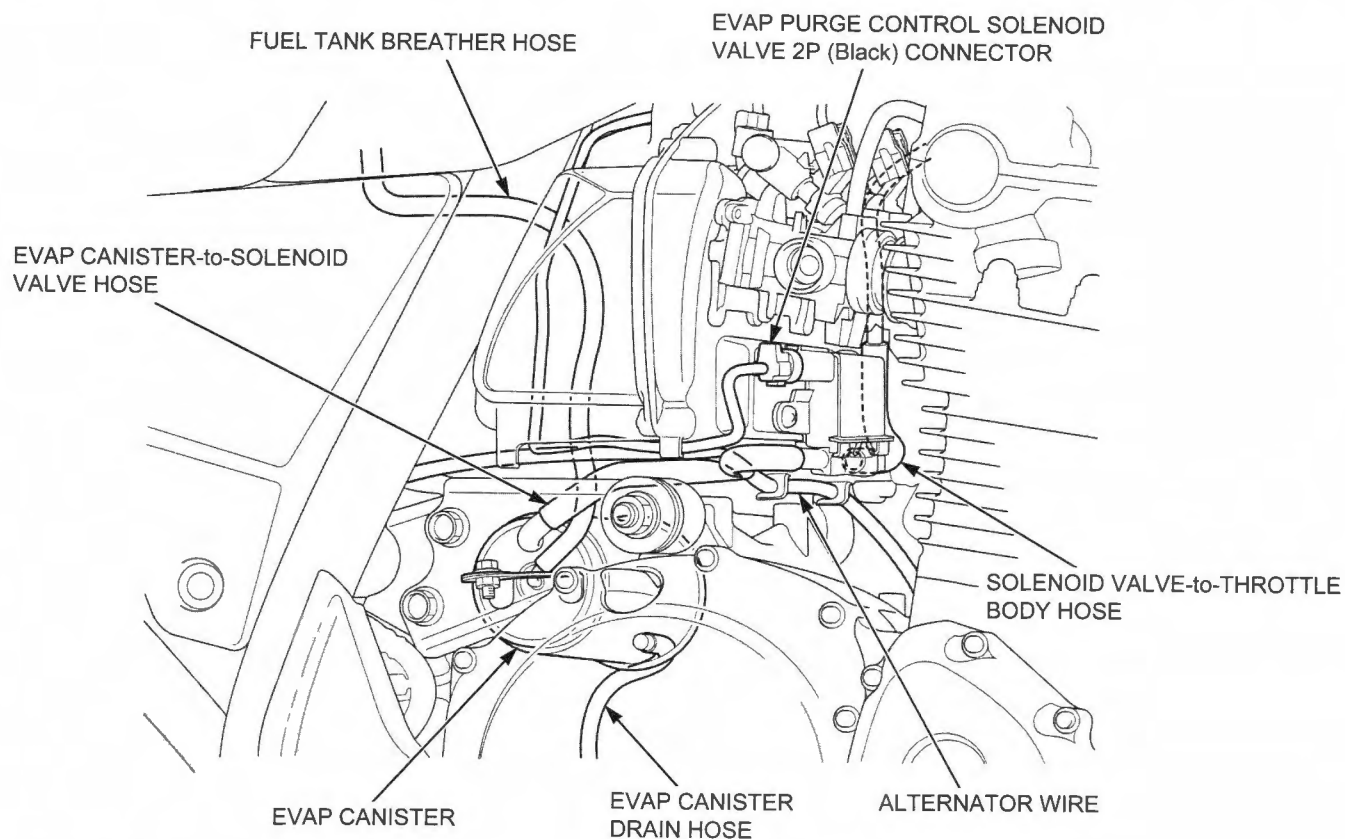


GENERAL INFORMATION

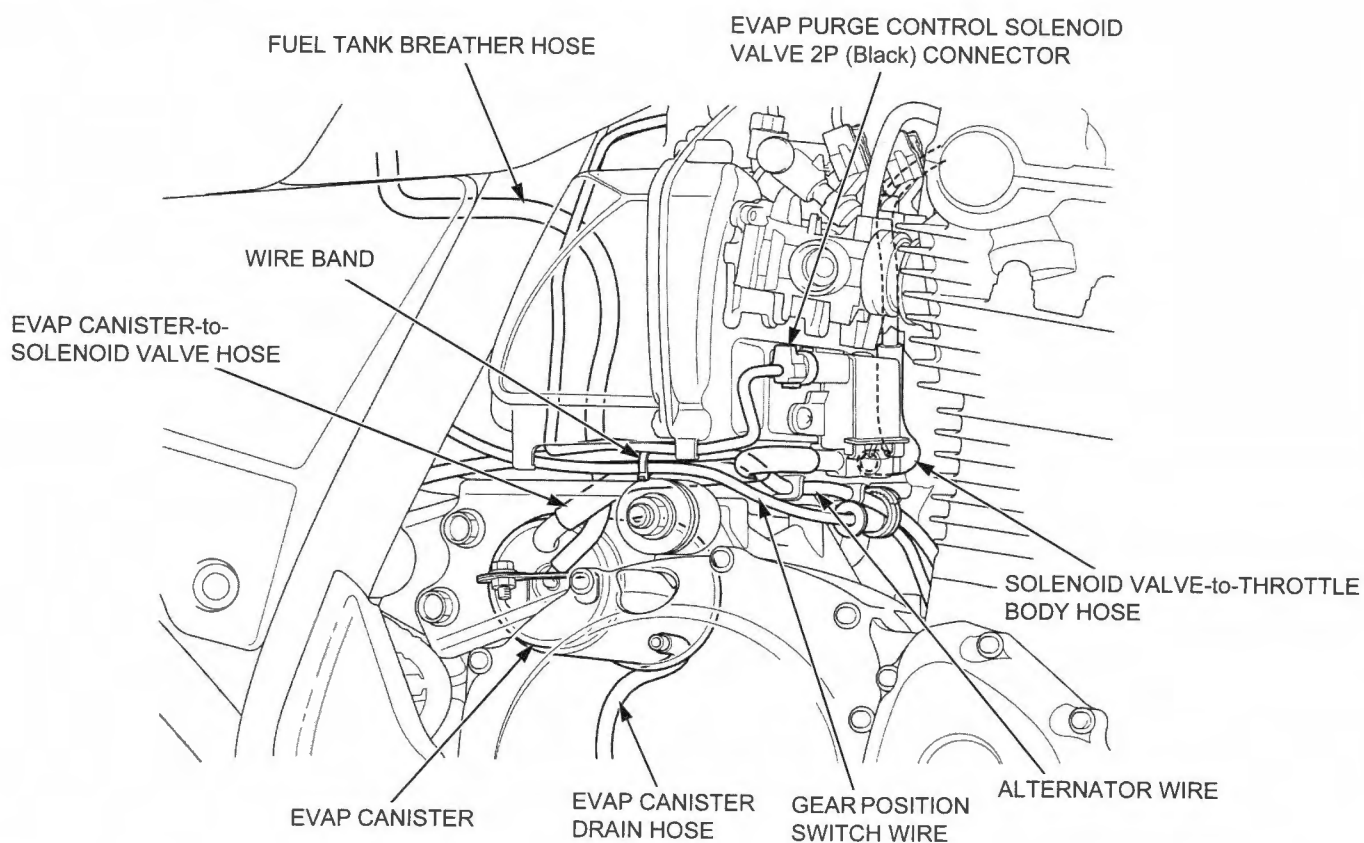
After '13 model:



'13 U.S.A. type only:

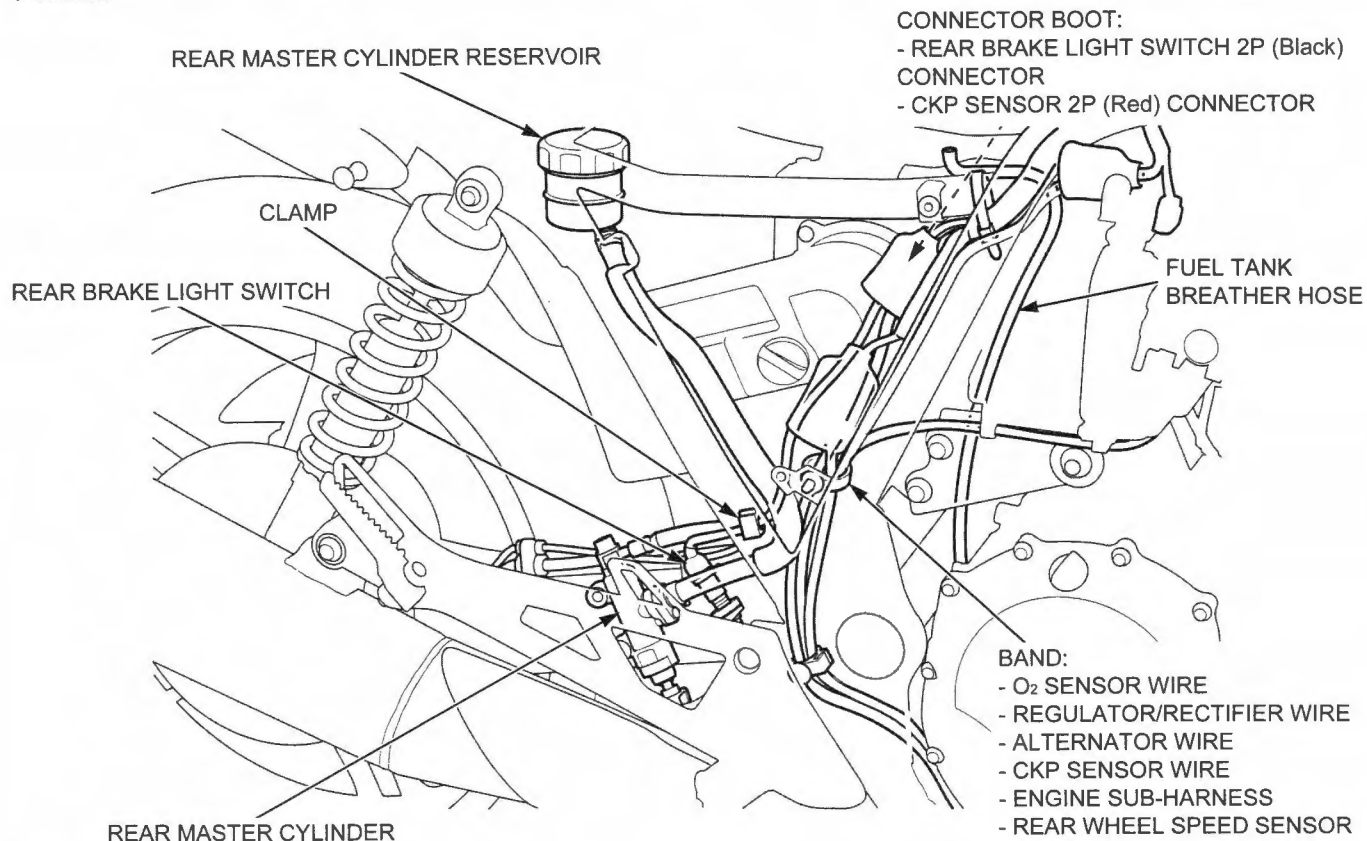


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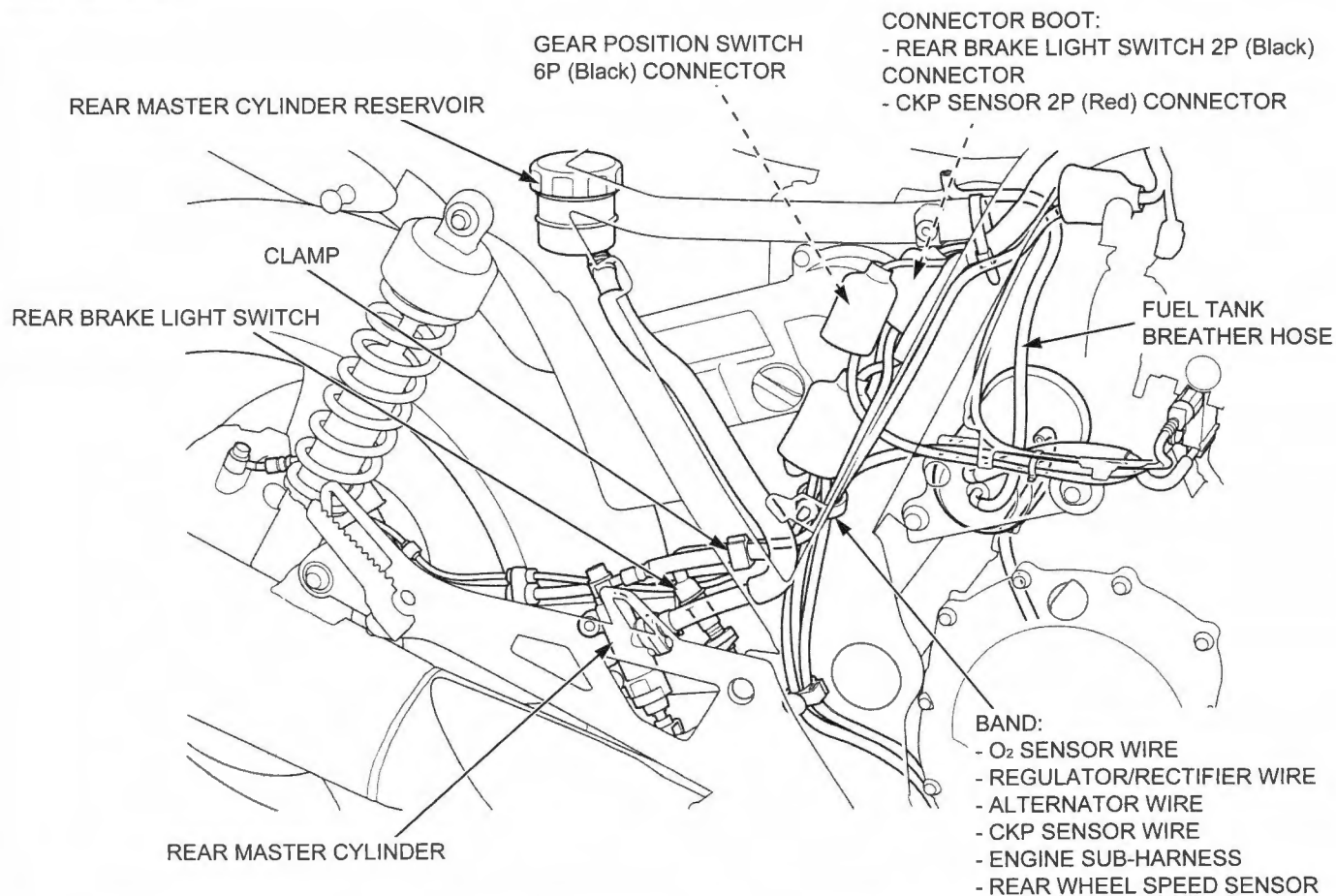


GENERAL INFORMATION

'13 model:



After '13 model:



'13 model:

CONNECTOR BOOT:

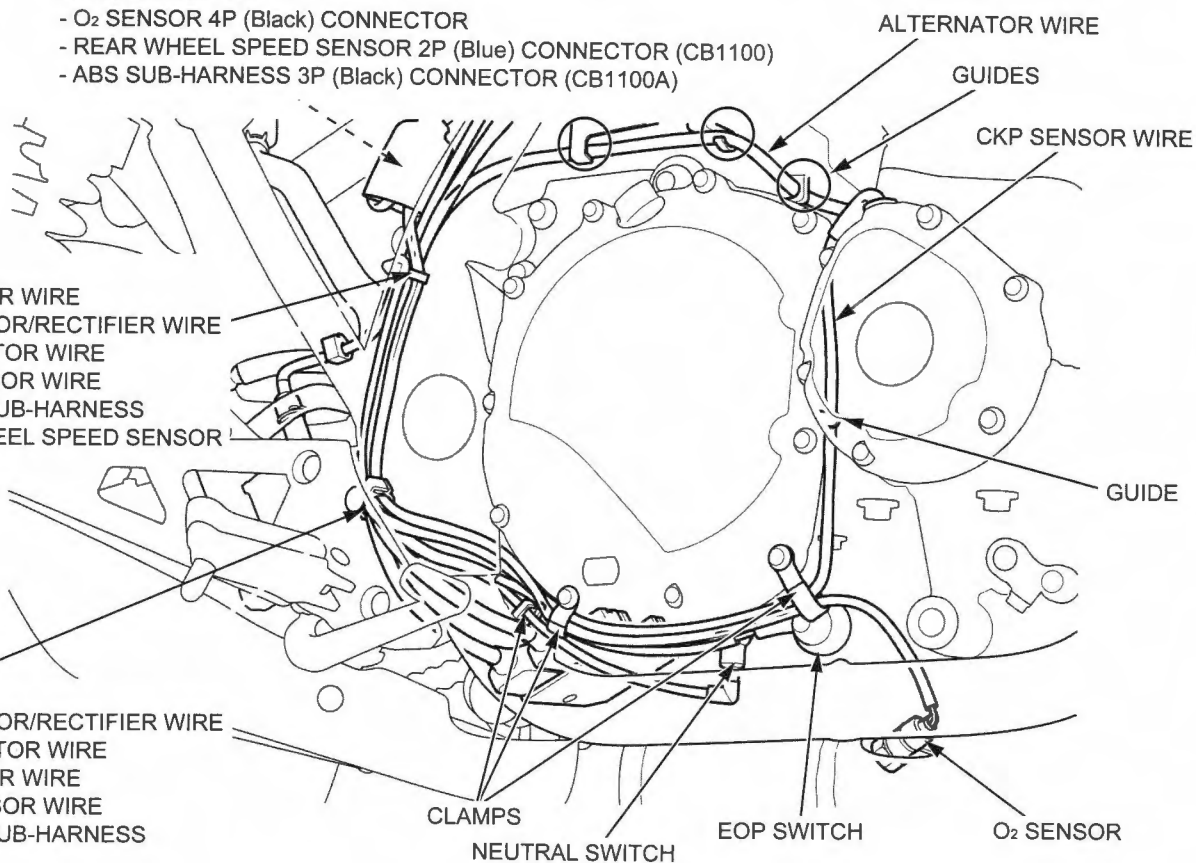
- O₂ SENSOR 4P (Black) CONNECTOR
- REAR WHEEL SPEED SENSOR 2P (Blue) CONNECTOR (CB1100)
- ABS SUB-HARNESS 3P (Black) CONNECTOR (CB1100A)

BAND:

- O₂ SENSOR WIRE
- REGULATOR/RECTIFIER WIRE
- ALTERNATOR WIRE
- CKP SENSOR WIRE
- ENGINE SUB-HARNESS
- REAR WHEEL SPEED SENSOR

CLAMP:

- REGULATOR/RECTIFIER WIRE
- ALTERNATOR WIRE
- O₂ SENSOR WIRE
- CKP SENSOR WIRE
- ENGINE SUB-HARNESS



After '13 model:

CONNECTOR BOOT:

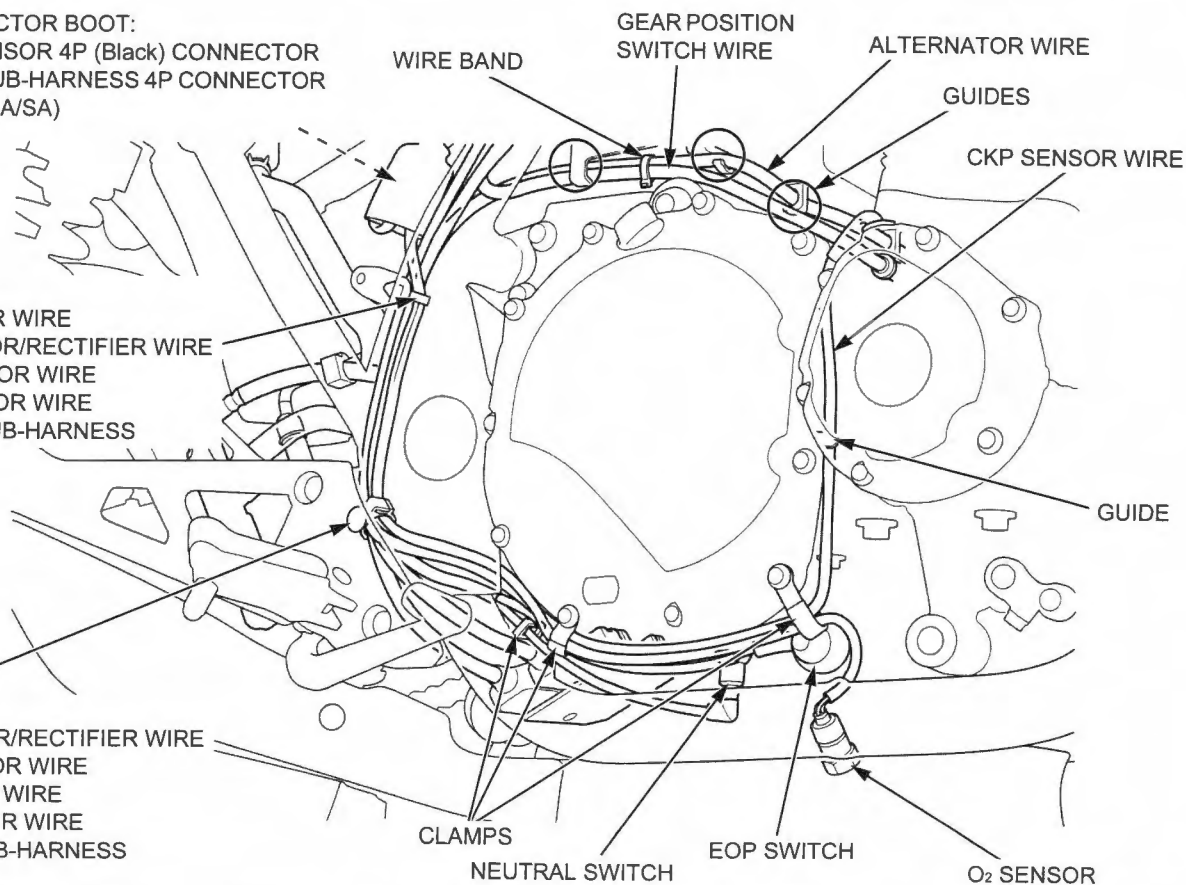
- O₂ SENSOR 4P (Black) CONNECTOR
- ABS SUB-HARNESS 4P CONNECTOR (CB1100A/SA)

BAND:

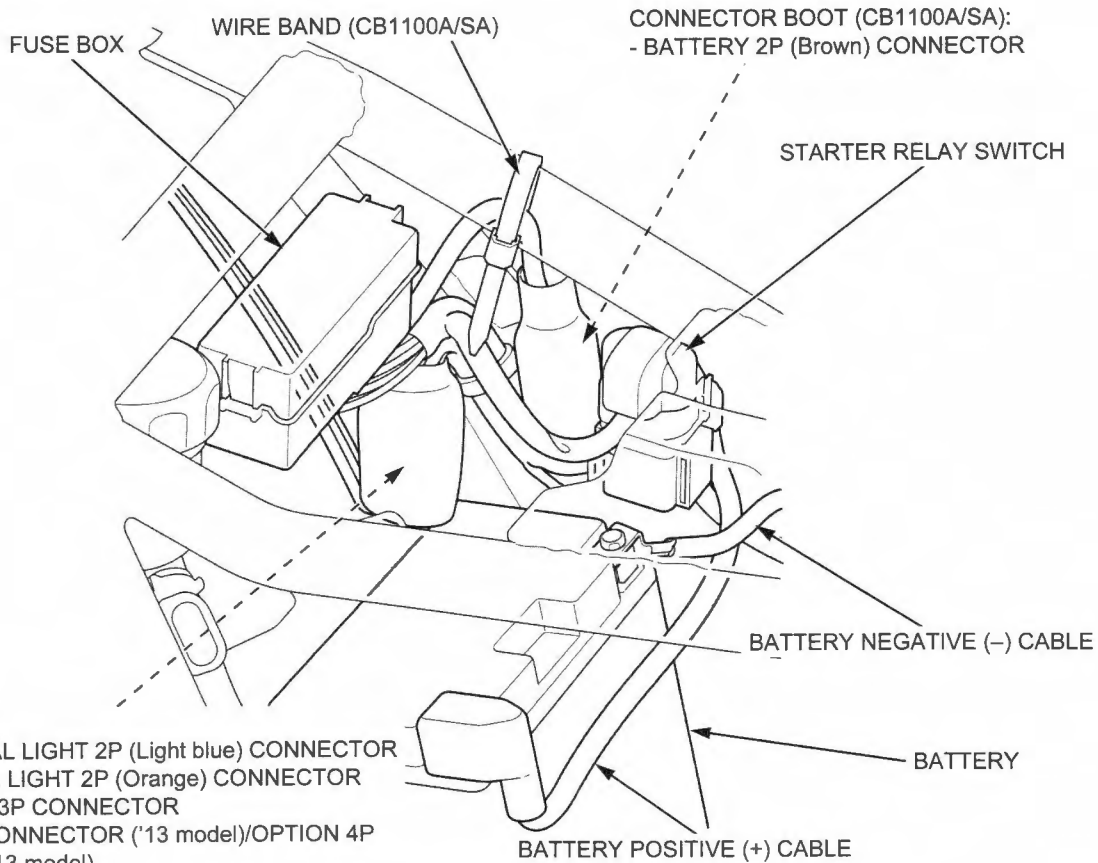
- O₂ SENSOR WIRE
- REGULATOR/RECTIFIER WIRE
- ALTERNATOR WIRE
- CKP SENSOR WIRE
- ENGINE SUB-HARNESS

CLAMP:

- REGULATOR/RECTIFIER WIRE
- ALTERNATOR WIRE
- O₂ SENSOR WIRE
- CKP SENSOR WIRE
- ENGINE SUB-HARNESS



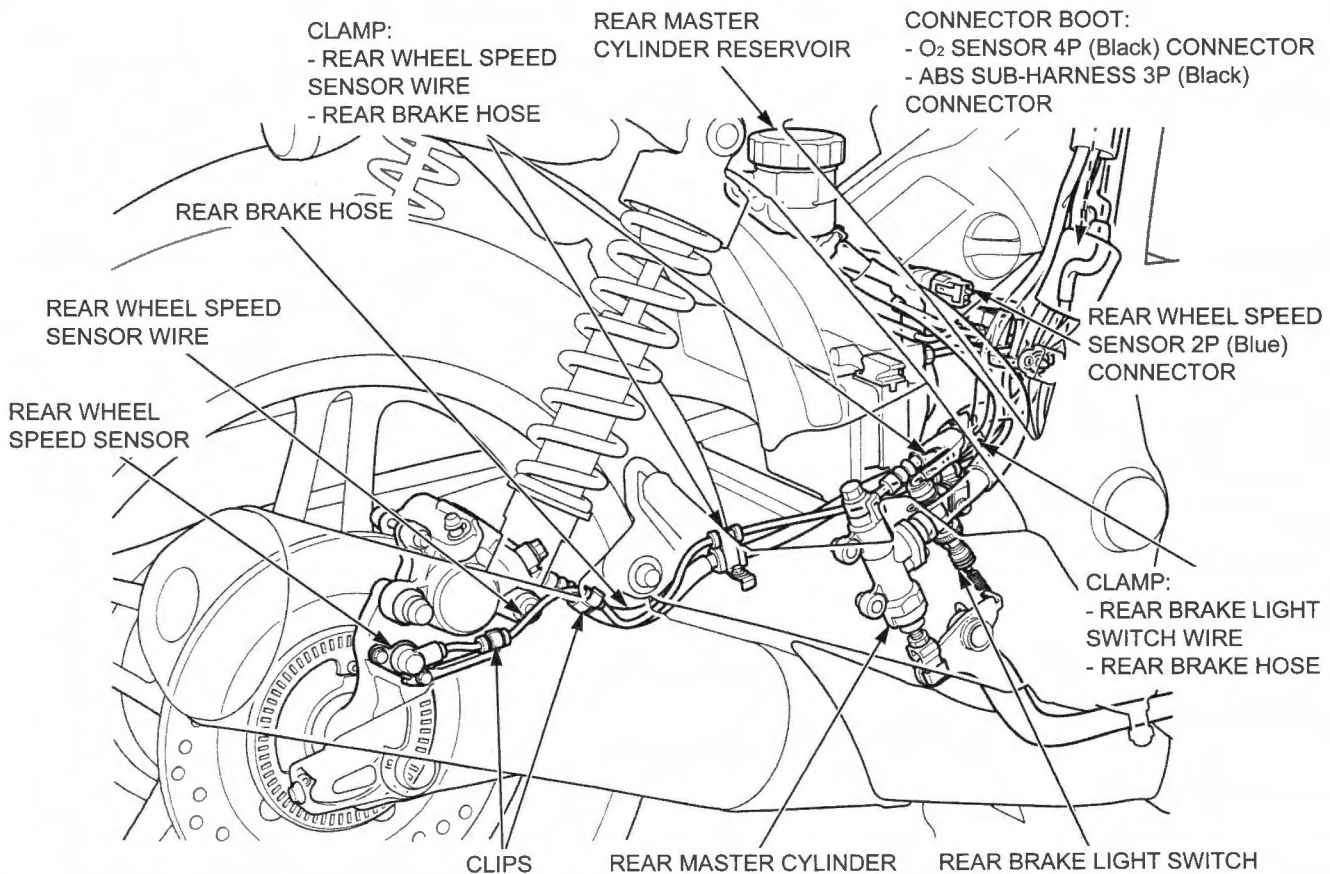
GENERAL INFORMATION



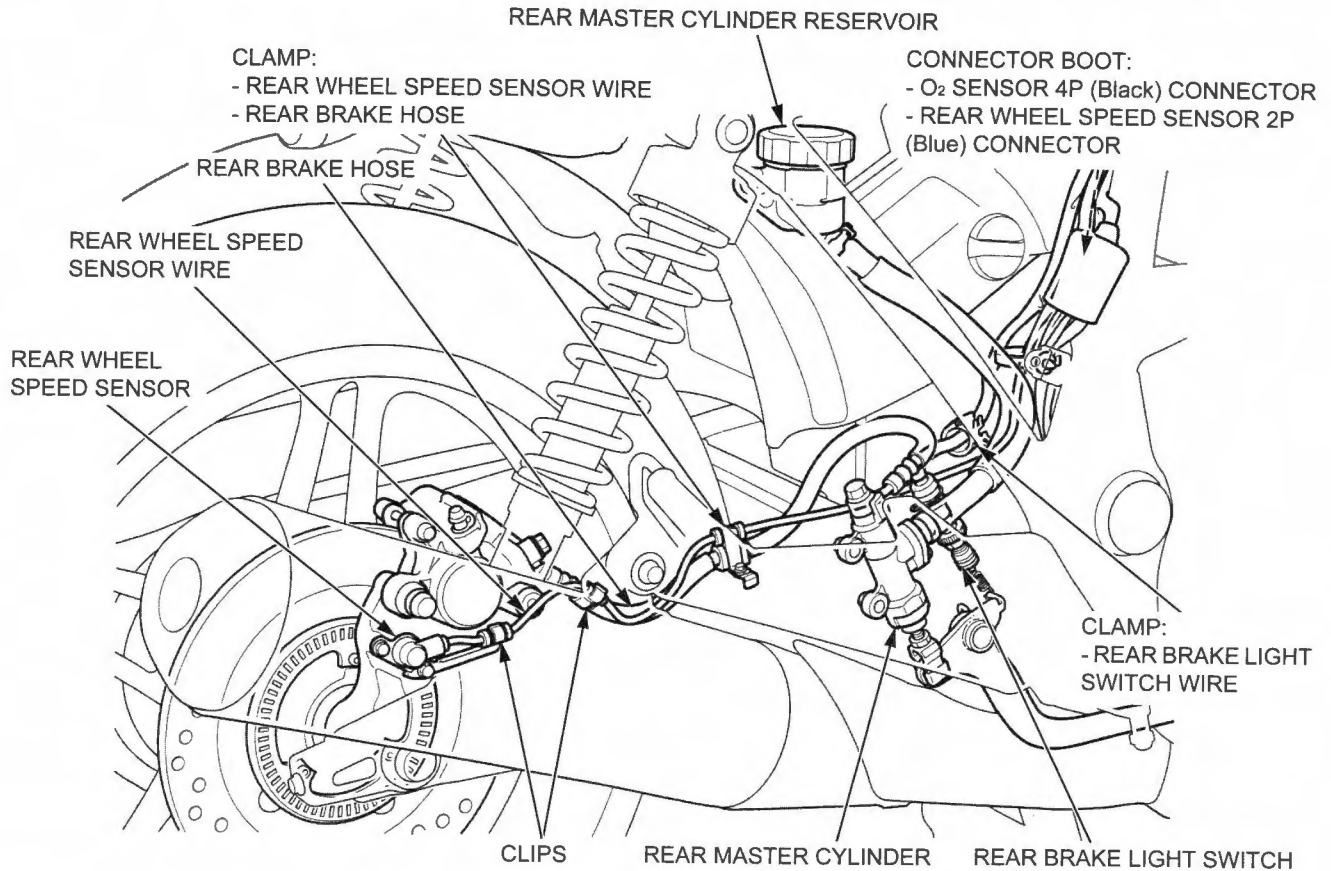
CONNECTOR BOOT:

- RIGHT TURN SIGNAL LIGHT 2P (Light blue) CONNECTOR
- LEFT TURN SIGNAL LIGHT 2P (Orange) CONNECTOR
- TAIL/BRAKE LIGHT 3P CONNECTOR
- OPTION 2P (Red) CONNECTOR ('13 model)/OPTION 4P CONNECTOR (After '13 model)

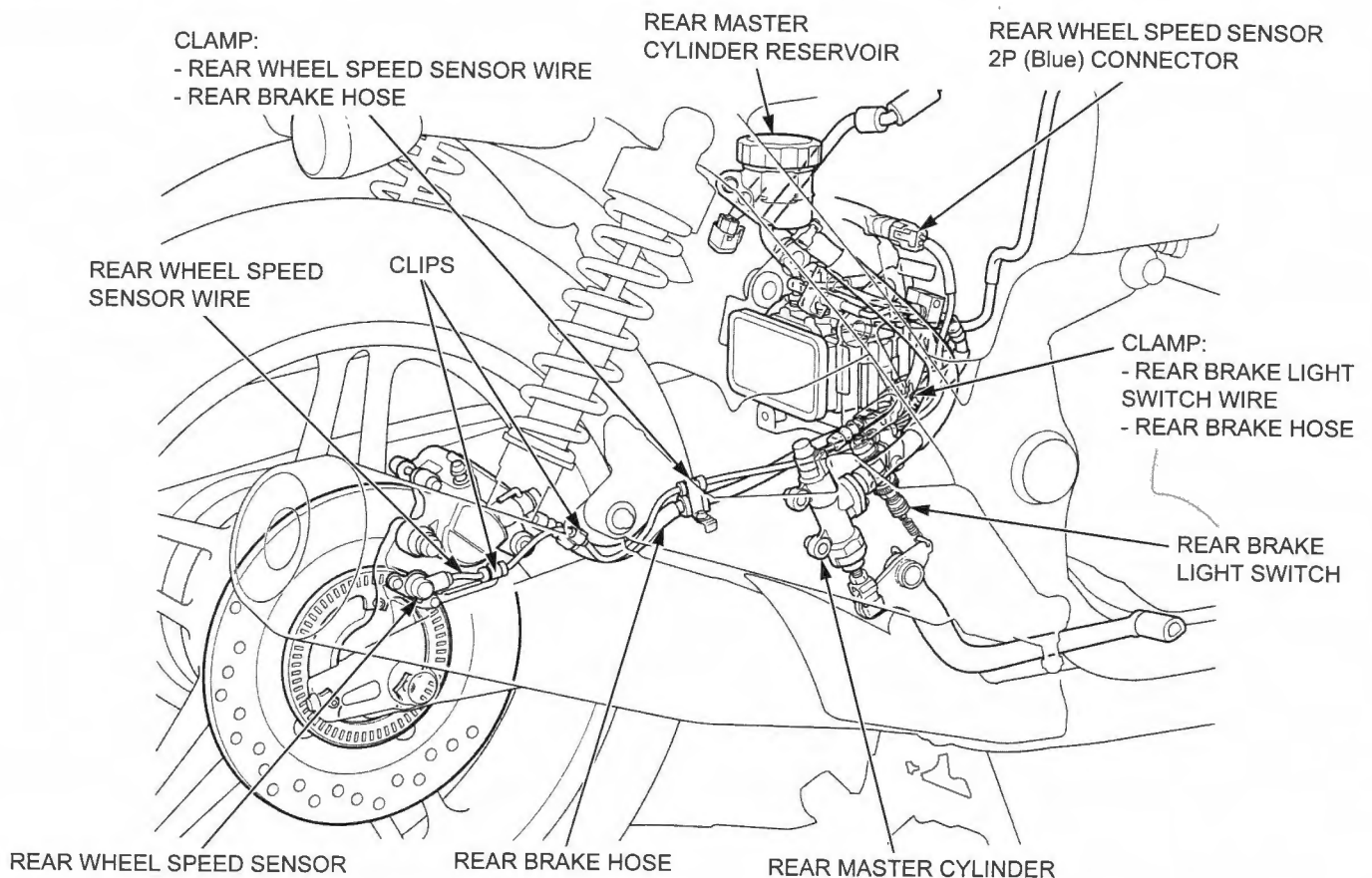
CB1100A:



CB1100:

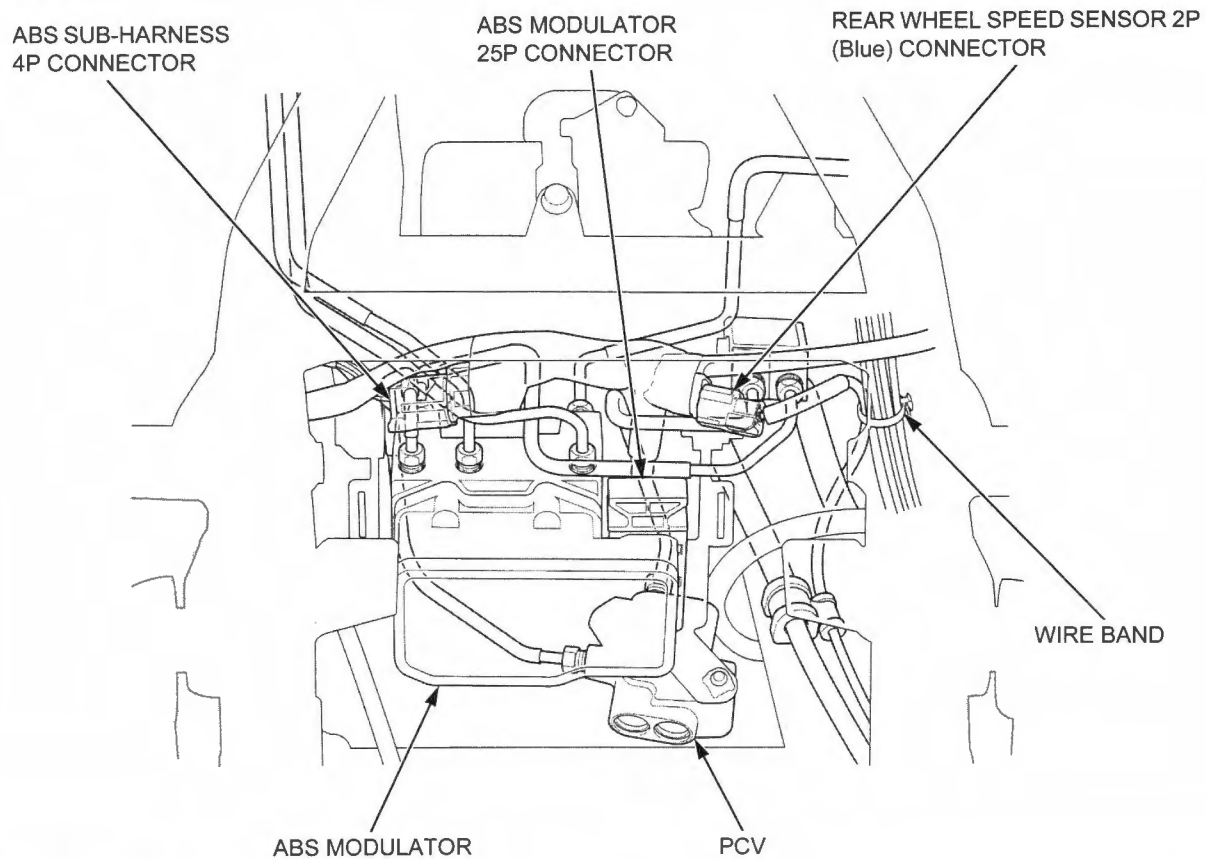


CB1100SA:

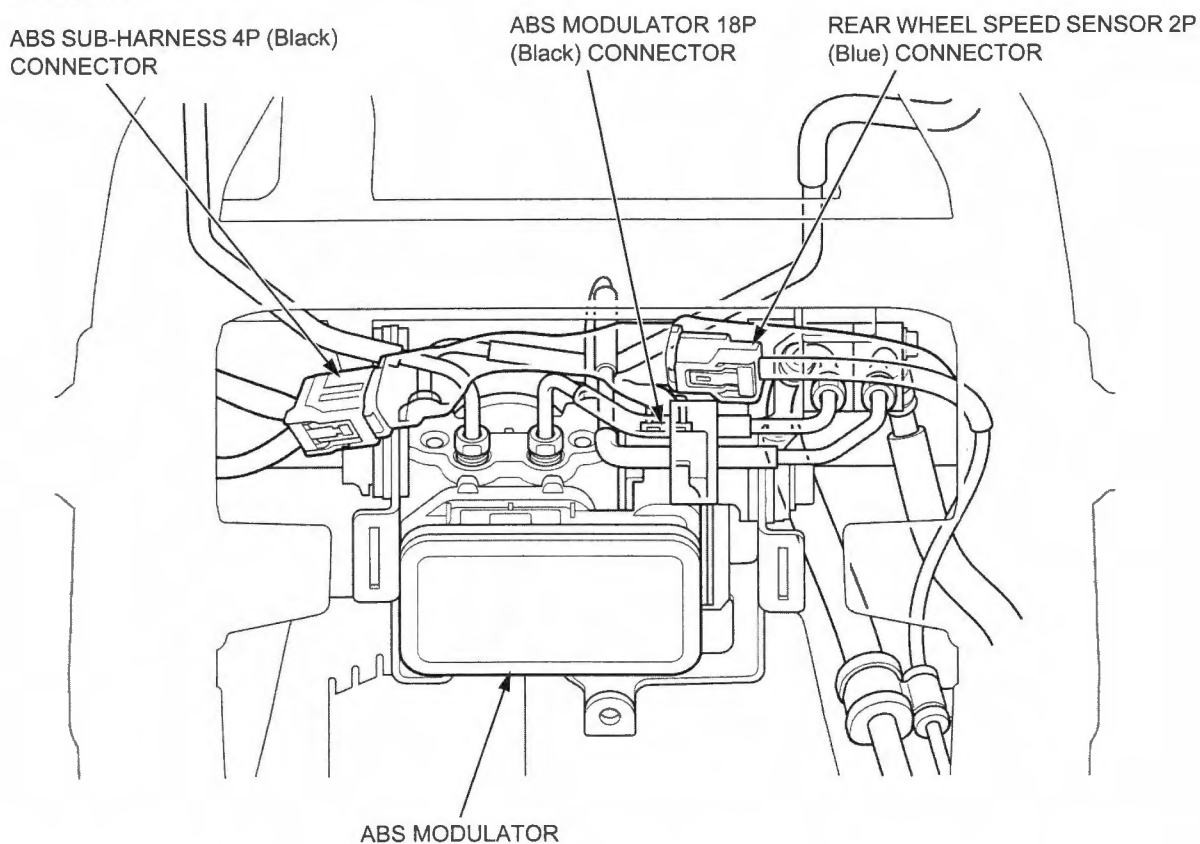


GENERAL INFORMATION

'13 CB1100A:

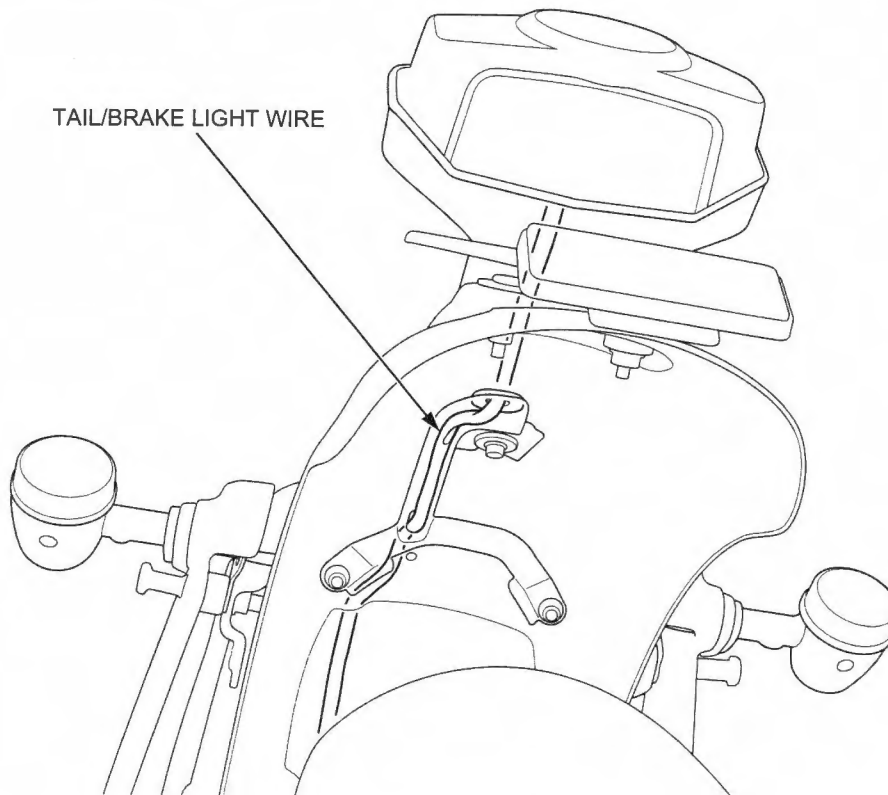
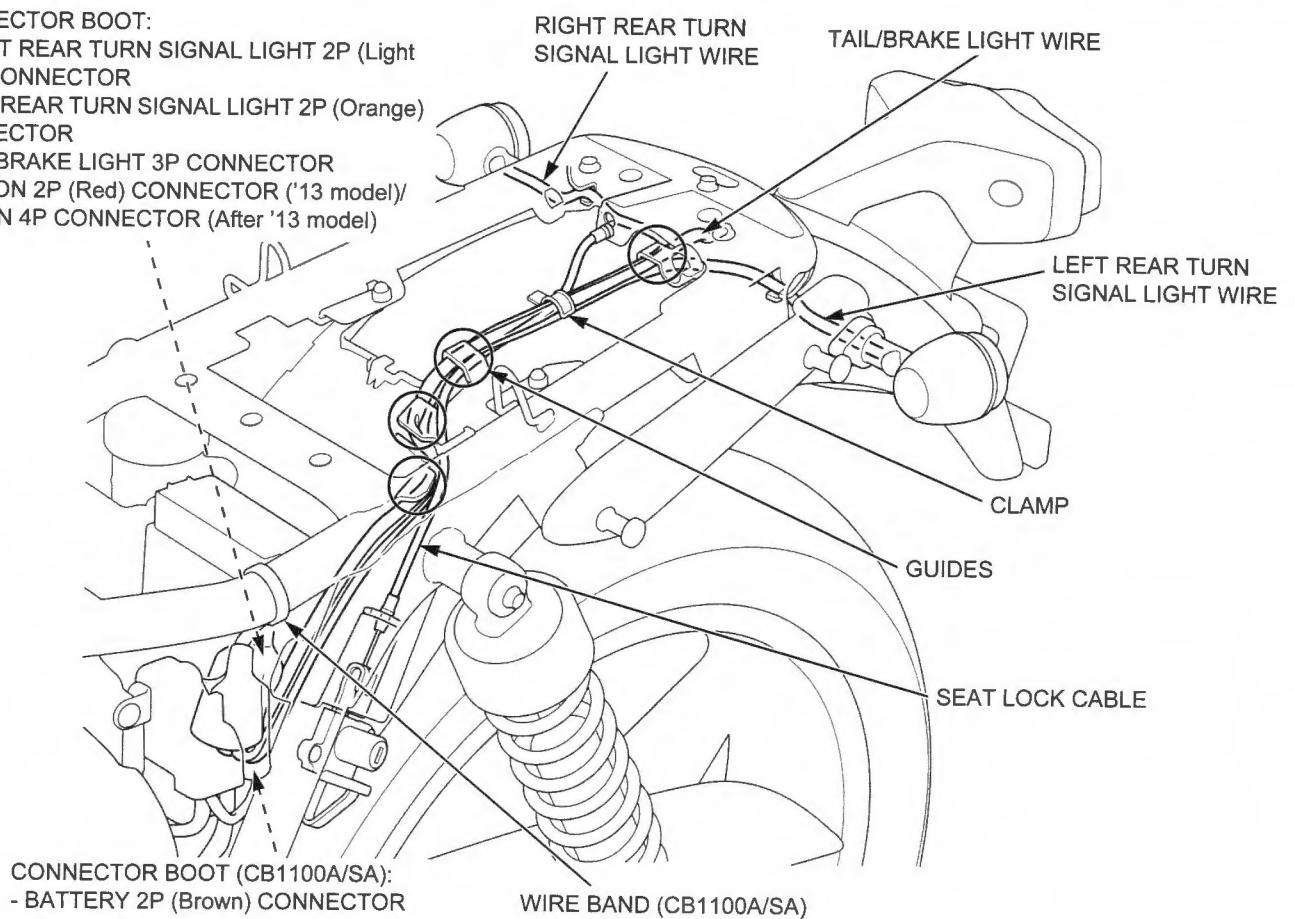


After '13 CB1100A/SA:



CONNECTOR BOOT:

- RIGHT REAR TURN SIGNAL LIGHT 2P (Light blue) CONNECTOR
- LEFT REAR TURN SIGNAL LIGHT 2P (Orange) CONNECTOR
- TAIL/BRAKE LIGHT 3P CONNECTOR
- OPTION 2P (Red) CONNECTOR ('13 model)/
OPTION 4P CONNECTOR (After '13 model)



GENERAL INFORMATION

EMISSION CONTROL SYSTEMS

EXHAUST EMISSION REQUIREMENT

The U.S. Environmental Protection Agency (EPA), California Air Resources Board (CARB), and Environment Canada 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 motorcycles 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

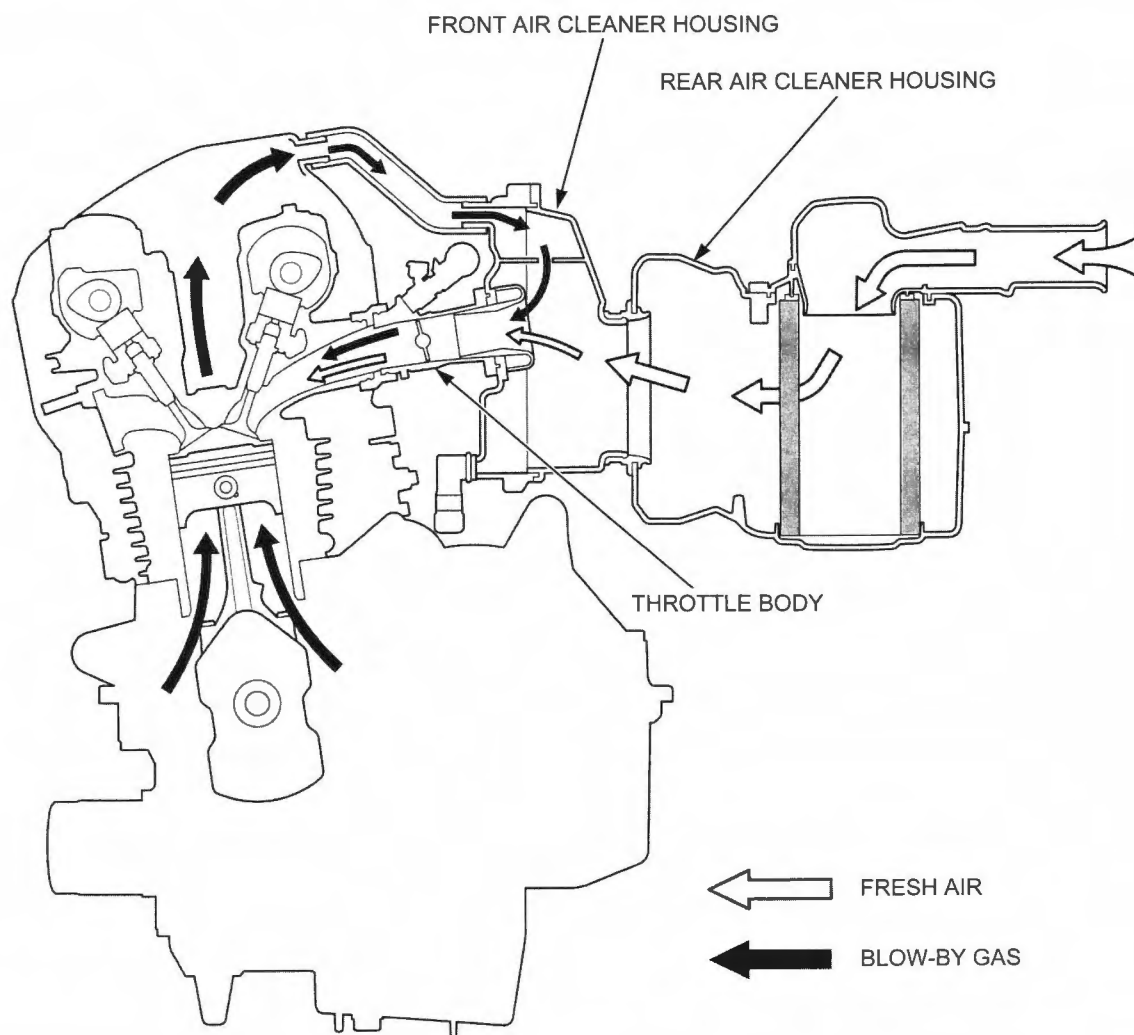
The combustion process produces carbon monoxide (CO), oxides of nitrogen (NO_x), and hydrocarbons (HC). Control of oxides of nitrogen and hydrocarbons is very important because, under certain conditions, they react to form photochemical smog when subject to sunlight. Carbon monoxide does not react in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

Honda Motor Co., Ltd. utilizes various systems (page 1-42) 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 air cleaner and throttle body.



EXHAUST EMISSION CONTROL SYSTEM

The exhaust emission control system is composed of a pulse secondary air supply system, a three-way catalytic converter, and PGM-FI system.

No adjustment should be made for the exhaust emission control system. The exhaust emission control system is separate from the crankcase emission control system.

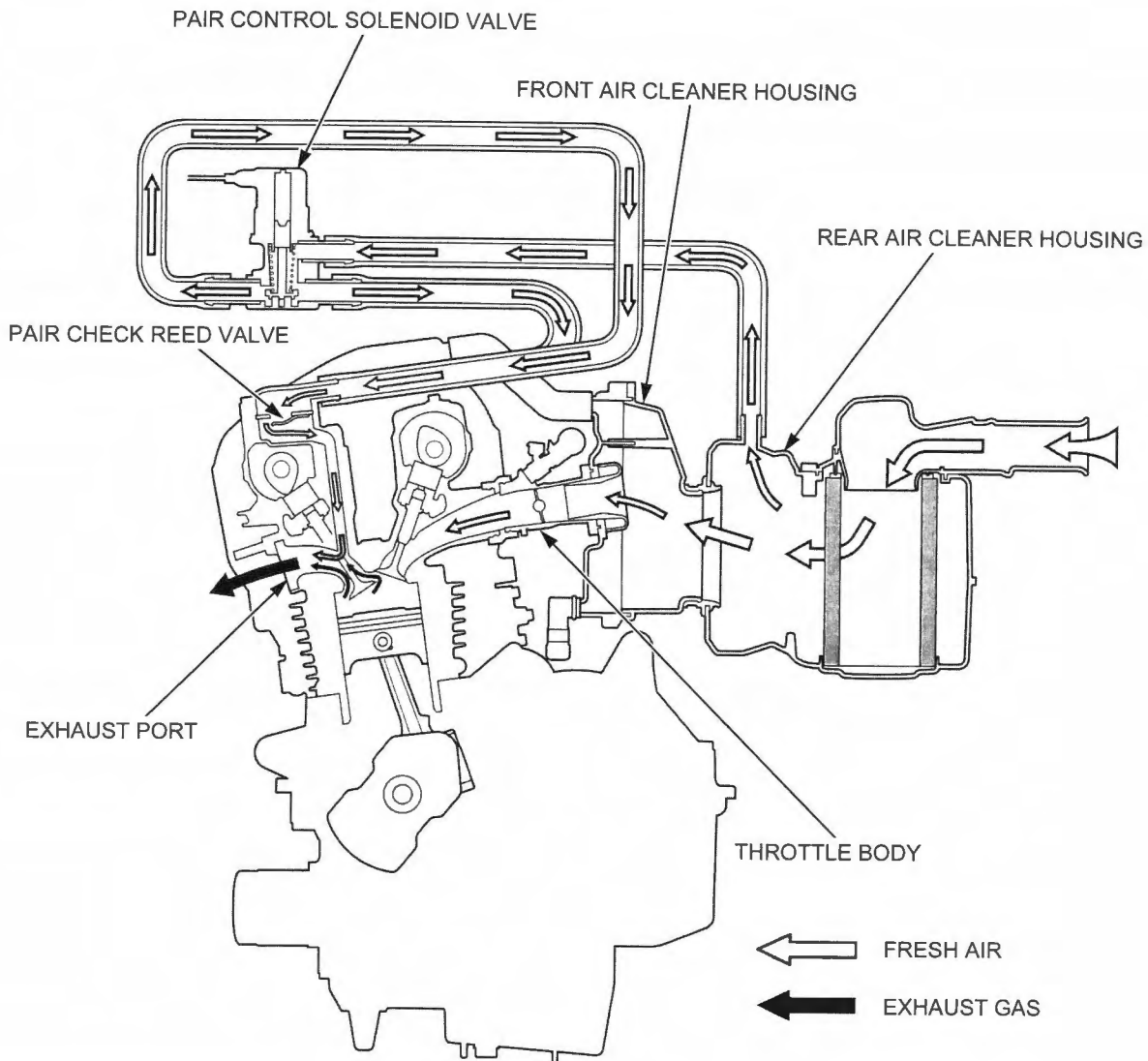
SECONDARY AIR SUPPLY SYSTEM

The pulse secondary air supply system introduces filtered air into the exhaust gases in the exhaust port. Fresh air is drawn into the exhaust port by the function of the PAIR control valve.

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

The reed valve prevents reverse air flow through the system. The PAIR control valve is operated by the solenoid valve. The solenoid valve is controlled by the PGM-FI unit, and the fresh air passage is opened/closed according to the running condition.

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



THREE-WAY CATALYTIC CONVERTER

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

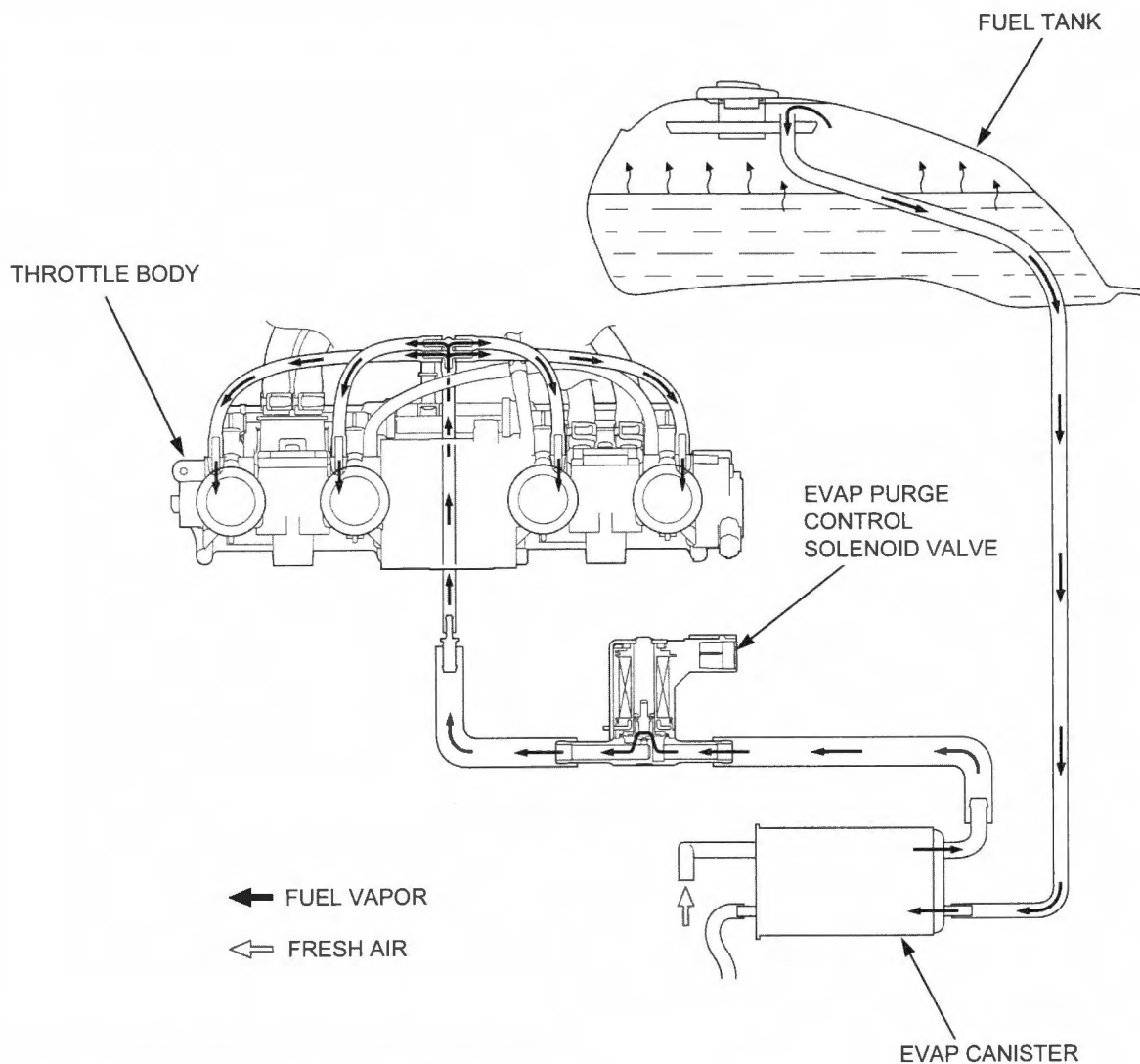
The three-way catalytic converter is in the exhaust system. Through chemical reactions, it converts HC, CO, and NO_x in the engine's exhaust to carbon dioxide (CO₂), nitrogen (N₂), and water vapor.

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

GENERAL INFORMATION

EVAPORATIVE EMISSION CONTROL SYSTEM (U.S.A. TYPE ONLY)

This model complies with CARB evaporative emission requirements. Fuel vapor from the fuel tank is routed into the EVAP canister where it is absorbed and stored while the engine is stopped. When the engine is running and the EVAP purge control solenoid valve is open, fuel vapor in the EVAP canister is drawn into the throttle body.



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 replacing 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 Canada (EC). 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.

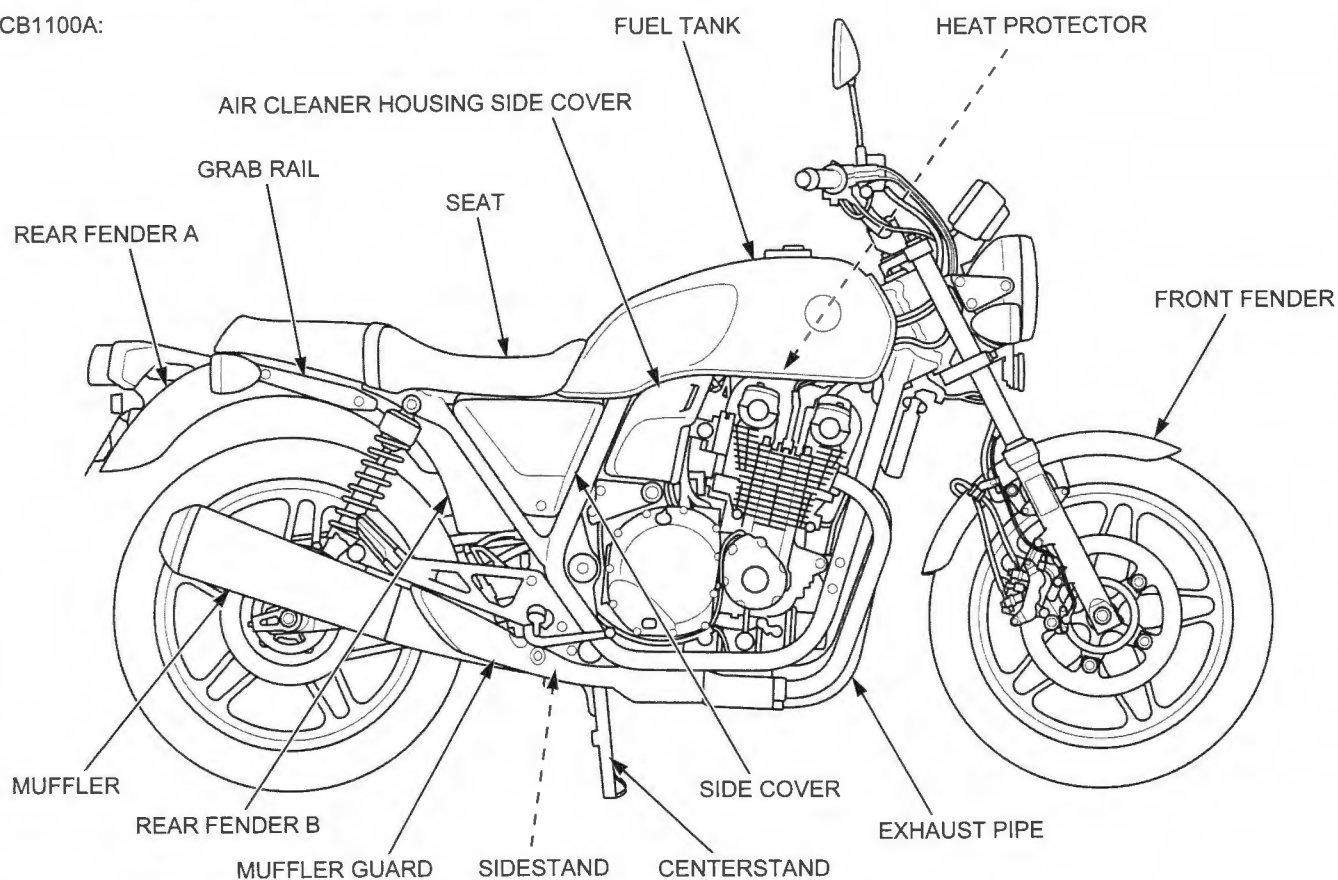
2. FRAME/BODY PANELS/EXHAUST SYSTEM

BODY PANEL LOCATIONS.....	2-2	HEAT PROTECTOR	2-12
SERVICE INFORMATION.....	2-3	MUFFLER GUARD.....	2-12
TROUBLESHOOTING	2-3	EXHAUST PIPE GUARD (CB1100SA)	2-13
SEAT	2-4	MUFFLER/EXHAUST PIPE (CB1100/A).....	2-13
SIDE COVER	2-4	MUFFLER/EXHAUST PIPE (CB1100SA).....	2-17
AIR CLEANER HOUSING SIDE COVER	2-5	CENTERSTAND ('13 model)	2-22
GRAB RAIL	2-5	CENTERSTAND (After '13 model).....	2-23
FRONT FENDER	2-8	SIDESTAND	2-24
REAR FENDER	2-9		

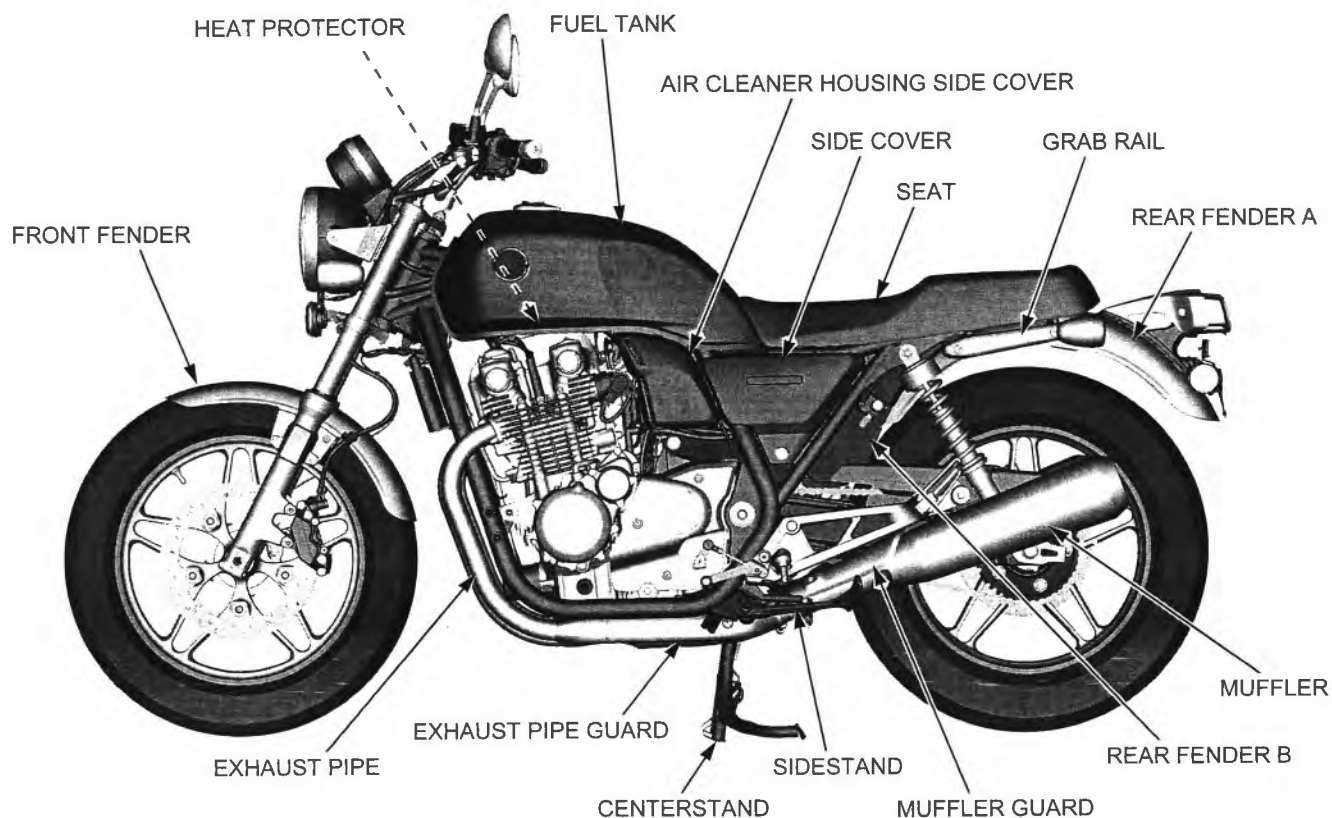
FRAME/BODY PANELS/EXHAUST SYSTEM

BODY PANEL LOCATIONS

CB1100A:



CB1100SA:



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 muffler/exhaust pipe gaskets after removing the muffler/exhaust pipe from the engine.
- When installing the exhaust system, loosely install all of the exhaust pipe fasteners. Always tighten the exhaust clamps first, then tighten the mounting fasteners. If you tighten the mounting fasteners first, the exhaust pipe may not seat properly.
- Always inspect the exhaust system for leaks after installation.

TORQUE VALUES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Grab rail mounting nut	2	8	26 (2.7, 19)	
Muffler guard bolt (CB1100/A)	1	6	12 (1.2, 9)	
Muffler guard bolt (CB1100SA)	2	6	12 (1.2, 9)	
Exhaust pipe joint nut	8	8	22 (2.2, 16)	
Exhaust pipe guard bolt (CB1100SA)	2	6	12 (1.2, 9)	
Muffler band bolt (CB1100/A)	1	8	20 (2.0, 15)	Apply engine oil to the threads and seating surface.
Muffler band bolt (CB1100SA)	2	8	20 (2.0, 15)	Apply engine oil to the threads and seating surface.
Exhaust pipe mounting bolt (CB1100/A)	1	8	21 (2.1, 15)	
Exhaust pipe mounting bolt (CB1100SA)	2	8	21 (2.1, 15)	
Muffler mounting nut (CB1100/A)	1	8	21 (2.1, 15)	
Muffler mounting nut (CB1100SA)	2	8	21 (2.1, 15)	
Centerstand pivot pipe mounting bolt	1	6	12 (1.2, 9)	ALOC bolt; replace with a new one.
Sidestand pivot bolt	1	10	10 (1.0, 7)	See page 2-24
Sidestand pivot nut	1	10	39 (4.0, 29)	See page 2-24

TROUBLESHOOTING

Excessive exhaust noise

- Broken exhaust system
- Exhaust gas leak

Poor performance

- Deformed exhaust system
- Exhaust gas leak
- Clogged muffler

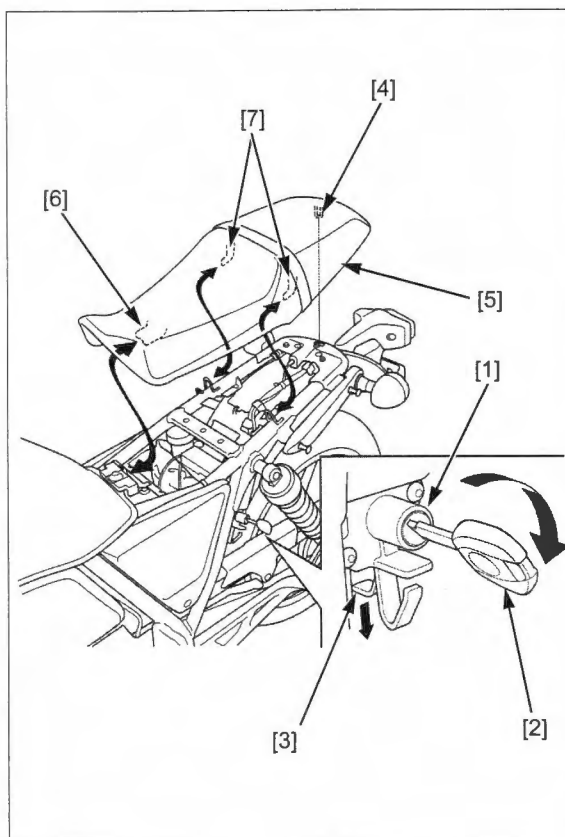
SEAT**REMOVAL/INSTALLATION**

Turn the seat lock/helmet holder [1] clockwise using the ignition key [2] and pull the lock lever [3] down to unhook the seat catch [4].

Pull the seat [5] backward and remove it.

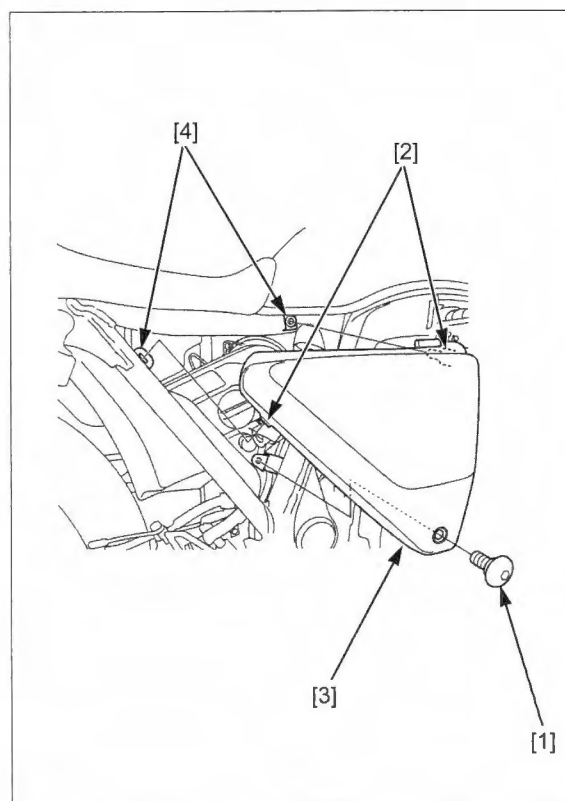
Install the seat while inserting its prong [6] into the retainer on the fuel tank bracket and its hooks [7] into the guides on the frame.

Push the seat forward, then down to lock the seat catch hook.

**SIDE COVER****REMOVAL/INSTALLATION**

Remove the side cover mounting bolt [1]. Release the tabs [2] of the side cover [3] from the frame grommets [4], then remove the side cover.

Installation is in the reverse order of removal.



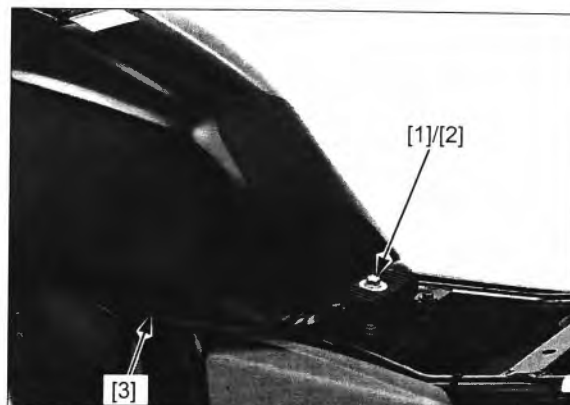
AIR CLEANER HOUSING SIDE COVER

REMOVAL/INSTALLATION

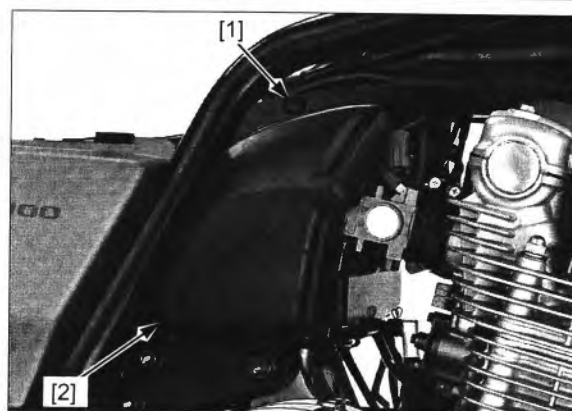
Remove the seat (page 2-4).

Be careful not to disconnect the breather hose when lifting up the fuel tank.

Remove the fuel tank mounting bolt [1] and collar [2], then lift up the fuel tank [3] slightly.



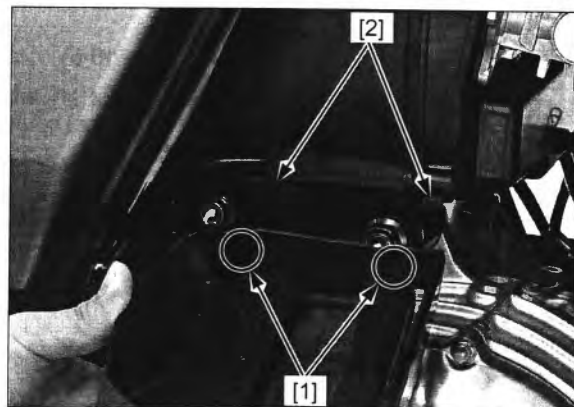
Remove the trim clip [1] and air cleaner housing side cover [2].



Installation is in the reverse order of removal.

NOTE:

At installation, align the cut-outs [1] of air cleaner housing side cover with the tabs [2] of front air cleaner housing.



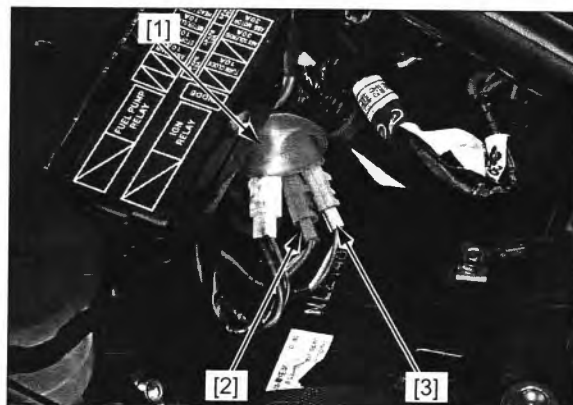
GRAB RAIL

REMOVAL/INSTALLATION (CB1100/A)

Remove the following:

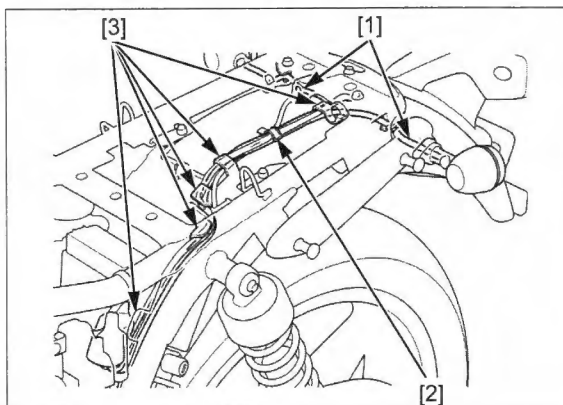
- seat (page 2-4)
- battery cover (page 16-6)

Remove the rubber boot [1] and disconnect the rear turn signal light 2P (Orange) connector [2] and 2P (Light blue) connector [3].



FRAME/BODY PANELS/EXHAUST SYSTEM

Release the rear turn signal light wires [1] from the clamp [2] and guides [3].



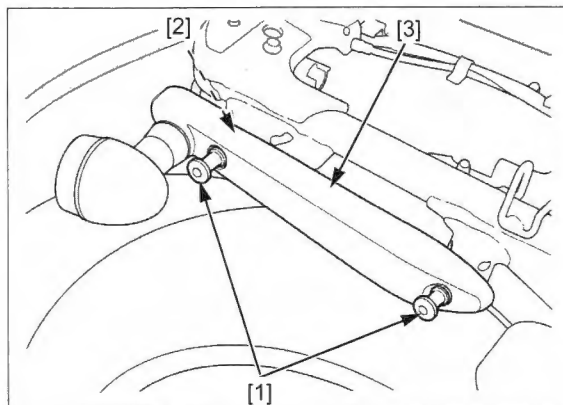
Remove the mounting bolts [1] and nut [2], then remove the grab rail [3].

Installation is in the reverse order of removal.

TORQUE:

Grab rail mounting nut:

26 N·m (2.7 kgf·m, 19 lbf·ft)

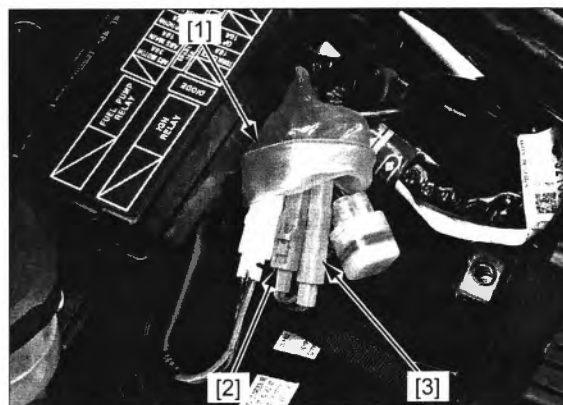


REMOVAL/INSTALLATION (CB1100SA)

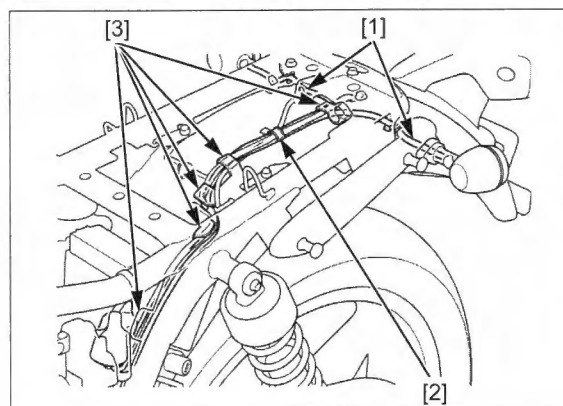
Remove the following:

- seat (page 2-4)
- battery cover (page 16-6)

Remove the rubber boot [1] and disconnect the rear turn signal light 2P (Orange) connector [2] and 2P (Light blue) connector [3].

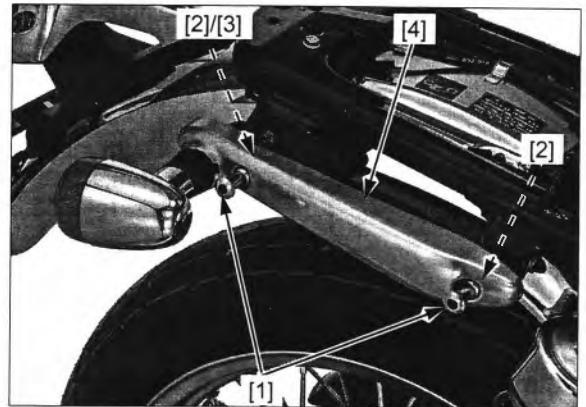


Release the rear turn signal light wires [1] from the clamp [2] and guides [3].



FRAME/BODY PANELS/EXHAUST SYSTEM

Remove the mounting bolts [1], collars [2], and nut [3], then remove the grab rail [4].

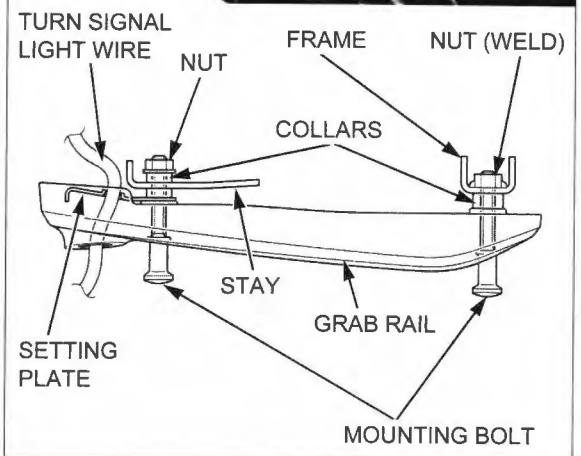
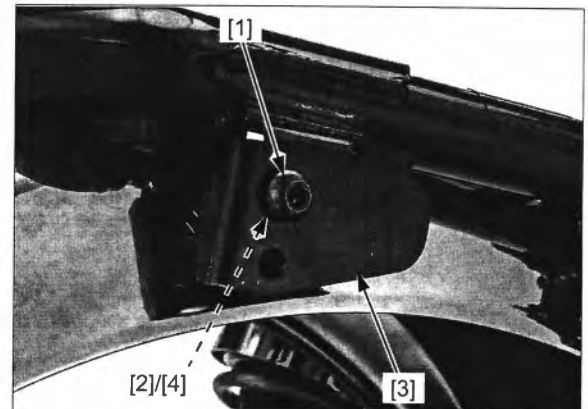


Remove the mounting bolt [1], collar [2], stay [3], and nut [4].

Installation is in the reverse order of removal.

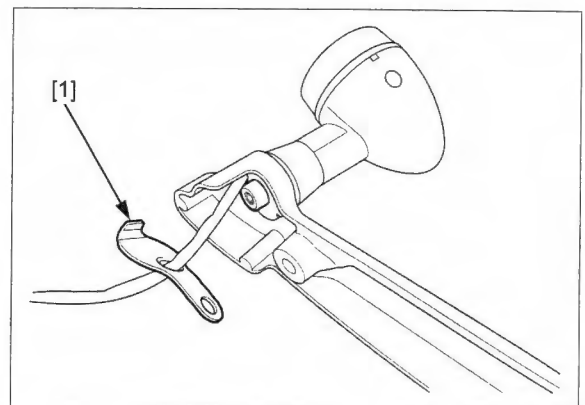
TORQUE:

Grab rail mounting nut:
26 N·m (2.7 kgf·m, 19 lbf·ft)



DISASSEMBLY/ASSEMBLY

Remove the setting plate [1].



FRAME/BODY PANELS/EXHAUST SYSTEM

Remove the mounting bolt [1], collar [2], and rear turn signal light assembly [3].

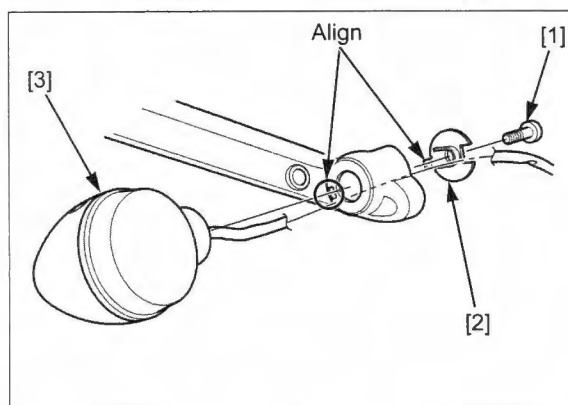
Assembly is in the reverse order of disassembly.

TORQUE:

Rear turn signal light mounting bolt:
5.1 N·m (0.5 kgf·m, 3.8 lbf·ft)

NOTE:

At assembly, align the boss of collar with hole of grab rail.



FRONT FENDER

REMOVAL/INSTALLATION

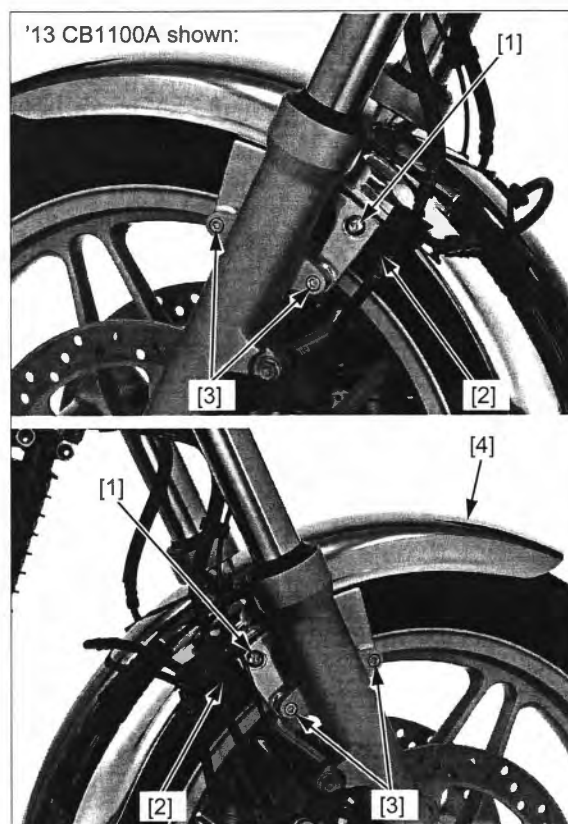
Remove the stay bolts [1] and brake hose joint stays [2].

Remove the mounting bolts [3] and front fender [4].

Installation is in the reverse order of removal.

NOTE:

Tighten the stay bolts while pushing the brake hose joint stays against the stoppers of front fender.



REAR FENDER

REAR FENDER A REMOVAL/ INSTALLATION

Remove the battery cover (page 16-6).

Remove the rubber boot and disconnect the tail/brake light 3P connector [1].

Release the tail/brake light wire [2], turn signal wires [3], and seat lock cable [4] from the clamp [5] and guides [6].

Remove the front mounting nuts [7], rear mounting bolts [8], nuts [9], collars [10], and seat lock cover [11].

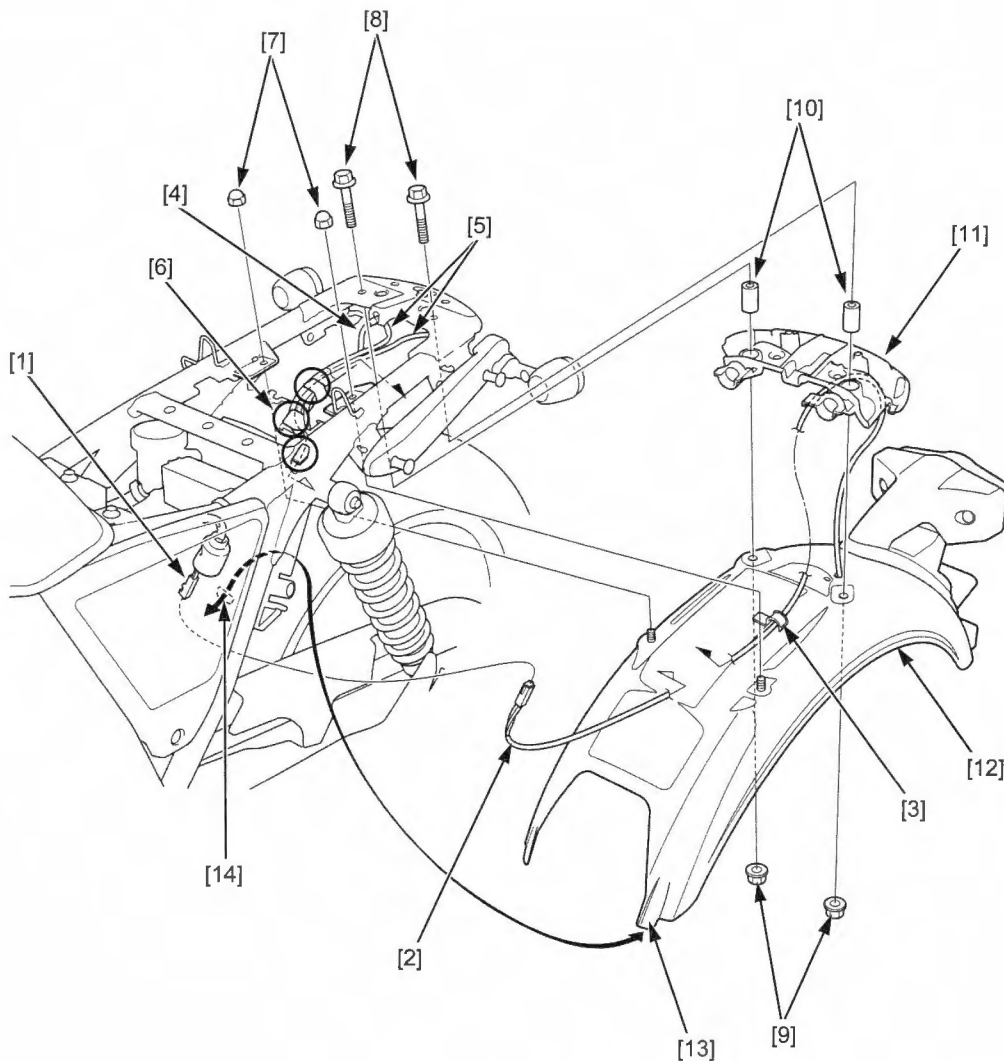
Release the tail/brake light wire from the seat lock cover, then remove the rear fender [12].

Installation is in the reverse order of removal.

NOTE:

At installation, align the tab [13] of rear fender A with the cut-out [14] of rear fender B.

*Route the tail/brake
light wire properly
(page 1-21).*



REAR FENDER A DISASSEMBLY/ ASSEMBLY

Remove the mounting nuts [1], washers [2], collars A [3], and collars B [4], then remove the number plate bracket [5].

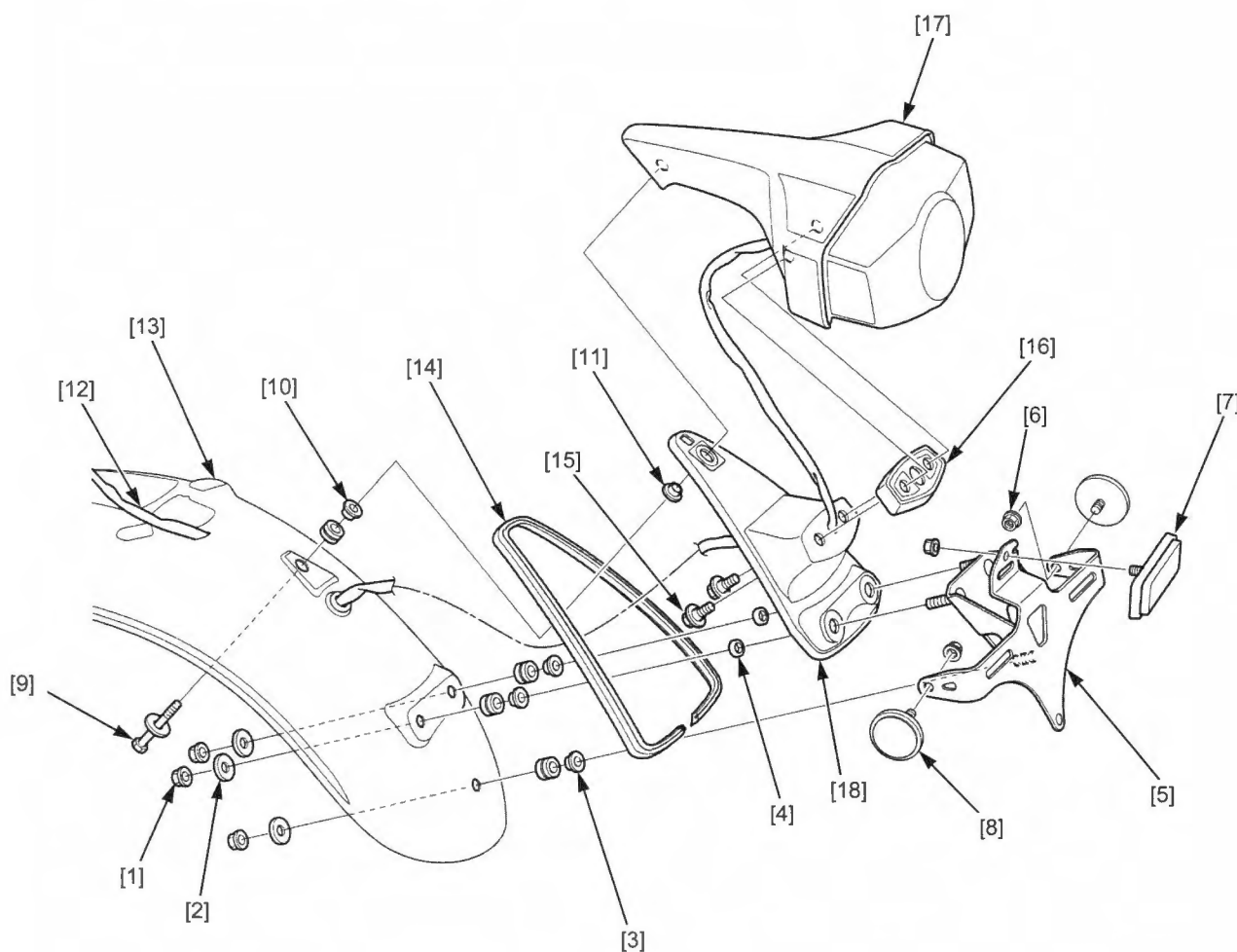
Remove the mounting nuts [6], rear reflector [7], and rear side reflectors [8] from the number plate bracket.

Remove the mounting washer bolt [9], collar C [10], and collar D [11].

Release the tail/brake light wire [12] from the rear fender A [13], then remove the tail/brake light assembly and rubber seal [14].

Remove the mounting bolts [15], spacer [16] and tail/brake light unit [17] from the base [18].

Assembly is in the reverse order of disassembly.



REAR FENDER B REMOVAL/ INSTALLATION

Remove the following:

- side covers (page 2-4)
- battery (page 16-6)
- rear fender A (page 2-9)

Place the motorcycle on its centerstand.

Remove the left and right rear shock absorber upper mounting bolts/washers [1], then lower the rear wheel.

Keep the brake master cylinder reservoir upright to prevent air from entering the hydraulic system. Remove the bolt [2] and rear master cylinder reservoir [3].

Remove the fuse box [4] from the rear fender B [5].

Remove the turn signal wires and seat lock cable from the rear fender B (page 1-42).

Remove the bolt [6] and seat lock [7] from the frame. Disconnect the seat lock cable [8] from the seat lock.

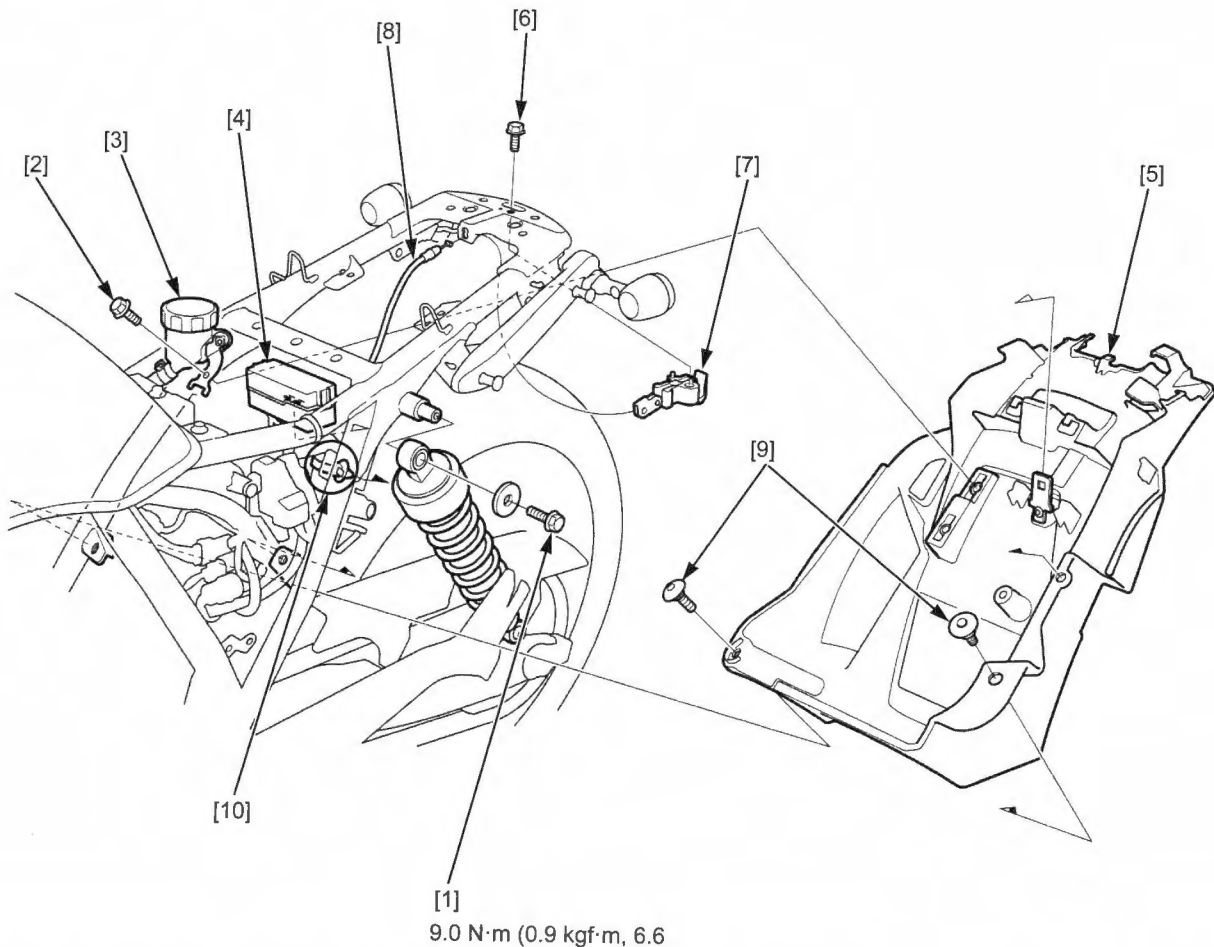
Remove the mounting bolts [9].

Remove the main harness clip [10] from the rear fender B, then remove the rear fender B from the frame.

Route the seat lock cable properly (page 1-21). Installation is in the reverse order of removal.

TORQUE:

Rear shock absorber upper mounting bolt:
9.0 N·m (0.9 kgf·m, 6.6 lbf·ft)



HEAT PROTECTOR

REMOVAL/INSTALLATION

Remove the following:

- ignition coil assembly (page 17-7)
- turn signal/position relay (page 19-37)
- ECM (page 5-80)
- bank angle sensor (page 5-77)

Remove the left and right trim clips [1].

Remove the bank angle sensor connector stay from the heat shield.

Release the ECM box [2] from the frame bosses [3], then remove the heat protector assembly [4].

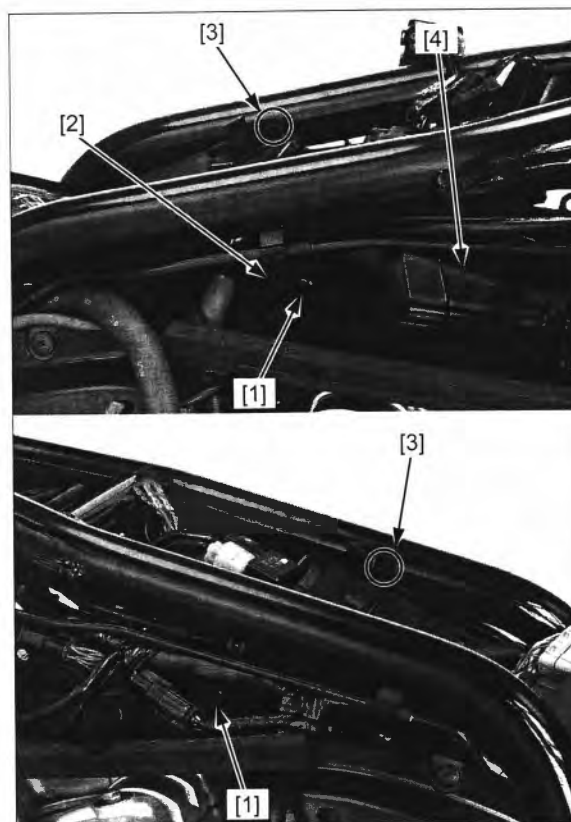
Separate the ECM box and heat protector.

Installation is in the reverse order of removal.

NOTE:

To prevent the thread plate from falling upon installation, secure it to the heat protector with a piece of tape.

Route the wire harnesses properly (page 1-21).

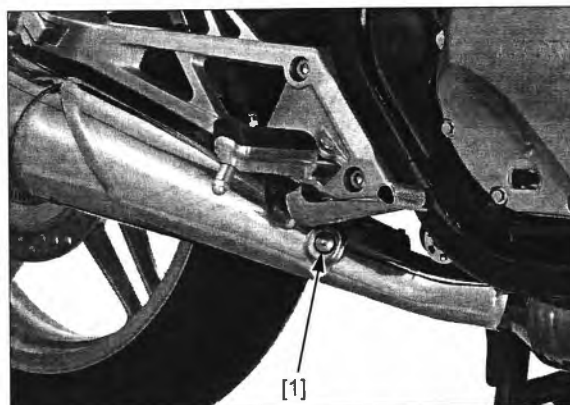


MUFFLER GUARD

REMOVAL/INSTALLATION

CB1100SA: Removal/installation of the right and left muffler guards follow the same procedures.

Remove the muffler guard bolt [1].



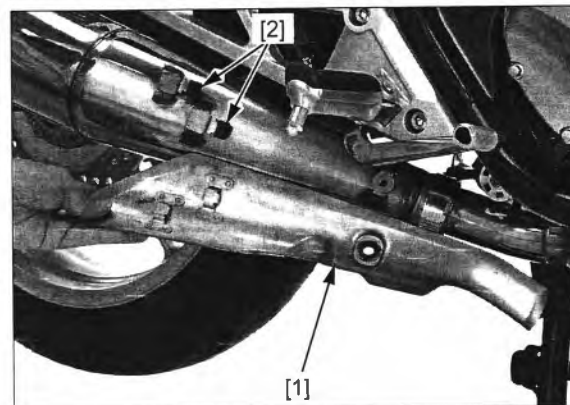
Slide the muffler guard [1] forward and remove it from the exhaust pipe hooks [2].

Installation is in the reverse order of removal.

TORQUE:

Muffler guard bolt:

12 N·m (1.2 kgf·m, 9 lbf·ft)

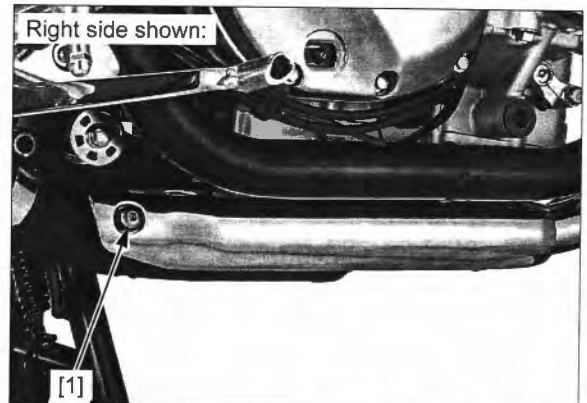


EXHAUST PIPE GUARD (CB1100SA)

REMOVAL/INSTALLATION

Removal/installation of the right and left exhaust pipe guards follow the same procedures.

Remove the exhaust pipe guard bolt [1].

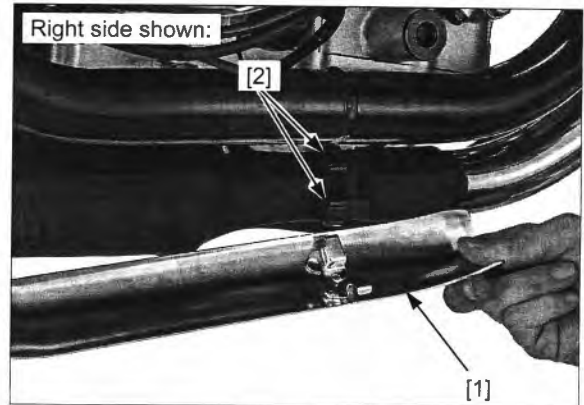


Slide the exhaust pipe guard [1] backward and remove it from the exhaust pipe hooks [2].

Installation is in the reverse order of removal.

TORQUE:

Exhaust pipe guard bolt:
12 N·m (1.2 kgf·m, 9 lbf·ft)



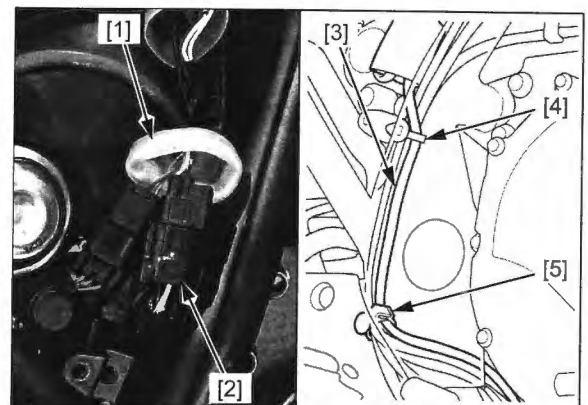
MUFFLER/EXHAUST PIPE (CB1100/A)

REMOVAL

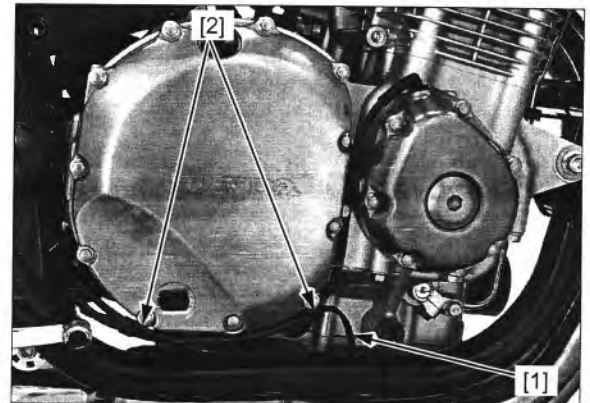
Remove the right side cover (page 2-4).

Remove the rubber boot [1] and disconnect the O₂ sensor 4P (Black) connector [2].

Release the O₂ sensor wire [3] from the wire band [4] and wire clamp [5].



Release the O₂ sensor wire [1] from the wire clamps [2].



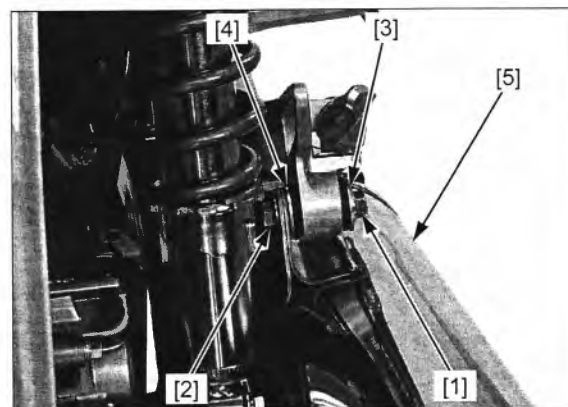
FRAME/BODY PANELS/EXHAUST SYSTEM

Loosen the muffler band bolt [1].

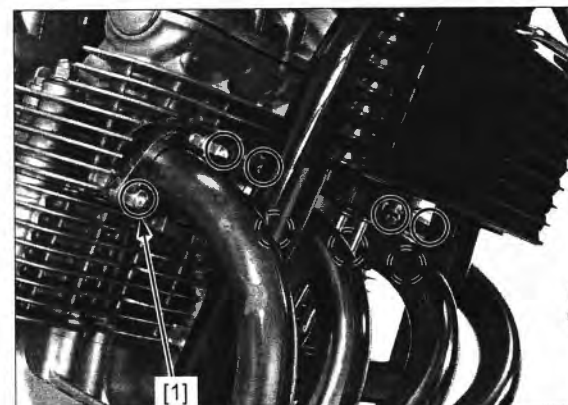


Remove the muffler mounting bolt [1], nut [2], washer [3], and collar [4], then remove the muffler [5].

Remove the muffler gasket.

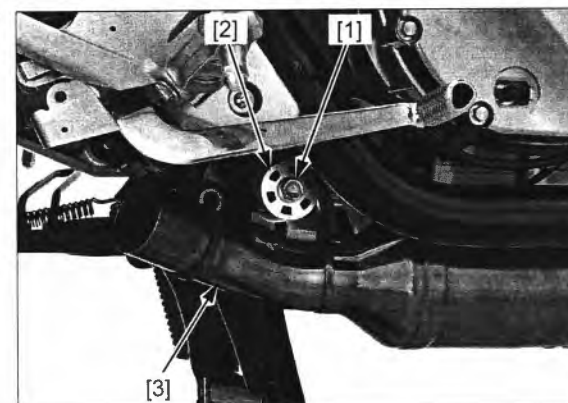


Remove the exhaust pipe joint nuts [1].

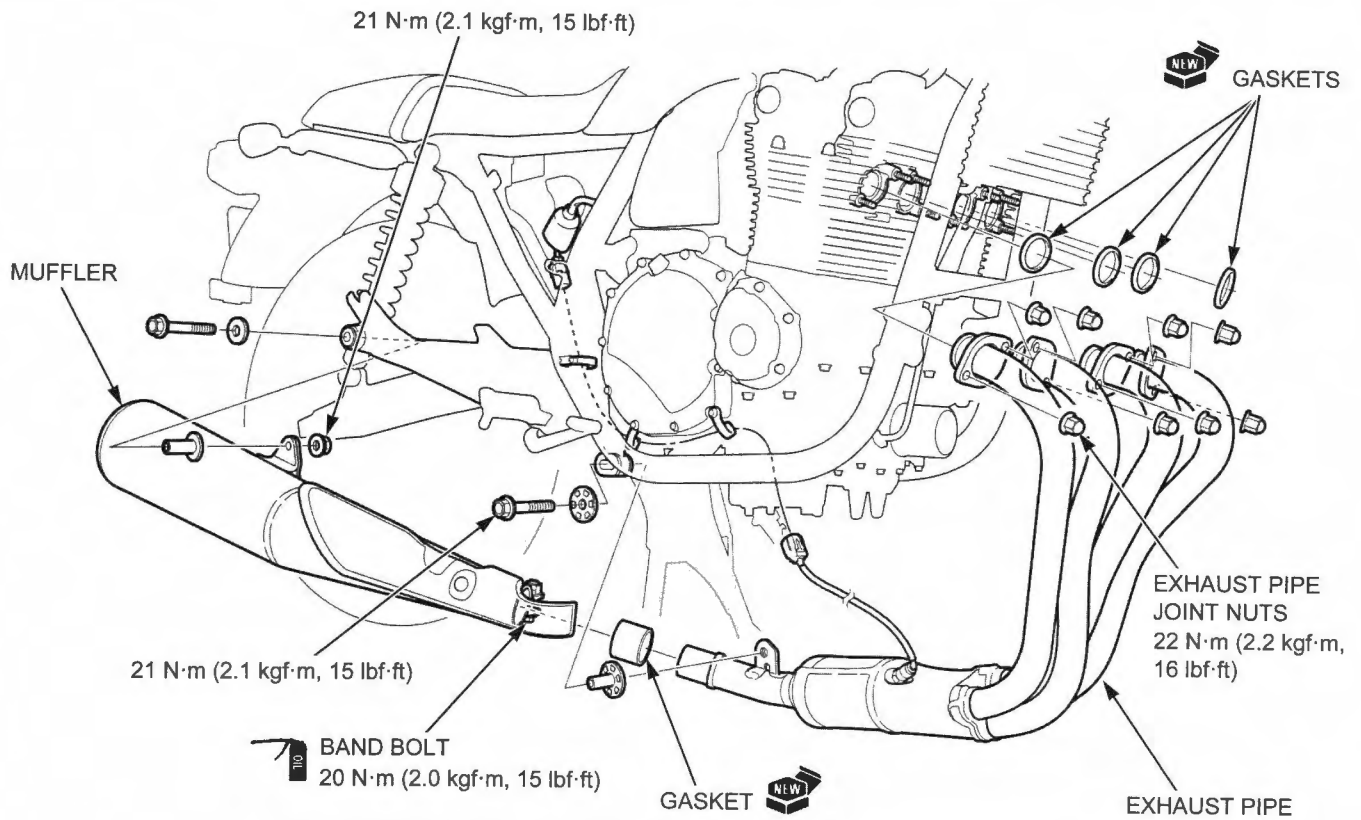


Remove the exhaust pipe mounting bolt [1] and washer [2], then remove the exhaust pipe [3].

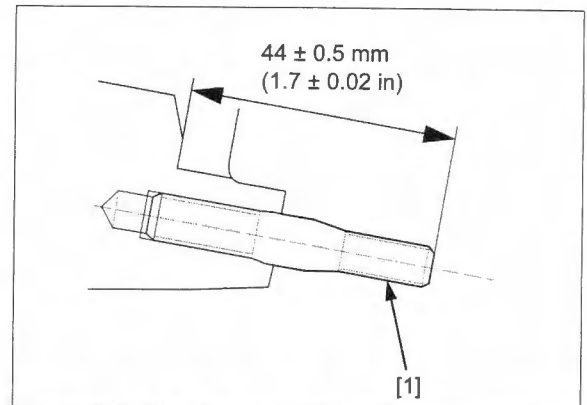
Remove the exhaust pipe gaskets from the exhaust ports.



INSTALLATION



Check that the exhaust pipe stud bolt [1] protrusion from the exhaust port is the specified length as shown.
Tighten the stud bolt if necessary.



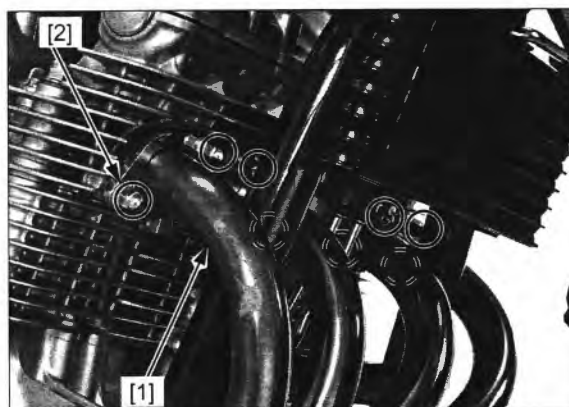
Always replace the exhaust pipe gaskets with new ones.

Install new exhaust pipe gaskets [1] onto the exhaust ports of the cylinder head.

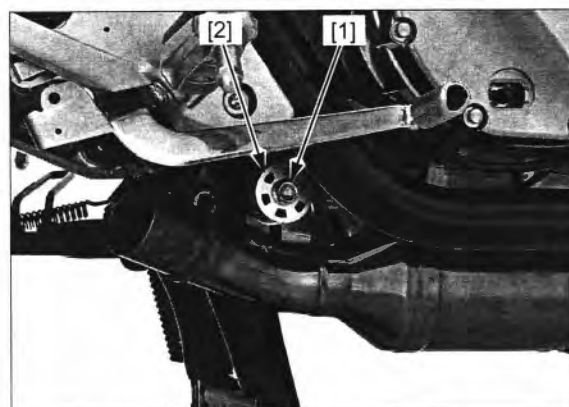


FRAME/BODY PANELS/EXHAUST SYSTEM

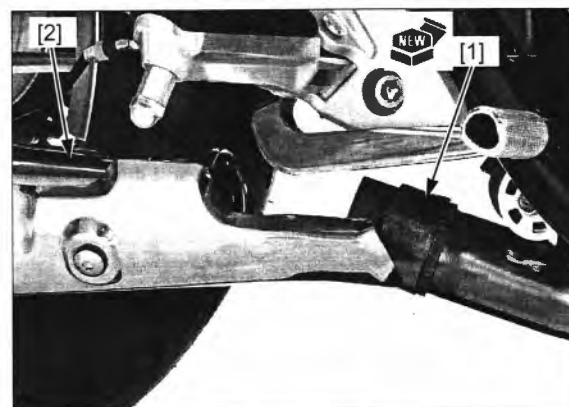
Install the exhaust pipe [1] and temporarily install the exhaust pipe joint nuts [2].



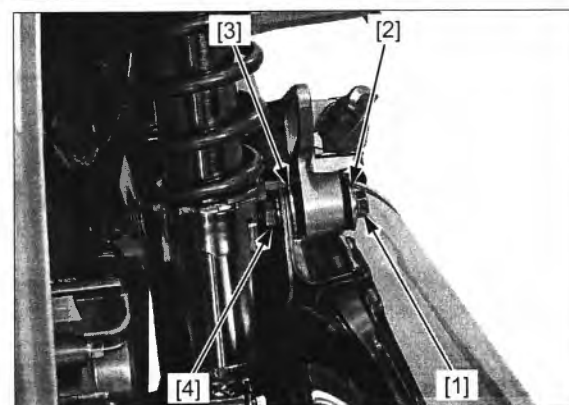
Temporarily install the exhaust pipe mounting bolt [1] and washer [2].



Install a new gasket [1] onto the exhaust pipe.
Install the muffler [2] into the exhaust pipe.



Temporarily install the muffler mounting bolt [1], washer [2], collar [3], and nut [4].



First tighten the exhaust pipe joint nuts to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

Apply engine oil to the muffler band bolt [1] and tighten it to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

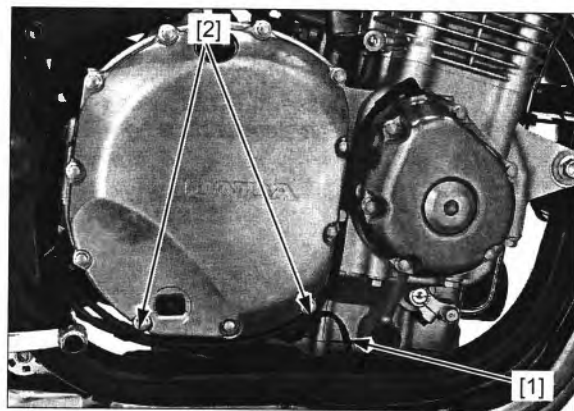
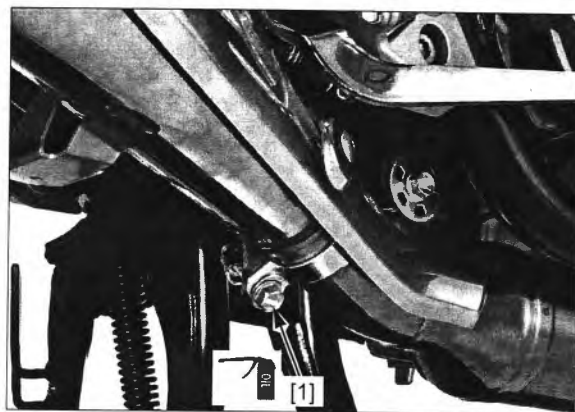
Tighten the exhaust pipe mounting bolt.

TORQUE: 21 N·m (2.1 kgf·m, 15 lbf·ft)

Hold the muffler mounting bolt and tighten the nut to the specified torque.

TORQUE: 21 N·m (2.1 kgf·m, 15 lbf·ft)

Secure the O₂ sensor wire [1] with the wire clamps [2].



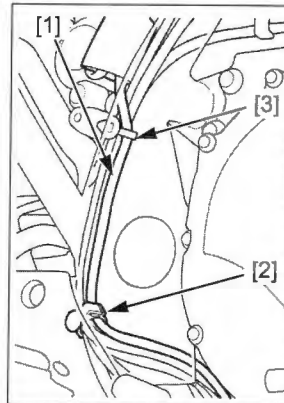
Route the O₂ sensor wire properly (page 1-21).

Secure the O₂ sensor wire [1] with the wire clamp [2] and wire band [3].

Connect the O₂ sensor 4P (Black) connector [4] and install the rubber boot [5].

Install the right side cover (page 2-4).

After installation, start the engine and inspect the exhaust system for leaks.



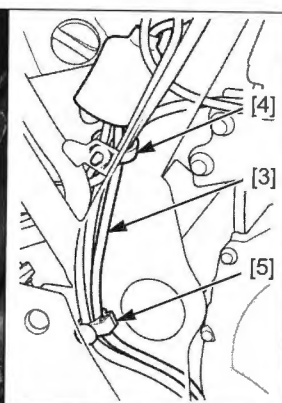
MUFFLER/EXHAUST PIPE (CB1100SA)

REMOVAL

Remove the right and left side covers (page 2-4).

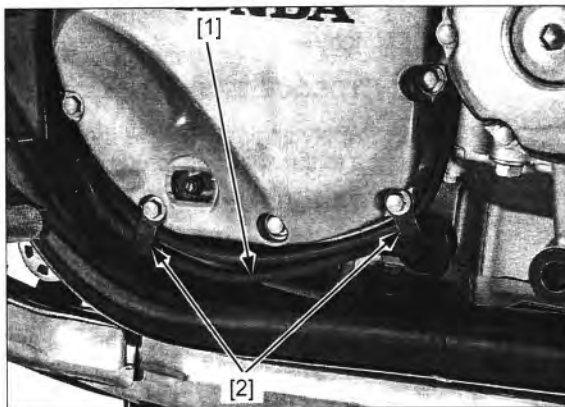
Right side: Remove the rubber boot [1] and disconnect the O₂ sensor 4P (Black) connector [2].

Release the O₂ sensor wire [3] from the wire band [4] and wire clamp [5].



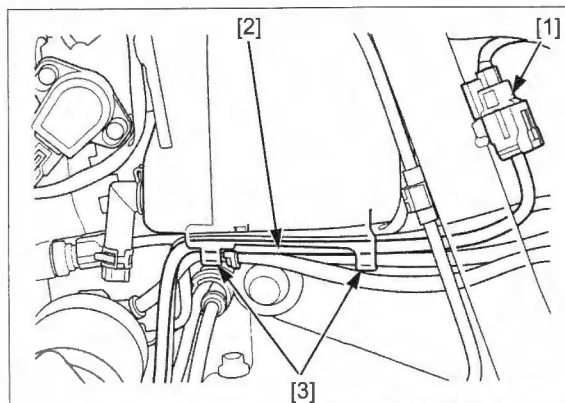
FRAME/BODY PANELS/EXHAUST SYSTEM

Right side: Release the O₂ sensor wire [1] from the wire clamps [2].



Left side: Release the O₂ sensor 4P (Black) connector [1] from the frame stay and disconnect it.

Release the O₂ sensor wire [2] from the guides [3] on the air cleaner housing.

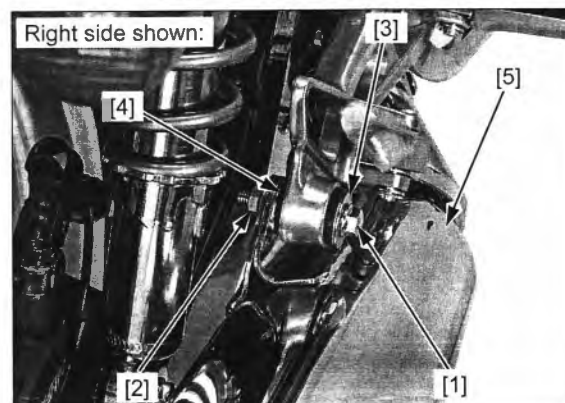


The right and left sides follow the same procedures.
Loosen the muffler band bolt [1].

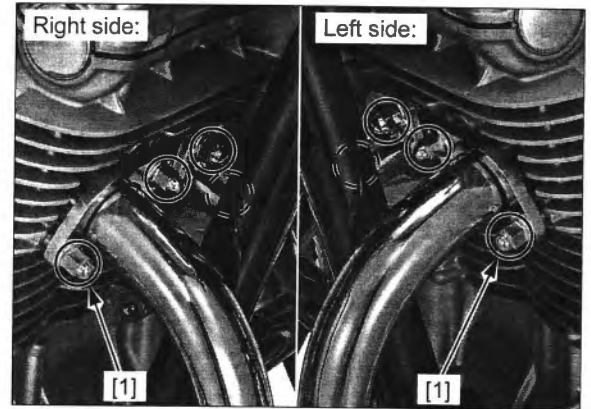


Remove the muffler mounting bolt [1], nut [2], washer [3], and collar [4], then remove the muffler [5].

Remove the muffler gasket.

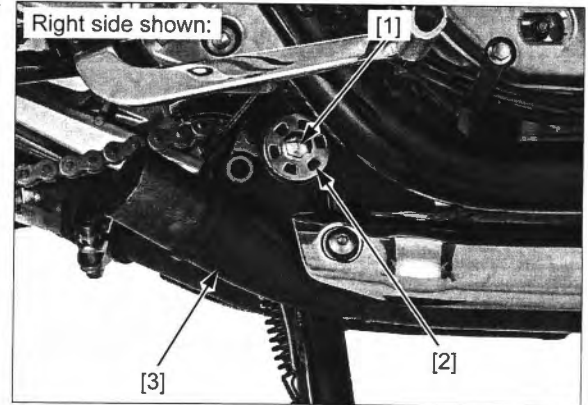


Remove the exhaust pipe joint nuts [1].

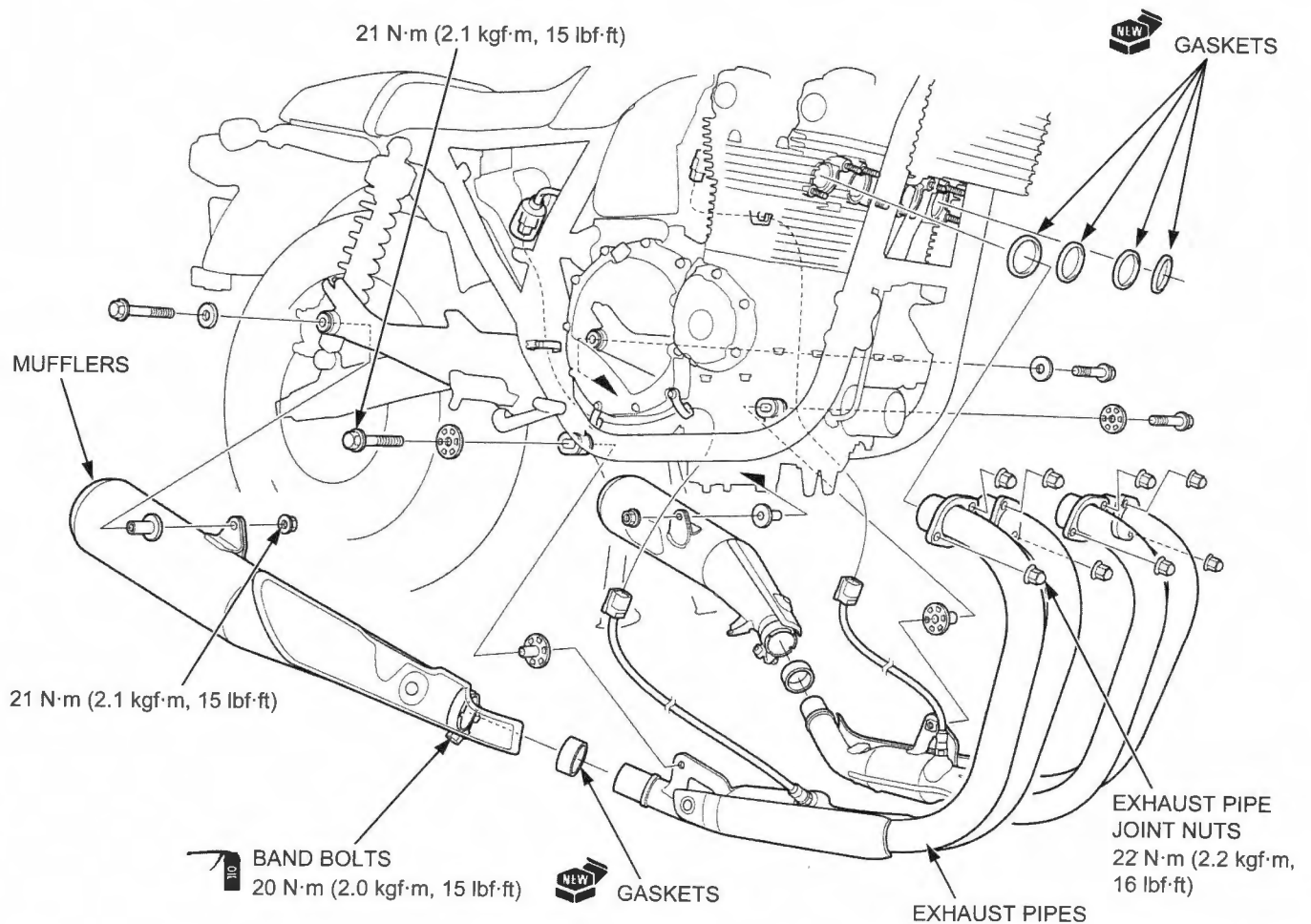


Remove the exhaust pipe mounting bolt [1] and washer [2], then remove the exhaust pipe [3].

Remove the exhaust pipe gaskets from the exhaust ports.



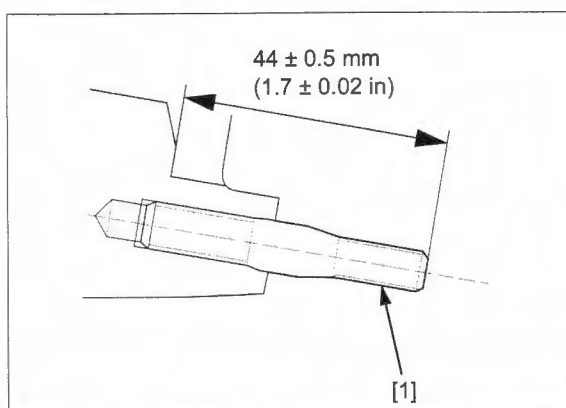
INSTALLATION



FRAME/BODY PANELS/EXHAUST SYSTEM

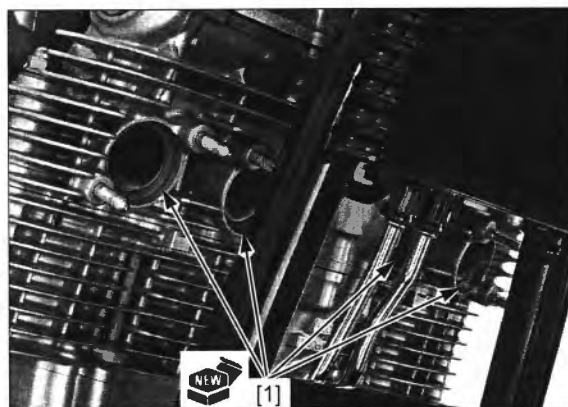
Check that the exhaust pipe stud bolt [1] protrusion from the exhaust port is the specified length as shown.

Tighten the stud bolt if necessary.

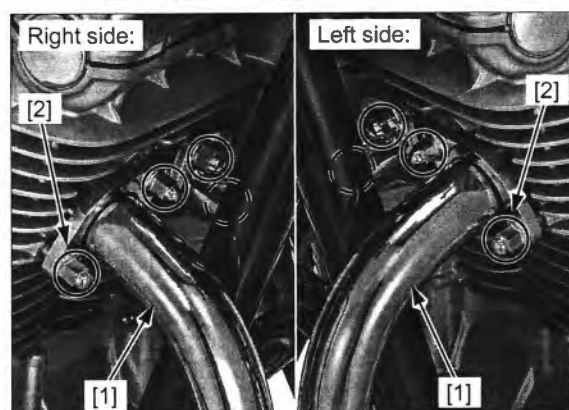


Always replace the exhaust pipe gaskets with new ones.

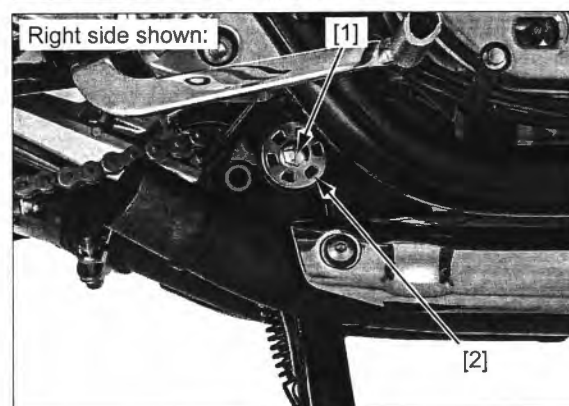
Install new exhaust pipe gaskets [1] onto the exhaust ports of the cylinder head.



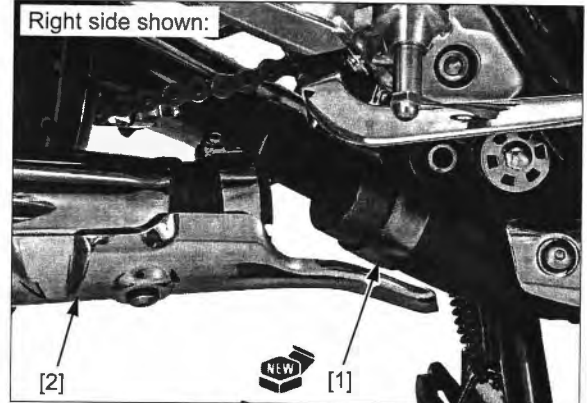
Install the exhaust pipe [1] and temporarily install the exhaust pipe joint nuts [2].



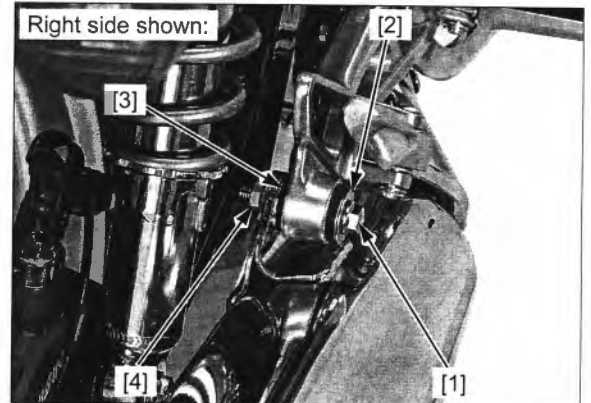
Temporarily install the exhaust pipe mounting bolt [1] and washer [2].



Install a new gasket [1] onto the exhaust pipe.
Install the muffler [2] into the exhaust pipe.



Temporarily install the muffler mounting bolt [1], washer [2], collar [3], and nut [4].



First tighten the exhaust pipe joint nuts to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

Apply engine oil to the muffler band bolt [1] and tighten it to the specified torque.

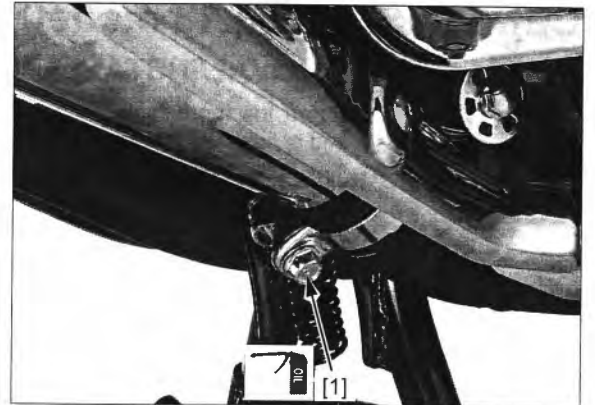
TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

Tighten the exhaust pipe mounting bolt.

TORQUE: 21 N·m (2.1 kgf·m, 15 lbf·ft)

Hold the muffler mounting bolt and tighten the nut to the specified torque.

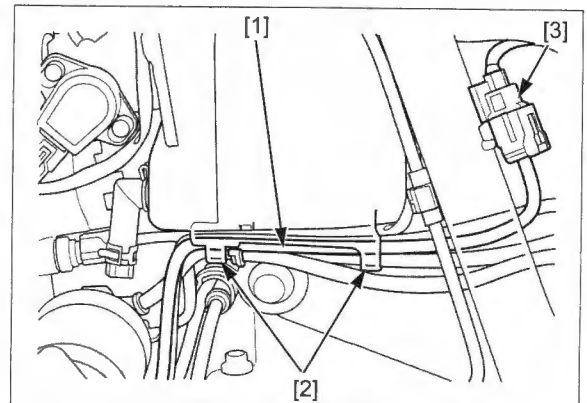
TORQUE: 21 N·m (2.1 kgf·m, 15 lbf·ft)



Left side: Route the O₂ sensor wire [1] to the guides [2] on the air cleaner housing.

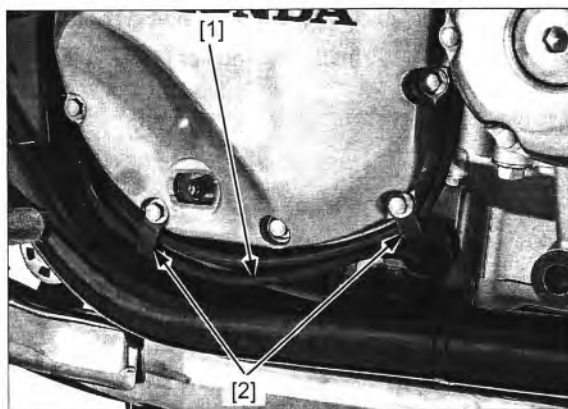
- Route the O₂ sensor wire properly (page 1-21).

Connect the O₂ sensor 4P (Black) connector [3] and attach it to the frame stay.



FRAME/BODY PANELS/EXHAUST SYSTEM

Right side: Route the O₂ sensor wire [1] and secure it with the wire clamps [2].



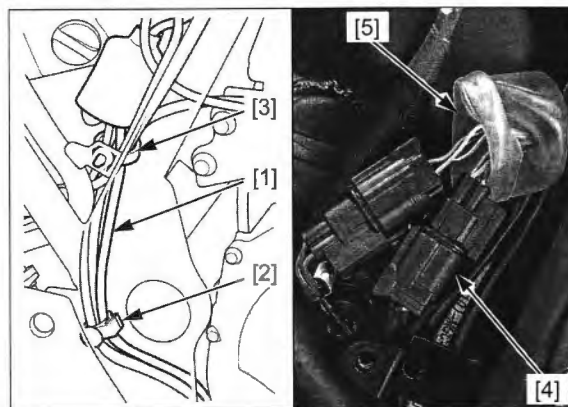
Right side: Secure the O₂ sensor wire [1] with the wire clamp [2] and wire band [3].

- Route the O₂ sensor wire properly (page 1-21).

Connect the O₂ sensor 4P (Black) connector [4] and install the rubber boot [5].

Install the right and left side covers (page 2-4).

After installation, start the engine and inspect the exhaust system for leaks.



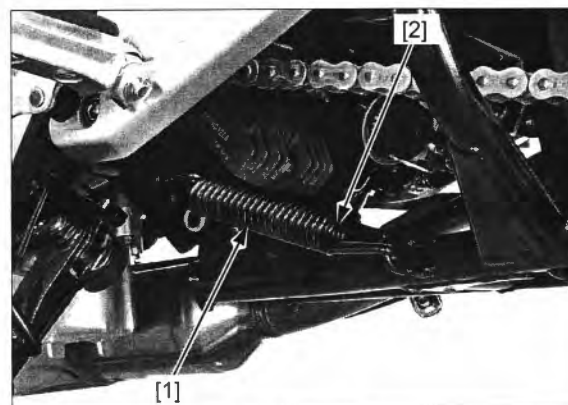
CENTERSTAND ('13 model)

REMOVAL/INSTALLATION

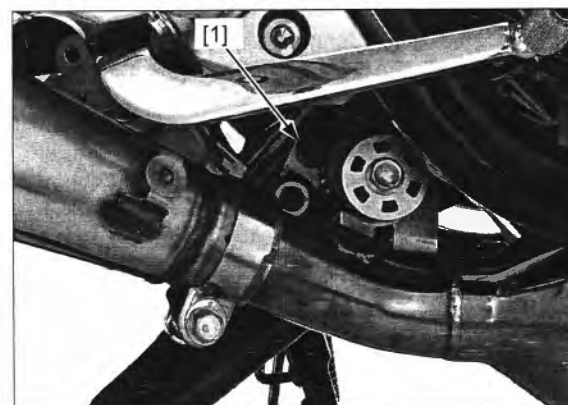
Support the motorcycle securely using a maintenance stand or other support tool.

Remove the muffler guard (page 2-12).

Remove the centerstand main spring [1] and sub spring [2].



Remove the pivot pipe mounting bolt [1].



Remove the pivot pipe [1] while holding the centerstand, then remove the centerstand from the frame.

Installation is in the reverse order of removal.

NOTE:

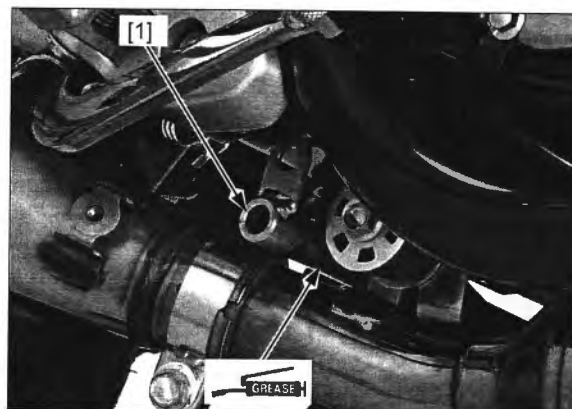
- Before installation, apply grease to the sliding surface of the pivot pipe.
- Replace the pivot pipe mounting bolt with new one.

TORQUE:

Pivot pipe mounting bolt:

12 N·m (1.2 kgf·m, 9 lbf·ft)

Make sure that the centerstand retracts smoothly.



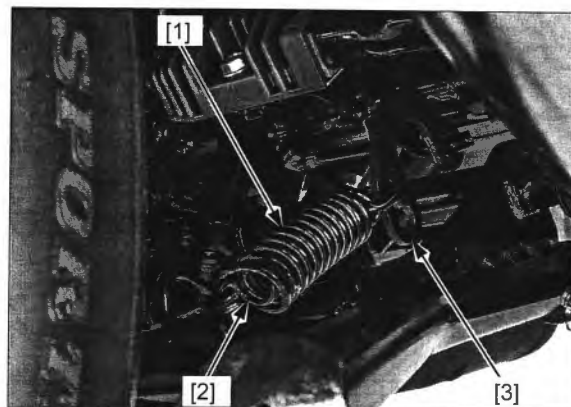
CENTERSTAND (After '13 model)

REMOVAL/INSTALLATION

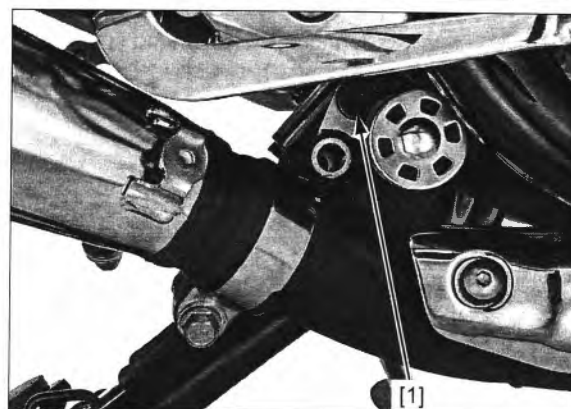
Support the motorcycle securely using a maintenance stand or other support tool.

Remove the muffler guard (page 2-12).

Remove the centerstand main spring [1] and sub spring [2], then remove the spring plate [3].



Remove the pivot pipe mounting bolt [1].



FRAME/BODY PANELS/EXHAUST SYSTEM

Remove the pivot pipe [1] while holding the centerstand, then remove the centerstand from the frame.

Installation is in the reverse order of removal.

NOTE:

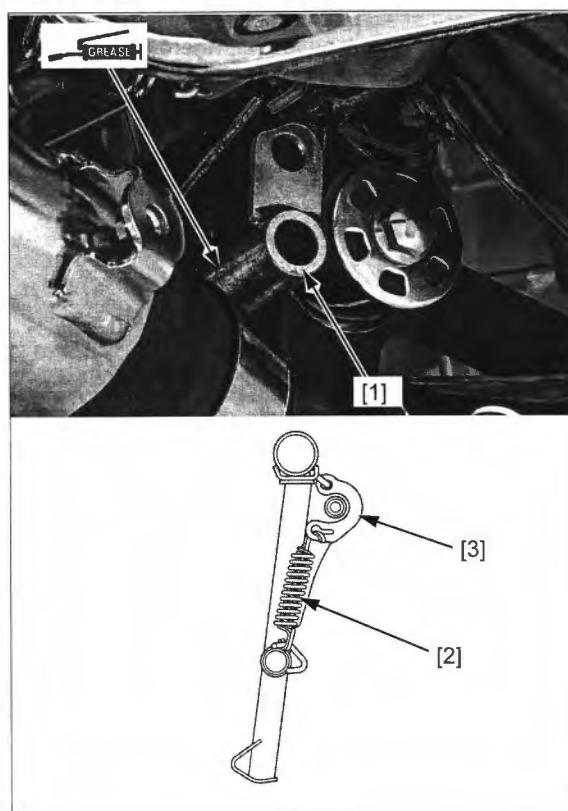
- Note the direction of the springs [2] and spring plate [3]. Install the springs with the large hook side facing up as shown.
- Before installation, apply grease to the sliding surface of the pivot pipe.
- Replace the pivot pipe mounting bolt with a new one.

TORQUE:

Pivot pipe mounting bolt:

12 N·m (1.2 kgf·m, 9 lbf·ft)

Make sure that the centerstand is retracts smoothly.



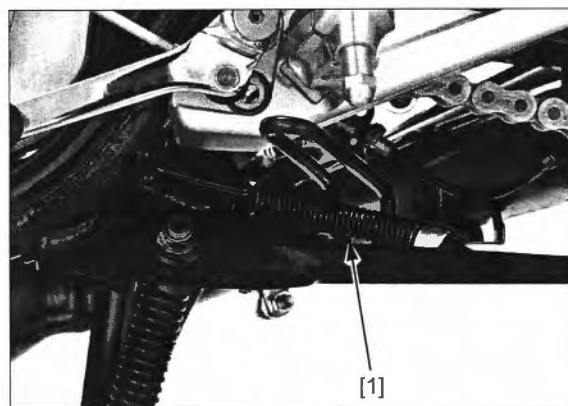
SIDESTAND

REMOVAL/INSTALLATION

Place the motorcycle on its centerstand.

Remove the sidestand switch (page 19-34).

Unhook the sidestand spring [1].



Hold the pivot bolt [1] and loosen the pivot nut [2]. Remove the pivot bolt/nut and sidestand [3].

Installation is in the reverse order of removal.

NOTE:

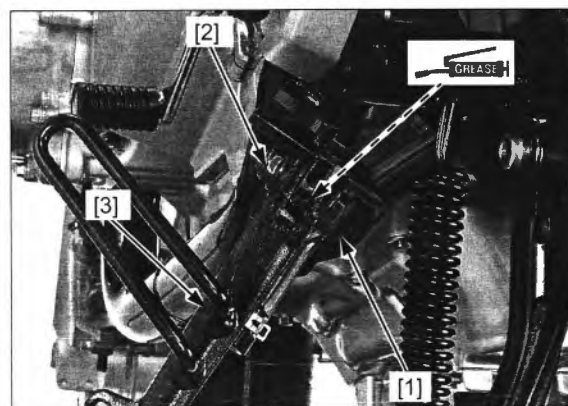
- Before installation, apply grease to the pivot bolt sliding surface.
- Tighten the pivot bolt to the specified torque, then loosen it 45 – 90 degrees. Tighten the pivot nut to the specified torque while holding the pivot bolt.

TORQUE:

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

Sidestand pivot nut: 39 N·m (4.0 kgf·m, 29 lbf·ft)

Make sure that the sidestand retracts smoothly.



SERVICE INFORMATION.....	3-2	DRIVE CHAIN	3-19
MAINTENANCE SCHEDULE	3-4	DRIVE CHAIN SLIDER	3-22
FUEL LINE	3-6	BRAKE FLUID	3-23
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AIR CLEANER	3-7	BRAKE SYSTEM	3-25
CRANKCASE BREATHER	3-7	BRAKE LIGHT SWITCH.....	3-27
SPARK PLUG	3-8	HEADLIGHT AIM	3-27
VALVE CLEARANCE	3-9	CLUTCH SYSTEM/CLUTCH FLUID	3-28
ENGINE OIL/OIL FILTER	3-14	SIDESTAND	3-29
ENGINE IDLE SPEED.....	3-17	SUSPENSION	3-29
SECONDARY AIR SUPPLY SYSTEM.....	3-18	NUTS, BOLTS, FASTENERS	3-31
EVAPORATIVE EMISSION CONTROL SYSTEM (U.S.A. TYPE ONLY)	3-19	WHEELS/TIRES	3-31
		STEERING HEAD BEARINGS	3-32

MAINTENANCE

SERVICE INFORMATION

GENERAL

- Place the motorcycle on a level surface before starting any work.
- 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 and enclosed area.

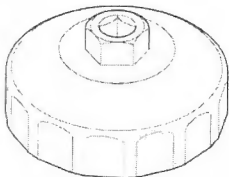
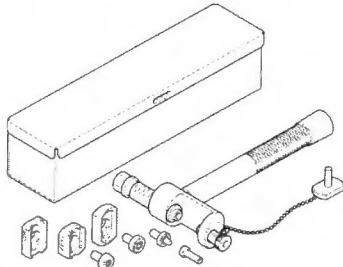
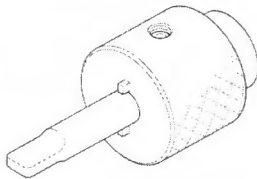
SPECIFICATIONS

ITEM			SPECIFICATIONS
Throttle grip freeplay			2 – 6 mm (0.08 – 0.24 in)
Spark plug	NGK		LMAR8A-9S
Spark plug gap			0.80 – 0.90 mm (0.031 – 0.035 in)
Valve clearance		IN	0.15 ± 0.03 mm (0.006 ± 0.001 in)
		EX	0.28 ± 0.03 mm (0.011 ± 0.001 in)
Engine oil	Oil recommendation		Pro Honda GN4 4-stroke oil (U.S.A. and Canada) or equivalent motor oil API service classification: SG or Higher JASO T 903 standard: MA Viscosity: SAE 10W-30
Engine oil capacity	After draining		3.8 liter (4.0 US qt, 3.3 Imp qt)
	After oil filter change		3.9 liter (4.1 US qt, 3.4 Imp qt)
Engine idle speed			1,100 ± 100 rpm
Drive chain slack			25 – 35 mm (1.0 – 1.4 in)
Drive chain size/link	'13	DID	DID50ZVM2/110L
		RK	RK50LFOZ2/110L
	After '13	DID	DID50VA11/110L
		RK	RK50HFOZ6/110L
Recommended brake fluid			DOT 4 brake fluid
Recommended clutch fluid			DOT 4 brake fluid
Brake pedal height standard length			67.5 ± 1.0 mm (2.66 ± 0.04 in)
Fork	Pre-load adjuster initial setting		9 mm (0.4 in) from fork bolt top/3rd groove
Shock absorber	Spring preload adjuster standard position		2nd position
Tire size		Front	110/80R18M/C 58V
		Rear	140/70R18M/C 67V
Tire brand	BRIDGESTONE	Front	BT-54F RADIAL G
		Rear	BT-54R RADIAL G
	DUNLOP	Front	D205F
		Rear	D205
Tire air pressure	Up to 90 kg (200 lbs) load	Front	250 kPa (2.50 kgf/cm ² , 36 psi)
		Rear	290 kPa (2.90 kgf/cm ² , 42 psi)
	Up to maximum weight capacity	Front	250 kPa (2.50 kgf/cm ² , 36 psi)
		Rear	290 kPa (2.90 kgf/cm ² , 42 psi)
Minimum tire tread depth		Front	1.5 mm (0.06 in)
		Rear	2.0 mm (0.08 in)

TORQUE VALUES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Spark plug	4	10	16 (1.6, 12)	
Timing hole cap	1	30	10 (1.0, 7)	Apply grease to the threads.
Engine oil drain bolt	1	14	30 (3.1, 22)	
Engine oil filter boss	1	20	18 (1.8, 13)	Apply a locking agent to the threads.
Engine oil filter cartridge	1	20	26 (2.7, 19)	Apply oil to the threads and O-ring.

TOOLS

Oil filter wrench 07HAA-PJ70101  or 07AAA-PLCA100 (U.S.A. only)	Drive chain tool set 07HMH-MR10103  or 07HMH-MR1010C (U.S.A. only)	Tensioner stopper 070MG-0010100  or 07AMG-001A100 (U.S.A. only)
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MAINTENANCE

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.

'13 model:

ITEMS	NOTE	FREQUENCY (NOTE 1)								REFER TO PAGE
		x 1,000 mi	0.6	4	8	12	16	20	24	
		x 1,000 km	1.0	6.4	12.8	19.2	25.6	32.0	38.4	
EMISSION RELATED ITEMS	* FUEL LINE				I		I		I	3-6
	* THROTTLE OPERATION				I		I		I	3-6
	AIR CLEANER	NOTE 2				I			I	3-7
	CRANKCASE BREATHER	NOTE 3			C	C	C	C	C	3-7
	SPARK PLUG			I	R	I	R	I	R	3-8
	* VALVE CLEARANCE				I		I		I	3-9
	ENGINE OIL		R	R	R	R	R	R	R	3-14
	ENGINE OIL FILTER		R		R		R		R	3-15
	* ENGINE IDLE SPEED		I		I		I		I	3-17
	* SECONDARY AIR SUPPLY SYSTEM				I		I		I	3-18
NON-EMISSION RELATED ITEMS	* EVAPORATIVE EMISSION CONTROL SYSTEM	NOTE 4				I			I	3-19
	DRIVE CHAIN		EVERY 500 mi (800 km): I, L							3-19
	DRIVE CHAIN SLIDER			I	I	I	I	I	I	3-22
	BRAKE FLUID	NOTE 5		I	I	R	I	I	R	3-23
	BRAKE PADS WEAR			I	I	I	I	I	I	3-24
	BRAKE SYSTEM		I		I		I		I	3-25
	BRAKE LIGHT SWITCH				I		I		I	3-27
	HEADLIGHT AIM				I		I		I	3-27
	CLUTCH SYSTEM				I		I		I	3-28
	CLUTCH FLUID	NOTE 5		I	I	R	I	I	R	3-28
	SIDESTAND				I		I		I	3-29
	* SUSPENSION				I		I		I	3-29
	* NUTS, BOLTS, FASTENERS		I		I		I		I	3-31
	** WHEELS/TIRES				I		I		I	3-31
	** STEERING HEAD BEARINGS		I		I		I		I	3-32

* 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 the motorcycle after each periodic maintenance is carried out.

NOTES:

1. At higher odometer reading, repeat at the frequency interval established here.
2. Service more frequently when riding in unusually wet or dusty areas.
3. Service more frequently when riding in rain or at full throttle.
4. 50 STATE (meets California)
5. Replace every 2 years, or at indicated odometer interval, whichever comes first. Replacement requires mechanical skill.

After '13 model:

ITEMS			NOTE	FREQUENCY (NOTE 1)								REFER TO PAGE
				x 1,000 mi	0.6	4	8	12	16	20	24	
				x 1,000 km	1.0	6.4	12.8	19.2	25.6	32.0	38.4	
EMISSION RELATED ITEMS	*	FUEL LINE					I		I		I	3-6
	*	THROTTLE OPERATION				I		I		I		3-6
		AIR CLEANER	NOTE 2				I			I		3-7
		CRANKCASE BREATHER	NOTE 3			C	C	C	C	C	C	3-7
		SPARK PLUG			I	R	I	R	I	R		3-8
	*	VALVE CLEARANCE				I		I		I		3-9
		ENGINE OIL			INITIAL = 600 mi (1,000 km) or 1 month : R REGULAR = EVERY 4,000 mi (6,400 km) or 6 months : R							3-14
		ENGINE OIL FILTER			R		R		R		R	3-15
	*	ENGINE IDLE SPEED			I		I		I		I	3-17
	*	SECONDARY AIR SUPPLY SYSTEM					I		I		I	3-18
*	EVAPORATIVE EMISSION CONTROL SYSTEM	NOTE 4					I			I	3-19	
NON-EMISSION RELATED ITEMS		DRIVE CHAIN			EVERY 500 mi (800 km): I, L							3-19
		DRIVE CHAIN SLIDER				I	I	I	I	I	I	3-22
		BRAKE FLUID	NOTE 5			I	I	R	I	I	R	3-23
		BRAKE PADS WEAR				I	I	I	I	I	I	3-24
		BRAKE SYSTEM			I		I		I		I	3-25
		BRAKE LIGHT SWITCH					I		I		I	3-27
		HEADLIGHT AIM					I		I		I	3-27
		CLUTCH SYSTEM					I		I		I	3-28
		CLUTCH FLUID	NOTE 5			I	I	R	I	I	R	3-28
		SIDESTAND					I		I		I	3-29
	*	SUSPENSION					I		I		I	3-29
	*	NUTS, BOLTS, FASTENERS			I		I		I		I	3-31
	**	WHEELS/TIRES					I		I		I	3-31
	**	STEERING HEAD BEARINGS			I		I		I		I	3-32

* 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 the motorcycle after each periodic maintenance is carried out.

NOTES:

1. At higher odometer reading, repeat at the frequency interval established here.
2. Service more frequently when riding in unusually wet or dusty areas.
3. Service more frequently when riding in rain or at full throttle.
4. 50 STATE (meets California)
5. Replace every 2 years, or at indicated odometer interval, whichever comes first. Replacement requires mechanical skill.

MAINTENANCE

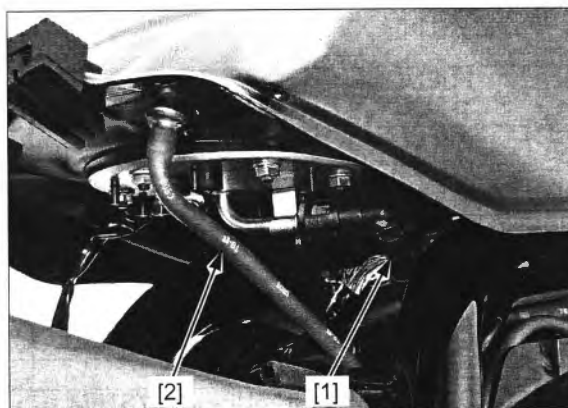
FUEL LINE

Lift up the fuel tank slightly (page 2-5).

Check the fuel line [1] for deterioration, damage, or leakage. Replace the fuel line if necessary (page 5-66).

NOTE:

Remove the sag from the breather hose [2] before returning the fuel tank to the original position.



THROTTLE OPERATION

Check the throttle grip for smooth operation.

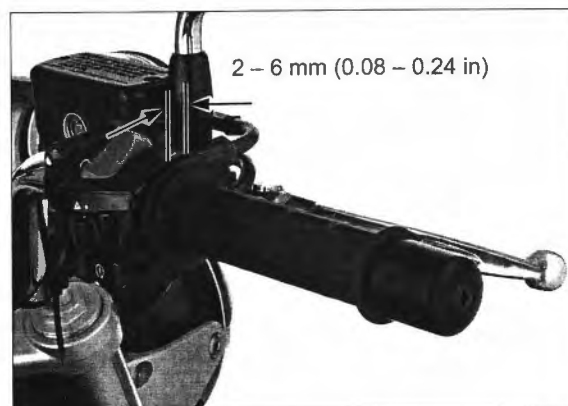
Check that the throttle opens fully and automatically closes in all steering positions.

Check the throttle cables and replace them if they are deteriorated, kinked, or damaged.

Lubricate the throttle cables if throttle operation is not smooth.

Measure the freeplay at the throttle grip flange.

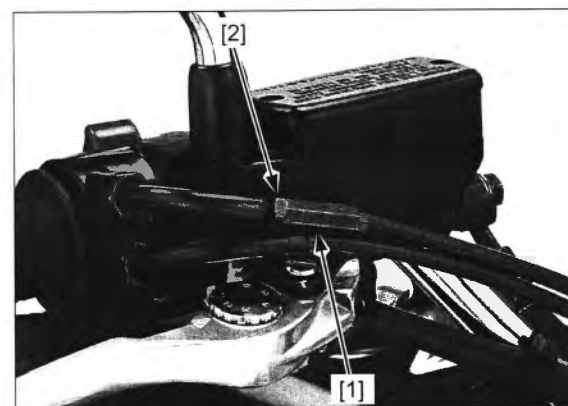
FREEPLAY: 2 – 6 mm (0.08 – 0.24 in)



Throttle grip freeplay can be adjusted at either end of the throttle cable.

Minor adjustment is made with the throttle grip side adjuster [1].

Adjust the freeplay by loosening the lock nut [2] and turning the adjuster.



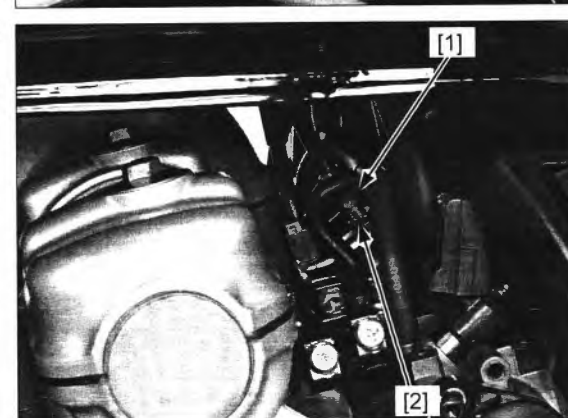
Major adjustment is made with the throttle body side adjuster [1].

Adjust the freeplay by loosening the lock nut [2] and turning the adjuster.

After adjustment, tighten the lock nut securely.

Recheck the throttle operation.

Replace any damaged parts, if necessary.



AIR CLEANER

Remove the right side cover (page 2-4).

Remove the screws [1] and air cleaner duct assembly [2].



Clean the air cleaner element [1] in accordance with the maintenance schedule (page 3-4).

If the surface of the element is dirty, remove the dust first by tapping the element gently. Then, blow away any remaining dust on the surface of the filter with compressed air from the outer mesh side (clean side) toward inside (dirty side).

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

Clean the inside of the air cleaner housing and air cleaner duct if necessary.

Install the removed parts in the reverse order of removal.



TORQUE:

Air cleaner duct mounting screw:

1.1 N·m (0.1 kgf·m, 0.8 lbf·ft)

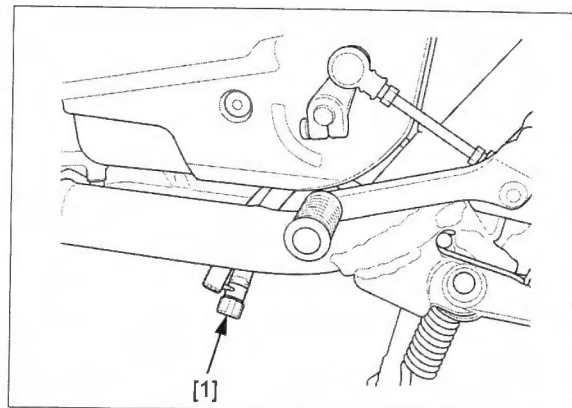
CRANKCASE BREATHER

Place a drain pan under the crankcase breather hose plug [1].

Remove the plug from the rear air cleaner housing drain hose to drain the deposits in the hose.

Service more frequently when riding in wet or dusty areas.

Reinstall the crankcase breather hose plug.

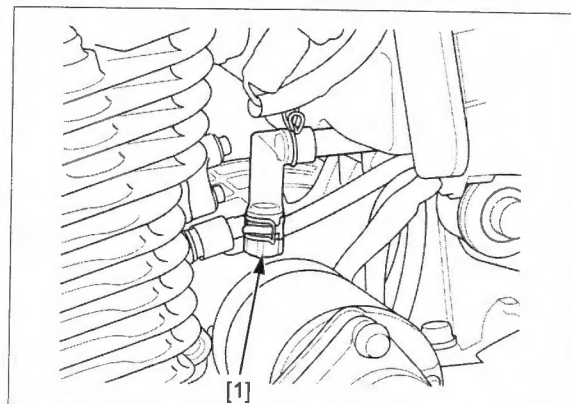


Place a drain pan under the front air cleaner housing breather hose plug [1].

Remove the plug from the front air cleaner housing to drain the deposits in the hose.

Service more frequently when riding in wet or dusty areas.

Reinstall the front air cleaner housing breather hose plug.

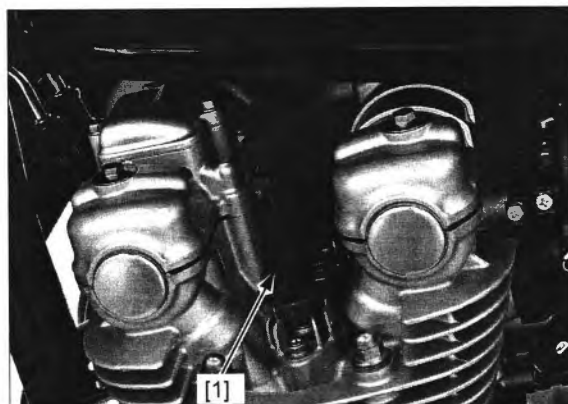


SPARK PLUG

REMOVAL

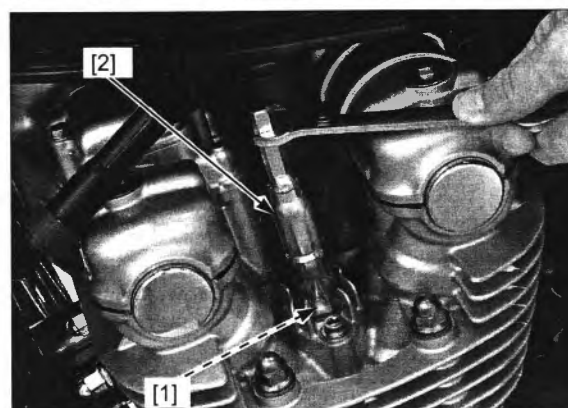
- Clean around the spark plug bases with compressed air before removing and be sure that no debris is allowed to enter the combustion chamber.

Remove the spark plug cap [1].



Remove the spark plug [1] using a spark plug wrench [2] or an equivalent tool.

Inspect or replace as described in the maintenance schedule (page 3-4).

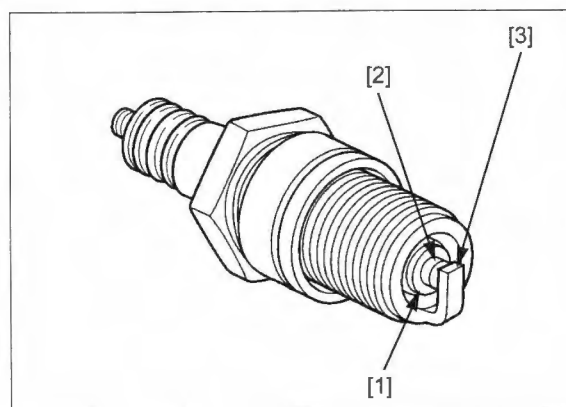


INSPECTION

Check the following and replace if necessary (recommended spark plug; page 3-2)

- Insulator [1] for damage
- Center electrode [2] and side electrode [3] for wear
- Burning condition, coloration

If the electrode is contaminated with accumulated objects or dirt, replace the spark plug.



REUSING A SPARK PLUG

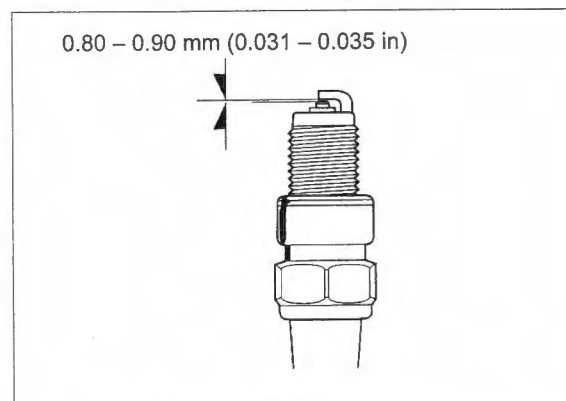
Clean the spark plug electrodes with a wire brush or special plug cleaner.

Check the gap between the center and side electrodes with a wire-type feeler gauge.

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

SPARK PLUG GAP:

0.80 – 0.90 mm (0.031 – 0.035 in)

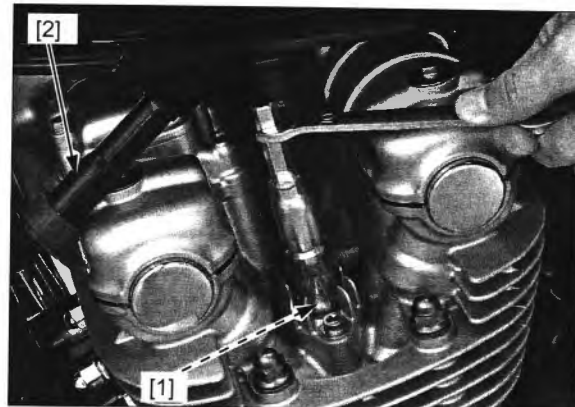


INSTALLATION

Install and hand-tighten the spark plug [1] to the cylinder head, then tighten the spark plug to the specified torque.

TORQUE: 16 N·m (1.6 kgf·m, 12 lbf·ft)

Install the spark plug cap [2].



VALVE CLEARANCE

INSPECTION

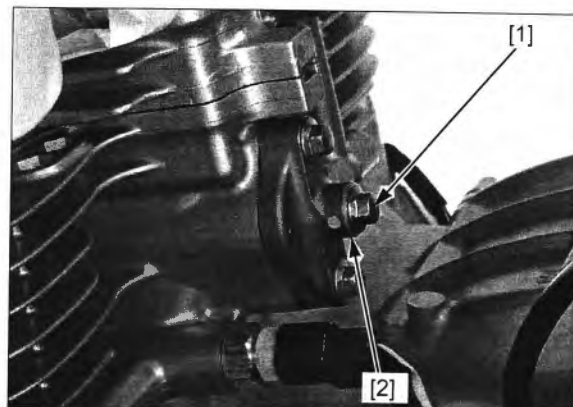
NOTE:

Check the engine idle speed after the valve clearance inspection (page 3-17).

Inspect and adjust the valve clearance while the engine is cold (below 35°C/95°F).

Remove the cylinder head cover (page 7-6).

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

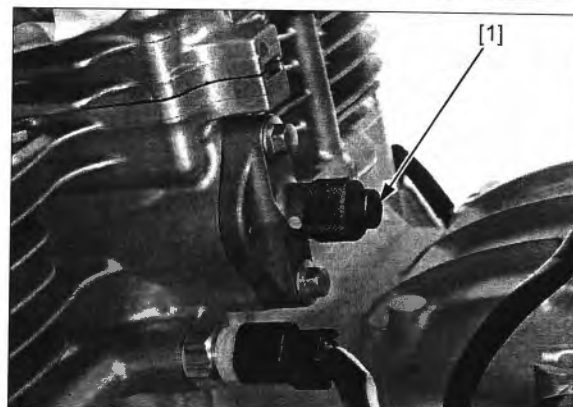


Turn the cam chain tensioner lifter shaft fully and secure it using the tensioner stopper [1].

TOOL:

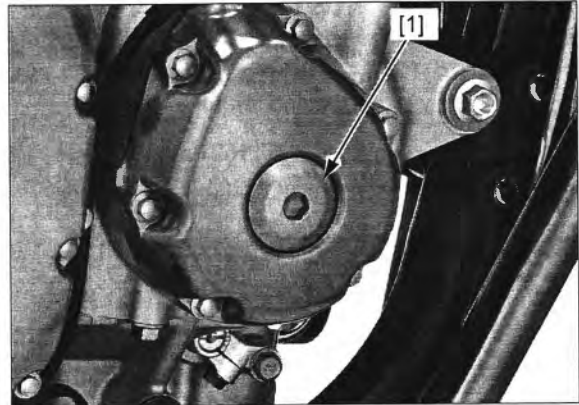
Tensioner stopper

**070MG-0010100 or
07AMG-001A100
(U.S.A. only)**

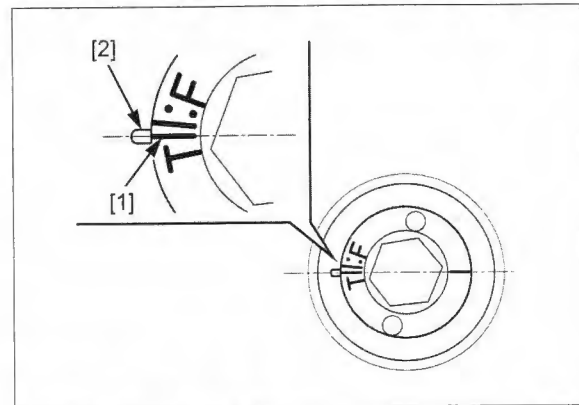


MAINTENANCE

Remove the timing hole cap [1].

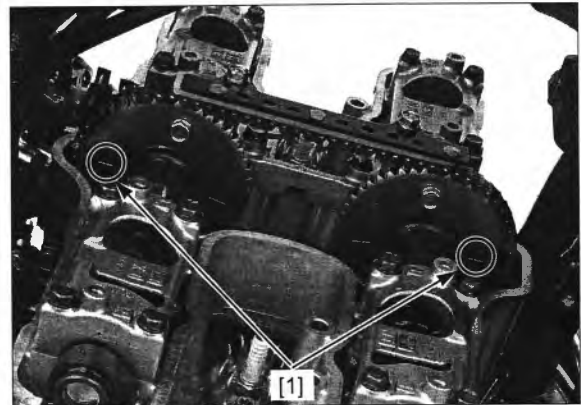


Turn the crankshaft clockwise, align the "T" mark [1] on the CKP sensor rotor with the index mark [2] on the right crankcase cover.



The timing marks [1] ("IN" and "EX") on the cam sprockets must be flush with the cylinder head surface and facing outward as shown.

If the timing marks on the cam sprockets face inward, turn the crankshaft clockwise one full turn (360°) and realign the timing marks with the cylinder head surface so they are facing outward.



Insert the feeler gauge [1] between the valve lifter and cam lobe.

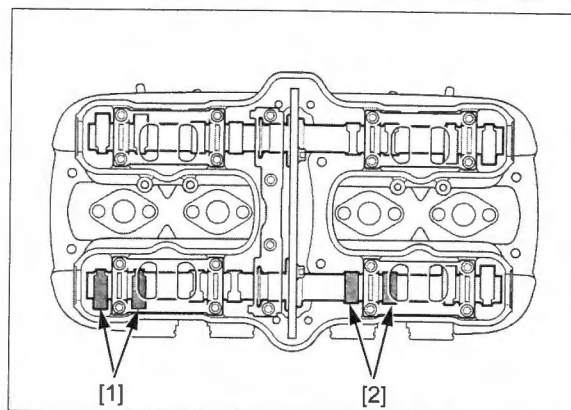


Record each valve clearance for reference in shim selection if adjustment is required.

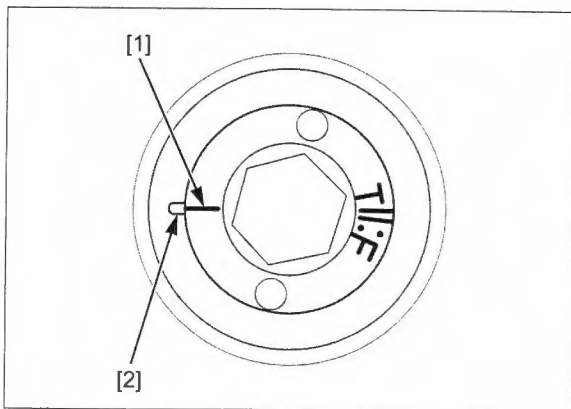
Check the valve clearance for the No.1 cylinder intake valve [1] and No.3 cylinder intake valve [2] using a feeler gauge.

VALVE CLEARANCE:

IN: 0.15 ± 0.03 mm (0.006 ± 0.001 in)



Turn the crankshaft clockwise 1/2 turn (180°) and align the index line [1] on the CKP sensor rotor with the index mark [2] on the right crankcase cover.

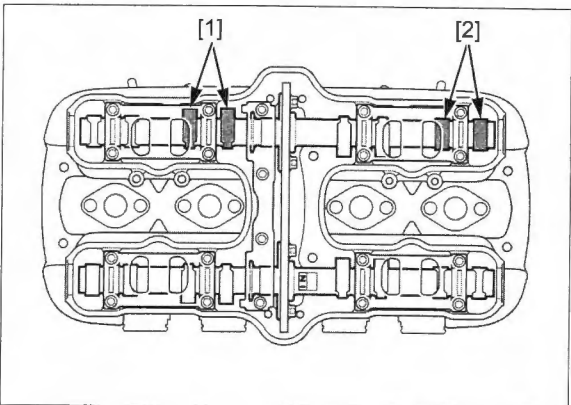


Record each valve clearance for reference in shim selection if adjustment is required.

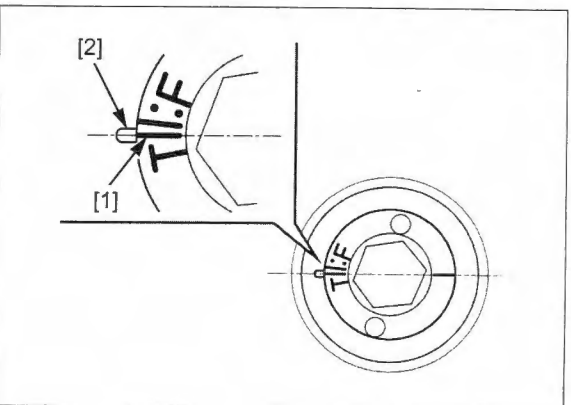
Check the valve clearance for the No.2 cylinder exhaust valve [1] and No.4 cylinder exhaust valve [2] using a feeler gauge.

VALVE CLEARANCE:

EX: 0.28 ± 0.03 mm (0.011 ± 0.001 in)



Turn the crankshaft clockwise and align the "T" mark [1] on the CKP sensor rotor with the index mark [2] on the right crankcase cover.



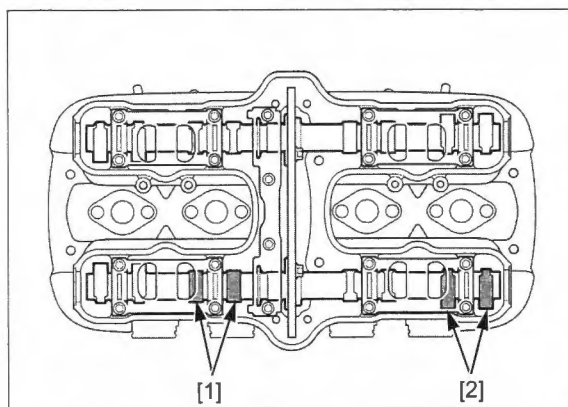
MAINTENANCE

Record each valve clearance for reference in shim selection if adjustment is required.

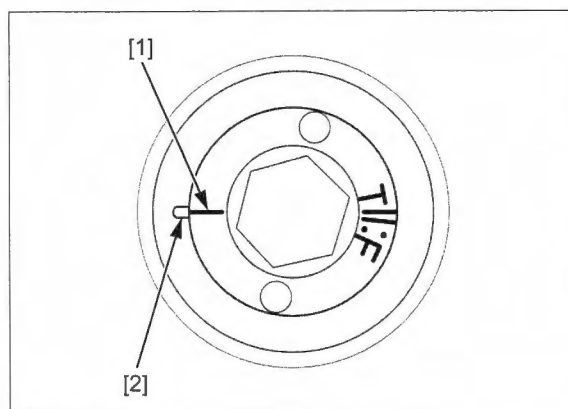
Check the valve clearance for the No.2 cylinder intake valve [1] and No.4 cylinder intake valve [2] using a feeler gauge.

VALVE CLEARANCE:

IN: 0.15 ± 0.03 mm (0.006 ± 0.001 in)



Turn the crankshaft clockwise 1/2 turn (180°) and align the index line [1] on the CKP sensor rotor with the index mark [2] on the right crankcase cover.



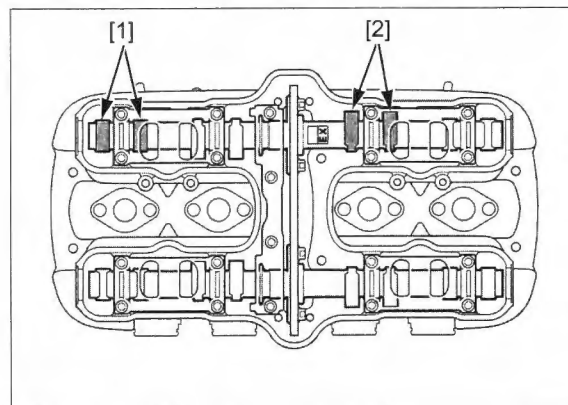
Record each valve clearance for reference in shim selection if adjustment is required.

Check the valve clearance for the No.1 cylinder exhaust valve [1] and No.3 cylinder exhaust valve [2] using a feeler gauge.

VALVE CLEARANCE:

EX: 0.28 ± 0.03 mm (0.011 ± 0.001 in)

Install the cylinder head cover (page 7-8).

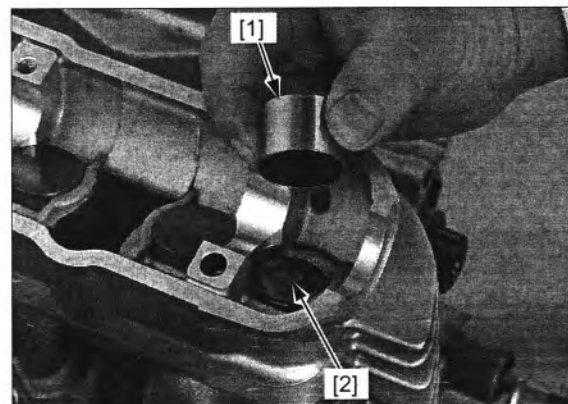


ADJUSTMENT

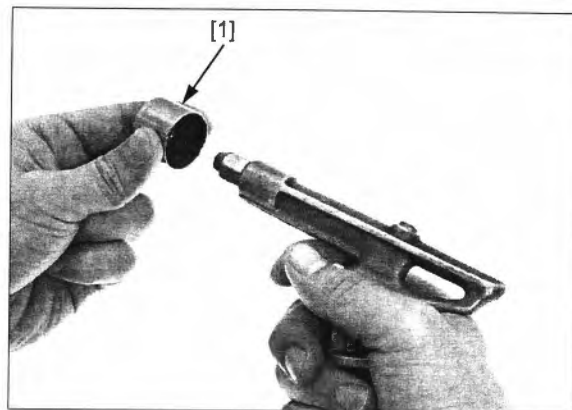
Remove the camshaft (page 7-10).

Remove the valve lifters [1] and shims [2].

- Shim may stick to the inside of the valve lifter. Do not allow the shims to fall into the crankcase.
- Mark all valve lifters and shims to ensure correct reassembly in their original locations.
- The valve lifter can be easily removed with a valve lapping tool or magnet.
- The shims can be easily removed with tweezers or a magnet.



Clean the valve shim contact area in the valve lifter [1] with compressed air.



Sixty-nine different thickness shims are available from the thinnest 1.200 mm thickness shim to the thickest 2.900 mm thickness shim in intervals of 0.025 mm.

Measure the shim [1] thickness and record it.

Calculate the new shim thickness using the equation below.

$$A = (B - C) + D$$

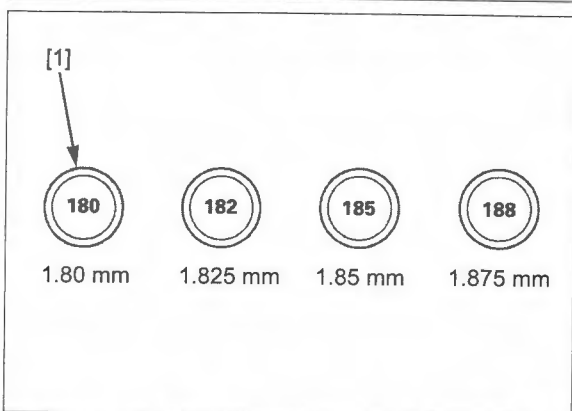
A: New shim thickness

B: Recorded valve clearance

C: Specified valve clearance

D: Old shim thickness

- Make sure of the correct shim thickness by measuring the shim by micrometer.
- Reface the valve seat if carbon deposit result in a calculated dimension of over 2.900 mm.

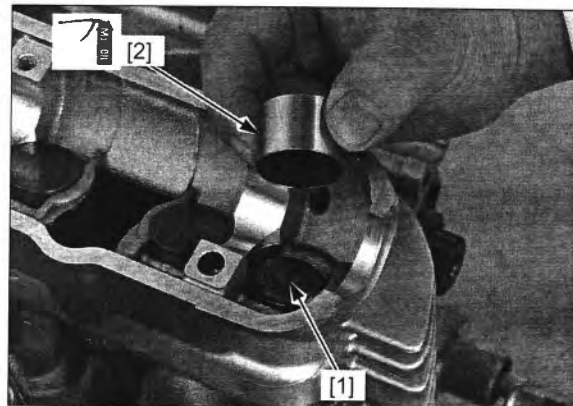


Install the shims and valve lifters in their original locations

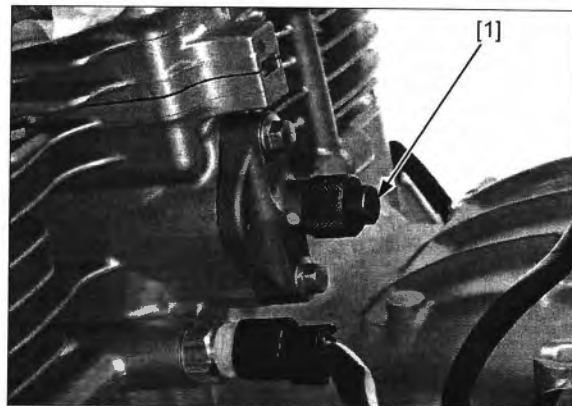
Install the newly selected shim [1] on the valve retainer. Apply molybdenum disulfide oil to the valve lifters [2]. Install the valve lifters into the valve lifter holes.

Install the camshaft (page 7-14).

Rotate the camshafts by rotating the crankshaft clockwise several times.
Recheck the valve clearance.

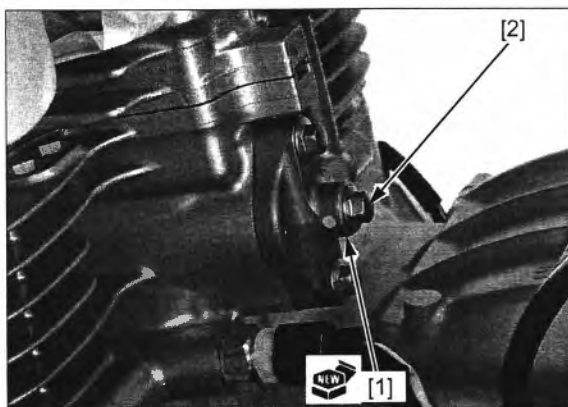


Remove the tensioner stopper [1].



MAINTENANCE

Install a new sealing washer [1] and cam chain tensioner lifter bolt [2].
Tighten the bolt securely.

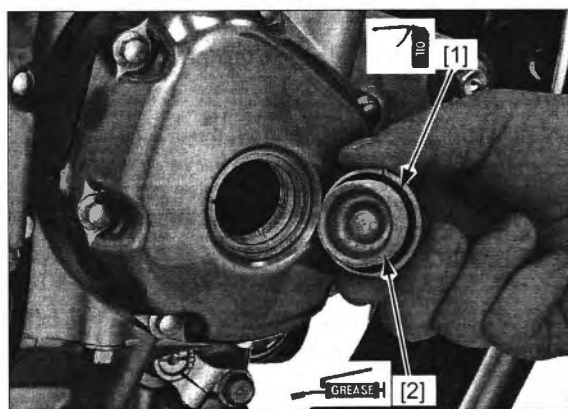


Check if the O-ring [1] is in good condition and replace if necessary.

Apply engine oil to the O-ring and install it onto the timing hole cap.

Apply grease to the timing hole cap threads [2].

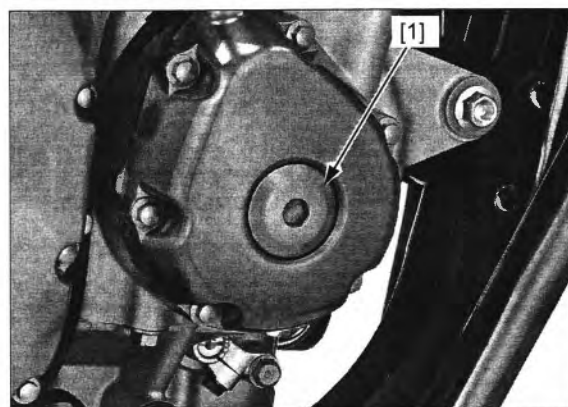
Install the timing hole cap.



Tighten the timing hole cap [1] to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the cylinder head cover (page 7-8).



ENGINE OIL/OIL FILTER

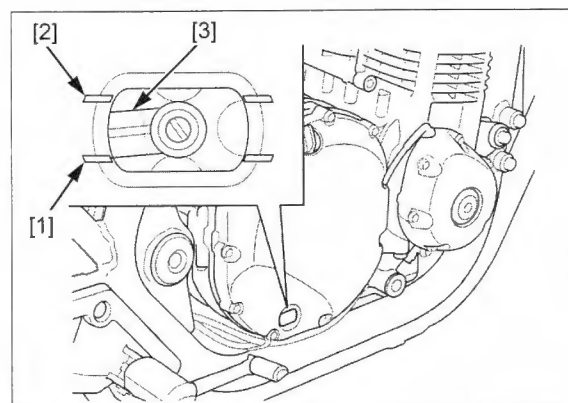
OIL LEVEL INSPECTION

Start the engine and let it idle for 3 – 5 minutes.
Stop the engine and wait 2 – 3 minutes.
Hold the motorcycle in an upright position.

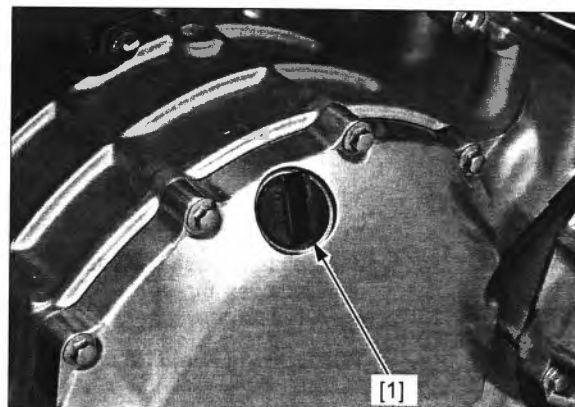
Turn the wiper [3] on the inspection window before checking the oil level.

Check the oil level through the inspection window.

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



Remove the oil filler cap [1].



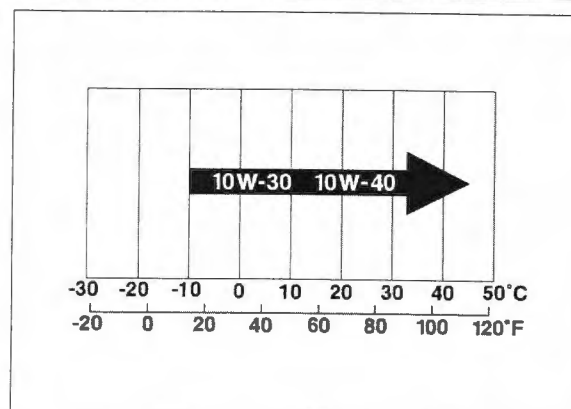
Fill the recommended engine oil up to the upper level line.

Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range.

RECOMMENDED ENGINE OIL:

Pro Honda GN4 4-stroke oil (U.S.A. and Canada) or equivalent motor oil
API service classification: SG or Higher
JASO T 903 standard: MA
Viscosity: 10W-30

Reinstall the filler cap.

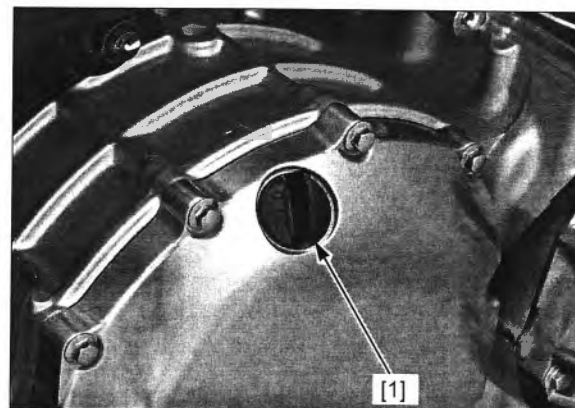


ENGINE OIL & FILTER CHANGE

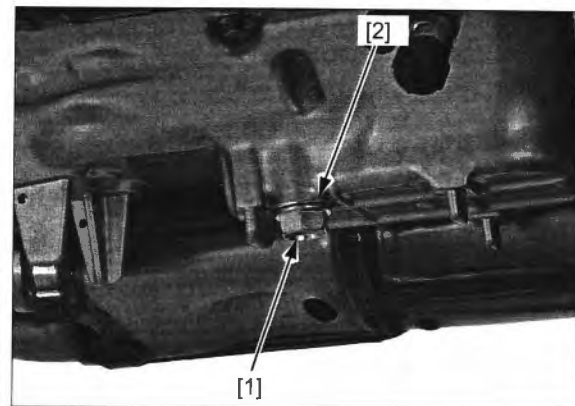
Warm up the engine.

Change the engine oil with the engine warm and the motorcycle on level ground to assure complete draining.

Stop the engine and remove the oil filler cap [1].



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



MAINTENANCE

Remove and discard the oil filter cartridge [1] using the special tool.

TOOL:

[2] Oil filter wrench

07HAA-PJ70101 or
07AAA-PLCA100
(U.S.A. only)

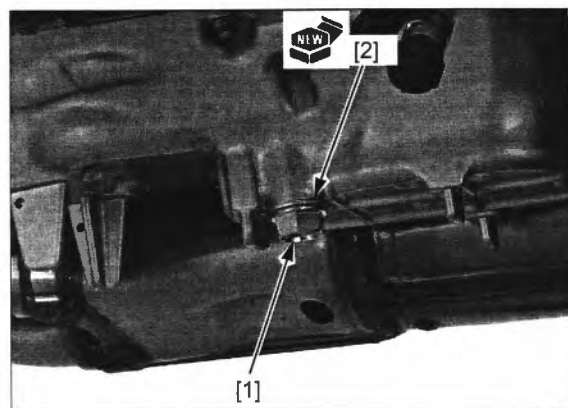
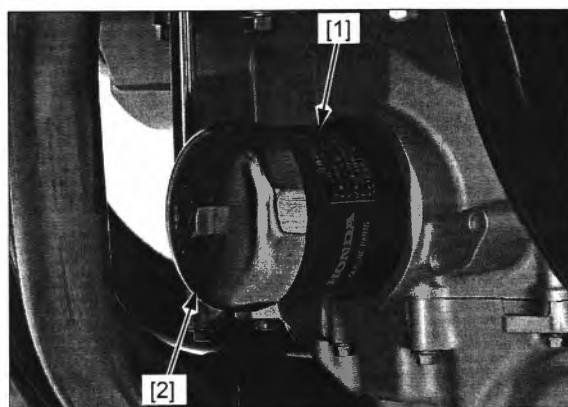
Clean the oil filter installation surface of crankcase.

If the oil filter boss is loose, apply a locking agent to the oil filter boss threads and tighten oil filter boss to the specified torque.

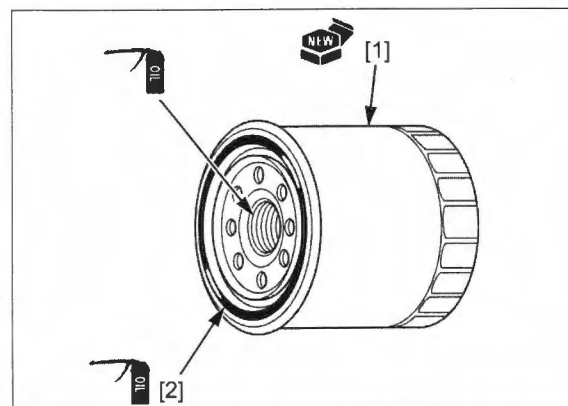
TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

Install the drain bolt [1] with a new sealing washer [2].
Tighten the drain bolt to the specified torque.

TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)



Apply clean engine oil to a new oil filter cartridge [1] threads and O-ring [2].



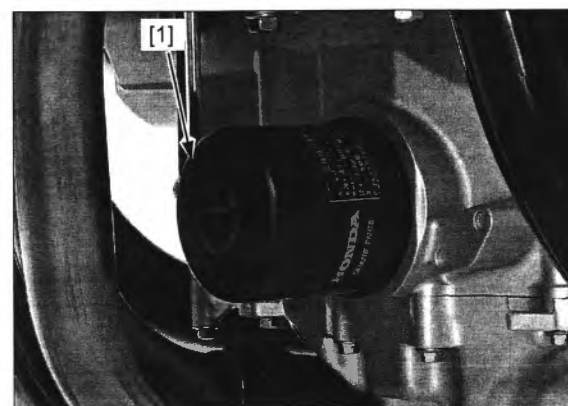
Install the oil filter [1] and tighten it to the specified torque using the special tool.

TOOL:

Oil filter wrench

07HAA-PJ70101 or
07AAA-PLCA100
(U.S.A. only)

TORQUE: 26 N·m (2.7 kgf·m, 19 lbf·ft)



Fill the crankcase with recommended engine oil.

OIL CAPACITY:

3.8 liter (4.0 US qt, 3.3 Imp qt) after draining

3.9 liter (4.1 US qt, 3.4 Imp qt) after oil filter change

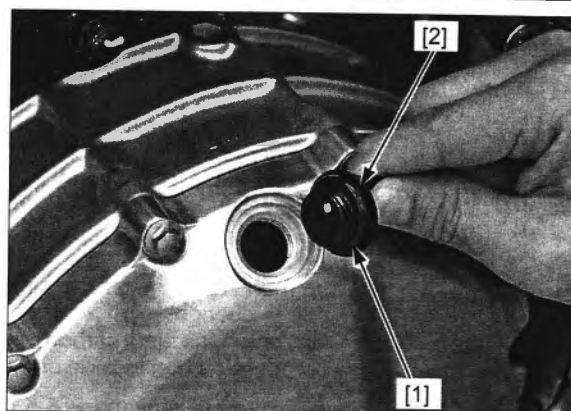
Check if the O-ring [1] is in good condition and replace if necessary.

Install the oil filler cap [2].

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

Stop the engine and recheck the oil level.

Make sure there are no oil leaks.



ENGINE IDLE SPEED

IDLE SPEED INSPECTION

NOTE:

- Inspect the idle speed after all other engine maintenance items have been performed and are within specification.
- Before checking the idle speed, inspect the following items.
 - No DTC and MIL blinking (page 5-13)
 - air cleaner condition (page 3-7)
 - spark plug condition (page 3-8)
 - PAIR system condition (page 5-82)
 - ignition system condition (page 17-5)
- The engine must be warm for accurate idle speed inspection.
- This system eliminates the need for manual idle speed adjustment compared to previous designs.
- Use a tachometer with graduations of 50 rpm or smaller that will accurately indicate a 50 rpm change.

Support the motorcycle on a level surface and shift the transmission into neutral.

Stop the engine and connect a tachometer according to the tachometer manufacturer's operating instructions.

Start the engine and warm it up, then check the idle speed.

ENGINE IDLE SPEED: 1,100 ± 100 rpm

If the idle speed is out of the specification, check the following:

- throttle operation and throttle grip freeplay (page 3-6)
- intake air leak or engine top-end problem (page 7-5)
- IACV operation (page 5-74)

MAINTENANCE

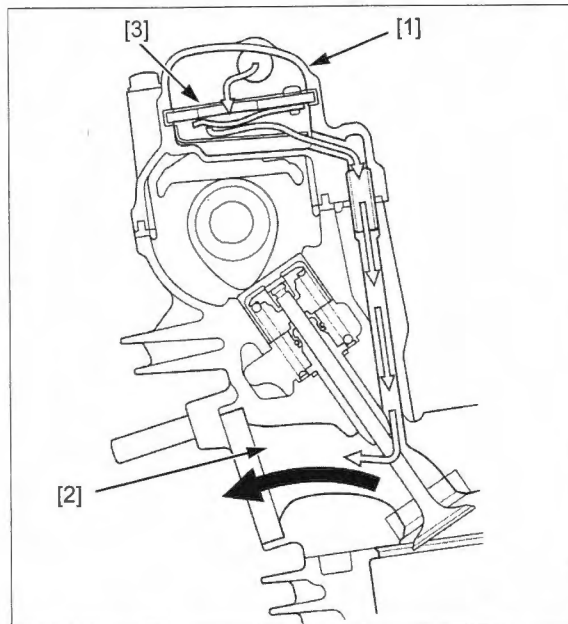
SECONDARY AIR SUPPLY SYSTEM

- This model is equipped built-in secondary air supply system. The pulse secondary air supply system is located on the cylinder head cover [1].
- The secondary air supply system introduces filtered air into exhaust gases in the exhaust port [2]. The secondary air is drawn into the exhaust port whenever there is negative pressure pulse in the exhaust system. This charged secondary air promotes burning of the unburned exhaust gases and changes a considerable amount of hydrocarbons and carbon monoxide into relatively harmless carbon dioxide and water.

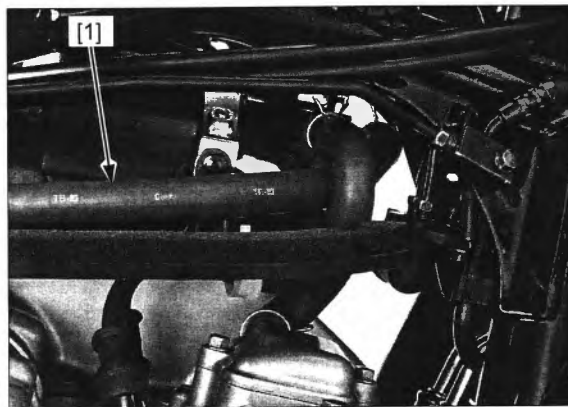
Remove the fuel tank (page 5-55).

Check the PAIR hoses between the PAIR solenoid valve and cylinder head cover for deterioration, damage, or loose connections. Make sure that the hoses are not cracked.

If the hoses show any signs of heat damage, inspect the PAIR check valve [3] in the reed valve cover for damage.



Check the air suction hose [1] between the air cleaner housing and PAIR solenoid valve for deterioration, damage, or loose connections. Make sure that the hose is not kinked, pinched, or cracked.

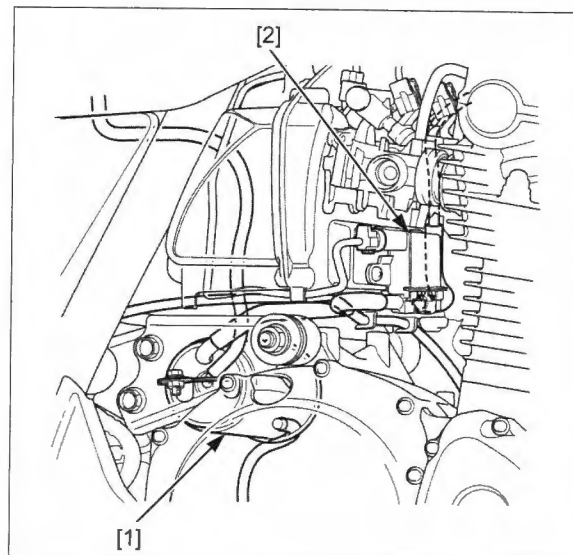


EVAPORATIVE EMISSION CONTROL SYSTEM (U.S.A. TYPE ONLY)

Check the hoses between the fuel tank, cylinder head, EVAP canister [1], and EVAP purge control solenoid valve [2] for deterioration, damage, or loose connection.

Check the EVAP canister for cracks, or other damage.

Refer to the cable & harness routing for hose connections (page 1-21).



DRIVE CHAIN

DRIVE CHAIN SLACK INSPECTION

⚠ WARNING

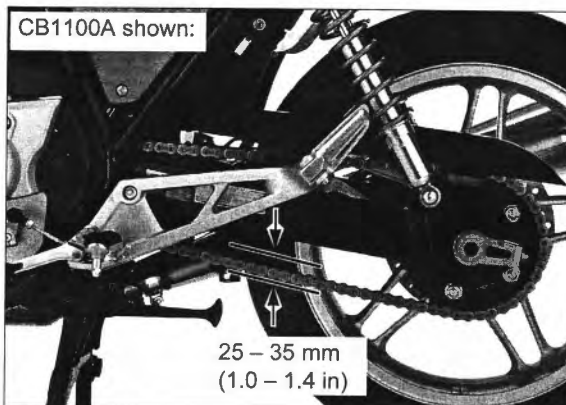
Amputation hazard. Never inspect or adjust the drive chain while the engine is running.

Turn the ignition switch OFF, place the motorcycle on its centerstand, and shift the transmission into neutral.

Check the slack in the drive chain lower run midway between the sprockets.

CHAIN SLACK: 25 – 35 mm (1.0 – 1.4 in)

Lubricate the drive chain with #80 – 90 gear oil or chain lubricant designed specifically for use with O-ring chains. Wipe off the excess oil or chain lubricant.



ADJUSTMENT

Loosen the rear axle nut [1].

Place the motorcycle on its centerstand and raise the rear wheel off the ground.

Turn both adjusting bolts [2] an equal number of turns until the correct drive chain slack is obtained.

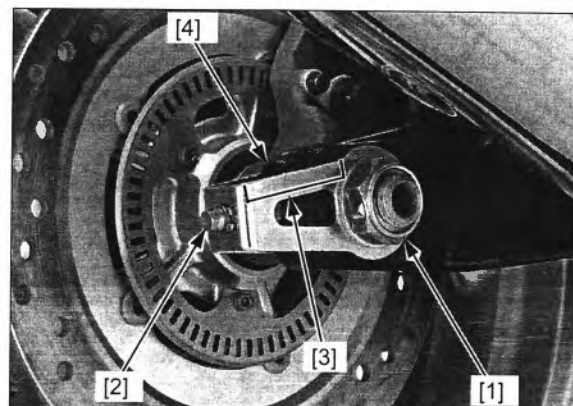
Make sure the same index marks [3] (right and left sides) on adjusting plates are aligned with both ends [4] of swingarm.

Tighten the rear axle nut to the specified torque.

TORQUE:

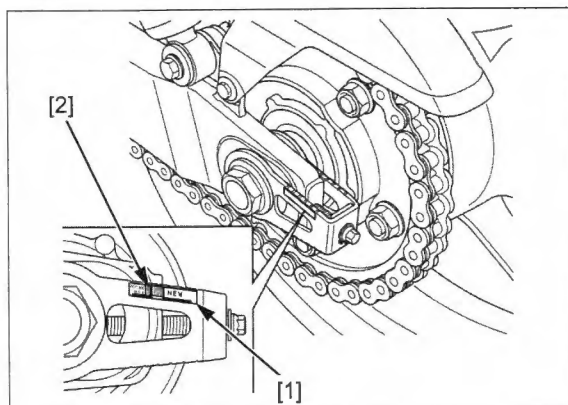
'13 model: 113 N·m (11.5 kgf·m, 83 lbf·ft)

After '13 model: 93 N·m (9.5 kgf·m, 69 lbf·ft)



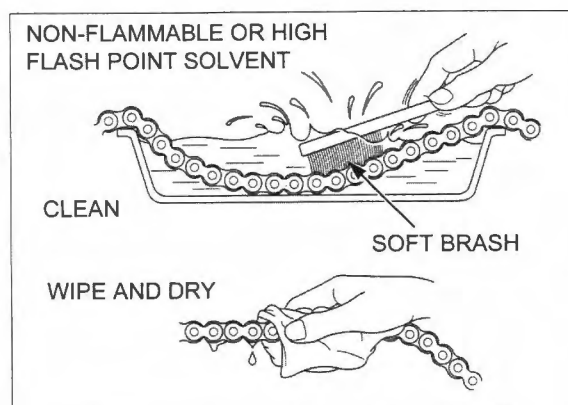
MAINTENANCE

Recheck the drive chain slack and free wheel rotation. Lubricate the drive chain with #80 – 90 gear oil or drive chain lubricant designed specifically for use with O-ring chains. Wipe off the excess oil or chain lubricant. Check the drive chain wear indicator label [1] attached on the left side of the adjusting plate. If the edge of the left swingarm end reaches the red zone [2] on the indicator label, replace the drive chain with a new one (page 3-21).

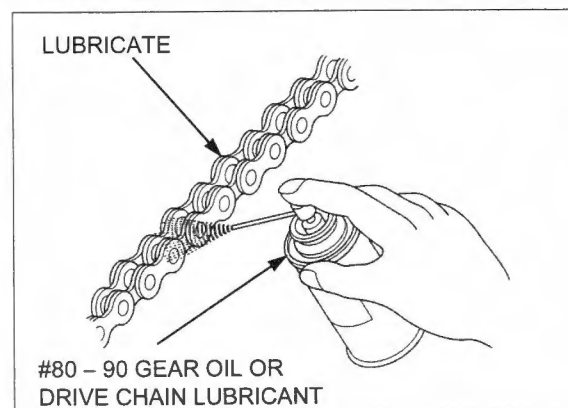


CLEANING AND LUBRICATION

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



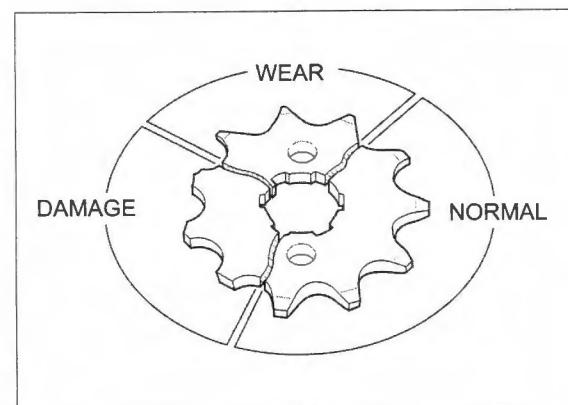
Lubricate the drive chain with #80 – 90 gear oil or drive chain lubricant designed specifically for use with O-ring chains. Wipe off the excess oil or chain lubricant.



SPROCKET INSPECTION

Remove the left crankcase rear cover (page 6-4).

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



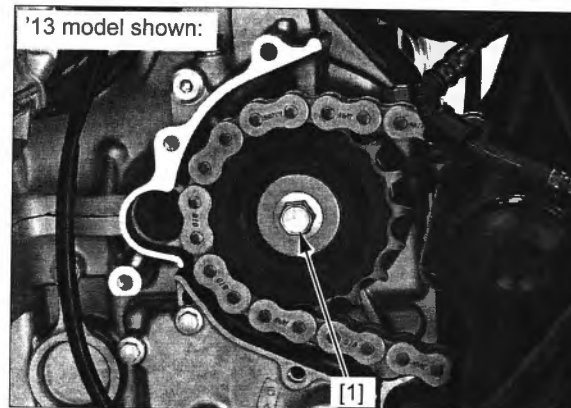
Check the drive sprocket bolt [1] and driven sprocket nuts.

If any are loose, torque them.

TORQUE:

Drive sprocket bolt: 54 N·m (5.5 kgf·m, 40 lbf·ft)

Driven sprocket nut: 108 N·m (11.0 kgf·m, 80 lbf·ft)



REPLACEMENT

This motorcycle uses a drive chain with a staked master link [1].

Fully slacken the drive chain (page 3-19).

When using the special tool, follow the manufacturer's instruction.

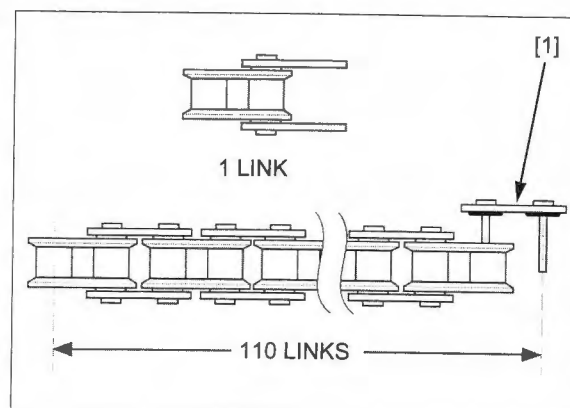
TOOL:

Drive chain tool set

07HMH-MR10103 or
07HMH-MR1010C
(U.S.A. only)

Remove the excess drive chain links from the new drive chain with the drive chain tool set.

STANDARD LINKS: 110 LINKS



REPLACEMENT CHAIN

'13 model:

DID: DID50ZVM2

RK: RK50LFOZ2

After '13 model:

DID: DID50VA11

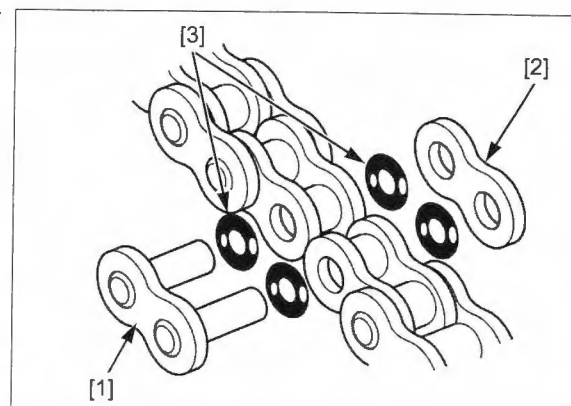
RK: RK50HFOZ6

NOTICE

Never reuse the old drive chain, master link [1], master link plate [2], or O-rings [3].

Insert the master link from the inside of the drive chain, and install the plate with the identification mark facing the outside.

Assemble the new master link, O-rings, and plate.



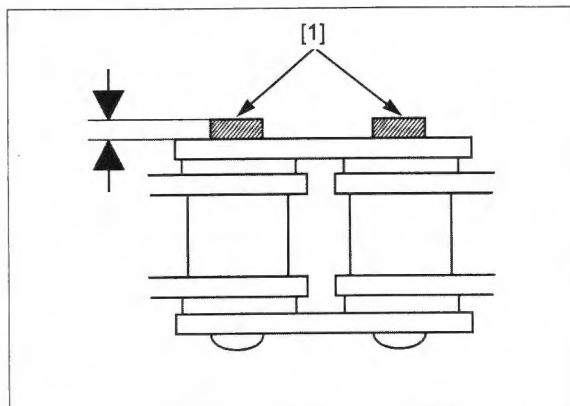
MAINTENANCE

Make sure that the master link pins [1] are installed properly.
Measure the master link pin length projected from the plate.

STANDARD LENGTH:

1.3 – 1.5 mm (0.05 – 0.06 in)

Stake the master link pins.



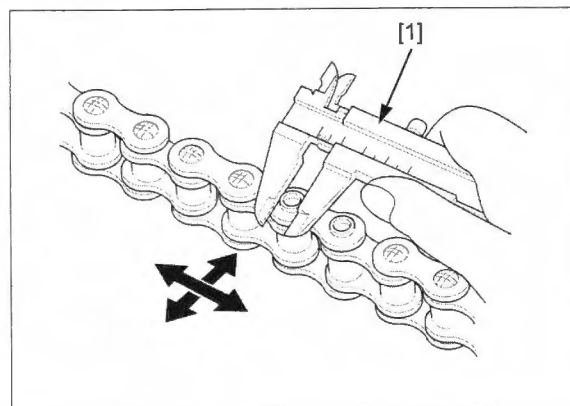
Make sure that the pins are staked properly by measuring the diameter of the staked area using a slide caliper [1].

DIAMETER OF THE STAKED AREA:

5.50 – 5.80 mm (0.217– 0.228 in)

After staking, check the staked area of the master link for cracks.

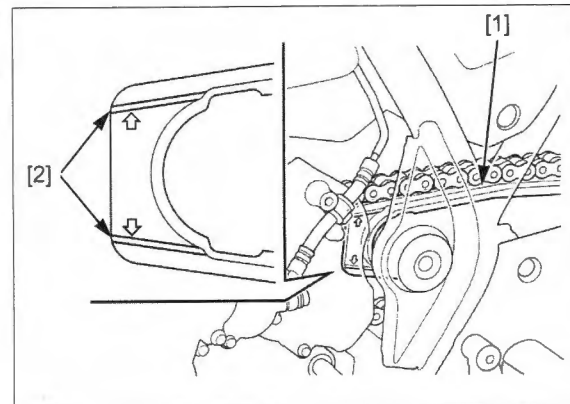
If there is any cracking, replace the master link, O-rings, and plate.



DRIVE CHAIN SLIDER

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

If it is worn to the wear indicator lines [2], replace the drive chain slider (page 13-17).



BRAKE FLUID

- 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.

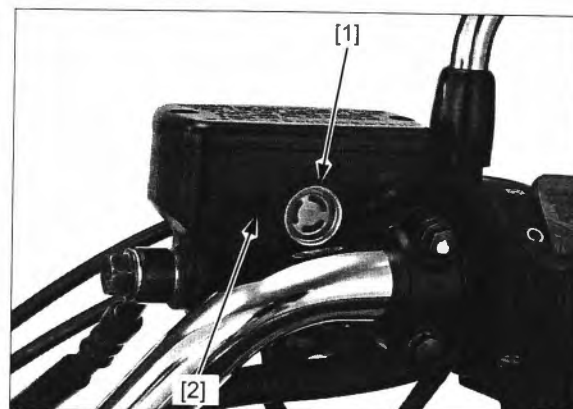
NOTICE

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

When the fluid level is low, check the brake pads for wear. A low fluid level may be due to wear of the brake pads. If the brake pads are worn, the caliper piston is pushed out, and this accounts for a low reservoir level. If the brake pads are not worn and the fluid level is low, check entire system for leaks (page 3-24).

FRONT BRAKE

Turn the handlebar to the left so that the reservoir is level and check the front brake master cylinder reservoir through the inspection window [1]. If the level is near the lower level line [2], check the brake pad wear (page 3-24).



REAR BRAKE

Remove the seat (page 2-4).

Check the fluid level of the rear brake master cylinder reservoir.

If the level is near the lower level line [1], check the brake pad wear (page 3-24).



BRAKE PADS WEAR

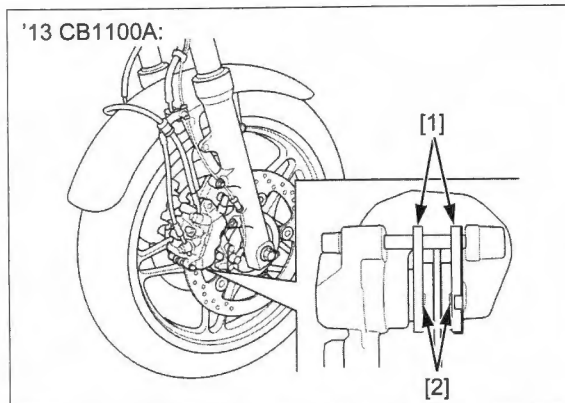
FRONT BRAKE PADS

'13 CB1100A:

Check the brake pads for wear.

Replace the brake pads [1] if either pad is worn to the wear indicator [2].

Refer to brake pad replacement (page 14-20).

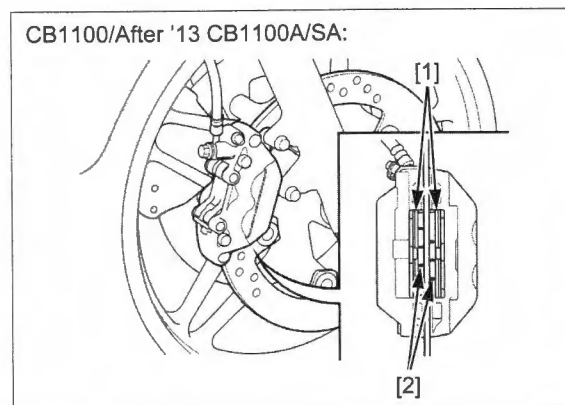


CB1100/After '13 CB1100A/SA:

Check the brake pads for wear.

Replace the brake pads [1] if either pad is worn to the bottom of wear limit groove [2].

Refer to brake pad replacement (page 14-21).

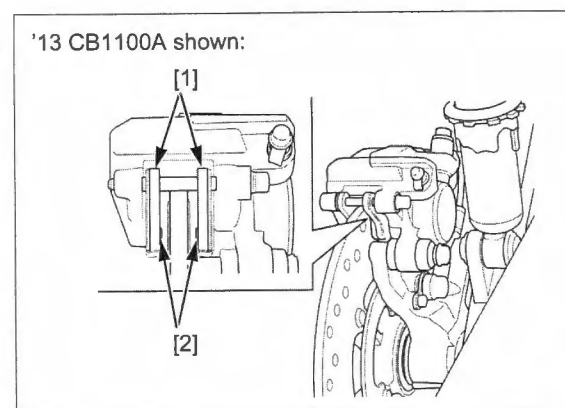


REAR BRAKE PADS

Check the brake pads [1] for wear.

Replace the brake pads if either pad is worn to the wear indicator [2].

Refer to brake pad replacement (page 14-23).



BRAKE SYSTEM

INSPECTION

Firmly apply the brake lever or pedal, and 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.

Inspect the brake hose [1] and fittings [2] for deterioration, cracks, or signs of leakage.

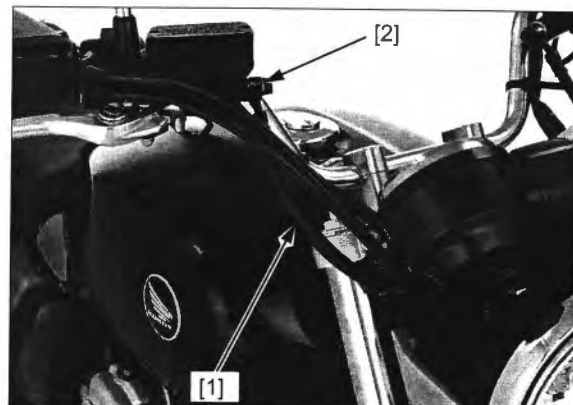
Tighten any loose fittings.

Replace hoses and fittings as required.

Refer the procedure for brake bleeding.

– '13 CB1100A (page 14-8)

– except '13 CB1100A (page 14-15)



COMBINED BRAKE SYSTEM INSPECTION ('13 CB1100A)

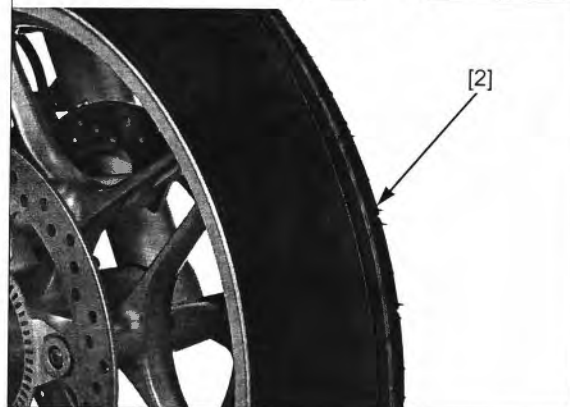
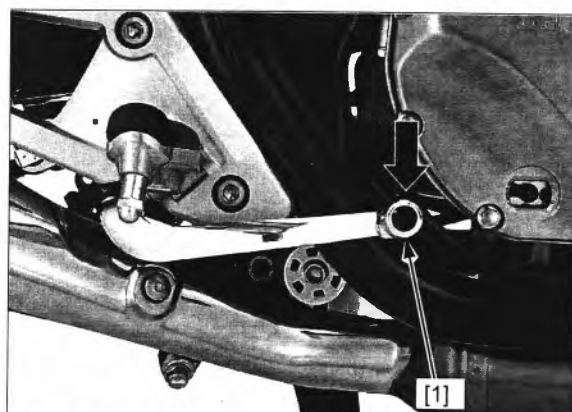
This model is equipped with a Combined Brake System.

Check the combined brake operation as follows:

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

Apply the brake pedal [1].

Make sure the front wheel [2] does not turn while the brake pedal is applied.

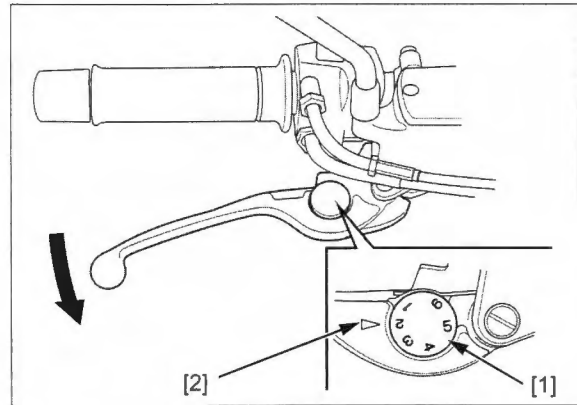


MAINTENANCE

BRAKE LEVER ADJUSTMENT

Align the "△" mark [2] on the brake lever with the index number on the adjuster.

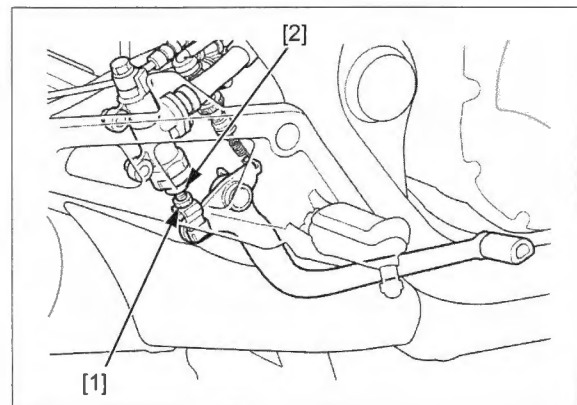
The distance between the brake lever and throttle grip can be adjusted by turning the adjuster [1].



BRAKE PEDAL HEIGHT ADJUSTMENT

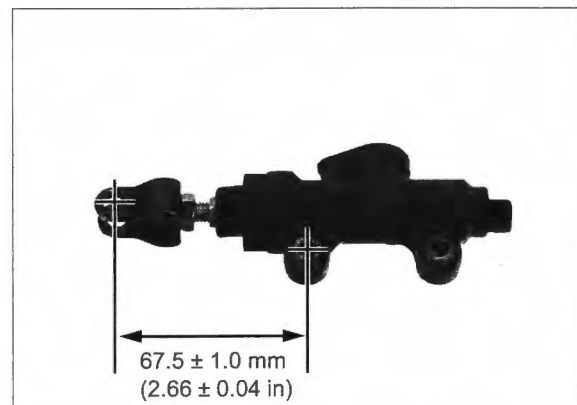
Loosen the push rod joint nut [1] and turn the push rod [2] until the correct pedal height is obtained.

- Check and adjust the brake light switch after the brake pedal height adjustment.



The standard push rod length (distance between the centers of the master cylinder lower mounting bolt hole and push rod joint hole) is as follows:

STANDARD LENGTH: 67.5 ± 1.0 mm
(2.66 ± 0.04 in)

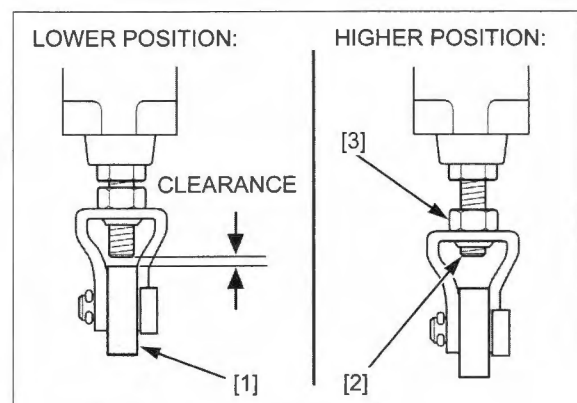


If the brake pedal [1] is adjusted to the lower position, make sure that the clearance between the lower end of the push rod thread [2] and the brake pedal does not fall below 1 mm (0.04 in).

If the brake pedal is adjusted to the higher position, make sure that the lower end of the push rod thread is visible inside the joint.

Tighten the joint nut [3] to the specified torque.

TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)



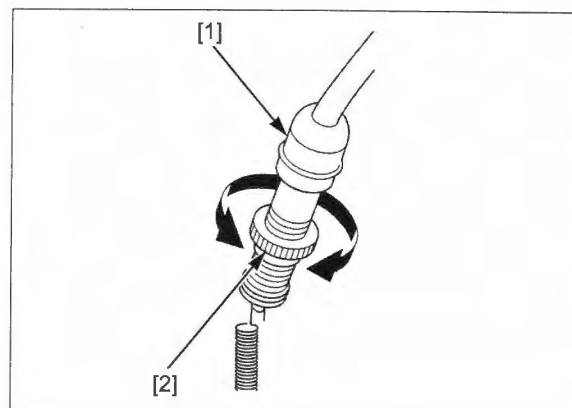
BRAKE LIGHT SWITCH

The front brake light switch does not require adjustment.

Adjust the brake light switch [1] so that the brake light comes on just prior to the brake actually being engaged.

If the light fails to come on, adjust the switch so that the light comes on at the proper time.

Hold the switch body and turn the adjuster [2]. Do not turn the switch body.



HEADLIGHT AIM

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

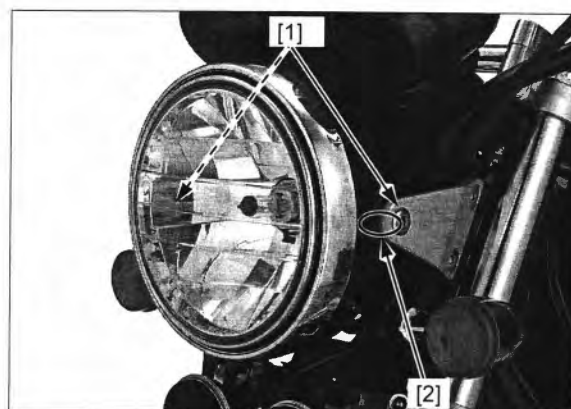
Place the motorcycle on a level surface.

Loosen the headlight case mounting bolts [1].

Adjust the headlight beam vertically by moving the headlight.

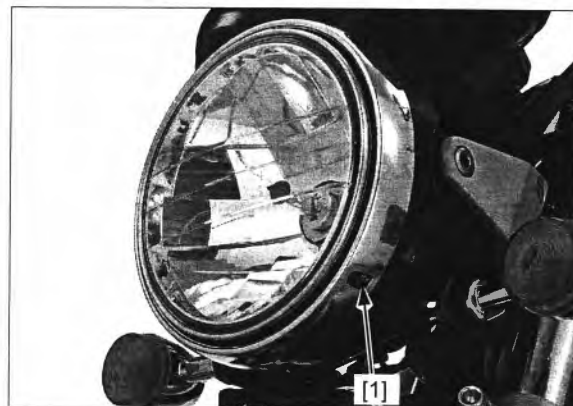
- The base lines [2] are stamped on the headlight case and bracket.

After adjustment, tighten the mounting bolts securely.



Adjust the headlight beam horizontally by turning the horizontal beam adjusting screw [1].

A clockwise rotation moves the beam toward the right side of the rider.



CLUTCH SYSTEM/CLUTCH FLUID

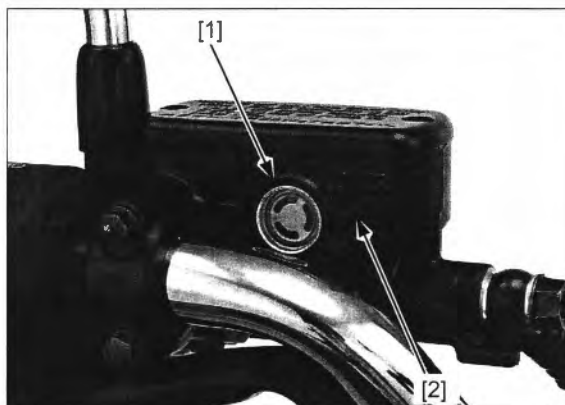
- Do not mix different types of fluid, as they are not compatible with each other.
- Do not allow foreign material to enter the system when filling the reservoir.

NOTICE

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

Turn the handlebar to the right so that the reservoir is level and check the fluid level of the clutch master cylinder reservoir through the inspection window [1].

If the level is near the lower level line [2], check entire system for leaks.



Firmly apply the clutch lever and check that no air has entered the system.

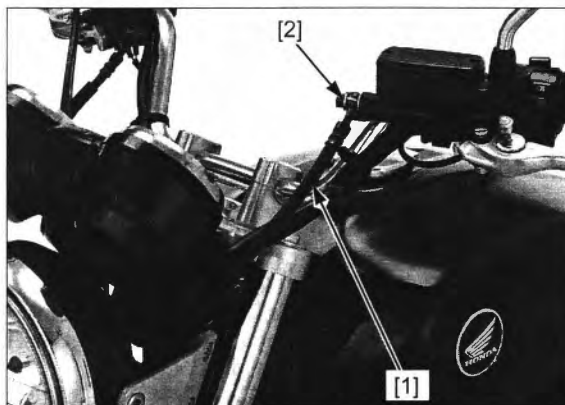
If the lever feels soft or spongy when operated, bleed the air from the system.

Inspect the clutch hose [1] and fittings [2] for deterioration, cracks, or signs of leakage.

Tighten any loose fittings.

Replace hoses and fittings as required.

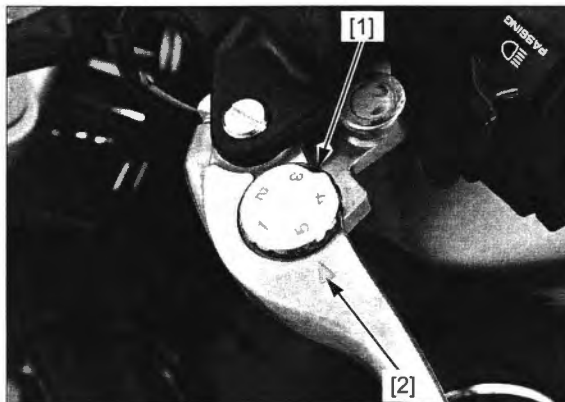
Refer to procedure for the hydraulic clutch bleeding (page 9-8).



CLUTCH LEVER ADJUSTMENT

Align the "△" mark [2] on the clutch lever with the index number on the adjuster.

The distance between the clutch lever and grip can be adjusted by turning the adjuster [1].

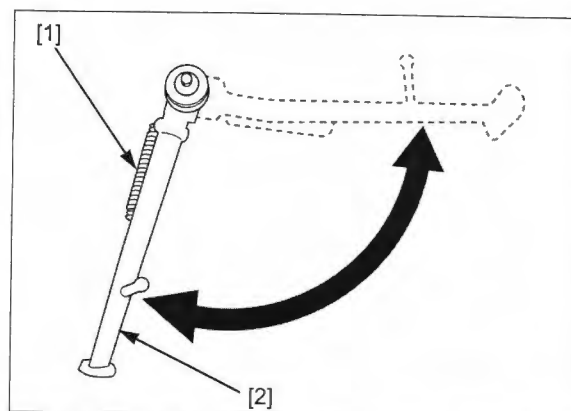


SIDESTAND

Place the motorcycle on its centerstand.

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

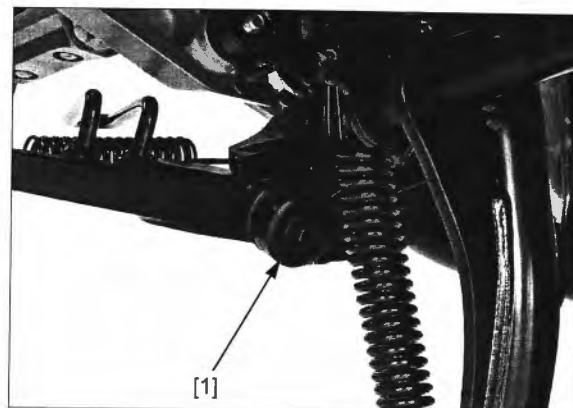
Check the sidestand assembly [2] for freedom of movement and lubricate the sidestand pivot if necessary.



Check the sidestand ignition cut-off system:

1. Sit astride the motorcycle and raise the sidestand.
2. Start the engine with the transmission in neutral, then shift the transmission into gear, with the clutch lever squeezed.
3. Move the sidestand fully down.
4. The engine should stop as the sidestand is lowered.

If there is a problem with the system, check the sidestand switch [1] (page 19-34).



SUSPENSION

FRONT SUSPENSION INSPECTION

Check the action of the forks by operating the front brakes and compressing the front suspension several times.

Check the entire assembly for signs of leaks, damage, or loose fasteners.

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

Replace damaged components that cannot be repaired.

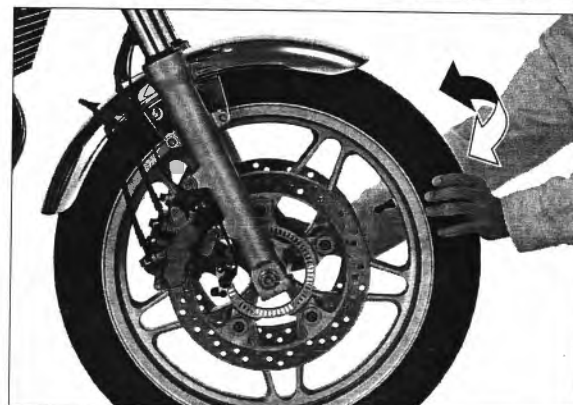
Tighten all nuts and bolts.

Refer to procedure for the fork service (page 12-20).



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

Replace the wheel bearings if any looseness is noted.



FRONT SUSPENSION ADJUSTMENT

FORK SPRING PRE-LOAD ADJUSTER

Spring pre-load can be adjusted by turning the adjuster [1].

TURN CLOCKWISE:

Increase the spring pre-load

TURN COUNTERCLOCKWISE:

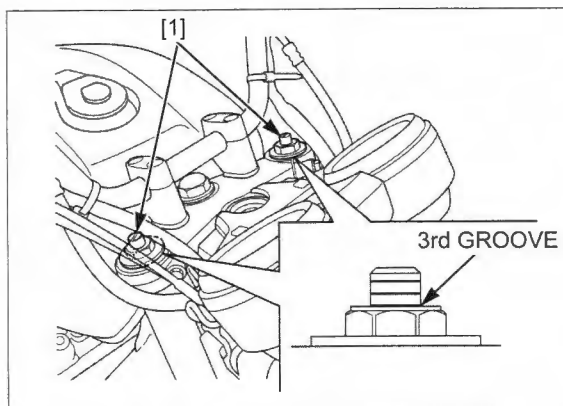
Decrease the spring pre-load

PRE-LOAD ADJUSTER STANDARD POSITION:

9 mm (0.4 in) from top surface of the fork bolt/3rd groove from top

PRE-LOAD ADJUSTER ADJUSTABLE RANGE:

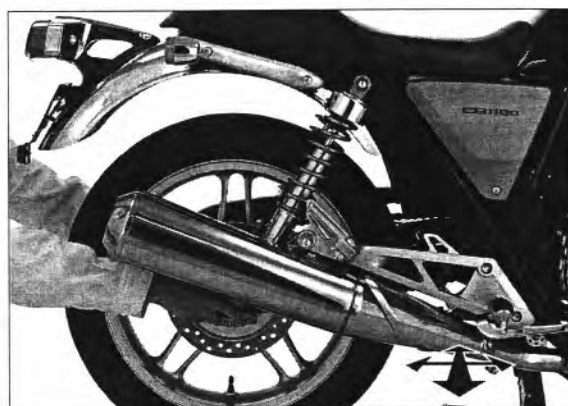
0 – 15 mm (0 – 0.6 in)



REAR SUSPENSION INSPECTION

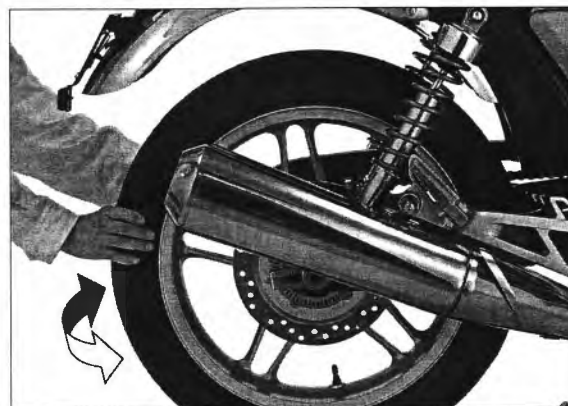
Support the motorcycle securely and raise the rear wheel off the ground.

Check for worn swingarm bearings by grabbing the swingarm and attempting to move the swingarm side to side.



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

Replace the bearings if any looseness is noted.



Check the action of the shock absorbers by compressing them several times.

Check the entire shock absorber assembly for signs of leaks, damage, or loose fasteners.

Replace damaged components which cannot be repaired.

Tighten all nuts and bolts.

Refer to procedure for the shock absorber service (page 13-16).



REAR SUSPENSION ADJUSTMENT

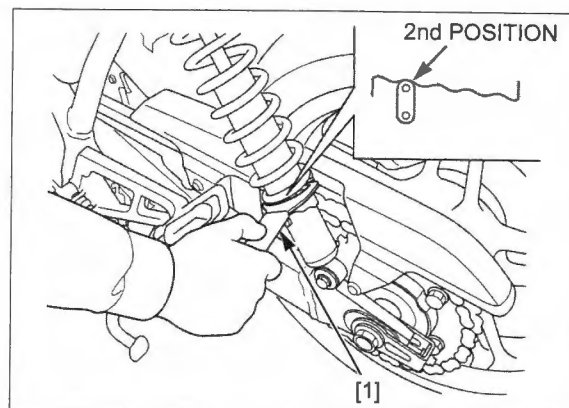
SPRING PRELOAD ADJUSTER

To adjust the spring preload, turn the spring adjuster using a pin spanner [1].

COUNTERCLOCKWISE TURN: Increase preload

CLOCKWISE TURN: Decrease preload

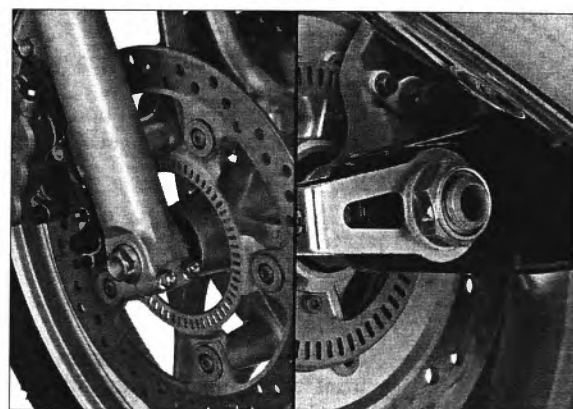
PRELOAD ADJUSTER STANDARD POSITION:
2nd position from softest



NUTS, BOLTS, FASTENERS

Check that all chassis nuts and bolts are tightened to their correct torque values (page 1-12).

Check that all safety clips, hose clamps, and cable stays are in place and properly secured.



WHEELS/TIRES

Check the tire pressure using a tire pressure gauge [1].

Tire pressure should be checked when the tires are COLD.

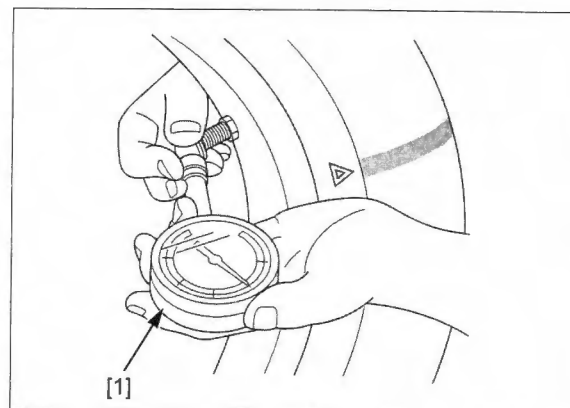
RECOMMENDED TIRE PRESSURE AND TIRE SIZE:

Tire pressure: kPa (kgf/cm ² , psi)	Up to 90 kg (200 lbs) load	Front:	250 (2.50, 36)
		Rear:	290 (2.90, 42)
	Up to maximum weight capacity	Front:	250 (2.50, 36)
		Rear:	290 (2.90, 42)
Tire size	Front:	110/80R18M/C 58V	
	Rear:	140/70R18M/C 67V	
Tire brand (BRIDGESTONE)	Front:	BT-54F RADIAL G	
	Rear:	BT-54R RADIAL G	
Tire brand (DUNLOP)	Front:	D205F	
	Rear:	D205	

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

Check the wheels for trueness.

- front wheel (page 12-14)
- rear wheel (page 13-8)



MAINTENANCE

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

MINIMUM TREAD DEPTH:

FRONT: 1.5 mm (0.06 in)

REAR: 2.0 mm (0.08 in)



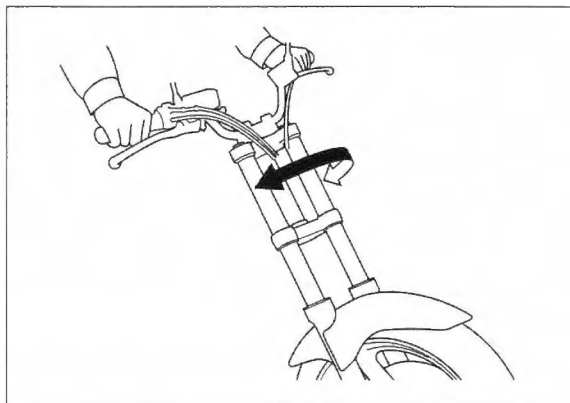
STEERING HEAD BEARINGS

Check that the control cables do not interfere with handlebar rotation.

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

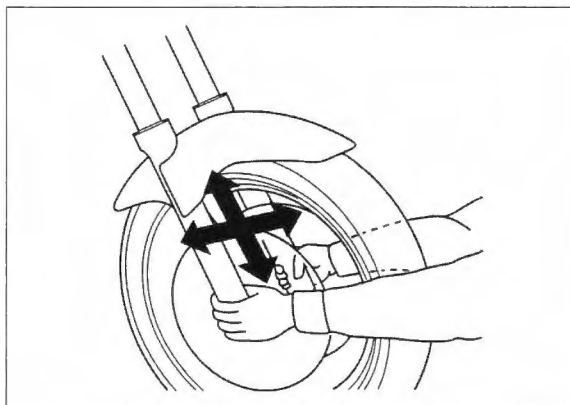
Check that the handlebar moves freely from side to side.

If the handlebar moves unevenly, binds, or has vertical movement, inspect the steering head bearings (page 12-29).



Check for the steering stem bearings by grabbing the front fork leg and attempting to move the front fork side to side.

Replace the bearings if any looseness is noted (page 12-29).



4. LUBRICATION SYSTEM

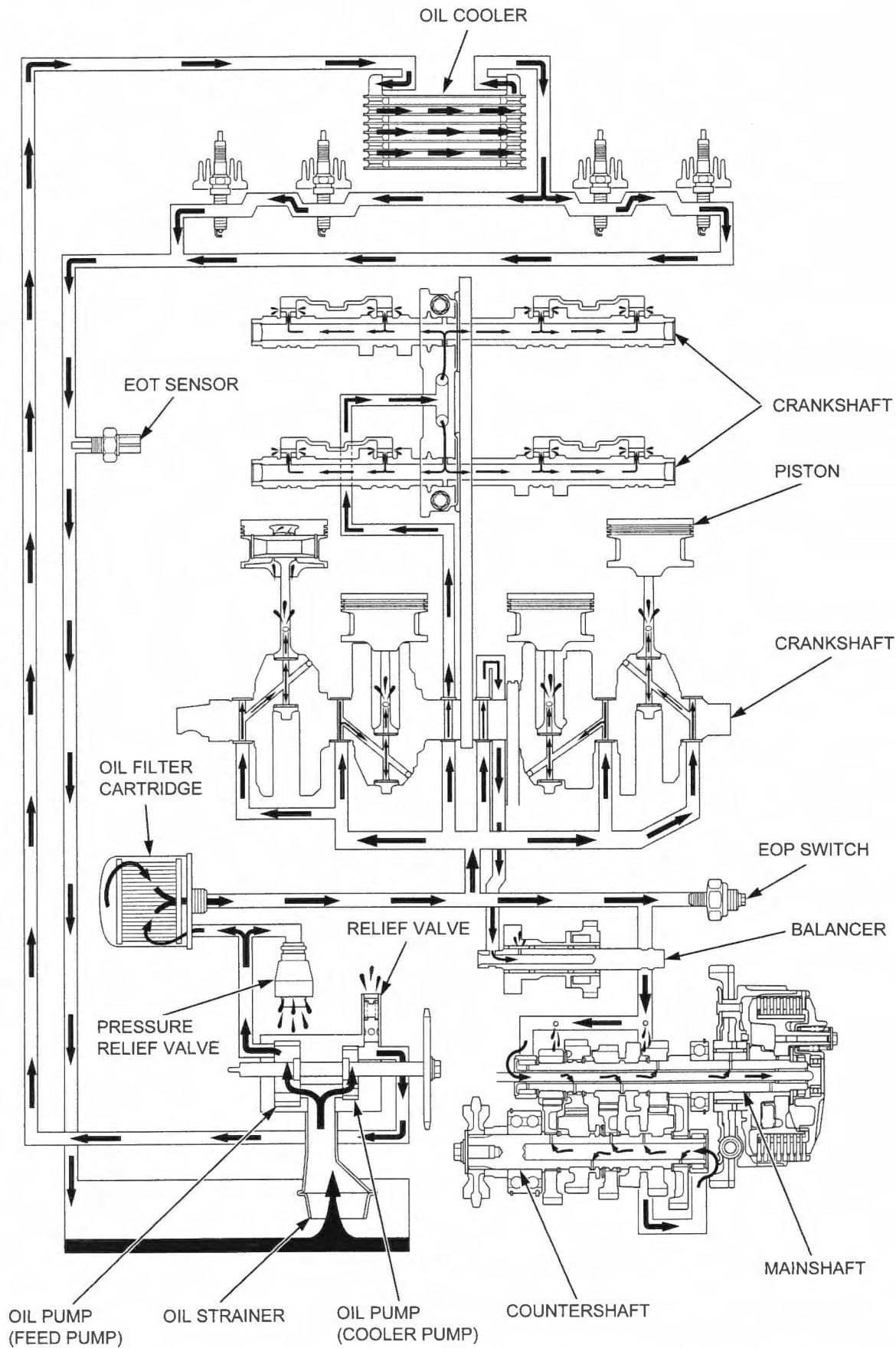
LUBRICATION SYSTEM DIAGRAM	4-2
SERVICE INFORMATION	4-3
TROUBLESHOOTING	4-4
OIL PRESSURE INSPECTION	4-5

OIL STRAINER/PRESSURE RELIEF VALVE	4-6
OIL PUMP	4-10
OIL COOLER	4-17

LUBRICATION SYSTEM

LUBRICATION SYSTEM DIAGRAM

'13 model shown:



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 and that oil pressure is correct.

SPECIFICATIONS

Unit: mm (in)

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Engine oil capacity		After draining	3.8 liter (4.0 US qt, 3.3 Imp qt)	—
		After draining/filter change	3.9 liter (4.1 US qt, 3.4 Imp qt)	—
		After disassembly	4.9 liter (5.2 US qt, 4.3 Imp qt)	—
Recommended engine oil			Pro Honda GN4 4-stroke oil (U.S.A. and Canada) or equivalent motor oil API service classification: SG or Higher JASO T 903 standard: MA Viscosity: SAE 10W-30	—
Oil pressure at EOP switch			490 – 588 kPa (5.0 – 6.0 kgf/cm ² , 71 – 85 psi) at 5,000 rpm/(80°C/176°F)	—
Oil pump rotor	Feed pump	Tip clearance	0.15 (0.006)	0.20 (0.008)
		Body clearance	0.15 – 0.23 (0.006 – 0.009)	0.35 (0.014)
		Side clearance	0.02 – 0.07 (0.001 – 0.003)	0.17 (0.007)
	Cooler pump	Tip clearance	0.15 (0.006)	0.20 (0.008)
		Body clearance	0.15 – 0.21 (0.006 – 0.008)	0.35 (0.014)
		Side clearance	0.02 – 0.07 (0.001 – 0.003)	0.17 (0.007)

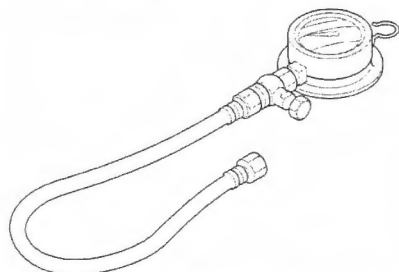
TORQUE VALUES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Oil pump assembly bolt	3	6	13 (1.3, 10)	CT bolt
Oil pump driven sprocket bolt	1	6	15 (1.5, 11)	Apply a locking agent to the threads.
EOP switch	1	PT 1/8	12 (1.2, 9)	Apply sealant to the threads.
EOP switch wire terminal bolt	1	4	2.2 (0.2, 1.6)	

LUBRICATION SYSTEM

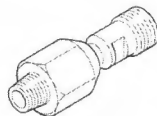
TOOLS

Oil pressure gauge set
07506-3000001



or equivalent commercially available in
U.S.A. (MT37A)

Oil pressure gauge attachment
07406-0030000



or equivalent commercially available in
U.S.A. (AT77AH)

TROUBLESHOOTING

Oil level too low

- Oil consumption
- External oil leak
- Worn piston rings
- Improperly installed piston rings
- Worn cylinders
- Worn stem seals
- Worn valve guide

Low oil pressure

- Oil level low
- Clogged oil strainer
- Internal oil leak
- Incorrect oil being used

No oil pressure

- Oil level too low
- Oil pressure relief valve stuck open
- Broken oil pump drive chain
- Broken oil pump drive or driven sprocket
- Damaged oil pump
- Internal oil leak

High oil pressure

- Oil pressure relief valve stuck closed
- Clogged oil filter, gallery, or metering orifice
- Incorrect oil being used

Oil contamination

- Oil or filter not changed often enough
- Worn piston rings

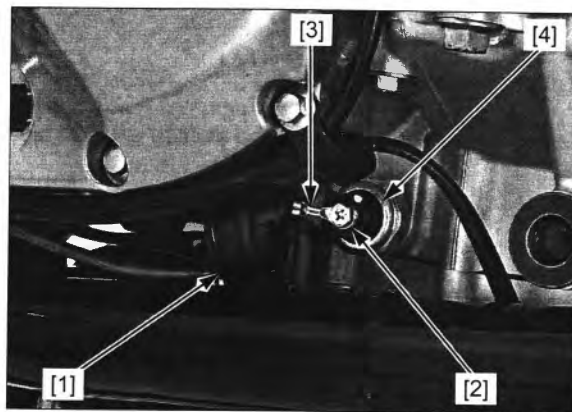
OIL PRESSURE INSPECTION

If the oil pressure indicator remains on a few seconds, check the indicator system before checking the oil pressure.

Check the engine oil level (page 3-14).

Warm up the engine to normal operating temperature (approximately 80°C/176°F).
Stop the engine.

Remove the rubber cap [1] from the EOP switch.
Remove the terminal bolt [2] and disconnect the EOP switch wire [3].
Remove the EOP switch [4].

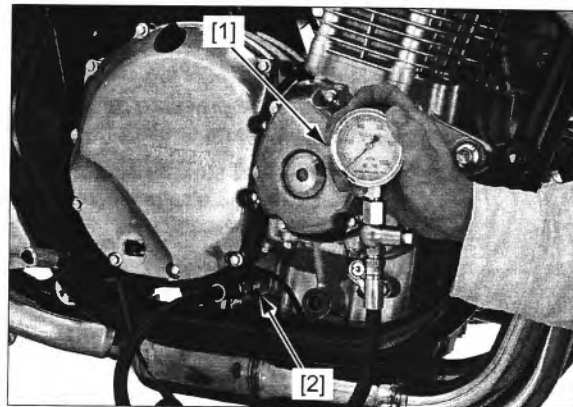


Connect an oil pressure gauge [1] and attachment [2] to the pressure switch hole.

TOOLS:

Oil pressure gauge set 07506-3000001 or equivalent commercially available in U.S.A. (MT37A)

Oil pressure gauge attachment 07406-0030000 or equivalent commercially available in U.S.A. (AT77AH)



Start the engine and increase the rpm to 5,000 rpm and read the oil pressure.

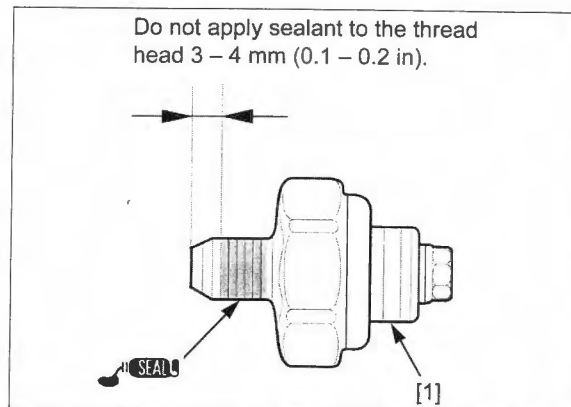
OIL PRESSURE:

490 - 588 kPa (5.0 - 6.0 kgf/cm², 71 - 85 psi)
at 5,000 rpm/(80°C/176°F)

Stop the engine and remove the tools.

Apply sealant (Three Bond 1207B or an equivalent) to the threads of the EOP switch [1] threads.
Install and tighten the EOP switch to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



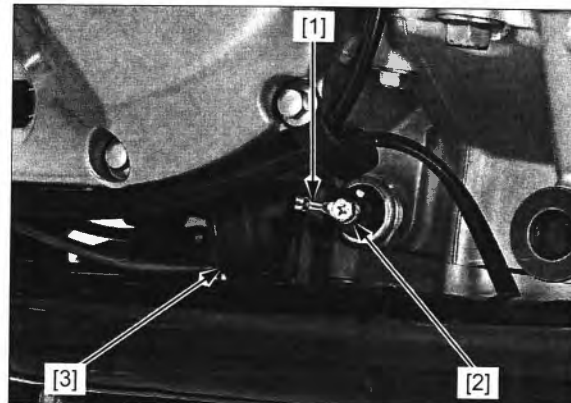
Connect the switch wire [1] to the terminal and tighten the bolt [2] to the specified torque.

TORQUE: 2.2 N·m (0.2 kgf·m, 1.6 lbf·ft)

Install the rubber cap [3] securely.

Start the engine and check that the oil pressure indicator goes off after a few seconds.

If the indicator is incorrect, check the EOP switch (page 19-26)



LUBRICATION SYSTEM

OIL STRAINER/PRESSURE RELIEF VALVE

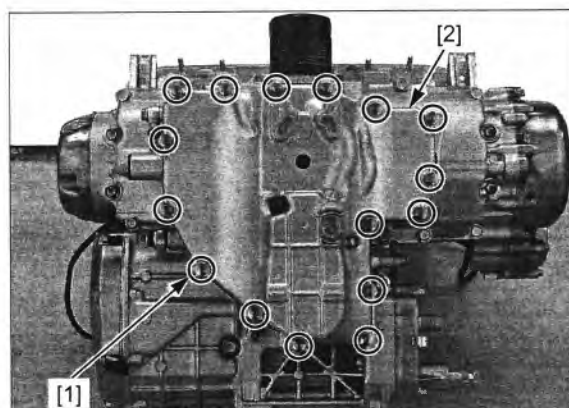
REMOVAL

Drain the engine oil (page 3-15).

Remove the muffler/ exhaust pipe (page 2-13).

Loosen the oil pan mounting bolts [1] in a crisscross pattern in 2 – 3 steps.

Remove the oil pan mounting bolts and oil pan [2].

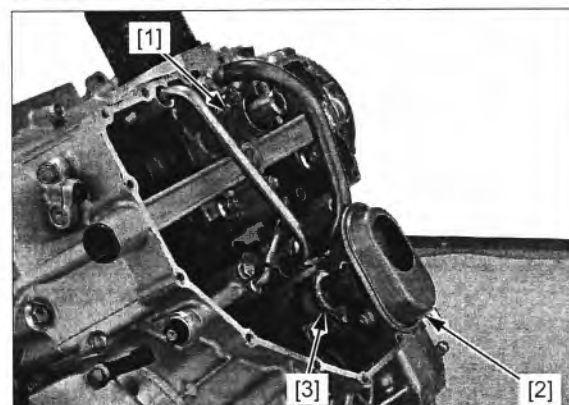


Remove the pressure relief valve [1] and O-ring.

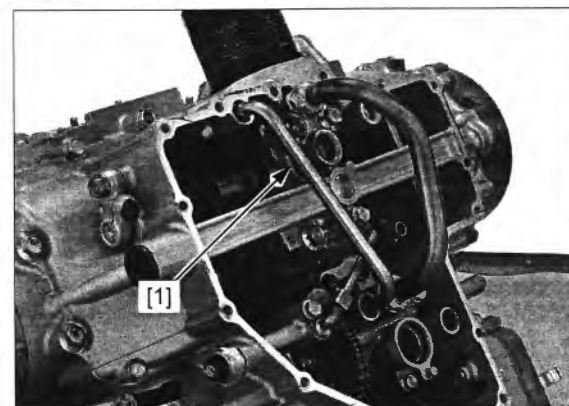
Remove the oil strainer [2] and packing [3].

Clean the oil strainer screen.

Check the oil strainer screen for clogging or damage, replace it if necessary.

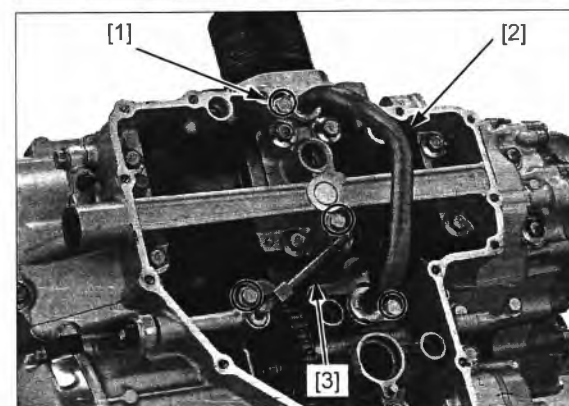


Remove the oil pass line B [1] and O-rings.

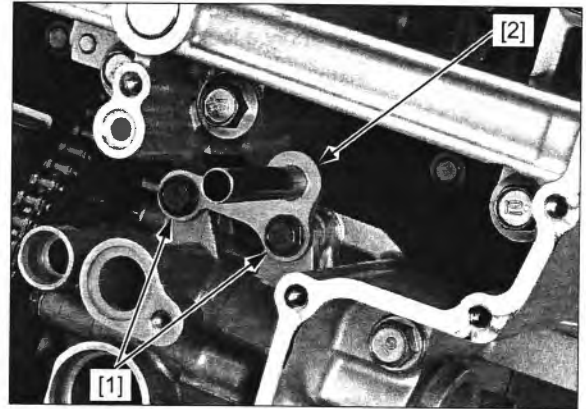


Remove the bolts [1], oil pass line A [2], and O-rings.

Remove the oil line [3] and O-rings.



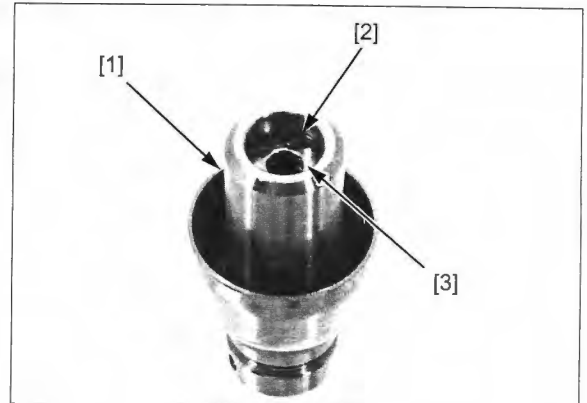
Remove the bolts [1], oil return pipe [2], and O-rings.



INSPECTION

Check the operation of the pressure relief valve by pushing on the piston.

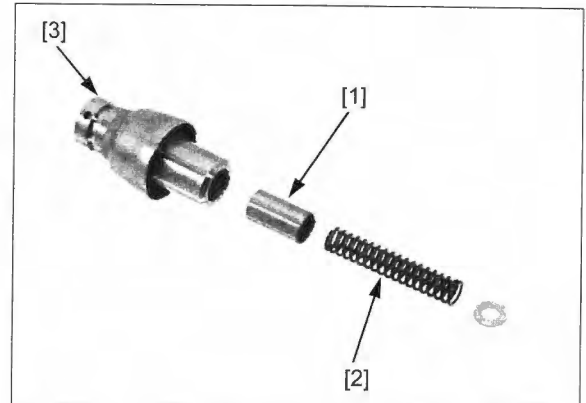
Disassemble the relief valve [1] by removing the snap ring [2] and washer [3].



Inspect the following:

- piston [1] for wear, sticking, or damage.
- spring [2] for weakness or damage.
- relief valve body [3] for clogging or damage.

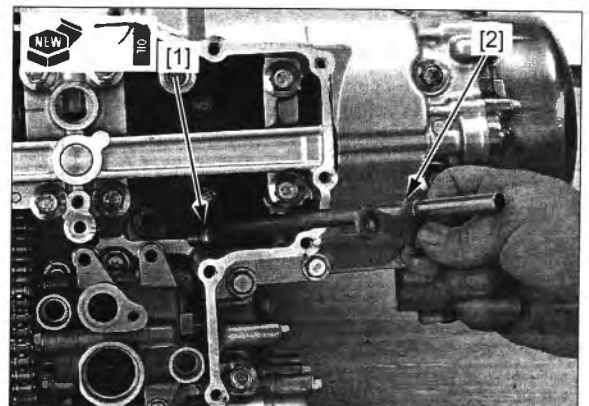
Assemble the relief valve in the reverse order of disassembly.



INSTALLATION

Apply engine oil to new O-rings [1] and install them onto the oil return pipe [2].

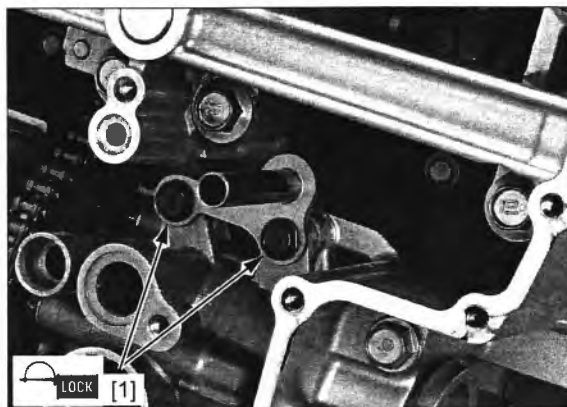
Install the oil return pipe into the crankcase.



LUBRICATION SYSTEM

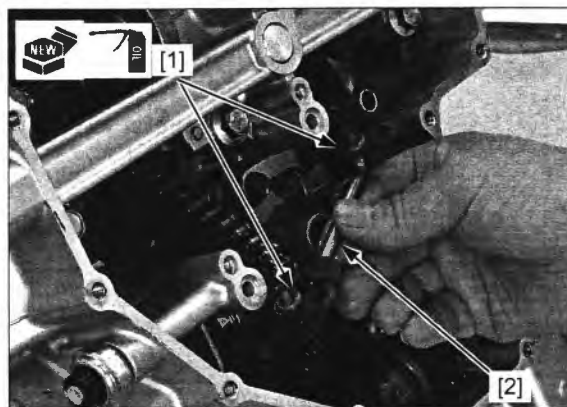
Clean the threads of the oil return pipe mounting bolt [1] and apply a locking agent.

Install the bolts and tighten the them securely.



Apply engine oil to new O-rings [1] and install them onto the oil line [2].

Install the oil line into the crankcase.

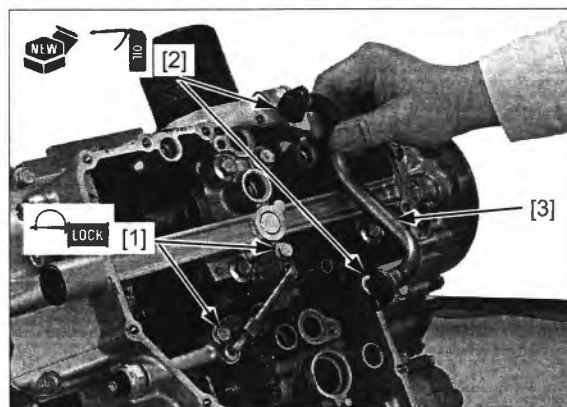


Clean the threads of the oil line mounting bolt [1] and apply a locking agent.

Install the bolts and tighten the them securely.

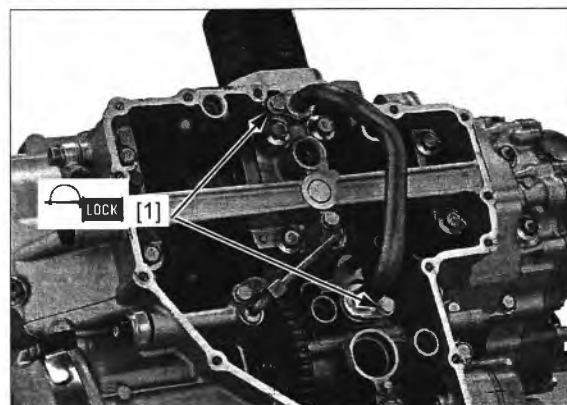
Apply engine oil to a new O-ring [2] and install it onto the oil pass line A [3].

Install the oil pass line A into the crankcase.



Clean the threads of the oil pass line A mounting bolt [1] and apply a locking agent.

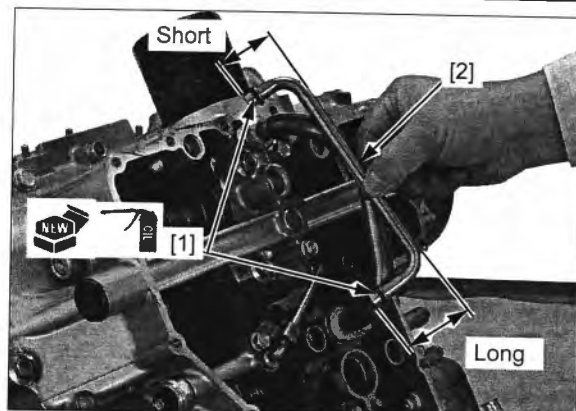
Install the bolts and tighten the them securely.



LUBRICATION SYSTEM

Apply engine oil to a new O-ring [1] and install it onto the oil pass line B [2].

Install the oil pass line B into the crankcase as shown.



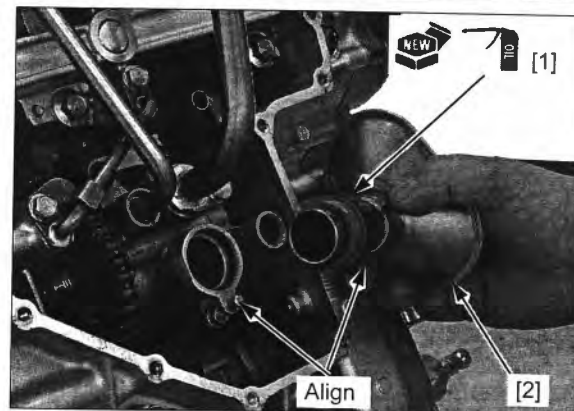
Apply engine oil to a new O-ring [1] and install it onto the pressure relief valve [2].

Install the pressure relief valve into the crankcase.



Apply engine oil to a new packing [1] and install it onto the oil strainer [2].

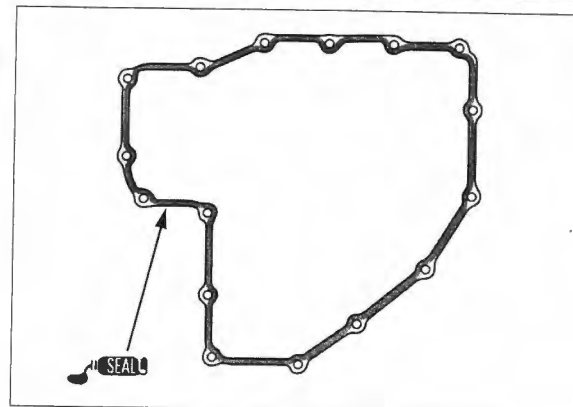
Install the oil strainer into the oil pump while aligning strainer groove with the boss on the oil pump body.



Clean the oil pan mating surface thoroughly.

Do not apply sealant more than necessary.

Apply Three Bond 1207B or equivalent to the mating surface.



LUBRICATION SYSTEM

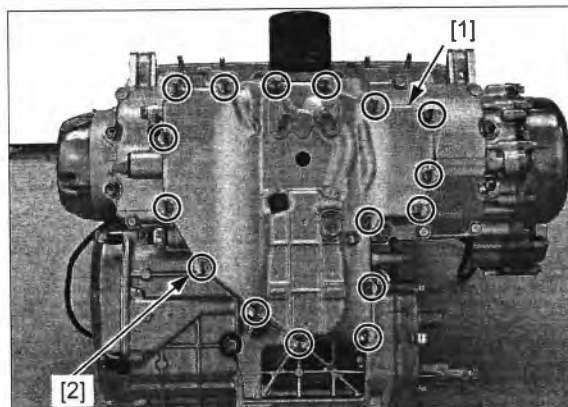
Install the oil pan [1] onto the lower crankcase.

Install the oil pan mounting bolts [2] and tighten the bolts in a crisscross pattern in 2 – 3 steps.

Install the muffler/exhaust pipe (page 2-15).

Fill the crankcase with recommended oil (page 3-15).

After installation, check that there is oil pressure and that there are no oil leaks (page 4-5).



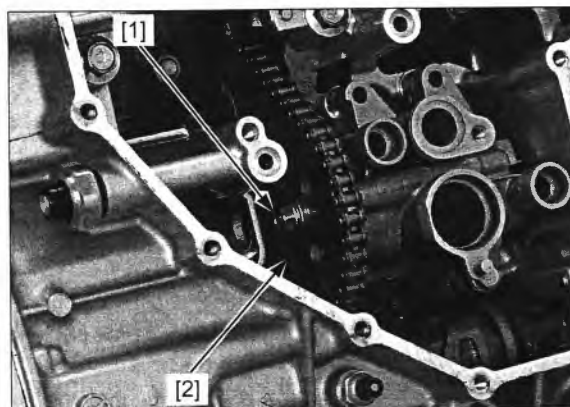
OIL PUMP

REMOVAL

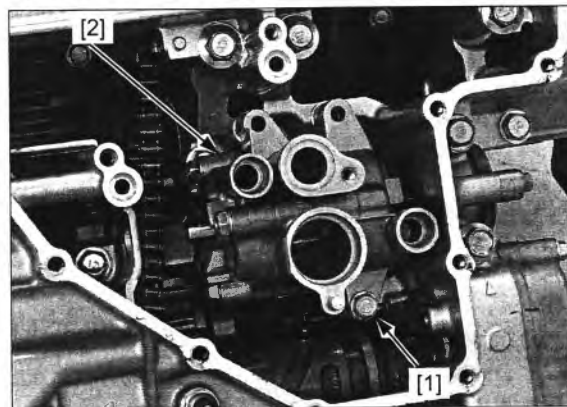
Remove the following:

- clutch (page 9-18)
- oil pan/oil strainer/relief valve/oil lines (page 4-6)

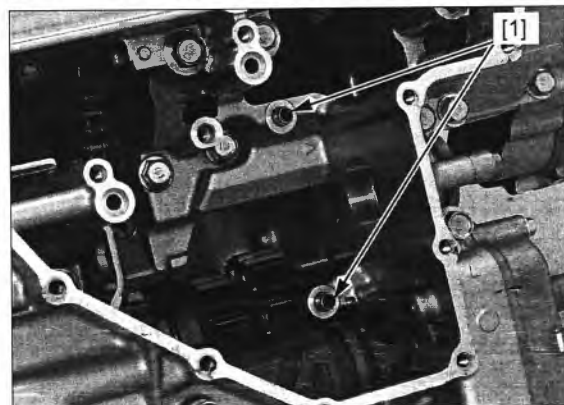
Remove the bolt/washer [1], then remove the oil pump driven sprocket [2] and drive chain from the oil pump shaft.



Remove the flange bolt [1] and oil pump assembly [2].

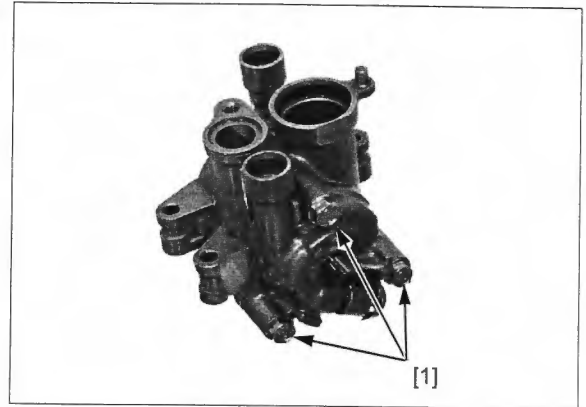


Remove the dowel pins [1].



DISASSEMBLY

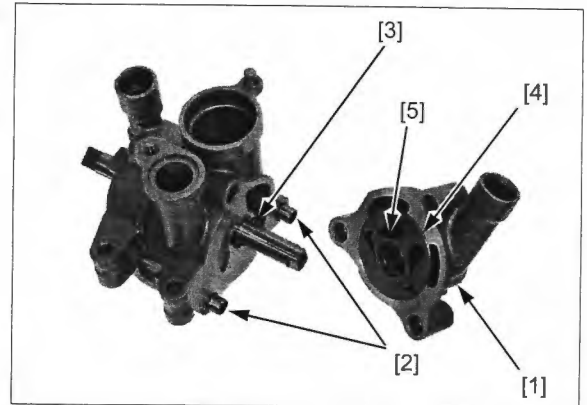
Remove the oil pump assembly bolts [1] (cooler pump side).



Remove the oil pump cover A [1] and cooler pump side dowel pins [2] (8 mm x 14 mm).

Remove the drive pin [3].

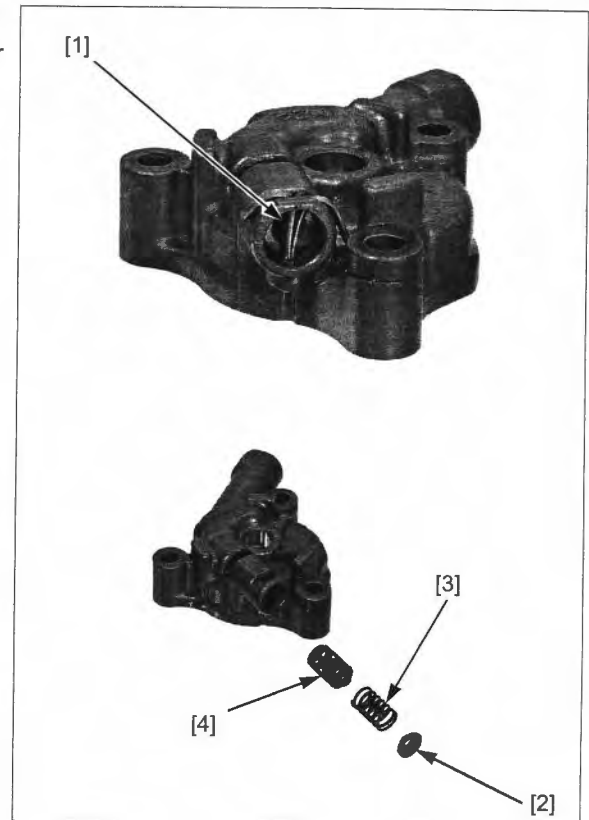
Remove the oil pump outer rotor [4] and inner rotor [5] from the oil pump cover A.



Remove the cotter pin [1] and disassembly relief valve.

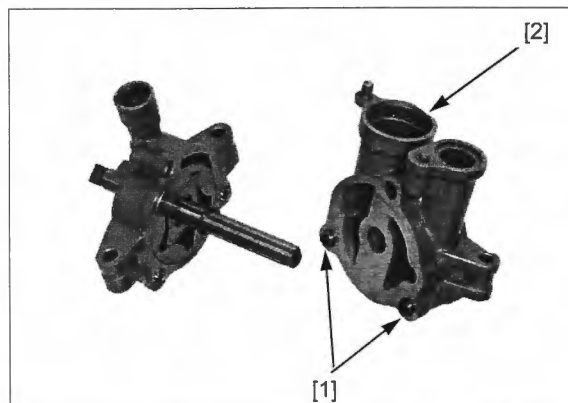
Check the relief valve seat [2] and spring [3] for weakness or damage.

Check the relief valve [4] for fatigue or damage.



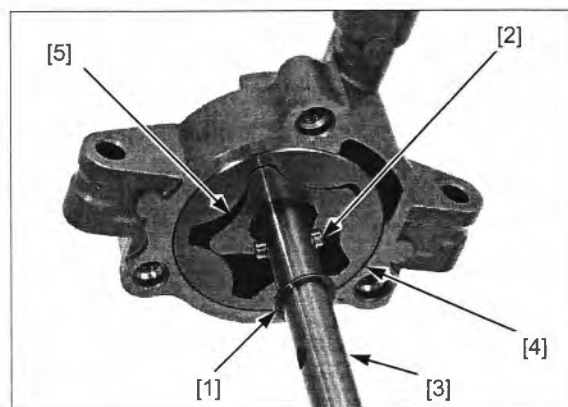
LUBRICATION SYSTEM

Remove the feed pump side dowel pins [1] (8 mm x 10 mm) from oil pump body [2].



Remove the thrust washer [1], drive pin [2], and oil pump shaft [3].

Remove the outer rotor [4] and inner rotor [5] from the oil pump cover B.



INSPECTION

BODY CLEARANCE

If any portion of the oil pump is worn beyond the service limit, replace the oil pump as an assembly.

Temporarily install the oil pump inner and outer rotors into the oil pump cover. Install the oil pump shaft.

Measure the pump body clearance for the feed and cooler pump.

SERVICE LIMITS:

Feed pump: 0.35 mm (0.014 in)
Cooler pump: 0.35 mm (0.014 in)

BODY CLEARANCE:



TIP CLEARANCE

Measure the rotor tip clearance for the feed and cooler pump.

SERVICE LIMITS:

Feed pump: 0.20 mm (0.008 in)
Cooler pump: 0.20 mm (0.008 in)

TIP CLEARANCE:



SIDE CLEARANCE

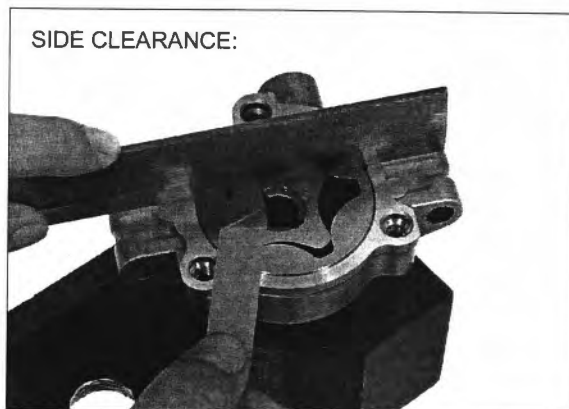
Remove the oil pump shaft.

Measure the side clearance for feed and cooler pump using a straight edge and feeler gauge.

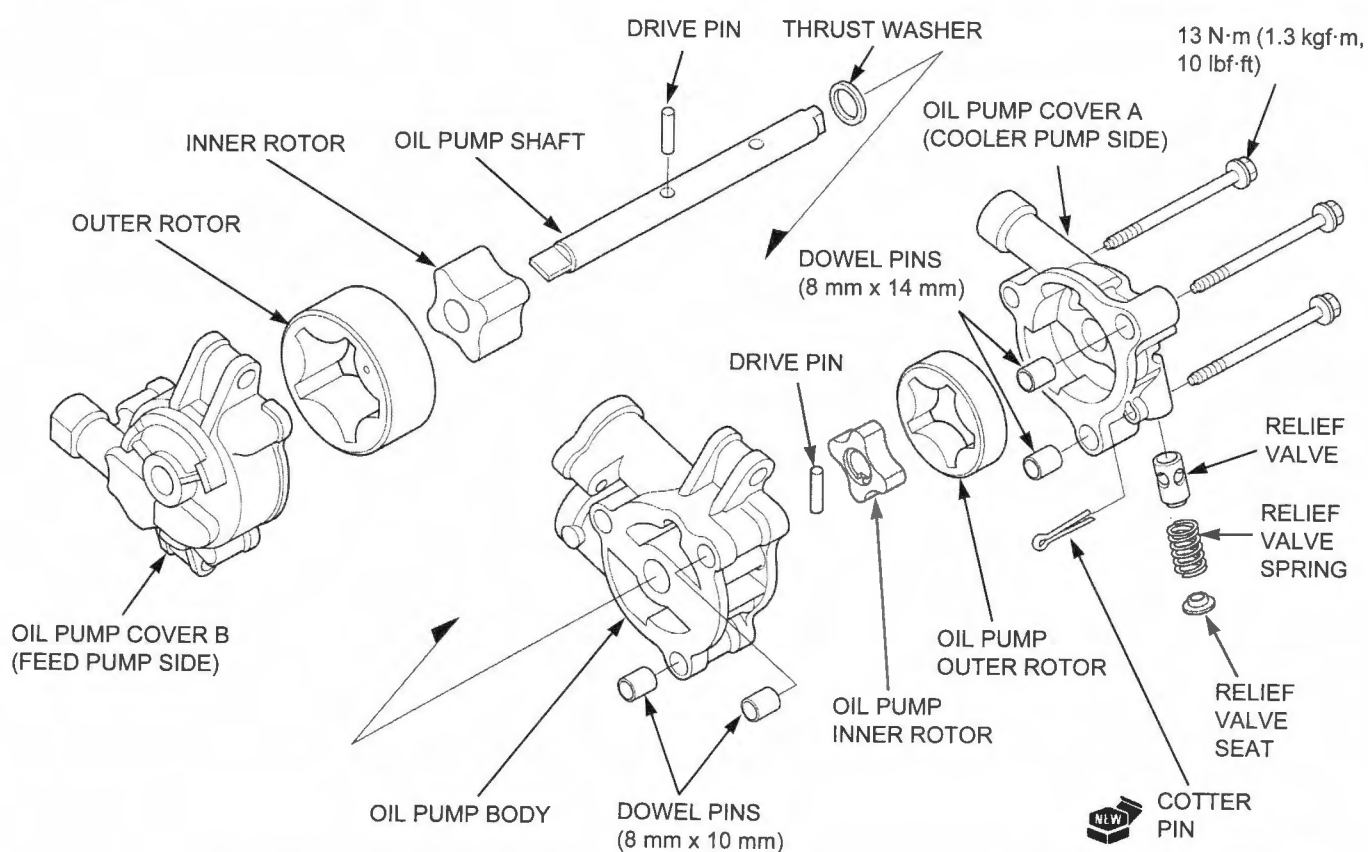
SERVICE LIMITS:

Feed pump: 0.17 mm (0.007 in)

Cooler pump: 0.17 mm (0.007 in)



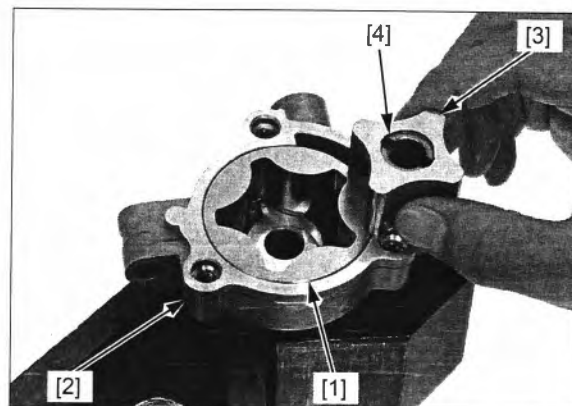
ASSEMBLY



Apply clean engine oil to each part.

Install the outer rotor [1] into the oil pump cover B [2].

Install the inner rotor [3] into the outer rotor with its drive pin groove [4] facing to the oil pump body.



LUBRICATION SYSTEM

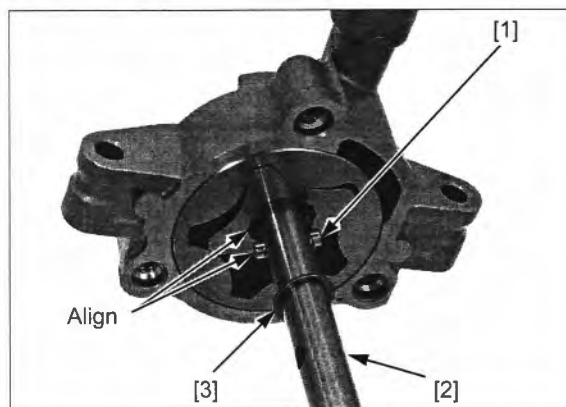
Install the drive pin [1] into the hole in the oil pump shaft [2].

Install the oil pump shaft by aligning the drive pin with the groove in the inner rotor groove as shown.

Install the thrust washer [3].

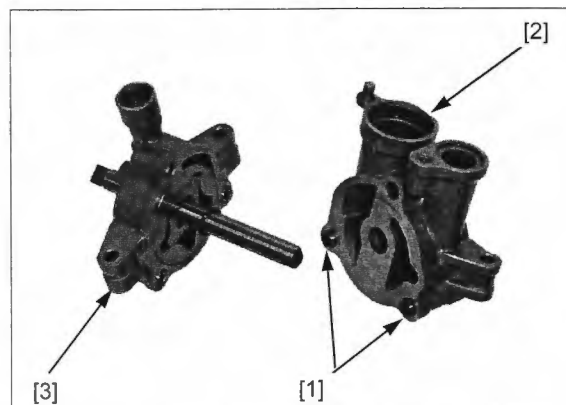
NOTE:

Install the oil pump driven sprocket bolt threads side of oil pump shaft facing the oil pump body side.



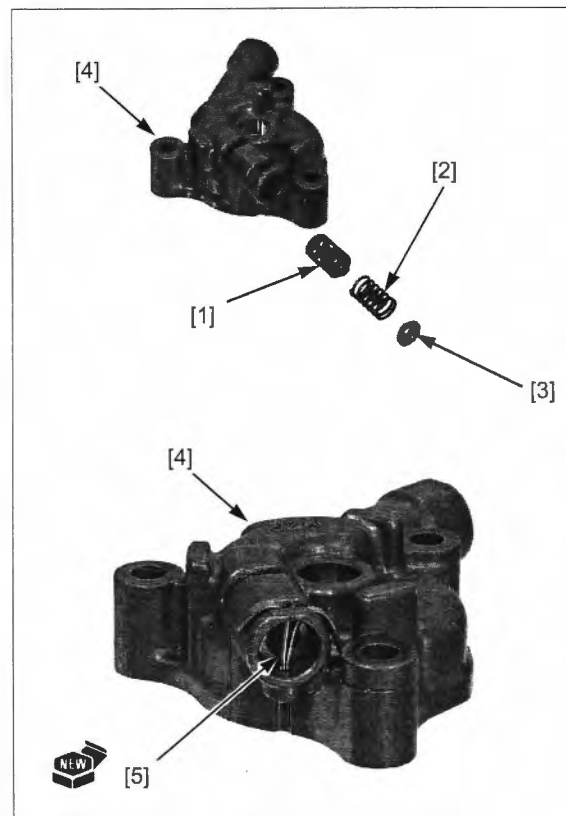
Install the dowel pins [1] (8 mm x 10 mm) to the oil pump body [2].

Install the oil pump body to the oil pump cover B [3].



Install the relief valve [1], spring [2], and valve seat [3] to oil pump cover A [4].

Install a new cotter pin [5] to oil pump cover A.



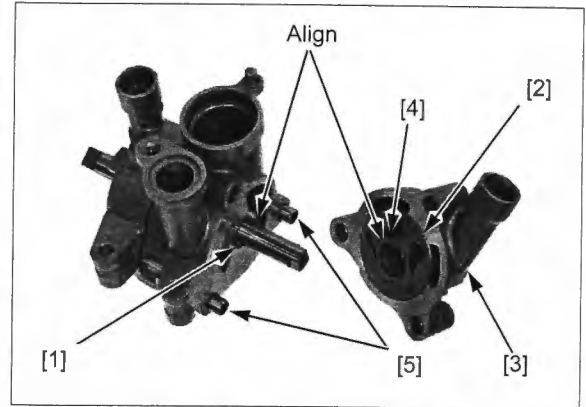
Install the drive pin [1] into the hole in the oil pump shaft.

Install the oil pump outer rotor [2] into the oil pump cover A [3].

Install the oil pump inner rotor [4] into the oil pump outer rotor with its drive pin groove facing the oil pump body.

Install the dowel pins [5] (8 mm x 14 mm) to the oil pump body.

Install the oil pump cover A to the oil pump body by aligning the drive pin with the groove in the oil pump inner rotor groove as shown.

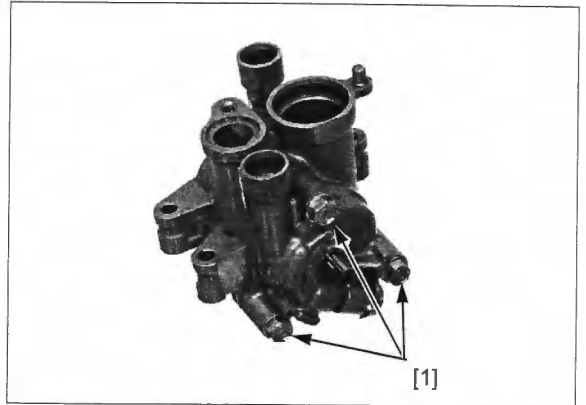


Install the oil pump assembly bolts [1] and tighten the bolts to the specified torque.

TORQUE: 13 N·m (1.3 kgf·m, 10 lbf·ft)

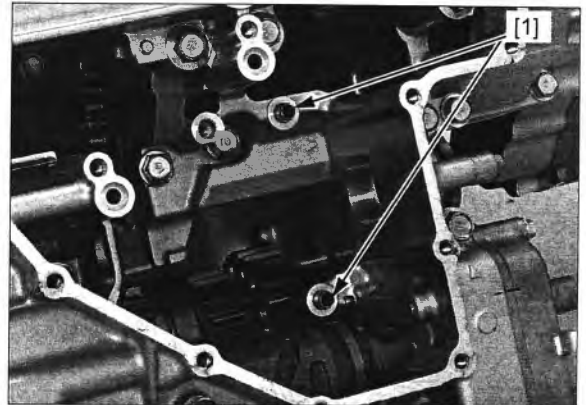
Check the oil pump operation by turning the pump shaft.

If necessary, reassemble the oil pump.

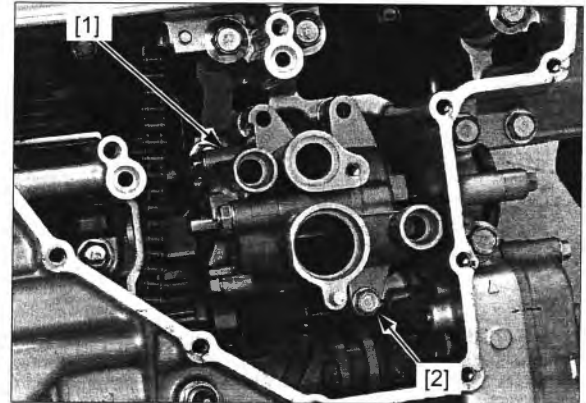


INSTALLATION

Install the dowel pins [1] to the crankcase.



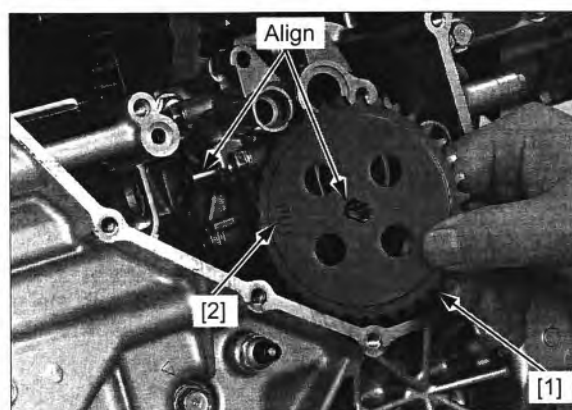
Install the oil pump [1] and tighten the mounting bolts [2] securely.



LUBRICATION SYSTEM

Install the oil pump driven sprocket [1] onto the pump shaft with its "OUT" mark [2] facing the clutch side while aligning the cut-outs.

Install the driven chain onto the sprocket.



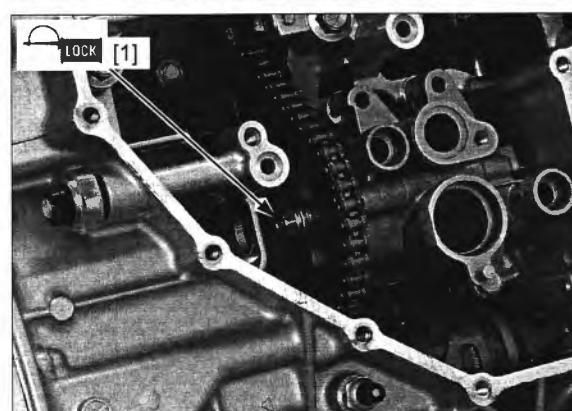
Clean the threads of the oil pump driven sprocket bolt [1] and apply a locking agent.

Install and tighten the bolt/washer [1] to the specified torque.

TORQUE: 15 N·m (1.5 kgf·m, 11 lbf·ft)

Install the following:

- oil lines/relief valve/oil strainer/oil pan (page 4-7)
- clutch (page 9-25)



OIL COOLER

INSPECTION

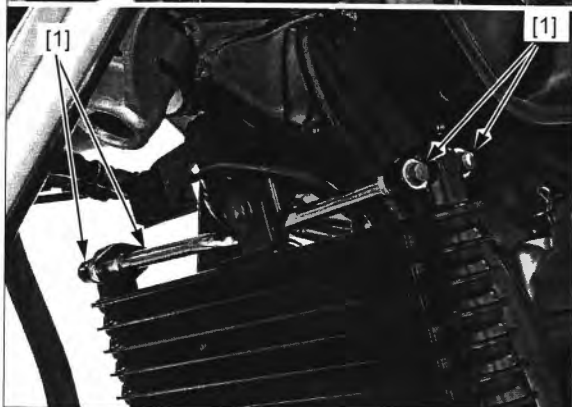
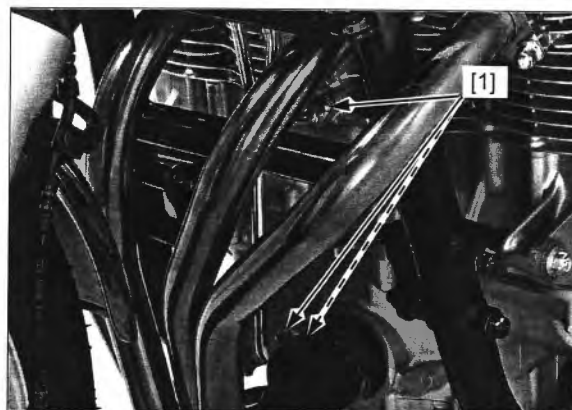
Check the oil cooler air passages for clogging or damage.

Straighten bent fins and remove insects, mud, or other obstructions with compressed air or low water pressure.

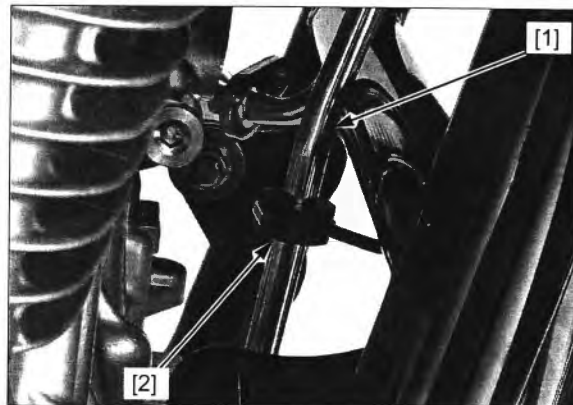
REMOVAL

Drain the engine oil (page 3-15).

Remove the oil cooler line bolts [1].



Release the oil cooler line [1] from the oil cooler line guide [2].

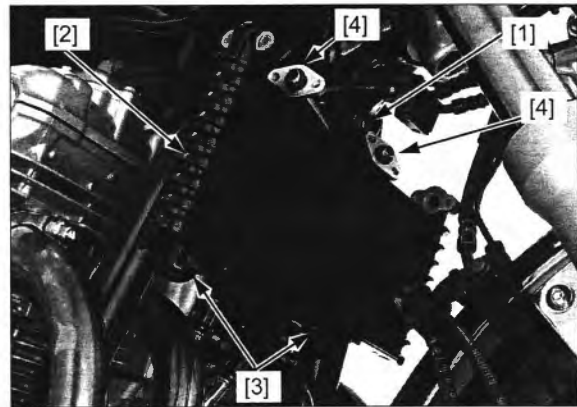


LUBRICATION SYSTEM

Remove the oil cooler mounting bolt [1], then remove the oil cooler [2] from oil cooler lower mount [3].

Remove the oil cooler lines [4].

Remove the O-ring from the oil cooler lines.



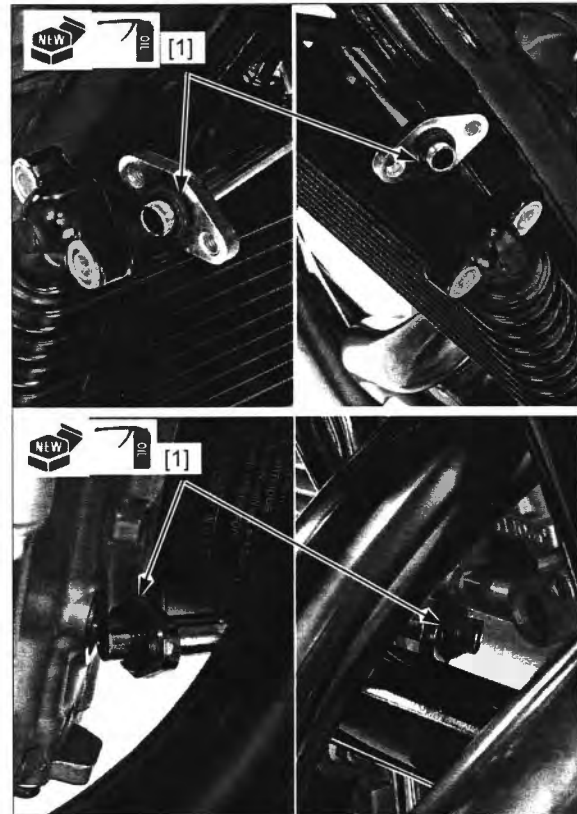
INSTALLATION

Coat a new O-ring with engine oil and install it into the oil cooler lines.

Installation is in the reverse order of removal.

Fill the crankcase with recommended engine oil (page 3-15).

After installation, check that there are no oil leaks.

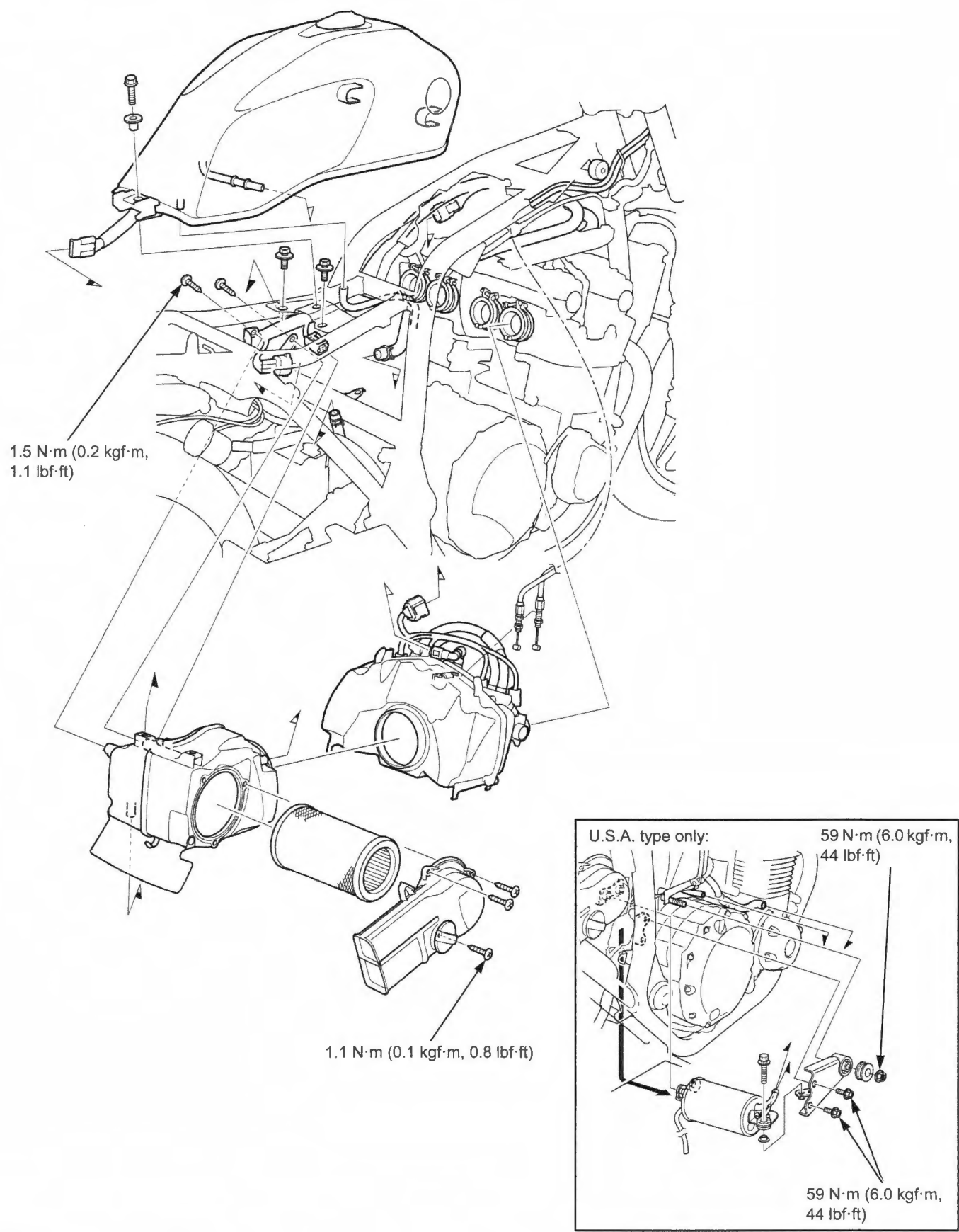


5. FUEL SYSTEM (PGM-FI)

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		EVAP PURGE CONTROL SOLENOID VALVE (U.S.A. TYPE ONLY)	5-86

FUEL SYSTEM (PGM-FI)

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- Be sure to relieve the fuel pressure while the engine is OFF.
- 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.
- 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 hose, relieve the fuel pressure from the system by disconnecting the quick connect fitting (page 5-45).
- Do not apply commercially available carburetor cleaners to the inside of the throttle bore.
- Do not snap the throttle valve from full open to full close after the throttle cable has been removed. It may cause incorrect operation.
- Seal the cylinder head intake ports with tape or a clean cloth to keep dirt and debris from entering the intake ports after the throttle body has been removed.
- Do not apply excessive force to the fuel rail on the throttle body while removing or installing the throttle body.
- Do not damage the throttle body. It may cause incorrect throttle valve synchronization.
- Prevent dirt and debris from entering the throttle bore and fuel hose, clean them using compressed air.
- The throttle body is factory pre-set. Do not disassemble in a way other than shown in this manual.
- Do not loosen or tighten the white painted bolts, nuts, or screws of the throttle body. Loosening or tightening them can cause throttle valve synchronization failure.
- Do not push the fuel pump base under the fuel tank when the fuel tank is stored.
- Always replace the packing when the fuel pump is removed.
- The PGM-FI system is equipped with the Self-Diagnostic System (page 5-12). If the MIL blinks, follow the Self-Diagnostic Procedures to remedy the problem.
- When checking the PGM-FI, always follow the steps in the troubleshooting flow chart (page 5-7).
- The PGM-FI system is provided with 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 using numerical values preset in advance in the program map. It must be remembered, however, that when any abnormality is detected in fuel injector(s) and/or the CKP sensor, the fail safe function stops the engine to protect it from damage.
- Refer to PGM-FI system location (page 5-8).
- A faulty PGM-FI system is often related to poorly connected or corroded connectors. Check those connections before proceeding.
- The rear wheel speed sensor sends a digital pulse signal to the ECM for computation. Refer to procedures for the rear wheel speed sensor inspection ('13 model).
 - CB1100A (page 19-18)
 - CB1100 (page 19-18)
- The rear wheel speed sensor sends a digital pulse signal to the combination meter for computation. Refer to procedures for the rear wheel speed sensor inspection (After '13 model).
 - CB1100A/SA (page 19-21)
 - CB1100 (page 19-22)
- Refer to procedures for fuel level sensor inspection.
 - '13 model (page 19-27)
 - After '13 model (page 19-28)
- When disassembling the PGM-FI parts, note the location of the O-rings. Replace them with new ones upon reassembly.
- Use a digital tester for PGM-FI system inspection.

SPECIFICATIONS

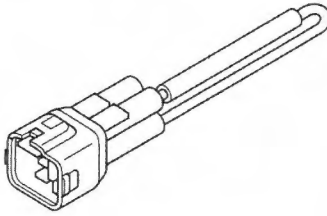
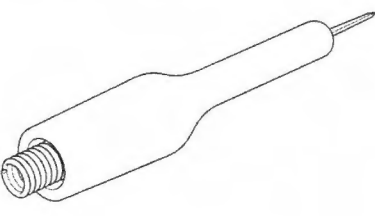
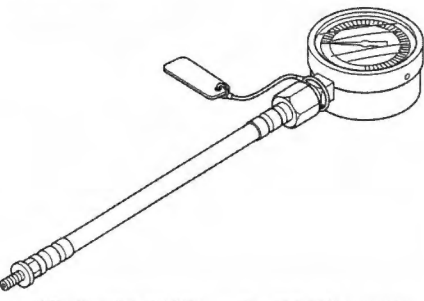
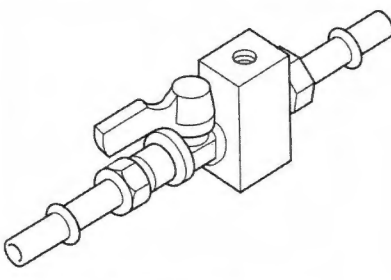
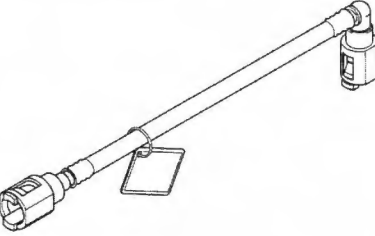
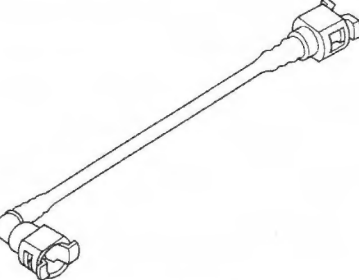
ITEM		SPECIFICATIONS
Throttle body identification number		GQ8FB
Idle speed		1,100 ± 100 rpm
Throttle grip freeplay		2 – 6 mm (0.08 – 0.24 in)
IAT sensor resistance (at 20°C/68°F)		1 – 4 kΩ
EOT sensor resistance (at 20°C/68°F)		2.4 – 2.9 kΩ
Fuel injector resistance (at 20°C/68°F)		11.4 – 12.6 Ω
PAIR control solenoid valve resistance (at 20°C/68°F)		23 – 27 Ω
EVAP purge control solenoid valve resistance (at 20°C/68°F) (U.S.A. type only)		30 – 34 Ω
Fuel pressure at idle		343 kPa (3.5 kgf/cm ² , 50 psi)
Fuel pump flow (at 12 V)	'13	290 cm ³ (9.8 US oz, 10.2 Imp oz) minimum/10 seconds
	After '13	393 cm ³ (13.3 US oz, 13.8 Imp oz) minimum/10 seconds

FUEL SYSTEM (PGM-FI)

TORQUE VALUES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
EOT sensor	1	10	14.5 (1.5, 11)	
Insulator band screw (Cylinder head side)	4	5	—	See page 5-63
Insulator band screw (Throttle body side)	4	5	—	See page 5-64
Fuel rail mounting bolt	4	5	5.1 (0.5, 3.8)	
IACV joint plate screw	1	4	2.1 (0.2, 1.5)	
IACV mounting screw	2	4	2.1 (0.2, 1.5)	
PAIR check reed valve cover bolt	4	6	12 (1.2, 9)	CT bolt
Fuel pump mounting nut ('13)	6	6	12 (1.2, 9)	See page 5-52
Fuel pump mounting cap nut (After '13)	6	6	12 (1.2, 9)	See page 5-54
Air cleaner housing connecting boot band screw	1	5	—	See page 5-57
Connector stay mounting screw	1	6	1.5 (0.2, 1.1)	
Air cleaner duct mounting screw	3	5	1.1 (0.1, 0.8)	
Air funnel mounting screw	6	5	4.2 (0.4, 3.1)	
MAP sensor mounting screw	1	5	1.1 (0.1, 0.8)	
Front air cleaner housing screw	7	4	0.8 (0.1, 0.6)	
IAT sensor mounting screw	2	5	1.1 (0.1, 0.8)	
Muffler cover mounting bolt	3	5	5.2 (0.5, 3.8)	
O ₂ sensor (CB1100/A)	1	12	24.5 (2.5, 18)	
O ₂ sensor (CB1100SA)	2	12	24.5 (2.5, 18)	

TOOLS

SCS service connector 070PZ-ZY30100 	Test probe, 2 pack 07ZAJ-RDJA110 	Fuel pressure gauge, 0 – 100 psi 07406-0040004  or 07406-004000B or 07406-004000C (U.S.A. only)
Pressure gauge manifold 07ZAJ-S5A0111  (Not available in U.S.A.)	Hose attachment, 8 mm/9 mm 07ZAJ-S7C0100  (Not available in U.S.A.)	Hose attachment, 9 mm/9 mm 07ZAJ-S5A0120  (Not available in U.S.A.)

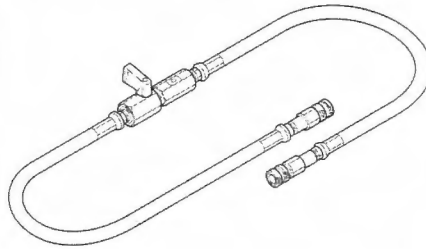
FUEL SYSTEM (PGM-FI)

Attachment joint, 8 mm/9 mm
07ZAJ-S7C0200

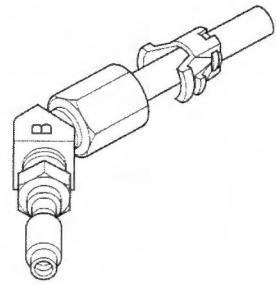


(Not available in U.S.A.)

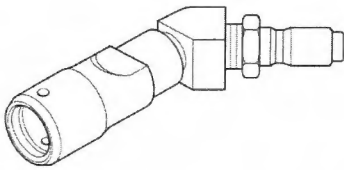
Pressure manifold hose
07AMJ-HW3A100 (U.S.A. only)



Adaptor, male "C"
07AAJ-S6MA300 (U.S.A. only)



Adaptor, female "C"
07AAJ-S6MA500 (U.S.A. only)



FUEL SYSTEM (PGM-FI)

ECM-to-COMBINATION METER TWO-WAY SERIAL COMMUNICATION (After '13 model)

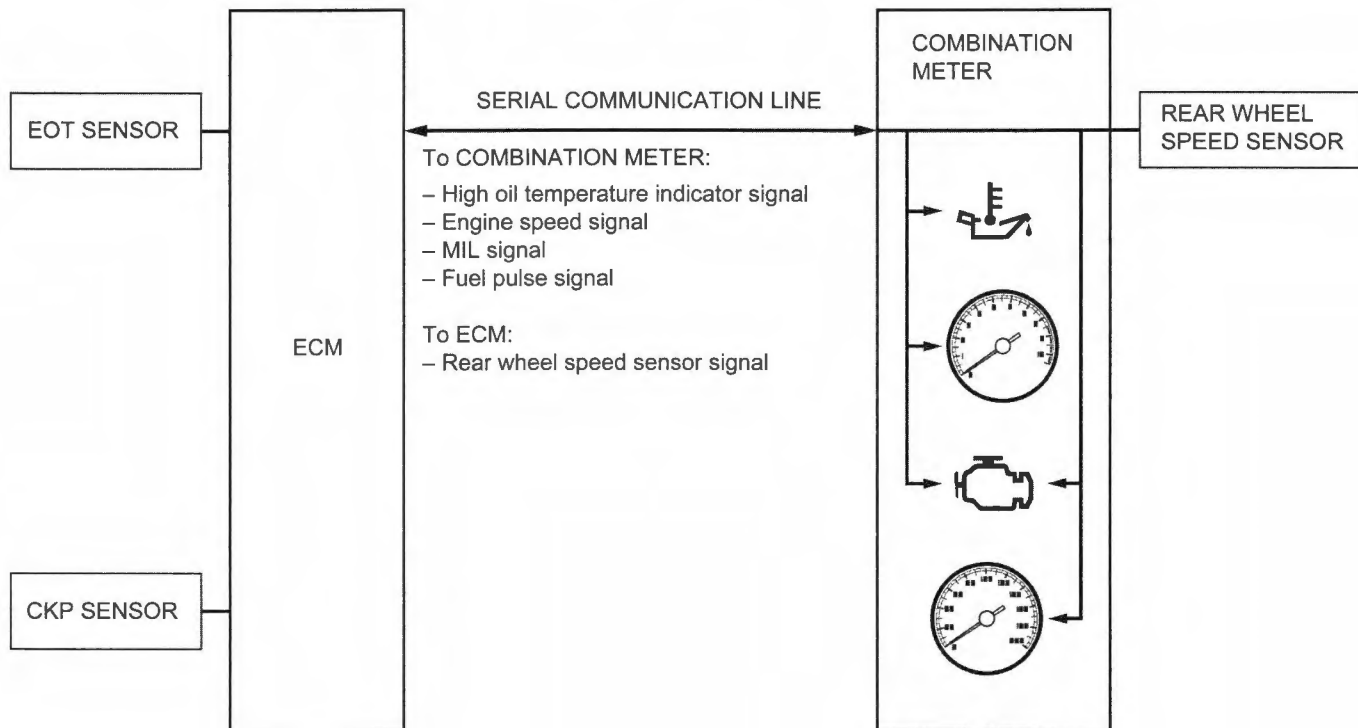
This motorcycle is equipped with the ECM-to-combination meter two-way serial communication system.

The ECM sends the following information to the combination meter.

- High oil temperature indicator signal
- Engine speed signal
- MIL signal
- Fuel pulse signal (for fuel mileage meter)

The combination meter sends the rear wheel speed sensor signal information to the ECM.

These signals are communicated between the ECM and combination meter via one wire. This wire is called the serial communication (TXD/RXD) line.



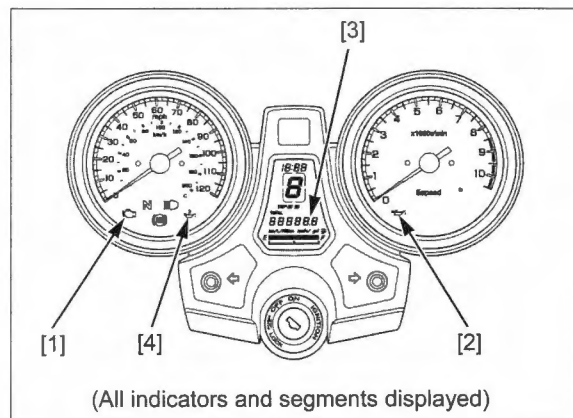
COMBINATION METER INDICATION WHEN THE SERIAL COMMUNICATION LINE IS ABNORMAL

If there is any problem in the serial communication line, the combination meter shows following:

- MIL [1] and engine oil pressure indicator [2] stay on
- odometer, tripmeter, or fuel mileage meter [3] indicates "-" (while the engine is running)
- high oil temperature indicator [4] does not come on (exception of the initial operation)

Serial communication line troubleshooting (page 19-15).

If there is any problem in the serial communication, the ECM stores the DTC 86-1 (page 5-42).



PGM-FI SYMPTOM TROUBLESHOOTING

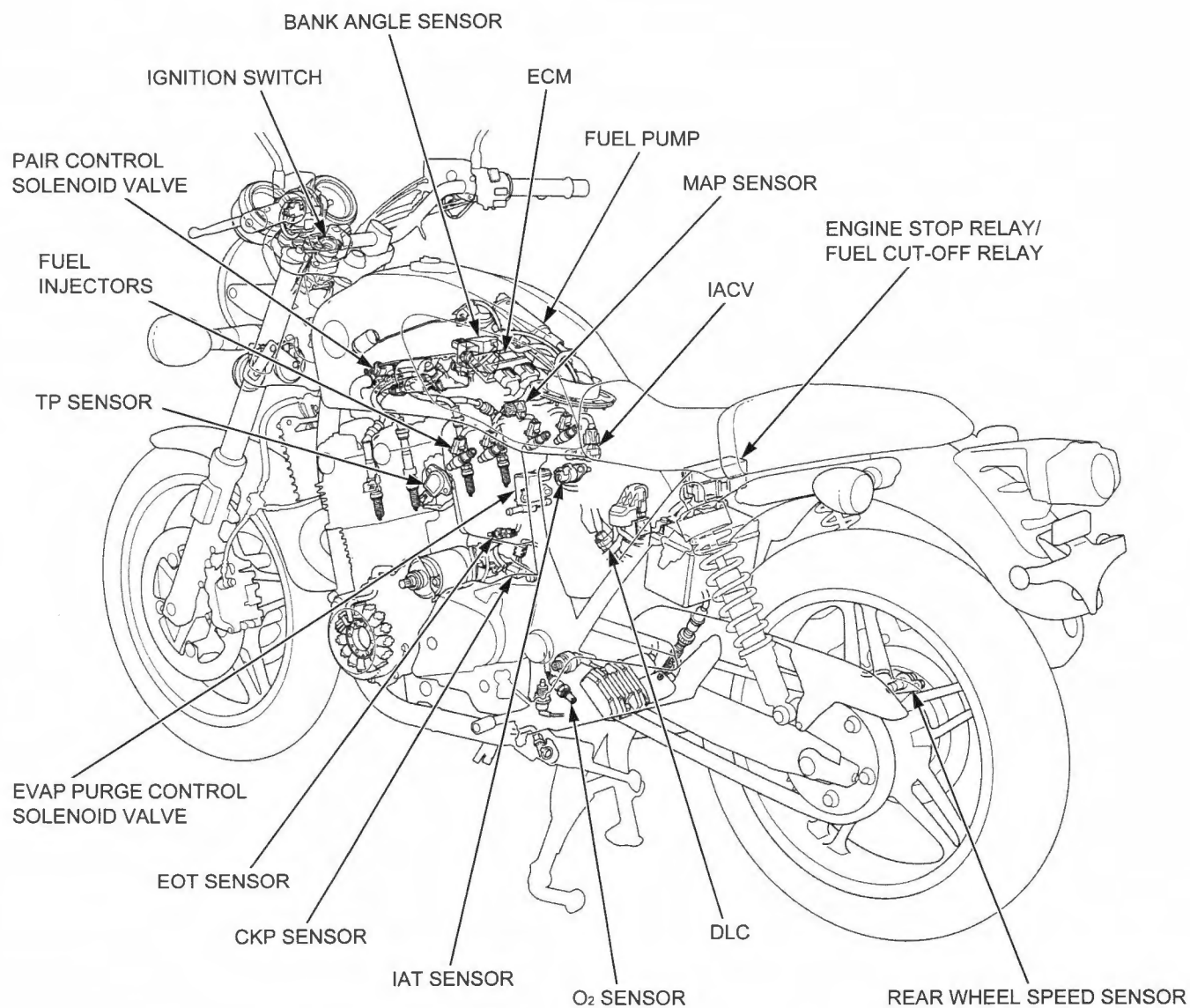
When the motorcycle has one of these symptoms, check the DTC or MIL blinking, refer to the DTC index (page 5-15), and begin the appropriate troubleshooting procedure. If there are no DTC/MIL blinking stored in the ECM memory, do the diagnostic procedure for the symptom, in sequence listed below, until you find cause.

Symptom	Diagnosis procedure	Also check for
Engine cranks but won't start (No DTC and MIL blinking)	1. Crank the starter for more than ten seconds and check the DTC (page 5-13) and execute the troubleshooting according to the DTC. 2. Inspect the fuel supply system (page 5-45).	• No fuel to fuel injector – Clogged fuel filter – Pinched or clogged fuel hose – Pinched or clogged fuel tank breather hose • Faulty fuel pump • Faulty fuel pump circuits • Intake air leak • Contaminated/deteriorated fuel • Faulty fuel injector • IACV stuck closed • Faulty ignition system
Engine cranks but won't start (No fuel pump operation sound when the turning the ignition ON)	1. ECM power/ground circuits malfunction (page 5-80) 2. Inspect the fuel supply system (page 5-45).	• Open circuit in the power input and/or ground wire of the ECM • Faulty bank angle sensor or related circuit • Faulty engine stop relay or related circuit • Faulty engine stop switch or related circuit • Blown sub fuse 20 A (FI, IGN) • Blown sub fuse 10 A (START)
Engine stalls, hard to start, rough idling	1. Check the idle speed. 2. Check the IACV. 3. Inspect the fuel supply system (page 5-45).	• Restricted fuel hose • Contaminated/deteriorated fuel • Intake air leak • Faulty IACV • Restricted fuel tank breather hose • Faulty ignition system
Afterburn when engine braking is used	Check the PAIR system (page 5-82).	• Faulty PAIR system – Faulty PAIR control solenoid valve – Faulty PAIR check reed valve – Clogged hose of the PAIR system • Faulty ignition system
Backfiring or misfiring during acceleration	Check the ignition system.	• Faulty ignition system
Poor performance (driveability) and poor fuel economy	1. MAP sensor and its hoses connection. 2. Inspect the fuel supply system (page 5-45).	• Pinched or clogged fuel hose • Faulty pressure regulator (fuel pump) • Faulty fuel injector • Faulty ignition system • Faulty MAP sensor • Pinched or clogged MAP sensor hoses
Idle speed is below specifications or fast idle too low (No DTC and MIL blinking)	1. Check the idle speed. 2. Check the IACV.	• IACV stuck closed • Faulty fuel supply system • Faulty ignition system
Idle speed is above specifications or fast idle too high (No DTC and MIL blinking)	1. Check the idle speed. 2. Check the throttle operation and grip freeplay. 3. Check the IACV.	• IACV stuck opened • Faulty ignition system • Intake air leak • Engine top end problem • Air cleaner condition
MIL stays ON but no DTCs set, or MIL never comes ON at all	Troubleshoot the MIL circuit (page 5-44).	• Faulty MIL circuit
MIL stays ON (No DTC set)	Inspect the DLC circuit.	• Short circuit in the DLC related wire

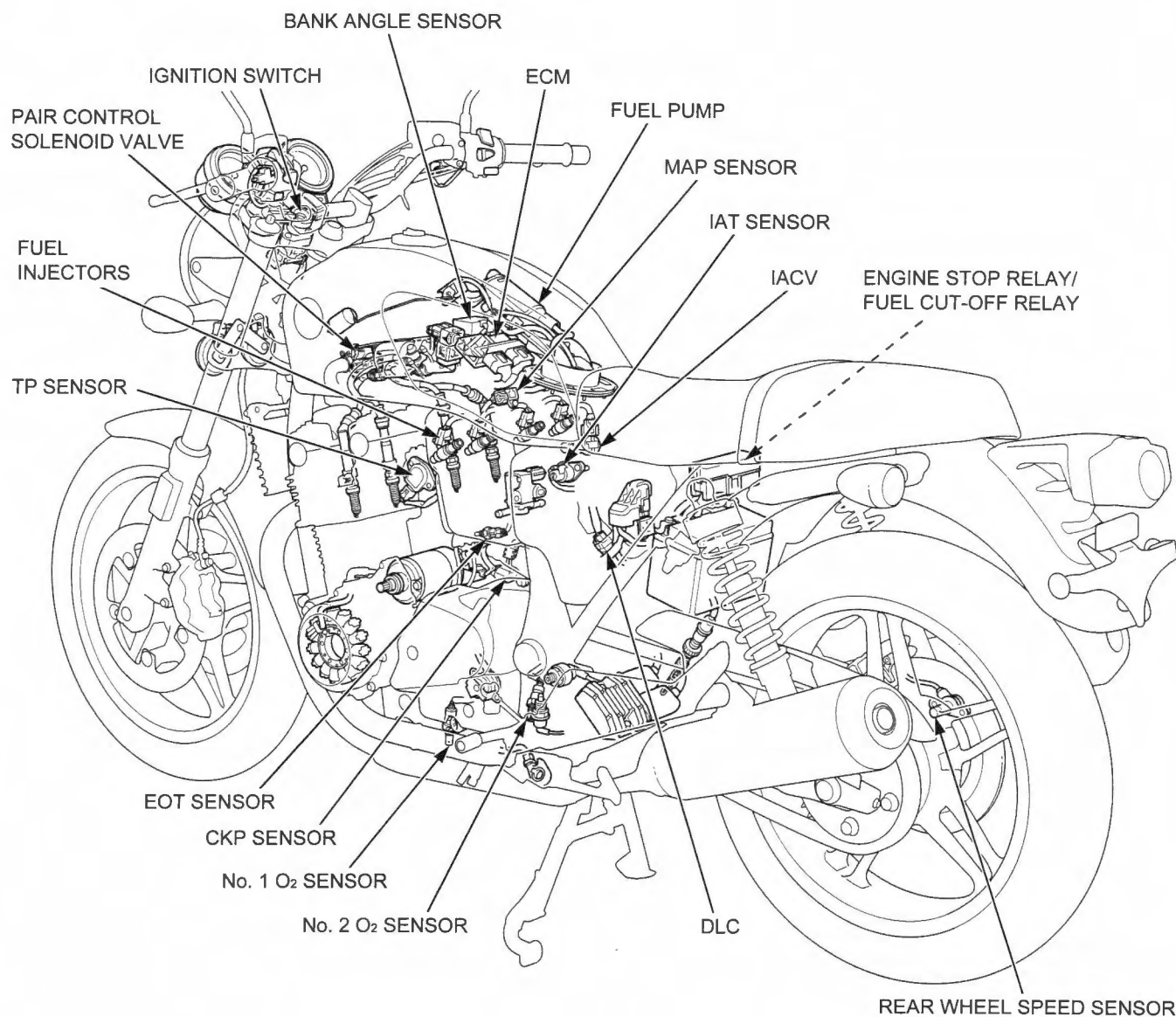
FUEL SYSTEM (PGM-FI)

PGM-FI SYSTEM LOCATION

'13 CB1100A shown:



CB1100SA shown:



PGM-FI SYSTEM DIAGRAM

Wiring diagram for the 1997 Honda Civic EX 1.8i 4-door. The diagram shows the electrical system from the battery to various components including the ignition switch, engine stop switch, fuel pump, ECM, sensors (MAP, TP, IAT, EOT, O2, CKP), and gauges (Tachometer, MIL, Oil Temperature Indicator). It includes a legend for wire colors and a note about DTC/MIL numbers. Two connector diagrams are shown at the bottom: ECM 33P (BLACK) CONNECTOR A and ECM 33P (GRAY) CONNECTOR B.

Legend:

- Br: Brown
- Bl: Black
- Y: Yellow
- Bu: Blue
- G: Green
- R: Red
- W: White
- O: Orange
- Lg: Light green
- P: Pink
- Gr: Gray

Notes:

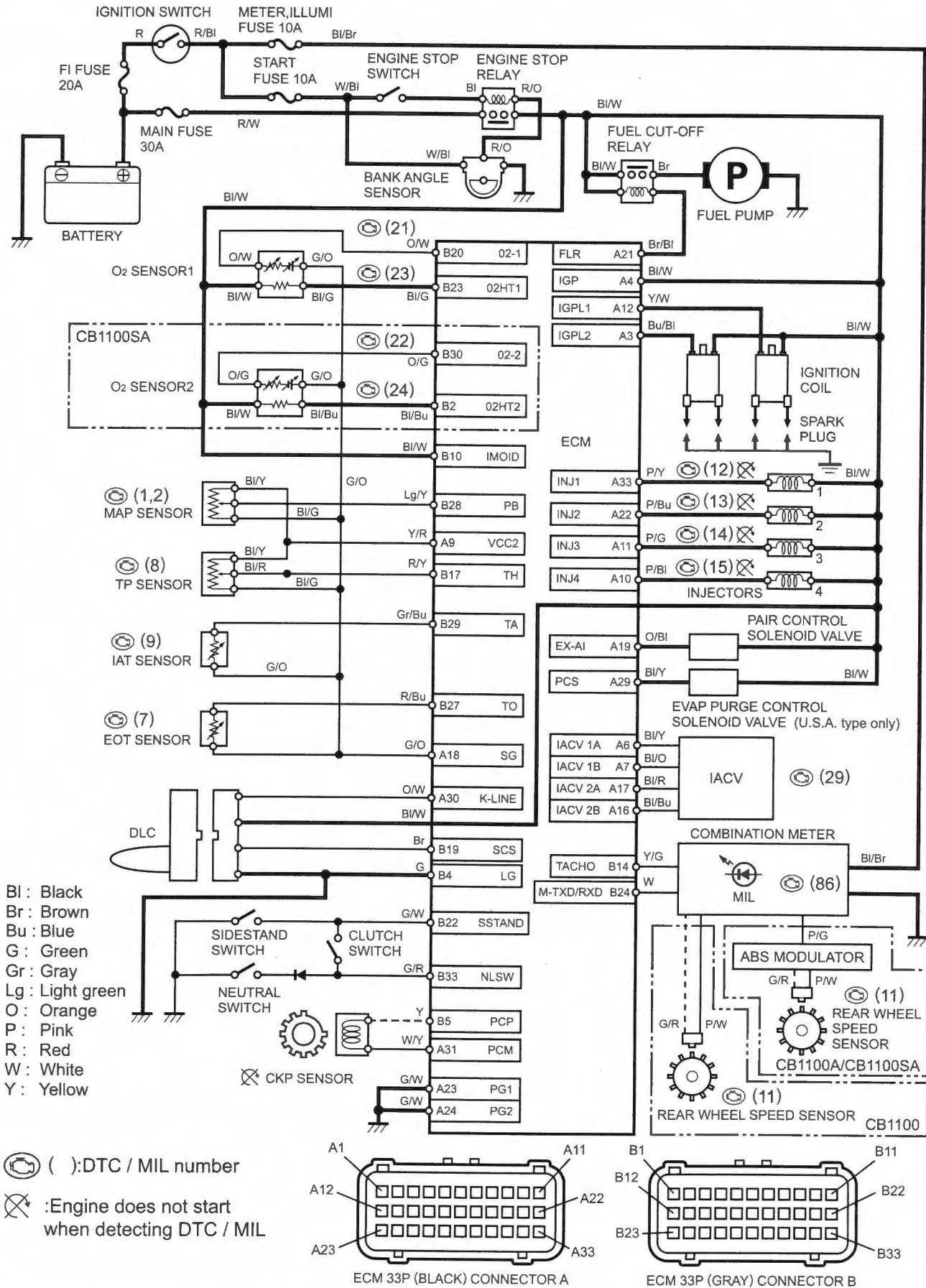
- (): DTC / MIL number
- X: Engine does not start when detecting DTC / MIL

ECM 33P (BLACK) CONNECTOR A

ECM 33P (GRAY) CONNECTOR B

REAR WHEEL SPEED SENSOR (11)

After '13 model:



FUEL SYSTEM (PGM-FI)

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 ECMs this can sometimes mean something work, but not the way it's supposed to.

If the MIL has come on

Refer to DTC READOUT (page 5-13).

If the MIL did not stay on

If the MIL did not stay on, but there is a driveability problem, do the SYMPTOM TROUBLESHOOTING (page 5-7).

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 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-programed value in the simulated program map. When any abnormality is detected in the fuel injector(s) and/or CKP sensor, the fail-safe function stops the engine to protect it from damage.

DTC (Diagnostic Trouble Code)

- The DTC is composed of a main code and a sub code and it is displayed as a hyphenated number when retrieved from the ECM with the MCS.

The digits in front of the hyphen are the main code, they indicate the component of function failure.

The digits behind the hyphen are the sub code, they detail the specific symptom of the component or function failure.

For example, in the case of the TP sensor:

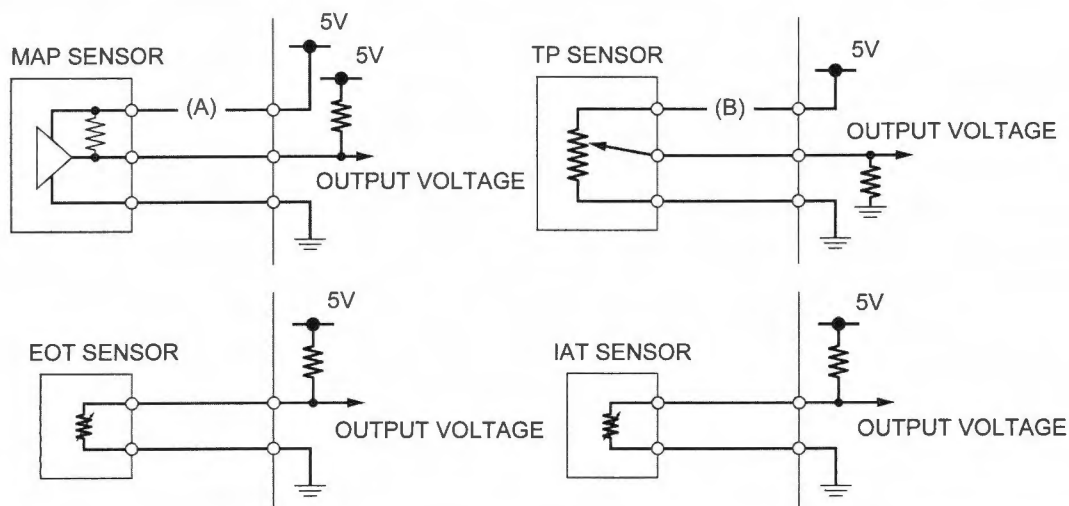
- DTC 08 - 1 = (TP sensor voltage) - (lower than the specified value)
- DTC 08 - 2 = (TP sensor voltage) - (higher than the specified value).

- The MAP, EOT, TP and IAT sensor diagnosis will be made according to the voltage output of the affected sensor.

If a failure occurs, the ECM determines the Function Failure, compares the sensor voltage output to the standard value, and then outputs the corresponding DTC to the MCS.

For example:

- If the input voltage line (A) on the MAP sensor is opened, the ECM detects the output voltage is about 5 V, then the DTC 1-2 (MAP sensor circuit high voltage) will be displayed.
- If the input voltage line (B) on the TP sensor is opened, the ECM detects the output voltage is 0 V, then the DTC 8-1 (TP sensor circuit low voltage) will be displayed.



MIL Blink Pattern

- If the MCS is not available, DTC can be read from the ECM memory by the MIL blink pattern.
- The number of MIL blinks is the equivalent of the main code of the DTC (the sub code cannot be displayed by the MIL).
- The MIL will blink the current DTC, in case the ECM detects the problem at present, when the ignition switch ON or idling with the sidestand down. The MIL will stay ON when the engine speed is over 1,700 rpm or with the sidestand up.
- The MIL has two types of blinks, a long blink and short blink. The long blink lasts for 1.3 seconds, the short blink 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).
- When the ECM stores more than one DTC, the MIL will indicate them by blinking in the order from the lowest number to highest number.

MIL Check

When the ignition switch is turned ON and engine stop switch "○", the MIL will stay on for a few seconds, then go off. If the MIL does not come on, troubleshoot the MIL circuit (page 5-44).

CURRENT DTC/FREEZE DTC

The DTC is indicated in two ways according to the failure status.

- In case the ECM detects the problem at present, the MIL will come on and the MIL will start to blink as its DTC when the sidestand is lowered. It is possible to readout the MIL blink pattern as the current DTC.
- In case the ECM does not detect any problem at present but has a problem stored in its memory, the MIL will not light and blink. If it is necessary to retrieve the past problem, readout the freeze DTC by following the DTC readout procedure (page 5-13).

MCS INFORMATION

- The MCS can read out the DTC, stored data, current data and other ECM condition.

How to connect the MCS

Turn the ignition switch OFF.

Remove the left side cover (page 2-4).

Remove the DLC [1] from the dummy connector [2] on the wire harness.

Connect the MCS to the DLC.

Turn the ignition switch ON with the engine stop switch "○" and check the DTC.

NOTE:

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

DTC READOUT

Current DTC

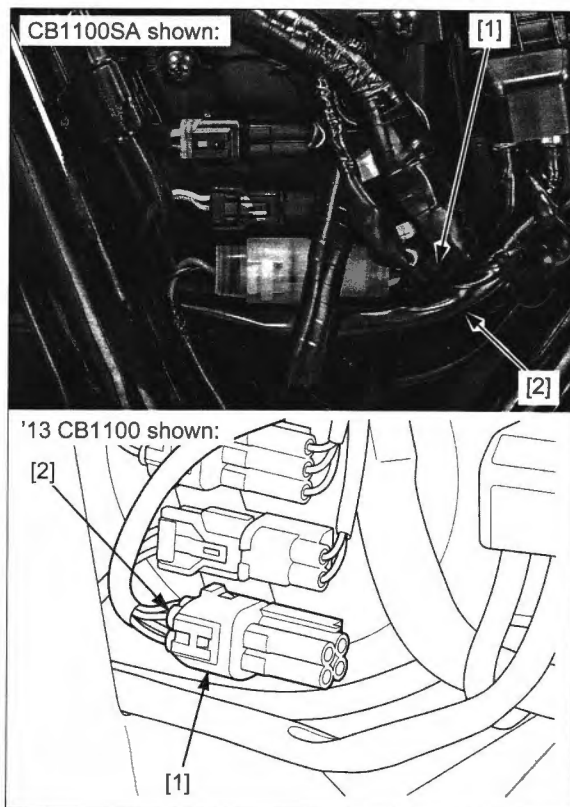
Turn the ignition switch ON with the engine stop switch "○" and check the MIL.

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

If the MIL blinks, connect the MCS to the DLC (page 5-13).

Read the DTC, stored data and follow the DTC index (page 5-15).

- If the MIL does not blink, the system is normal at present. If you wish to read the stored DTC, connect the MCS to the DLC.
- If the MCS is not available, note how many times the MIL blinks and follow the DTC index (page 5-15). If you wish to read the stored DTC, perform the following.



FUEL SYSTEM (PGM-FI)

Reading stored DTC with the MIL

Turn the ignition switch OFF.

Remove the left side cover (page 2-4).

Remove the DLC [1] from the dummy connector [2] on the wire harness and short the DLC terminals using the special tool.

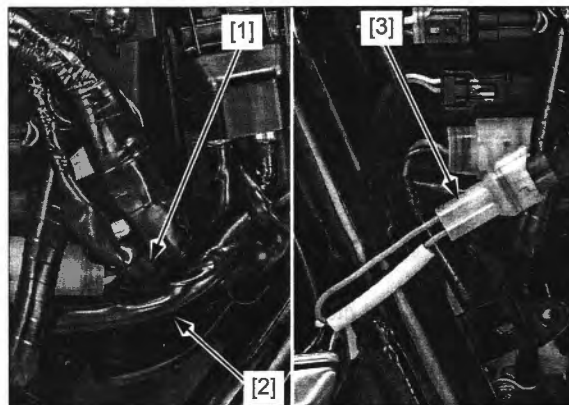
TOOL:

[3] SCS service connector 070PZ-ZY30100

CONNECTION: Brown – Green

Turn the ignition switch ON with the engine stop switch "O", read the MIL blinks and refer to the DTC index (page 5-15).

- If the ECM has stored DTC in its memory, the MIL will illuminate 0.3 seconds and go off, then start blinking as its DTC when you turn the ignition switch ON.
- If the ECM has no stored DTC, the MIL will illuminate and stay on when you turn the ignition switch ON.



ERASING STORED DTC

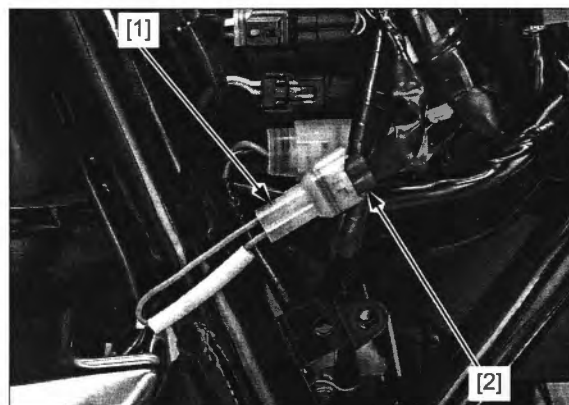
NOTE:

- The stored DTC cannot be erased by simply disconnecting the battery negative cable.

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

How to erase the DTC without MCS

1. Connect the SCS connector to the DLC (page 5-14).
 2. Turn the ignition switch ON with the engine stop switch "O".
 3. Disconnect the SCS connector [1] from the DLC [2].
Connect the SCS connector to the DLC again while the MIL stays ON within 5 seconds (reset receiving pattern).
 4. 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.
 - Note that the self-diagnostic memory cannot be erased if the ignition switch is turned OFF before the MIL starts blinking.



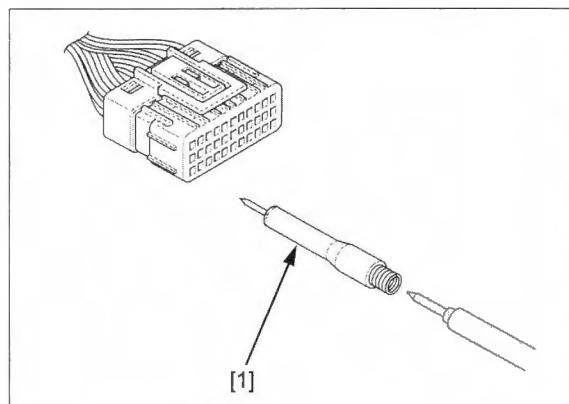
CIRCUIT INSPECTION

INSPECTION AT ECM CONNECTOR

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

TOOL:

Test probe, 2 pack 07ZAJ-RDJA110



DTC INDEX

DTC (MIL blinks)	Function Failure	Symptom/Fail-safe function	Refer to
1-1 (1)	MAP sensor circuit low voltage (less than 0.2 V) • MAP sensor or its circuit malfunction	• Engine operates normally	5-17
1-2 (1)	MAP sensor circuit high voltage (more than 3.9 V) • Loose or poor contact of the MAP sensor connector • MAP sensor or its circuit malfunction	• Engine operates normally	5-18
2-1 (2)	MAP sensor hose connection • Disconnection or poor connection of the MAP sensor hoses • MAP sensor malfunction	• Engine operates normally	5-20
7-1 (7)	EOT sensor circuit low voltage (less than 0.04 V) • EOT sensor or its circuit malfunction	• Hard start at a low temperature • Fail-safe value: 130°C/266°F	5-21
7-2 (7)	EOT sensor circuit high voltage (more than 4.93 V) • Loose or poor contact of the ECT sensor connector • ECT sensor or its circuit malfunction	• Hard start at a low temperature • Fail-safe value: 130°C/266°F	5-22
8-1 (8)	TP sensor circuit low voltage (less than 0.3 V) • Loose or poor contact of the TP sensor connector • TP sensor or its circuit malfunction	• Poor engine acceleration • Fail-safe value: 0°	5-23
8-2 (8)	TP sensor circuit high voltage (more than 4.93 V) • TP sensor or its circuit malfunction	• Poor engine acceleration • Fail-safe value: 0°	5-25
9-1 (9)	IAT sensor circuit low voltage (less than 0.07 V) • IAT sensor or its circuit malfunction	• Engine operates normally • Fail-safe value: 35°C/95°F	5-26
9-2 (9)	IAT sensor circuit high voltage (more than 4.93 V) • Loose or poor contact of the IAT sensor connector • IAT sensor or its circuit malfunction	• Engine operates normally • Fail-safe value: 35°C/95°F	5-27
11-1 (11) (13 model)	Rear wheel speed sensor no signal • Loose or poor contact of the rear wheel speed sensor connector • Rear wheel speed sensor or its circuit malfunction	• Engine operates normally	5-28
11-1 (11) (After '13 model)	Rear wheel speed sensor no signal • Loose or poor contact of the rear wheel speed sensor connector • Rear wheel speed sensor or its circuit malfunction	• Engine operates normally • Fail-safe value: 5 km/h	5-29
12-1 (12)	No. 1 fuel injector circuit malfunction • Loose or poor contact of the fuel injector connector • Fuel injector or its circuit malfunction	• Engine does not start • Fuel injectors, fuel pump and ignition shut down	5-31
13-1 (13)	No. 2 fuel injector circuit malfunction • Loose or poor contact of the fuel injector connector • Fuel injector or its circuit malfunction	• Engine does not start • Fuel injectors, fuel pump and ignition shut down	5-32
14-1 (14)	No. 3 fuel injector circuit malfunction • Loose or poor contact of the fuel injector connector • Fuel injector or its circuit malfunction	• Engine does not start • Fuel injectors, fuel pump and ignition shut down	5-32
15-1 (15)	No. 4 fuel injector circuit malfunction • Loose or poor contact of the fuel injector connector • Fuel injector or its circuit malfunction	• Engine does not start • Fuel injectors, fuel pump and ignition shut down	5-32
21-1 (21) (CB1100/A)	O ₂ sensor malfunction • Loose or poor contact of the O ₂ sensor connector • O ₂ sensor or its circuit malfunction	• Engine operates normally	5-33
21-1 (21) (CB1100SA)	No.1 O ₂ sensor malfunction • Loose or poor contact of the O ₂ sensor connector • O ₂ sensor or its circuit malfunction	• Engine operates normally	5-34
22-1 (22) (CB1100SA)	No.2 O ₂ sensor malfunction • Loose or poor contact of the O ₂ sensor connector • O ₂ sensor or its circuit malfunction	• Engine operates normally	5-35
23-1 (23) (CB1100/A)	O ₂ sensor heater circuit malfunction • Loose or poor contact of the O ₂ sensor connector • O ₂ sensor heater or its circuit malfunction	• Engine operates normally	5-37
23-1 (23) (CB1100SA)	No.1 O ₂ sensor heater circuit malfunction • Loose or poor contact of the O ₂ sensor connector • O ₂ sensor heater or its circuit malfunction	• Engine operates normally	5-38

FUEL SYSTEM (PGM-FI)

DTC (MIL blinks)	Function Failure	Symptom/Fail-safe function	Refer to
24-1 (24) (CB1100SA)	No.2 O ₂ sensor heater circuit malfunction • Loose or poor contact of the O₂ sensor connector • O₂ sensor heater or its circuit malfunction	• Engine operates normally	5-39
29-1 (29)	IACV circuit malfunction • Loose or poor contact of the IACV connector • IACV or its circuit malfunction	• Engine stalls, hard to start, rough idling	5-41
86-1 (86) (After '13 model)	Serial communication malfunction • Loose or poor contact of the related connector • Faulty combination meter or its circuit malfunction • Faulty ECM	• Engine operates normally	5-42

DTC TROUBLESHOOTING

DTC 1-1 (MAP SENSOR LOW VOLTAGE)

- Before starting the inspection, check for loose or poor contact on the MAP sensor 3P (Black) connector, fuel injector sub-harness 10P (Black) connector, and the ECM 33P connectors, then recheck the DTC.

1. MAP Sensor System Inspection

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

Check the MAP sensor with the MCS.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. MAP Sensor Input Voltage Inspection

Turn the ignition switch OFF.

Disconnect the MAP sensor 3P (Black) connector [1].

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

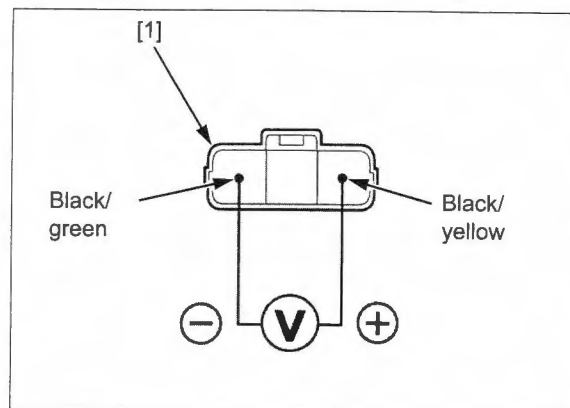
Measure the voltage at the wire harness side.

CONNECTION: Black/yellow (+) – Black/green (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 4.

NO – GO TO STEP 3.



3. MAP Sensor Input Line Inspection

Turn the ignition switch OFF.

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

Check for continuity at the Black/yellow, Yellow/red wire between the MAP sensor 3P (Black) connector [2] terminal and the ECM 33P (Black) connector.

CONNECTION: A9 – Black/yellow

TOOL:

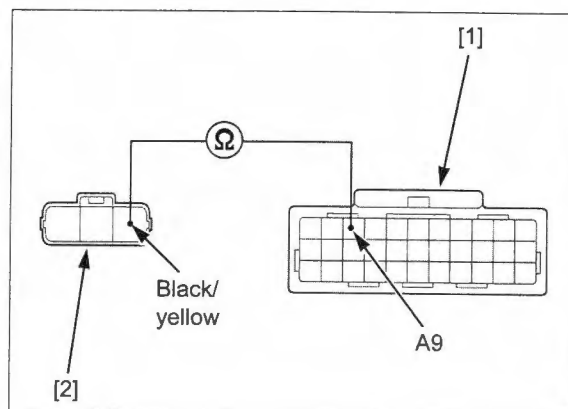
Test probe, 2 pack

07ZAJ-RDJA110

Is there continuity?

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

NO – Open circuit in Black/yellow or Yellow/red wires



FUEL SYSTEM (PGM-FI)

4. MAP Sensor Output Line Short Circuit Inspection

Turn the ignition switch OFF.

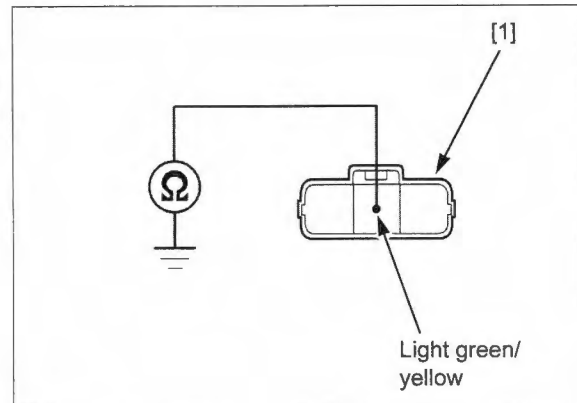
Check for continuity between the MAP sensor 3P (Black) connector [1] terminal of the wire harness side and ground.

CONNECTION: Light green/yellow – Ground

Is there continuity?

YES – Short circuit in Light green/yellow wire

NO – GO TO STEP 5.



5. MAP Sensor Inspection

Replace the MAP sensor with a known good one (page 5-76).

Clear the ECM self-diagnosis memory data (page 5-14).

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

Check the MAP sensor with the MCS.

Is DTC 1-1 indicated?

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

NO – Faulty original MAP sensor

DTC 1-2 (MAP SENSOR HIGH VOLTAGE)

- Before starting the inspection, check for loose or poor contact on the MAP sensor 3P (Black) connector, fuel injector sub-harness 10P (Black) connector, and the ECM 33P connectors, then recheck the DTC.

1. MAP Sensor System Inspection 1

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

Check the MAP sensor with the MCS.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. MAP Sensor System Inspection 2

Turn the ignition switch OFF.

Disconnect the MAP sensor 3P (Black) connector [1].

Connect the MAP sensor terminals at the wire harness side with a jumper wire [2].

CONNECTION: Light green/yellow – Black/green

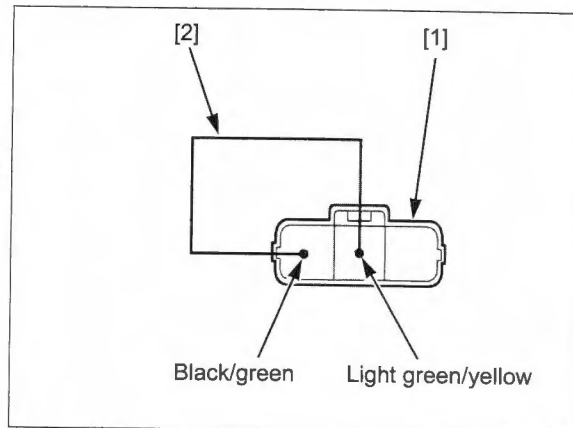
Turn the ignition switch ON and engine stop switch "O".

Check the MAP sensor with the MCS.

Is about 0 V indicated?

YES – Faulty MAP sensor

NO – GO TO STEP 3.



3. MAP Sensor Input Voltage Inspection

Turn the ignition switch OFF.

Remove the jumper wire.

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

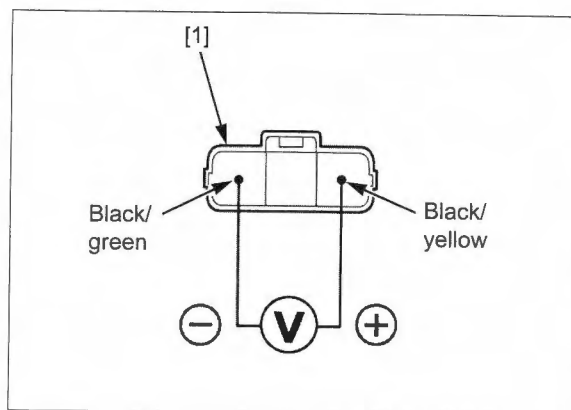
Measure the voltage at the MAP sensor 3P (Black) connector [1] terminal of the wire harness side.

CONNECTION: Black/yellow (+) – Black/green (-)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 4.

NO – • Open circuit in Black/yellow or Yellow/red wires
• Open circuit in Black/green or Green/orange wires



4. MAP Sensor Output Line Open Circuit Inspection

Turn the ignition switch OFF.

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

Check for continuity at the Light green/yellow wire between the MAP sensor 3P (Black) connector [2] terminal and the ECM 33P (Gray) connector.

CONNECTION: B28 – Light green/yellow

TOOL:

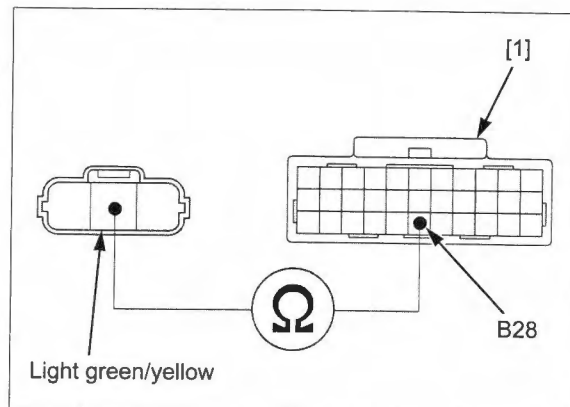
Test probe, 2 pack

07ZAJ-RDJA110

Is there continuity?

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

NO – Open circuit in Light green/yellow wire



DTC 2-1 (MAP SENSOR HOSE CONNECTION)

- Before starting the inspection, check for loose or poor contact on the MAP sensor 3P (Black) connector, fuel injector sub-harness 10P (Black) connector, and the ECM 33P connectors, then recheck the DTC.

1. MAP Sensor System Inspection

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

Start the engine and check the MAP sensor with the MCS at idle speed.

Is the reading changed?

YES – Intermittent failure

NO – GO TO STEP 2.

2. MAP sensor hose inspection

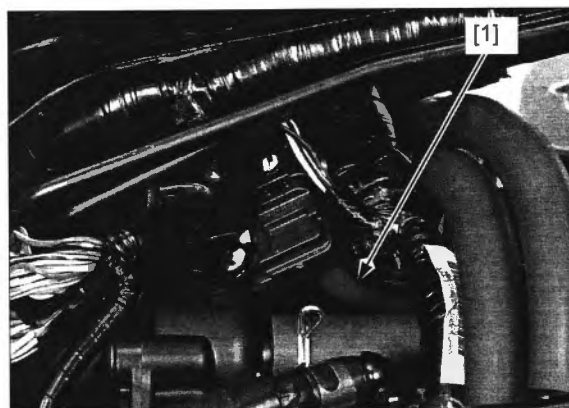
Turn the ignition switch OFF.

Check for connection and installation of the MAP sensor vacuum hose [1].

Is the MAP sensor vacuum hose connection correct?

YES – GO TO STEP 3.

NO – Correct the hose installation



3. MAP Sensor System Inspection

Replace the MAP sensor with a known good one (page 5-76).

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

Start the engine and check the MAP sensor with the MCS at idle speed.

Is the reading changed?

YES – Faulty original MAP sensor

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

DTC 7-1 (EOT SENSOR LOW VOLTAGE)

- Before starting the inspection, check for loose or poor contact on the EOT sensor 2P (Black) connector and the ECM 33P connectors, then recheck the DTC.

1. EOT Sensor System Inspection

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

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 [1].

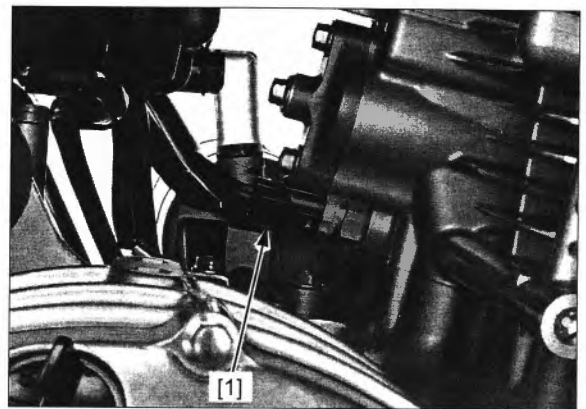
Turn the ignition switch ON and engine stop switch "○".

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.

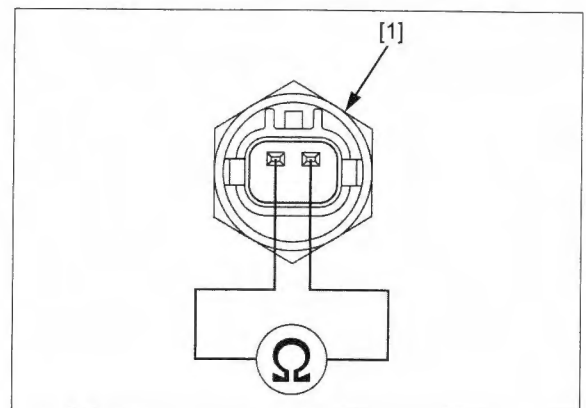
Measure the resistance at the EOT sensor [1] terminals.

STANDARD: 2.4 – 2.9 kΩ (20°C/68°F)

Is the resistance within 2.4 – 2.9 kΩ?

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

NO – Faulty EOT sensor.

**4. EOT Sensor Short Circuit Inspection**

Turn the ignition switch OFF.

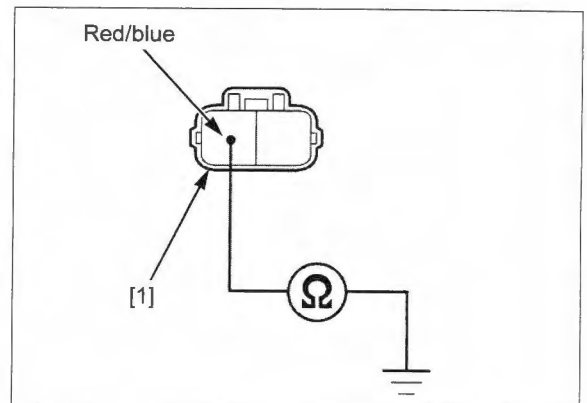
Check for continuity between the EOT sensor 2P (Black) connector [1] terminal of the wire harness side and ground.

CONNECTION: Red/blue – Ground

Is there continuity?

YES – Short circuit in Red/blue wire

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



FUEL SYSTEM (PGM-FI)

DTC 7-2 (EOT SENSOR HIGH VOLTAGE)

- Before starting the inspection, check for loose or poor contact on the EOT sensor 2P (Black) connector and the ECM 33P connectors, then recheck the DTC.

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 [1].

Connect the EOT sensor terminals with a jumper wire [2].

CONNECTION: Red/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 – Inspect the EOT sensor (page 5-77).

NO – GO TO STEP 3.

3. EOT Sensor Output Line Inspection

Turn the ignition switch OFF.

Remove the jumper wire.

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

Check the continuity between the ECM connectors and EOT sensor 2P (Black) connector [3] of the wire harness side.

**CONNECTION: B27 – Red/blue
A18 – Green/orange**

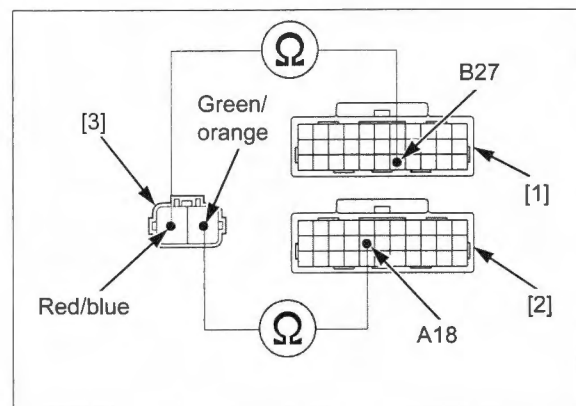
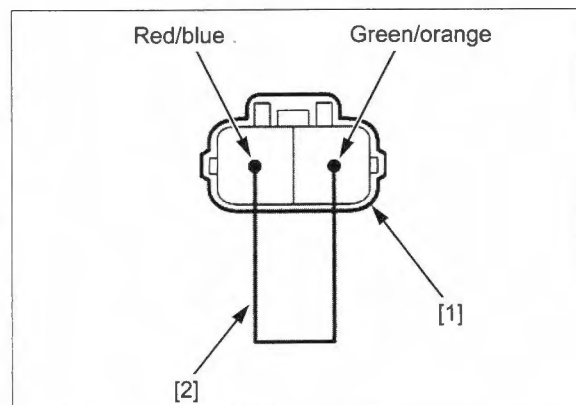
TOOL:

Test probe, 2 pack 07ZAJ-RDJA110

Are there continuities?

YES – Replace the ECM with new one and recheck.

NO – • Open circuit in Red/blue wire
• Open circuit in Green/orange wire



DTC 8-1 (TP SENSOR LOW VOLTAGE)

- Before starting the inspection, check for loose or poor contact on the TP sensor 3P (Black) connector, fuel injector sub-harness 10P (Black) connector, and the ECM 33P connectors, then recheck the DTC.

1. TP Sensor System Inspection

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

Check the TP sensor with the MCS with the throttle fully closed.

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – GO TO STEP 2.

2. TP Sensor Inspection

Check the TP sensor voltage is increasing uninterrupted 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 Input Voltage Inspection

Turn the ignition switch OFF.

Disconnect the TP sensor 3P (Black) connector [1].

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

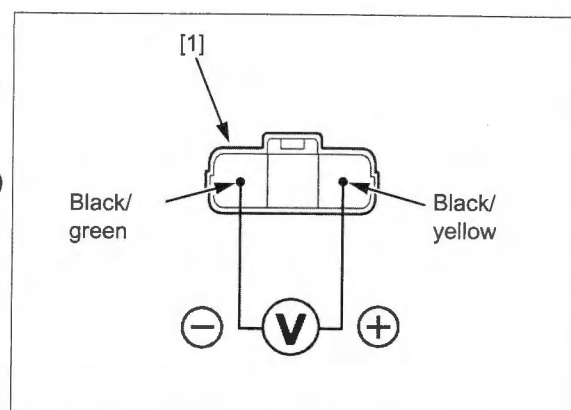
Measure the voltage at the wire harness side.

CONNECTION: Black/yellow (+) – Black/green (–)

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 5.

NO – GO TO STEP 4.

**4. TP Sensor Circuit Inspection**

Turn the ignition switch OFF.

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

Check the continuity at the Black/yellow, Yellow/red wire between the TP sensor 3P (Black) connector [2] terminal and the ECM 33P (Black) connector.

CONNECTION: A9 – Black/yellow

TOOL:

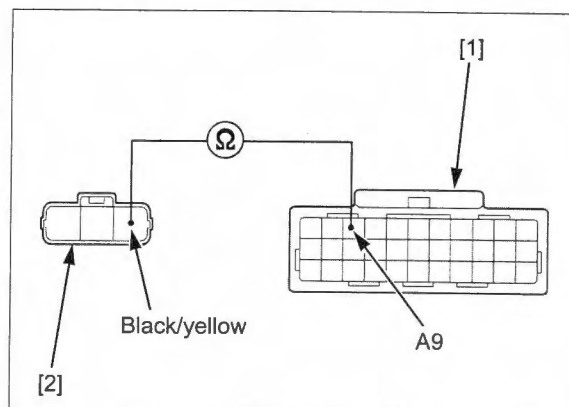
Test probe, 2 pack

07ZAJ-RDJA110

Is there continuity?

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

NO – Open circuit in Black/yellow or Yellow/red wires



FUEL SYSTEM (PGM-FI)

5. TP Sensor Output Line Open Circuit Inspection

Turn the ignition switch OFF.

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

Check for continuity at the Black/red, Red/yellow wire between the TP sensor 3P (Black) connector [2] terminal and the ECM 33P (Gray) connector.

CONNECTION: B31 – Black/red

B17 – Black/red

TOOL:

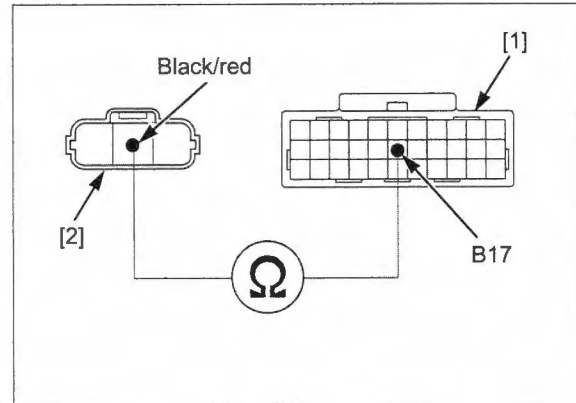
Test probe, 2 pack

07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 6.

NO – Open circuit in Black/red or Red/yellow wires



6. TP Sensor Output Line Short Circuit Inspection

Connect the ECM 33P (Gray) connector.

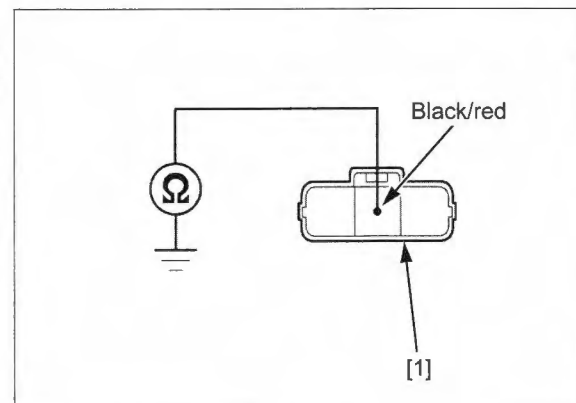
Check for continuity between the TP sensor 3P (Black) connector [1] terminal of the wire harness side and ground.

CONNECTION: Black/red – Ground

Is there continuity?

YES – Short circuit in Black/red or Red/yellow wires

NO – GO TO STEP 7.



7. TP Sensor Inspection

Replace the throttle body (page 5-58).

Clear the ECM self-diagnosis memory data

(page 5-14).

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

Check the TP sensor with the MCS.

Is DTC 8-1 indicated?

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

NO – Faulty original TP sensor

DTC 8-2 (TP SENSOR HIGH VOLTAGE)

- Before starting the inspection, check for loose or poor contact on the TP sensor 3P (Black) connector, fuel injector sub-harness 10P (Black) connector, and the ECM 33P connectors, then recheck the DTC.

1. TP Sensor System Inspection

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

Check the TP sensor with the MCS.

Is about 5 V indicated?

YES – GO TO STEP 3.

NO – GO TO STEP 2.

2. TP Sensor Inspection

Check the TP sensor voltage is increasing uninterrupted 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.

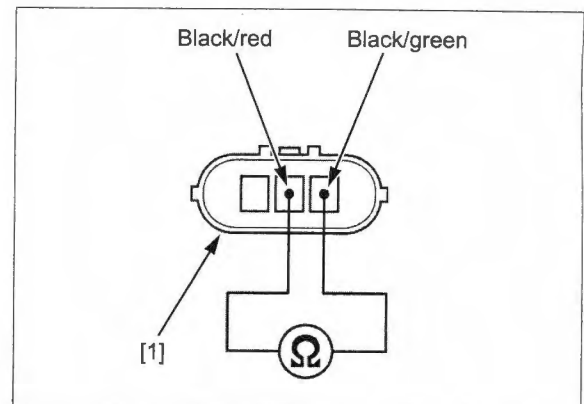
Disconnect the TP sensor 3P (Black) connector. Measure the resistance at the TP sensor [1] side.

CONNECTION: Black/red – Black/green

Is the resistance within 0.5 – 1.5 kΩ?

YES – GO TO STEP 4.

NO – Faulty TP sensor

**4. TP Sensor Input Voltage Inspection**

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

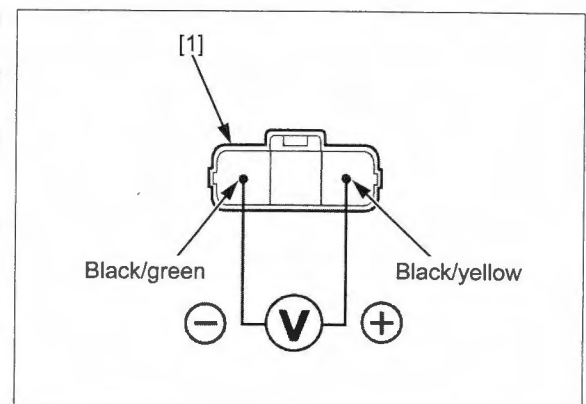
Measure the voltage at the TP sensor 3P (Black) connector [1] terminal of the wire harness side.

CONNECTION: Black/yellow (+) – Black/green (–)

Is the voltage within 4.75 – 5.25 V?

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

NO – Open circuit in Black/green or Green/orange wires



FUEL SYSTEM (PGM-FI)

DTC 9-1 (IAT SENSOR LOW VOLTAGE)

- Before starting the inspection, check for loose or poor contact on the IAT sensor 2P (Black) connector and the ECM 33P connectors, then recheck the DTC.

1. IAT Sensor System Inspection

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

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 [1].

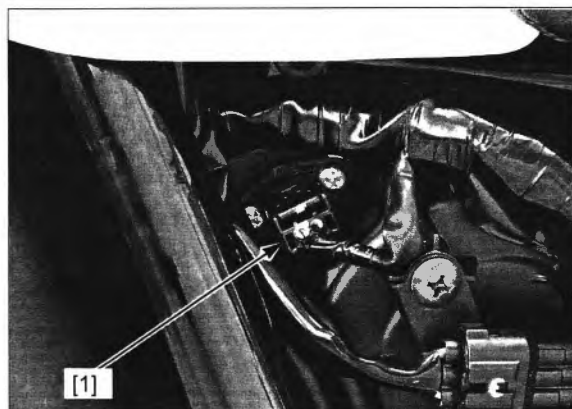
Turn the ignition switch ON and engine stop switch "○".

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.

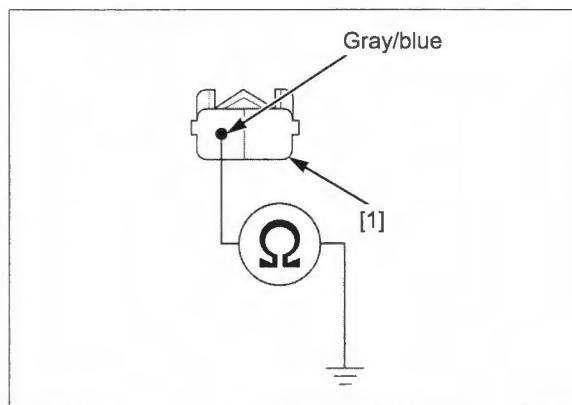
Check for continuity between the IAT sensor 2P (Black) connector [1] terminal of the wire harness side and ground.

CONNECTION: Gray/blue – Ground

Is there continuity?

YES – Short circuit in Gray/blue wire

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



DTC 9-2 (IAT SENSOR HIGH VOLTAGE)

- Before starting the inspection, check for loose or poor contact on the IAT sensor 2P (Black) connector and the ECM 33P connectors, then recheck the DTC.

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 [1]. Connect the IAT sensor terminals with a jumper wire [2].

CONNECTION: Gray/blue – Green/orange

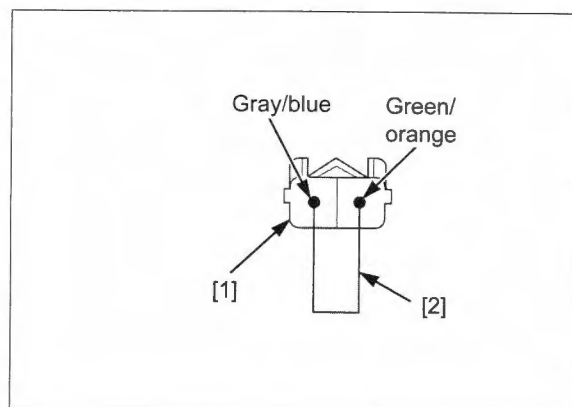
Turn the ignition switch ON and engine stop switch "O".

Check the IAT sensor with the MCS.

Is about 0 V indicated?

YES – Faulty IAT sensor

NO – GO TO STEP 3.

**3. IAT Sensor Output Line Inspection**

Turn the ignition switch OFF.

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

Check the continuity at the Gray/blue and Green/orange wires between the IAT sensor 2P (Black) connector [3] terminals and the ECM 33P connectors.

CONNECTION: B29 – Gray/blue

A18 – Green/orange

TOOL:

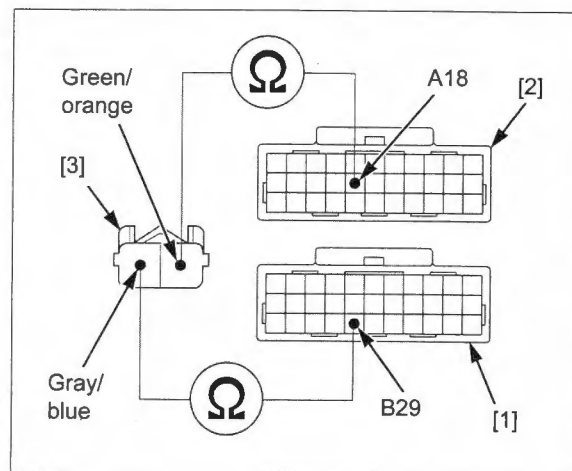
Test probe, 2 pack

07ZAJ-RDJA110

Are there continuities?

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

NO – • Open circuit in Gray/blue wire
• Open circuit in Green/orange wire



DTC 11-1 (REAR WHEEL SPEED SENSOR: '13)

- Before starting the inspection, check the speedometer/rear wheel speed sensor.
 - CB1100A (page 19-18)
 - CB1100 (page 19-18)
- Before starting the inspection, check for loose or poor contact on the following connectors, then recheck the DTC.
 - rear wheel speed sensor 2P (Blue) connector
 - combination meter 10P (Black) connector (CB1100)
 - ABS modulator 25P connector (CB1100A)
 - ABS sub-harness connectors (CB1100A)

1. Rear Wheel Speed Sensor System Inspection

Clear the ECM self-diagnosis memory data (page 5-14).

Test ride the motorcycle.

Stop the engine.

Turn the ignition switch ON and engine stop switch

" $\odot$ ".

Check the rear wheel speed sensor with the MCS.

Is DTC 11-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. Rear Wheel Speed Sensor Pulse Line Open Circuit Inspection

Turn the ignition switch OFF.

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

CB1100A:

Disconnect the ABS modulator 25P connector [2].

Check the continuity between the ECM 33P (Gray) connector terminal and ABS modulator 25P connector terminal of the wire harness side.

CB1100:

Disconnect the combination meter 10P (Black) connector [3].

Check the continuity between the ECM 33P (Gray) connector terminal and combination meter 10P (Black) connector terminal of the wire harness side.

CONNECTION: B28 – Pink/green
B21 – Pink/green

TOOL:

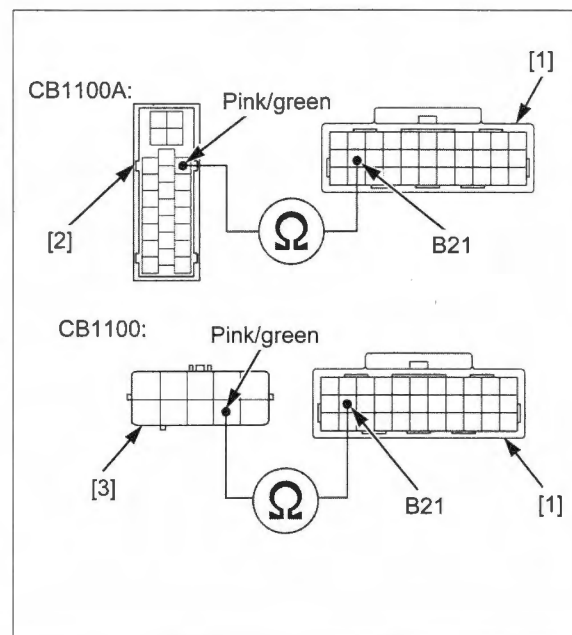
Test probe, 2 pack

07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 3.

NO – Open circuit in Pink/green wire



3. Rear Wheel Speed Sensor Pulse Line Short Circuit Inspection

CB1100A:

Check for continuity between the ABS modulator 25P connector [1] of the wire harness side and body ground.

CB1100:

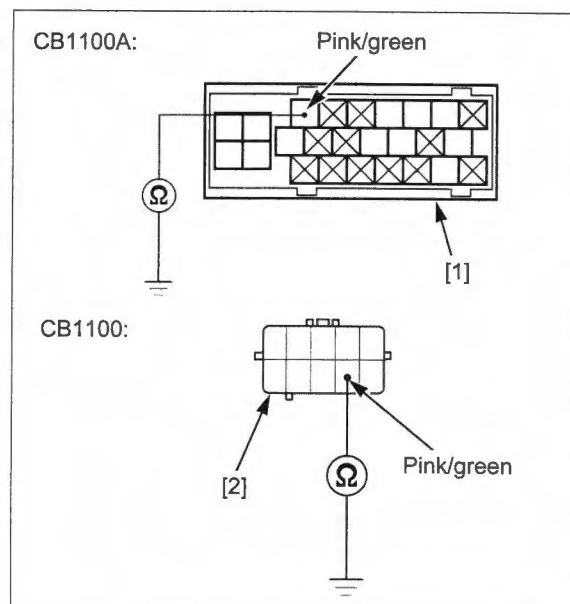
Check for continuity between the combination meter 10P (Black) connector [2] of the wire harness side and body ground.

CONNECTION: Pink/green – Ground

Is there continuity?

YES – Short circuit in Pink/green wire

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



DTC 11-1 (REAR WHEEL SPEED SENSOR: After '13)

- Before starting the inspection, check for loose or poor contact on the following connectors, then recheck the DTC.
 - rear wheel speed sensor 2P (Blue) connector
 - combination meter 10P (Black) connector
 - ABS modulator 18P connector (CB1100A/SA)
 - ABS sub-harness connectors (CB1100A/SA)

1. Rear Wheel Speed Sensor System Inspection

Erase the DTC (page 5-14).

Test ride the motorcycle above 3,600 rpm.

Stop the engine.

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

Check the rear wheel speed sensor with the MCS.

Is DTC 11-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

FUEL SYSTEM (PGM-FI)

2. Rear Wheel Speed Sensor Signal Line Open Circuit Inspection

Turn the ignition switch OFF.
Disconnect the combination meter 10P (Black) connector [1].

CB1100A/SA:
Disconnect the ABS modulator 18P connector [2].
Check the continuity between the combination meter 10P (Black) connector terminal and ABS modulator 18P connector terminal of the wire harness side.

CONNECTION: Pink/green – Pink/green

TOOL:

Test probe, 2 pack

07ZAJ-RDJA110

CB1100:
Disconnect the rear wheel speed sensor 2P (Blue) connector [3].

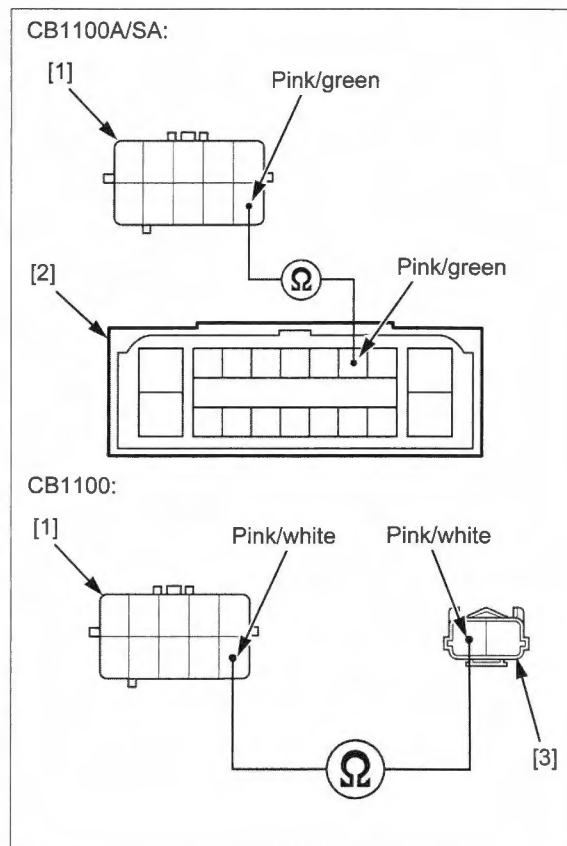
Check the continuity between the combination meter 10P (Black) connector terminal and rear wheel speed sensor 2P (Blue) connector terminal of the wire harness side.

CONNECTION: Pink/white – Pink/white

Is there continuity?

YES – GO TO STEP 3.

NO – • Open circuit in Pink/green wire (CB1100A/SA)
• Open circuit in Pink/white wire (CB1100)



3. Rear Wheel Speed Sensor Signal Line Short Circuit Inspection

CB1100A/SA:
Check for continuity between the ABS modulator 18P connector [1] of the wire harness side and body ground.

CONNECTION: Pink/green – Ground

TOOL:

Test probe, 2 pack

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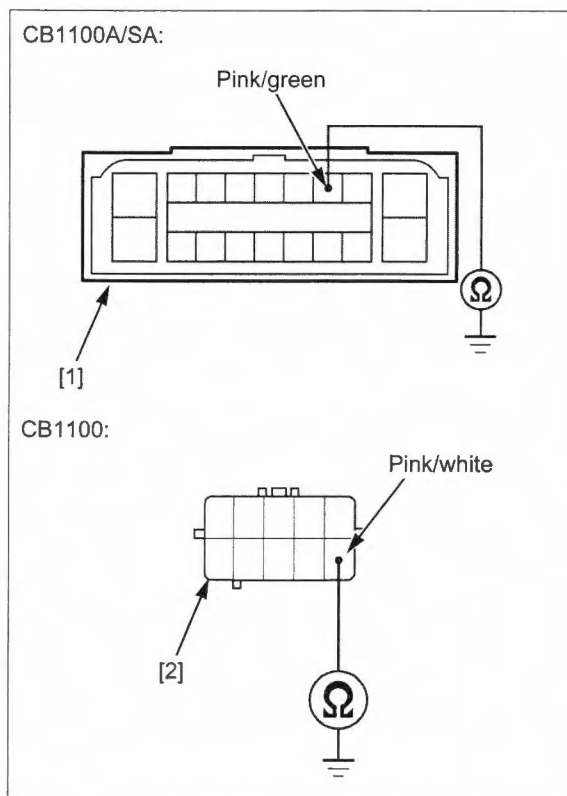
CB1100:
Check for continuity between the combination meter 10P (Black) connector [2] of the wire harness side and body ground.

CONNECTION: Pink/white – Ground

Is there continuity?

YES – • Short circuit in Pink/green wire (CB1100A/SA)
• Short circuit in Pink/white wire (CB1100)

NO – GO TO STEP 4.



4. Rear wheel Speed Sensor Inspection

Check for operation of rear wheel speed sensor (page 15-42).

Does the rear wheel speed sensor operate normally?

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

NO – Faulty rear wheel speed sensor or its related circuits

DTC 12-1 (No.1 FUEL INJECTOR)

- Before starting the inspection, check for loose or poor contact on the fuel injector 2P (Black) connectors, fuel injector sub-harness 10P (Black) connector, and the ECM 33P connectors, then recheck the DTC.

DTC	FUEL INJECTOR	POWER INPUT LINE	SIGNAL LINE	SIGNAL AT ECM
12-1	No.1	Black/white	Pink/yellow	A33
13-1	No.2	Black/white	Pink/blue	A22
14-1	No.3	Black/white	Pink/green	A11
15-1	No.4	Black/white	Pink/black	A10

1. Fuel Injector System Inspection

Clear the ECM self-diagnosis memory data (page 5-14).

Turn the ignition switch ON and engine stop switch "○", then start the engine and check the fuel injector with the MCS.

Is the 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 [1].

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

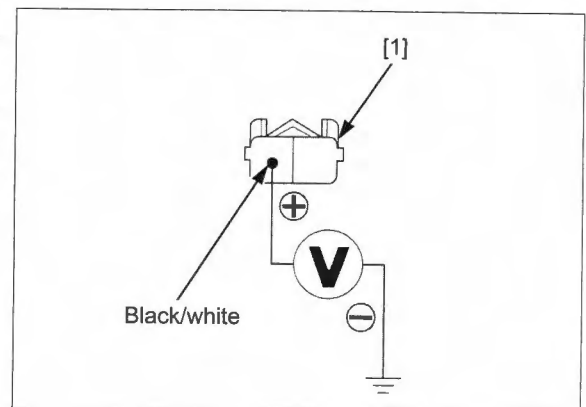
Measure the voltage between the fuel injector 2P (Black) connector of the wire harness side and ground.

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

Is there battery voltage?

YES – GO TO STEP 3.

NO – Open or short circuit in Black/white wire



FUEL SYSTEM (PGM-FI)

3. Fuel Injector Resistance Inspection

Turn the ignition switch OFF.

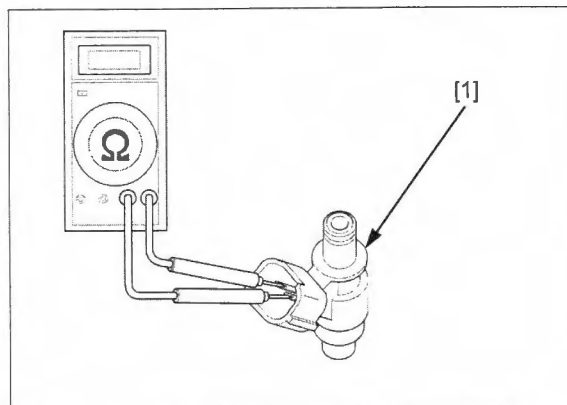
Measure the resistance of the fuel injector [1] connector terminals.

STANDARD: 11.4 – 12.6 Ω (20 °C/68 °F)

Is the resistance within specification?

YES – GO TO STEP 4.

NO – Faulty fuel injector



4. Fuel Injector Signal Line Open Circuit Inspection

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

CONNECTION: SIGNAL LINE – SIGNAL LINE

TOOL:

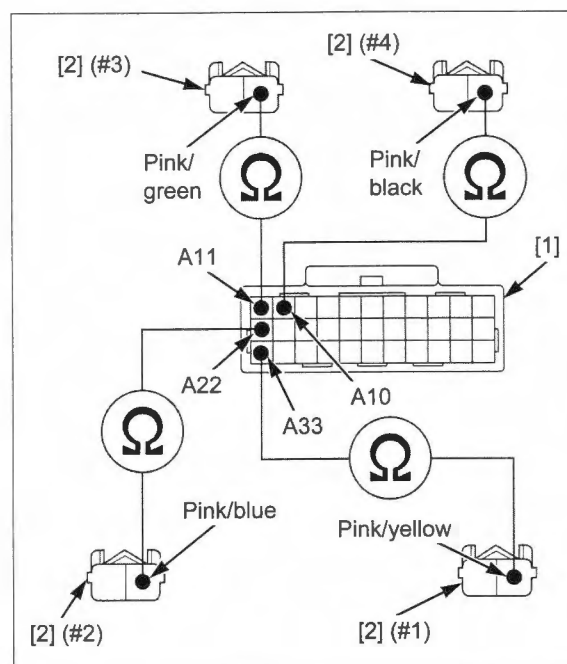
Test probe, 2 pack

07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in SIGNAL line wire



5. Fuel Injector Signal Line Short Circuit Inspection

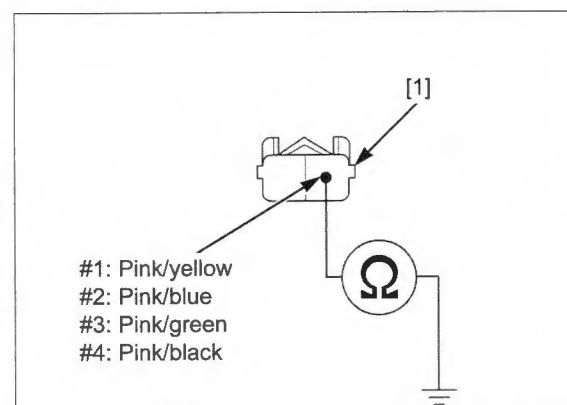
Check for continuity between the fuel injector 2P (Black) connector [1] and ground.

CONNECTION: SIGNAL LINE – Ground

Is there continuity?

YES – Short circuit in SIGNAL LINE wire

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



DTC 13-1 (No.2 FUEL INJECTOR)

See page 5-31

DTC 14-1 (No.3 FUEL INJECTOR)

See page 5-31

DTC 15-1 (No.4 FUEL INJECTOR)

See page 5-31

DTC 21-1 (O₂ SENSOR: CB1100/A)

- Before starting the inspection, check for loose or poor contact on the O₂ sensor 4P (Black) connector and the ECM 33P connectors, then recheck the DTC.

1. O₂ Sensor System Inspection

Start the engine and warm it up.

Test-ride the motorcycle and check the O₂ sensor with the MCS.

STANDARD: 0.1 V – 1.5 V

Is the voltage as specified?

- YES** – • Check the fuel pressure (page 5-48).
 • If the system is correct, GO TO STEP 4.

NO – GO TO STEP 2.

2. O₂ Sensor Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECM 33P (Gray) connector [1], 33P (Black) connector [2], and O₂ sensor 4P (Black) connector [3].

Check the continuity between the ECM 33P connectors of the wire harness side and O₂ sensor 4P (Black) connector of the wire harness side.

**CONNECTION: A18 – Green/orange
 B20 – Orange/white**

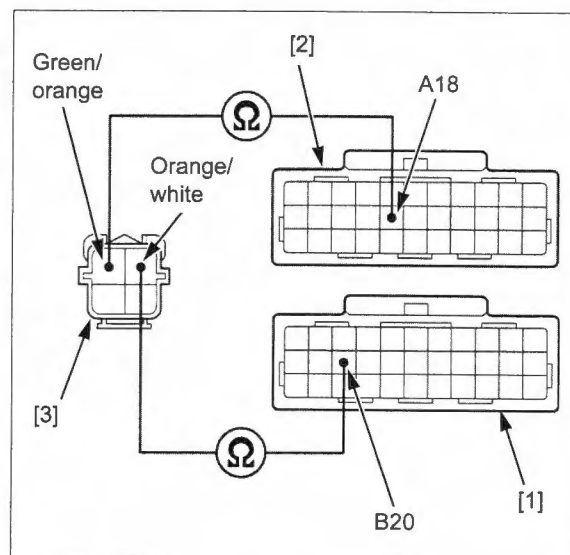
TOOL:

Test probe, 2 pack 07ZAJ-RDJA110

Are there continuities?

YES – GO TO STEP 3.

- NO** – • Open circuit in Green/orange wire
 • Open circuit in Orange/white wire

**3. O₂ Sensor Short Circuit Inspection**

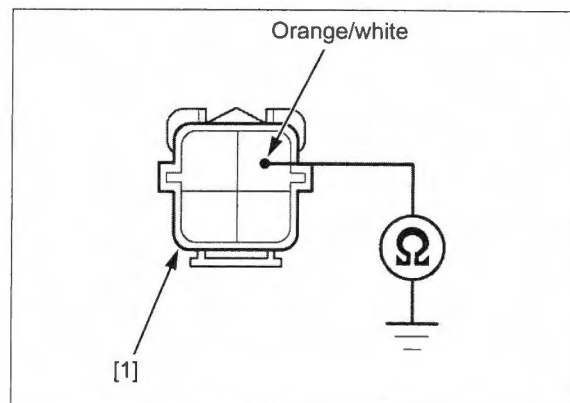
Check for continuity between the O₂ sensor 4P (Black) connector [1] terminal and ground.

CONNECTION: Orange/white – Ground

Is there continuity?

YES – Short circuit in the Orange/white wire

NO – GO TO STEP 4.



FUEL SYSTEM (PGM-FI)

4. O₂ Sensor Inspection

Connect the ECM 33P connectors.
Replace the O₂ sensor with a known good one (page 5-85).

Clear the ECM self-diagnosis memory data (page 5-14).

Start the engine and warm it up.

Test-ride the motorcycle and check the O₂ sensor with the MCS.

Is the DTC 21-1 indicated?

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

NO – Faulty original O₂ sensor

DTC 21-1 (No.1 O₂ SENSOR: CB1100SA [for left muffler])

- Before starting the inspection, check for loose or poor contact on the O₂ sensor 4P (Black) connector (behind the left side cover) and ECM 33P connectors, then recheck the DTC.

1. O₂ Sensor System Inspection

Start the engine and warm it up.

Test-ride the motorcycle and check the O₂ sensor with the MCS.

STANDARD: 0.1 V – 1.5 V

Is the voltage as specified?

YES – • Check the fuel pressure (page 5-48).
• If the system is correct, GO TO STEP 4.

NO – GO TO STEP 2.

2. O₂ Sensor Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECM 33P (Gray) connector [1], 33P (Black) connector [2], and O₂ sensor 4P (Black) connector (behind the left side cover) [3].

Check the continuity between the ECM 33P connectors of the wire harness side and the O₂ sensor 4P (Black) connector of the wire harness side.

**CONNECTION: A18 – Green/orange
B20 – Orange/white**

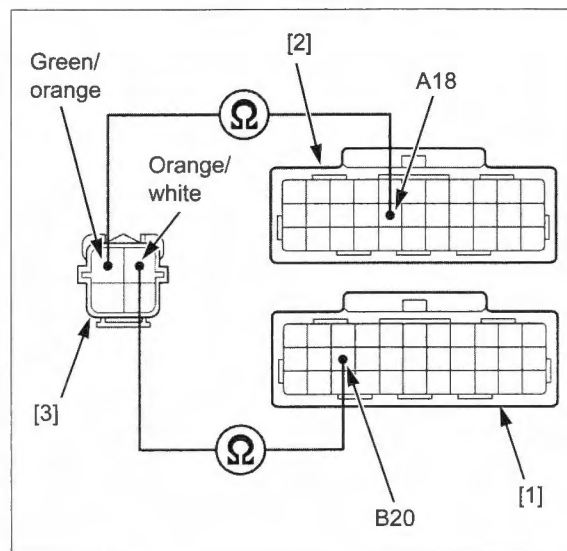
TOOL:

Test probe, 2 pack 07ZAJ-RDJA110

Are there continuities?

YES – GO TO STEP 3.

NO – • Open circuit in Green/orange wire
• Open circuit in Orange/white wire



3. O₂ Sensor Short Circuit Inspection

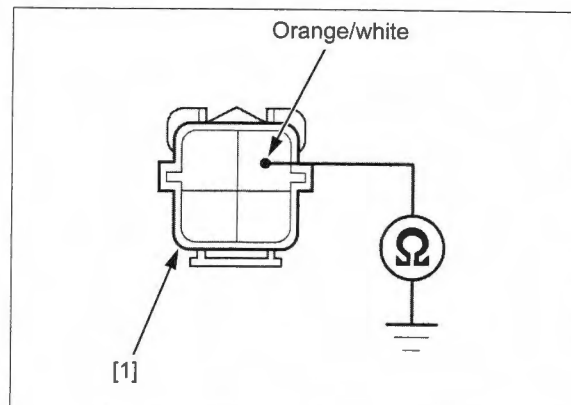
Check for continuity between the O₂ sensor 4P (Black) connector [1] terminal and ground.

CONNECTION: Orange/white – Ground

Is there continuity?

YES – Short circuit in the Orange/white wire

NO – GO TO STEP 4.



4. O₂ Sensor Inspection

Connect the ECM 33P connectors.

Replace the No.1 O₂ sensor with a known good one (page 5-85).

Erase the DTC (page 5-14).

Start the engine and warm it up.

Test-ride the motorcycle and check the O₂ sensor with the MCS.

Is the DTC 21-1 indicated?

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

NO – Faulty original O₂ sensor

DTC 22-1 (No.2 O₂ SENSOR: CB1100SA [for right muffler])

- Before starting the inspection, check for loose or poor contact on the O₂ sensor 4P (Black) connector (behind the right side cover) and the ECM 33P connectors, then recheck the DTC.

1. O₂ Sensor System Inspection

Start the engine and warm it up.

Test-ride the motorcycle and check the O₂ sensor with the MCS.

STANDARD: 0.1 V – 1.5 V

Is the voltage as specified?

YES – • Check the fuel pressure (page 5-48).
• If the system is correct, GO TO STEP 4.

NO – GO TO STEP 2.

FUEL SYSTEM (PGM-FI)

2. O₂ Sensor Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECM 33P (Gray) connector [1], 33P (Black) connector [2], and O₂ sensor 4P (Black) connector (behind the right side cover) [3].

Check the continuity between the ECM 33P connectors of the wire harness side and the O₂ sensor 4P (Black) connector of the wire harness side.

**CONNECTION: A18 – Green/orange
B30 – Orange/green**

TOOL:

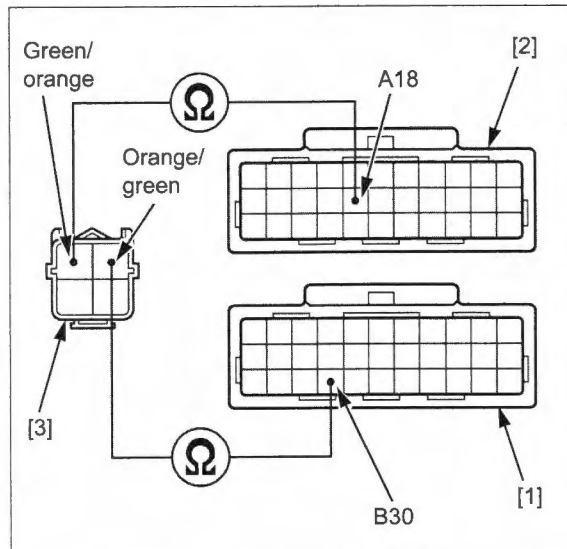
Test probe, 2 pack

07ZAJ-RDJA110

Are there continuities?

YES – GO TO STEP 3.

NO – • Open circuit in Green/orange wire
• Open circuit in Orange/green wire



3. O₂ Sensor Short Circuit Inspection

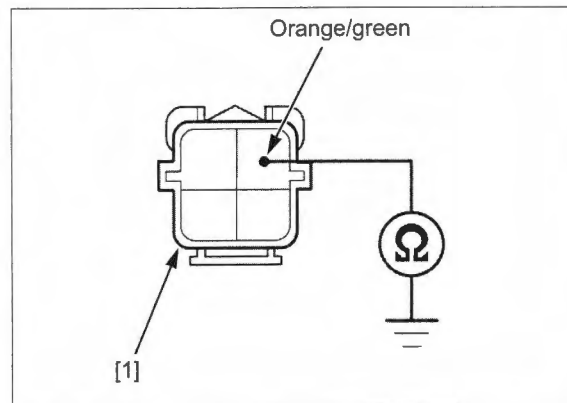
Check for continuity between the O₂ sensor 4P (Black) connector [1] terminal and ground:

CONNECTION: Orange/green – Ground

Is there continuity?

YES – Short circuit in the Orange/green wire

NO – GO TO STEP 4.



4. O₂ Sensor Inspection

Connect the ECM 33P connectors.

Replace the No.2 O₂ sensor with a known good one (page 5-85).

Erase the DTC (page 5-14).

Start the engine and warm it up.

Test-ride the motorcycle and check the O₂ sensor with the MCS.

Is the DTC 22-1 indicated?

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

NO – Faulty original O₂ sensor

**DTC 23-1 (O₂ SENSOR HEATER:
CB1100/A)**

- Before starting the inspection, check for loose or poor contact on the O₂ sensor 4P (Black) connector and the ECM 33P connectors, then recheck the DTC.

1. O₂ Sensor Heater System Inspection

Clear the ECM self-diagnosis memory data (page 5-14).

Start the engine and check the O₂ sensor heater with the MCS.

Is the DTC 23-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. O₂ Sensor Heater Resistance Inspection

Turn the ignition switch OFF.

Disconnect the O₂ sensor 4P (Black) connector [1] and measure the resistance at the O₂ sensor connector terminals of the sensor side.

'13 model:

CONNECTION: White – White

STANDARD: 5 – 20 Ω (20°C/68°F)

After '13 model:

CONNECTION: Black/green – Black/white

STANDARD: 13.0 – 18.5 Ω (20°C/68°F)

Is the resistance within the standard value?

YES – GO TO STEP 3.

NO – Faulty O₂ sensor

3. O₂ Sensor Heater Power Input Line Inspection

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

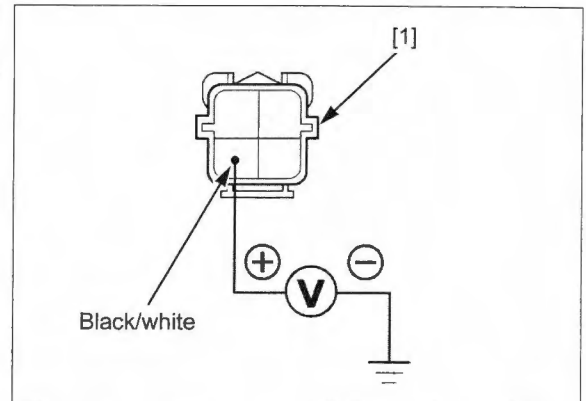
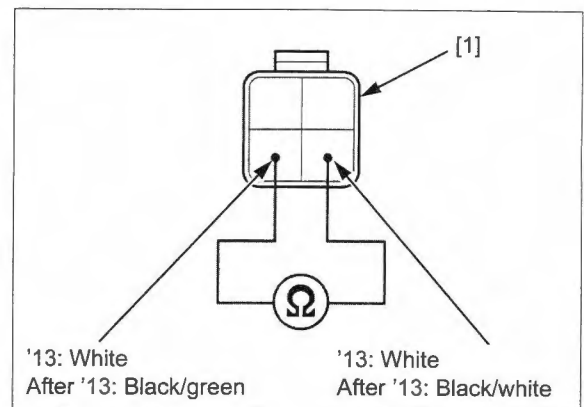
Measure the voltage between O₂ sensor 4P (Black) connector of the wire harness side and ground.

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

Is there battery voltage?

YES – GO TO STEP 4.

NO – Open circuit in the Black/white wire



FUEL SYSTEM (PGM-FI)

4. O₂ Sensor Heater Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECM 33P (Gray) connector [1].
Check the continuity between the ECM 33P (Gray) connector and the O₂ sensor 4P (Black) connector [2] of the wire harness side.

CONNECTION: B23 – Black/green

TOOL:

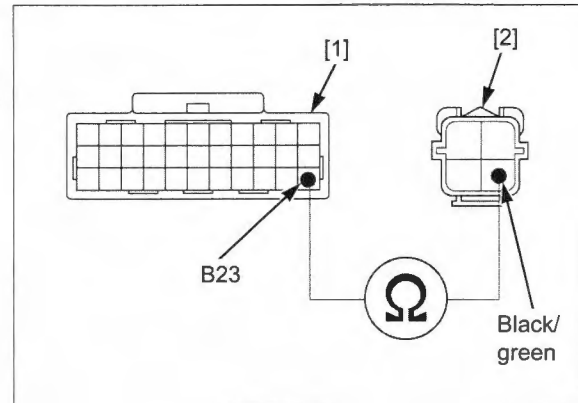
Test probe, 2 pack

07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in Black/green wire



5. O₂ Sensor Heater Short Circuit Inspection 2

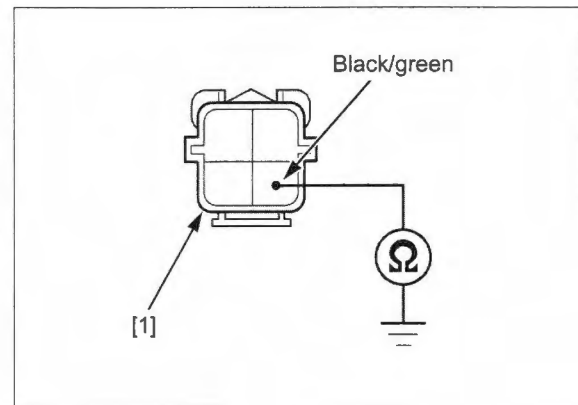
Check for continuity between the O₂ sensor heater 4P (Black) connector [1] of the wire harness side and ground.

CONNECTION: Black/green – Ground

Is there continuity?

YES – Short circuit in Black/green wire

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



DTC 23-1 (No.1 O₂ SENSOR HEATER: CB1100SA [for left muffler])

- Before starting the inspection, check for loose or poor contact on the O₂ sensor 4P (Black) connector (behind the left side cover) and the ECM 33P connectors, then recheck the DTC.

1. O₂ Sensor Heater System Inspection

Erase the DTC (page 5-14).

Start the engine and check the O₂ sensor heater with the MCS.

Is the DTC 23-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. O₂ Sensor Heater Resistance Inspection

Turn the ignition switch OFF.

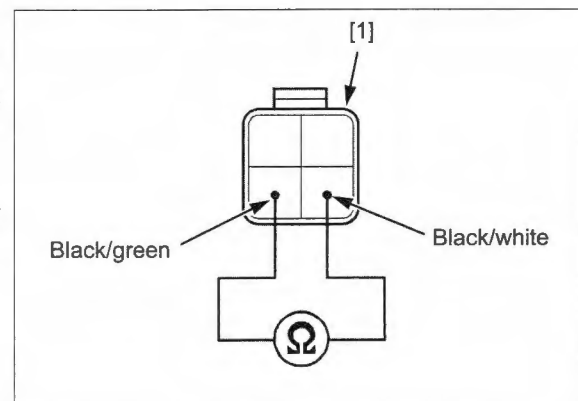
Disconnect the O₂ sensor 4P (Black) connector (behind the left side cover) [1] and measure the resistance at the O₂ sensor connector terminals of the sensor side.

CONNECTION: Black/white – Black/green

Is the resistance within 13.0 – 18.5 Ω (20°C/ 68°F)?

YES – GO TO STEP 3.

NO – Faulty O₂ sensor



3. O₂ Sensor Heater Power Input Line Inspection

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

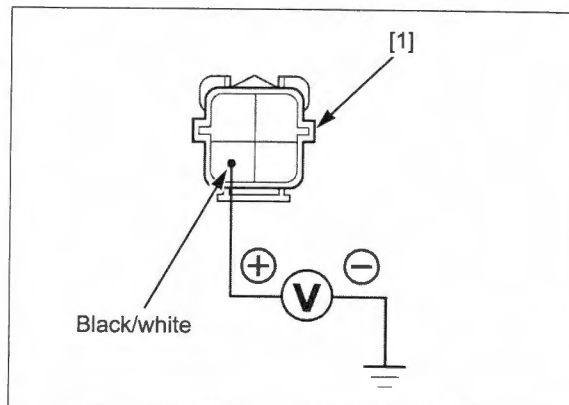
Measure the voltage between the O₂ sensor 4P (Black) connector of the wire harness side and ground.

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

Is there battery voltage?

YES – GO TO STEP 4.

NO – Open circuit in the Black/white wire



4. O₂ Sensor Heater Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECM 33P (Gray) connector [1]. Check the continuity between the ECM 33P (Gray) connector and the O₂ sensor 4P (Black) connector [2] of the wire harness side.

CONNECTION: B23 – Black/green

TOOL:

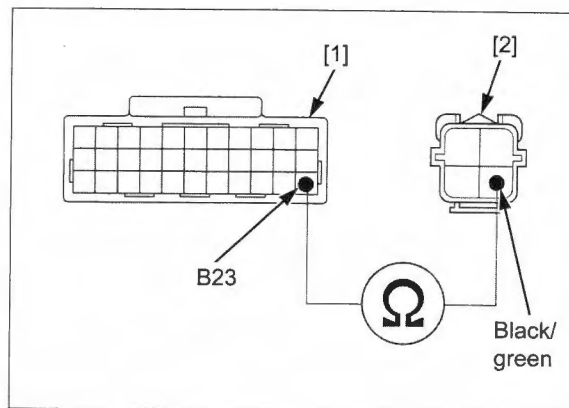
Test probe, 2 pack

07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in Black/green wire



5. O₂ Sensor Heater Short Circuit Inspection 2

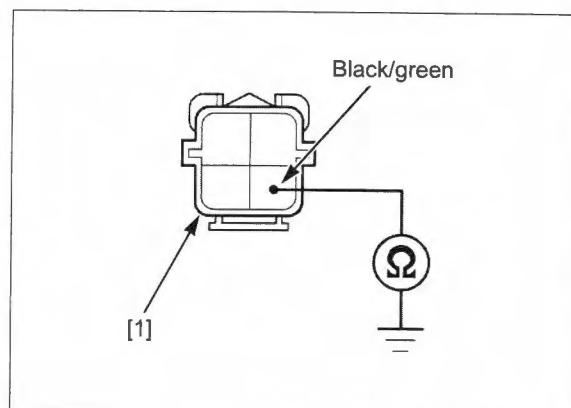
Check for continuity between the O₂ sensor 4P (Black) connector [1] of the wire harness side and ground.

CONNECTION: Black/green – Ground

Is there continuity?

YES – Short circuit in Black/green wire

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



DTC 24-1 (No.2 O₂ SENSOR HEATER: CB1100SA [for right muffler])

- Before starting the inspection, check for loose or poor contact on the O₂ sensor 4P (Black) connector (behind the right side cover) and the ECM 33P connectors, then recheck the DTC.

1. O₂ Sensor Heater System Inspection

Erase the DTC (page 5-14).

Start the engine and check the O₂ sensor heater with the MCS.

Is the DTC 24-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

FUEL SYSTEM (PGM-FI)

2. O₂ Sensor Heater Resistance Inspection

Turn the ignition switch OFF.

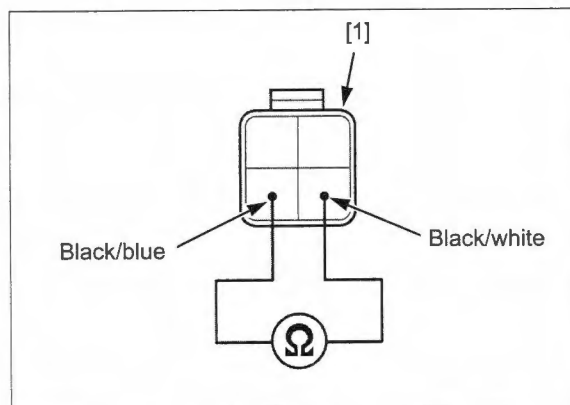
Disconnect the O₂ sensor 4P (Black) connector (behind the right side cover) [1] and measure the resistance at the O₂ sensor connector terminals of the sensor side.

CONNECTION: Black/white – Black/blue

Is the resistance within 13.0 – 18.5 Ω (20°C/68°F)?

YES – GO TO STEP 3.

NO – Faulty O₂ sensor



3. O₂ Sensor Heater Power Input Line Inspection

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

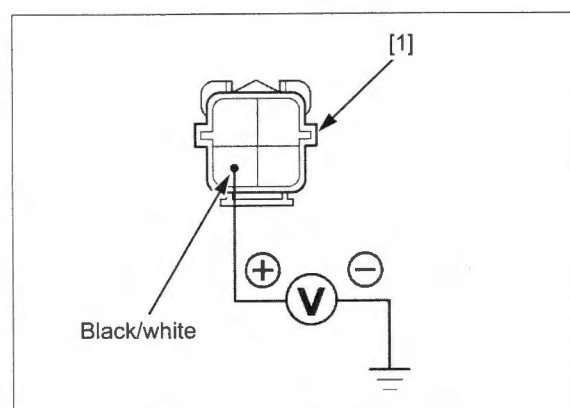
Measure the voltage between the O₂ sensor 4P (Black) connector of the wire harness side and ground.

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

Is there battery voltage?

YES – GO TO STEP 4.

NO – Open circuit in the Black/white wire



4. O₂ Sensor Heater Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECM 33P (Gray) connector [1]. Check the continuity between the ECM 33P (Gray) connector and the O₂ sensor 4P (Black) connector [2] of the wire harness side.

CONNECTION: B2 – Black/blue

TOOL:

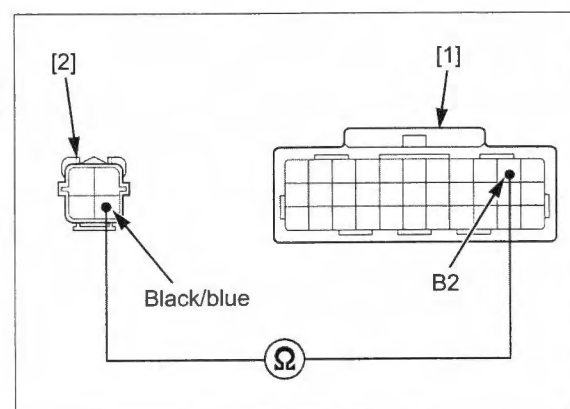
Test probe, 2 pack

07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in Black/blue wire



5. O₂ Sensor Heater Short Circuit Inspection 2

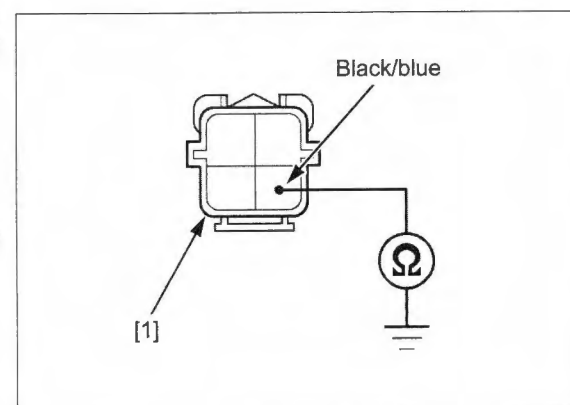
Check for continuity between the O₂ sensor 4P (Black) connector [1] of the wire harness side and ground.

CONNECTION: Black/blue – Ground

Is there continuity?

YES – Short circuit in Black/blue wire

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



DTC 29-1 (IACV)

- Before starting the inspection, check for loose or poor contact on the IACV 4P (Black) connector and the ECM 33P connectors, then recheck the DTC.

1. Recheck DTC

Clear the ECM self-diagnosis memory data
(page 5-14).

Start the engine and check the IACV with the MCS.

Is the DTC 29-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. IACV Short Circuit Inspection

Turn the ignition switch OFF.

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

Check for continuities between the IACV 4P (Black) connector and ground.

CONNECTION: Black/yellow – Ground
Black/red – Ground
Black/blue – Ground
Black/orange – Ground

Are there continuities?

- YES** – • Short circuit in Black/yellow or Black/orange wire
• Short circuit in Black/red or Black/blue wire

NO – GO TO STEP 3.

3. IACV Circuit Continuity Inspection

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

Check the continuities between the ECM 33P (Black) connector terminals and the IACV 4P (Black) connector [2] terminals.

CONNECTION: A6 – Black/yellow
A17 – Black/red
A16 – Black/blue
A7 – Black/orange

TOOL:

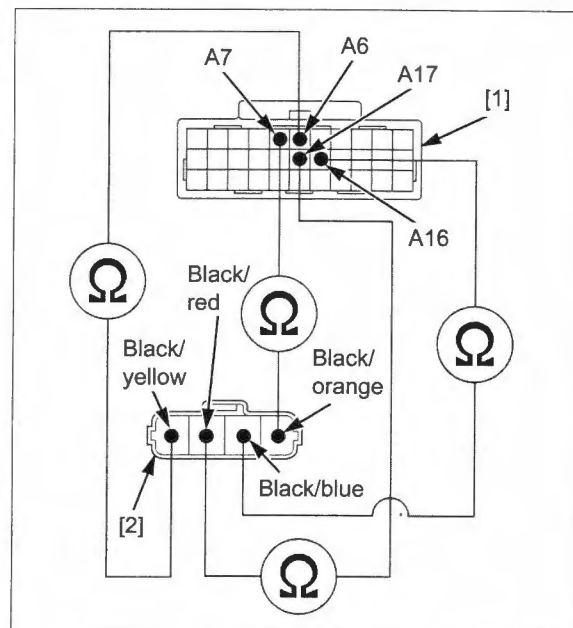
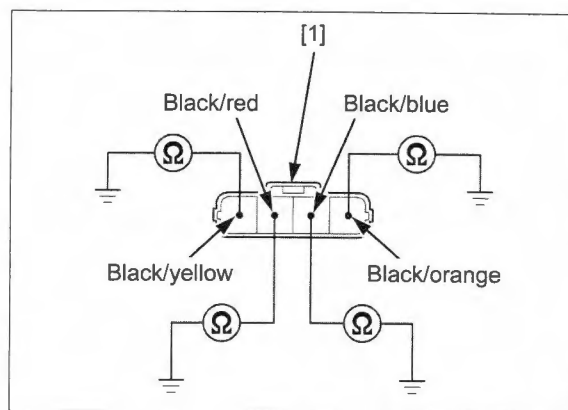
Test probe, 2 pack

07ZAJ-RDJA110

Are there continuities?

YES – GO TO STEP 4.

- NO** – • Open circuit in Black/yellow or Black/orange wire
• Open circuit in Black/red or Black/blue wire



FUEL SYSTEM (PGM-FI)

4. IACV Resistance Inspection

Measure the resistance at the IACV [1] side.

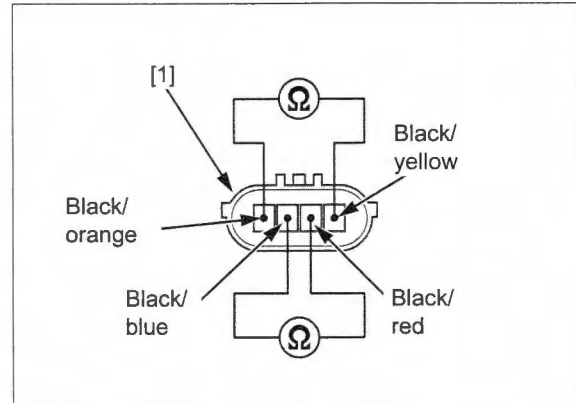
CONNECTION: Black/yellow – Black/orange
Black/red – Black/blue

STANDARD: 99 – 121 Ω (25 °C/77 °F)

Is the resistance within 99 – 121 Ω (25°C/77°F)?

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

NO – Faulty IACV



DTC 86-1 (SERIAL COMMUNICATION: After '13 model)

NOTE:

- Before starting the inspection, check the following connectors for loose or poor contact and the fuse for blown.
 - ECM 33P (Black)
 - combination meter 10P (Black) and 6P
 - TURN, CLOCK fuse (10 A)

1. Recheck DTC

Erase the DTC (page 5-14).

Check the serial communication with the MCS.

Is DTC 86-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. ECM Serial Communication Output Voltage Inspection

Turn the ignition switch OFF.

Disconnect the combination meter 10P (Black) connector.

Short the DLC terminals using the SCS connector (page 5-13).

Open the throttle grip fully, hold it and turn the ignition switch ON with the engine stop switch "O".

Wait for more than 10 seconds and release the throttle grip.

NOTE:

- The ECM enters the communication diagnostic output mode. The open circuit in the ECM can be checked in this mode.

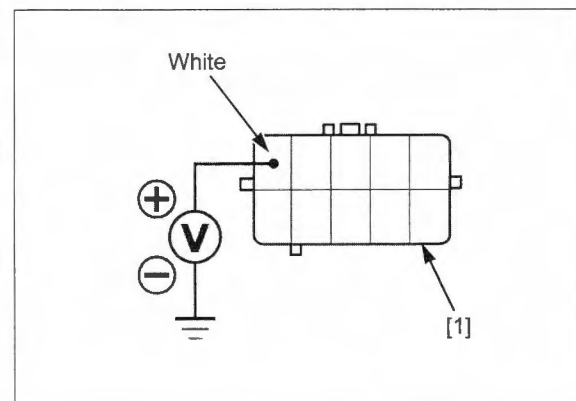
Measure the voltage between the combination meter 10P (Black) connector [1] terminal and ground.

CONNECTION: White (+) – Ground (–)

Does the voltage repeat 0 V to 7 V or more at intervals of 5 seconds?

YES – GO TO STEP 3.

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



3. Combination Meter Serial Communication Output Voltage Inspection

Turn the ignition switch OFF.
Remove the SCS connector.
Connect the combination meter 10P (Black) connector.
Disconnect the ECM 33P (Gray) connector.
Push and hold both the left control button [1] and right control button [2] on the combination meter and turn the ignition switch ON with the engine stop switch "O".
Wait for more than 10 seconds and release the buttons.

NOTE:

- The combination meter enters the communication diagnostic output mode. The open circuit in the combination meter can be checked in this mode.

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

CONNECTION: White (+) – Ground (–)

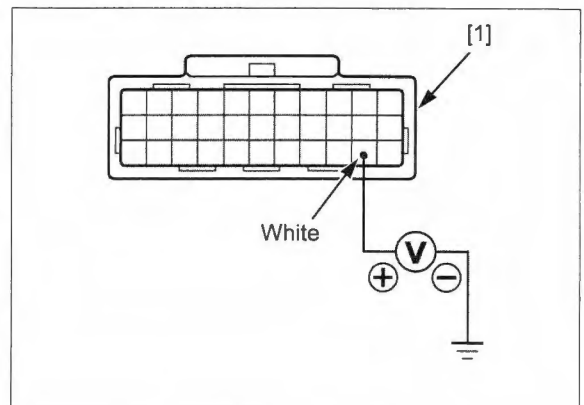
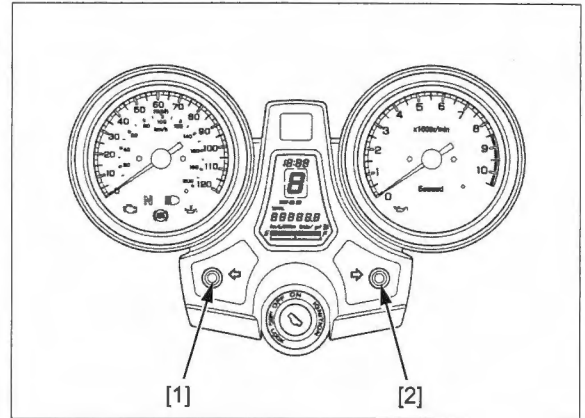
TOOL:

Test probe, 2 pack 07ZAJ-RDJA110

Does the voltage repeat 0 V to 7 V or more at intervals of 5 seconds?

YES – GO TO STEP 4.

NO – Replace the combination meter with a known good one and recheck.



4. Combination Meter Back-up Voltage Inspection

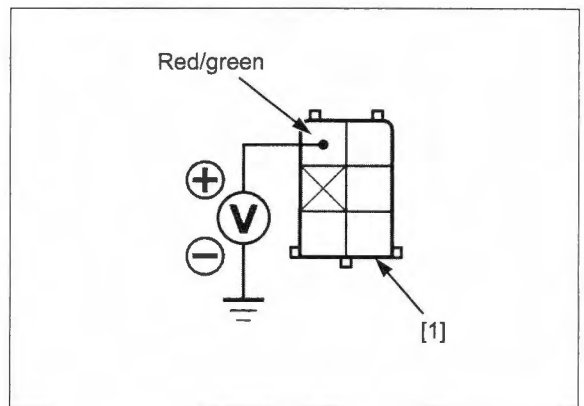
Turn the ignition switch OFF.
Disconnect the combination meter 6P connector.
Measure the voltage between the combination meter 6P connector [1] terminal and ground.

CONNECTION: Red/green (+) – Ground (–)

Is there battery voltage?

YES – Intermittent failure

NO – Open circuit in Red/green wire between the fuse box and combination meter



FUEL SYSTEM (PGM-FI)

MIL CIRCUIT TROUBLESHOOTING ('13 model)

If the engine can be started but the MIL does not come on when the ignition switch is turned "ON" and the engine stop switch is in "○", check as follows:

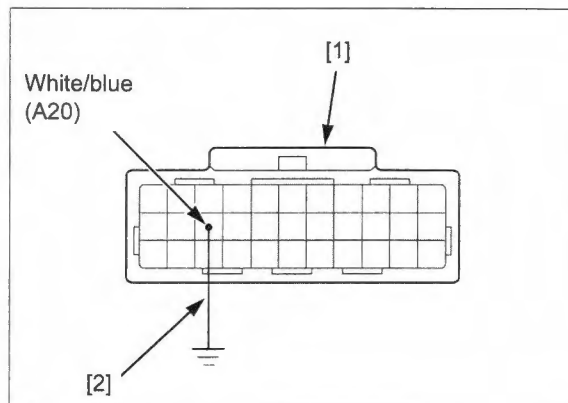
Check for operation of the combination meter function properly.

- If they do not function, check the combination meter power input line (page 19-13).
- If they function properly, check as follows:

Turn the ignition switch to "OFF".

Disconnect the ECM 33P (Black) connector from the ECM (page 5-80).

Ground the White/blue (A20) wire terminal of the wire harness side ECM 33P (Black) connector [1] with a jumper wire [2].



TOOL:

Test probe, 2 pack

07ZAJ-RDJA110

Turn the ignition switch to "ON" and the engine stop switch "○", the MIL should come on.

- If the MIL comes on, replace the ECM with a new one and recheck the MIL indication.
- If the MIL does not come on, check for open circuit in the White/blue wire between the combination meter and ECM.
If the wire is OK, replace the combination meter (page 19-11).

MIL CIRCUIT TROUBLESHOOTING (After '13 model)

Check that the MIL [1] comes on for 2 seconds and goes off when the ignition switch is turned ON with the engine stop switch "○".

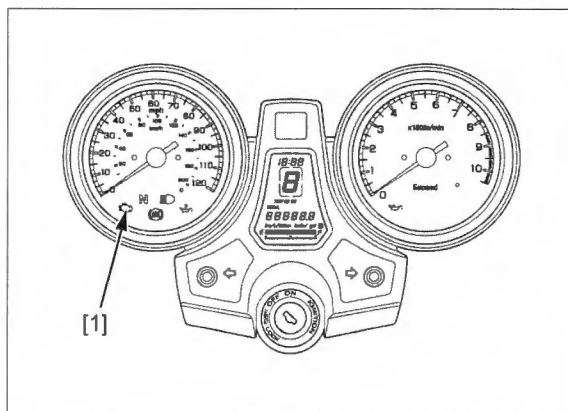
NOTE:

- If the MIL and digital display do not function at all, refer to combination meter initial operation check (page 19-14).

If the engine stop switch is in "⊗", the MIL will stay on even when the system is normal.

If the MIL stays on and the other indications function normally, check the combination meter indication when the serial communication line is abnormal (page 5-6).

If the indication is not according to above condition, check as follows.



Turn the ignition switch OFF.

Disconnect the ECM 33P (Black) connector (page 5-80).

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

TOOL:

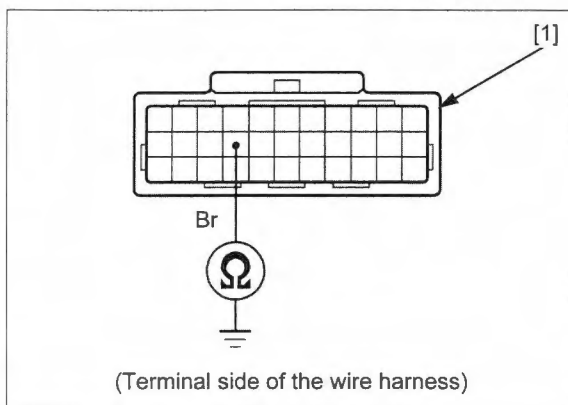
Test probe, 2 pack

07ZAJ-RDJA110

CONNECTION: Brown – Ground

If there is continuity, check for short circuit in the Brown wire between the DLC and ECM.

If there is no continuity, replace the ECM with a known good one and recheck.

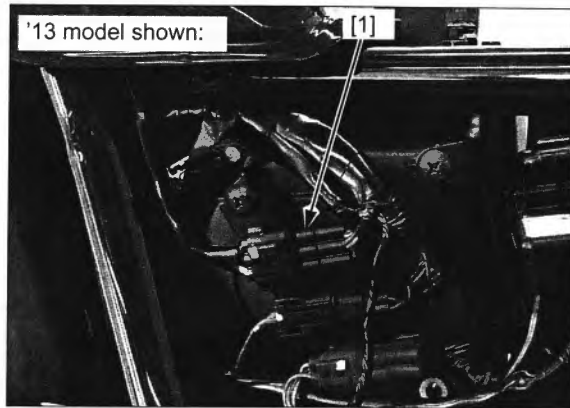


FUEL LINE INSPECTION

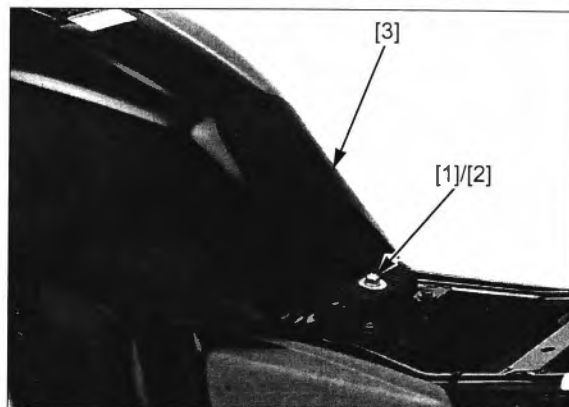
FUEL PRESSURE RELIEVING/QUICK CONNECT FITTING REMOVAL

- Before disconnecting the fuel hose, relieve fuel pressure from the system following these procedures:

1. Turn the ignition switch OFF.
Remove the left side cover (page 2-4).
2. Disconnect the fuel pump 3P (Black: '13 model) or 4P (Black: After '13 model) connector [1].
3. Turn the ignition switch ON, start the engine, and let it idle until the engine stalls.
4. Turn the ignition switch OFF.
5. Disconnect the battery negative (-) cable (page 16-6).

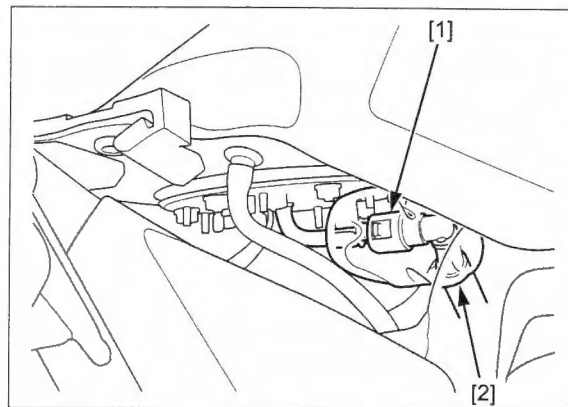


6. Remove the fuel tank mounting bolt [1] and collar [2], then lift up the fuel tank [3] slightly.



7. Check the fuel quick connect fitting [1] for dirt and clean if necessary.

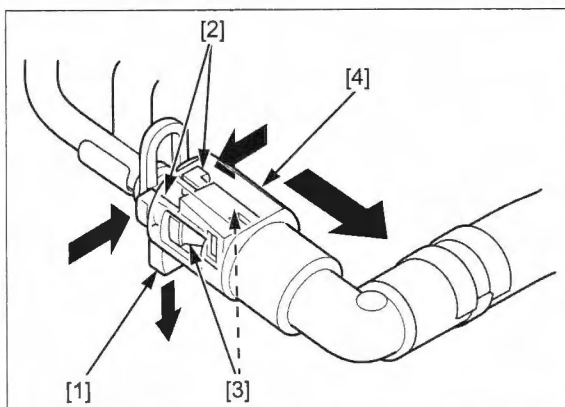
Place a shop towel [2] over the quick connect fitting.



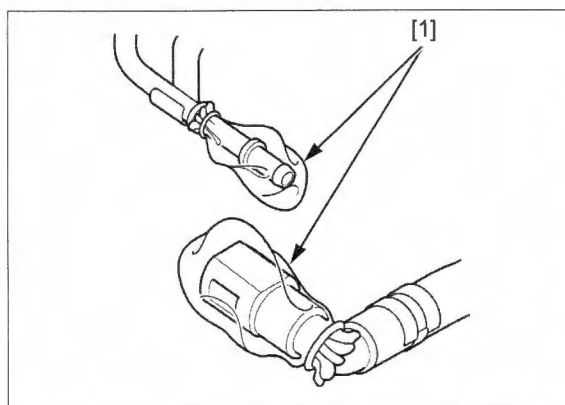
FUEL SYSTEM (PGM-FI)

8. Pull and release the rubber cap [1] from the retainer.
9. Hold the connector with one hand and squeeze the retainer tabs [2] with the other hand to release them from the locking pawls [3]. Pull the connector [4] off, then remove the rubber cap and retainer from the fuel joint.

- Absorb the remaining fuel in the fuel hose from flowing out with a shop towel.
- Be careful not to damage the hose or other parts.
- Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.

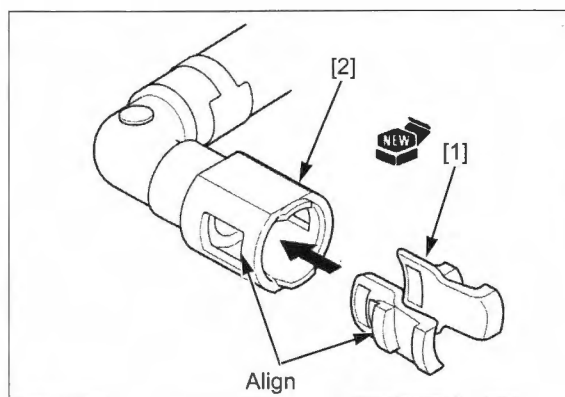


10. To prevent damage and keep foreign matter out, cover the disconnected connector and fuel joint end with plastic bags [1].



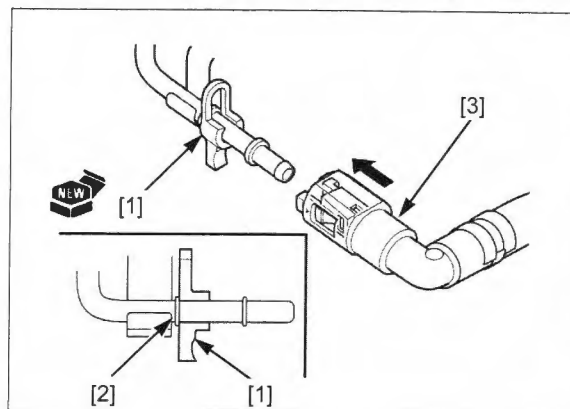
QUICK CONNECT FITTING INSTALLATION

- Always replace the retainer and rubber cap of the quick connect fitting when the fuel hose is disconnected.
 - Do not bend or twist fuel hose.
 - When replacing the retainer, use the same manufacturer's retainer as the ones being removed (The various manufactures feature different retainer specification).
1. Insert a new retainer [1] into the connector [2] while aligning the retainer locking pawls with the connector grooves.

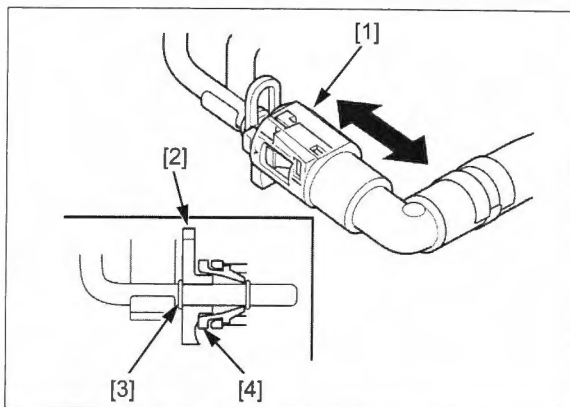


2. Install a new rubber cap [1] and seat it onto the fuel joint flange [2] as shown. Install the quick connect fitting [3] with the fuel joint, then press the quick connect fitting onto the fuel joint until both retainer pawls lock with a "CLICK".

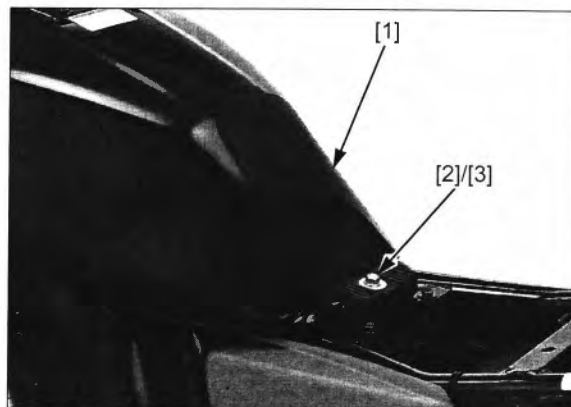
If it is hard to connect, put a small amount of engine oil on the joint end.



3. Make sure the connection is secure and that the pawls are firmly locked into place; check visually and by pulling the connector [1].
4. Make sure the rubber cap [2] is in place (between the flange [3] and retainer tab [4]).



5. Install the fuel tank [1], mounting bolt [2], and collar [3], then tighten the mounting bolt securely.



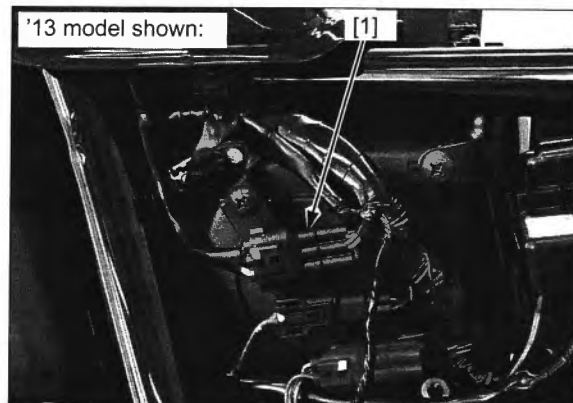
6. Connect the fuel pump 3P (Black: '13 model) or 4P (Black: After '13 model) connector [1].
7. Connect the battery negative (-) cable to the battery (page 16-6).

Do not start the engine.

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

The fuel pump will run for about 2 seconds and fuel pressure will rise. Repeat 2 or 3 times, and check that there is no leakage in the fuel supply system.

9. Install the left side cover (page 2-4).



FUEL SYSTEM (PGM-FI)

FUEL PRESSURE TEST

Relieve the fuel pressure and disconnect the quick connect fitting (page 5-45).

Attach the fuel pressure gauge, attachments, and manifold.

TOOLS:

[1] Fuel pressure gauge, 0 – 100 psi	07406-0040004
[2] Pressure gauge manifold	07ZAJ-S5A0111
[3] Hose attachment, 9 mm/9 mm	07ZAJ-S5A0120
[4] Hose attachment, 8 mm/9 mm	07ZAJ-S7C0100
[5] Attachment joint, 8 mm/9 mm	07ZAJ-S7C0200

U.S.A. TOOLS:

Fuel pressure gauge, 0 – 100 psi	07406-004000B or 07406-004000C
Pressure manifold hose	07AMJ-HW3A100
Adaptor, male "C"	07AAJ-S6MA300
Adaptor, female "C"	07AAJ-S6MA500

Connect the fuel pump 3P (Black) connector.
Temporarily connect the battery negative (–) cable to the battery.
Start the engine and let it idle.
Read the fuel pressure.

STANDARD: 343 kPa (3.5 kgf/cm², 50 psi)

If the fuel pressure is higher than specified, replace the fuel pump assembly (faulty fuel pump or fuel pressure regulator) (page 5-51).

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

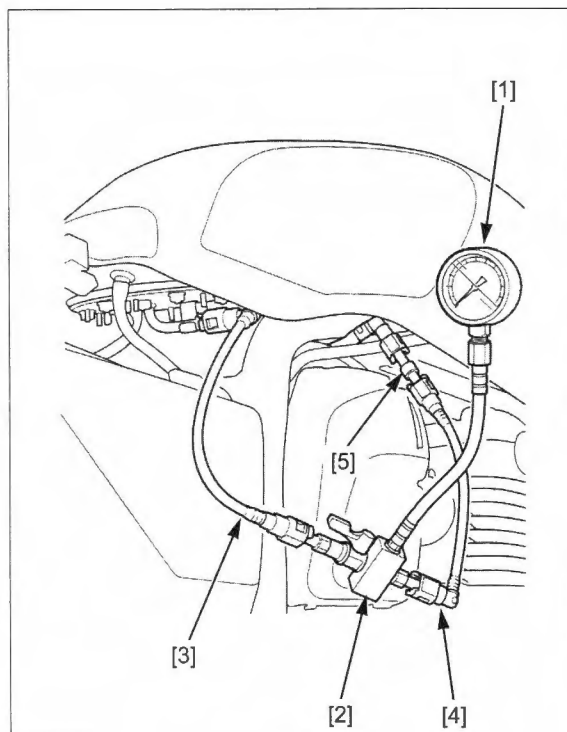
- fuel line leaking
- pinched or clogged fuel hose or fuel tank breather hose
- fuel pump unit (page 5-50)
- clogged fuel filter (Assembly of the fuel pump: page 5-51)

Wrap a shop towel around the attachment to soak up any spilled fuel.

After inspection, relieve the fuel pressure by disconnecting the quick connect fitting (page 5-45).

Remove the fuel pressure gauge, attachment joint and manifold.

Connect the quick connect fitting (page 5-46).

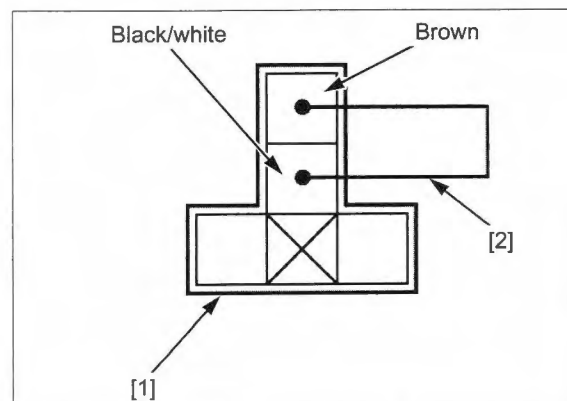


FUEL FLOW INSPECTION ('13 model)

Remove the fuel cut-off relay (page 5-54).

Jump the Brown and Black/white wire terminals [1] in the fuse box using a jumper wire [2].

- Place an approved gasoline container and drain the gasoline.
- Wipe off spilled gasoline.



Relieve the fuel pressure and disconnect the quick connect fitting (page 5-45).
Attach the hose attachment to the fuel hose.

TOOL:

[1] Hose attachment, 8 mm/9 mm 07ZAJ-S7C0100

U.S.A. only:

When performing the flow inspection, be sure to leave the fuel pressure gauge installed into the manifold.

U.S.A. TOOLS:

Fuel pressure gauge,
0 – 100 psi

07406-004000B or

07406-004000C

Pressure manifold hose

07AMJ-HW3A100

Adaptor, female "C"

07AAJ-S6MA500

Turn the ignition switch ON for 10 seconds.
Measure the amount of fuel flow.

Amount of fuel flow:

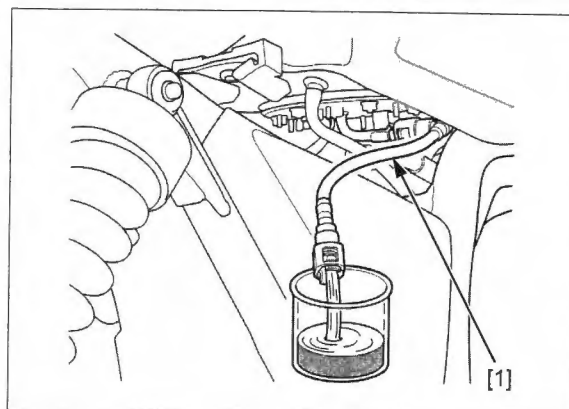
290 cm³ (9.8 US oz, 10.2 Imp oz) minimum
/10 seconds at 12 V

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

- fuel pump unit (page 5-50)
- clogged fuel filter (Assembly of the fuel pump: page 5-51)

Remove the hose attachment from the fuel hose and connect the quick connect fitting (page 5-46).

Install the fuel cut-off relay (page 5-54).



FUEL FLOW INSPECTION (After '13 model)

NOTE:

- Check the fuel tank breather hose (A, CM types) or fuel tank-to-EVAP canister hose (AC type) for pinches or clogs when the fuel tank is lifted.

Disconnect the quick connect fitting from the fuel tank (page 5-45).

Attach the hose attachment to the fuel hose.

TOOL:

[1] Hose attachment, 8 mm/9 mm 07ZAJ-S7C0100

U.S.A. only:

When performing the flow inspection, be sure to leave the fuel pressure gauge installed into the manifold.

U.S.A. TOOLS:

Fuel pressure gauge,
0 – 100 psi

07406-004000B or

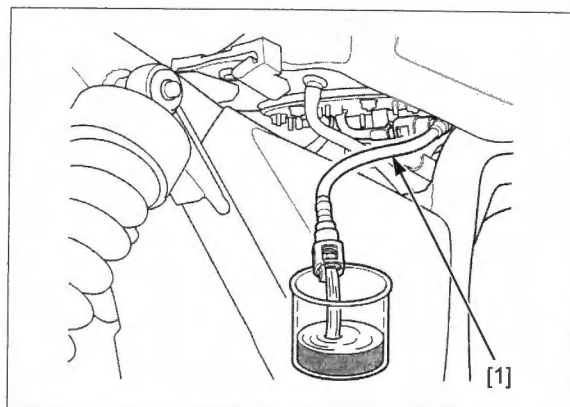
07406-004000C

Pressure manifold hose

07AMJ-HW3A100

Adaptor, female "C"

07AAJ-S6MA500



Wipe off spilled gasoline.

Place the end of the hose attachment into an approved gasoline container.

Lower the fuel tank until the fuel pump 4P (Black) connector can be connected and support it.
Temporarily connect the fuel pump 4P (Black) 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 tank when finished.

FUEL SYSTEM (PGM-FI)

Measure the amount of fuel flow.

Amount of fuel flow:

**393 cm³ (13.3 US oz, 13.8 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 (tank side) for pinches or clogs (A, CM types)
- fuel filter for clogs
- fuel pump (page 5-52)

Remove the hose attachment from the fuel hose and connect the quick connect fitting (page 5-46).

FUEL PUMP ('13 model)

INSPECTION

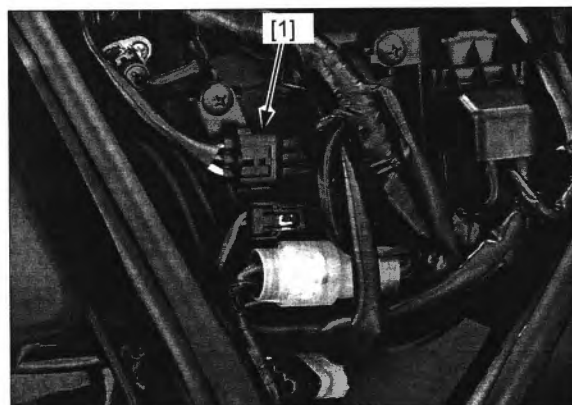
Turn the ignition switch ON and engine stop switch "O", and confirm that the fuel pump operates for a few seconds.

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

Turn the ignition switch OFF.

Remove the left side cover (page 2-4).

Disconnect the fuel pump 3P (Black) connector [1].



Turn the ignition switch ON and measure the voltage between the terminals.

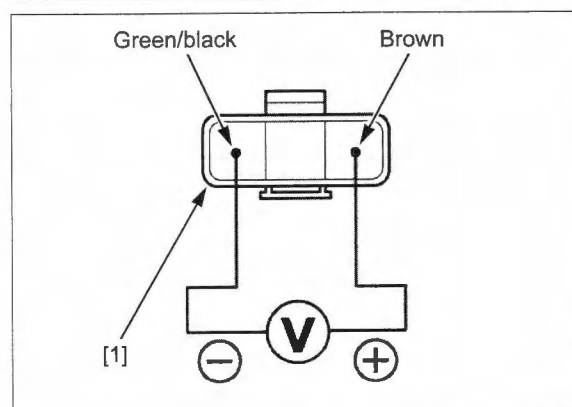
CONNECTION: Brown (+) – Green/black (–)

There should be battery voltage for a few seconds.

If there is battery voltage for more than a few seconds, replace the fuel pump unit.

If there is no battery voltage, inspect the following:

- open circuit in Brown or Green/black wires
- main fuse 30A
- sub fuse 20A (FI, IGN)
- sub fuse 10A (START)
- engine stop switch (page 19-30)
- fuel cut-off relay (page 5-54)
- engine stop relay (page 5-79)
- bank angle sensor (page 5-77)
- ECM (page 5-80)



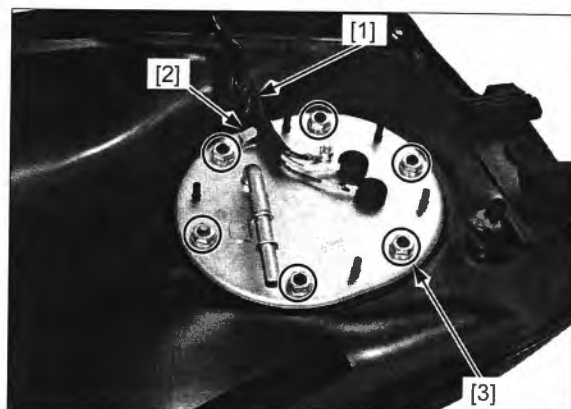
REMOVAL

- Wipe off spilled gasoline.

Remove the fuel tank (page 5-55).

Remove the fuel pump wire [1] from the wire clamp [2].

Loosen the fuel pump unit mounting nuts [3] in a crisscross pattern in several steps, then remove the mounting nuts.



Be careful not to damage the fuel level sensor float arm.

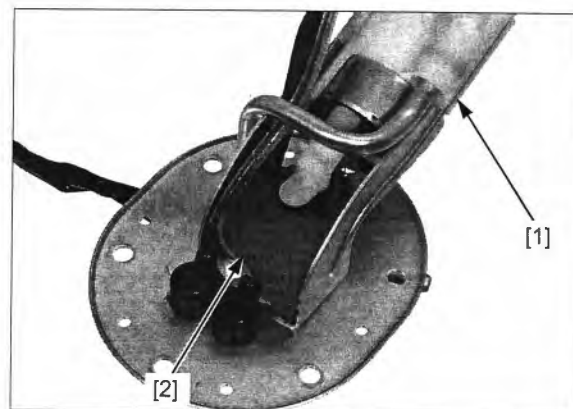
Remove the fuel pump unit [1] and packing [2].



INSPECTION

Check the fuel pump unit [1] for wear or damage, replace it if necessary.

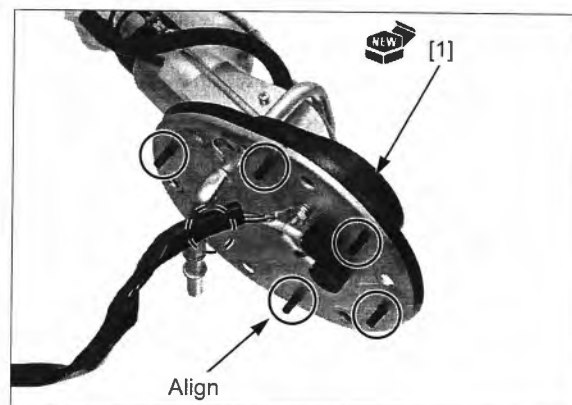
Clean the fuel strainer screen [2] with non-flammable or high flash point solvent.



INSTALLATION

Always replace the packing with a new one.

Install a new packing [1], aligning its tabs to the holes of the fuel pump base.



FUEL SYSTEM (PGM-FI)

Be careful not to damage the fuel level sensor float arm.

Install the fuel pump unit [1] into the fuel tank.

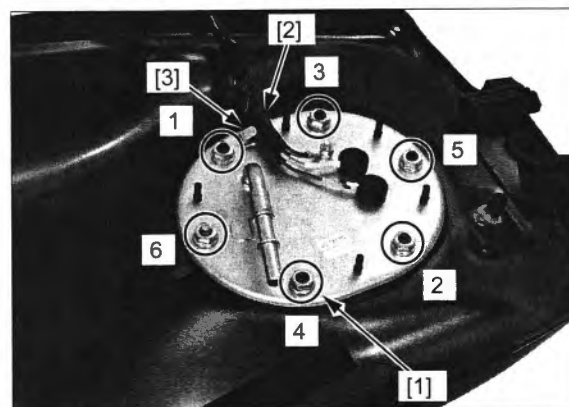


Install and tighten the fuel pump mounting nuts [1] in a crisscross pattern in several steps. Tighten the mounting nuts in the specified sequence as shown.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Secure the fuel pump wire [2] with the wire clamp [3].

Install the fuel tank (page 5-55).



FUEL PUMP (After '13 model)

INSPECTION

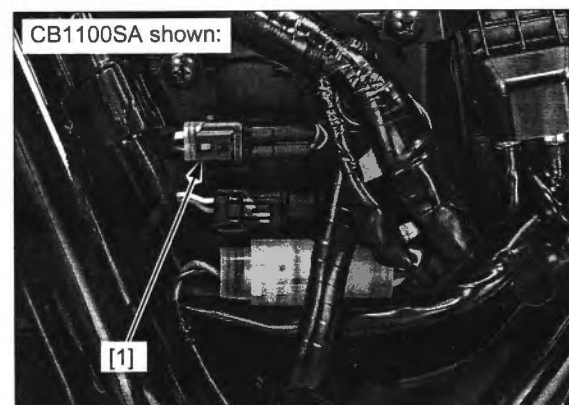
Turn the ignition switch ON and engine stop switch "O", and confirm that the fuel pump operates for a few seconds.

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

Turn the ignition switch OFF.

Remove the left side cover (page 2-4).

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



Turn the ignition switch ON and measure the voltage between the terminals.

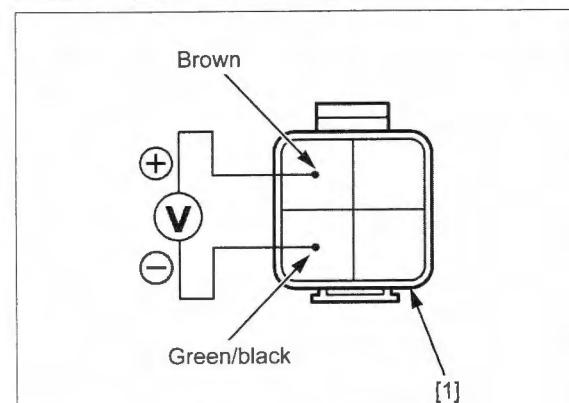
CONNECTION: Brown (+) – Green/black (–)

There should be battery voltage for a few seconds.

If there is battery voltage for more than a few seconds, replace the fuel pump unit.

If there is no battery voltage, inspect the following:

- open circuit in Brown or Green/black wires
- main fuse 30A
- sub fuse 20A (FI, IGN)
- sub fuse 10A (START)
- engine stop switch (page 19-31)
- fuel cut-off relay (page 5-54)
- engine stop relay (page 5-79)
- bank angle sensor (page 5-77)
- ECM (page 5-80)



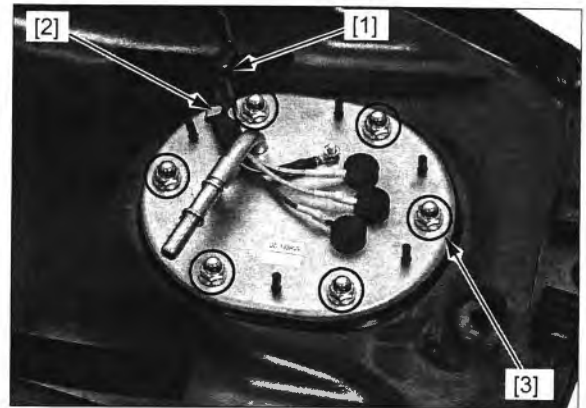
REMOVAL

- Wipe off spilled gasoline.

Remove the fuel tank (page 5-55).

Remove the fuel pump wire [1] from the wire clamp [2].

Loosen the fuel pump unit mounting cap nuts [3] in a crisscross pattern in several steps, then remove the mounting nuts.



Be careful not to damage the fuel level sensor float arm.

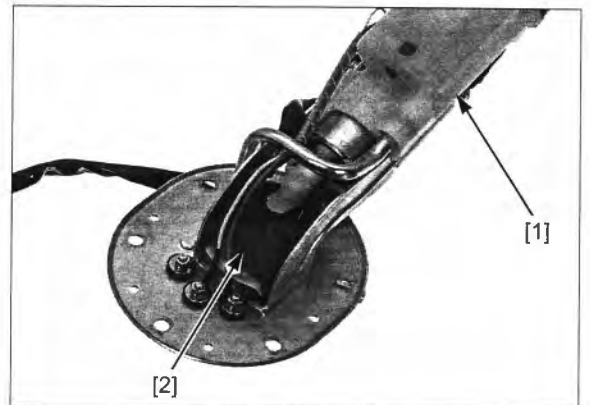
Remove the fuel pump unit [1] and packing [2].



INSPECTION

Check the fuel pump unit [1] for wear or damage, replace it if necessary.

Clean the fuel strainer screen [2] with non-flammable or high flash point solvent.



INSTALLATION

Always replace the packing with a new one.

Install a new packing [1], aligning its tabs to the holes of the fuel pump base.



FUEL SYSTEM (PGM-FI)

Be careful not to damage the fuel level sensor float arm.

Install the fuel pump unit [1] into the fuel tank.

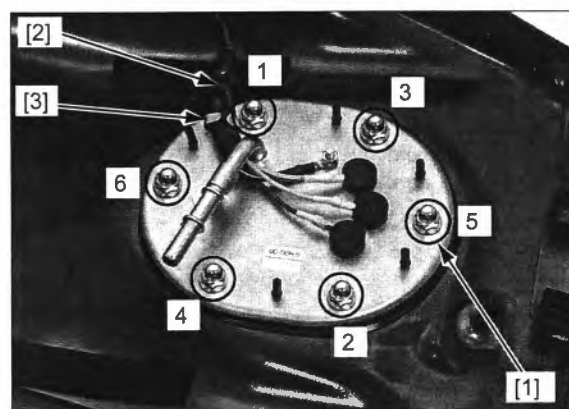


Install and tighten the fuel pump mounting nuts [1] in a crisscross pattern in several steps. Tighten the mounting cap nuts in the specified sequence as shown.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Secure the fuel pump wire [2] with the wire clamp [3].

Install the fuel tank (page 5-55).

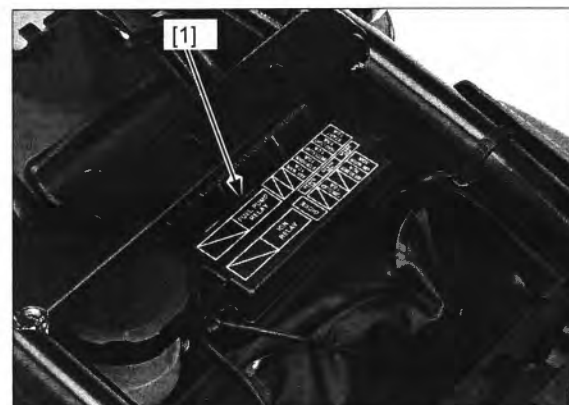


FUEL CUT-OFF RELAY

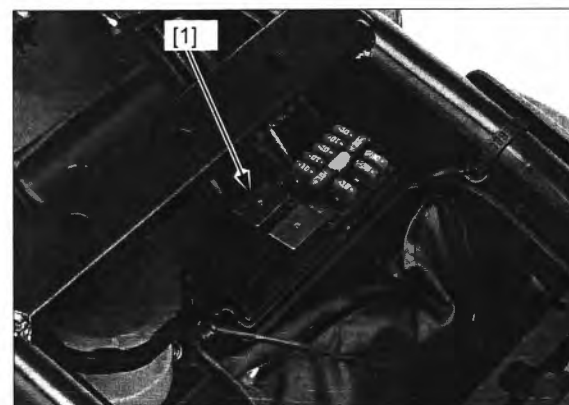
INSPECTION

Remove the seat (page 2-4).

Remove the fuse box cover [1].



Remove the fuel cut-off relay [1].



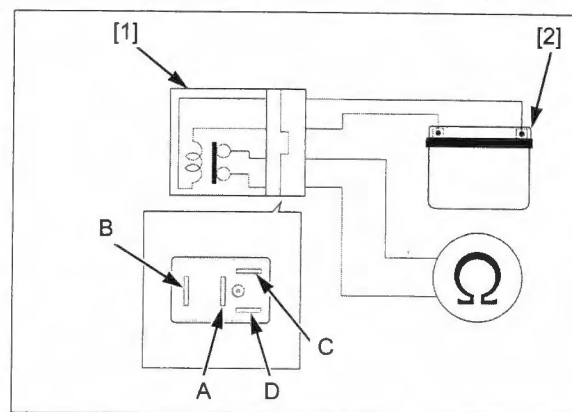
Connect an ohmmeter to the fuel cut-off relay [1] connector terminals.

CONNECTION: A - B

Connect a 12 V battery [2] to the following fuel cut-off relay connector terminals.

CONNECTION: C - D

There should be continuity only when the 12 V battery is connected. If there is no continuity when the 12 V battery is connected, replace the fuel cut-off relay.



FUEL TANK

REMOVAL/INSTALLATION

Support the motorcycle level surface.

Remove the seat (page 2-4).

Remove the fuel tank mounting bolt [1] and collar [2].

Relieve the fuel pressure and disconnect the quick connect fitting [3] from the fuel tank (page 5-45).

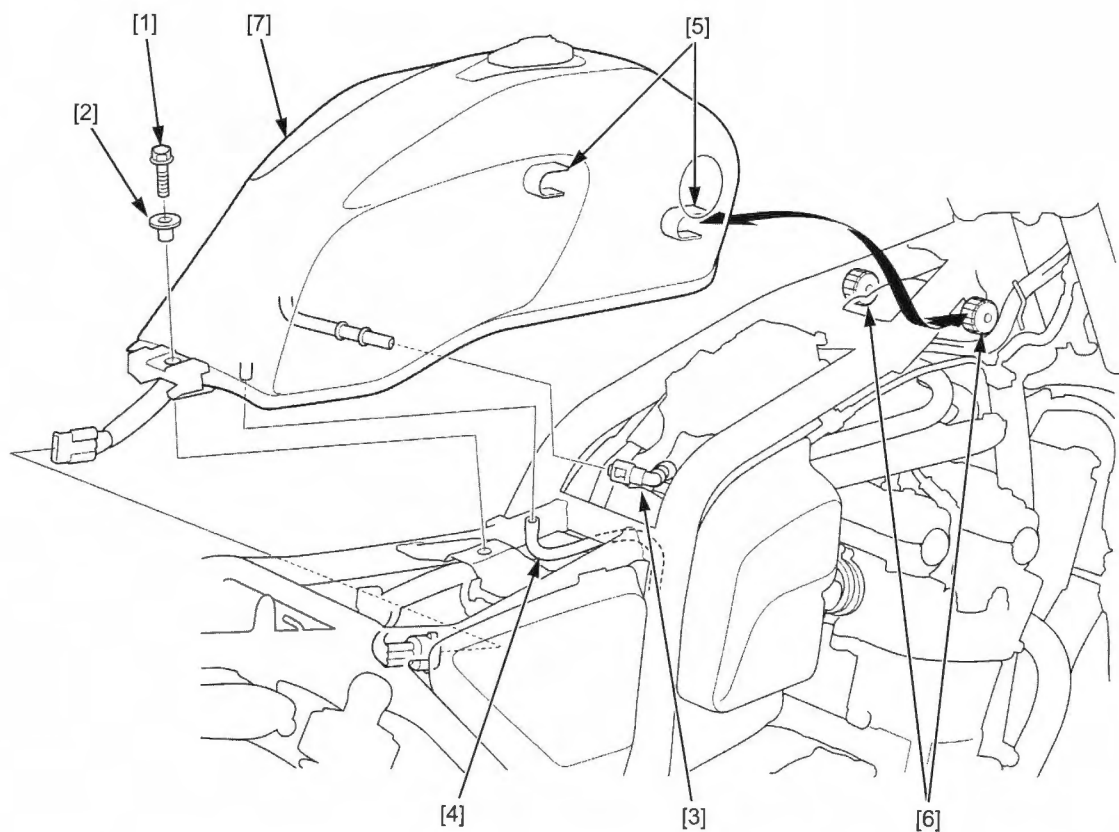
Disconnect the fuel tank breather hose [4].

Remove the hooks [5] on the fuel tank from the rubber mounts [6] on the frame, then remove the fuel tank [7].

Installation is in the reverse order of removal.

NOTE:

After installing the fuel tank, make sure the fuel tank breather hose is not kinked or bound.



AIR CLEANER HOUSING

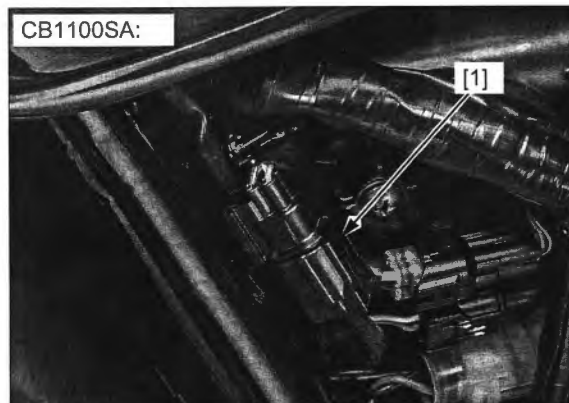
REAR AIR CLEANER HOUSING

REMOVAL

Remove the following:

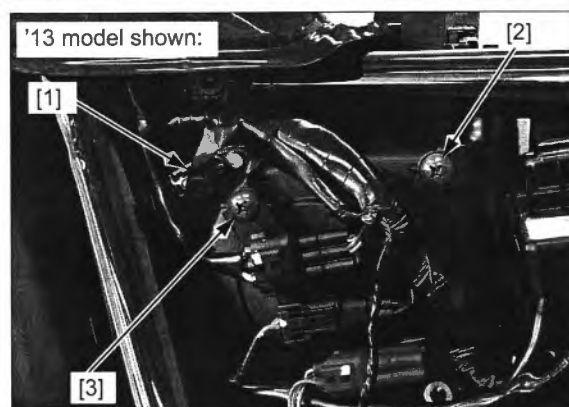
- air cleaner element (page 3-7)
- rear fender A and B (page 2-9)
- air cleaner case side cover (page 2-5)

CB1100SA: Release the O₂ sensor 4P (Black) connector [1] from the frame stay.

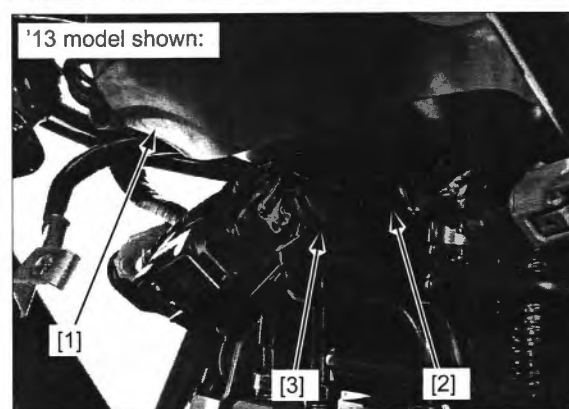


Disconnect the IAT sensor 2P (Black) connector [1] from the sensor.

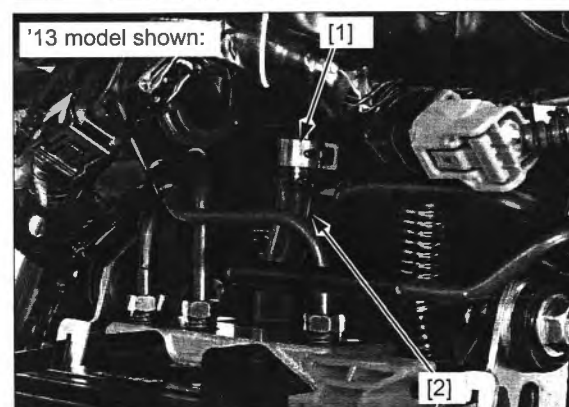
Remove the starter relay switch stay screw [2] and connector stay screw [3] from the rear air cleaner housing.



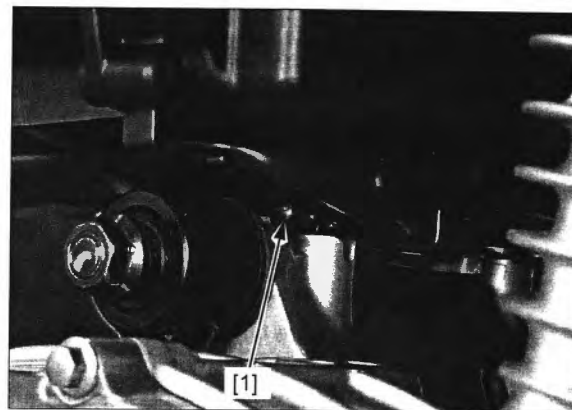
Lift the rubber cover [1] and release the wire harness [2] from the guide [3] of rear air cleaner housing.



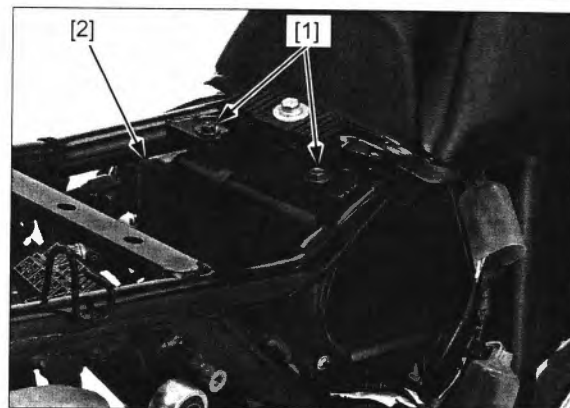
Remove the hose clip [1] and disconnect the drain hose [2] from the rear air cleaner housing.



Loosen the air cleaner housing connecting boot band screw [1].

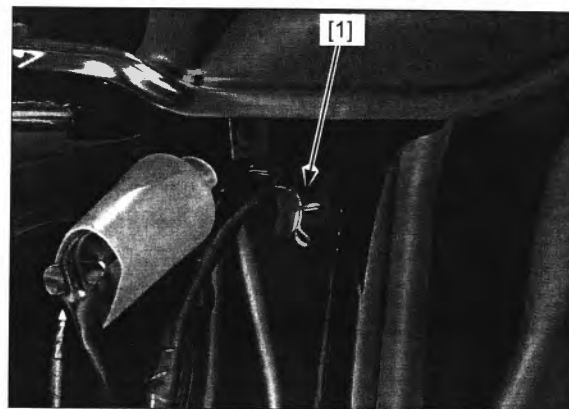


Remove the mounting bolts/washers [1], then pull the rear air cleaner housing [2] backward.



Disconnect the PAIR air suction hose [1] from the rear air cleaner housing.

Turn the right rear shock absorber rearward and remove the air cleaner housing.



INSTALLATION

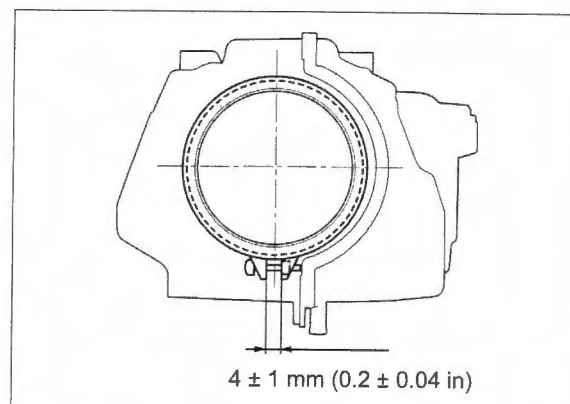
Installation is in the reverse order of removal.

NOTE:

Tighten the connecting boot band screw so that the boot band distance is 4 ± 1 mm (0.2 ± 0.04 in).

TORQUE:

Connector stay mounting screw:
 $1.5 \text{ N}\cdot\text{m}$ ($0.2 \text{ kgf}\cdot\text{m}$, $1.1 \text{ lbf}\cdot\text{ft}$)



FUEL SYSTEM (PGM-FI)

FRONT AIR CLEANER HOUSING/ THROTTLE BODY

- Do not snap the throttle valve from full open to full close after the throttle cable has been removed. It may cause incorrect operation.

REMOVAL

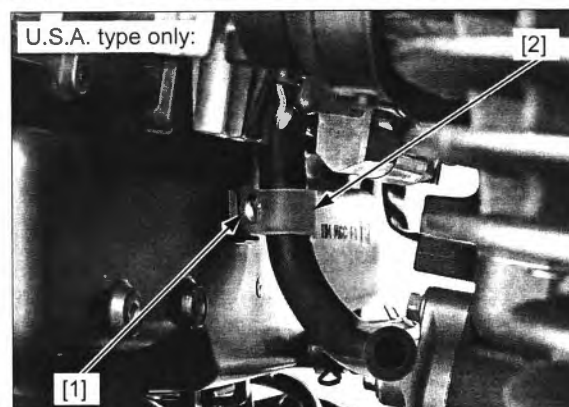
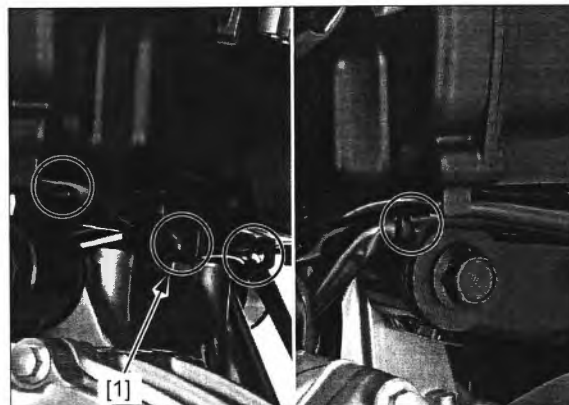
Remove the following:

- fuel tank (page 5-55)
- rear air cleaner housing (page 5-56)

U.S.A. type only: Remove the EVAP purge control solenoid valve (page 5-86).

Release the wire harnesses from the guides [1] of the air cleaner housing.

U.S.A. type only: Remove the screw [1] and hose clamp [2].



Disconnect the fuel injector sub-harness 10P (Black) connector [1].



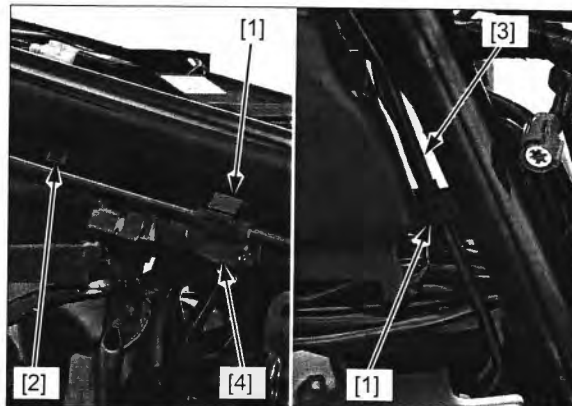
Disconnect the IACV 4P (Black) connector [1].



Remove the clutch line guide clips [1] and main harness clip [2] from the frame.

Be careful not to bend or damage the clutch line.

Pull the clutch line [3] and main harness [4] out of the frame.

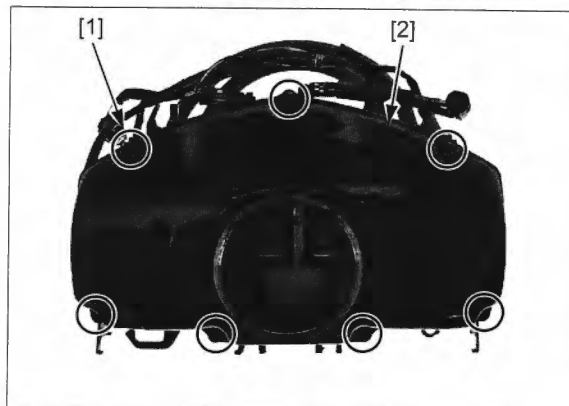


Loosen the throttle body side insulator band screws [1].

Remove the vacuum hose [2] from the No.4 cylinder throttle body.



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

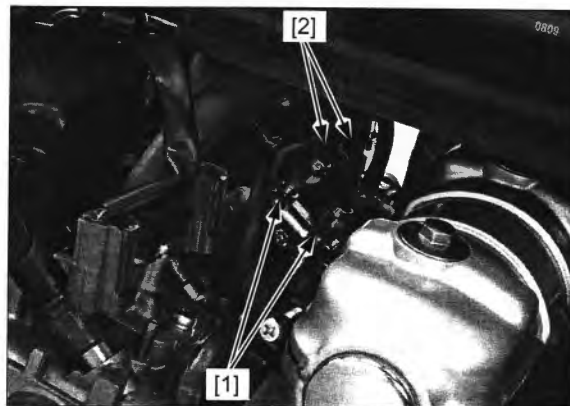


Remove the front air cleaner housing/throttle body assembly from the insulators.

Be careful not to damage the TP sensor wire.

Pull out the front air cleaner housing/throttle body assembly to the right side.

Loosen the throttle cable adjuster nuts [1], then disconnect the throttle cable [2] ends from the throttle drum.



FUEL SYSTEM (PGM-FI)

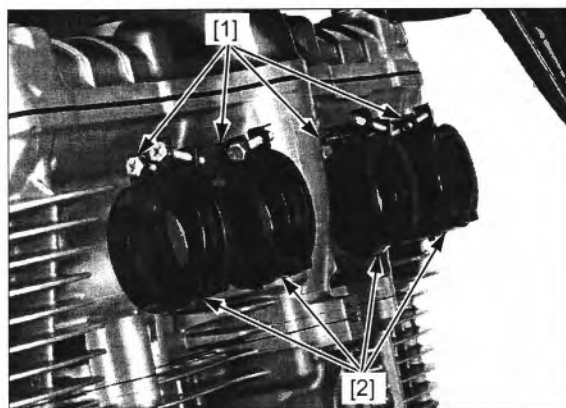
Disconnect the crankcase breather hose [1], then remove the front air cleaner housing/throttle body assembly from the frame.



Loosen the cylinder head side insulator band screws [1] and remove the insulators [2] from the cylinder head.

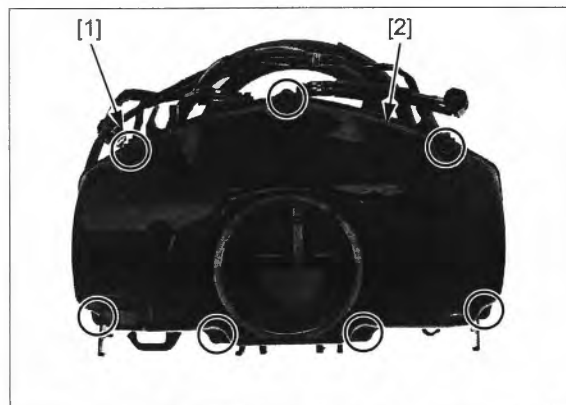
NOTICE

Seal the cylinder head intake ports with tape or a clean cloth to keep dirt and debris from entering the intake ports after the throttle body has been removed.

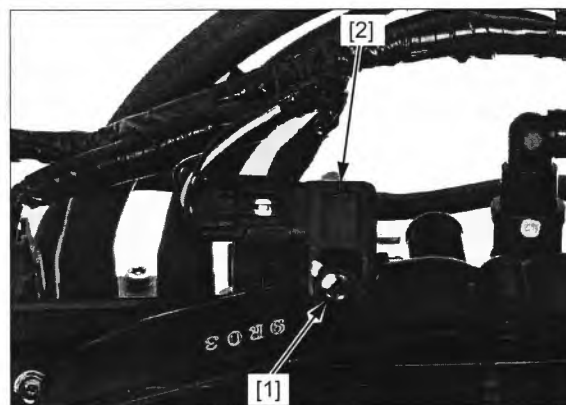


DISASSEMBLY

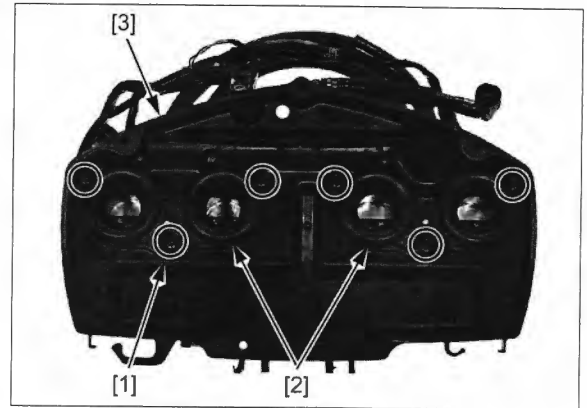
Remove the screws [1] and front air cleaner housing cover [2].



Remove the screw [1] and MAP sensor [2] from the front air cleaner housing.

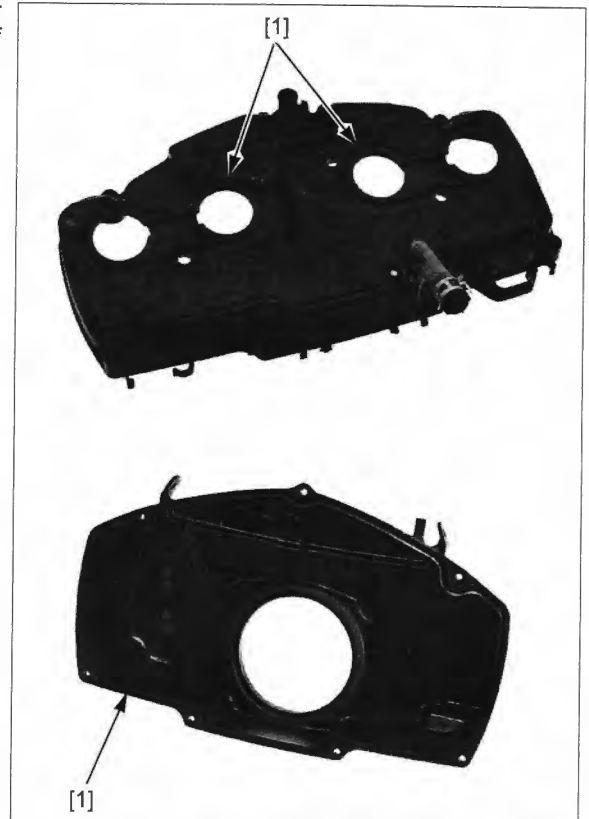


Remove the air funnel mounting screws [1], air funnels [2], and front air cleaner housing [3].



INSPECTION

Check that the sealing rubbers [1] in the air cleaner housing and cover are in good condition, replace if necessary.

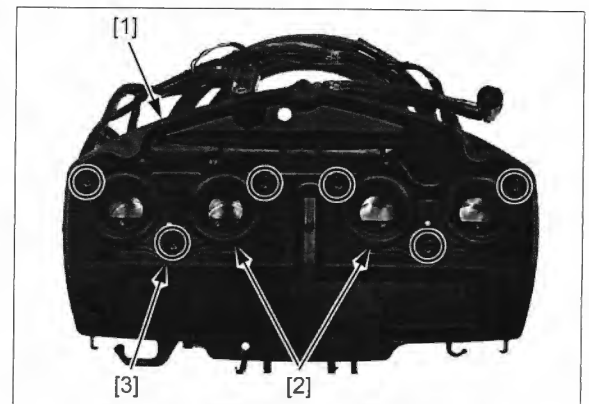


ASSEMBLY

Install the front air cleaner housing [1] to the throttle body.

Install the air funnels [2] and tighten the screws [3] to the specified torque.

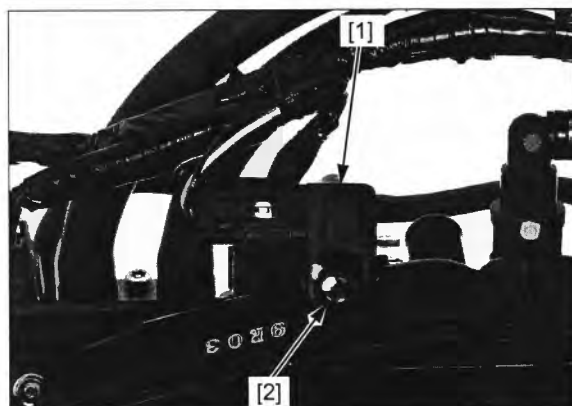
TORQUE: 4.2 N·m (0.4 kgf·m, 3.1 lbf·ft)



FUEL SYSTEM (PGM-FI)

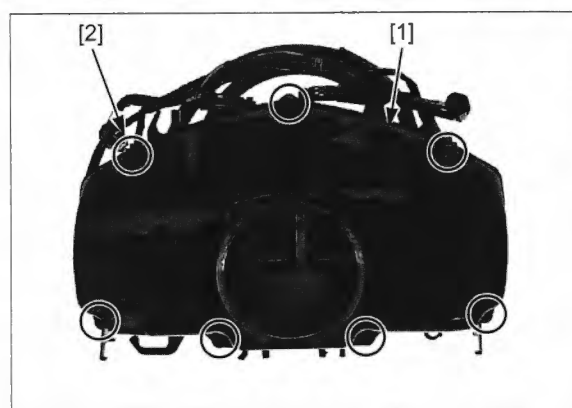
Install the MAP sensor [1] onto the front air cleaner housing and tighten the screw [2] to the specified torque.

TORQUE: 1.1 N·m (0.1 kgf·m, 0.8 lbf·ft)



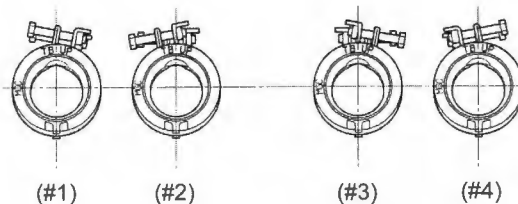
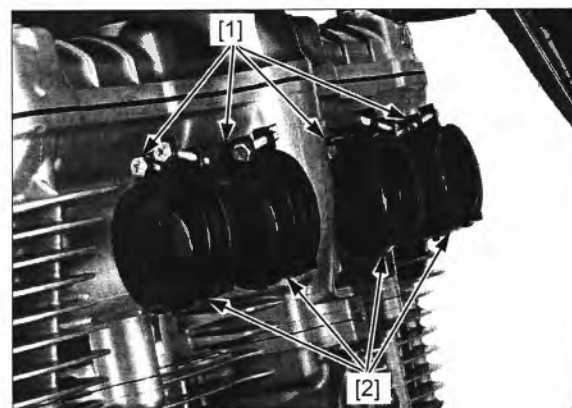
Install the front air cleaner housing cover [1] and tighten the screws [2] to the specified torque.

TORQUE: 0.8 N·m (0.1 kgf·m, 0.6 lbf·ft)



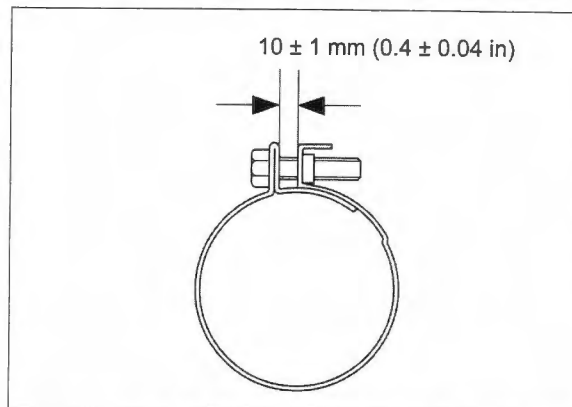
INSTALLATION

Check the insulator band screws [1] angle.
Install the insulators [2] onto the cylinder head.



FUEL SYSTEM (PGM-FI)

Tighten the cylinder head side insulator band screws so that the insulator band distance is 10 ± 1 mm (0.4 ± 0.04 in).



Be careful not to damage the TP sensor wire.

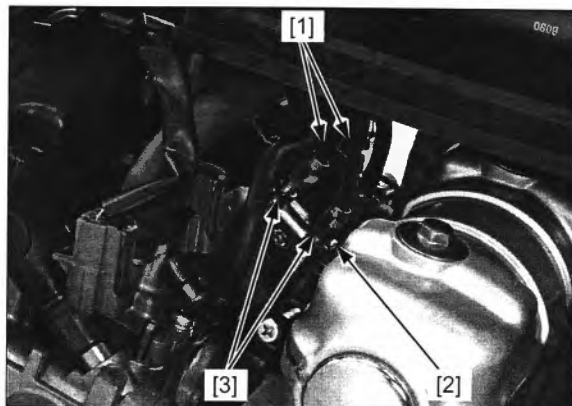
Place the front air cleaner housing/throttle body assembly into the frame.

Route the crankcase breather hose properly (page 1-21).

Connect the crankcase breather hose [1] to the front air cleaner housing, secure it with the hose clip.

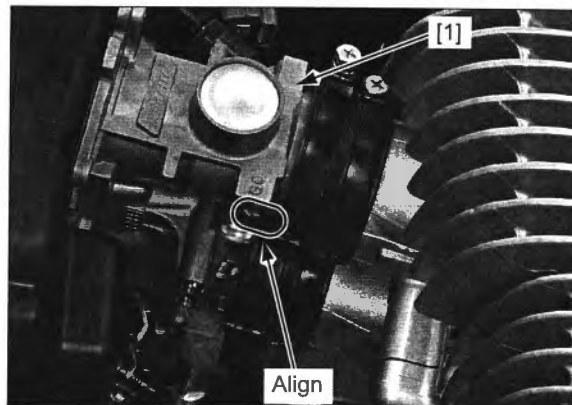


Connect the throttle cable [1] ends to the throttle drum. Install the throttle cables to the guide bracket [2] and temporarily tighten the adjuster nuts [3].



Apply engine oil to the insulator inside surfaces for ease of throttle body installation.

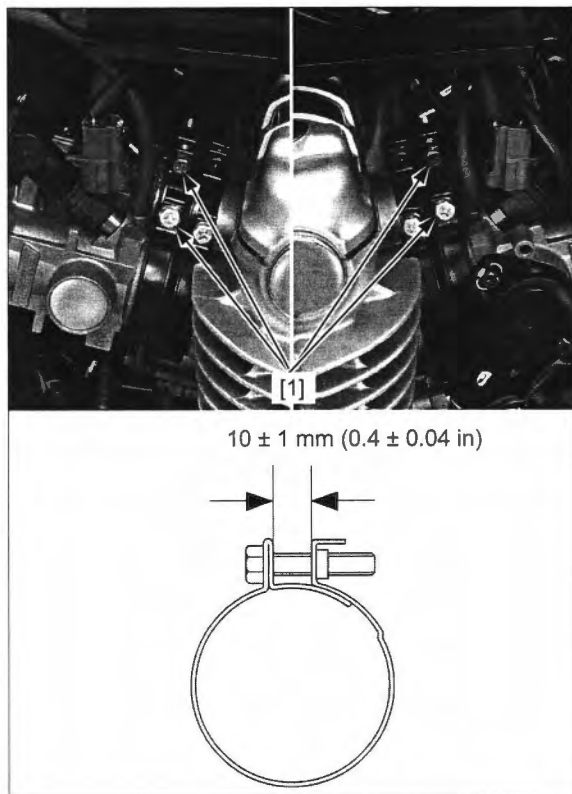
Install the throttle body [1] into the insulators by aligning its bosses with the cut-outs of the insulators.



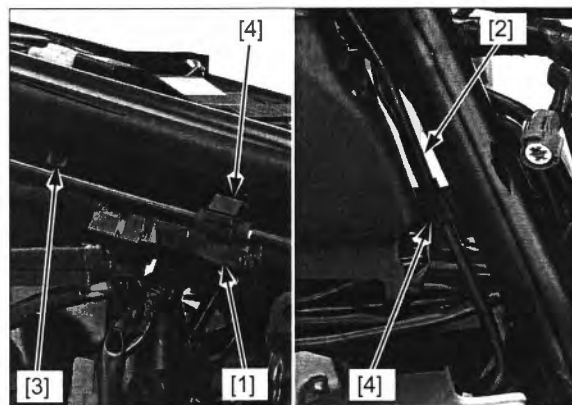
FUEL SYSTEM (PGM-FI)

Tighten the throttle body side insulator band screws [1] so that the insulator band distance is 10 ± 1 mm (0.4 ± 0.04 in).

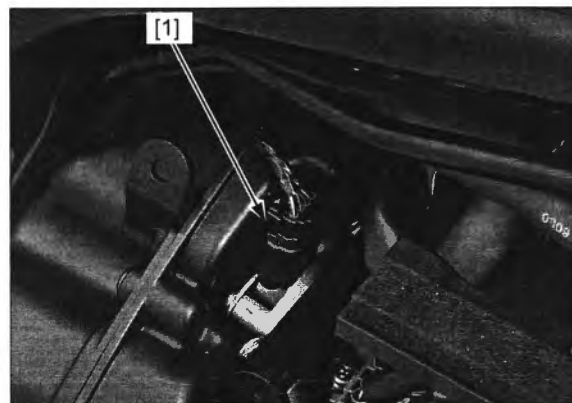
Adjust the throttle grip freeplay (page 3-6).



Be careful not to bend or damage the clutch line. Install the main harness [1] and clutch line [2] to the original positions, then secure them with the main harness clip [3] and clutch line guide clips [4].



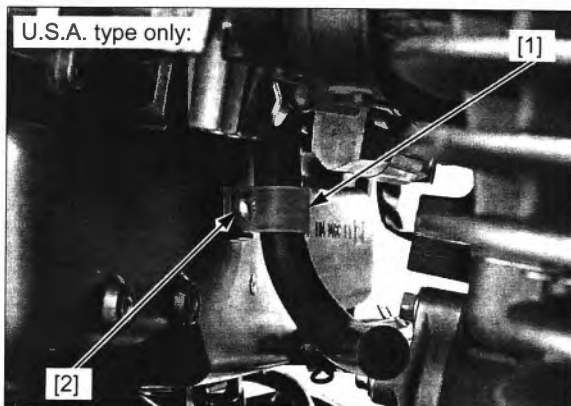
Connect the IACV 4P (Black) connector [1].



Connect the fuel injector sub-harness 10P (Black) connector [1].



U.S.A. type only: Install the hose clamp [1] and tighten the screw [2].

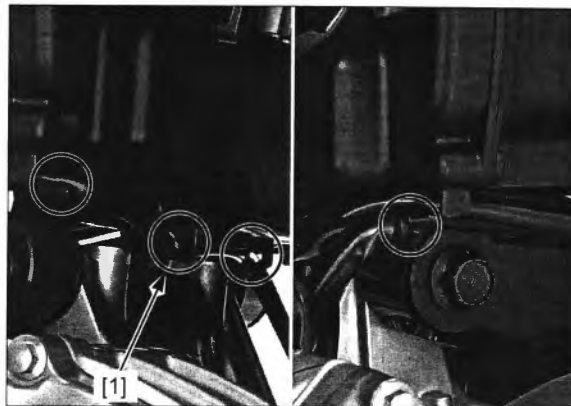


Route the wire harness properly (page 1-21). Route the wire harnesses to the guides [1] of the air cleaner housing.

Install the following:

- rear air cleaner housing (page 5-57)
- fuel tank (page 5-55)

U.S.A. type only: Install the EVAP purge control solenoid valve (page 5-86).



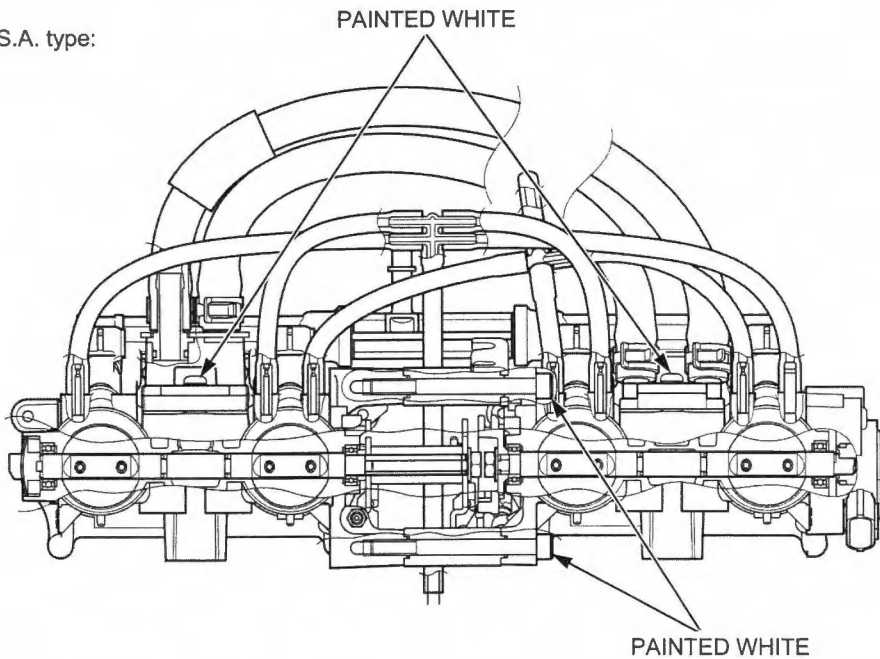
THROTTLE BODY

DISASSEMBLY

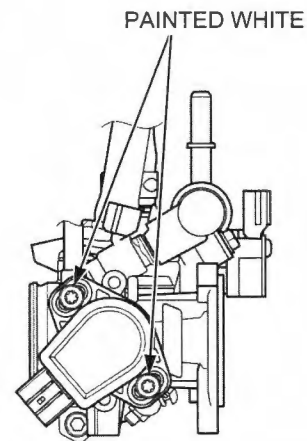
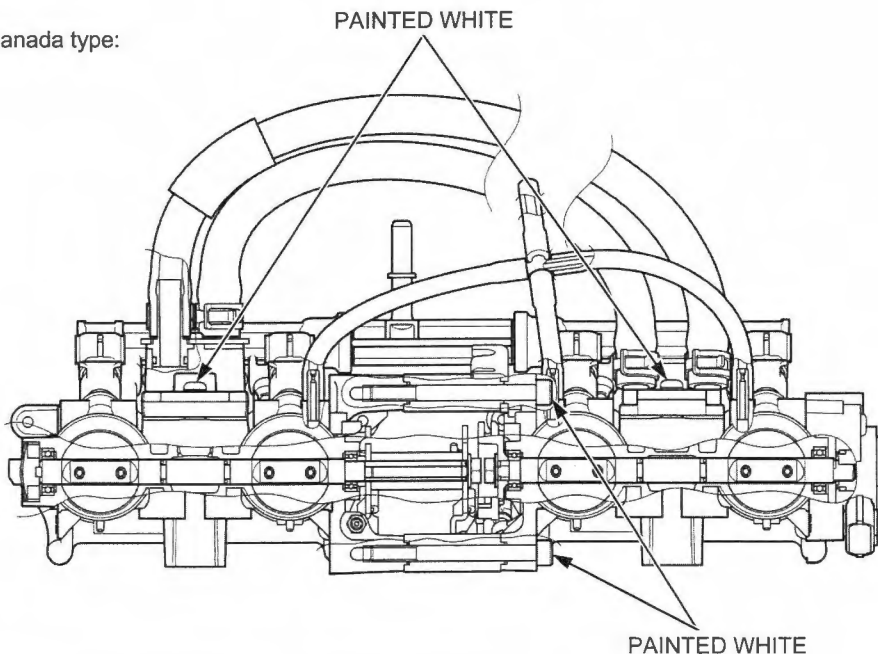
- Prevent dirt and debris from entering the throttle bore and fuel hose, clean them using compressed air.
- Do not damage the throttle body. It may cause incorrect throttle valve synchronization.
- The throttle body is factory pre-set. Do not disassemble in a way other than shown in this manual.
- Do not loosen or tighten the white painted bolts, nut, or screws of the throttle body. Loosening or tightening them can cause throttle valve synchronization failure.

Viewed from cylinder head side and throttle sensor side:

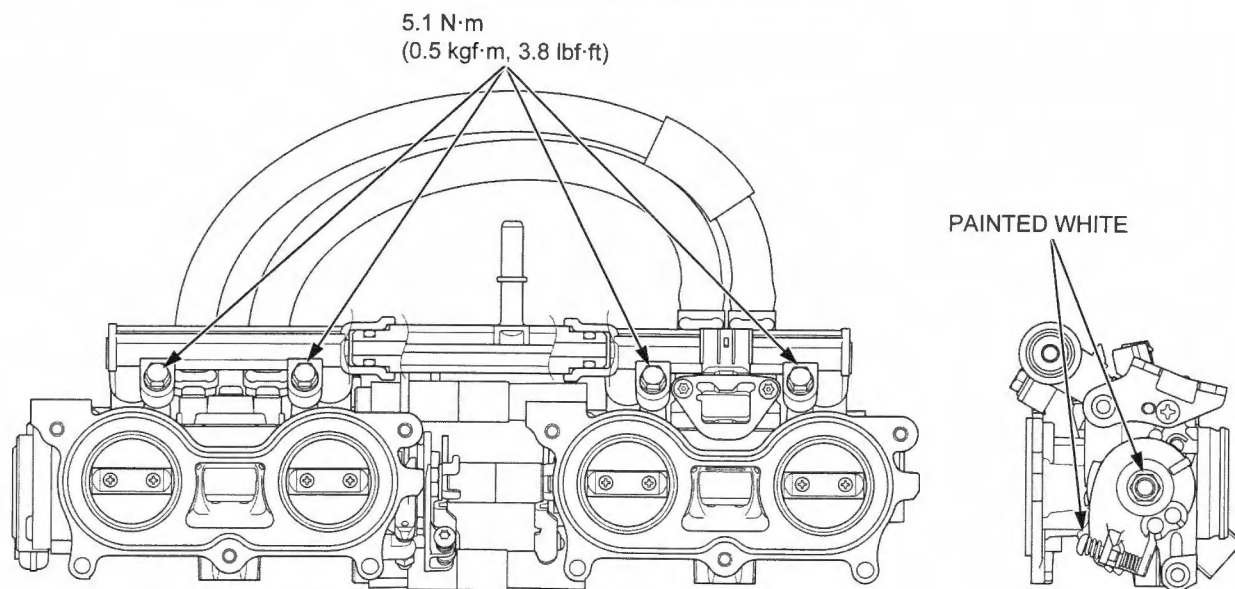
U.S.A. type:



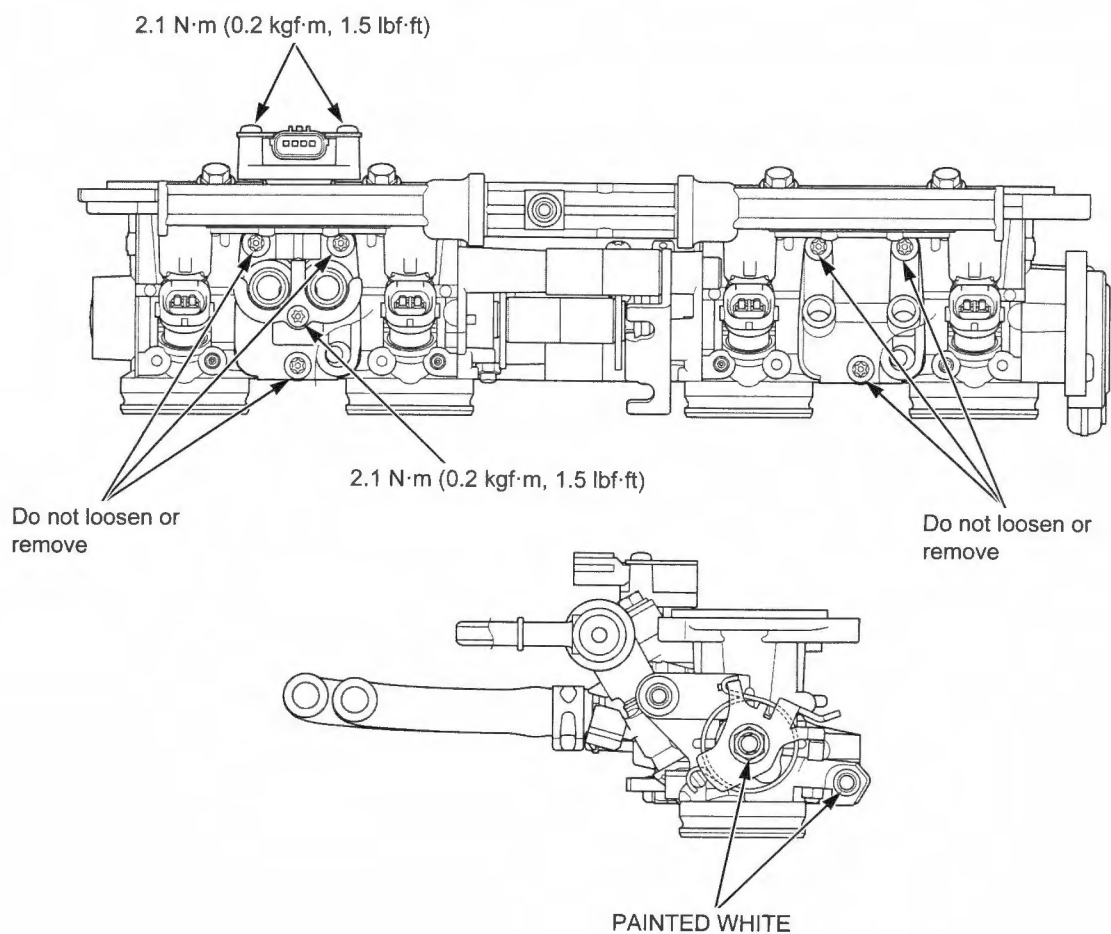
Canada type:



Viewed from air cleaner housing side and throttle drum side:

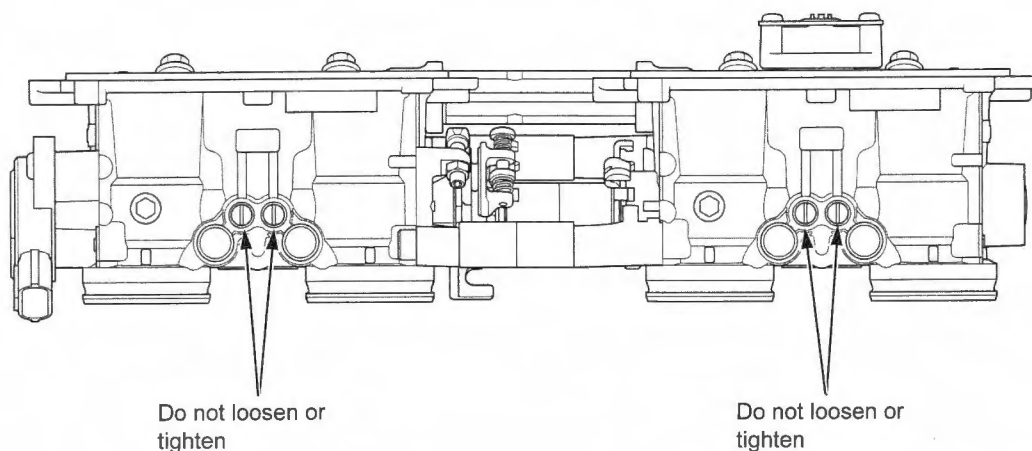


Viewed from top and throttle drum side:



FUEL SYSTEM (PGM-FI)

Viewed from bottom:



Remove the throttle body from the front air cleaner housing (page 5-60).

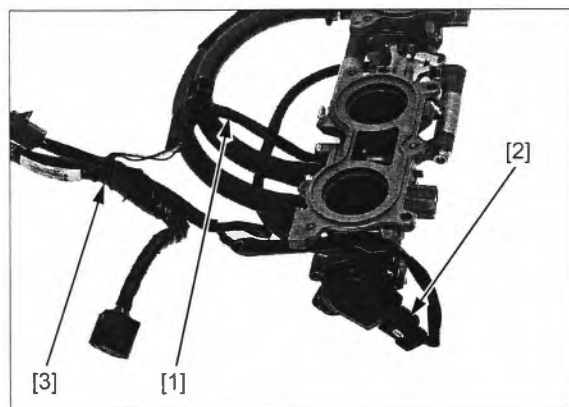
Disconnect the quick connect fitting from the fuel rail joint (page 5-45).

Remove the following:

- fuel rail assembly (page 5-71)
- IACV (page 5-74)

Disconnect the MAP sensor vacuum hose [1] from the MAP sensor.

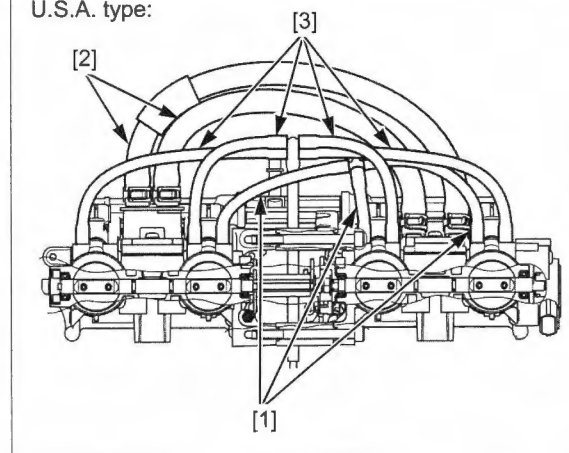
Disconnect the TP sensor 3P (Black) connector [2], then remove the fuel injector sub-harness [3].



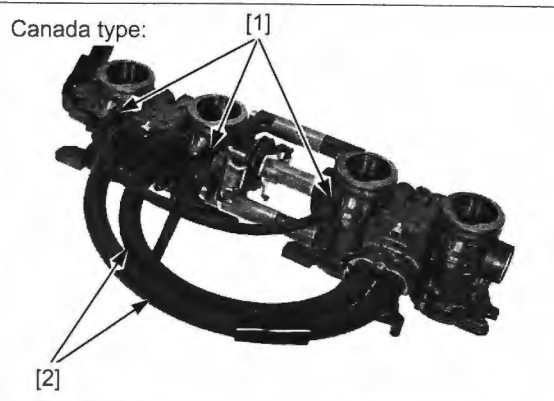
U.S.A. type: Disconnect the MAP sensor vacuum hoses [1] from the throttle body.

Disconnect the IACV distribution hoses [2] and EVAP vacuum hoses [3].

U.S.A. type:



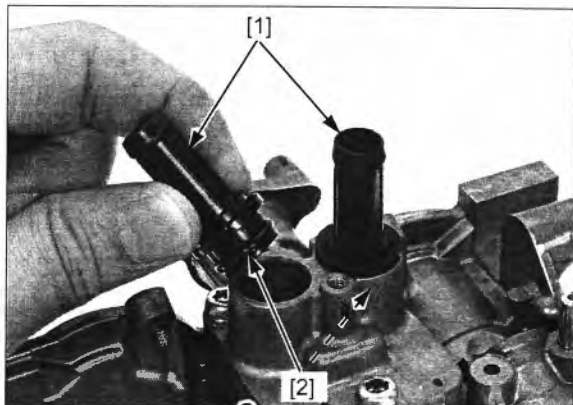
Canada type: Disconnect the MAP sensor vacuum hoses [1] from the throttle body.
Disconnect the IACV distribution hoses [2].



Do not loosen the IACV cover screws. Remove the screw [1] and joint plate [2].



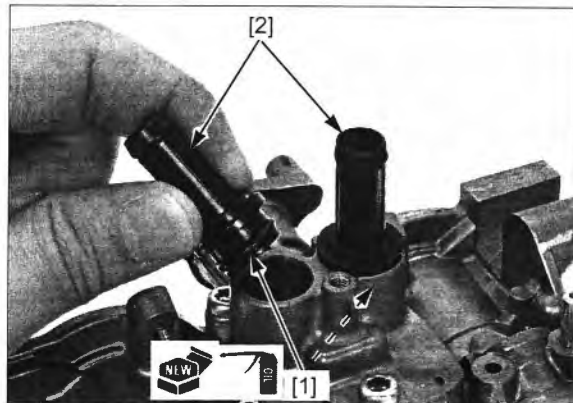
Remove the IACV joints [1] and O-rings [2].



ASSEMBLY

Apply engine oil to new O-rings [1] and install them to the IACV joints [2].

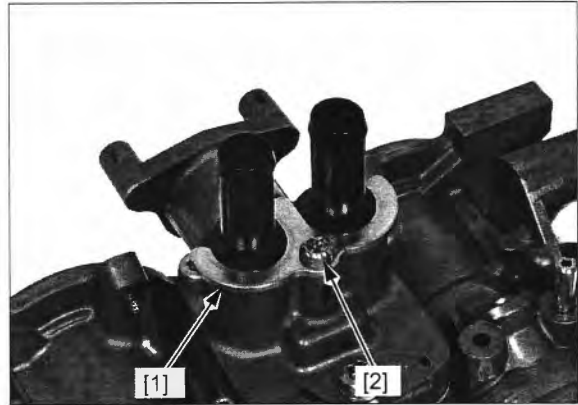
Install the IACV joints to the throttle body.



FUEL SYSTEM (PGM-FI)

Install the joint plate [1] and tighten the screw [2] to the specified torque.

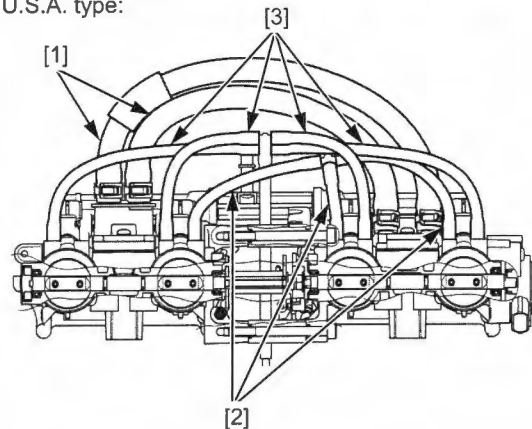
TORQUE: 2.1 N·m (0.2 kgf·m, 1.5 lbf·ft)



U.S.A. type: Connect the IACV distribution hoses [1], then secure them with the hose clips.

Connect the MAP sensor vacuum hoses [2] and EVAP hoses [3] to the throttle body.

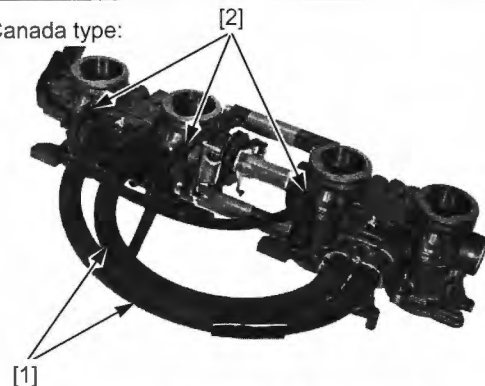
U.S.A. type:



Canada type: Connect the IACV distribution hoses [1], then secure them with the hose clips.

Connect the MAP sensor vacuum hoses [2] to the throttle body.

Canada type:



Route the sub-harness properly (page 1-21).

Route the fuel injector sub-harness [1] and connect the TP sensor 3P (Black) connector [2].

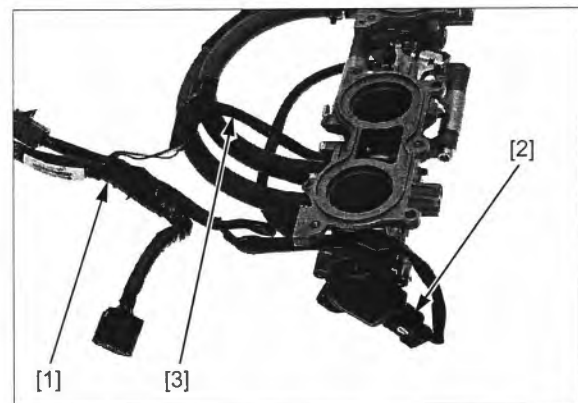
Connect the MAP sensor vacuum hose [3] to the MAP sensor.

Install the following:

- IACV (page 5-75)
- fuel rail assembly (page 5-72)

Connect the quick connect fitting to the fuel rail joint (page 5-46).

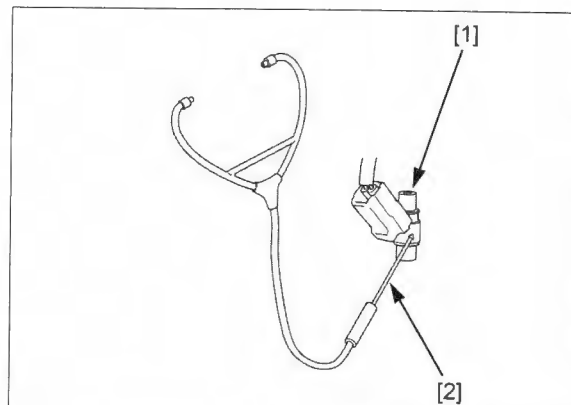
Install the throttle body to the front air cleaner housing (page 5-61).



FUEL INJECTOR

INSPECTION

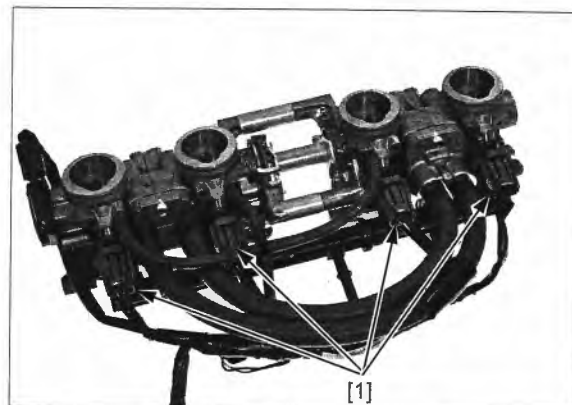
Start the engine and let it idle.
Confirm the fuel injector [1] operation sounds with a sounding rod [2] or stethoscope.



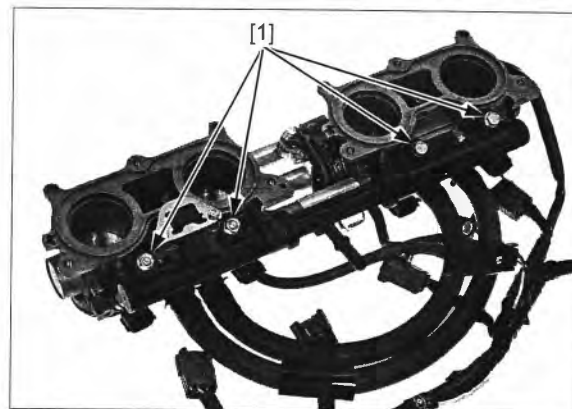
REMOVAL

Remove the throttle body from the front air cleaner housing (page 5-60).

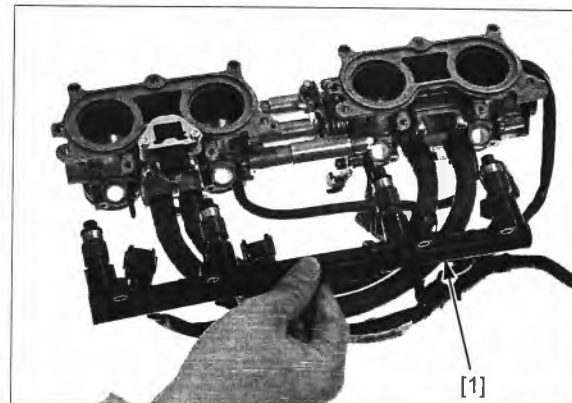
Disconnect the fuel injector 2P (Black) connectors [1].



Remove the fuel rail mounting bolts [1].

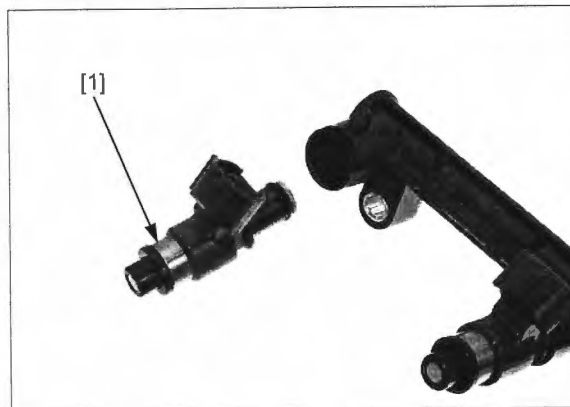


Remove the fuel rail assembly [1] from the throttle body.

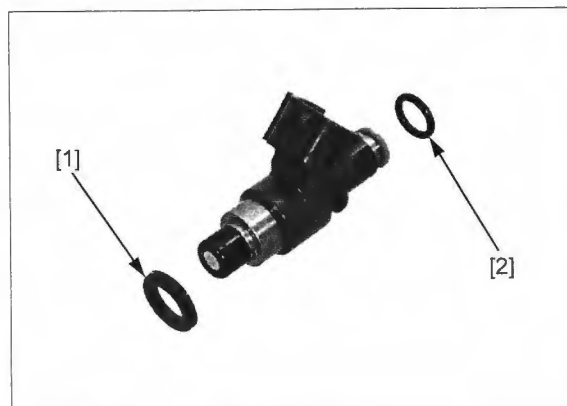


FUEL SYSTEM (PGM-FI)

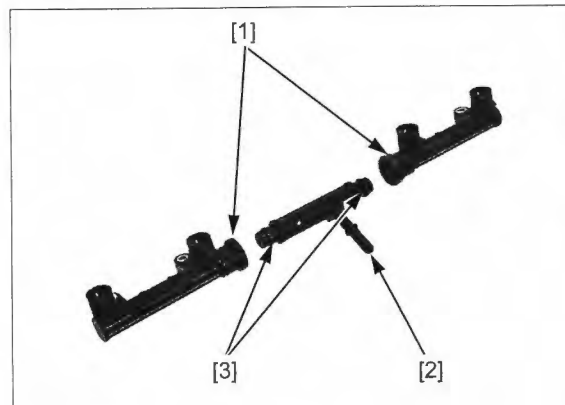
Remove the fuel injectors [1] from the fuel rail.



Remove the seal ring [1] and O-ring [2] from the fuel injector.



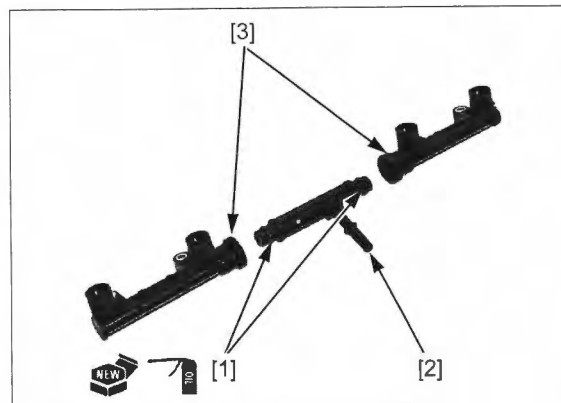
Remove the fuel rails [1] from the fuel rail joint [2].
Remove the O-rings [3] from the fuel rail joint.



INSTALLATION

Apply engine oil to new O-rings [1] of the fuel rail joint.
Install the O-rings onto the fuel rail joint [2].

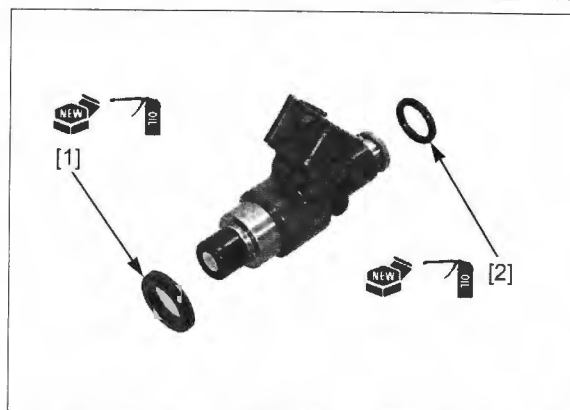
Install the fuel rails [3] to the fuel rail joint, being careful of the fuel pipe joint direction.



FUEL SYSTEM (PGM-FI)

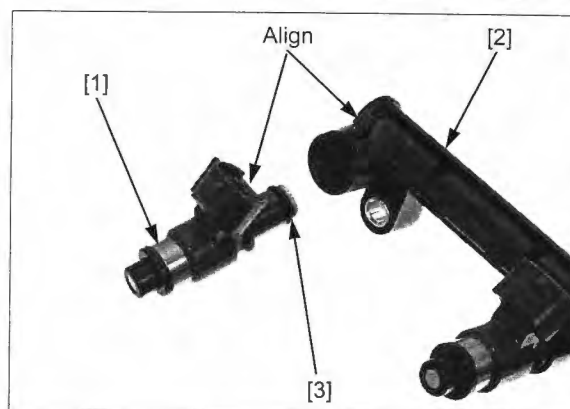
Replace the seal ring and O-ring with new ones as a set.

Apply engine oil to a new seal ring [1] and a new O-ring [2], then install them to the fuel injector.



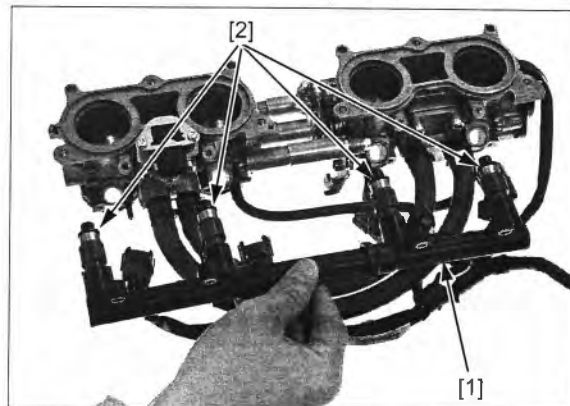
Install the fuel injectors [1] to the fuel rail [2] by aligning its cut-out with the fuel rail tab, being careful not to damage the O-ring [3].

Install the fuel rail assembly to the throttle body (page 5-73).



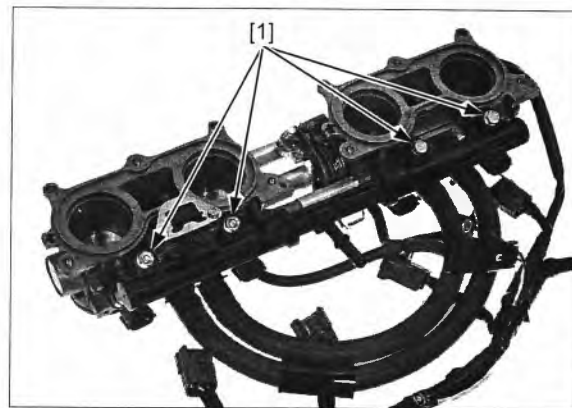
Be careful not to damage the seal rings [2].

Install the fuel rail assembly [1] to the throttle body.



Install and tighten the fuel rail mounting bolts [1] to the specified torque.

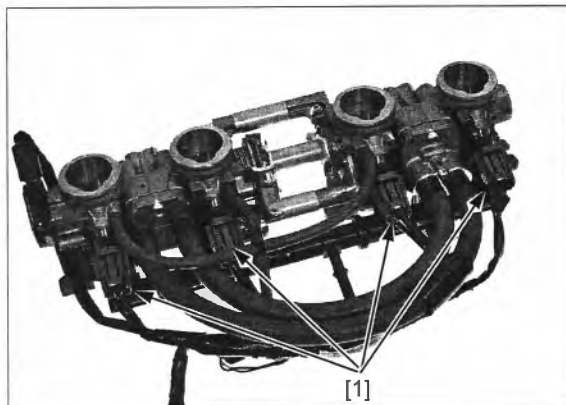
TORQUE: 5.1 N·m (0.5 kgf·m, 3.8 lbf·ft)



FUEL SYSTEM (PGM-FI)

Route the sub-harness properly (page 1-21).

Connect the fuel injector 2P (Black) connectors [1].
Install the throttle body to the front air cleaner housing (page 5-61).



IACV

INSPECTION

The IACV [1] is installed on the throttle body and is operated by the step motor. When the ignition switch is turned ON, the IACV operates for a few seconds.

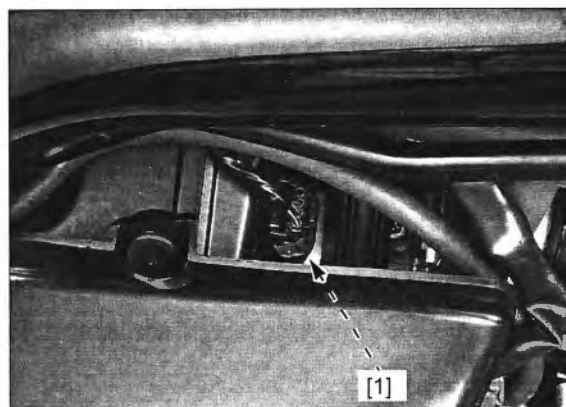
Remove the fuel tank (page 5-55)

Check the step motor operation sound with the ignition switch turned ON and engine stop switch "○".

NOTE:

The IACV operation can be checked visually as follows:

1. Remove the IACV (page 5-74).
2. Connect the 4P (Black) connector to the IACV, then turn the ignition switch ON and engine stop switch "○".

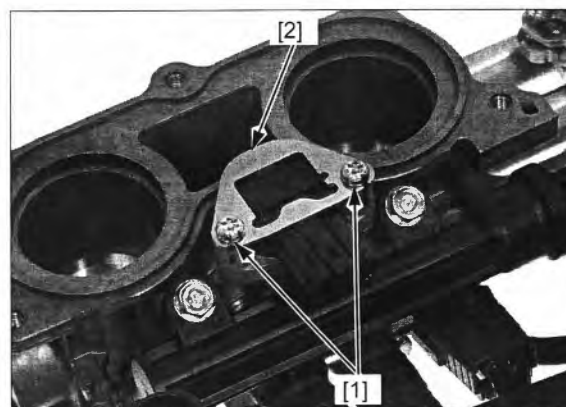


REMOVAL

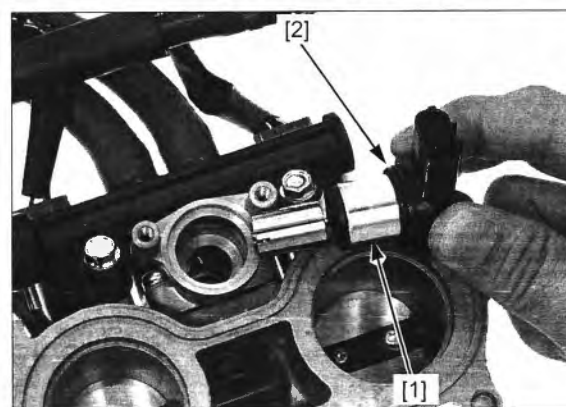
- Always clean the throttle body before the IACV removal to prevent dirt and debris from entering the IACV passage.

Remove the throttle body from the front air cleaner housing (page 5-60).

Remove the screws [1] and setting plate [2].

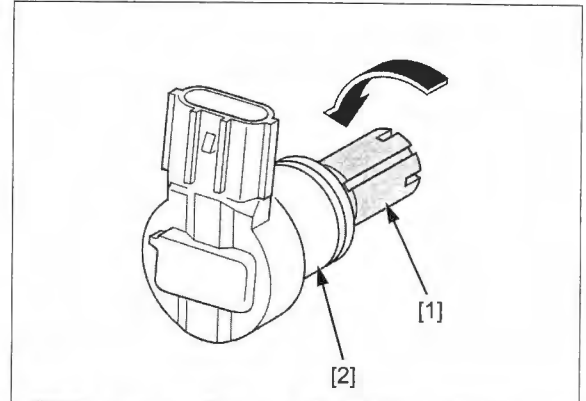


Remove the IACV [1] and O-ring [2].



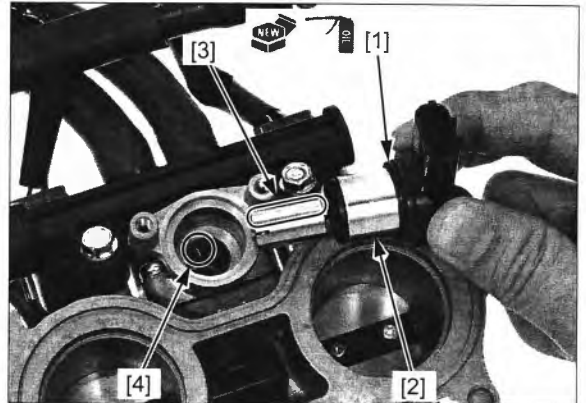
INSTALLATION

Turn the slide valve [1] clockwise until lightly seated on IACV [2].

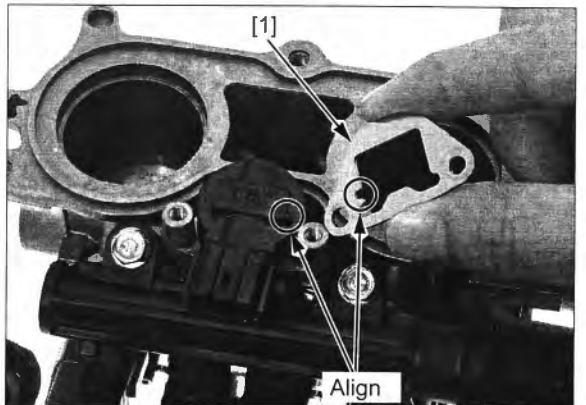


Apply engine oil to a new O-ring [1] and install it to the IACV [2].

Install the IACV aligning its groove [3] with the pin [4].



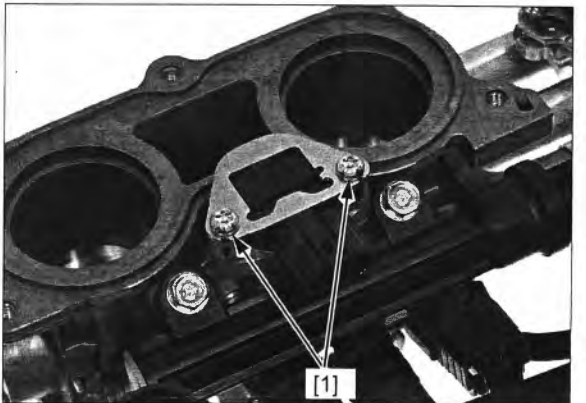
Install the setting plate [1] while aligning the cut-out with the lug on the IACV.



Install the screws [1] and tighten them to the specified torque.

TORQUE: 2.1 N·m (0.2 kgf·m, 1.5 lbf·ft)

Install the throttle body to the front air cleaner housing (page 5-61).



MAP SENSOR

REMOVAL/INSTALLATION

Remove the heat protector (page 2-12).

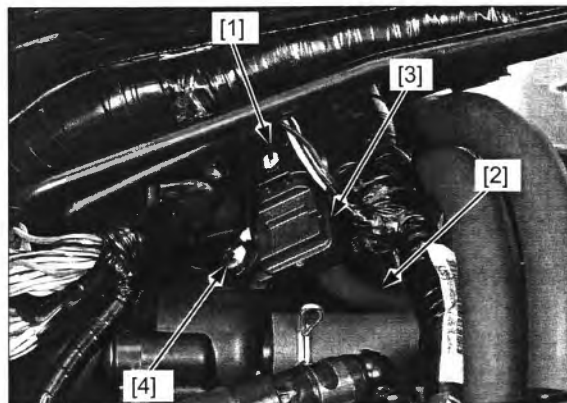
Disconnect the MAP sensor 3P (Black) connector [1].
Disconnect the vacuum hose [2] from the MAP sensor [3].

Remove the screw [4] and MAP sensor from the front air cleaner housing.

Installation is in the reverse order of removal.

TORQUE:

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



IAT SENSOR

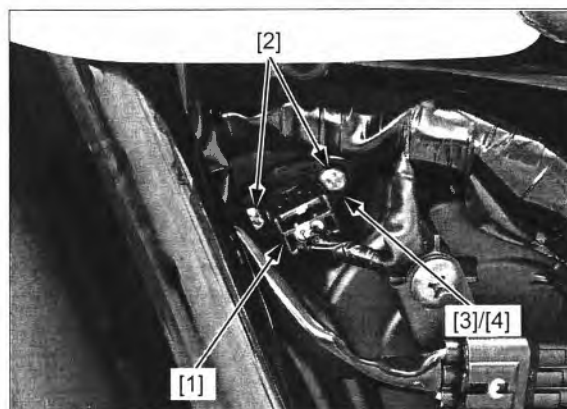
REMOVAL/INSTALLATION

Remove the left side cover (page 2-4).

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

Remove the screws [2] and IAT sensor [3] from the rear air cleaner housing.

Remove the O-ring [4] from the IAT sensor.



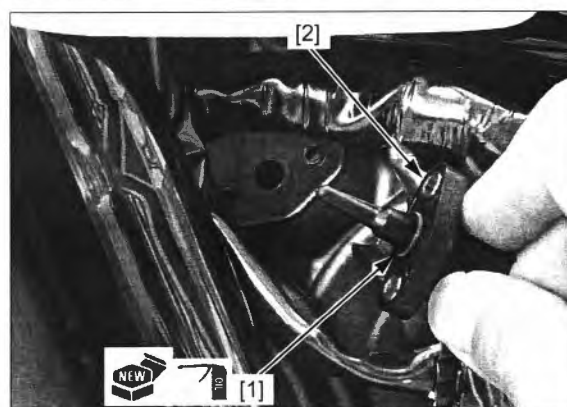
Apply engine oil to a new O-ring [1] and install it onto the IAT sensor [2].

Install the IAT sensor and tighten the screws to the specified torque.

TORQUE: 1.1 N·m (0.1 kgf·m, 0.8 lbf·ft)

Connect the IAT sensor 2P (Black) connector.

Install the left side cover (page 2-4).



EOT SENSOR

REMOVAL/INSTALLATION

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

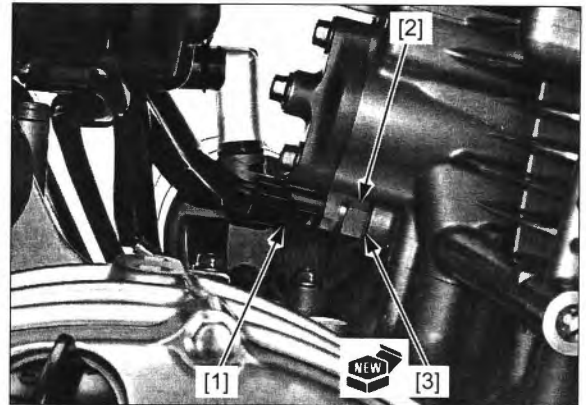
Wrap a shop towel around the sensor to soak up any spilled engine oil.

Remove the EOT sensor [2] and sealing washer [3].

Always replace the sealing washer with a new one.

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

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



BANK ANGLE SENSOR

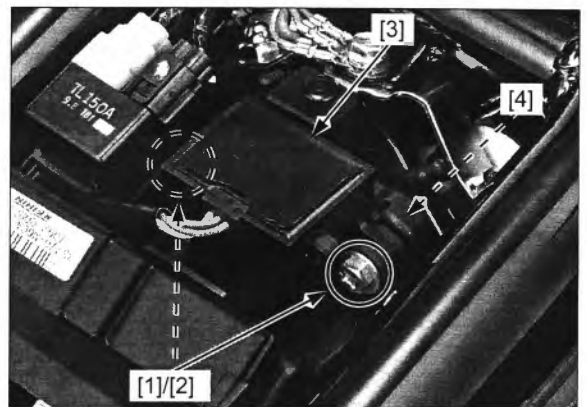
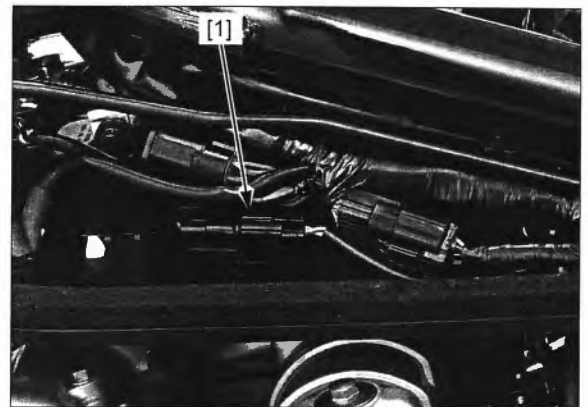
REMOVAL/INSTALLATION

Remove the fuel tank (page 5-55).

Disconnect the bank angle sensor 3P (Black) connector [1].

Be careful not to let the setting plate [4] fall from the heat protector.

Remove the bolts [1], collars [2], and bank angle sensor [3].

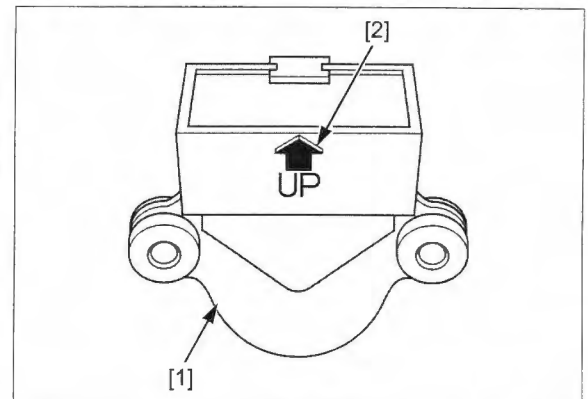


Route the bank angle sensor wire properly (page 1-21).

Installation is in the reverse order of removal.

NOTE:

- Install the bank angle sensor [1] with its "UP" mark [2] facing up and front.
- Make sure the setting plate into the heat protector securely, then install the bolts, aligning them with the weld nuts of setting plate.



FUEL SYSTEM (PGM-FI)

INSPECTION

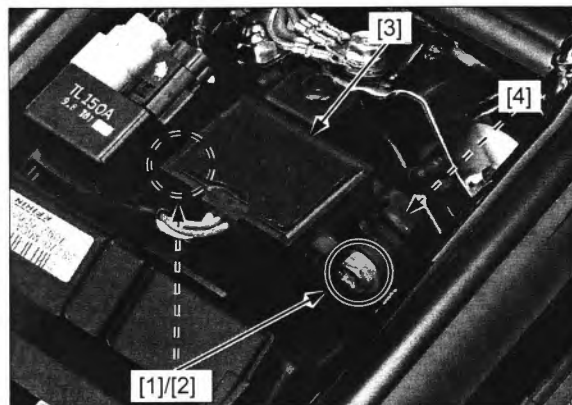
Support the motorcycle on a level surface.
Remove the fuel tank (page 5-55).

*Be careful not to let
the setting plate [4]
fall from the heat
protector.*

Remove the bolts [1], collars [2], and bank angle sensor [3].

NOTE:

Do not disconnect the bank angle sensor connector during inspection.



Place the bank angle sensor horizontally as shown and ignition switch ON and engine stop switch "O".

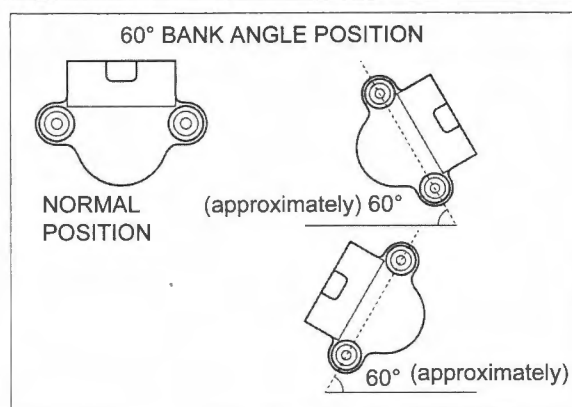
The bank angle sensor is normal if the engine stop relay clicks and the power supply is closed.

Incline the bank angle sensor approximately 60 degrees to the left or right with the ignition switch ON.

The bank angle sensor is normal if the engine stop relay clicks and the power supply is open.

If you repeat this test, first turn the ignition switch OFF, then turn the ignition switch ON.

If the engine stop relay does not click, inspect the bank angle sensor line as follows:



INPUT LINE INSPECTION

Disconnect the bank angle sensor 3P (Black) connector (page 5-77).

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

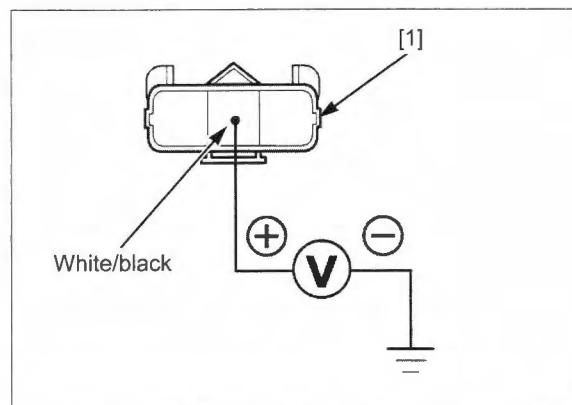
Measure the voltage between the bank angle sensor 3P (Black) connector [1] at the wire side and ground.

Connection: White/black (+) – Ground (-)

There should be battery voltage.

If there is no battery voltage, inspect the following:

- open circuit in White/black wire
- battery (page 16-6)
- main fuse (30A)
- sub fuse (START 10A)
- ignition switch (page 19-29)



GROUND LINE INSPECTION

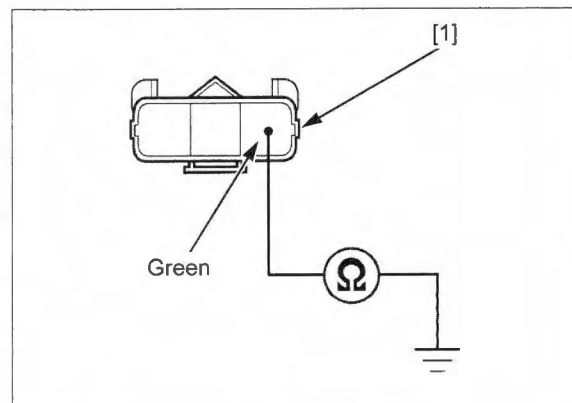
Turn the ignition switch OFF.

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

Connection: Green – Ground

There should be continuity.

If there is no continuity, inspect the open circuit in Green wire



ENGINE STOP RELAY COIL LINE INSPECTION

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

Measure the voltage between the bank angle sensor 3P (Black) connector [1] at the wire side and ground.

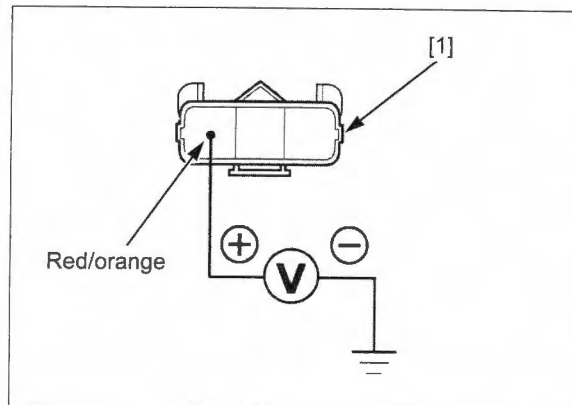
Connection: Red/orange (+) – Ground (–)

There should be battery voltage.

If there is no battery voltage, inspect the following:

- open circuit in Red/orange wire
- engine stop relay (page 5-79)
- engine stop switch (page 19-30)

If all items are normal, replace the bank angle sensor with a known good one and recheck.

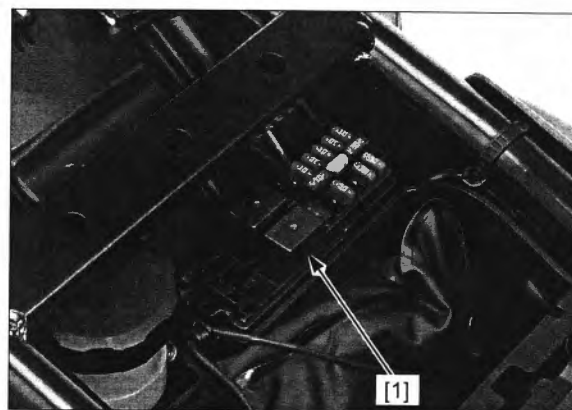


ENGINE STOP RELAY

INSPECTION

Remove the fuse box cover (page 5-54).

Remove the engine stop relay [1].



Connect an ohmmeter to the engine stop relay [1] connector terminals.

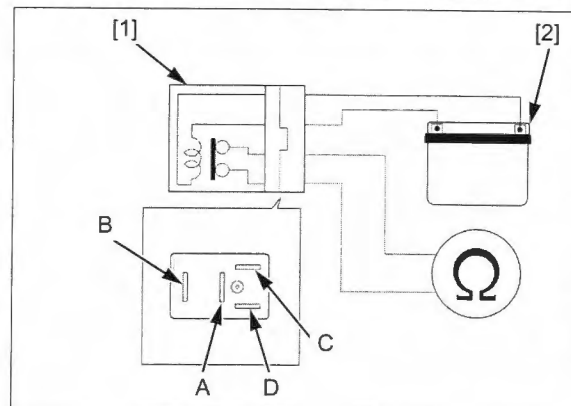
Connection: A – B

Connect a 12 V battery [2] to the following engine stop relay connector terminals.

Connection: C – D

There should be continuity only when the 12 V battery is connected.

If there is no continuity when the 12 V battery is connected, replace the engine stop relay.



ECM

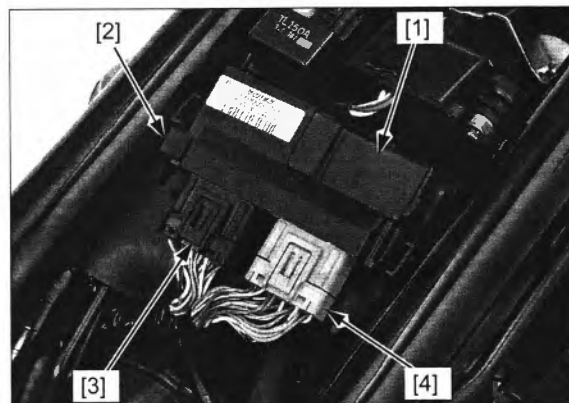
REMOVAL/INSTALLATION

Remove the fuel tank (page 5-55).

Remove the ECM [1] from the ECM box [2].

Disconnect the ECM 33P (Black) connector [3] and 33P (Gray) connector [4] from the ECM.

Installation is in the reverse order of removal.



ECM POWER/GROUND LINE INSPECTION

ENGINE DOES NOT START (No DTC and MIL blinking)

1. ECM Power Input Voltage Inspection

- Before starting the inspection, check for loose or poor contact on the ECM 33P connectors and recheck the MIL blinking.

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

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

Measure the voltage at the ECM 33P (Black) connector terminal and ground.

TOOL:

Test probe, 2 pack

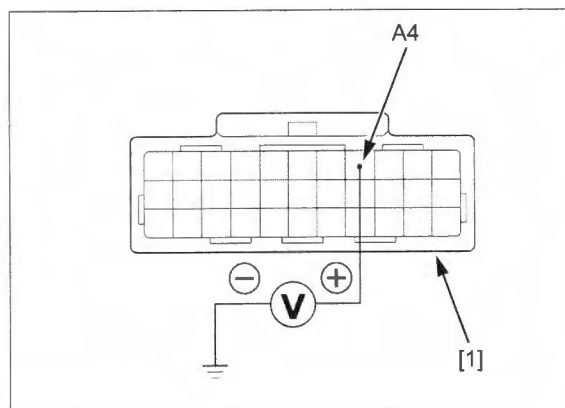
07ZAJ-RDJA110

CONNECTION: A4 (+) – Ground (–)

Is there battery voltage?

YES – GO TO STEP 2.

NO – GO TO STEP 3.



2. ECM Ground Line Inspection

Turn the ignition switch OFF.

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

Check the continuity between the ECM 33P (Black) connector [2] and 33P (Gray) connector terminals and ground.

TOOL:

Test probe, 2 pack

07ZAJ-RDJA110

CONNECTION: A23 – Ground

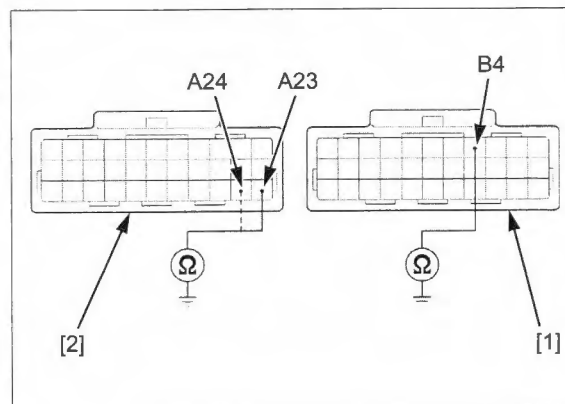
A24 – Ground

B4 – Ground

Are there continuities?

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

NO – Open circuit in Green/white (A23 or A24) wires or Green wire (B4)



3. Engine Stop Relay Inspection 1

Turn the ignition switch OFF.
Remove the engine stop relay (page 5-79).

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

Measure the voltage at the engine stop relay connector terminals [1] in the fuse box.

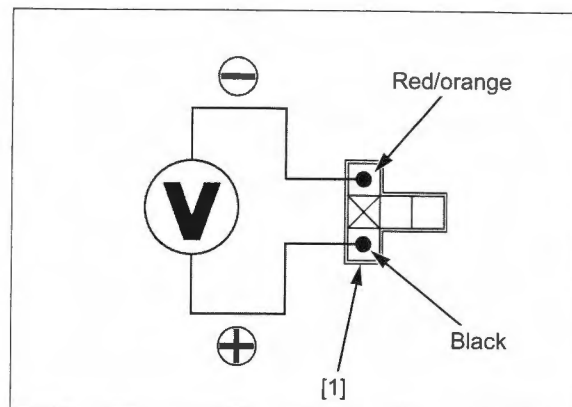
CONNECTION: Black (+) – Red/orange (–)

Is there battery voltage?

YES – GO TO STEP 4.

NO –

- Inspect the bank angle sensor (page 5-77).
- Inspect the engine stop switch (page 19-30).
- Blown sub fuse 10A (START)



4. Engine Stop Relay Inspection 2

Turn the ignition switch OFF.
Jump the engine stop relay connector [1] terminals with a jumper wire [2].

CONNECTION: Red/white – Black/white

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

Measure the voltage at the ECM 33P (Black) connector [3] terminal and ground.

TOOL:

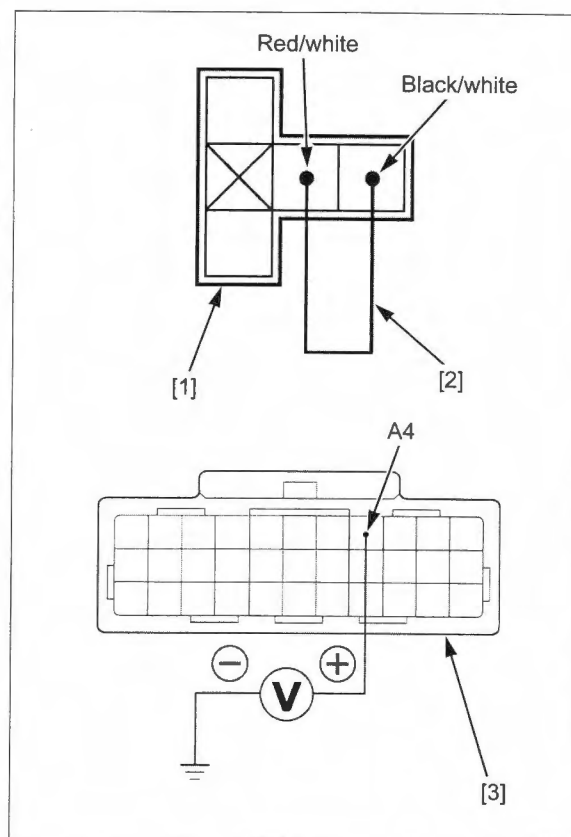
Test probe, 2 pack 07ZAJ-RDJA110

CONNECTION: A4 (+) – Ground (–)

Is there battery voltage?

YES – Inspect the engine stop relay (page 5-79).

NO – Open circuit in power input lines (Black/white or Red/white) between the battery and ECM



SECONDARY AIR SUPPLY SYSTEM

SYSTEM INSPECTION

Start the engine and warm it up.
Stop the engine.

Remove the air cleaner element (page 3-7).

Disconnect the air supply hose [1] from the air cleaner housing.

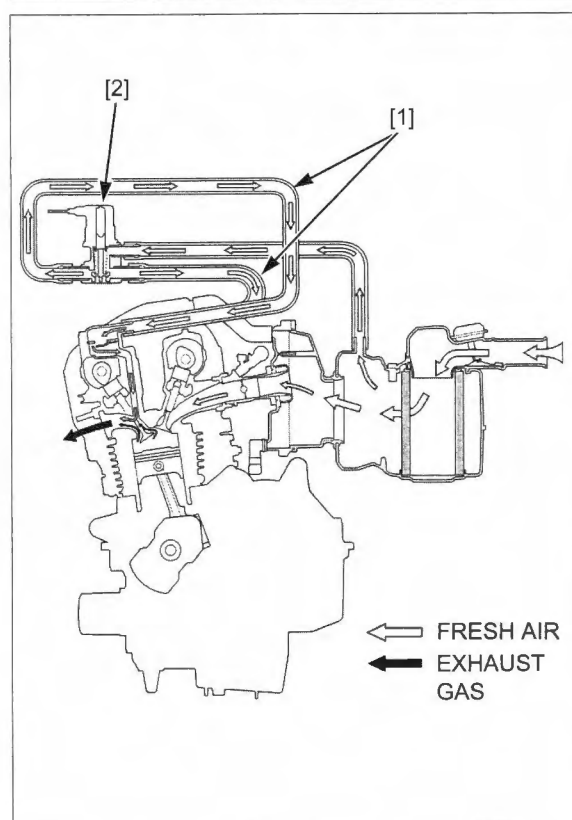
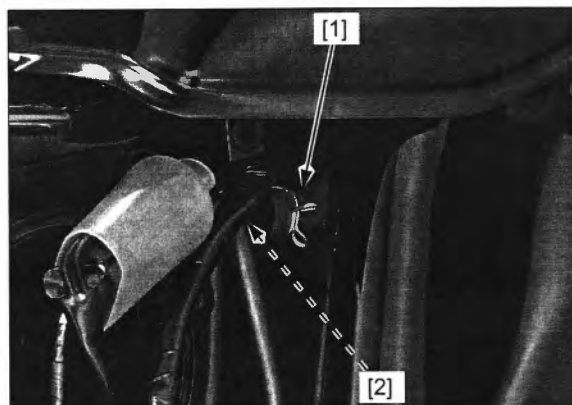
Check that the secondary air intake port [2] is clean and free of carbon deposits.

Check the PAIR check valves if the port is carbon fouled (page 5-84).

Install the air cleaner element and air cleaner duct assembly (page 3-7).

Start the engine and open the throttle slightly to be certain that the air sucked in through the air supply hose [1].

If the air is not drawn in, check the air supply hoses for clogs and the PAIR solenoid valve [2].



PAIR CONTROL SOLENOID VALVE

REMOVAL/INSTALLATION

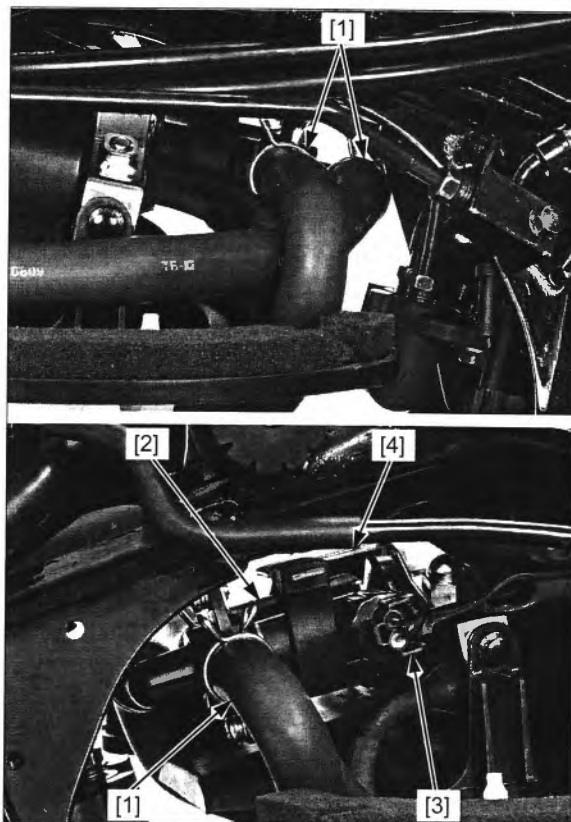
Remove the fuel tank (page 5-55).

Disconnect the PAIR air suction hoses [1] from the PAIR solenoid valve [2].

Disconnect the PAIR solenoid valve 2P (Black) connector [3].

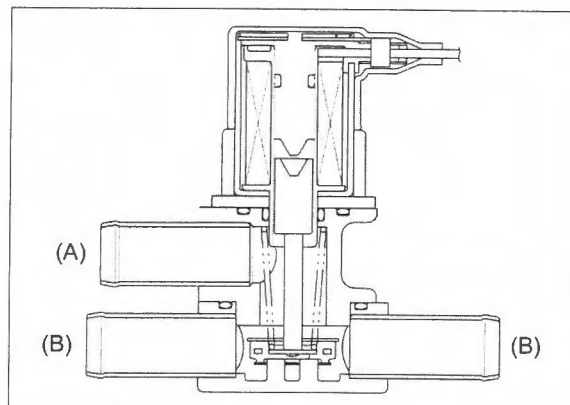
Remove the PAIR solenoid valve from the ignition coil stay [4].

Installation is in the reverse order of removal.



INSPECTION

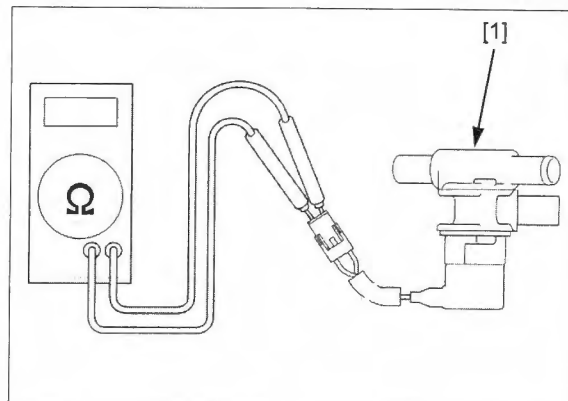
Check that air does not flow (A) to (B), only when a 12 V battery is connected to the PAIR solenoid valve 2P (Black) connector terminals.



Check the resistance between the terminals of the PAIR solenoid valve [1].

STANDARD: 23 – 27 Ω (20 °C/68 °F)

If the resistance is out of specification, replace the PAIR solenoid valve.



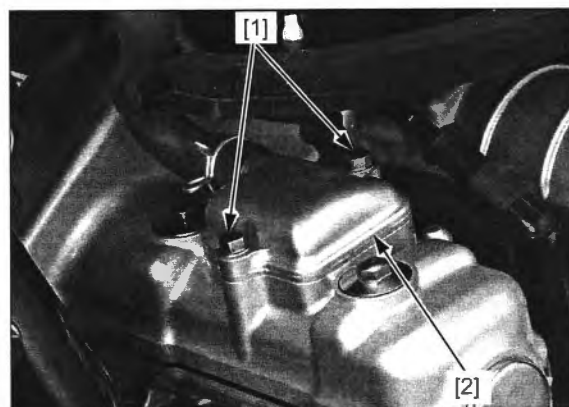
FUEL SYSTEM (PGM-FI)

PAIR CHECK REED VALVE

INSPECTION

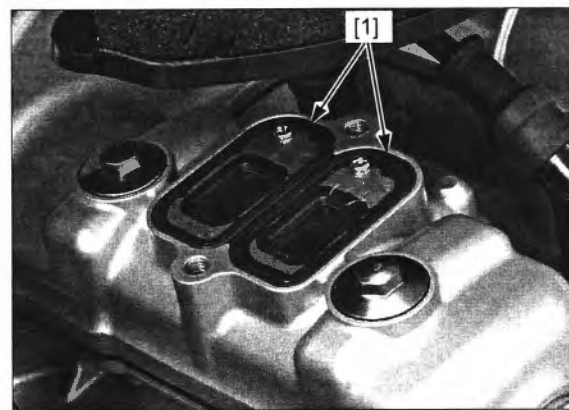
Remove the fuel tank (page 5-55).

Remove bolts [1] and PAIR reed valve cover [2].



Remove the PAIR check valves [1].

Check the PAIR check valves for wear or damage, replace if necessary.



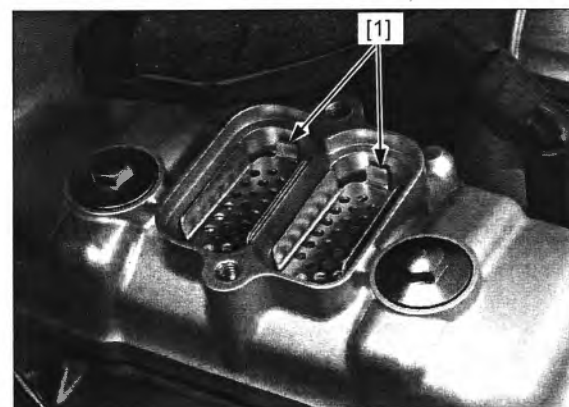
Remove the port plates [1] from the cylinder head cover.

Installation is in the reverse order of removal.

TORQUE:

Reed valve cover bolt:

12 N·m (1.2 kgf·m, 9 lbf·ft)



O₂ SENSOR

REMOVAL/INSTALLATION

- Handle the O₂ sensor with care.
- Do not get grease, oil, or other materials in the O₂ sensor air hole or it may be damaged.
- Do not service the O₂ sensor while it is hot.

Remove the exhaust pipe.

- CB1100/A (page 2-13)
- CB1100SA (page 2-17)

Remove the O₂ sensor [1] from the exhaust pipe using the special tool.

TOOL:

FRXM17 (Snap On) or equivalent

- Be careful not to damage the sensor wire.
- Do not use an impact wrench while removing or installing the O₂ sensor or it may be damaged.

Install the O₂ sensor [1] onto the exhaust pipe. Tighten the O₂ sensor to the specified torque using the special tool.

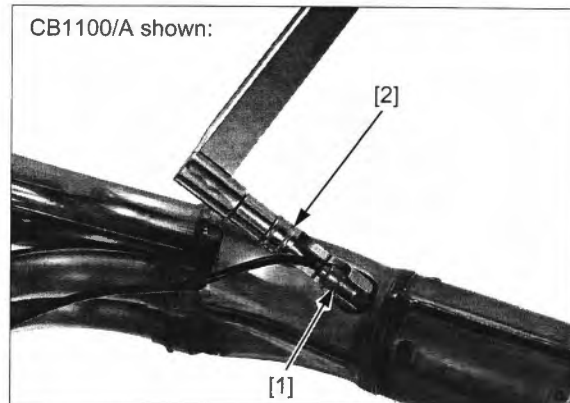
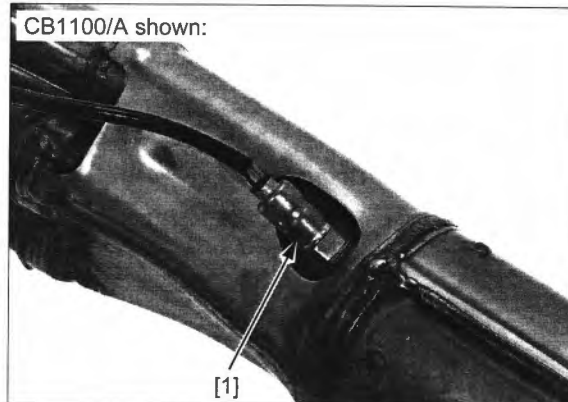
TOOL:

[2] FRXM17 (Snap On) or equivalent

TORQUE: 24.5 N·m (2.5 kgf·m, 18 lbf·ft)

Install the exhaust pipe.

- CB1100/A (page 2-15)
- CB1100SA (page 2-19)



EVAP CANISTER (U.S.A. TYPE ONLY)

REMOVAL/INSTALLATION

CB1100A/SA: Remove the rear air cleaner housing (page 5-56).

Release the EVAP canister drain hose [1] from the guide [2].

Remove the rear upper engine hanger nut [3], rubber mount [4], bolts [5], and rear engine hanger bracket [6]. Disconnect the fuel tank breather hose [7] and canister-to-solenoid valve hose [8] from the EVAP canister [9]. Remove the EVAP canister mounting bolt [10] and collar [11].

CB1100: Remove the EVAP canister through the swingarm hole.

CB1100A/SA: Remove the EVAP canister from the upper side of the frame.

Installation is in the reverse order of removal.

TORQUE:

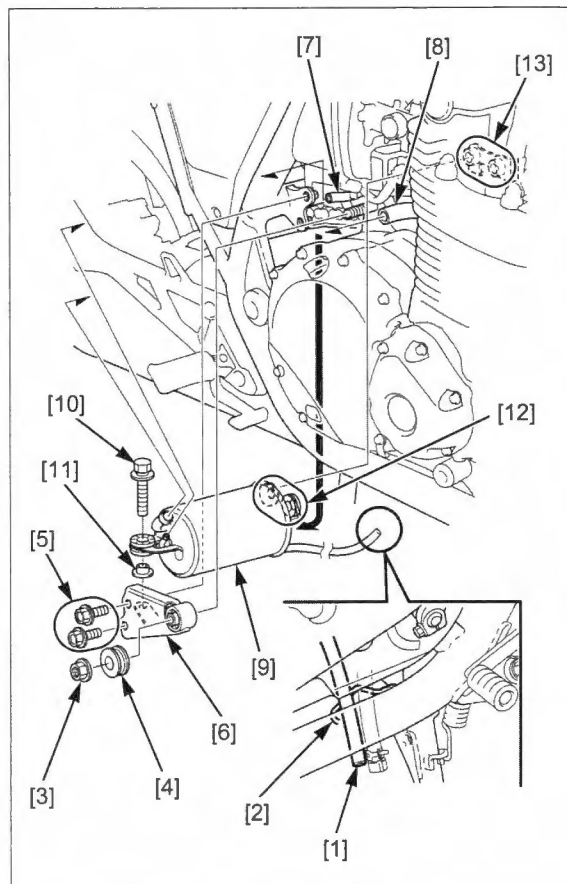
Rear upper engine hanger nut:

59 N·m (6.0 kgf·m, 44 lbf·ft)

Rear engine hanger bracket bolt:

59 N·m (6.0 kgf·m, 44 lbf·ft)

- Install the EVAP canister by aligning its grommets [12] with the bosses [13] of the frame.



EVAP PURGE CONTROL SOLENOID VALVE (U.S.A. TYPE ONLY)

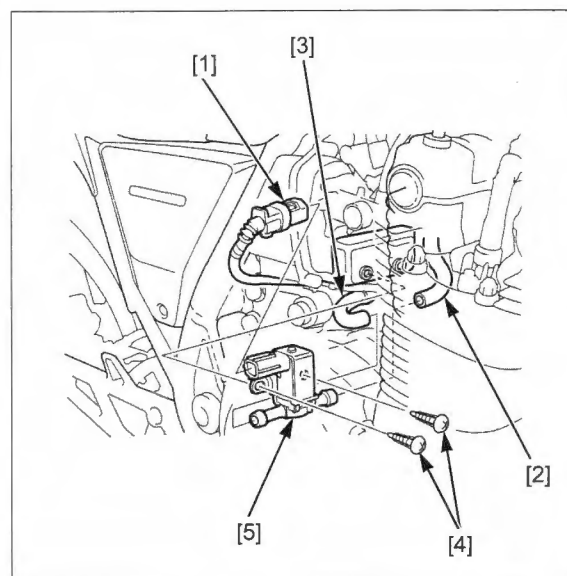
REMOVAL/INSTALLATION

Disconnect the following:

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

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

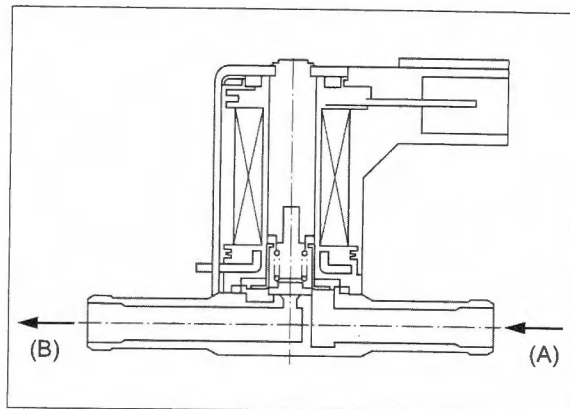
Installation is in the reverse order of removal.



INSPECTION

Remove the EVAP purge control solenoid valve.

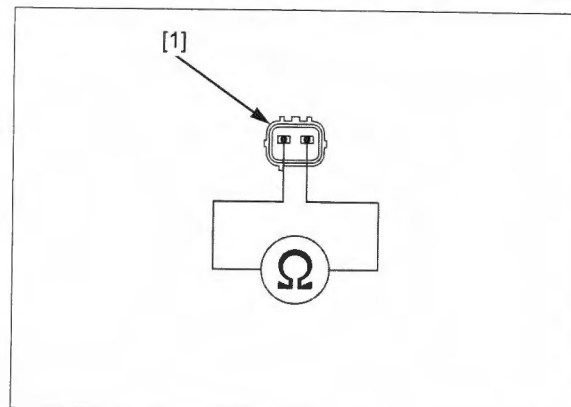
Check that air flows from (A) to (B) only when a 12 V battery is connected to the EVAP purge control solenoid valve terminal.



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

STANDARD 30 – 34 Ω (20°C/68°F)

If the resistance is out specification, replace the EVAP purge control solenoid valve.



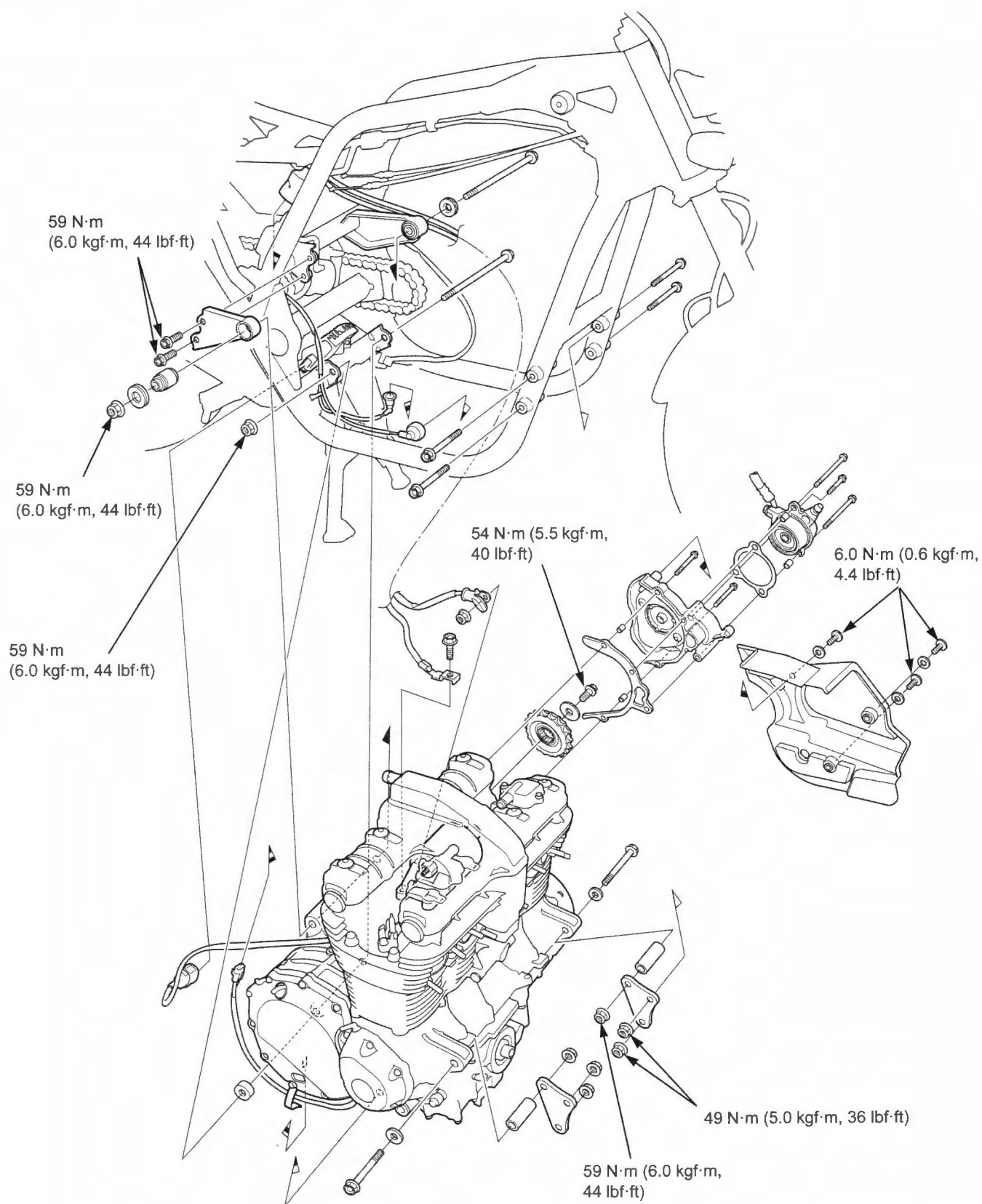
MEMO

6. ENGINE REMOVAL/INSTALLATION

COMPONENT LOCATION	6-2	ENGINE REMOVAL	6-6
SERVICE INFORMATION	6-3	ENGINE INSTALLATION	6-9
DRIVE SPROCKET REMOVAL	6-4	DRIVE SPROCKET INSTALLATION	6-12

ENGINE REMOVAL/INSTALLATION

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- A hoist or equivalent is required to support the motorcycle when removing and installing the engine.
- Protect the frame with tape when removing and installing the engine.
- A floor jack or other adjustable support is required to support and maneuver the engine.
- Do not use the oil filter as a jacking point.

NOTICE

Do not use the oil filter as a jacking point.

- The following components can be serviced with the engine installed in the frame.
 - oil pump (page 4-10)
 - camshaft (page 7-10)
 - cylinder head/valves (page 7-18)
 - cylinder/piston (page 8-5)
 - clutch (page 9-18)
 - gearshift linkage ('13 model: page 9-29, After '13 model: page 9-31)
 - alternator (page 10-4)
- The following components require engine removal for service.
 - crankshaft (page 11-8)
 - transmission (page 11-18)
 - balancer (page 11-33)

SPECIFICATIONS

ITEM		SPECIFICATIONS
Engine dry weight	'13	86.9 kg (191.6 lbs)
	After '13	87.5 kg (192.9 lbs)
Engine oil capacity	After disassembly	4.9 liter (5.2 US qt, 4.3 Imp qt)

TORQUE VALUES

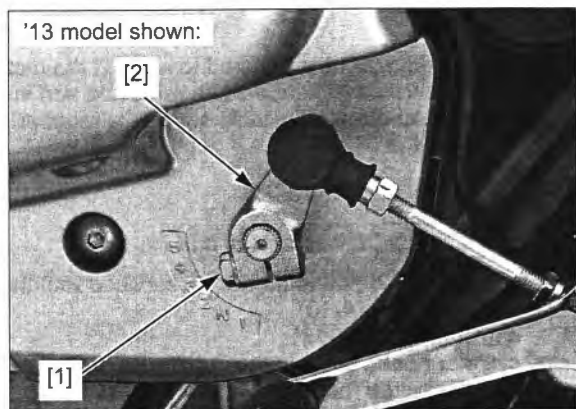
ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Left crankcase side cover bolt	3	6	6.0 (0.6, 4.4)	
Left crankcase rear cover bolt	2	6	12 (1.2, 9)	Apply a locking agent to the threads.
Drive sprocket bolt	1	10	54 (5.5, 40)	
Front engine bracket nut	4	10	49 (5.0, 36)	
Front engine hanger nut	2	10	59 (6.0, 44)	
Rear engine bracket bolt	2	10	59 (6.0, 44)	
Rear upper engine hanger nut	1	12	59 (6.0, 44)	
Rear lower engine hanger nut	1	12	59 (6.0, 44)	

ENGINE REMOVAL/INSTALLATION

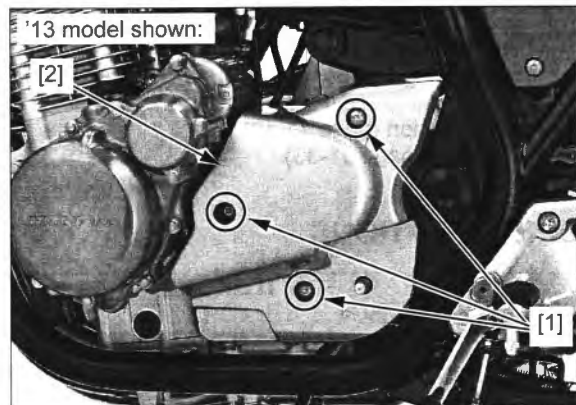
DRIVE SPROCKET REMOVAL

Loosen the rear axle nut and drive chain adjusting bolts (page 3-19).

Remove the pinch bolt [1], then remove the gearshift arm [2] from the gearshift spindle.

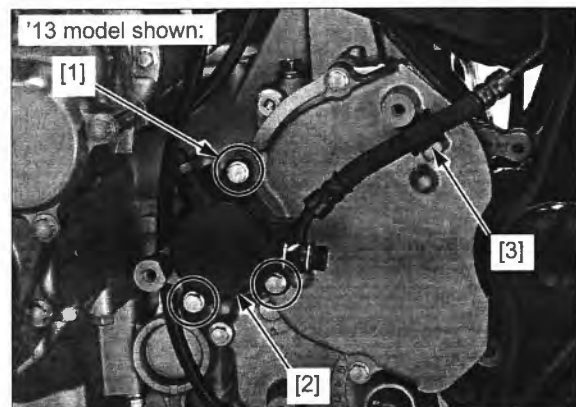


Remove the bolts [1] and left crankcase side cover [2].

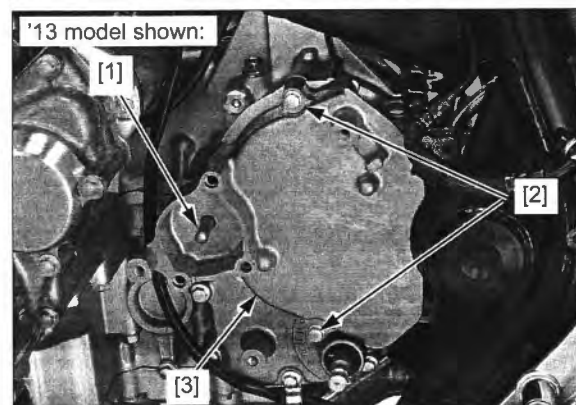


After '13 model: Remove the gear position switch (page 19-38).

Remove the bolts [1] and clutch slave cylinder [2].
Remove the clutch hose grommet [3] from the left crankcase rear cover.

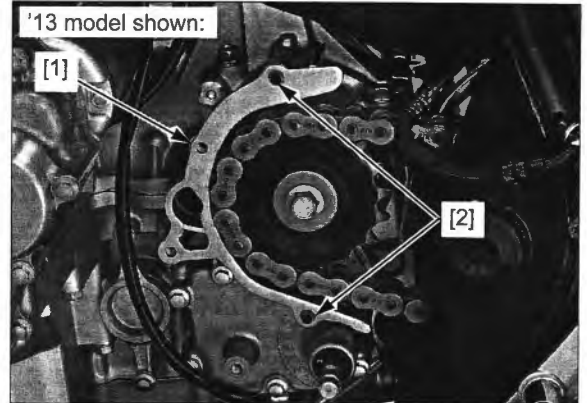


Remove the clutch lifter rod [1].
Remove the bolts [2] and left crankcase rear cover [3].



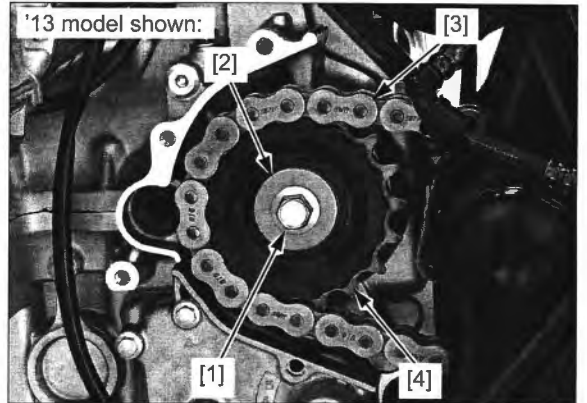
Remove the drive chain guide plate [1] and dowel pins [2].

Check the drive chain guide plate for wear or damage. Replace the drive chain guide plate if necessary.



Remove the drive sprocket bolt [1] and washer [2].

Derail the drive chain [3] and remove the drive sprocket [4] from the countershaft.



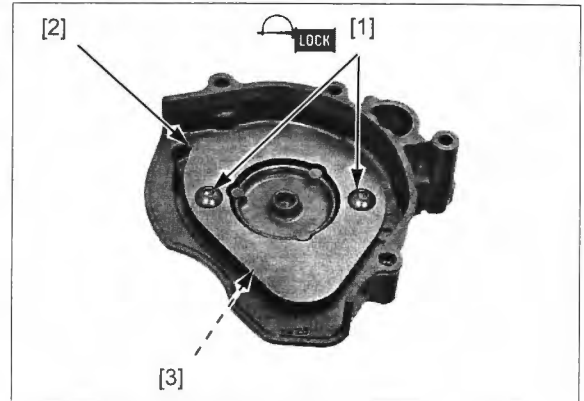
Remove the bolts [1], plate [2], and rear cover rubber [3].

Check the left crankcase rear cover rubber for deterioration or damage and replace if necessary.

Apply a locking agent to the bolt threads.

Install the rear cover rubber and plate and tighten the bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



ENGINE REMOVAL/INSTALLATION

ENGINE REMOVAL

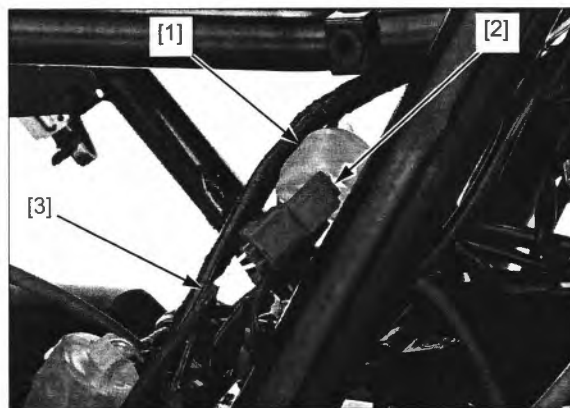
Drain the engine oil (page 3-15).

Remove the following:

- fuel tank (page 5-55)
- front air cleaner housing/throttle body (page 5-58)
- muffler/exhaust pipe
 - CB1100/A (page 2-13)
 - CB1100SA (page 2-17)
- oil filter (page 3-15)
- ignition coil (page 17-7)
- drive sprocket (page 6-4)
- starter motor (page 18-6)
- heat protector (page 2-12)
- oil cooler (page 4-17)

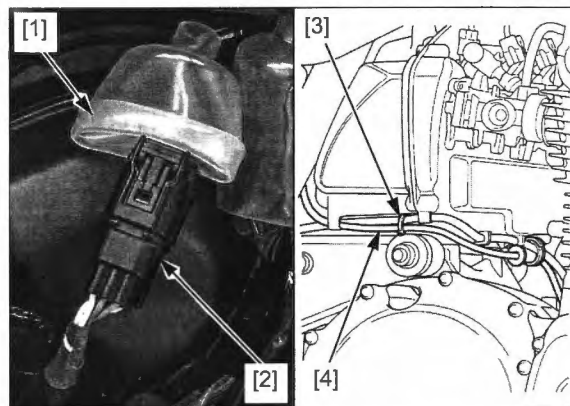
Pull up the boot [1] and disconnect the CKP sensor 2P (Red) connector [2].

Release the CKP sensor wire [3] from the frame clamp and wire clamp (page 17-8).



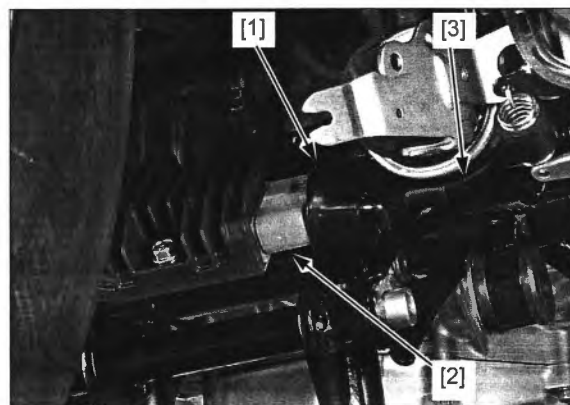
After '13 model: Pull up the boot [1] and disconnect the gear position switch 6P (Black) connector [2].

Remove the wire band [3] securing the gear position switch wire [4] and alternator wire.



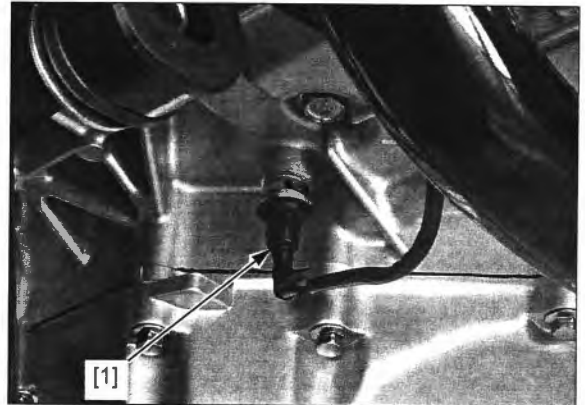
Pull up the boot [1] and disconnect the alternator 3P (Gray) connector [2].

Release the alternator wire [3] from the frame clamp and wire clamp (page 10-4).

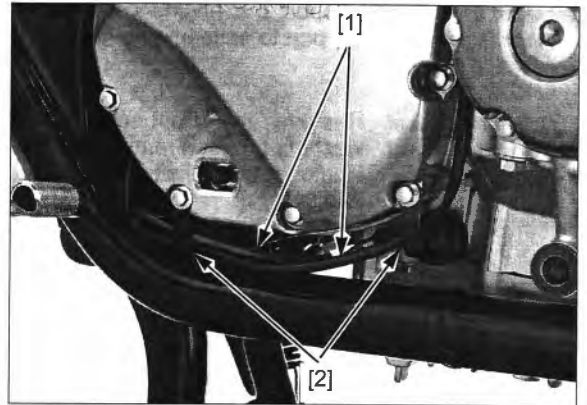


ENGINE REMOVAL/INSTALLATION

Disconnect the neutral switch connector [1].

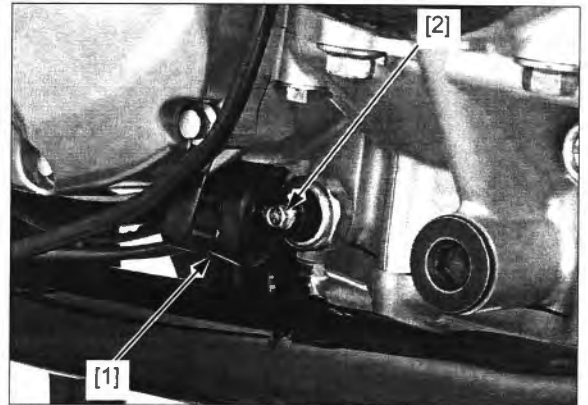


Release the CKP sensor wire and EOP switch wire [1] from the clamp [2].

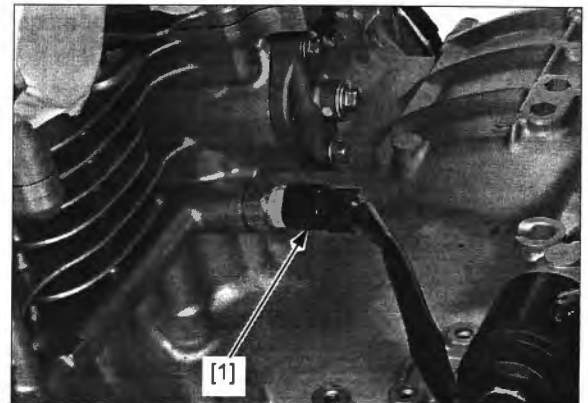


Remove the dust cover [1].

Remove the terminal bolt [2] and disconnect the EOP switch wire.

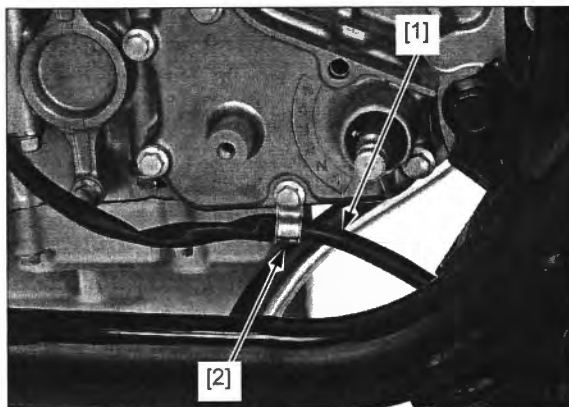


Disconnect the EOT sensor 2P (Black) connector [1].



ENGINE REMOVAL/INSTALLATION

Release the sidestand switch wire [1] from the clamp [2].

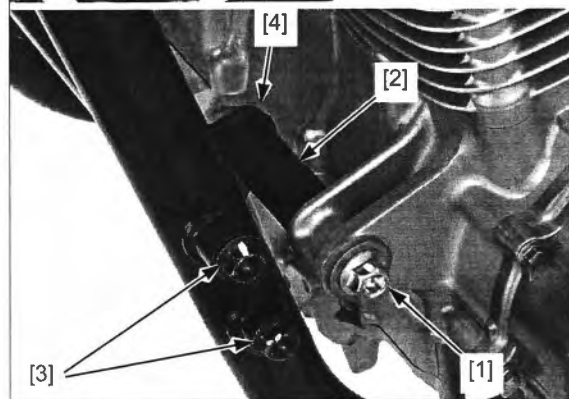
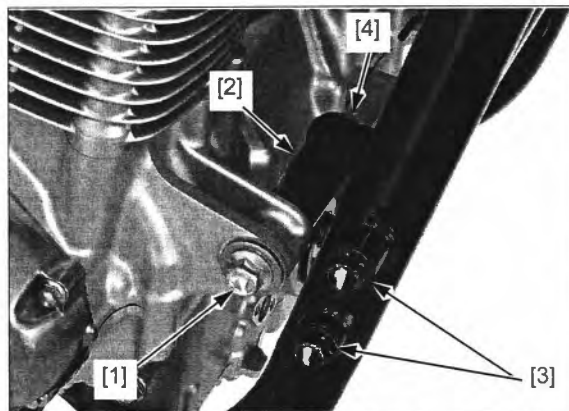


Do not use the oil filter as a jacking point.

Support the engine using a jack or other adjustable support to ease engine hanger bolt removal.

Note the length of bolts for correct installation.

Remove the front engine hanger bolts/nuts and washers [1], then remove the collars [2]. Remove the nuts/bolts [3] and front engine hanger brackets [4].

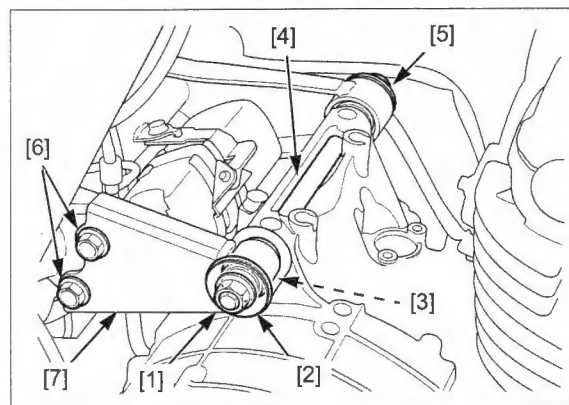


Remove the rear upper engine hanger nut [1], right rubber mount C [2], rubber mount E [3], hanger bolt [4], and left rubber mount C [5].

Remove the bolts [6] and rear engine bracket [7].

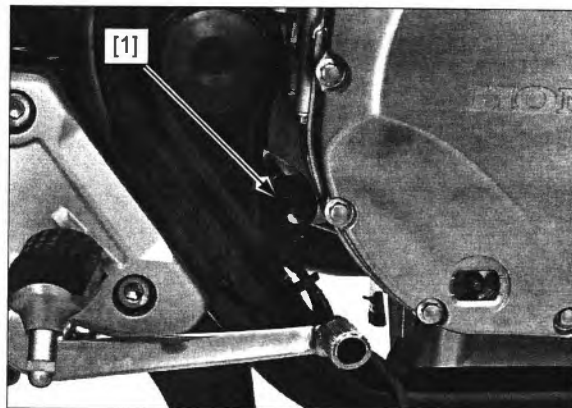
U.S.A. type only:

Remove the EVAP purge control solenoid valve (page 5-86).



Remove the rear lower engine hanger bolt/nut and collar [1].

Remove the engine to the right side of the frame.



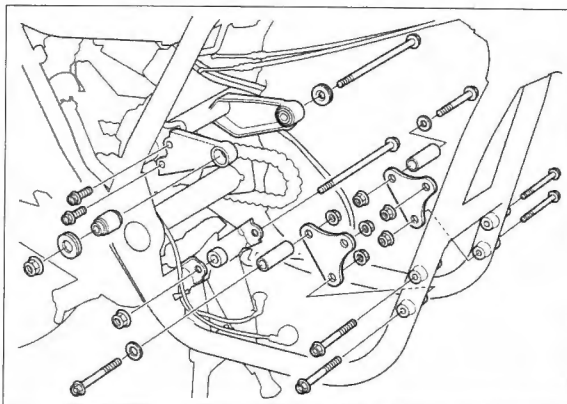
ENGINE INSTALLATION

- Note the direction of the hanger bolts.
- The jack height must be continually adjusted to relieve stress from the mounting fasteners.
- Route the wire and cables properly (page 1-21).

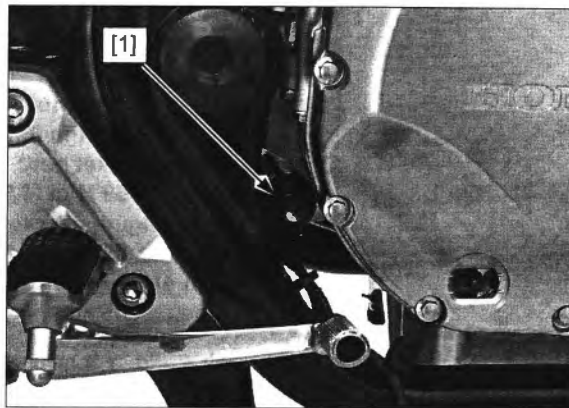
Carefully install the engine into the frame from the right side.

NOTE:

Install all the engine hanger and bracket bolts/nuts, then tighten the bolts and nuts to the specified torque.



Install the collar and rear lower engine hanger bolt/nut [1].

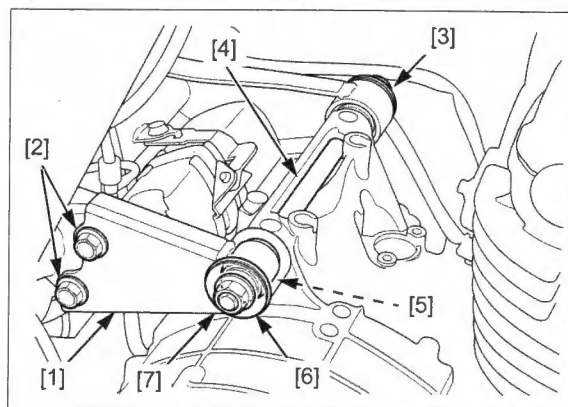


U.S.A. type only: Install the EVAP purge control solenoid valve (page 5-86).

Install the rear engine bracket [1] and bolts [2].

Install the left rubber mount C [3] and hanger bolt [4].

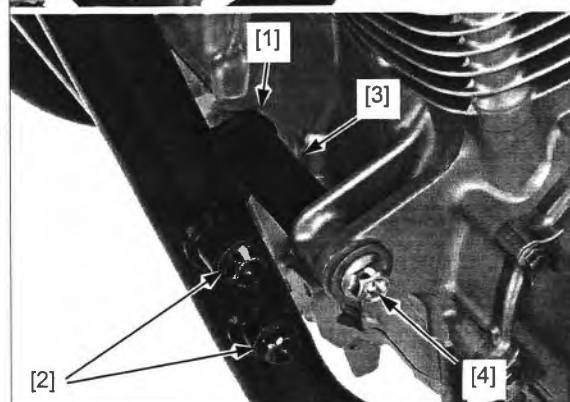
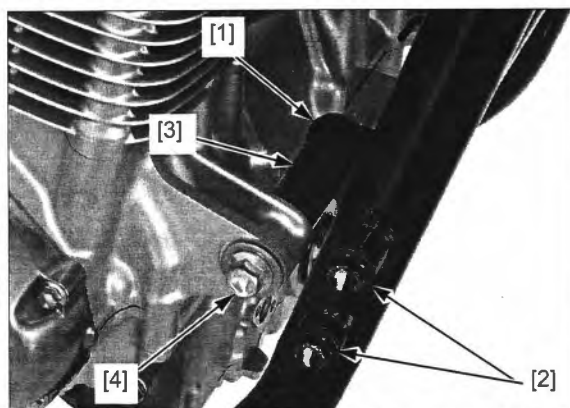
Install the rubber mount E [5], right rubber mount C [6], and rear upper engine hanger nut [7].



ENGINE REMOVAL/INSTALLATION

Install the front engine brackets [1], bracket bolts, and nuts [2].

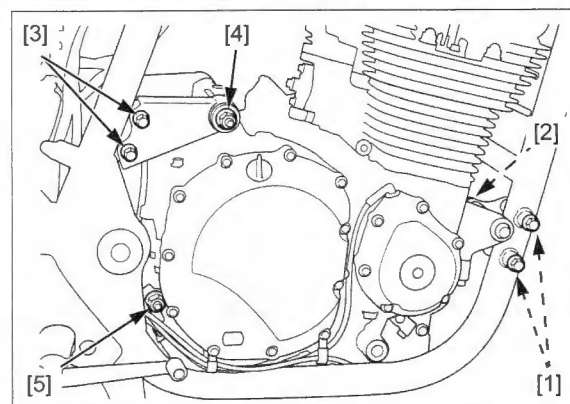
Install the collars [3], front engine hanger bolts, washers, and nuts [4].



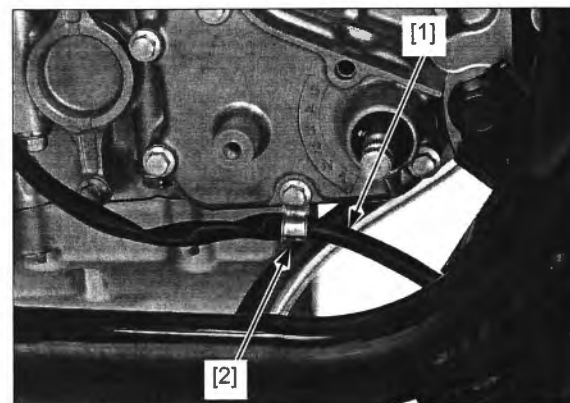
Tighten all the engine hanger and bracket bolts/nuts to the specified torque.

TORQUE:

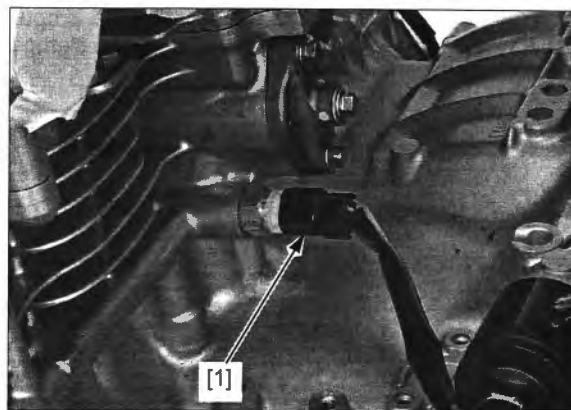
- [1] Front engine bracket nut:
49 N·m (5.0 kgf·m, 36 lbf·ft)
- [2] Front engine hanger nut:
59 N·m (6.0 kgf·m, 44 lbf·ft)
- [3] Rear engine bracket bolt:
59 N·m (6.0 kgf·m, 44 lbf·ft)
- [4] Rear upper engine hanger nut:
59 N·m (6.0 kgf·m, 44 lbf·ft)
- [5] Rear lower engine hanger nut:
59 N·m (6.0 kgf·m, 44 lbf·ft)



Secure the sidestand switch wire [1] with the clamp [2].



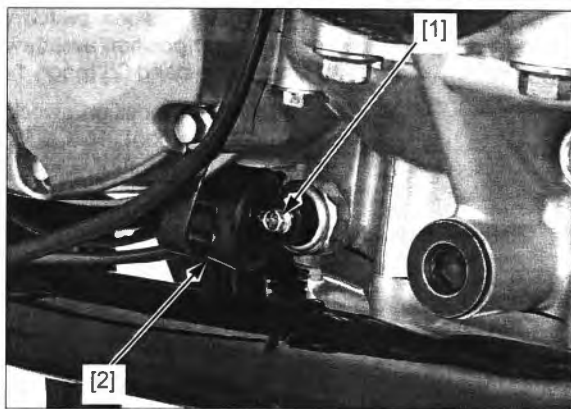
Connect the EOT sensor 2P (Black) connector [1].



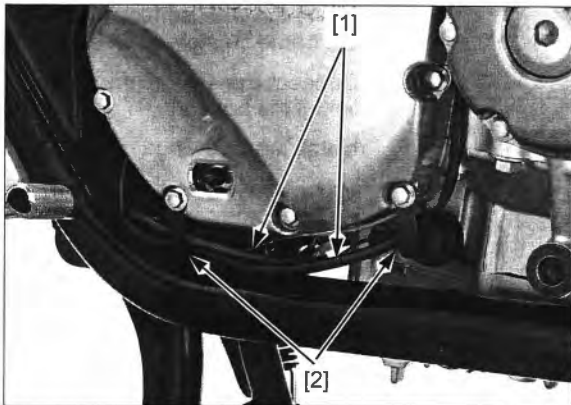
Connect the EOP switch terminal to the switch and tighten the terminal bolt [1] to the specified torque.

TORQUE: 2.2 N·m (0.2 kgf·m, 1.6 lbf·ft)

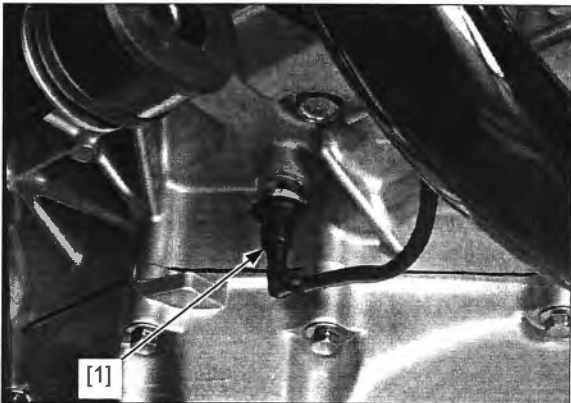
Install the dust cover [2].



Route the CKP sensor wire and EOP switch wire [1] properly, then secure them with the clamps [2].



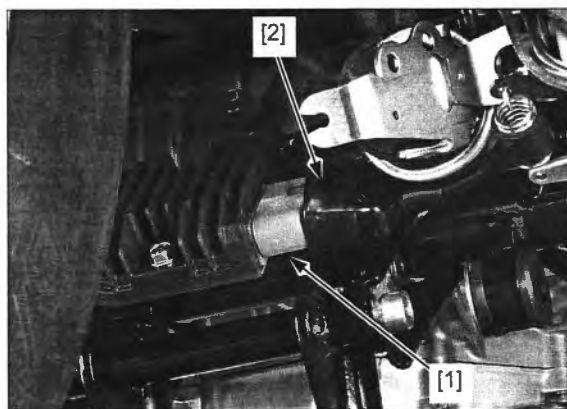
Connect the neutral switch connector [1].



ENGINE REMOVAL/INSTALLATION

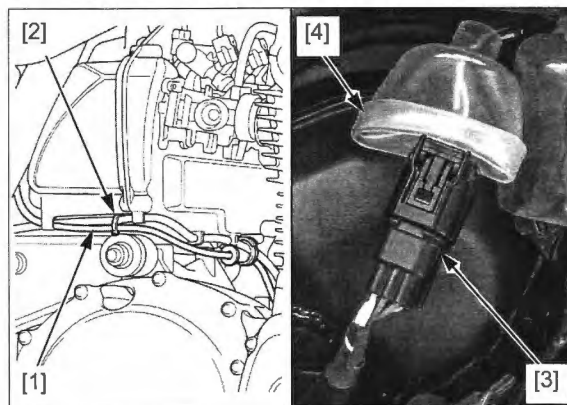
Route the alternator wire properly, then secure it with the frame clamp and wire clamp (page 10-13).

Connect the alternator 3P (Gray) connector [1] and install the boot [2].



After '13 model: Route the gear position switch wire [1] properly, then secure the gear position switch wire and alternator wire with a new wire band [2] (page 1-21).

Connect the gear position switch 6P (Black) connector [3] and install the boot [4].



Route the CKP sensor wire properly, then secure it with the frame clamp and wire clamp (page 17-12).

Connect the CKP sensor 2P (Red) connector [1] and install the boot [2].

Install the following:

- oil cooler (page 4-17)
- heat protector (page 2-12)
- starter motor (page 18-14)
- drive sprocket (page 6-12)
- ignition coil (page 17-7)
- oil filter (page 3-15)
- muffler/exhaust pipe
 - CB1100/A (page 2-15)
 - CB1100SA (page 2-19)
- front air cleaner housing/throttle body (page 5-62)
- fuel tank (page 5-55)

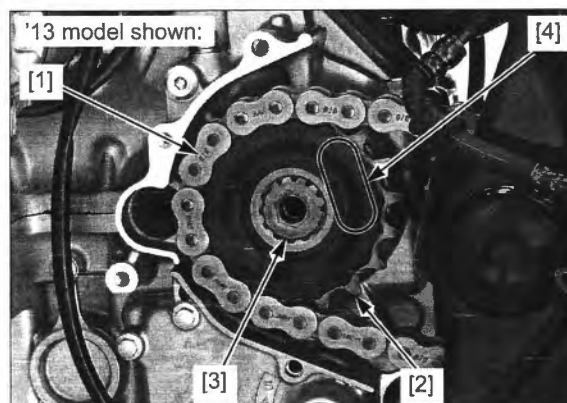
Pour recommended engine oil up to the proper level (page 3-14).



DRIVE SPROCKET INSTALLATION

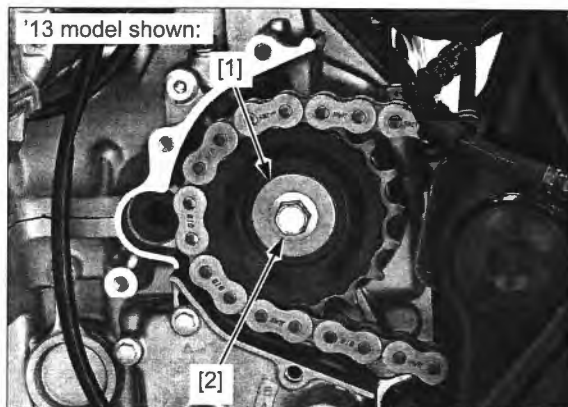
Install the drive sprocket with its "OUT SIDE" mark [4] facing out.

Install the drive chain [1] onto the drive sprocket [2], then install the sprocket to the countershaft [3].

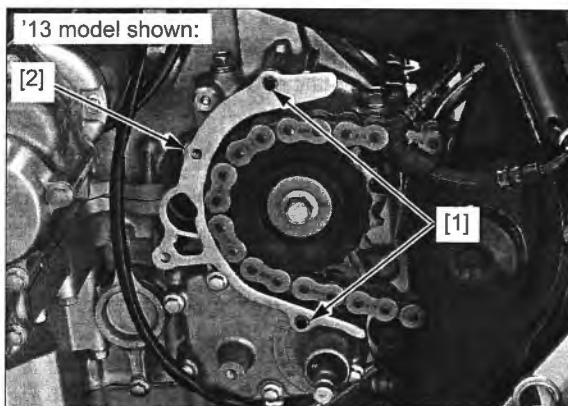


Install the washer [1] and sprocket bolt [2] and tighten the bolt to the specified torque.

TORQUE: 54 N·m (5.5 kgf·m, 40 lbf·ft)

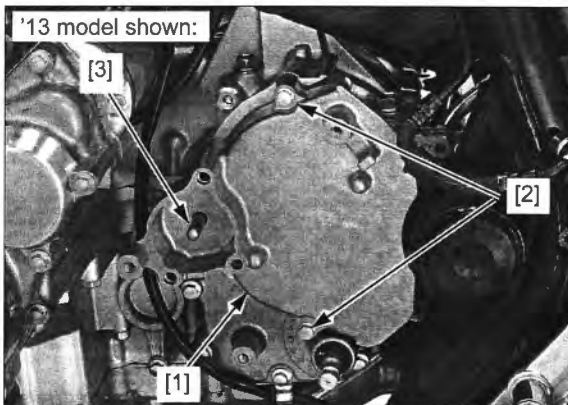


Install the dowel pins [1] and drive chain guide plate [2].



Install the left crankcase rear cover [1] and tighten the bolts securely [2].

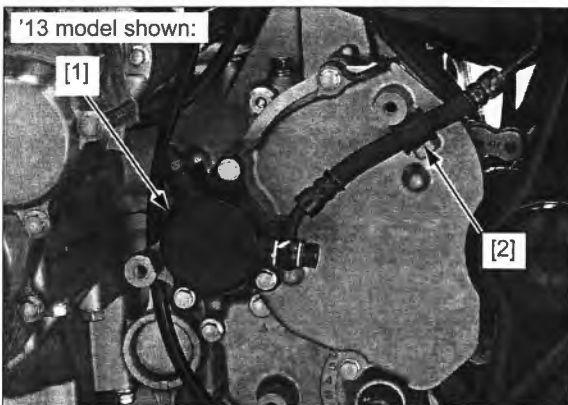
Install the clutch lifter rod [3].



Install the clutch slave cylinder [1] (page 9-17).

Install the clutch hose grommet [2] into the groove on the cover.

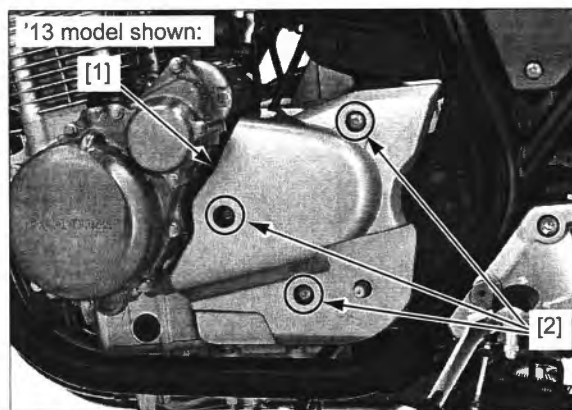
CB1100SA: Install the gear position switch (page 19-38).



ENGINE REMOVAL/INSTALLATION

Install the left crankcase side cover [1] and tighten the bolts [2] to the specified torque.

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

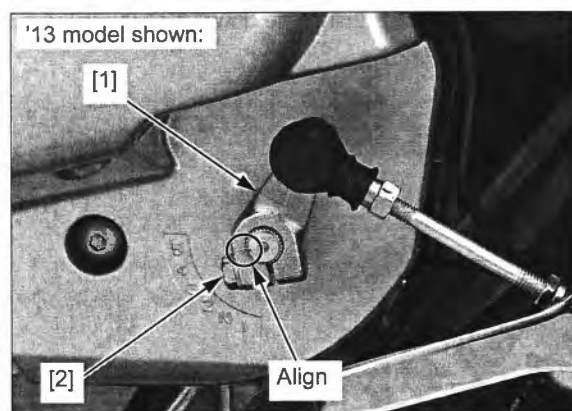


Install the gearshift arm [1] to the gearshift spindle while aligning the punch marks.

Install and tighten the pinch bolt [2] to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Adjust the drive chain slack (page 3-19).

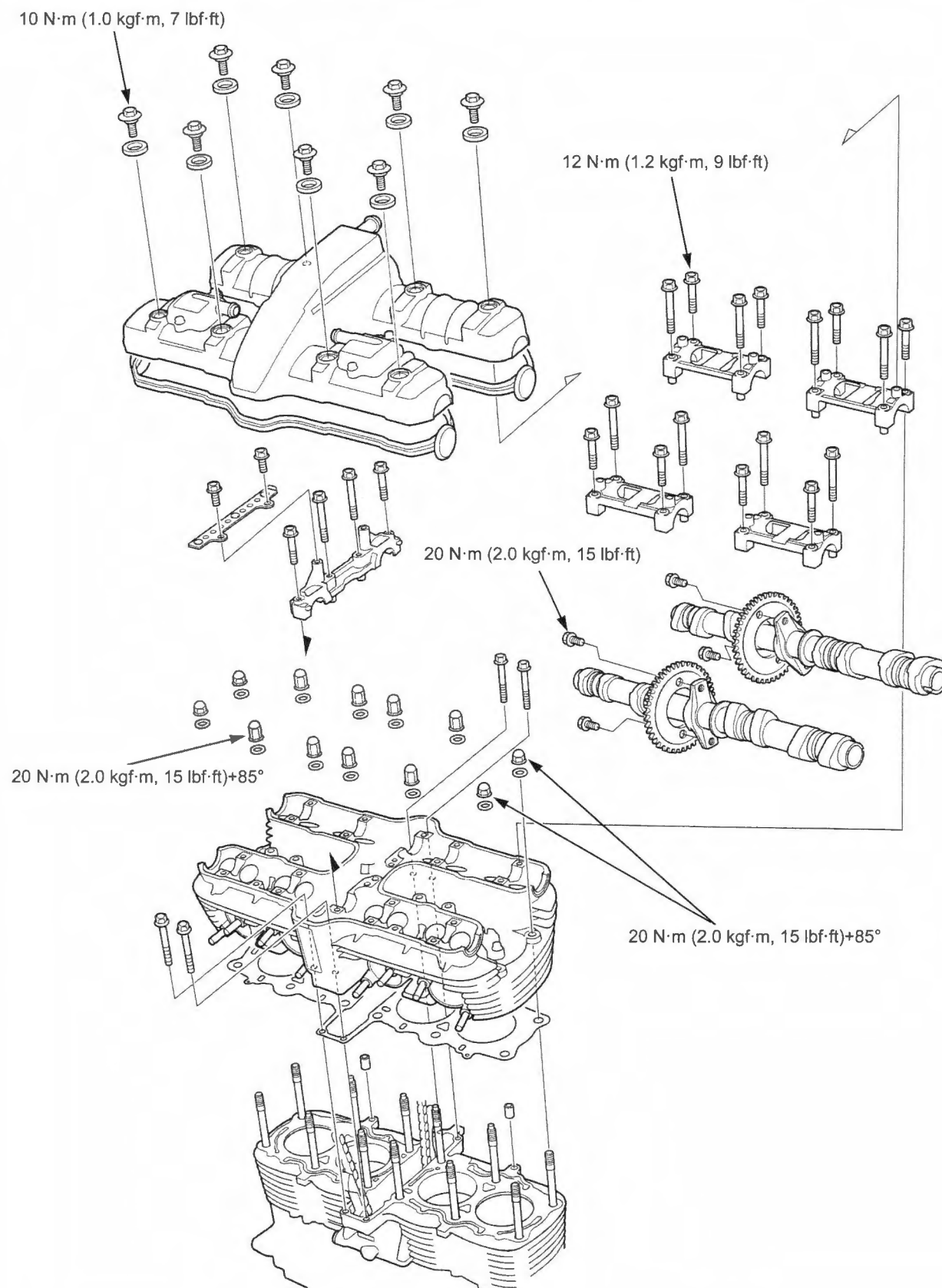


7. CYLINDER HEAD/VALVES

COMPONENT LOCATION	7-2	CYLINDER HEAD COVER	7-6
SERVICE INFORMATION	7-3	CAMSHAFT	7-10
TROUBLESHOOTING	7-5	CYLINDER HEAD	7-18
CYLINDER COMPRESSION TEST	7-6	PLUG HOLE COVER	7-28

CYLINDER HEAD/VALVES

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers service of the cylinder head, valves, and camshaft.
- Protect the frame with tape when removing and installing the cylinder head cover.
- The camshaft and cylinder head 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 cover and cylinder head.

SPECIFICATIONS

Unit: mm (in)

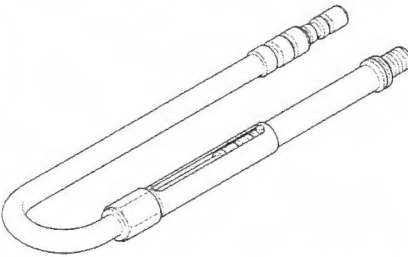
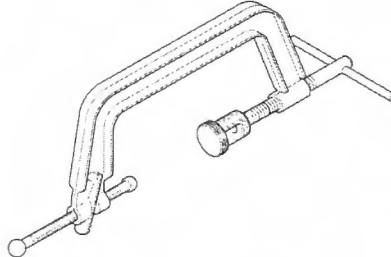
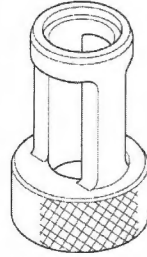
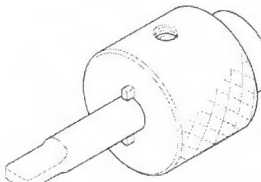
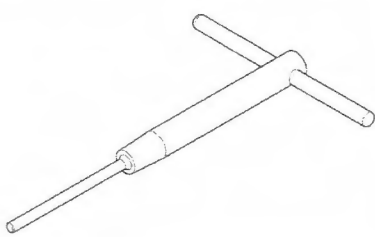
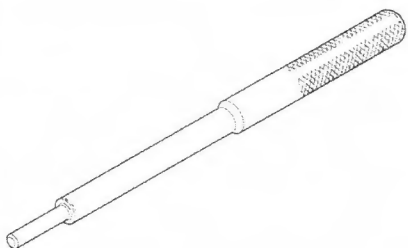
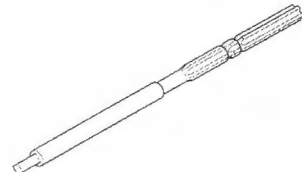
ITEM			STANDARD	SERVICE LIMIT
Cylinder compression			1,245 kPa (12.7 kgf/cm ² , 181 psi) at 250 rpm	—
Valve clearance		IN	0.15 ± 0.03 (0.006 ± 0.001)	—
		EX	0.28 ± 0.03 (0.011 ± 0.001)	—
Camshaft	Cam lobe height	IN	37.43 – 37.67 (1.474 – 1.483)	37.39 (1.472)
		EX	37.36 – 37.60 (1.471 – 1.477)	37.32 (1.469)
	Runout		—	0.05 (0.002)
	Oil clearance		0.020 – 0.062 (0.0008 – 0.0024)	0.10 (0.004)
Valve lifter	Valve lifter O.D.		25.978 – 25.993 (1.0228 – 1.0233)	25.97 (1.022)
	Valve lifter bore I.D.		26.010 – 26.026 (1.0240 – 1.0246)	26.04 (1.025)
Valve, valve guide	Valve stem O.D.	IN	4.970 – 4.995 (0.1957 – 0.1967)	4.960 (0.1953)
		EX	4.950 – 4.975 (0.1949 – 0.1959)	4.940 (0.1945)
	Valve guide I.D.	IN/EX	5.000 – 5.012 (0.1969 – 0.1973)	5.040 (0.1984)
	Stem-to-guide clearance	IN	0.005 – 0.042 (0.0002 – 0.0017)	0.08 (0.003)
		EX	0.025 – 0.062 (0.0010 – 0.0024)	0.10 (0.004)
	Valve seat width	IN	0.90 – 1.10 (0.035 – 0.043)	1.5 (0.06)
		EX	1.30 – 1.50 (0.051 – 0.059)	1.9 (0.07)
Valve spring free length		IN/EX	44.85 (1.766)	43.95 (1.730)
Cylinder head warpage			—	0.15 (0.006)

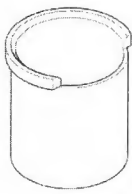
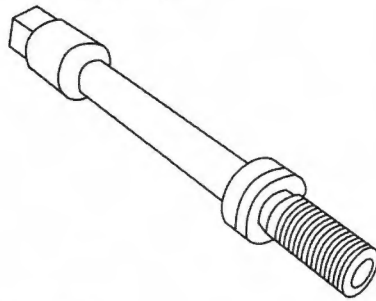
TORQUE VALUES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Cylinder head cover bolt	8	6	10 (1.0, 7)	
Camshaft holder flange bolt	20	6	12 (1.2, 9)	Apply engine oil to the threads and seating surface.
Cam sprocket bolt	4	7	20 (2.0, 15)	Apply a locking agent to the threads.
Crankcase stud bolt	12	10	—	See page 7-27
Cylinder head stud bolt (exhaust pipe stud bolt)	8	8	—	See page 2-15
Cylinder head mounting nut	12	9	20 (2.0, 15) + 85°	Apply engine oil to the threads and seating surface. Sealing washer; replace with a new one. See page 7-28
Plug hole cover bolt	8	6	12 (1.2, 9)	

CYLINDER HEAD/VALVES

TOOLS

Compression gauge attachment 07RMJ-MY50100  or equivalent commercially available in U.S.A.	Valve spring compressor 07757-0010000 	Valve spring compressor attachment 07959-KM30101 
Seat cutter, 27.5 mm (EX 45°) 07780-0010200  or equivalent commercially available in U.S.A.	Seat cutter, 29 mm (IN 45°) 07780-0010300  or equivalent commercially available in U.S.A.	Flat cutter, 28 mm (EX 32°) 07780-0012100  or equivalent commercially available in U.S.A.
Flat cutter, 30 mm (IN 32°) 07780-0012200  or equivalent commercially available in U.S.A.	Interior cutter, 30 mm (IN/EX 60°) 07780-0014000  or equivalent commercially available in U.S.A.	Tensioner stopper 070MG-0010100  or 07AMG-001A100 (U.S.A. only)
Cutter holder, 5 mm 07781-0010400  or 07AMG-001A100 (U.S.A. only)	Valve guide driver, 5 mm 07942-MA60000 	Valve guide reamer 07984-MA60001  or 07984-MA6000D (U.S.A. only)

Tappet hole protector 07HMG-MR70002  Not available in the U.S.A. make a tool following the instructions in the Common Service Manual.	Attachment 07AMJ-MENA200  U.S.A. only
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TROUBLESHOOTING

- Engine top-end problems usually affect engine performance. These problem can be diagnosed by a compression test or by tracing engine noises to the top-end with a sounding rod or stethoscope.
- If the performance is poor at low speeds, check for white smoke in the crankcase breather hose. If the hose is smoky, check for a seized piston ring (page 8-7).

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

- Valves:
 - Incorrect valve adjustment
 - Burned or bent valve
 - Incorrect valve timing
 - Broken valve spring
 - Uneven valve seating
- Cylinder head:
 - Leaking or damaged head gasket
 - Warped or cracked cylinder head
- Worn cylinder, piston, or piston rings (page 8-7)

Compression too high, overheating or knocking

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

Excessive smoke

- Cylinder head:
 - Worn valve stem or valve guide
 - Damaged stem seal
- Worn cylinder, piston, or piston rings (page 8-7)

Excessive noise

- Cylinder head:
 - Incorrect valve adjustment
 - Sticking valve or broken valve spring
 - Damaged or worn camshaft
 - Loose or worn cam chain
 - Worn or damaged cam chain
 - Worn or damaged cam chain tensioner
 - Worn cam sprocket teeth
- Worn cylinder, piston, or piston rings (page 8-7)

Rough idle

- Low cylinder compression

Excessive exhaust gas

- Cylinder head:
 - Incorrect valve adjustment
- Worn cylinder, piston, or piston rings (page 8-7)

CYLINDER HEAD/VALVES

CYLINDER COMPRESSION TEST

Warm up the engine to normal operating temperature. Stop the engine and remove all plug caps and spark plugs (page 3-8).

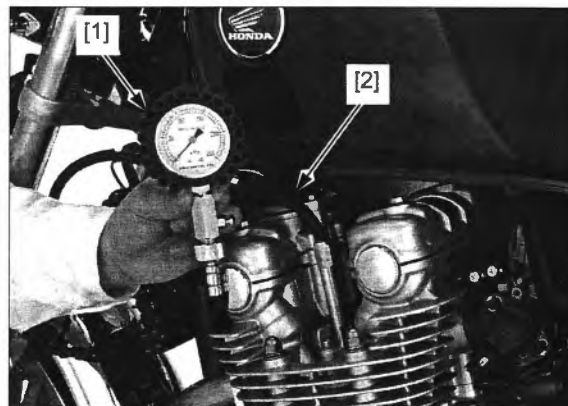
Install a compression gauge [1] with the attachment into the spark plug hole.

TOOL:

[2] Compression gauge attachment
07RMJ-MY50100

U.S.A.TOOLS:

Attachment
07AMJ-MENA200
and commercially
available in U.S.A.
compression gauge
attachment



Shift the transmission into neutral.

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

The maximum reading is usually reached within 4 – 7 seconds.

COMPRESSION PRESSURE:

1,245 kPa (12.7 kgf/cm², 181 psi) at 250 rpm

Low compression can be caused by:

- blown cylinder head gasket
- improper valve adjustment
- valve leakage

High compression can be caused by:

- carbon deposits in combustion chamber or on piston head

*To avoid
discharging the
battery, do not
operate the starter
motor for more than
seven seconds.*

CYLINDER HEAD COVER

REMOVAL

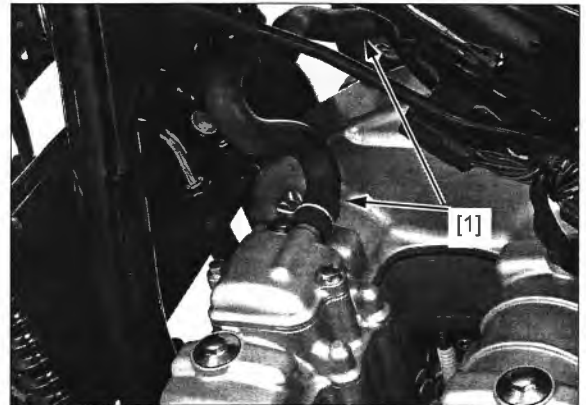
Remove the following:

- ignition coil assembly (page 17-7)
- heat protector (page 2-12)

Disconnect the crankcase breather hose [1].

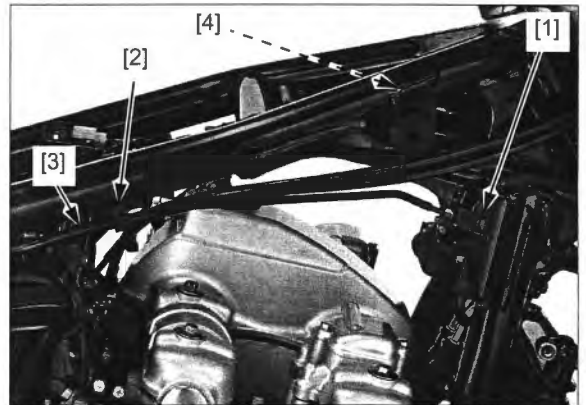


Disconnect the PAIR air suction hoses [1].

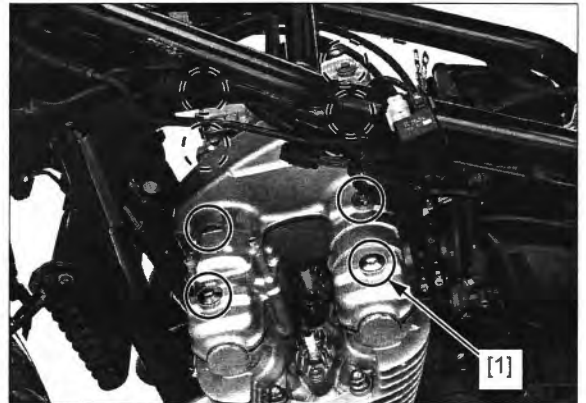


CB1100A: Remove the bolt [1] and the brake line joint from the frame.

Be careful not to bend or damage the brake line. Remove the frame clamp [2] and pull the brake line [3] away from the frame.
Remove the 2P (Blue) connector [4] from its stay.



Remove the cylinder head cover bolts and washers [1].



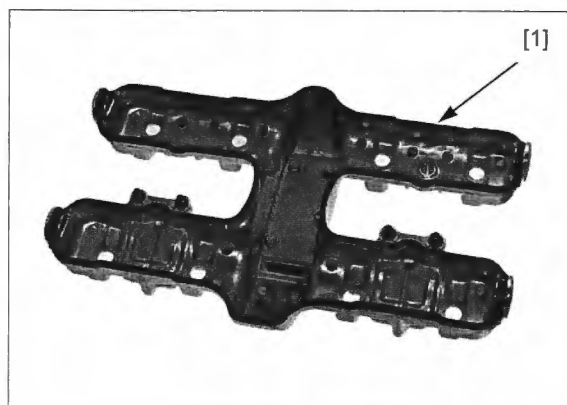
Protect the frame with tape when removing the cylinder head cover. Remove the cylinder head cover [1] to the right side.



CYLINDER HEAD/VALVES

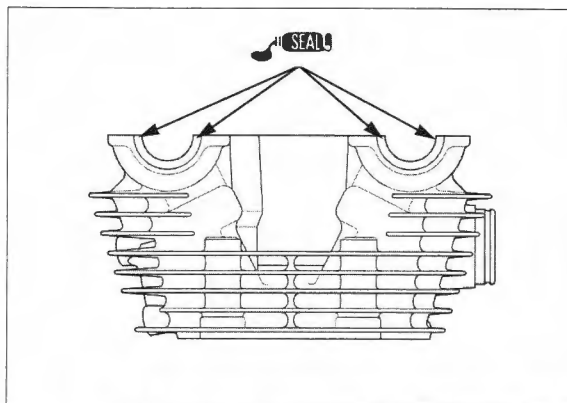
Remove the cylinder head cover packing [1].

Check the cylinder head cover packing for wear or damage, replace if necessary.



INSTALLATION

Apply sealant (Three Bond 5211C or equivalent) to the cylinder head semi-circular cut-outs as shown.

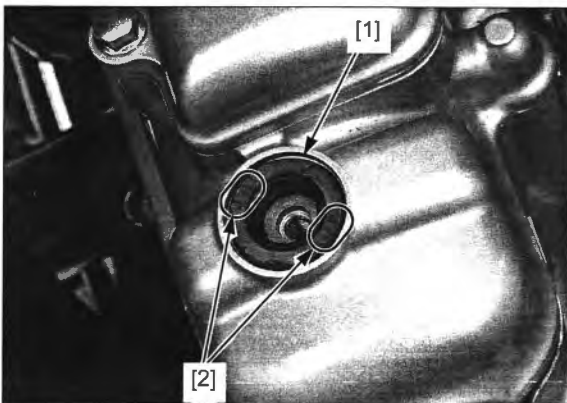


Protect the frame with tape when installing the cylinder head cover.

Install the cylinder head cover [1] from the right side.



Install the washers [1] with their "UP" mark [2] facing up.



Install and tighten the cylinder head cover bolts [1] in a crisscross pattern in two or three steps to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

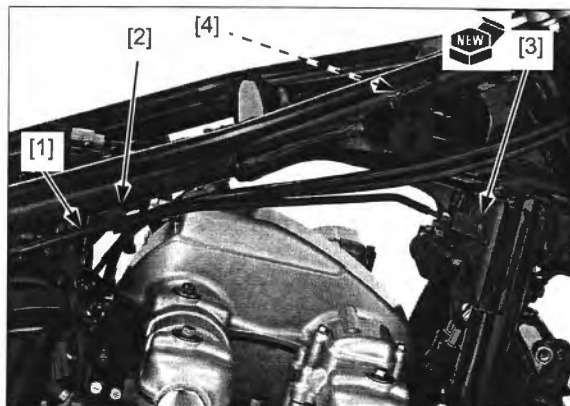


CB1100A: Secure the brake line [1] with the frame clamps [2].

Be careful not to bend or damage the brake line. Install the brake line joint to the frame and install a new bolt [3]. Tighten the bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the 2P (Blue) connector [4] to its stay.



Connect the PAIR air suction hoses [1] and secure them with the hose clips securely.



Connect the crankcase breather hose [1] and secure it with the hose clip.

Install the following:

- heat protector (page 2-12)
- ignition coil assembly (page 17-7)

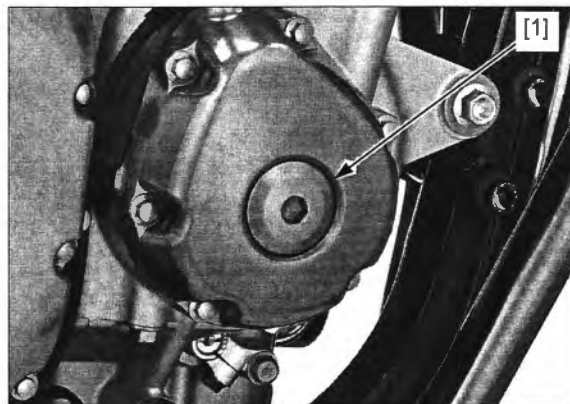


CAMSHAFT

REMOVAL

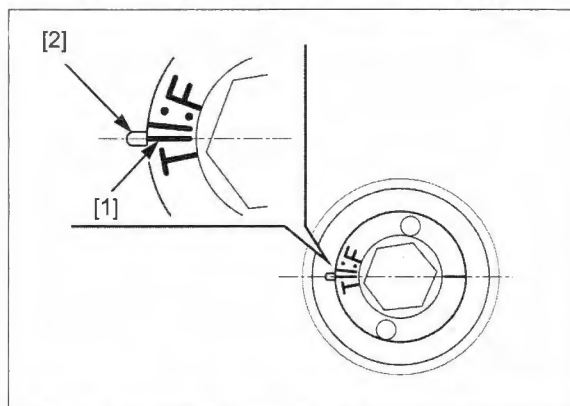
Remove the cylinder head cover (page 7-6).

Remove the timing hole cap [1].

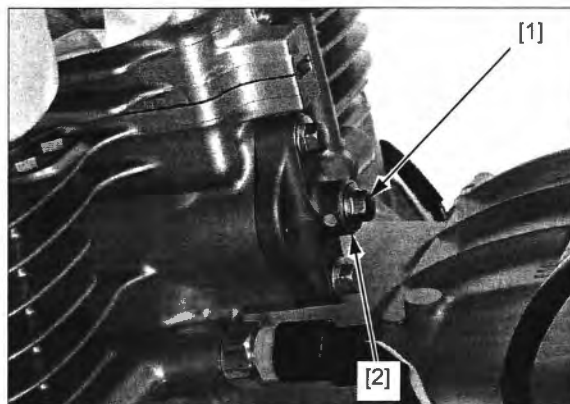


Turn the crankshaft clockwise, align the "T" mark [1] on the CKP sensor rotor with the index mark [2] on the right crankcase cover.

Make sure the No.1 piston is at TDC (Top Dead Center) on the compression stroke.



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

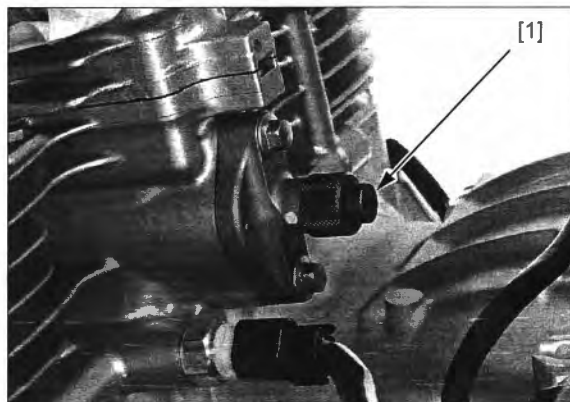


Turn the tensioner lifter shaft fully in (clockwise) and secure it using the stopper tool [1].

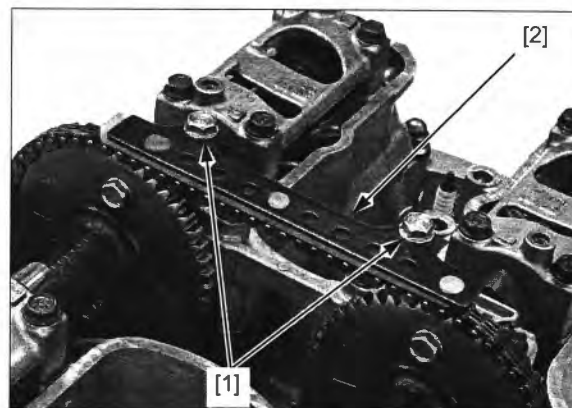
TOOL:

Tensioner stopper

070MG-0010100 or
07AMG-001A100
(U.S.A. only)

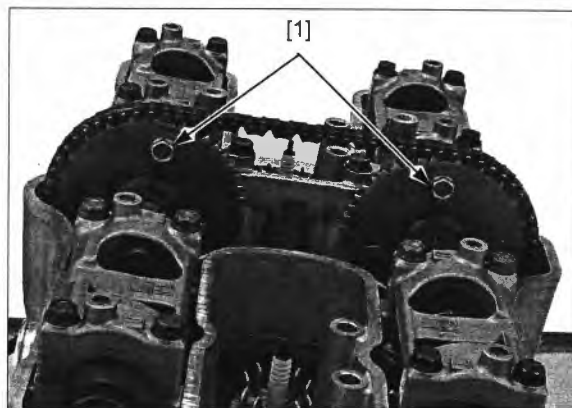


Remove the bolts [1] and cam chain guide B [2].



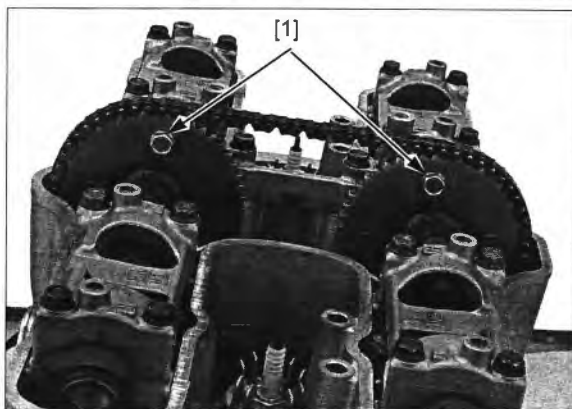
Be careful not to drop the cam sprocket bolts into the crankcase.

Remove the cam sprocket bolts [1] from intake and exhaust camshafts.



Turn the crankshaft one full turn (360°), remove the other cam sprocket bolts [1] from the camshafts.

Remove the cam sprockets from the camshafts.



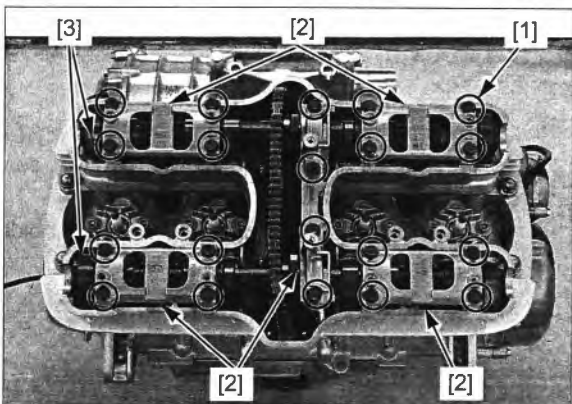
Suspend the cam chain with a piece of wire to prevent the chain from falling into the crankcase.

Loosen and remove the camshaft holder bolts [1], then remove the camshaft holders [2] and camshafts [3].

NOTICE

From outside to inside, loosen the bolts in a crisscross pattern in several steps or the camshaft holder might break.

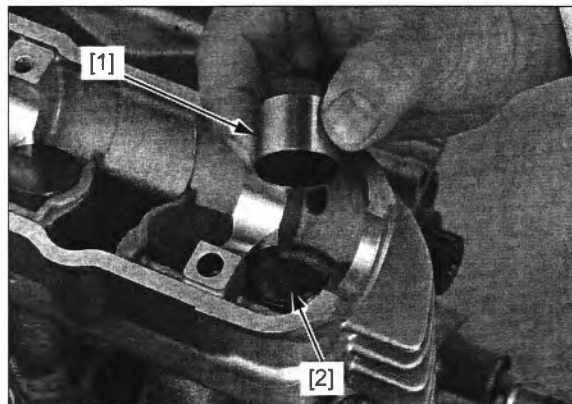
Do not forcibly remove the dowel pins from the camshaft holders.



CYLINDER HEAD/VALVES

Remove the valve lifters [1] and shims [2].

- Be careful not to damage the valve lifter bore.
- Shims may stick to the inside of the valve lifter. Do not allow the shims to fall into the crankcase.
- Mark all valve lifters and shims to ensure correct reassembly in their original locations.
- The valve lifter can be easily removed with a valve lapping tool or magnet.
- The shims can be easily removed with tweezers or a magnet.



INSPECTION

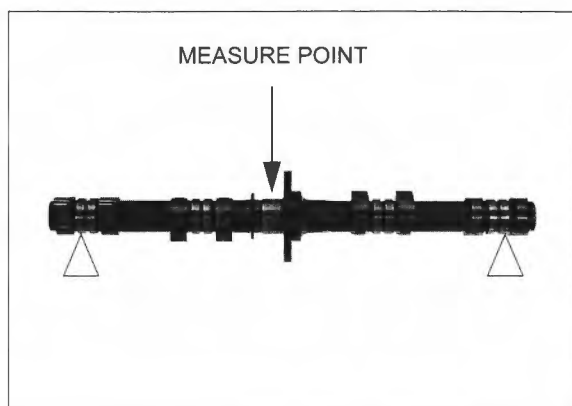
CAMSHAFT

Check the cam and journal surfaces of the camshaft for scoring, scratches, or evidence of insufficient lubrication.

Check the oil holes in the camshaft for clogging.

Support both ends of the camshaft with V-blocks and check the camshaft runout with a dial gauge.

SERVICE LIMIT: 0.05 mm (0.002 in)

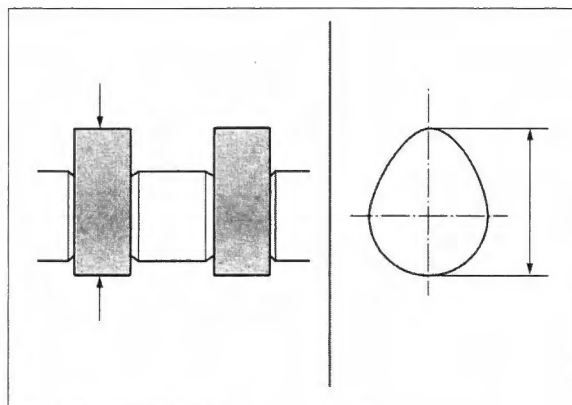


Using a micrometer, measure each cam lobe height.

SERVICE LIMITS:

IN: 37.39 mm (1.472 in)

EX: 37.32 mm (1.469 in)



CAMSHAFT HOLDER

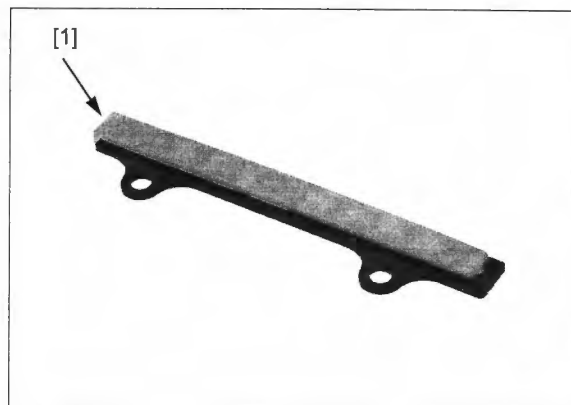
Inspect the camshaft journal [1] sliding surfaces of the camshaft holders for scoring, scratches, or evidence of insufficient lubrication.

Inspect the oil orifices of the holders for clogging.



CAM CHAIN GUIDE B

Inspect the cam chain slipper surface of the cam chain guide B [1] for wear or damage.

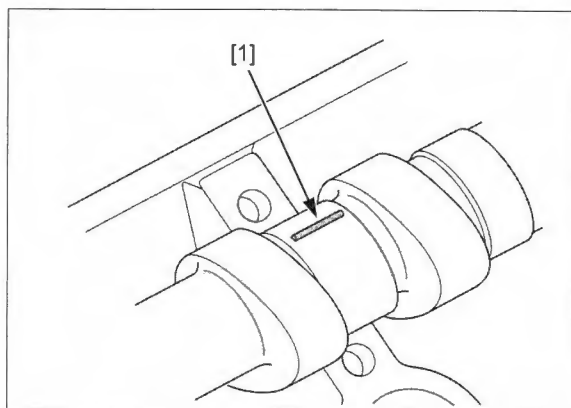
**CAMSHAFT OIL CLEARANCE**

Remove the cylinder head and valves (page 7-18).

Clean off any oil from the cylinder head, camshaft holders, and camshaft journals.

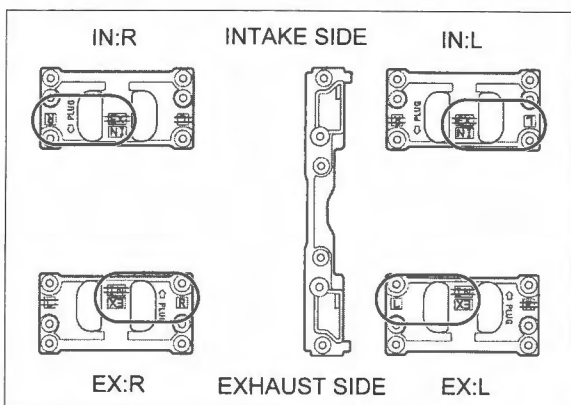
Install the camshaft onto the cylinder head.

Put a strip of plastigauge [1] lengthwise on each camshaft journal avoiding the oil hole.



Be sure the dowel pins in the camshaft holder align properly with the holes in the cylinder head.

Install each camshaft holder onto the camshafts to the correct locations with the identification marks as shown.



Do not rotate the camshaft when using plastigauge

Apply engine oil to the threads and seating surfaces of the camshaft holder bolts [1] and install them.

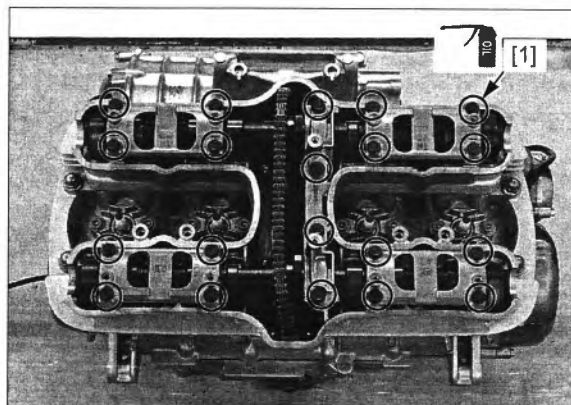
From inside to outside, tighten the camshaft holder bolts gradually until the camshaft holders seats the cylinder head.

Tighten the camshaft holder bolts in a crisscross pattern in two or three steps to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

NOTICE

Failure to tighten the camshaft holder in a crisscross pattern might cause a camshaft holder to break.

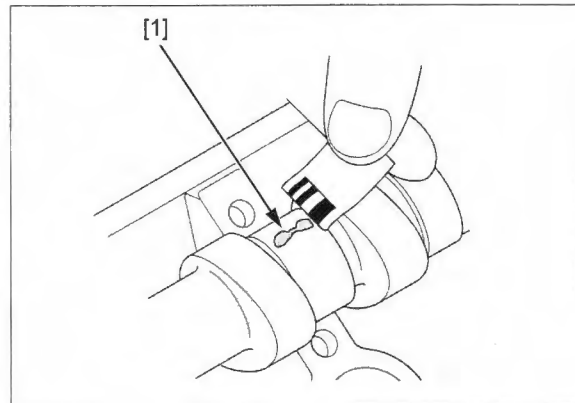


CYLINDER HEAD/VALVES

Loosen and remove the camshaft holder bolts from outside to inside gradually in 2 or 3 steps. Remove the camshaft holders and measure the width of each plastigauge [1]. The widest thickness determines the oil clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)

When the service limits are exceeded, replace the camshaft and recheck the oil clearance. Replace the cylinder head and camshaft holders as a set if the clearance still exceeds the service limit.

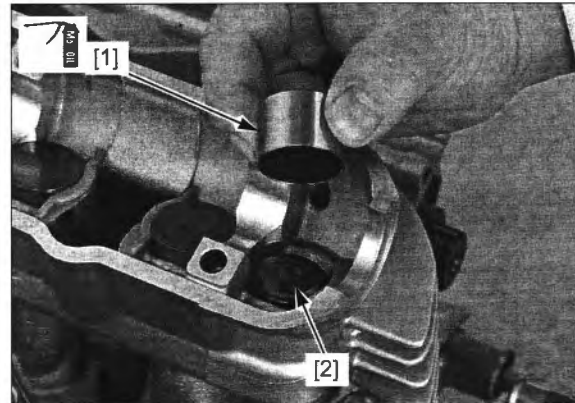


INSTALLATION

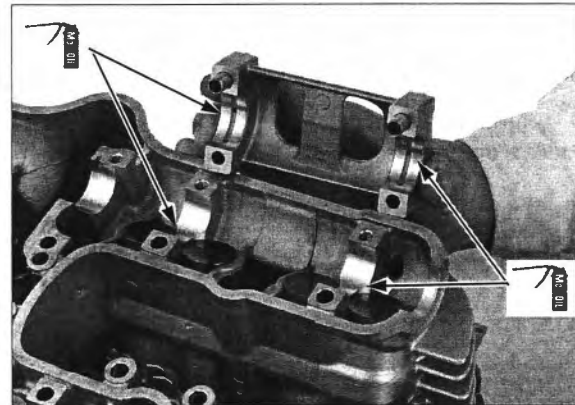
Apply molybdenum oil solution to the outer surface of each valve lifter [1].

Install the shims and valve lifters in their original locations.

Install the shims [2] and valve lifters into the valve lifter bores.

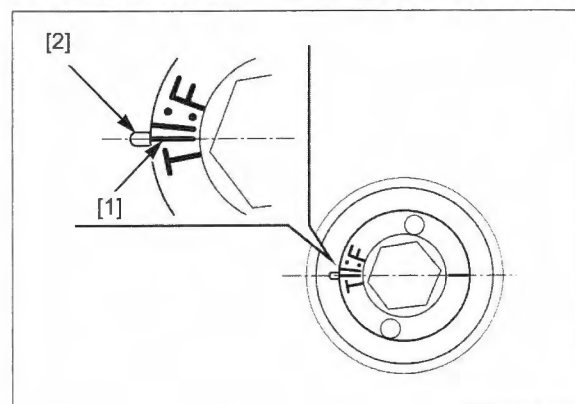


Apply molybdenum oil solution to the camshaft journals of the cylinder head and camshaft holders.



Turn the crankshaft clockwise, align the "T" mark [1] on the CKP sensor rotor with the index mark [2] on the right crankcase cover.

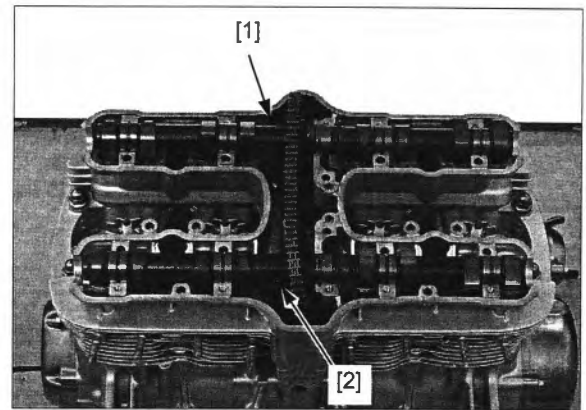
Make sure the No.1 piston is at TDC (Top Dead Center) on the compression stroke.



Install the cam sprockets onto each camshaft.

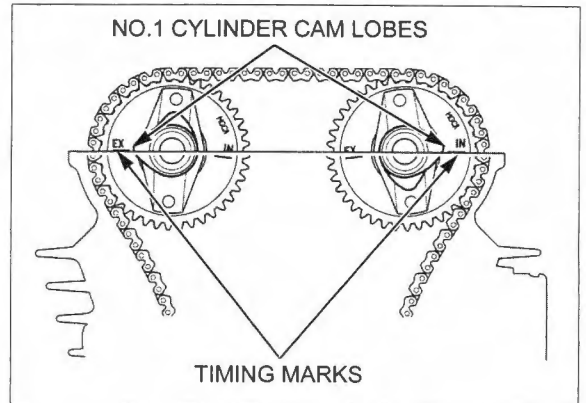
Install the intake and exhaust camshafts onto the cylinder head.

- Install the each camshaft to the correct locations with the identification marks.
"IN": Intake camshaft [1]
"EX": Exhaust camshaft [2]



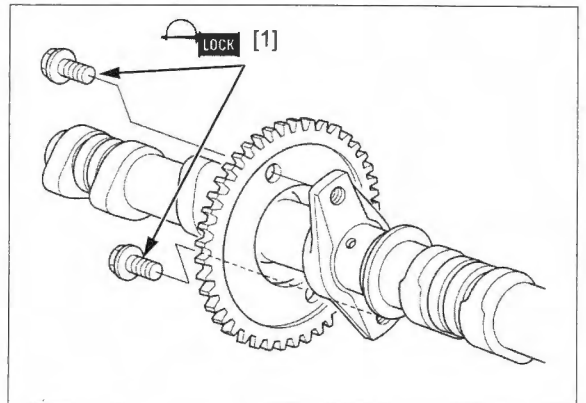
Install the cam chain over the sprockets and then install the cam sprockets onto the camshaft flanges.

- Install the intake cam sprocket with the timing mark (IN) facing outward and the No.1 cylinder cam lobe facing up and out as shown.
- Install the exhaust cam sprocket with the timing mark (EX) facing outward and the No.1 cylinder cam lobe facing up and out as shown.



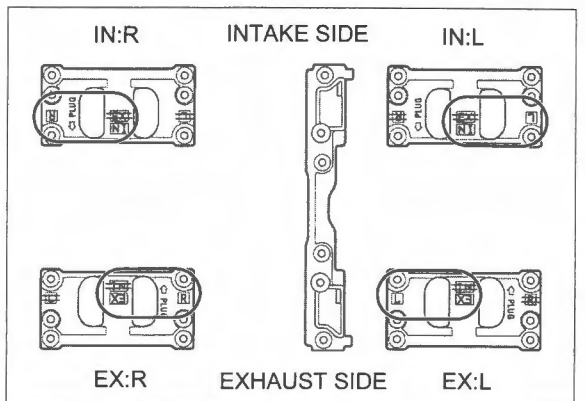
Clean and apply a locking agent to the intake and exhaust cam sprocket bolt threads.

Install the intake and exhaust cam sprocket bolts [1].



Be sure the dowel pins in the camshaft holder align properly with the holes in the cylinder head.

Install each camshaft holder onto the camshafts to the correct locations with the identification marks as shown.



CYLINDER HEAD/VALVES

Apply engine oil to the threads and seating surfaces of the camshaft holder bolts [1] and install them.

From inside to outside, tighten the camshaft holder bolts gradually until the camshaft holders seats the cylinder head.

Tighten the camshaft holder bolts in a crisscross pattern in two or three steps to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

NOTICE

Failure to tighten the camshaft holder in a crisscross pattern might cause a camshaft holder to break.

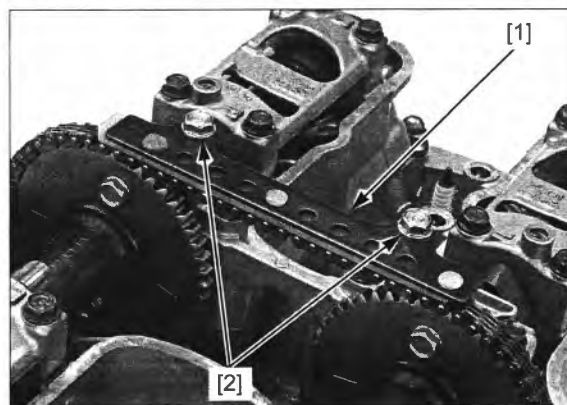
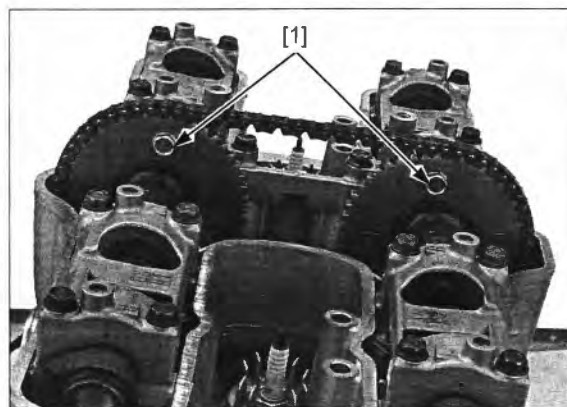
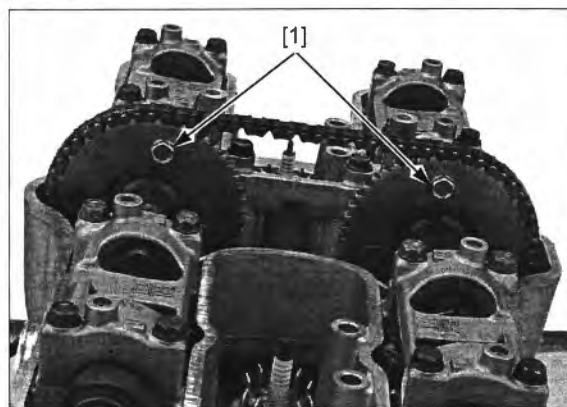
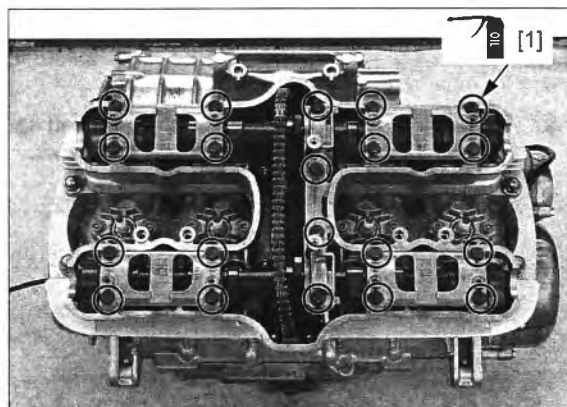
Tighten the cam sprocket bolts [1] to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

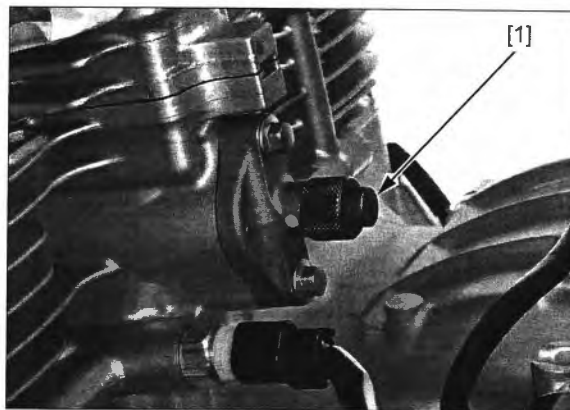
Turn the crankshaft clockwise one full turn (360°) and tighten the other cam sprocket bolts [1] to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

Install the cam chain guide B [1] and tighten the bolts [2].



Remove the stopper tool [1] from the cam chain tensioner lifter.

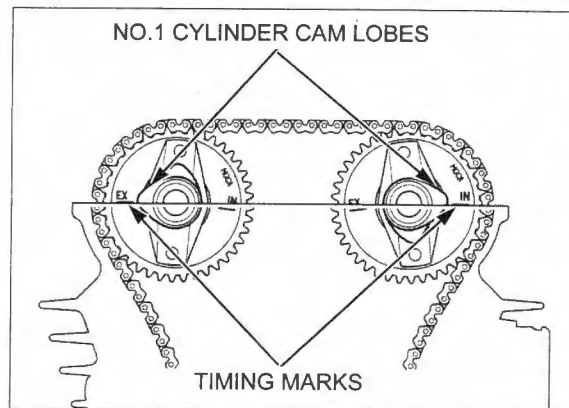


Install a new sealing washer [1] and tighten the cam chain tensioner lifter bolt [2].



Turn the crankshaft clockwise several times, align the "T" mark on the CKP sensor rotor with the index mark on the right crankcase cover.

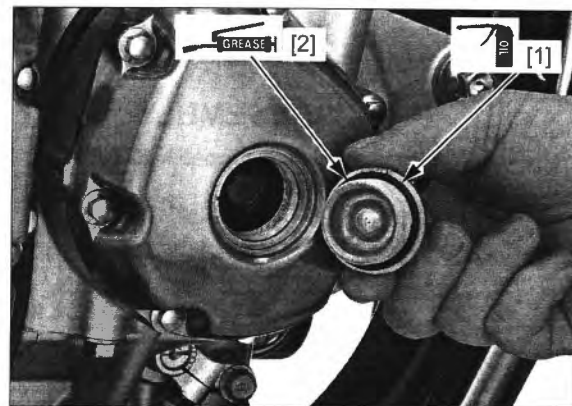
Check that the timing marks on the intake and exhaust cam sprockets are facing outward and the No.1 cylinder cam lobes face up and out as shown.



Check the O-ring [1] are in good condition, replace them if necessary.

Apply engine oil to the O-ring and install it to the timing hole cap [2].

Apply grease to the timing hole cap threads



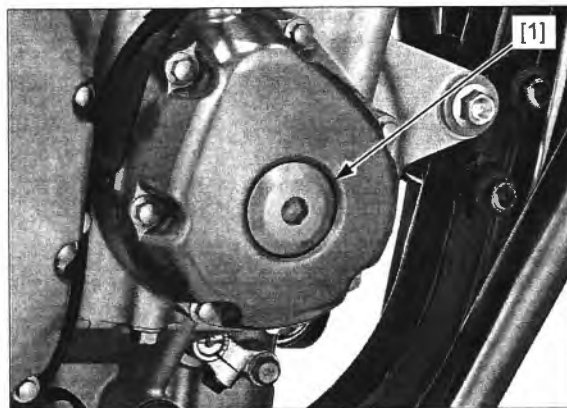
CYLINDER HEAD/VALVES

Install the timing hole cap.

Tighten the timing hole cap [1] to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the cylinder head cover (page 7-8).



CYLINDER HEAD

REMOVAL

Remove the following:

- muffler/exhaust pipe (page 2-13)
- front air cleaner housing/throttle body assembly (page 5-58)
- camshaft (page 7-10)

Remove the 6 mm flange bolts [1].

Remove the 9 mm A [2] and B [3] nuts and washers [4].

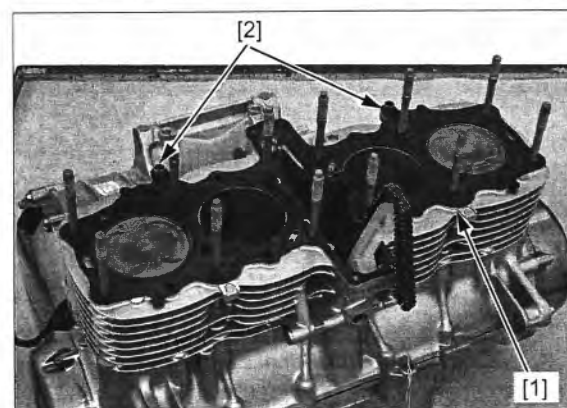
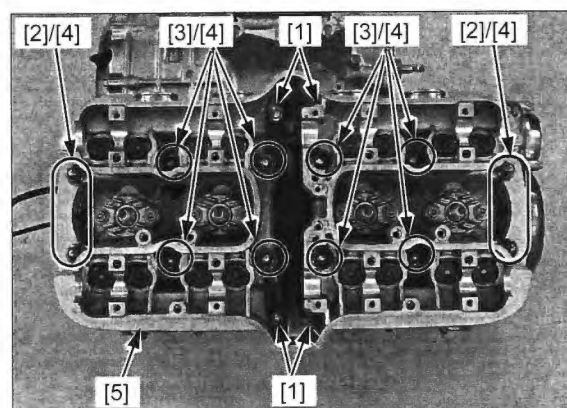
Remove the cylinder head [5].

Loosen the 9 mm nuts in a crisscross pattern in 2 – 3 steps.

NOTE:

Be careful not to drop the bolts and nuts into the crankcase.

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



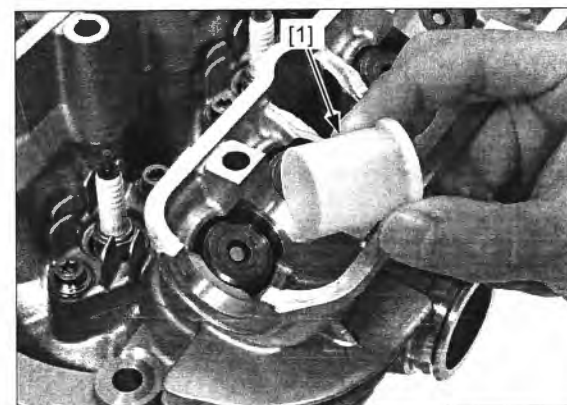
DISASSEMBLY

Install the tappet hole protector [1] into the valve lifter bore.

TOOL:

Tappet hole protector

07HMG-MR70002



Remove the valve spring cotters [1] using the special tools as shown.

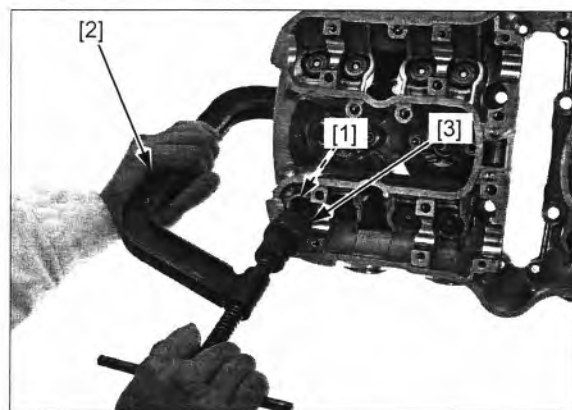
TOOLS:

[2] Valve spring compressor 07757-0010000

[3] Valve spring compressor attachment 07959-KM30101

NOTICE

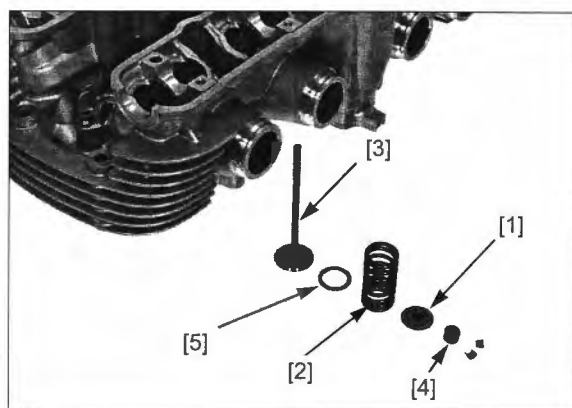
To prevent loss of tension, do not compress the valve springs more than necessary to remove the cotters.



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

Remove the following:

- spring retainers [1]
- valve springs [2]
- valves [3]
- stem seals [4]
- valve spring seats [5]



CYLINDER HEAD/VALVES

INSPECTION

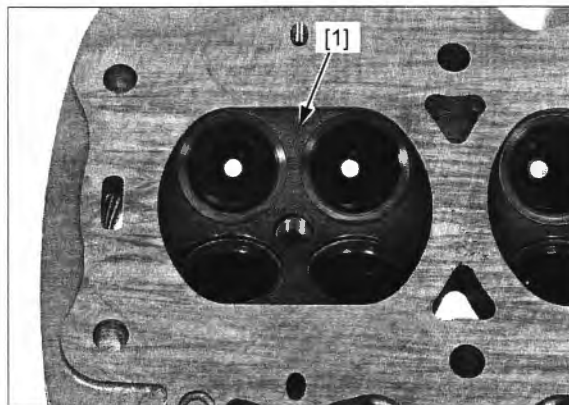
CYLINDER HEAD

Remove the spark plugs from the cylinder head.

Avoid damaging the gasket surface.

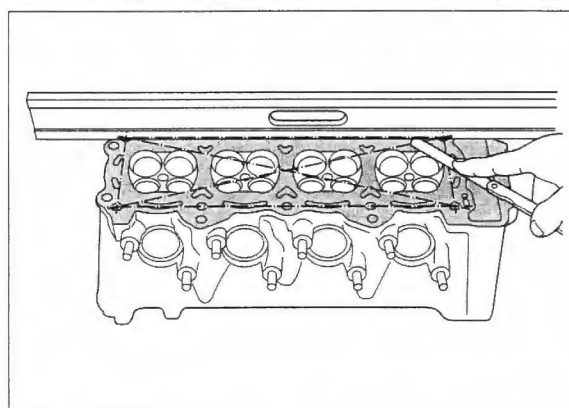
Remove carbon deposits from the combustion chambers [1].

Check the spark plug holes and valve areas for cracks.



Check the cylinder head for warpage with a straight edge and feeler gauge.

SERVICE LIMIT: 0.15 mm (0.006 in)

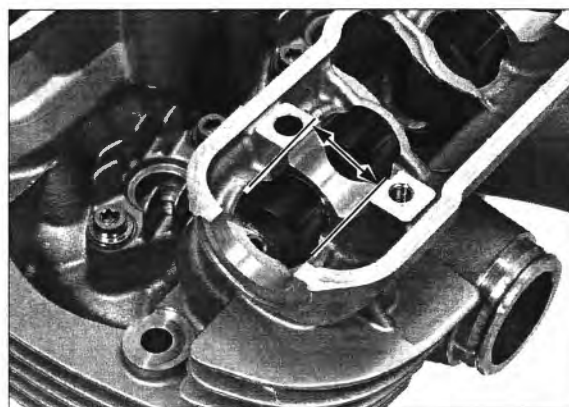


VALVE LIFTER BORE

Inspect each valve lifter bore for scratches or abnormal wear.

Measure each valve lifter bore I.D.

SERVICE LIMIT: 26.04 mm (1.025 in)



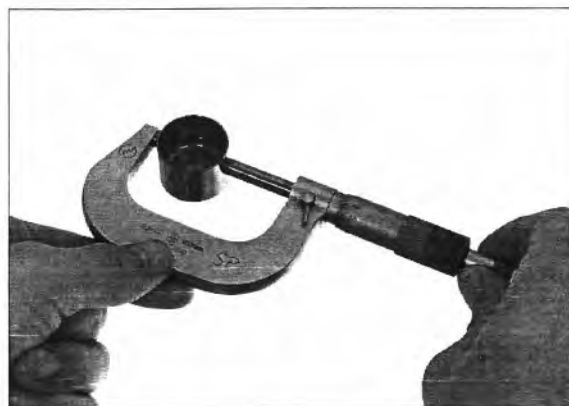
VALVE LIFTER

Inspect each valve lifter for scratches or abnormal wear.

Measure each valve lifter O.D.

SERVICE LIMIT: 25.97 mm (1.022 in)

Replace the valve lifters if they are smaller than the service limit.



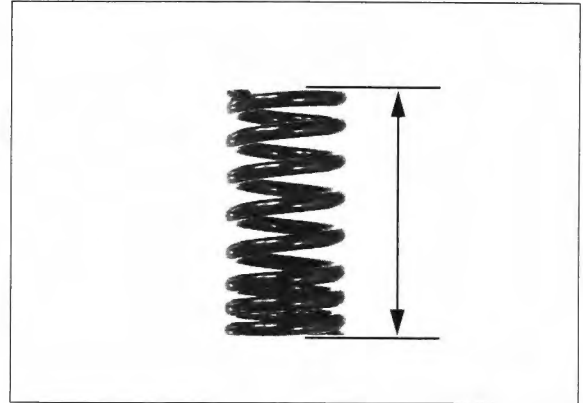
VALVE SPRING

Measure the valve spring free length.

SERVICE LIMIT:

IN/EX: 43.95 mm (1.730 in)

Replace the springs if they are shorter than the service limit.



VALVE/VALVE GUIDE

Check that the valve moves smoothly in the guide. Inspect each valve for bending, burning, or abnormal stem wear.

Check valve movement in the guide, measure and record each valve stem O.D.

SERVICE LIMITS:

IN: 4.960 mm (0.1953 in)

EX: 4.940 mm (0.1945 in)

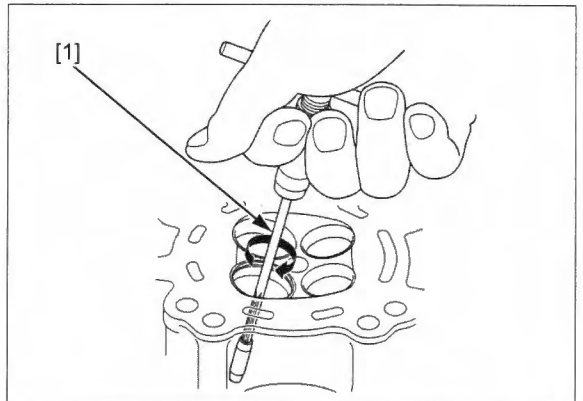
Replace the valves if they are smaller than the service limits.



Ream the guides to remove any carbon deposits before checking clearances. Insert the reamer from the combustion chamber side of the head and always rotate the reamer clockwise.

TOOL:

[1] Valve guide reamer, 5 mm 07984-MA60001 or 07984-MA6000D (U.S.A. only)



Measure and record each valve guide I.D.

SERVICE LIMIT: IN/EX: 5.040 mm (0.1984 in)

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

SERVICE LIMIT:

IN: 0.08 mm (0.003 in)

EX: 0.10 mm (0.004 in)

Reface the valve seats whenever the valve guides are replaced (page 7-23).

If the stem-to-guide clearance is out of standard, determine if a new guide with standard dimensions would bring the clearance within tolerance. If so, replace any guides as necessary and ream to fit. If the stem-to-guide clearance is out of standard with the new guides, replace the valves and guides.



CYLINDER HEAD/VALVES

VALVE GUIDE REPLACEMENT

Chill the replacement valve guides in the freezer section of a refrigerator for about an hour.

Heat the cylinder head to 100 – 150°C (212 – 300°F) with a hot plate or oven.

NOTICE

Do not use a torch to heat the cylinder head; it may cause warping.

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

TOOL:

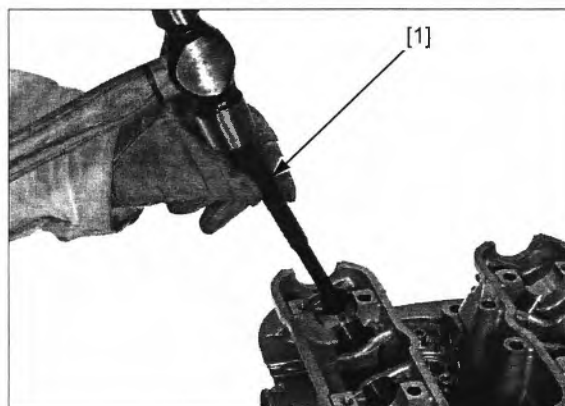
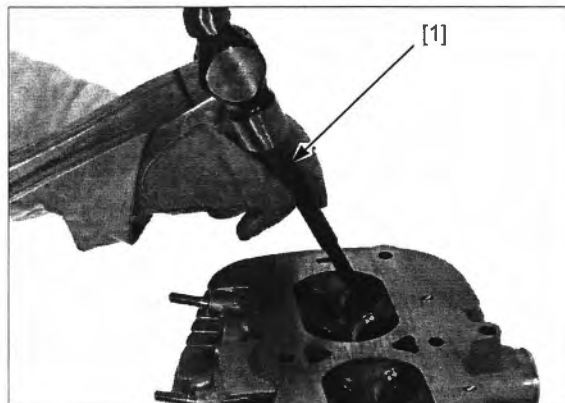
[1] Valve guide driver, 5 mm 07942-MA60000

While the cylinder head is still heated, drive new guides from the top of the cylinder head using the special tool.

TOOL:

[1] Valve guide driver, 5 mm 07942-MA60000

Let the cylinder head cool to room temperature.



Use cutting oil on the reamer during this operation

Ream the new valve guide after installation. Insert the reamer [1] from the combustion chamber side of the head and always rotate the reamer clockwise.

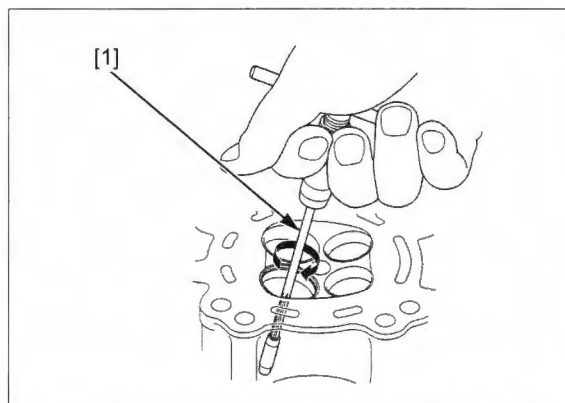
TOOL:

Valve guide reamer

**07984-MA60001 or
07984-MA6000D
(U.S.A. only)**

Clean the cylinder head thoroughly to remove any metal particles.

Reface the valve seat (page 7-23).

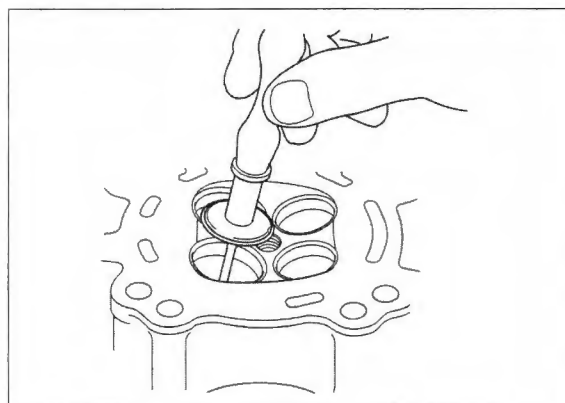


VALVE SEAT INSPECTION/REFACING

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

Apply a light coating of Prussian Blue to the valve seats.

Tap the valves and seats using a rubber hose or other hand-lapping tool.



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

STANDARD:

IN: 0.90 – 1.10 mm (0.035 – 0.043 in)

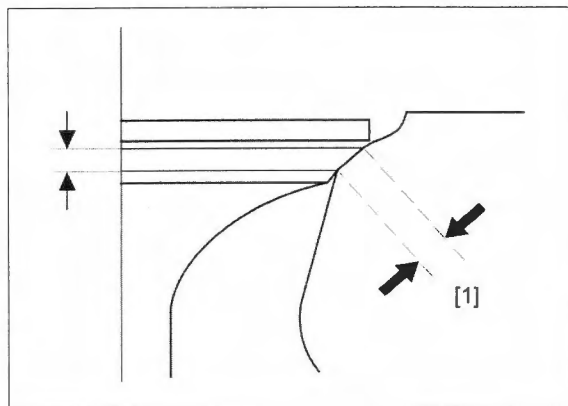
EX: 1.30 – 1.50 mm (0.051 – 0.059 in)

SERVICE LIMIT:

IN: 1.5 mm (0.06 in)

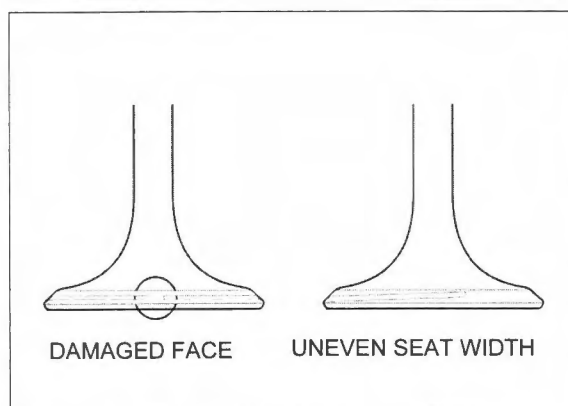
EX: 1.9 mm (0.07 in)

If the seat width [1] is not within specification, reface the valve seat (page 7-23).



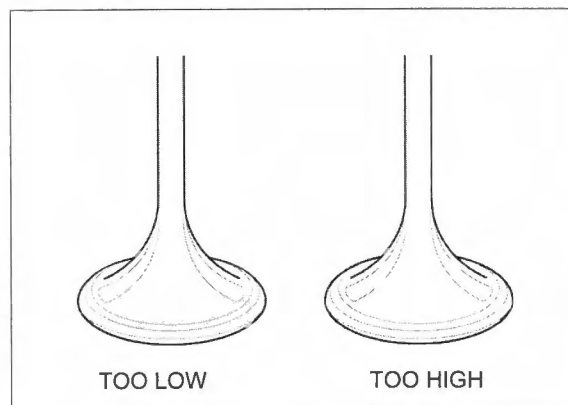
Inspect the valve seat face for:

- Uneven seat width:
 - Replace the valve and reface the valve seat.
- Damaged face:
 - Replace the valve and reface the valve seat.



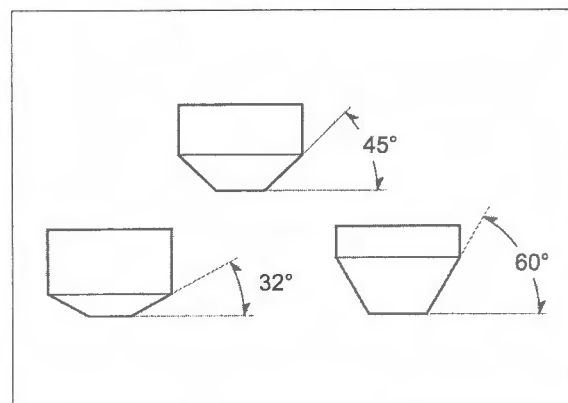
The valves cannot be ground. If a valve face is burned or badly worn or if it contacts the seat unevenly, replace the valve.

- Contact area (too high or too low)
 - Reface the valve seat.

**VALVE SEAT REFACING**

Follow the refacing manufacturer's operating instructions.

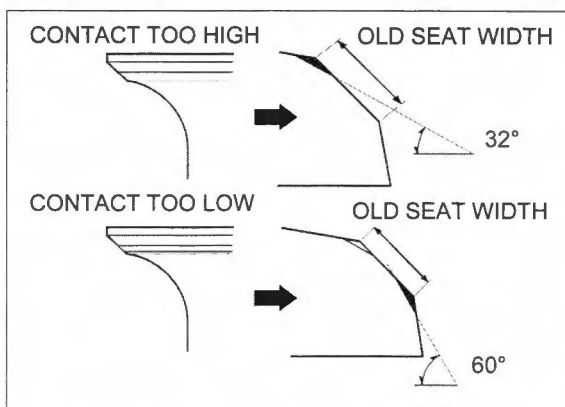
Valve seat cutters/grinders or equivalent valve seat refacing equipment are recommended to correct worn valve seats.



CYLINDER HEAD/VALVES

If the contact area is too high on the valve, the seat must be lowered using a 32° flat cutter.

If the contact area is too low on the valve, the seat must be raised using a 60° interior cutter.



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

Use a 45° cutter to remove any roughness [1] or irregularities from the seat.

TOOLS:

Seat cutter, 29 mm (IN)

Seat cutter, 27.5 mm (EX)

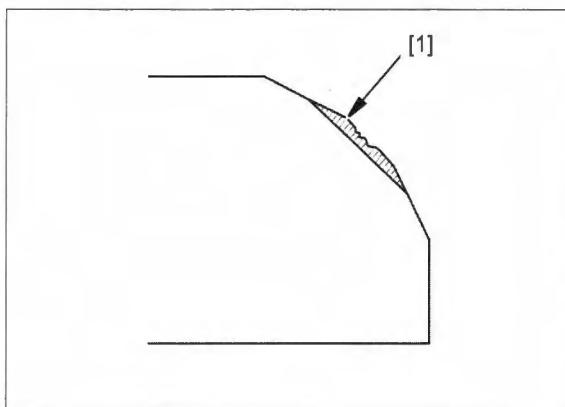
Cutter holder, 5.0 mm

07780-0010300

07780-0010200

07781-0010400 or
equivalent

commercially
available in U.S.A.



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

TOOLS:

Flat cutter, 30 mm (IN)

Flat cutter, 28 mm (EX)

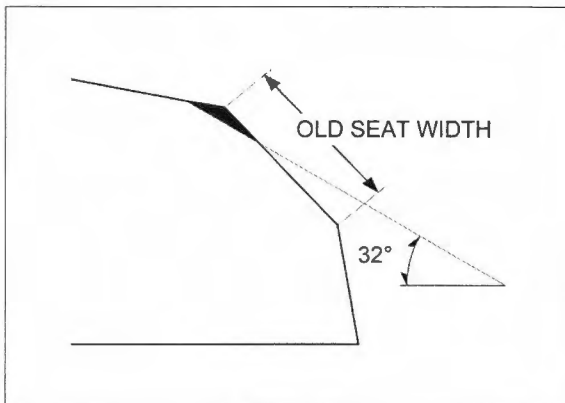
Cutter holder, 5.0 mm

07780-0012200

07780-0012100

07781-0010400 or
equivalent

commercially
available in U.S.A.



Use a 60° cutter to remove the bottom 1/4 of the old seat.

TOOLS:

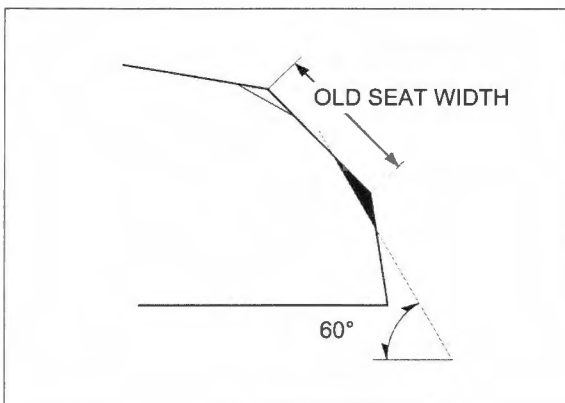
Interior cutter, 30 mm (IN/EX)

Cutter holder, 5.0 mm

07780-0014000

07781-0010400 or
equivalent

commercially
available in U.S.A.

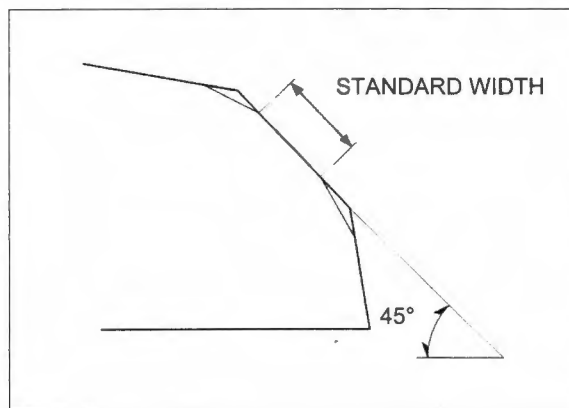


Using a 45° seat cutter, cut the seat to the proper width. Make sure that all pitting and irregularities are removed. Refinish if necessary.

STANDARD:

IN: 0.90 – 1.10 mm (0.035 – 0.043 in)

EX: 1.30 – 1.50 mm (0.051 – 0.059 in)

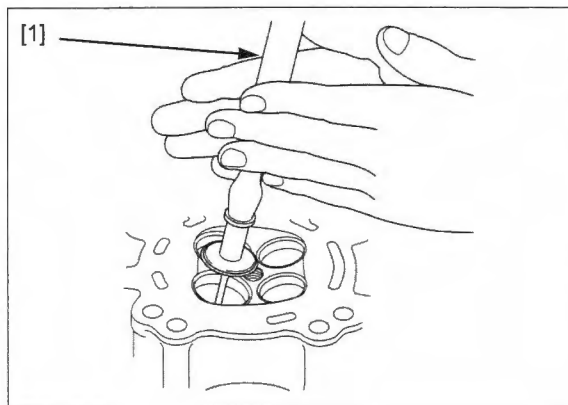
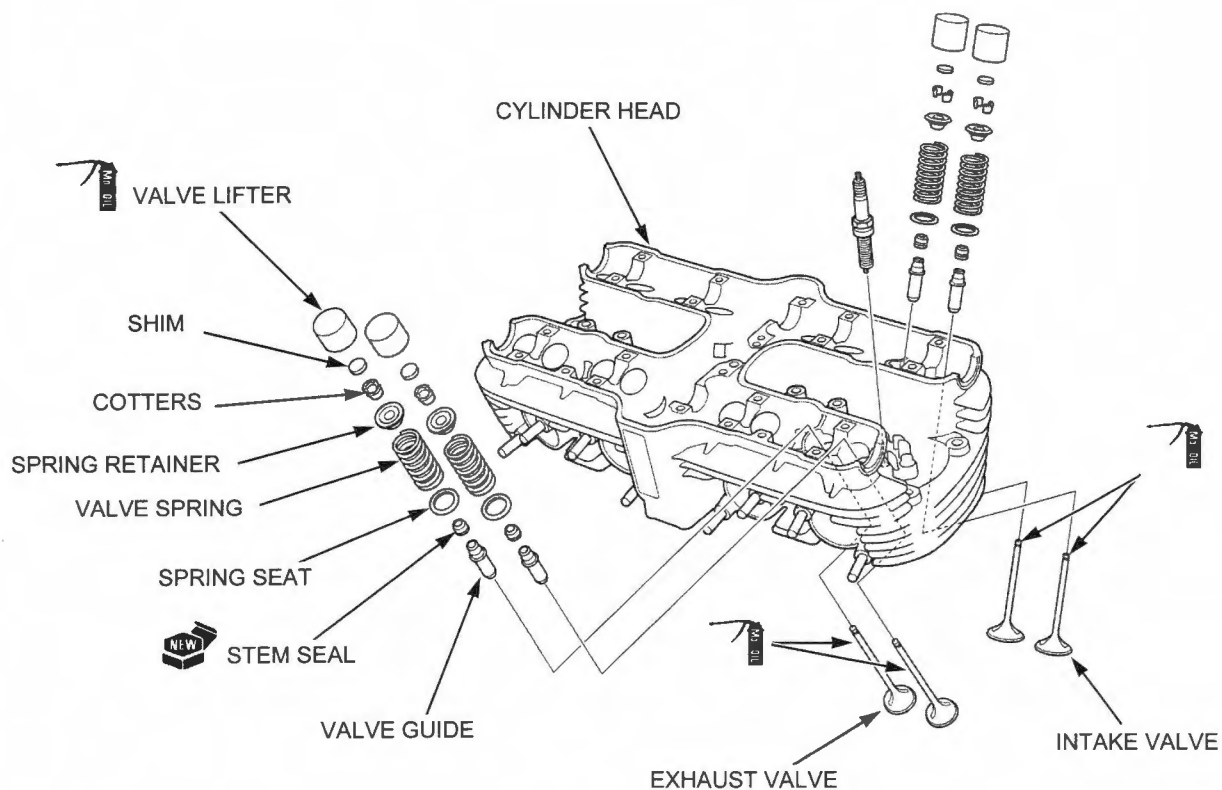


After cutting the seat, apply lapping compound to the valve face, and lap the valve using light pressure.

NOTICE

- 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 all residual compound off the cylinder head and valve.

**ASSEMBLY**

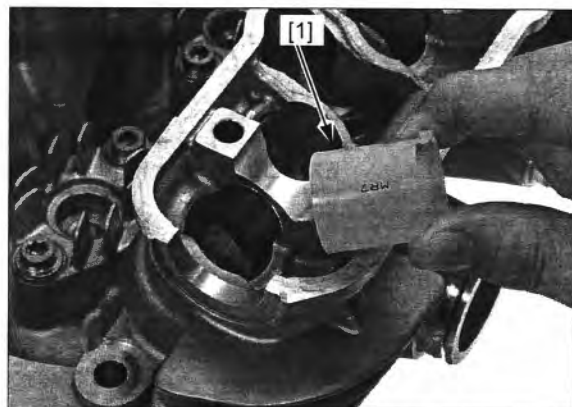
CYLINDER HEAD/VALVES

Blow through all oil passages in the cylinder head with compressed air.

Install the tappet hole protector [1] into the valve lifter bore.

TOOL:

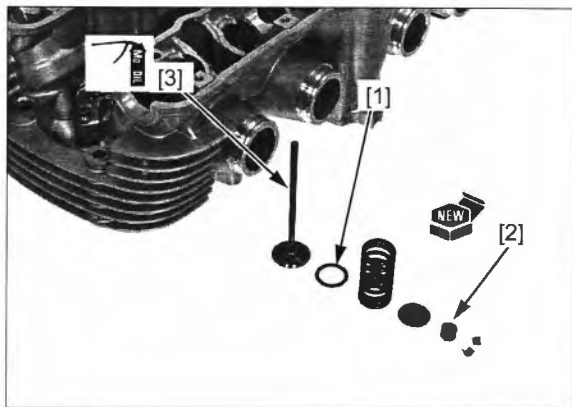
Tappet hole protector 07HMG-MR70002



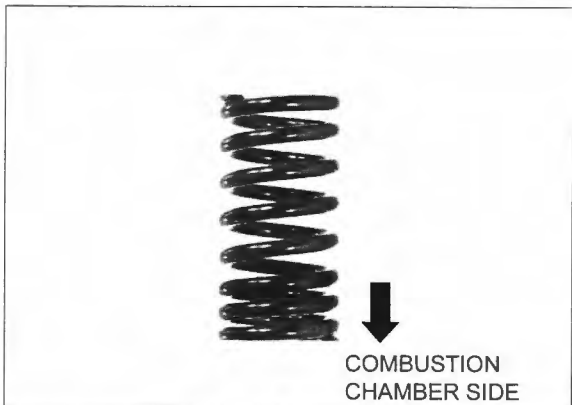
Install the valve spring seats [1].

Install new stem seals [2].

Lubricate the valve stems with molybdenum oil solution. Insert the valve [3] into the valve guide while turning it slowly to avoid damage to the stem seal.



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



Grease the cotters to ease installation.

Install the valve spring retainers [1].

Install the valve cotters [2] using the special tool as shown.

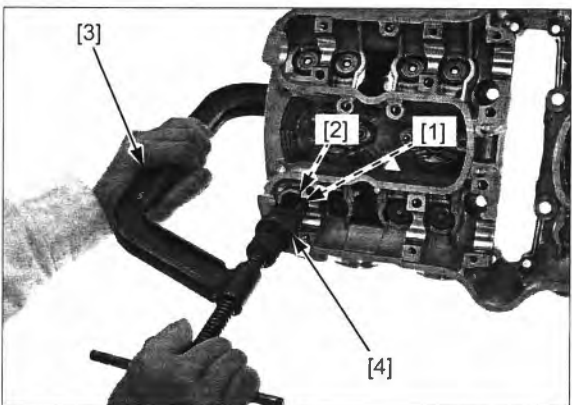
NOTICE

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

TOOLS:

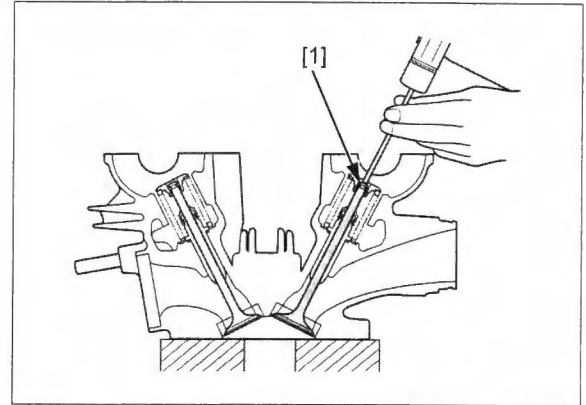
[3] Valve spring compressor 07757-0010000

[4] Valve spring compressor attachment 07959-KM30101



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

Tap the valve stems [1] gently with plastic hammer and pin driver as shown to seat the cotters firmly.



INSTALLATION

Temporarily install the cylinder head gasket onto the cylinder block.

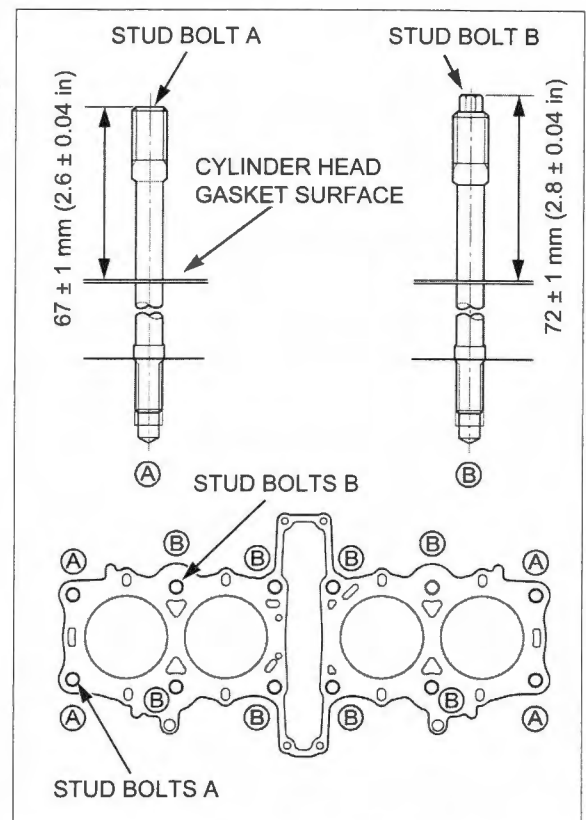
Check the protrusions of crankcase stud bolt A and B from the cylinder head gasket surface.

Tighten the crankcase stud bolts until the specified length, if necessary.

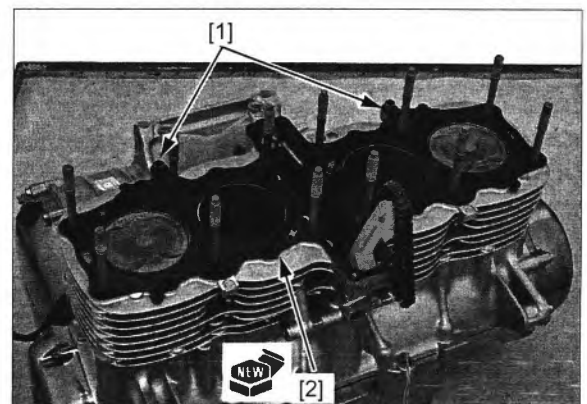
SPECIFIED LENGTH:

STUD BOLT A: $67 \pm 1 \text{ mm}$ ($2.6 \pm 0.04 \text{ in}$)

STUD BOLT B: $72 \pm 1 \text{ mm}$ ($2.8 \pm 0.04 \text{ in}$)



Install the dowel pins [1] and a new cylinder head gasket [2] as shown.



CYLINDER HEAD/VALVES

Install the cylinder head [1] onto the cylinder block.

Apply engine oil to the threads and seating surface of the 9 mm nuts A [2] and B [3] and install them with new washers [4].

Apply engine oil to the threads and seating surface of the 6 mm flange bolts [5] and install them.

Ensure that 9 mm cylinder mounting nuts A and B are installed in their correct locations.

Tighten the 9 mm nuts A and B in a crisscross pattern in 2 – 3 steps to the specified torque.

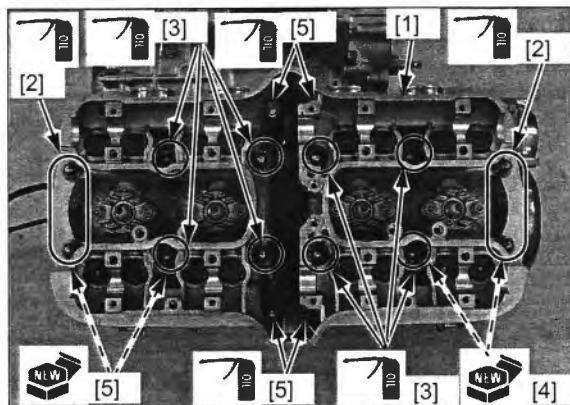
TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

Further tighten the 9 mm nuts A and B 85°.

Tighten the 6 mm flange bolts securely.

Install the following:

- camshaft (page 7-14)
- spark plug (page 3-9)
- muffler/exhaust pipe (page 2-15)
- front air cleaner housing/throttle body assembly (page 5-62)



PLUG HOLE COVER

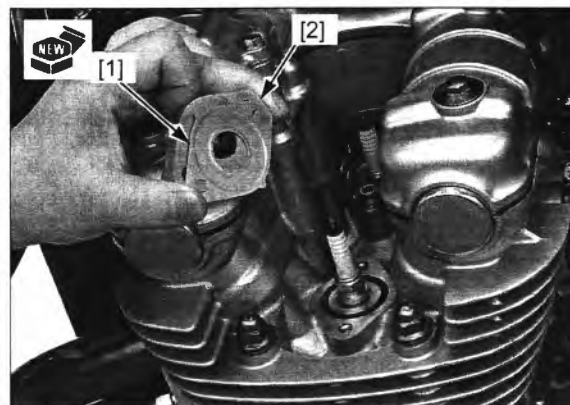
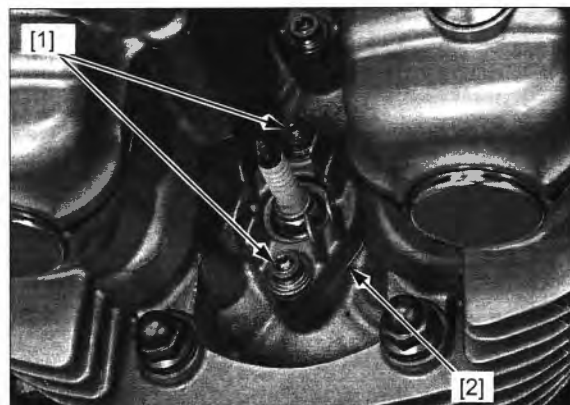
REMOVAL/INSTALLATION

Disconnect the spark plug caps from the spark plugs (page 3-8).

Remove the plug hole cover bolt [1], plug hole cover [2], and gasket.

Install a new gasket [1] onto the plug hole cover [2].

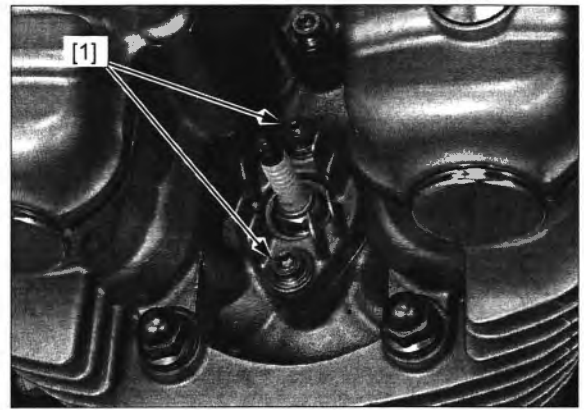
Install the plug hole cover onto the cylinder head.



Tighten the plug hole cover bolt [1] to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Connect the spark plug caps to the spark plugs (page 3-8).



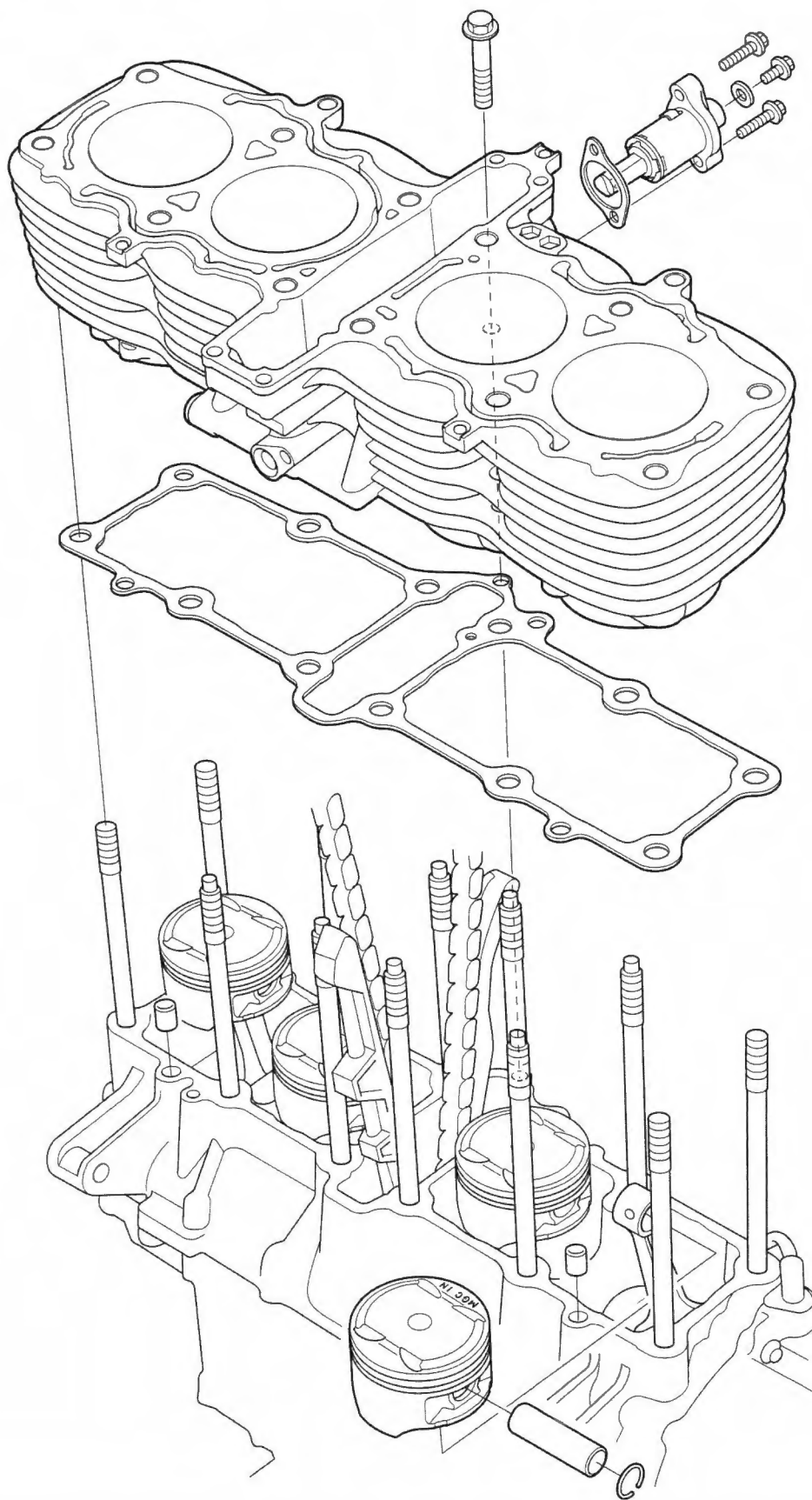
MEMO

8. CYLINDER/PISTON

COMPONENT LOCATION 8-2
SERVICE INFORMATION 8-3
TROUBLESHOOTING 8-4

CYLINDER/PISTON 8-5
CAM CHAIN TENSIONER LIFTER 8-11

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

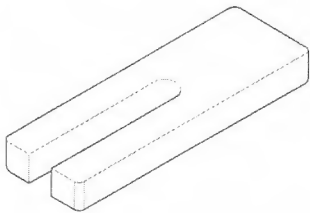
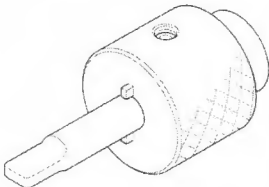
- This section covers service of the cylinder and piston.
- The cylinder and piston services can be done with the engine installed in the frame.
- When disassembling, mark and store the disassembled parts to ensure that they are reinstalled in their original locations.
- Be careful not to damage the cylinder and piston wall.
- 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. Clean the oil passages before assembling the cylinder.
- Be careful not to damage the mating surfaces when removing the cylinder.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Piston, piston rings	Piston O.D. at 15 mm (0.6 in) from bottom	73.465 – 73.485 (2.8923 – 2.8931)	73.395 (2.8896)
	Piston pin bore I.D.	17.002 – 17.008 (0.6694 – 0.6696)	17.05 (0.671)
	Piston pin O.D.	16.994 – 17.000 (0.6691 – 0.6693)	16.98 (0.669)
	Piston to piston pin clearance	0.002 – 0.014 (0.0001 – 0.0006)	0.04 (0.002)
	Piston ring end gap	Top	0.23 – 0.38 (0.009 – 0.015)
		Second	0.38 – 0.53 (0.015 – 0.021)
		Oil (side rail)	0.20 – 0.50 (0.008 – 0.020)
	Piston ring-to-ring groove clearance	Top	0.015 – 0.050 (0.0006 – 0.0020)
		Second	0.015 – 0.050 (0.0006 – 0.0020)
Cylinder	I.D.	73.500 – 73.515 (2.8937 – 2.8943)	73.600 (2.8976)
	Out of round	—	0.10 (0.004)
	Taper	—	0.10 (0.004)
	Warpage	—	0.15 (0.006)
Cylinder-to-piston clearance		0.015 – 0.050 (0.0006 – 0.0020)	0.10 (0.004)
Connecting rod small end I.D.		17.030 – 17.051 (0.6705 – 0.6713)	17.061 (0.6717)
Connecting rod-to-piston pin clearance		0.030 – 0.057 (0.0012 – 0.0022)	0.08 (0.003)

TOOLS

Piston base 07958-2500001 	Tensioner stopper 070MG-0010100  or 07AMG-001A100 (U.S.A. only)
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CYLINDER/PISTON

TROUBLESHOOTING

Cylinder compression is too low, hard to start, or poor performance at low speed

- Worn, stuck, or broken piston ring
- Worn or damaged cylinder and piston
- Worn or damaged cylinder head or valve (page 7-18).

Cylinder compression too high, overheating or knocking

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

Excessive smoke

- Worn cylinder, piston, or piston ring
- Improper installation of piston rings
- Scored or scratched piston or cylinder wall
- Worn or damaged cylinder head or valve (page 7-18).

Abnormal noise

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

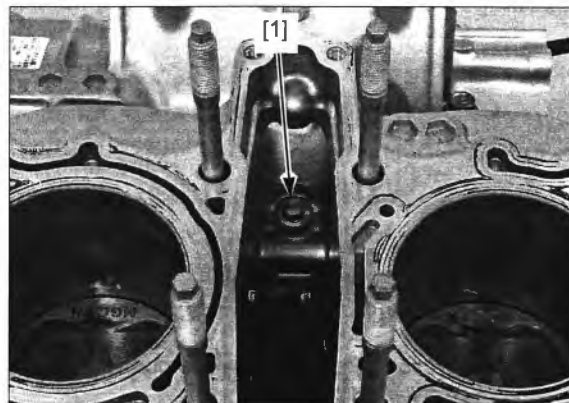
CYLINDER/PISTON

REMOVAL

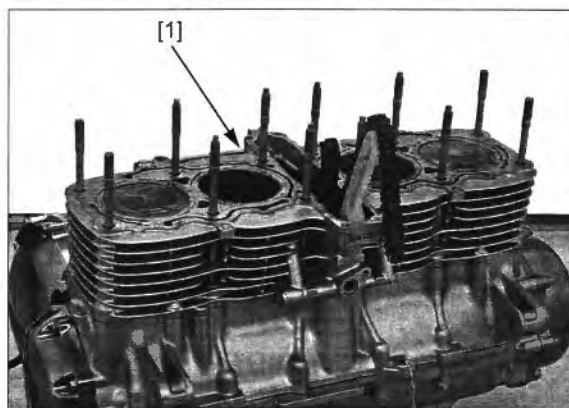
Remove the cylinder head (page 7-18).

Remove the cam chain tensioner lifter (page 8-11).

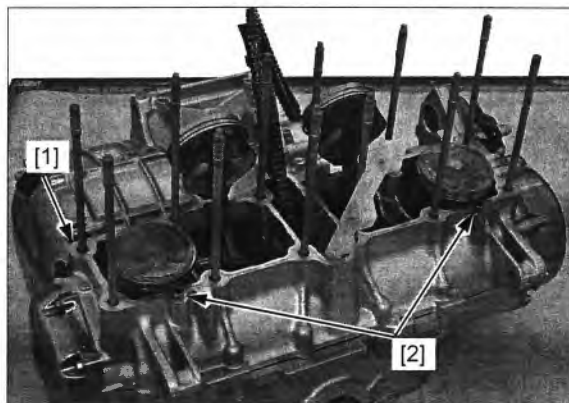
Remove the cylinder mounting bolt [1] and cylinder.



Remove the cylinder [1].



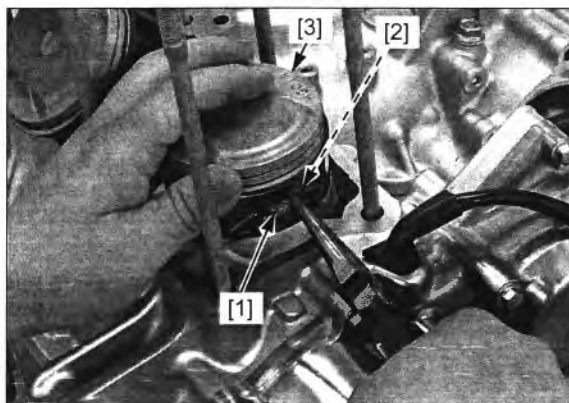
Remove the gasket [1] and dowel pins [2].



Mark all the parts as you remove them to indicate the correct cylinder for reassembly.

Avoid dropping the piston pin clips [1], cover the crankcase opening with a shop towel or equivalent.

Remove the piston pin clips with pliers. Push the piston pin [2] out of the piston [3] and connecting rod and remove the piston.

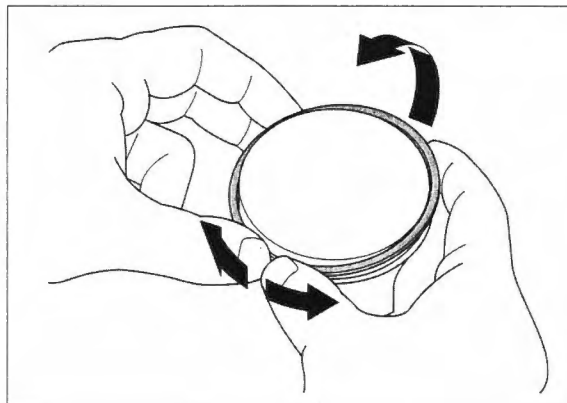


CYLINDER/PISTON

DISASSEMBLY

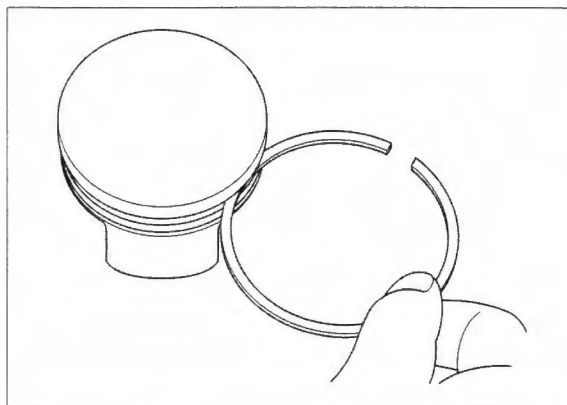
Do not damage the piston ring by spreading the ends too far.

Spread each piston ring and remove it by lifting up at a point opposite the gap.



Clean carbon deposits from the ring grooves with a ring that will be discarded. Never use a wire brush; it will scratch the groove.

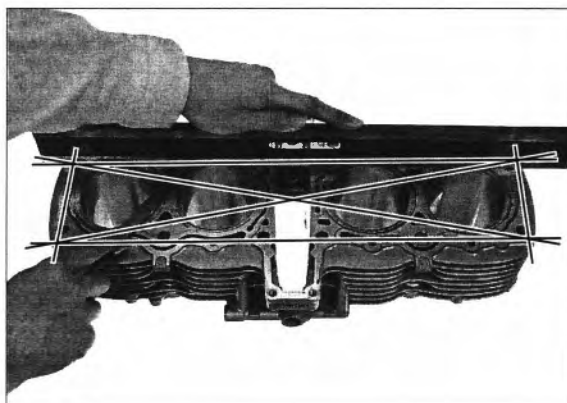
Remove any carbon deposits from the piston ring grooves.



CYLINDER INSPECTION

Inspect the top of the cylinder for warpage.

SERVICE LIMIT: 0.15 mm (0.006 in)

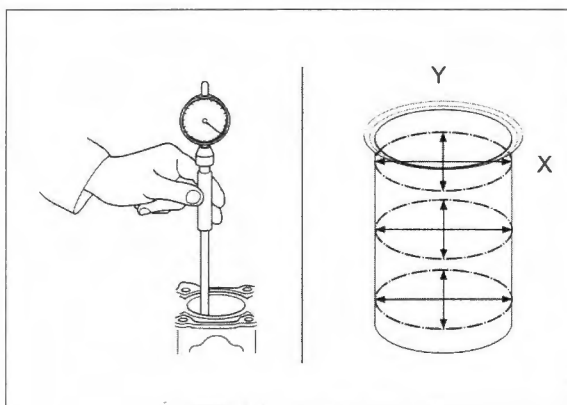


Inspect the cylinder bore for wear or damage. Measure the cylinder I.D. in X and Y axis at three levels. Take the maximum reading to determine the cylinder wear.

SERVICE LIMIT: 73.600 mm (2.8976 in)

Calculate the piston-to-cylinder clearance. Take a maximum reading to determine the clearance. Refer to procedures for measurement of the piston O.D. (page 8-7).

SERVICE LIMIT: 0.10 mm (0.004 in)

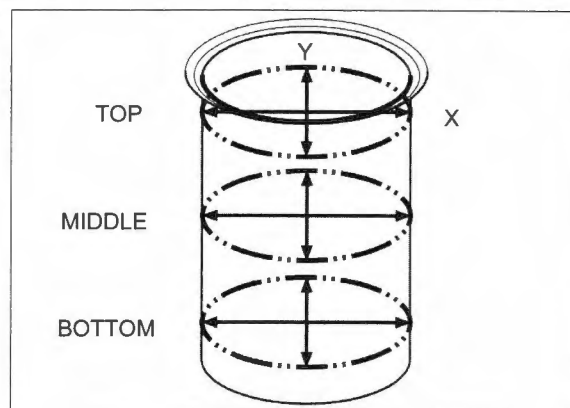


Calculate the taper and out of round at three levels in X and Y axis. Take the maximum reading to determine them.

SERVICE LIMITS:

Taper: 0.10 mm (0.004 in)

Out of round: 0.10 mm (0.004 in)



PISTON INSPECTION

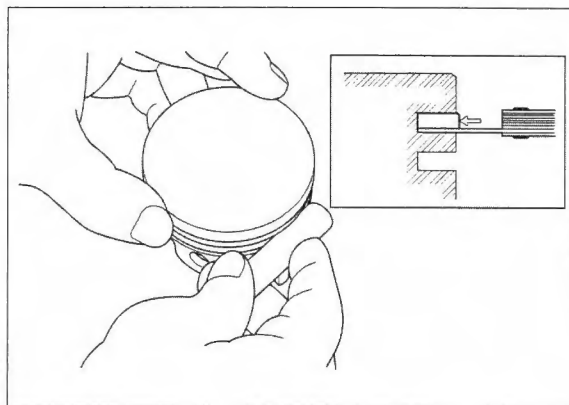
Temporarily install the piston rings to their proper position with the mark facing up.

Measure the piston ring-to-ring groove clearance with the rings pushed into the grooves.

SERVICE LIMITS:

Top: 0.09 mm (0.004 in)

Second: 0.09 mm (0.004 in)



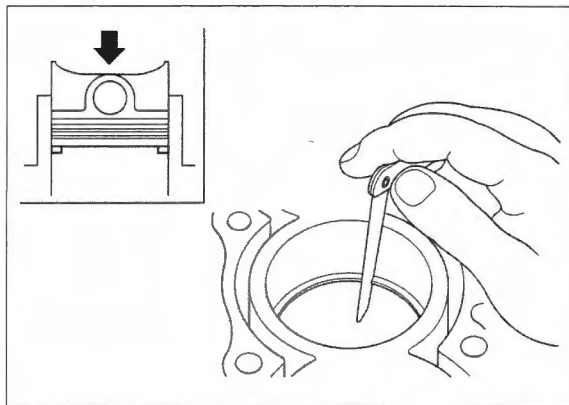
Insert the piston ring squarely into the bottom of the cylinder and measure the ring end gap.

SERVICE LIMITS:

Top: 0.48 mm (0.019 in)

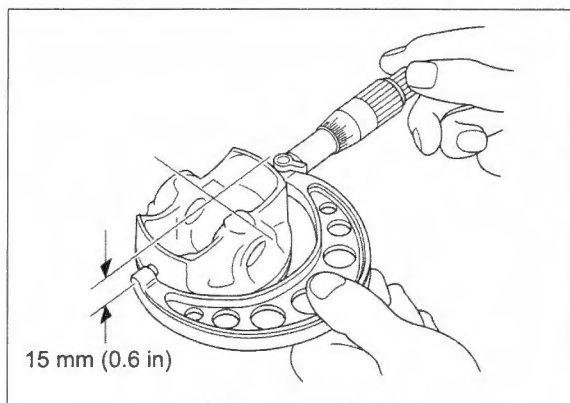
Second: 0.73 mm (0.029 in)

Oil (side rail): 0.7 mm (0.03 in)



Measure the diameter of the piston at 15 mm (0.6 in) from the bottom of the skirt and 90 degrees to the piston pin hole.

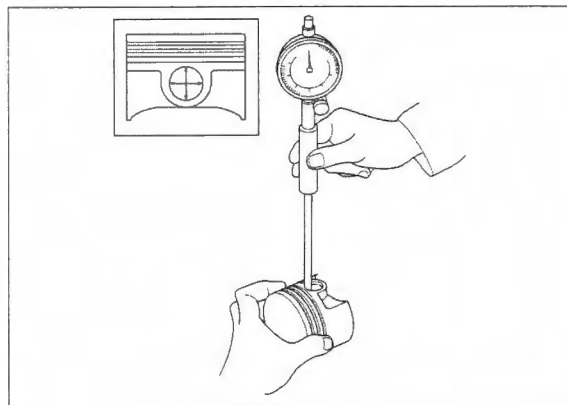
SERVICE LIMIT: 73.395 mm (2.8896 in)



CYLINDER/PISTON

Measure the piston pin bore.

SERVICE LIMIT: 17.05 mm (0.671 in)

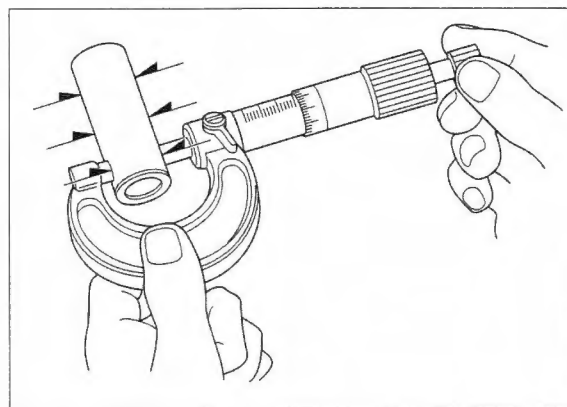


Measure the O.D. of the piston pin.

SERVICE LIMIT: 16.98 mm (0.669 in)

Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.04 mm (0.002 in)



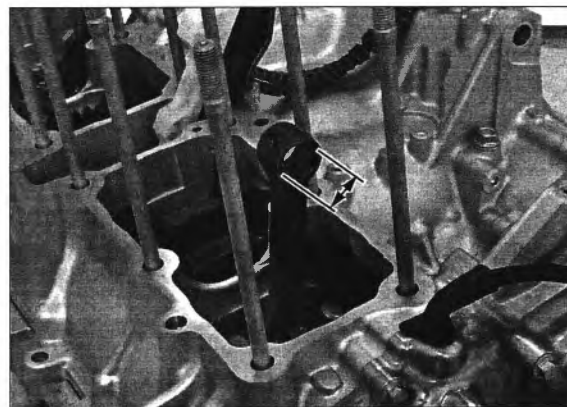
CONNECTING ROD INSPECTION

Measure the connecting rod small end I.D.

SERVICE LIMIT: 17.061 mm (0.6717 in)

Calculate the connecting rod-to-piston pin clearance.

SERVICE LIMIT: 0.08 mm (0.003 in)



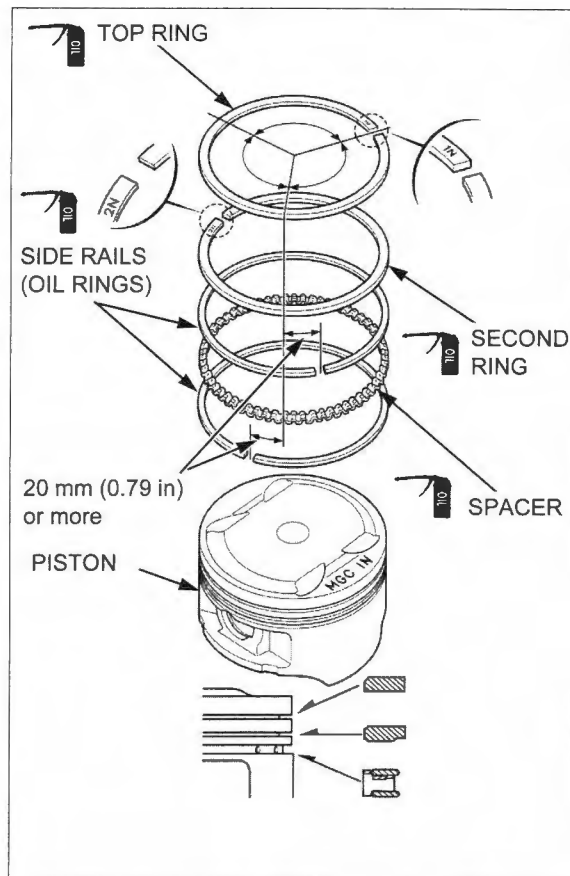
PISTON ASSEMBLY

Clean the piston ring grooves thoroughly and install the piston rings.

- Apply engine oil to the piston rings.
- Avoid piston and piston ring damage during installation.
- Install the piston rings with the marking facing up.
 - Top ring: "1N" mark
 - Second ring: "2N" mark
- Do not interchange the top and second rings.
- To install the oil ring, install the spacer first, then install the side rails.

Stagger the piston ring end gaps 120° apart from each other.

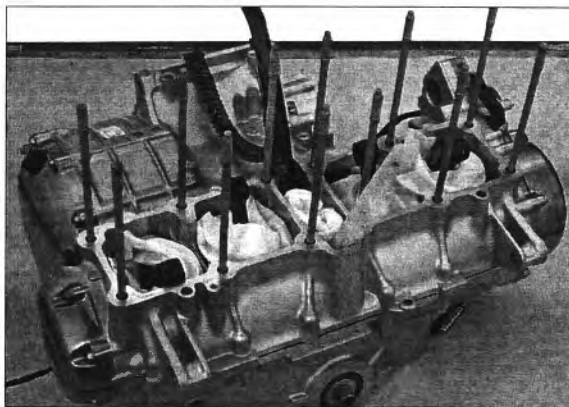
Stagger the side rail end gaps as shown.



INSTALLATION

Be careful not to damage the gasket mating surface.

Clean any gasket material from the cylinder base and crankcase upper surface.



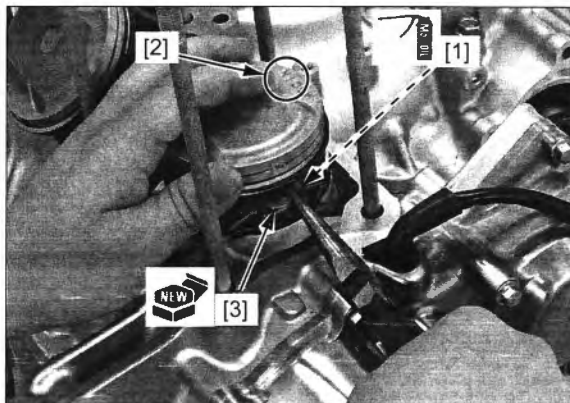
Apply molybdenum disulfide oil to the piston pin [1] outer surface.

Set the piston over the connecting rod with the "IN" mark [2] facing towards the intake side.

Install the piston pin, and secure it using new piston pin clips [3].

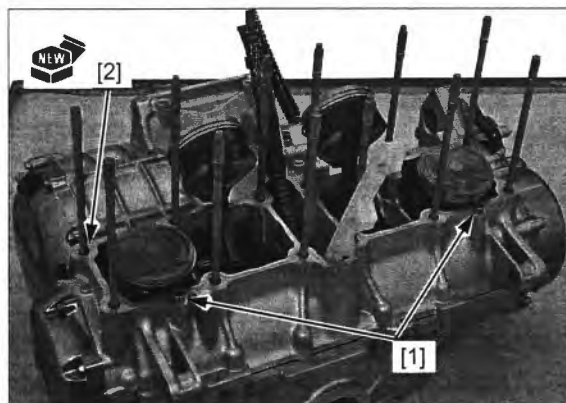
- Make sure that the piston pin clips are seated securely.
- Do not align the piston pin clip end gap with the piston cut-out.

Avoid dropping the piston pin clips, cover the crankcase opening with a shop towel or equivalent.



CYLINDER/PISTON

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



Coat the cylinder bores and pistons with engine oil.

Place the special tool under the No.2 and No.3 pistons.

TOOL:

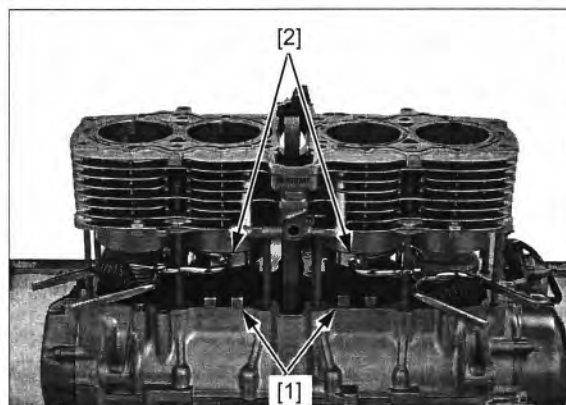
[1] Piston base 07958-2500001

Compress the No.2 and No.3 piston rings using a commercially available piston ring compressors [2].

Route the cam chain into the cylinder, then place the cylinder onto the No.2 and No.3 pistons.

Turn the crankshaft clockwise and install the No.2 and No.3 pistons into the cylinder.

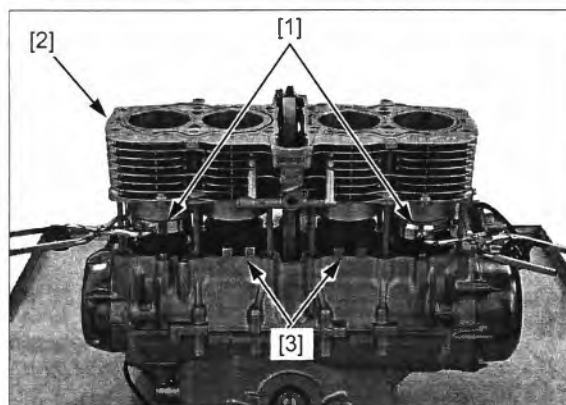
Hold the piston bases under the No.2 and No.3 pistons.



Compress the No.1 and No.4 piston rings using the commercially available piston ring compressors [1].

Turn the crankshaft clockwise and install the No.1 and No.4 pistons into the cylinder [2].

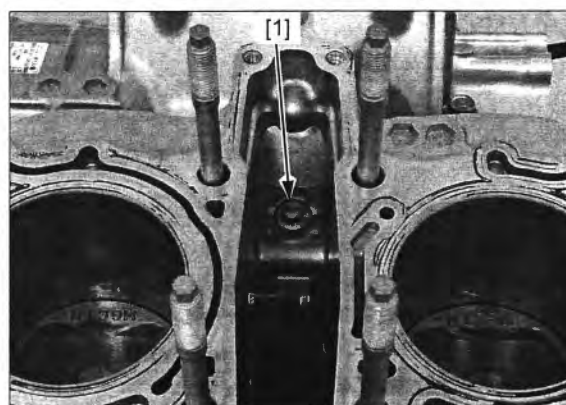
Remove the piston bases [3], then install the cylinder to the crankcase.



Install the cylinder mounting bolt [1] and tighten it securely.

Install the cam chain tensioner lifter (page 8-11).

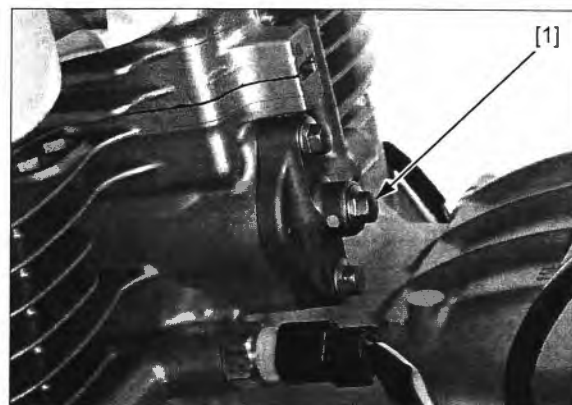
Install the cylinder head (page 7-27).



CAM CHAIN TENSIONER LIFTER

REMOVAL

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



Turn the tensioner shaft fully in (clockwise) and secure it using the tensioner stopper to prevent damaging the cam chain.

TOOL:

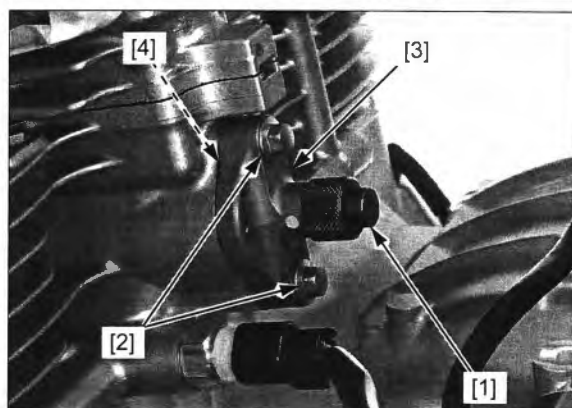
[1] Tensioner stopper

070MG-0010100 or
07AMG-001A100
(U.S.A. only)

Be careful not to let dirt into the cylinder head.

Remove the bolts [2] and cam chain tensioner lifter [3].

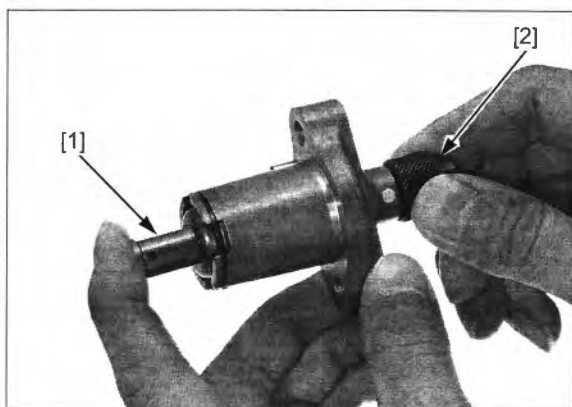
Remove the gasket [4].



INSPECTION

The tensioner shaft [1] should not go into the body when it is pushed.

When it is turned clockwise with the cam chain tensioner holder [2] or a stopper tool, the tensioner shaft should be pulled into the body. The shaft should spring out of the body as soon as the stopper tool is released.



INSTALLATION

Note the installation direction of the gasket.

Install a new gasket [1] onto the cam chain tensioner lifter [2].

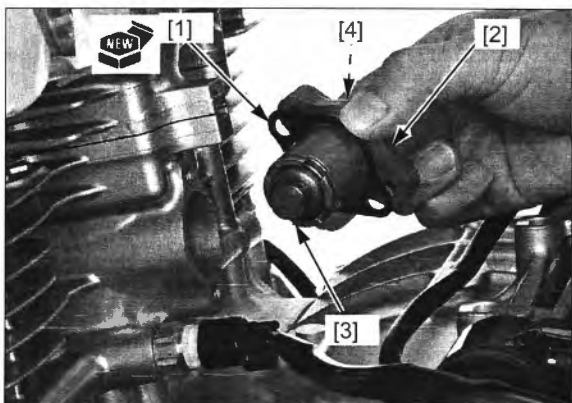
Retract the cam chain tensioner lifter shaft [3] and secure it using the special tool.

TOOL:

[4] Tensioner stopper

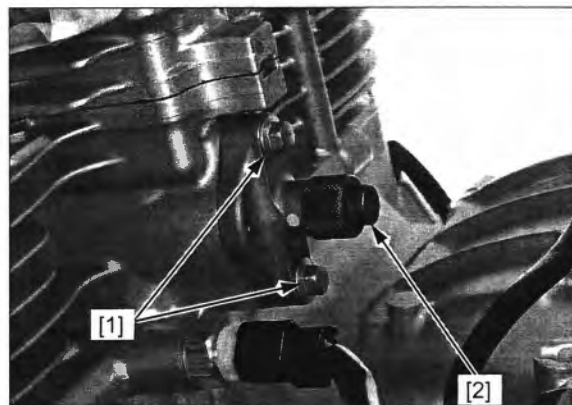
070MG-0010100 or
07AMG-001A100
(U.S.A. only)

Install the cam chain tensioner lifter into the cylinder.

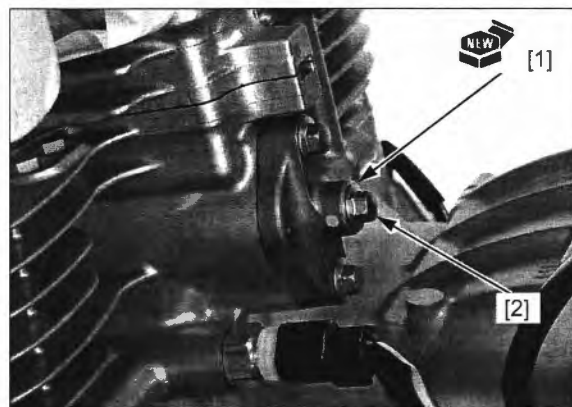


CYLINDER/PISTON

Install and tighten the mounting bolts [1] securely.
Remove the tensioner stopper [2].



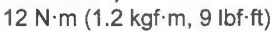
Install a new sealing washer [1] and tighten the cam chain tensioner lifter bolt [2] securely.



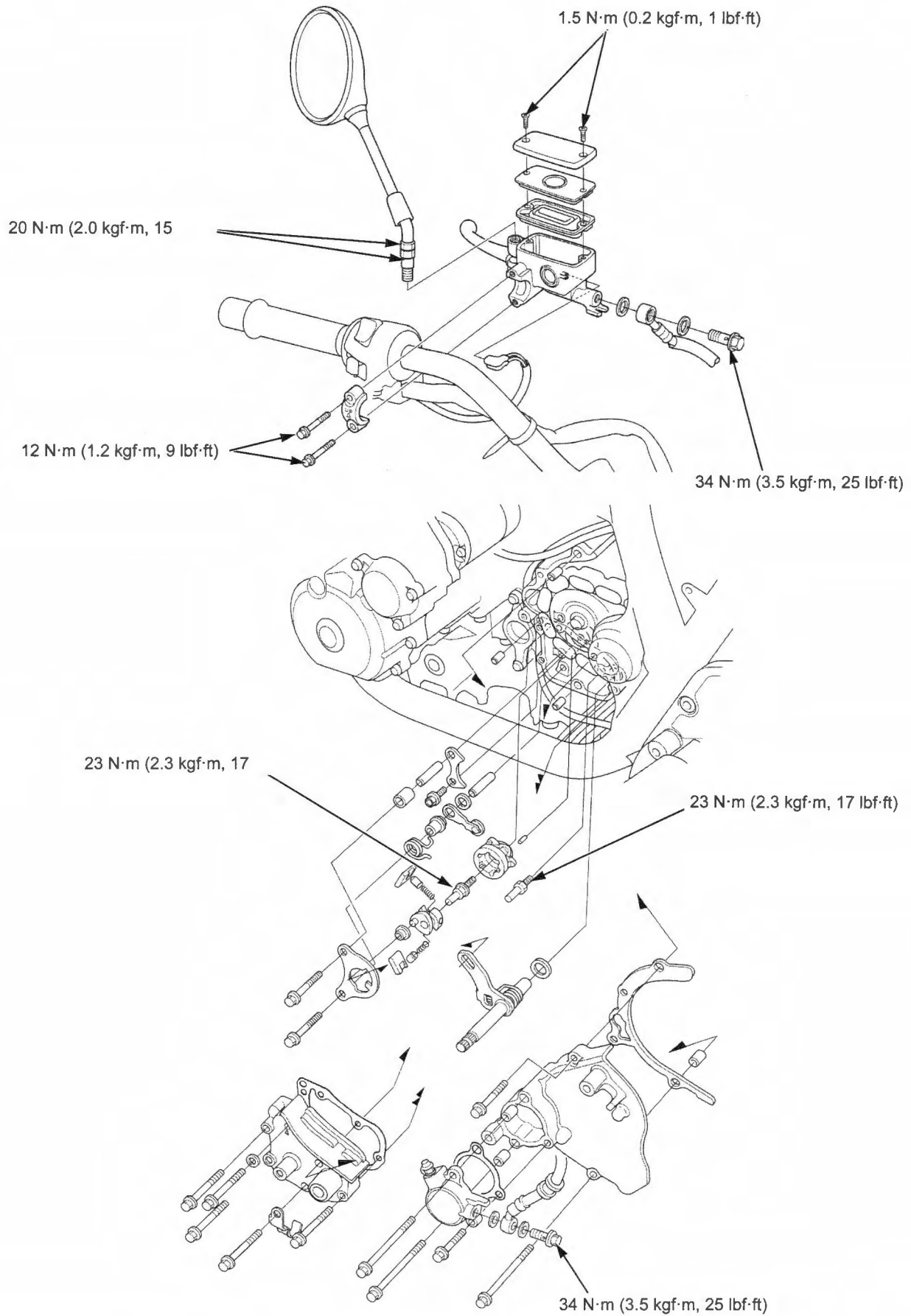
9. CLUTCH/GEARSHIFT LINKAGE

COMPONENT LOCATION	9-2	CLUTCH SLAVE CYLINDER	9-15
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TROUBLESHOOTING	9-7	CLUTCH	9-18
CLUTCH FLUID REPLACEMENT/AIR BLEEDING	9-8	CLUTCH COVER INSTALLATION	9-28
CLUTCH MASTER CYLINDER	9-10	GEARSHIFT LINKAGE	9-29

COMPONENT LOCATION

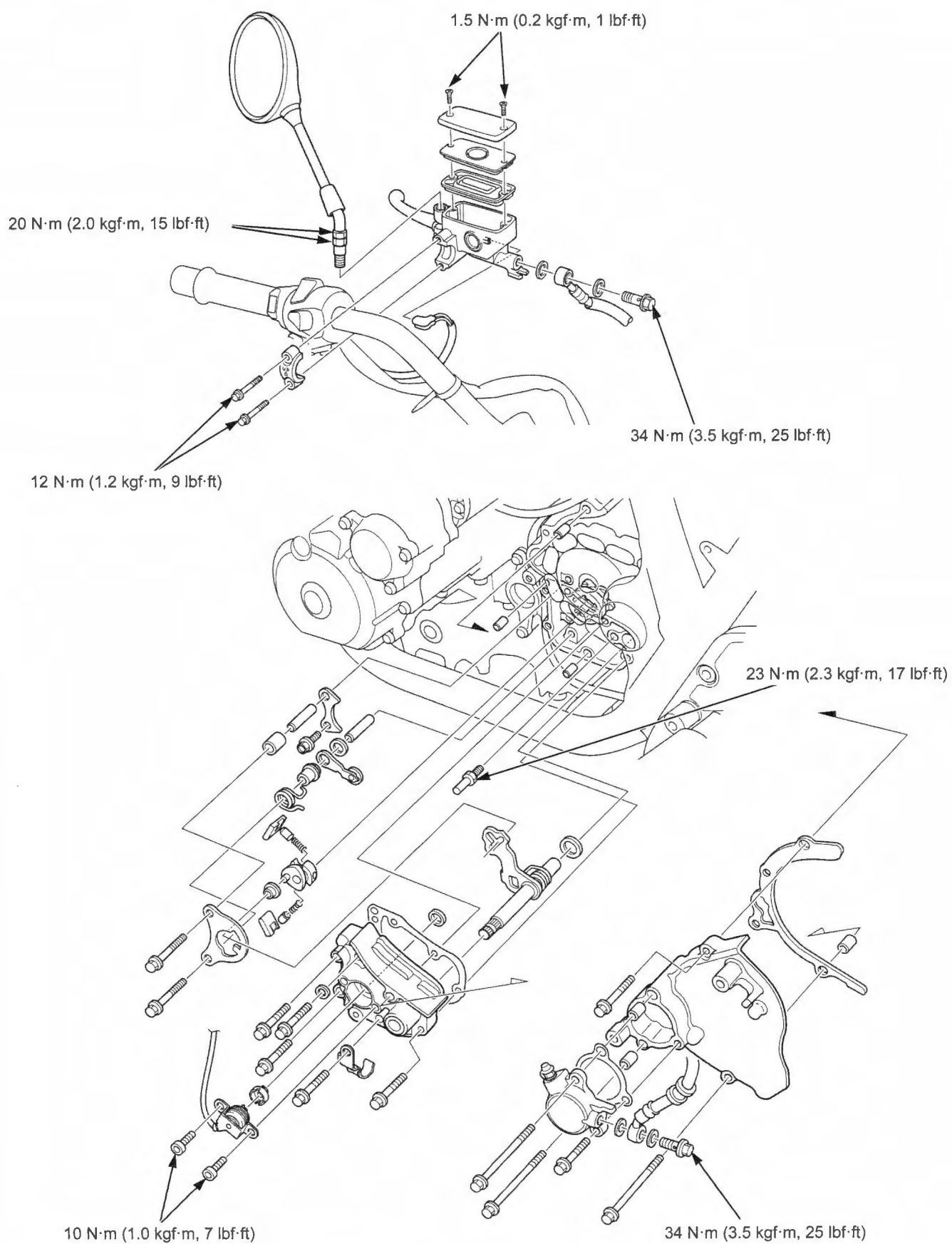


'13 model:



CLUTCH/GEARSHIFT LINKAGE

After '13 model:



SERVICE INFORMATION

GENERAL

NOTICE

Spilled clutch (brake) fluid will severely damage plastic parts and painted surfaces. It is also harmful to some rubber parts. Be careful whenever you remove the reservoir cap; make sure the reservoir is horizontal first.

- This section covers service of the clutch and gearshift linkage. All service can be done with the engine installed in the frame.
- DOT 4 brake fluid is used for the hydraulic clutch and is referred to as clutch fluid in this section. Do not use other types of fluid as they are not compatible.
- Never allow contaminants (dirt, water, etc.) to get into an open reservoir.
- Once the hydraulic system has been opened, the system must be bled.
- Always use fresh DOT 4 brake fluid from a sealed container when servicing the system. Do not mix different types of fluid as they may not be compatible.
- Clean any sealant from the clutch cover mating surface.
- Be careful not to damage the clutch cover mating surface when servicing.
- When servicing the clutch, use care not to allow dust or dirt to enter the engine.
- Engine oil viscosity and level have an effect on clutch disengagement. When the clutch does not disengage or the motorcycle creeps with the clutch disengaged, inspect the engine oil level before servicing the clutch system.

SPECIFICATIONS

Unit: mm (in)

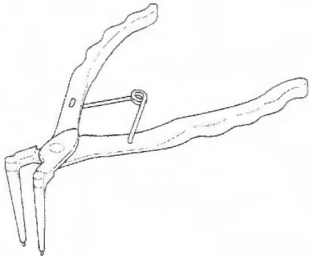
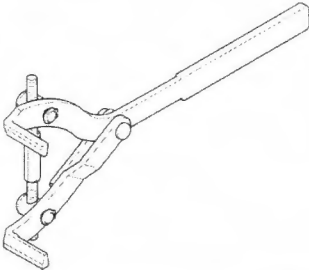
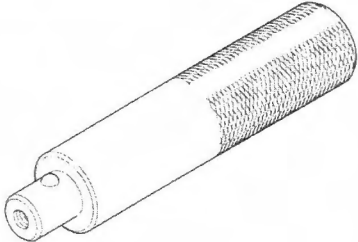
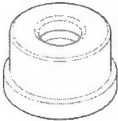
ITEM		STANDARD	SERVICE LIMIT
Recommended clutch fluid		DOT 4 brake fluid	—
Clutch master cylinder I.D.		12.700 – 12.743 (0.5000 – 0.5017)	12.755 (0.5022)
Clutch master piston O.D.		12.657 – 12.684 (0.4983 – 0.4994)	12.645 (0.4978)
Clutch	Spring free length	53.1 (2.09)	50.1 (1.97)
	Disc thickness	3.72 – 3.88 (0.146 – 0.153)	3.5 (0.14)
	Plate warpage	—	0.30 (0.012)
Clutch outer guide	I.D.	27.995 – 28.012 (1.1022 – 1.1028)	28.08 (1.106)
	O.D.	39.992 – 40.008 (1.5745 – 1.5751)	39.93 (1.572)
Mainshaft O.D. at clutch outer guide		27.980 – 27.993 (1.1016 – 1.1021)	27.10 (1.067)

TORQUE VALUES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Clutch master cylinder reservoir cover screw	2	4	1.5 (0.2, 1.1)	
Clutch switch screw	1	4	1.2 (0.1, 0.9)	
Clutch lever pivot bolt	1	6	1.0 (0.1, 0.7)	
Clutch lever pivot nut	1	6	6.0 (0.6, 4.4)	
Clutch master cylinder holder bolt	2	6	12 (1.2, 9)	
Clutch hose oil bolt	2	10	34 (3.5, 25)	
Clutch cover damper rubber set plate bolt	1	6	12 (1.2, 9)	Apply a locking agent to the threads.
Clutch slave cylinder bleed valve	1	8	8.0 (0.8, 5.9)	
Clutch center lock nut	1	25	186 (19.0, 137)	Apply engine oil to the threads and seating surface. Stake.
Clutch spring bolt	6	6	12 (1.2, 9)	
Gearshift spindle return spring pin	1	8	23 (2.3, 17)	
Shift drum center bolt ('13)	1	8	23 (2.3, 17)	Apply a locking agent to the threads.
Shift drum lock bolt (After '13)	1	5	5.2 (0.5, 3.8)	Apply a locking agent to the threads.

CLUTCH/GEARSHIFT LINKAGE

TOOLS

Snap ring pliers 07914-SA50001 	Clutch center holder 07724-0050002  or equivalent commercially available in U.S.A.	Driver 07749-0010000 
Attachment, 28 x 30 mm 07946-1870100 	Attachment, 32 x 35 mm 07746-0010100 	Pilot, 17 mm 07746-0040400 

TROUBLESHOOTING

Clutch lever soft or spongy

- Air in hydraulic system
- Low fluid level
- Hydraulic system leaking

Clutch lever too hard to pull in

- Sticking master cylinder piston
- Sticking slave cylinder
- Clogged hydraulic system
- Damaged clutch lifter mechanism
- Faulty clutch lifter bearing
- Clutch lifter piece installed improperly

Clutch slips when accelerating

- Hydraulic system sticking
- Worn clutch discs
- Weak clutch springs
- Engine oil mixed with molybdenum or graphite additive

Clutch will not disengage or motorcycle creeps with clutch disengaged

- Air in hydraulic system
- Low fluid level
- Hydraulic system leaking or clogged
- Clutch plate warped
- Loose clutch center lock nut
- Oil level too high
- Improper oil viscosity
- Damaged clutch lifter mechanism
- Clutch lifter piece installed improperly

Hard to shift

- Improper clutch operation
- Improper oil viscosity
- Bent shift fork and shift fork shaft
- Bent shift fork claw
- Damaged shift drum cam groove
- Loose stopper plate bolt
- Damaged stopper plate and pin
- Damaged gearshift spindle

Transmission jumps out of gear

- Worn shift drum stopper arm
- Weak or broken shift arm return spring
- Loose stopper plate bolt
- Bent shift fork shaft
- Damaged shift drum cam groove
- Damaged or bent shift forks
- Worn gear engagement dogs or slots

Gearshift pedal will not return

- Weak or broken gearshift spindle return spring
- Bent gearshift spindle

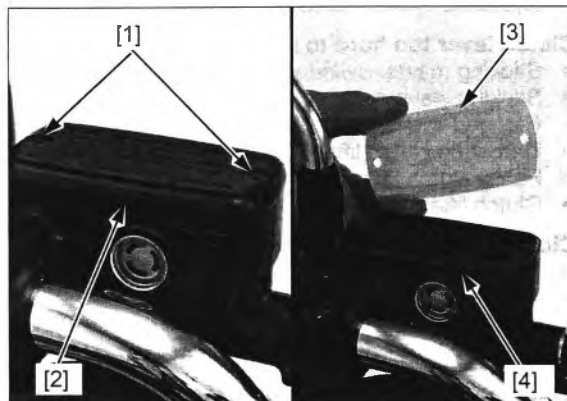
CLUTCH FLUID REPLACEMENT/AIR BLEEDING

CLUTCH FLUID DRAINING

Support the motorcycle using its centerstand securely. Remove the left crankcase side cover (page 6-4).

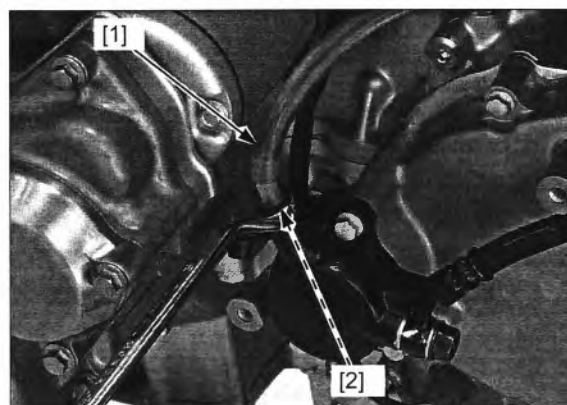
Turn the handlebar to the right until the reservoir is parallel to the ground.

Remove the screws [1], reservoir cover [2], set plate [3], and diaphragm [4].



Connect a bleed hose [1] to the bleed valve [2] of the clutch slave cylinder.

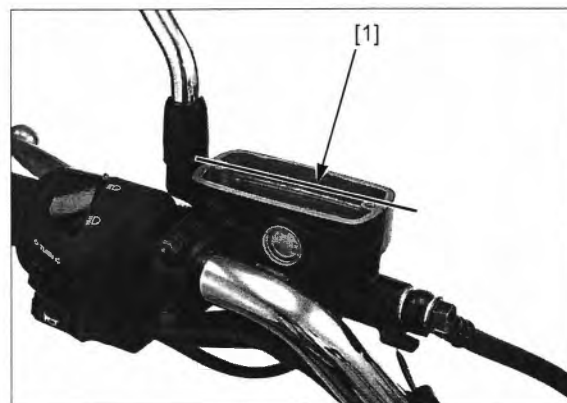
Loosen the bleed valve and pump the clutch lever until fluid stops flowing out from the bleed valve.



CLUTCH FLUID FILLING/AIR BLEEDING

- Never allow contaminants (dirt, water, etc.) to get into an open reservoir.
- Use only DOT 4 brake fluid from a sealed container.
- Do not mix different types of fluid. They are not compatible.

Tighten the bleed valve and fill the reservoir to the casting ledge [1] with DOT 4 Brake fluid from a sealed container.



Connect a commercially available brake bleeder [1] to the bleed valve.

Pump the brake bleeder and loosen the bleed valve.

Add brake fluid when the fluid level in the reservoir is low.

- Check the fluid level often while bleeding the clutch to prevent air from being pumped into the system.
- When using a brake bleeding tool, follow the manufacturer's operating instruction.

If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Repeat the above procedures until new fluid flows out of the bleed valve and air bubbles do not appear in the plastic hose.

Tighten the bleed valve to the specified torque.

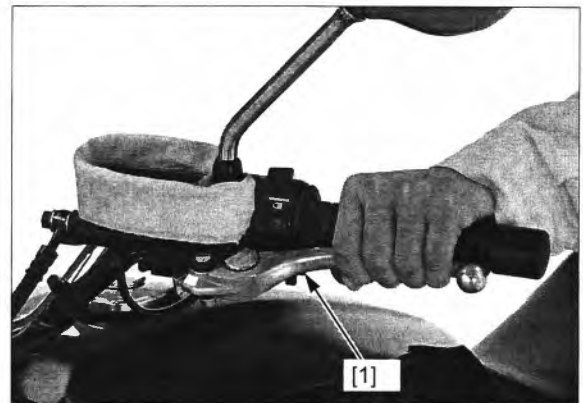
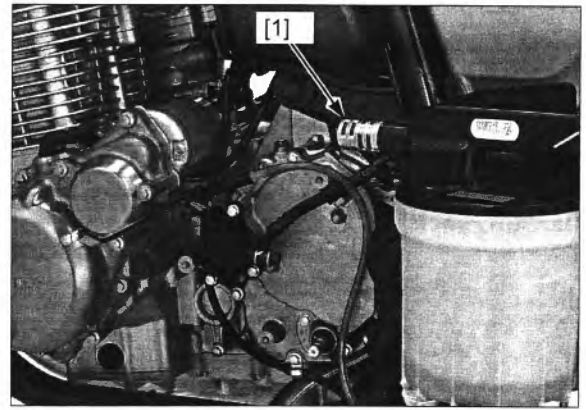
TORQUE: 8.0 N·m (0.8 kgf·m, 5.9 lbf·ft)

Operate the clutch lever.

If it is still spongy, bleed the system again.

If a brake bleeder is not available, use the following procedure.

Pump the clutch lever [1] until lever resistance is felt.



Connect a bleed hose [1] to the bleed valve [2] and bleed the system as follows:

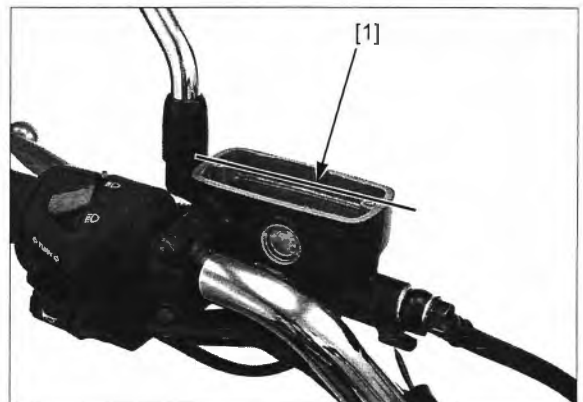
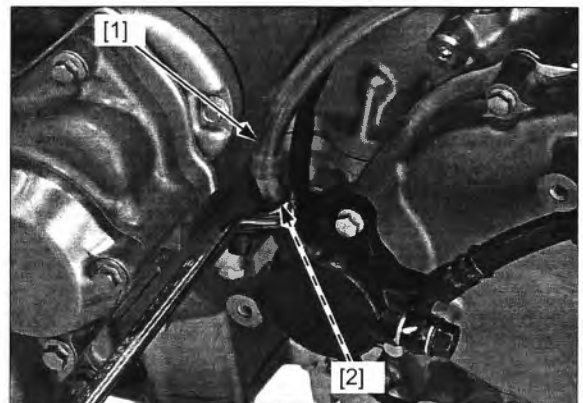
1. Pump the clutch lever several (5 – 10) times, then squeeze the clutch lever all the way, loosen the bleed valve 1/2 of a turn and then close it. Do not release the clutch lever until the bleed valve has been closed.
2. Release the clutch lever slowly and wait several seconds after it reaches the end of its travel.

Repeat steps 1 and 2 until air bubbles do not appear in the bleed hose.

Tighten the bleed valve to the specified torque.

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

Fill the reservoir to the casting ledge [1] with DOT 4 brake fluid from a sealed container.



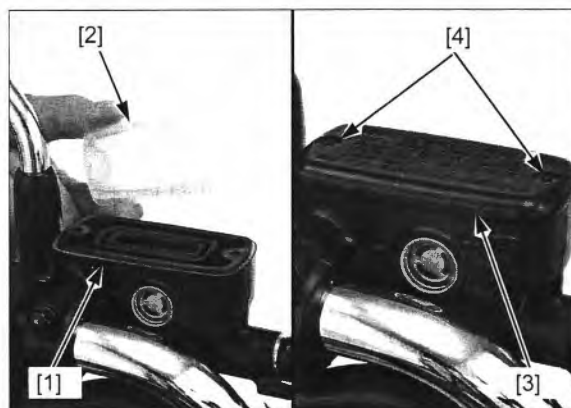
CLUTCH/GEARSHIFT LINKAGE

Install the diaphragm [1] and set plate [2].

Install the reservoir cover [3] and tighten the screws [4] to the specified torque.

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

Install the left crankcase side cover (page 6-12).
Check the clutch operation (page 3-28).



CLUTCH MASTER CYLINDER

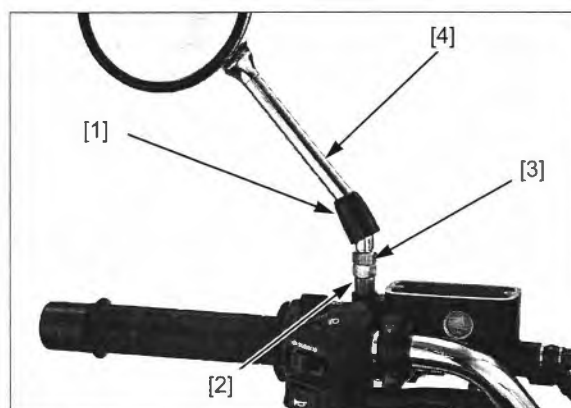
REMOVAL

Drain the clutch hydraulic system (page 9-8).

Remove the cover [1] from the rearview mirror adapter bolt [2].

Remove the rearview mirror lock nut (left hand threads) [3], then remove the left rearview mirror [4].

Remove the rearview mirror adapter bolt from the master cylinder.



Disconnect the clutch switch wire connectors [1].

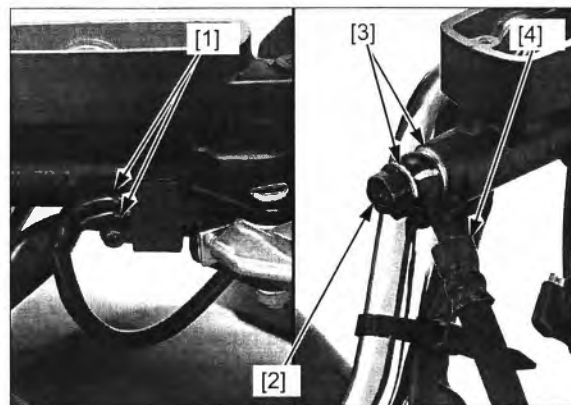
Avoid spilling fluid on painted, plastic, or rubber parts.

Place a rag over these parts whenever the system is serviced.

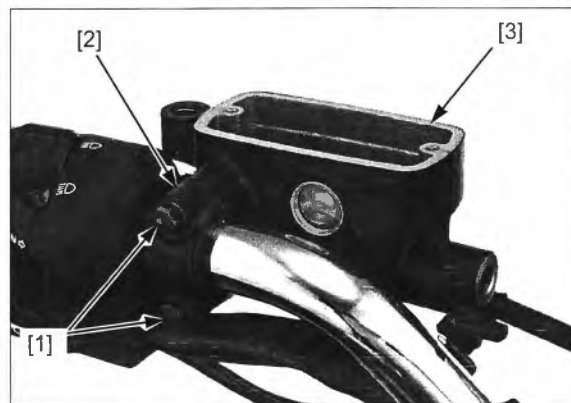
Remove the clutch hose oil bolt [2], sealing washers [3], and clutch hose eyelet [4].

NOTE:

When removing the oil bolt, cover the end of the hose to prevent contamination.

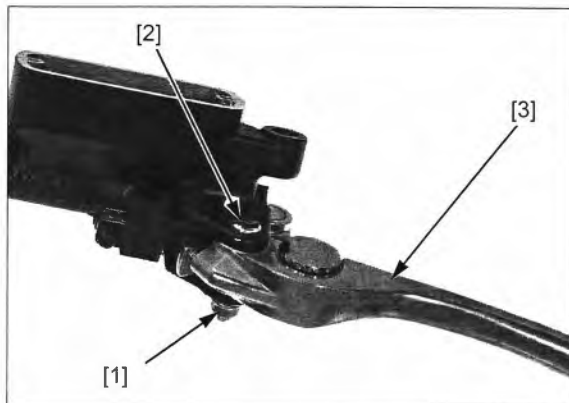


Remove the bolts [1], holder [2], and master cylinder assembly [3].

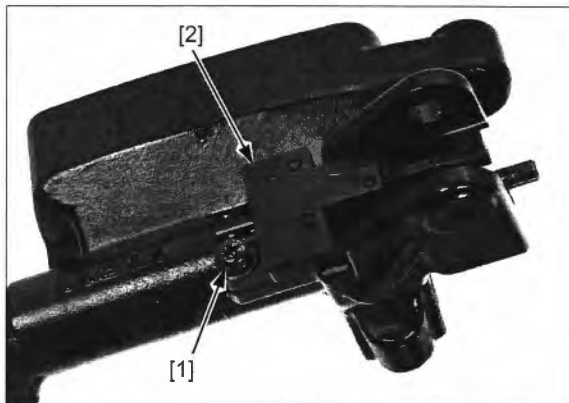


DISASSEMBLY

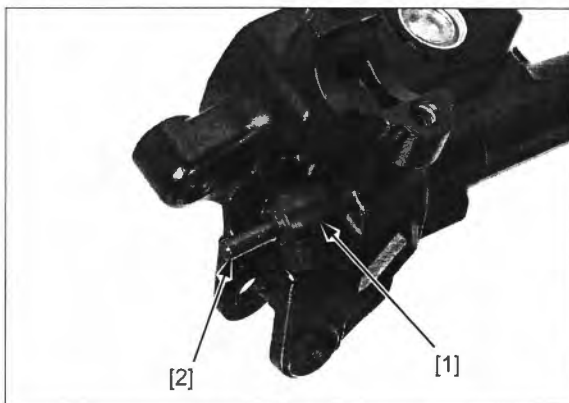
Remove the pivot nut [1], bolt [2], and clutch lever assembly [3].



Remove the screw [1] and clutch switch [2].



Remove the boot [1] and push rod [2].

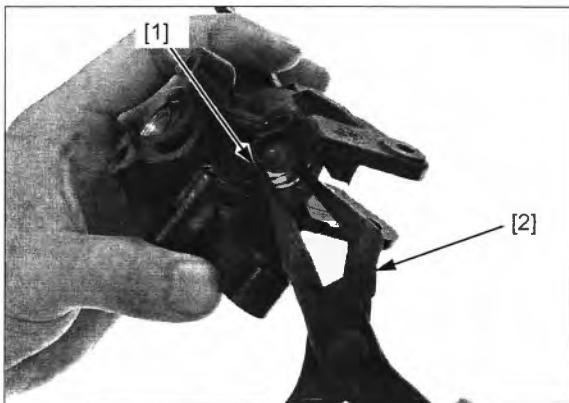


Remove the snap ring [1] from the master cylinder body using the special tool as shown.

TOOL:

Snap ring pliers [2]

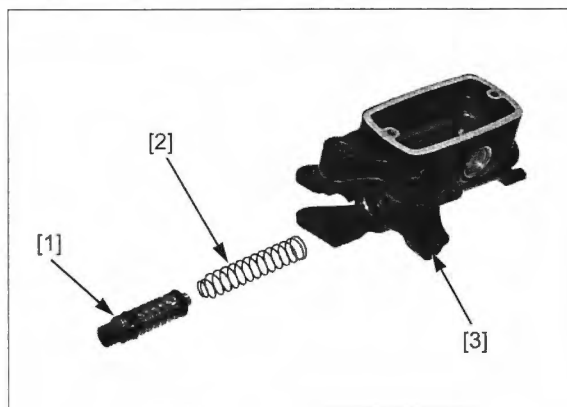
07914-SA50001



CLUTCH/GEARSHIFT LINKAGE

Remove the master piston assembly [1] and spring [2] from the master cylinder [3].

Clean the inside of the master cylinder and piston with clean brake fluid.



INSPECTION

Replace the master piston, piston cups and spring as a set.

Check the piston boot and piston cups for fatigue or damage.

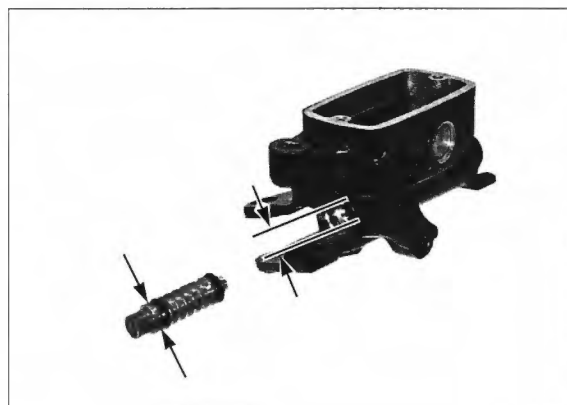
Check the master cylinder and piston for abnormal scratches or damage.

Measure the master cylinder I.D.

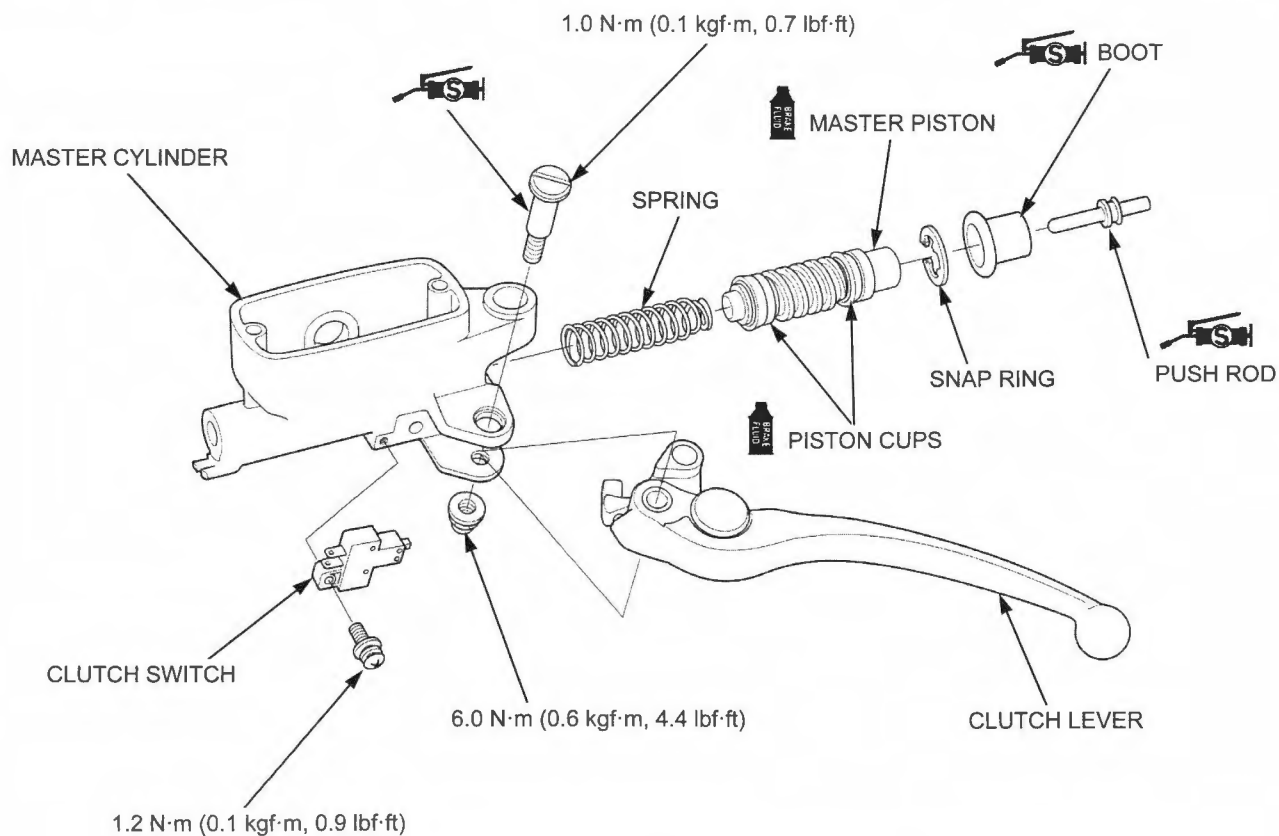
SERVICE LIMIT: 12.755 mm (0.5022 in)

Measure the master piston O.D.

SERVICE LIMIT: 12.645 mm (0.4978 in)



ASSEMBLY



Coat the master piston [1] and piston caps [2] with clean brake fluid.

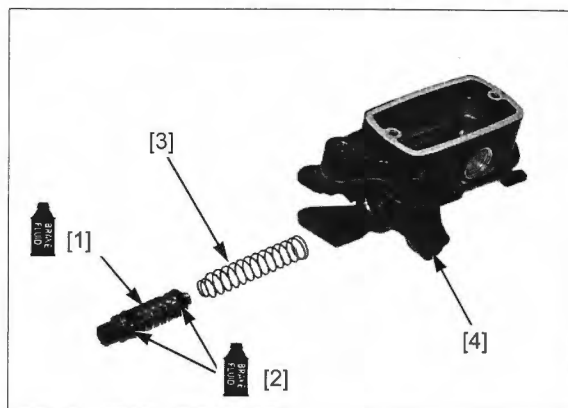
NOTE:

Keep the piston, spring, snap ring, and boot as a set; do not substitute individual parts.

Install the spring [3] onto the master piston assembly.

When installing the cups, do not allow the lips to turn inside out.

Install the master piston assembly into the master cylinder [4].



Be certain the snap ring is firmly seated in the groove.

Install the snap ring [1] into the master cylinder groove using the special tool.

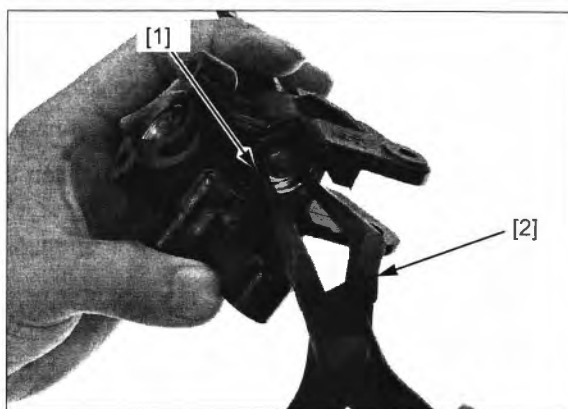
TOOL:

Snap ring pliers [2]

07914-SA50001

NOTE:

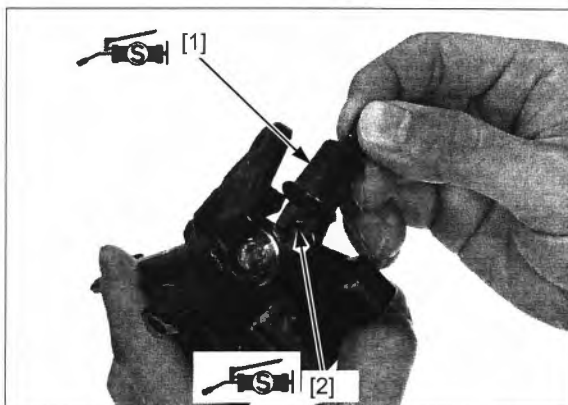
Install the snap ring with its chamfered edge facing the master piston.



Apply silicone grease to the inside of the boot [1] and the tip of the push rod [2].

Install the push rod to the boot with its direction as shown.

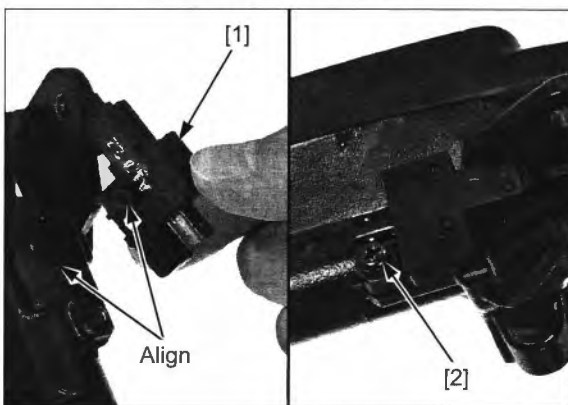
Install the push rod/boot to the master cylinder aligning the boot into the groove on the master cylinder.



Install the clutch switch [1] by aligning its boss with the hole on the master cylinder.

Install and tighten the screw [2] to the specified torque.

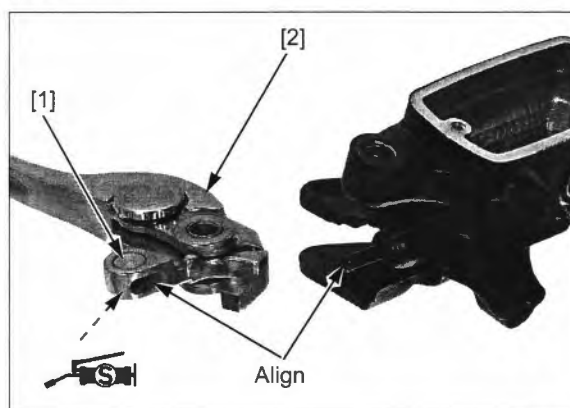
TORQUE: 1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)



CLUTCH/GEARSHIFT LINKAGE

Apply silicone grease to the tip of the push rod and clutch lever joint piece [1].

Install the clutch lever assembly [2] by aligning the hole with the push rod.



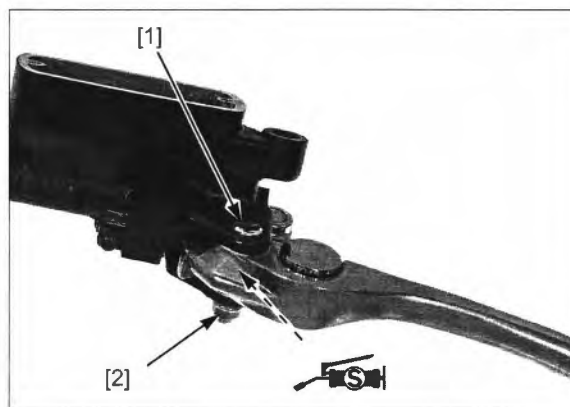
Apply silicone grease to the clutch lever pivot bolt [1] sliding surface.

Install and tighten the pivot bolt to the specified torque.

TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)

Hold the pivot bolt and tighten the pivot nut [2] to the specified torque.

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



INSTALLATION

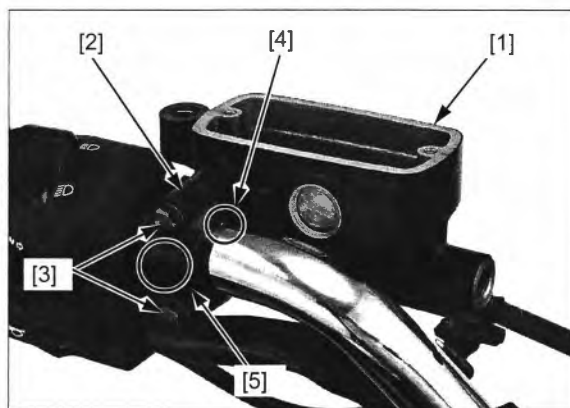
Install the master cylinder holder with its "UP" mark [5] facing up.

Install the master cylinder assembly [1], holder [2], and bolts [3].

Align the end of the master cylinder with the punch mark [4] on the handlebar.

Tighten the upper bolt first, then the lower bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

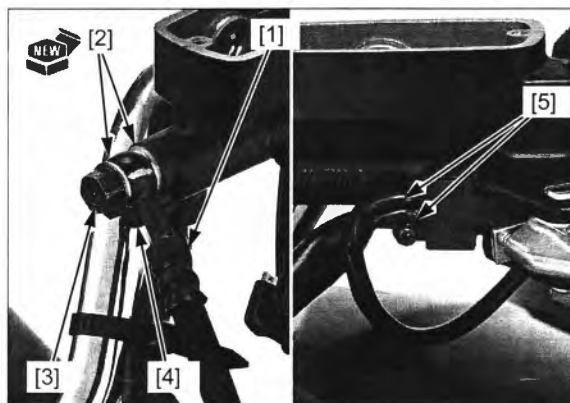


Install the clutch hose eyelet [1] and oil bolt [2] with new sealing washers [3] while pushing the clutch hose against the stopper [4].

Tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Connect the clutch switch connectors [5].



Install the rearview mirror adapter bolt [1] to the master cylinder.
Tighten the rearview mirror adapter bolt to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

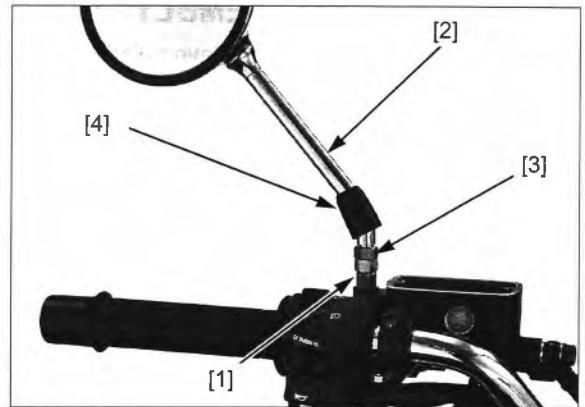
Install the rearview mirror [2] and tighten the lock nut (left hand threads) [3] to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

Adjust the rearview mirror.

Install the cover [4] to the rearview mirror adapter bolt securely.

Fill the reservoir to the upper level and bleed the clutch hydraulic system (page 9-8).



CLUTCH SLAVE CYLINDER

REMOVAL

Drain the clutch hydraulic system (page 9-8).

Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.

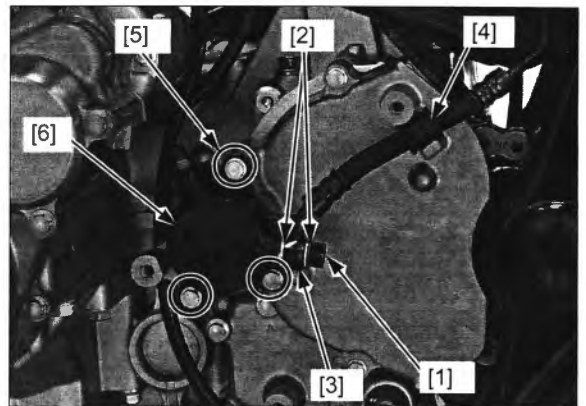
Remove the clutch hose oil bolt [1], sealing washers [2], and clutch hose eyelet [3].

NOTE:

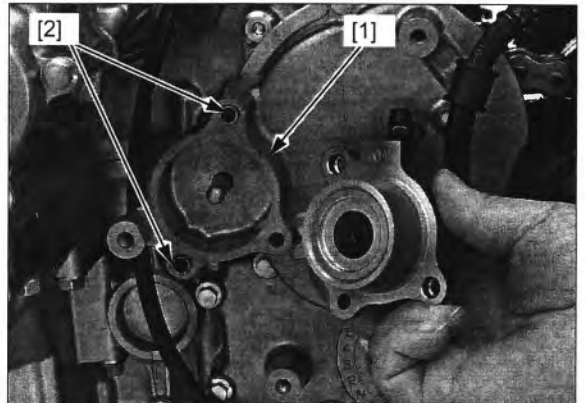
When removing the oil bolt, cover the end of the hose to prevent contamination.

Remove the clutch hose grommet [4] from the guide of left crankcase rear cover.

Remove the bolts [5] and clutch slave cylinder assembly [6].



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



CLUTCH/GEARSHIFT LINKAGE

DISASSEMBLY

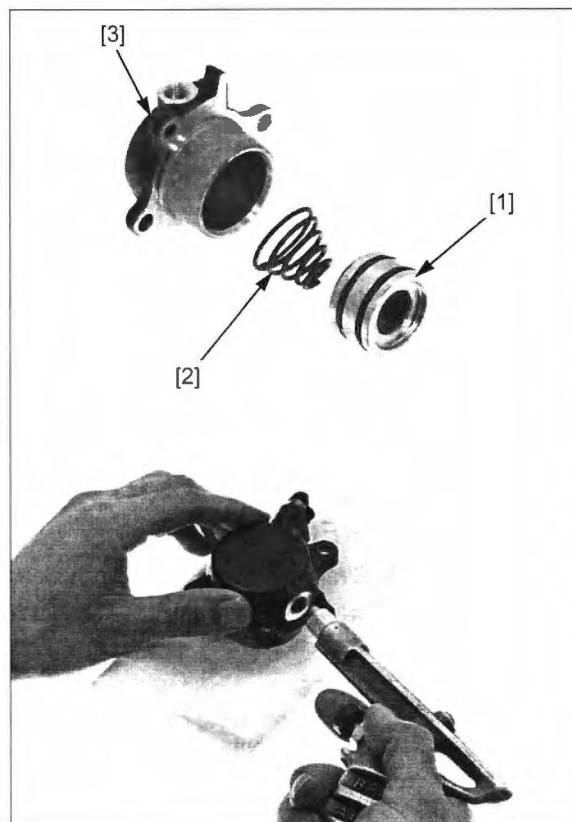
Remove the slave cylinder piston [1] and spring [2] from the slave cylinder [3].

If the piston is hard to remove, do the following:

Place a shop towel over the piston to cushion the piston when it is expelled, and position the cylinder with the piston down.

Do not use high pressure air or bring the nozzle to close to the inlet.

Apply small squirts of air pressure to the fluid inlet to remove the piston.



INSPECTION

Remove the O-rings [1] and oil seal [2] from the slave cylinder piston [3].

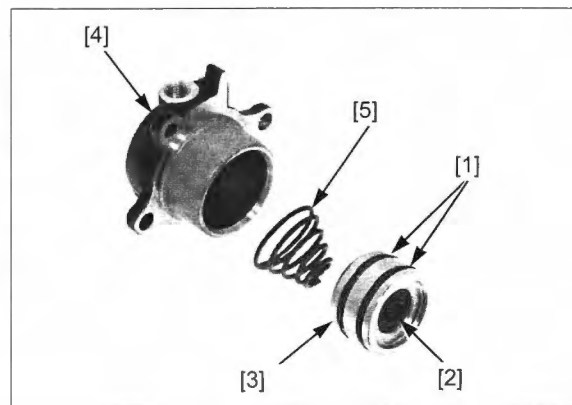
Clean the inside of the slave cylinder [4], piston, and spring [5] with clean brake fluid.

Clean the O-ring grooves of the piston with clean brake fluid.

Check the piston spring for weakness or damage.

Check the slave cylinder for scoring or other damage.

Check the slave cylinder piston for scratches, scoring, or other damage.



ASSEMBLY

Coat the piston [1] with clean brake fluid.

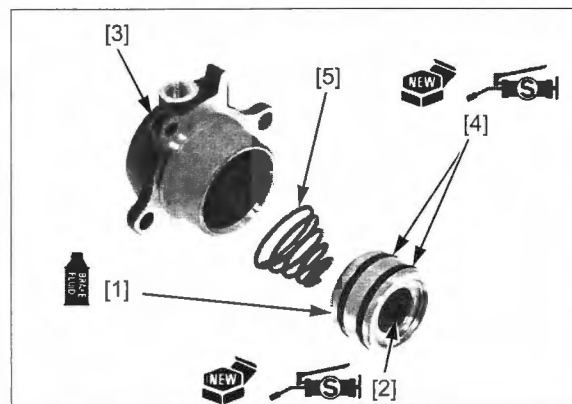
Apply silicone grease to new oil seal [2] lips.

Install the oil seal with its lips facing the slave cylinder [3] side.

Apply silicone grease to new O-rings [4] and install them to the slave cylinder piston grooves.

Install the spring [5] into the boss of the piston.

Install the spring and piston into the slave cylinder



INSTALLATION

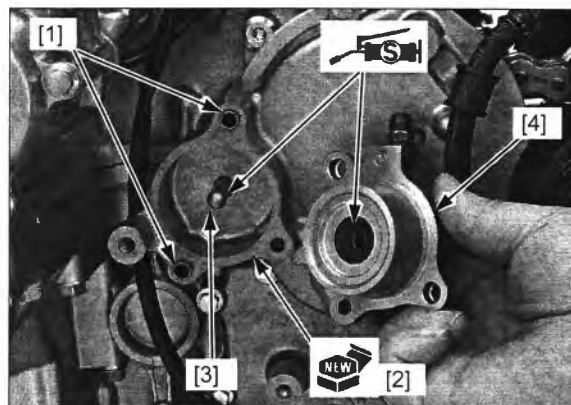
Be careful not to damage the mating surface.

Clean the slave cylinder mating surface.

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

Apply silicone grease to the tip of the push rod [3] and piston oil seal.

Install the slave cylinder [4] onto the left crankcase rear cover.



Install and tighten the slave cylinder mounting bolts [1] securely.

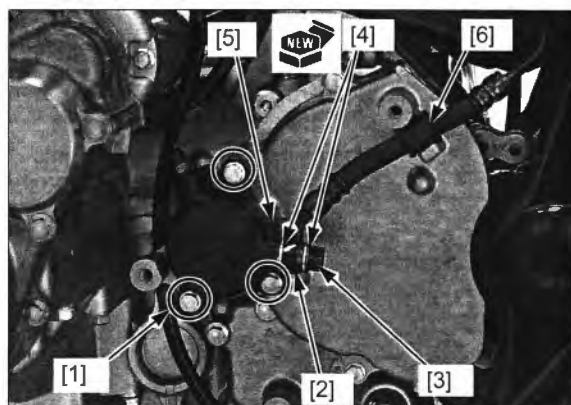
Install the clutch hose eyelet [2] and oil bolt [3] with new sealing washers [4] while pushing the clutch hose against the stopper [5].

Tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Install the clutch hose grommet [6] to the guide of left crankcase rear cover.

Fill the reservoir to the upper level and bleed the clutch hydraulic system (page 9-8).

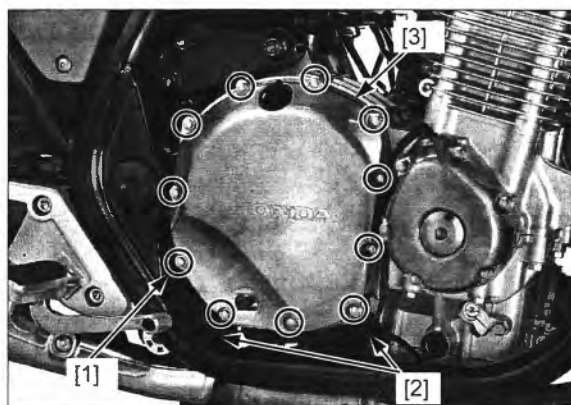


CLUTCH COVER REMOVAL

Drain the engine oil (page 3-15).

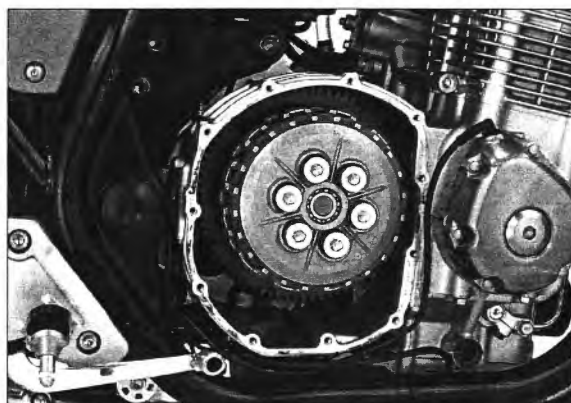
Loosen the bolts in a crisscross pattern in two or three steps.

Remove the bolts [1], wire clamps [2], and clutch cover [3].



Be careful not to damage the mating surface.

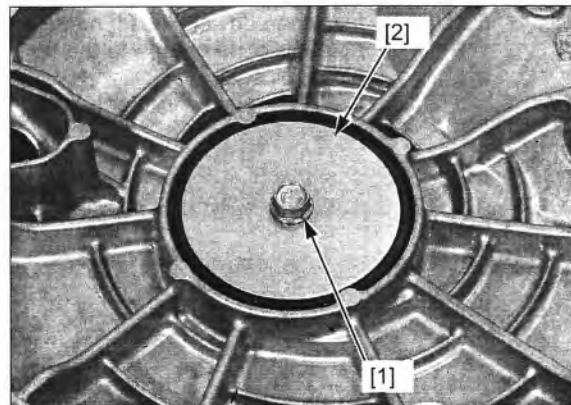
Clean any sealant off from the clutch cover mating surfaces.



CLUTCH/GEARSHIFT LINKAGE

CLUTCH DAMPER RUBBER INSPECTION

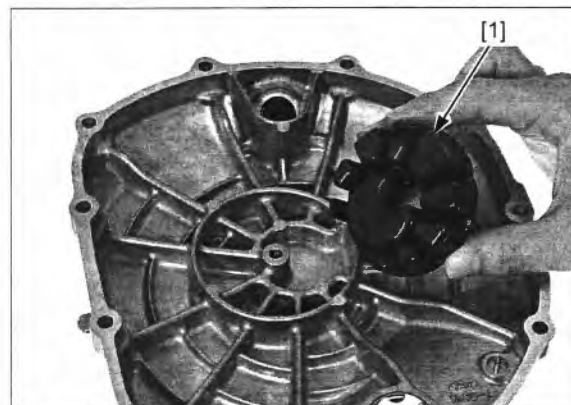
Remove the bolt [1] and damper rubber set plate [2].



Remove the damper rubber [1] from the clutch cover.

Check the damper rubber for cracks, deterioration, or damage and replace it if necessary.

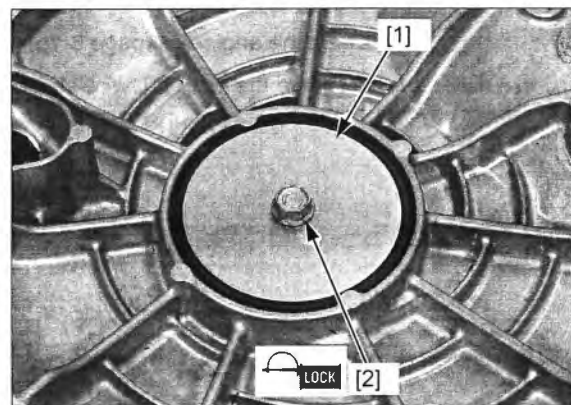
Install the damper rubber into the clutch cover while aligning the rubber with the groove on the clutch cover.



Install the damper rubber set plate [1].

Apply a locking agent to the plate bolt [2] threads. Install and tighten the bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

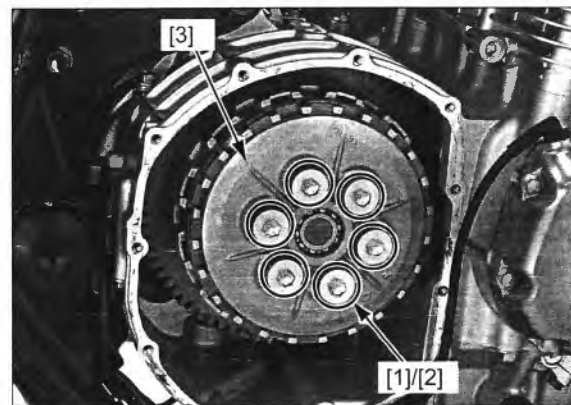


CLUTCH

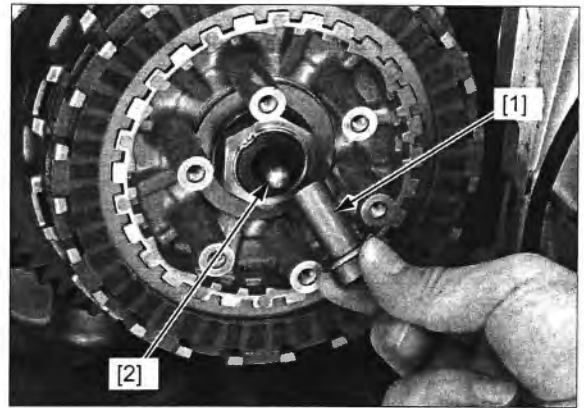
REMOVAL

Remove the clutch cover (page 9-17).

Remove the clutch spring bolts [1] and springs [2] in a crisscross pattern in two or three steps, then remove the pressure plate [3].



Remove the clutch lifter piece [1] and clutch lifter rod [2].



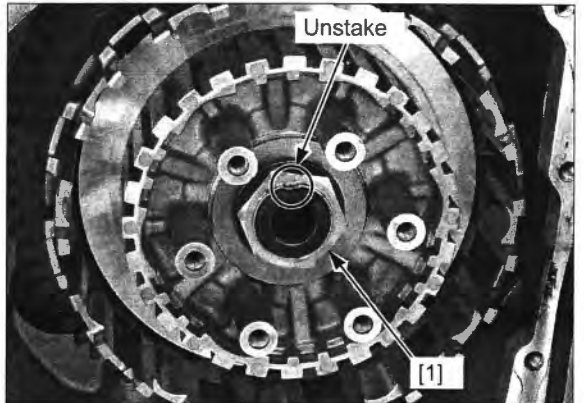
Remove the following:

- eight clutch discs [1]
- seven clutch plates [2]
- judder spring [3]
- spring seat [4]



Be careful not to damage the mainshaft threads.

Unstake the clutch center lock nut [1].

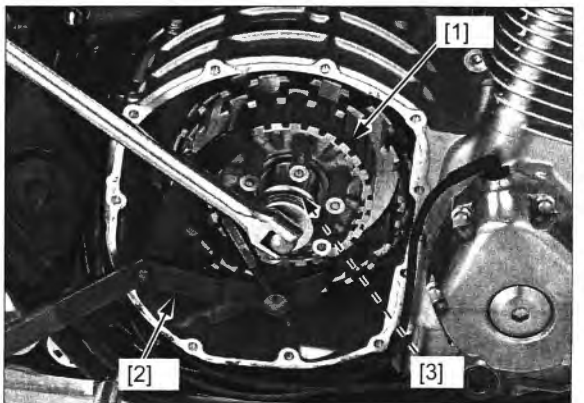


Hold the clutch center [1] with the clutch center holder [2], then loosen the lock nut [3].

TOOL:

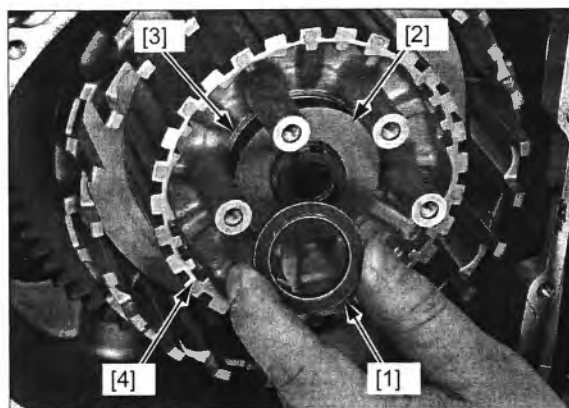
Clutch center holder 07724-0050002 or equivalent commercially available in U.S.A.

Remove and discard the lock nut.

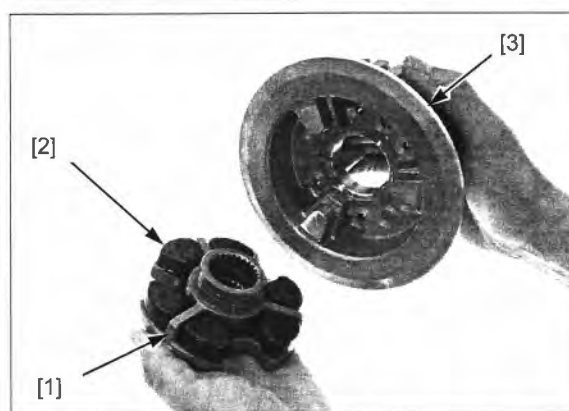


CLUTCH/GEARSHIFT LINKAGE

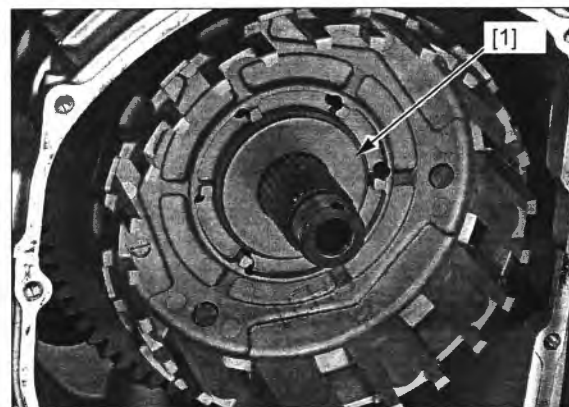
Remove the lock washer [1], thrust washer [2], shim [3], and clutch center assembly [4].



Remove the clutch center boss [1] and damper rubbers [2] from the clutch center [3].

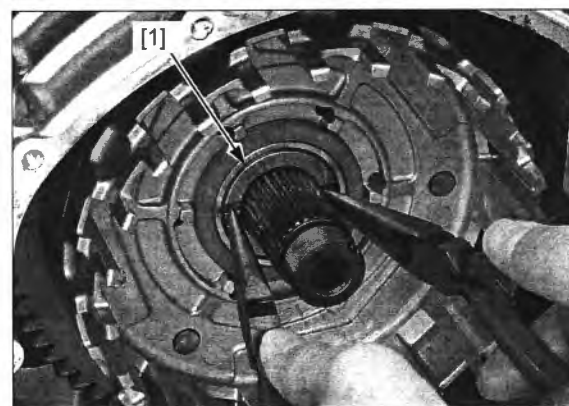


Remove the thrust washer [1].

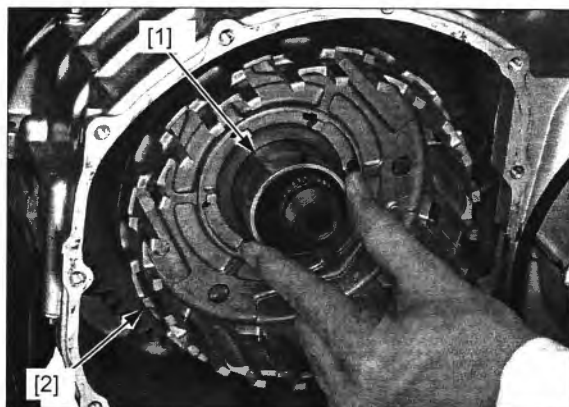


Turn the crankshaft so that the No.1 piston is at TDC to prevent interference of the clutch outer and crankshaft weight (page 3-9).

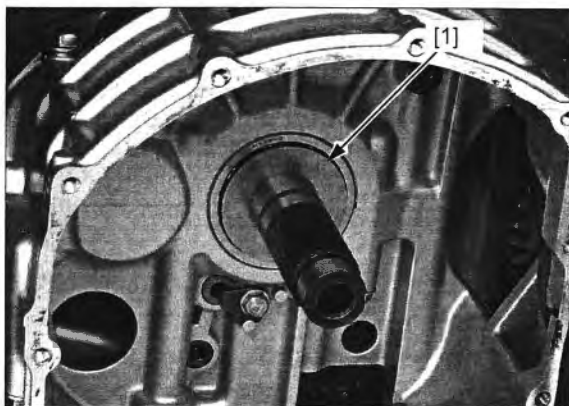
Pull out the clutch outer guide [1] using pliers.



Remove the needle bearing [1] and clutch outer [2].



Remove the distance collar [1] from the mainshaft.



INSPECTION

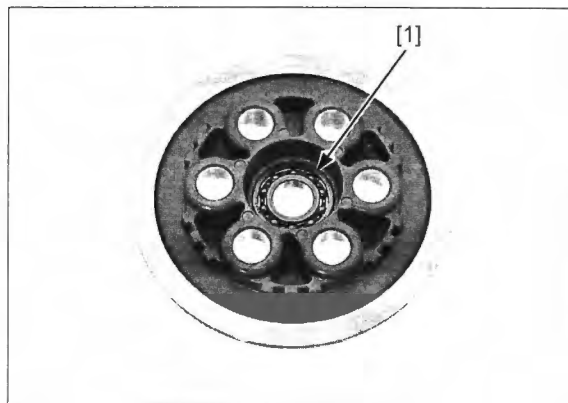
Clutch lifter bearing

Turn the inner race of the lifter bearing [1] with your finger.

The bearing should turn smoothly and quietly.

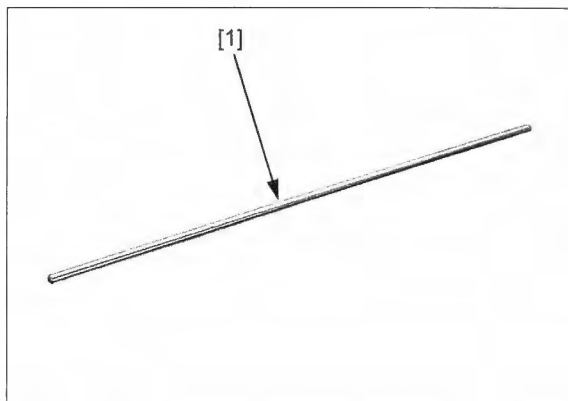
Also check that the outer race of the bearing fits tightly in the pressure plate.

Replace the bearing if the inner race does not turn smoothly, quietly, or if the outer race fits loosely in the pressure plate (page 9-24).



Clutch lifter rod

Check the clutch lifter rod [1] for bends or other damage.



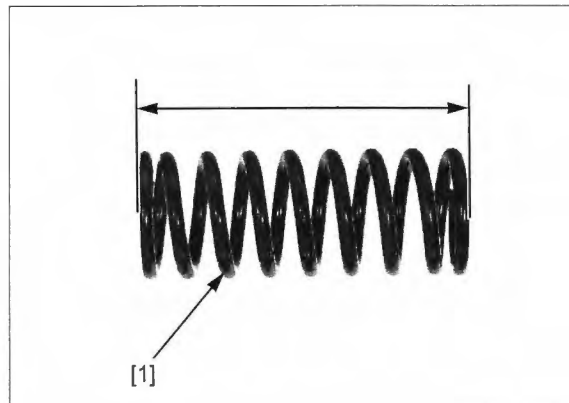
CLUTCH/GEARSHIFT LINKAGE

Clutch spring

Replace the clutch springs as a set.

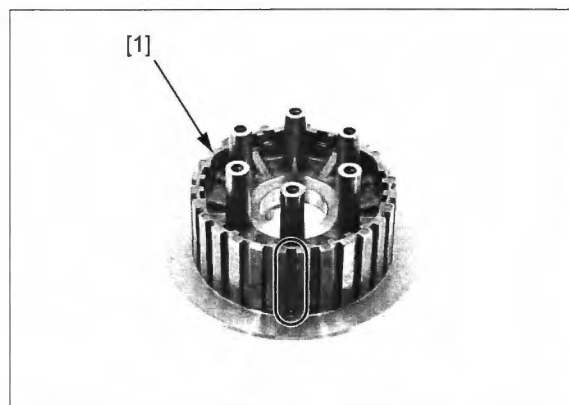
Measure the clutch spring [1] free length.

SERVICE LIMIT: 50.1 mm (1.97 in)



Clutch center

Check the grooves of the clutch center [1] for damage or wear caused by the clutch plates. Replace if necessary.



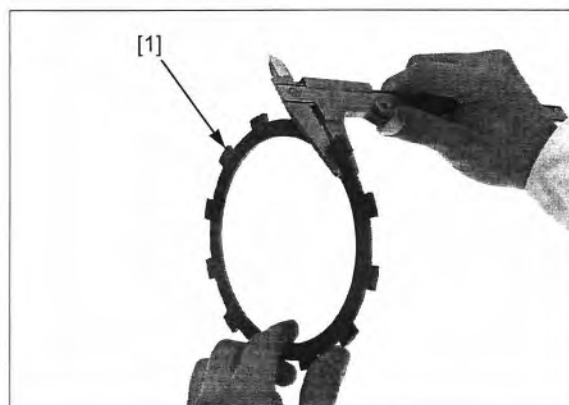
Clutch disc

Replace the clutch discs and plates as a set.

Replace the clutch discs [1] if they show signs of scoring or discoloration.

Measure the disc thickness of each disc.

SERVICE LIMIT: 3.5 mm (0.14 in)

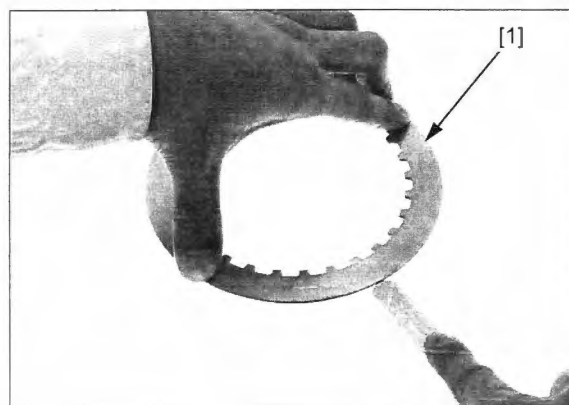


Clutch plate

Replace the clutch discs and plates as a set.

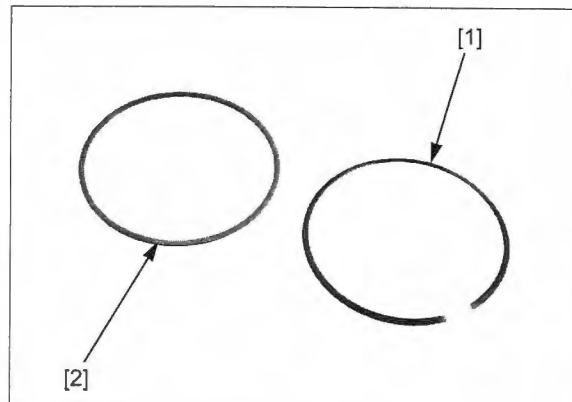
Check each disc plate [1] for warpage on a surface plate using a feeler gauge.

SERVICE LIMIT: 0.30 mm (0.012 in)



Judder spring/spring seat

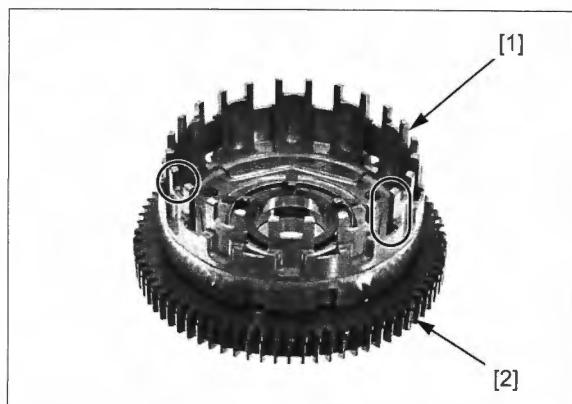
Check the judder spring [1] and spring seat [2] for wear or other damage, replace if necessary.



Clutch outer/clutch outer guide

Check the slots of the clutch outer [1] for damage or wear caused by the clutch discs.
Check the primary driven gear [2] for abnormal wear or damage.

Replace the clutch outer assembly if necessary.



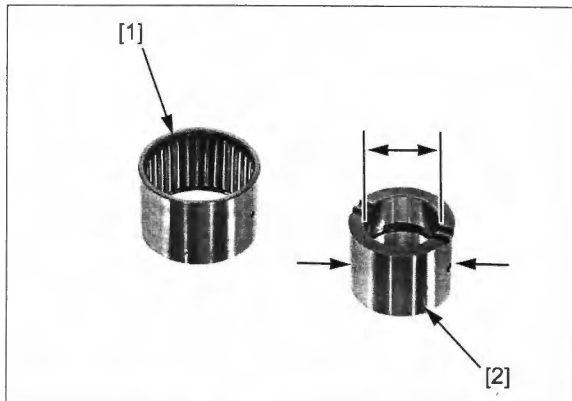
Check the needle bearing [1] for wear or damage.

Measure the O.D. and I.D. of the clutch outer guide [2].

SERVICE LIMITS:

O.D.: 39.93 mm (1.572 in)

I.D.: 28.08 mm (1.106 in)



Mainshaft

Measure the mainshaft O.D. at the clutch outer guide sliding surface.

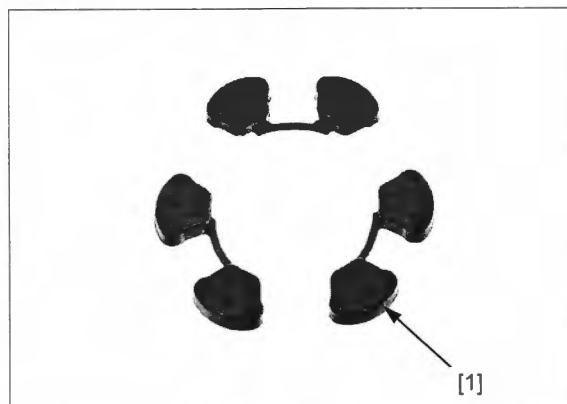
SERVICE LIMIT: 27.10 mm (1.067 in)



CLUTCH/GEARSHIFT LINKAGE

Clutch damper rubber

Check the clutch damper rubber [1] for cracks, deterioration, or damage, replace them if necessary.



CLUTCH LIFTER BEARING REPLACEMENT

Remove the clutch lifter bearing [1] using the special tools.

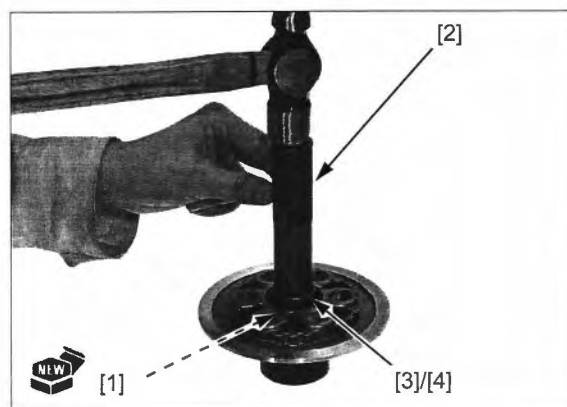
TOOLS:

Driver	07749-0010000
Attachment, 28 x 30 mm	07946-1870100
Pilot, 17 mm	07746-0040400

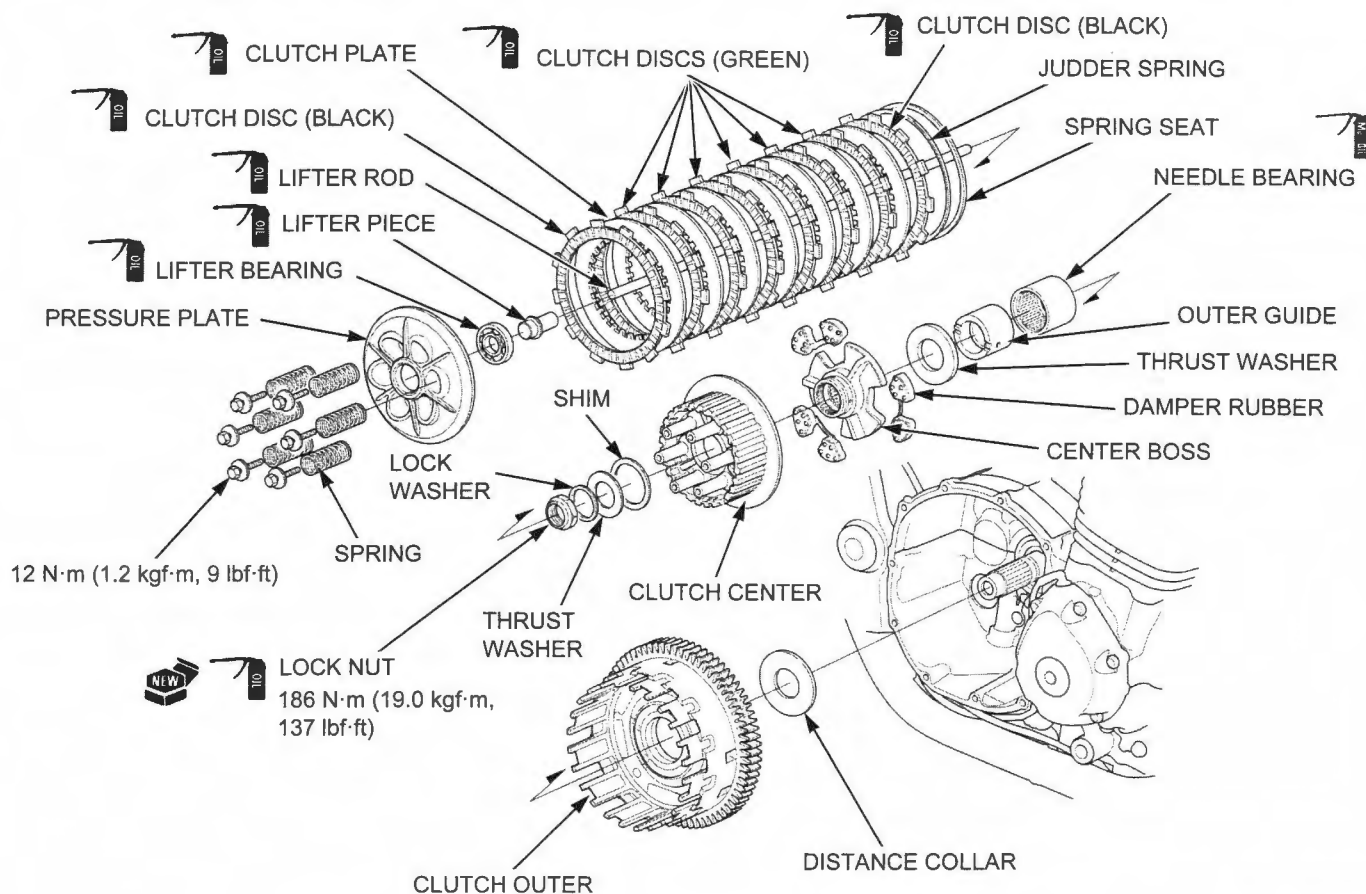
Drive in a new clutch lifter bearing squarely with the marked side facing up until it is seated on the pressure plate.

TOOLS:

Driver [2]	07749-0010000
Attachment, 32 x 35 mm [3]	07746-0010100
Pilot, 17 mm [4]	07746-0040400

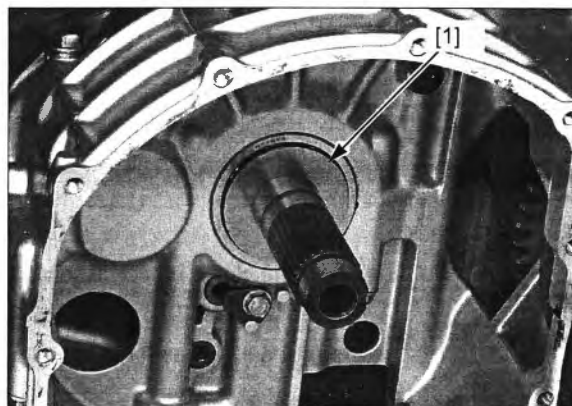


INSTALLATION



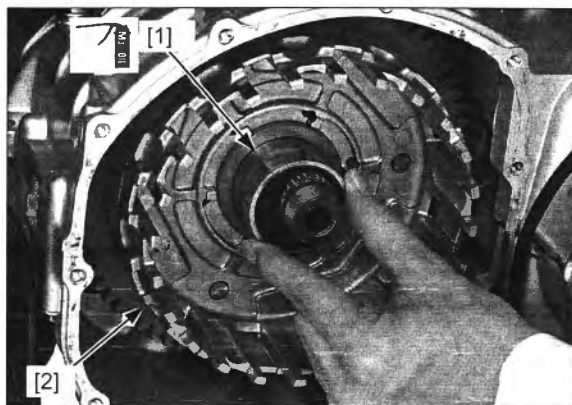
Turn the crankshaft so that the No.1 piston is at TDC to prevent interference of the clutch outer and crankshaft weight (page 3-9).

Install the distance collar [1] onto the mainshaft.



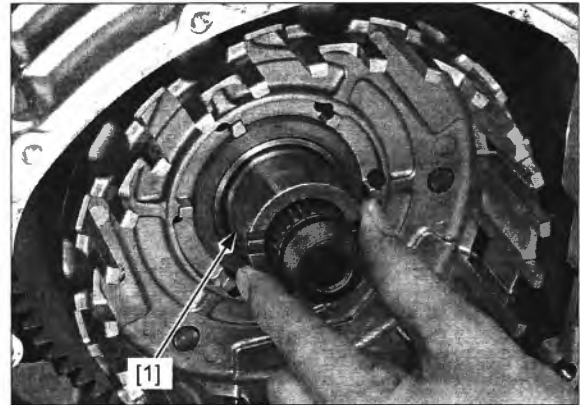
Apply molybdenum disulfide oil to the outer surface of the needle bearing [1].

Install the clutch outer [2] and needle bearing.

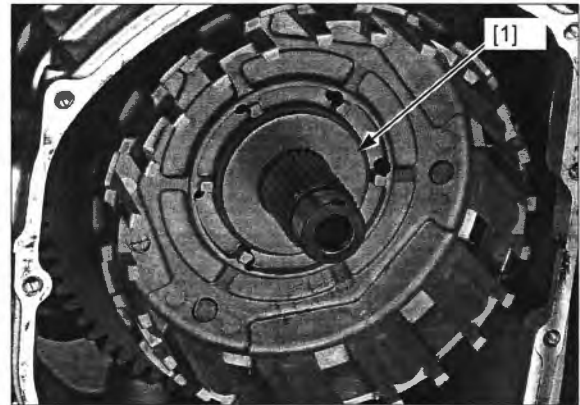


CLUTCH/GEARSHIFT LINKAGE

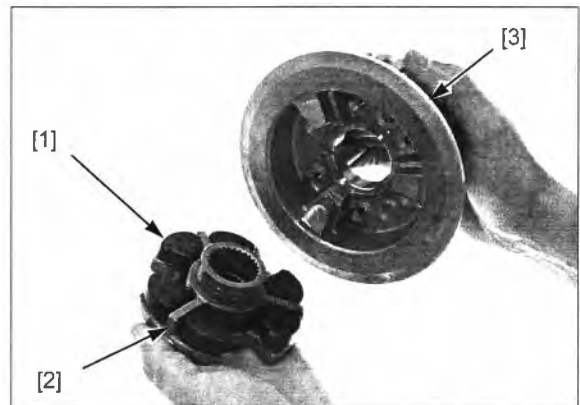
Align the primary drive gear teeth with the driven gear teeth, install the clutch outer guide [1].



Install the thrust washer [1] onto the clutch outer.



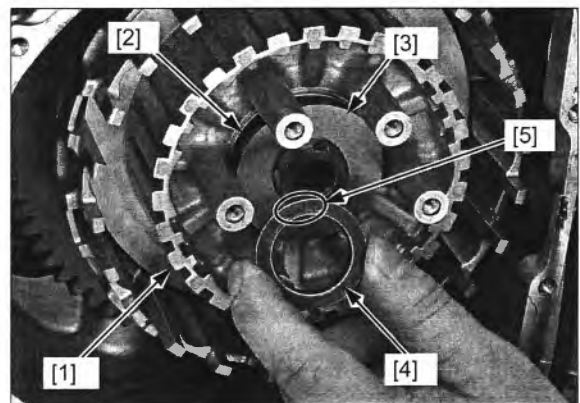
Install the clutch damper rubbers [1] and clutch center boss [2] into the clutch center [3].



Install the clutch center assembly [1].

Install the shim [2] and thrust washer [3].

Install the lock washer [4] with its "OUT" mark [5] facing out.



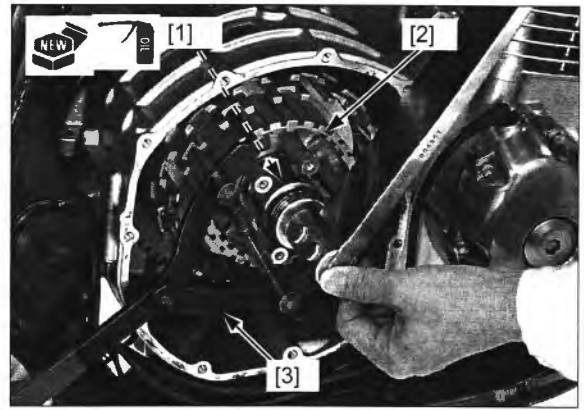
Apply engine oil to the seating surface and threads of a new lock nut [1].
Install the lock nut to the mainshaft.

Hold the clutch center [2] with the clutch center holder [3], then tighten the lock nut to the specified torque.

TOOL:

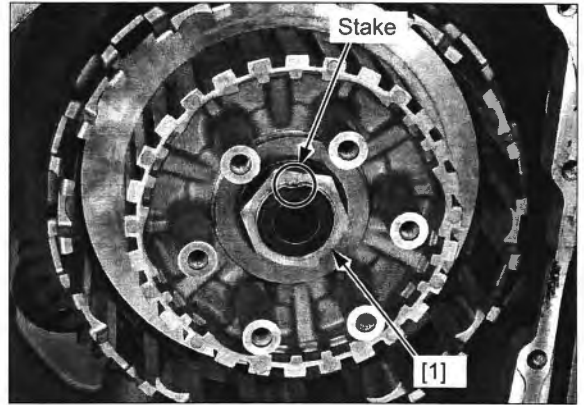
Clutch center holder 07724-0050002 or equivalent commercially available in U.S.A.

TORQUE: 186 N·m (19.0 kgf·m, 137 lbf·ft)



Be careful not to damage the mainshaft threads.

Stake the lock nut [1] into the mainshaft groove with a punch.



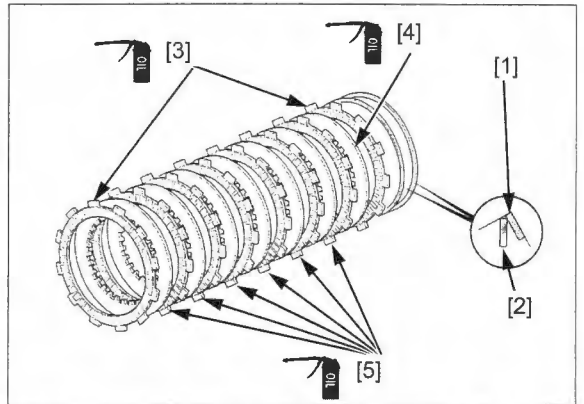
Note the direction of the judder spring.

Install the spring seat [1] and judder spring [2].

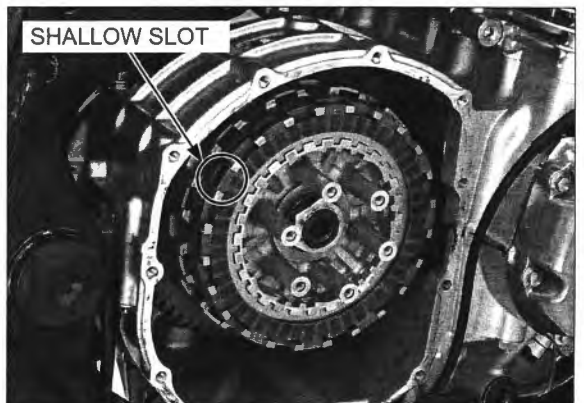
Coat the clutch discs and plates with clean engine oil.

Install the discs colored "Black" on both ends.

Install the clutch disc (Black) [3], then install the clutch plate [4].
Stack the clutch discs (Green) [5] and plates alternately.



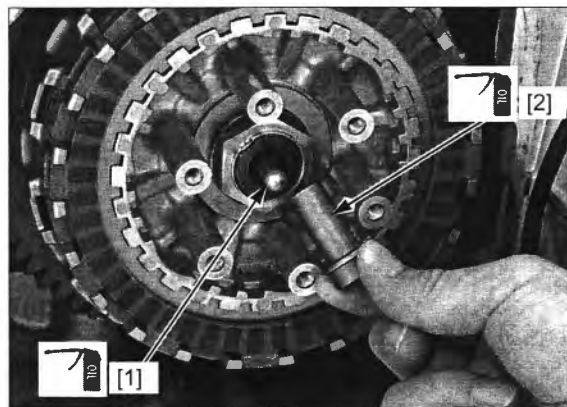
Install the outer clutch disc colored "Black" in the shallow slot on the clutch outer.



CLUTCH/GEARSHIFT LINKAGE

Apply engine oil to the clutch lifter rod [1] and lifter piece [2] contact surface.

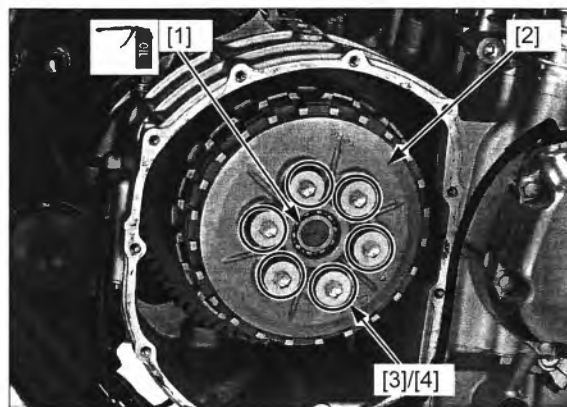
Install the clutch lifter rod and lifter piece.



Apply engine oil to the clutch lifter bearing [1].
Install the pressure plate [2].
Install the clutch springs [3] and spring bolts [4].
Tighten the bolts in a crisscross pattern in two or three steps, then tighten the bolts to the specified torque.

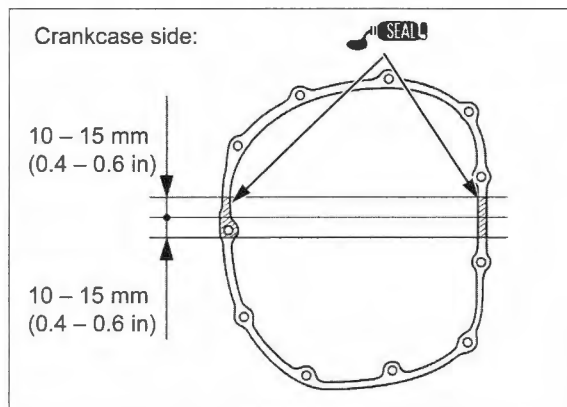
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the clutch cover (page 9-28).

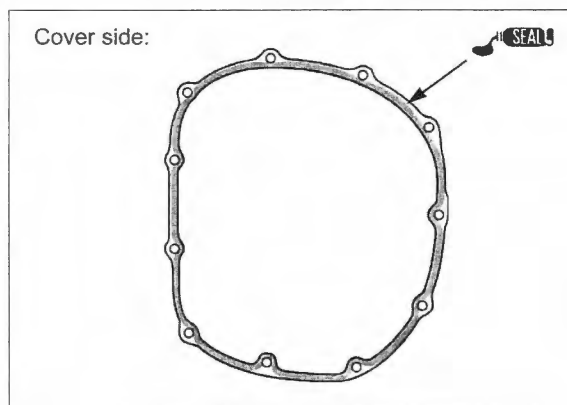


CLUTCH COVER INSTALLATION

Apply liquid sealant (Three Bond 1207 B or equivalent) to the mating surfaces of the crankcase as shown.



Apply liquid sealant (Three Bond 1207 B or equivalent) to the mating surfaces of the clutch cover as shown.

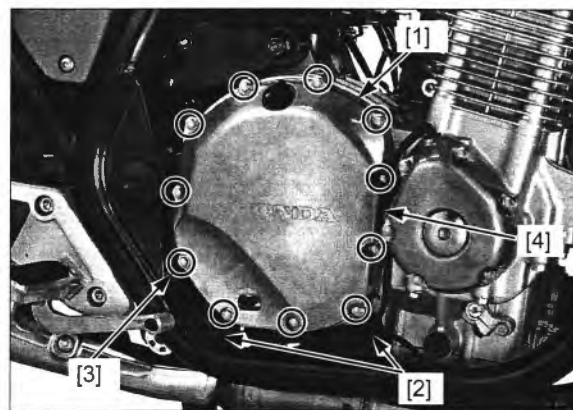


Install the clutch cover [1], wire clamps [2], and mounting bolts [3].

Tighten the clutch cover bolts in a crisscross pattern in two or three steps.

Route the CKP sensor wire [4] properly and secure it with the wire clamps (page 1-21).

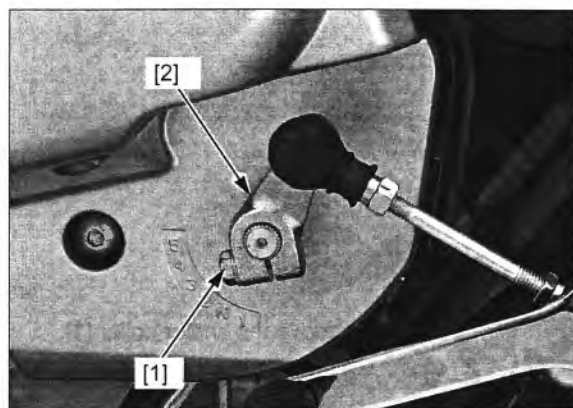
Add the recommended engine oil (page 3-15).



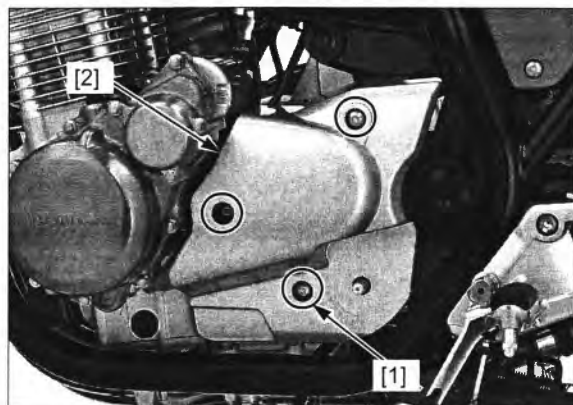
GEARSHIFT LINKAGE

REMOVAL ('13 model)

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

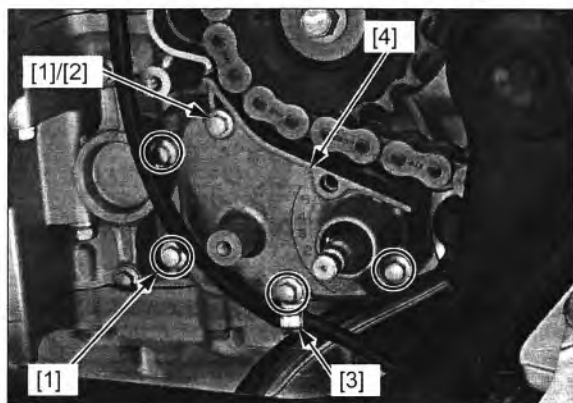


Remove the bolts [1] and left crankcase side cover [2].



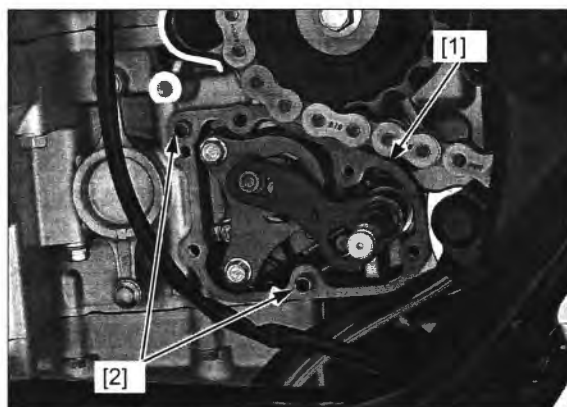
Remove the left crankcase rear cover (page 6-4).

Remove the bolts [1], copper washer [2], wire clamp [3], and gearshift linkage cover [4].

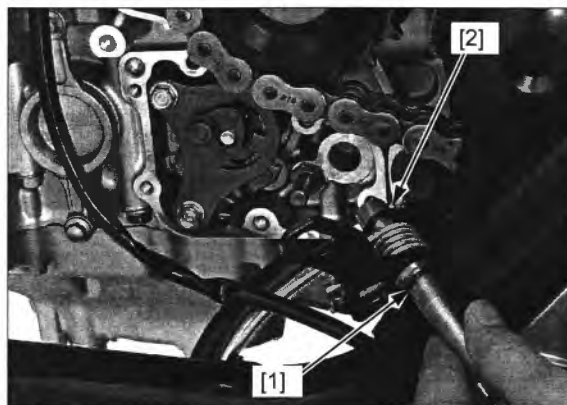


CLUTCH/GEARSHIFT LINKAGE

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



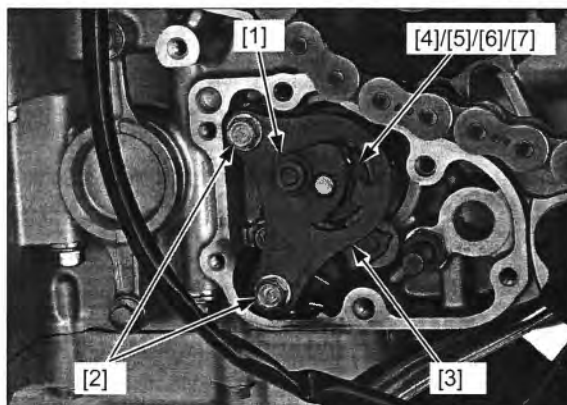
Remove the gearshift spindle assembly [1] and thrust washer [2].



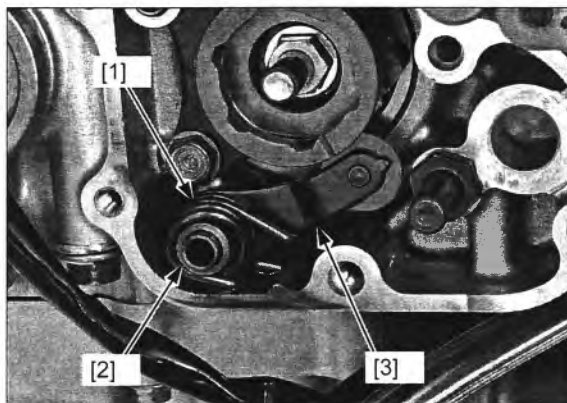
Remove the shifter collar [1].

Do not let the ratchet pawls, plungers, and springs fall when removing the guide plate.

Remove the guide plate bolts [2]. Remove the guide plate [3], drum shifter [4], ratchet pawls [5], plungers [6], and springs [7] as an assembly.

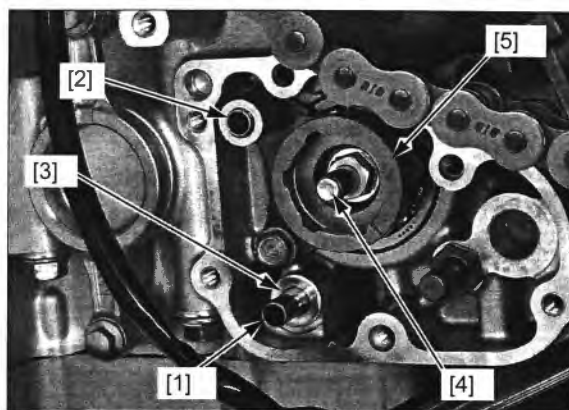


Remove the return spring [1], collar [2], and shift drum stopper arm [3].



Remove the guide plate dowel pin [1], collar [2], and washer [3].

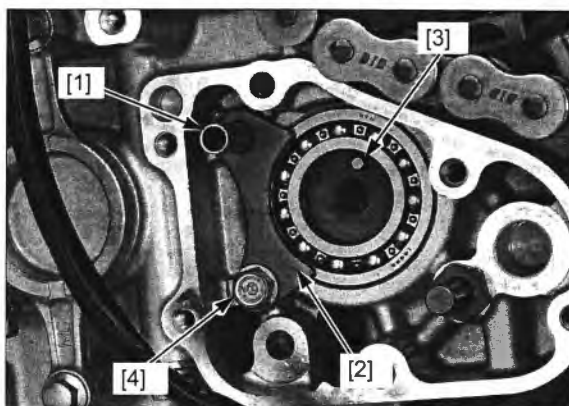
Remove the shift drum center bolt [4] and shift drum center [5].



Remove the dowel pin [1] from the set plate [2].

Remove the dowel pin [3] from the shift drum.

Remove the bolt [4] and shift drum bearing set plate.

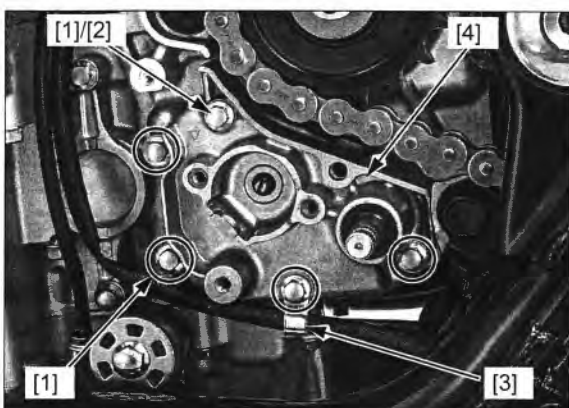


REMOVAL (After '13 model)

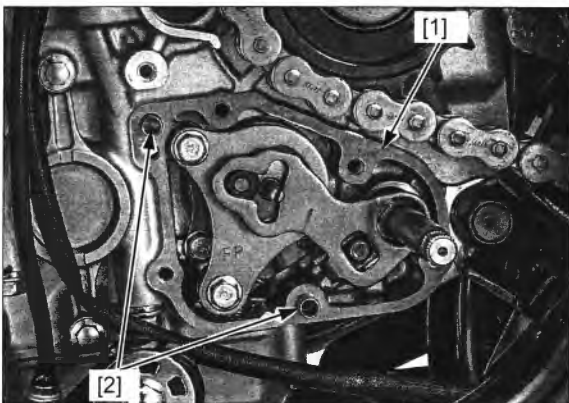
Remove the following:

- gear position switch (page 19-38)
- left crankcase rear cover (page 6-4)

Remove the bolts [1], copper washer [2], wire clamp [3], and gearshift linkage cover [4].

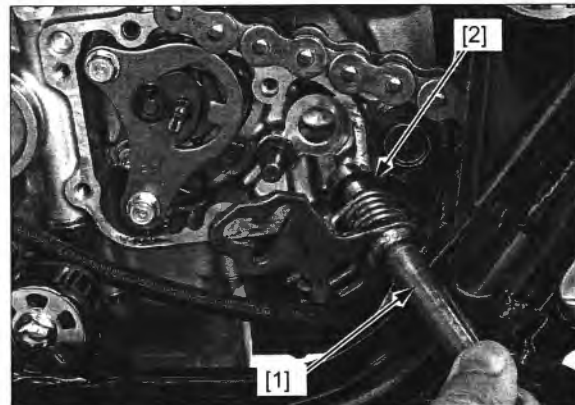


Remove the gasket [1] and dowel pins [2].



CLUTCH/GEARSHIFT LINKAGE

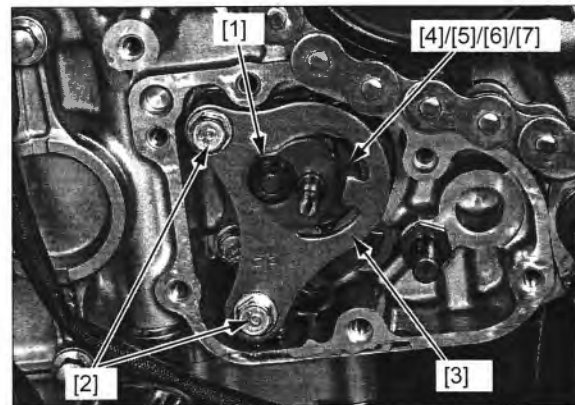
Remove the gearshift spindle assembly [1] and thrust washer [2].



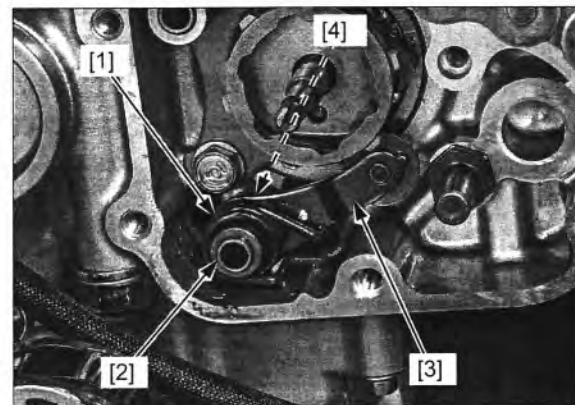
Remove the shifter collar [1].

Do not let the ratchet pawls, plungers, and springs fall when removing the guide plate.

Remove the guide plate bolts [2].
Remove the guide plate [3], drum shifter [4], ratchet pawls [5], plungers [6], and springs [7] as an assembly.



Remove the return spring [1], collar [2], shift drum stopper arm [3], and washer [4].

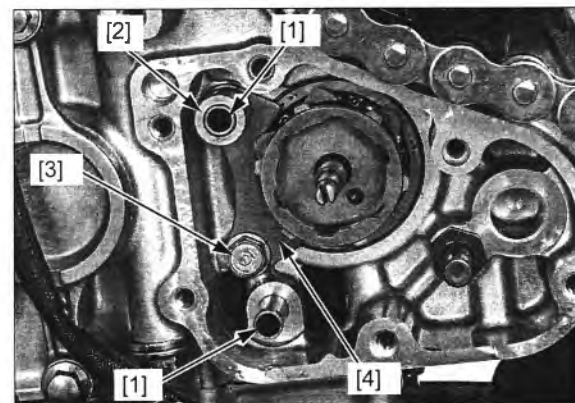


Remove the guide plate dowel pins [1] and collar [2].

Remove the bolt [3] and shift drum bearing set plate [4].

NOTE:

The shift drum, shift drum center, bearing, and gear position switch drive shaft are assembly parts. Replace them as an assembly if necessary (page 11-28).



INSPECTION

Check the gearshift spindle [1] for wear, damage, or bending.

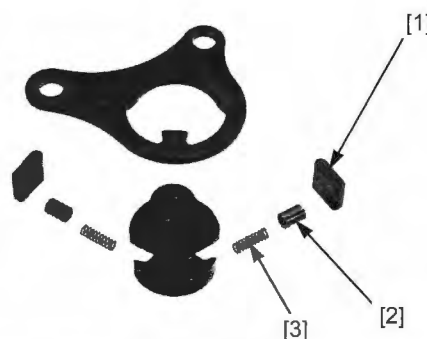
Check the return spring [2] for fatigue or damage.

'13 model shown:

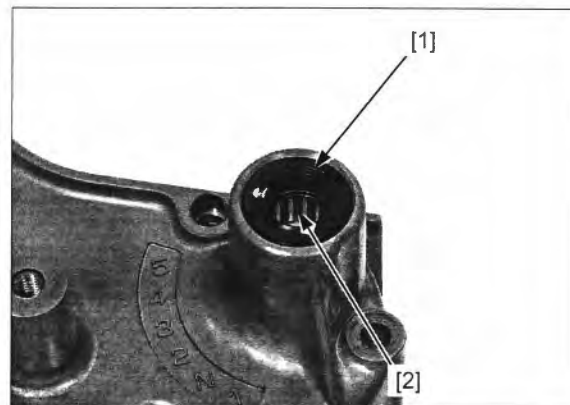


Disassemble the guide plate assembly.

Check the ratchet pawls [1], plungers [2], and springs [3] for wear or damage, replace if necessary.



Check the gearshift linkage cover oil seal [1] and needle bearing [2] for wear or damage, replace if necessary.

**INSTALLATION ('13 model)**

If the gearshift spindle return spring pin [1] is removed, install and tighten the return spring pin to the specified torque.

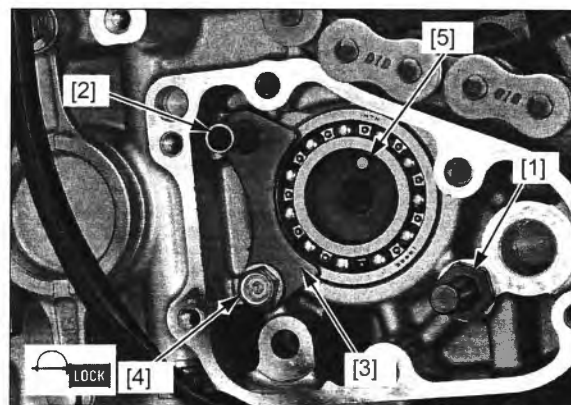
TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)

Install the dowel pin [2] and shift drum bearing set plate [3].

Clean and apply a locking agent to the bearing stopper plate bolt [4] threads.

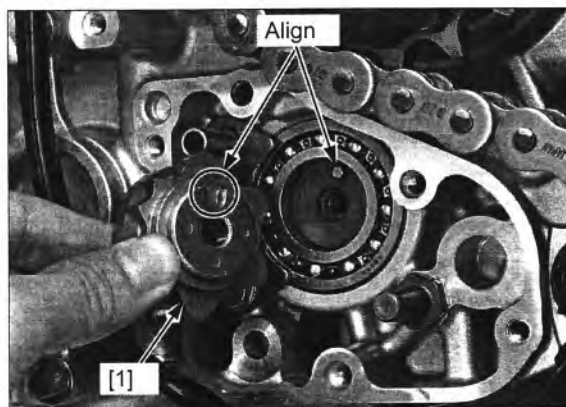
Install and tighten the stopper plate bolt securely.

Install the dowel pin [5] onto the shift drum.

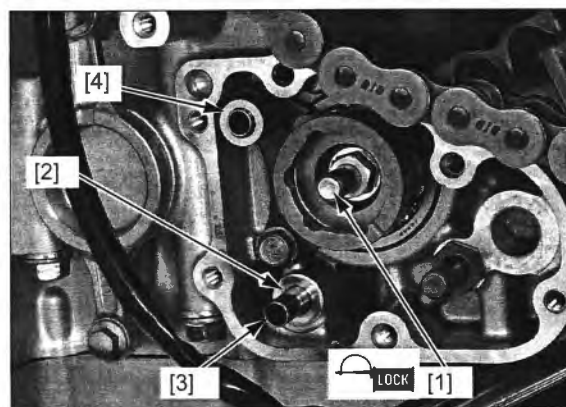


CLUTCH/GEARSHIFT LINKAGE

Install the shift drum center [1] while aligning its cut-out with the dowel pin on the shift drum.



Apply a locking agent to the shift drum center bolt [1] threads.

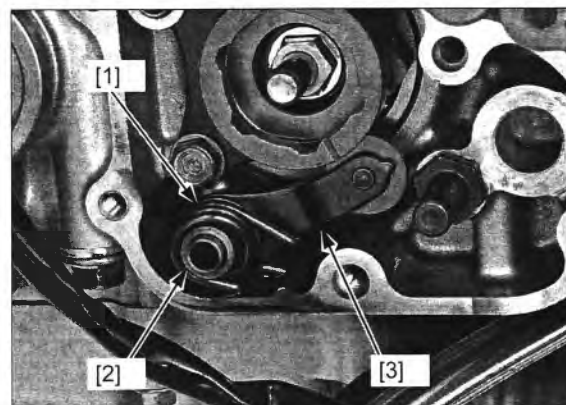


Install and tighten the shift drum center bolt to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)

After tightening the shift drum center bolt, check the shift drum operation by turning the center bolt.

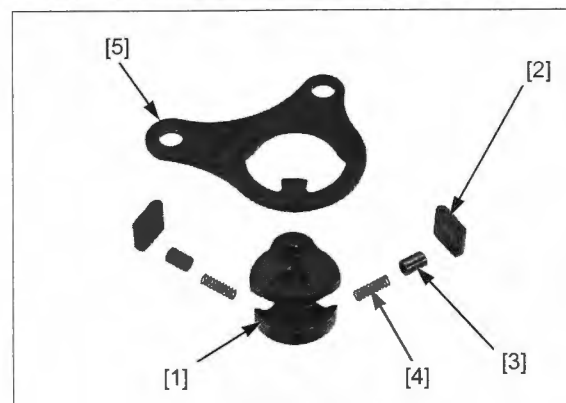
Install the washer [2], guide plate dowel pin [3], and collar [4].



Install the return spring [1], collar [2], and shift drum stopper arm [3].

Clean the drum shifter [1], ratchet pawls [2], plungers [3], and springs [4] with clean engine oil.

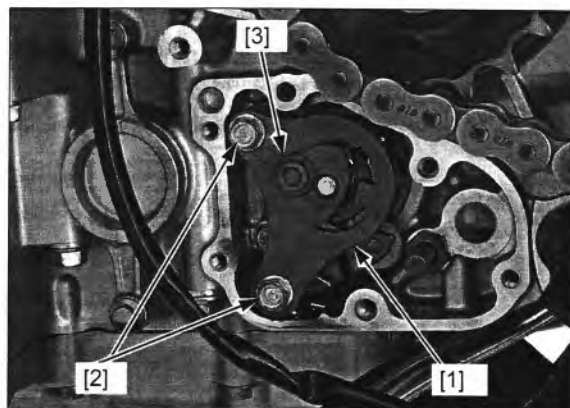
Assemble the guide plate [5].



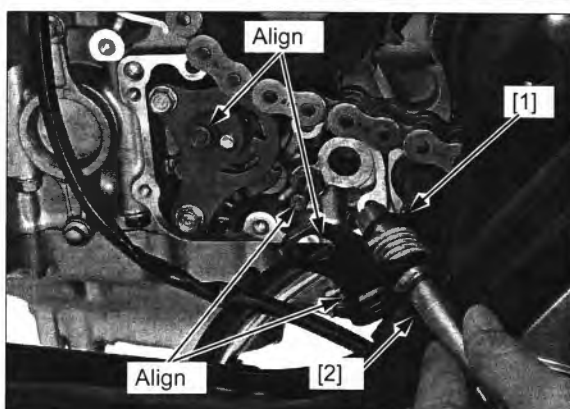
Note the direction of the ratchet pawl.

Install the guide plate assembly [1] while aligning the drum shifter hole with the shift drum center bolt. Make sure the dowel pin is installed properly, then install and tighten the guide plate bolts [2].

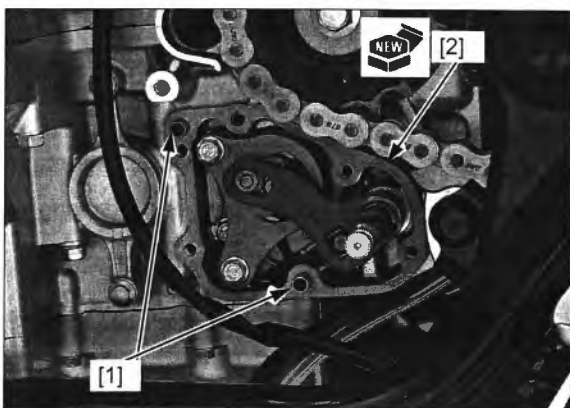
Install the shifter collar [3] onto the drum shifter.



Install the thrust washer [1] and gearshift spindle assembly [2] into the crankcase while aligning the spring ends with the return spring pin, spindle hole with shifter collar.



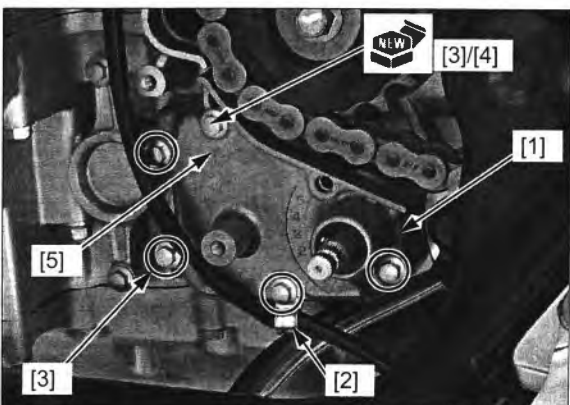
Install the dowel pins [1] and a new gasket [2].



The copper washer location is indicated on the gearshift linkage cover using the "△" mark [5].

Install the gearshift linkage cover [1], wire clamp [2], a new copper washer [3], and bolts [4].

Tighten the cover bolt securely.

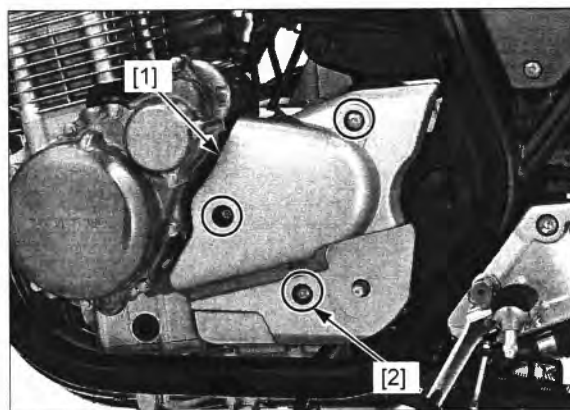


CLUTCH/GEARSHIFT LINKAGE

Install the left crankcase rear cover (page 6-12).

Install the left crankcase side cover [1] and tighten the bolts [2] to the specified torque.

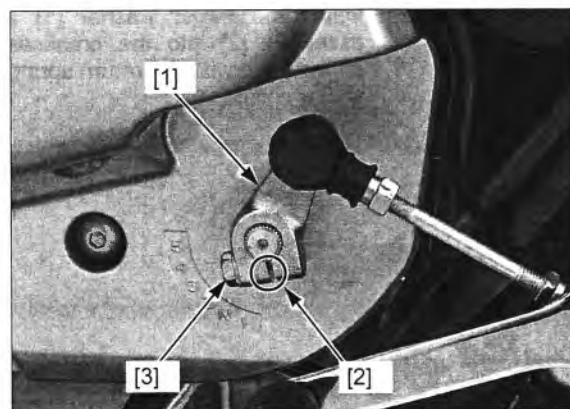
TORQUE: 6.0 N·m (0.6 kgf·m, 4.4 lbf·ft)



Install the gearshift arm [1] to the gearshift spindle while aligning the punch marks [2].

Install and tighten the pinch bolt [3] to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



INSTALLATION (After '13 model)

If the gearshift spindle return spring pin [1] is removed, install and tighten the return spring pin to the specified torque.

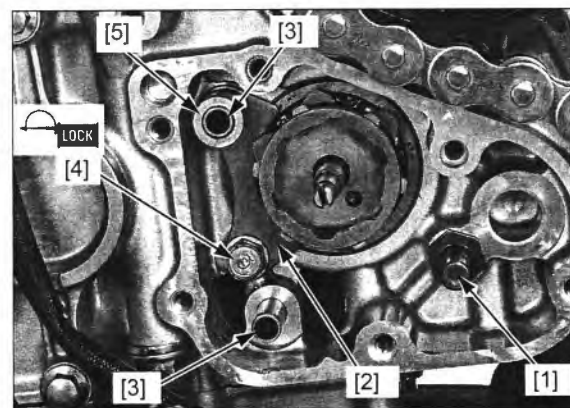
TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)

Install the shift drum bearing set plate [2] and dowel pins [3].

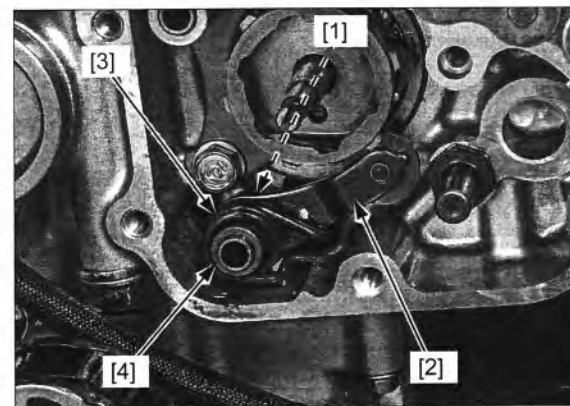
Clean and apply a locking agent to the bearing stopper plate bolt [4] threads.

Install and tighten the stopper plate bolt securely.

Install the collar [5] onto the dowel pin.



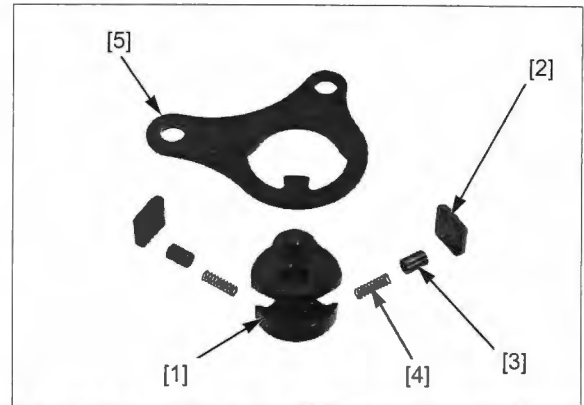
Install the washer [1], shift drum stopper arm [2], return spring [3], and collar [4].



Clean the drum shifter [1], ratchet pawls [2], plungers [3], and springs [4] with clean engine oil.

Note the direction of the ratchet pawl.

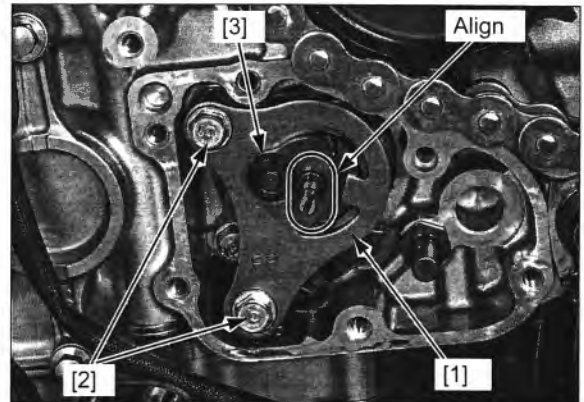
Assemble the guide plate [5].



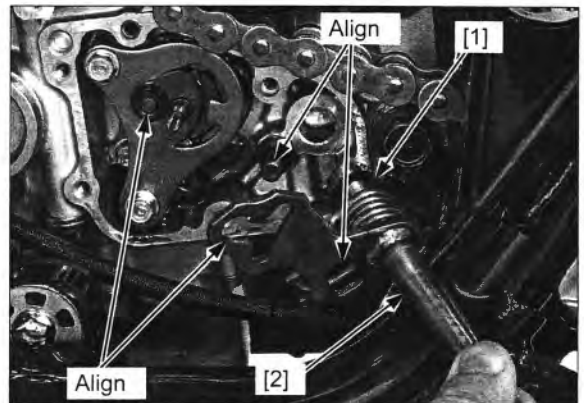
Install the guide plate assembly [1] while aligning the drum shifter hole with the gear position switch drive shaft.

Make sure the dowel pins are installed properly, then install and tighten the guide plate bolts [2].

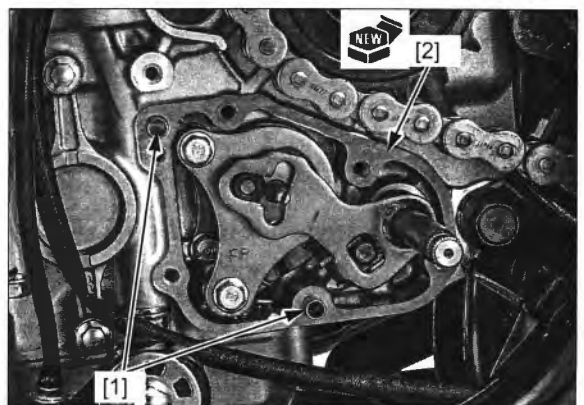
Install the shifter collar [3] onto the drum shifter.



Install the thrust washer [1] and gearshift spindle assembly [2] into the crankcase while aligning the spring ends with the return spring pin and the spindle hole with the shifter collar.



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



CLUTCH/GEARSHIFT LINKAGE

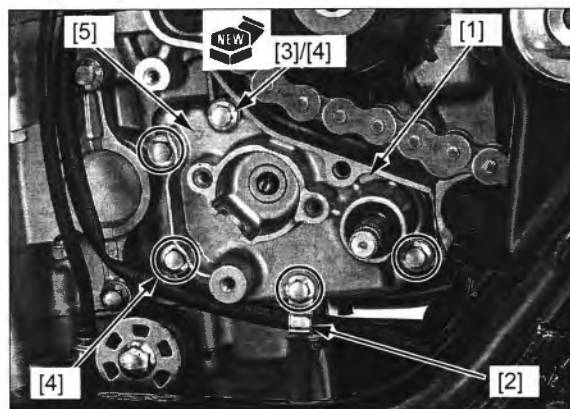
The copper washer location is indicated on the gearshift linkage cover using the "△" mark [5].

Install the gearshift linkage cover [1], wire clamp [2], a new copper washer [3], and bolts [4].

Tighten the cover bolt securely.

Install the following:

- left crankcase rear cover (page 6-12)
- gear position switch (page 19-38)

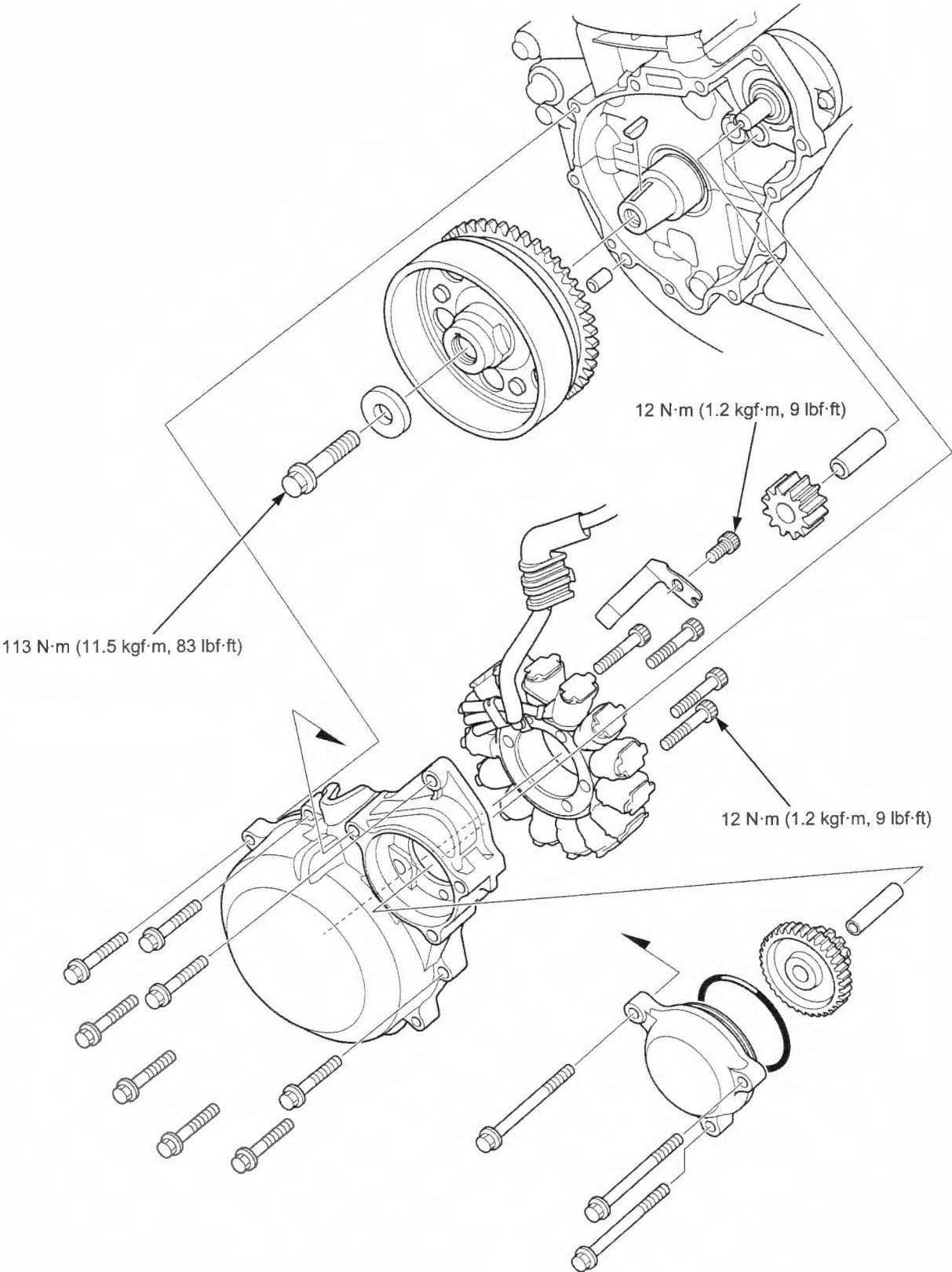


10. ALTERNATOR/STARTER CLUTCH

COMPONENT LOCATION	10-2	FLYWHEEL REMOVAL	10-7
SERVICE INFORMATION	10-3	STARTER CLUTCH	10-8
TROUBLESHOOTING	10-3	FLYWHEEL INSTALLATION	10-10
ALTERNATOR COVER REMOVAL	10-4	ALTERNATOR COVER INSTALLATION	10-11
STATOR	10-6		

ALTERNATOR/STARTER CLUTCH

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers service of the alternator stator, flywheel, and starter clutch. All services can be done with the engine installed in the frame.
- Refer to procedures for alternator stator inspection (page 16-8).
- Refer to procedures for starter motor servicing (page 18-6).

SPECIFICATIONS

Unit: mm (in)

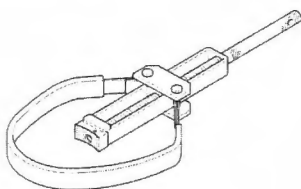
ITEM	STANDARD	SERVICE LIMIT
Starter driven gear boss O.D.	51.699 – 51.718 (2.0354 – 2.0361)	51.684 (2.0348)

TORQUE VALUES

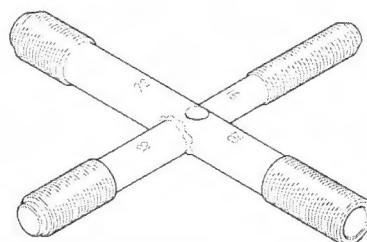
ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Stator mounting bolt	4	6	12 (1.2, 9)	
Alternator wire clamp bolt	1	6	12 (1.2, 9)	
Starter clutch assembly bolt	6	6	16 (1.6, 12)	Apply a locking agent to the threads.
Flywheel flange bolt	1	10	113 (11.5, 83)	Apply engine oil to the threads and seating surface.

TOOLS

Flywheel holder
07725-0040001



Rotor puller
07733-0020001



or 07933-3950000 (U.S.A. only)

TROUBLESHOOTING

Engine does not turn

- Faulty starter clutch
- Damaged reduction gear/shaft

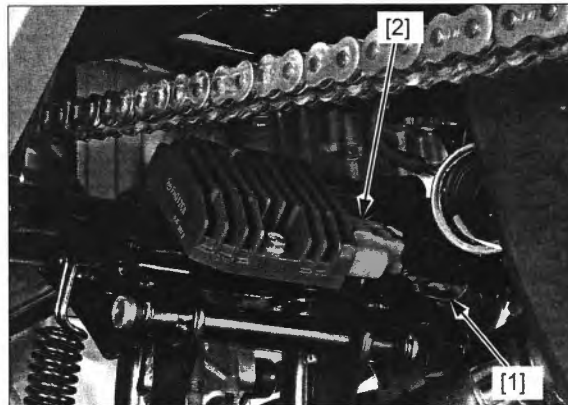
ALTERNATOR/STARTER CLUTCH

ALTERNATOR COVER REMOVAL

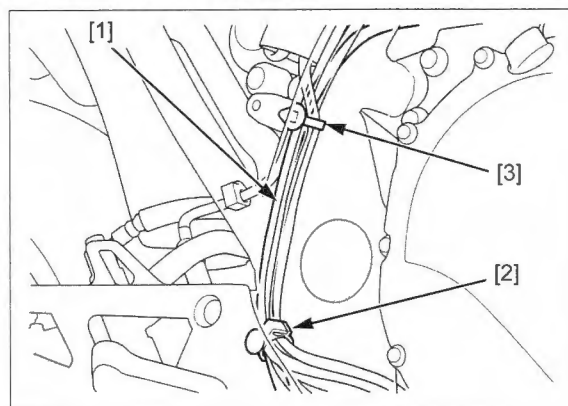
Remove the following:

- right side cover (page 2-4)
- starter motor (page 18-6)

Remove the rubber boot [1] and disconnect the alternator 3P (Gray) connector [2].

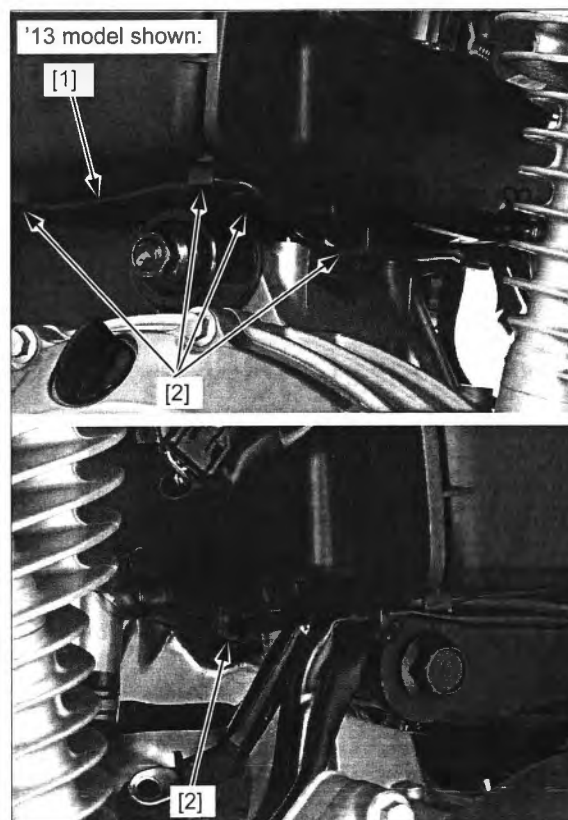


Release the alternator wire [1] from the wire clamp [2] and wire band [3].



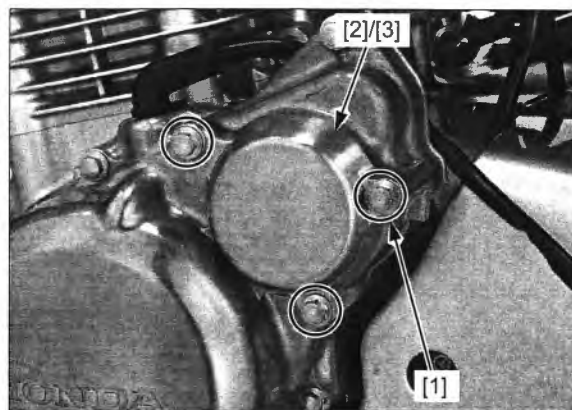
After '13 model: Remove the wire band securing the alternator wire and gear position switch wire (page 6-6).

Release the alternator wire [1] from the guides [2] on the air cleaner housing.

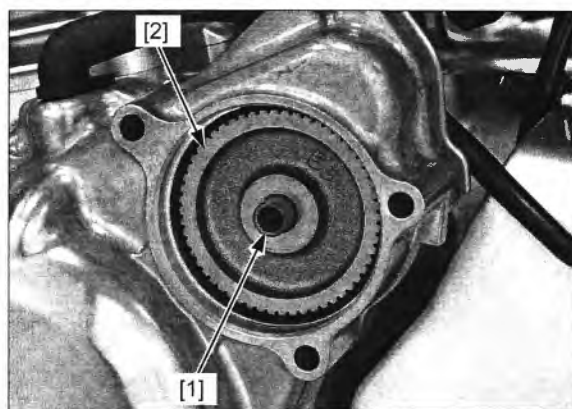


ALTERNATOR/STARTER CLUTCH

Remove the bolts [1], starter reduction gear cover [2], and O-ring [3].



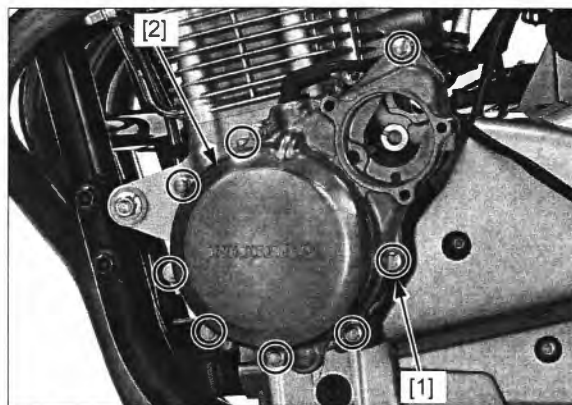
Remove the gear shaft [1] and starter reduction gear [2].



The alternator cover (stator) is magnetically attracted to the flywheel, be careful during removal.

Remove the bolts [1] and alternator cover [2].

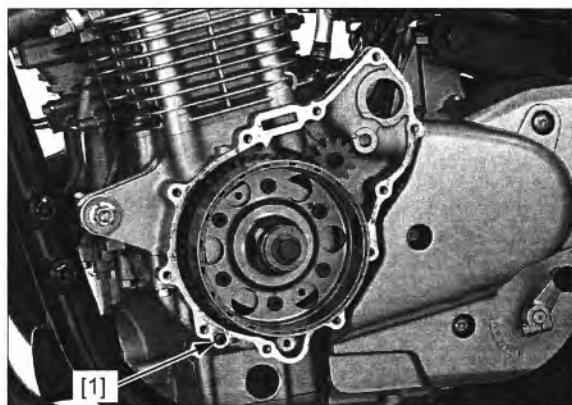
- The engine oil will run out when the alternator cover is removed. Set a clean oil pan under the engine and add the recommended oil to the specified level after installation.



Remove the dowel pin [1].

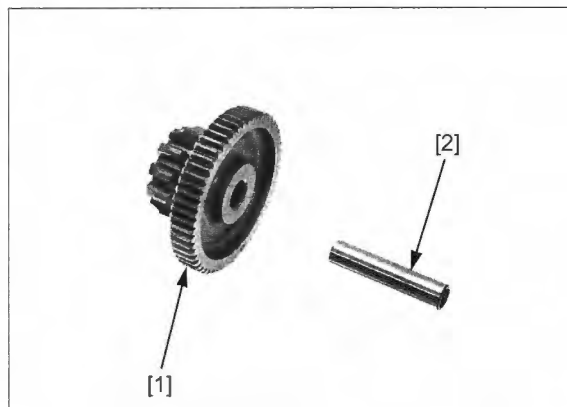
Be careful not to damage the mating surface.

Clean any sealant off from the alternator cover mating surfaces.



ALTERNATOR/STARTER CLUTCH

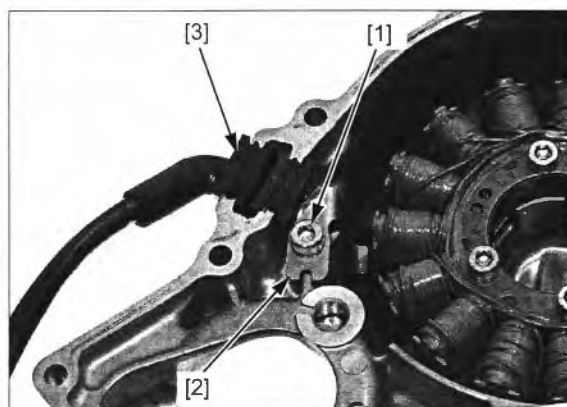
Check the starter reduction gear [1] and gear shaft [2] for wear or damage.



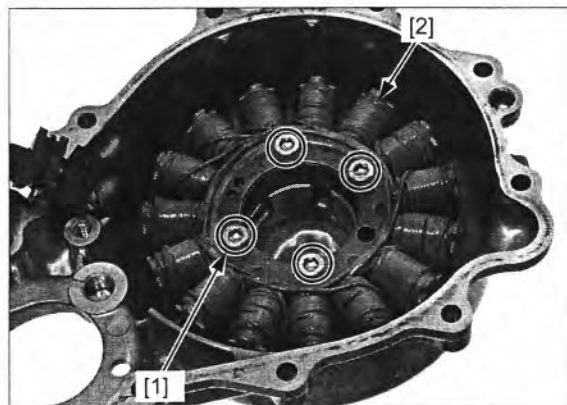
STATOR

REMOVAL

Remove the mounting bolt [1] and stator wire clamp [2]. Remove the alternator wire grommet [3] from the alternator cover.



Remove the mounting bolts [1] and stator [2].

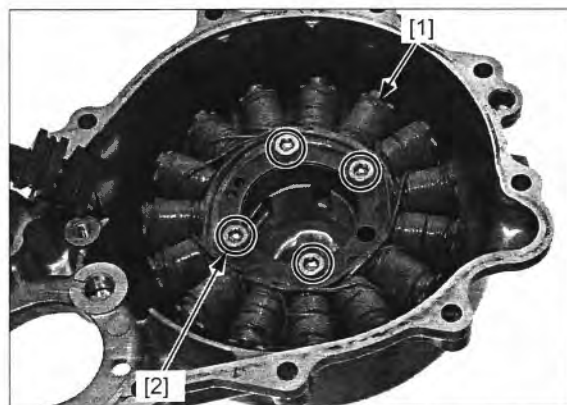


INSTALLATION

Install the stator [1] into the alternator cover.

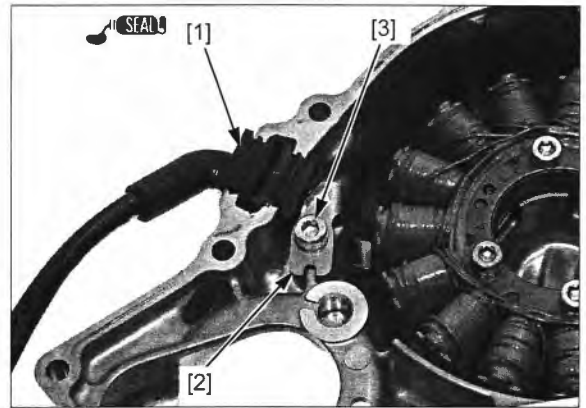
Install and tighten the stator mounting bolts [2] to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Apply sealant to the wire grommet [1], then install the wire grommet into the alternator cover groove securely. Install the wire clamp [2] and tighten the mounting bolt [3] to the specified torque.

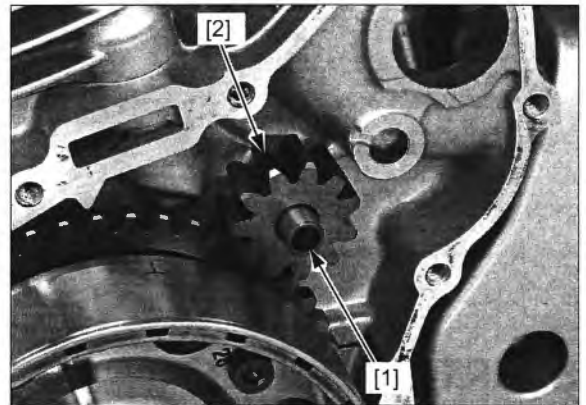
TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



FLYWHEEL REMOVAL

Remove the alternator cover (page 10-4).

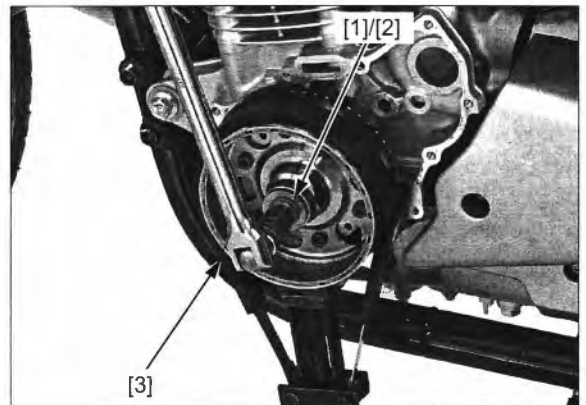
Remove the gear shaft [1] and starter idle gear [2].



Hold the flywheel using the special tool, then remove the flywheel bolt [1] and washer [2].

TOOL:

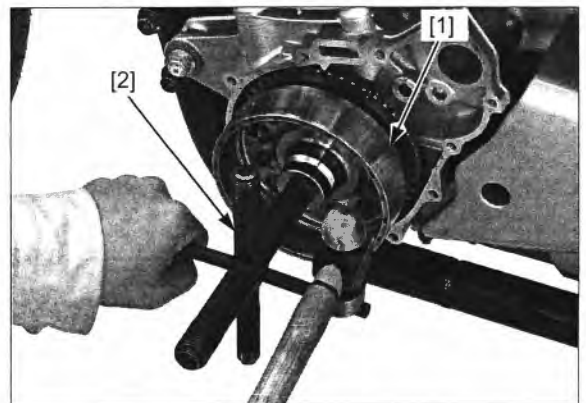
[3] Flywheel holder 07725-0040001



Remove the flywheel [1] using the special tool.

TOOL:

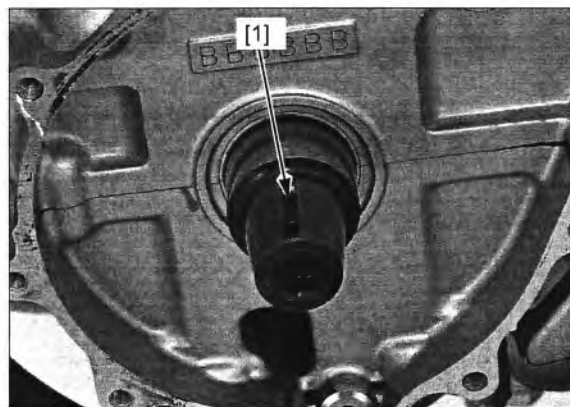
[2] Rotor puller 07733-0020001 or 07933-3950000 (U.S.A. only)



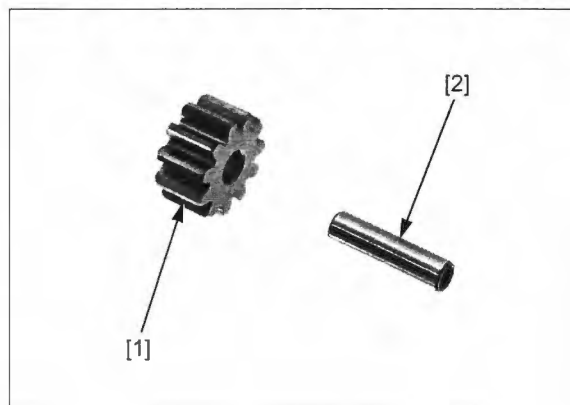
ALTERNATOR/STARTER CLUTCH

Be careful not to damage the crankshaft.

Remove the woodruff key [1].



Check the starter idle gear [1] and gear shaft [2] for wear or damage.

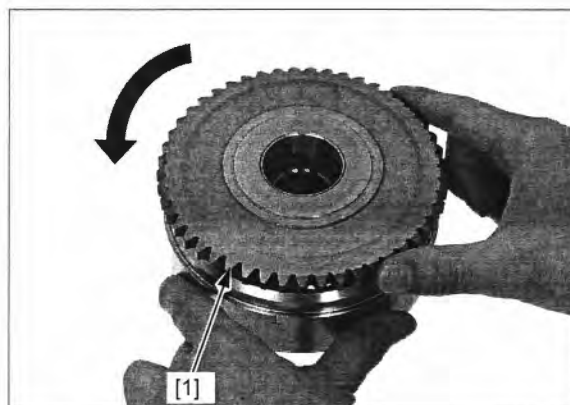


STARTER CLUTCH

INSPECTION

Check the operation of the one-way clutch by turning the starter driven gear [1].

You should be able to turn the starter driven gear counterclockwise smoothly, but the gear should not turn clockwise.



DISASSEMBLY

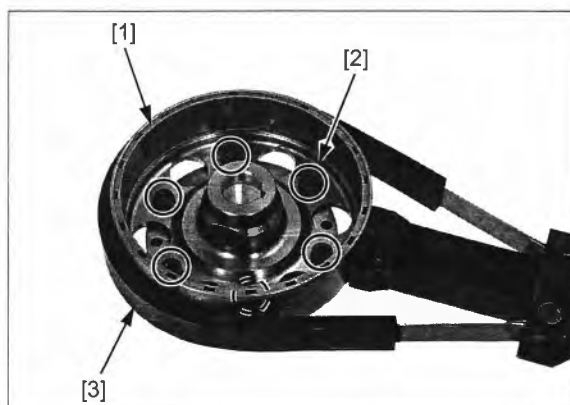
Remove the starter driven gear by turning it counterclockwise.

Hold the flywheel [1] using the special tool and remove the starter clutch assembly bolts [2].

TOOL:

[3] Flywheel holder 07725-0040001

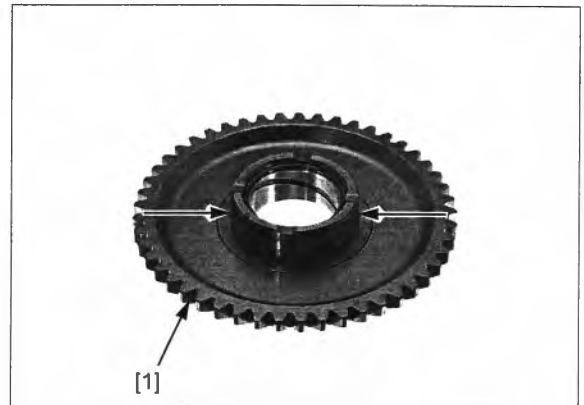
Remove the starter one-way clutch assembly.



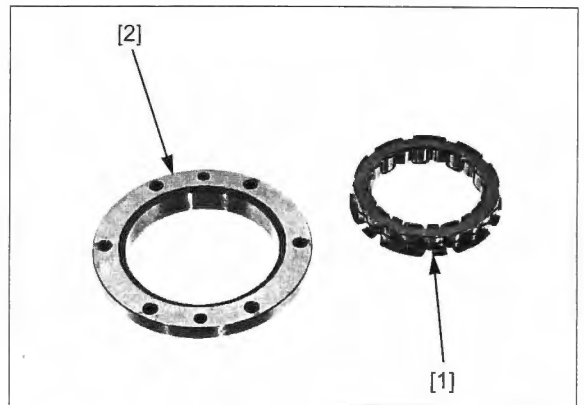
Check the starter driven gear [1] for abnormal wear or damage.

Measure the starter driven gear boss O.D.

SERVICE LIMIT: 51.684 mm (2.0348 in)



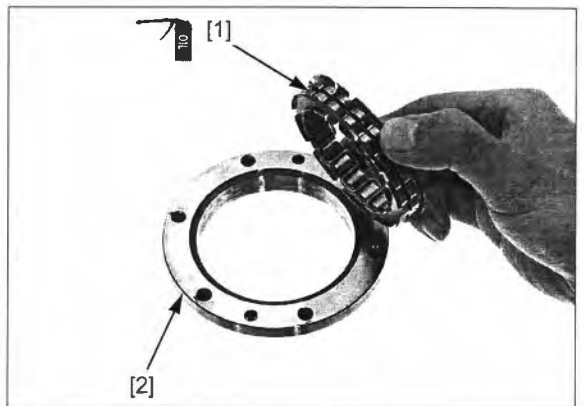
Check the one-way clutch [1] and clutch outer [2] for wear or damage and replace if necessary.



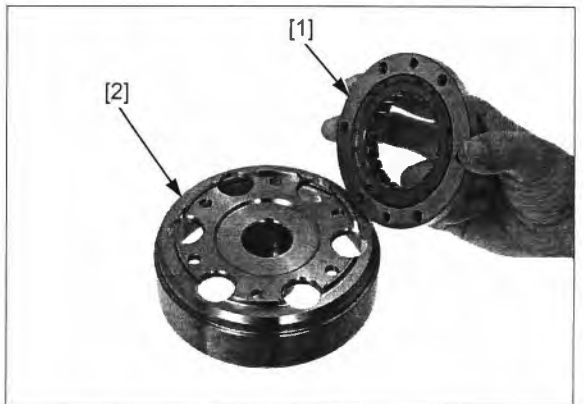
ASSEMBLY

Apply engine oil to the one-way clutch [1] contacting surfaces.

Install the one-way clutch into the clutch outer [2] with the flange side facing the flywheel side.



Install the starter one-way clutch assembly [1] onto the flywheel [2].



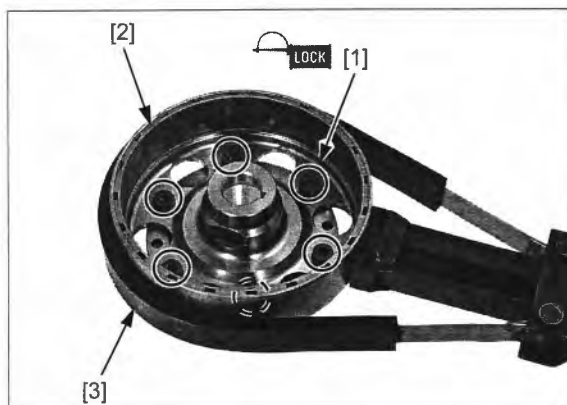
ALTERNATOR/STARTER CLUTCH

Apply a locking agent to the starter clutch assembly bolt threads [1], then install them to the flywheel [2].

Hold the flywheel using the special tool.

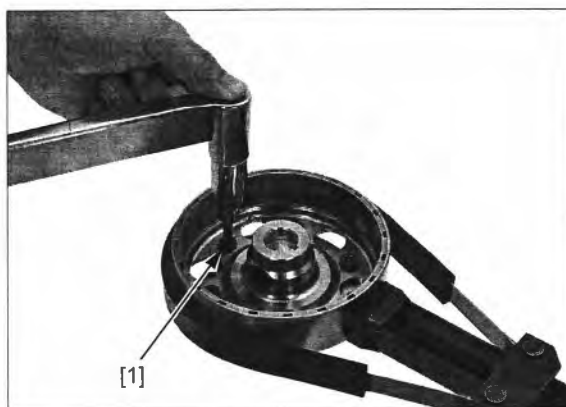
TOOL:

[3] Flywheel holder 07725-0040001



Tighten the starter clutch assembly bolts [1] to the specified torque.

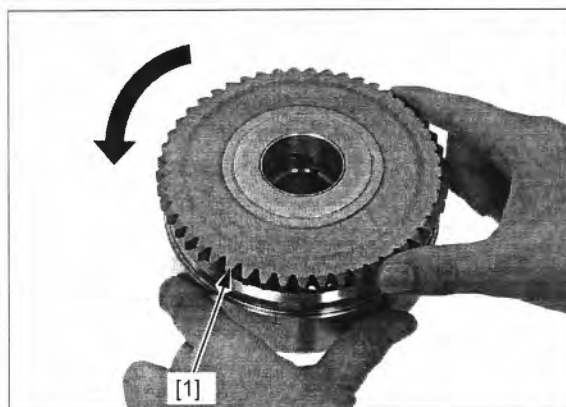
TORQUE: 16 N·m (1.6 kgf·m, 12 lbf·ft)



Install the starter driven gear [1] into the one-way clutch while turning it counterclockwise.

Recheck the one-way clutch operation.

You should be able to turn the driven gear counterclockwise smoothly, but the gear should not turn clockwise.

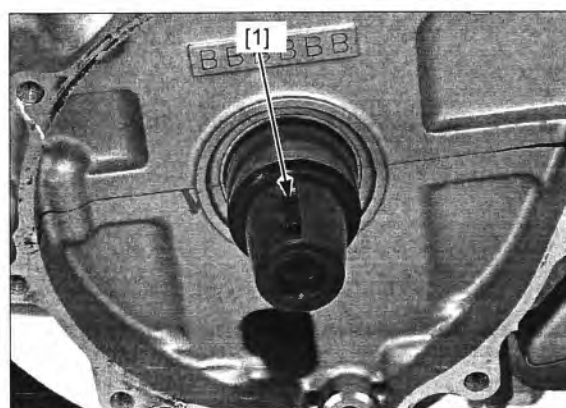


FLYWHEEL INSTALLATION

Clean any oil from the tapered area of the crankshaft and flywheel thoroughly.

Be careful not to damage the crankshaft.

Install the woodruff key [1] on the crankshaft.

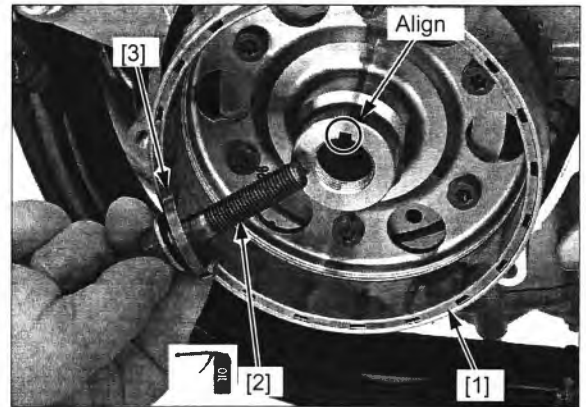


ALTERNATOR/STARTER CLUTCH

Install the flywheel [1] aligning the key way in the flywheel with the woodruff key on the crankshaft.

Apply engine oil to the flywheel bolt [2] threads and seating surface.

Install the washer [3] and flywheel bolt.

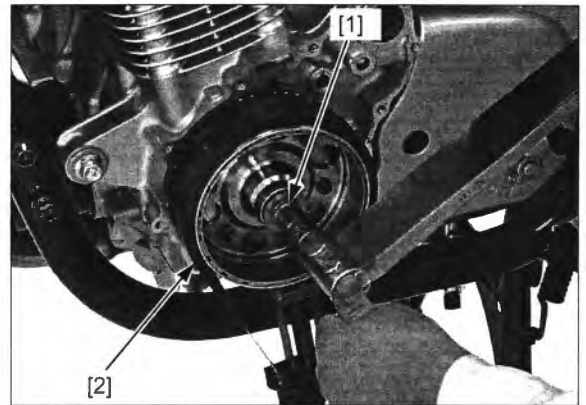


Hold the flywheel using the special tool, then tighten the bolt [1] to the specified torque.

TOOL:

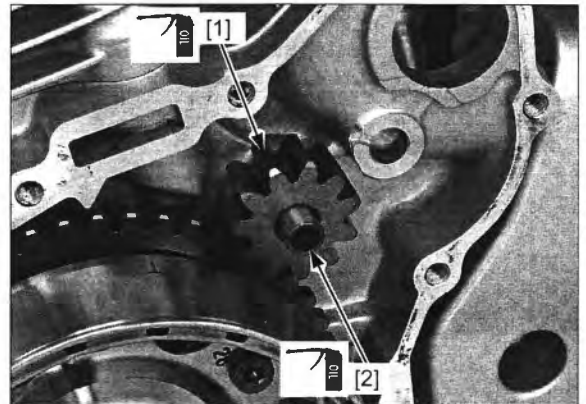
[2] Flywheel holder 07725-0040001

TORQUE: 113 N·m (11.5 kgf·m, 83 lbf·ft)



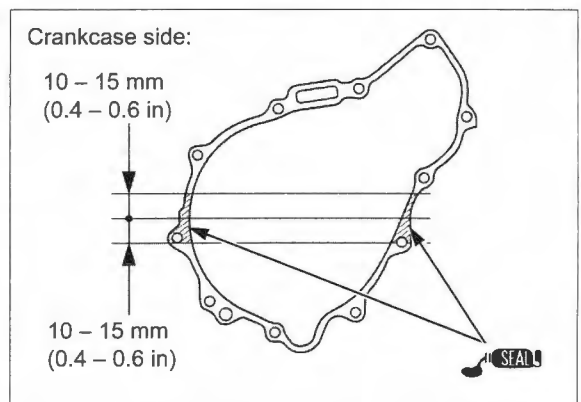
Apply engine oil to the starter idle gear [1] and gear shaft [2] sliding surface.

Install the starter idle gear and gear shaft.



ALTERNATOR COVER INSTALLATION

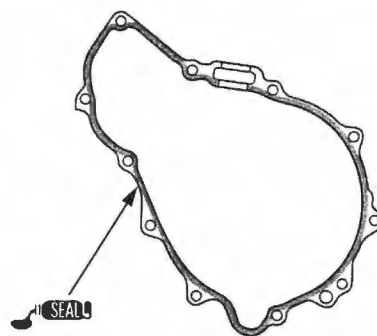
Apply sealant (Three Bond 1207B or equivalent) to the mating surfaces of the crankcase as shown.



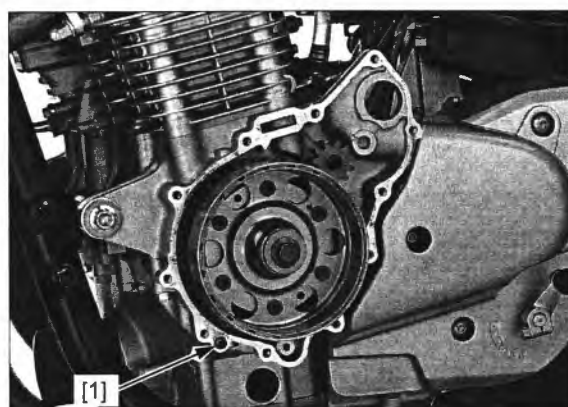
ALTERNATOR/STARTER CLUTCH

Apply sealant (Three Bond 1207B or equivalent) to the mating surfaces of the alternator cover as shown.

Cover side:



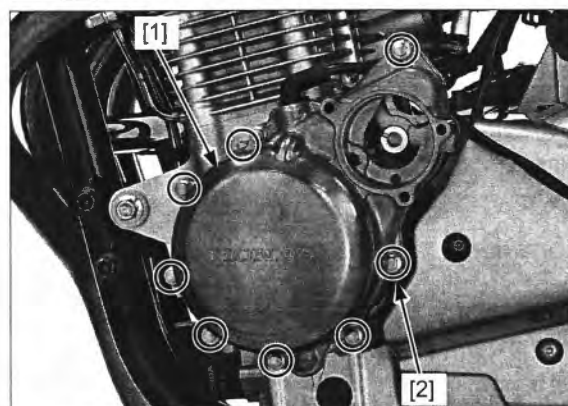
Install the dowel pin [1].



The alternator cover (stator) is magnetically attracted to the flywheel, be careful during installation.

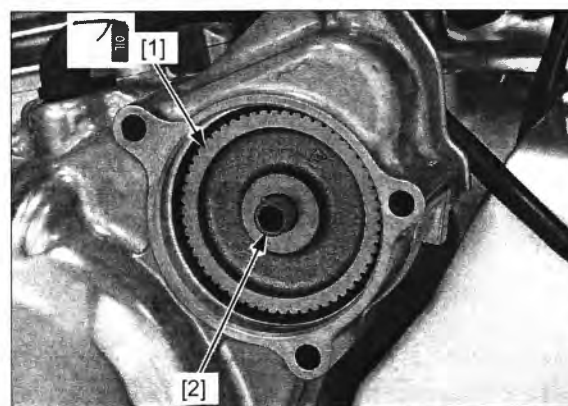
Install the alternator cover [1].

Install and tighten the bolts [2] in a crisscross pattern in two or three steps.



Apply engine oil to the starter reduction gear [1] and gear shaft [2] sliding surface.

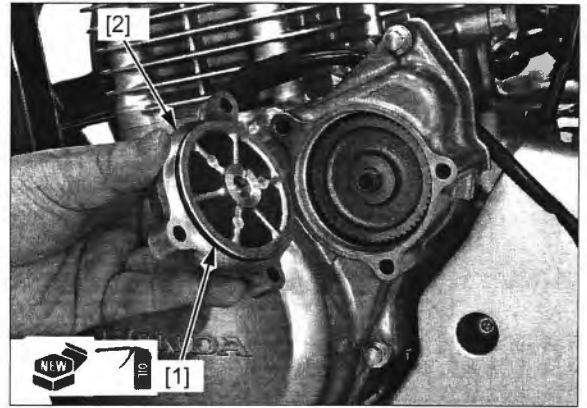
Install the starter reduction gear and gear shaft.



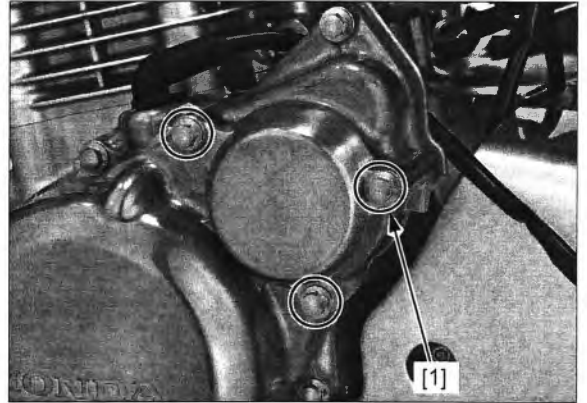
ALTERNATOR/STARTER CLUTCH

Apply engine oil to a new O-ring [1] and install it onto the starter reduction gear cover [2].

Install the starter reduction gear cover.



Install and tighten the starter reduction gear cover bolts [1] securely.

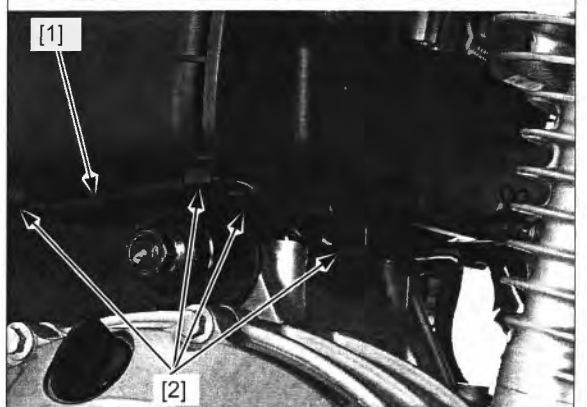
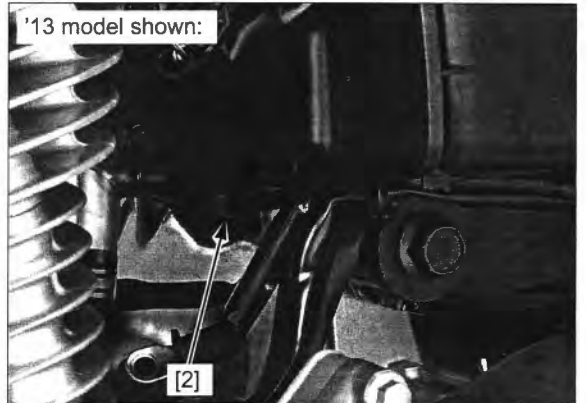


Route the alternator wire properly (page 1-21).

Install the alternator wire [1] to the guides [2] on the air cleaner housing.

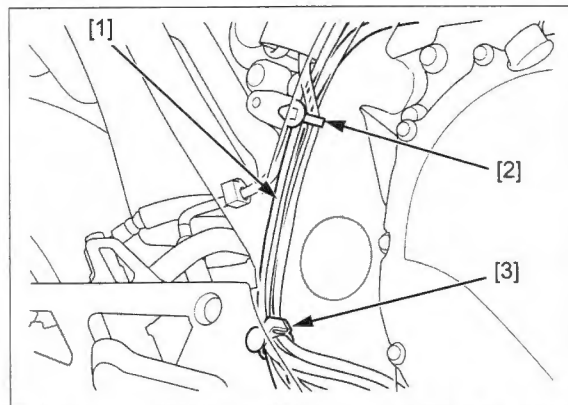
After '13 model:

Secure the alternator wire and gear position switch wire with a new wire band (page 1-21).



ALTERNATOR/STARTER CLUTCH

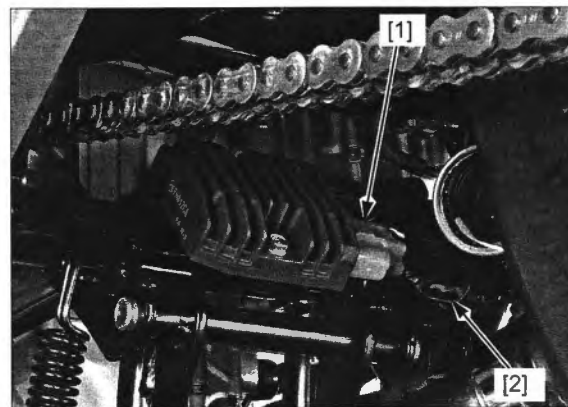
Secure the alternator wire [1] with the wire band [2] and wire clamp [3].



Connect the alternator 3P (Gray) connector [1] and install the rubber boot [2].

Install the following:

- starter motor (page 18-14)
- right side cover (page 2-4)

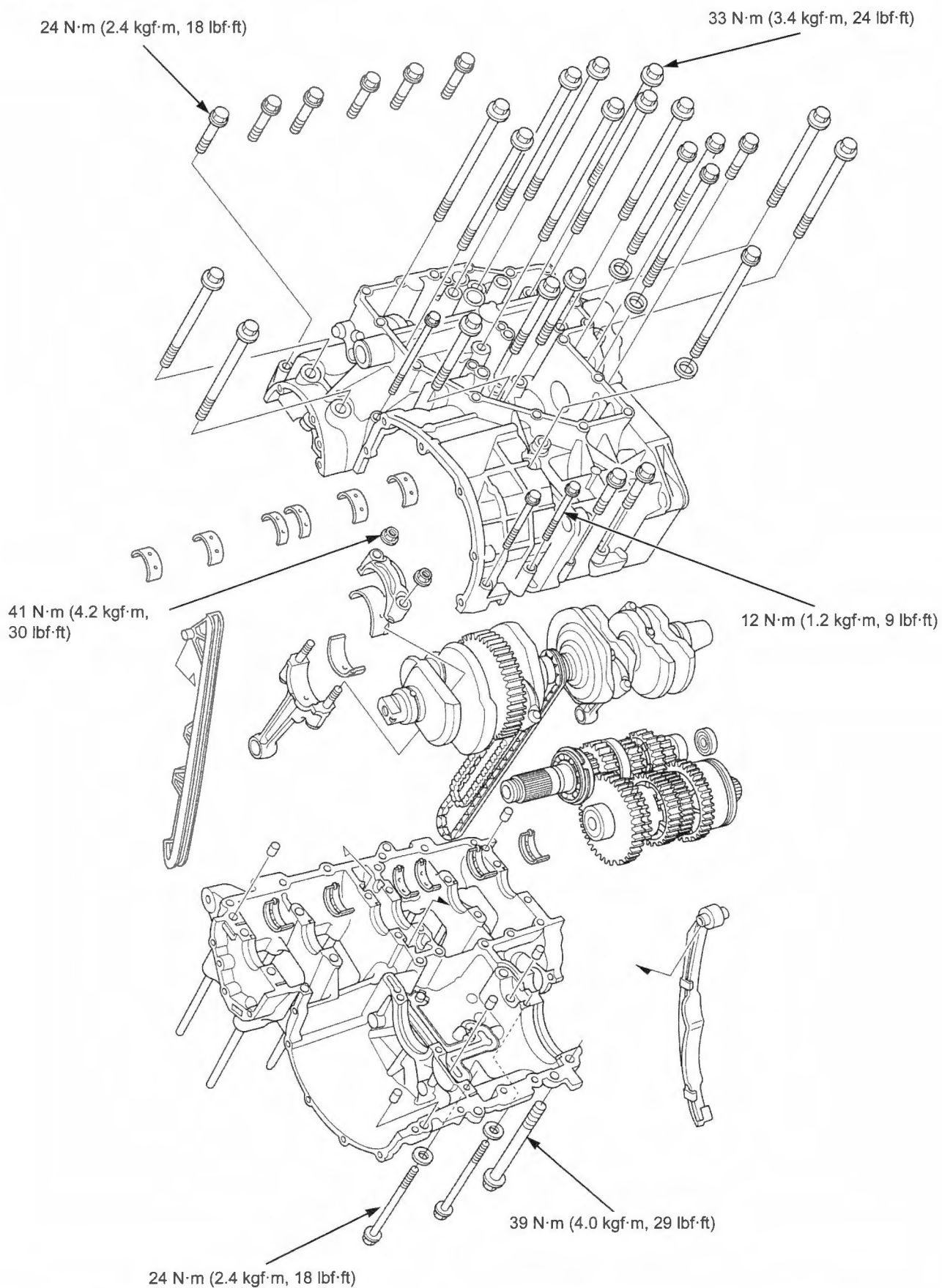


11. CRANKSHAFT/TRANSMISSION/BALANCER

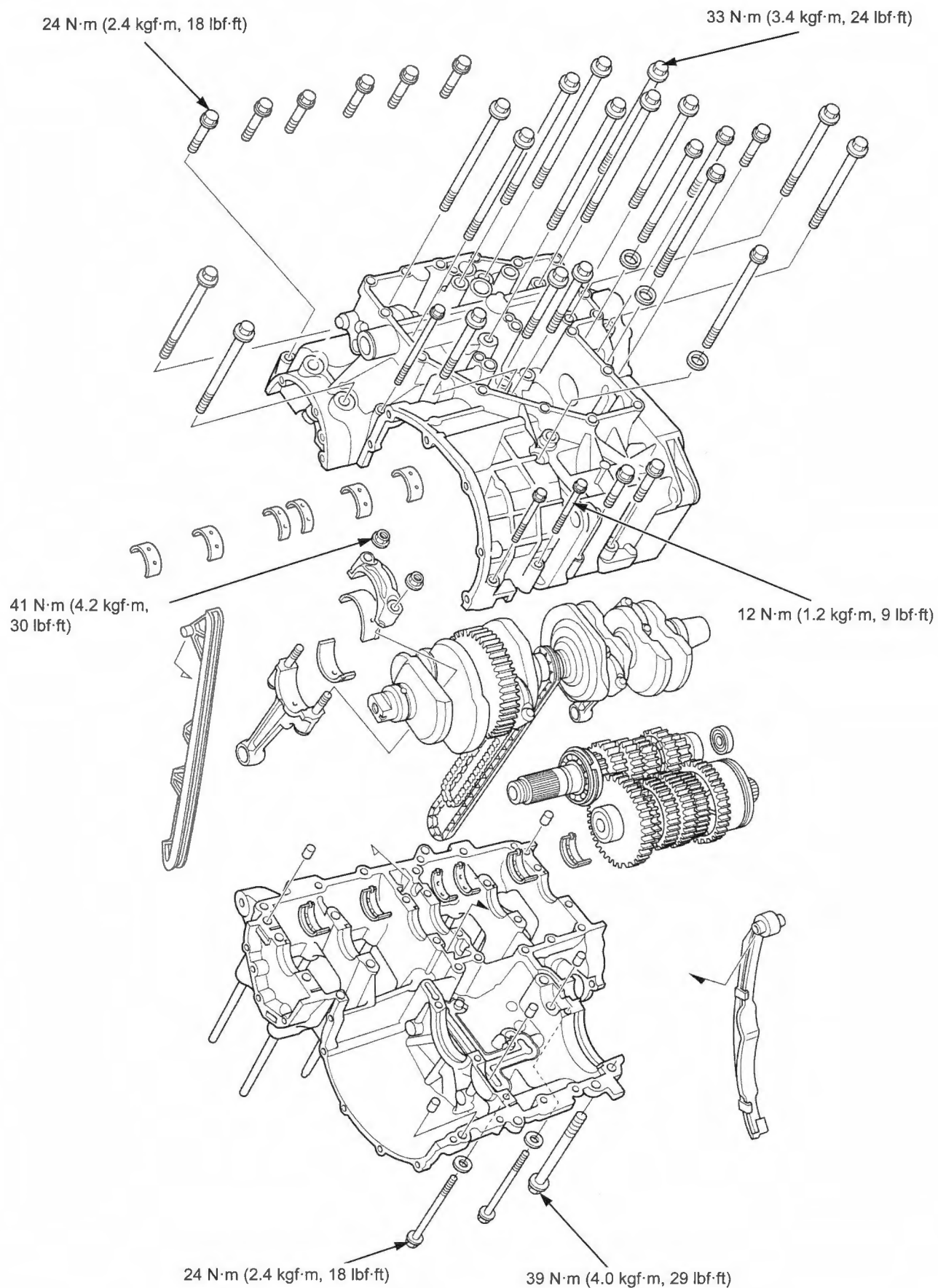
COMPONENT LOCATION	11-2	CRANKPIN BEARING	11-16
SERVICE INFORMATION	11-4	TRANSMISSION	11-18
TROUBLESHOOTING	11-6	SHIFT FORK/SHIFT DRUM	11-28
CRANKCASE SEPARATION	11-7	CRANKCASE ASSEMBLY	11-31
CRANKSHAFT/CONNECTING ROD	11-8	BALANCER	11-33
MAIN JOURNAL BEARING	11-13		

COMPONENT LOCATION

'13 model:



After '13 model:



SERVICE INFORMATION

GENERAL

- The crankcase must be separated to service the following:
 - connecting rod (page 11-8)
 - crankshaft (page 11-8)
 - transmission (page 11-18)
 - balancer (page 11-33)
- The following components must be removed before separating the crankcase:
 - oil pan (page 4-6)
 - oil pump (page 4-10)
 - engine (page 6-6)
 - cylinder head (page 7-18)
 - cylinder/piston (page 8-5)
 - clutch (page 9-18)
 - gearshift linkage ('13 model: page 9-29, After '13 model: page 9-31)
 - alternator (page 10-4)
 - flywheel (page 10-7)
 - CKP sensor/rotor (page 17-8)
 - starter motor (page 18-6)
 - gear position switch (After '13 model: page 19-38)
- Mark and store the connecting rods, bearing caps, and bearing inserts to be sure of their correct locations for reassembly.
- The crankpin and main journal bearing inserts are select fit and are identified by color codes. Select replacement bearings from the code tables. After selecting new bearings, recheck the oil clearance with plastigauge. Incorrect oil clearance can cause major engine damage.
- Be careful not to damage the crankcase mating surfaces when servicing.
- Be careful not to damage the main journal bearings when servicing.
- Prior to assembling the crankcase halves, apply sealant (ThreeBond 1207B or an equivalent) to their mating surfaces. Wipe off excess sealant thoroughly.

SPECIFICATIONS

			Unit: mm (in)	
ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod side clearance		0.05 – 0.20 (0.002 – 0.008)	0.30 (0.012)
	Crankpin bearing oil clearance		0.028 – 0.052 (0.0011 – 0.0020)	0.08 (0.003)
	Main journal bearing oil clearance		0.016 – 0.040 (0.0006 – 0.0016)	0.08 (0.003)
	Runout		–	0.03 (0.001)
Shift fork, fork shaft	I.D.	'13	14.000 – 14.021 (0.5512 – 0.5520)	14.04 (0.553)
		After '13	14.000 – 14.018 (0.5512 – 0.5519)	14.04 (0.553)
	Claw thickness	'13	5.93 – 6.00 (0.233 – 0.236)	5.9 (0.23)
		After '13	5.93 – 6.00 (0.233 – 0.236)	5.83 (0.230)
	Shift fork shaft O.D.		13.957 – 13.968 (0.5495 – 0.5499)	13.90 (0.547)
Transmission ('13)	Gear I.D.	M4, M5	31.000 – 31.025 (1.2205 – 1.2215)	31.05 (1.222)
		C1	26.007 – 26.028 (1.0239 – 1.0247)	26.04 (1.025)
		C2, C3	33.000 – 33.025 (1.2992 – 1.3002)	33.05 (1.301)
	Gear busing O.D.	M4, M5	30.950 – 30.975 (1.2185 – 1.2195)	30.93 (1.218)
		C2	32.955 – 32.980 (1.2974 – 1.2984)	32.93 (1.296)
		C3	32.950 – 32.975 (1.2972 – 1.2982)	32.93 (1.296)
	Gear-to-bushing clearance	M4, M5	0.025 – 0.075 (0.0010 – 0.0030)	0.11 (0.004)
		C2	0.020 – 0.070 (0.0008 – 0.0028)	0.11 (0.004)
		C3	0.025 – 0.075 (0.0010 – 0.0030)	0.11 (0.004)
	Gear bushing I.D.	M4	28.000 – 28.021 (1.1024 – 1.1032)	28.04 (1.104)
		C2	29.985 – 30.006 (1.1805 – 1.1813)	30.02 (1.182)
	Mainshaft O.D.	at M4	27.980 – 27.993 (1.1016 – 1.1021)	27.97 (1.101)
	Countershaft O.D.	at C2	29.950 – 29.975 (1.1791 – 1.1801)	29.94 (1.179)
	Bushing-to-shaft clearance	M4	0.007 – 0.041 (0.0028 – 0.0016)	0.08 (0.003)
		C2	0.010 – 0.056 (0.0004 – 0.0022)	0.10 (0.004)

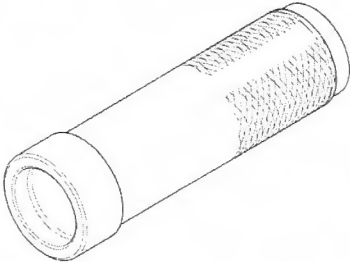
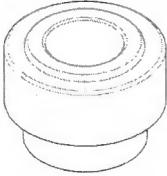
CRANKSHAFT/TRANSMISSION/BALANCER

ITEM			STANDARD	SERVICE LIMIT
Transmission (After 13)	Gear I.D.	M5, M6	31.000 – 31.025 (1.2205 – 1.2215)	31.035 (1.2218)
		C1	26.007 – 26.028 (1.0239 – 1.0247)	26.04 (1.025)
		C2, C3, C4	33.000 – 33.025 (1.2992 – 1.3002)	33.035 (1.3006)
	Gear busing O.D.	M5	30.955 – 30.980 (1.2187 – 1.2197)	30.93 (1.218)
		M6	30.950 – 30.975 (1.2185 – 1.2195)	30.94 (1.218)
		C2	32.955 – 32.980 (1.2974 – 1.2984)	32.93 (1.296)
		C3, C4	32.950 – 32.975 (1.2972 – 1.2982)	32.93 (1.296)
	Gear-to-bushing clearance	M5	0.020 – 0.070 (0.0008 – 0.0028)	0.11 (0.004)
		M6	0.025 – 0.075 (0.0010 – 0.0030)	0.095 (0.0037)
		C2	0.020 – 0.070 (0.0008 – 0.0028)	0.11 (0.004)
		C3	0.025 – 0.075 (0.0010 – 0.0030)	0.095 (0.0037)
	Gear bushing I.D.	M5	27.985 – 28.006 (1.1018 – 1.1026)	28.03 (1.104)
		C2	29.985 – 30.006 (1.1805 – 1.1813)	30.02 (1.182)
Mainshaft O.D.	at M5	27.967 – 27.980 (1.1016 – 1.1021)	27.957 (1.1007)	
Countershaft O.D.	at C2	29.950 – 29.975 (1.1791 – 1.1801)	29.94 (1.179)	
Bushing-to-shaft clearance	M5	0.005 – 0.039 (0.0002 – 0.0015)	0.06 (0.002)	
	C2	0.010 – 0.056 (0.0004 – 0.0022)	0.10 (0.004)	

TORQUE VALUES

ITEM		Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Crankcase	9 mm bolt (main journal)	12	9	33 (3.4, 24)	Degrease and apply molybdenum disulfide oil to the threads and seating surface.
	10 mm bolt	1	10	39 (4.0, 29)	
	8 mm bolt	18	8	24 (2.4, 18)	
	6 mm bolt	3	6	12 (1.2, 9)	
Oil pass plate mounting bolt		3	6	12 (1.2, 9)	Apply a locking agent to the threads. Stake.
Connecting rod bearing cap nut		8	8	41 (4.2, 30)	Apply engine oil to the threads and seating surface.
Shift fork shaft stopper plate bolt		1	6	12 (1.2, 9)	Apply a locking agent to the threads.
Balancer shaft lock bolt		1	6	12 (1.2, 9)	

TOOLS

Driver, 40 mm I.D. 07746-0030100 	Attachment, 30 mm I.D. 07746-0030300 
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TROUBLESHOOTING

Excessive engine noise

- Worn or damaged transmission gear
- Worn or damaged transmission bearings
- Worn main journal bearings
- Worn crankpin bearings
- Worn connecting rod bearings
- Worn balancer bearings
- Incorrect balancer backlash adjustment

Hard to shift

- Improper clutch operation
- Incorrect engine oil weight
- Bent shift fork
- Bent shift fork shaft
- Bent shift fork claw
- Damaged shift drum cam groove
- Bent gearshift spindle

Transmission jumps out of gear

- Worn gear dogs
- Worn gear shifter groove
- Bent shift fork shaft
- Broken shift drum stopper arm
- Broken shift drum stopper arm spring
- Worn or bent shift forks
- Broken gearshift spindle return spring

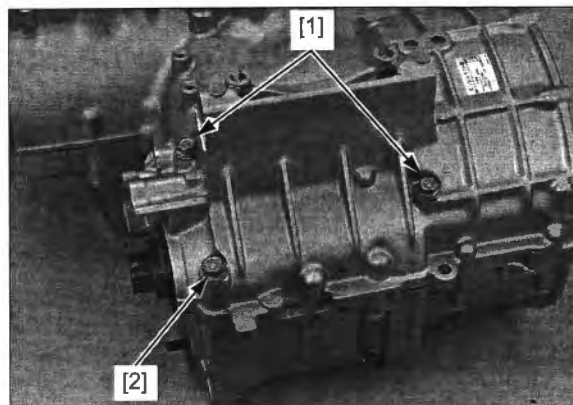
Engine vibration

- Excessive crankshaft runout
- Incorrect balancer timing

CRANKCASE SEPARATION

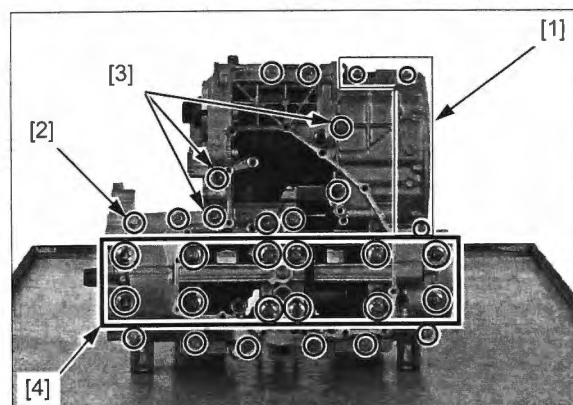
Refer to Service Information for removal of necessary parts before separating the crankcase (page 11-4).

Loosen the two 8 mm bolts [1] and 10 mm bolt [2] in a crisscross pattern in two or three steps. Remove the bolts and sealing washers.



Place the engine with the upper side down. Loosen the three 6 mm bolts [1] and sixteen 8 mm bolts [2] in a crisscross pattern in two or three steps. Remove the 6 mm bolts, 8 mm bolts, and sealing washers [3].

Loosen the twelve main journal 9 mm bolts [4] in a crisscross pattern in two or three steps. Remove the main journal bolts.



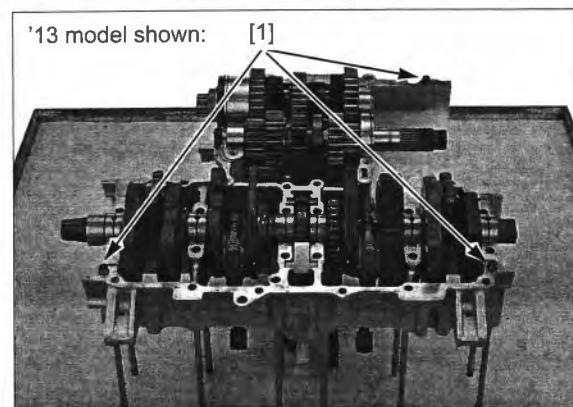
Do not use a screwdriver when separating the crankcase, as it may damage the crankcase mating surfaces.

Separate the lower crankcase from the upper crankcase.

Tap the side of the crankcase lightly if the lower crankcase is hard to separate.

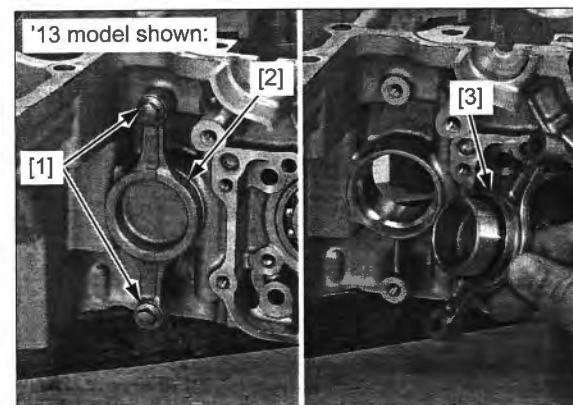
Remove the dowel pins [1].

Clean any sealant off from the crankcase mating surface.



Remove the left middle cover mount bolts [1] from the lower crankcase and remove the left middle cover [2].

Remove the O-ring [3] from the left middle cover.



CRANKSHAFT/CONNECTING ROD

Separate the crankcase halves (page 11-7).

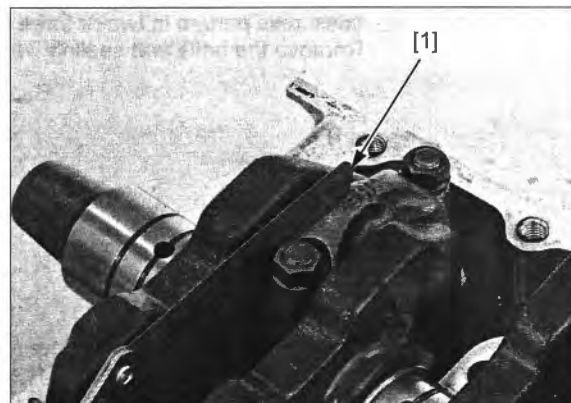
SIDE CLEARANCE INSPECTION

Measure the connecting rod side clearance.

SERVICE LIMIT: 0.30 mm (0.012 in)

If the clearance exceeds the service limit, replace the connecting rod.

Recheck and if still out of limit, replace the crankshaft.



REMOVAL

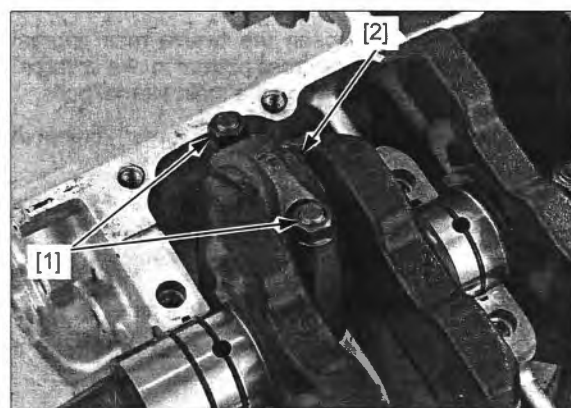
Separate the crankcase halves (page 11-7).

Mark the bearing caps and bearings as you remove them to indicate the correct cylinder for reassembly.

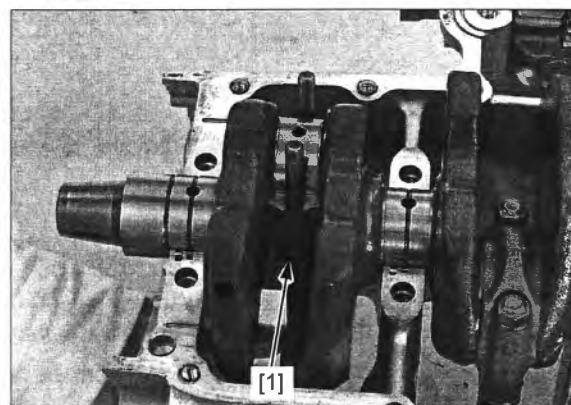
Be careful not to damage the crankpin, main journal, or bearing inserts.

Remove the connecting rod bearing cap nuts [1] and bearing caps [2].

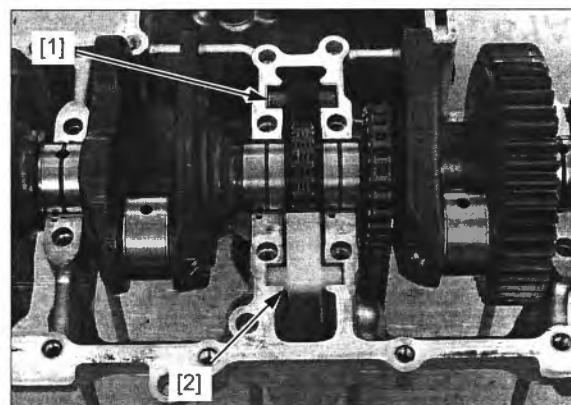
Tap the side of the cap lightly if the bearing cap is hard to remove.



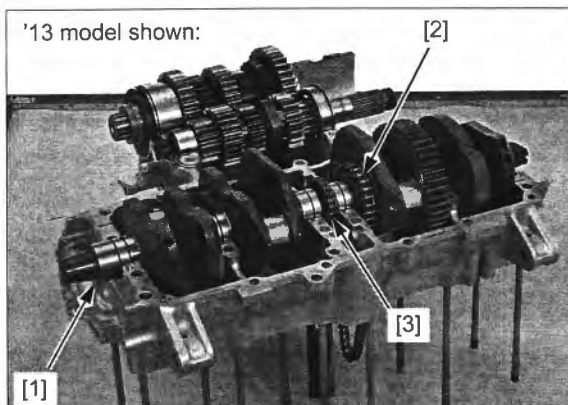
Remove the connecting rod [1].



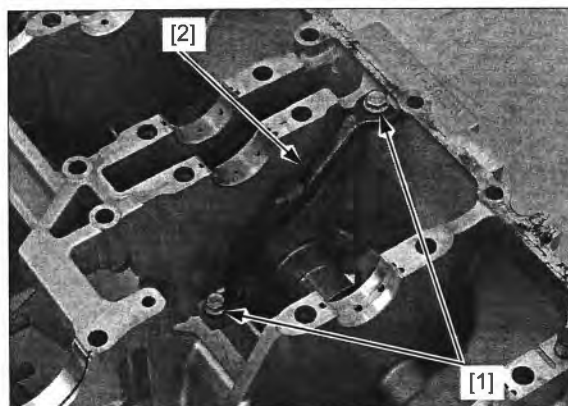
Remove the cam chain tensioner [1] and cam chain guide [2].



Remove the crankshaft [1] from the upper crankcase.
Remove the oil pump drive chain [2] and cam chain [3]
from the crankshaft.



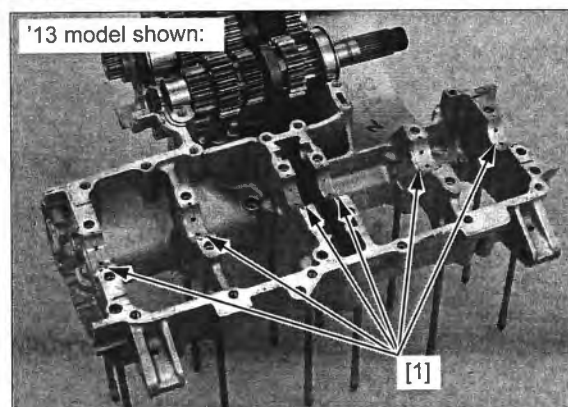
Remove the bolts [1] and oil pump drive chain guide [2]
from the lower crankcase.



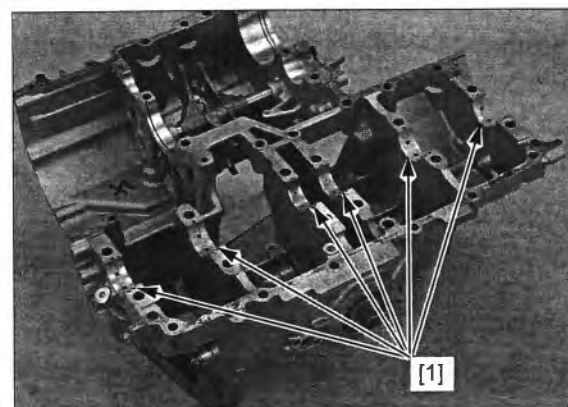
Remove the main journal bearings [1] from the upper
crankcase.

NOTICE

*Do not interchange the bearing inserts. They must be
installed in their original locations or the correct bearing
oil clearance may not be obtained, resulting in engine
damage.*



Remove the main journal bearings [1] from the lower
crankcase.

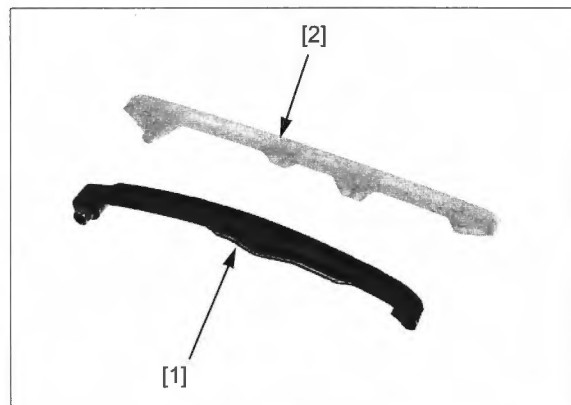


CRANKSHAFT/TRANSMISSION/BALANCER

INSPECTION

CAM CHAIN TENSIONER/CAM CHAIN GUIDE

Check the cam chain tensioner [1] and cam chain guide [2] for wear or damage, replace if necessary.



OIL PUMP CHAIN GUIDE

Check the oil pump drive chain guide [1] for wear or damage, replace if necessary.



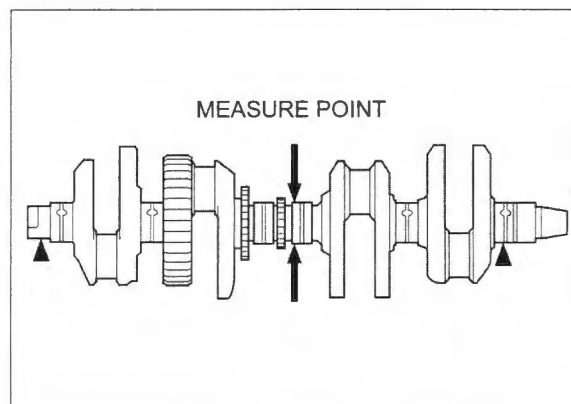
CRANKSHAFT

Set both ends of the crankshaft on V-blocks.

Set a dial gauge on the center main journal of the crankshaft.

Rotate the crankshaft two revolutions and read the runout.

SERVICE LIMIT: 0.03 mm (0.001 in)

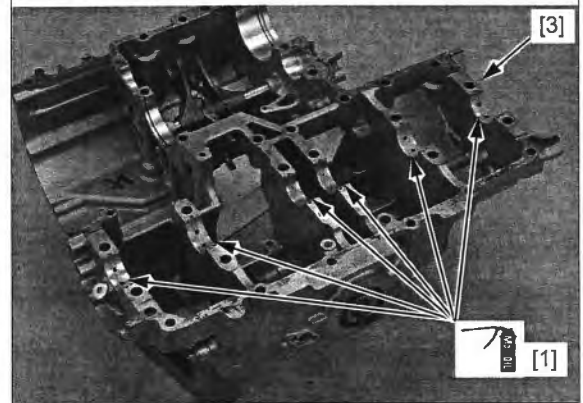
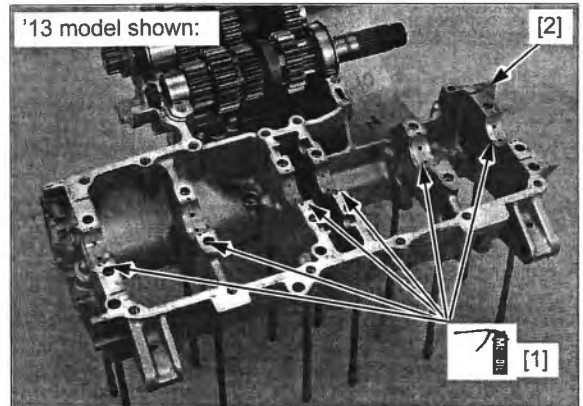


INSTALLATION

Apply molybdenum oil solution to the main journal bearing [1] sliding surfaces on the upper [2] and lower [3] crankcase.

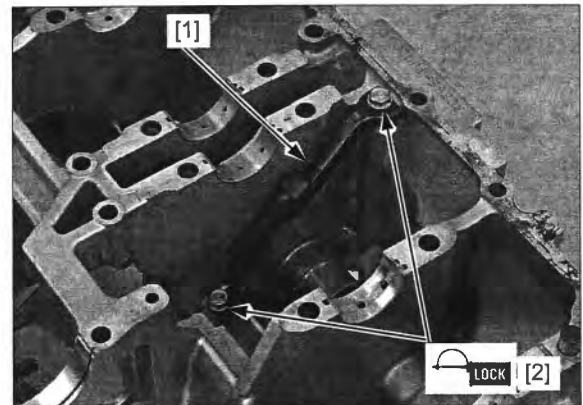
NOTICE

Do not interchange the bearing inserts. They must be installed in their original locations or the correct bearing oil clearance may not be obtained, resulting in engine damage.



Install the oil pump drive chain guide [1] into the lower crankcase.

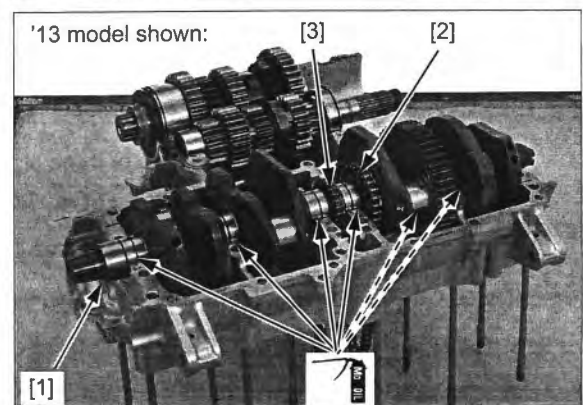
Apply locking agent to the bolt threads and tighten the bolts [2] securely.



Apply molybdenum oil solution to the main journal sliding surfaces on the crankshaft [1].

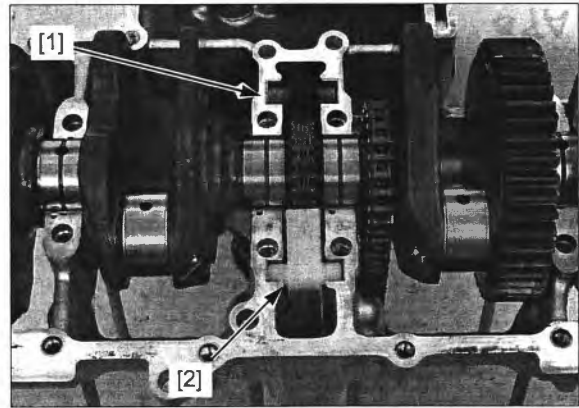
Install the oil pump drive chain [2] and cam chain [3] onto the crankshaft.

Install the crankshaft onto the upper crankcase.



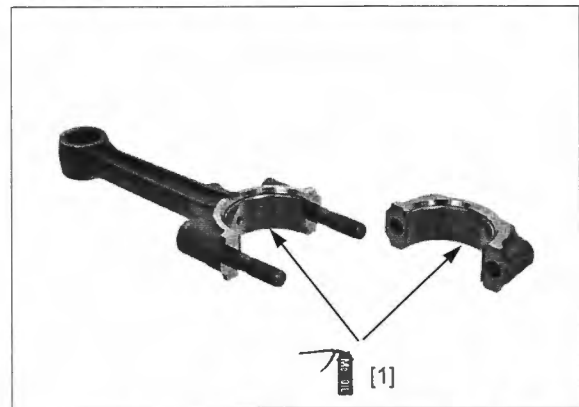
CRANKSHAFT/TRANSMISSION/BALANCER

Install the cam chain tensioner [1] and cam chain guide [2] into the upper crankcase grooves.

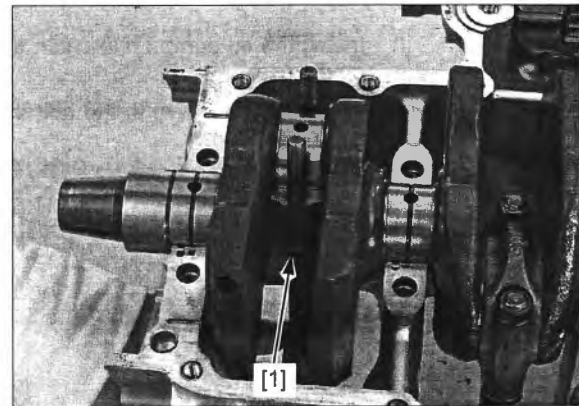


Do not allow the molybdenum oil solution to contact the connecting bolts and bearing cap nuts. The solution may not allow the correct tightening torque of the cap and nuts to be obtained.

Apply molybdenum oil solution to the crankpin bearing [1] sliding surfaces on the connecting rods.



Install the connecting rod [1] from the cylinder side with its piston oil jet facing the intake side.

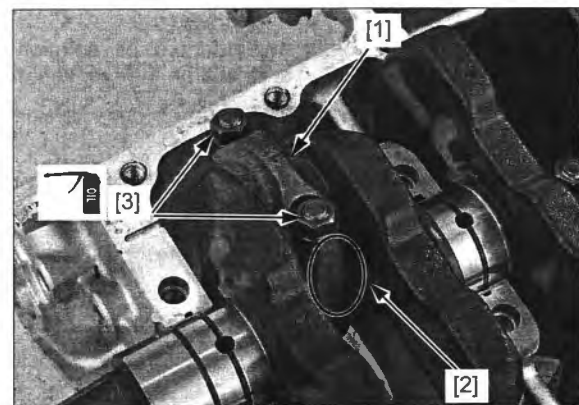


Install the bearing cap [1] by aligning the I.D. code [2] on the connecting rod and bearing cap. Be sure each part is installed in its original position, as noted during removal.

Apply engine oil to the bearing cap nut threads and seating surfaces and install the cap nuts [3]. Tighten the nut in two or three steps and torque them.

TORQUE: 41 N·m (4.2 kgf·m, 30 lbf·ft)

Assemble the crankcase halves (page 11-31).



MAIN JOURNAL BEARING

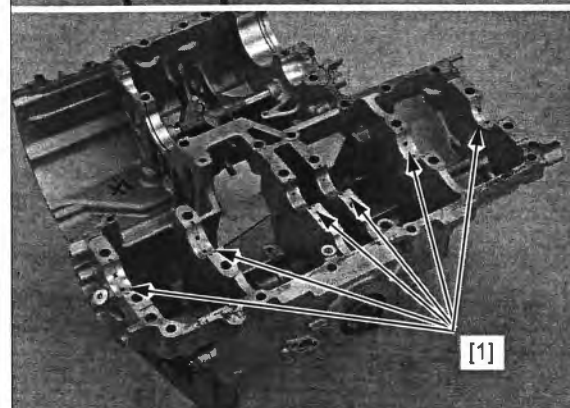
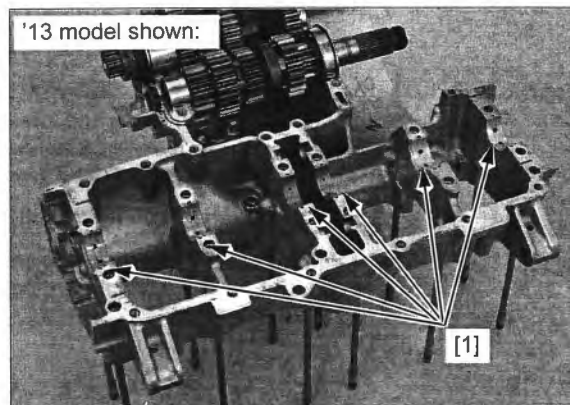
NOTICE

Do not interchange the bearing inserts. They must be installed in their original locations or the correct bearing oil clearance may not be obtained, resulting in engine damage.

Remove the crankshaft and connecting rod (page 11-8).

BEARING INSPECTION

Inspect the main journal bearing [1] inserts on the upper and lower crankcase for unusual wear or peeling. Check the bearing tabs for damage.



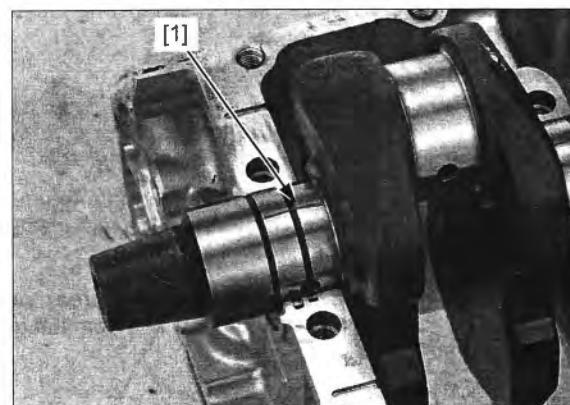
OIL CLEARANCE INSPECTION

Do not rotate the crankshaft during inspection.

Clean off any oil from the bearing inserts and main journals.

Install the crankshaft onto the upper crankcase.

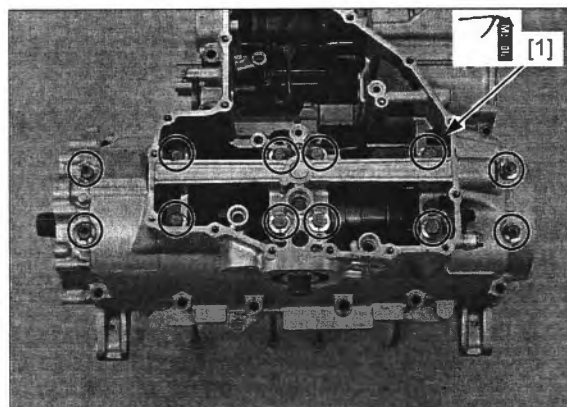
Put a strip of plastigauge [1] lengthwise on each main journal avoiding the oil hole.



CRANKSHAFT/TRANSMISSION/BALANCER

Install the dowel pins.
Carefully install the lower crankcase on the upper crankcase.
Clean any oil from the main journal 9 mm bolts [1] and apply molybdenum disulfide oil to the 9 mm bolt threads and seating surface.
Install and tighten the main journal 9 mm bolts in a crisscross pattern in two or three steps.

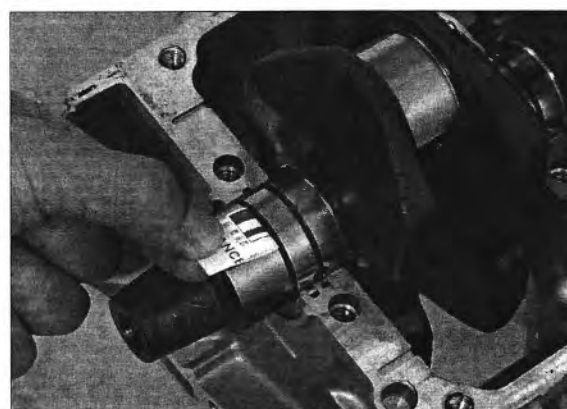
TORQUE: 33 N·m (3.4 kgf·m, 24 lbf·ft)



Remove the 9 mm bolts and lower crankcase.
Measure the compressed plastigauge at its widest point on each main journal to determine the oil clearance.

SERVICE LIMIT: 0.08 mm (0.003 in)

If main bearing clearance exceeds the service limit, select the correct replacement bearings.

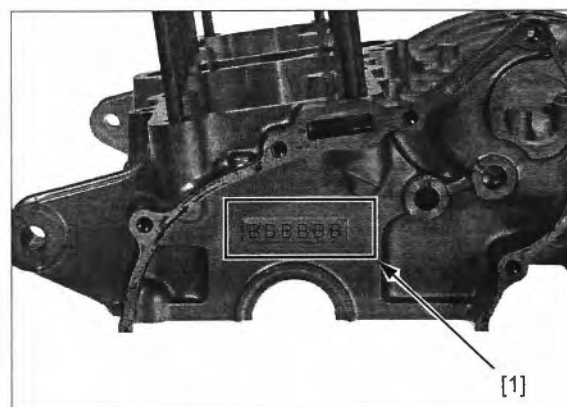


BEARING SELECTION

Record the crankcase bearing support I.D. code letters from the pad on the left side of the upper crankcase as shown.

NOTE:

Letters (A, B, or C) on the left side of upper crankcase are the codes for the bearing support I.D.s from left to right.

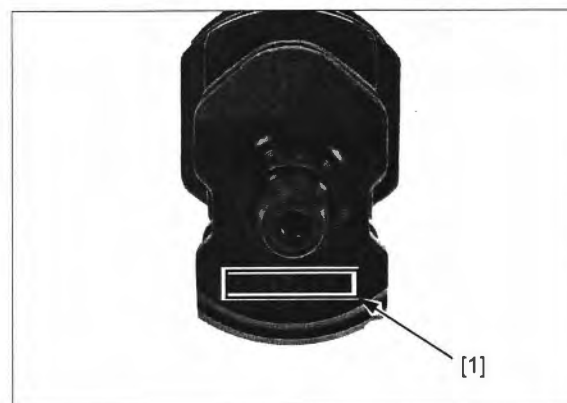


Record the corresponding main journal O.D. code numbers from the crank weight.

Cross reference the main journal and bearing support codes to determine the replacement bearing color code.

NOTE:

Numbers (1 or 2) on the crank weight are the codes for the main journal O.D.s from left to right.



MAIN JOURNAL BEARING SELECTION TABLE:

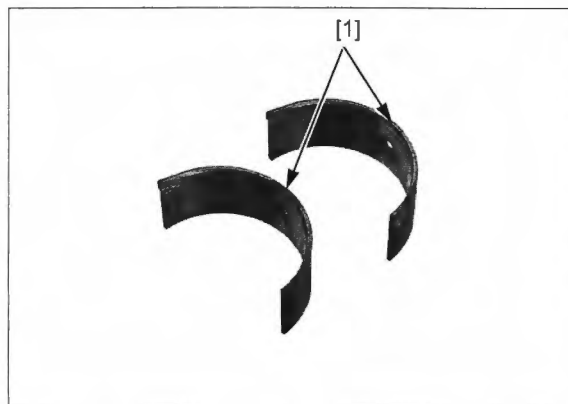
			BEARING SUPPORT I.D. CODE		
			A	B	C
			39.000 – 39.007 mm (1.5354 – 1.5357 in)	39.008 – 39.015 mm (1.5357 – 1.5360 in)	39.016 – 39.024 mm (1.5361 – 1.5364 in)
MAIN JOURNAL O.D. CODE	1	35.992 – 36.000 mm (1.4170 – 1.4173 in)	Pink	Yellow	Green
	2	35.984 – 35.991 mm (1.4167 – 1.4170 in)	Yellow	Green	Brown

BEARING THICKNESS:

Brown: Thick
 Green: ↑
 Yellow: ↓
 Pink: Thin

NOTICE

After selecting new bearings, recheck the clearance with plastigauge. Incorrect clearance can cause severe engine damage.

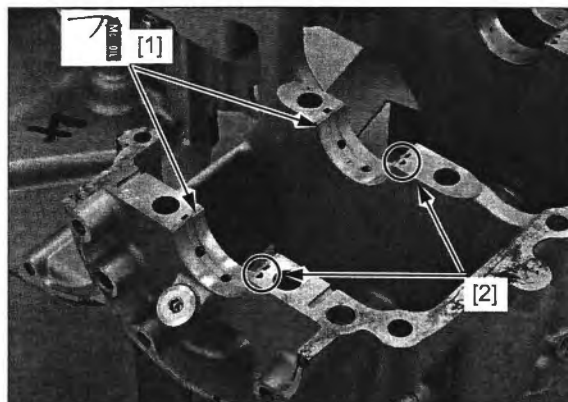


BEARING INSTALLATION

Clean the bearing outer surfaces and crankcase bearing supports.

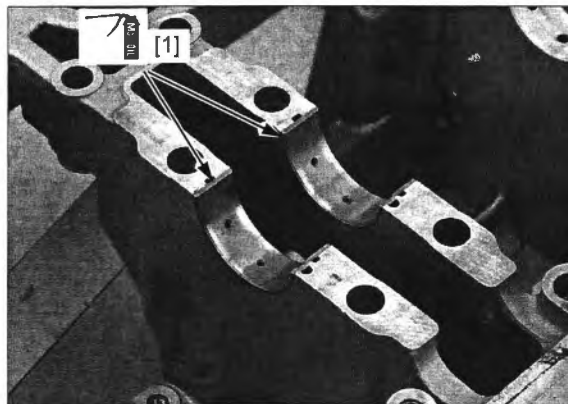
Install the main journal bearing [1] inserts (with groove) onto the side crankcase bearing supports, aligning each tab [2] with each groove.

Apply molybdenum oil solution to the main journal bearing sliding surfaces.



Install the main journal bearing [1] inserts (non-groove) onto the center crankcase bearing supports, aligning each tab with each groove.

Apply molybdenum oil solution to the main journal bearing sliding surfaces.



CRANKPIN BEARING

NOTICE

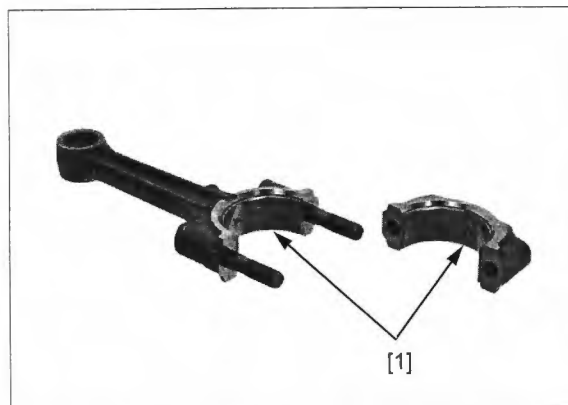
Do not interchange the bearing inserts. They must be installed in their original locations or the correct bearing oil clearance may not be obtained, resulting in engine damage.

Remove the crankshaft and connecting rod (page 11-8).

BEARING INSPECTION

Check the bearing [1] inserts for unusual wear or peeling.

Check the bearing tabs for damage.

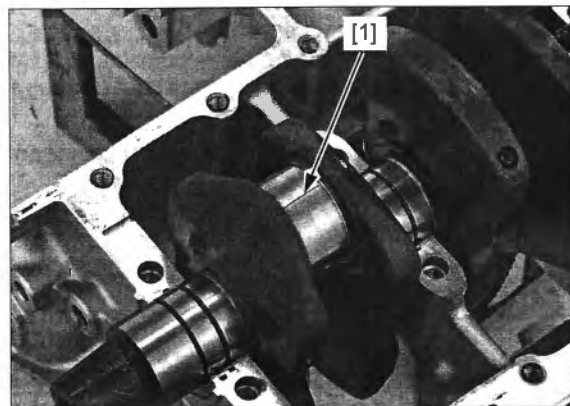


OIL CLEARANCE INSPECTION

Clean off any oil from the bearing inserts and crankpin. Carefully install the crankshaft onto the upper crankcase.

Put a strip of plastigauge [1] lengthwise on the crankpin avoiding the oil hole.

Set the connecting rod onto the crankpin.

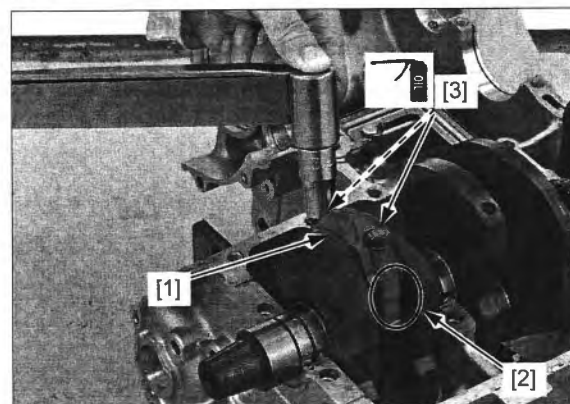


Carefully install the bearing caps [1] by aligning the I.D. code [2].

Apply engine oil to the connecting rod bearing cap nut [3] threads and seating surfaces and install them.

Tighten the cap nuts in two or three steps.

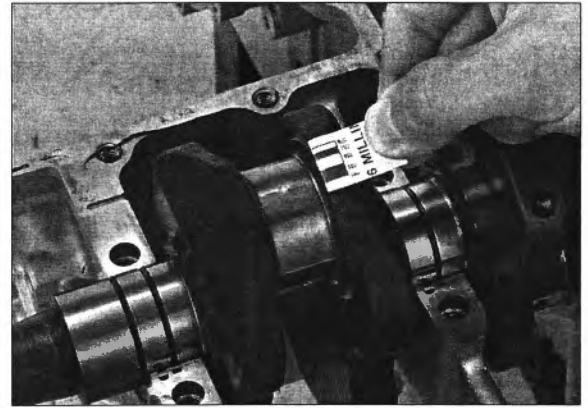
TORQUE: 41 N·m (4.2 kgf·m, 30 lbf·ft)



Remove the nuts and bearing cap.
Measure the compressed plastigauge at its widest point on the crankpin to determine the oil clearance.

SERVICE LIMIT: 0.08 mm (0.003 in)

If the oil clearance exceeds the service limit, select the correct replacement bearings.

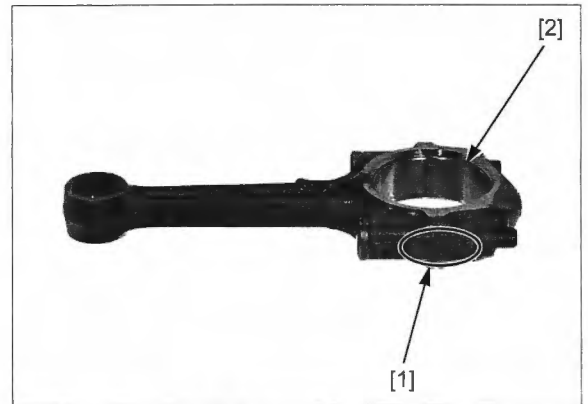


BEARING SELECTION

Record the connecting rod I.D. code number (1 or 2) [1] or measure the I.D. with the bearing cap installed without bearing [2] inserts.

NOTE:

Numbers (1 or 2) on the connecting rods are the codes for the connecting rod I.D.



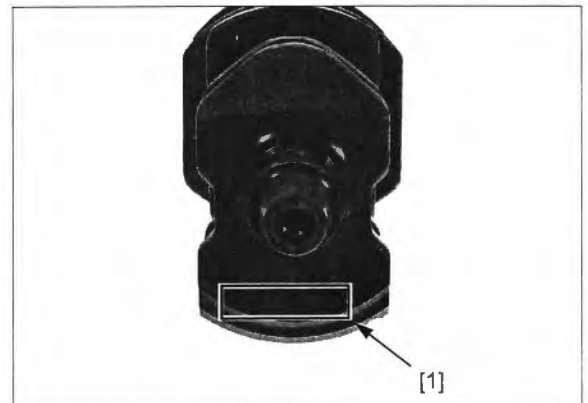
If you are replacing the crankshaft, record the corresponding crankpin O.D. code number (A or B) [1].

NOTE:

Letters (A or B) on the crank weight are the codes for the crankpin O.D.s from left to right.

If you are reusing the crankshaft, measure the crankpin O.D. with the micrometer.

Cross-reference the crankpin and rod codes to determine the replacement bearing color.



CRANKPIN BEARING SELECTION TABLE:

			Connecting ROD I.D. CODE	
			1	2
			43.000 – 43.007 mm (1.6929 – 1.6932 in)	43.008 – 43.016 mm (1.6932 – 1.6935 in)
CRANK PIN O.D. CODE	A	39.995 – 40.003 mm (1.5746 – 1.5749 in)	C (Yellow)	B (Green)
	B	39.987 – 39.994 mm (1.5743 – 1.5746 in)	B (Green)	A (Brown)

CRANKSHAFT/TRANSMISSION/BALANCER

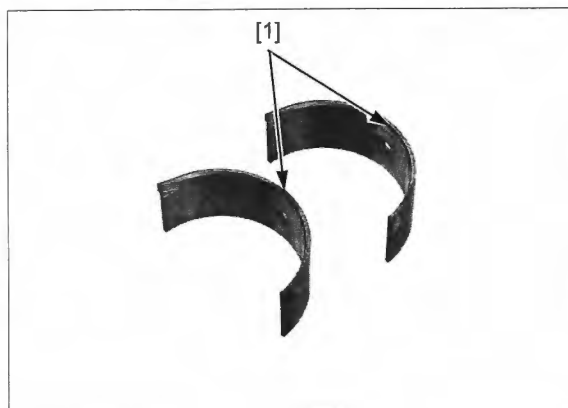
Bearing insert has a color code [1] to identify its thickness.

BEARING THICKNESS:

A (Brown): Thick
B (Green): ↓
C (Yellow): Thin

NOTICE

After selecting new bearings, recheck the clearance with plastigauge. Incorrect clearance can cause severe engine damage.

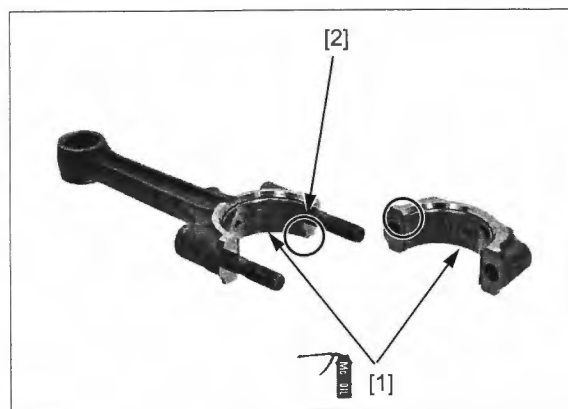


BEARING INSTALLATION

Clean the bearing outer surfaces, bearing cap and connecting rod.

Install the crankpin bearing [1] inserts onto the bearing cap and connecting rod, aligning each tab [2] with each groove.

Apply molybdenum oil solution to the crankpin bearing sliding surfaces.



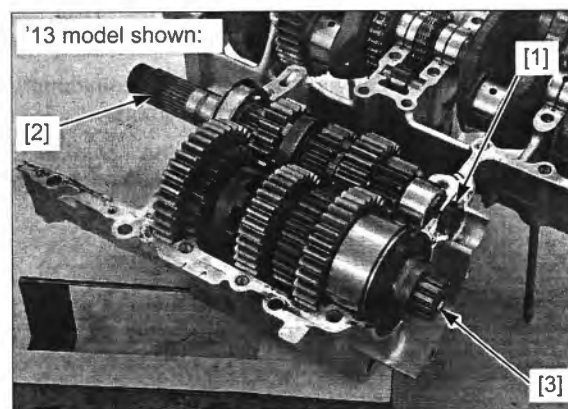
TRANSMISSION

REMOVAL

Separate the crankcase halves (page 11-7).

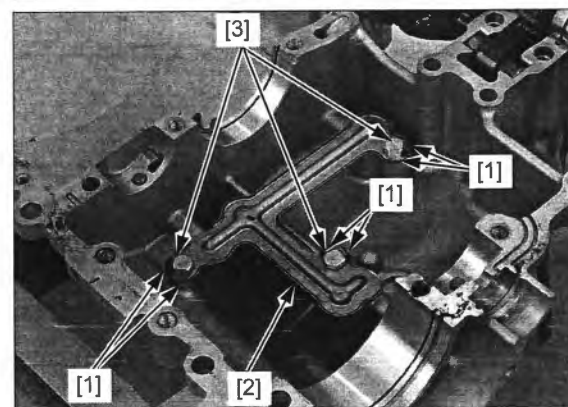
Remove the mainshaft oil seal [1].

Remove the mainshaft [2] and countershaft [3] assemblies.

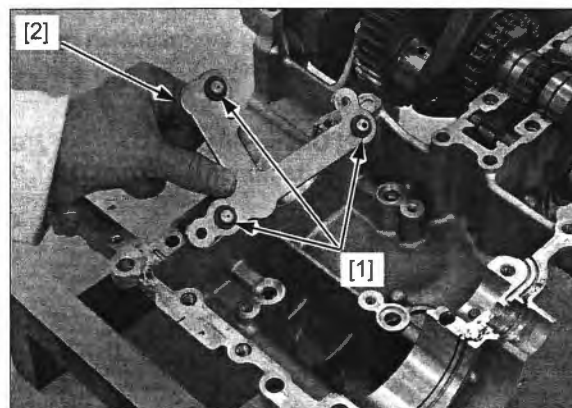


Bend the tabs [1] of the oil pass plate [2].

Remove the bolts [3] and oil pass plate

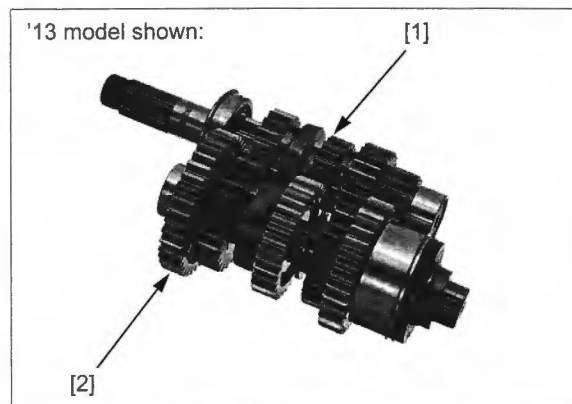


Remove the O-rings [1] from the oil pass plate [2].



DISASSEMBLY

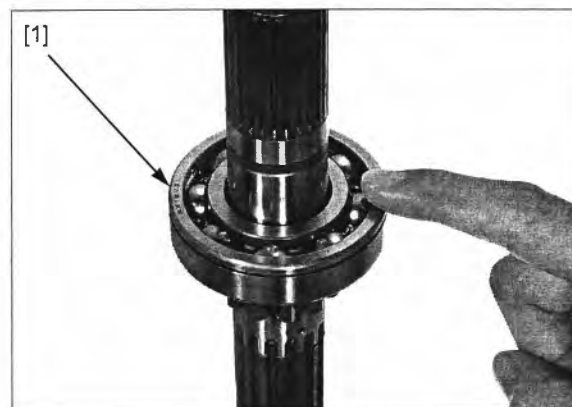
Disassemble the mainshaft [1] and countershaft [2].



Turn the outer race of each bearing with your finger. The bearings [1] should turn smoothly and quietly. Also check that the bearing inner race fits tightly on the shaft.

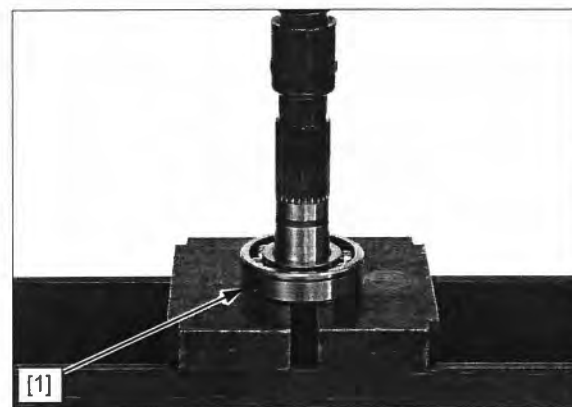
Remove and discard the mainshaft bearing if the race does not turn smoothly, quietly, or fits loosely on the mainshaft.

Replace the countershaft, collar, and bearing as an assembly if the race does not turn smoothly, quietly, or fits loosely on the countershaft.



MAINSHAFT BEARING REPLACEMENT

Press out the mainshaft from the bearing [1] using a hydraulic press.

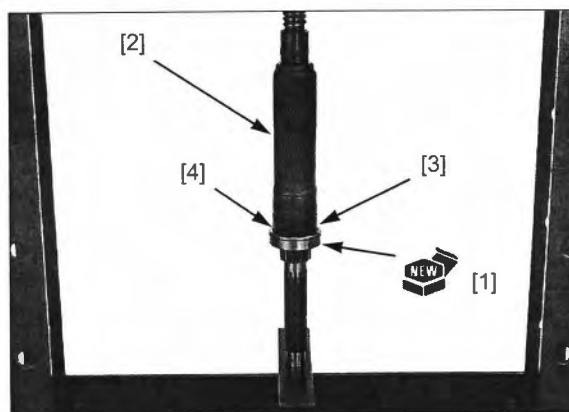


CRANKSHAFT/TRANSMISSION/BALANCER

Install with the marked side [4] facing up. Install a new mainshaft bearing [1] onto the mainshaft by pressing the mainshaft bearing inner race using the special tools.

TOOLS:

- [2] Driver, 40 mm I.D. 07746-0030100
[3] Attachment, 30 mm I.D. 07746-0030300



INSPECTION

Check the gear dogs, dog holes, and teeth for abnormal wear or lack of lubrication.

Measure the I.D. of each gear.

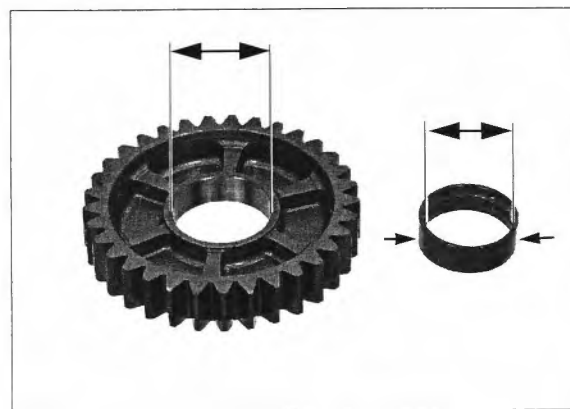
SERVICE LIMITS:

'13 model:

- M4, M5: 31.05 mm (1.222 in)
C1: 26.04 mm (1.025 in)
C2, C3: 33.05 mm (1.301 in)

After '13 model:

- M5, M6: 31.035 mm (1.2218 in)
C1: 26.04 mm (1.025 in)
C2, C3, C4: 33.035 mm (1.3006 in)



Measure the O.D. of each gear bushing.

SERVICE LIMITS:

'13 model:

- M4, M5: 30.93 mm (1.218 in)
C2: 32.93 mm (1.296 in)
C3: 32.93 mm (1.296 in)

After '13 model:

- M5: 30.93 mm (1.218 in)
M6: 30.94 mm (1.218 in)
C2, C3, C4: 32.93 mm (1.296 in)

Measure the I.D. of each gear bushing.

SERVICE LIMITS:

'13 model:

- M4: 28.04 mm (1.104 in)
C2: 30.02 mm (1.182 in)

After '13 model:

- M5: 28.03 mm (1.104 in)
C2: 30.02 mm (1.182 in)

Calculate the gear-to-bushing clearance.

SERVICE LIMITS:

'13 model:

- M4, M5: 0.11 mm (0.004 in)
C2: 0.11 mm (0.004 in)
C3: 0.11 mm (0.004 in)

After '13 model:

- M5: 0.11 mm (0.004 in)
M6: 0.095 mm (0.0037 in)
C2: 0.11 mm (0.004 in)
C3: 0.095 mm (0.0037 in)

Check the gear shifter groove for abnormal wear or damage.

Check the mainshaft and countershaft for abnormal wear or damage.

'13 model: Measure the mainshaft O.D. at the M4 gear.

SERVICE LIMIT: 27.97 mm (1.101 in)

After '13 model: Measure the mainshaft O.D. at the M5 gear.

SERVICE LIMIT: 27.957 mm (1.1007 in)

Measure the countershaft O.D. at the C2 gear.

SERVICE LIMIT: 29.94 mm (1.179 in)

Calculate the gear bushing-to-shaft clearance.

SERVICE LIMITS:

'13 model:

M4: 0.08 mm (0.003 in)

C2: 0.10 mm (0.004 in)

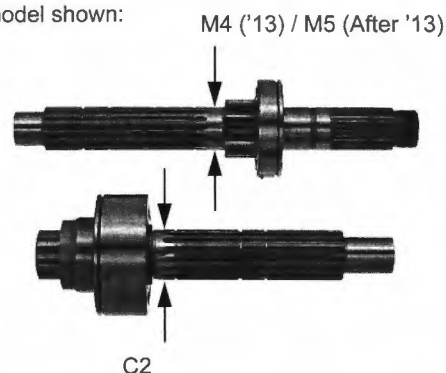
After '13 model:

M5: 0.06 mm (0.002 in)

C2: 0.10 mm (0.004 in)

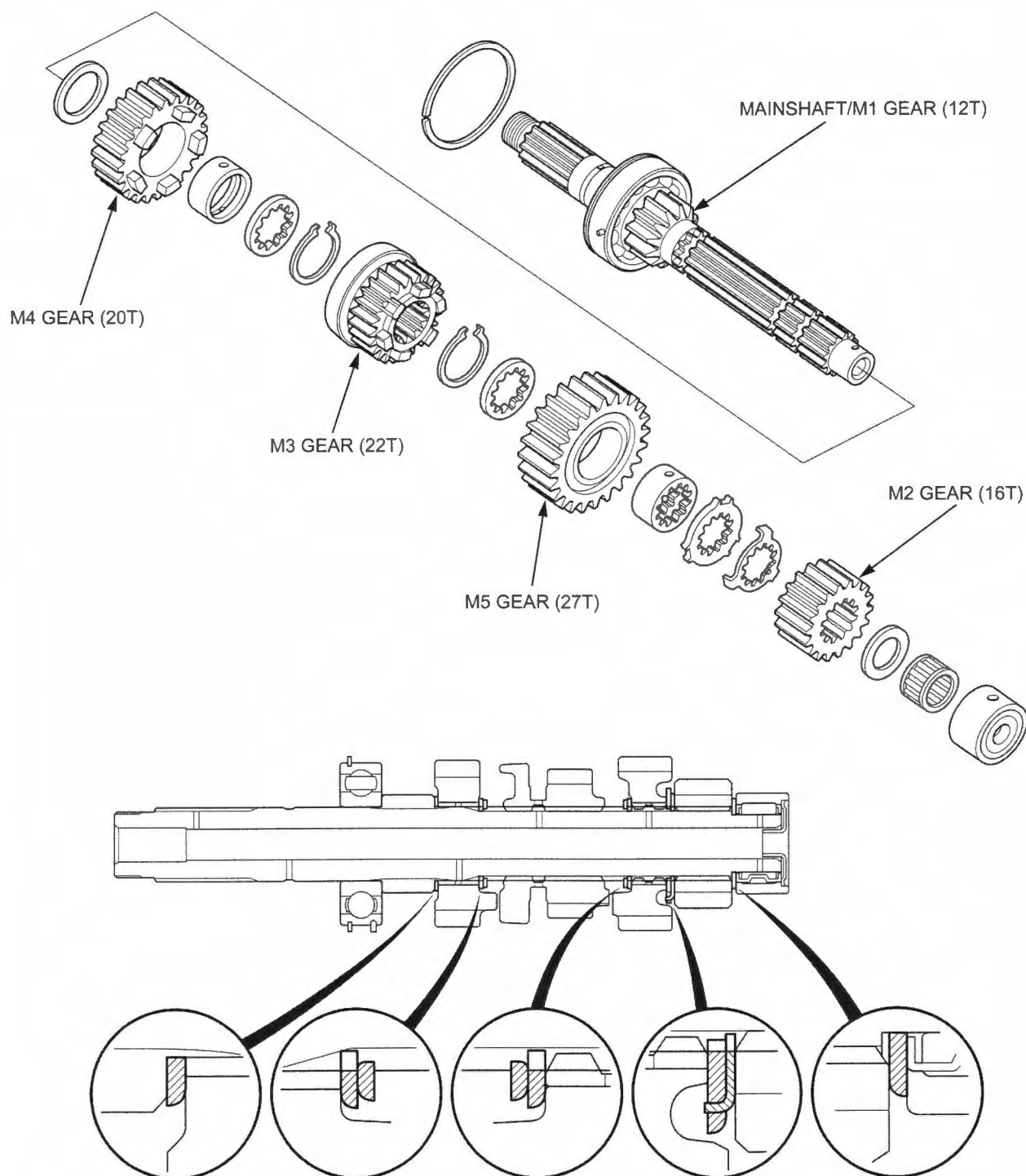
Check the needle bearing for wear or damage, replace if necessary.

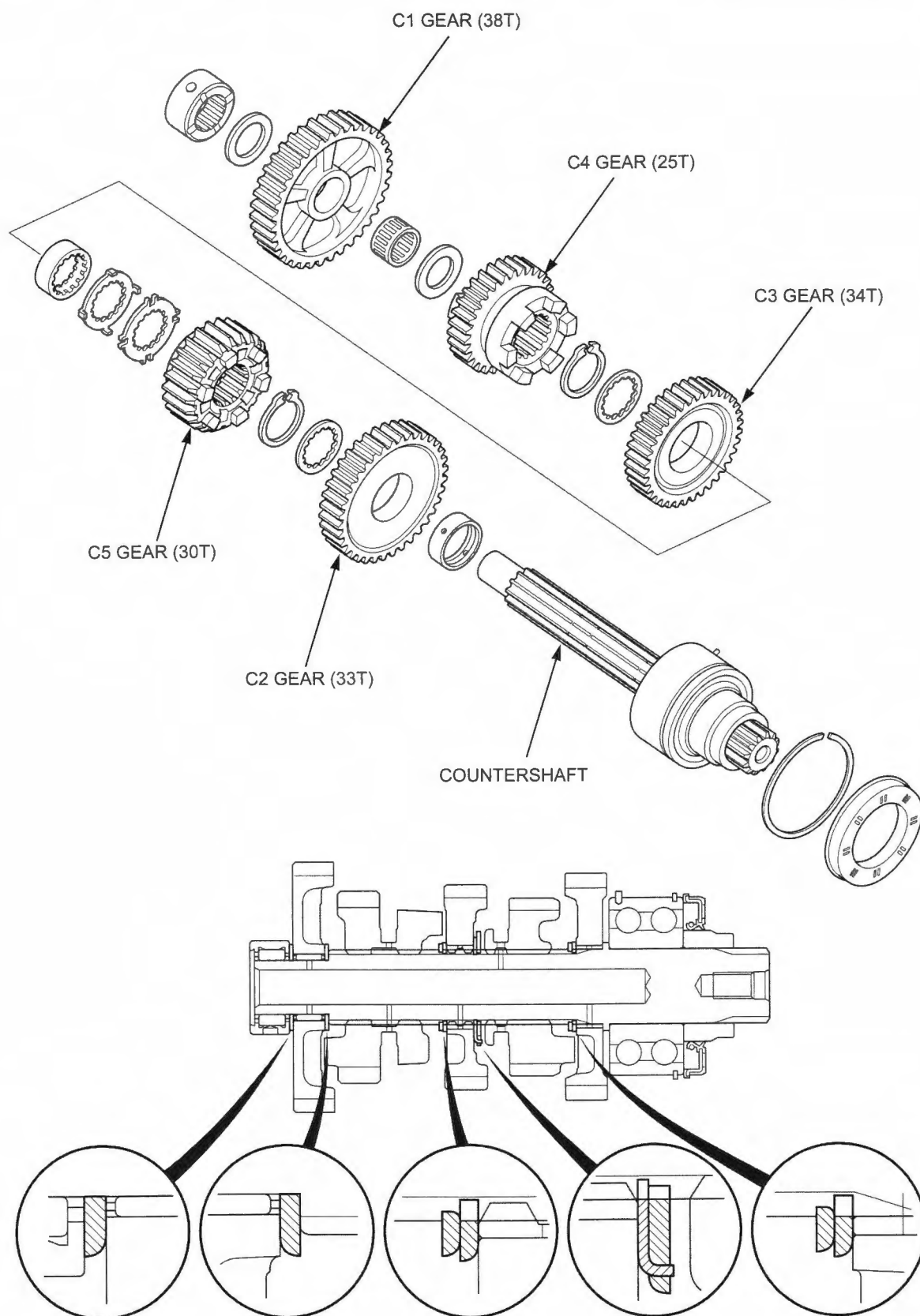
'13 model shown:



CRANKSHAFT/TRANSMISSION/BALANCER ASSEMBLY

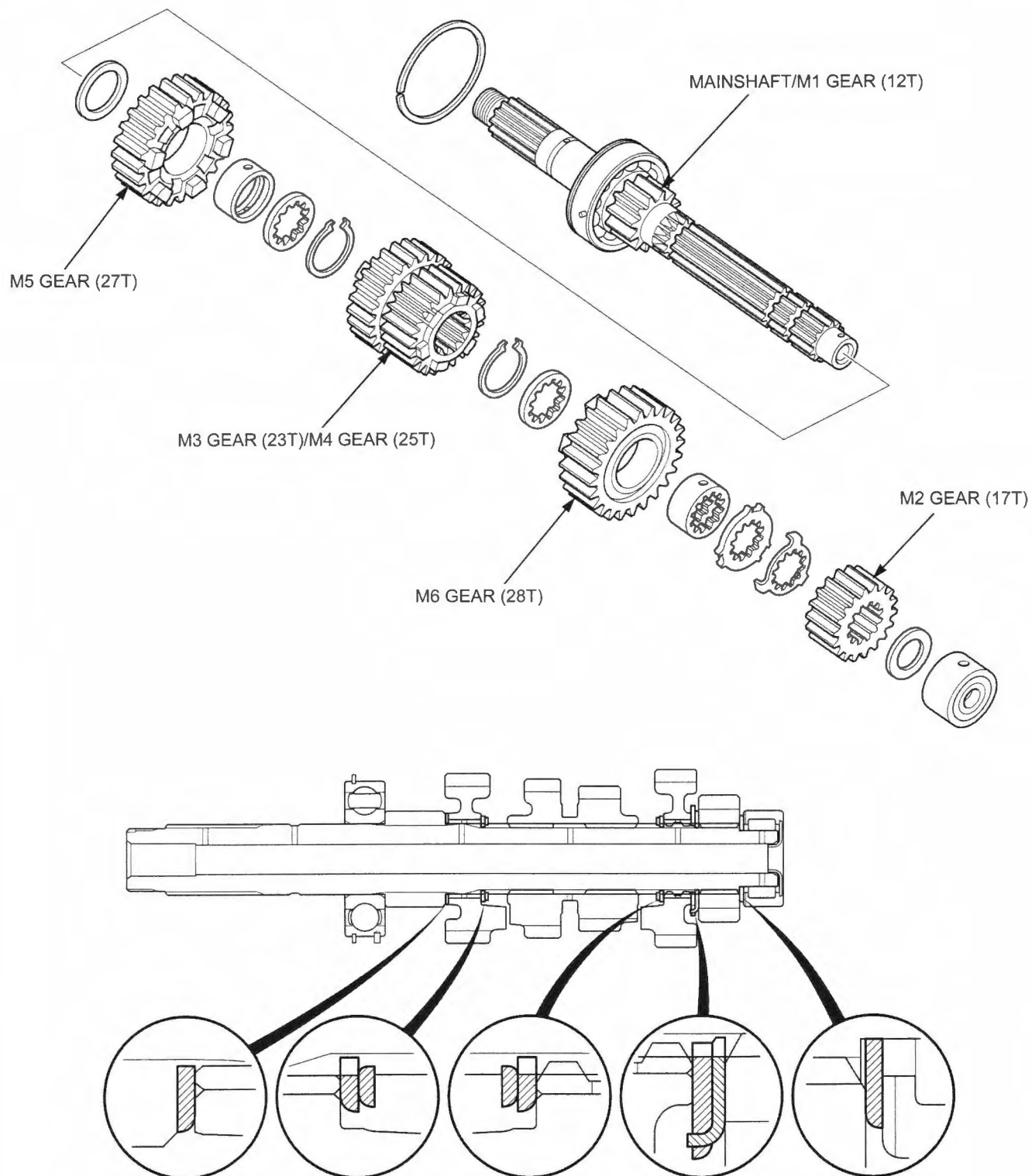
'13 model:

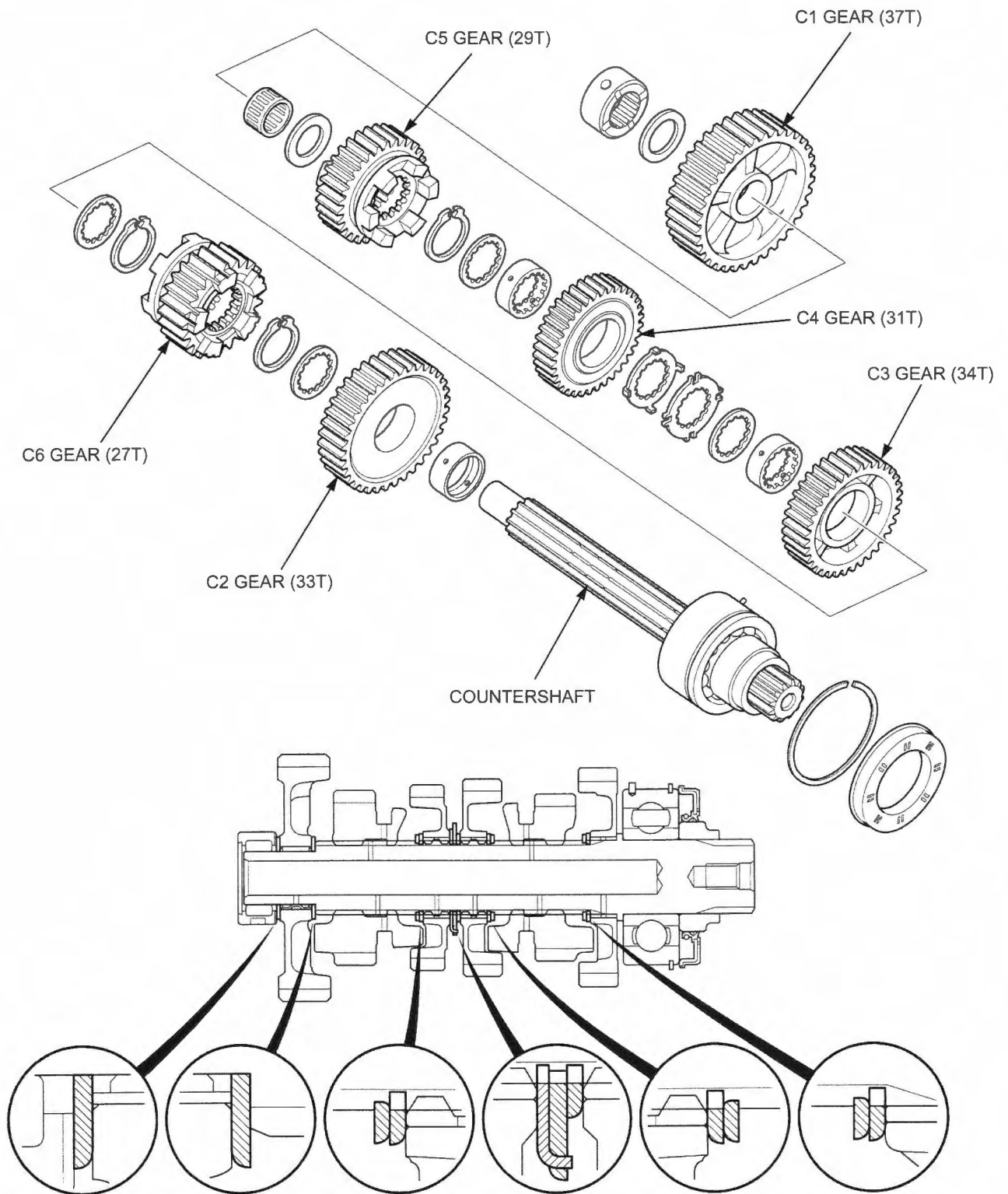




CRANKSHAFT/TRANSMISSION/BALANCER

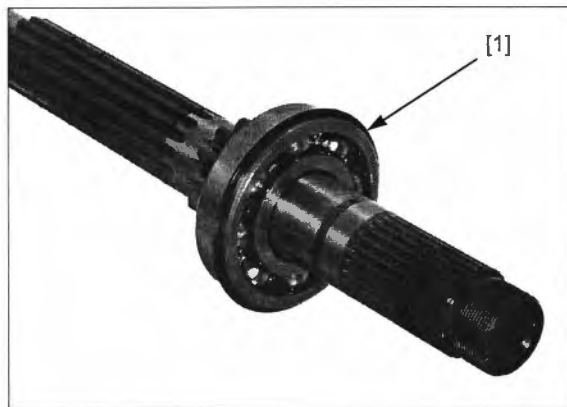
After '13 model:



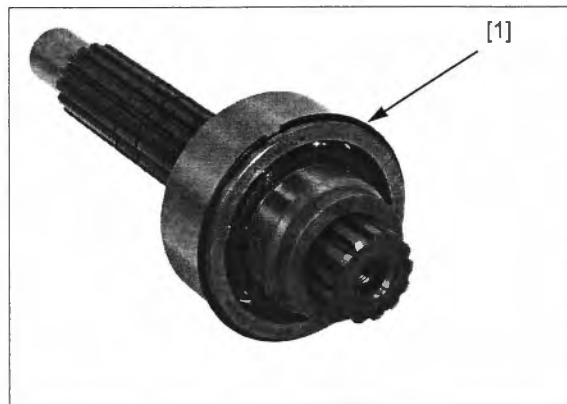


CRANKSHAFT/TRANSMISSION/BALANCER

Install the stop ring [1] into the groove of the mainshaft bearing.



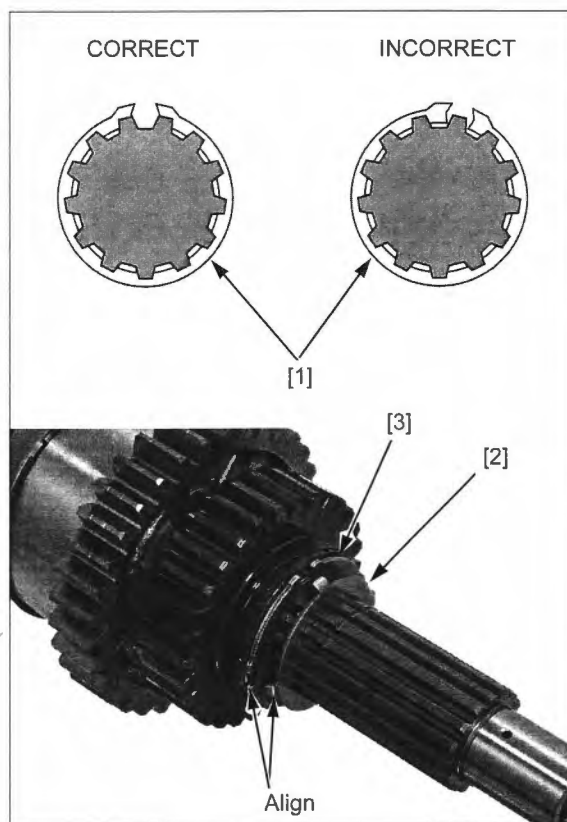
Install the stop ring [1] into the groove of the countershaft bearing.



Coat each gear with clean engine oil and check for smooth movement.

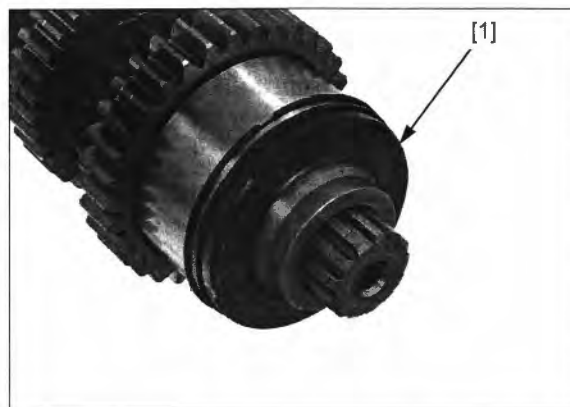
Assemble the transmission gear and shafts.

- Always install the thrust washer and snap ring [1] with the chamfered (rolled) edge facing away from the thrust load.
- Do not reuse worn snap rings which could easily spin in the groove.
- Install the snap ring so that its end gap aligns with the groove in the splines.
- Make sure that the snap ring is fully seated in the shaft groove after installing it.
- Align the lock washer [2] tabs with the spline washer [3] grooves.



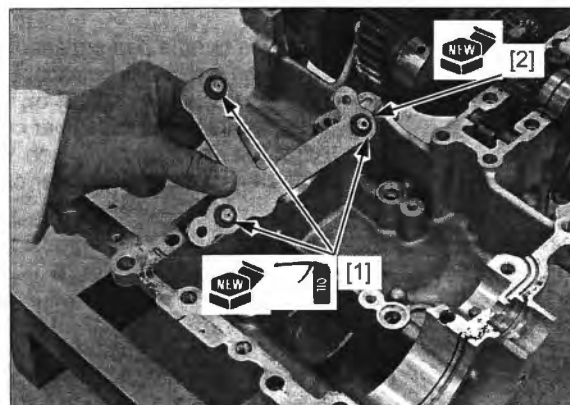
Check the countershaft oil seal [1] for wear or damage, replace if necessary.

Install the countershaft oil seal.



INSTALLATION

Apply engine oil to the new O-rings [1] and install them onto a new oil pass plate [2].



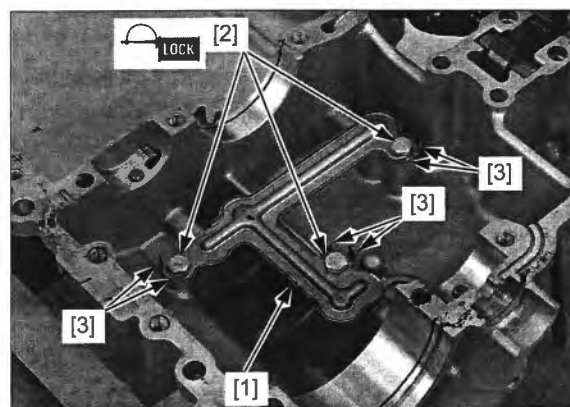
Install the oil pass plate [1] onto the upper crankcase.

Clean and apply a locking agent the oil pass plate mounting bolt [2] threads.

Install and tighten the oil pass plate mounting bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

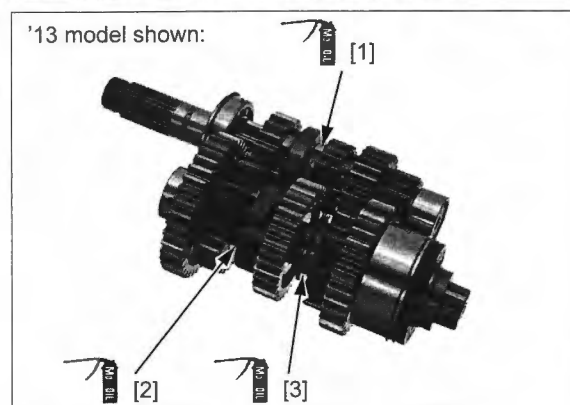
Bend the tabs [3] of the oil pass plate against the mounting bolts.



'13 model: Apply molybdenum oil solution to the shift fork grooves in the M3 [1], C4 [2] and C5 gear [3].

After '13 model: Apply molybdenum oil solution to the shift fork grooves in the M3/M4 [1], C6 [2] and C5 gear [3].

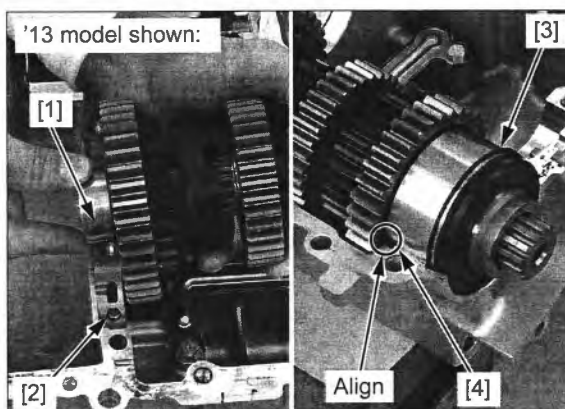
'13 model shown:



CRANKSHAFT/TRANSMISSION/BALANCER

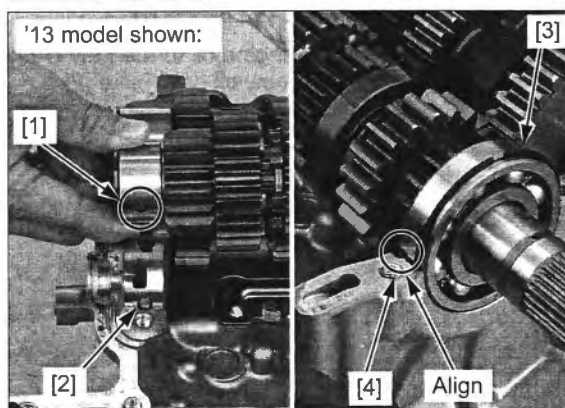
Install the countershaft assembly onto the upper crankcase.

- Align the needle bearing case hole [1] with the dowel pin [2] on the upper crankcase.
- Align the stopper ring [3] on the countershaft bearing with the groove of the upper crankcase.
- Align the stopper pin [4] on the countershaft bearing with the groove of the upper crankcase.



Install the mainshaft assembly onto the upper crankcase.

- Align the needle bearing case hole [1] with the dowel pin [2] on the upper crankcase.
- Align the stopper ring [3] on the mainshaft bearing with the groove of the upper crankcase.
- Align the stopper pin [4] on the mainshaft bearing with the groove of the upper crankcase.

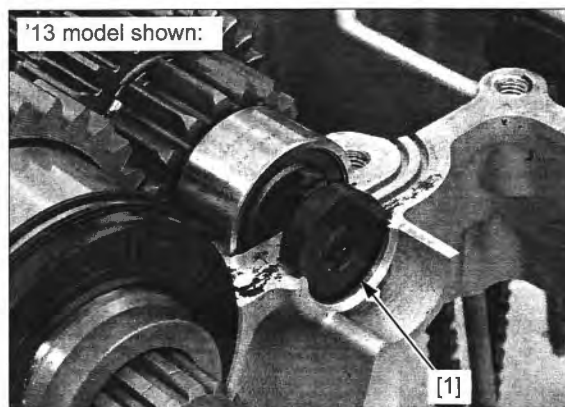


Check the mainshaft oil seal [1] for deterioration or damage.

Replace the mainshaft oil seal if necessary.

Install the mainshaft oil seal onto the upper crankcase.

Assemble the crankcase (page 11-31).

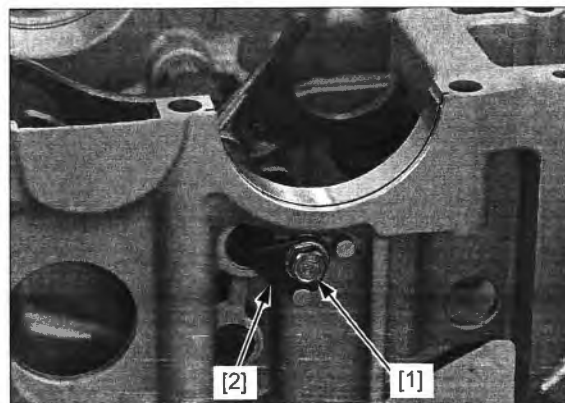


SHIFT FORK/SHIFT DRUM

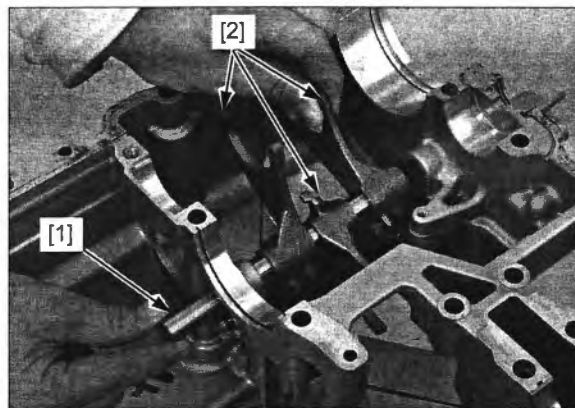
REMOVAL

Separate the crankcase halves (page 11-7).

Remove the bolt [1] and shift fork shaft stopper plate [2].

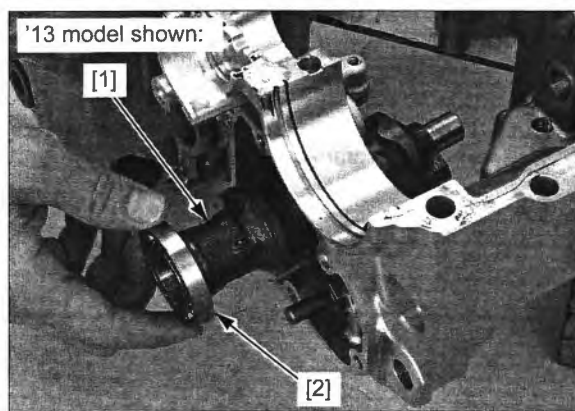


Remove the shift fork shaft [1] and shift forks [2].



'13 model: Remove the shift drum [1] and bearing [2] as an assembly.

After '13 model: Remove the shift drum, shift drum center, bearing, and gear position switch drive shaft as an assembly.



INSPECTION

Inspect the shift drum [1] guide grooves for abnormal wear or damage.

Turn the outer race of the shift drum bearing [2] with your finger.

The bearing should turn smoothly and freely without excessive play.

'13 model: If necessary replace the bearing.

After '13 model: If necessary, replace the shift drum assembly.

NOTE:

After '13 model: The shift drum, shift drum center, bearing and gear position switch drive shaft are an assembly parts. Replace them as an assembly if necessary.

Check the shift fork guide pin for abnormal wear or damage.

Measure the shift fork I.D.

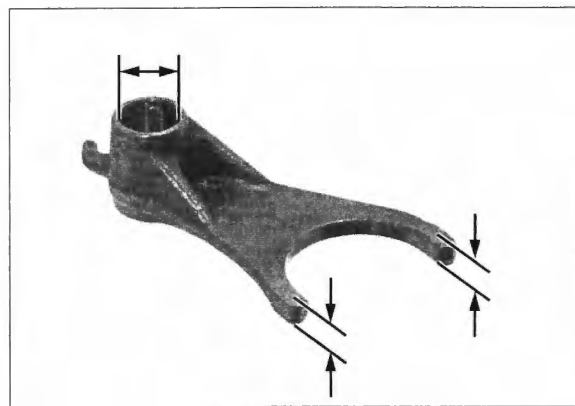
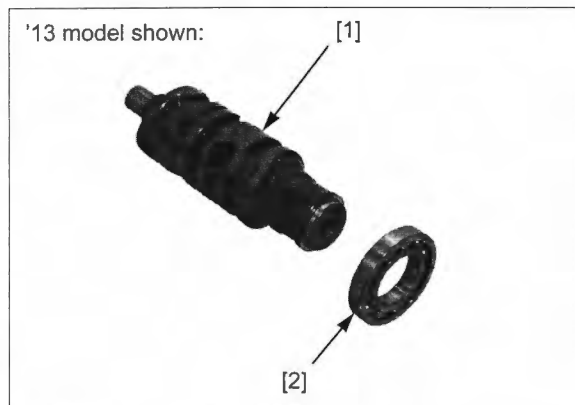
SERVICE LIMIT: 14.04 mm (0.553 in)

Measure the shift fork claw thickness.

SERVICE LIMITS:

'13 model: 5.9 mm (0.23 in)

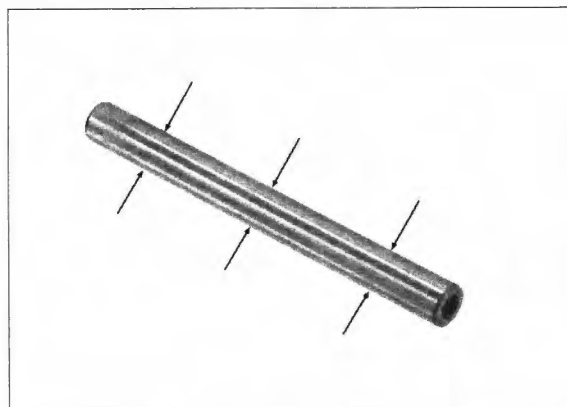
After '13 model: 5.83 mm (0.230 in)



CRANKSHAFT/TRANSMISSION/BALANCER

Measure the shift fork shaft O.D.

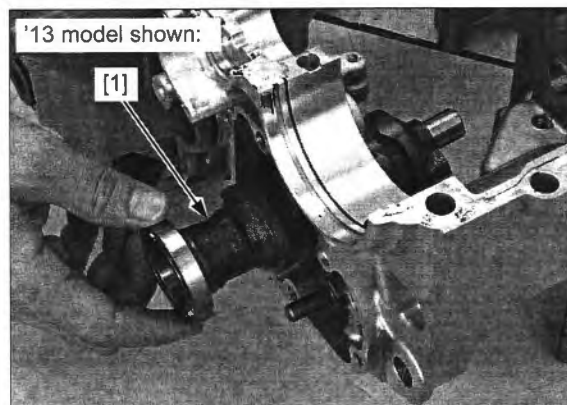
SERVICE LIMIT: 13.90 mm (0.547 in)



INSTALLATION

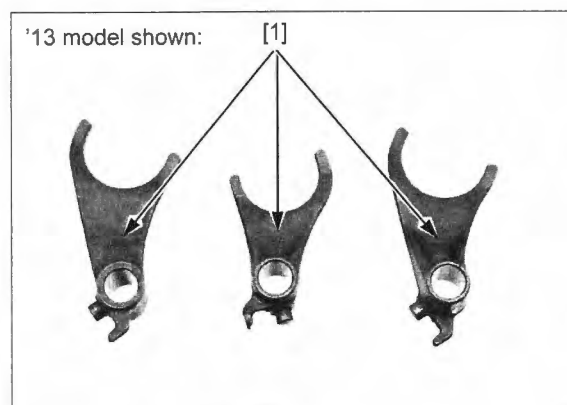
'13 model: Install the shift drum/bearing assembly [1] into the lower crankcase.

After '13 model: Install the shift drum assembly [1] into the lower crankcase.



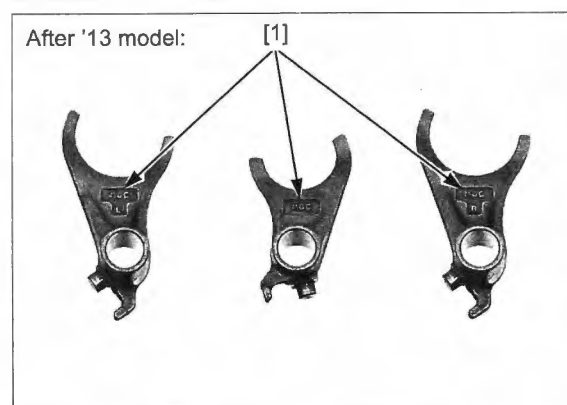
'13 model: The shift forks have identification marks [1]:

- "R" for right
- "C" for center
- "L" for left

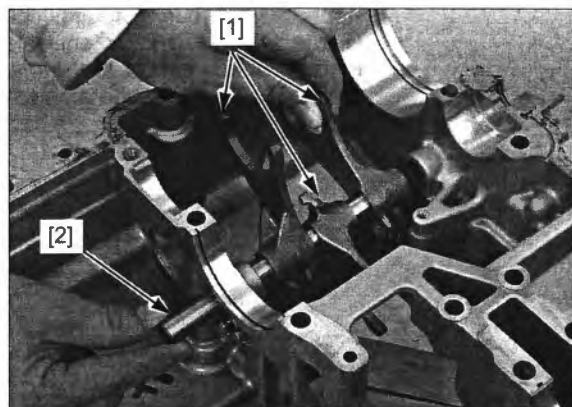


After '13 model: The shift forks have identification marks [1]:

- "MGC R" for right
- "MGC" for center
- "MGC L" for left



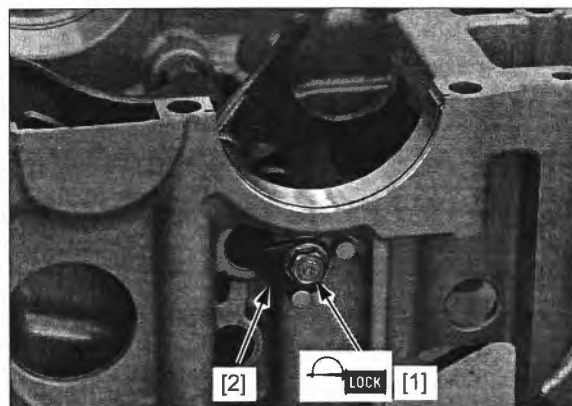
Install the shift forks [1] into the shift drum guide groove with the identification marks facing toward the right side of the engine and insert the fork shaft [2].



Apply a locking agent to the threads of the shift fork shaft stopper plate bolt [1]. Install the stopper plate [2], tighten the bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

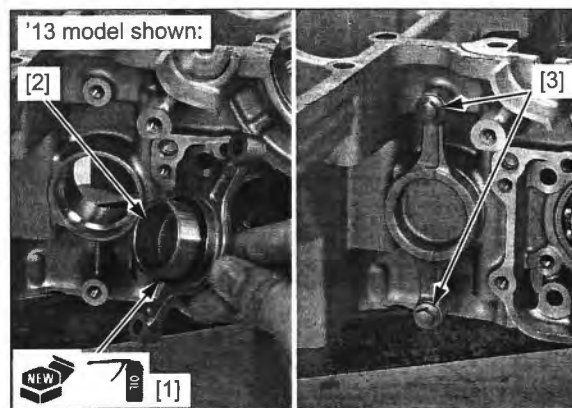
Assemble the crankcase halves (page 11-27).



CRANKCASE ASSEMBLY

Apply engine oil to a new O-ring [1] and install it to the left middle cover [2].

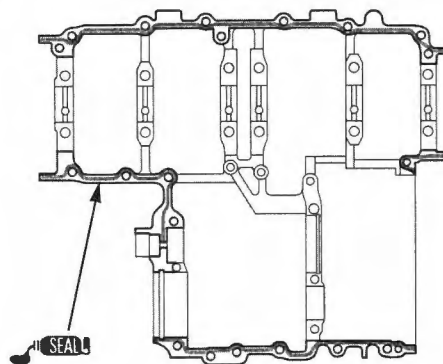
Install the left middle cover to lower crankcase. Install the left middle cover mount bolts [3] and tighten them securely.



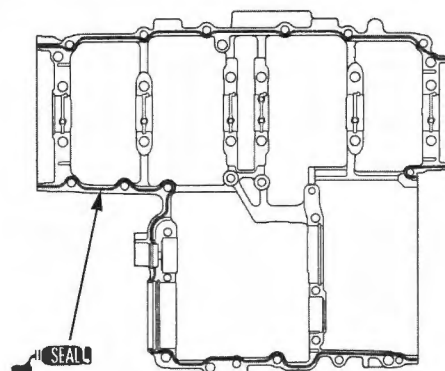
CRANKSHAFT/TRANSMISSION/BALANCER

Apply a light, but thorough, coating of liquid sealant (Three Bond 1207B or equivalent) to the crankcase mating surface except to the main bearing journal bolt area and the oil passage area as shown.

'13 model:

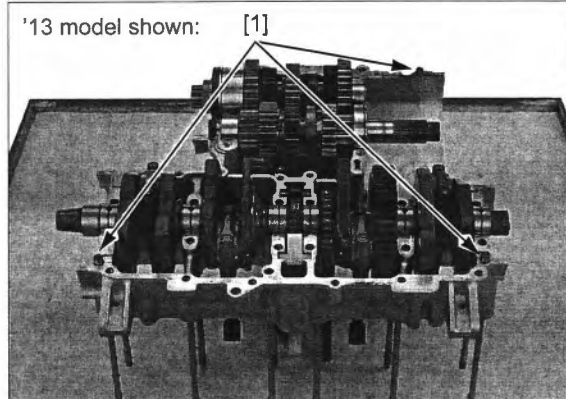


After '13 model:



Install the three dowel pins [1].

'13 model shown:

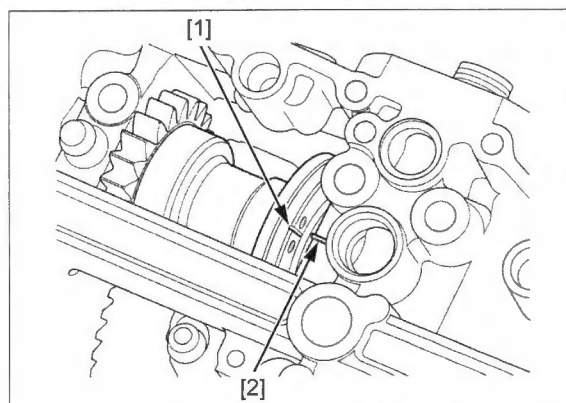


Make sure the No. 1 and No. 4 pistons are at TDC (Top Dead Center).

Align the balancer weight index mark [1] with the lower crankcase index line [2].

Make sure the balancer index mark is aligned on the lower crankcase index line.

Install the lower crankcase onto the upper crankcase while aligning the C4, C5, and M3 gear shifter groove ('13 model) or C5, C6, and M3/M4 gear shifter groove (After '13 model) with the shift fork.



The sealing washer locations are indicated on the lower crankcase using the "△" mark.

Clean any oil from the main journal 9 mm bolts [1] and apply molybdenum disulfide oil to the 9 mm bolt threads and seating surface and install them.

Install the 8 mm bolts [2], new sealing washer [3], and 6 mm bolts [4].

Make sure the upper and lower crankcase are seated securely.

From the inside to outside, tighten the lower crankcase 9 mm bolts (main journal bolts) in a crisscross pattern in two or three steps.

TORQUE: 33 N·m (3.4 kgf·m, 24 lbf·ft)

Tighten the 8 mm bolts to the specified torque in a crisscross pattern in two or three steps.

TORQUE: 24 N·m (2.4 kgf·m, 18 lbf·ft)

Tighten 6 mm bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

The sealing washer locations are indicated on the upper crankcase using the "△" mark.

Install the upper crankcase 10 mm bolt [1] and 8 mm bolts [2] with new sealing washers [3].

Tighten the 10 mm bolt to the specified torque.

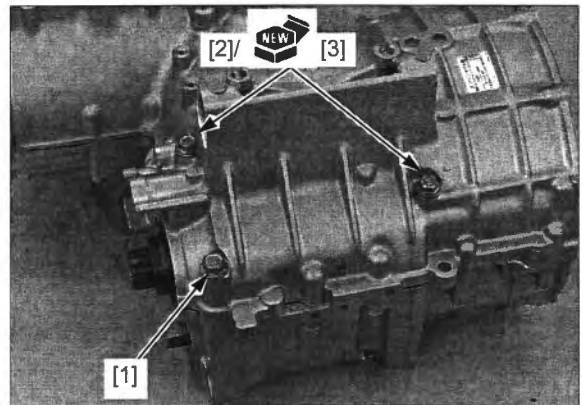
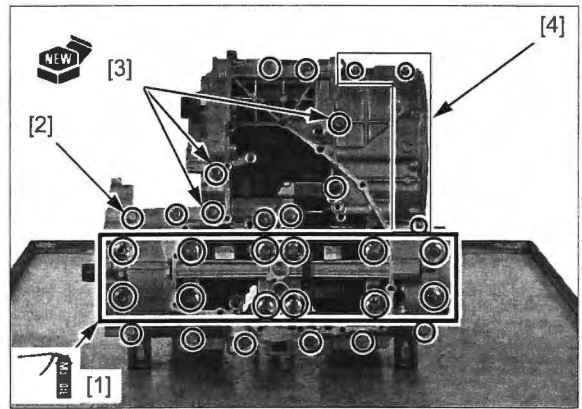
TORQUE: 39 N·m (4.0 kgf·m, 29 lbf·ft)

Tighten the 8 mm bolts alternately.

TORQUE: 24 N·m (2.4 kgf·m, 18 lbf·ft)

Install the removed parts in the reverse order of removal (page 11-4).

Install the engine in the frame (page 6-9).



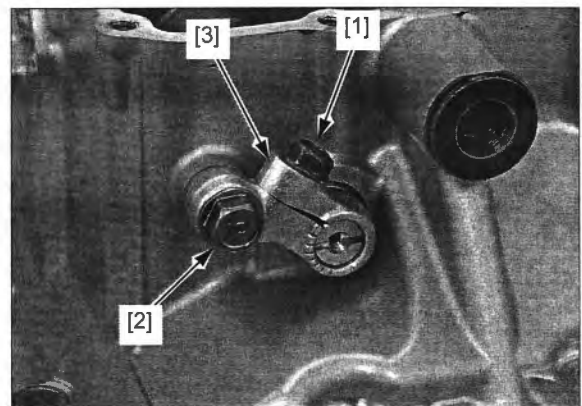
BALANCER

REMOVAL

Separate the crankcase halves (page 11-7).
Remove the crankshaft and oil pump drive chain guide (page 11-8).

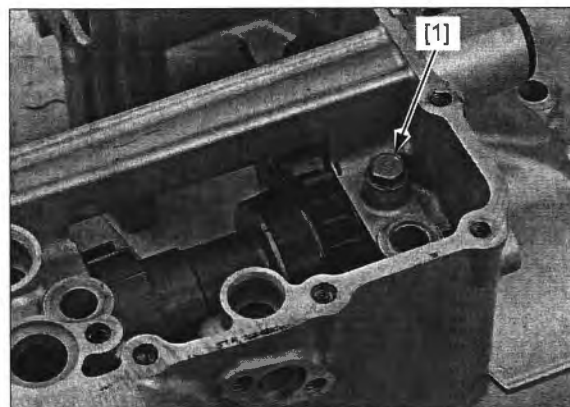
Loosen the balancer shaft holder pinch bolt [1].

Remove the balancer shaft holder bolt [2] and balancer shaft holder [3].

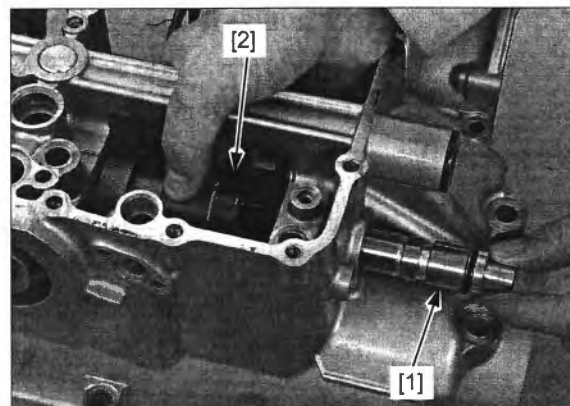


CRANKSHAFT/TRANSMISSION/BALANCER

Remove the balancer shaft lock bolt [1].

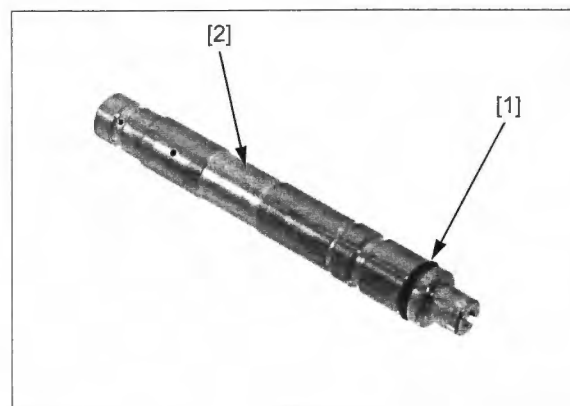


Remove the balancer shaft [1] and balancer weight assembly [2].

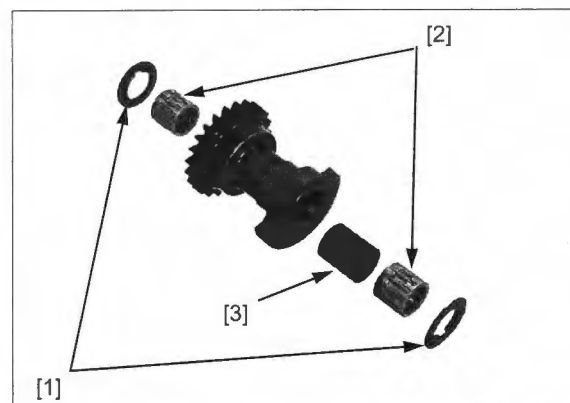


DISASSEMBLY

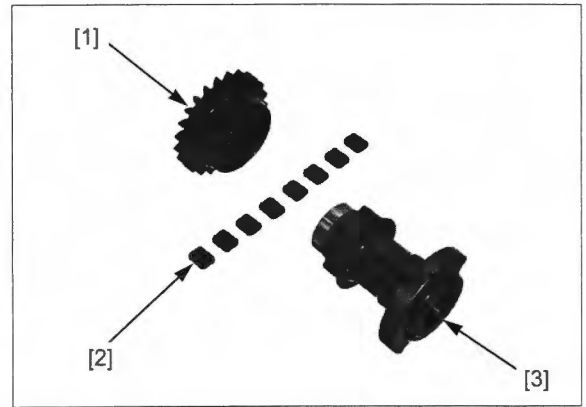
Remove the O-ring [1] from the balancer shaft [2].



Remove the washers [1], needle bearings [2], and distance collar [3] from the balancer weight assembly.



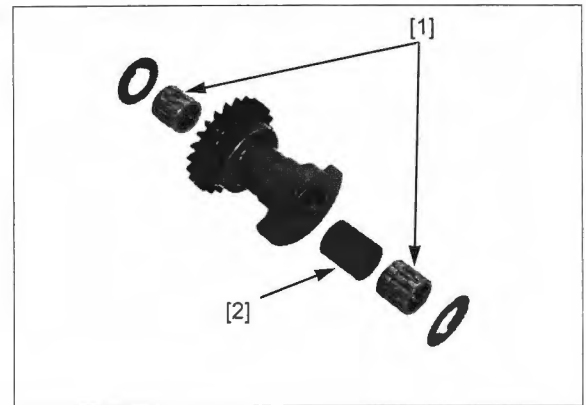
Remove the balancer gear [1] and damper rubbers [2] from the balancer weight [3].



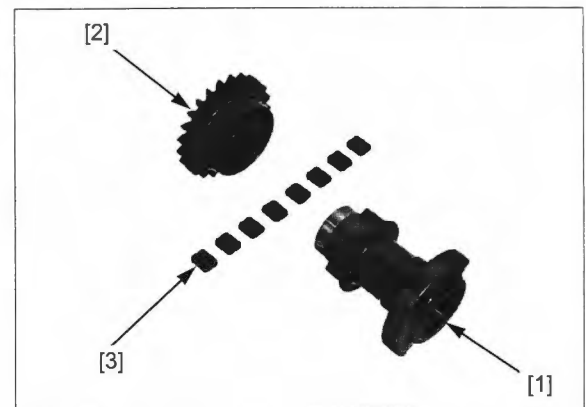
INSPECTION

Replace the balancer weight, balancer shaft, and needle bearings as a set.

Check the needle bearings [1] and distance collar [2] for wear or damage, replace if necessary.

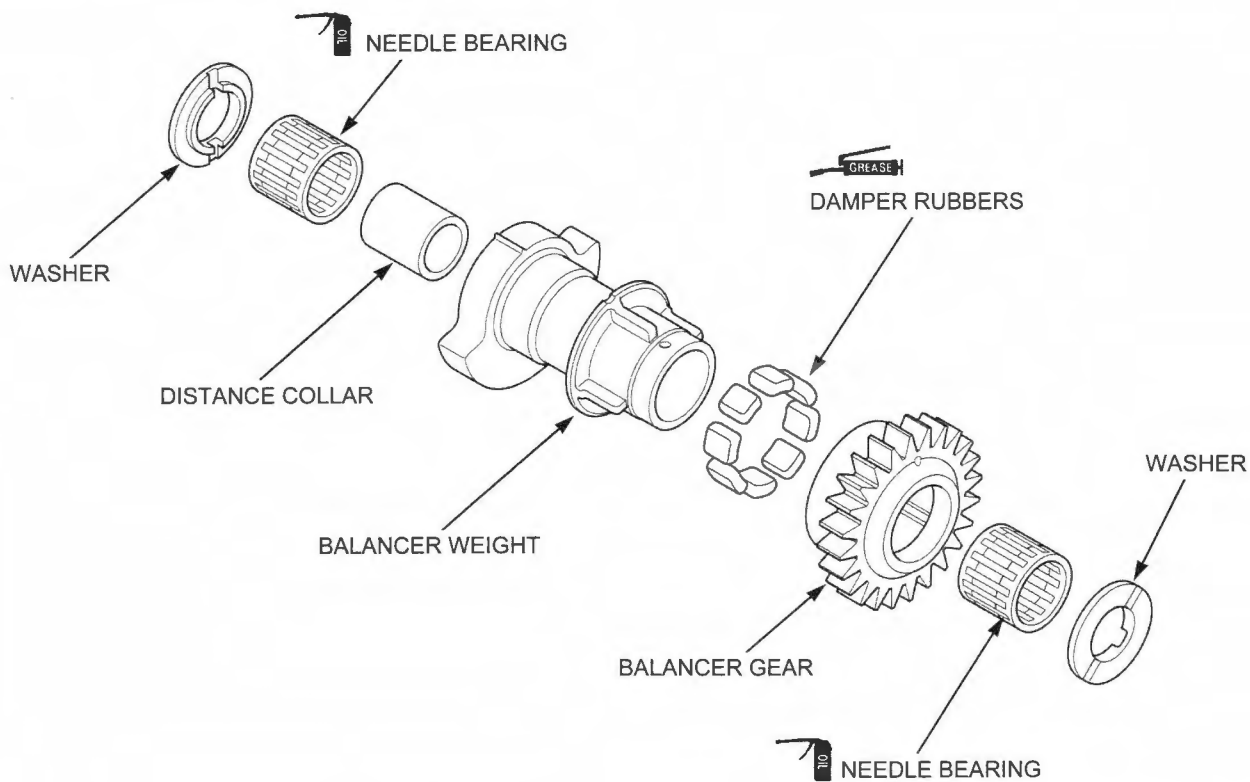


Check the balancer weight [1] and gear [2] for wear or damage.
Check the damper rubbers [3] for deterioration or damage, replace if necessary.



CRANKSHAFT/TRANSMISSION/BALANCER

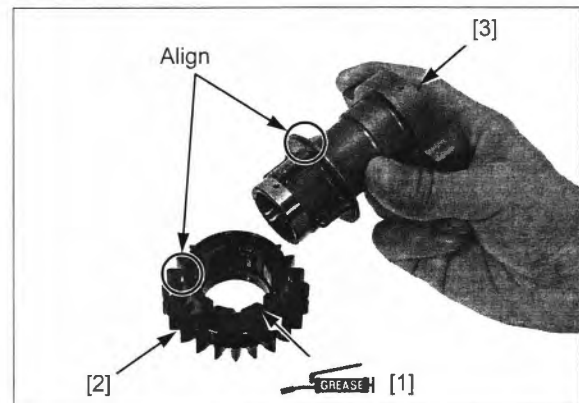
ASSEMBLY



Apply grease to the damper rubbers [1].

Install the damper rubbers into the balancer gear [2].

Assemble the balancer gear and weight [3] while aligning the aligning marks.

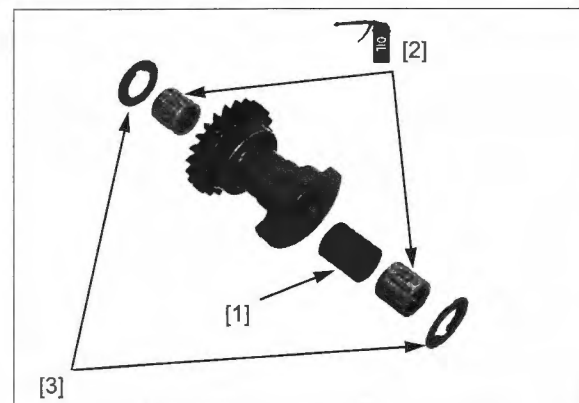


Install the distance collar [1].

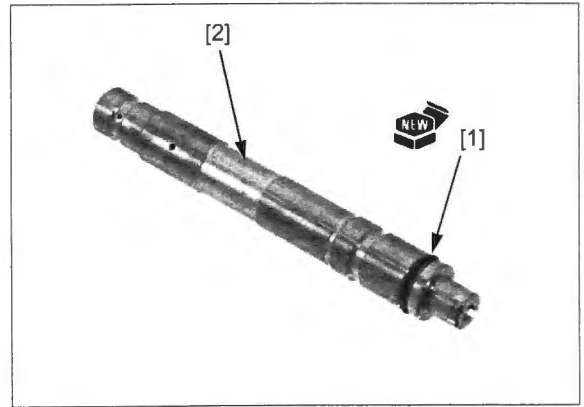
Apply engine oil to the needle bearings [2] and install them into the balancer weight.

Install the washers [3].

Note the installation direction of the washer.



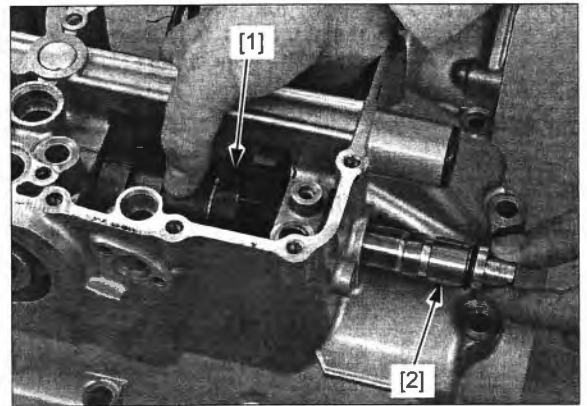
Install a new O-ring [1] to the balancer shaft [2].



INSTALLATION

Install the balancer weight assembly [1] into the lower crankcase.

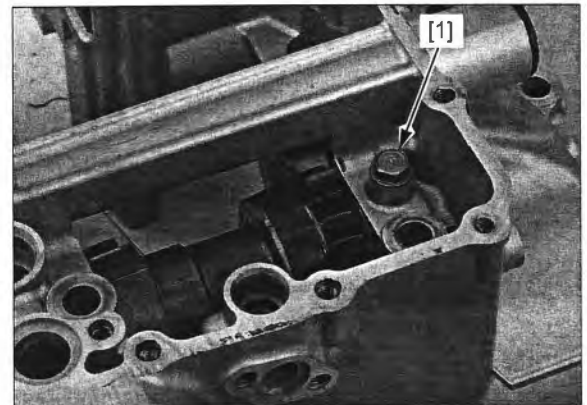
Install the balancer shaft [2].



Align the lock bolt tip with the balancer shaft groove.

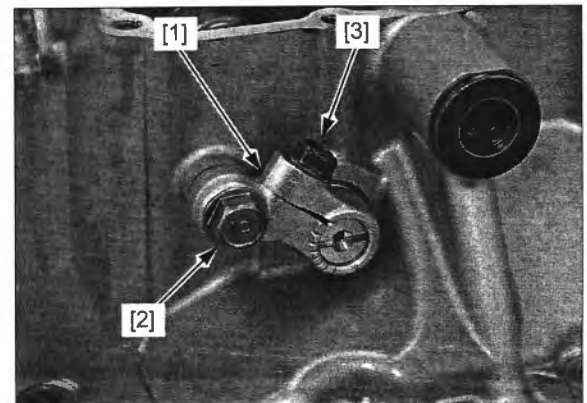
Install and tighten the balancer shaft lock bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Install the balancer shaft holder [1] and holder bolt [2], then tighten the holder bolt securely. Tighten the balancer shaft holder pinch bolt [3] securely.

Install the oil pump drive chain guide and crankshaft (page 11-11).
Assemble the crankcase halves (page 11-31).



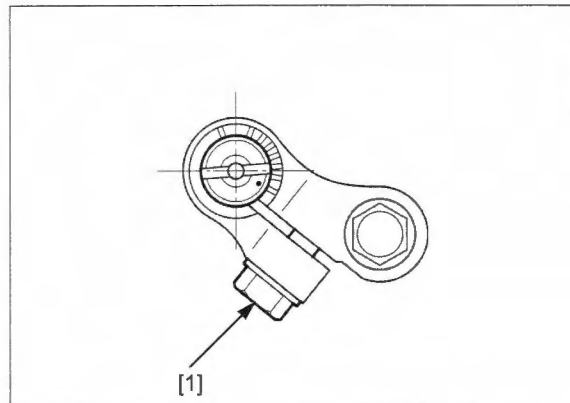
CRANKSHAFT/TRANSMISSION/BALANCER

BACKLASH ADJUSTMENT

Install the engine into the frame (page 6-9).

Adjust the backlash while the engine is cold (below 35°C/ 95°F) and the engine is not running.

Loosen the balancer shaft holder pinch bolt [1].

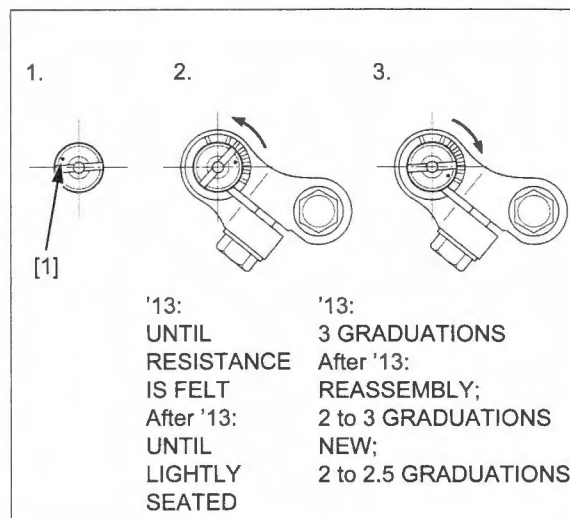


'13 model: Turn the balancer shaft counterclockwise until resistance is felt, then back it off three graduations using the punch mark [1] as a measure.

After '13 model: Turn the balancer shaft counterclockwise until lightly seated, then back it off 2 to 3 graduations using the punch mark [1] as a measure. When replacing new balancer gear, turn the balancer shaft counterclockwise until lightly seated, then back it off 2 to 2.5 graduations.

NOTE:

Excessive force can cause balancer gear, bearing, and shaft damage. Do not turn the shaft more than necessary.



Warm up the engine and let it idle.

If the balancer gear noises are excessive, adjust the balancer backlash as follows:

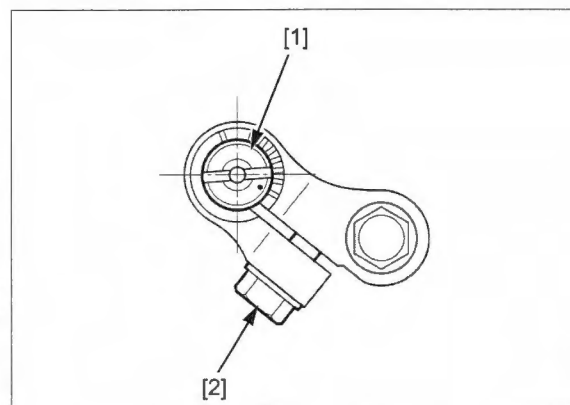
Turn the balancer gear shaft [1] counterclockwise until the gears begin to make a "whining" noise. Then turn the gear shaft clockwise until the gear "whining" noise disappears.

Tighten the balancer shaft pinch bolt [2].

After all gear backlash adjustments are done, snap the throttle and make sure the gear noises are not excessive.

If the gear "whine" noise is excessive, the backlash is too small.

If the gear "rattling" noise is excessive, the backlash is excessive.

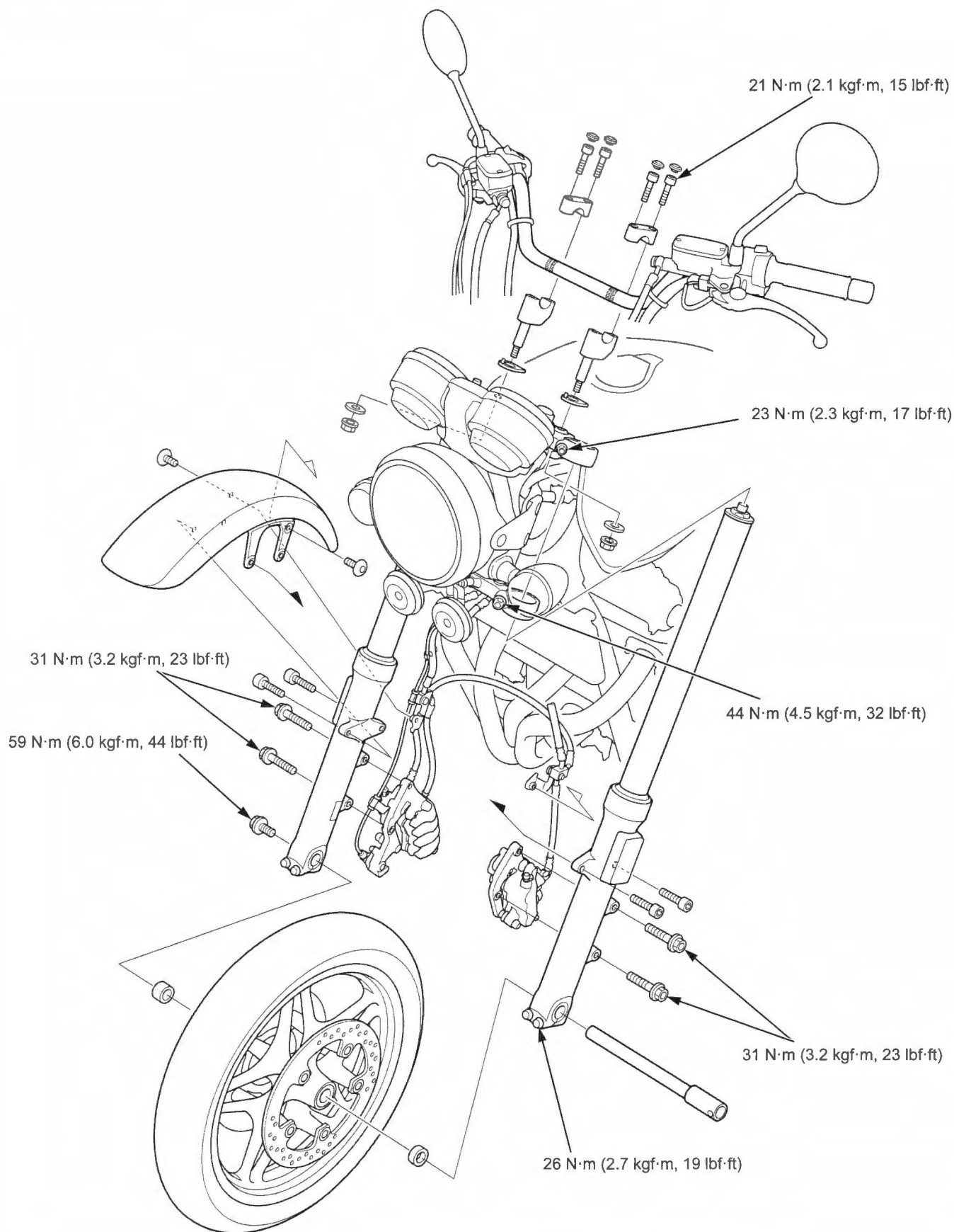


12. FRONT WHEEL/SUSPENSION/STEERING

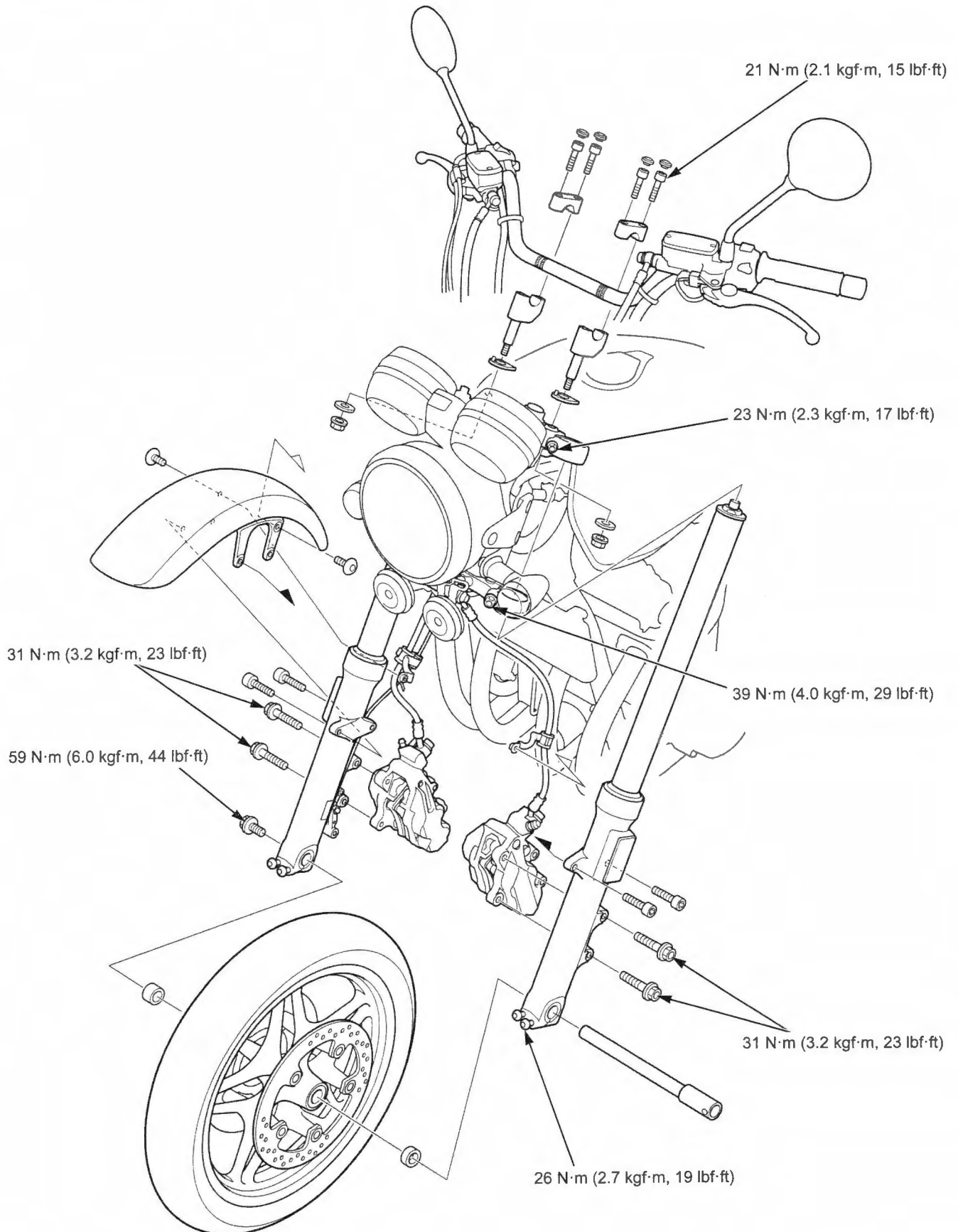
COMPONENT LOCATION	12-2	FRONT WHEEL	12-14
SERVICE INFORMATION	12-4	FORK	12-20
TROUBLESHOOTING	12-6	STEERING STEM	12-29
HANDLEBAR	12-7		

COMPONENT LOCATION

'13 CB1100A shown:



CB1100SA shown:



FRONT WHEEL/SUSPENSION/STEERING

SERVICE INFORMATION

GENERAL

- When servicing the front wheel, fork, or steering stem, 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 front wheel installation, check the brake operation by applying the brake lever.
- Refer to the brake system information (page 14-5).
- Use only tires marked "TUBELESS" and tubeless valves on rim marked "TUBELESS TIRE APPLICABLE".

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Minimum tire tread depth			—	1.5 (0.06)
Cold tire pressure	Up to 90 kg (200 lbs) load		250 kPa (2.50 kgf/cm ² , 36 psi)	—
	Up to maximum weight capacity		250 kPa (2.50 kgf/cm ² , 36 psi)	—
Axle runout			—	0.2 (0.01)
Wheel rim runout	Radial		—	2.0 (0.08)
	Axial		—	2.0 (0.08)
Wheel balance weight			—	60 g (2.1 oz) max.
Fork	Spring free length	CB1100/A:	335.5 (13.21)	328.8 (12.94)
		CB1100SA right fork:	335.5 (13.21)	328.8 (12.94)
		CB1100SA left fork:	485.5 (19.11)	475.8 (18.73)
	Pipe runout		—	0.20 (0.008)
	Recommended fork fluid		Pro Honda Suspension Fluid SS-8 (10W) or equivalent	—
	Fluid level	CB1100/A:	117 (4.6)	—
		CB1100SA right fork:	111 (4.4)	—
		CB1100SA left fork:	185 (7.3)	—
	Fluid capacity	CB1100/A:	495 ± 2.5 cm ³ (16.7 ± 0.08 US oz, 17.4 ± 0.09 Imp oz)	—
		CB1100SA right fork:	506 ± 2.5 cm ³ (17.1 ± 0.08 US oz, 17.8 ± 0.09 Imp oz)	—
		CB1100SA left fork:	434 ± 2.5 cm ³ (14.7 ± 0.08 US oz, 15.3 ± 0.09 Imp oz)	—
	Pre-load adjuster initial setting		9 mm (0.4 in) from fork bolt top/3rd groove	—
	Steering head bearing pre-load			9.6 – 13.7 N (1.0 – 1.4 kgf, 2.2 – 3.1 lbf)

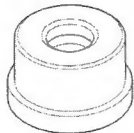
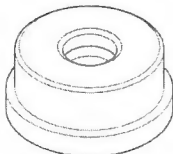
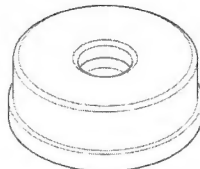
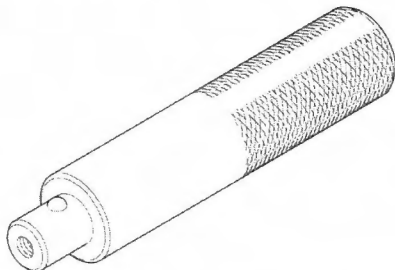
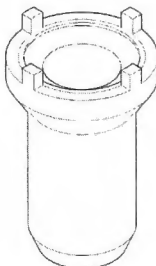
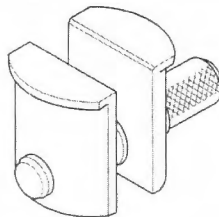
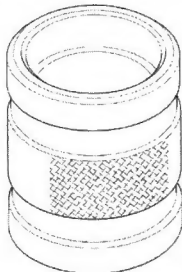
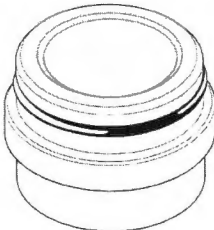
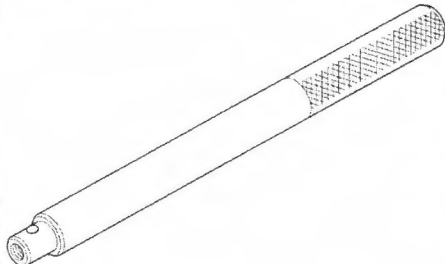
TORQUE VALUES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Handlebar upper holder bolt	4	8	21 (2.1, 15)	
Handlebar weight mounting screw	2	6	10 (1.0, 7)	ALOC screw; replace with a new one.
Rearview mirror adapter bolt	2	10	20 (2.0, 15)	
Rearview mirror lock nut	2	10	20 (2.0, 15)	Left hand threads.
Front brake disc bolt	10	6	20 (2.0, 15)	ALOC bolt; replace with a new one.
Front axle bolt	1	14	59 (6.0, 44)	
Front axle pinch bolt	4	8	26 (2.7, 19)	
Fork socket bolt	2	8	20 (2.0, 15)	Apply a locking agent to the threads.
Fork bolt	2	37	22 (2.2, 16)	
Fork bottom bridge pinch bolt ('13)	2	10	44 (4.5, 32)	
Fork bottom bridge pinch bolt (After '13)	2	10	39 (4.0, 29)	
Fork top bridge pinch bolt	2	8	23 (2.3, 17)	

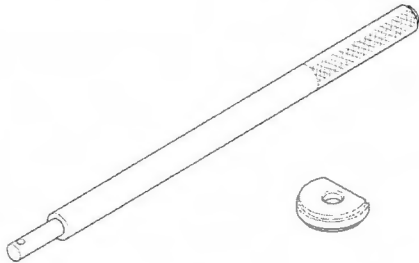
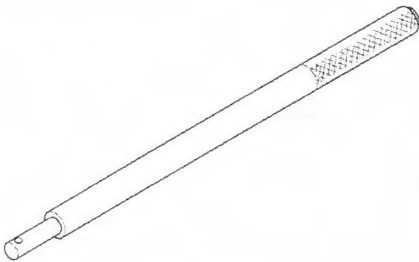
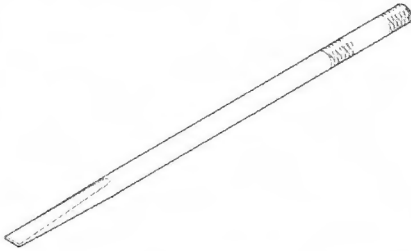
FRONT WHEEL/SUSPENSION/STEERING

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Steering stem adjusting nut	1	26	29 (3.0, 21)	Apply engine oil to the threads and seating surface. See page 12-32
Steering stem adjusting lock nut	1	26	—	See page 12-32
Steering stem nut	1	24	103 (10.5, 76)	

TOOLS

Attachment, 32 x 35 mm 07746-0010100 	Attachment, 42 x 47 mm 07746-0010300 	Attachment, 52 x 55 mm 07746-0010400 
Attachment, 30 mm I.D 07746-0030300 	Pilot 20 mm 07746-0040500 	Remover Head 20 mm 07746-0050600 
Driver 07749-0010000 	Locknut Wrench 5.7 x 50 07916-3710101 	Ball Race Remover 44.5 07946-3710500 
Fork Seal Driver Weight 45.5 x 54.3 07947-KA50100 	Fork Seal Driver Weight 41.2 07947-KF00100 	Driver 07949-3710001 

FRONT WHEEL/SUSPENSION/STEERING

Ball Race Remover Set 07953-MJ10000 	Remover Attachment 40 07953-MJ10100 	Handle 370 07953-MJ10200 
Bearing Remover Shaft 14 x 400L 07GGD-0010100 		

TROUBLESHOOTING

Hard steering

- Steering stem adjustment nut too tight
- Worn or damaged steering head bearings
- Bent steering stem
- Insufficient tire pressure

Steers to one side or does not track straight

- Damaged or loose steering head bearings
- Bent forks
- Bent axle
- Wheel installed incorrectly
- Bent frame
- Worn or damaged wheel bearings
- Worn or damaged swingarm pivot bearings

Front wheel wobbling

- Bent rim
- Worn or damaged front wheel bearings
- Faulty tire
- Unbalanced front tire and wheel

Front wheel turns hard

- Faulty front wheel bearing
- Bent front axle
- Front brake drag

Soft suspension

- Insufficient fluid in fork
- Incorrect fork fluid weight
- Weak fork springs
- Insufficient tire pressure

Hard suspension

- Bent fork pipes
- Too much fluid in fork
- Incorrect fork fluid weight
- Clogged fork fluid passage

Front suspension noise

- Insufficient fluid in fork
- Loose fork fasteners
- Incorrect fork fluid weight

HANDLEBAR

REMOVAL

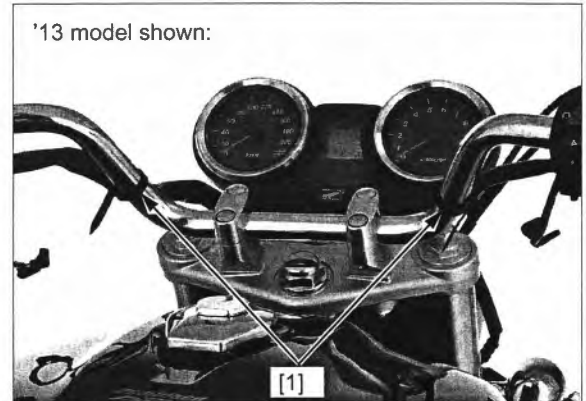
Remove the following:

- front brake master cylinder (page 14-24)
- clutch master cylinder (page 9-10)

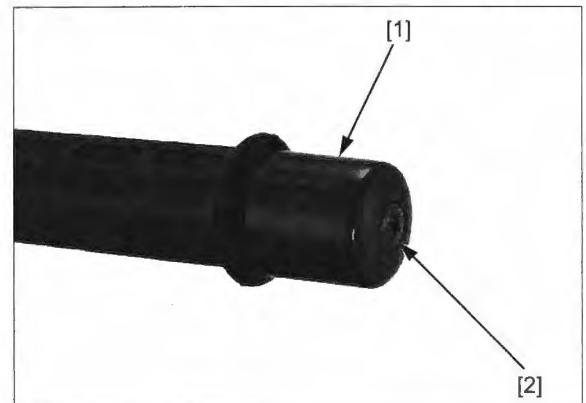
NOTE:

- It is not necessary to disconnect the brake hose and clutch hose.
- Keep the master cylinders upright to prevent air from entering the hydraulic system.

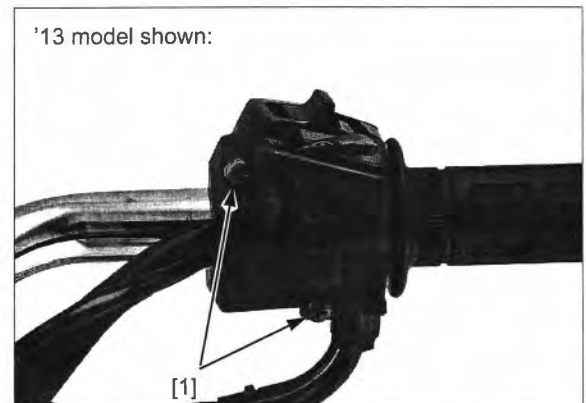
Remove the wire bands [1].



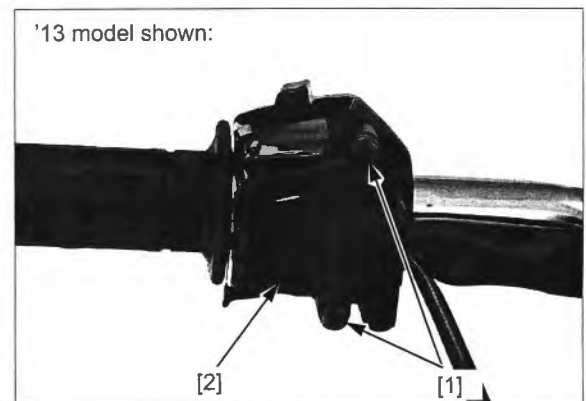
Hold the right handlebar weight [1] and remove the mounting screw [2].
Remove the right handlebar weight.



Remove the right handlebar switch screws [1].

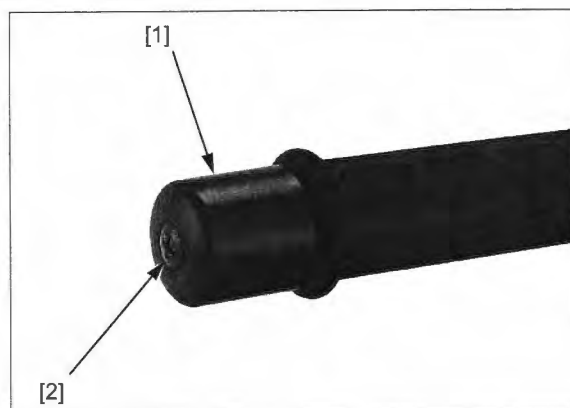


Remove the screws [1] and left handlebar switch [2].

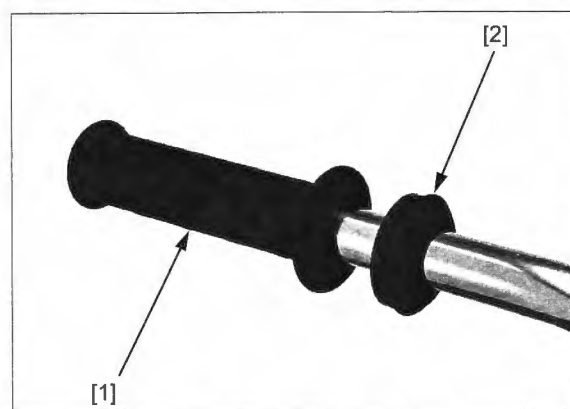


FRONT WHEEL/SUSPENSION/STEERING

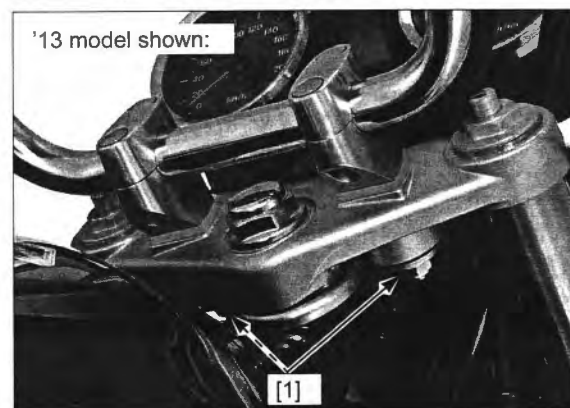
Hold the left handlebar weight [1] and remove the mounting screw [2].
Remove the left handlebar weight.



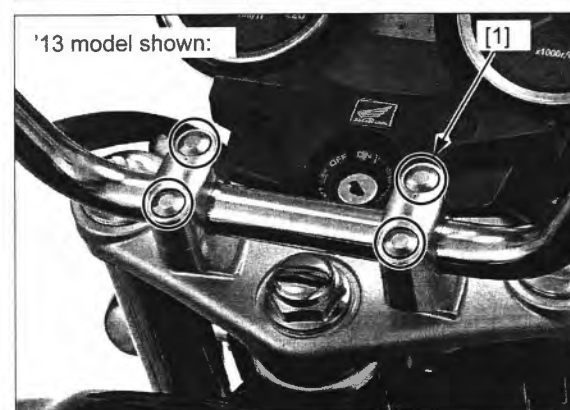
Remove the left handlebar grip [1] and handlebar switch end cover [2] from the handlebar.



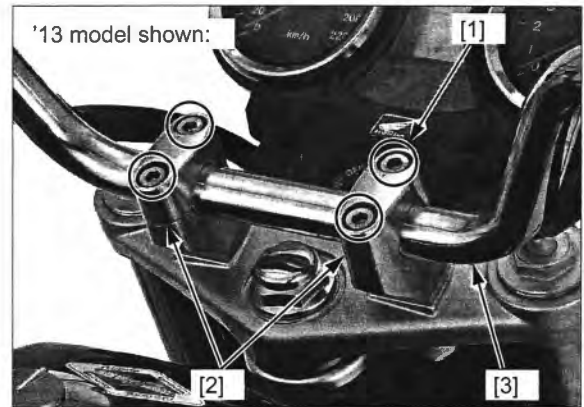
Do not remove the lower holder nuts yet. If the handlebar lower holders will be removed, loosen the lower holder nuts [1] before removing the upper holder bolts.



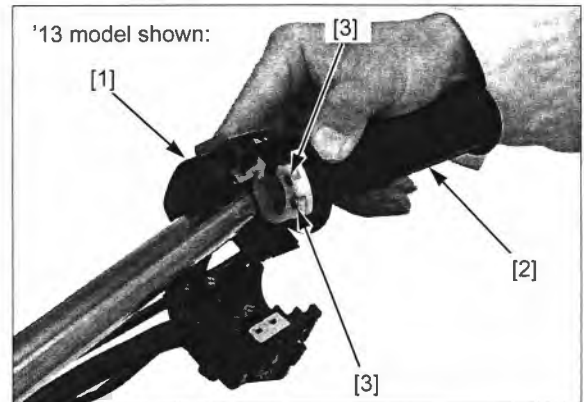
Remove the bolt caps [1] from the upper holder bolts.



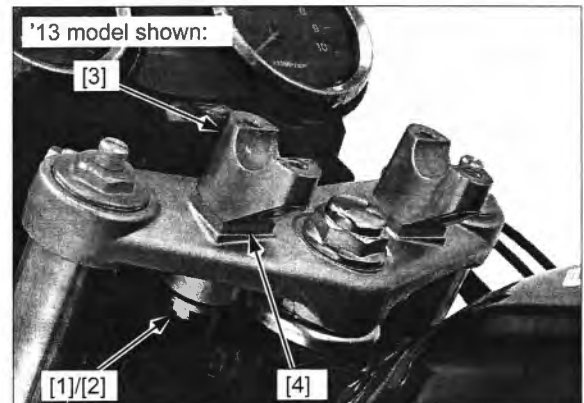
Remove the handlebar upper holder bolts [1], upper holders [2], and handlebar [3].



Remove the right handlebar switch [1] and throttle pipe [2] from the handlebar. Disconnect the throttle cable ends [3] from the throttle pipe.



Remove the lower holder nuts [1] and washers [2], then remove the handlebar lower holders [3] and rubber mounts [4].

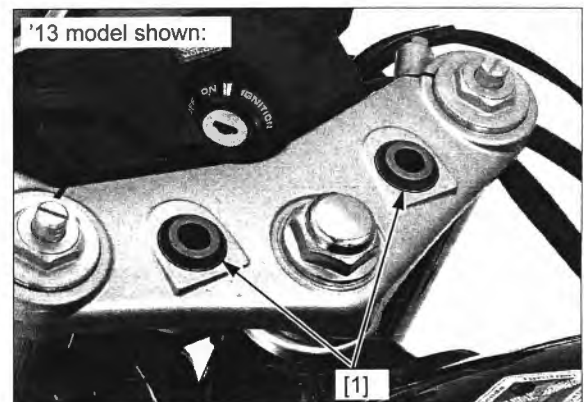


INSTALLATION

NOTE:

Route the cables, wire harnesses, brake hose, and clutch hose properly (page 1-21).

Check the handlebar bushings [1] for fatigue or damage and replace them if necessary.



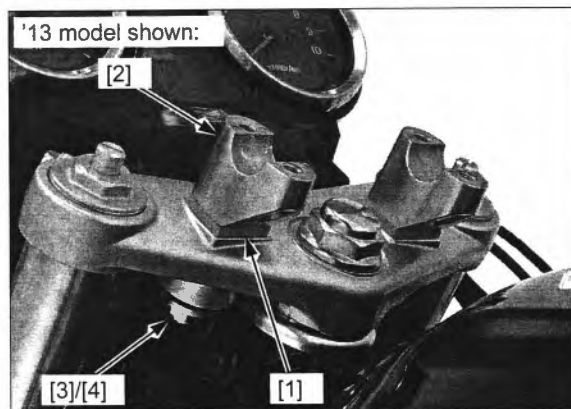
FRONT WHEEL/SUSPENSION/STEERING

Align the boss on the rubber mount with the hole on the lower holder.

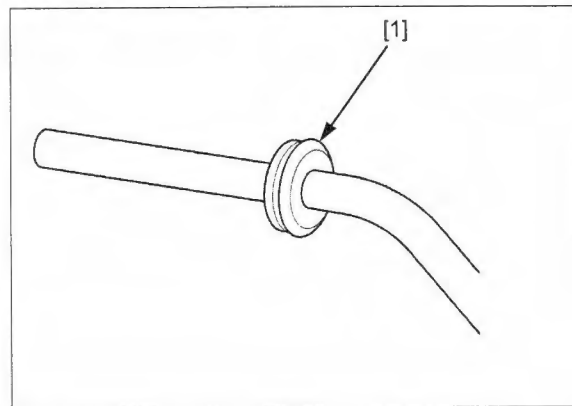
Install the rubber mounts [1], handlebar lower holders [2], washers [3], and lower holder nuts [4].

NOTE:

Do not tighten the lower holder nuts yet. Tighten the nuts after installing the upper holders.



Install the left handlebar switch end cover [1] onto the handlebar.



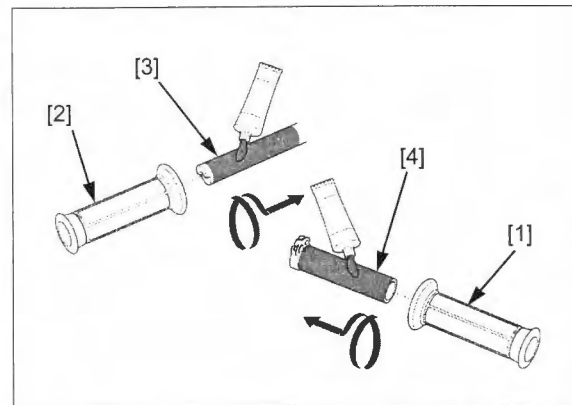
If the handlebar grips were removed, apply Pro Honda Handgrip Cement, Honda Bond A, Cemedine #540 or equivalent adhesive to the inside of the right handlebar grip [1], left handlebar grip [2], and to the clean surfaces of the handlebar [3] and throttle pipe [4].

Wait 3 – 5 minutes and install the handlebar grips.

Rotate the grip for even application of the adhesive.

NOTE:

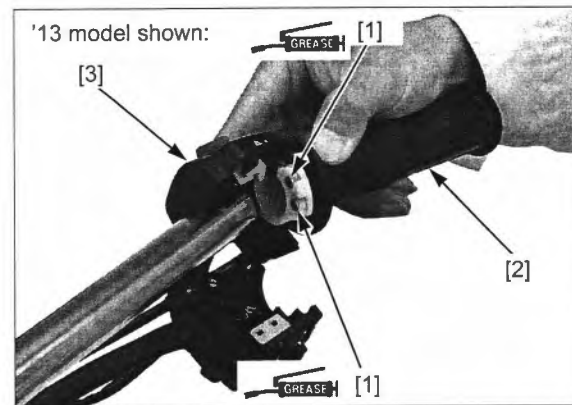
Allow the adhesive to dry for an hour before using.



Apply grease to the throttle cable ends [1] and cable guide grooves of the throttle pipe [2].

Connect the throttle cable ends to the throttle pipe.

Install the right handlebar switch [3] and throttle pipe onto the handlebar.



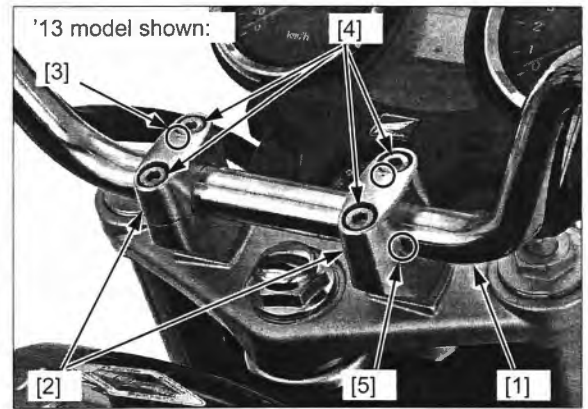
Install the handlebar [1] onto the lower holders.

Install the handlebar upper holders [2] with their punch marks [3] facing forward, then install the holder bolts [4].

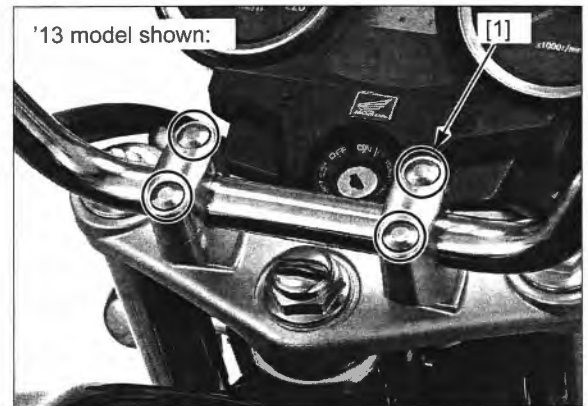
Align the punch mark [5] on the handlebar with the mating surface of the upper and lower holders.

Tighten the forward bolts first, then tighten the rear bolts to the specified torque.

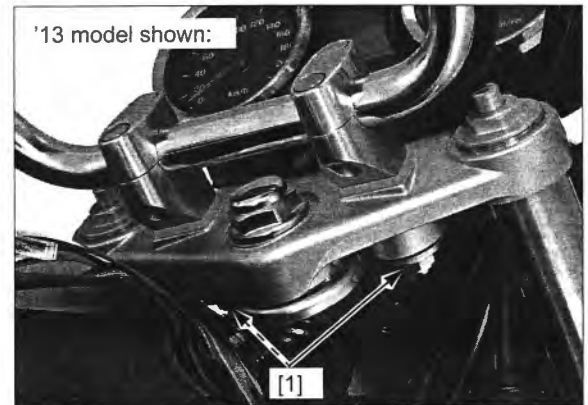
TORQUE: 21 N·m (2.1 kgf·m, 15 lbf·ft)



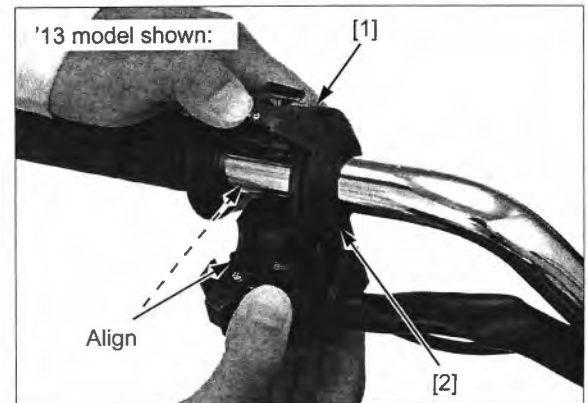
Install the bolt caps [1] onto the upper holder bolts.



Tighten the handlebar lower holder nuts [1] securely.

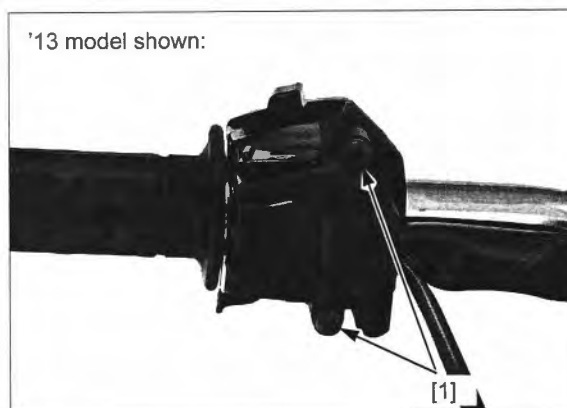


Install the left handlebar switch [1] aligning its locating pin with the hole on the handlebar, also align the groove of the end cover [2] with the handlebar switch.

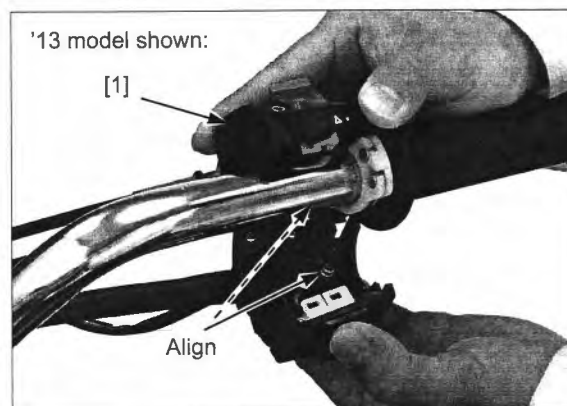


FRONT WHEEL/SUSPENSION/STEERING

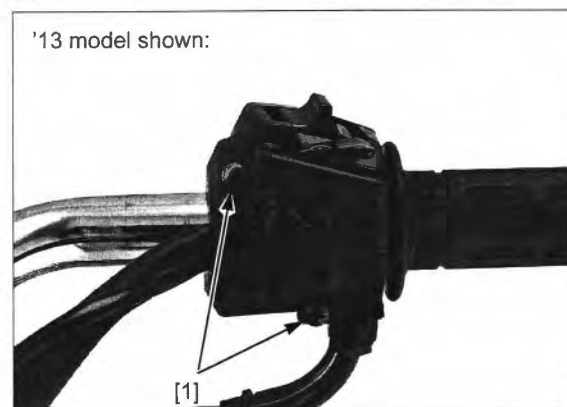
Install the left handlebar switch screws [1].
Tighten the forward screw first, then the rear screw.
Install the clutch master cylinder (page 9-14).



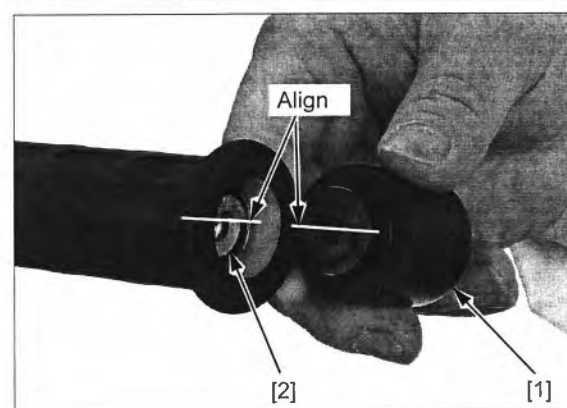
Install the right handlebar switch [1] aligning its locating pin with the hole on the handlebar.



Install the right handlebar switch screws [1].
Tighten the forward screw first, then the rear screw.
Install the front brake master cylinder (page 14-29).



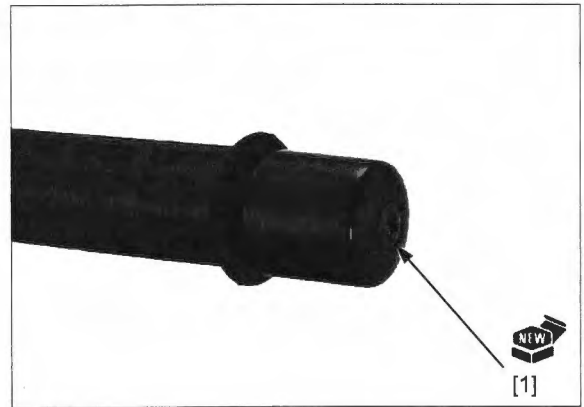
Install the handlebar weight [1] aligning each cut-out of the handlebar weight and inner weight [2].



Install a new mounting screw [1] and tighten it to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the other side handlebar weight with a new mounting screw.



HANDLEBAR INNER WEIGHT REPLACEMENT

Remove the left handlebar grip and throttle pipe.

Straighten the retainer tab [1] with a screwdriver or punch.

Temporarily install the handlebar weight [2] and screw [3], then remove the inner weight [4] while turning the handlebar weight.

NOTE:

Apply lubricant spray through the tab locking hole [5] for easy removal.

Remove the screw, handlebar weight, retainer, and rubber cushions [6] from the inner weight.

Install the rubber cushion with its flange (indentation) side facing the inner weight.

Install the rubber cushions onto the inner weight.

Install a new retainer [7] onto the inner weight.

Install the handlebar weight to the inner weight while aligning each cut-out.

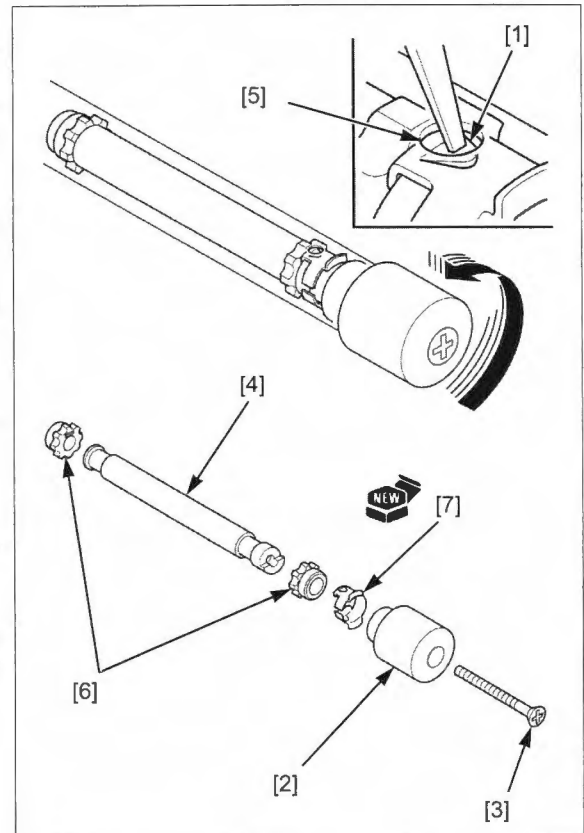
Install the mounting screw.

Insert the weight assembly into the handlebar.

Turn the handlebar weight and hook the retainer tab with the hole on the handlebar.

Remove the screw and handlebar weight.

Install the left handlebar grip and throttle pipe, then install the handlebar weights with new mounting screws.



FRONT WHEEL

REMOVAL

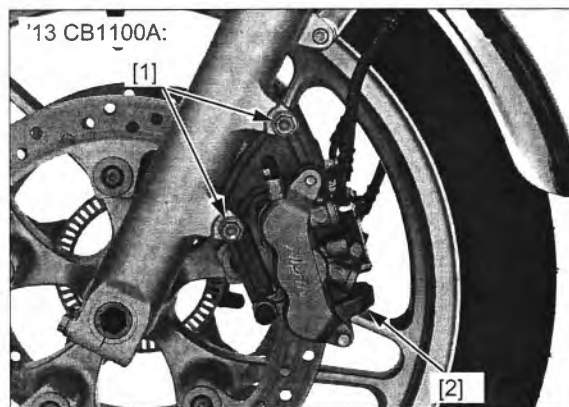
'13 CB1100A: Remove the mounting bolts [1] and left front brake caliper [2].

Except '13

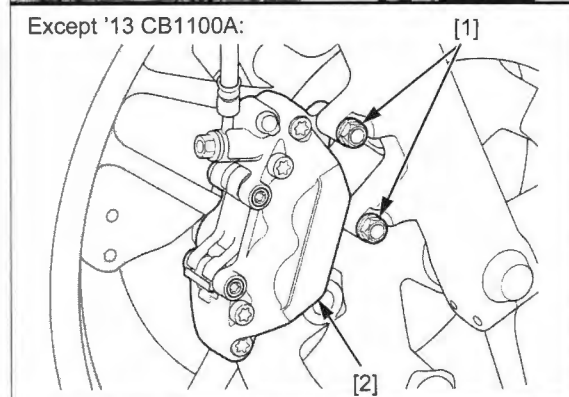
CB1100A: Remove the mounting bolts [1] and right or left front brake caliper [2].

NOTE:

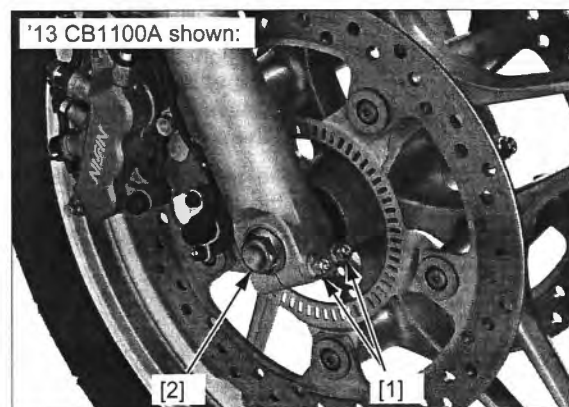
- Do not operate the brake after the brake caliper is removed.
- Support the brake caliper with a piece of wire so that it does not hang from the brake hose. Do not twist the brake hose.



Except '13 CB1100A:



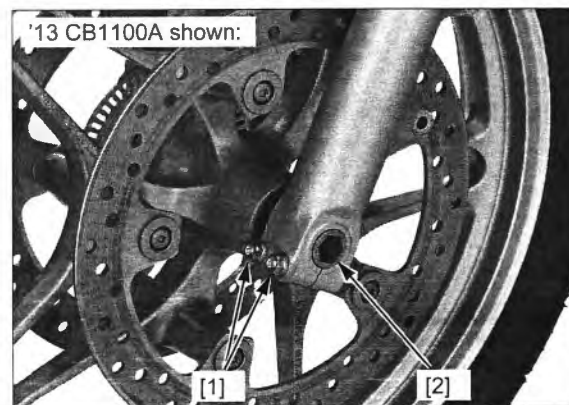
Loosen the right axle pinch bolts [1].
Remove the front axle bolt [2].



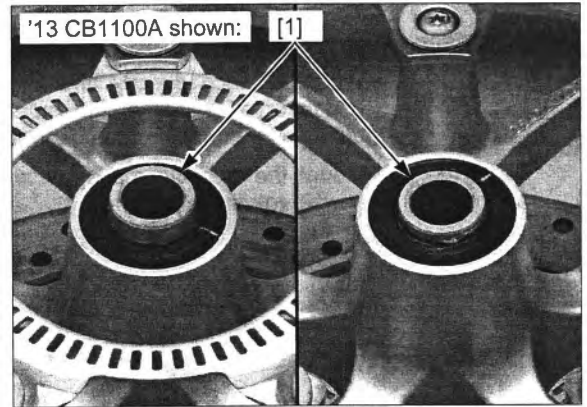
Loosen the left axle pinch bolts [1].

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

Remove the axle [2] while holding the front wheel, then remove the wheel.



Remove the right and left side collars [1].

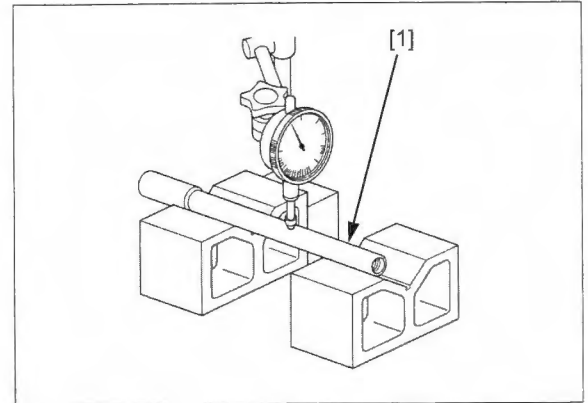


INSPECTION

AXLE

Set the axle [1] in V-blocks and measure the runout. Actual runout is 1/2 the total indicator reading.

SERVICE LIMIT: 0.2 mm (0.01 in)

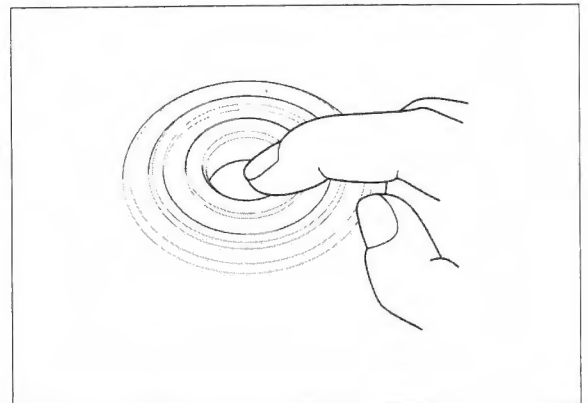


WHEEL BEARING

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.

Remove and discard the bearings if they do not turn smoothly, quietly, or if they fit loosely in the hub.

Refer to procedure for the wheel bearing replacement (page 12-17).



WHEEL RIM

Check the rim runout by placing the wheel in a truing stand.

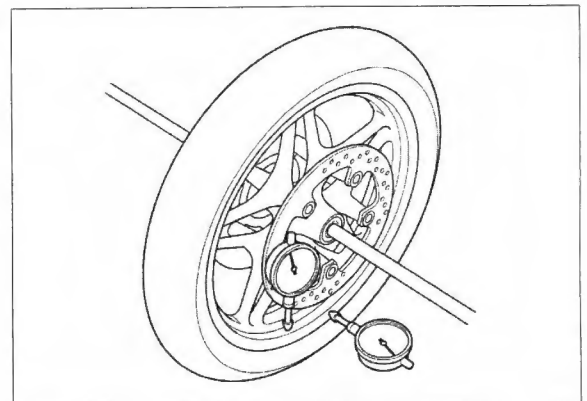
Spin the wheel by hand, and read the runout using a dial gauge.

SERVICE LIMITS:

Radial: 2.0 mm (0.08 in)

Axial: 2.0 mm (0.08 in)

Always replace wheel which have been bent or have cracks, as they may cause air leakage.



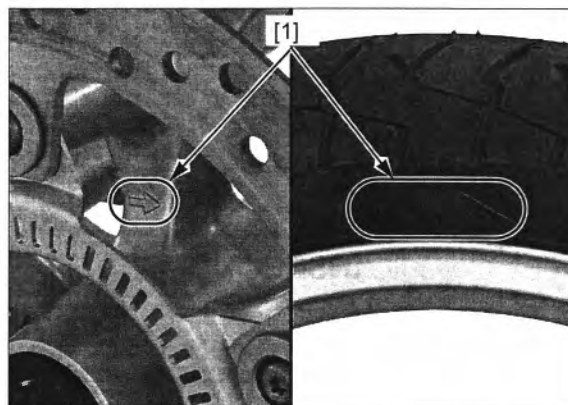
FRONT WHEEL/SUSPENSION/STEERING

WHEEL BALANCE

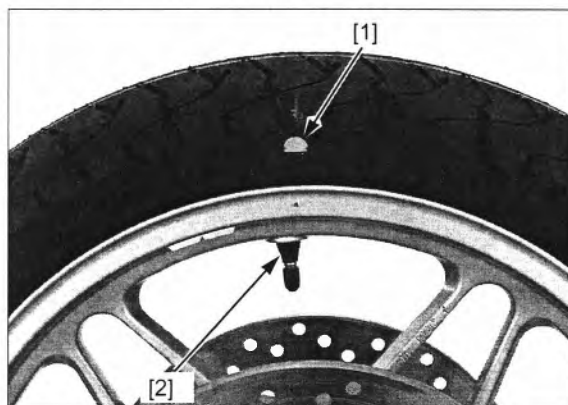
NOTE:

Wheel balance directly affects the stability, handling, and over all safety of the motorcycle. Always check balance when the tire has been removed from the rim.

Mount the tire with the arrow marks [1] facing in the normal rotating direction.



For optimum balance, the tire balance mark (a paint dot on the side wall) [1] must be located next to the valve stem [2]. Remount the tire if necessary.

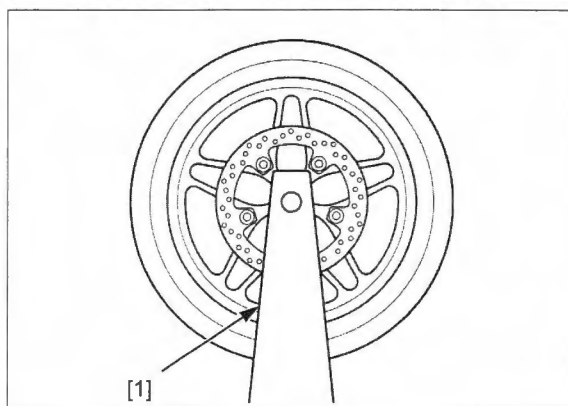


Remove the dust seals from the wheel hub. Mount the wheel, tire, and brake discs assembly in an inspection stand [1].

Spin the wheel, allow it to stop, and mark the lowest (heaviest) point of the wheel with chalk.

Do this two or three times to verify the heaviest area.

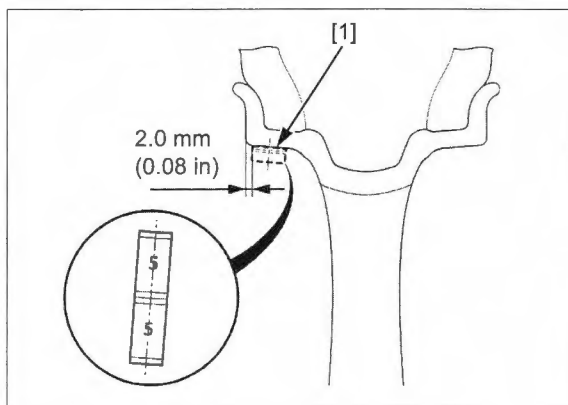
If the wheel is balanced, it will not stop consistently in the same position.



To balance the wheel, install balance weights on the lightest side of the rim, the side opposite the chalk mark. Add just enough weight so the wheel will no longer stop in the same position when it is spun.

NOTE:

- Use Honda genuine balance weight.
- Do not add more than 60 g (2.1 oz) to the wheel.
- Install the balance weight [1] on the left side of the rim as shown in the illustration. (For the rear wheel, install the weights in a similar position.)
- If the weight exceeds 10 g (0.4 oz), install the same amount of weight symmetrically on both sides. (front wheel only)
- Before installing the balance weight, degrease the surface of the rim.



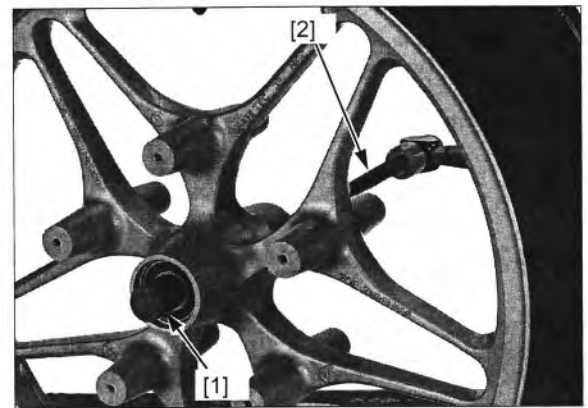
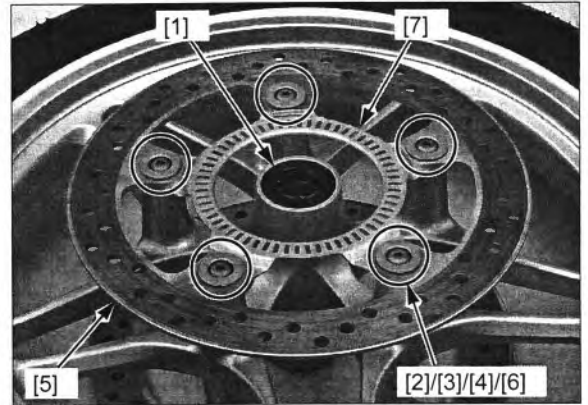
DISASSEMBLY

Remove the dust seal [1].

Remove the brake disc bolts [2], collars [3], springs [4], right brake disc [5], and washers [6].

CB1100A/SA: Remove the pulser ring [7].

From the opposite side, remove the dust seal and brake disc.



Install the bearing remover head [1] into the bearing. From the opposite side, install the bearing remover shaft [2] and drive the bearing out of the wheel hub.

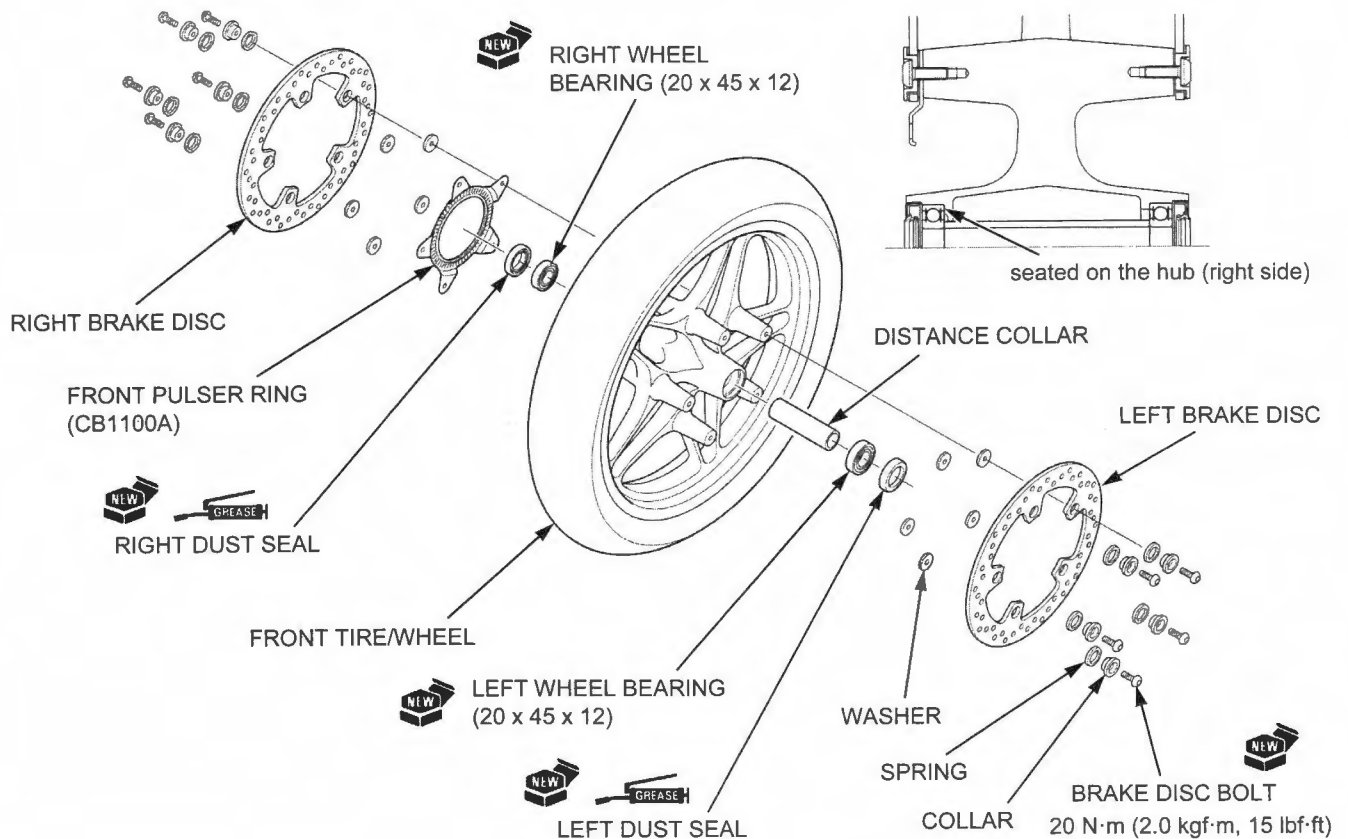
Remove the distance collar and drive out the other bearing.

TOOLS:

Bearing remover head, 20 mm 07746-0050600

Bearing remover shaft 07GGD-0010100

ASSEMBLY



FRONT WHEEL/SUSPENSION/STEERING

Never install the old bearings. Once the bearings have been removed, they must be replaced with new ones.

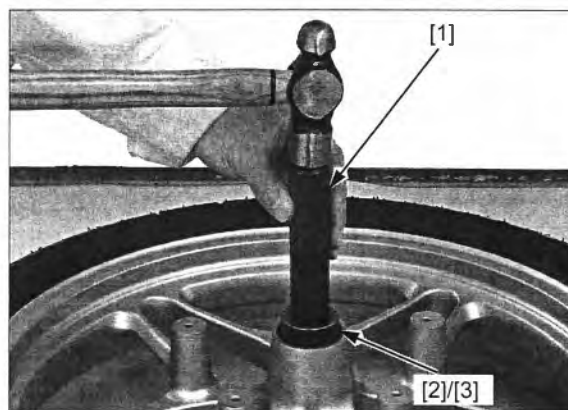
Drive in a new right wheel bearing squarely until it is fully seated on the hub.
Install the distance collar, then drive in a new left bearing until it is seated on the distance collar.

TOOLS:

- | | |
|----------------------------|---------------|
| [1] Driver | 07749-0010000 |
| [2] Attachment, 42 x 47 mm | 07746-0010300 |
| [3] Pilot, 20 mm | 07746-0040500 |

NOTE:

Replace the wheel bearings in pairs.



CB1100A/SA: Install the pulser ring [1] onto the right side of the wheel hub.

Align the arrow mark [8] on the disc with the wheel rotating direction.

Install the washers [2], brake disc [3], springs [4], and collars [5] onto the wheel hub with new brake disc bolts [6].

Tighten the brake disc bolts to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

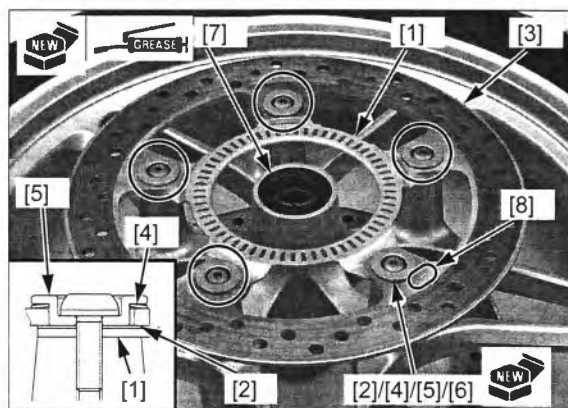
NOTE:

- Be careful not to drop or damage the washers.
- Install the brake disc springs as shown in the illustration.

Do not get grease on the brake discs or stopping power will be reduced.

Apply grease to the lip of a new dust seal [7], then install the dust seal into the wheel hub.

Install the brake disc and new dust seal to the opposite side of the wheel hub.



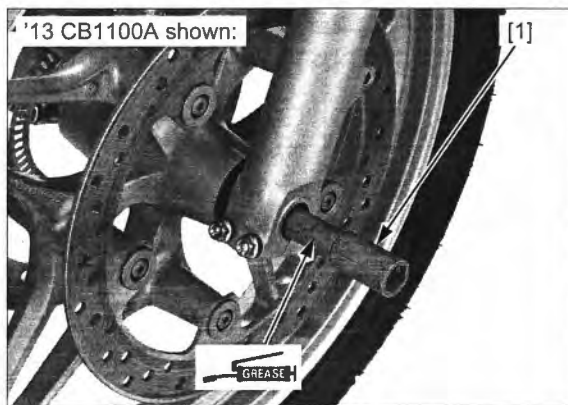
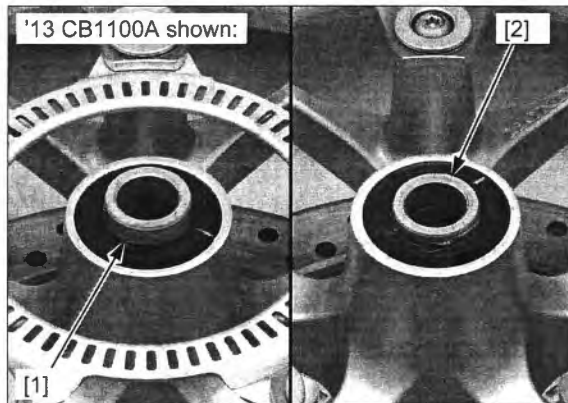
INSTALLATION

Install the right side collar [1] and left side collar [2].

Be careful not to damage the brake pads.

Install the front wheel between the fork legs.

Apply thin layer of grease to the front axle surface.
Install the front axle [1] from the left side.



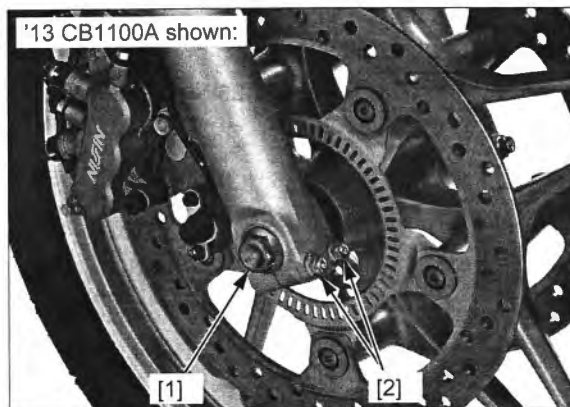
Lower the front wheel to the ground.

Hold the axle and tighten the axle bolt [1] to the specified torque.

TORQUE: 59 N·m (6.0 kgf·m, 44 lbf·ft)

Tighten the right axle pinch bolts [2] to the specified torque.

TORQUE: 26 N·m (2.7 kgf·m, 19 lbf·ft)

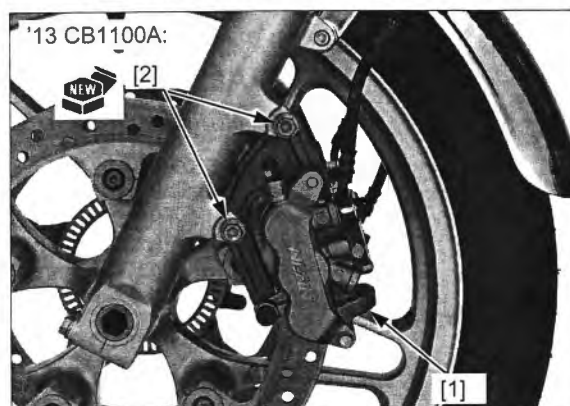


Be careful not to damage the brake pads.

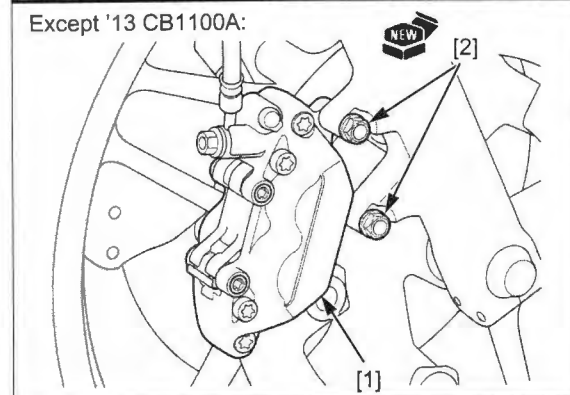
Install the brake caliper [1] while setting the brake disc between the pads.

Install and tighten new mounting bolts [2] to the specified torque.

TORQUE: 31 N·m (3.2 kgf·m, 23 lbf·ft)



Except '13 CB1100A:



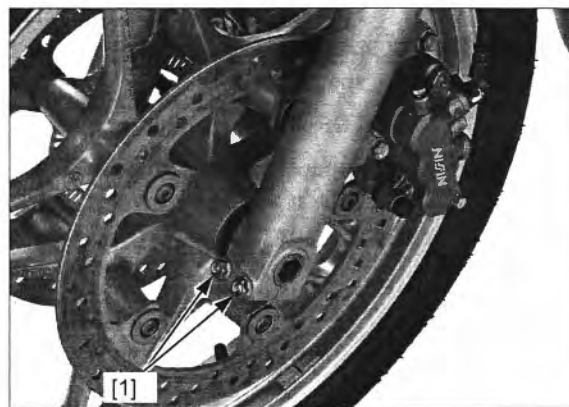
With the front brake applied, pump the fork up and down several times to seat the axle and also check brake operation by applying the brake lever.



FRONT WHEEL/SUSPENSION/STEERING

Tighten the left axle pinch bolts [1] to the specified torque.

TORQUE: 26 N·m (2.7 kgf·m, 19 lbf·ft)



FORK

REMOVAL

Remove the following:

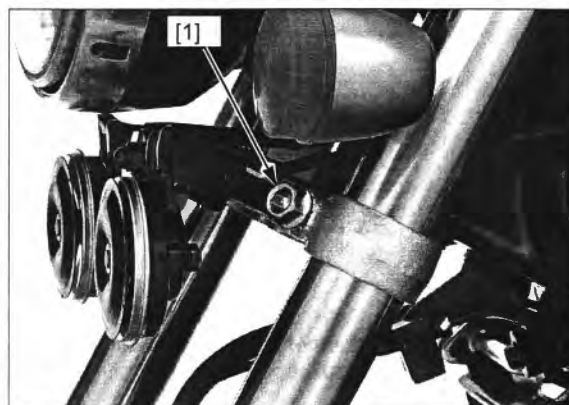
- front fender (page 2-8)
- front brake calipers (not necessary to disconnect the brake hose)
 - '13 CB1100A (page 14-35)
 - except '13 CB1100A (page 14-38)
- front wheel (page 12-14)

Loosen the fork top bridge pinch bolt [1].

When the fork is ready to be disassembled loosen the fork bolt [2], but do not remove it yet.



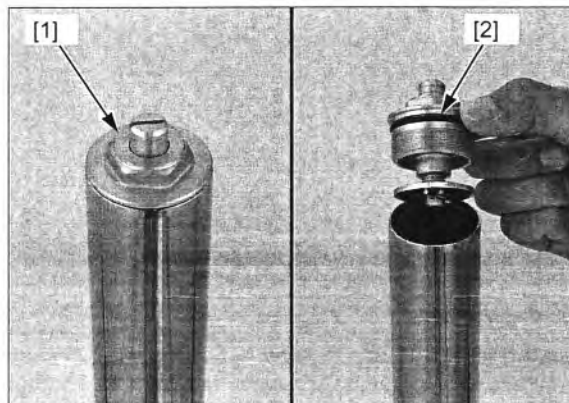
Loosen the fork bottom bridge pinch bolt [1] while holding the fork, then remove the fork pipe from the fork bridges.



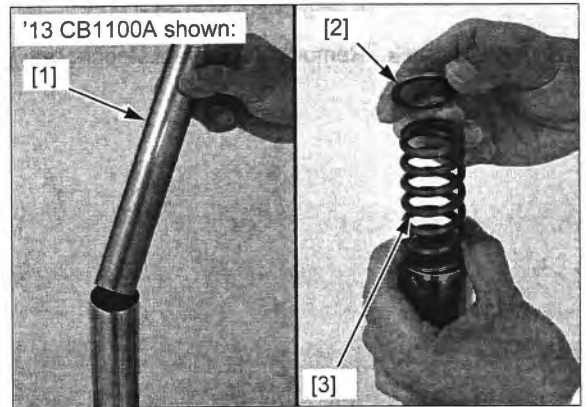
DISASSEMBLY

Remove the fork bolt [1] from the fork pipe.

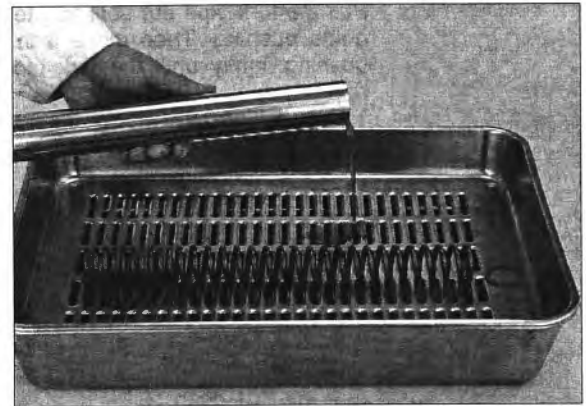
Remove the O-ring [2] from the fork bolt.



Remove the spring collar [1], spring seat [2], and fork spring [3].



Pour out the fork fluid by pumping the fork pipe several times.



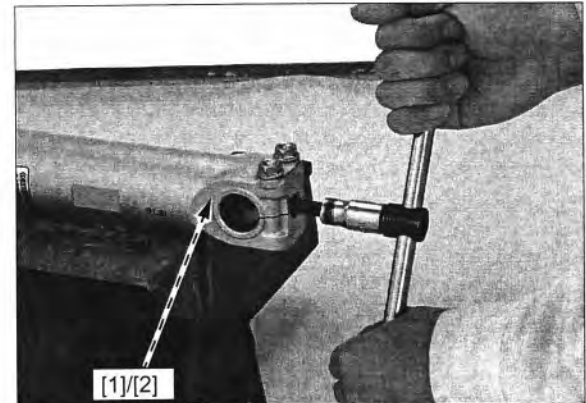
Do not over-tighten the vise.

Hold the caliper mount of the bottom case in a vise with soft jaws or a shop towel.

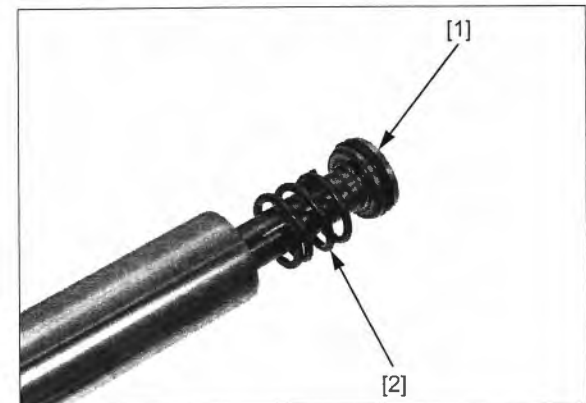
Remove the fork socket bolt [1] and sealing washer [2].

NOTE:

If the socket bolt turns together with the fork piston, temporarily install the fork spring, spring seat, spring collar, and fork bolt.



Remove the fork piston [1] and rebound spring [2].

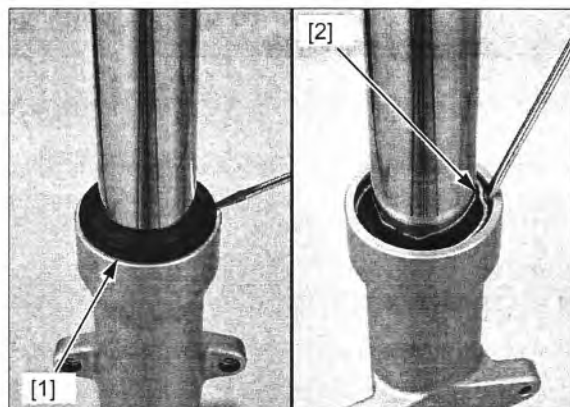


FRONT WHEEL/SUSPENSION/STEERING

Remove the dust seal [1].

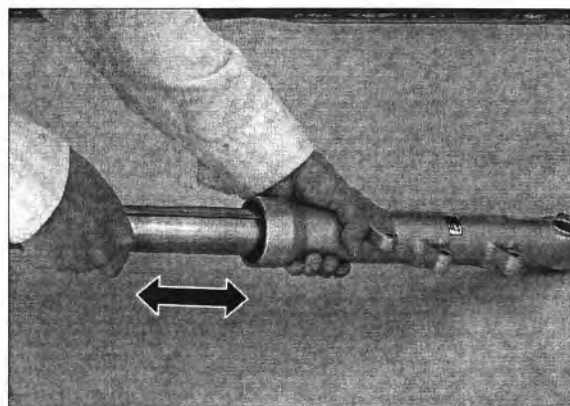
*Do not scratch the
fork pipe sliding
surface.*

Remove the oil seal stopper ring [2].



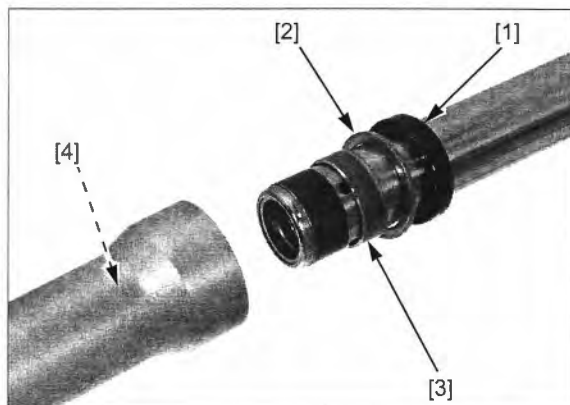
Pull the fork pipe out until you feel resistance from the guide bushing. Then move it in and out, tapping the bushing lightly until the fork pipe separates from the bottom case.

The guide bushing will be forced out by the fork pipe bushing.



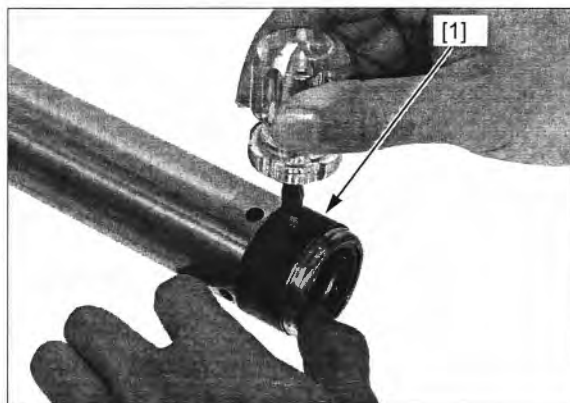
Remove the oil seal [1], back-up ring [2], and guide bushing [3] from the fork pipe.

Remove the oil lock piece [4] from the bottom case.



*Do not remove the
fork pipe bushing
unless it is
necessary to
replace with a new
one.*

Carefully remove the fork pipe bushing [1] by prying the slit with a screwdriver until the bushing can be pulled off by hand.



INSPECTION

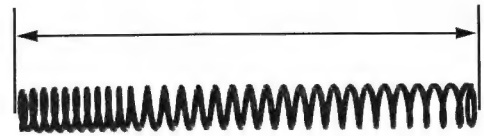
FORK SPRING

Measure the fork spring free length.

SERVICE LIMITS:

CB1100/A:	328.8 mm (12.94 in)
CB1100SA right fork:	328.8 mm (12.94 in)
CB1100SA left fork:	475.8 mm (18.73 in)

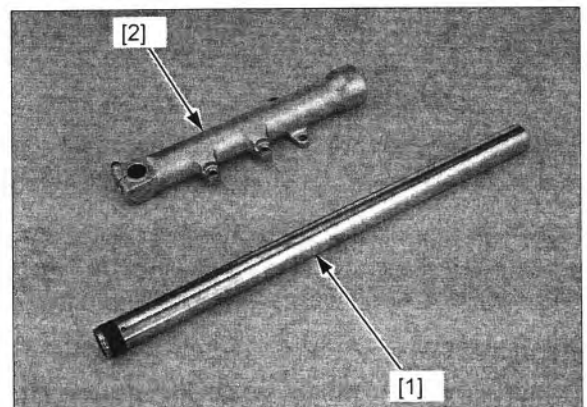
'13 CB1100A shown:



FORK PIPE/BOTTOM CASE

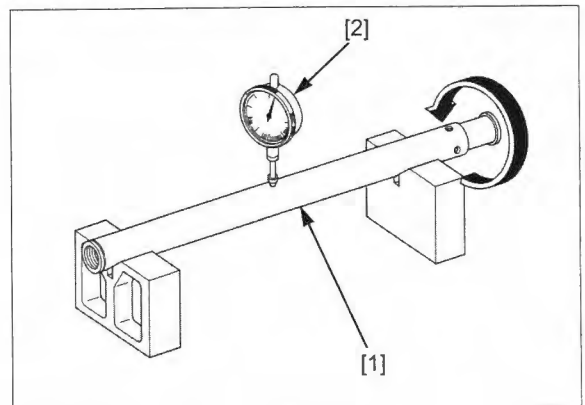
Check the fork pipe [1] and bottom case [2] for score marks, scratches, or excessive or abnormal wear.

Replace any components which are worn or damaged.



Place the fork pipe [1] in V-blocks and measure the runout with a dial gauge [2].
Actual runout is 1/2 the total indicator reading.

SERVICE LIMIT: 0.20 mm (0.008 in)



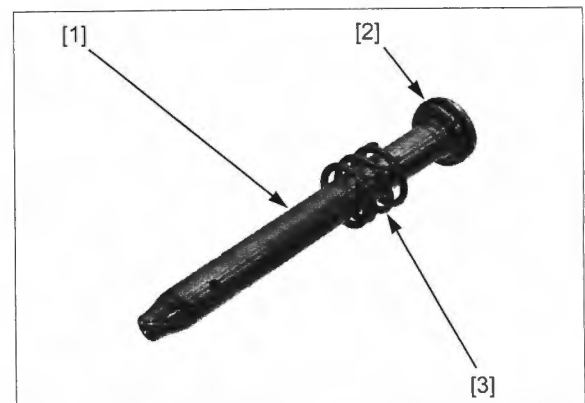
FORK PISTON/REBOUND SPRING

Check the fork piston [1] for damage or deformation.

Check the piston ring [2] for wear or damage.

Check the rebound spring [3] for fatigue or damage.

Replace any components which are worn or damaged.

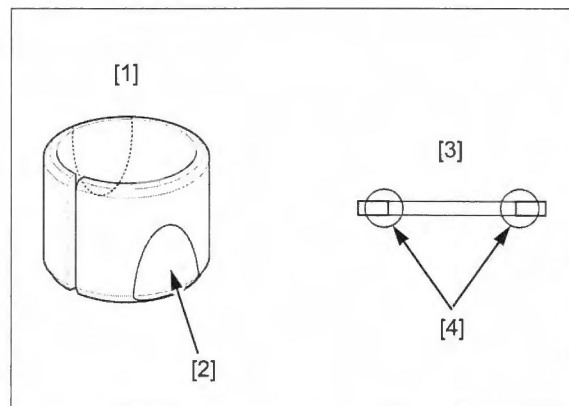


FRONT WHEEL/SUSPENSION/STEERING

BUSHING/BACK-UP RING

Visually inspect the guide and fork pipe bushings [1]. Replace the bushings if there is excessive scoring or scratching, or if the teflon is worn so that the copper surface [2] appears on more than 3/4 of the entire surface.

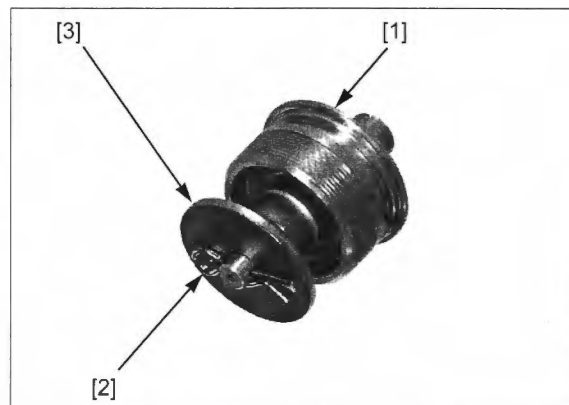
Check the back-up ring [3]; replace it if there is any distortion at the points [4] shown.



FORK BOLT

Check the fork bolt [1] for damage.

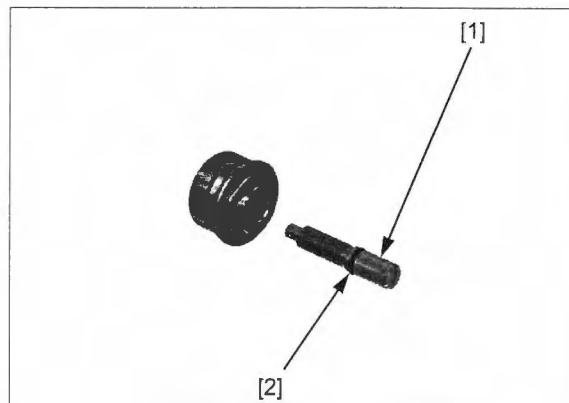
Remove the clip [2] and plate [3].



Record the pre-load adjuster position so you can return it to its original position when reassembling.

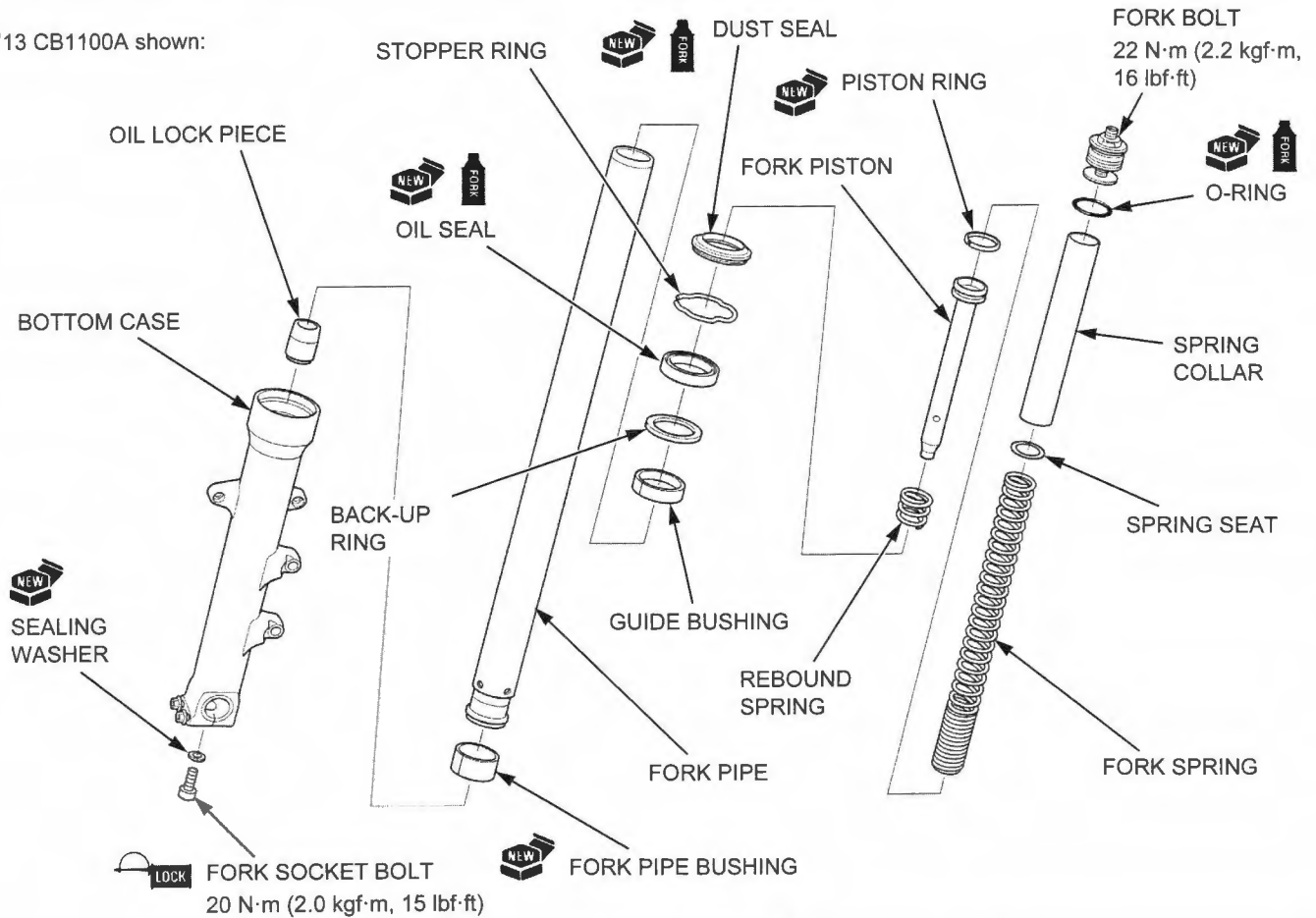
Remove the pre-load adjuster [1] from the fork bolt. Check the O-ring [2] for deterioration or damage.

If necessary, replace the fork bolt as an assembly.



ASSEMBLY

'13 CB1100A shown:

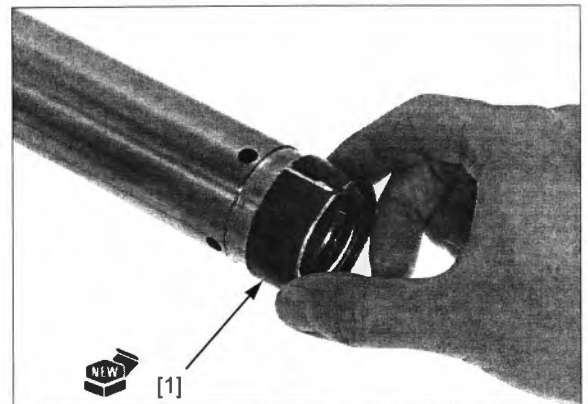


Before assembly, wash all parts with a high flash or non-flammable solvent and wipe them dry.

Do not open the bushing slit more than necessary.

Install a new fork pipe bushing [1] being careful not to damage the coating if it has been removed.

If necessary, remove the burrs from the bushing mating surface, being careful not to peel off the coating.

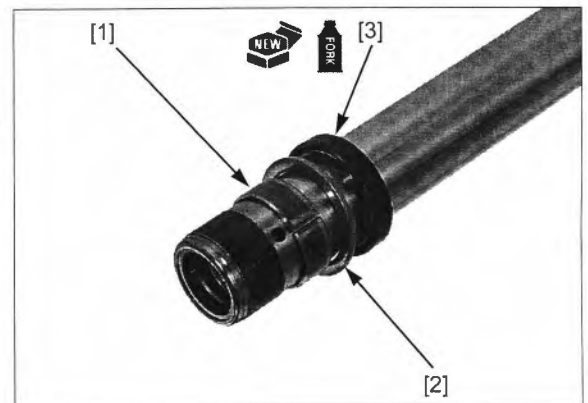


Install the guide bushing [1] and back-up ring [2] onto the fork pipe.

Wrap the fork pipe end with a vinyl tape.

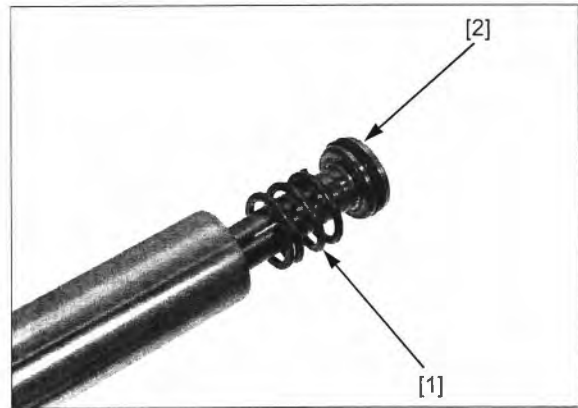
Install the oil seal with its marked side facing fork pipe top.

Apply fork fluid to new oil seal [3] lips and install the oil seal onto the fork pipe.

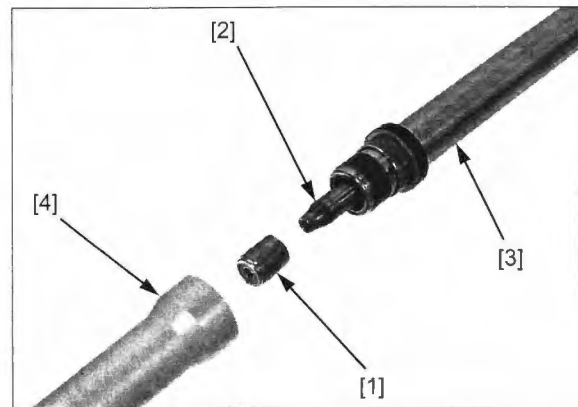


FRONT WHEEL/SUSPENSION/STEERING

Install the rebound spring [1] to the fork piston [2], then install them into the fork pipe.



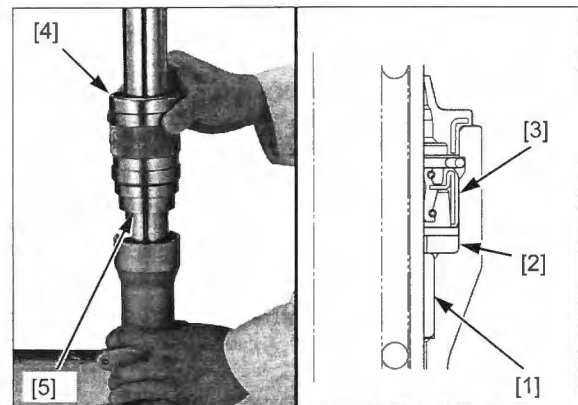
Install the oil lock piece [1] onto the bottom of the fork piston [2], then install the fork pipe [3] into the bottom case [4].



Drive the guide bushing [1], back-up ring [2], and oil seal [3] into the bottom case using the special tools.

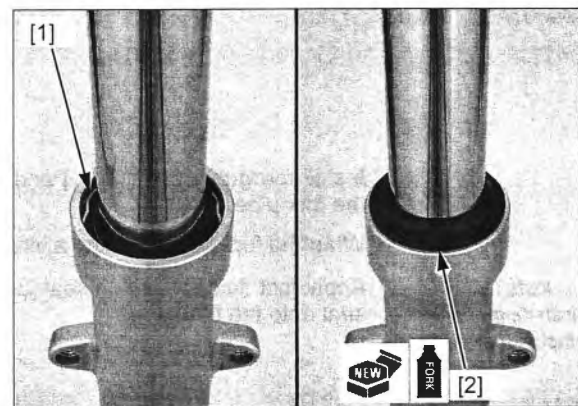
TOOLS:

- [4] Fork seal driver weight 07947-KA50100
- [5] Fork seal driver attachment, 41 mm 07947-KF00100



Install the stopper ring [1] into the bottom case groove securely.

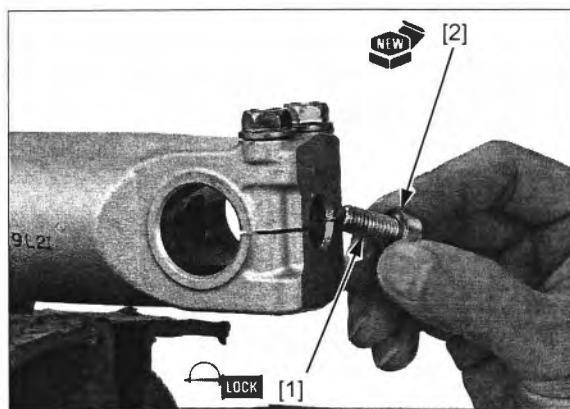
Apply fork fluid to the new dust seal [2] lips.
Install the dust seal to the bottom case.



Do not over-tighten the vise. Hold the caliper mount of the bottom case in a vise with soft jaws or a shop towel.

Clean the fork socket bolt threads and apply a locking agent.

Install the socket bolt [1] to the bottom case (fork piston) with a new sealing washer [2].

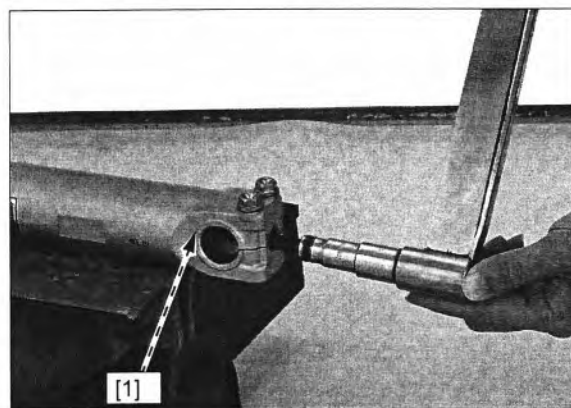


Tighten the fork socket bolt [1] to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

NOTE:

If the socket bolt turns together with the fork piston, temporarily install the fork spring, spring seat, spring collar and fork bolt.



Pour the specified amount of recommended fork fluid into the fork pipe.

RECOMMENDED FORK FLUID:

Pro Honda Suspension Fluid SS-8 (10W) or equivalent

FORK FLUID CAPACITY:

CB1100/A:

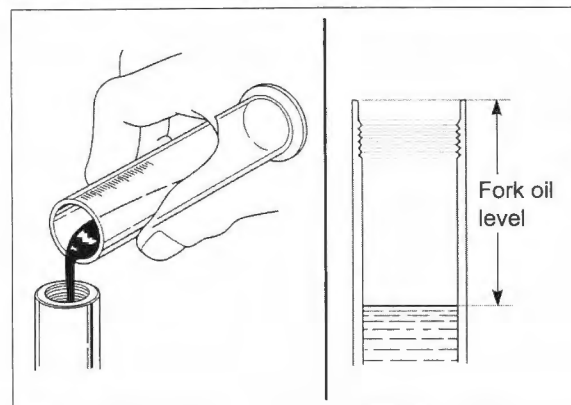
495 ± 2.5 cm³
(16.7 ± 0.08 US oz, 17.4 ± 0.09 Imp oz)

CB1100SA right fork:

506 ± 2.5 cm³
(17.1 ± 0.08 US oz, 17.8 ± 0.09 Imp oz)

CB1100SA left fork:

434 ± 2.5 cm³
(14.7 ± 0.08 US oz, 15.3 ± 0.09 Imp oz)



Slowly pump the fork pipe several times to remove the trapped air.

Be sure the oil level is the same in the both forks (CB1100/A only). Slowly compress the fork pipe fully and measure the oil level from the top of the fork pipe.

FORK OIL LEVEL:

CB1100/A:

117 mm (4.6 in)

CB1100SA right fork:

111 mm (4.4 in)

CB1100SA left fork:

185 mm (7.3 in)

FRONT WHEEL/SUSPENSION/STEERING

Extend the fork pipe fully.

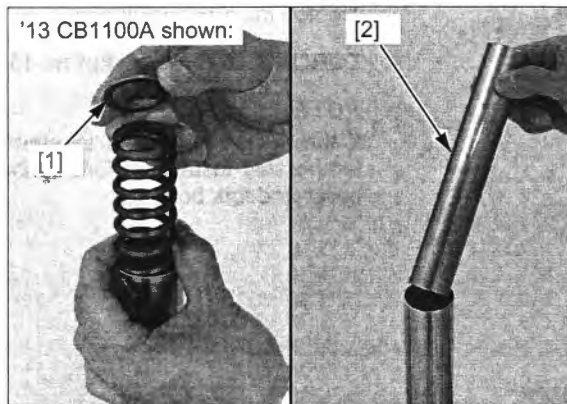
Install the fork spring with the tightly wound (narrow pitch) coils [1] facing down.

'13 CB1100A shown:



Install the spring seat [1] and spring collar [2].

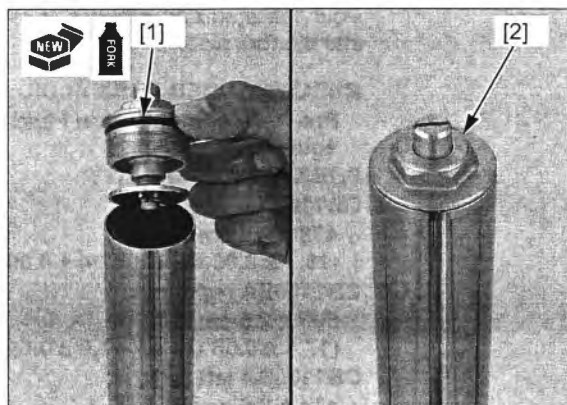
'13 CB1100A shown:



Apply fork fluid to a new O-ring [1] and install it into the fork bolt groove.

Tighten the fork bolt after installing the fork leg to the fork bridges.

Install the fork bolt [2] to the fork pipe.



INSTALLATION

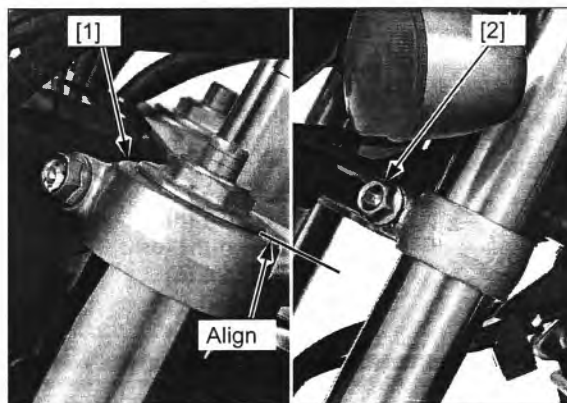
Install the fork leg through the bottom bridge and top bridge and align the fork pipe end with the top bridge [1] upper surface.

Tighten the bottom bridge pinch bolt [2] to the specified torque.

TORQUE:

'13 model: 44 N·m (4.5 kgf·m, 32 lbf·ft)

After '13 model: 39 N·m (4.0 kgf·m, 29 lbf·ft)



Tighten the fork bolt if [1] it was loosened.

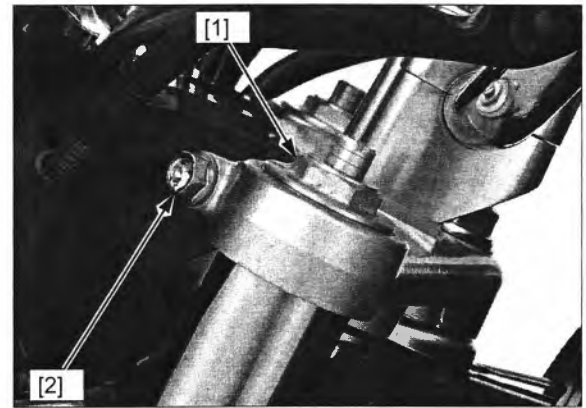
TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

Tighten the top bridge pinch bolt [2] to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)

Install the following:

- front wheel (page 12-18)
- front fender (page 2-8)
- front brake calipers
 - '13 CB1100A (page 14-38)
 - except '13 CB1100A (page 14-41)



STEERING STEM

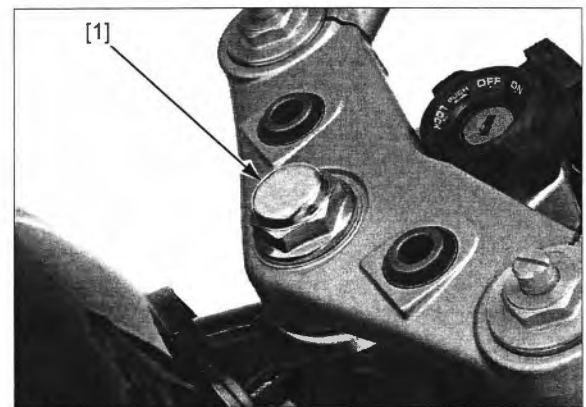
REMOVAL

Remove the following:

- handlebar (page 12-7)
- front wheel (page 12-14)
- headlight case (page 19-8)
- combination meter (page 19-11)
- horn (page 19-35)

Support the motorcycle securely using a safety stand or hoist.

Loosen the steering stem nut [1].



Remove the fork legs (page 12-20).

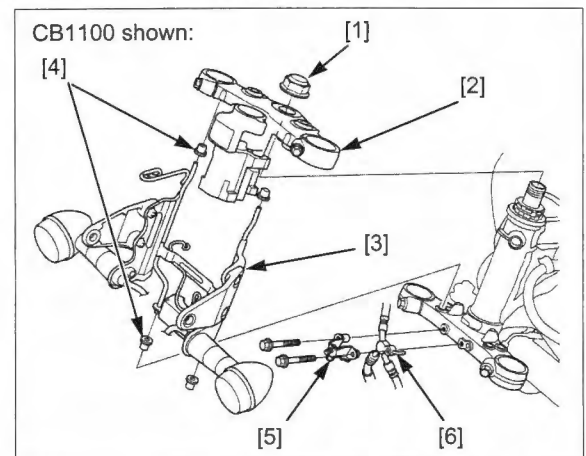
Remove the following:

- steering stem nut [1]
- top bridge [2]
- headlight bracket [3]
- setting rubbers [4]

Remove the bolt and horn stay [5].

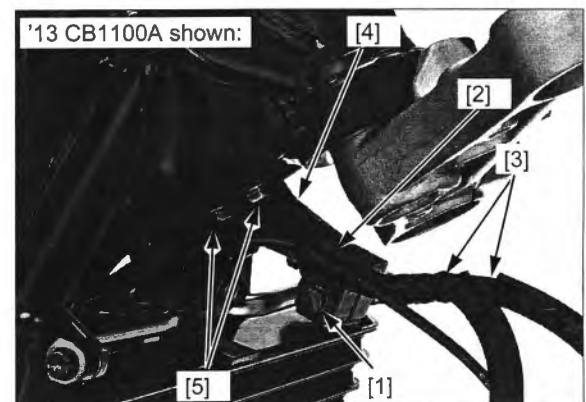
Except '13

CB1100A: Remove the brake hose joint [6].



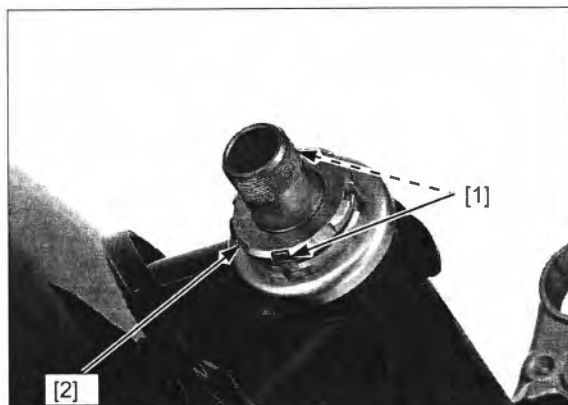
CB1100A/SA: Remove the brake hose mounting bolt [1], sensor wire clamp [2], and front brake hoses [3] from the brake hose stay [4].

Remove the bolts [5] and brake hose stay.



FRONT WHEEL/SUSPENSION/STEERING

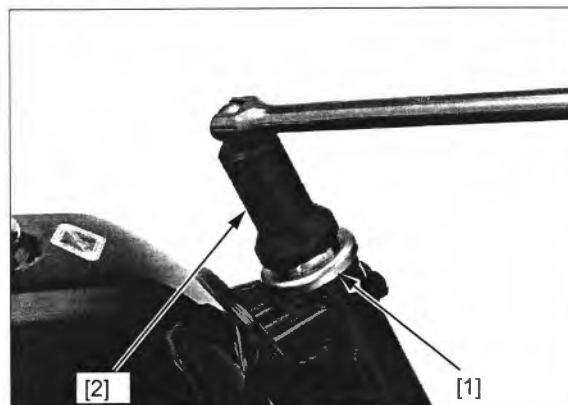
Straighten the tabs [1] of the lock washer.
Remove the lock nut [2] and lock washer.



Remove the steering stem adjusting nut [1] using the special tool.

TOOL:

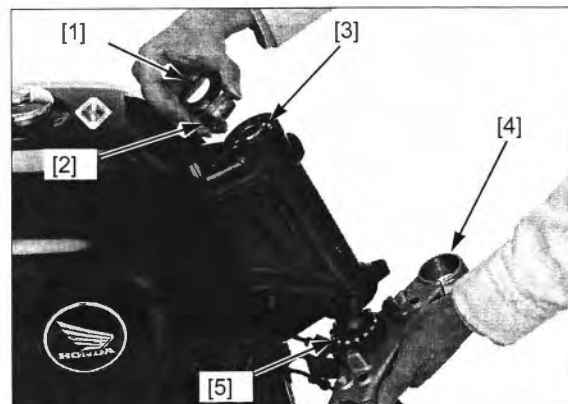
[2] Steering stem socket 07916-3710101



Remove the following:

- upper dust seal [1]
- upper bearing inner race [2]
- upper bearing [3]
- steering stem [4]
- lower bearing [5]

Check the steering head bearings and races for wear or damage.



BEARING RACE REPLACEMENT

NOTE:

Always replace the upper and lower bearings/races as a set.

Remove the upper bearing outer race [1] using the special tools.

TOOLS:

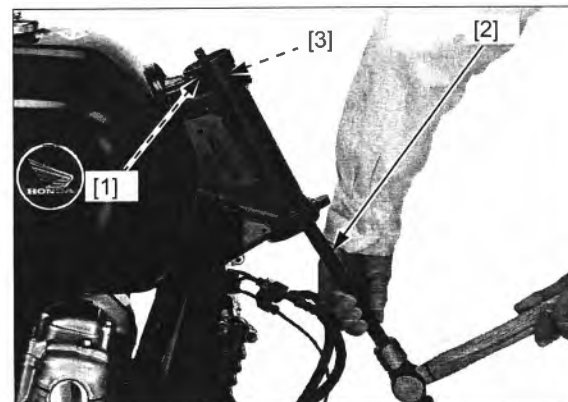
Ball race remover set 07953-MJ10000

- [2] Ball race remover shaft 07953-MJ10200

- [3] Remover attachment 07953-MJ10100

U.S.A. TOOLS:

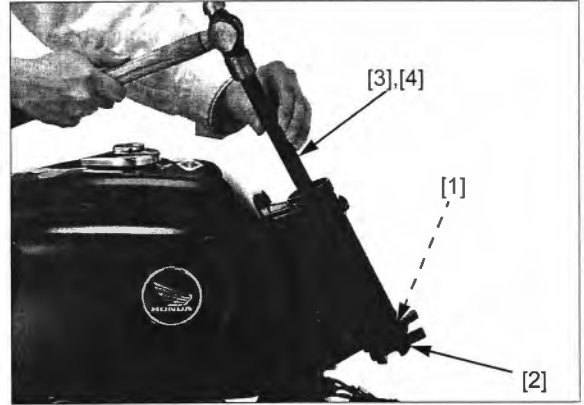
- [3] Race remover attachment 07953-MJ1000B
and a commercially available drift



Remove the lower bearing outer race [1] using the special tool.

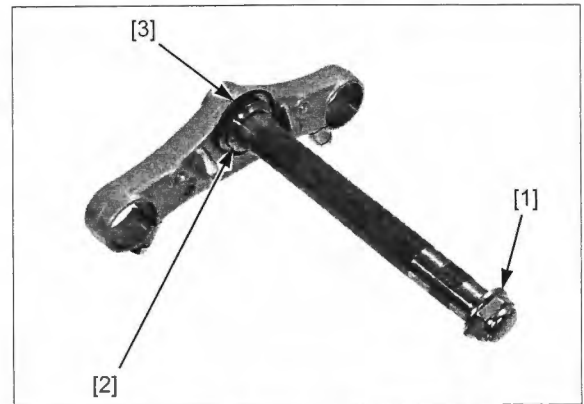
TOOL:

- [2] Ball race remover 07946-3710500
- [3] Driver 07949-3710001
- [4] Attachment, 32 x 35 mm 07746-0010100



Temporarily install the steering stem nut [1] onto the stem to prevent the threads from being damaged when removing the lower bearing inner race [2].

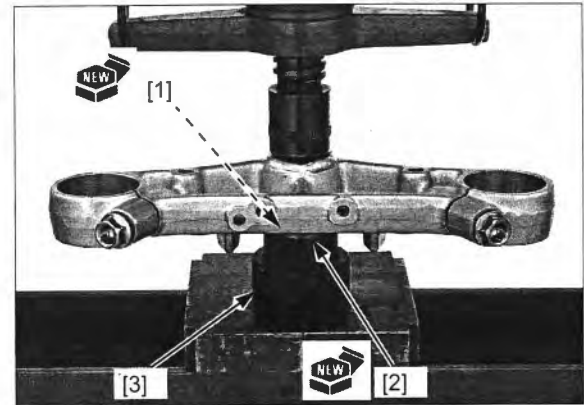
Remove the lower bearing inner race with a chisel or equivalent tool, being careful not to damage the stem. Remove the steering stem lower dust seal [3].



Apply urea based multi-purpose grease to new dust seal lips (page 1-19). Install the dust seal [1] over the steering stem. Install a new lower bearing inner race [2] using the special tool and a hydraulic press.

TOOL:

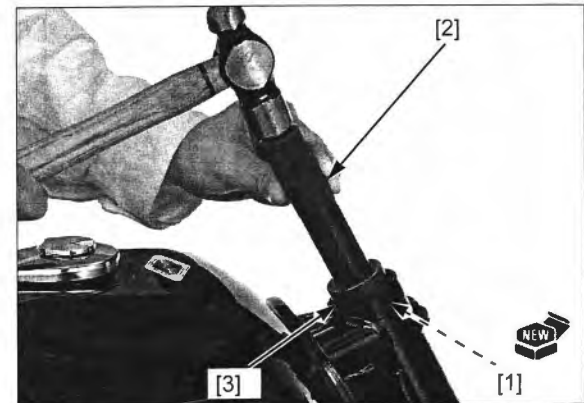
- [3] Attachment, 30 mm I.D. 07746-0030300



Drive a new upper bearing outer race [1] into the steering head pipe using the special tools.

TOOLS:

- [2] Driver 07749-0010000
- [3] Attachment, 42 x 47 mm 07746-0010300



FRONT WHEEL/SUSPENSION/STEERING

Drive a new lower bearing outer race [1] into the steering head pipe using the special tools.

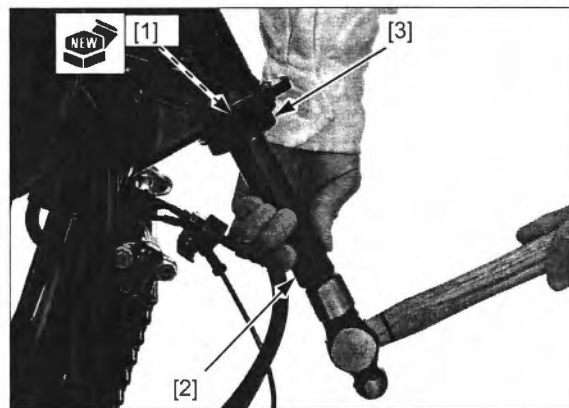
TOOLS:

[2] Driver

07749-0010000

[3] Attachment, 52 x 55 mm

07746-0010400



INSTALLATION

UREA-BASED	: BEARING
MULTI-PURPOSE	: BEARING RACE
GREASE	: DUST SEAL

'13 CB1100A shown:

HEADLIGHT BRACKET

HORN STAY

STEERING STEM

TOP BRIDGE

STEM NUT

LOCK NUT

LOCK WASHER

ADJUSTING NUT

UPPER DUST SEAL

UPPER INNER RACE

UPPER BEARING

UPPER OUTER RACE

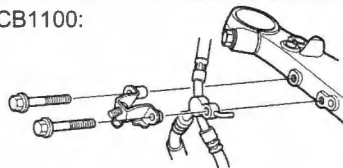
LOWER OUTER RACE

LOWER BEARING

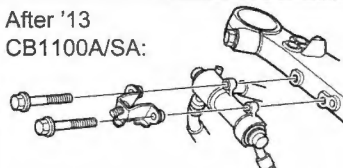
LOWER INNER RACE

LOWER DUST SEAL

CB1100:



After '13
CB1100A/SA:



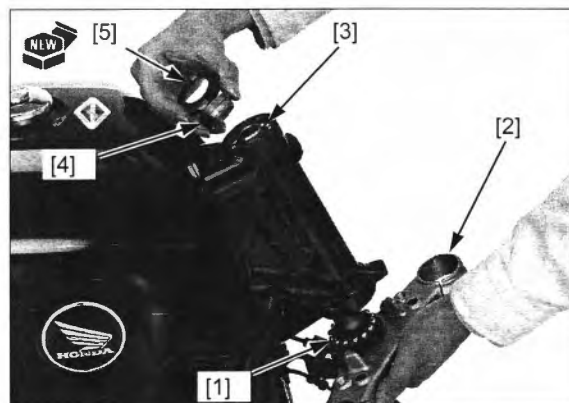
	: BEARING
	: BEARING RACE
	: DUST SEAL

Apply urea based multi-purpose grease to upper and lower bearings and bearing races (page 1-19).

Install the lower bearing [1] onto the steering stem [2] and insert the steering stem into the steering head pipe. Install the upper bearing [3] and inner race [4].

Apply urea based multi-purpose grease to new upper dust seal lips (page 1-19).

Install the dust seal [5] onto the steering stem.

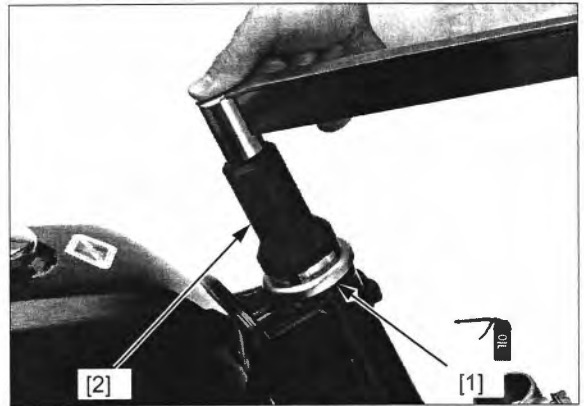


Apply oil to the steering stem adjusting nut [1] threads. Install and tighten the adjusting nut to the specified torque using the special tool.

TOOL:

Steering stem socket [2] 07916-3710101

TORQUE: 29 N·m (3.0 kgf·m, 21 lbf·ft)



Move the steering stem right and left, lock-to-lock, five times to seat the bearings. Make sure that the steering stem moves smoothly, without play or binding.



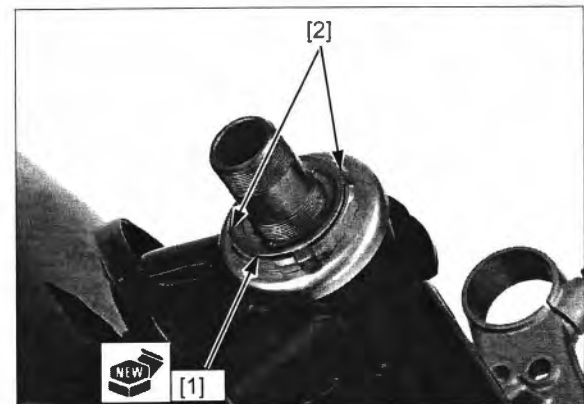
Retighten the steering stem adjusting nut [1] to the specified torque.

TORQUE: 29 N·m (3.0 kgf·m, 21 lbf·ft)

Recheck that the steering stem moves smoothly without play or binding.



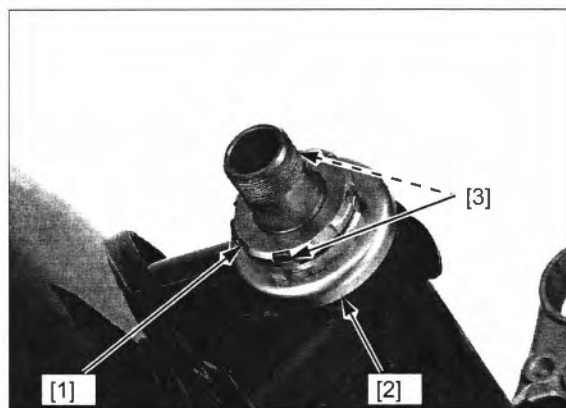
Install a new lock washer [1] onto the steering stem and align the tabs [2] of the lock washer with the grooves of the adjusting nut.



FRONT WHEEL/SUSPENSION/STEERING

Install and finger-tighten the lock nut [1].
Hold the adjusting nut [2] and further tighten the lock nut within 1/4 turn (90°), enough to align its grooves with the lock washer tabs [3].

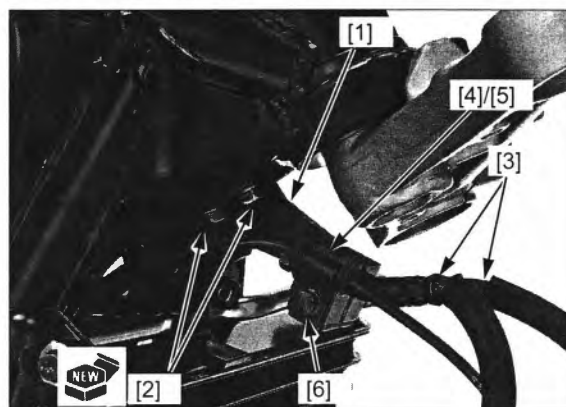
Bend the lock washer tabs up into the lock nut grooves.



CB1100A/SA: Install the brake hose stay [1] and new bolts [2].
Tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the front brake hoses [3] and sensor wire [4] to the stay and secure them with the clamp [5] and brake hose mounting bolt [6].



Route the cables, wire harness, and hoses properly (page 1-21).

Install the top bridge [1] with the setting rubbers [2] and headlight bracket [3], then install the stem nut [4].
Temporarily tighten the stem nut.

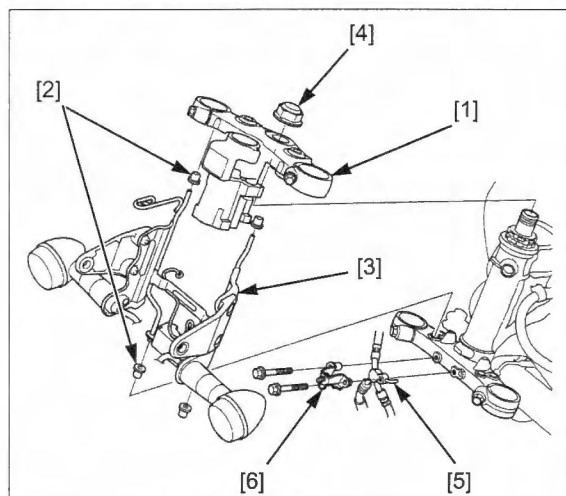
CB1100: Install the brake hose joint [5] onto the bottom bridge, aligning its boss with the hole on the bottom bridge.

Install the horn stay [6] and bolts, then tighten the bolts securely.

*After '13
CB1100A/SA:*

Install the brake hose joint [5], horn stay [6], and bolts [7], then tighten the bolts securely.

Install the fork legs (page 12-28).



After tightening the stem nut, make sure that the fork pipe ends align with the top bridge upper surface.

Tighten the steering stem nut [1] to the specified torque.

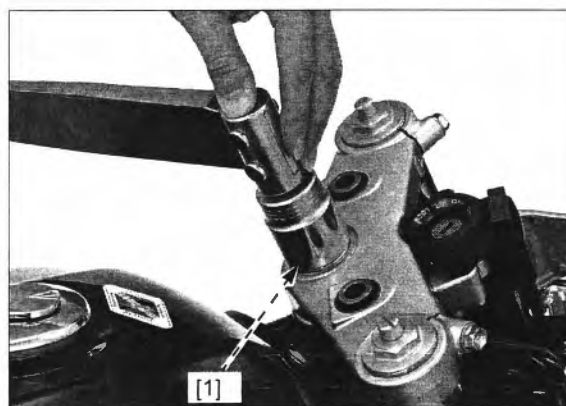
TORQUE: 103 N·m (10.5 kgf·m, 76 lbf·ft)

Move the steering stem right and left, lock-to-lock and make sure that the steering stem moves smoothly, without play or binding.

Check the steering head bearing pre-load (page 12-35).

Install the following:

- horn (page 19-35)
- combination meter (page 19-11)
- headlight case (page 19-8)
- front wheel (page 12-18)
- handlebar (page 12-9)



STEERING HEAD BEARING PRE-LOAD

Jack-up the motorcycle to raise the front wheel off the ground.

Position the steering stem to the straight ahead position.

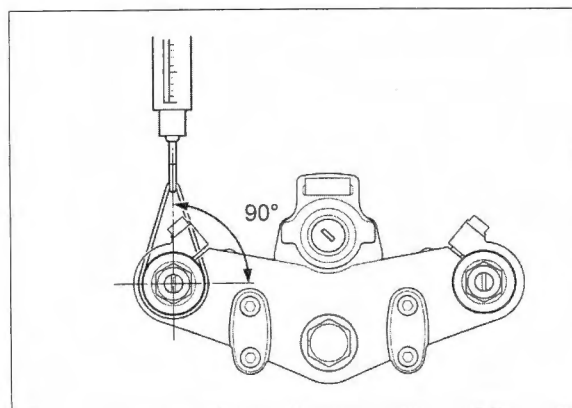
Make sure that there is no cable or wire harness interference.

Hook a spring scale to the fork pipe (between the top bridge and bottom bridge) and measure the steering head bearing pre-load.

Steering head bearing pre-load:

9.6– 13.7 N (1.0 – 1.4 kgf, 2.2 – 3.1 lbf)

If the readings do not fall within the limits, lower the front wheel to the ground and adjust the steering stem adjusting nut (page 12-32).



MEMO

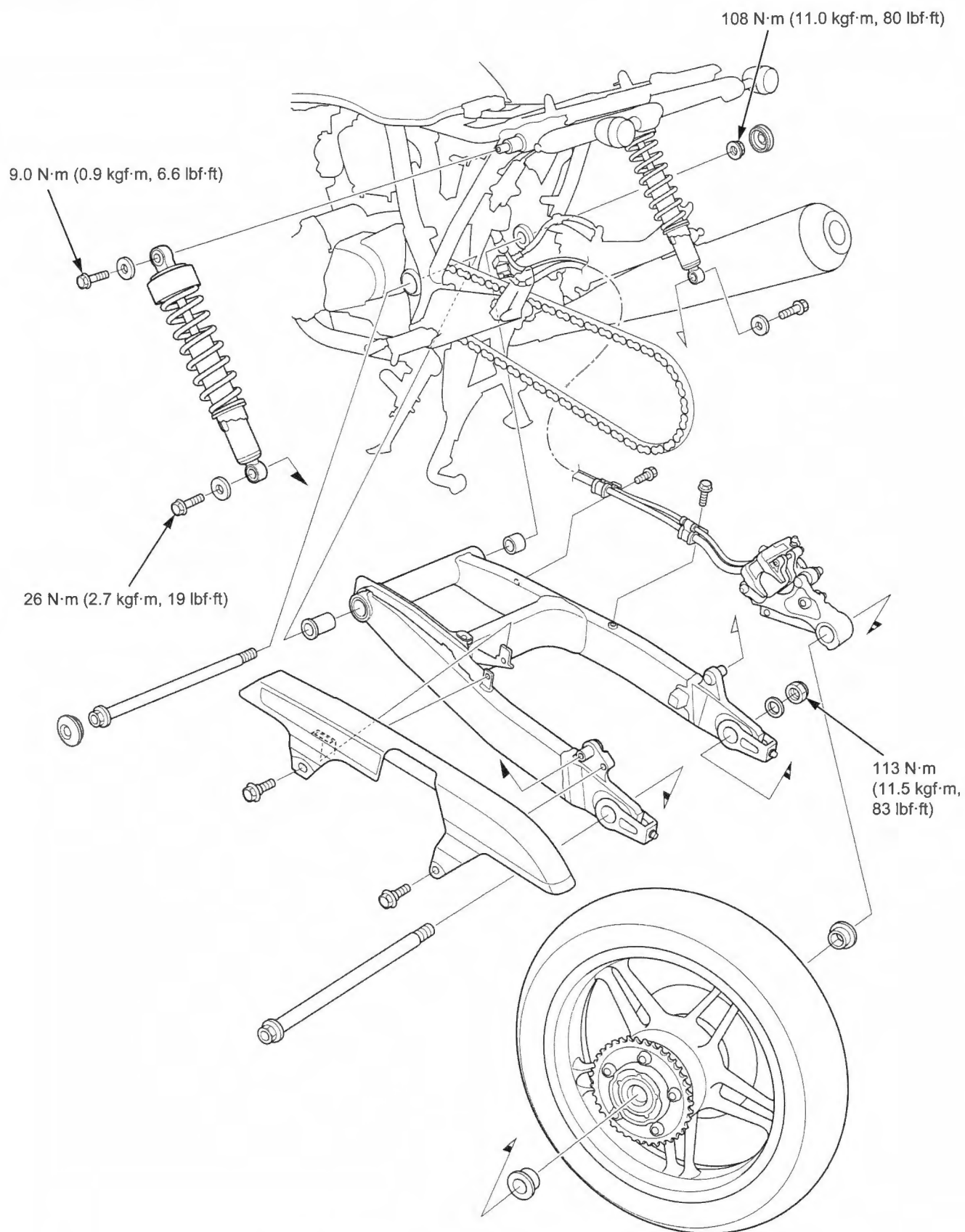
13. REAR WHEEL/SUSPENSION

COMPONENT LOCATION.....	13-2	REAR WHEEL.....	13-8
SERVICE INFORMATION.....	13-4	SHOCK ABSORBER.....	13-16
TROUBLESHOOTING	13-7	SWINGARM.....	13-17

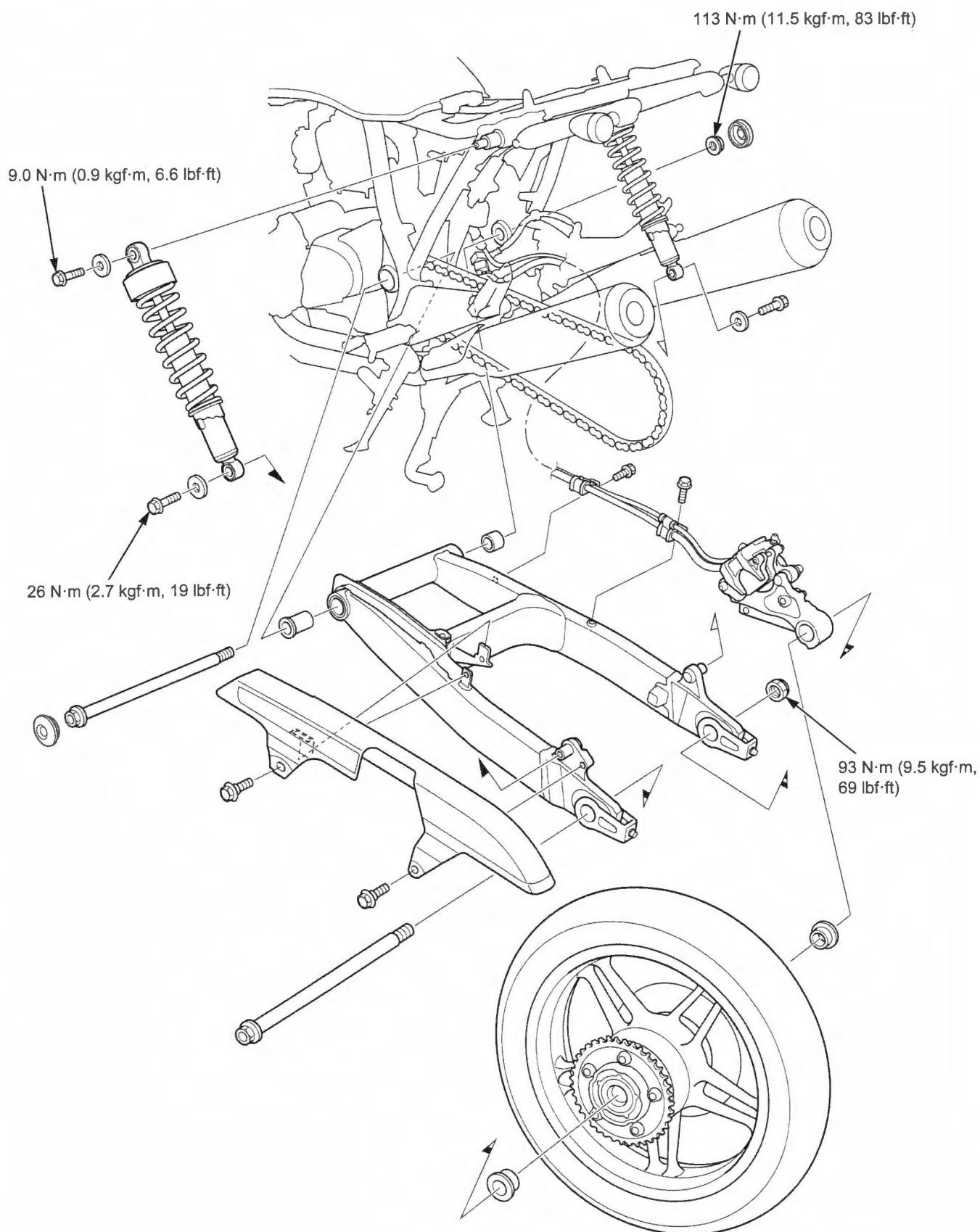
REAR WHEEL/SUSPENSION

COMPONENT LOCATION

'13 CB1100A shown:



CB1100SA shown:



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. Refer to information for the brake system servicing (page 14-5).
- After the rear wheel installation, check the brake operation by applying the brake pedal.
- Use only tires marked "TUBELESS" and tubeless valves on rim marked "TUBELESS TIRE APPLICABLE".
- Use genuine Honda replacement bolts and nuts for all suspension pivots and mounting points.

SPECIFICATIONS

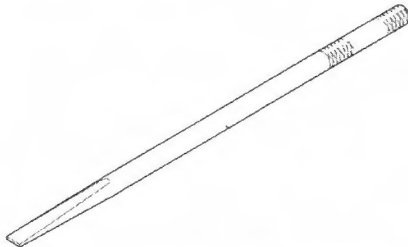
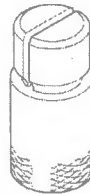
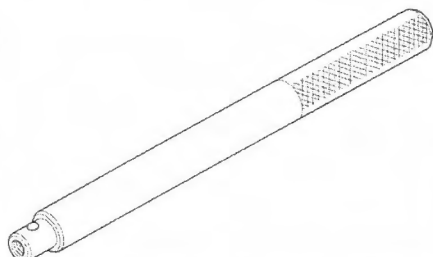
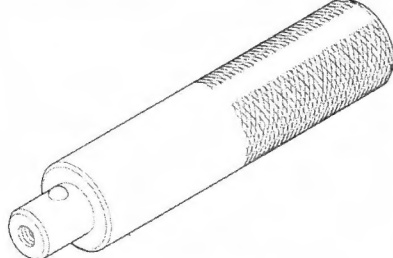
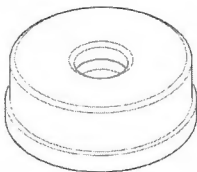
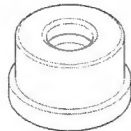
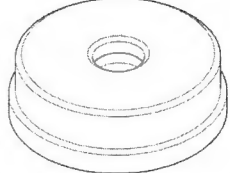
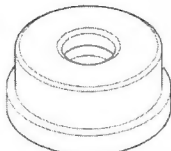
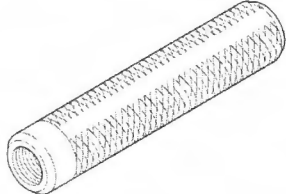
Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Minimum tire tread depth			—	2.0 (0.08)
Cold tire pressure	Up to 90 kg (200 lbs) load		290 kPa (2.90 kgf/cm ² , 42 psi)	—
	Up to maximum weight capacity		290 kPa (2.90 kgf/cm ² , 42 psi)	—
Axle runout			—	0.2 (0.01)
Wheel rim runout	Radial		—	2.0 (0.08)
	Axial		—	2.0 (0.08)
Wheel balance weight			—	60 g (2.1 oz) max.
Drive chain	Size/link ('13)	DID	DID50ZVM2/110L	—
		RK	RK50LFOZ2/110L	—
	Size/link (After '13)	DID	DID50VA11/110L	—
		RK	RK50HFOZ6/110L	—
	Slack		25 – 35 (1.0 – 1.4)	—
Shock absorber	Spring preload adjuster standard position		2nd position	—

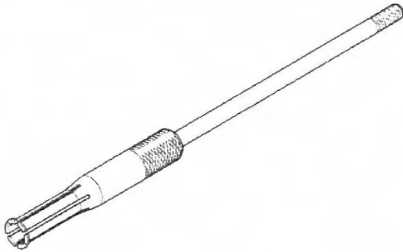
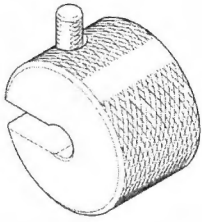
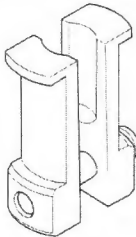
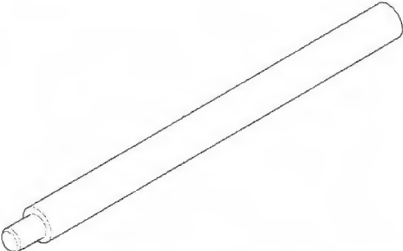
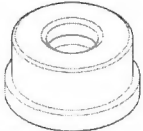
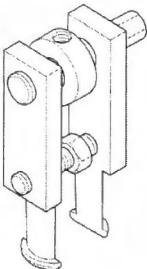
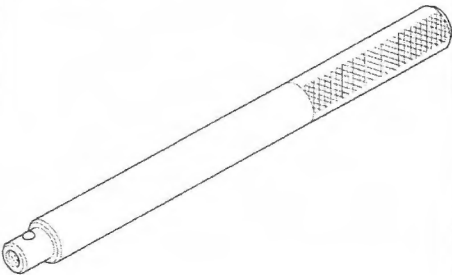
TORQUE VALUES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Driven sprocket nut	5	12	108 (11.0, 80)	
Rear brake disc bolt	5	8	42 (4.3, 31)	ALOC bolt; replace with a new one.
Rear pulser ring bolt	3	5	7.0 (0.7, 5.2)	ALOC bolt; replace with a new one.
Rear axle nut ('13)	1	22	113 (11.5, 83)	U-nut
Rear axle nut (After '13)	1	18	93 (9.5, 69)	U-nut
Rear shock absorber upper mounting bolt	2	6	9.0 (0.9, 6.6)	
Rear shock absorber lower mounting bolt	2	8	26 (2.7, 19)	
Drive chain slider screw	2	5	4.2 (0.4, 3.1)	ALOC screw; replace with a new one.
Swingarm pivot nut ('13)	1	18	108 (11.0, 80)	U-nut Apply engine oil to the threads and seating surface.
Swingarm pivot nut (After '13)	1	18	113 (11.5, 83)	U-nut Apply engine oil to the threads and seating surface.

TOOLS

Bearing remover shaft 07GGD-0010100 	Remover head, 25 mm 07746-0050800 	Driver 07949-3710001 
Attachment, 28 x 30 mm 07946-1870100 	Driver 07749-0010000 	Pilot, 28 mm 07746-0041100 
Attachment, 52 x 55 mm 07746-0010400 	Attachment, 32 x 35 mm 07746-0010100 	Pilot, 25 mm 07746-0040600 
Attachment, 62 x 68 mm 07746-0010500 	Attachment, 42 x 47 mm 07746-0010300 	Bearing remover handle 07936-3710100 

REAR WHEEL/SUSPENSION

Bearing remover shaft, 20 mm 07936-3710600 	Remover weight 07741-0010201  or 07936-3710200 or 07936-371020A (U.S.A. only)	Needle bearing remover 07HMC-MR70100 
Driver shaft 07946-MJ00100 	Attachment, 37 x 40 mm 07746-0010200 	Pilot, 28 mm 07JAD-PH80400 
Pilot, 20 mm 07746-0040500 	Adjustable bearing puller, 25-40 mm 07736-A01000B  U.S.A. only	Pilot, 32 x 50 mm 07MAD-PR90200  U.S.A. only
Driver 07949-3710001  U.S.A. only		

TROUBLESHOOTING

Soft suspension

- Weak shock absorber spring
- Incorrect pre-load adjustment
- Oil leakage from damper unit
- Insufficient tire pressure

Hard suspension

- Incorrect pre-load adjustment
- Damaged swingarm pivot bearings
- Bent damper rod
- Bent swingarm pivot
- Tire pressure too high

Rear wheel wobbling

- Bent rim
- Worn or damaged rear wheel/driven flange bearings
- Faulty rear tire
- Unbalanced rear tire and wheel
- Insufficient rear tire pressure
- Faulty swingarm pivot bearings

Rear wheel turns hard

- Faulty rear wheel/driven flange bearings
- Bent rear axle
- Rear brake drag
- Drive chain too tight

Rear suspension noise

- Faulty rear shock absorber
- Loose rear suspension fasteners

REAR WHEEL/SUSPENSION

REAR WHEEL

REMOVAL

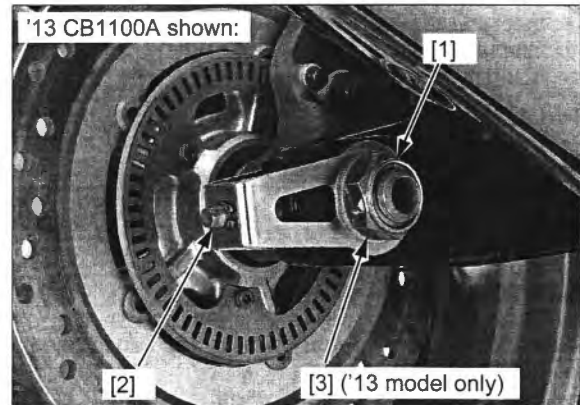
Loosen the rear axle nut [1].

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

Turn both adjusting bolts [2] and loosen the drive chain.

'13 model: Remove the rear axle nut and washer [3].

After '13 model: Remove the rear axle nut.



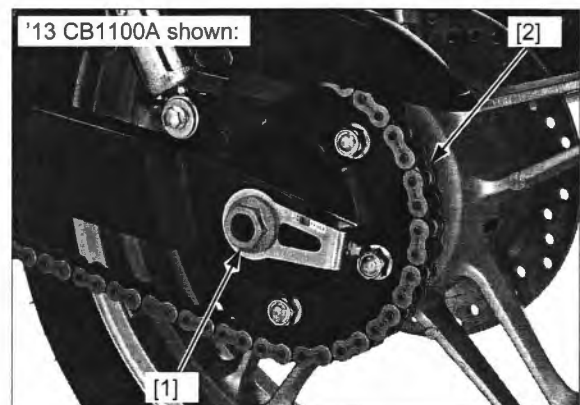
Be careful not to damage the wheel with the rear brake caliper.

Remove the rear axle [1] while holding the rear wheel.

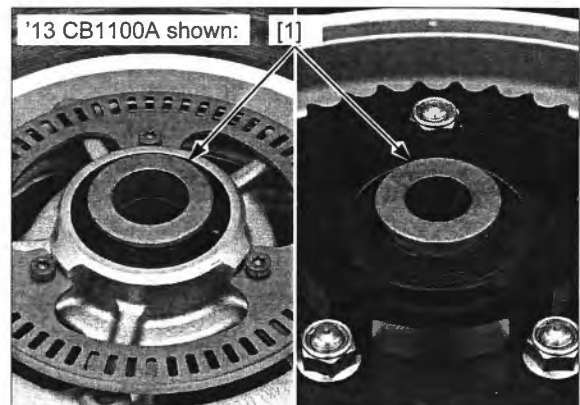
Derail the drive chain [2] from the driven sprocket, then remove the rear wheel.

NOTE:

Do not operate the brake pedal after the rear wheel is removed.



Remove the right and left side collars [1].

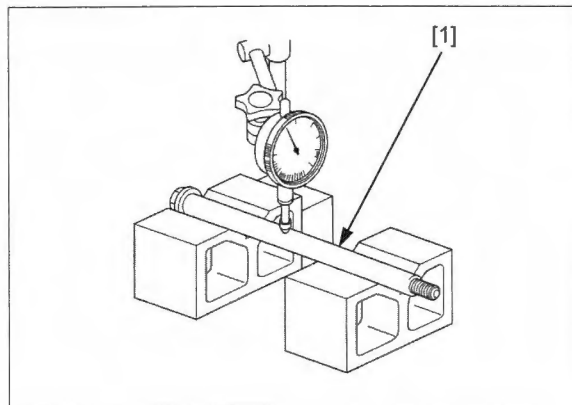


INSPECTION

Axle

Place the axle [1] in V-blocks and measure the runout. Actual runout is 1/2 the total indicator reading.

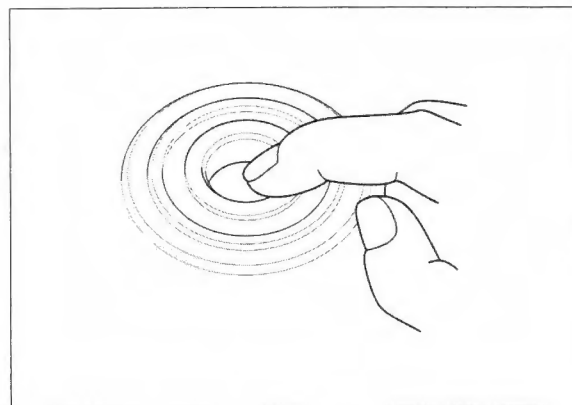
SERVICE LIMIT: 0.2 mm (0.01 in)



WHEEL BEARING/DRIVEN FLANGE BEARING

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.

Remove and discard the bearings if they do not turn smoothly and quietly, or if they fit loosely in the hub (page 13-10).



WHEEL RIM

Check the rim runout by placing the wheel in a truing stand.

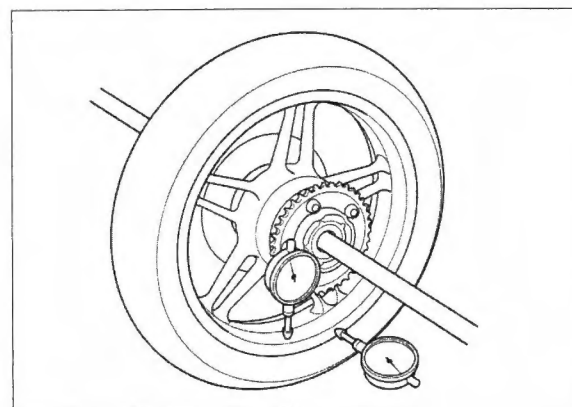
Spin the wheel slowly and read the runout using a dial gauge.

SERVICE LIMITS:

Radial: 2.0 mm (0.08 in)

Axial: 2.0 mm (0.08 in)

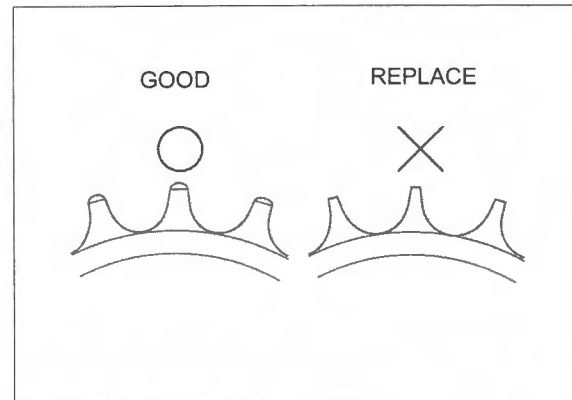
Always replace wheel which have been bent or have cracks, as they may cause air leakage.



DRIVEN SPROCKET

Check the condition of the driven sprocket teeth. Replace the sprocket if worn or damaged.

- If the driven sprocket requires replacement, inspect the drive chain and drive sprocket.
- Never install a new drive chain on worn sprockets or a worn chain on new sprockets. Both chain and sprocket must be in good condition or the new replacement parts will wear rapidly.



REAR WHEEL/SUSPENSION

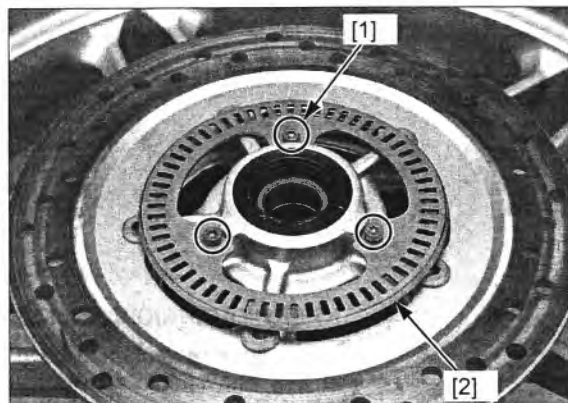
WHEEL BALANCE

Refer to the front wheel balance servicing (page 12-16).

DISASSEMBLY

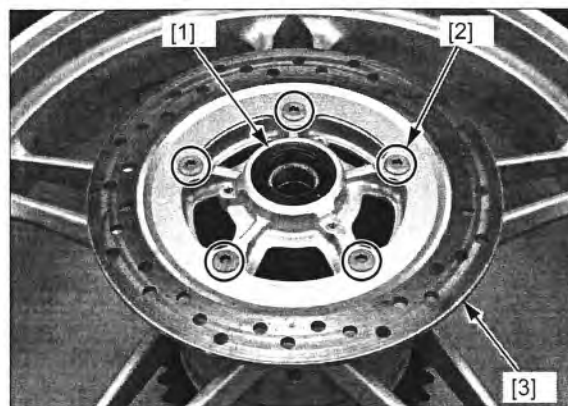
REAR WHEEL DISASSEMBLY

Remove the bolts [1] and rear pulser ring [2].



Remove the right dust seal [1].

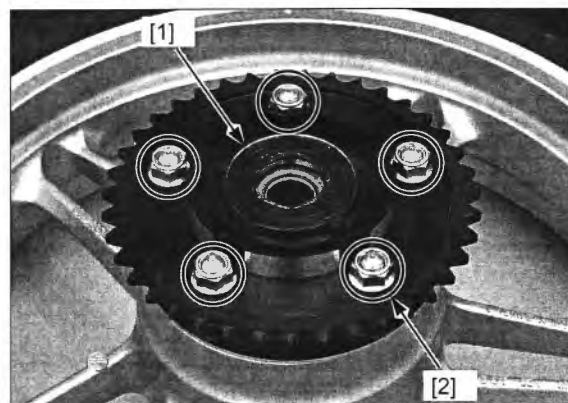
Remove the bolts [2] and rear brake disc [3].



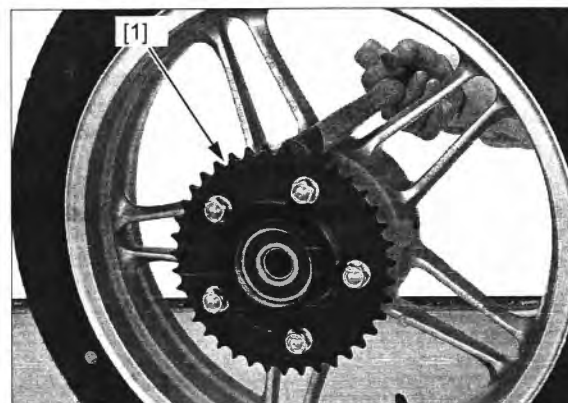
Remove the left dust seal [1] from the driven flange.

NOTE:

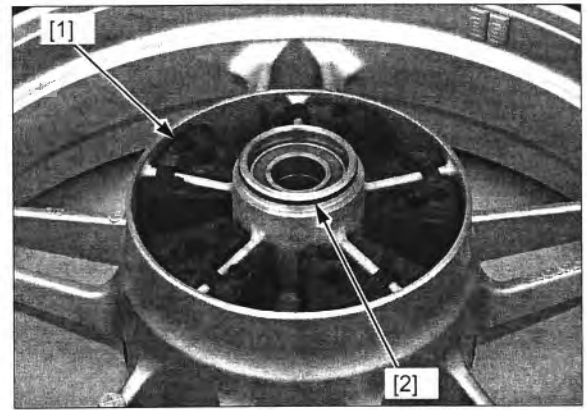
If the driven flange will be disassembled, loosen the driven sprocket nuts [2] before removing the driven flange from the wheel hub.



Remove the driven sprocket/driven flange assembly [1] from the left wheel hub.



Remove the wheel damper rubbers [1].
Remove the O-ring [2].



Install the bearing remover head into the right wheel bearing.
From the opposite side, install the bearing remover shaft and drive the bearing out of the wheel hub.

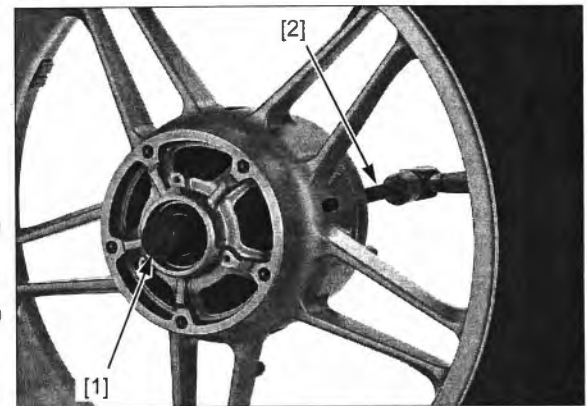
TOOLS:

'13 model:

- [1] Bearing remover head, 25 mm 07746-0050800
- [2] Bearing remover shaft 07GGD-0010100

After '13 model:

- [1] Bearing remover head, 20 mm 07746-0050600
- [2] Bearing remover shaft 07GGD-0010100



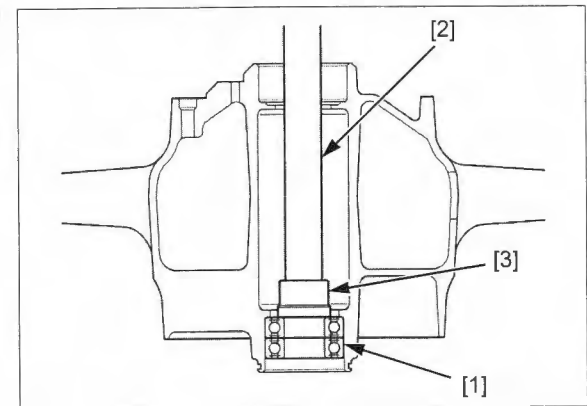
'13 model: Remove the distance collar.

After '13 model: Remove the distance collar and drive out the left wheel bearing.

'13 model only: Drive the left wheel bearings [1] out using the special tools.

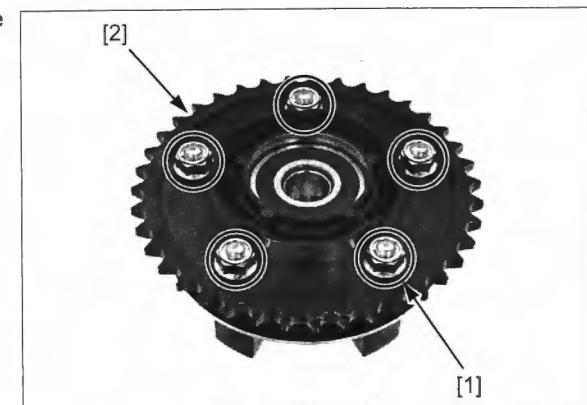
TOOLS:

- [2] Driver 07949-3710001
- [3] Attachment, 28 x 30 mm 07946-1870100



DRIVEN FLANGE DISASSEMBLY

Remove the nuts [1] and driven sprocket [2] from the driven flange.



REAR WHEEL/SUSPENSION

Drive the driven flange collar [1] out of the driven flange bearing using the special tools.

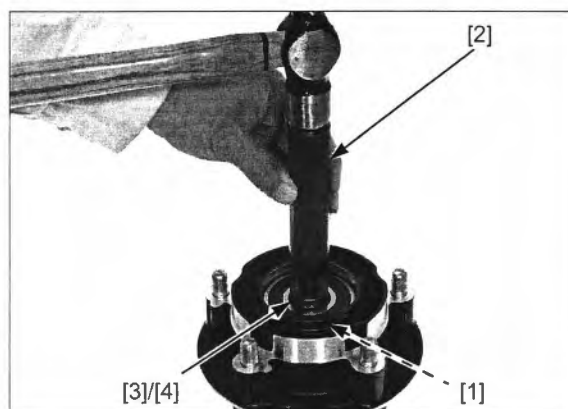
TOOLS:

'13 model:

[2] Driver	07749-0010000
[3] Pilot, 28 mm	07746-0041100

After '13 model:

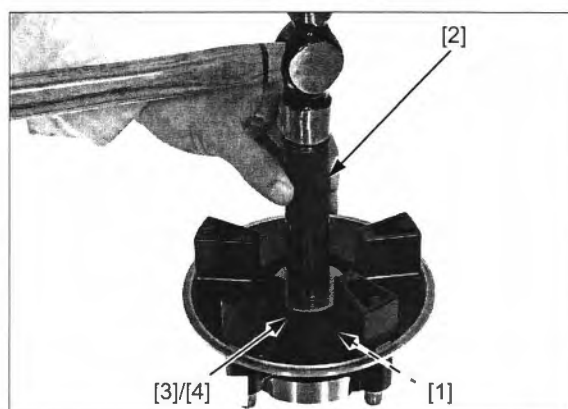
[2] Driver	07749-0010000
[3] Attachment, 28 x 30 mm	07946-1870100
[4] Pilot, 20 mm	07746-0040500



Drive the driven flange bearing [1] out using the special tools.

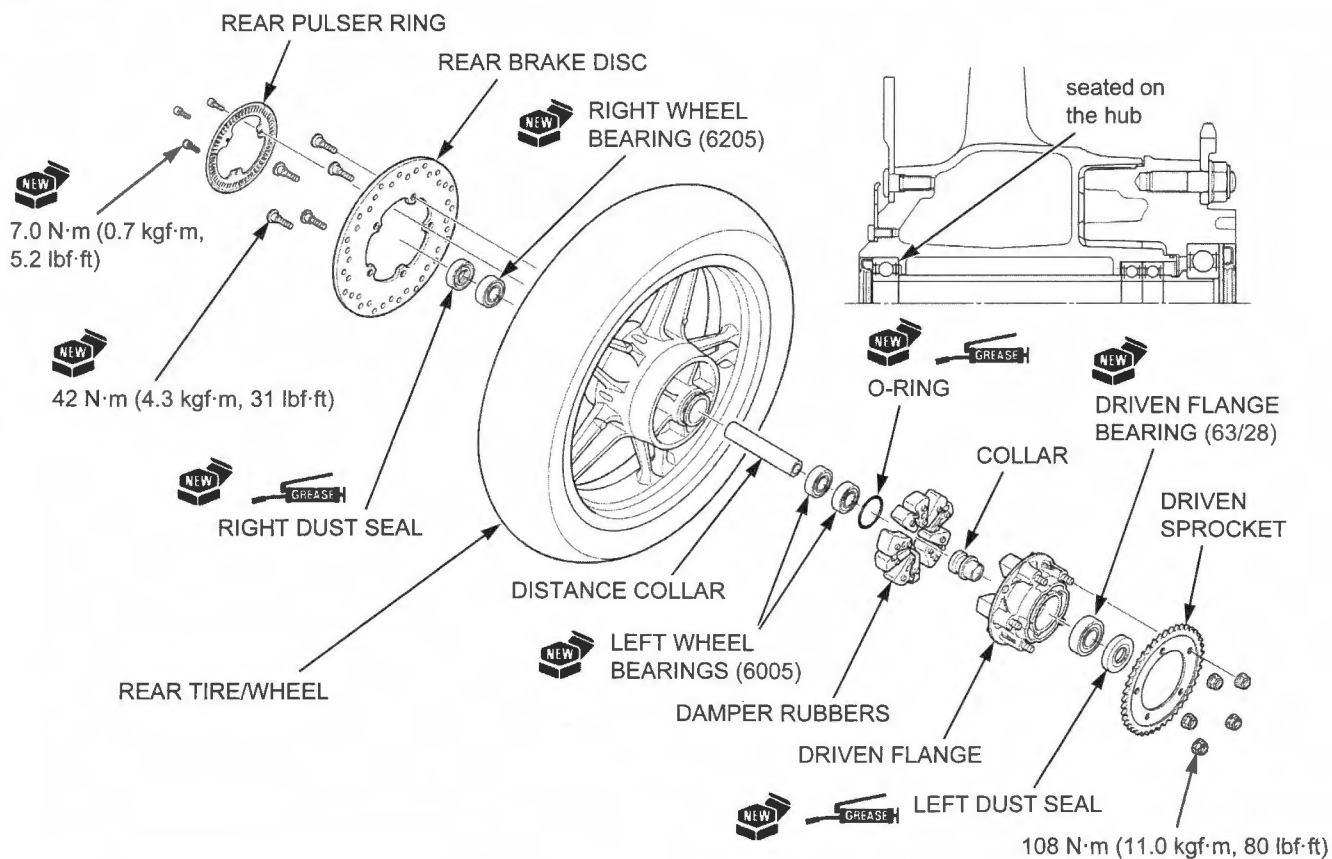
TOOLS:

[2] Driver	07749-0010000
[3] Attachment, 42 x 47 mm	07746-0010300
[4] Pilot, 28 mm	07746-0041100

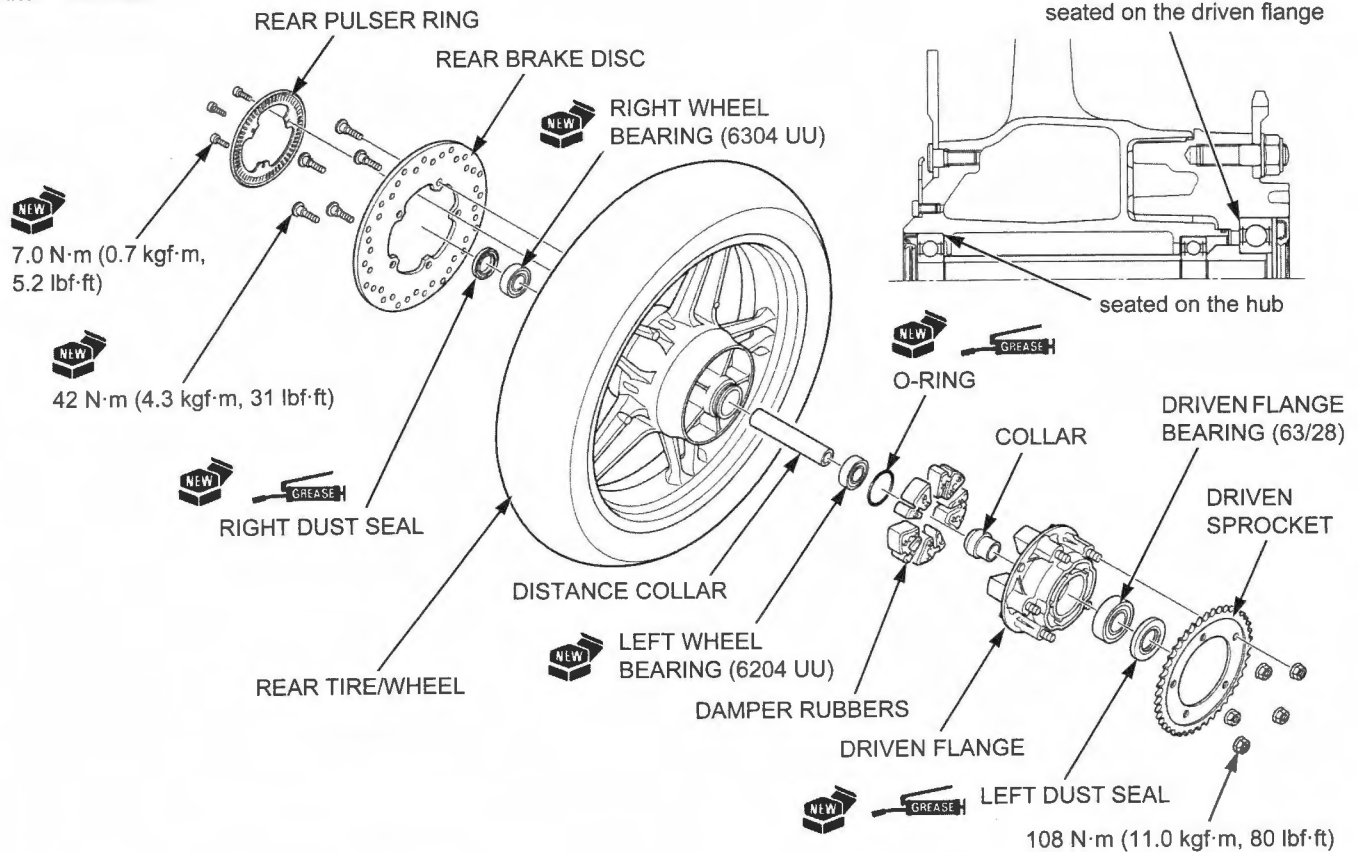


ASSEMBLY

'13 model:



After '13 model:



DRIVEN FLANGE ASSEMBLY

Install the driven flange collar [1] into a new driven flange bearing [2] using the special tools.

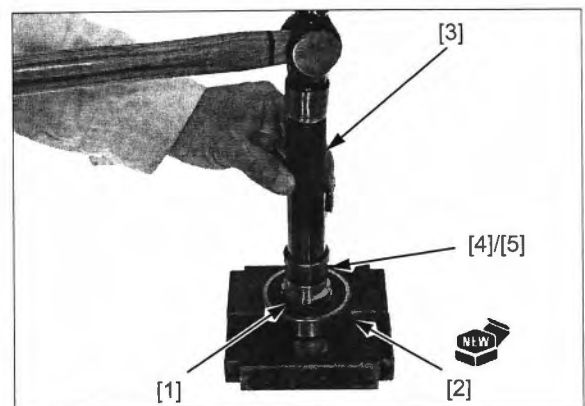
TOOLS:

'13 model:

[3] Driver	07749-0010000
[4] Attachment, 32 x 35 mm	07746-0010100
[5] Pilot, 25 mm	07746-0040600

After '13 model:

[3] Driver	07749-0010000
[4] Attachment, 32 x 35 mm	07746-0010100
[5] Pilot, 20 mm	07746-0040500



Drive the driven flange bearing [1]/collar [2] in the driven flange until it is fully seated.

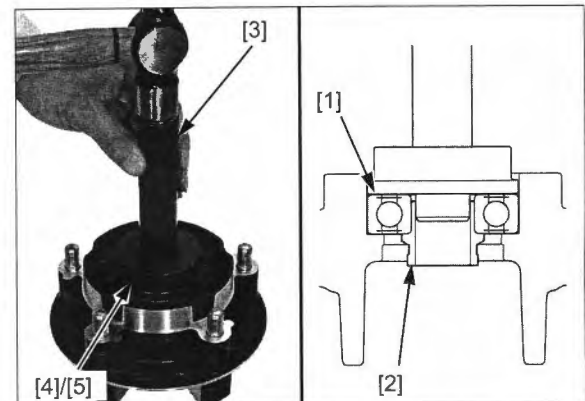
TOOLS:

'13 model:

[3] Driver	07749-0010000
[4] Attachment, 62 x 68 mm	07746-0010500
[5] Pilot, 25 mm	07746-0040600

After '13 model:

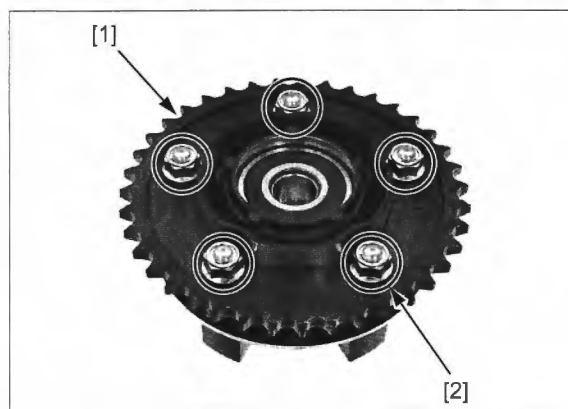
[3] Driver	07749-0010000
[4] Attachment, 62 x 68 mm	07746-0010500
[5] Pilot, 20 mm	07746-0040500



REAR WHEEL/SUSPENSION

Tighten the driven sprocket nut to the specified torque after installing the driven flange into the wheel hub.

Install the driven sprocket [1] and nuts [2] if they were removed.



REAR WHEEL ASSEMBLY

Never install the old bearings, once the bearings have been removed, they must be replaced with new ones.

Drive in a new right wheel bearing squarely until it is fully seated on the hub.

TOOLS:

'13 model:

[1] Driver	07749-0010000
[2] Attachment, 52 x 55 mm	07746-0010400
[5] Pilot, 25 mm	07746-0040600

After '13 model:

[3] Driver	07749-0010000
[2] Attachment, 52 x 55 mm	07746-0010400
[5] Pilot, 20 mm	07746-0040500

NOTE:

Replace the wheel bearings in pairs.

Install the distance collar into the wheel hub.

'13 model: Drive in new left wheel bearings until they are seated on the distance collar.

After '13 model: Drive in a new left wheel bearing until it is seated on the distance collar.

TOOLS:

'13 model:

[1] Driver	07749-0010000
[2] Attachment, 42 x 47 mm	07746-0010300
[5] Pilot, 25 mm	07746-0040600

After '13 model:

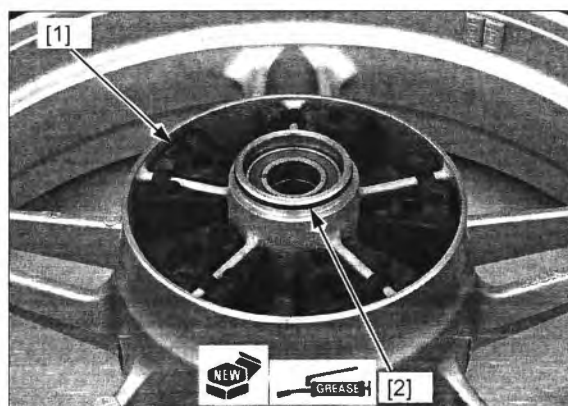
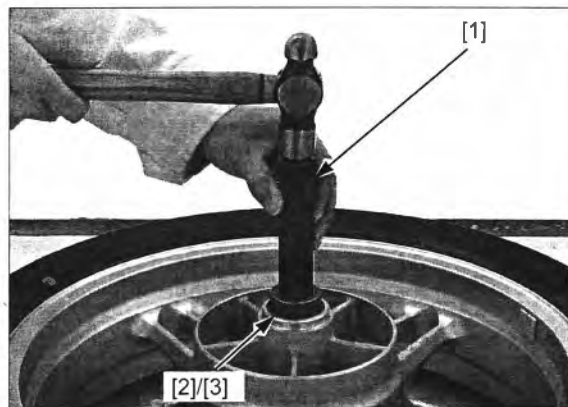
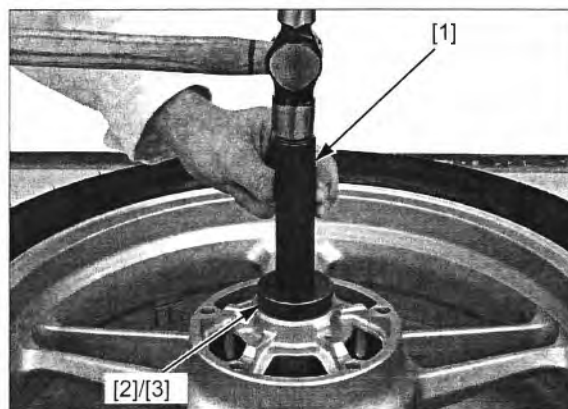
[3] Driver	07749-0010000
[2] Attachment, 42 x 47 mm	07746-0010300
[5] Pilot, 20 mm	07746-0040500

Replace the damper rubbers as a set.

Check the wheel damper rubbers for deterioration or damage and replace them if necessary.

Install the wheel damper rubbers [1] into the wheel hub.

Apply grease to a new O-ring [2] and install it into the groove of the wheel hub.

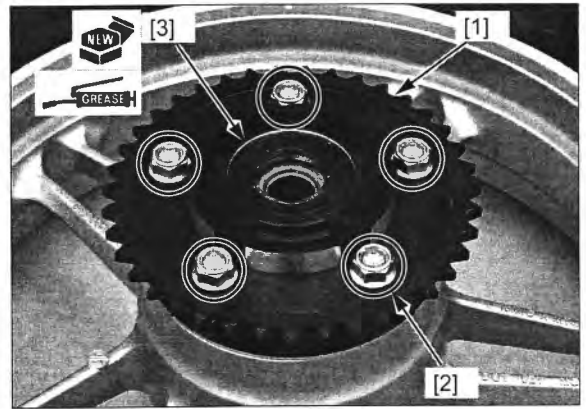


Install the driven flange assembly [1] into the wheel hub.

Tighten the nuts [2] to the specified torque.

TORQUE: 108 N·m (11.0 kgf·m, 80 lbf·ft)

Apply grease to the lip of a new left dust seal [3], then install the dust seal into the driven flange.



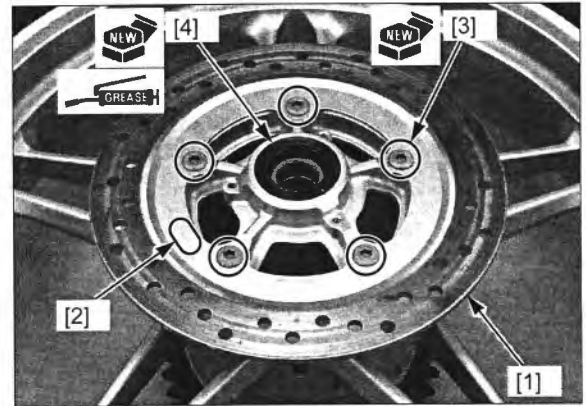
Install the brake disc [1] with its arrow mark [2] facing out.

Install and tighten new brake disc bolts [3] to the specified torque.

TORQUE: 42 N·m (4.3 kgf·m, 31 lbf·ft)

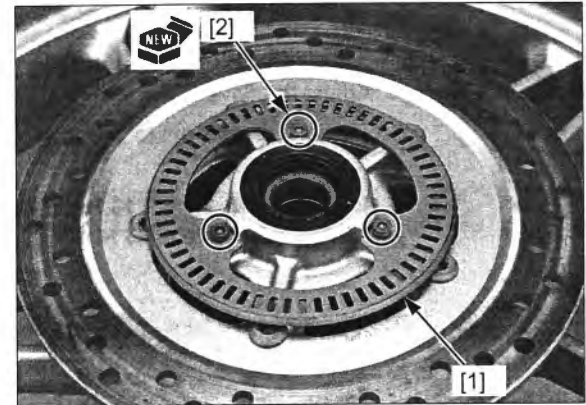
Do not get grease on the brake disc or stopping power will be reduced.

Apply grease to the lip of a new right dust seal [4], then install the dust seal into the wheel hub.



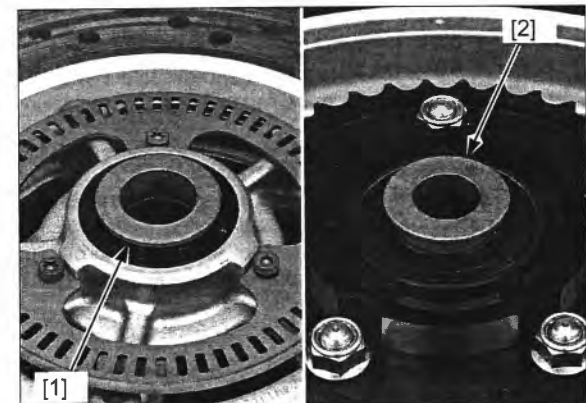
Install the rear pulser ring [1] and new bolts [2]. Tighten the bolts to the specified torque.

TORQUE: 7.0 N·m (0.7 kgf·m, 5.2 lbf·ft)



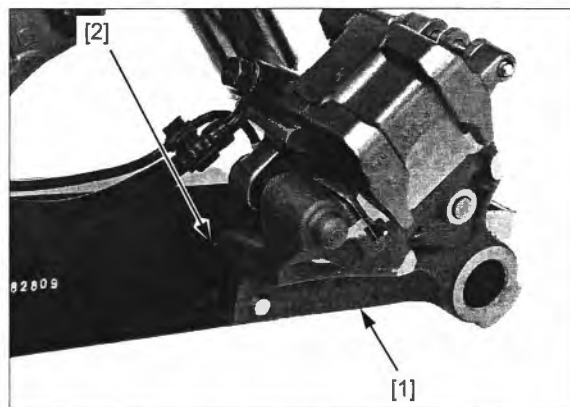
INSTALLATION

Install the right side collar [1] and left side collar [2].



REAR WHEEL/SUSPENSION

Check that the rear brake caliper bracket [1] is installed onto the guide [2] of the swingarm.

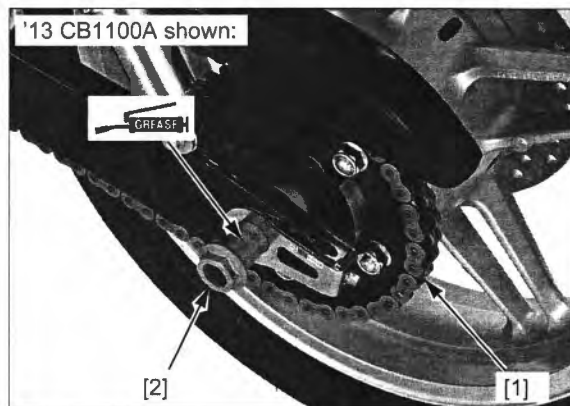


Place the rear wheel into the swingarm.

Be careful not to damage the brake pads.

Install the drive chain [1] over the driven sprocket and set the brake disc between the brake pads.

Apply thin layer of grease to the rear axle [2] surface. Install the rear axle from the left side.



'13 model: Install the washer [1] and rear axle nut [2].

After '13 model: Install the rear axle nut [2].

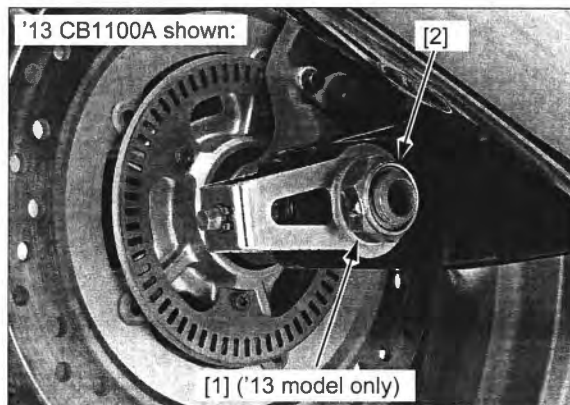
Adjust the drive chain slack (page 3-19).

Tighten the axle nut to the specified torque.

TORQUE:

'13 model: 113 N·m (11.5 kgf·m, 83 lbf·ft)

After '13 model: 93 N·m (9.5 kgf·m, 69 lbf·ft)



SHOCK ABSORBER

REMOVAL

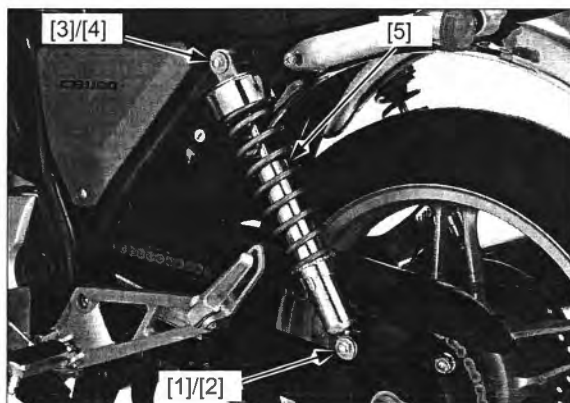
Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.

Remove the muffler if the shock absorber is difficult to remove ('13: page 2-13, After '13: page 2-17).

Remove the shock absorber lower mounting bolt [1] and washer [2].

Remove the shock absorber upper mounting bolt [3] and washer [4].

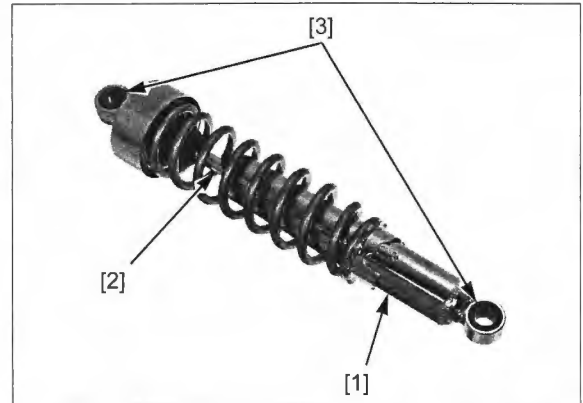
Remove the shock absorber [5] from the mounting pivots on the frame and swingarm.



INSPECTION

Check the damper unit [1] for leakage or other damage.
Check the damper rod [2] for bends or damage.
Replace the shock absorber assembly if necessary.

Check the pivot bushings [3] for damage, wear, or deterioration.
Replace the bushings if necessary.



INSTALLATION

Install the shock absorber [1] onto the mounting pivots on the frame and swingarm.
Install the washer [2] and upper mounting bolt [3].
Install the washer [4] and lower mounting bolt [5].
Tighten the mounting bolts to the specified torque.

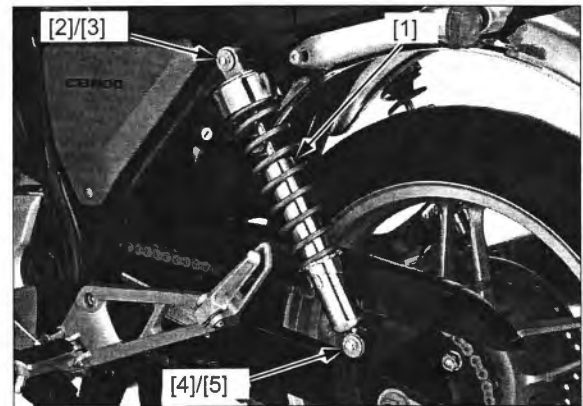
TORQUE:

Lower mounting bolt:

26 N·m (2.7 kgf·m, 19 lbf·ft)

Upper mounting bolt:

9.0 N·m (0.9 kgf·m, 6.6 lbf·ft)



SWINGARM

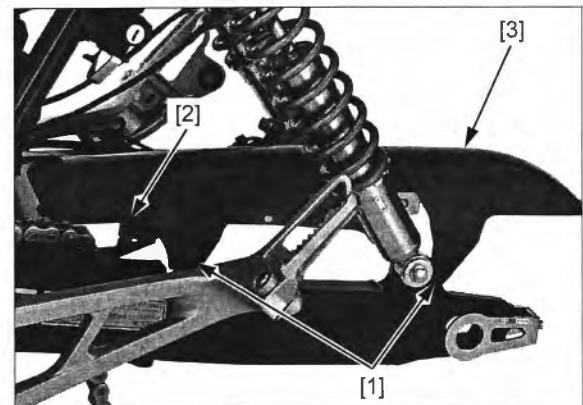
REMOVAL

Support the motorcycle using a safety stand or hoist.

Remove the following:

- muffler
 - CB1100/A (page 2-13)
 - CB1100SA (page 2-17)
- rear wheel (page 13-8)

Remove the bolts [1], the case tab from the stay [2], and the drive chain case [3].

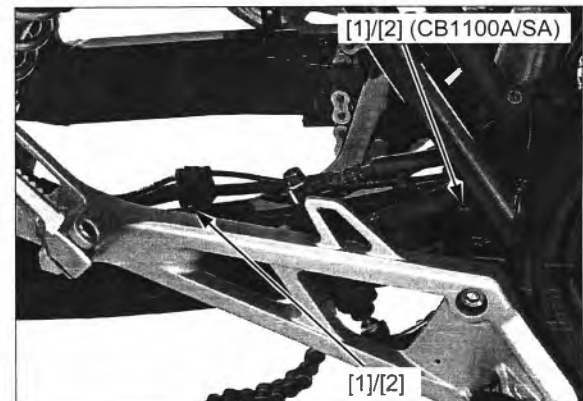


Remove the bolt(s) [1] and rear brake hose clamp(s) [2] from the swingarm.

Remove the rear caliper bracket from the guide on the swingarm.

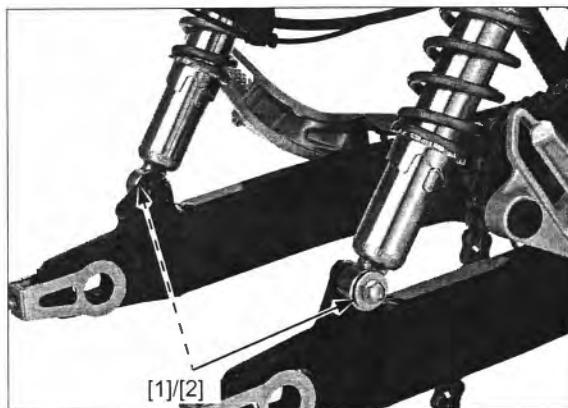
NOTE:

Support the brake caliper so that it does not hang from the brake hose. Do not twist the brake hose.

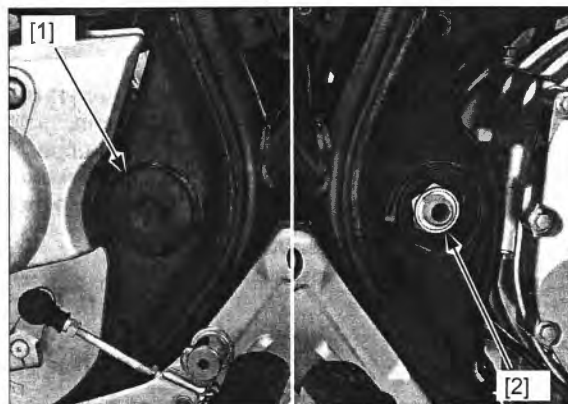


REAR WHEEL/SUSPENSION

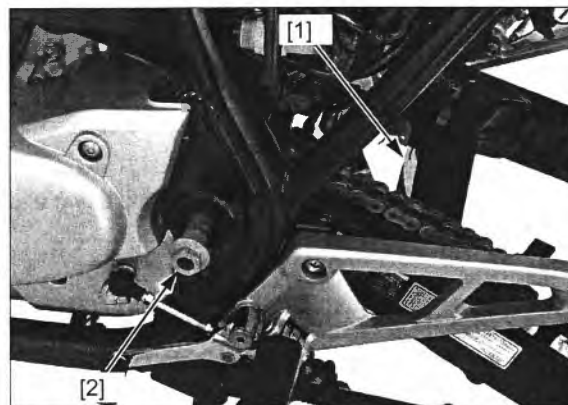
Remove the shock absorber lower mounting bolts [1] and washers [2].



Remove both swingarm pivot caps [1].
Remove the swingarm pivot nut [2].



Support the swingarm [1] and remove the pivot bolt [2].
Remove the swingarm from the frame.

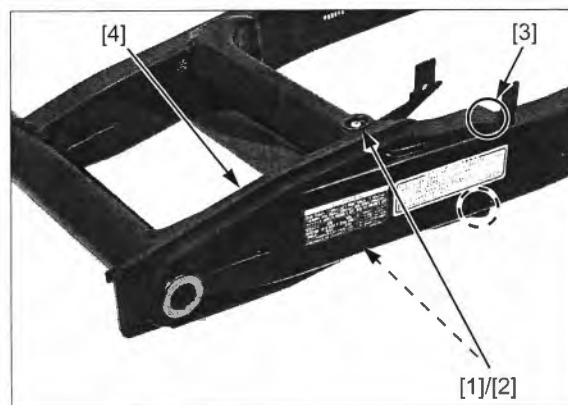


DISASSEMBLY/INSPECTION

Remove the drive chain slider screws [1] and washers [2].

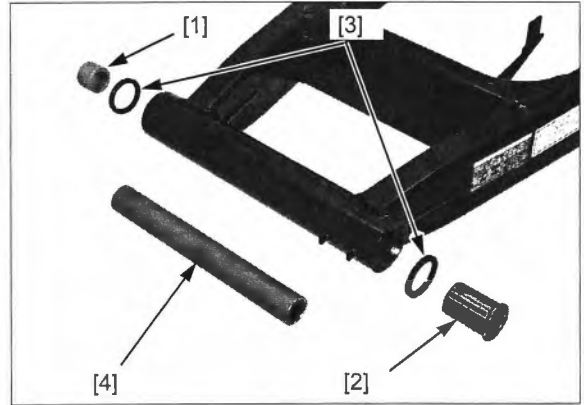
Pull the bosses [3] off and remove the drive chain slider [4] from the swingarm.

Check the drive chain slider for wear or damage and replace if necessary.



Remove the right pivot collar [1], left pivot collar [2], and dust seals [3] from the swingarm pivot. Remove the distance collar [4].

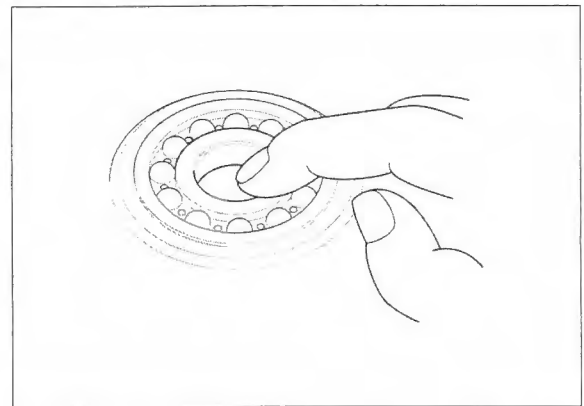
Check the swingarm, pivot collars, and distance collar for damage and replace if necessary.



Turn the inner race of right pivot bearings with your finger.

The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

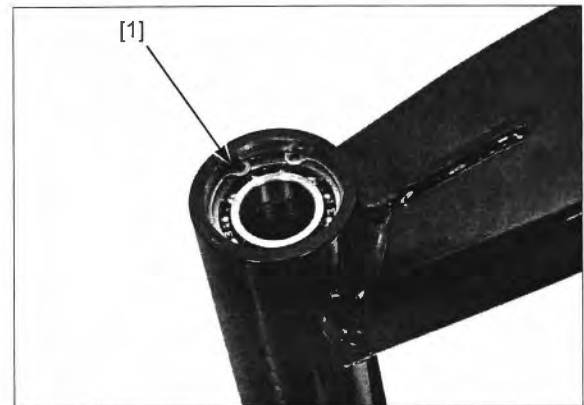
Remove and discard the bearings if they do not turn smoothly and quietly, or if they fit loosely in the pivot.



PIVOT BEARING REPLACEMENT

Remove the seal.

Remove the snap ring [1] from the right swingarm pivot.



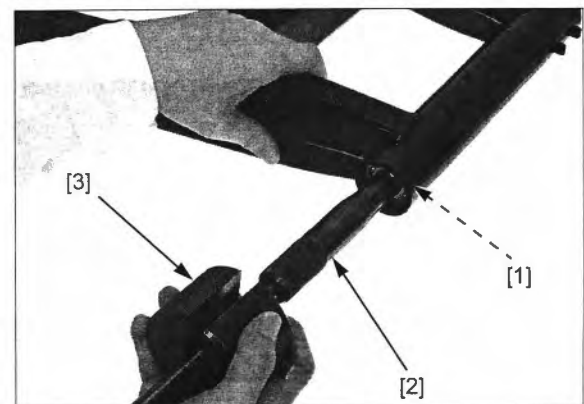
Remove the right pivot radial ball bearings [1] using the special tools.

TOOLS:

Bearing remover handle	07936-3710100
[2] Bearing remover shaft, 20 mm	07936-3710600
[3] Remover weight	07741-0010201 or 07936-3710200

U.S.A. TOOLS:

Bearing remover handle	07936-3710100
[2] Bearing remover shaft, 20 mm	07936-3710600
[3] Remover weight	07936-371020A



REAR WHEEL/SUSPENSION

Removal of the left pivot needle bearing requires the right pivot bearing to be removed first.

Press the left pivot needle bearing [1] out using the special tools and a hydraulic press.

TOOLS:

[2] Needle bearing remover 07HMC-MR70100

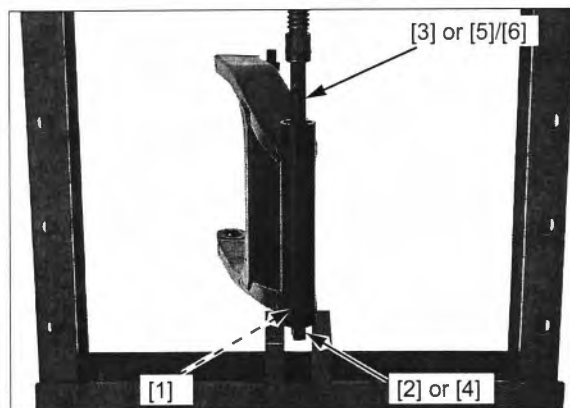
[3] Driver shaft 07946-MJ00100

U.S.A. TOOLS:

[4] Adjustable bearing puller, 07736-A01000B
25-40mm

[5] Pilot, 32 x 50 mm 07MAD-PR90200

[6] Driver 07949-3710001



Press the needle bearing into the swingarm pivot with the marked side facing out.

Apply molybdenum disulfide grease to needle rollers of a new left pivot bearing [1].

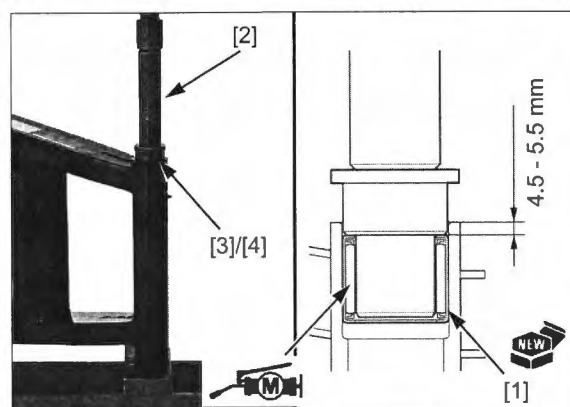
Press the needle bearing into the swingarm left pivot so that the needle bearing surface is 4.5 – 5.5 mm (0.17 – 0.22 in) from the swingarm pivot end using the special tools and a hydraulic press.

TOOLS:

[2] Driver 07749-0010000

[3] Attachment, 37 x 40 mm 07746-0010200

[4] Pilot, 28 mm 07JAD-PH80400



Press the bearings into the swingarm pivot with the marked side facing out.

Pack the new right pivot bearing cavities with molybdenum disulfide grease.

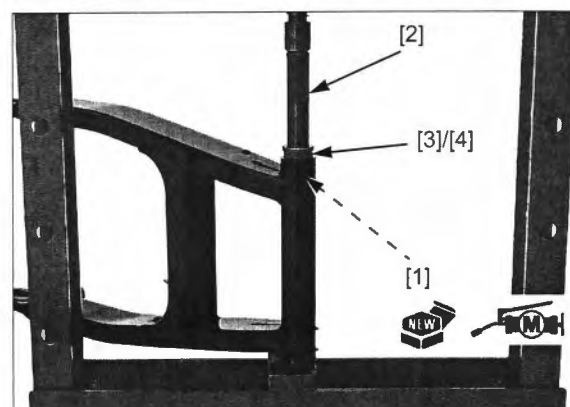
Press the radial ball bearings [1] in until it is fully seated using the special tools and a hydraulic press.

TOOLS:

[2] Driver 07749-0010000

[3] Attachment, 37 x 40 mm 07746-0010200

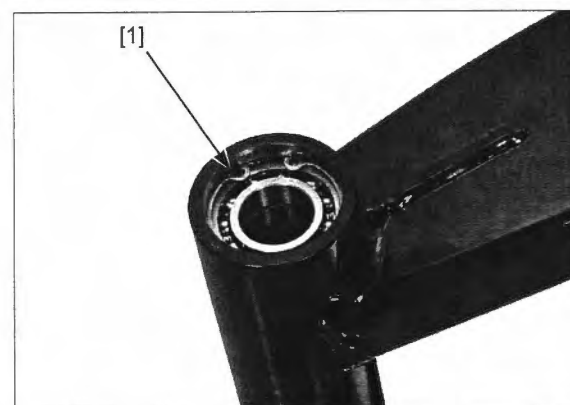
[4] Pilot, 20 mm 07746-0040500



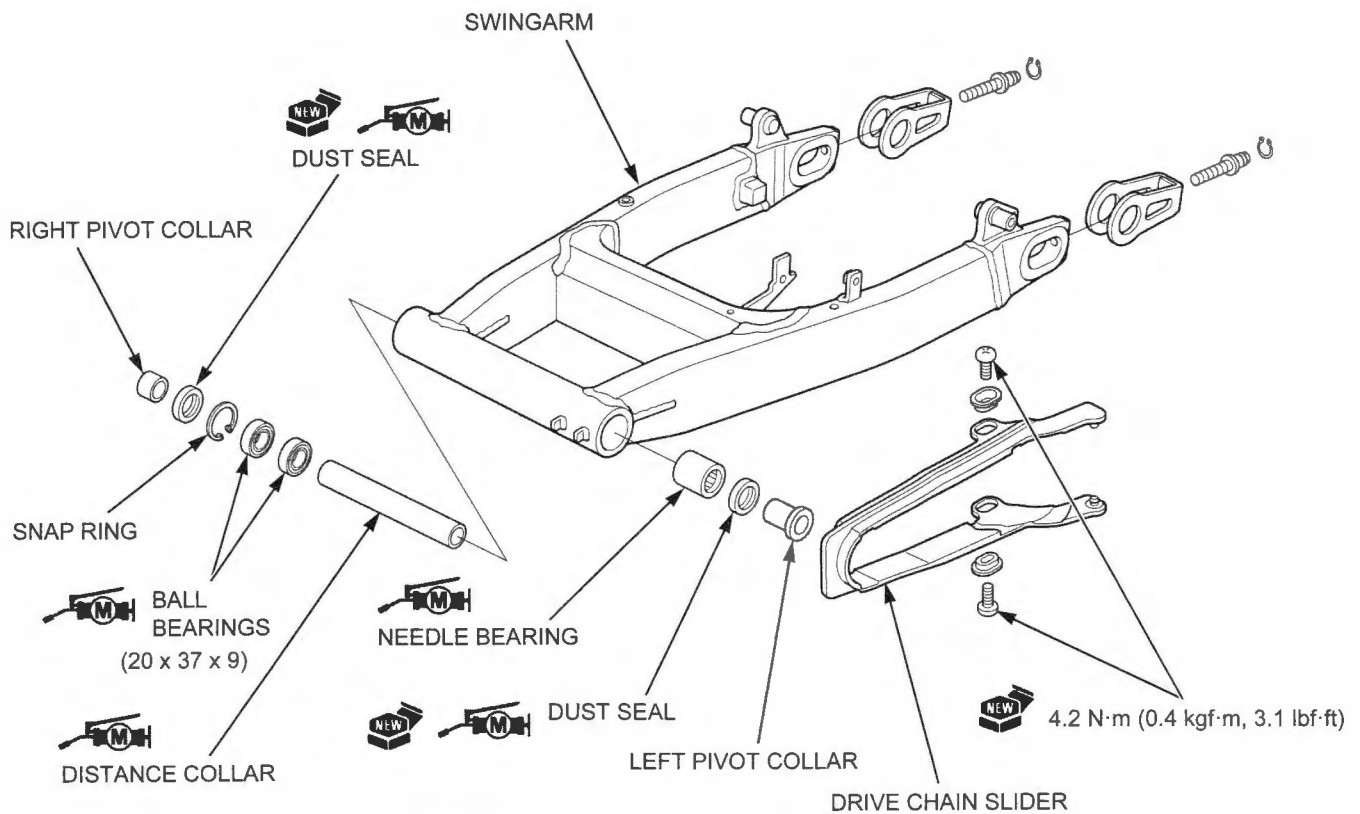
Install the snap ring into the groove securely, with its chamfered edge facing the bearing.

NOTE:

Do not reuse worn snap ring which could easily spin in the groove.



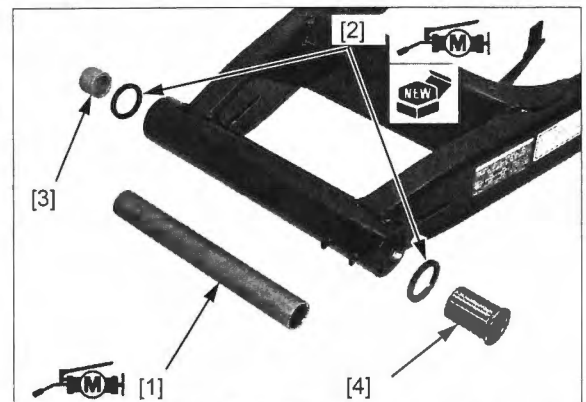
ASSEMBLY



Apply molybdenum disulfide grease to the distance collar [1] and install it into the swingarm pivot.

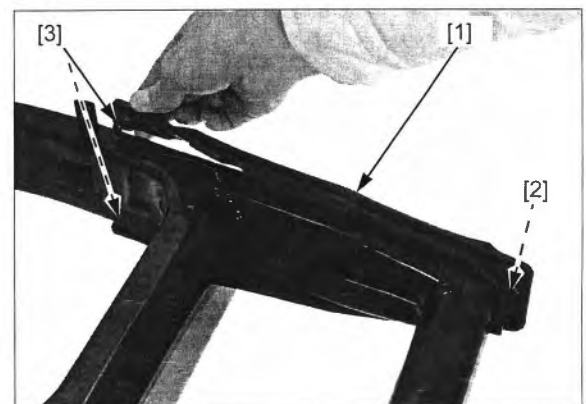
Apply molybdenum disulfide grease to the lips of new dust seals [2], then install the dust seals into the swingarm pivots.

Install the right pivot collar [3] and left pivot collar [4].



Install the drive chain slider [1] aligning its cut-out with the lug [2] on the swingarm.

Install the drive chain slider bosses [3] into the holes on the swingarm.

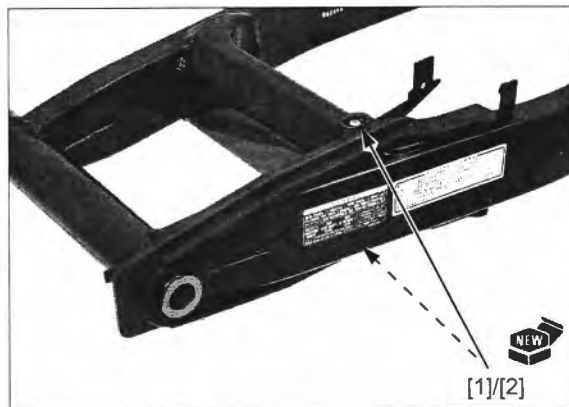


REAR WHEEL/SUSPENSION

Install the washers [1] and new drive chain slider screws [2].

Tighten the screws to the specified torque.

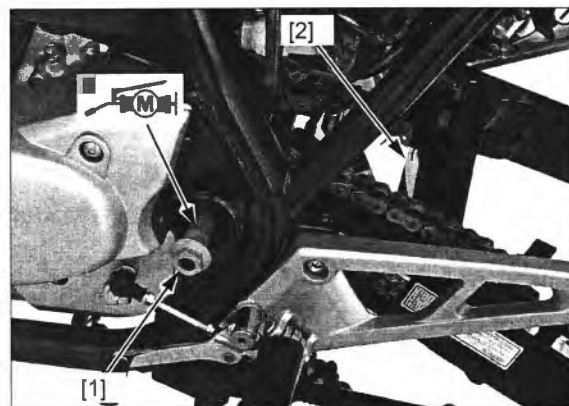
TORQUE: 4.2 N·m (0.4 kgf·m, 3.1 lbf·ft)



INSTALLATION

Apply thin layer of molybdenum disulfide grease to the swingarm pivot bolt [1] outer surface.

Install the swingarm [2] into the frame, then install the pivot bolt from the left side.



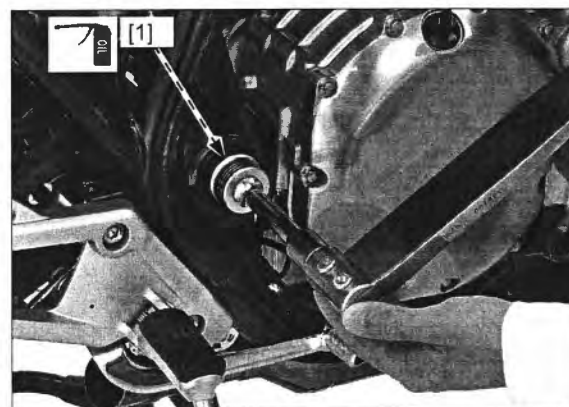
Apply engine oil to the swingarm pivot nut threads and seating surface.

Install and tighten the swingarm pivot nut [1] to the specified torque.

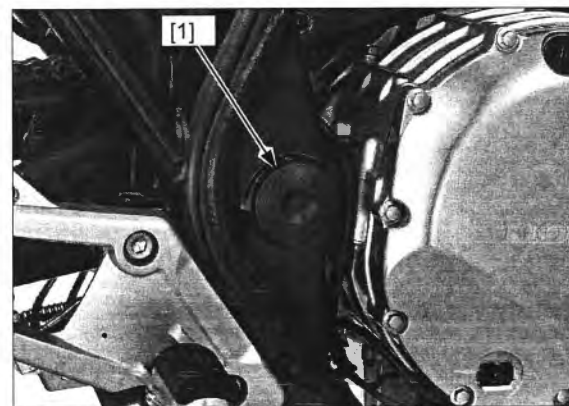
TORQUE:

'13 model: 108 N·m (11.0 kgf·m, 80 lbf·ft)

After '13 model: 113 N·m (11.5 kgf·m, 83 lbf·ft)



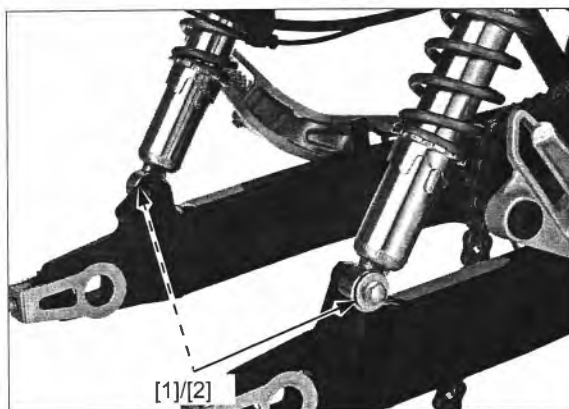
Install the swingarm pivot caps [1] to both sides of the frame.



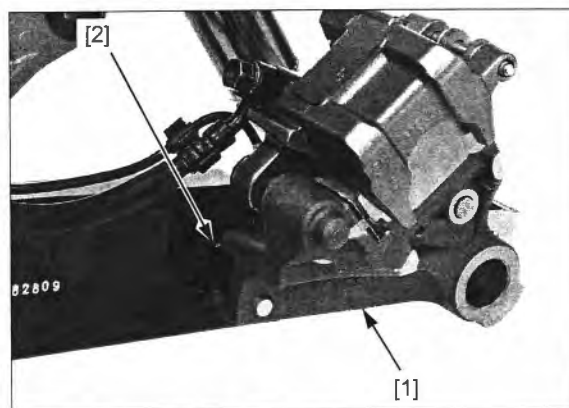
Install the shock absorber lower mounts onto the swingarm.

Install the washers [1] and shock absorber lower mounting bolts [2], then tighten the bolts to the specified torque.

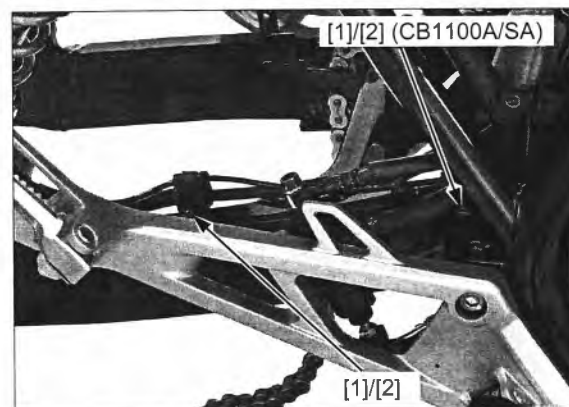
TORQUE: 26 N·m (2.7 kgf·m, 19 lbf·ft)



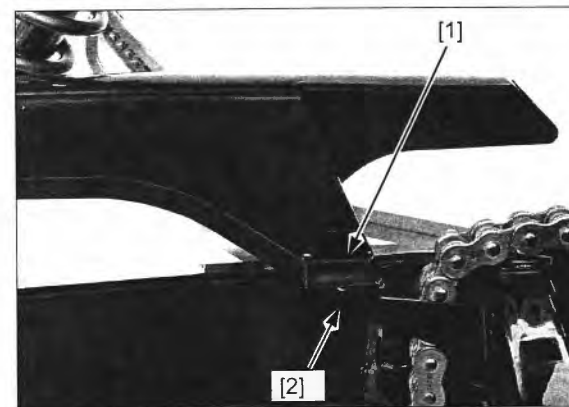
Install the rear brake caliper bracket [1] onto the guide [2] of the swingarm.



Install the brake hose clamp(s) [1] and bolt(s) [2], then tighten the bolt(s) securely.



Install the drive chain case aligning its cut-out [1] with the stay [2] on the swingarm.

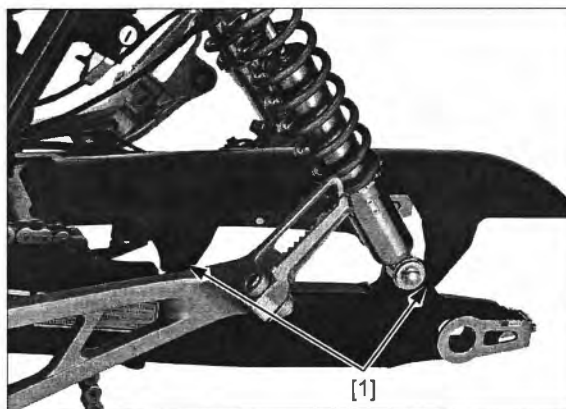


REAR WHEEL/SUSPENSION

Install the drive chain case bolts [1] and tighten them securely.

Install the following:

- rear wheel (page 13-15)
- muffler
 - CB1100/A (page 2-15)
 - CB1100SA (page 2-19)



14. HYDRAULIC BRAKE

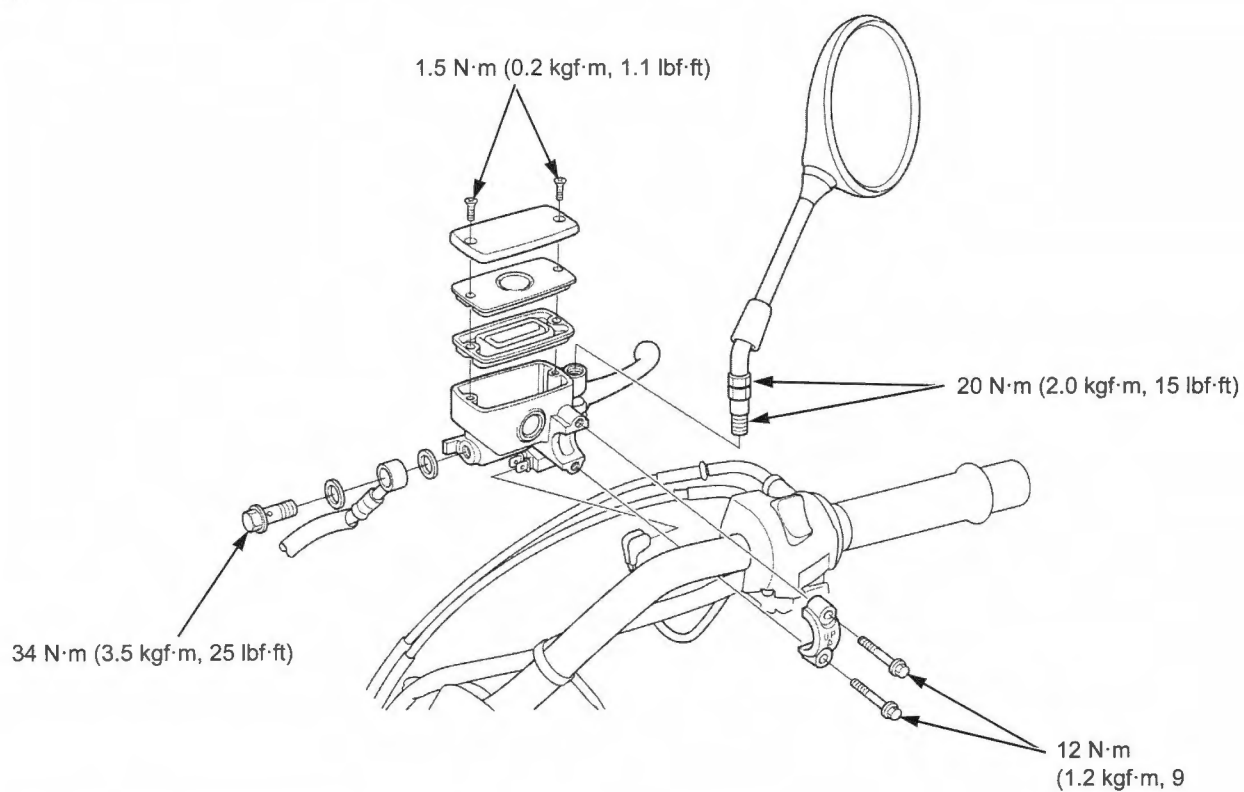
COMPONENT LOCATION	14-2
SERVICE INFORMATION	14-5
TROUBLESHOOTING	14-7
BRAKE FLUID REPLACEMENT/AIR BLEEDING ('13 CB1100A)	14-8
BRAKE FLUID REPLACEMENT/AIR BLEEDING (Except '13 CB1100A)	14-15
BRAKE PAD/DISC	14-20
FRONT MASTER CYLINDER	14-24
REAR MASTER CYLINDER	14-30

FRONT BRAKE CALIPER ('13 CB1100A)	14-35
FRONT BRAKE CALIPER (Except '13 CB1100A)	14-38
REAR BRAKE CALIPER ('13 model)	14-42
REAR BRAKE CALIPER (After '13 model)	14-45
BRAKE PEDAL/REAR BRAKE LIGHT SWITCH	14-48
DELAY VALVE ('13 CB1100A)	14-49
PCV (PROPORTIONAL CONTROL VALVE; '13 CB1100A)	14-50

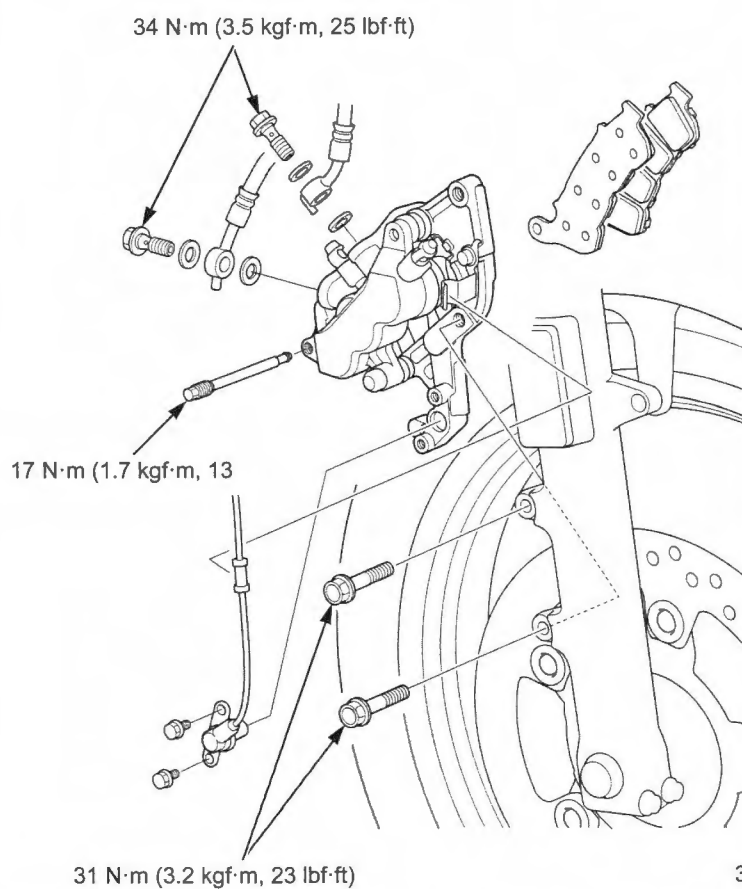
HYDRAULIC BRAKE

COMPONENT LOCATION

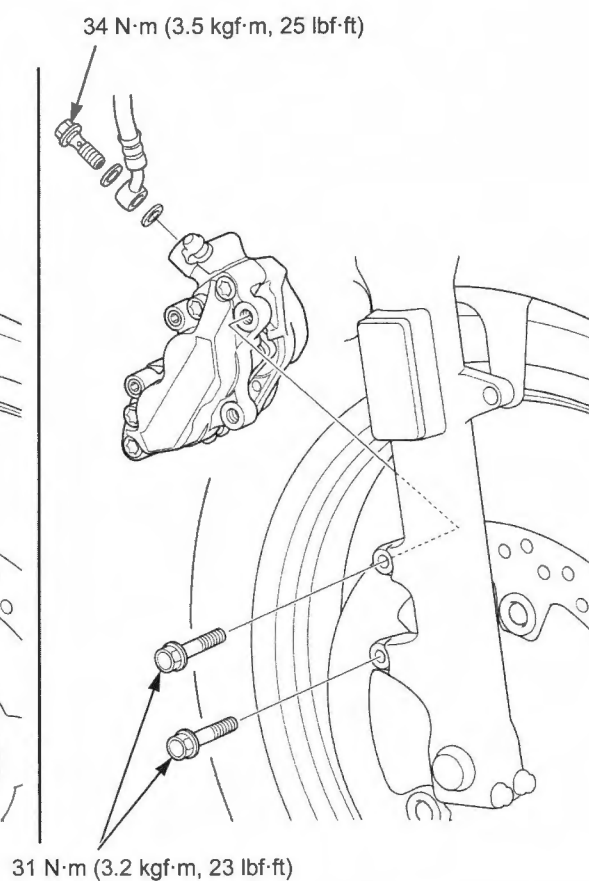
FRONT:



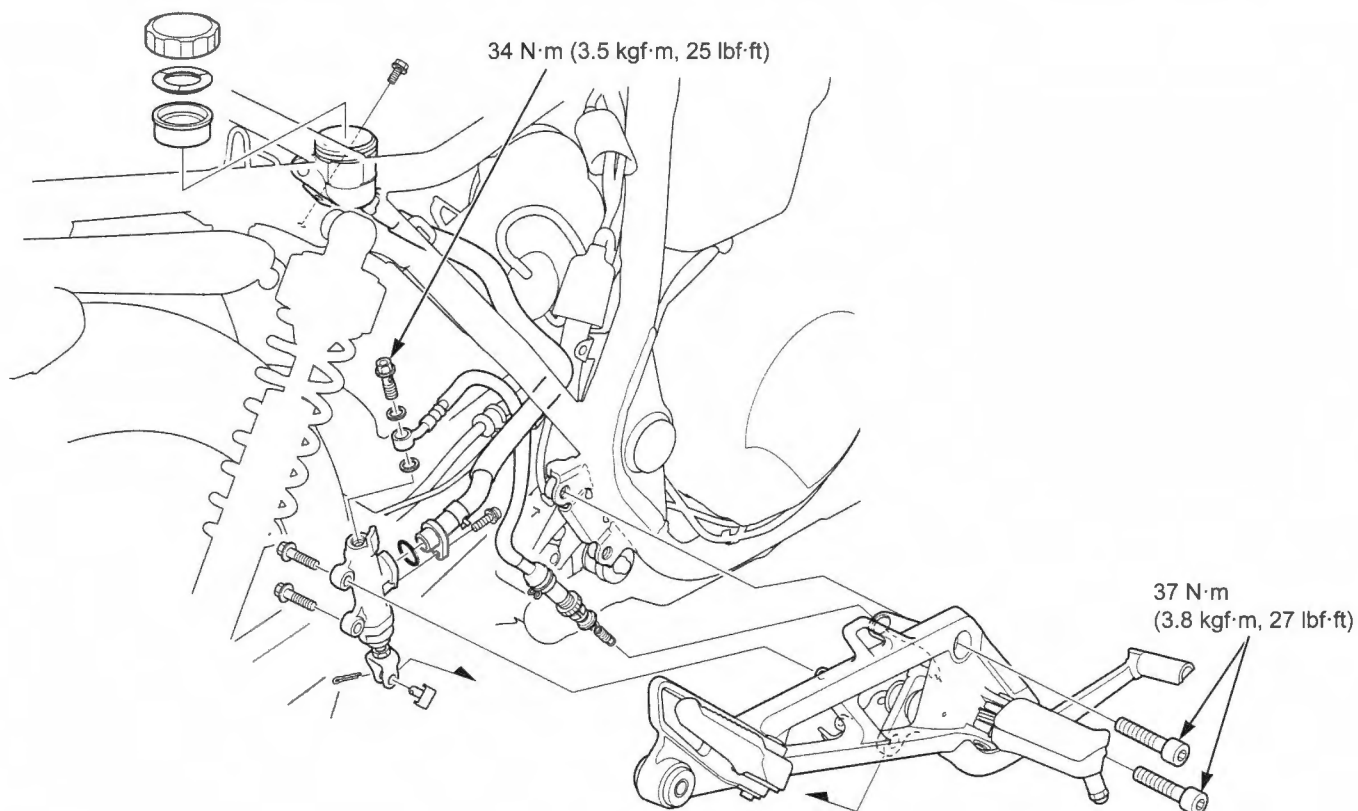
'13 CB1100A:



Except '13 CB1100A:

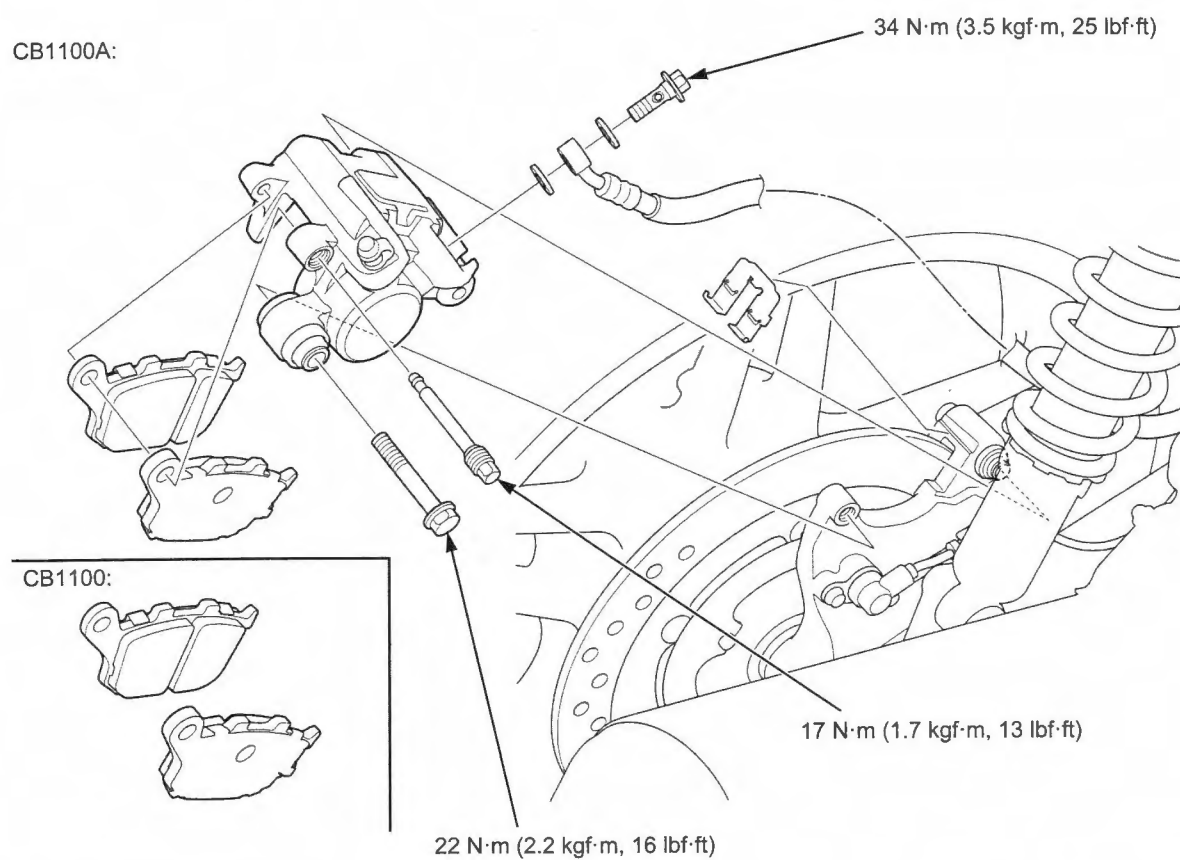


REAR:



'13 model:

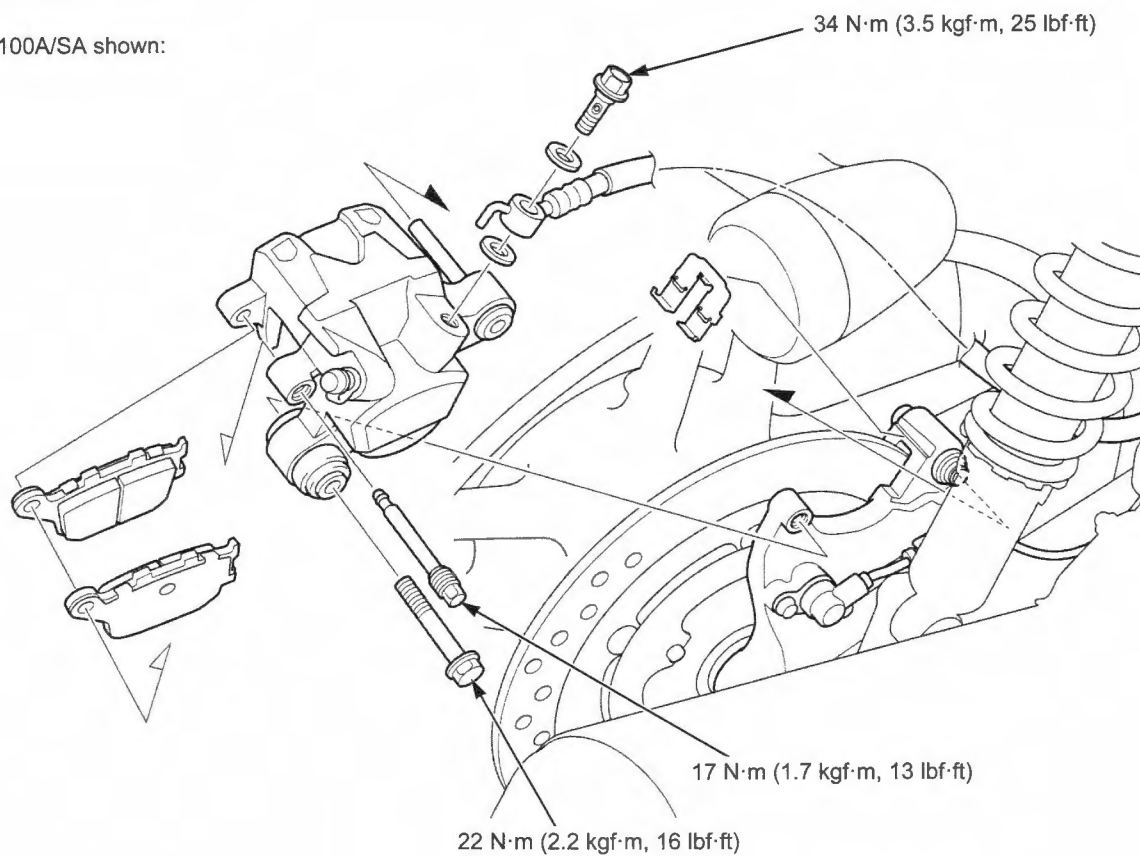
CB1100A:



HYDRAULIC BRAKE

After '13 model:

CB1100A/SA shown:



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

Spilled brake fluid will severely damage plastic parts, instrument lenses, and painted surfaces. It is also harmful to some rubber parts. Be careful whenever you remove the reservoir cover or cap; make sure the reservoir is horizontal first.

- This section covers service of the standard brake components of the brake system. Refer to information for the Anti-lock Brake System (ABS) servicing (page 15-6).
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- Check the brake system by applying the brake lever or pedal after the air bleeding.
- 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 use fresh DOT4 brake fluid from a sealed container when servicing the system. Do not mix different types of fluid as they may not be compatible.
- Always check brake operation before riding the motorcycle.
- ABS model ('13 CB1100A only) is provided with a Combined Brake System (CBS). The procedures of the air bleeding must be followed.
 - '13 CB1100A (page 14-8)
 - except '13 CB1100A (page 14-15)

SPECIFICATIONS

Unit: mm (in)

ITEM				STANDARD	SERVICE LIMIT
Front	Specified brake fluid			DOT 4 brake fluid	—
	Brake disc thickness			4.5 ± 0.1 (0.18 ± 0.004)	3.5 (0.14)
	Brake disc runout			—	0.20 (0.008)
	Master cylinder I.D.			14.000 – 14.043 (0.5512 – 0.5529)	14.055 (0.5533)
	Master piston O.D.			13.957 – 13.984 (0.5495 – 0.5506)	13.945 (0.5490)
	'13 CB1100A:	Caliper cylinder I.D.	Upper	27.000 – 27.050 (1.0630 – 1.0650)	27.060 (1.0654)
			Center	22.650 – 22.700 (0.8917 – 0.8937)	22.712 (0.8942)
			Lower	27.000 – 27.050 (1.0630 – 1.0650)	27.060 (1.0654)
		Caliper piston O.D.	Upper	26.935 – 26.968 (1.0604 – 1.0617)	26.91 (1.059)
			Center	22.585 – 22.618 (0.8892 – 0.8905)	22.560 (0.8882)
			Lower	26.935 – 26.968 (1.0604 – 1.0617)	26.91 (1.059)
	Except '13 CB1100A:	Caliper cylinder I.D.	A	30.230 – 30.280 (1.1902 – 1.1921)	30.29 (1.193)
			B	32.030 – 32.080 (1.2610 – 1.2630)	32.090 (1.2634)
Caliper piston O.D.		A	30.148 – 30.198 (1.1869 – 1.1889)	30.14 (1.187)	
		B	31.948 – 31.998 (1.2578 – 1.2598)	31.94 (1.257)	
Rear	Specified brake fluid			DOT 4 brake fluid	—
	Master cylinder push rod standard length			67.5 ± 1.0 (2.66 ± 0.04)	—
	Brake disc thickness			6.0 ± 0.2 (0.24 ± 0.008)	5.0 (0.20)
	Brake disc runout.			—	0.30 (0.012)
	Master cylinder I.D.			14.000 – 14.043 (0.5512 – 0.5529)	14.055 (0.5533)
	Master piston O.D.			13.957 – 13.984 (0.5495 – 0.5506)	13.945 (0.5490)
	Caliper cylinder I.D.			38.18 – 38.23 (1.503 – 1.505)	38.24 (1.506)
	Caliper piston O.D.			38.115 – 38.148 (1.5006 – 1.5019)	38.09 (1.500)

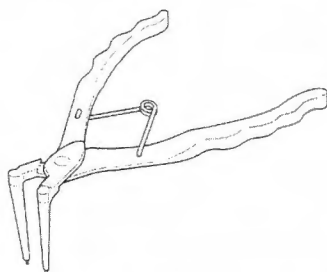
HYDRAULIC BRAKE

TORQUE VALUES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Front brake caliper mounting bolt	4	8	31 (3.2, 23)	ALOC bolt; replace with a new one.
Front brake lever pivot bolt	1	6	1.0 (0.1, 0.7)	
Front brake lever pivot nut	1	6	6.0 (0.6, 4.4)	
Front master cylinder reservoir cover screw	2	4	1.5 (0.2, 1.1)	
Front brake light switch screw	1	4	1.2 (0.1, 0.9)	
Front master cylinder holder bolt	2	6	12 (1.2, 9)	
Brake hose oil bolt ('13 CB1100A)	6	10	34 (3.5, 25)	
Brake hose oil bolt (CB1100)	5	10	34 (3.5, 25)	
Brake hose oil bolt (After '13 CB1100A/SA)	9	10	34 (3.5, 25)	
Front brake caliper pad pin ('13 CB1100A)	2	10	17 (1.7, 13)	
Front brake caliper pad pin (Except '13 CB1100A)	4	10	17 (1.7, 13)	
Front brake caliper pin bolt ('13 CB1100A)	2	8	22 (2.2, 16)	Apply a locking agent to the threads.
Front brake caliper bracket pin bolt ('13 CB1100A)	2	8	12 (1.2, 9)	Apply a locking agent to the threads.
Front brake caliper assembly bolt (Except '13 CB1100A)	8	8	22 (2.2, 16)	Apply a locking agent to the threads.
Brake caliper bleed valve ('13 CB1100A)	4	8	5.4 (0.6, 4.0)	
Brake caliper bleed valve (Except '13 CB1100A)	3	8	5.4 (0.6, 4.0)	
Rear brake caliper pad pin	1	10	17 (1.7, 13)	
Rear brake caliper pin bolt	1	12	27 (2.8, 20)	
Rear brake caliper bolt	1	8	22 (2.2, 16)	ALOC bolt; replace with a new one.
Rear master cylinder push rod joint nut	1	8	17 (1.7, 13)	
Rear master cylinder reservoir hose joint screw	1	4	1.5 (0.2, 1.1)	Apply a locking agent to the threads.
Front brake hose stay bolt (CB1100A/SA)	2	6	12 (1.2, 9)	ALOC bolt; replace with a new one.

TOOL

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 seals
- Worn master cylinder piston cups
- Worn brake pad/disc
- Contaminated caliper
- Caliper not sliding properly
- Low brake fluid level
- Clogged fluid passage
- Warped/deformed brake disc
- Sticking/worn caliper piston
- Sticking/worn master piston
- Contaminated master cylinder
- Bent brake lever/pedal

Brake lever/pedal hard

- Clogged/restricted brake system
- Sticking/worn caliper piston
- Caliper not sliding properly
- 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
- Sticking caliper piston
- Clogged/restricted fluid passage

HYDRAULIC BRAKE

BRAKE FLUID REPLACEMENT/AIR BLEEDING ('13 CB1100A)

NOTICE

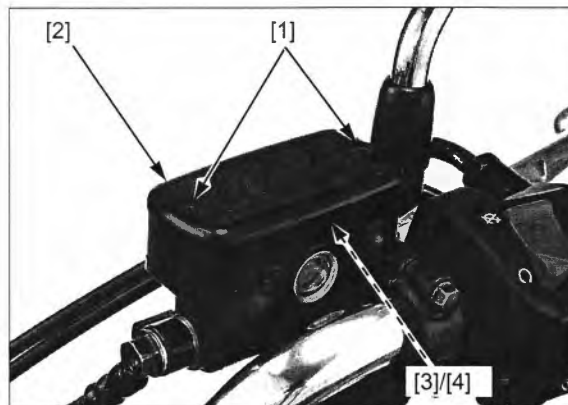
Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.

BRAKE FLUID DRAINING

Lever Brake Line

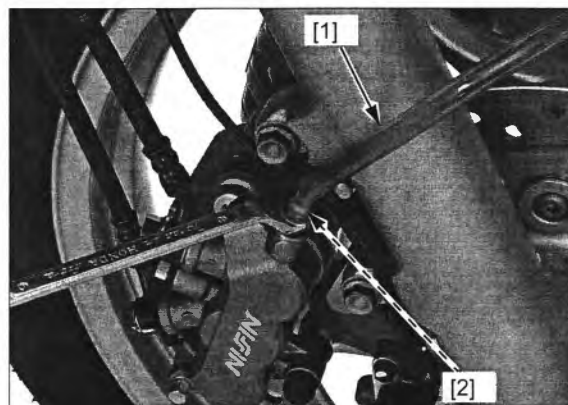
Support the motorcycle securely using its centerstand. Before removing the reservoir cover, turn the handlebar until the reservoir is parallel to the ground.

Remove the screws [1], reservoir cover [2], set plate [3], and diaphragm [4].



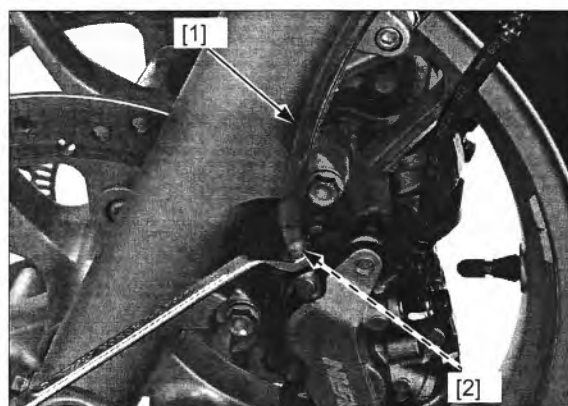
Connect a bleed hose [1] to the right front caliper upper bleed valve [2].

Loosen the upper bleed valve and pump the brake lever until no more fluid flows out of the bleed valve.



Connect a bleed hose [1] to the left front caliper bleed valve [2].

Loosen the bleed valve and pump the brake lever until no more fluid flows out of the bleed valve.



Pedal (Combined) Brake Line

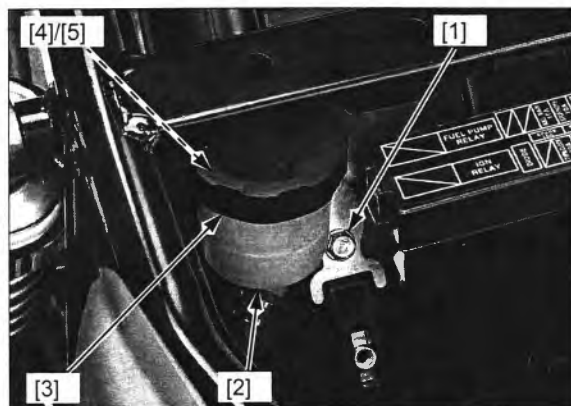
Support the motorcycle securely using its centerstand.

Remove the following:

- seat (page 2-4)
- battery cover (page 16-6)

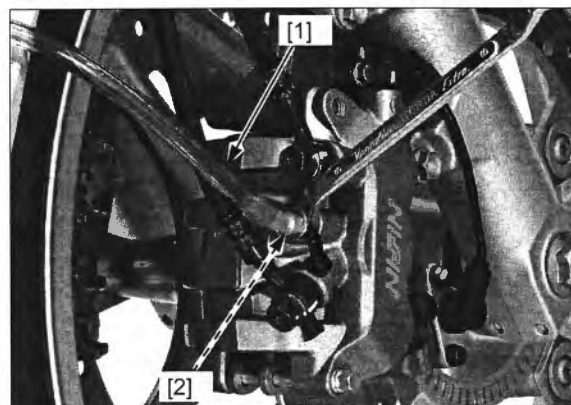
Remove the mounting bolt [1] and rear master cylinder reservoir [2].

Remove the reservoir cap [3], set plate [4], and diaphragm [5].



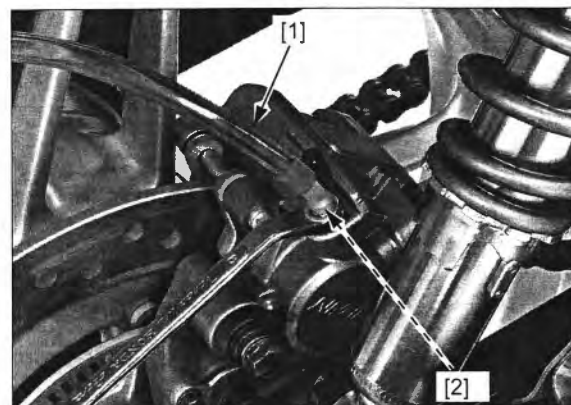
Connect a bleed hose [1] to the right front caliper lower bleed valve [2].

Loosen the lower bleed valve and pump the brake pedal until no more fluid flows out of the bleed valve.



Connect a bleed hose [1] to the rear caliper bleed valve [2].

Loosen the bleed valve and pump the brake pedal until no more fluid flows out of the bleed valve.

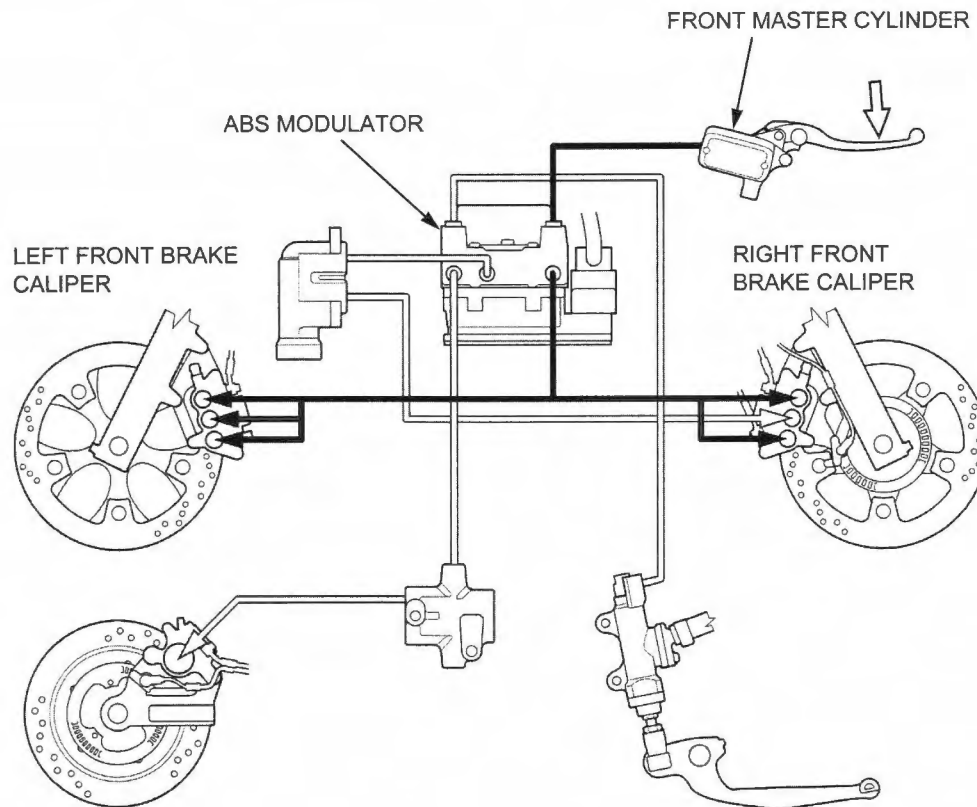


HYDRAULIC BRAKE

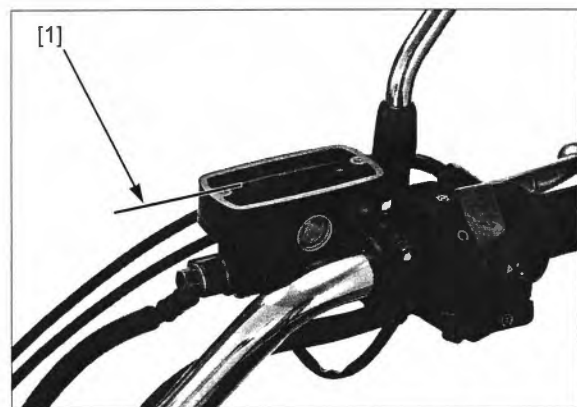
BRAKE FLUID FILLING/AIR BLEEDING

- Never allow contaminants (dirt, water, etc.) to get into an open reservoir.
- Use only DOT 4 brake fluid from a sealed container.
- Do not mix different types of fluid. They are not compatible.

Lever Brake Line



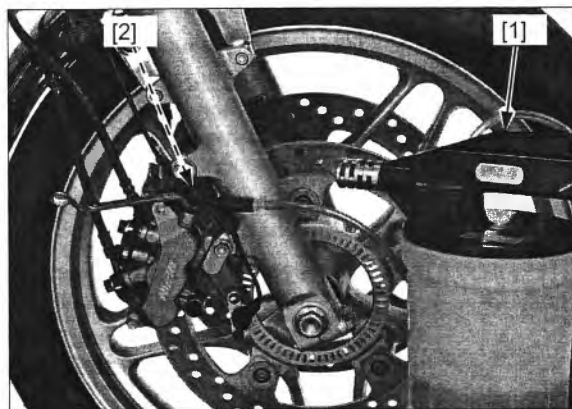
Tighten the bleed valves and fill the reservoir to the casting ledge [1] with DOT 4 brake fluid from a sealed container.



Connect a commercially available brake bleeder [1] to the right front caliper upper bleed valve [2].

Loosen the upper bleed valve and operate the brake bleeder.

- When using a brake bleeding tool, follow the manufacturer's operating instruction.



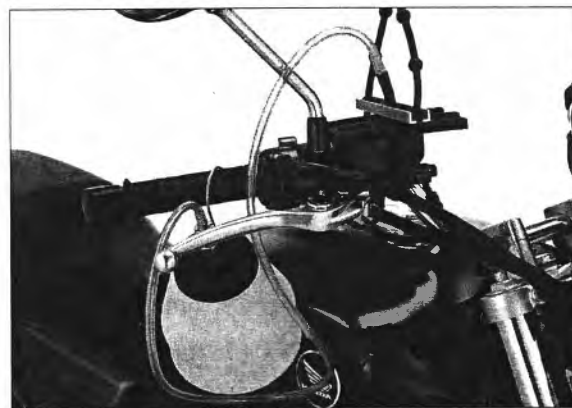
If an automatic refill system is not used, add brake fluid when the fluid level in the reservoir is low.

If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Operate the brake bleeder until new fluid flows out of the bleed valve and air bubbles do not appear in the plastic hose.

Tighten the upper bleed valve to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)



Connect a commercially available brake bleeder [1] to the left front brake caliper bleed valve [2].

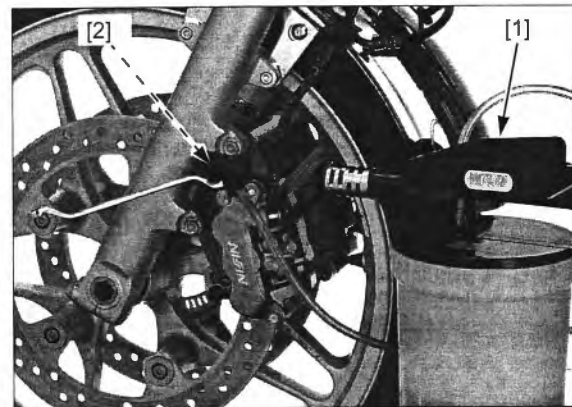
Loosen the bleed valve and operate the brake bleeder.

If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Operate the brake bleeder until new fluid flows out of the bleed valve and air bubbles do not appear in the plastic hose.

Tighten the bleed valve to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)



Operate the brake lever. If it still feels spongy, bleed the system again.

If a brake bleeder is not available, perform the following procedure:

Close the bleed valves and fill the reservoir with DOT 4 brake fluid from a sealed container.

- Check the fluid level often while bleeding the brakes to prevent air from being pumped into the system.

Operate the brake lever several times to bleed air from the master cylinder.



HYDRAULIC BRAKE

Connect a bleed hose [1] to the right front caliper upper bleed valve [2] and bleed the system as follows:

1. Pump the brake lever several (5 – 10) times, then squeeze the brake lever all the way and loosen the bleed valve 1/2 of a turn. Wait several seconds and then close the bleed valve.

Do not release the brake lever until the bleed valve has been closed.

2. Release the brake lever slowly and wait several seconds after it reaches the end of its travel.
3. Repeat the steps 1 and 2 until new fluid flows out of the bleed valve and air bubbles do not appear in the bleed hose.

Tighten the upper bleed valve to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)

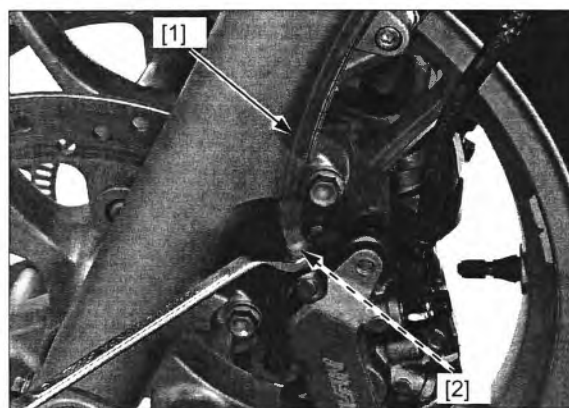
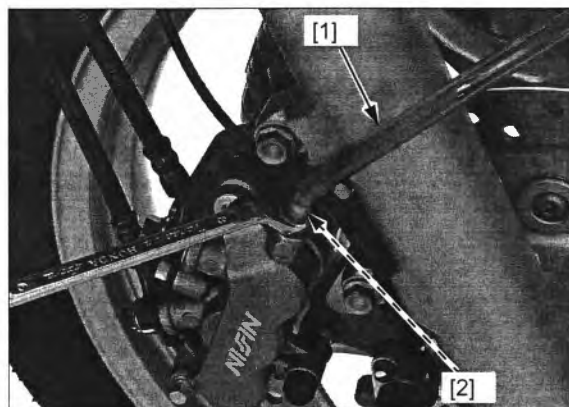
Connect a bleed hose [1] to the left front caliper bleed valve [2].

Bleed air in the same manner as the right front caliper upper bleed valve.

Tighten the bleed valve to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)

Operate the brake lever. If it still feels spongy, bleed the system again.

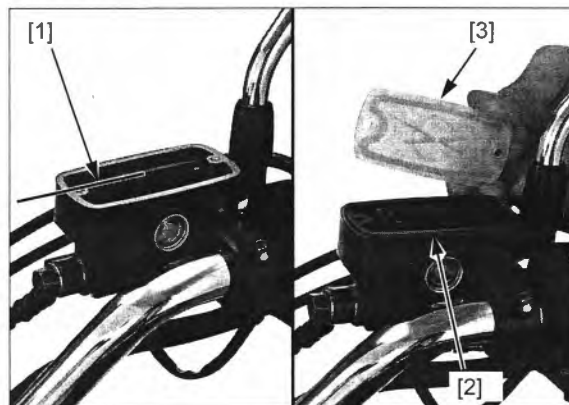


After the bleeding air completely, fill the reservoir to the casting ledge [1] with DOT 4 brake fluid from a sealed container.

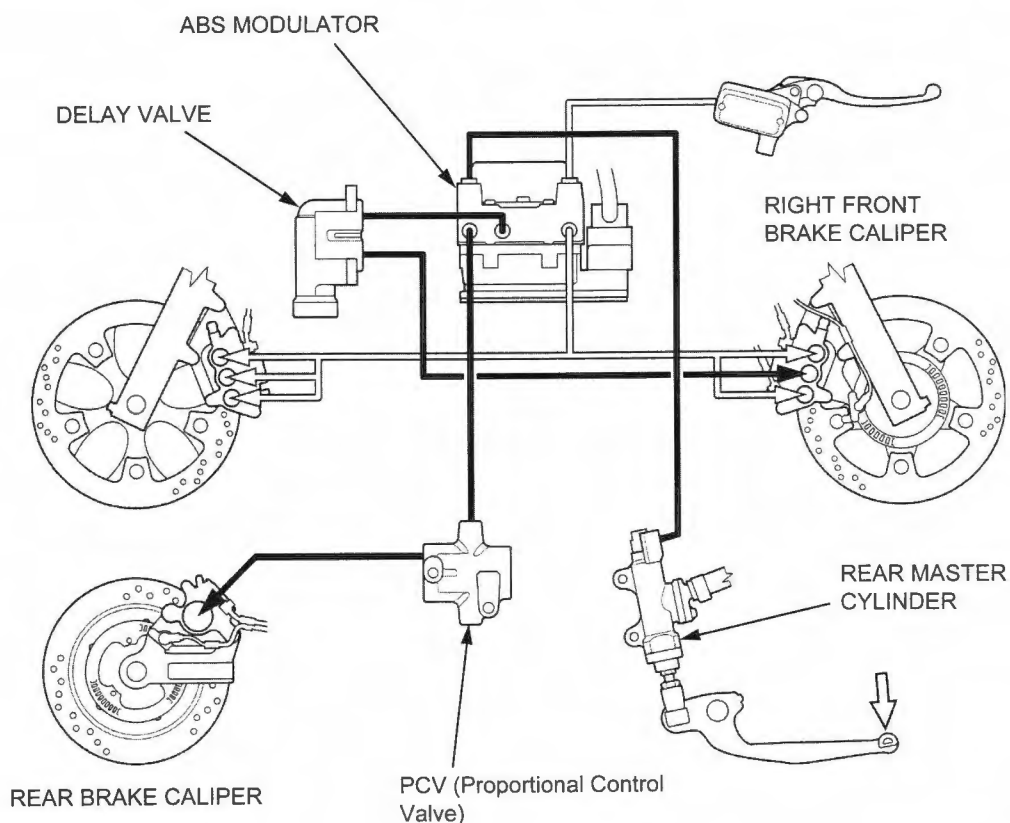
Install the diaphragm [2], set plate [3], and reservoir cover.

Install and tighten the screws to the specified torque.

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



Pedal (Combined) Brake Line



Tighten the bleed valves and fill the reservoir to the "UPPER" level [1] with DOT 4 brake fluid from a sealed container.



Connect a commercially available brake bleeder [1] to the right front caliper lower bleed valve [2].

Loosen the lower bleed valve and operate the brake bleeder.

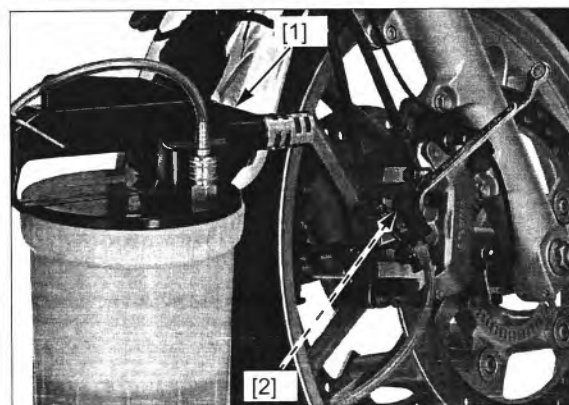
- When using a brake bleeding tool, follow the manufacturer's operating instruction.
- If an automatic refill system is not used, add brake fluid when the fluid level in the reservoir is low.

If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Operate the brake bleeder until new fluid flows out of the bleed valve and air bubbles do not appear in the plastic hose.

Tighten the lower bleed valve to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)



HYDRAULIC BRAKE

Connect a commercially available brake bleeder [1] to the rear caliper bleed valve [2].

Loosen the lower bleed valve and operate the brake bleeder.

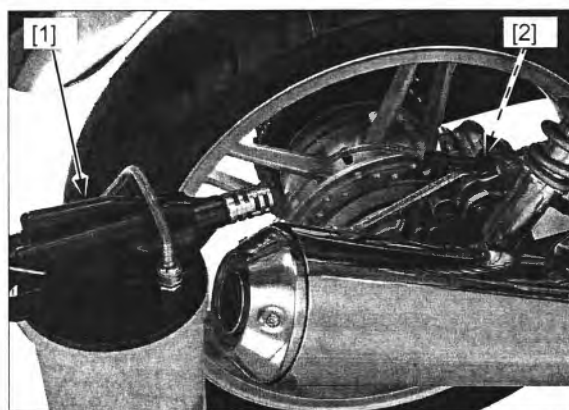
If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Operate the brake bleeder until new fluid flows out of the bleed valve and air bubbles do not appear in the plastic hose.

Tighten the bleed valve to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)

Operate the brake pedal. If it still feels spongy, bleed the system again.

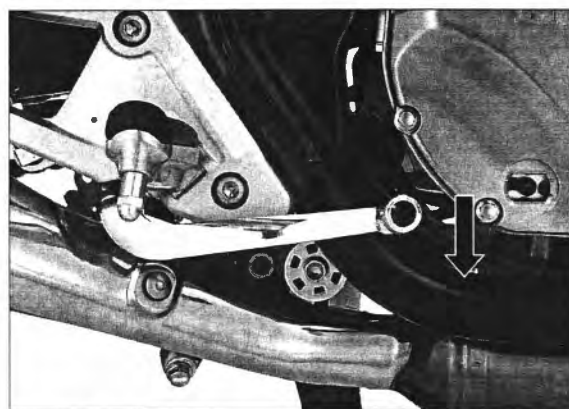


If the brake bleeder is not available, perform the following procedure:

Close the bleed valves and fill the reservoir with DOT 4 brake fluid from a sealed container.

- Check the fluid level often while bleeding the brakes to prevent air from being pumped into the system.

Operate the brake pedal several times to bleed air from the master cylinder.



Connect a bleed hose [1] to the right front caliper lower bleed valve [2] and bleed the system as follows:

1. Pump the brake pedal several (5 – 10) times, then depress the brake pedal all the way and loosen the bleed valve 1/2 of a turn. Wait several seconds and then close the bleed valve.

Do not release the brake pedal until the bleed valve has been closed.

2. Release the brake pedal slowly and wait several seconds after it reaches the end of its travel.
3. Repeat the steps 1 and 2 until air bubbles do not appear in the bleed hose.

Tighten the lower bleed valve to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)

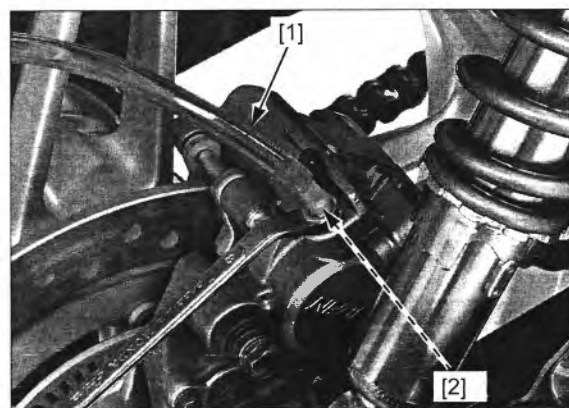
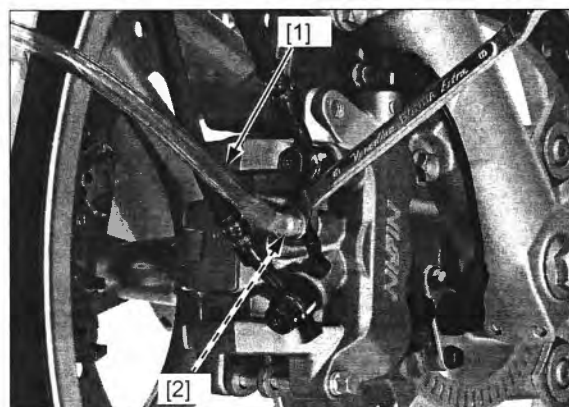
Connect a bleed hose [1] to the rear caliper bleed valve [2].

Bleed air according to the steps for left front caliper bleed valve.

Tighten the bleed valves to the specified torque.

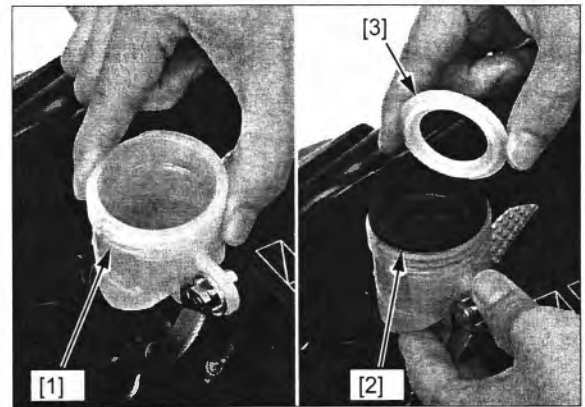
TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)

Operate the brake pedal. If it still feels spongy, bleed the system again.



After the bleeding air completely, fill the reservoir to the "UPPER" level [1] with DOT 4 brake fluid from a sealed container.

Install the diaphragm [2] and set plate [3].

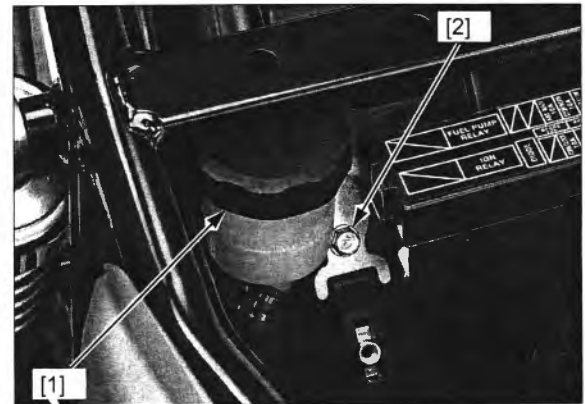


Install the reservoir cap [1].

Install the reservoir bracket and tighten the mounting bolt [2] securely.

Install the followings:

- battery cover (page 16-6)
- seat (page 2-4)



BRAKE FLUID REPLACEMENT/AIR BLEEDING (Except '13 CB1100A)

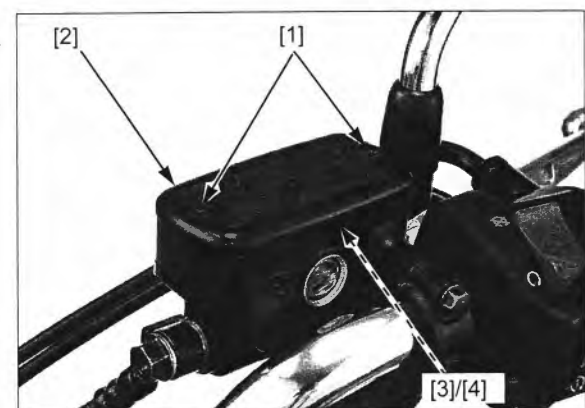
NOTICE

Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.

BRAKE FLUID DRAINING

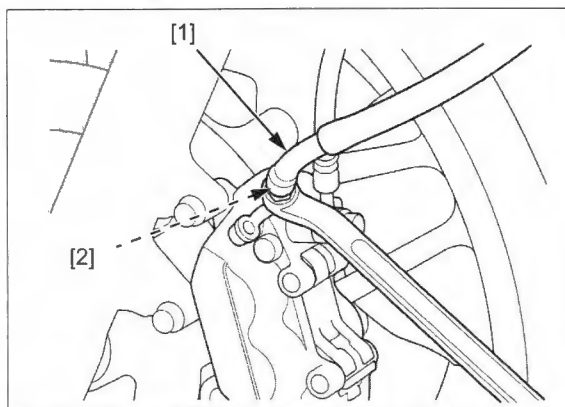
FRONT

Support the motorcycle securely using its centerstand. Before removing the reservoir cover, turn the handlebar until the reservoir is parallel to the ground. Remove the screws [1], reservoir cover [2], set plate [3], and diaphragm [4].



HYDRAULIC BRAKE

Connect a bleed hose [1] to the left front caliper bleed valve [2].



Loosen the bleed valve and pump the brake lever. Stop pumping the lever when no more fluid flows out of the bleed valve.

Drain the brake fluid from the right front caliper bleed valve in the same manner as the left front caliper.



REAR

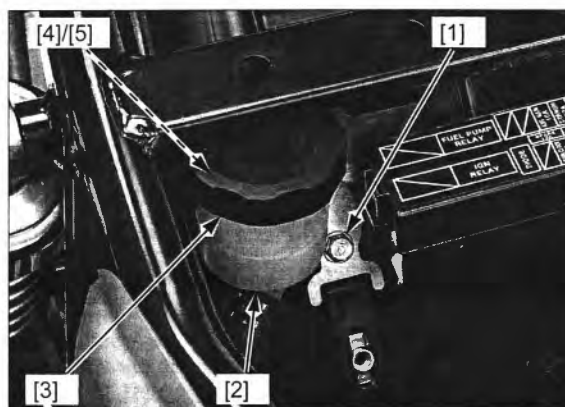
Support the motorcycle securely using its centerstand.

Remove the following:

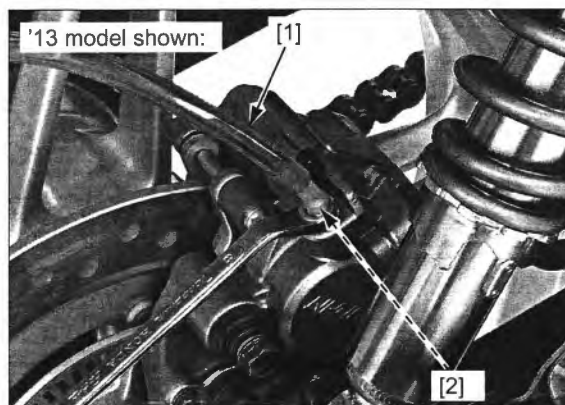
- seat (page 2-4)
- battery cover (page 16-6)

Remove the mounting bolt [1] and rear master cylinder reservoir [2].

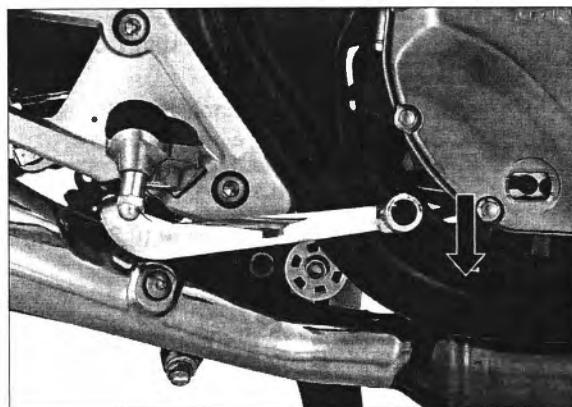
Remove the reservoir cap [3], set plate [4], and diaphragm [5].



Connect a bleed hose [1] to the rear caliper bleed valve [2].



Loosen the bleed valve and pump the brake pedal until no more fluid flows out of the bleed valve.



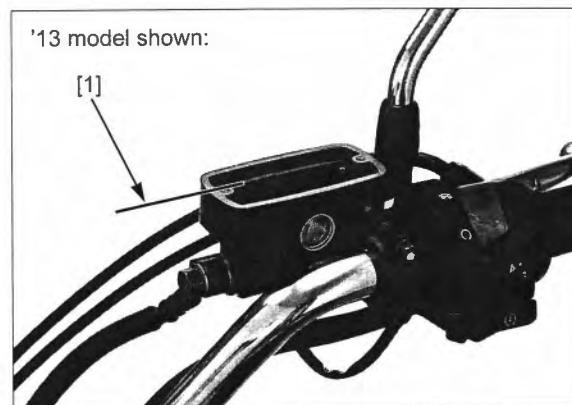
BRAKE FLUID FILLING/AIR BLEEDING

NOTE:

- Never allow contaminants (dirt, water, etc.) to get into an open reservoir.
- Use only DOT 4 brake fluid from a sealed container.
- Do not mix different types of fluid. They are not compatible.

FRONT

Tighten the bleed valves and fill the reservoir to the casting ledge [1] with DOT4 brake fluid from a sealed container.



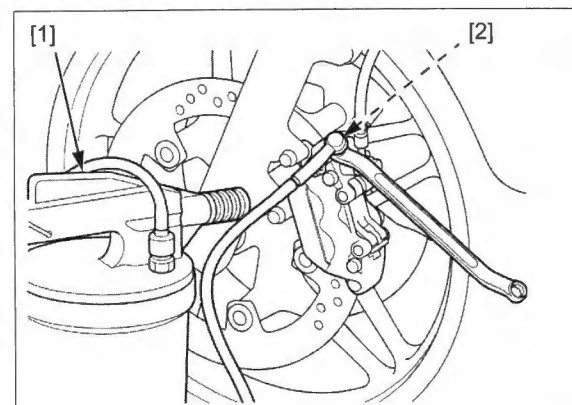
'13 model shown:

Connect a commercially available brake bleeder [1] to the left front caliper bleed valve [2].

Loosen the bleed valve and operate the brake bleeder.

Add brake fluid when the fluid level in the reservoir is low.

- When using a brake bleeding tool, follow the manufacturer's operating instructions.
- If an automatic refill system is not used, add brake fluid when the fluid level in the reservoir is low.



If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Operate the brake bleeder until new fluid flow out of the bleed valve and air bubbles do not appear in the plastic hose.

Tighten the bleed valve to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)

Bleed air from the right front caliper in the same manner.

After bleeding air, operate the brake lever. If it still feels spongy, bleed the system again.

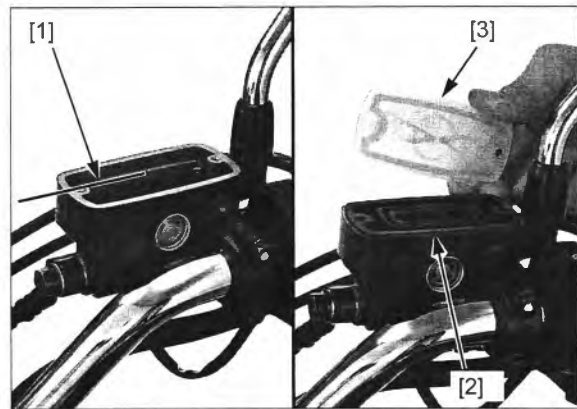
HYDRAULIC BRAKE

After the bleeding air completely, fill the reservoir to the casting ledge [1] with DOT 4 brake fluid from a sealed container.

Install the diaphragm [2], set plate [3], and reservoir cover.

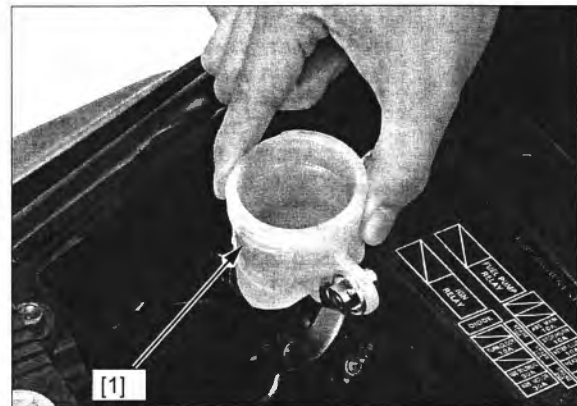
Install and tighten the reservoir cover screws to the specified torque.

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



REAR

Tighten the bleed valve and fill the reservoir to the "UPPER" level [1] with DOT 4 brake fluid from a sealed container.



Connect a commercially available brake bleeder [1] to the rear caliper bleed valve [2].

Pump the brake bleeder and loosen the bleed valve.

- When using a brake bleeding tool, follow the manufacturer's operating instructions.
- If an automatic refill system is not used, add brake fluid when the fluid level in the reservoir is low.

If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Operate the brake bleeder until new fluid flow out of the bleed valve and air bubbles do not appear in the plastic hose.

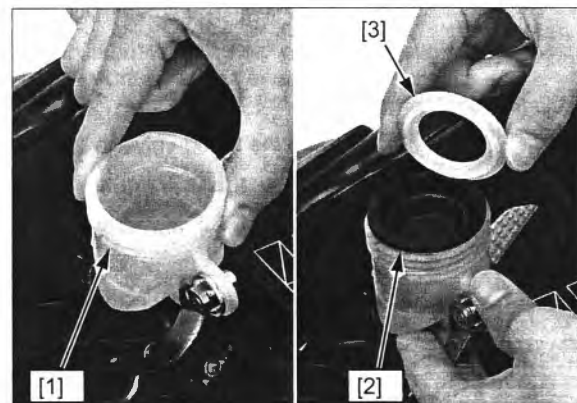
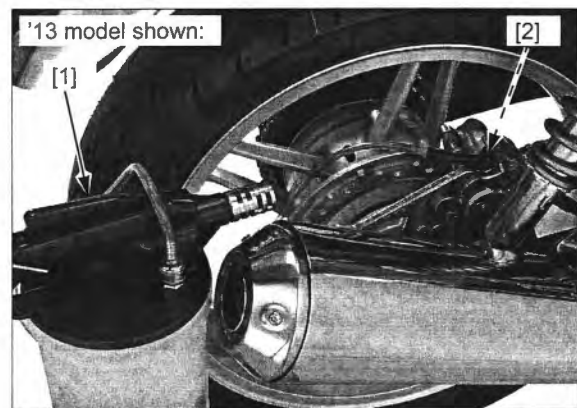
Tighten the bleed valve to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)

After bleeding air, operate the brake pedal. If it still feels spongy, bleed the system again.

After the bleeding air completely, fill the master cylinder reservoir up to the "UPPER" level [1] with DOT 4 brake fluid from a sealed container.

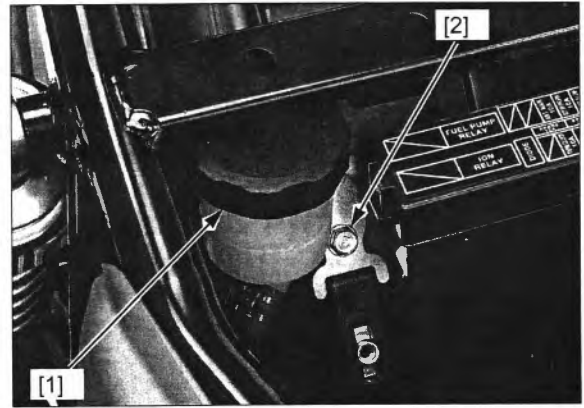
Install the diaphragm [2] and set plate [3].



Install the reservoir cap [1].
Install the reservoir bracket and tighten the mounting bolt [2] securely.

Install the followings:

- battery cover (page 16-6)
- seat (page 2-4)



If a brake bleeder is not available, use the following procedure:

Pump up the system pressure with the brake lever (pedal) until lever (pedal) resistance is felt.

Connect a bleed hose to the bleed valve [1] and bleed the system as follows:

1. Pump the brake lever (pedal) several (5 – 10) times, then squeeze the brake lever (depress the brake pedal), open the bleed valve 1/2 of a turn 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 new fluid flow out of the bleed valve and air bubbles do not appear in the bleed hose.

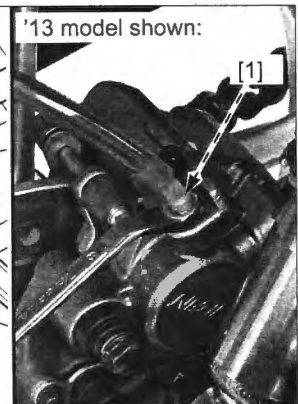
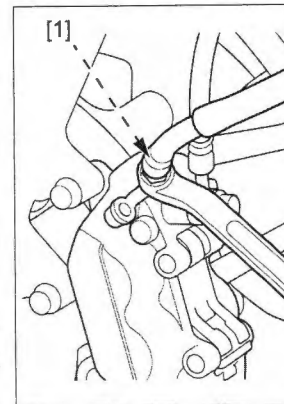
Tighten the bleed valve.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)

After the bleeding air completely, fill the reservoir to the upper level line with DOT4 brake fluid from a sealed container.

Install the diaphragm, set plate and reservoir cover (cap).

- Front (page 14-18)
- Rear (page 14-18)



BRAKE PAD/DISC

NOTE:

- Always replace the brake pads in pairs to assure even disc pressure.
- Always check brake operation after replacing the brake pads.

FRONT BRAKE PAD REPLACEMENT ('13 CB1100A)

Check the brake fluid level in the master cylinder reservoir as this operation causes the level to rise.

Push the caliper pistons all the way in to allow installation of new brake pads by pushing the caliper body inward.



Loosen the pad pin [1].

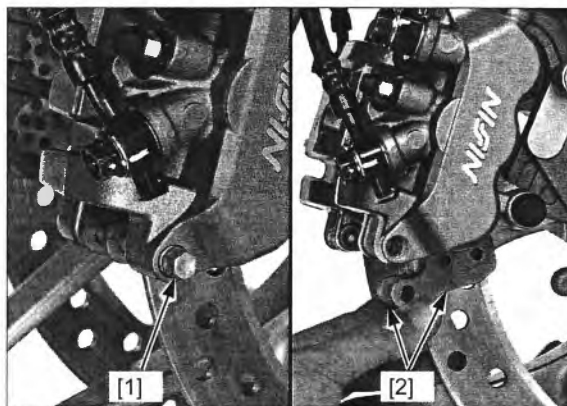
Pull the pad pin out of the caliper body while holding the brake pads [2].

Remove the brake pads.

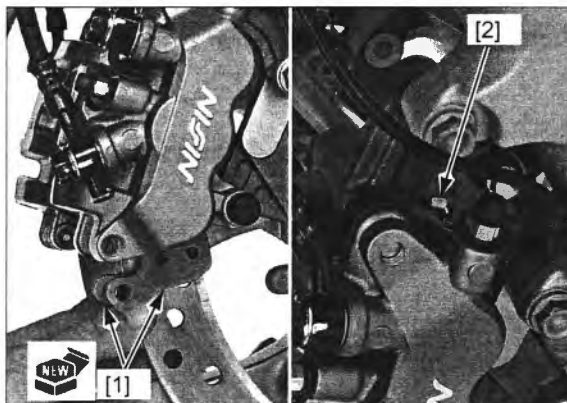
Clean the inside of the brake caliper, especially around the caliper pistons.

Check for brake fluid leakage around the piston seals.

Make sure that the pad spring is in place (page 14-37).



Install new pads [1] so that their ends positioned onto the pad retainer [2] on the caliper bracket as shown.



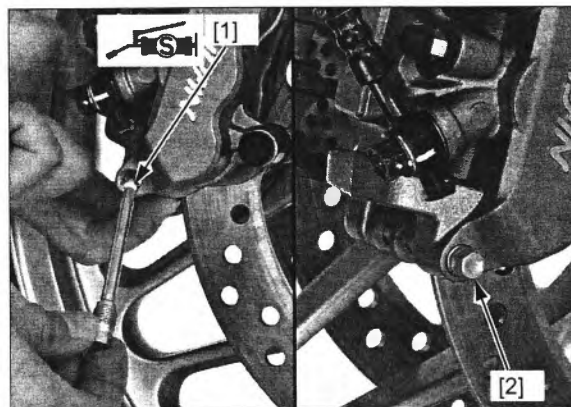
Apply silicone grease to the pad pin stopper ring [1].

Install the pad pin [2] by pushing the pads against the pad spring to align the pad pin holes in the pads and caliper.

Tighten the pad pin to the specified torque.

TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)

Operate the brake lever and brake pedal to seat the caliper pistons against the pads.

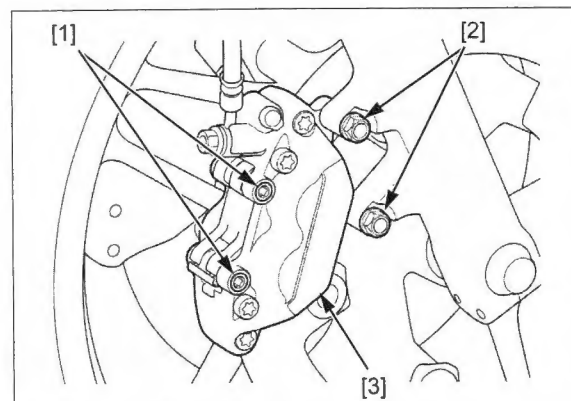


FRONT BRAKE PAD REPLACEMENT (Except '13 CB1100A)

Do not remove the pad pins yet.

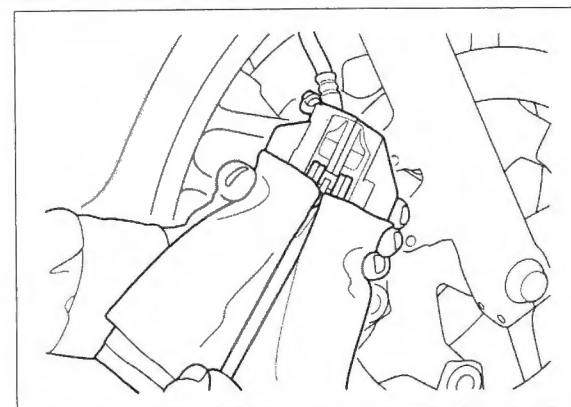
Loosen the pad pins [1].

Remove the mounting bolts [2] and brake caliper [3].

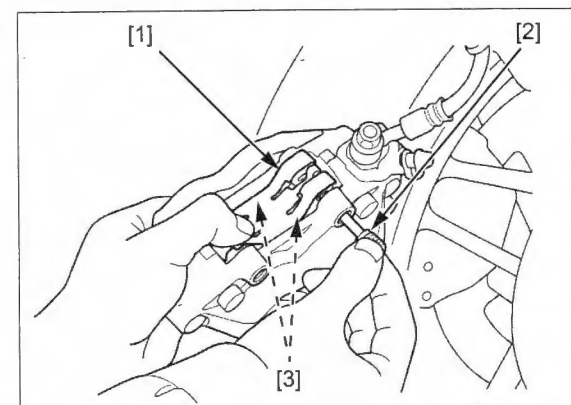


Check the brake fluid level in the master cylinder reservoir as this operation causes the level to rise.

Push the caliper pistons all the way in to allow installation of new brake pads.

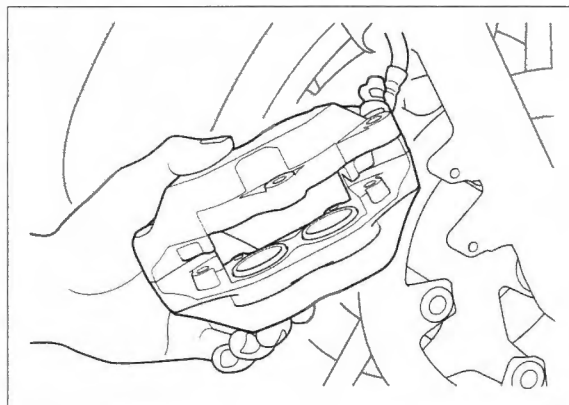


Hold the pad spring [1] and remove the pad pins [2], then remove the pad spring and brake pads [3].

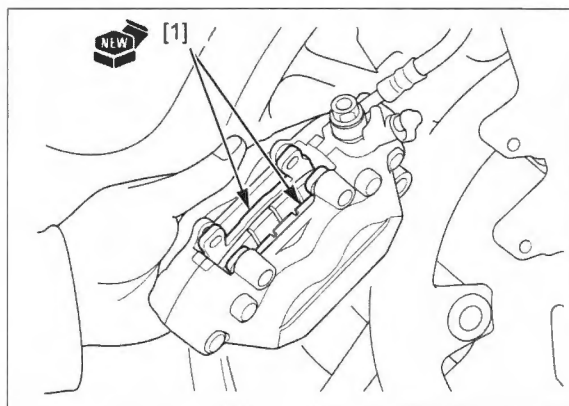


HYDRAULIC BRAKE

Clean the inside of the caliper, especially around the caliper pistons.
Check for brake fluid leakage around the piston seals.



Install new brake pads [1] into the caliper.



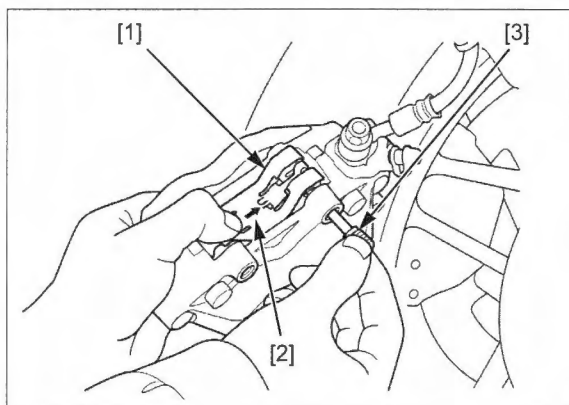
Note the installation direction of the pad spring.

Install the pad spring [1] with its arrow mark [2] facing up as shown.

Push and hold the pad spring, then install the pad pins [3].

NOTE:

Do not tighten the pad pins yet.



Be careful not to damage the brake pads.

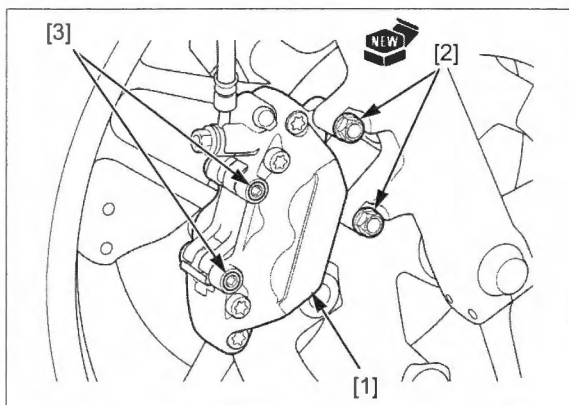
Install the brake caliper [1] to the fork leg so that the disc is positioned between the pads.

Install new mounting bolts [2] and tighten them to the specified torque.

TORQUE: 31 N·m (3.2 kgf·m, 23 lbf·ft)

Tighten the pad pins [3] to the specified torque.

TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)

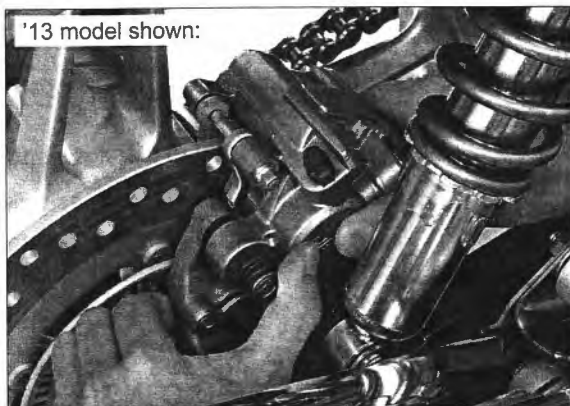


REAR BRAKE PAD REPLACEMENT

Check the brake fluid level in the master cylinder reservoir as this operation causes the level to rise.

Push the caliper piston all the way in to allow installation of new brake pads by pushing the caliper body inward.

'13 model shown:

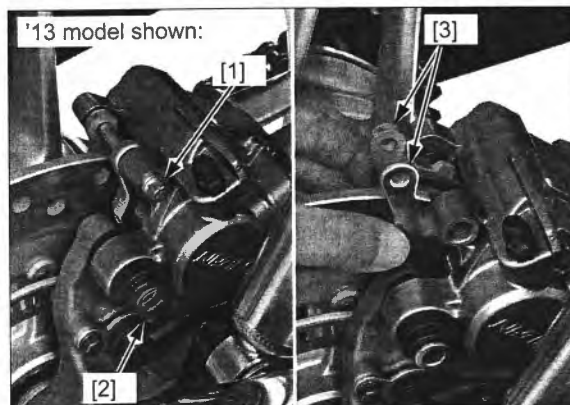


Loosen the pad pin [1].

Remove the rear brake caliper bolt [2].

Remove the pad pin and pivot the caliper up, then remove the brake pads [3].

'13 model shown:

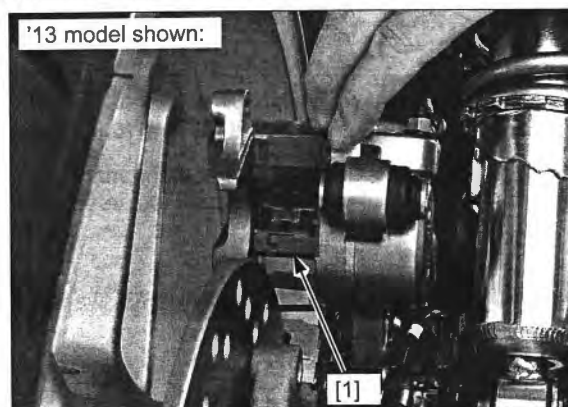


Clean the inside of the caliper especially around the caliper piston.

Check for brake fluid leakage around the piston seal.

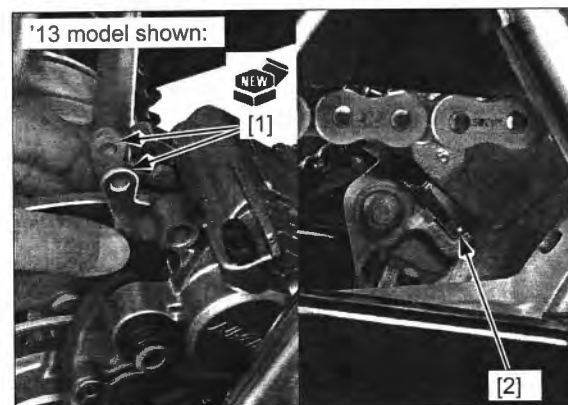
Make sure that the pad spring [1] is in place (page 14-43).

'13 model shown:



Install new pads [1] and lower the caliper so that the pad ends positioned onto the retainer [2] on the caliper bracket as shown.

'13 model shown:



HYDRAULIC BRAKE

Apply silicone grease to the pad pin stopper ring [1].

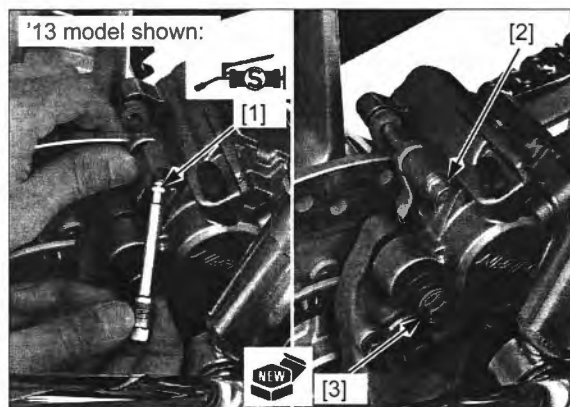
While pushing the pads against the pad spring, install the pad pin [2].

Install and tighten a new caliper bolt [3] to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)

Tighten the pad pin to the specified torque.

TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)



BRAKE DISC INSPECTION

Visually inspect the brake disc for damage or cracks.

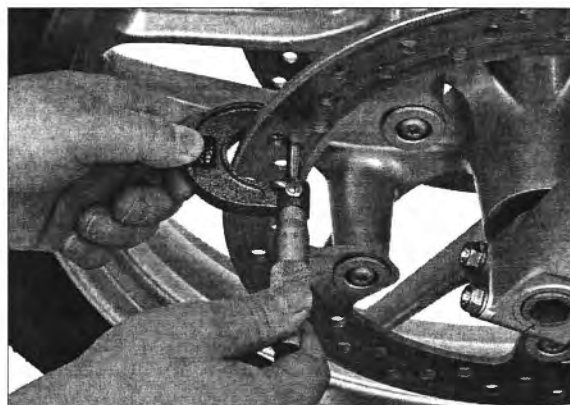
Measure the brake disc thickness with a micrometer at several points.

SERVICE LIMITS:

FRONT: 3.5 mm (0.14 in)

REAR: 5.0 mm (0.20 in)

Replace the brake disc if the smallest measurement is less than the service limit.



Measure the brake disc warpage with a dial gauge.

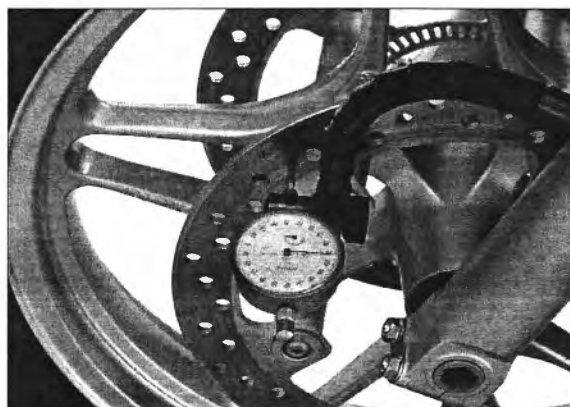
SERVICE LIMITS:

FRONT: 0.20 mm (0.008 in)

REAR: 0.30 mm (0.012 in)

Check the wheel bearings for excessive play if the warpage exceeds the service limit.

Replace the brake disc if the wheel bearings are normal.



FRONT MASTER CYLINDER

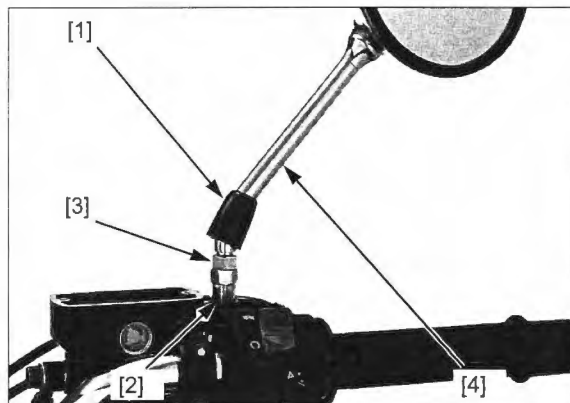
REMOVAL

Drain the brake hydraulic system.

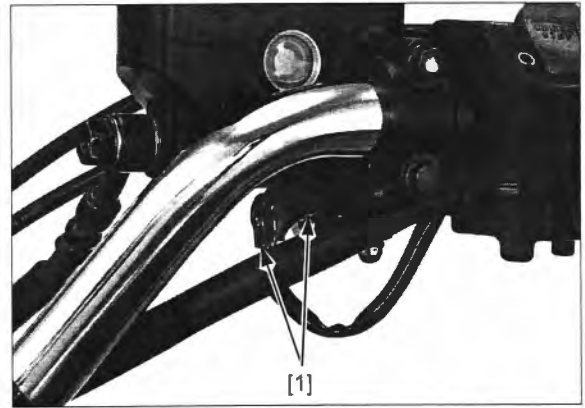
- '13 CB1100A (page 14-8)
- except '13 CB1100A (page 14-15)

Remove the cover [1] from the rearview mirror adaptor bolt [2].

Loosen the nut (left hand threads) [3] and remove the right rearview mirror [4] from the master cylinder.



Disconnect the brake light switch connectors [1].

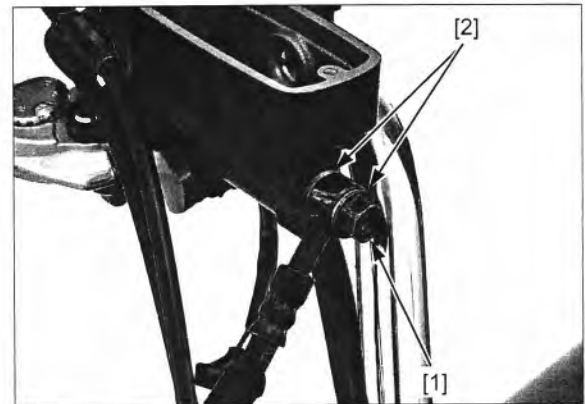


Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.

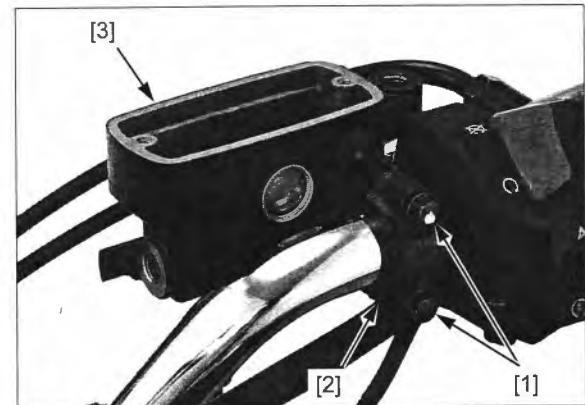
Remove the brake hose oil bolt [1], sealing washers [2], and brake hose eyelet.

NOTE:

When removing the oil bolt, cover the end of the hose to prevent contamination.

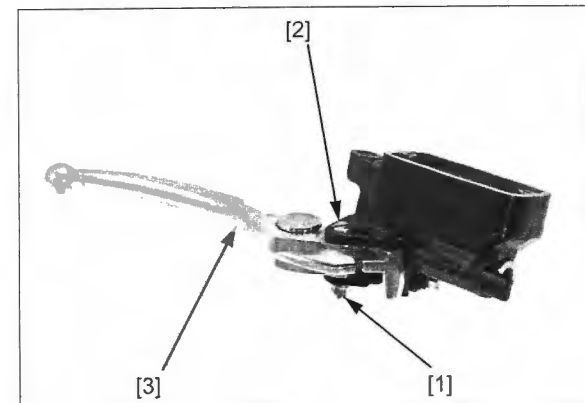


Remove the master cylinder holder bolts [1], holder [2], and master cylinder assembly [3].



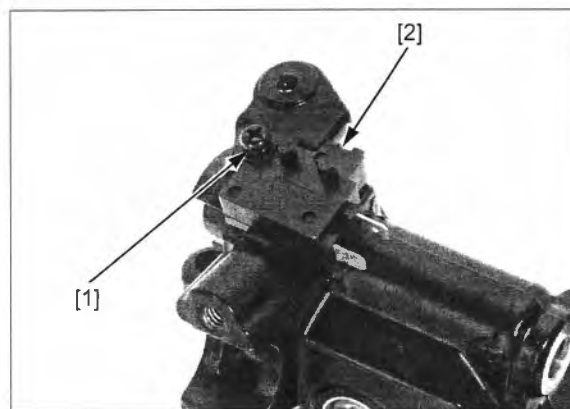
DISASSEMBLY

Remove the nut [1], pivot bolt [2], and brake lever [3].



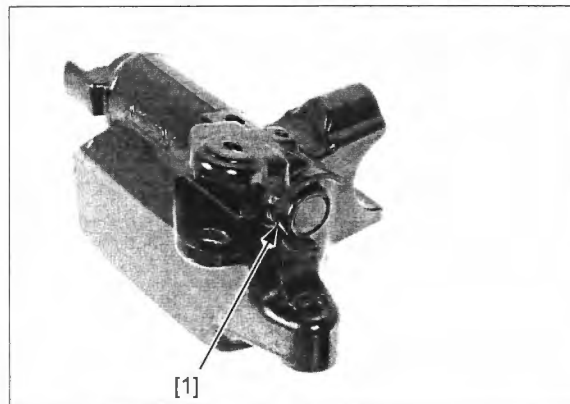
HYDRAULIC BRAKE

Remove the screw [1] and brake light switch [2].



Be careful not to damage the boot.

Remove the boot [1] from the master piston.



Remove the snap ring [1] from the master cylinder body using the special tool.

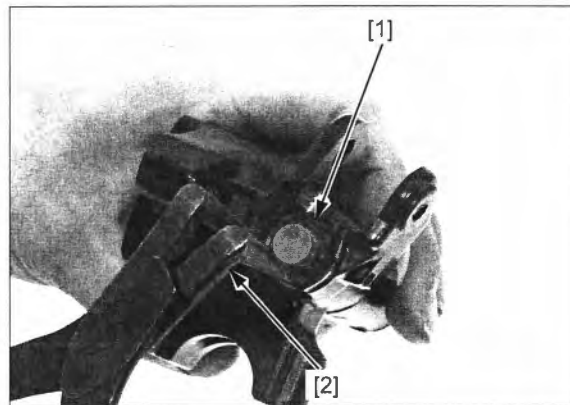
TOOL:

[2] Snap ring pliers

07914-SA50001

Remove the master piston, primary cup, and spring.

Clean the inside of the cylinder, reservoir, and master piston with clean brake fluid.



INSPECTION

Replace the master piston, piston cups, and spring as a set.

Check the piston boot, primary cup, and secondary cup for deterioration or damage.

Check the master cylinder and piston for scoring, abnormal scratches, or damage.

Check the spring for fatigue or damage.

Measure the master cylinder I.D.

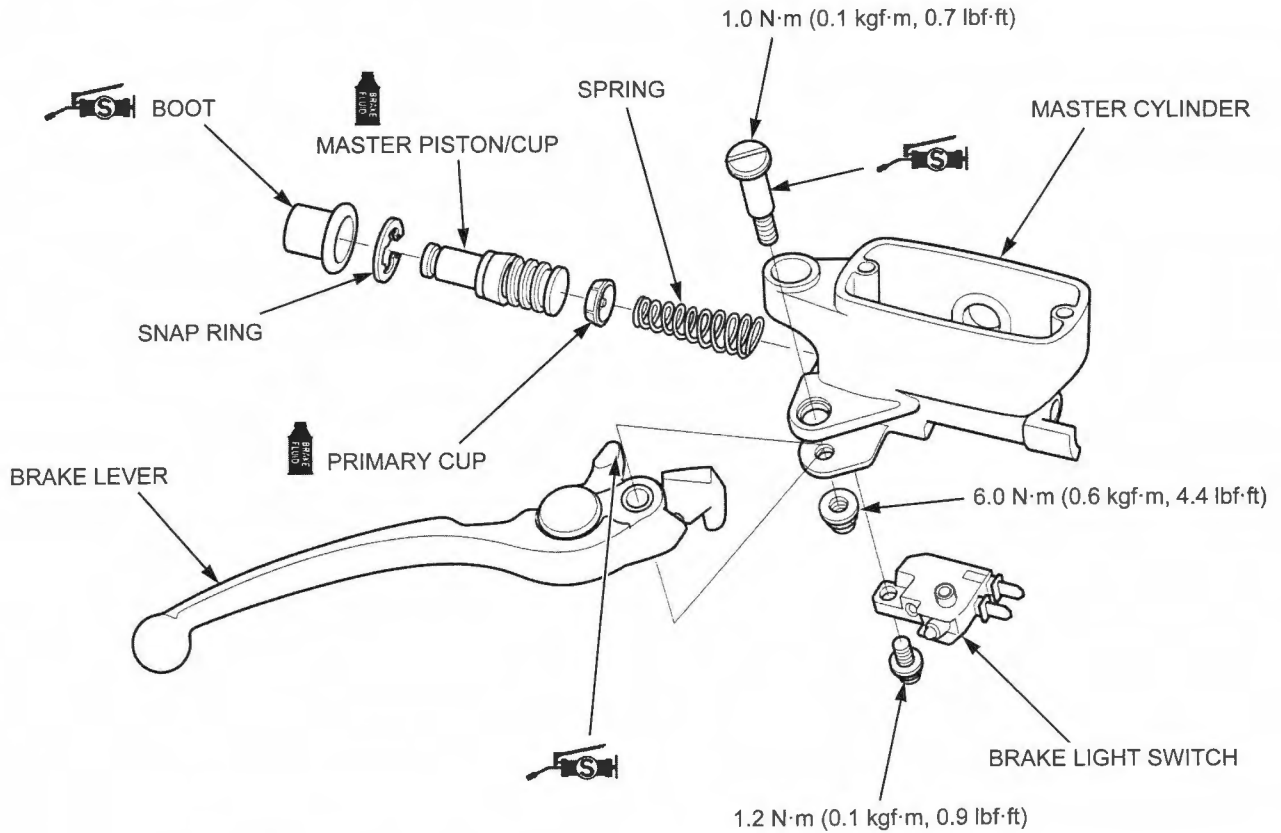
SERVICE LIMIT: 14.055 mm (0.5533 in)

Measure the master piston O.D.

SERVICE LIMIT: 13.945 mm (0.5490 in)



ASSEMBLY



Coat the master piston, piston cups, and inside of the master cylinder with clean brake fluid.

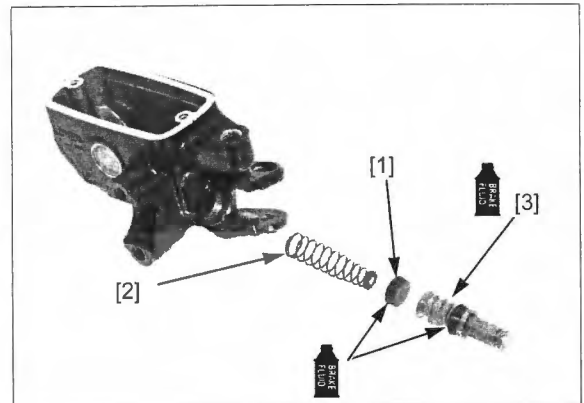
NOTE:

Keep the master piston, cups, and spring as a set; do not substitute individual parts.

Install the primary cup [1] onto the spring [2].

When installing the cups, do not allow the lips to turn inside out.

Install the spring/primary cup and master piston [3] into the master cylinder.



Install the snap ring with its chamfered edge facing the master piston.

Install the snap ring [1] into the master cylinder groove using the special tool.

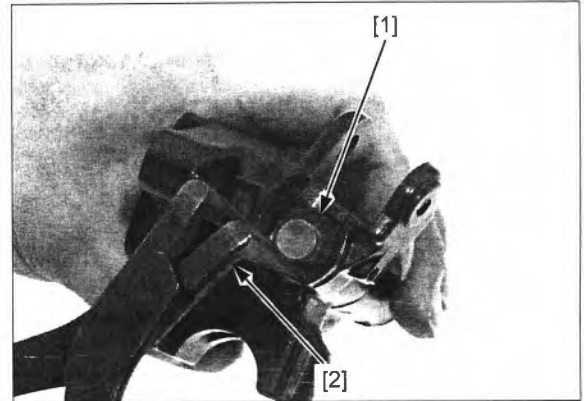
TOOL:

[2] Snap ring pliers

07914-SA50001

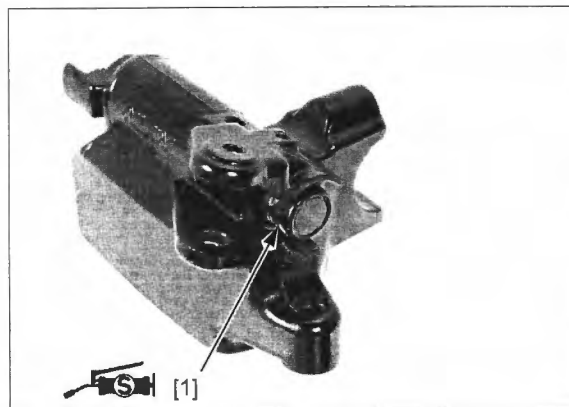
NOTE:

Be certain the snap ring is firmly seated in the groove.



HYDRAULIC BRAKE

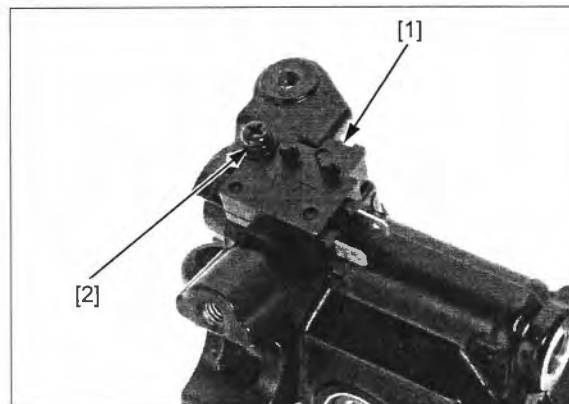
Apply silicone grease to the inside of the boot [1].
Install the boot onto the master piston.



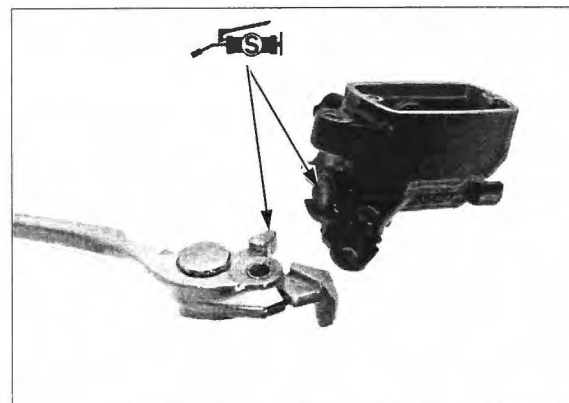
Install the brake light switch [1] by aligning its boss with the hole on the master cylinder.

Install and tighten the screw [2] to the specified torque.

TORQUE: 1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)



Apply silicone grease to the contact surfaces of the brake lever and piston tip.



Apply silicone grease to the brake lever pivot bolt [1] sliding surface.

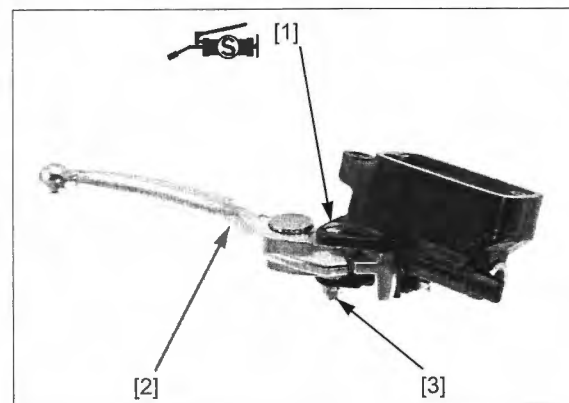
Install the brake lever [2] and pivot bolt, then tighten the pivot bolt to the specified torque.

TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)

Install the pivot nut [3].

Hold the pivot bolt and tighten the nut to the specified torque.

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



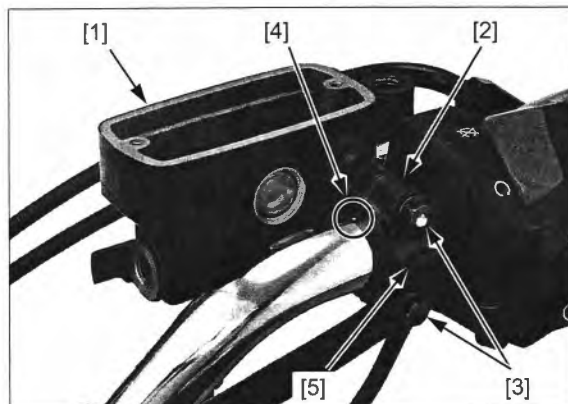
INSTALLATION

Install the master cylinder holder with its "UP" mark [5] facing up.

Install the master cylinder [1], holder [2], and holder bolts [3], then align the edge of the master cylinder with the punch mark [4] on the handlebar.

Tighten the upper bolt first, then the lower bolt.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

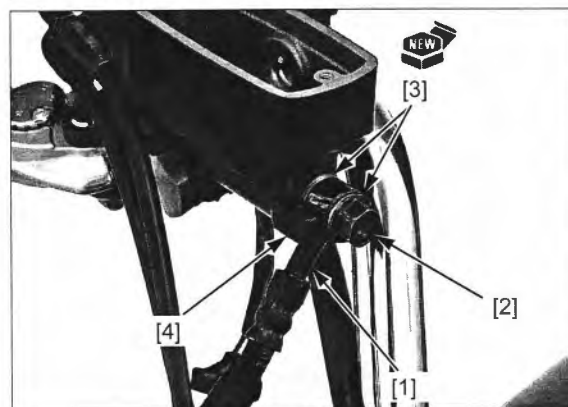


Do not twist the brake hose.

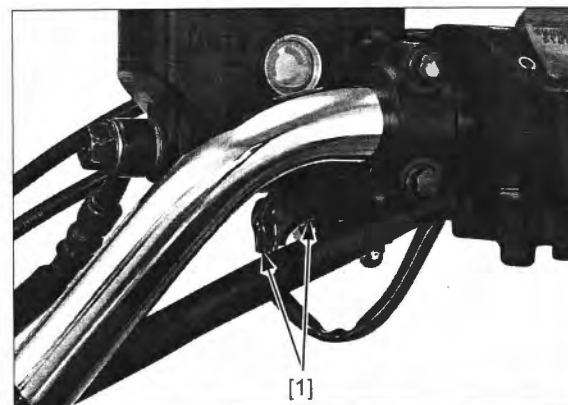
Connect the brake hose [1] with the oil bolt [2] and new sealing washers [3].

Push the eyelet neck against the stopper [4], then tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)



Connect the brake light switch connectors [1].



Install the rearview mirror adaptor bolt [1] to the master cylinder. Tighten the rearview mirror adaptor bolt to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

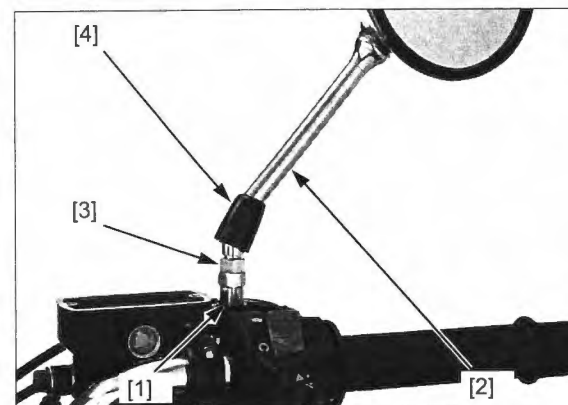
Install the rearview mirror [2] and tighten the nut (left hand threads) [3] to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

Install the cover [4] onto the rearview mirror adaptor bolt securely.

Fill the reservoir to the upper level and bleed the hydraulic system.

- '13 CB1100A (page 14-10)
- except '13 CB1100A (page 14-17)



HYDRAULIC BRAKE

REAR MASTER CYLINDER

REMOVAL

'13 CB1100A: Drain the brake hydraulic system (page 14-8).

Except '13

CB1100A: Drain the rear brake hydraulic system (page 14-15).

Remove the following:

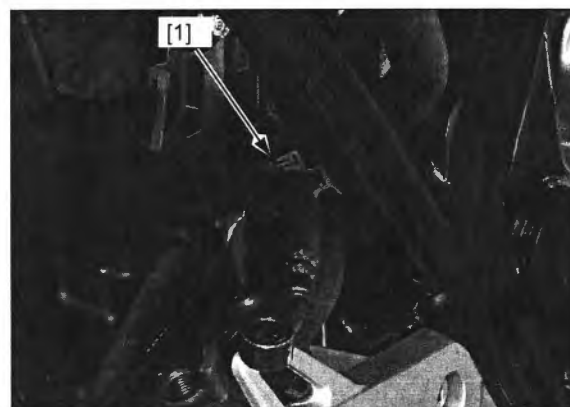
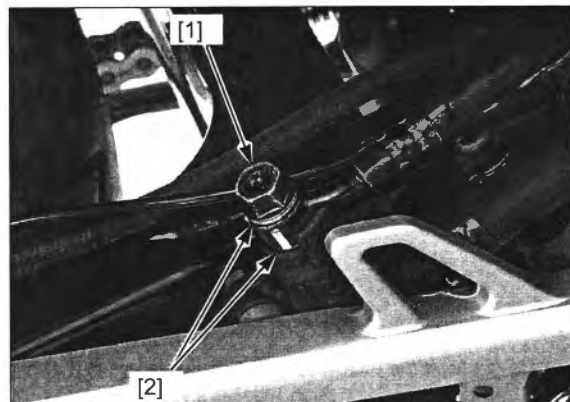
- muffler
 - CB1100/A (page 2-13)
 - CB1100SA (page 2-17)
- rear fender B (page 2-11)

Remove the brake hose oil bolt [1], sealing washers [2], and brake hose eyelet.

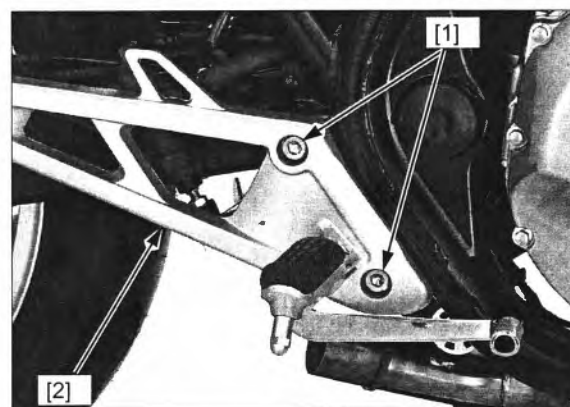
NOTE:

When removing the oil bolt, cover the end of the hose to prevent contamination.

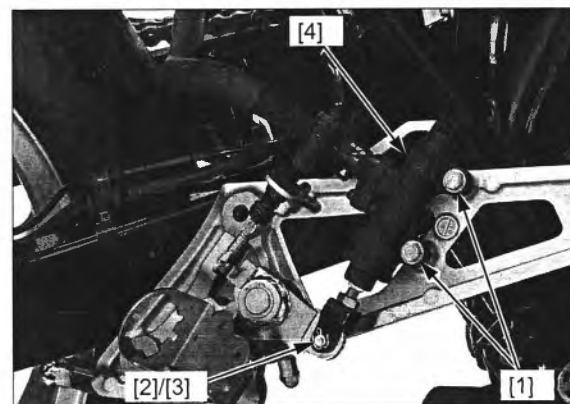
Release the rear brake hose (CB1100A/SA) and rear brake right switch wire from the clamp [1].



Remove the mounting bolts [1] and right main step holder [2].



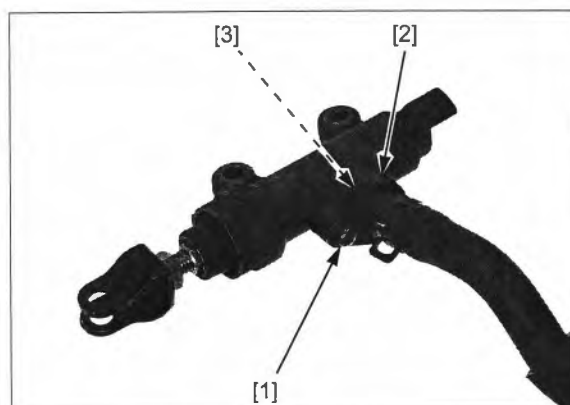
Remove the master cylinder mounting bolts [1]. Remove the cotter pin [2] and joint pin [3], then remove the rear master cylinder [4].



DISASSEMBLY

Remove the screw [1] and reservoir hose joint [2] from the master cylinder.

Remove the O-ring [3] from the reservoir hose joint.



Be careful not to damage the boot.

Remove the boot [1] from the master cylinder body. Remove the snap ring [2] from the master cylinder body using the special tool.

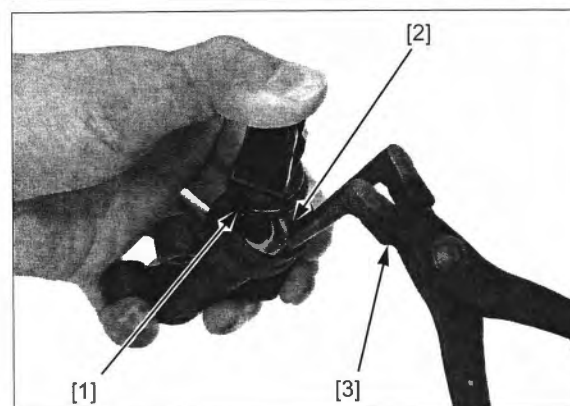
TOOL:

[3] Snap ring pliers

07914-SA50001

Remove the push rod assembly, master piston, primary cup, and spring.

Clean the master piston and inside of the cylinder with clean brake fluid.

**INSPECTION**

Replace the master piston, primary cup, and spring as a set.

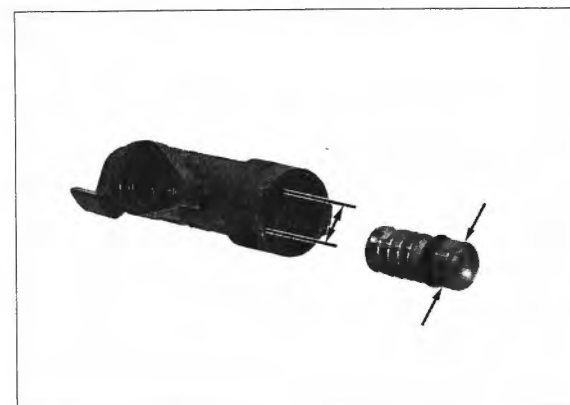
Check the push rod boot, primary cup, and secondary cup for deterioration or damage. Check the master cylinder and piston for scoring, abnormal scratches, or damage. Check the spring for fatigue or damage.

Measure the master cylinder I.D.

SERVICE LIMIT: 14.055 mm (0.5533 in)

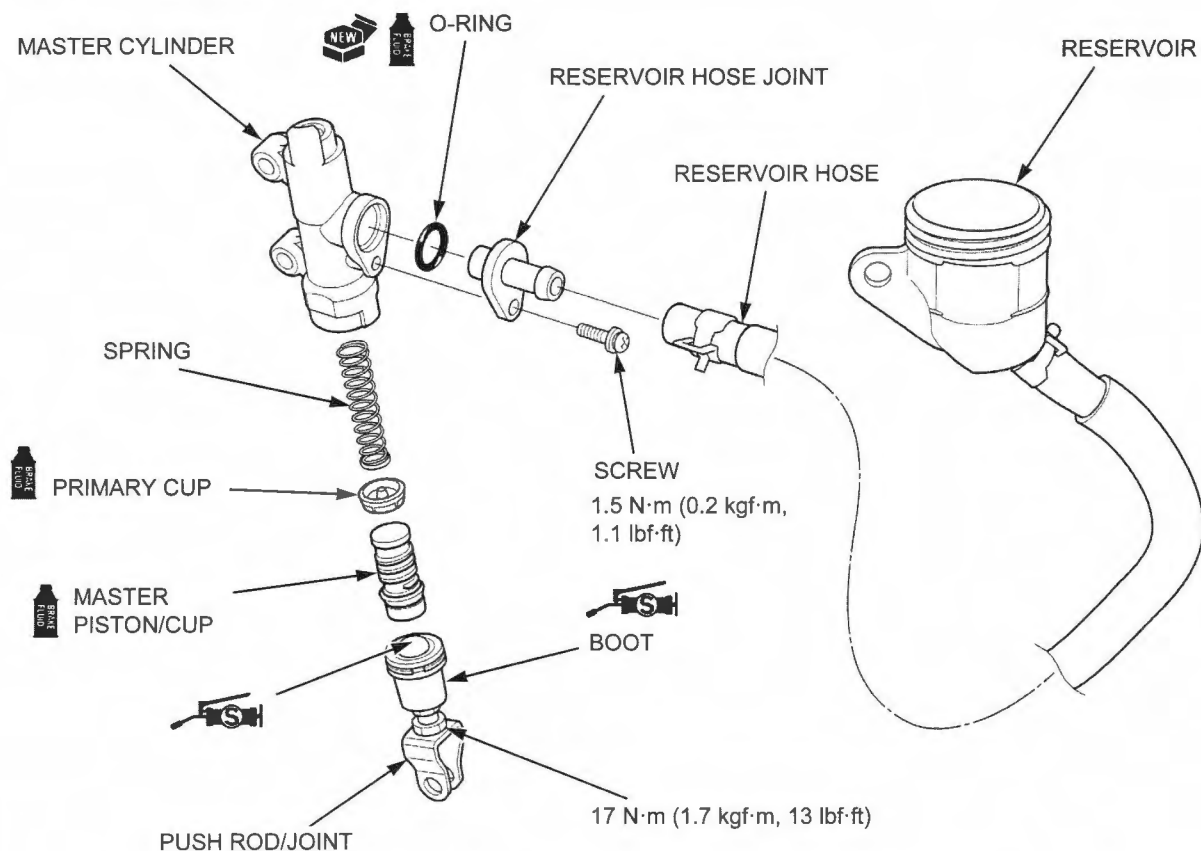
Measure the master piston O.D.

SERVICE LIMIT: 13.945 mm (0.5490 in)



HYDRAULIC BRAKE

ASSEMBLY



Coat the master piston, piston cups, and inside of the master cylinder with clean brake fluid.

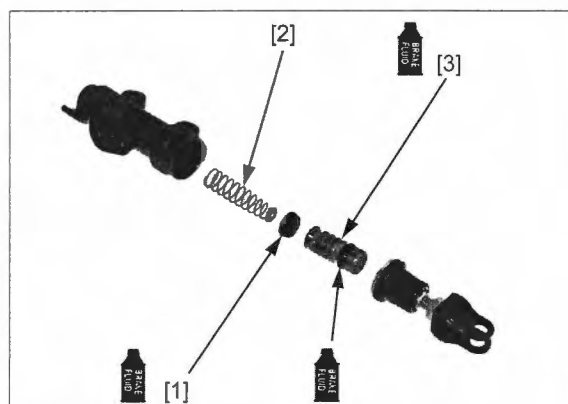
NOTE:

Keep the master piston, cups, and spring as a set; do not substitute individual parts.

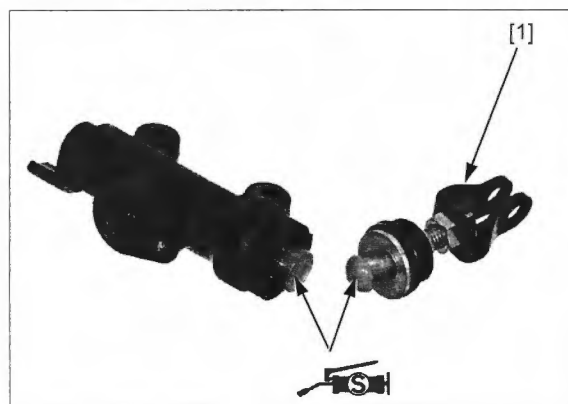
Install the primary cup [1] onto the spring [2].

When installing the cups, do not allow the lips to turn inside out.

Install the spring/primary cup and master piston [3] into the master cylinder.



Apply silicone grease to contact areas of the master piston and push rod [1] tip.



Install the push rod assembly into the master cylinder.

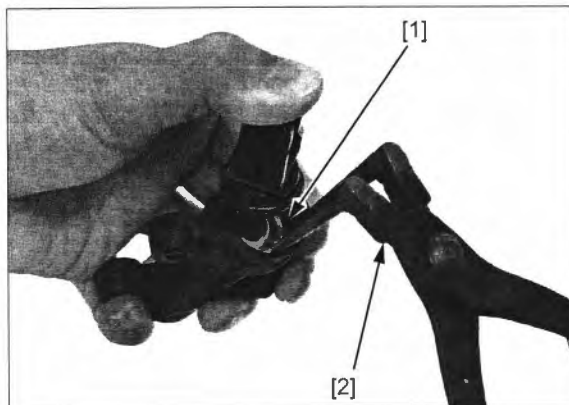
Install the snap ring [1] into the master cylinder groove using the special tool.

TOOL:

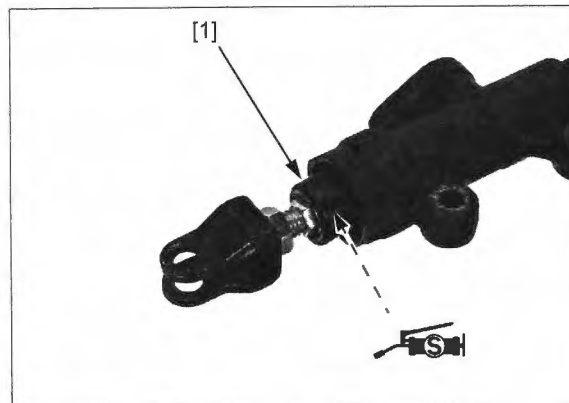
[2] Snap ring pliers **07914-SA50001**

NOTE:

Be certain the snap ring is firmly seated in the groove.



Apply silicone grease to the inside of the boot [1].
Install the boot into the master cylinder properly.

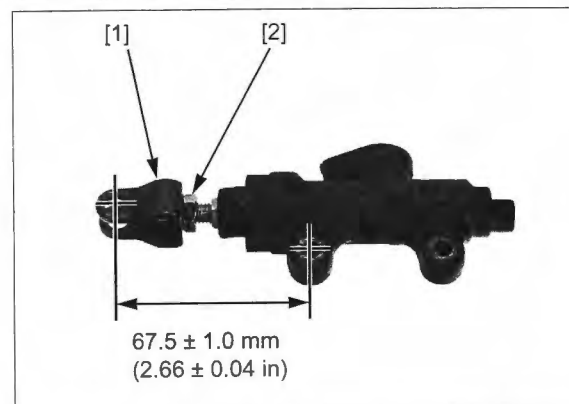


If the push rod joint [1] is reinstalled, adjust the push rod length so that the distance between the centers of the lower mounting bolt hole and joint pin hole is specified.

STANDARD LENGTH: 67.5 ± 1.0 mm (2.66 ± 0.04 in)

After adjustment, hold the push rod joint and tighten the joint nut [2] to the specified torque.

TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)



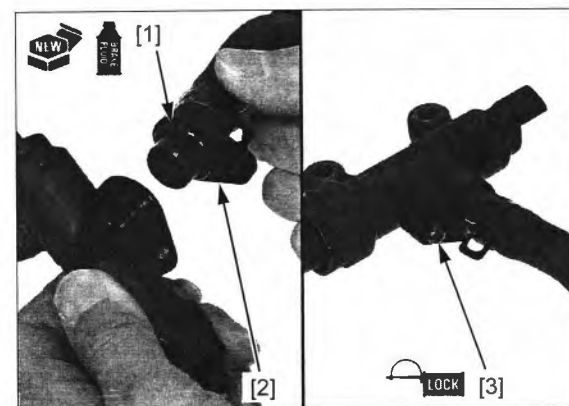
Apply brake fluid to a new O-ring [1] and install it onto the reservoir hose joint [2].

Install the reservoir hose joint to the master cylinder.

Clean the reservoir hose joint screw threads and apply a locking agent.

Install and tighten the screw [3] to the specified torque.

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



HYDRAULIC BRAKE

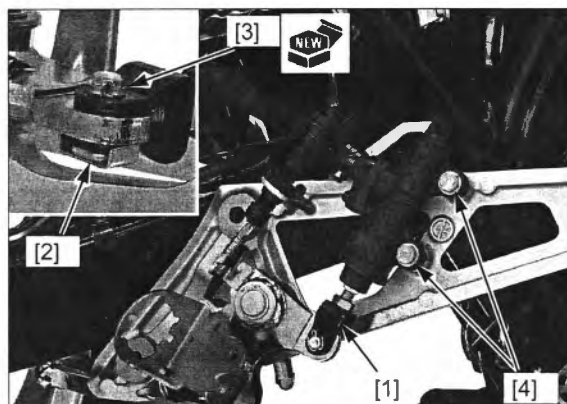
INSTALLATION

Place the master cylinder onto the right step holder, then connect the push rod joint [1] to the brake pedal and install the joint pin [2].

Secure the joint pin with a new cotter pin [3].

Align the mounting bolt holes on the master cylinder body and right main step holder, then install the master cylinder mounting bolts [4].

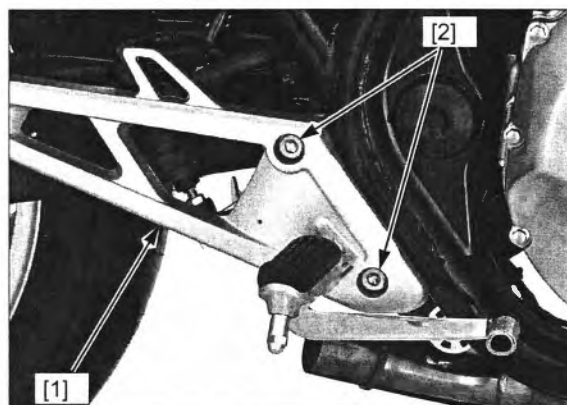
Tighten the mounting bolts securely.



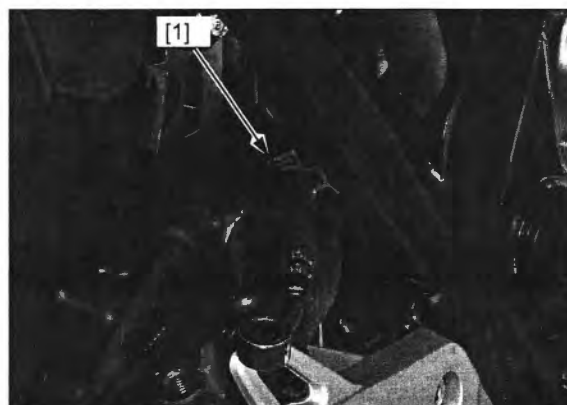
Install the right step holder [1] onto the frame.

Install and tighten the mounting bolts [2] to the specified torque.

TORQUE: 37 N·m (3.8 kgf·m, 27 lbf·ft)



Install the rear brake hose (CB1100A/SA) and rear brake light switch wire to the clamp [1].



Connect the brake hose [1] with the oil bolt [2] and new sealing washers [3].

Push the eyelet neck against the stopper [4], then tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

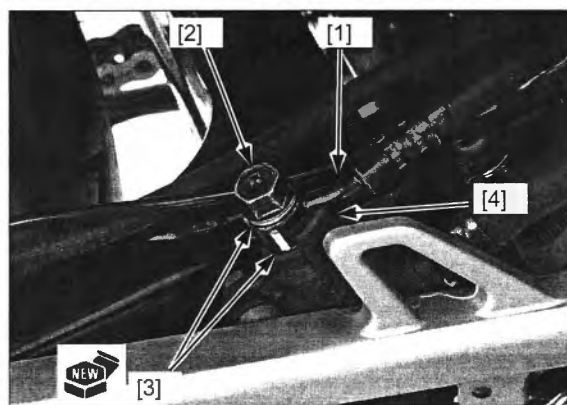
Install the following:

- rear fender B (page 2-11)
- muffler
 - CB1100/A (page 2-15)
 - CB1100SA (page 2-19)

'13 CB1100A: Fill and bleed the brake hydraulic system (page 14-10).

Except '13

CB1100A: Fill and bleed the rear brake hydraulic system (page 14-17).



FRONT BRAKE CALIPER (‘13 CB1100A)

REMOVAL

Drain the brake hydraulic system (page 14-8).

Remove the front brake pad (page 14-20)

Right caliper only: Remove the front wheel speed sensor (page 15-51).

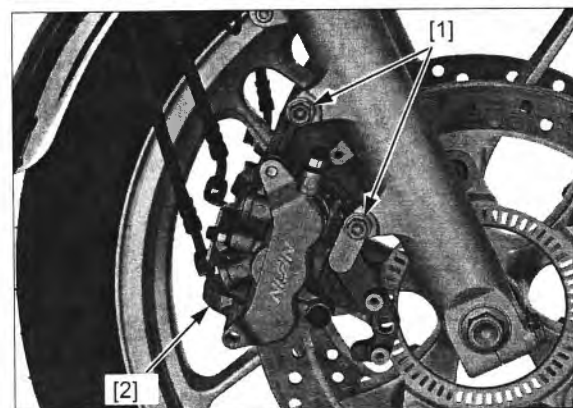
Remove the brake hose oil bolts [1], sealing washers [2], and brake hose eyelet.

NOTE:

When removing the oil bolt, cover the end of the hose to prevent contamination.



Remove the mounting bolts [1] and front brake caliper [2].



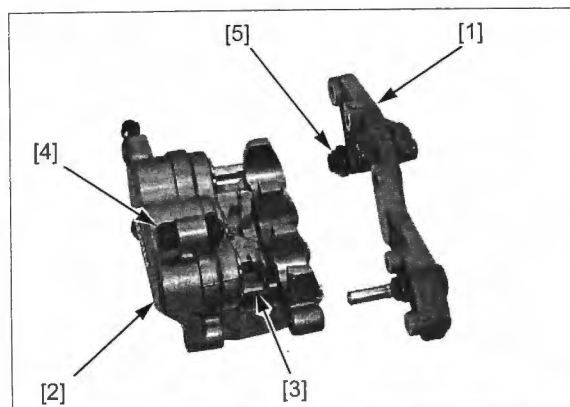
DISASSEMBLY

Remove the caliper bracket [1] from the caliper body [2].

Remove the pad spring [3] and bracket pin boot [4] from the caliper body.

Remove the caliper pin boot [5] from the caliper bracket.

If the boots are hard or deteriorated, replace them with new ones.



Place a shop towel over the pistons.

Do not use high pressure air or bring the nozzle too close to the inlet.

Position the caliper body with the pistons facing down and apply small squirts of air pressure to the fluid inlet to remove the pistons.

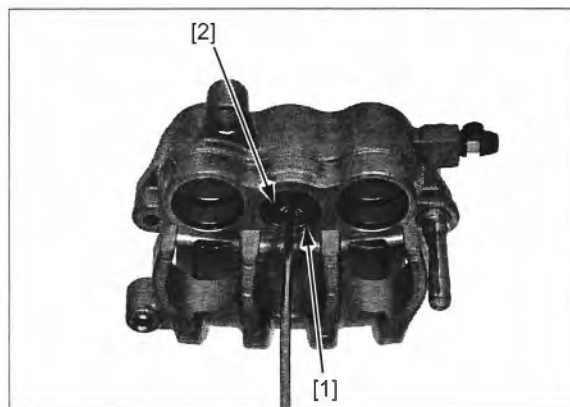


HYDRAULIC BRAKE

Be careful not to damage the cylinder inner surface.

Push the dust seals [1] and piston seals [2] in and lift them out.

Clean the seal grooves, caliper cylinders, and pistons with clean brake fluid.



INSPECTION

Check the caliper cylinders for scoring or other damage.

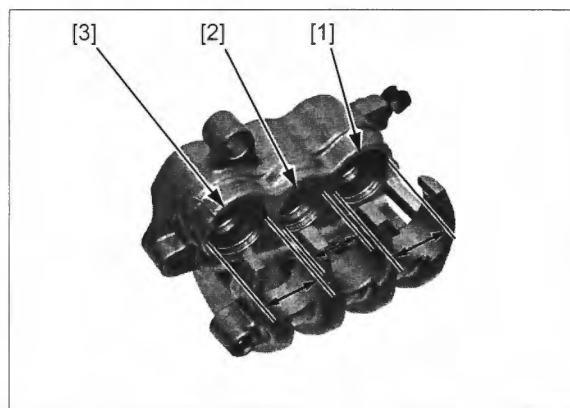
Measure the each caliper cylinder I.D.

SERVICE LIMITS:

UPPER [1]: 27.060 mm (1.0654 in)

CENTER [2]: 22.712 mm (0.8942 in)

LOWER [3]: 27.060 mm (1.0654 in)



Check the caliper pistons for scratches, scoring, or other damage.

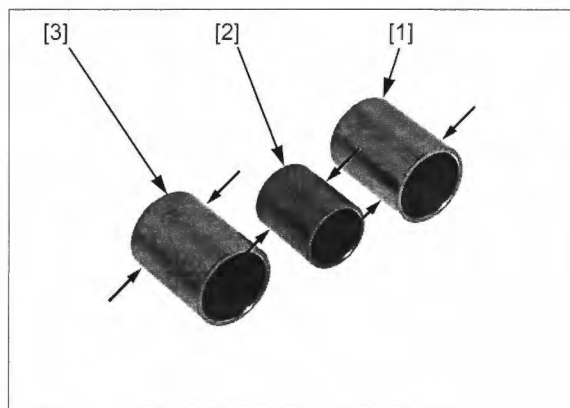
Measure the each caliper piston O.D.

SERVICE LIMITS:

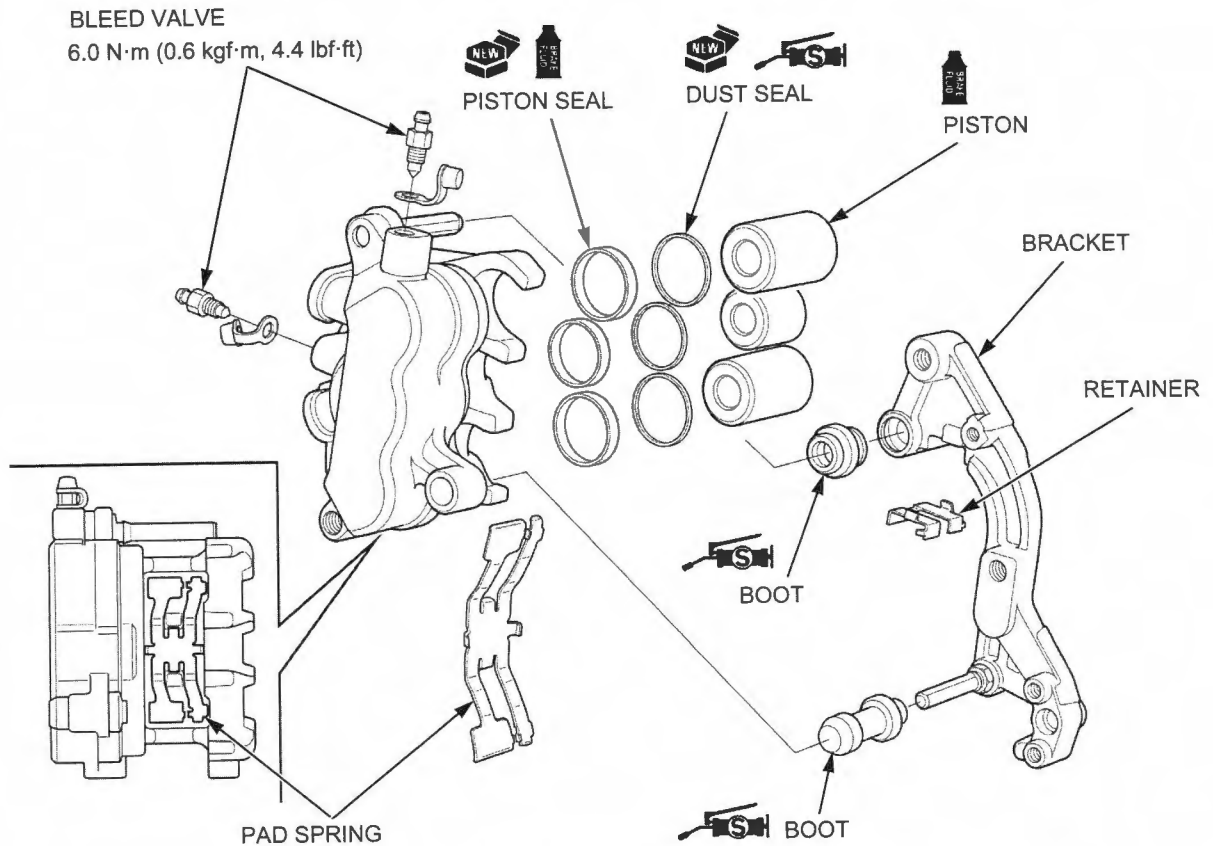
UPPER [1]: 26.91 mm (1.059 in)

CENTER [2]: 22.560 mm (0.8882 in)

LOWER [3]: 26.91 mm (1.059 in)

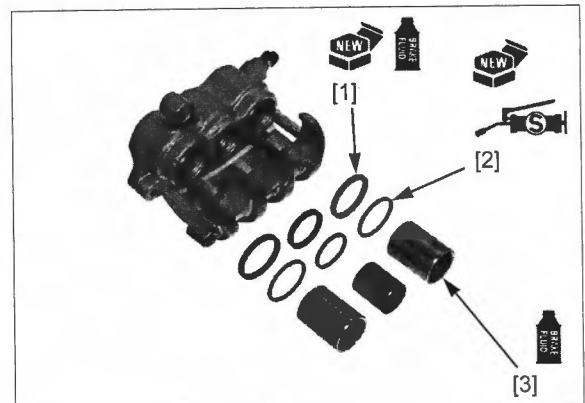


ASSEMBLY



Coat new piston seals [1] with clean brake fluid and install them into the seal grooves in the caliper. Coat new dust seals [2] with silicone grease and install them into the seal grooves in the caliper.

Coat the caliper pistons [3] with clean brake fluid and install them into the caliper cylinders with the opening sides toward the pads.



Check that the pad retainer [1] is in place on the caliper bracket.

Install the caliper pin boot [2] into the caliper bracket [3]. Install the bracket pin boot [4] into the caliper body [5].

NOTE:

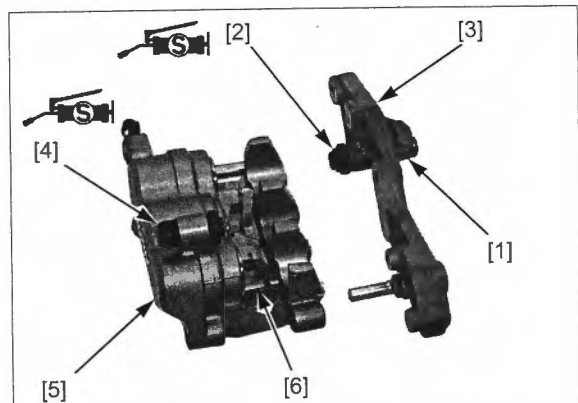
If the boots are hard or deteriorated, replace them with new ones.

Install the pad spring [6] in the caliper body.

Apply silicone grease to the sliding surfaces of the caliper/bracket pin and inside of the boots.

Install the caliper bracket over the caliper body.

Note the installation direction of the pad spring.



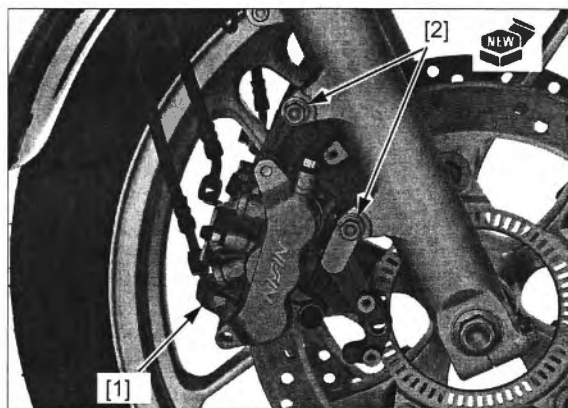
HYDRAULIC BRAKE

INSTALLATION

Install the brake caliper [1] onto the fork leg.

Install and tighten new brake caliper mounting bolts [2] to the specified torque.

TORQUE: 31 N·m (3.2 kgf·m, 23 lbf·ft)

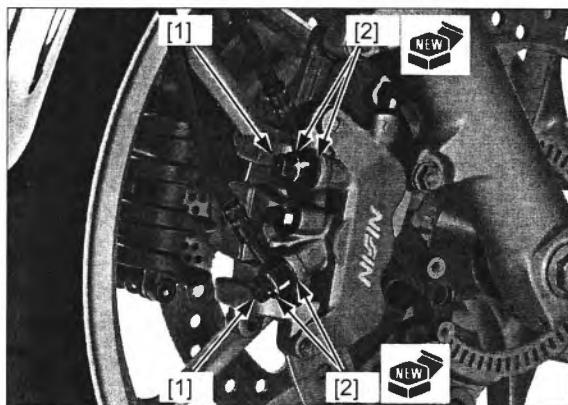


Connect the brake hose to the caliper body with the oil bolts [1] and new sealing washers [2].

Push the stoppers on the brake hose eyelets against the caliper body, then tighten the oil bolts to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Right caliper only: Install the front wheel speed sensor (page 15-51).
Install the front brake pads (page 14-20).
Fill and bleed the brake hydraulic system (page 14-10).



FRONT BRAKE CALIPER (Except '13 CB1100A)

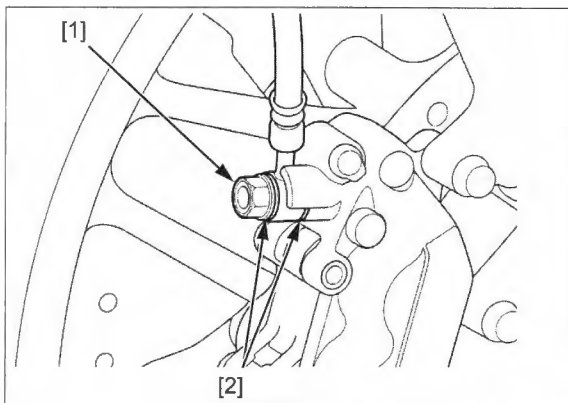
REMOVAL

Drain the front brake hydraulic system (page 14-15).

Remove the oil bolt [1], sealing washers [2], and brake hose eyelet.

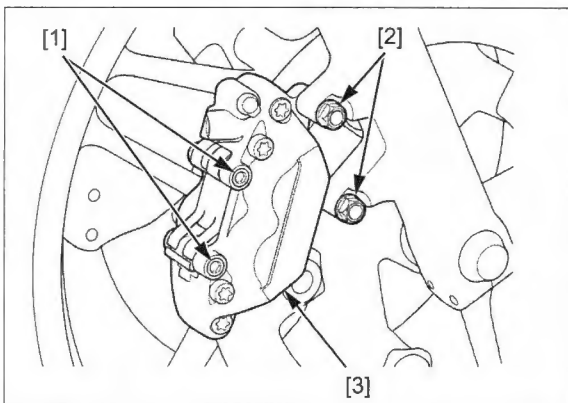
NOTE:

When removing the oil bolt, cover the end of the hose to prevent contamination.



Loosen the pad pins [1].
Remove the mounting bolts [2] and front brake caliper [3].

Remove the brake pads (page 14-21).



DISASSEMBLY

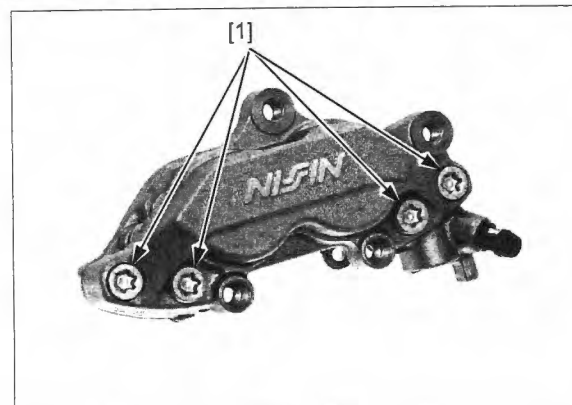
Install a piece of cardboard or soft wood sheet between the pistons.

Do not use high pressure air or bring the nozzle too close to the inlet.

Apply small squirts of air pressure to the fluid inlet to remove the pistons.



Remove the caliper assembly bolts [1].

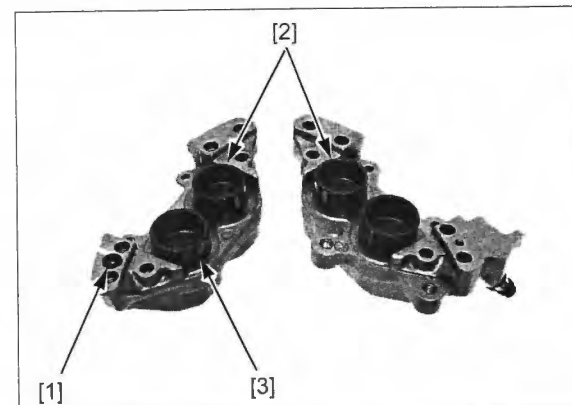


Mark the pistons to ensure correct reassembly.

Separate the caliper halves.

Remove the following:

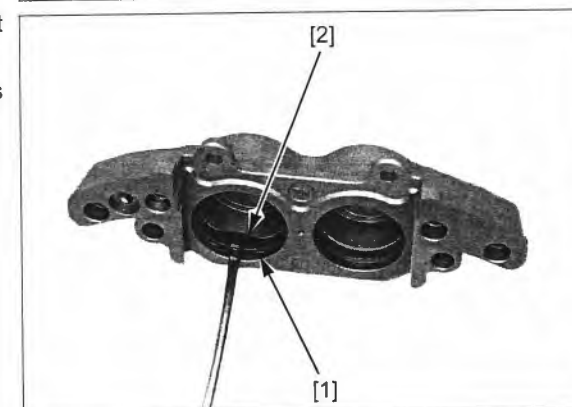
- joint seal [1]
- caliper pistons A [2]
- caliper pistons B [3]



Be careful not to damage the cylinder inner surface.

Push the dust seals [1] and piston seals [2] in and lift them out.

Clean the seal grooves, caliper cylinder, and pistons with clean brake fluid.



HYDRAULIC BRAKE

INSPECTION

Check the caliper cylinders and pistons for scoring, scratches, or other damage.

Measure the caliper cylinder I.D.

SERVICE LIMITS:

CYLINDER A [1]: 30.29 mm (1.193 in)

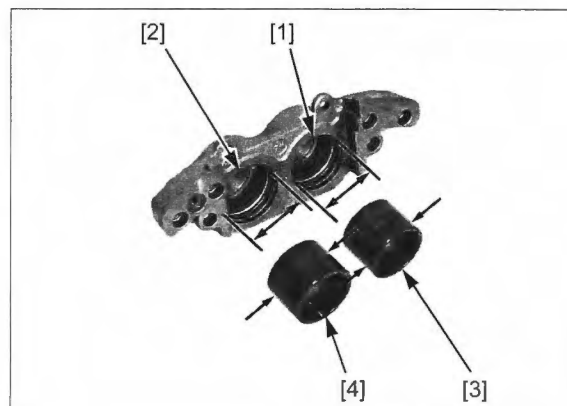
CYLINDER B [2]: 32.090 mm (1.2634 in)

Measure the caliper piston O.D.

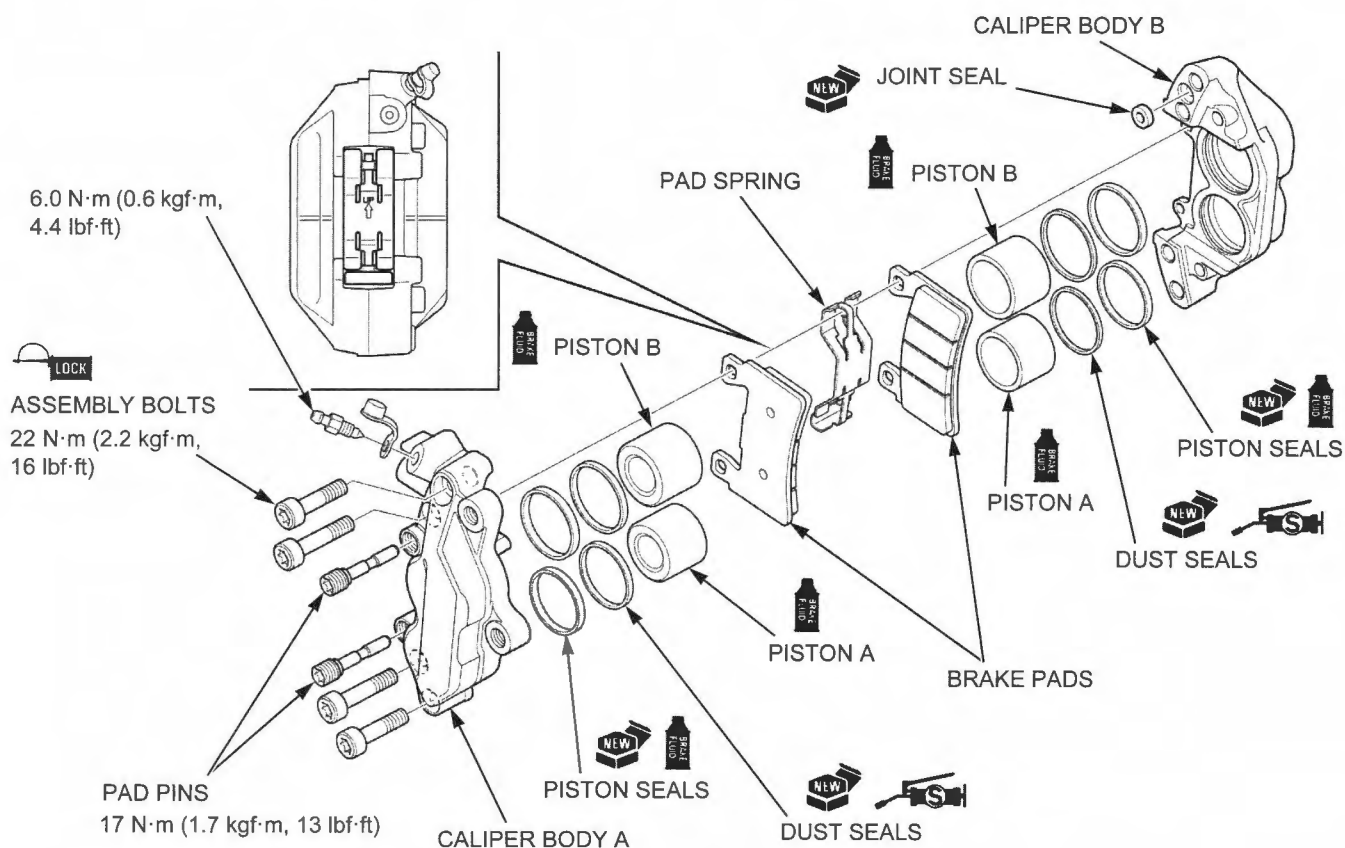
SERVICE LIMITS:

PISTON A [3]: 30.14 mm (1.187 in)

PISTON B [4]: 31.94 mm (1.257 in)



ASSEMBLY

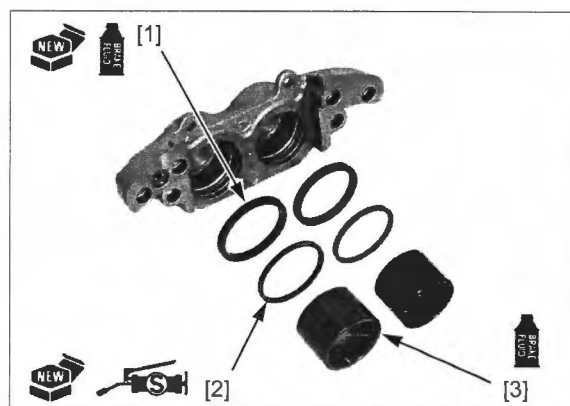


Coat new piston seals [1] with clean brake fluid and install them into the seal grooves in the caliper. Coat new dust seals [2] with silicone grease and install them into the seal grooves in the caliper.

Coat the caliper pistons [3] outer surface with clean brake fluid.

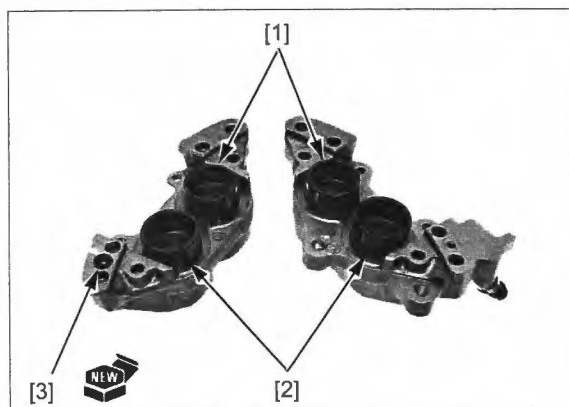
NOTE:

The O.D. of each piston is different. Be careful not to install the seals in the wrong positions.



Install the caliper piston A [1] and piston B [2] into the caliper cylinder with their opening ends toward the pad.

Install a new joint seal [3] into the fluid passage of the caliper.

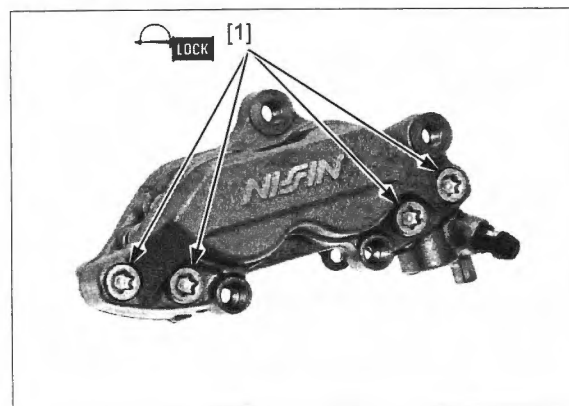


Assemble the caliper halves.

Clean the caliper assembly bolt [1] threads and apply a locking agent.

Install and tighten the caliper assembly bolts to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)



INSTALLATION

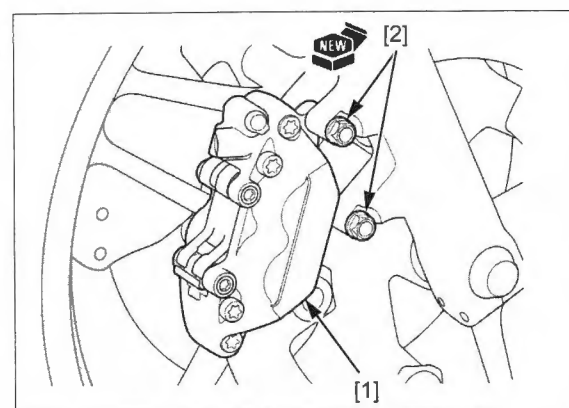
Install the brake pads to the caliper [1], then install the caliper onto the fork leg with new mounting bolts (page 14-21).

TORQUE:

Caliper mounting bolt:

31 N·m (3.2 kgf·m, 23 lbf·ft)

Pad pin: 17 N·m (1.7 kgf·m, 13 lbf·ft)

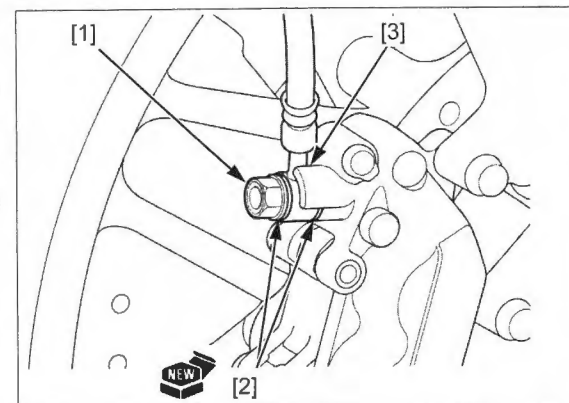


Connect the brake hose to the caliper body with the oil bolt [1] and new sealing washers [2].

Push the eyelet neck against the stopper [3] on the caliper, then tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill and bleed the front brake hydraulic system (page 14-17).



REAR BRAKE CALIPER ('13 model)

REMOVAL

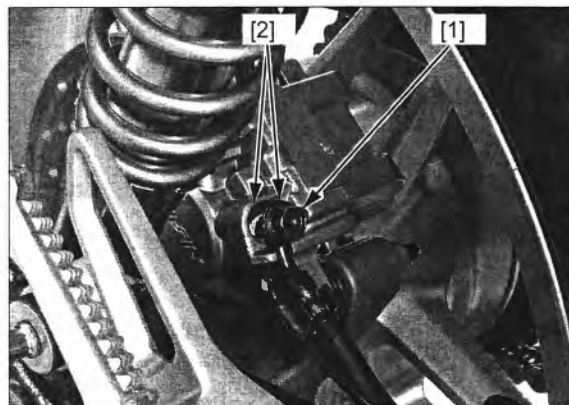
CB1100A: Drain the brake hydraulic system (page 14-8).

CB1100: Drain the rear brake hydraulic system (page 14-15).

Remove the oil bolt [1], sealing washers [2], and brake hose eyelet.

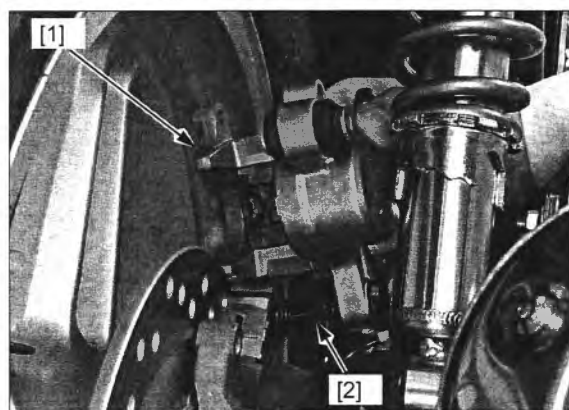
NOTE:

When removing the oil bolt, cover the end of the hose to prevent contamination.



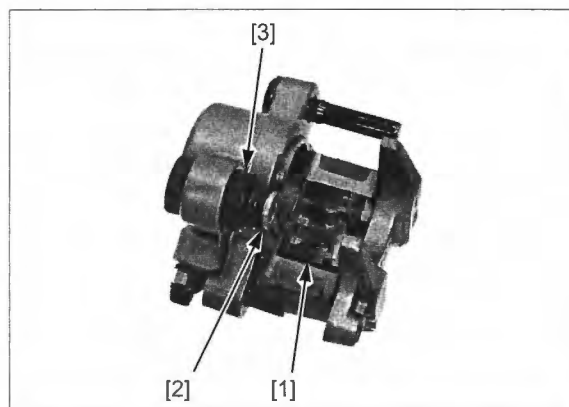
Remove the rear brake pads (page 14-23).

Pivot the rear caliper [1] up, then remove the caliper pin [2] from the bracket and remove the rear caliper.



DISASSEMBLY

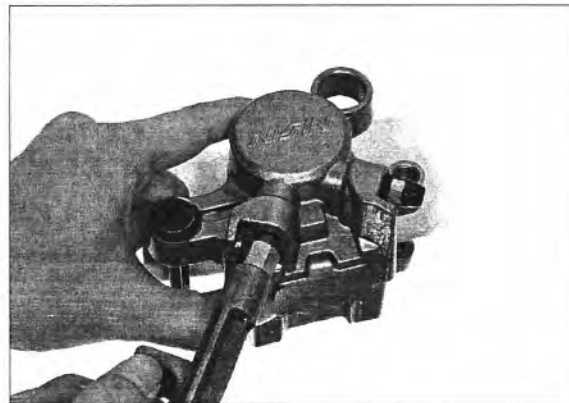
Remove the pad spring [1], collar [2], and caliper boot [3] from the caliper body.



Place a shop towel over the piston.

Do not use high pressure air or bring the nozzle too close to the inlet.

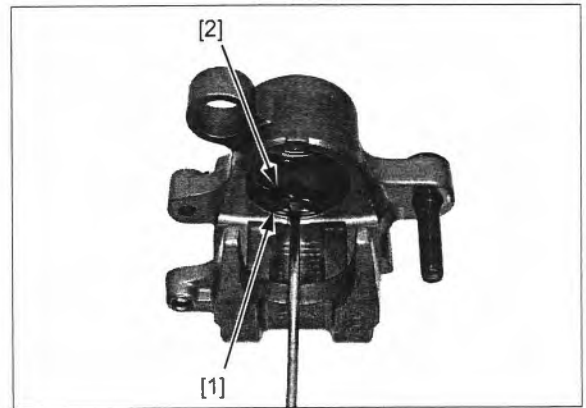
Position the caliper body with the piston facing down and apply small squirts of air pressure to the fluid inlet to remove the piston.



Be careful not to damage the cylinder inner surface.

Push the dust seal [1] and piston seal [2] in and lift them out.

Clean the seal grooves, caliper cylinder and piston with clean brake fluid.



INSPECTION

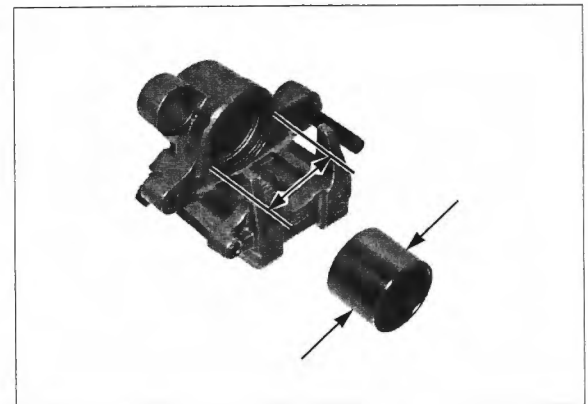
Check the caliper cylinder and piston for scoring, scratches, or other damage.

Measure the caliper cylinder I.D.

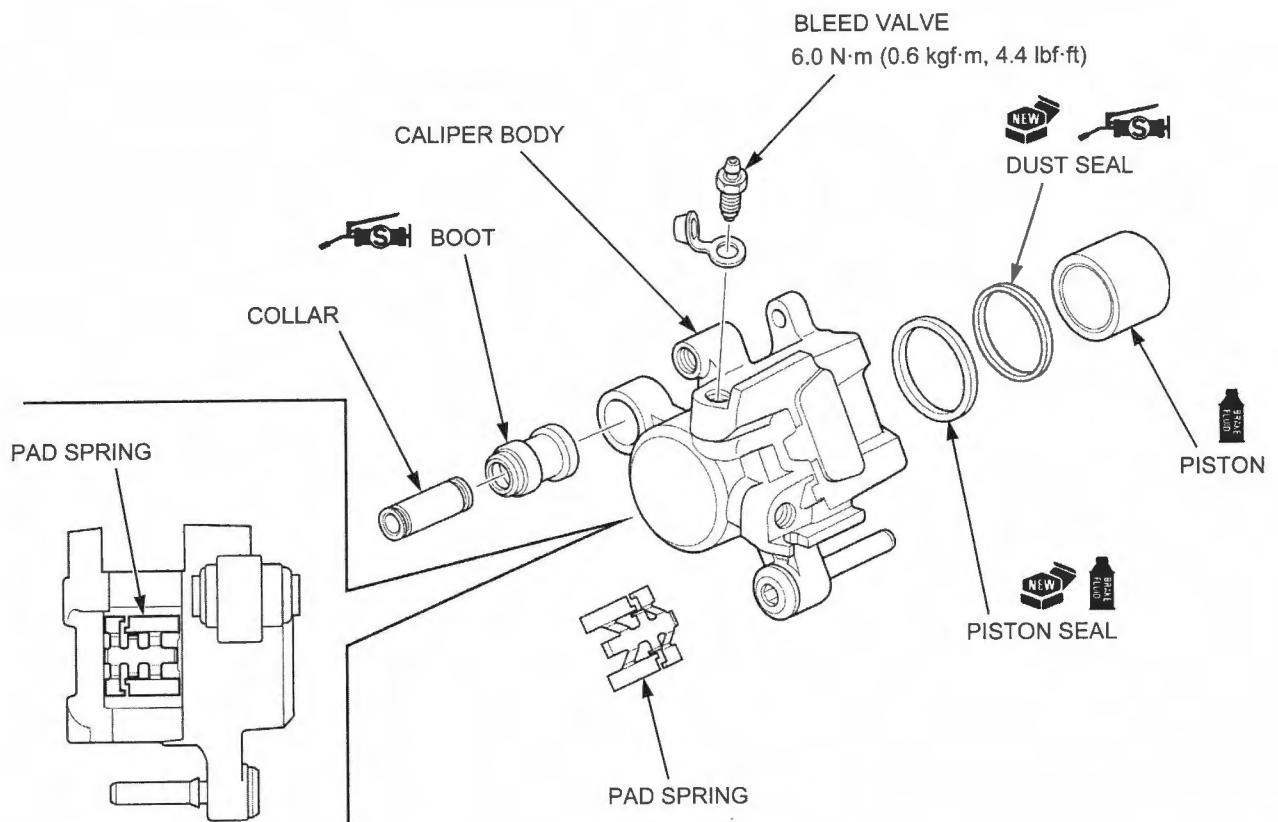
SERVICE LIMIT: 38.24 mm (1.506 in)

Measure the caliper piston O.D.

SERVICE LIMIT: 38.09 mm (1.500 in)



ASSEMBLY

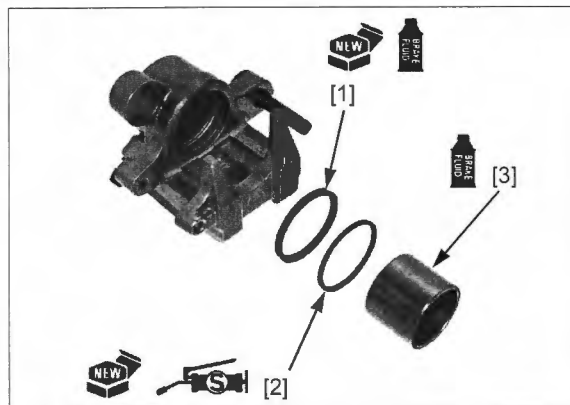


HYDRAULIC BRAKE

Coat new piston seal [1] with clean brake fluid and install it into the seal groove in the caliper.

Coat new dust seal [2] with silicone grease and install it into the seal groove in the caliper.

Coat the caliper piston [3] with clean brake fluid and install it into the caliper cylinder with the opening side toward the pads.

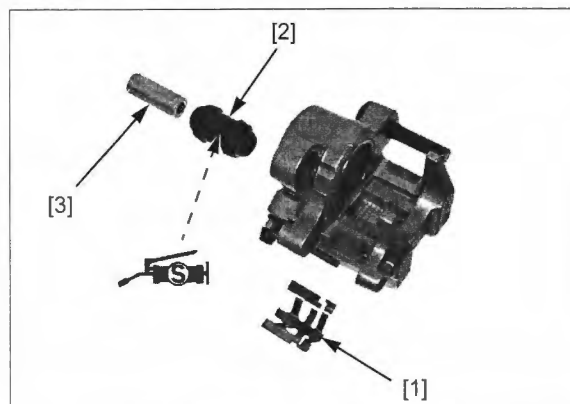


Note the installation direction of the pad spring.

Install the pad spring [1] into the caliper body. Apply silicone grease to the inside of the caliper boot. Install the boot and collar into the caliper.

NOTE:

If the caliper boot is hard or deteriorated, replace it with new one.



INSTALLATION

Make sure that the pad retainer is installed in place on the caliper bracket.

Apply silicone grease to the sliding surface of the caliper pin [1] and inside of the boot. Install the caliper [2] onto the bracket.

NOTE:

If the caliper pin boot is hard or deteriorated, replace it with new one.

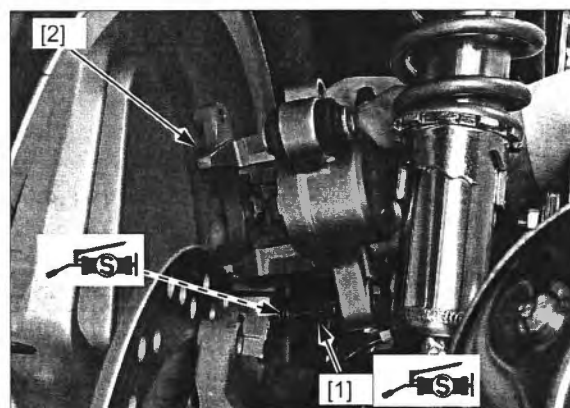
Install the brake pads with a new caliper bolt (page 14-23).

TORQUE:

Rear brake caliper bolt:

22 N·m (2.2 kgf·m, 16 lbf·ft)

Pad pin: 17 N·m (1.7 kgf·m, 13 lbf·ft)



Align the brake hose neck with the groove on the caliper.

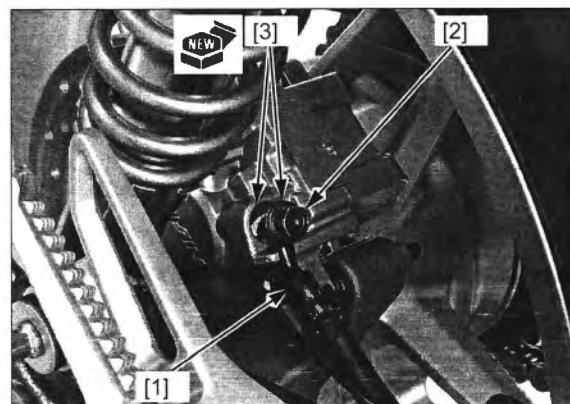
Connect the brake hose [1] to the caliper body with the oil bolt [2] and new sealing washers [3].

Tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

CB1100A: Fill and bleed the brake hydraulic system (page 14-10).

CB1100: Fill and bleed the rear brake hydraulic system (page 14-17).



REAR BRAKE CALIPER (After '13 model)

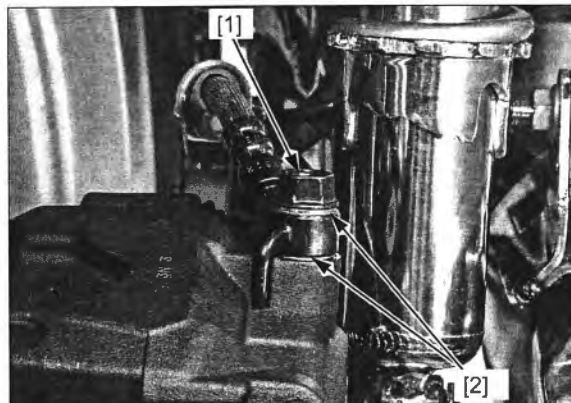
REMOVAL

Drain the rear brake hydraulic system (page 14-15).

Remove the oil bolt [1], sealing washers [2], and brake hose eyelet.

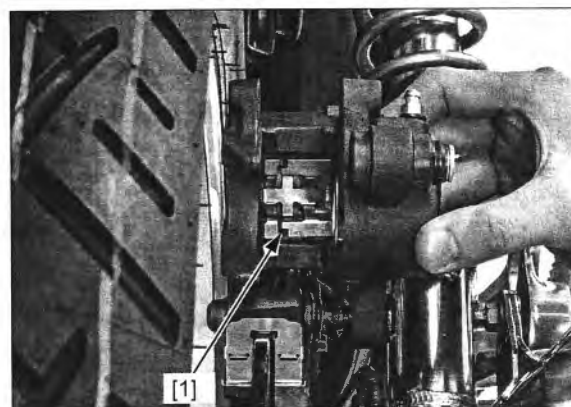
NOTE:

When removing the oil bolt, cover the end of the hose to prevent contamination.



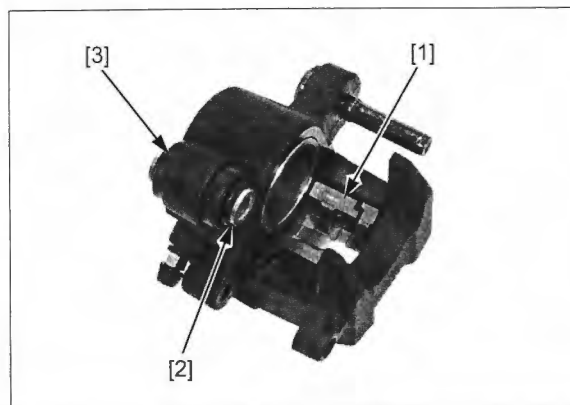
Remove the rear brake pads (page 14-23).

Pivot the caliper [1] up and remove it from the bracket.



DISASSEMBLY

Remove the pad spring [1], caliper sleeve [2], and sleeve boot [3] from the caliper body.



Place a shop towel over the piston.

Do not use high pressure air or bring the nozzle too close to the inlet.

Position the caliper body with the piston facing down and apply small squirts of air pressure to the fluid inlet to remove the piston.

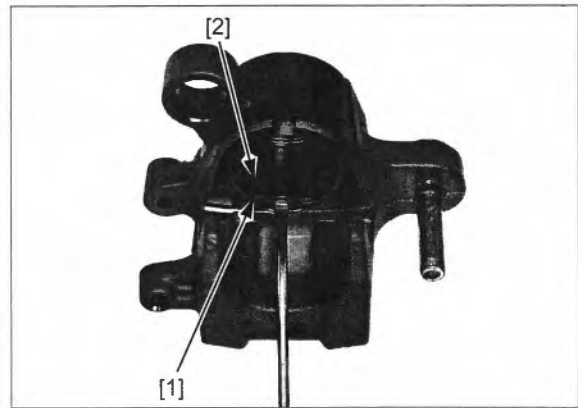


HYDRAULIC BRAKE

Be careful not to damage the cylinder inner surface.

Push the dust seal [1] and piston seal [2] in and lift them out.

Clean the seal grooves, caliper cylinder, and piston with clean brake fluid.



INSPECTION

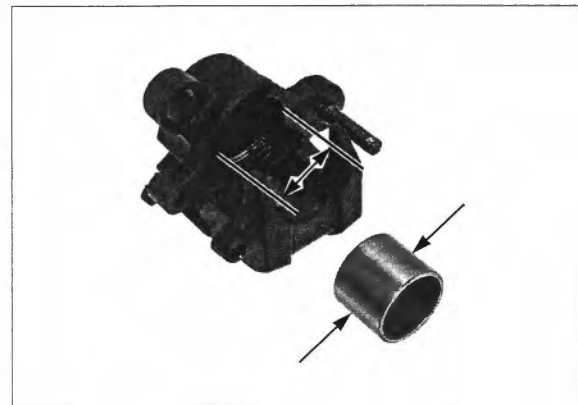
Check the caliper cylinder and piston for scoring, scratches, or other damage.

Measure the caliper cylinder I.D.

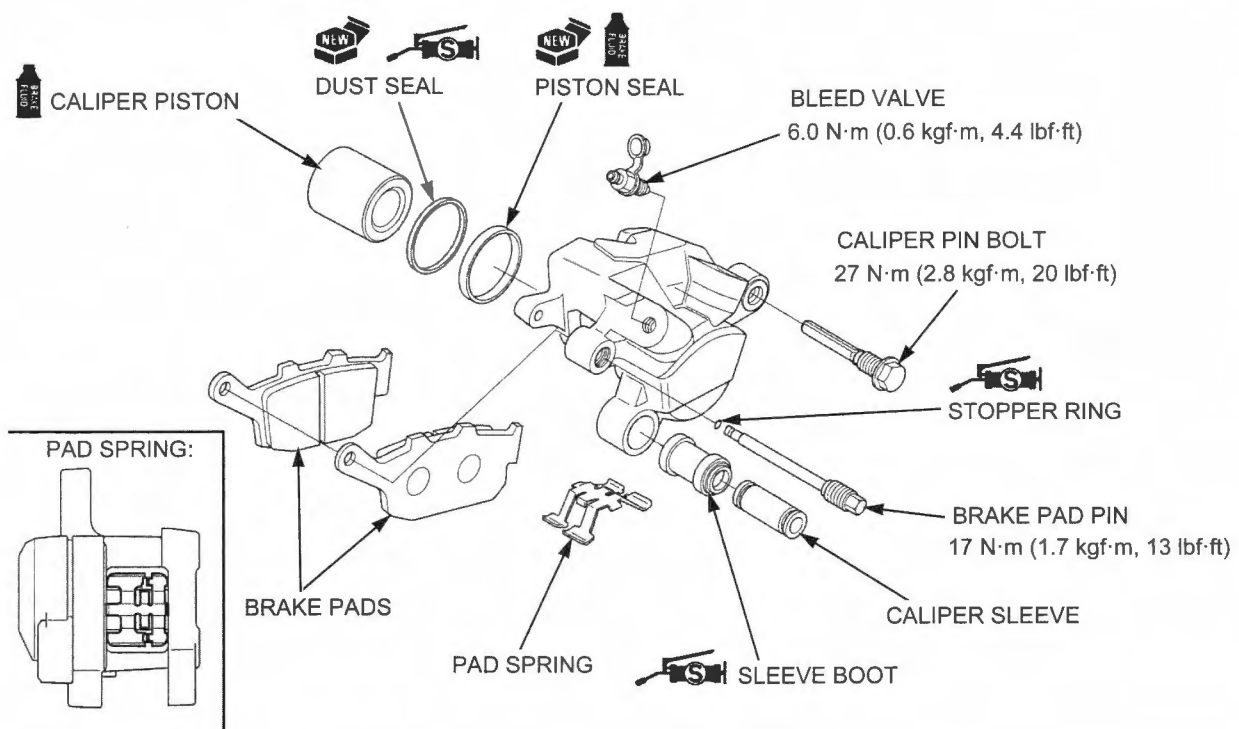
SERVICE LIMIT: 38.24 mm (1.506 in)

Measure the caliper piston O.D.

SERVICE LIMIT: 38.09 mm (1.500 in)

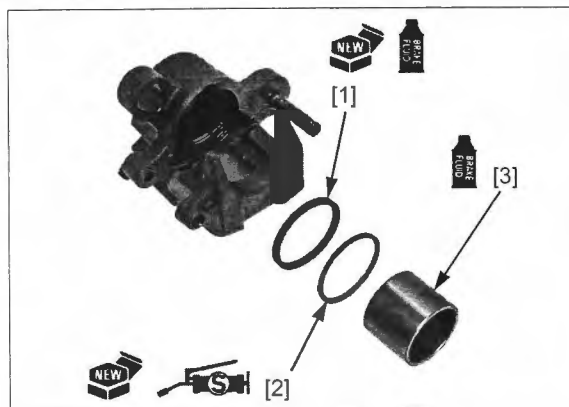


ASSEMBLY



Coat new piston seal [1] with clean brake fluid and install it into the seal groove in the caliper.
Coat new dust seal [2] with silicone grease and install it into the seal groove in the caliper.

Coat the caliper piston [3] with clean brake fluid and install it into the caliper cylinder with the opening side toward the pads.

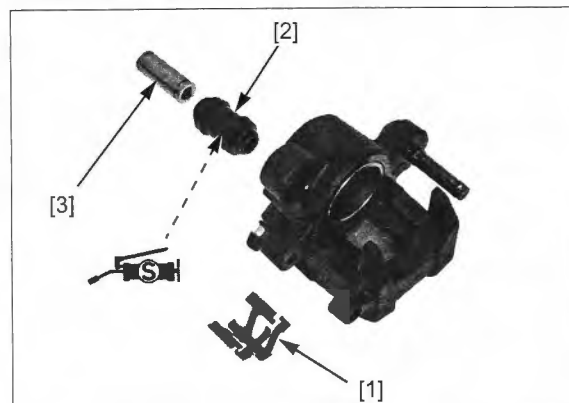


Note the installation direction of the pad spring.

Install the pad spring [1] into the caliper body.
Apply silicone grease to the inside of the sleeve boot [2].
Install the sleeve boot and caliper sleeve [3] into the caliper.

NOTE:

If the caliper boot is hard or deteriorated, replace it with new one.



INSTALLATION

Make sure that the pad retainer is installed in place on the caliper bracket.

Apply 0.4 g (0.01 g) of silicone grease to the sliding surface of the caliper pin bolt [1].
Install the caliper [2] onto the bracket.

NOTE:

If the caliper pin boot [3] is hard or deteriorated, replace it with new one.

Install the brake pads with a new caliper bolt (page 14-23).

TORQUE:

Rear brake caliper bolt:

22 N·m (2.2 kgf·m, 16 lbf·ft)

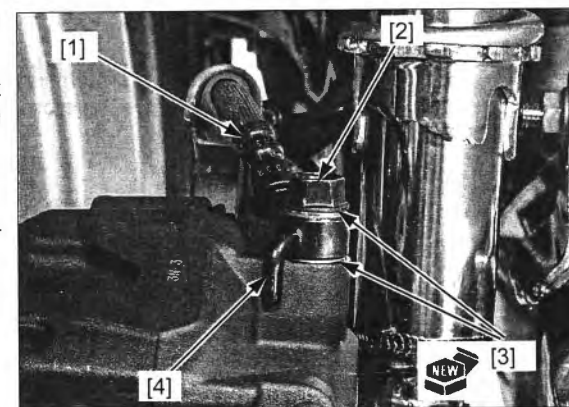
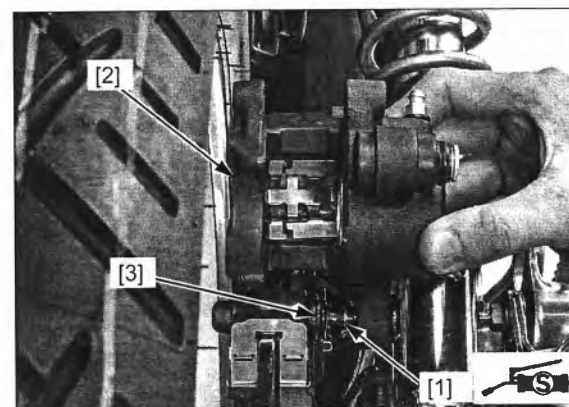
Pad pin: 17 N·m (1.7 kgf·m, 13 lbf·ft)

Connect the brake hose [1] to the caliper body with the oil bolt [2] and new sealing washers [3].

Push the stopper [4] on the brake hose eyelet joint against the caliper body, then tighten the oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill and bleed the rear brake hydraulic system (page 14-17).



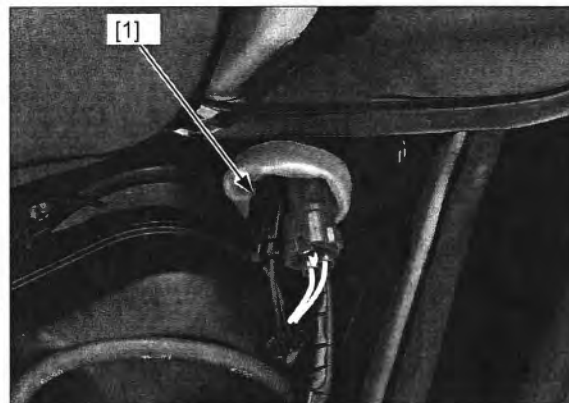
BRAKE PEDAL/REAR BRAKE LIGHT SWITCH

REMOVAL/INSTALLATION

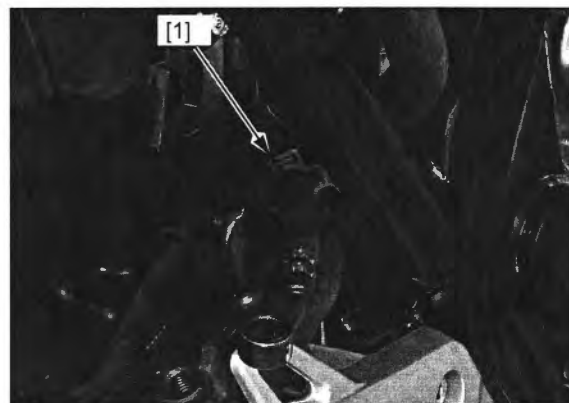
Remove the following:

- right side cover (page 2-4)
- muffler
 - CB1100/A (page 2-13)
 - CB1100SA (page 2-17)

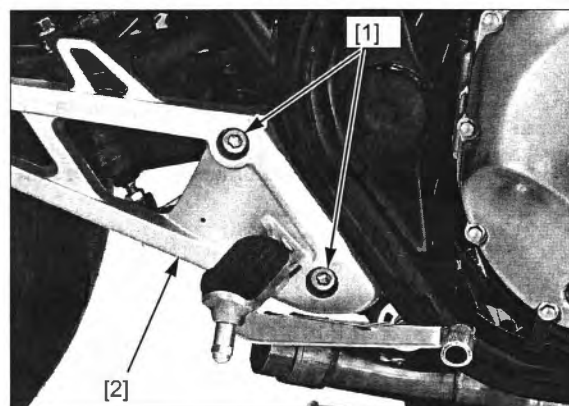
Disconnect the rear brake light switch 2P (Black) connector.



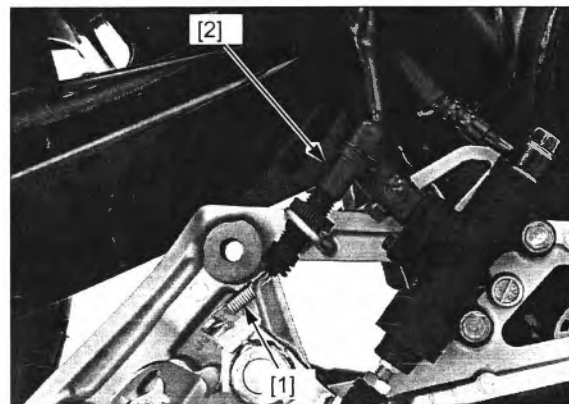
Release the rear brake hose (CB1100A/SA) and rear brake light switch wire from the clamp.



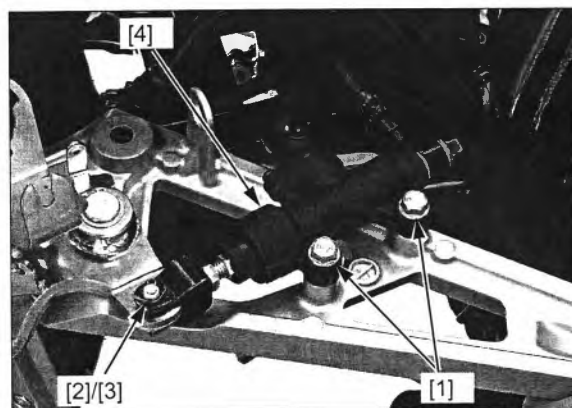
Remove the mounting bolts [1] and right main step holder [2].



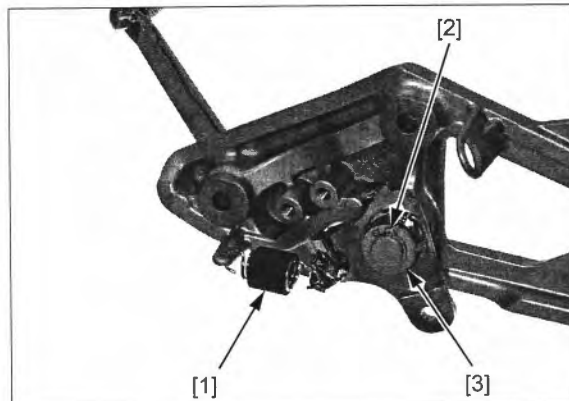
Unhook the brake light switch spring [1] and remove the brake light switch [2] from the bracket.



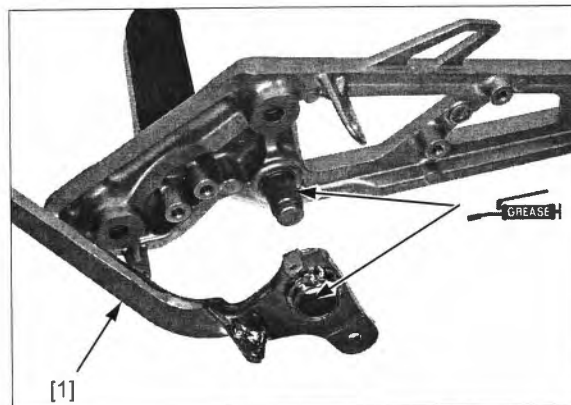
Remove the master cylinder mounting bolts [1].
Remove the cotter pin [2], then remove the brake pedal joint pin [3] and rear master cylinder [4] from the brake pedal.



Unhook the brake pedal return spring [1].
Remove the snap ring [2], washer [3], and brake pedal.



Check the brake pedal pivot for wear or damage.
Apply grease to the sliding surfaces of the brake pedal [1] and pivot on the step holder.
Install the brake pedal onto the pivot.
Install the removed parts in the reverse order of removal.



TORQUE:

Right main step holder mounting bolt:
37 N·m (3.8 kgf·m, 27 lbf·ft)

NOTE:

- At installation, replace the cotter pin with a new one and secure the joint pin (page 14-34).
- Route the rear brake light switch wire properly (page 1-21).

DELAY VALVE ('13 CB1100A)

REMOVAL/INSTALLATION

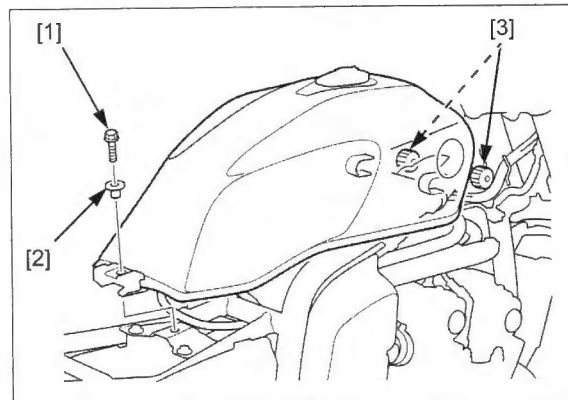
Drain the brake hydraulic system (page 14-8).

Remove the fuel tank mounting bolt [1] and collar [2].

Remove the fuel tank hooks from the rubber mounts [3].
Lift the front of the fuel tank and support it using a suitable tool.

NOTE:

To prevent damage or disconnection of the fuel hose and fuel tank breather hose, do not lift the fuel tank more than necessary.



HYDRAULIC BRAKE

Loosen the brake line joint nuts [1], then disconnect the brake lines from the delay valve [2].

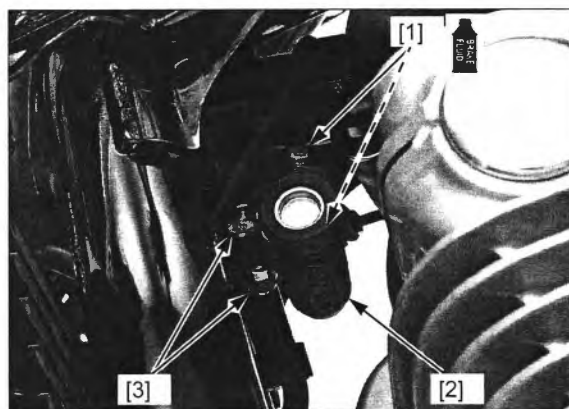
Remove the bolts [3] and delay valve.

Apply brake fluid to the brake line joint nut threads.

Installation is in the reverse order of removal.

TORQUE:

Brake line joint nut: 14 N·m (1.4 kgf·m, 10 lbf·ft)



PCV (PROPORTIONAL CONTROL VALVE; '13 CB1100A)

REMOVAL/INSTALLATION

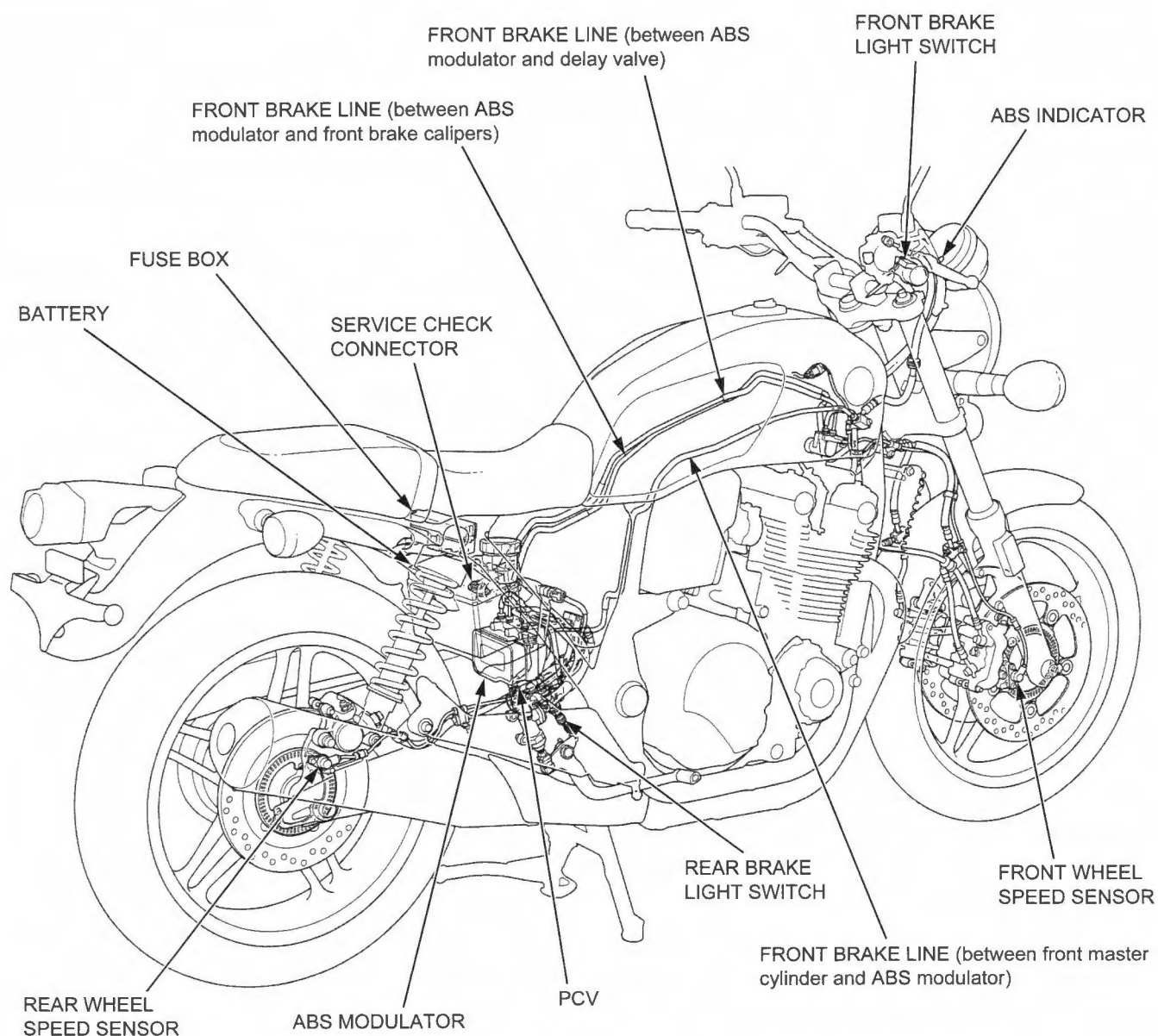
Refer to procedures for the ABS modulator removal/installation (page 15-56).

15. ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

COMPONENT LOCATION	15-2	DTC INDEX (After '13 model)	15-16
SYSTEM DIAGRAM	15-4	ABS TROUBLESHOOTING ('13 model)	15-18
SERVICE INFORMATION	15-6	ABS INDICATOR CIRCUIT TROUBLESHOOTING (After '13 model)	15-35
BEFORE STARTING ABS TROUBLESHOOTING ('13 model)	15-8	ABS TROUBLESHOOTING (After '13 model)	15-40
ABS TROUBLESHOOTING INFORMATION (After '13 model)	15-11	WHEEL SPEED SENSOR	15-51
ABS INDICATOR PROBLEM CODE INDEX ('13 model)	15-15	ABS MODULATOR	15-56

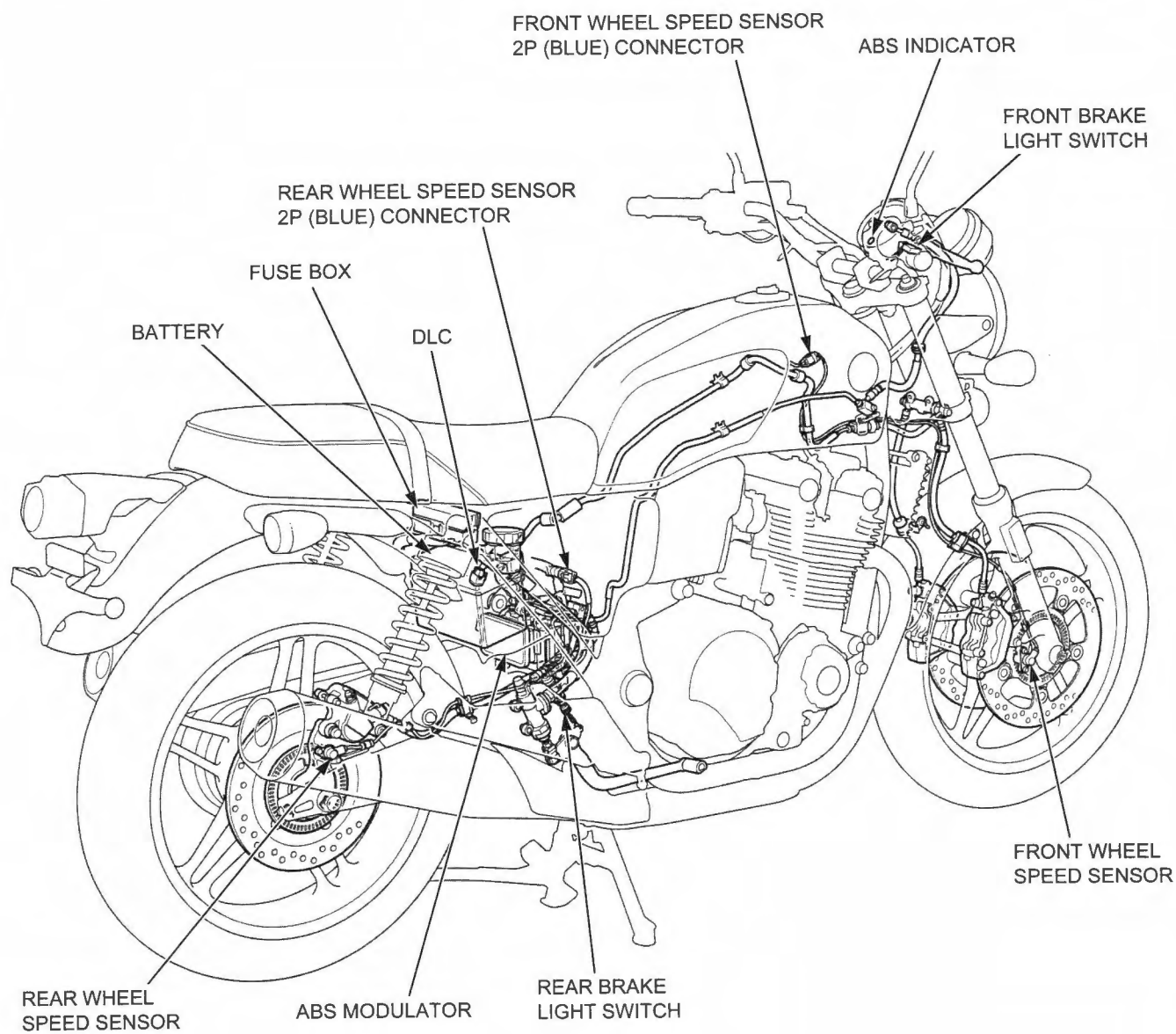
COMPONENT LOCATION

'13 CB1100A shown:



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

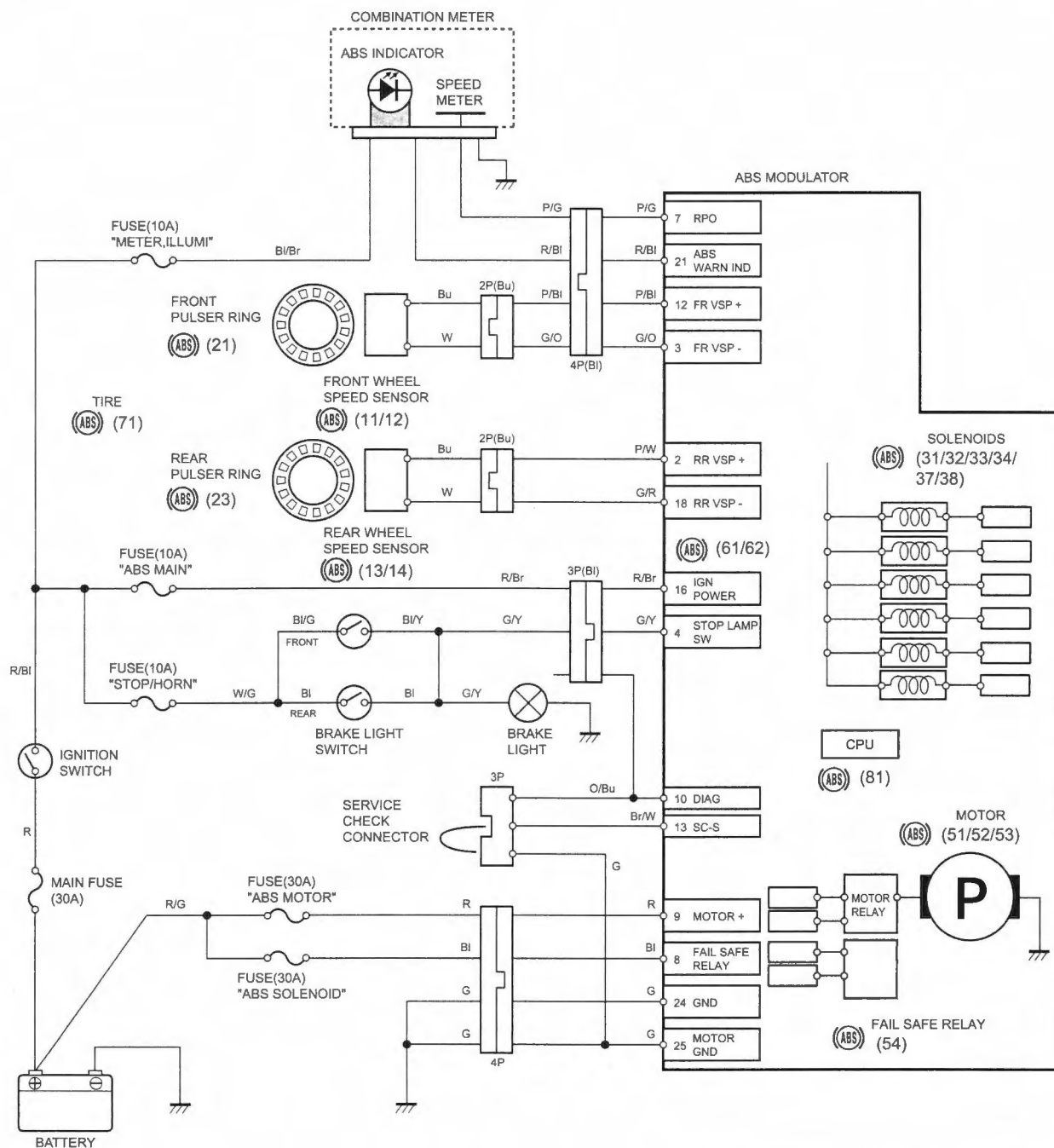
CB1100SA shown:



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

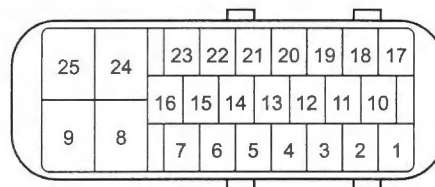
SYSTEM DIAGRAM

'13 model:



Br : Brown
 Bl : Black
 Y : Yellow
 Bu : Blue
 G : Green
 R : Red
 O : Orange
 P : Pink

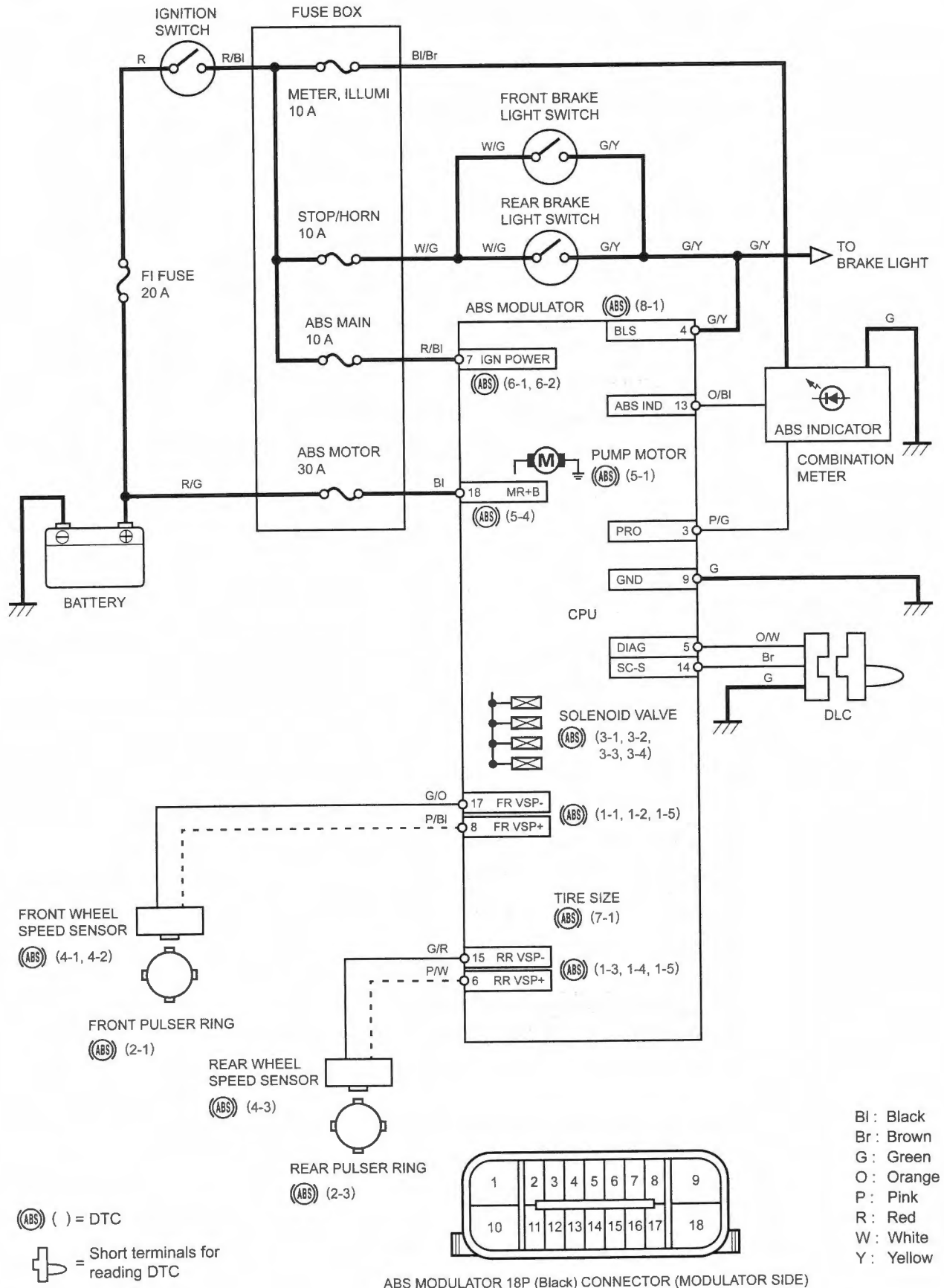
(ABS) (): Number of ABS indicator blinks



ABS MODULATOR 25P CONNECTOR

ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

After '13 model:



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

SERVICE INFORMATION

GENERAL ('13 model)

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.

- This section covers service of the Anti-lock Brake System (ABS; CB1100A). Refer to information for the conventional brake system servicing (page 14-5).
- Read "Before Starting ABS Troubleshooting" carefully, inspect and troubleshoot the ABS system according to the diagnostic troubleshooting. Observe each step of the procedures one by one. Write down the problem code and probable faulty part before starting diagnosis and troubleshooting.
- After troubleshooting, erase the problem code and perform the pre-start self-diagnosis to be sure that the ABS indicator is operating normally.
- When the wheel speed sensor and/or pulser ring is replaced, check the clearance (air gap) between both components.
- The ABS electronic control unit (ECU) is mounted on the modulator (the modulator with the built-in ECU). Do not disassemble the ABS modulator. Replace the ABS modulator as an assembly when it is faulty.
- When the ABS modulator assembly is detected to be faulty, recheck the wire harness and connector connections closely before replacing it.
- Be careful not to damage the wheel speed sensor and pulser ring when removing and installing the wheel.
- Use a fully charged battery. Do not diagnose with a charger connected to the battery.
- The following color codes are used throughout this section.

Bu = Blue	G = Green	Lg = Light Green	R = Red
Bl = Black	Gr = Gray	O = Orange	W = White
Br = Brown	Lb = Light Blue	P = Pink	Y = Yellow

NOTE:

- When the ABS electronic control unit detects a problem, it stops the ABS function and switches back to the conventional brake operation, and the ABS indicator blinks or stays on. Take care during a test ride.
- The ABS electronic control unit has a self-diagnostic system. By means of shorting the service check connector terminals, the ABS indicator indicates the problem code by blinking a specified number of times. Troubles not resulting from a faulty ABS (e.g. brake disc squeak, unevenly worn brake pad) cannot be recognized by the ABS self-diagnostic system.

GENERAL (After '13 model)

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 other service (conventional brake) of the brake system, see Hydraulic Brake section (page 14-5).
- The ABS control unit is integrated in the 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 and switches back to the conventional brake operation, and the ABS indicator blinks or stays on. Take care during a test-ride.
- Read "ABS Troubleshooting Information" carefully, inspect and troubleshoot the ABS system according to the 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 perform the pre-start self-diagnosis to be sure that the ABS indicator is operating normally (page 15-11).
- Troubles not resulting from a faulty ABS (e.g. brake disc squeak, unevenly worn brake pad) cannot be recognized by the ABS diagnosis system.
- When the wheel speed sensor and/or pulser ring is replaced, be sure to check the air gap (page 15-51).
- The following color codes are used throughout this section.

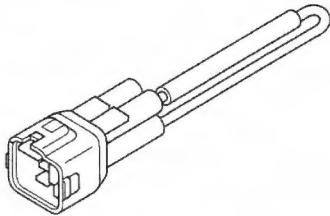
Bl = Black	O = Orange	W = White
Br = Brown	P = Pink	Y = Yellow
G = Green	R = Red	

TORQUE VALUE

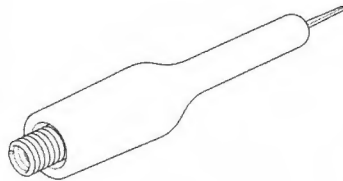
ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Brake line joint nut ('13)	14	10	14 (1.4, 10)	Apply brake fluid to the threads.
Brake line joint nut (After '13)	8	10	14 (1.4, 10)	Apply brake fluid to the threads.

TOOLS

SCS service connector
070PZ-ZY30100



Test probe, 2 pack
07ZAJ-RDJA110



BEFORE STARTING ABS TROUBLESHOOTING ('13 model)

SUMMARY OF ABS PRE-START SELF-DIAGNOSIS SYSTEM

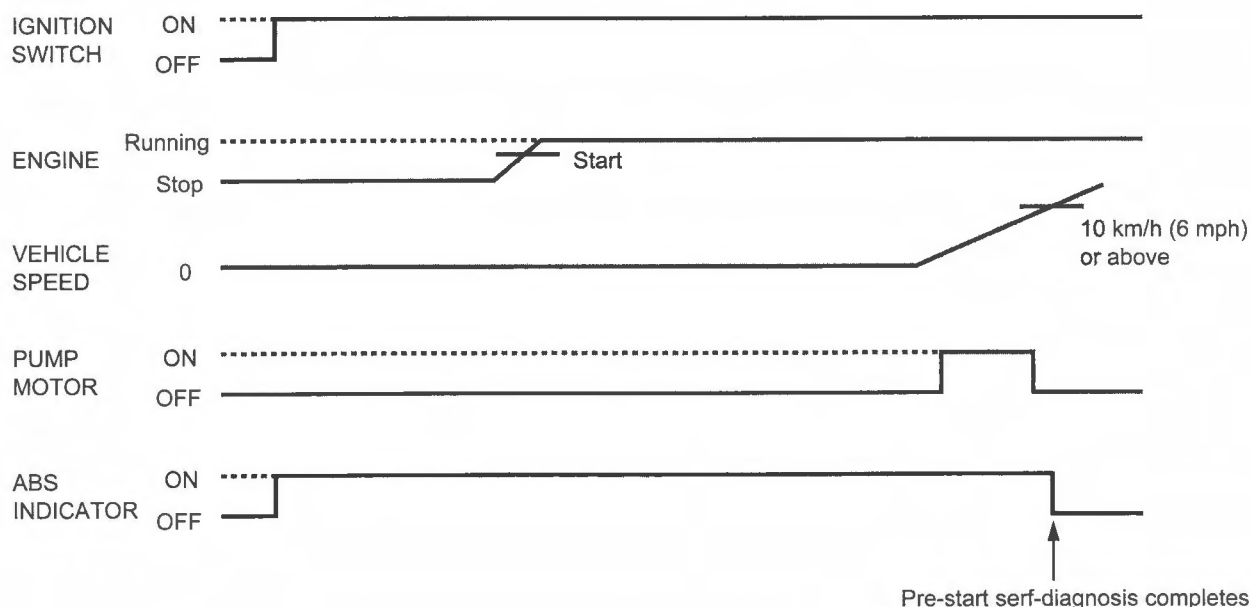
The ABS pre-start self-diagnosis system diagnoses the electrical system as well as the operating status of the modulator. When there is any abnormality, the problem and the associated part can be detected by reading the problem code.

When the motorcycle starts running, pulse signals generated at the front/rear wheel speed sensor are sent to the ABS control unit, then the pre-start self-diagnosis system operates the pump motor (inside the modulator) and detects whether the hydraulic operation is normal. The pre-start self-diagnosis is complete when the vehicle speed goes to approx. 10 km/h (6 mph) and the ABS indicator goes off.

If a problem is detected, the ABS indicator blinks or comes on and stays on to notify the rider of the problem. The self-diagnosis is also made while the motorcycle is running, and the indicator blinks when a problem is detected.

When the indicator blinks, the cause of the problem can be identified by retrieving the problem code following the specified retrieval procedure (page 15-9).

Pre-start self-diagnosis when normal:



PRE-START SELF-DIAGNOSIS PROCEDURE

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

RETRIEVAL/ERASURE OF PROBLEM CODE

NOTE:

- The ABS indicator indicates the problem code by blinking a specified number of times.
- The problem code is not erased by turning the ignition switch to "OFF" while the problem code is being output. Note that turning the ignition switch to "ON" again does not indicate the problem code. To show the problem code again, repeat the problem code retrieval procedures from the beginning.
- Be sure to make a note of the retrieval problem code(s).
- After diagnostic troubleshooting, erase the problem code(s) and test ride the motorcycle to be sure that there is no problem in the ABS indicator (indicator is operating normally).

PROBLEM CODE RETRIEVAL

NOTE:

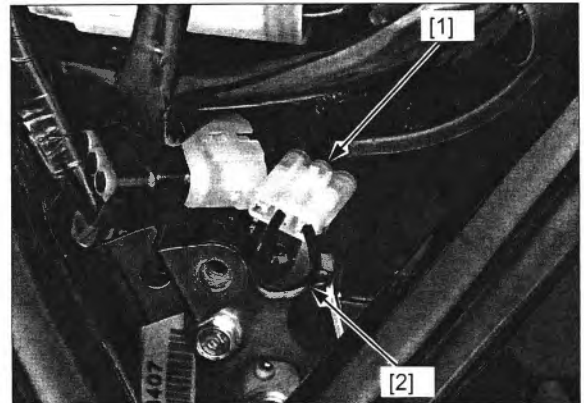
- Do not operate the brake lever or pedal during retrieval.

Remove the left side cover (page 2-4).

Remove the service check connector [1] from the dummy connector.

1. Short the wire terminals of the service check connector with a jumper wire [2] with the ignition switch turned to "OFF".

CONNECTION: Brown/white – Green



2. Turn the engine stop switch to "O" and ignition switch to "ON". The ABS indicator will come on for 2 seconds (start signal), then goes off for 3.6 seconds and start the problem code indication.
3. The problem code is indicated by the number of times of the indicator blinks.
If the problem code is not stored, the ABS indicator stays on.
4. Turn the ignition switch to "OFF" and remove the jumper wire.

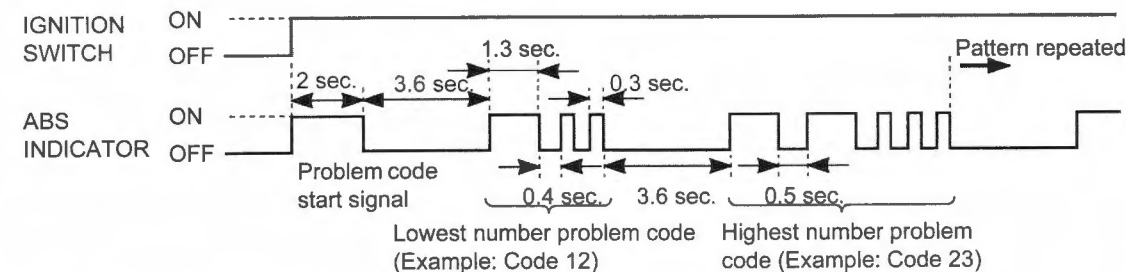
Install the service check connector to the dummy connector, then install the left side cover (page 2-4).

ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

Problem Code Indication Pattern

NOTE:

- The ABS indicator denotes the problem codes from 11 to 81. The indicator has two types of blinks, a long blink and short blink. The long blink lasts for 1.3 seconds, the short blink lasts for 0.3 seconds. The cause of the problem can be identified by the problem code. When two long blinks and three short blinks occur, that problem code is 23 (two long blinks = 20 blinks, three short blinks = 3 blinks). Go to the troubleshooting and see problem code 23.
- When the ABS control unit stores some problem codes, the ABS indicator shows the problem codes in the order from the lowest number to highest number. For example, when the indicator indicates code 12, then indicates code 23, two failures have occurred.



When the problem code is not stored:



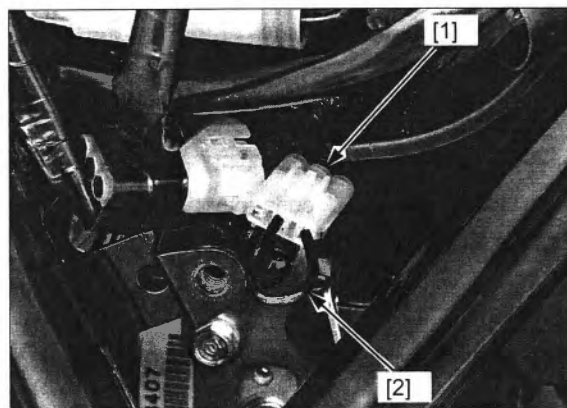
PROBLEM CODE ERASURE

Remove the left side cover (page 2-4).

Remove the service check connector [1] from the dummy connector.

1. Short the wire terminals of the service check connector with a jumper wire [2] with the ignition switch turned to "OFF" in the same manner as retrieval.

CONNECTION: Brown/white – Green



2. Turn the ignition switch to "ON" while squeezing the brake lever. The ABS indicator should come on for 2 seconds and go off.
3. Release the brake lever immediately after the ABS indicator is off. The ABS indicator should come on.
4. Squeeze the brake lever immediately after the ABS indicator is on. The ABS indicator should go off.
5. Release the brake lever immediately after the ABS indicator is off.
When code erasure is complete, the ABS indicator blinks 2 times and stays on.
If the ABS indicator keeps blinking, repeat above procedures from the beginning.
6. Turn the ignition switch to "OFF" and remove the jumper wire.

Install the service check connector to the dummy connector, then install the left side cover (page 2-4).

ABS TROUBLESHOOTING INFORMATION (After '13 model)

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 DTC.

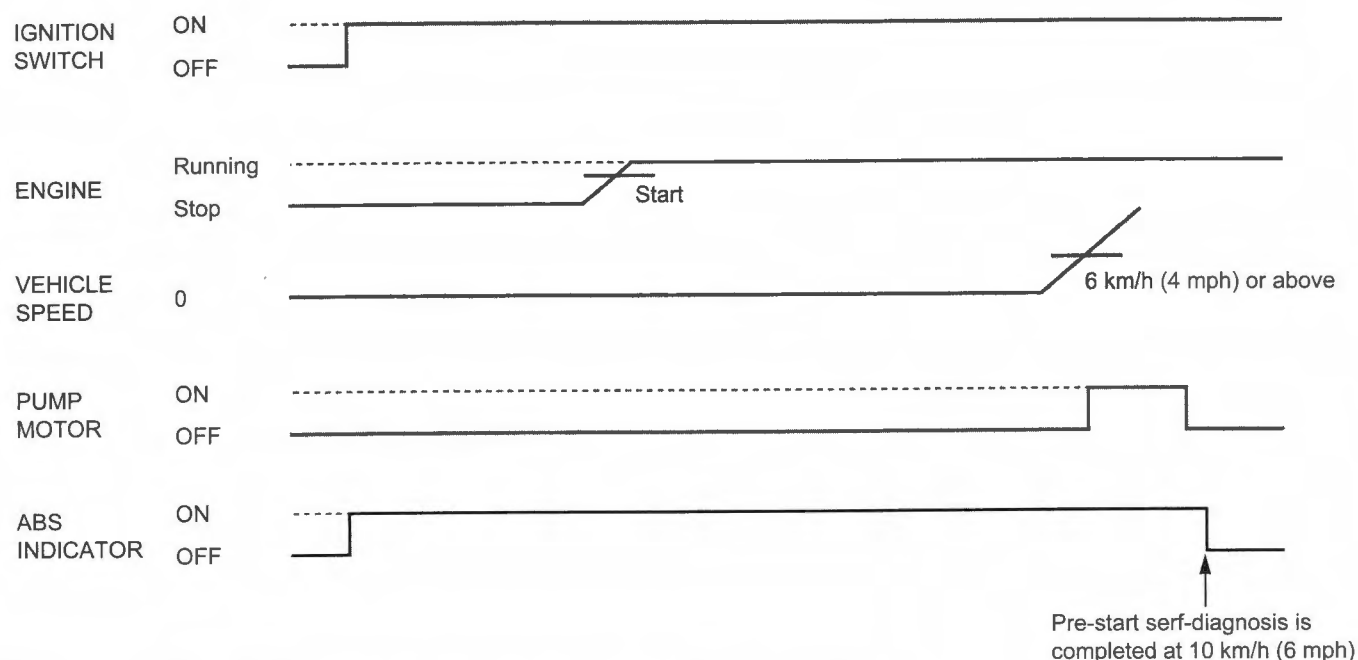
When the motorcycle is running, pulse signals generated at the front and rear wheel speed sensors are sent to the ABS control unit. When the vehicle speed reaches approximately 6 km/h (4 mph), the ABS control unit operates the pump motor to check it. When the vehicle speed reaches 10 km/h (6 mph), the 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 self-diagnosis is also made while the motorcycle is running, and the ABS indicator blinks when a problem is detected.

When the ABS indicator blinks, the cause of the problem can be identified by reading the DTC (page 15-12).

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 system is normal, the ABS indicator circuit may be faulty. Follow the troubleshooting (page 15-35).

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; CB1100A/SA)

MCS INFORMATION

Refer to PGM-FI system (page 5-13).

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(s).
- 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 15-11).
- Do not apply the brake during DTC readout.

Connect the MCS to the DLC (page 5-13).

Read the DTC and follow the DTC index (page 15-16).

- If the MCS is not available, perform the following.

Reading DTC with the ABS indicator

Turn the ignition switch OFF.

Remove the left side cover (page 2-4).

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

TOOL:

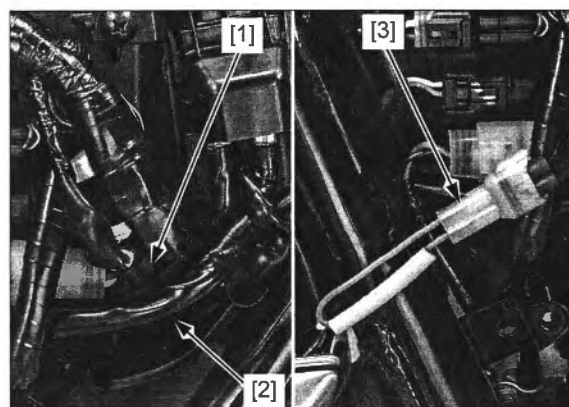
[3] SCS connector 070PZ-ZY30100

CONNECTION: Brown – Green

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

The ABS indicator should come on for 2 seconds (start signal) (then goes off 3.6 seconds) and start the DTC indication.

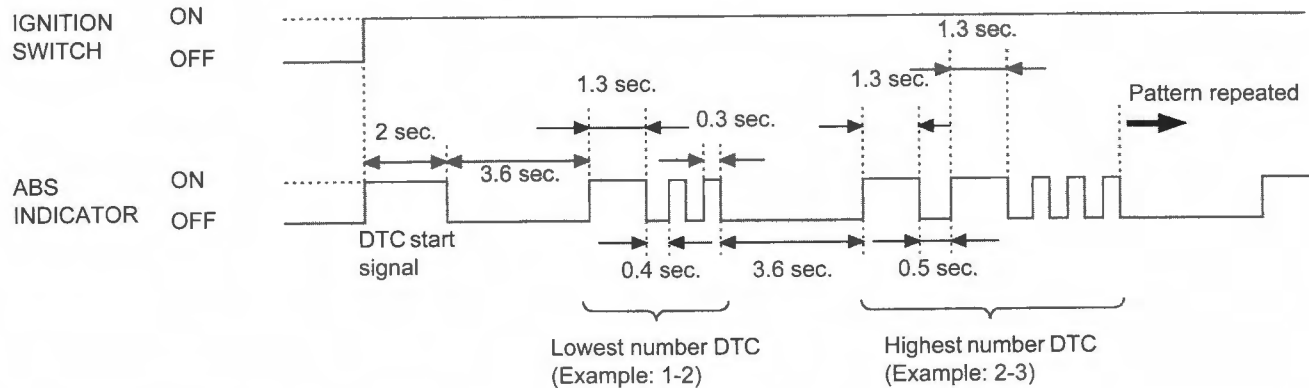
The DTC is indicated by the number of the times of the ABS indicator blinks. If the DTC is not stored, the ABS indicator stays on.



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 DTC 1-2, then indicates DTC 2-3, two failures have occurred.



When the DTC is not stored:



ERASING STORED DTC

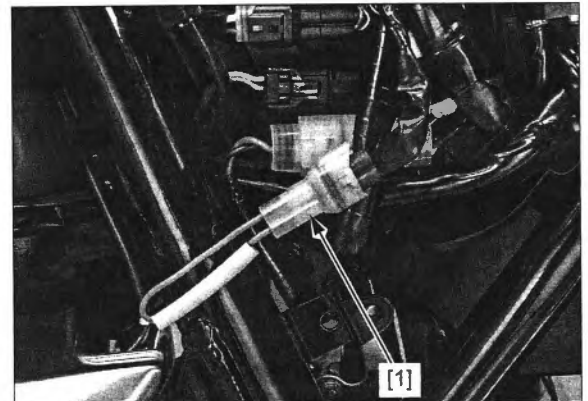
NOTE:

- The stored DTC cannot be erased by simply disconnecting the battery negative cable.

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

How to erase the DTC without MCS

- Connect the SCS connector [1] to the DLC (page 15-12).
 - While squeezing the brake lever, turn the ignition switch ON with the engine stop switch to "Q". 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 remove the SCS connector from the DLC.
 - Install the left side cover (page 2-4).



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

CIRCUIT INSPECTION

INSPECTION AT ABS MODULATOR CONNECTOR

Turn the ignition switch OFF.

Remove the rear air cleaner housing (page 5-56).

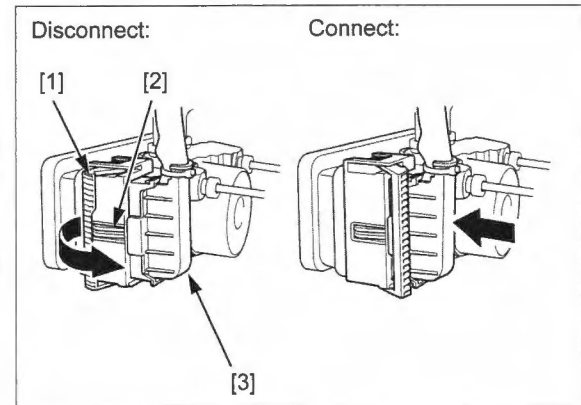
Disconnecting procedure:

Turn the lock lever [1] to this side while pressing the lock tab [2] to release it. Be sure the lock lever is turned all the way and disconnect the ABS modulator 18P (Black) connector [3].

Connecting procedure:

Be sure to seat the lock lever against the wire side of the connector fully. Connect the ABS modulator 18P (Black) connector by pressing it straight at the area as shown (arrow) until the lock tab clicks.

Make sure the connector is locked securely.

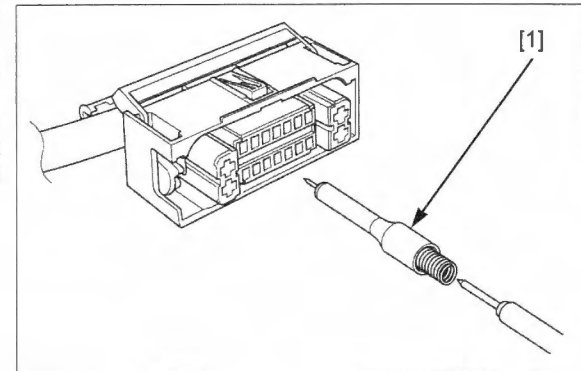


- Always clean around and keep any foreign material away from the connector before disconnecting it.
- A faulty ABS is often related to poorly connected or corroded connections. Check those connections before proceeding.
- In testing at the ABS modulator 18P (Black) connector terminals (wire harness side; except No. 9 and No. 18 terminals), always use the test probe [1]. Insert the test probe into the connector terminal, then connect the digital multimeter probe to the test probe.

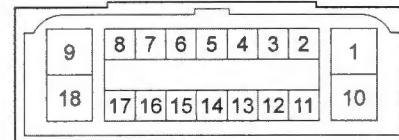
TOOL:

Test probe, 2 pack

07ZAJ-RDJA110



TERMINAL LAYOUT:



(Terminal side of the wire harness)

ABS INDICATOR PROBLEM CODE INDEX ('13 model)

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.
- The ABS indicator might blink while riding under the following conditions. This is a temporary failure. Erase the problem code and perform the pre-start self-diagnosis. The ABS is normal if the indicator goes off. Ask the rider for the riding conditions in detail when the motorcycle is brought in for inspection.
 - The motorcycle has continuously run on bumpy roads.
 - The front wheel leaves the ground for a long time when riding (wheelie).
 - After riding (after the pre-start self diagnosis), the engine was kept running and the rear wheel turning with the motorcycle placed on the centerstand.
 - 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).

Problem Code	Check Part/Symptoms	Detection		Probable faulty part	Reference page
		A	B		
–	ABS indicator does not come on			• Indicator related wires	15-18
	ABS indicator stays on				15-19
11	Front wheel speed sensor	○	○	• Wheel speed sensor or related wires	15-23
13	Rear wheel speed sensor	○	○		15-25
12	Front wheel speed sensor		○	• Wheel speed sensor or related wires	15-23
14	Rear wheel speed sensor		○	• Electromagnetic interference	15-25
21	Front pulser ring		○	• Pulser ring or wheel speed sensor	15-23
23	Rear pulser ring		○		15-25
31	Solenoid valve			• Solenoid valve (ABS modulator)	15-27
32					
33					
34		○	○		
37					
38					
41	Front wheel lock		○	• Riding condition	15-23
42	Wheelie		○		15-25
43	Rear wheel lock		○		
51	Motor lock	○	○	• Pump motor (ABS modulator) or related wires	15-28
52	Motor stuck off	○	○		
53	Motor stuck on	○	○		
54	Fail-safe relay	○	○	• Fail-safe relay (ABS modulator) or related wires	15-30
61	Power circuit	○	○	• Input voltage (too low)	15-32
62	Power circuit	○	○	• Input voltage (too high)	
71	Tire		○	• Tire size	15-34
81	CPU	○	○	• ABS control unit (ABS modulator)	15-34

(A) Pre-start self-diagnosis (page 15-8)

(B) Ordinary self-diagnosis: diagnoses while the motorcycle is running (after pre-start self-diagnosis)

DTC INDEX (After '13 model)
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.
- The ABS indicator might blink while riding under the following conditions. This is a temporary failure. Be sure to erase the DTC (page 15-13). Then, test-ride the motorcycle above 30 km/h (19 mph) and check the DTC (page 15-12). Ask the rider for the riding conditions in detail when the motorcycle is brought in for inspection.
 - The motorcycle has continuously run on 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 • ABS MAIN fuse (10 A)			• ABS indicator never comes ON at all	15-35
				• ABS indicator stays ON at all	15-36
1-1	Front wheel speed sensor circuit malfunction (open circuit) • Wheel speed sensor or related wires	○	○	• Stops ABS operation	15-40
1-2	Front wheel speed sensor malfunction • Wheel speed sensor, pulser ring or related wires • Electromagnetic interference		○	• Stops ABS operation	15-40
1-3	Rear wheel speed sensor circuit malfunction • Wheel speed sensor or related wires	○	○	• Stops ABS operation	15-42
1-4	Rear wheel speed sensor malfunction • Wheel speed sensor, pulser ring or related wires • Electromagnetic interference		○	• Stops ABS operation	15-42
1-5	Front or rear wheel speed sensor circuit malfunction (short circuit) • Wheel speed sensor or related wires	○	○	• Stops ABS operation	15-44
2-1	Front pulser ring • Pulser ring or related wires		○	• Stops ABS operation	15-40
2-3	Rear pulser ring • Pulser ring or related wires		○	• Stops ABS operation	15-42
3-1	Solenoid valve malfunction (ABS modulator)	○	○	• Stops ABS operation	15-46
3-2					
3-3					
3-4					
4-1	Front wheel lock • Riding condition		○	• Stops ABS operation	15-40
4-2	Front wheel lock (Wheelie) • Riding condition		○		
4-3	Rear wheel lock • Riding condition		○	• Stops ABS operation	15-42
5-1	Pump motor lock • Pump motor (ABS modulator) or related wires • ABS MOTOR fuse (30 A)	○	○	• Stops ABS operation	15-46
5-4	Power supply relay malfunction • Power supply relay (ABS modulator) or related wires • ABS MOTOR fuse (30 A)	○	○	• Stops ABS operation	15-46

ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

DTC	Function failure	Detection		Symptom/Fail-safe function	Refer to
		A	B		
6-1	Power circuit under voltage • Input voltage (too low) • ABS MAIN fuse (10 A)	○	○	• Stops ABS operation	15-48
6-2	Power circuit over voltage • Input voltage (too high)	○	○	• Stops ABS operation	
7-1	Tire malfunction • Tire size		○	• Stops ABS operation	15-50
8-1	ABS control unit • ABS control unit malfunction (ABS modulator)	○	○	• Stops ABS operation	15-50

(A) Pre-start self-diagnosis (page 15-11)

(B) Ordinary self-diagnosis: diagnoses while the motorcycle is running (after pre-start self-diagnosis)

ABS TROUBLESHOOTING ('13 model)

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 troubleshooting, erase the problem code (page 15-10).
Then test ride the motorcycle above 30 km/h (19 mph) and check the other problem code by retrieving the self-diagnosis system (page 15-9).

NO PROBLEM CODE FAILURE

ABS INDICATOR DOES NOT COME ON (when the ignition switch turned to "ON")

1. Combination Meter Power/ground Line Inspection

Check the combination meter power and ground lines (page 19-13).

Are the wires normal?

YES – GO TO STEP 2.

NO – Open circuit in related wires

2. Indicator Operation Inspection

Remove the rear air cleaner housing (page 5-56).
Connect a fully charged 12 V battery (page 16-6).

Disconnect the ABS sub-harness 4P (Black) connector.

Turn the ignition switch to "ON" and check the ABS indicator.

Does the indicator come on?

YES – GO TO STEP 3.

NO – GO TO STEP 4.



3. Sub-harness Signal Line Short Circuit Inspection

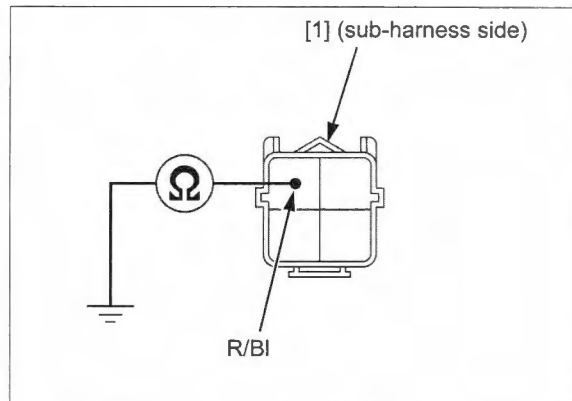
Check for continuity between the Red/black wire terminal of the 4P (Black) connector (ABS sub-harness side) and body ground.

CONNECTION: Red/black - Body ground

Is there continuity?

YES – Short circuit in the Red/black wire of the ABS sub-harness

NO – Faulty ABS modulator



4. Indicator Signal Line Short Circuit Inspection

Remove the headlight unit (page 19-7).

Disconnect the combination meter 10P (Black) connector [1].

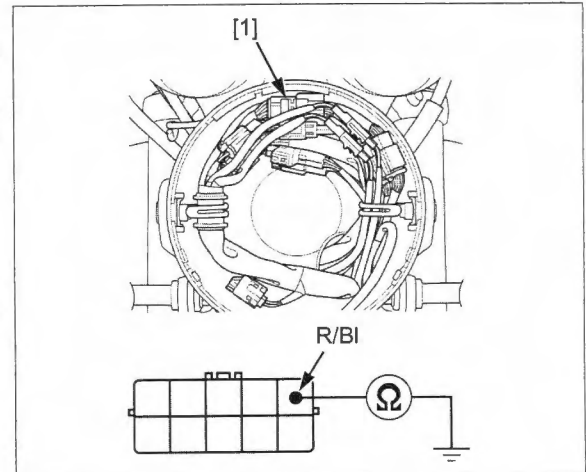
Check for continuity between the Red/black wire terminal of the 10P (Black) connector (main harness side) and body ground.

CONNECTION: Red/black - Body ground

Is there continuity?

YES – Short circuit in the Red/black wire between the combination meter and ABS sub-harness 4P (Black) connector

NO – Faulty combination meter



ABS INDICATOR STAYS ON (Indicator does not go off when the motorcycle is running – Problem code is not indicated by the retrieval procedure)

1. Service Check Line Short Circuit Inspection

Remove the ABS service check connector from the dummy connector.

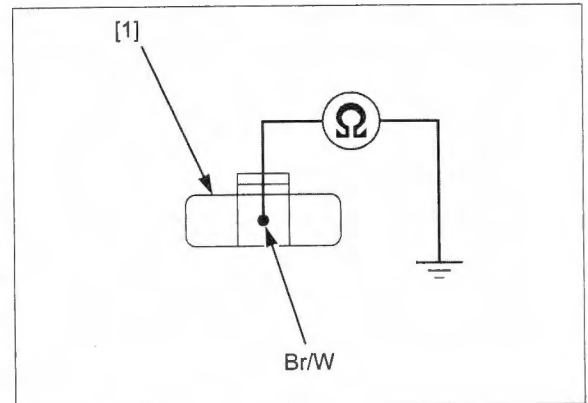
Check for continuity between the Brown/white wire terminal of the service check connector [1] and body ground.

CONNECTION: Brown/white - Body ground

Is there continuity?

YES – Short circuit in the Brown/white wire between the service check connector and ABS modulator

NO – GO TO STEP 2.



2. Indicator Signal Line Open Circuit Inspection (1)

Disconnect the ABS sub-harness 4P (Black) connector.

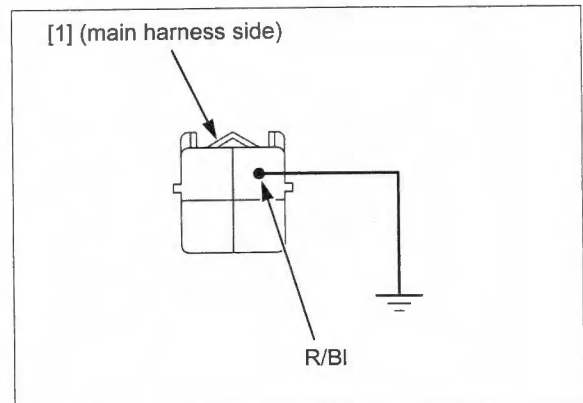
Short the Red/black wire terminal of the 4P connector (main harness side) [1] and body ground with a jumper wire.

Check the ABS indicator with the ignition switch turned to "ON".

Does it go off?

YES – GO TO STEP 4.

NO – GO TO STEP 3.



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

3. Indicator Signal Line Open Circuit Inspection (2)

Remove the headlight unit (page 19-7).

Disconnect the combination meter 10P (Black) connector [1].

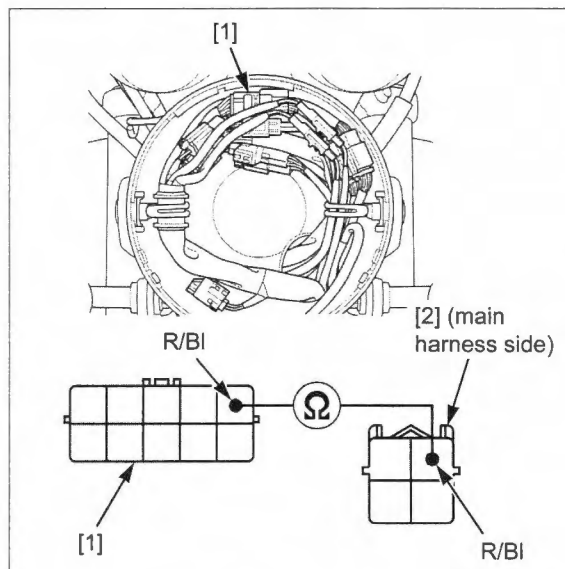
Check for continuity in the Red/black wire between the 10P connector and sub-harness 4P (Black) connector [2].

CONNECTION: Red/black - Red/black

Is there continuity?

YES – Faulty combination meter

NO – Open circuit in the Red/black wire between the combination meter 10P (Black) connector and sub-harness 4P (Black) connector



4. Logic Ground Line Open Circuit Inspection

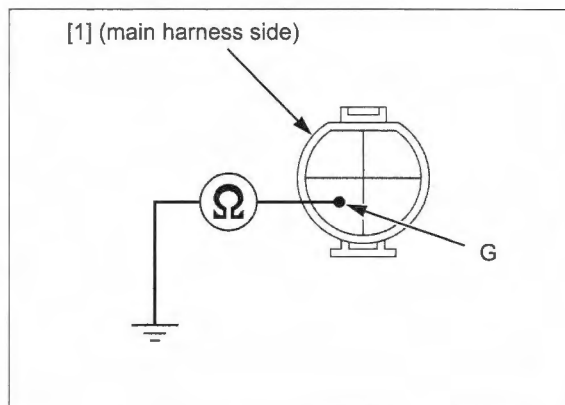
Disconnect the ABS sub-harness 4P connector. Check for continuity between the Green wire terminal of the 4P connector (main harness side) [1] and body ground.

CONNECTION: Green - Body ground

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in the Green wire between the 4P connector of the main harness side and ground



5. ABS Sub-harness Open Circuit Inspection (1)

Disconnect the ABS modulator 25P connector. Check for continuity in the Green wire between the ABS modulator 25P connector [1] and ABS sub-harness 4P connector [2], and continuity in the Red/black wire between the ABS modulator 25P connector and ABS sub-harness 4P (Black) connector [3].

TOOL:

Test probe, 2 pack

07ZAJ-RDJA110

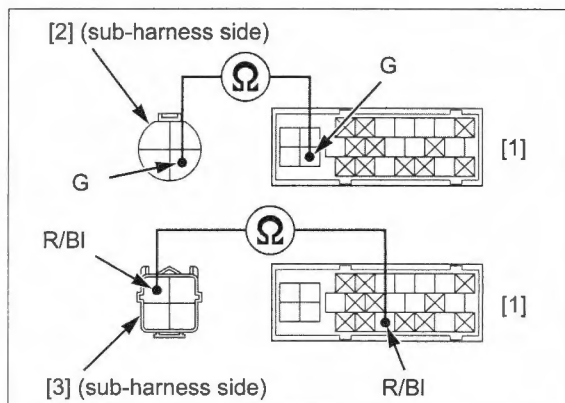
CONNECTION: Green - Green

Red/black - Red/black

Is there continuity?

YES – GO TO STEP 6.

NO – • Open circuit in the Green wire of the ABS sub-harness
• Open circuit in the Red/black wire of the ABS sub-harness



6. ABS Sub-harness Open Circuit Inspection (2)

Disconnect the ABS sub-harness 3P (Black) connector.

Check for continuity in the Red/brown wire between the ABS modulator 25P connector and ABS sub-harness 3P (Black) connector. There should be continuity.

TOOL:

Test probe, 2 pack

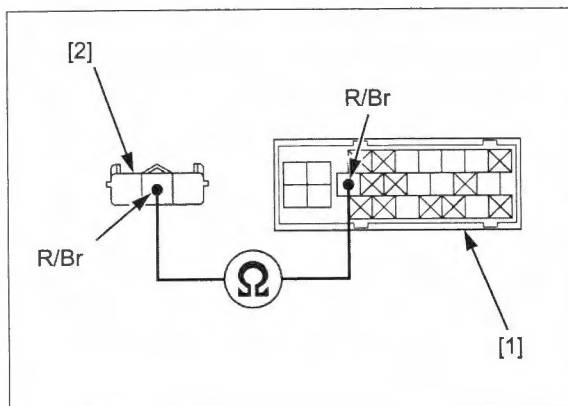
07ZAJ-RDJA110

CONNECTION: Red/brown - Red/brown

Is there continuity?

YES – GO TO STEP 7.

NO – Open circuit in the Red/brown of the ABS sub-harness



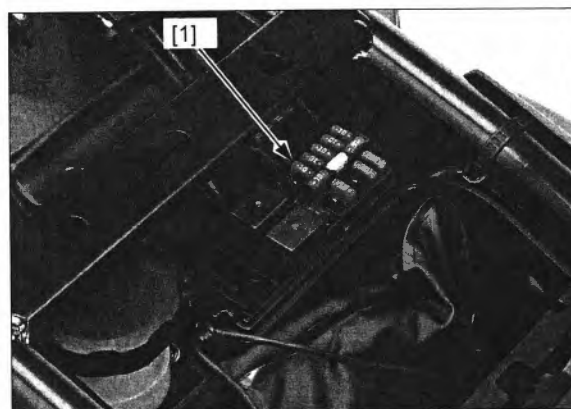
7. Fuse Inspection

Check for a blown ABS MAIN fuse (10 A) [1].

Is the fuse blown?

YES – GO TO STEP 8.

NO – GO TO STEP 10.



8. Power Input Line Short Circuit Inspection (at ABS sub-harness side)

With the ABS main fuse (10 A) removed, check for continuity between the Red/brown wire terminal of the 25P connector [1] and body ground.

TOOL:

Test probe, 2 pack

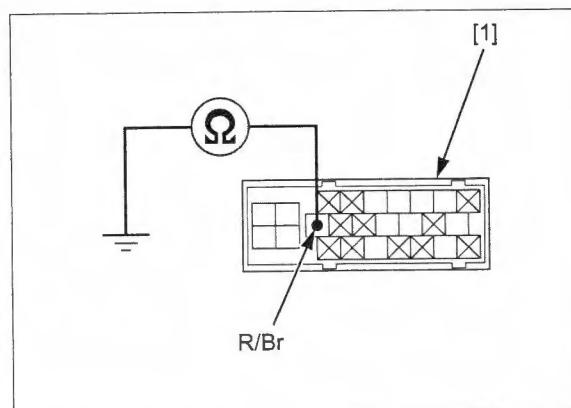
07ZAJ-RDJA110

CONNECTION: Red/brown - Body ground

Is there continuity?

YES – GO TO STEP 9.

NO – Temporary failure. Install a spare fuse and perform the pre-start self-diagnosis (page 15-8).



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

9. Power Input Line Short Circuit Inspection (at main harness side)

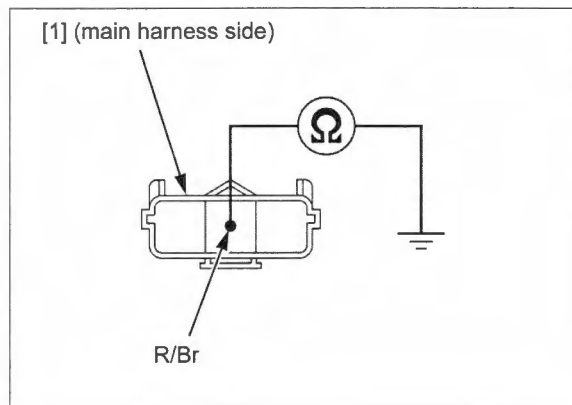
Disconnect the ABS sub-harness 3P (Black) connector.

Check for continuity between the Red/brown wire terminal of the 3P connector (main harness side) [1] and body ground.

CONNECTION: Red/brown - Body ground

Is there continuity?

- YES** – Short circuit in the Red/brown wire between the fuse box and 3P connector
- NO** – Short circuit in the Red/brown wire of the ABS sub-harness



10. Power Input Line Open Circuit Inspection

Connect the ABS modulator 25P connector.

Connect a fully charged 12 V battery (page 16-6).

Disconnect the ABS sub-harness 3P (Black) connector.

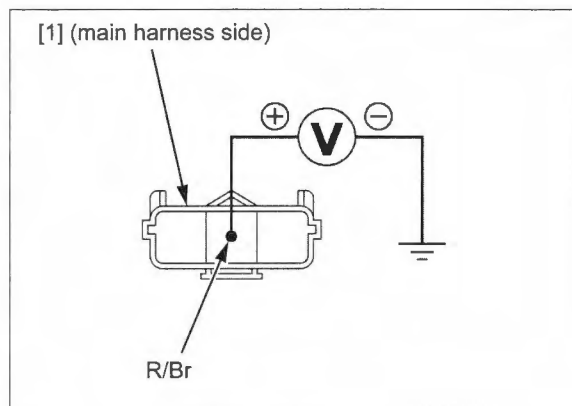
Measure the voltage between the Red/brown wire terminal of the 3P connector (main harness side) [1] and body ground.

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

CONNECTION: Red/brown - Body ground

Is there battery voltage?

- YES** – Faulty ABS modulator.
- NO** –
- Open circuit in the Red/brown or Red/black wire between the ignition switch and ABS sub-harness 3P connector
 - If the wire is OK, check the Battery/Charging System (page 16-7).



**PROBLEM CODE 11, 12, 21, 41 or 42
(Front Wheel/Pulser Ring/Front Wheel
Speed Sensor)**

NOTE:

- The ABS indicator might blink under unusual riding conditions. This is a temporary failure (page 15-15). Erase the problem code and perform the pre-start self-diagnosis before troubleshooting (page 15-8). The ABS is normal if the indicator goes off.
- If the problem code 41 is indicated, check the front brake for drag.

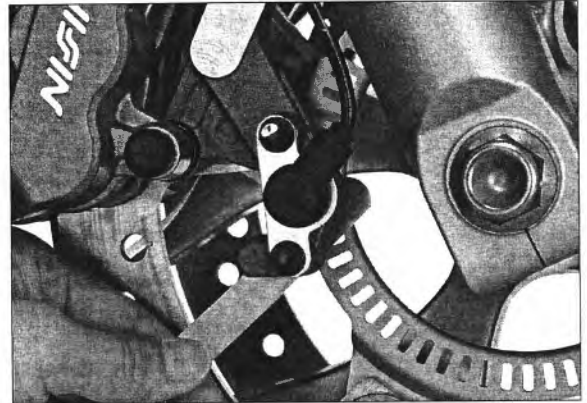
1. Speed Sensor Air Gap Inspection

Measure the air gap between the speed sensor and pulser ring (page 15-51).

Is the air gap correct?

YES – GO TO STEP 2.

NO – Check each part for deformation or looseness and correct accordingly. Recheck the air gap.



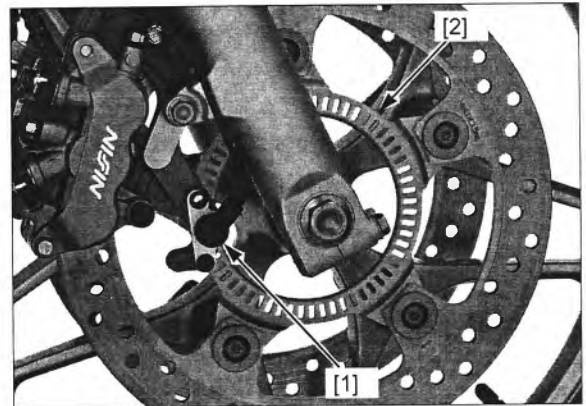
2. Speed Sensor Condition Inspection

Inspect the area around the speed sensor [1]. Check for iron or other magnetic deposits between the pulser ring [2] and speed sensor and check 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 (e.g., chipped pulser ring teeth).

Are the sensor and pulser ring in good condition?

YES – GO TO STEP 3.

NO – Remove any deposits. Install properly or replace faulty part.



3. Speed Sensor Line Short Circuit Inspection (at ABS sub-harness side)

Disconnect the ABS modulator 25P connector. Check for continuity between the Pink/black wire terminal of the 25P connector [1] and body ground, and between the Green/orange wire terminal of the 25P connector and body ground.

TOOL:

Test probe, 2 pack

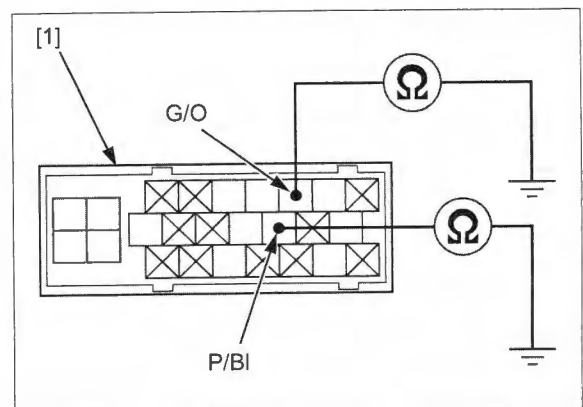
07ZAJ-RDJA110

CONNECTION: Green/orange - Body ground
Pink/black - Body ground

Is there continuity?

YES – GO TO STEP 4.

NO – GO TO STEP 6.



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

4. Speed Sensor Line Short Circuit Inspection (at main harness side)

Disconnect the ABS sub-harness 4P (Black) connector.

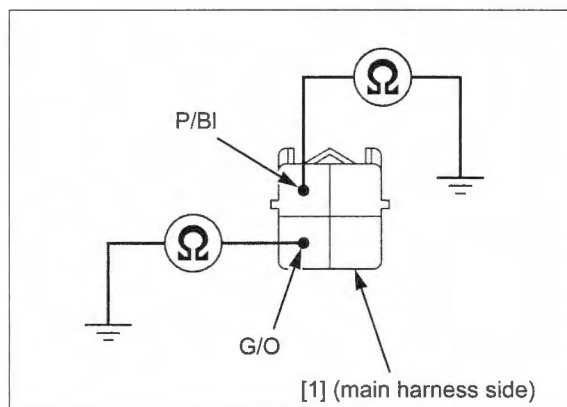
Check for continuity between the Pink/black wire terminal of the 4P connector (main harness side) [1] and ground, and between the Green/orange wire terminal (main harness side) and ground.

CONNECTION: Green/orange - Body ground
Pink/black - Body ground

Is there continuity?

YES - GO TO STEP 5.

NO - Short circuit in the Pink/black or Green/orange wire of the ABS sub-harness



5. Speed Sensor Line Short Circuit Inspection (at sensor side)

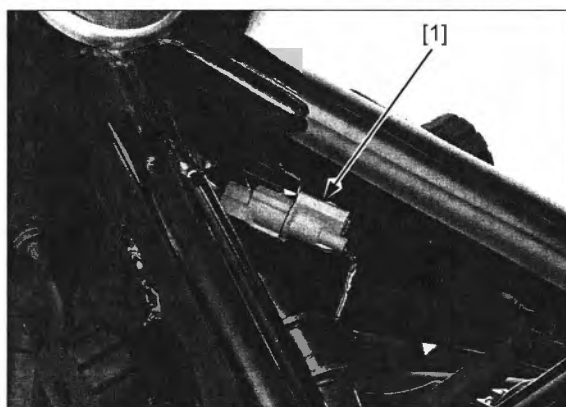
Disconnect the front wheel speed sensor 2P (Blue) connector.

Check for continuity between each terminal (Blue and White) of the sensor side 2P connector [1] and body ground.

Is there continuity?

YES - Faulty front wheel speed sensor

NO - Short circuit in the Pink/black or Green/orange wire between the ABS sub-harness 4P (Black) connector and wheel speed sensor 2P (Blue) connector



6. Speed Sensor Line Open Circuit Inspection (1)

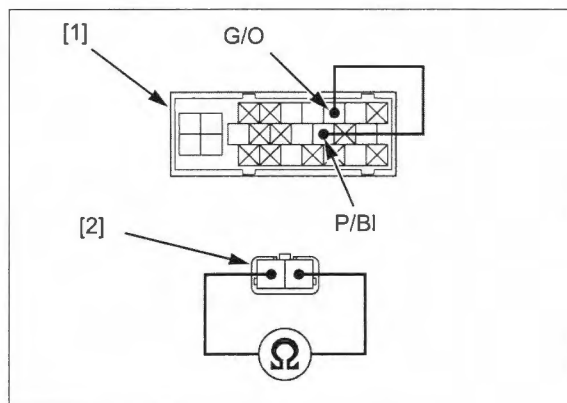
Short the Pink/black and Green/orange wire terminals of the 25P connector [1] with a jumper wire.

Check for continuity between the terminals of the wheel speed sensor 2P (Blue) connector (main harness side) [2].

Is there continuity?

YES - GO TO STEP 8.

NO - GO TO STEP 7.



7. Speed Sensor Line Open Circuit Inspection (2)

Disconnect the ABS sub-harness 4P (Black) connector.

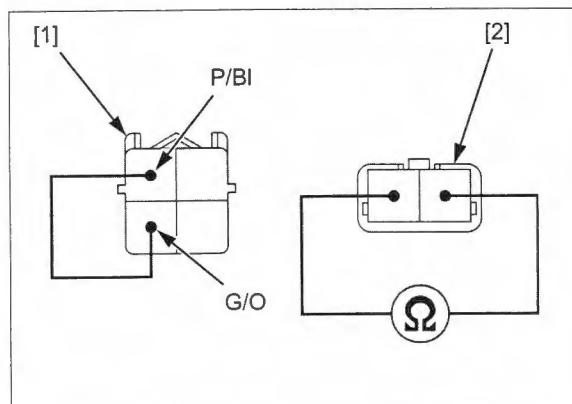
Short the Pink/black and Green/orange wire terminals of the 4P connector (main harness side) [1] with a jumper wire.

Check for continuity between the terminals of the wheel speed sensor 2P (Blue) connector (main harness side) [2].

Is there continuity?

YES – Open circuit in the Pink/black or Green/orange wire of the ABS sub-harness

NO – Open circuit in the Pink/black or Green/orange wire between the 2P (Blue) connector and ABS sub-harness 4P (Black) connector



8. Failure Reproduction with a New Speed Sensor

Replace the front wheel speed sensor with a new one (page 15-51).

Connect the ABS modulator 25P connector and ABS sub-harness 4P (Black) connector.

Connect a fully charged 12 V battery (page 16-6).

Erase the problem code (page 15-10).

Test ride the motorcycle above 30 km/h (19 mph).

Retrieve the problem code (page 15-9).

Does the indicator blink?

YES – Faulty ABS modulator; check the "Battery/Charging System" before replacing the ABS modulator (page 16-5).

NO – Faulty removed wheel speed sensor

PROBLEM CODE 13, 14, 23 or 43 (Rear Wheel/Pulser Ring/Rear Wheel Speed Sensor)

NOTE:

- The ABS indicator might blink under unusual riding conditions. This is a temporary failure (page 15-15). Erase the problem code and perform the pre-start self-diagnosis before troubleshooting (page 15-8). The ABS is normal if the indicator goes off.
- If the problem code 43 is indicated, check the rear brake for drag.

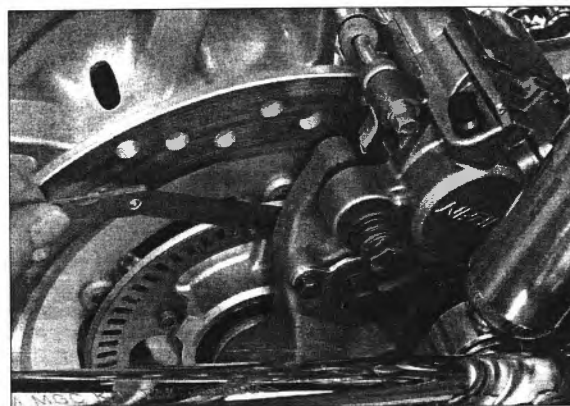
1. Speed Sensor Air Gap Inspection

Measure the air gap between the speed sensor and pulser ring (page 15-51).

Is the air gap correct?

YES – GO TO STEP 2.

NO – Check each part for deformation or looseness and correct accordingly. Recheck the air gap.



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

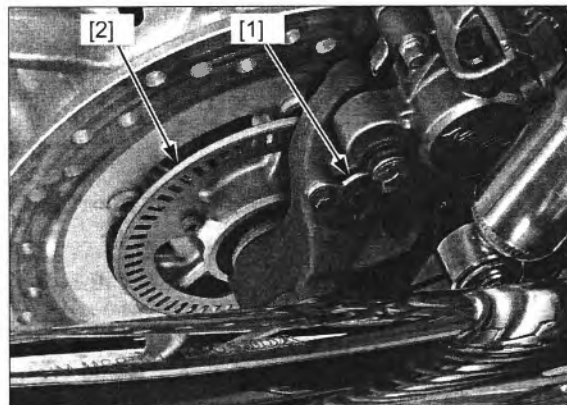
2. Speed Sensor Condition Inspection

Inspect the area around the speed sensor [1].
Check for iron or other magnetic deposits between the pulser ring [2] and speed sensor and check 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 (e.g., chipped pulser ring teeth).

Are the sensor and pulser ring in good condition?

YES – GO TO STEP 3.

NO – Remove any deposits. Install properly or replace faulty part.



3. Speed Sensor Line Short Circuit Inspection (at ABS sub-harness side)

Disconnect the ABS modulator 25P connector.
Check for continuity between the Pink/white wire terminal of the 25P connector [1] and body ground, and between the Green/red wire terminal of the 25P connector and body ground.

TOOL:

Test probe, 2 pack

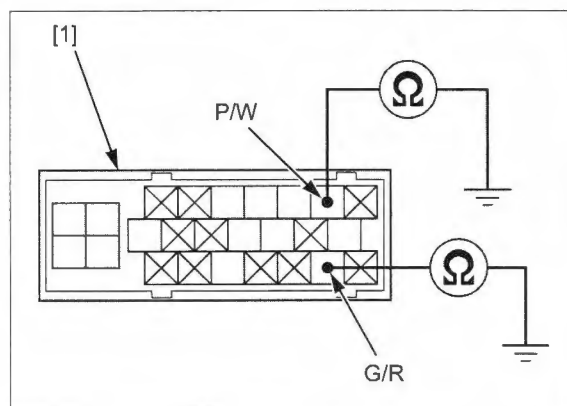
07ZAJ-RDJA110

CONNECTION: Green/red - Body ground
Pink/white - Body ground

Is there continuity?

YES – GO TO STEP 4.

NO – GO TO STEP 5.



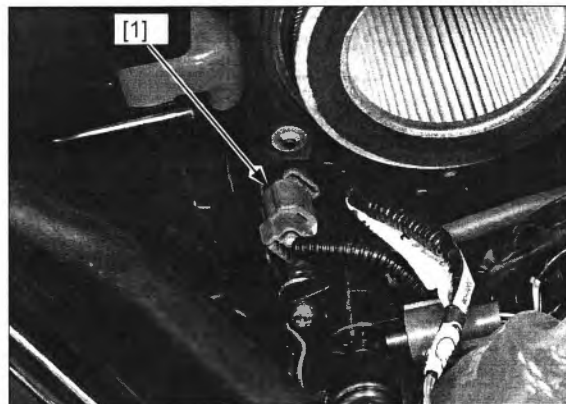
4. Speed Sensor Line Short Circuit Inspection (at sensor side)

Disconnect the rear wheel speed sensor 2P (Blue) connector.
Check for continuity between each terminal (Blue and White) of the sensor side 2P connector [1] and body ground.

Is there continuity?

YES – Faulty rear wheel speed sensor

NO – Short circuit in the Pink/white or Green/red wire of the ABS sub-harness



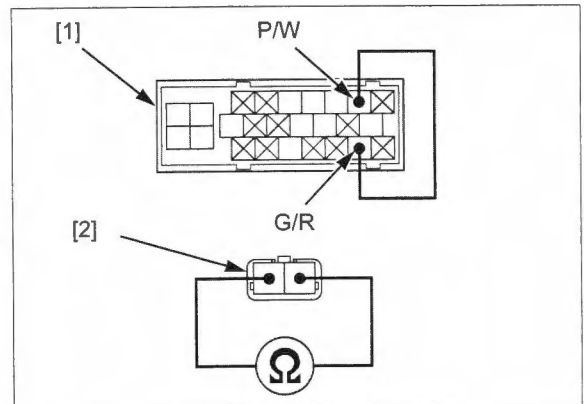
5. Speed Sensor Line Open Circuit Inspection

Short the Pink/white and Green/red wire terminals of the 25P connector [1] with a jumper wire. Check for continuity between the terminals of the wheel speed sensor 2P (Blue) connector (main harness side) [2].

Is there continuity?

YES – GO TO STEP 6.

NO – Open circuit in the Pink/white or Green/red wire of the ABS sub-harness



6. Failure Reproduction with a New Speed Sensor

Replace the rear wheel speed sensor with a new one (page 15-51).

Connect the ABS modulator 25P connector.

Connect a fully charged 12 V battery (page 16-6).

Erase the problem code (page 15-10).

Test ride the motorcycle above 30 km/h (19 mph).

Retrieve the problem code (page 15-9).

Does the indicator blink?

YES – Faulty ABS modulator; check the "Battery/Charging System" before replacing the ABS modulator (page 16-5).

NO – Faulty removed wheel speed sensor

PROBLEM CODE 31, 32, 33, 34, 37 or 38 (Solenoid Valve)

1. Failure Reproduction

Erase the problem code (page 15-10).

Test ride the motorcycle above 30 km/h (19 mph).

Retrieve the problem code (page 15-9).

Does the indicator indicate the code "31, 32, 33, 34, 37 or 38"?

YES – Faulty ABS modulator; check the "Battery/Charging System" before replacing the ABS modulator (page 16-5).

NO – Normal (problem code is not stored; temporary failure)

PROBLEM CODE 51, 52 or 53 (Pump Motor)

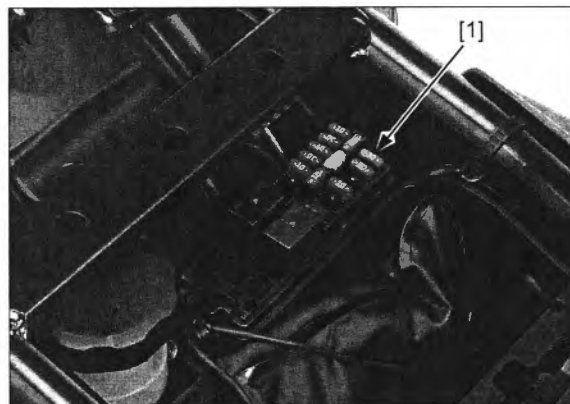
1. Fuse Inspection

Check for a blown ABS MOTOR fuse (30 A).

Is the fuse blown?

YES – GO TO STEP 2.

NO – GO TO STEP 4.



2. Motor Power Input Line Short Circuit Inspection (at ABS sub-harness side)

Disconnect the ABS modulator 25P connector. Check for continuity between the Red wire terminal of the 25P connector [1] and body ground.

TOOL:

Test probe, 2 pack

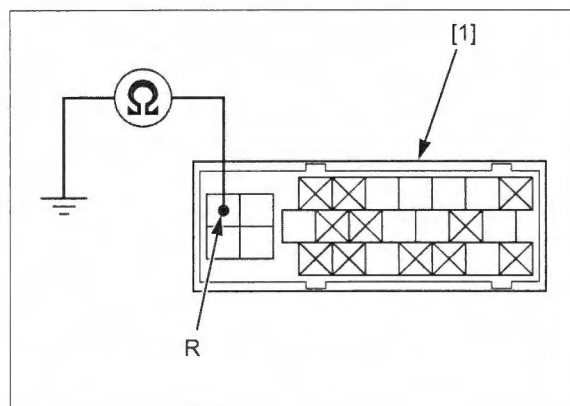
07ZAJ-RDJA110

CONNECTION: Red - Body ground

Is there continuity?

YES – GO TO STEP 3.

NO – Temporary failure; install a spare fuse and perform the pre-start self-diagnosis (page 15-8).



3. Motor Power Input Line Short Circuit Inspection (at main harness side)

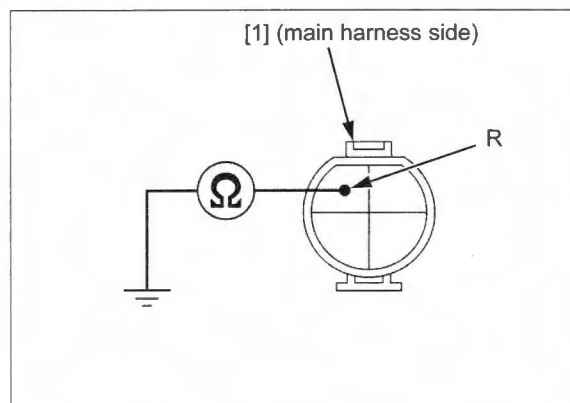
Disconnect the ABS sub-harness 4P connector. Check for continuity between the Red wire terminal of the 4P connector (main harness side) [1] and body ground.

CONNECTION: Red - Body ground

Is there continuity?

YES – Short circuit in the Red wire between the fuse box and 4P connector

NO – Short circuit in the Red wire of the ABS sub-harness



4. Motor Power Input Line Open Circuit Inspection

Disconnect the ABS sub-harness 4P connector. Measure the voltage between Red wire terminal (+) of the 4P connector (main harness side) [1] and body ground (-). There should be battery voltage at all times.

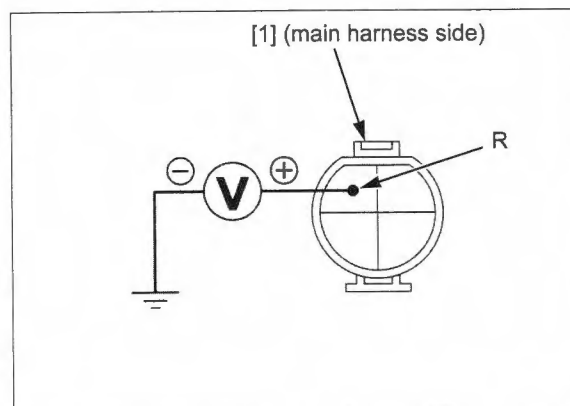
CONNECTION: Red - Body ground

Is there battery voltage?

YES - GO TO STEP 5.

NO -

- Open circuit in the Red/green wire between the battery and fuse box
- Open circuit in the Red wire between the fuse box and ABS sub-harness 4P connector



5. ABS Sub-harness Open Circuit Inspection

Disconnect the ABS modulator 25P connector. Check for continuity in the Red wire between the modulator 25P connector [1] and sub-harness 4P connector [2]. There should be continuity.

TOOL:

Test probe, 2 pack

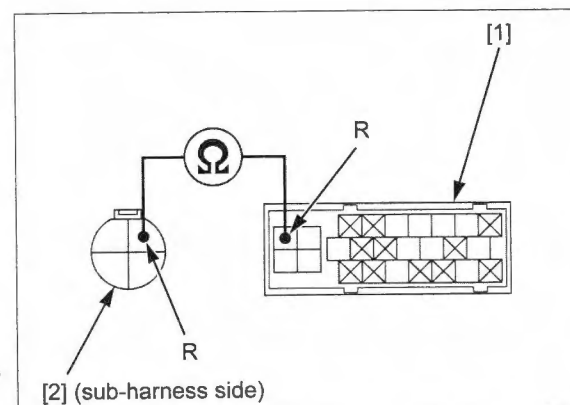
07ZAJ-RDJA110

CONNECTION: Red - Red

Is there continuity?

YES - GO TO STEP 6.

NO - Open circuit in the Red wire of the ABS sub-harness



6. Failure Reproduction

Connect the ABS modulator 25P connector and ABS sub-harness 4P connector. Connect a fully charged 12 V battery (page 16-6). Erase the problem code (page 15-10). Test ride the motorcycle above 30 km/h (19 mph). Retrieve the problem code (page 15-9).

Does the indicator indicate the code "51, 52, or 53"?

YES - Faulty ABS modulator; check the "Battery/Charging System" before replacing the ABS modulator (page 16-5).

NO - Normal (problem code is not stored; temporary failure)

PROBLEM CODE 54 (Fail-safe Relay)

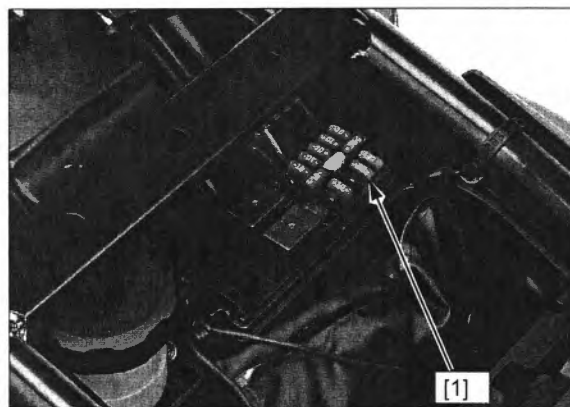
1. Fuse Inspection

Check for a blown ABS SOLENOID fuses (30 A) [1].

Is the fuse blown?

YES – GO TO STEP 2.

NO – GO TO STEP 4.



2. Relay Power Input Line Short Circuit Inspection (at ABS sub-harness side)

Disconnect the ABS modulator 25P connector. Check for continuity between the Black wire terminal of the 25P connector [1] and body ground.

TOOL:

Test probe, 2 pack

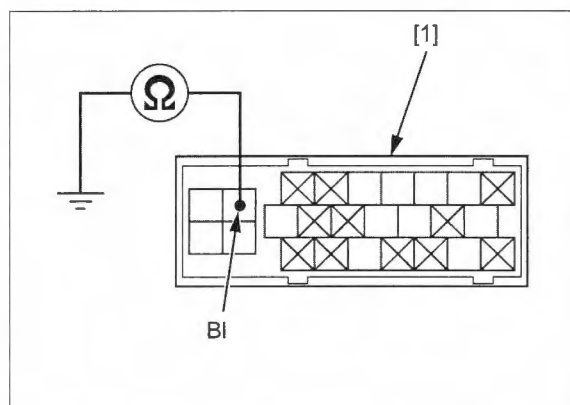
07ZAJ-RDJA110

CONNECTION: Black - Body ground

Is there continuity?

YES – GO TO STEP 3.

NO – Temporary failure; install a spare fuse and perform the pre-start self-diagnosis (page 15-8).



3. Relay Power Input Line Short Circuit Inspection (at main harness side)

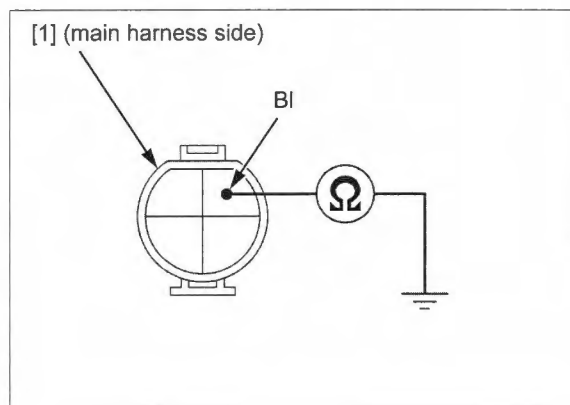
Disconnect the ABS sub-harness 4P connector. Check for continuity between the Black wire terminal of the 4P connector (main harness side) [1] and body ground.

CONNECTION: Black - Body ground

Is there continuity?

YES – Short circuit in the Black wire between the fuse box and 4P connector

NO – Short circuit in the Black wire of the ABS sub-harness



4. Relay Power Input Line Open Circuit Inspection

Disconnect the ABS sub-harness 4P connector. Measure the voltage between the Black wire terminal (+) of the 4P connector (main harness side) [1] and body ground (-).

There should be battery voltage at all times.

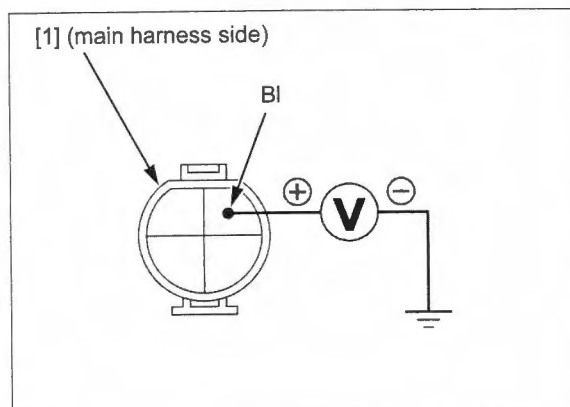
CONNECTION: Black - Body ground

Is there battery voltage?

YES - GO TO STEP 5.

NO -

- Open circuit in the Red/green wire between the battery and fuse box
- Open circuit in the Black wire between the fuse box and ABS sub-harness 4P connector



5. ABS Sub-harness Open Circuit Inspection

Disconnect the ABS modulator 25P connector. Check for continuity in the Black wire between the modulator 25P connector [1] and sub-harness 4P connector [2].

There should be continuity.

TOOL:

Test probe, 2 pack

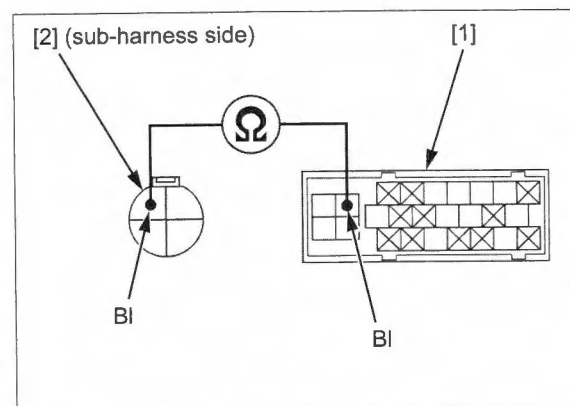
07ZAJ-RDJA110

CONNECTION: Black - Black

Is there continuity?

YES - GO TO STEP 6.

NO - Open circuit in the Black wire of the ABS sub-harness



6. Failure Reproduction

Connect the ABS modulator 25P connector and ABS sub-harness 4P connector.

Connect a fully charged 12 V battery (page 16-6).

Erase the problem code (page 15-10).

Test ride the motorcycle above 30 km/h (19 mph).

Retrieve the problem code (page 15-9).

Does the indicator indicate the code "54"?

YES - Faulty ABS modulator; check the "Battery/Charging System" before replacing the ABS modulator (page 16-5).

NO - Normal (problem code is not stored; temporary failure)

PROBLEM CODE 61 or 62 (Power Circuit)

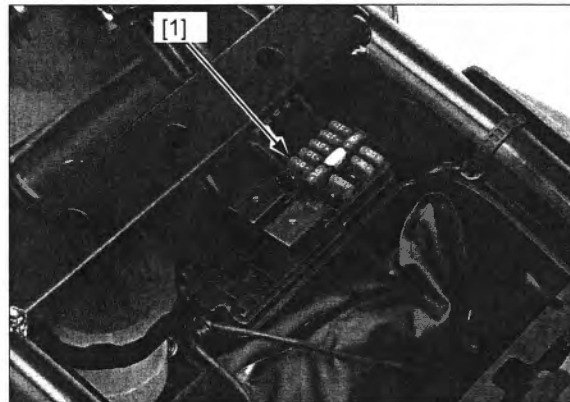
1. Fuse Inspection

Check for a blown ABS MAIN fuses (10 A) [1].

Is the fuse blown?

YES – GO TO STEP 2.

NO – GO TO STEP 4.



2. Power Input Line Short Circuit Inspection (at ABS sub-harness side)

Disconnect the ABS modulator 25P connector. Check for continuity between the Red/brown wire terminal of the 25P connector [1] and body ground.

TOOL:

Test probe, 2 pack

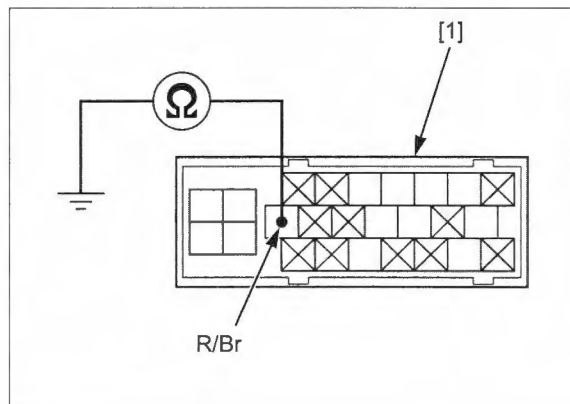
07ZAJ-RDJA110

CONNECTION: Red/brown - Body ground

Is there continuity?

YES – GO TO STEP 3.

NO – Temporary failure; install a spare fuse and perform the pre-start self-diagnosis (page 15-8).



3. Power Input Line Short Circuit Inspection (at main harness side)

Disconnect the ABS sub-harness 3P (Black) connector.

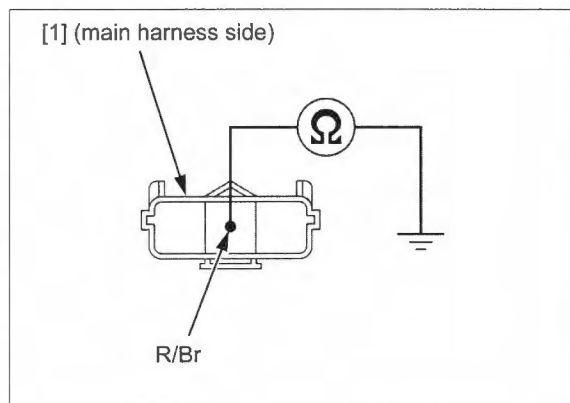
Check for continuity between the Red/brown wire of the 3P connector (main harness side) [1] and body ground.

CONNECTION: Red/brown - Body ground

Is there continuity?

YES – Short circuit in the Red/brown wire between the fuse box and 3P (Black) connector

NO – Short circuit in the Red/brown wire of the ABS sub-harness



4. Power Input Line Open Circuit Inspection

Disconnect the ABS sub-harness 3P (Black) connector.

Measure the voltage between the Red/brown wire terminal (+) of the 3P connector (main harness side) [1] and body ground (-).

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

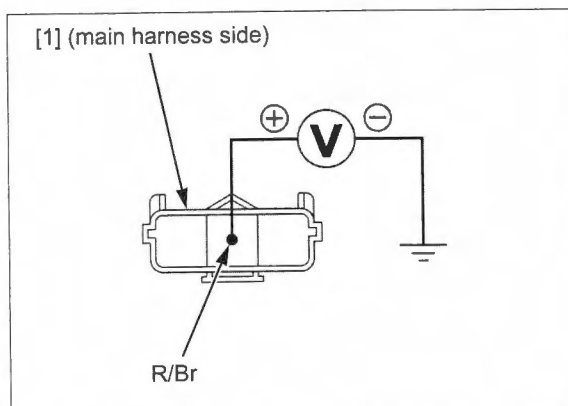
CONNECTION: Red/brown - Body ground

Is there battery voltage?

YES - GO TO STEP 5.

NO -

- Open circuit in the Red/brown or Red/black wire between the 3P (Black) connector and ignition switch
- If the wire is OK, check the "Battery/Charging System" (page 16-5).



5. ABS Sub-harness Open Circuit Inspection

Disconnect the ABS modulator 25P connector.

Check for continuity in the Red/brown wire between the ABS modulator 25P connector [1] and ABS sub-harness 3P (Black) connector [2].

There should be continuity.

TOOL:

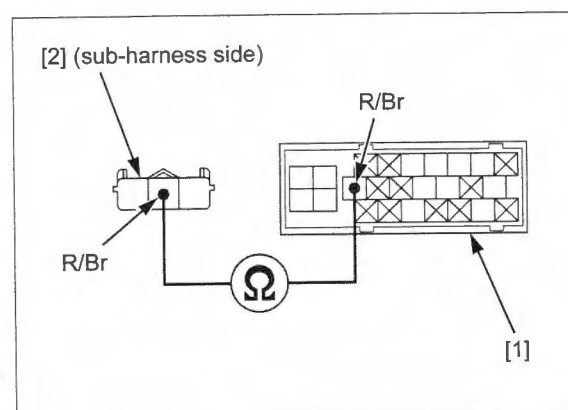
Test probe, 2 pack **07ZAJ-RDJA110**

CONNECTION: Red/brown - Red/brown

Is there continuity?

YES - GO TO STEP 6.

NO - Open circuit in the Red/brown wire of the ABS sub-harness



6. Failure Reproduction

Connect the ABS modulator 25P connector and ABS sub-harness 3P (Black) connector.

Connect a fully charged 12 V battery (page 16-6).

Erase the problem code (page 15-10).

Test ride the motorcycle above 30 km/h (19 mph).

Retrieve the problem code (page 15-9).

Does the indicator indicate the code "61 or 62"?

YES - Faulty ABS modulator; check the "Battery/Charging System" before replacing the ABS modulator (page 16-5).

NO - Normal (problem code is not stored; temporary failure)

PROBLEM CODE 71 (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

1. Failure Reproduction

If the above items are normal, recheck the problem code indication:

Erase the problem code (page 15-10).

Test ride the motorcycle above 30 km/h (19 mph).

Retrieve the problem code (page 15-9).

Does the indicator indicate the code "71"?

- YES** – Faulty ABS modulator; check the "Battery/Charging System" before replacing the ABS modulator (page 16-5).
- NO** – Normal (problem code is not stored; temporary failure)

PROBLEM CODE 81 (CPU; ABS Control Unit)

1. Failure Reproduction

Erase the problem code (page 15-10).

Test ride the motorcycle above 30 km/h (19 mph).

Retrieve the problem code (page 15-9).

Does the indicator indicate the code "81"?

- YES** – Faulty ABS modulator; check the "Battery/Charging System" before replacing the ABS modulator (page 16-5).
- NO** – Normal (problem code is not stored; temporary failure)

ABS INDICATOR CIRCUIT TROUBLESHOOTING (After '13 model)

ABS INDICATOR DOES NOT COME ON (when the ignition switch turned ON)

NOTE:

- Before starting this inspection, check the initial operation of the combination meter (page 19-14).

1. Indicator Operation Inspection

Turn the ignition switch OFF.
Disconnect the ABS modulator 18P (Black) connector (page 15-14).
Connect a fully charged 12 V battery (page 16-6).

Turn the ignition switch ON with the engine stop switch "O".
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 (1)

Turn the ignition switch OFF.
Check for continuity between the wire harness side ABS modulator 18P (Black) connector [1] terminal and ground.

TOOL:

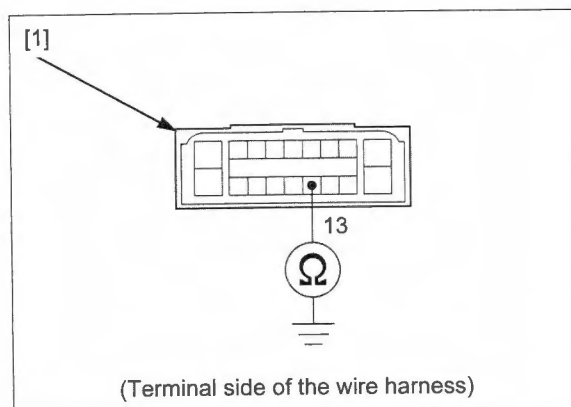
Test probe, 2 pack

07ZAJ-RDJA110

CONNECTION: 13 – Ground

Is there continuity?

- YES** – GO TO STEP 3.
NO – Faulty combination meter



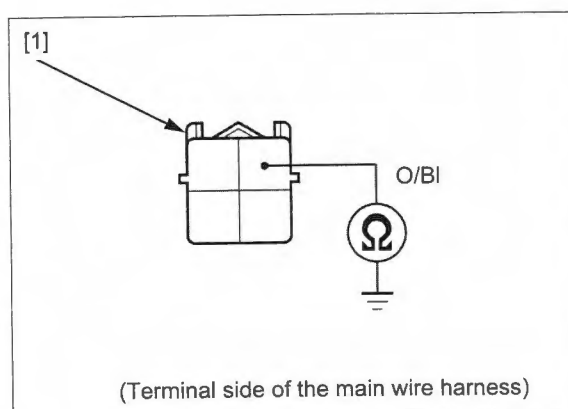
3. Indicator Signal Line Short Circuit Inspection (2)

Disconnect the ABS sub-harness 4P (Black) connector (page 1-21).
Check for continuity between the main wire harness side ABS sub-harness 4P (Black) connector [1] terminal and ground.

CONNECTION: Orange/black – Ground

Is there continuity?

- YES** – Short circuit in the Orange/black wire of the main wire harness
NO – Short circuit in the Orange/black wire of the ABS sub-harness



ABS INDICATOR STAYS ON (Indicator does not go off when the motorcycle is running)

1. Service Check Line Short Circuit Inspection (1)

Turn the ignition switch OFF.
Disconnect the ABS modulator 18P (Black) connector (page 15-14).
Check for continuity between the wire harness side ABS modulator 18P (Black) connector [1] terminal and ground.

TOOL:

Test probe, 2 pack

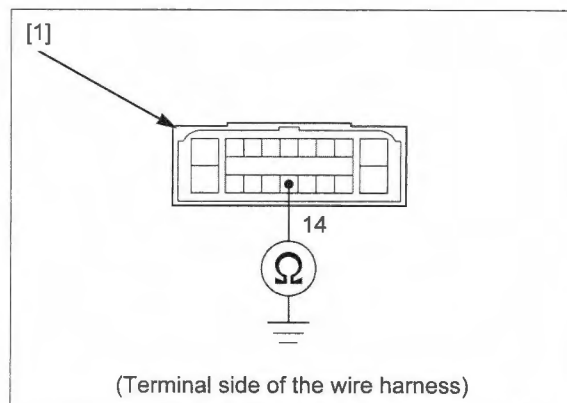
07ZAJ-RDJA110

CONNECTION: 14 – Ground

Is there continuity?

YES – GO TO STEP 2.

NO – GO TO STEP 3.



2. Service Check Line Short Circuit Inspection (2)

Remove the right side cover (page 2-4).
Disconnect the ABS sub-harness 4P (Black) connector (page 1-21).

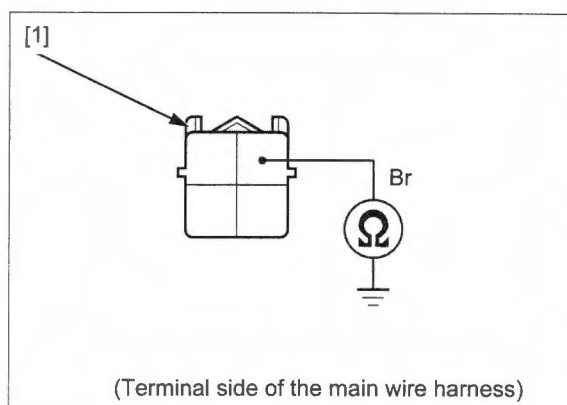
Check for continuity between the main wire harness side ABS sub-harness 4P (Black) connector [1] terminal and ground.

CONNECTION: Brown – Ground

Is there continuity?

YES – Short circuit in the Brown wire of the main wire harness

NO – Short circuit in the Brown wire of the ABS sub-harness



3. Indicator Signal Line Open Circuit Inspection (1)

Short the wire harness side ABS modulator 18P (Black) connector [1] terminal to ground with a jumper wire [2].

TOOL:

Test probe, 2 pack

07ZAJ-RDJA110

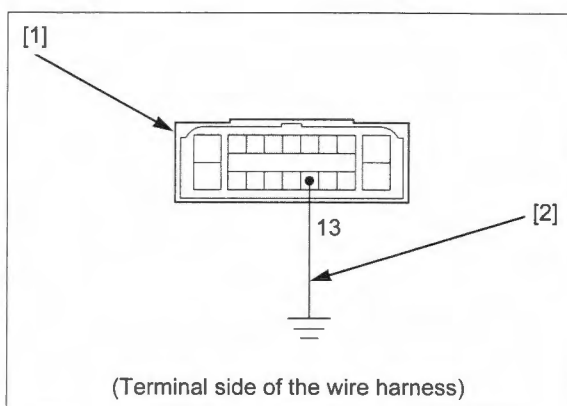
CONNECTION: 13 – Ground

Connect a fully charged 12 V battery (page 16-6).
Turn the ignition switch ON with the engine stop switch "O".
Check the ABS indicator.

Does it go off?

YES – GO TO STEP 5.

NO – GO TO STEP 4.



4. Indicator Signal Line Open Circuit Inspection (2)

Disconnect the ABS sub-harness 4P (Black) connector (page 1-21).

Short the main wire harness side ABS sub-harness 4P (Black) connector [1] terminal to ground with a jumper wire [2].

TOOL:

Test probe, 2 pack

07ZAJ-RDJA110

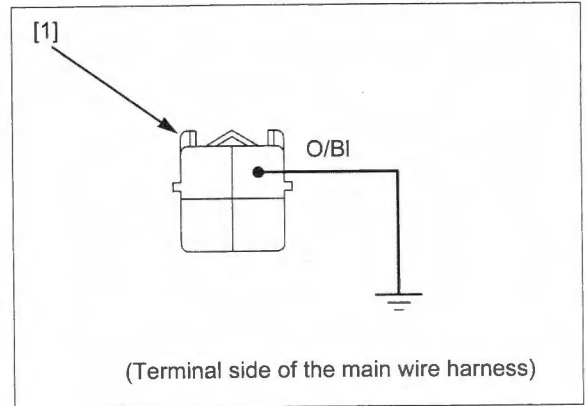
CONNECTION: Orange/black – Ground

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

Check the ABS indicator.

Does it go off?

- YES** – Open circuit in the Orange/black wire of the ABS sub-harness
- NO** – • Open circuit in the Orange/black wire of the main wire harness
• Faulty combination meter (if the Orange/black wire is OK)



5. Modulator Ground Line Open Circuit Inspection (1)

Turn the ignition switch OFF.

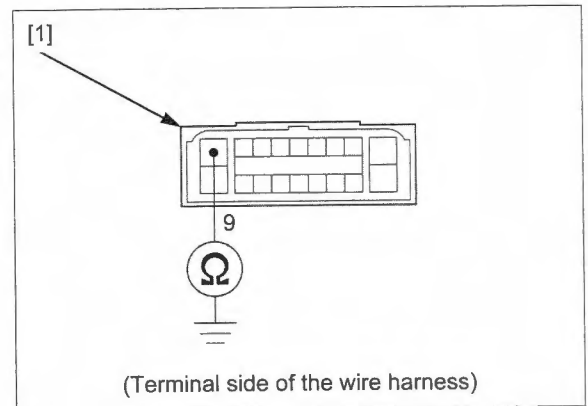
Check for continuity between the wire harness side ABS modulator 18P (Black) connector [1] terminal and ground.

CONNECTION: 9 – Ground

Is there continuity?

YES – GO TO STEP 7.

NO – GO TO STEP 6.



6. Modulator Ground Line Open Circuit Inspection (2)

Remove the left side cover (page 2-4).

Disconnect the ABS sub-harness 2P connector (page 1-21).

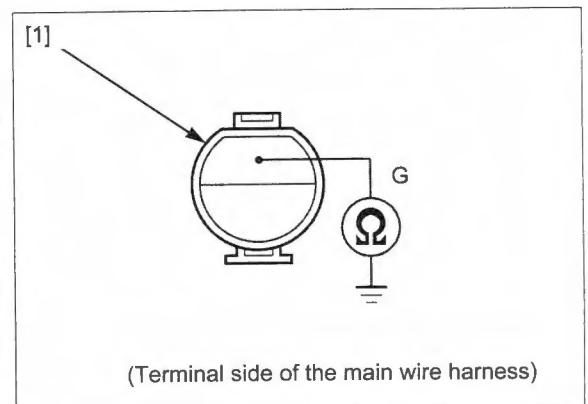
Check for continuity between the main wire harness side ABS sub-harness 2P connector [1] terminal and ground.

CONNECTION: Green – Ground

Is there continuity?

YES – Open circuit in the Green wire of the ABS sub-harness

NO – Open circuit in the Green wire of the main wire harness



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

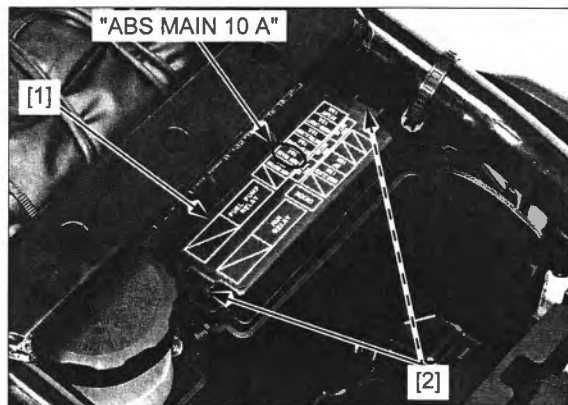
7. Fuse Inspection

Remove the fuse box cover [1] from the fuse box by releasing the two tabs [2].
Check for a blown ABS MAIN fuse (10 A).

Is the fuse blown?

YES – GO TO STEP 8.

NO – GO TO STEP 10.



8. Power Input Line Short Circuit Inspection (1)

With the ABS MAIN fuse (10 A) removed, check for continuity between the wire harness side ABS modulator 18P (Black) connector [1] and ground.

TOOL:

Test probe, 2 pack

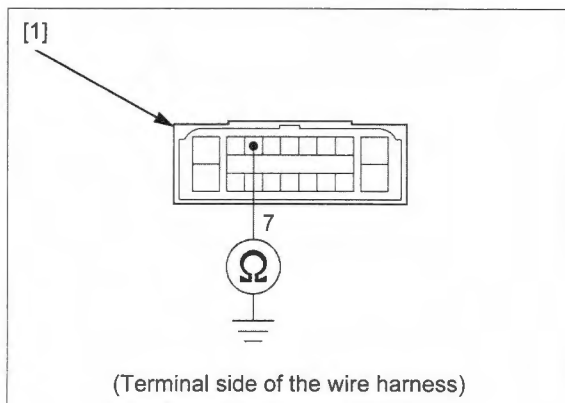
07ZAJ-RDJA110

CONNECTION: 7 – Ground

Is there continuity?

YES – GO TO STEP 9.

NO – Intermittent failure. Replace the ABS MAIN fuse (10 A) with a new one and recheck.



9. Power Input Line Short Circuit Inspection (2)

Remove the right side cover (page 2-4).

Disconnect the ABS sub-harness 4P (Black) connector (page 1-21).

Check for continuity between the main wire harness side ABS sub-harness 4P (Black) connector [1] and ground.

TOOL:

Test probe, 2 pack

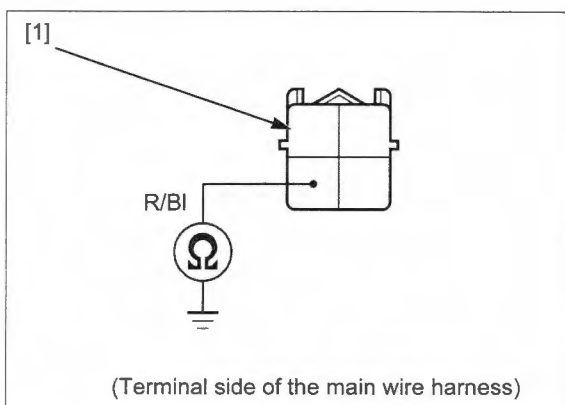
07ZAJ-RDJA110

CONNECTION: Red/black – Ground

Is there continuity?

YES – Short circuit in the Red/black wire of the main wire harness

NO – Short circuit in the Red/black wire of the ABS sub-harness



10. Power Input Line Open Circuit Inspection (1)

Install the ABS MAIN fuse (10 A).

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

Measure the voltage between the wire harness side ABS modulator 18P (Black) connector [1] terminal and ground.

TOOL:

Test probe, 2 pack

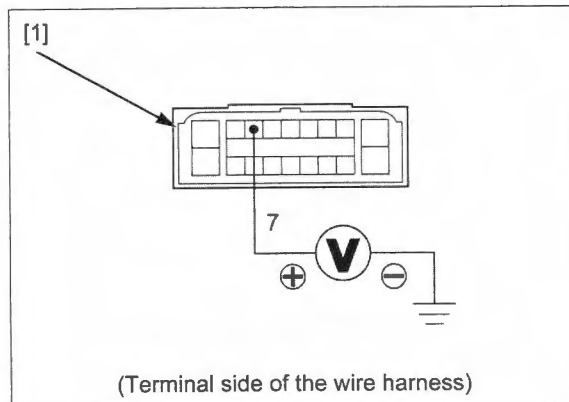
07ZAJ-RDJA110

CONNECTION: 7 (+) – Ground (–)

Is there battery voltage?

YES – Faulty ABS modulator

NO – GO TO STEP 11.



11. Power Input Line Open Circuit Inspection (2)

Remove the right side cover (page 2-4).

Disconnect the ABS sub-harness 4P (Black) connector (page 1-21).

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

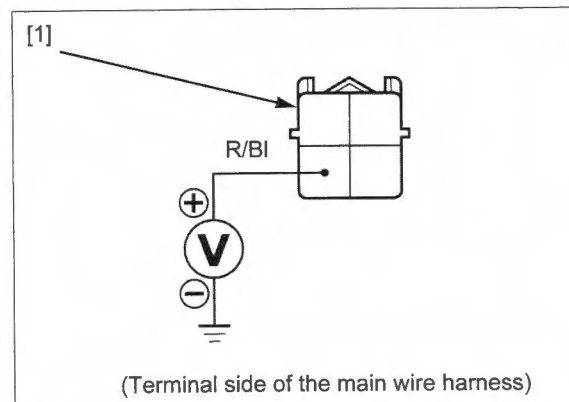
Measure the voltage between the main wire harness side ABS sub-harness 4P connector [1] terminal and ground.

CONNECTION: Red/black (+) – Ground (–)

Is there battery voltage?

YES – Open circuit in the Red/black wire of the ABS sub-harness

NO – Open circuit in the Red/black wire of the main wire harness



ABS TROUBLESHOOTING (After '13 model)

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 15-13) and test-ride the motorcycle to check that the ABS indicator operates normally during pre-start self-diagnosis (page 15-11).

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 15-11). This is a temporary failure. Erase the DTC (page 15-13), then test-ride the motorcycle above 30 km/h (19 mph) and check that the ABS indicator operates normally (page 15-11).
- If the DTC 4-1 is indicated, check the front brake for drag.

1. Speed Sensor Air Gap Inspection

Measure the air gap between the speed sensor and pulser ring (page 15-51).

Is the air gap correct?

YES – GO TO STEP 2.

NO – Check each part for deformation or looseness and correct accordingly. Recheck the air gap.

2. Speed Sensor Condition Inspection

Inspect the area around the front wheel speed sensor [1].

Check for iron or other magnetic deposits between the pulser ring [2] and speed sensor and check the pulser ring slots for obstructions.

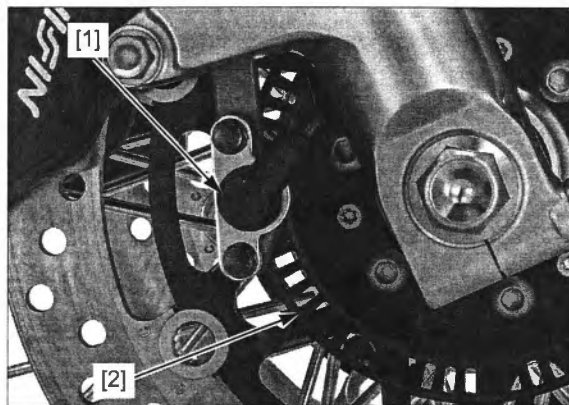
Check the installation condition of the pulser ring or wheel speed sensor for looseness.

Check the pulser ring and sensor tip for deformation or damage (e.g., chipped pulser ring teeth).

Are the sensor and pulser ring in good condition?

YES – GO TO STEP 3.

NO – Remove any deposits. Install properly or replace faulty part.



3. Front Wheel Speed Sensor Line Short Circuit Inspection (at sensor side)

Turn the ignition switch OFF.

Disconnect the front wheel speed sensor 2P (Blue) connector (page 15-53).

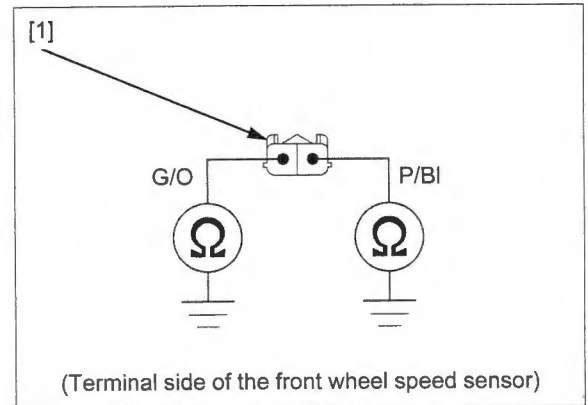
Check for continuity between each terminal of the sensor side front wheel speed sensor 2P (Blue) connector [1] and ground.

CONNECTION: Pink/black – Ground
Green/orange – Ground

Is there continuity?

YES – Faulty front wheel speed sensor

NO – GO TO STEP 4.



4. Front Wheel Speed Sensor Line Short Circuit Inspection (1)

Disconnect the ABS modulator 18P (Black) connector (page 15-14).

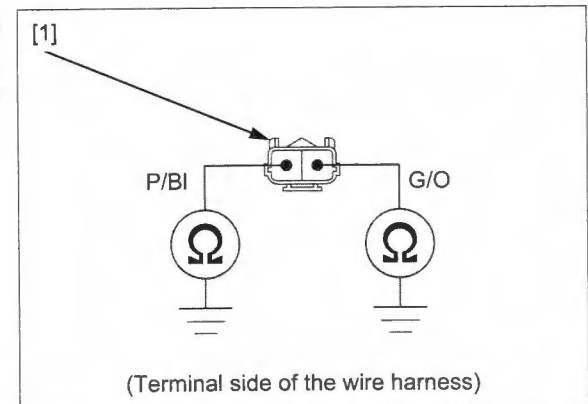
Check for continuity between each terminal of the wire harness side front wheel speed sensor 2P (Blue) connector [1] and ground.

CONNECTION: Pink/black – Ground
Green/orange – Ground

Is there continuity?

YES – GO TO STEP 5.

NO – GO TO STEP 6.



5. Front Wheel Speed Sensor Line Short Circuit Inspection (2)

Disconnect the ABS sub-harness 4P (Black) connector (page 1-21).

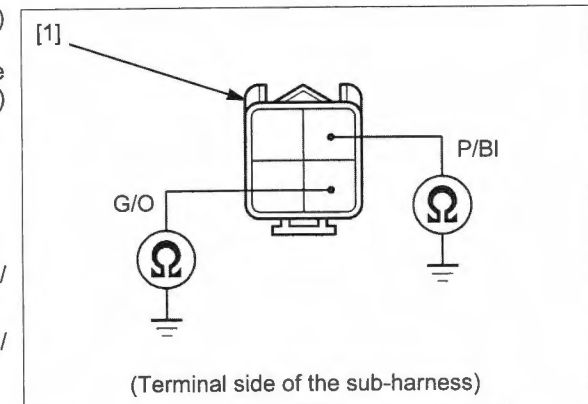
Check for continuity between each terminal of the sub-harness side ABS sub-harness 4P (Black) connector [1] and ground.

CONNECTION: Pink/black – Ground
Green/orange – Ground

Is there continuity?

YES – Short circuit in the Pink/black or Green/orange wire of the ABS sub-harness

NO – Short circuit in the Pink/black or Green/orange wire of the main wire harness



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

6. Front Wheel Speed Sensor Line Open Circuit Inspection

Short the wire harness side ABS modulator 18P (Black) connector [1] terminals with a jumper wire [2].

CONNECTION: 8 – 17

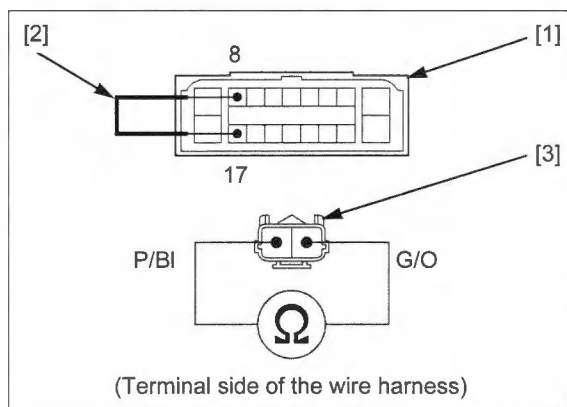
Check for continuity between the wire harness side front wheel speed sensor 2P (Blue) connector [3] terminals.

CONNECTION: Pink/black – Green/orange

Is there continuity?

YES – GO TO STEP 7.

NO – Open circuit in the Pink/black or Green/orange wire



7. Failure Reproduction with a New Speed Sensor

Replace the front wheel speed sensor with a new one (page 15-53).

Connect the ABS modulator 18P (Black) and front wheel speed sensor 2P (Blue) connectors.

Install the rear air cleaner housing (page 5-56).

Erase the DTC (page 15-13).

Test-ride the motorcycle above 30 km/h (19 mph).

Recheck the DTC (page 15-12).

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

DTC 1-3, 1-4, 2-3, or 4-3 (Rear Wheel Speed Sensor Circuit/Rear Wheel Speed Sensor/Rear Pulser Ring/Rear Wheel Lock)

NOTE:

- The ABS indicator might blink under unusual riding conditions (page 15-11). This is a temporary failure. Erase the DTC (page 15-13), then test-ride the motorcycle above 30 km/h (19 mph) and check that the ABS indicator operates normally (page 15-11).
- If the DTC 4-3 is indicated, check the rear brake for drag.

1. Speed Sensor Air Gap Inspection

Measure the air gap between the speed sensor and pulser ring (page 15-51).

Is the air gap correct?

YES – GO TO STEP 2.

NO – Check each part for deformation or looseness and correct accordingly. Recheck the air gap.

2. Speed Sensor Condition Inspection

Inspect the area around the rear wheel speed sensor [1].

Check for iron or other magnetic deposits between the pulser ring [2] and wheel speed sensor and check the pulser ring slots for obstructions.

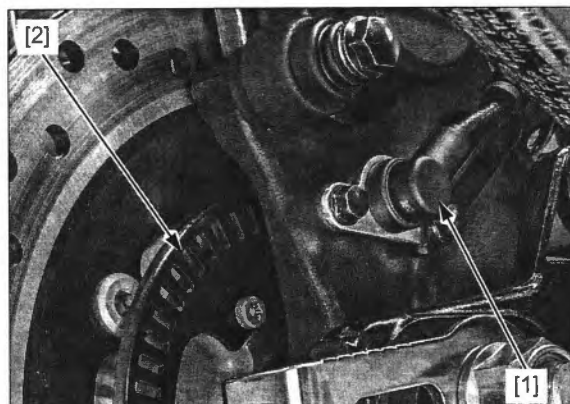
Check the installation condition of the pulser ring and wheel speed sensor for looseness.

Check the pulser ring and sensor tip for deformation or damage (e.g., chipped pulser ring teeth).

Are the sensor and pulser ring in good condition?

YES – GO TO STEP 3.

NO – Remove any deposits. Install properly or replace faulty part.



3. Rear Wheel Speed Sensor Line Short Circuit Inspection (at sensor side)

Turn the ignition switch OFF.

Remove the air cleaner duct (page 3-7).

Disconnect the rear wheel speed sensor 2P (Blue) connector [1] (page 15-54).

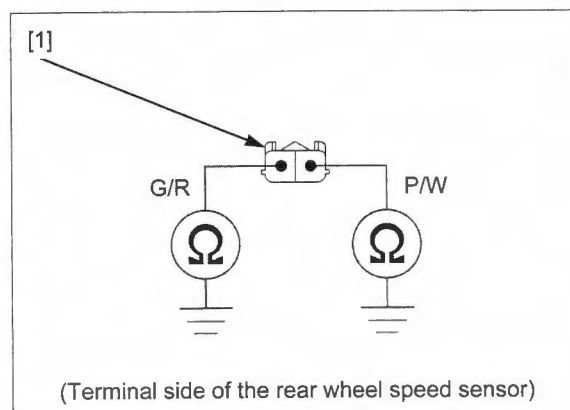
Check for continuity between each terminal of the sensor side rear wheel speed sensor 2P (Blue) connector [1] and ground.

CONNECTION: Pink/white – Ground
Green/red – Ground

Is there continuity?

YES – Faulty rear wheel speed sensor

NO – GO TO STEP 4.



4. Rear Wheel Speed Sensor Line Short Circuit Inspection

Disconnect the ABS modulator 18P (Black) connector (page 15-14).

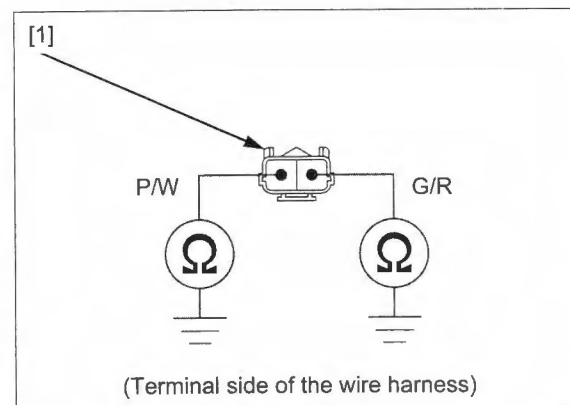
Check for continuity between each terminal of the wire harness side rear wheel speed sensor 2P (Blue) connector [1] and ground.

CONNECTION: Pink/white – Ground
Green/red – Ground

Is there continuity?

YES – • Short circuit in the Pink/white wire of the ABS sub-harness
• Short circuit in the Green/red wire of the ABS sub-harness

NO – GO TO STEP 5.



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

5. Rear Wheel Speed Sensor Line Open Circuit Inspection

Short the wire harness side ABS modulator 18P (Black) connector [1] terminals with a jumper wire [2].

CONNECTION: 6 – 15

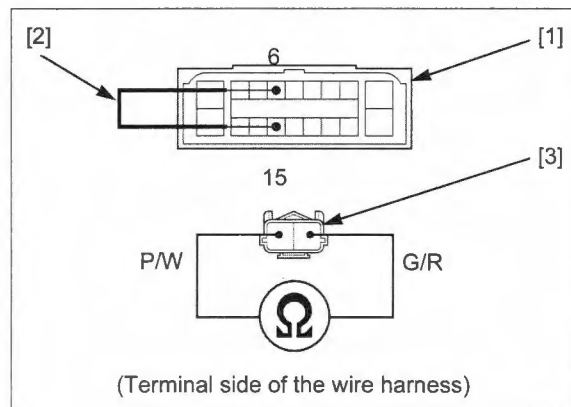
Check for continuity between the wire harness side rear wheel speed sensor 2P (Blue) connector [3] terminals.

CONNECTION: Pink/white – Green/red

Is there continuity?

YES – GO TO STEP 6.

NO – Open circuit in the Pink/white or Green/red wire of the ABS sub-harness



6. Failure Reproduction with a New Speed Sensor

Replace the rear wheel speed sensor with a new one (page 15-54).

Connect the ABS modulator 18P (Black) and rear wheel speed sensor 2P (Blue) connectors.

Install the rear air cleaner housing (page 5-56).

Erase the DTC (page 15-13).

Test ride the motorcycle above 30 km/h (19 mph).

Recheck the DTC (page 15-12).

Is the DTC 1-3, 1-4, 2-3, or 4-3 indicated?

YES – Faulty ABS modulator

NO – Faulty original wheel speed sensor

DTC 1-5 (Front or Rear Wheel Speed Sensor Circuit; Short)

1. Front Wheel Speed Sensor Line Short Circuit Inspection (at sensor side)

Turn the ignition switch OFF.

Disconnect the front wheel speed sensor 2P (Blue) connector (page 15-53).

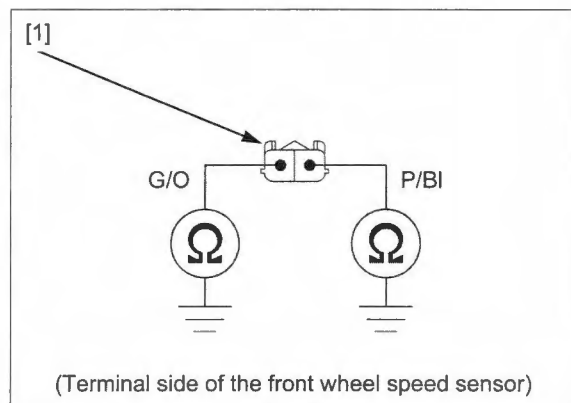
Check for continuity between each terminal of the sensor side front wheel speed sensor 2P (Blue) connector [1] and ground.

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

Is there continuity?

YES – Faulty front wheel speed sensor

NO – GO TO STEP 2.



2. Front Wheel Speed Sensor Line Short Circuit Inspection (1)

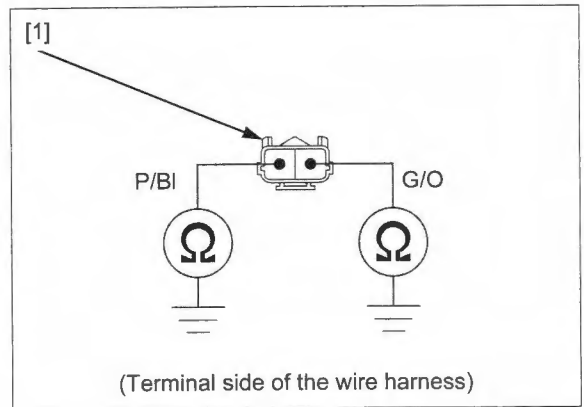
Disconnect the ABS modulator 18P (Black) connector (page 15-14).
Check for continuity between each terminal of the wire harness side front wheel speed sensor 2P (Blue) connector [1] and ground.

CONNECTION: Pink/Black – Ground
Green/orange – Ground

Is there continuity?

YES – GO TO STEP 3.

NO – GO TO STEP 4.



3. Front Wheel Speed Sensor Line Short Circuit Inspection (2)

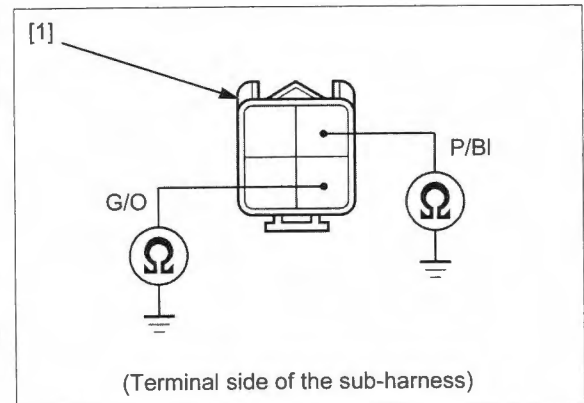
Disconnect the ABS sub-harness 4P (Black) connector (page 1-21).
Check for continuity between each terminal of the sub-harness side ABS sub-harness 4P (Black) connector [1] and ground.

CONNECTION: Pink/Black – Ground
Green/orange – Ground

Is there continuity?

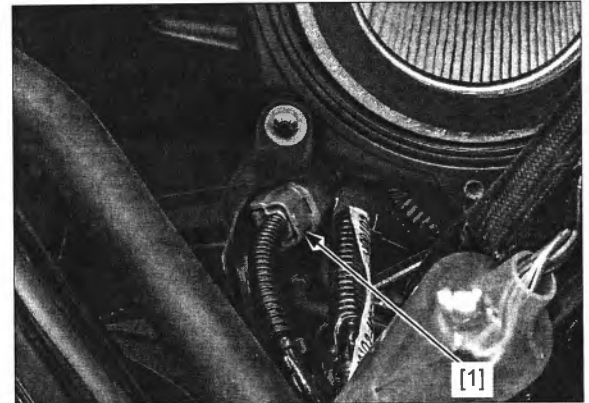
YES – Short circuit in the Pink/black or Green/orange wire of the ABS sub-harness

NO – Short circuit in the Pink/black or Green/orange wire of the main wire harness



4. Rear Wheel Speed Sensor Line Short Circuit Inspection (at sensor side)

Remove the air cleaner duct (page 3-7).
Disconnect the rear wheel speed sensor 2P (Blue) connector [1].



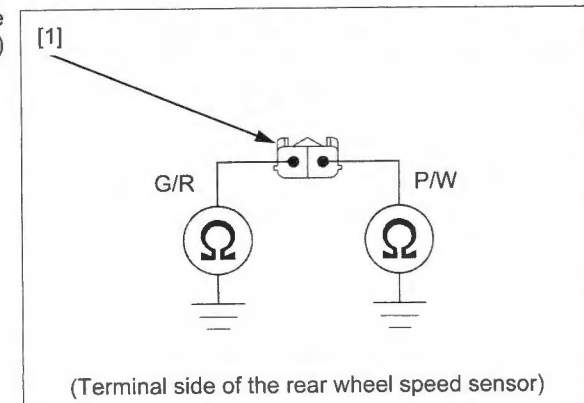
Check for continuity between each terminal of the sensor side rear wheel speed sensor 2P (Blue) connector [1] and ground.

CONNECTION: Pink/white – Ground
Green/red – Ground

Is there continuity?

YES – Faulty rear wheel speed sensor

NO – GO TO STEP 5.



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

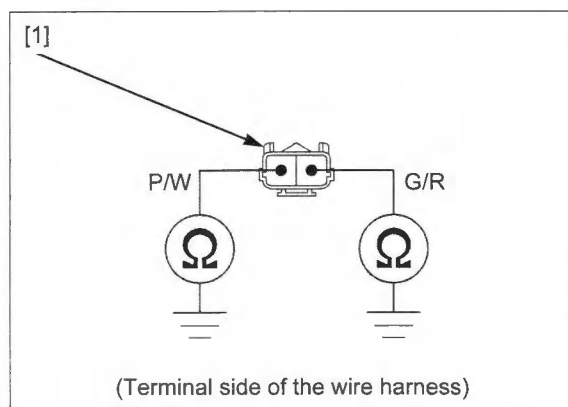
5. Rear Wheel Speed Sensor Line Short Circuit Inspection

Check for continuity between each terminal of the wire harness side rear wheel speed sensor 2P (Blue) connector [1] and ground.

CONNECTION: Pink/white – Ground
Green/red – Ground

Is there continuity?

- YES** – • Short circuit in the Pink/white wire
• Short circuit in the Green/red wire
- NO** – Faulty ABS modulator



DTC 3-1, 3-2, 3-3 or 3-4 (Solenoid Valve)

1. Failure Reproduction

Erase the DTC (page 15-13).
Test ride the motorcycle above 30 km/h (19 mph).
Recheck the DTC (page 15-12).

Is the DTC 3-1, 3-2, 3-3 or 3-4 indicated?

- YES** – Faulty ABS modulator
- NO** – Solenoid valve is normal (intermittent failure)

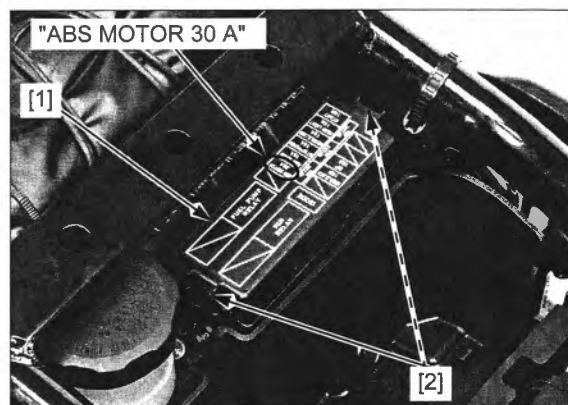
DTC 5-1 or 5-4 (Pump Motor Lock/Power Supply Relay)

1. Fuse Inspection

Turn the ignition switch OFF.
Remove the seat (page 2-4).
Remove the fuse box cover [1] from the fuse box by releasing the two tabs [2].
Check for a blown ABS MOTOR fuse (30 A).

Is the fuse blown?

- YES** – GO TO STEP 2.
- NO** – GO TO STEP 4.



2. Motor Power Input Line Short Circuit Inspection (1)

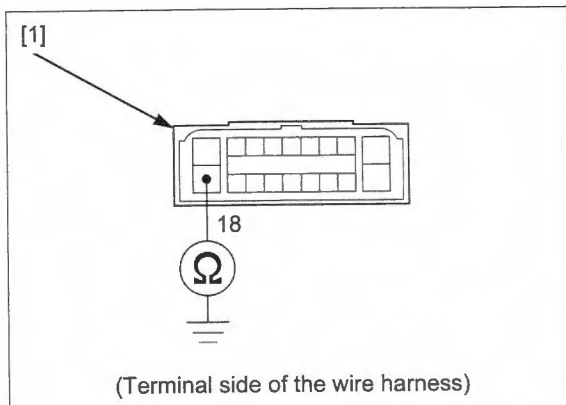
Disconnect the ABS modulator 18P (Black) connector (page 15-14).
With the ABS MOTOR fuse (30 A) removed, check for continuity between the wire harness side ABS modulator 18P (Black) connector [1] terminal and ground.

CONNECTION: 18 – Ground

Is there continuity?

YES – GO TO STEP 3.

NO – Intermittent failure. Replace the ABS MOTOR fuse (30 A) with a new one and recheck.



3. Motor Power Input Line Short Circuit Inspection (2)

Remove the left side cover (page 2-4).
Disconnect the ABS sub-harness 2P connector (page 1-21).

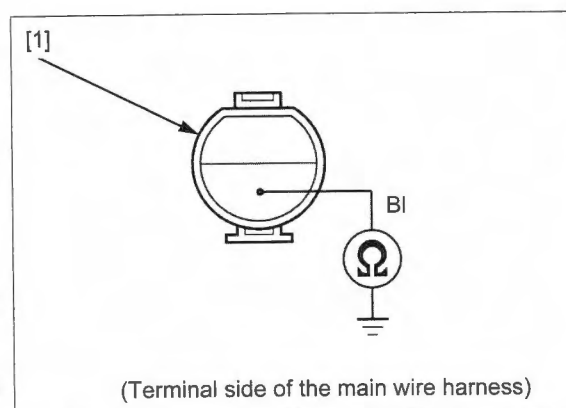
Check for continuity between the main wire harness side ABS sub-harness 2P connector [1] terminal and ground.

CONNECTION: Black – Ground

Is there continuity?

YES – Short circuit in the Black wire between the fuse box and ABS sub-harness 2P connector

NO – Short circuit in the Black wire of the ABS sub-harness



4. Motor Power Input Line Open Circuit Inspection (1)

Install the ABS MOTOR fuse (30 A).
Disconnect the ABS modulator 18P (Black) connector (page 15-14).
Connect a fully charged 12 V battery (page 16-6).

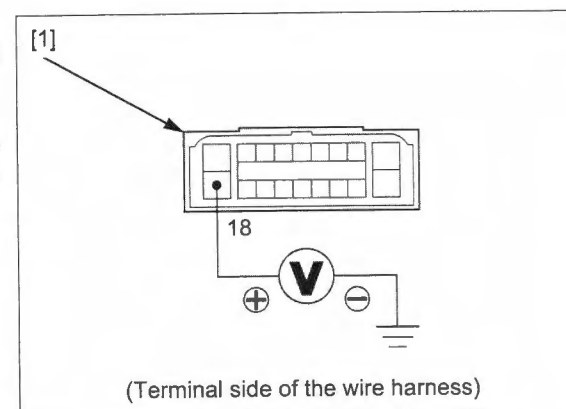
Measure the voltage between the wire harness side ABS modulator 18P (Black) connector [1] terminal and ground.

CONNECTION: 18 (+) – Ground (-)

Is there battery voltage?

YES – GO TO STEP 6.

NO – GO TO STEP 5.



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

5. Motor Power Input Line Open Circuit Inspection (2)

Remove the left side cover (page 2-4).
Disconnect the ABS sub-harness 2P connector (page 1-21).

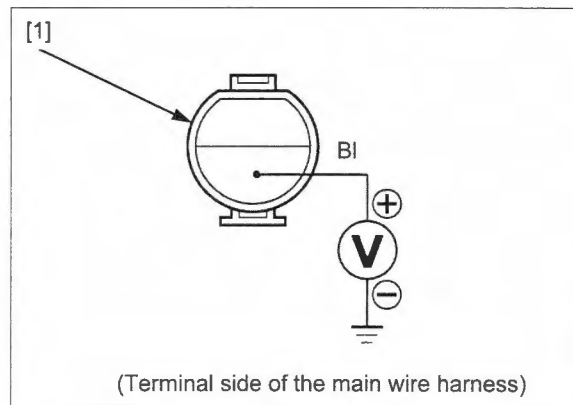
Measure the voltage between the main wire harness side ABS sub-harness 2P connector [1] terminal and ground.

CONNECTION: Black (+) – Ground (–)

Is there battery voltage?

YES – Open circuit in the Black wire of the ABS sub-harness

NO – Open circuit in the Black wire between the battery and ABS sub-harness 2P connector



6. Failure Reproduction

Turn the ignition switch OFF.
Connect the ABS modulator 18P (Black) connector.
Install the rear air cleaner housing (page 5-56).

Erase the DTC (page 15-13).
Test ride the motorcycle above 30 km/h (19 mph).
Recheck the DTC (page 15-12).

Is the DTC 5-1 or 5-4 indicated?

YES – Faulty ABS modulator

NO – Pump motor is normal (intermittent failure)

DTC 6-1 or 6-2 (Power Circuit)

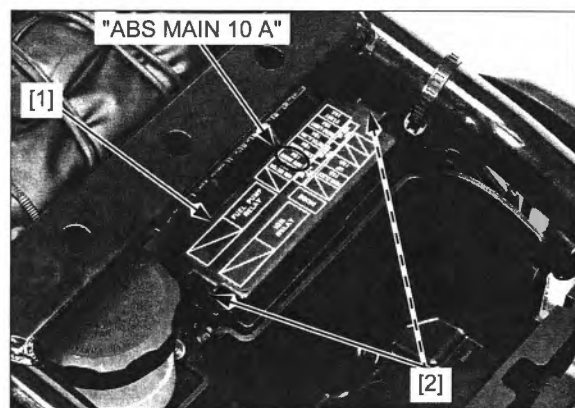
1. Fuse Inspection

Turn the ignition switch OFF.
Remove the seat (page 2-4).
Remove the fuse box cover [1] from the fuse box by releasing the two tabs [2].
Check for a blown ABS MAIN fuse (10 A).

Is the fuse blown?

YES – GO TO STEP 2.

NO – GO TO STEP 4.



2. Power Input Line Short Circuit Inspection (1)

Disconnect the ABS modulator 18P (Black) connector (page 15-14).
With the ABS MAIN fuse (10 A) removed, check for continuity between the wire harness side ABS modulator 18P (Black) connector [1] and ground.

TOOL:

Test probe, 2 pack

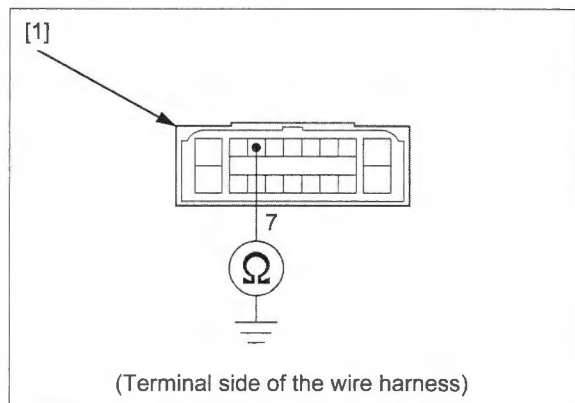
07ZAJ-RDJA110

CONNECTION: 7 – Ground

Is there continuity?

YES – GO TO STEP 3.

NO – Intermittent failure. Replace the ABS MAIN fuse (10 A) with a new one and recheck.



3. Power Input Line Short Circuit Inspection (2)

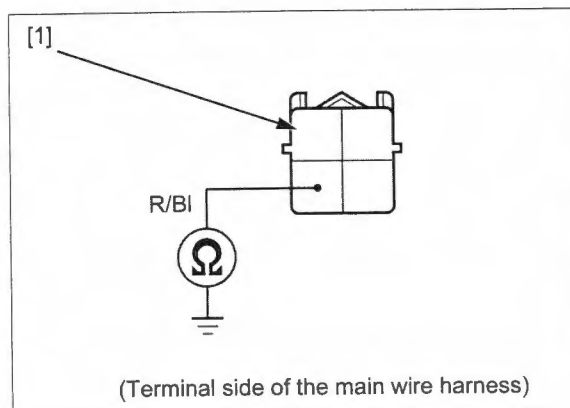
Remove the right side cover (page 2-4).
Disconnect the ABS sub-harness 4P (Black) connector (page 1-21).

Check for continuity between the main wire harness side ABS sub-harness 4P connector [1] and ground.

CONNECTION: Red/black – Ground

Is there continuity?

- YES** – Short circuit in the Red/black wire of the main wire harness
- NO** – Short circuit in the Red/black wire of the ABS sub-harness



4. Power Input Line Open Circuit Inspection (1)

Install the ABS MAIN fuse (10 A).
Disconnect the ABS modulator 18P (Black) connector (page 15-14).
Connect a fully charged 12 V battery (page 16-6).

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

Measure the voltage between the wire harness side ABS modulator 18P (Black) connector [1] terminal and ground.

TOOL:

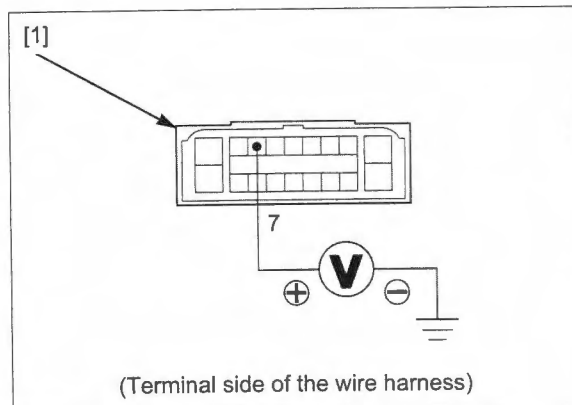
Test probe, 2 pack

07ZAJ-RDJA110

CONNECTION: 7 (+) – Ground (-)

Is there battery voltage?

- YES** – GO TO STEP 6.
- NO** – GO TO STEP 5.



5. Power Input Line Open Circuit Inspection (2)

Turn the ignition switch OFF.
Remove the right side cover (page 2-4).

Disconnect the ABS sub-harness 4P (Black) connector (page 1-21).

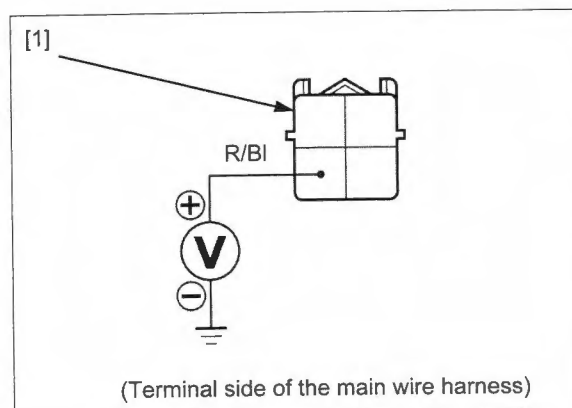
Turn the ignition switch ON with the engine stop switch "O".

Measure the voltage between the main wire harness side ABS sub-harness 4P (Black) connector [1] terminal and ground.

CONNECTION: Red/black (+) – Ground (-)

Is there battery voltage?

- YES** – Open circuit in the Red/black wire of the ABS sub-harness
- NO** – Open circuit in the Red/black wire of the main wire harness



6. Failure Reproduction

Turn the ignition switch OFF.
Connect the ABS modulator 18P (Black) connector.
Install the rear air cleaner housing (page 5-56).

Erase the DTC (page 15-13).

Test ride the motorcycle above 30 km/h (19 mph).

Recheck the DTC (page 15-12).

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; CB1100A/SA)

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.

1. Failure Reproduction

If the above items are normal, recheck the DTC indication:

Erase the DTC (page 15-13).

Test ride the motorcycle above 30 km/h (19 mph).

Recheck the DTC (page 15-12).

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 15-13).

Test ride the motorcycle above 30 km/h (19 mph).

Recheck the DTC (page 15-12).

Is the DTC 8-1 indicated?

YES – Faulty ABS modulator

NO – ABS control unit is normal (intermittent failure)

WHEEL SPEED SENSOR

AIR GAP INSPECTION

Support the motorcycle securely using the centerstand and raise the wheel off the ground.

Make sure that there is no foreign matter between the pulser ring and caliper bracket.

Measure the clearance (air gap) between the sensor and pulser ring at several points by turning the wheel slowly.

It must be within specification.

STANDARD: 0.4 – 1.2 mm (0.02 – 0.05 in)

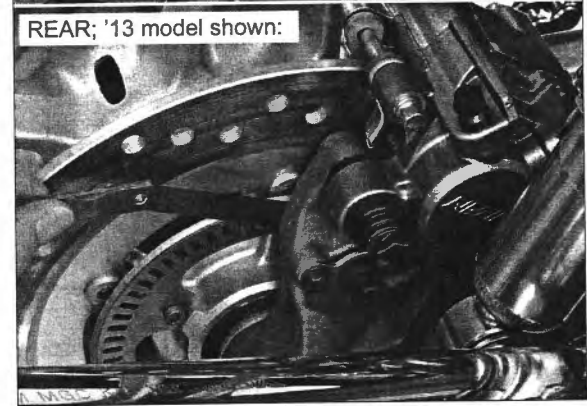
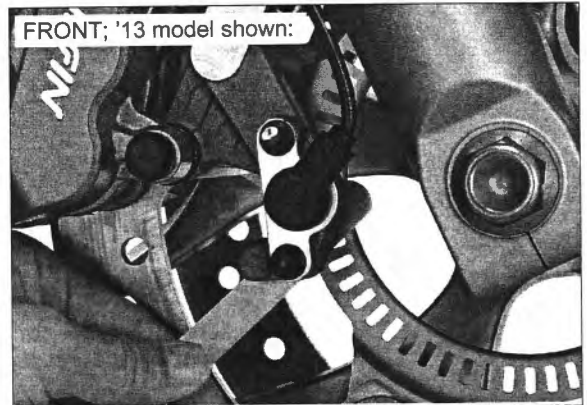
The clearance (air gap) cannot be adjusted.

If it is not within specification, check each part for deformation, looseness, or damage and also check the wheel bearings for excessive play.

Check the wheel speed sensor for damage, and replace if necessary (page 15-51).

Check the pulser ring for deformation or damage, and replace if necessary.

- front pulser ring (page 12-14)
- rear pulser ring (page 13-8)



REPLACEMENT

FRONT WHEEL SPEED SENSOR ('13 model)

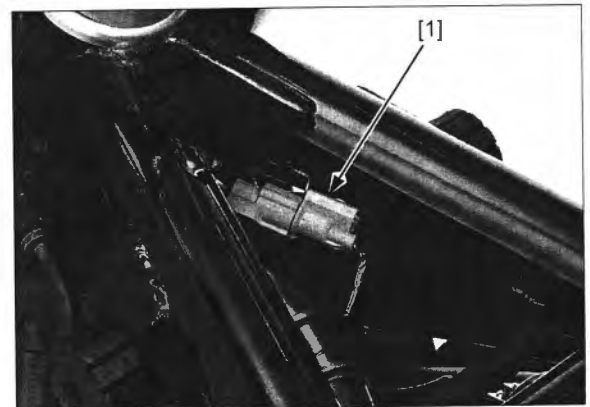
NOTE:

Refer to procedure for the pulser ring removal/installation.

- front pulser ring (page 12-14)
- rear pulser ring (page 13-8)

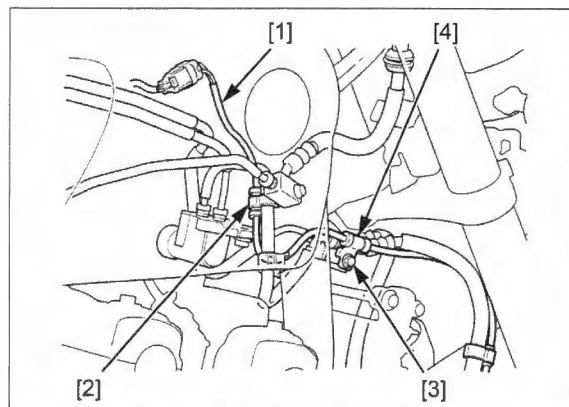
Remove the fuel tank from the rubber mounts, and then support it (page 14-49).

Remove the front wheel speed sensor 2P (Blue) connector [1] from the frame and disconnect the connector.

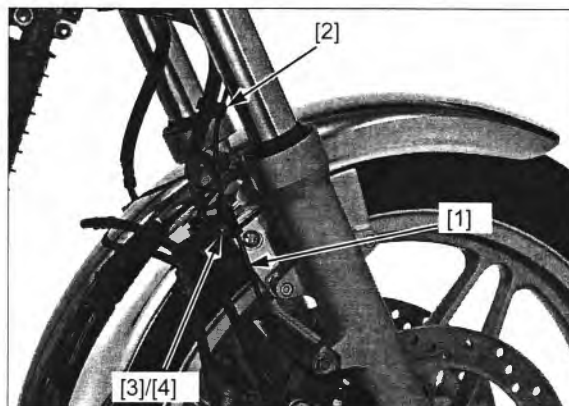


ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

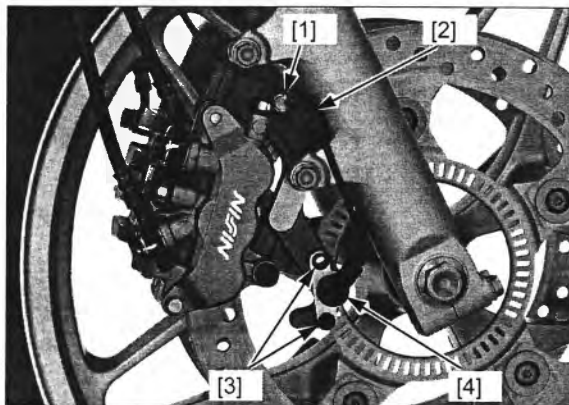
Remove the sensor wire [1] from the clip [2].
Remove the bolt [3] and sensor wire clamp [4].



Remove the sensor wire [1] from the clip [2].
Remove the bolt [3] and sensor wire from the brake hose clamp [4].



Remove the bolt [1] and sensor wire clamp [2].
Remove the bolts [3] and front wheel speed sensor [4] from the caliper bracket.

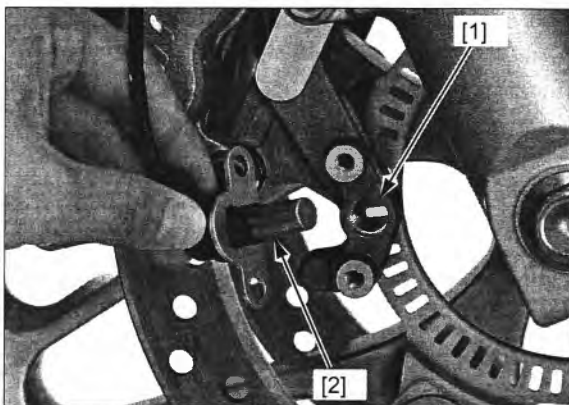


Clean around the sensor mounting area of the caliper bracket thoroughly and be sure that no foreign material is allowed to enter the mounting hole [1].

Route the sensor wire properly (page 1-21).

Install the front wheel speed sensor [2] in the reverse order of removal.

Check the sensor air gap after installation (page 15-51).



FRONT WHEEL SPEED SENSOR (After '13 model)

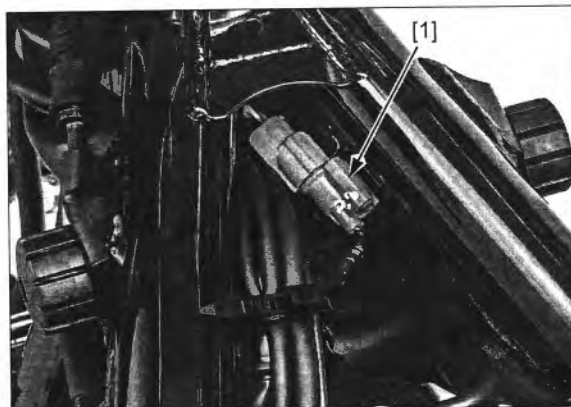
NOTE:

Refer to procedure for the pulser ring removal/ installation.

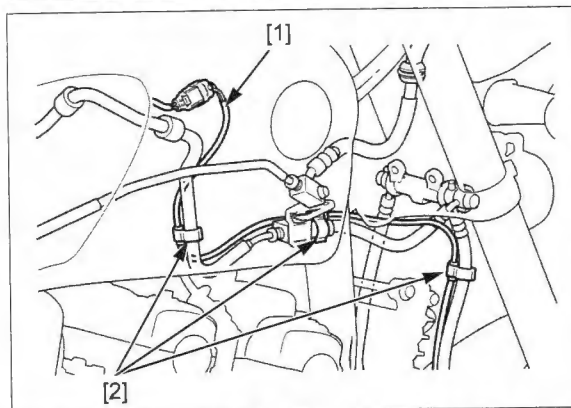
- front pulser ring (page 12-14)
- rear pulser ring (page 13-8)

Remove the fuel tank from the rubber mounts, and then support it (page 14-49).

Remove the front wheel speed sensor 2P (Blue) connector [1] from the frame and disconnect the connector.

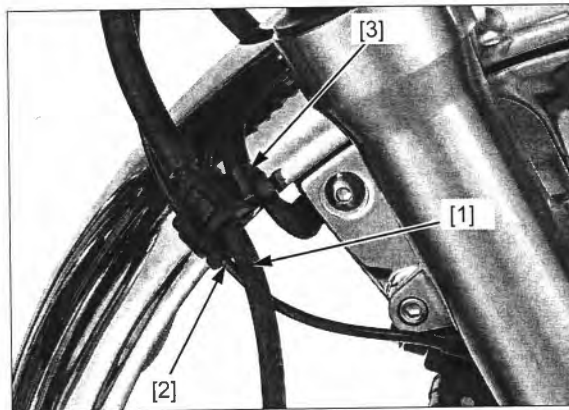


Remove the sensor wire [1] from the clips [2].

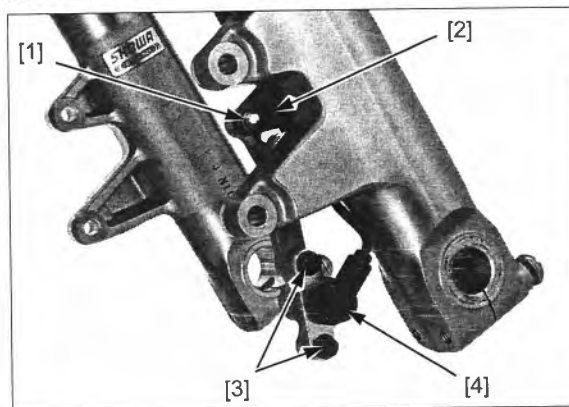


Remove the front wheel (page 12-14).

Remove the brake hose [1] and sensor wire [2] from the brake hose clamp [3].

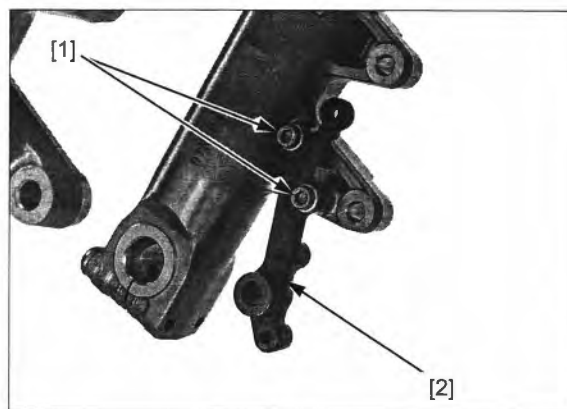


Remove the bolt [1] and sensor wire clamp [2].
Remove the bolts [3] and front wheel speed sensor [4] from the sensor bracket.



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

Remove the bolts [1] and sensor bracket [2].

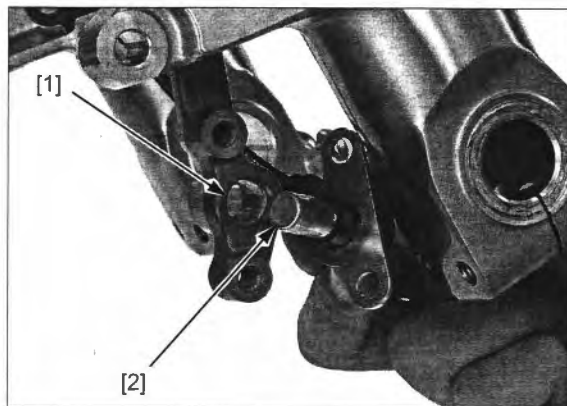


Clean around the sensor mounting area of the caliper bracket thoroughly and be sure that no foreign material is allowed to enter the mounting hole [1].

Route the sensor wire properly (page 1-21).

Install the front wheel speed sensor [2] in the reverse order of removal.

Check the sensor air gap after installation (page 15-51).



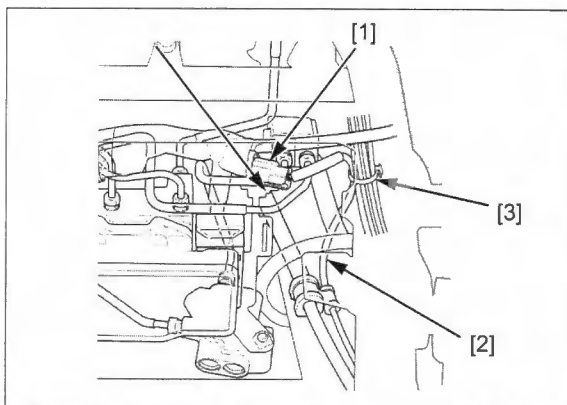
REAR WHEEL SPEED SENSOR

Remove the following:

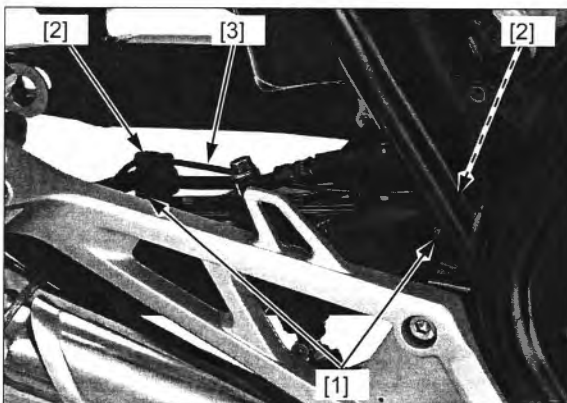
- air cleaner duct (page 3-7)
- rear wheel (page 13-8)

Disconnect the rear wheel speed sensor 2P (Blue) connector [1].

Remove the sensor wire [2] from the wire band [3].



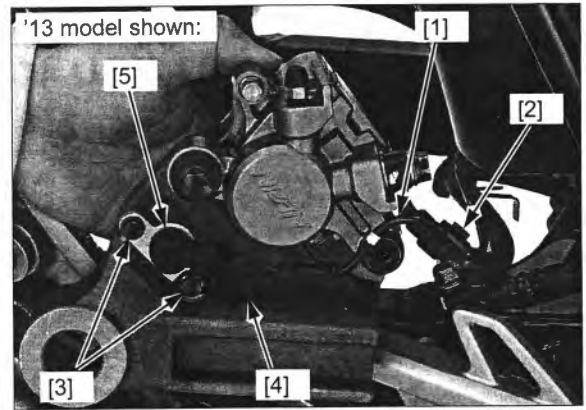
Remove the bolts [1] and rear brake hose clamps [2].
Remove the sensor wire [3] from the hose clamps.



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

Remove the sensor wire [1] from the clip [2].

Remove the bolts [3], sensor wire clamp [4], and rear wheel speed sensor [5].

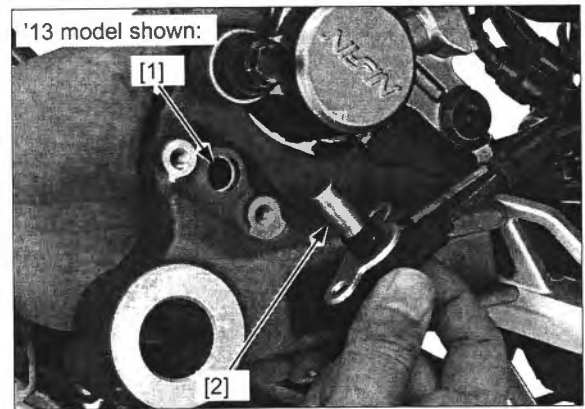


Clean around the sensor mounting area of the caliper bracket thoroughly and be sure that no foreign material is allowed to enter the mounting hole [1].

Route the sensor wire properly (page 1-21).

Install the rear wheel speed sensor [2] in the reverse order of removal.

Check the sensor air gap after installation (page 15-51).

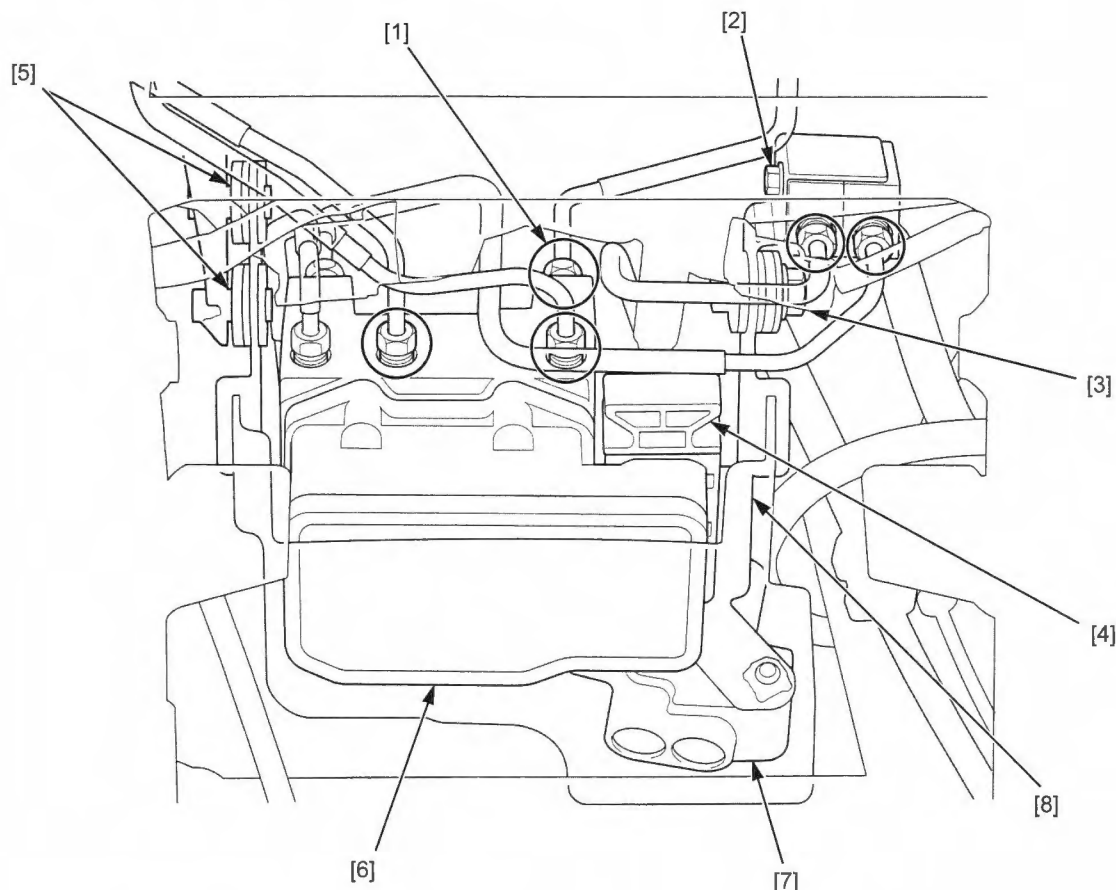


ABS MODULATOR

REMOVAL/INSTALLATION ('13 model)

NOTE:

- When loosening the joint nuts, cover the end of the brake lines to prevent contamination.
- Be careful not to bend or damage the brake lines during assembly or removal.



Drain the brake fluid from the hydraulic system (page 14-8).

Remove the rear air cleaner housing (page 5-56).

Loosen the brake line joint nuts [1] as shown in the illustration.

Remove the brake line joint bolt [2].

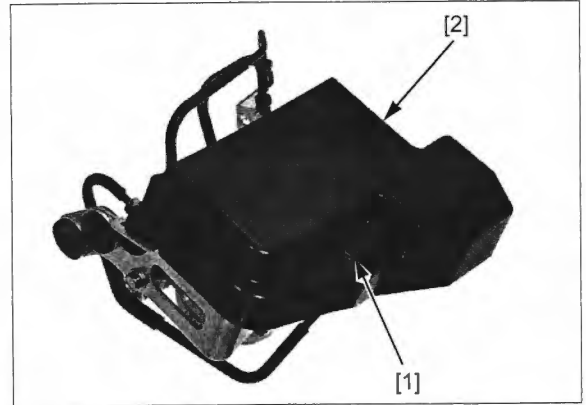
Remove the ABS modulator bracket mounting bolt [3].

Pull up the lock lever [4] and disconnect the ABS modulator 25P connector.

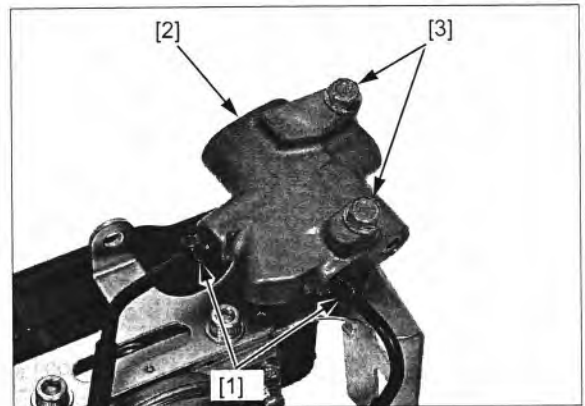
Slide the ABS modulator bracket to the right and remove the grommets from the frame bosses [5], then remove the ABS modulator [6], PCV [7], and bracket [8] as an assembly.

ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

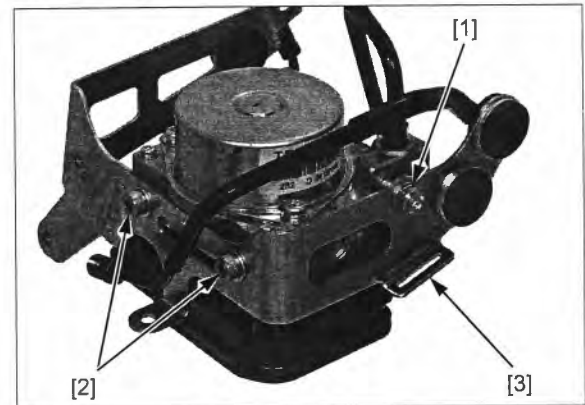
Remove the trim clip [1] and ABS modulator cover [2].



Loosen the joint nuts [1], then remove the brake lines from the PCV [2].
Remove the mounting bolts [3] and PCV.



Remove the flange bolt [1], socket bolts [2], and ABS modulator bracket [3].



Loosen the joint nuts [1], then remove the brake lines [2] from the ABS modulator.

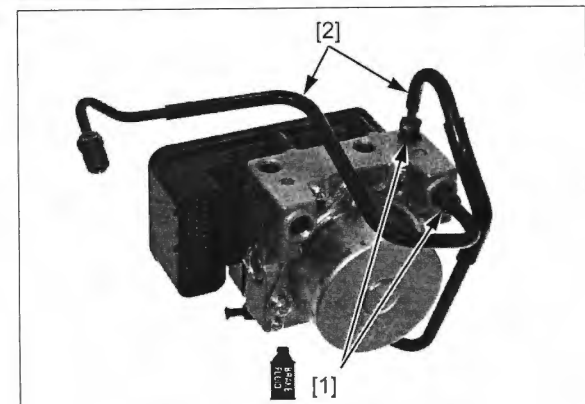
Installation is in the reverse order of removal.

When installing the brake line joint nuts, apply brake fluid to the threads.

TORQUE:

Brake line joint nut: 14 N·m (1.4 kgf·m, 10 lbf·ft)

Fill and bleed the brake hydraulic system (page 14-10).



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

REMOVAL/INSTALLATION (After '13 model)

NOTE:

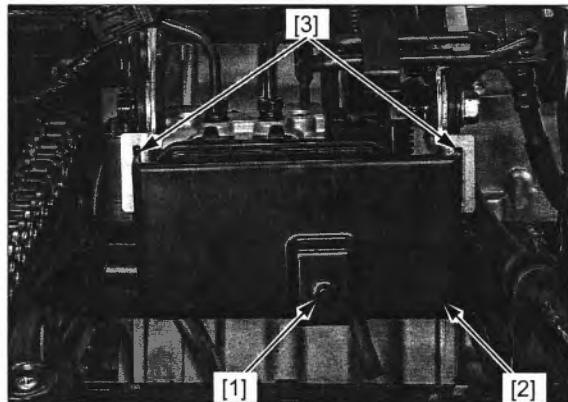
- When loosening the joint nuts, cover the end of the brake lines to prevent contamination.
- Be careful not to bend or damage the brake lines during assembly or removal.

Drain the brake fluid from the hydraulic system (page 14-15).

Remove the rear air cleaner housing (page 5-56).

Remove the trim clip [1].

Remove the ABS modulator cover [2] by releasing the tabs [3].



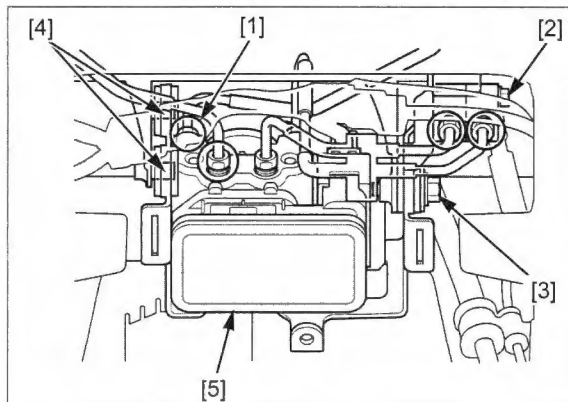
Disconnect the ABS modulator 18P connector (page 15-14).

Loosen the brake line joint nuts [1] as shown in the illustration.

Remove the brake line joint bolt [2].

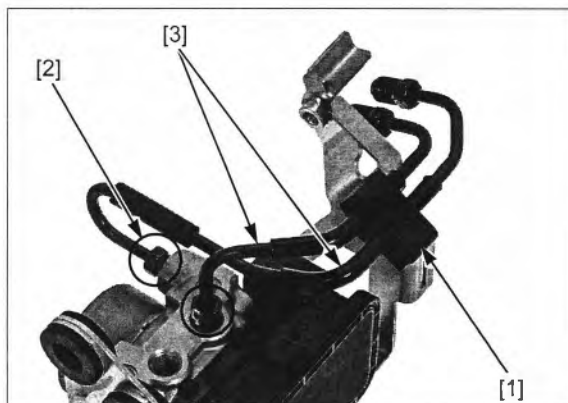
Remove the ABS modulator bracket mounting bolt [3].

Slide the ABS modulator bracket to the right and remove the grommets from the frame bosses [4], then remove the ABS modulator assembly [5].



Remove the brake line clamp [1].

Loosen the brake line joint nuts [2] and remove the brake lines [3].



ANTI-LOCK BRAKE SYSTEM (ABS; CB1100A/SA)

Remove the mounting bolts [1] and ABS modulator bracket [2].

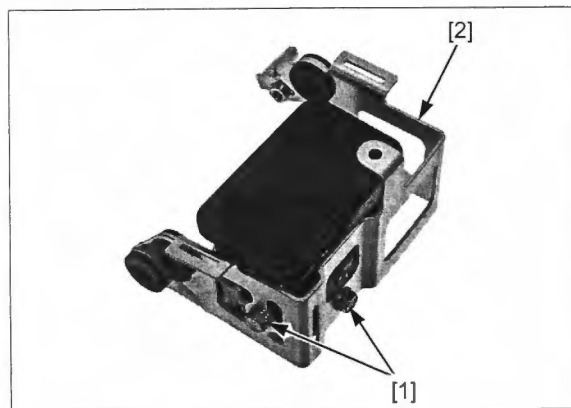
When installing the brake line joint nuts, apply brake fluid to the threads.

Installation is in the reverse order of removal.

TORQUE:

Brake line joint nut: 14 N·m (1.4 kgf·m, 10 lbf·ft)

Fill and bleed the brake hydraulic system (page 14-17).

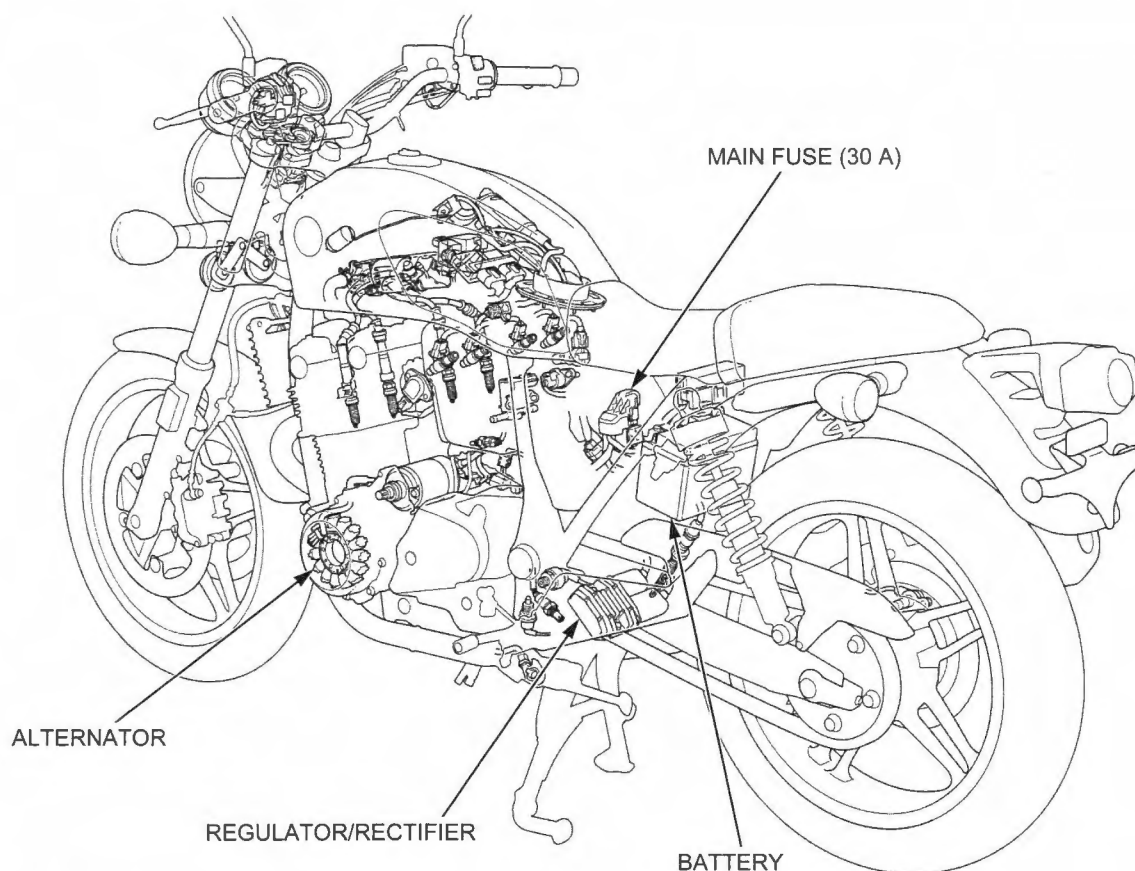


MEMO

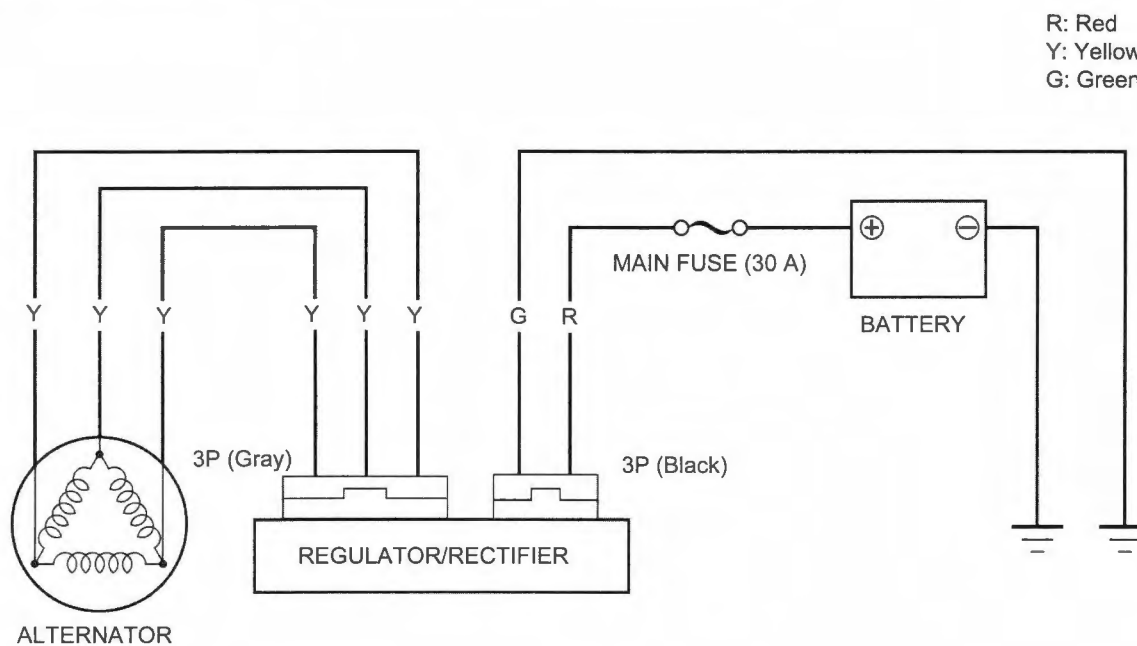
16. BATTERY/CHARGING SYSTEM

SYSTEM LOCATION	16-2	BATTERY.....	16-6
SYSTEM DIAGRAM	16-2	CHARGING SYSTEM INSPECTION	16-7
SERVICE INFORMATION.....	16-3	ALTERNATOR CHARGING COIL	16-8
TROUBLESHOOTING	16-5	REGULATOR/RECTIFIER	16-8

SYSTEM LOCATION



SYSTEM DIAGRAM



SERVICE INFORMATION

GENERAL

⚠ WARNING

- The battery gives off explosive gases; keep sparks, flames, and cigarettes away. Provide adequate ventilation when charging.
- The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.
 - If electrolyte gets on your skin, flush with water.
 - If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician immediately.
- Electrolyte is poisonous.
 - If swallowed, drink large quantities of water or milk and call your local Poison Control Center or call a physician immediately.

NOTICE

- Always turn OFF the ignition switch before disconnecting any electrical components.
- Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is ON and current is present.
- For extended storage, remove the battery, give it a full charge, and store it in a cool, dry space. For maximum service life, charge the stored battery every two weeks.
- For a battery remaining in a stored motorcycle, disconnect the negative battery cable from the battery terminal.
- The maintenance free 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, battery voltage will drop quickly and eventually die out. For this reason, the charging system is often suspected as the problem. Battery overcharge often results from problems in the battery itself, which may appear to be an overcharging symptom. If one of the battery cells is shorted and battery voltage does not increase, the regulator/rectifier supplies excess voltage to the battery. Under these conditions, the electrolyte level goes down quickly.
- Before troubleshooting the charging system, check for proper use and maintenance of the battery. Check if the battery is frequently under heavy load, such as having the headlight and taillight ON for long periods of time without riding the motorcycle.
- The battery will self-discharge when the motorcycle is not in use. For this reason, charge the battery every two weeks to prevent sulfation from occurring.
- When checking the charging system, always follow the steps in the troubleshooting flow chart (page 16-5).
- Refer to procedure for the alternator servicing (page 10-4).

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 instructions in 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 can be measured.

Recommended battery tester: Micro 404XL (U.S.A. only)

SPECIFICATIONS

ITEM			SPECIFICATIONS
Battery	Type		YTZ14S
	Capacity		12 V – 11.2 Ah (10 HR)/12 V – 11.8 Ah (20 HR)
	Current leakage		0.1 mA max.
	Voltage (20°C/68°F)	Fully charged	13.0 – 13.2 V
		Needs charging	Below 12.3 V
	Charging current	Normal	1.1 A/5 – 10 h
		Quick	5.5 A/1 h
Alternator	Capacity		0.336 kW/5,000 rpm
	Charging coil resistance (20°C/68°F)		0.1 – 1.0 Ω

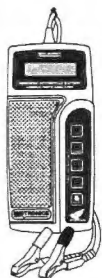
BATTERY/CHARGING SYSTEM

TORQUE VALUE

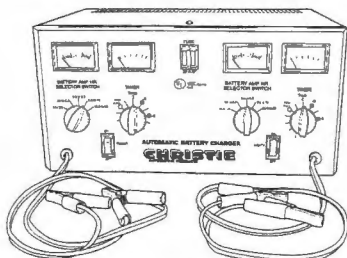
ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Battery cover screw	1	6	1.4 (0.1, 1.0)	

TOOLS

Motorcycle battery analyzer
Micro 404XL (U.S.A. only)



Christie battery charger
MC1012/2T (U.S.A. only)



TROUBLESHOOTING

BATTERY IS DAMAGED OR WEAK

1. BATTERY TEST

Remove the battery (page 16-6).

Check the battery condition using the recommended battery tester.

RECOMMENDED BATTERY TESTER: Micro 404XL (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 16-6).

Check the battery current leakage test (current leakage inspection; page 16-7).

Is the current leakage within specification?

YES – GO TO STEP 4.

NO – GO TO STEP 3.

3. CURRENT LEAKAGE TEST WITH REGULATOR/RECTIFIER CONNECTOR DISCONNECTED

Disconnect the regulator/rectifier 3P (Black) connector and recheck the battery current leakage.

Is the current leakage within specification?

YES – Faulty regulator/rectifier

NO – • Shorted wire harness
• Faulty ignition switch

4. ALTERNATOR CHARGING COIL INSPECTION

Check the alternator charging coil (page 16-8).

Is the alternator charging coil resistance within 0.1 – 1.0 Ω (20°C/68°F)?

YES – GO TO STEP 5.

NO – Faulty charging coil

5. CHARGING VOLTAGE INSPECTION

Measure and record the battery voltage using a digital multimeter (page 16-6).

Start the engine.

Measure the charging voltage (page 16-7).

Compare the measurement to the result of the following calculation.

STANDARD: Measured BV < Measured CV < 15.5 V

• BV = Battery Voltage (page 16-6)

• CV = Charging Voltage

Is the measured charging voltage within the standard voltage?

YES – Faulty battery

NO – GO TO STEP 6.

6. REGULATOR/RECTIFIER SYSTEM INSPECTION

Check the voltage and resistance at the regulator/rectifier connector (page 16-8).

Are the results of checked voltage and resistance correct?

YES – Faulty regulator/rectifier

NO – • Open circuit in related wire
• Loose or poor contacts of related terminal
• Shorted wire harness

BATTERY/CHARGING SYSTEM

BATTERY

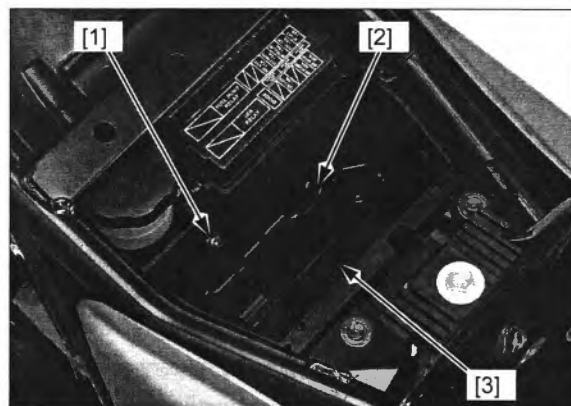
REMOVAL/INSTALLATION

Always turn the ignition switch OFF before removing the battery.

Remove the seat (page 2-4).

Remove the tool kit.

Remove the battery cover screw [1], clip [2], and battery cover [3].



Remove the terminal bolt and disconnect the negative cable [1] first.

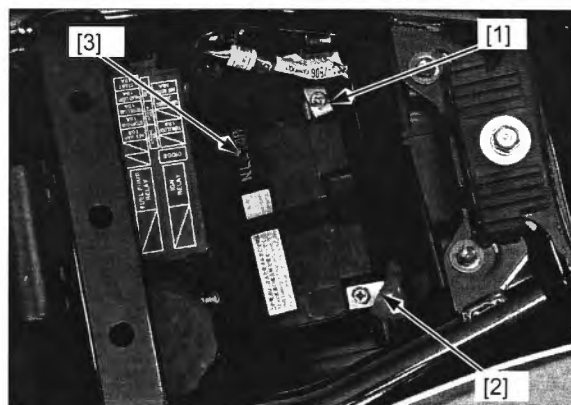
Remove the terminal bolt and disconnect the positive cable [2], then remove the battery [3].

Connect the positive terminal first and then the negative cable.

Installation is in the reverse order of removal.

TORQUE:

Battery cover screw: 1.4 N·m (0.1 kgf·m, 1.0 lbf·ft)



VOLTAGE INSPECTION

Measure the battery voltage using a digital multimeter.

VOLTAGE:

Fully charged: 13.0 – 13.2 V (20°C/68°F)

Under charged: Below 12.3 V (20°C/68°F)



BATTERY TESTING

Refer to the instructions that are appropriate to the battery testing equipment available to you.

TOOL:

Battery tester

**Micro 404XL
(U.S.A. only)**

BATTERY CHARGING (U.S.A. only)

Refer to the instructions that are appropriate to the battery charging equipment available to you.

TOOL:

Christie battery charger

**MC1012/2T
(U.S.A. only)**

CHARGING SYSTEM INSPECTION

CURRENT LEAKAGE INSPECTION

Remove the battery cover (page 16-6).

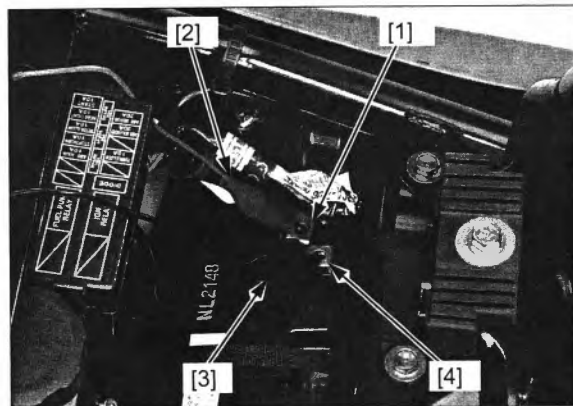
Turn the ignition switch off and disconnect the negative cable [1] from the battery.

Connect the ammeter (+) probe [2] to the battery negative cable and the ammeter (-) probe [3] to the battery (-) terminal [4].

With the ignition switch off, check the current leakage.

NOTE:

- When measuring current using a tester, set it to a high range, and then bring the range down to an appropriate level. Current flow higher than the range selected may blow out the fuse in the tester.
- While measuring current, do not turn the ignition switch on. A sudden surge of current may blow out the fuse in the tester.



SPECIFIED CURRENT LEAKAGE: 0.1 mA max.

If current leakage exceeds the specified value, a shorted circuit is likely.

Locate the short by disconnecting connectors one by one and measuring the current.

CHARGING VOLTAGE INSPECTION

Be sure the battery is in good condition before performing this test.

Warm up the engine to normal operating temperature. Stop the engine and connect the multimeter as shown.

NOTE:

To prevent a short, make absolutely certain which are the positive and negative terminals or cable.

Restart the engine.

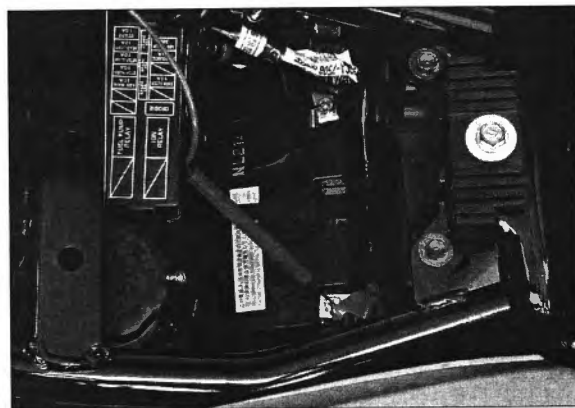
With the headlight on Hi beam, measure the voltage using the multimeter when the engine runs at 5,000 rpm.

STANDARD:

Measured BV < Measured CV < 15.5 V

- BV = Battery Voltage (page 16-6)
- CV = Charging Voltage

Charging system is normal if the measured voltage is within specification.

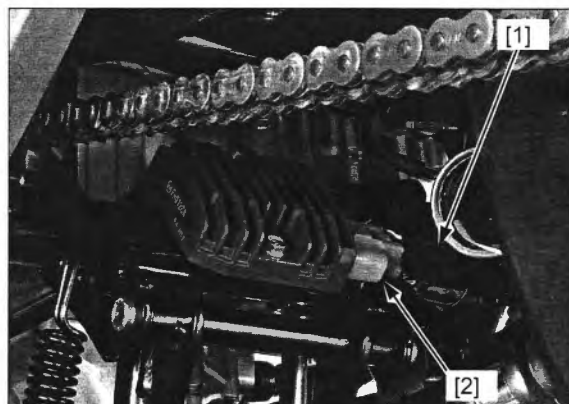


Do not disconnect the battery or any cable in the charging system without first switching off the ignition switch. Failure to follow this precaution can damage the tester or electrical components.

ALTERNATOR CHARGING COIL**INSPECTION****NOTE:**

It is not necessary to remove the stator coil to make this test.

Remove the boot [1] and disconnect the alternator 3P (Gray) connector [2].



Measure the resistance between all three Yellow terminals of the alternator 3P (Gray) connector wire harness side [1].

STANDARD: 0.1 – 1.0 Ω (at 20°C/68°F)

Check the continuity between all three Yellow terminals and ground.

There should be no continuity.

If readings are far beyond the standard, or if any wire has continuity to ground, replace the alternator stator. Refer to procedure for the stator removal (page 10-6).

**REGULATOR/RECTIFIER****SYSTEM INSPECTION**

Remove the boots [1] and disconnect the regulator/rectifier 3P (Black) connector [2] and alternator 3P (Gray) connector [3].

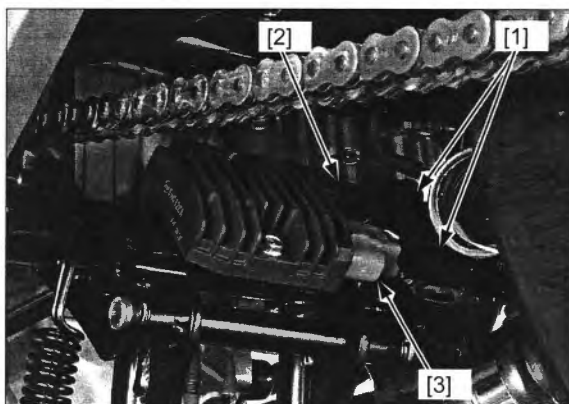
Check them for loose contact or corroded terminals.

If the charging voltage reading is out of specification, measure the voltage between the terminals of the 3P (Black) connector wire harness side as follows:

– Charging voltage inspection (page 16-7)

Item	Terminal	Specification
Battery charging line	Red (+) and ground (-)	Battery voltage should register
Ground line	Green and ground	Continuity should exist

If all components of the charging system are normal and there are no loose connections at the regulator/rectifier and alternator connectors, replace the regulator/rectifier.

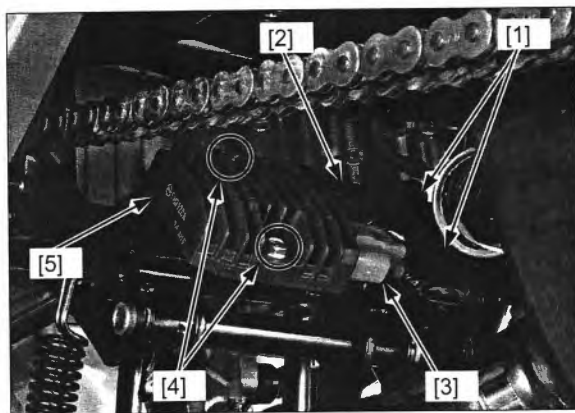


REMOVAL/INSTALLATION

Remove the boots [1] and disconnect the regulator/rectifier 3P (Black) connector [2] and alternator 3P (Gray) connector [3].

Remove the bolts [4] and the regulator/rectifier [5].

Installation is in the reverse order of removal.



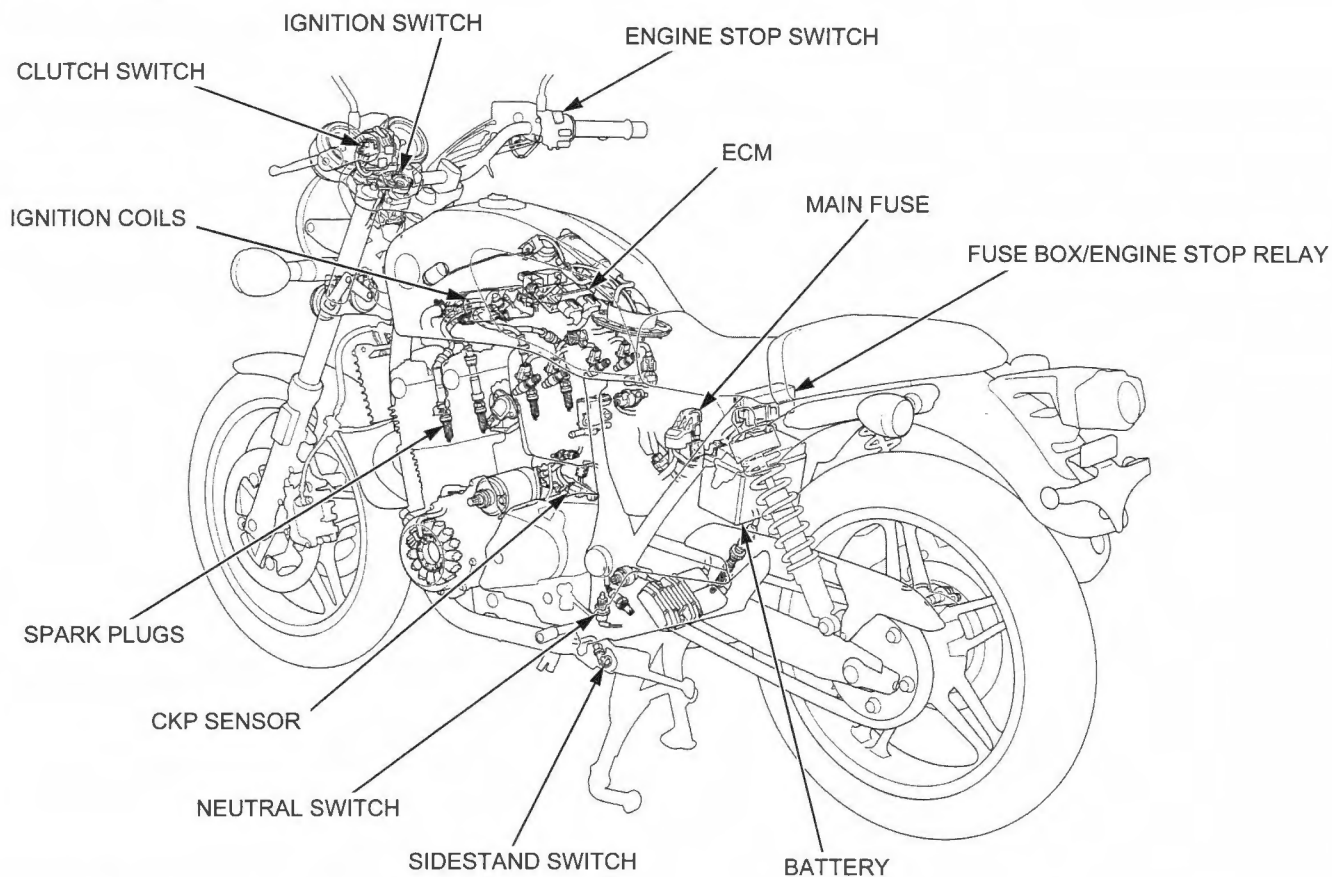
MEMO

17. IGNITION SYSTEM

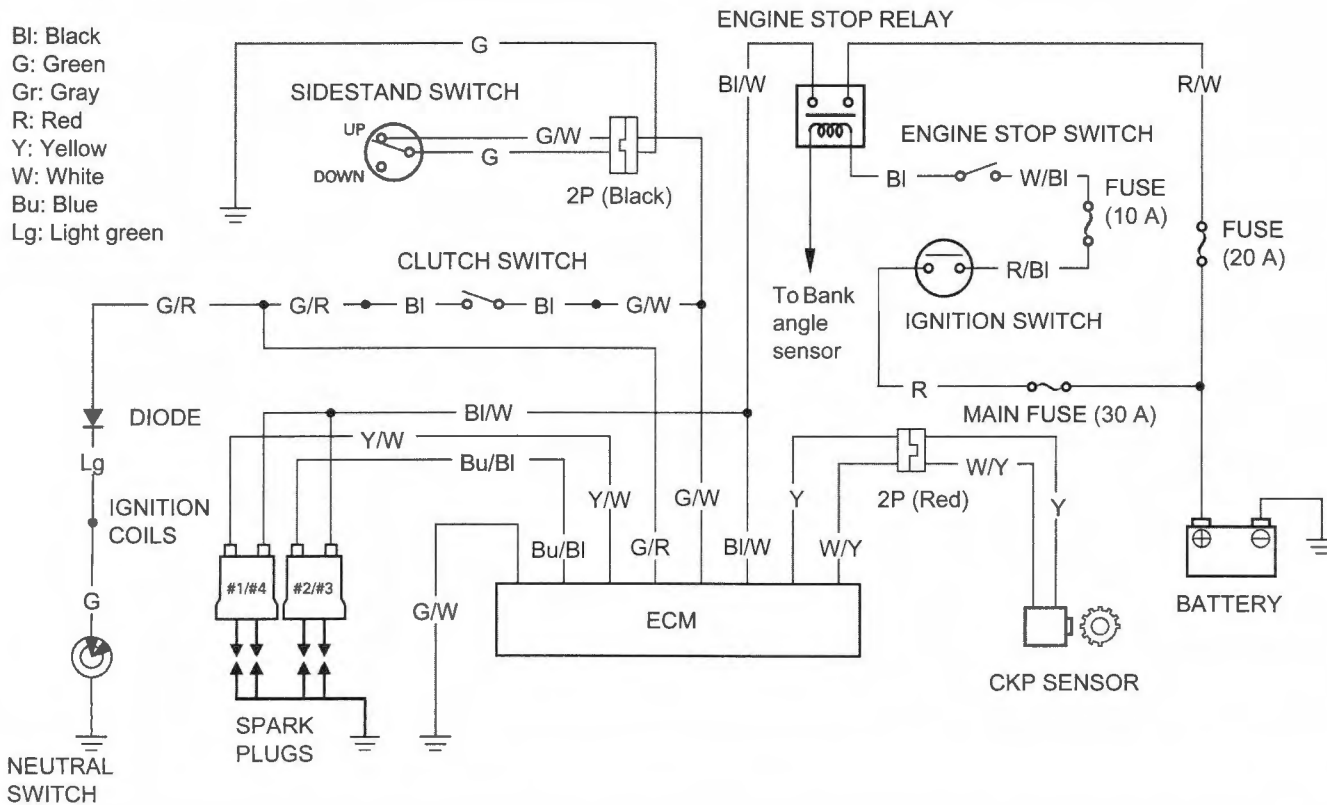
SYSTEM LOCATION	17-2	IGNITION SYSTEM INSPECTION	17-5
SYSTEM DIAGRAM	17-2	IGNITION COIL	17-7
SERVICE INFORMATION	17-3	CKP SENSOR	17-8
TROUBLESHOOTING	17-4	IGNITION TIMING	17-12

IGNITION SYSTEM

SYSTEM LOCATION



SYSTEM DIAGRAM



SERVICE INFORMATION

GENERAL

- Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is ON and current is present.
- When servicing the ignition system, always follow the steps in the troubleshooting sequence (page 17-4).
- This motorcycle's ICM is built into the ECM.
- The ignition timing does not normally need to be adjusted since the ECM is factory preset.
- The ECM may be damaged if dropped. Also if the connector is disconnected when current is flowing, the excessive voltage may damage the module. Always turn off the ignition switch before servicing.
- A faulty ignition system is often related to poor connections. Check those connections before proceeding. Make sure the battery is adequately charged. Using the starter motor with a weak battery results in a slower engine cranking speed as well as no spark at the spark plug.
- Use spark plug of the correct heat range. Using spark plug with an incorrect heat range can damage the engine.
- Refer to following component informations.
 - Clutch switch (page 19-32)
 - ECM (page 5-80)
 - Engine stop switch ('13 model: page 19-30, After '13: page 19-31)
 - Ignition switch (page 19-29)
 - Neutral switch (page 19-33)
 - Sidestand switch (page 19-33)

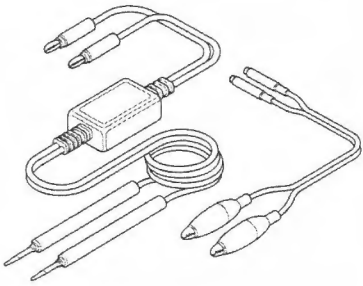
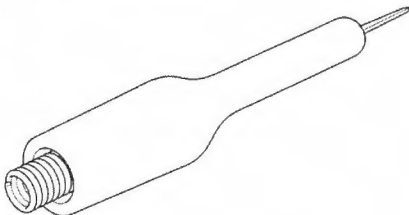
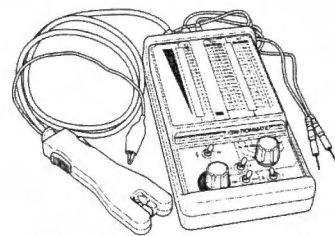
SPECIFICATIONS

ITEM		SPECIFICATIONS
Spark plug	NGK	LMAR8A-9S
Spark plug gap		0.80 – 0.90 mm (0.031 – 0.035 in)
Ignition coil peak voltage		100 V minimum
CKP sensor peak voltage		0.7 V minimum
Ignition timing ("F" mark)	'13	8° BTDC at idle
	After '13	10° BTDC at idle

TORQUE VALUE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
CKP sensor rotor flange bolt	1	10	75 (7.6, 55)	Apply engine oil to the threads and seating surface.

TOOLS

Peak voltage adaptor 07HGJ-0020100 (Not available in U.S.A.)  with commercially available digital multimeter (impedance 10 MΩ/DCV minimum)	Test probe, 2 pack 07ZAJ-RDJA110 	IgnitionMate peak voltage tester MTP07-0286 (U.S.A. only) 
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IGNITION SYSTEM

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 caps (leaking the ignition coil secondary voltage)
- If there is no spark at either cylinder, temporarily exchange the ignition coil with the other good one and perform the spark test. If there is spark, the exchanged ignition coil is faulty.
- "Initial voltage" of the ignition primary coil is the battery voltage with the ignition switch turned ON and engine stop switch to "○" (The engine is not cranked by the starter motor).

No spark at spark plugs

Unusual condition		Probable cause (Check in numerical order)
Ignition coil primary voltage	No initial voltage with ignition switch turned ON and engine stop switch to "○". (Other electrical components are normal)	1. Faulty engine stop switch. 2. An open circuit in Black/white wire between the ignition coil and engine stop relay. 3. Loose or poor connect of the ignition coil primary wire terminals, or an open circuit in primary coil. 4. Faulty ECM (in case when above No. 1 – 3 are normal)
	Initial voltage is normal, but it drops down to 2 – 4 V while cranking the engine.	1. Incorrect peak voltage adaptor connections. 2. Undercharged battery. 3. No voltage between the Black/white (+) and body ground (–) at the ECM connector or loose ECM connector terminals. 4. An open circuit or loose connection in Green/white wire. 5. An open circuit or loose connection in Yellow/white and Blue/black wires between the ignition coils and ECM. 6. Short circuit in ignition primary coil. 7. Faulty sidestand switch or neutral switch. 8. An open circuit or loose connection in No.7 related circuit wires. – Sidestand switch line: Green/white wire – Neutral switch line: Light green or Black or Green/red wire 9. Faulty CKP sensor (measure the peak voltage). 10. Faulty ECM (in case when above No. 1 – 9 are normal).
	Initial voltage is normal, but no peak voltage while cranking the engine.	1. Faulty peak voltage adaptor connections. 2. Faulty peak voltage adaptor. 3. Faulty ECM (in case when above No.1, 2 are normal).
	Initial voltage is normal, but 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 under-charged). 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 – 3 are normal).
	Initial and peak voltage are normal, but does not spark.	1. Faulty spark plug or leaking ignition coil secondary current ampere. 2. Faulty ignition coil(s).
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 under charged). 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 – 3 are normal).
	No peak voltage.	1. Faulty peak voltage adaptor. 2. Faulty CKP sensor.

IGNITION SYSTEM INSPECTION

- If there is no spark at any plug, check all connections for loose or poor contact before measuring each peak voltage.
- Use recommended digital multimeter or commercially available digital multimeter with an impedance of 10 M Ω /DCV minimum.
- The display value differs depending upon the internal impedance of the multimeter.
- If the peak voltage tester (U.S.A. only) is used, follow the manufacturer's instructions.

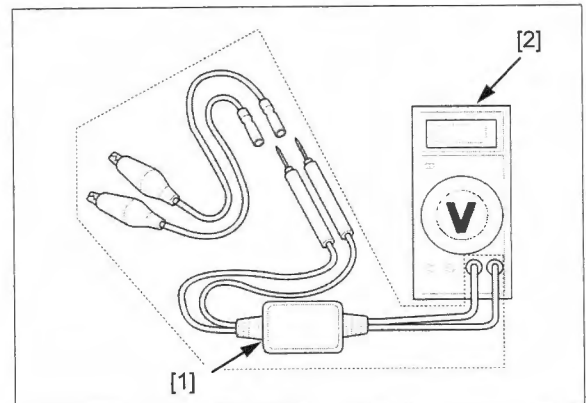
Connect the peak voltage adaptor [1] to the digital multimeter [2].

TOOLS:

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 Ω /DCV minimum)

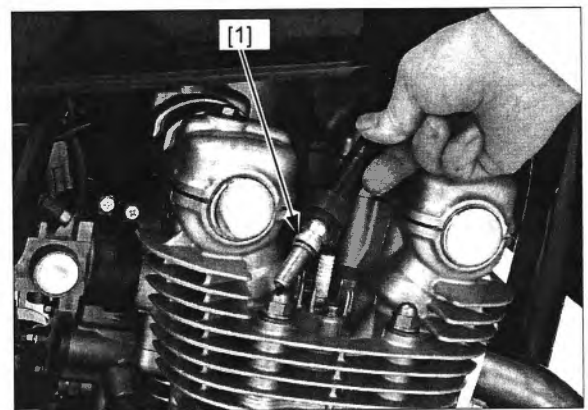


IGNITION COIL PRIMARY PEAK VOLTAGE

- Check all system connections before inspection. If the system is disconnected, incorrect peak voltage might be measured.
- Check cylinder compression and check that the spark plugs are installed correctly.

Disconnect the spark plug caps from the spark plugs.

Connect known good spark plugs [1] to the spark plug caps and ground the spark plugs to the cylinder head as done in a spark test.



IGNITION SYSTEM

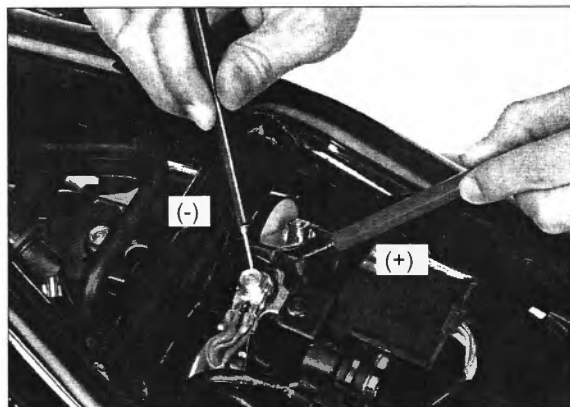
Remove the fuel tank (page 5-55).

With the ignition coil primary wires connected, connect the peak voltage adaptor or Imrie diagnostic tester probes to the ignition coil primary wire terminal and ground.

TOOLS:

IgnitionMate peak voltage tester MTP07-0286
(U.S.A. only) or
07HGJ-0020100
(Not available in
U.S.A.)

with commercially available digital multimeter
(impedance 10 M Ω /DCV minimum)



CONNECTION:

No.1/4 coil:

Yellow/white terminal (+) – body ground (-)

No.2/3 coil:

Blue/black terminal (+) – body ground (-)

Shift the transmission into neutral.

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

Check for initial voltage at this time.

The battery voltage should be measured.

If the initial voltage cannot be measured, check the power supply circuit (page 17-4).

*Do not touch the
spark plugs and
tester probes to
prevent electric
shock.*

Crank the engine with the starter motor and read ignition coil primary peak voltage.

PEAK VOLTAGE: 100 V minimum

If the peak voltage is abnormal, check for an open circuit or poor connection in Yellow/white and Blue/black wires.

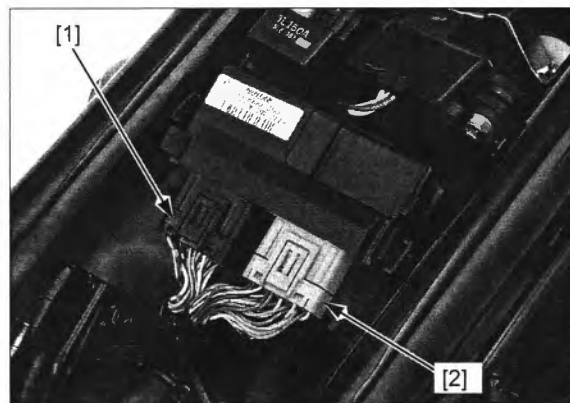
If no defects are found in the harness, refer to the troubleshooting chart (page 17-4).

CKP SENSOR PEAK VOLTAGE

- Check all system connection before inspection. If the system is disconnected, incorrect peak voltage might be measured.
- Check cylinder compression and check that the spark plugs are installed correctly.

Remove the fuel tank (page 5-55).

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



Connect the peak voltage tester or peak voltage adaptor [1] probes to the ECM 33P connector terminals.

TOOLS:

IgnitionMate peak voltage tester MTP07-0286
(U.S.A. only) or
Peak voltage adaptor 07HGJ-0020100
(Not available in
U.S.A.)

with commercially available digital multimeter
(impedance 10 MΩ/DCV minimum)

Test probe, 2 pack 07ZAJ-RDJA110

CONNECTION: B5 (+) – A31 (–)

Shift the transmission into neutral.

Turn the ignition switch ON and engine stop switch to "○".

Crank the engine with the starter motor and read the peak voltage.

PEAK VOLTAGE: 0.7 V minimum

If the peak voltage measured at ECM connectors (test harness) is abnormal, measure the peak voltage at the CKP sensor 2P (Red) connector.

Remove the right side cover (page 2-4).

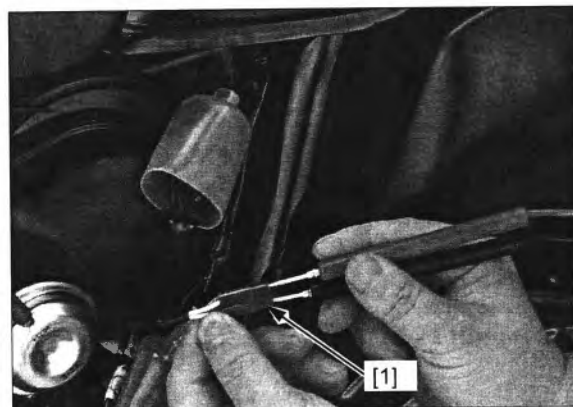
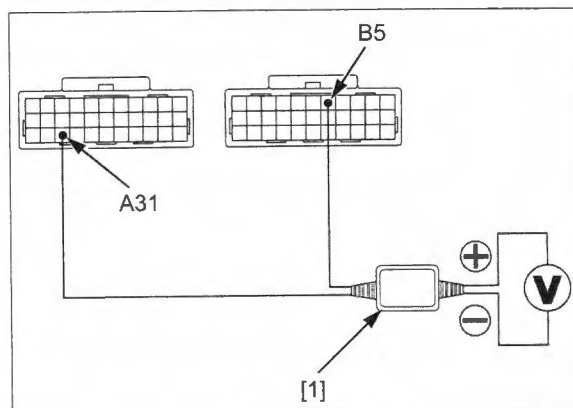
Disconnect the CKP sensor 2P (Red) connector [1] and connect the tester probes to the sensor side terminals.

CONNECTION:

Yellow (+) – White/yellow (–)

In the same manner as at the ECM connectors (test harness), measure the peak voltage and compare it to the voltage measured at the ECM connectors.

- If the peak voltage measured at the ECM connectors is abnormal and the one measured at the CKP sensor is normal, the wire harness has an open circuit or loose connection.
- If both peak voltages measured are abnormal, check each item in the troubleshooting chart. If all items are normal, the CKP sensor is faulty.
– CKP sensor replacement (page 17-8)



IGNITION COIL

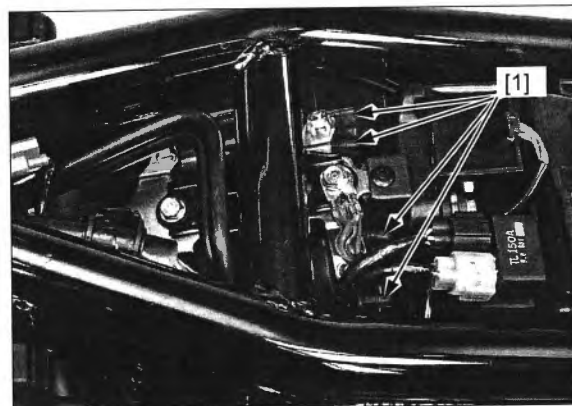
REMOVAL/INSTALLATION

Remove the fuel tank (page 5-55).

Remove the PAIR control solenoid valve (page 5-83).

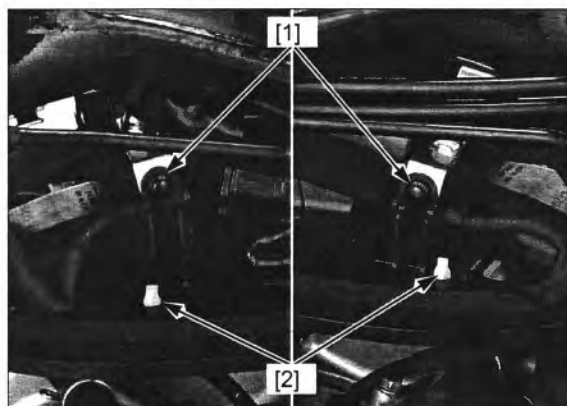
Remove the all spark plug caps.

Disconnect the ignition coil primary wires [1].

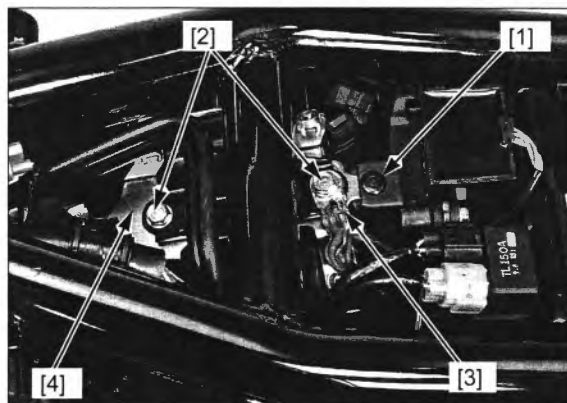


IGNITION SYSTEM

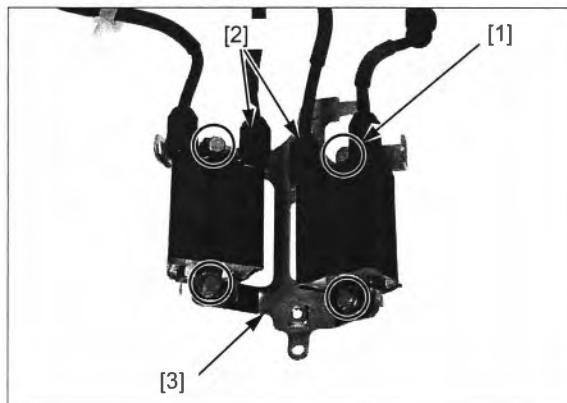
Remove the trim clips [1].
Remove the spark plug wire clips [2] from the heat protector.



Remove the trim clips [1].
Remove the mounting bolts [2] and the ground terminals [3].
Remove the ignition coil/bracket [4] as an assembly.



Remove the bolts [1] and ignition coils [2] from bracket [3].



Route the spark plug wires and ignition coil primary wires properly (page 1-21)

Installation is in the reverse order of removal.

- At installation, clean the ground terminal seating surfaces.
- Install the ignition coil/bracket mounting bolts with the ground terminals, then tighten them securely.

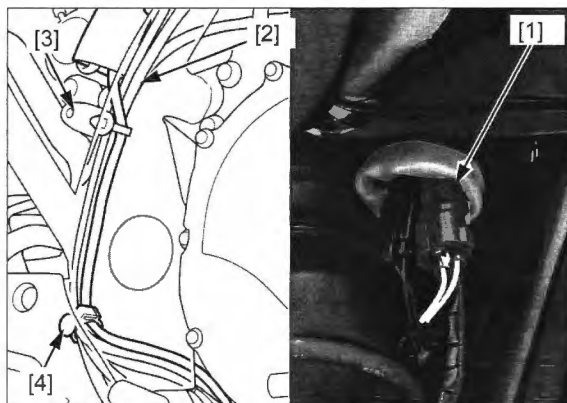
CKP SENSOR

REMOVAL

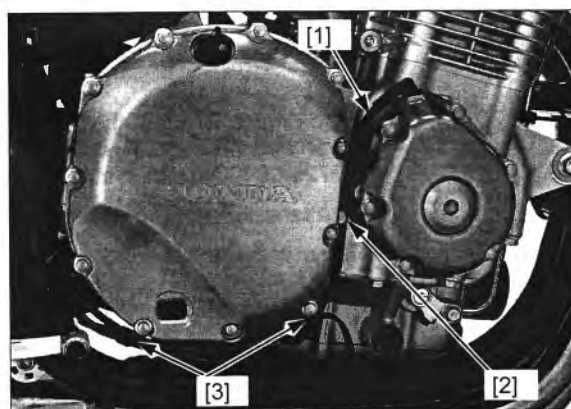
Remove the right side cover (page 2-4).

Disconnect the CKP sensor 2P (Red) connector [1].

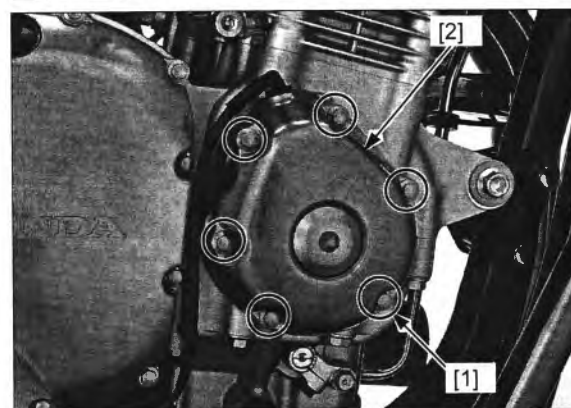
Remove the CKP sensor wire [2] from the harness band clip [3] and harness clamp [4].



Release the CKP sensor wire [1] from the guide [2] and clamps [3].



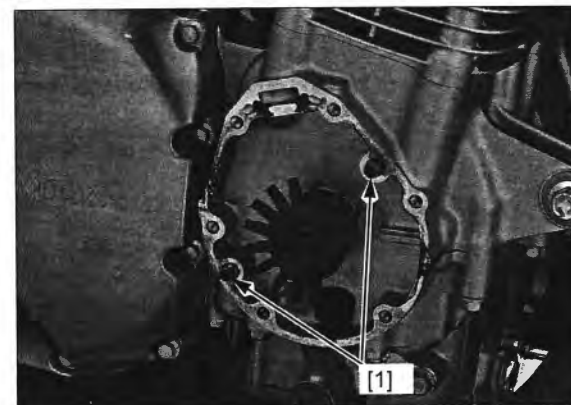
Remove the bolts [1] and right crankcase cover [2].



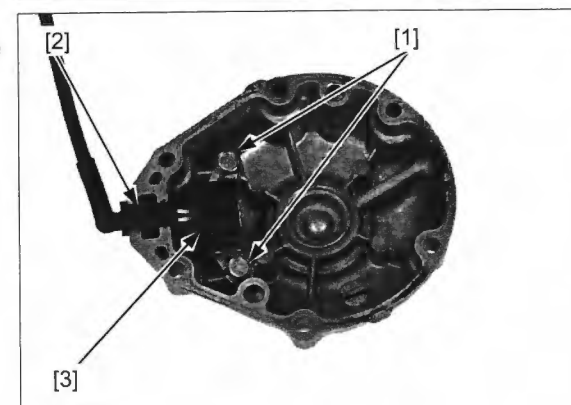
Remove the dowel pins [1].

Be careful not to damage the mating surfaces.

Clean any sealant off from the right crankcase cover mating surfaces.



Remove the CKP sensor mounting bolts [1].
Remove the wire grommet [2] from the right crankcase cover, then remove the CKP sensor [3].



IGNITION SYSTEM

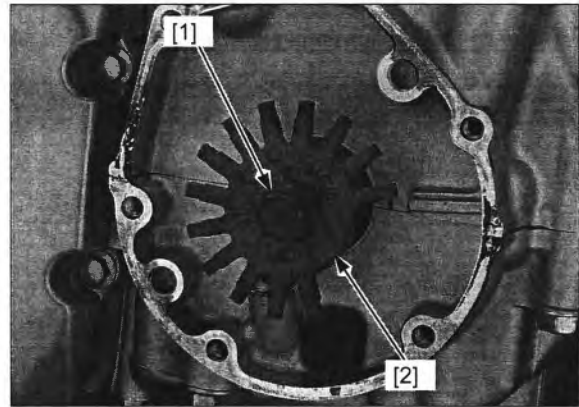
Shift the transmission into 5th gear and apply the rear brake.

NOTE:

If the engine is out of the frame, remove the alternator cover and hold the flywheel with the flywheel holder (07725-0040001), then remove the bolt.

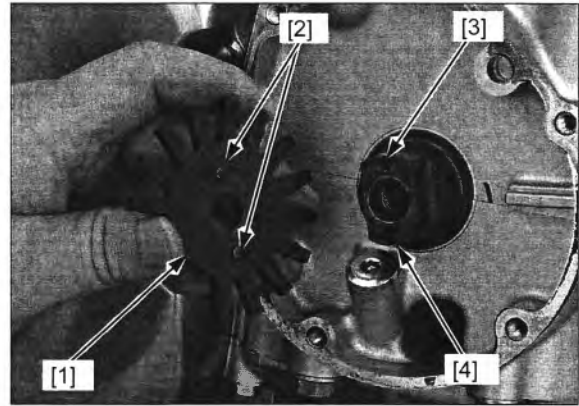
– Alternator cover removal (page 10-4)

Remove the flange bolt [1] and CKP sensor rotor [2].



INSTALLATION

Install the CKP sensor rotor [1] with its bosses [2] with the hole [3] and groove [4] on the crankshaft.



Apply engine oil to the CKP sensor rotor flange bolt [1] threads and seating surface, then install the rotor flange bolt.

Shift the transmission into 5th gear and apply the rear brake.

NOTE:

If the engine is out of the frame, remove the alternator cover and hold the flywheel with the flywheel holder (07725-0040001), then remove the bolt.

– Alternator cover installation (page 10-11)

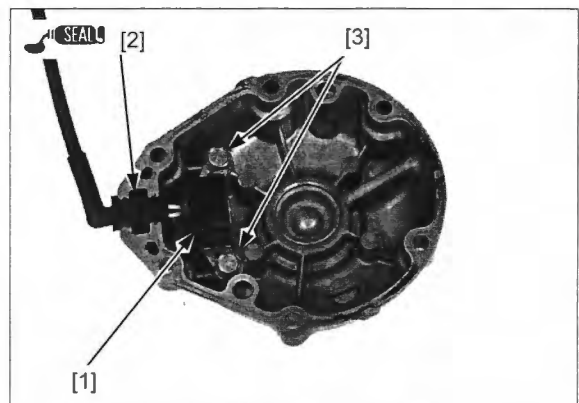
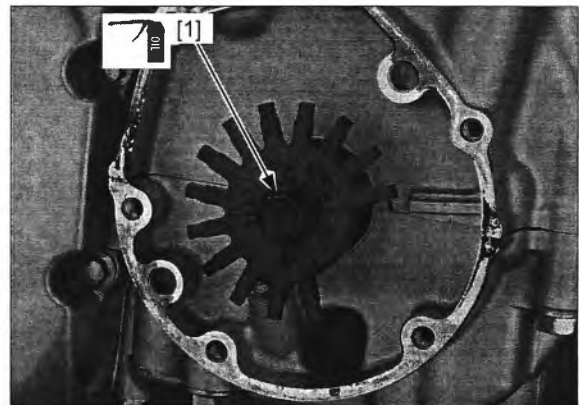
Tighten the CKP sensor rotor flange bolt to the specified torque.

TORQUE: 75 N·m (7.6 kgf·m, 55 lbf·ft)

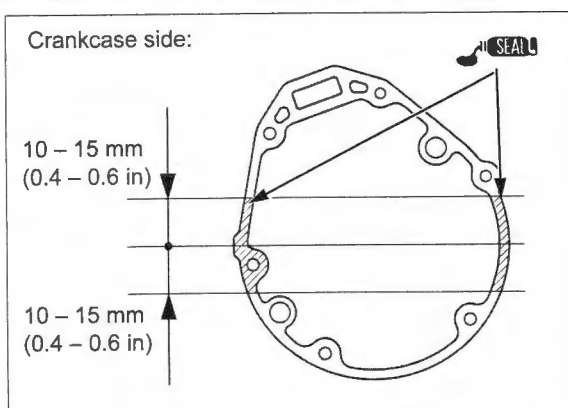
Install the CKP sensor [1] into the right crankcase cover.

Apply sealant to the wire grommet [2], then install it into the groove of the cover.

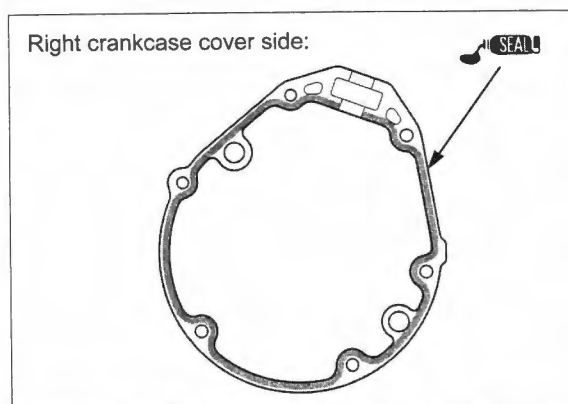
Install the CKP sensor bolts [3] and tighten them securely.



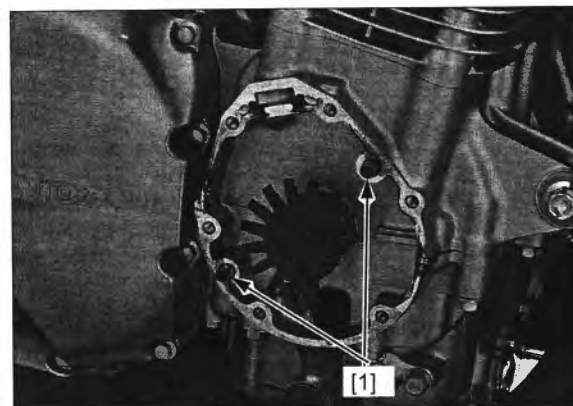
Apply liquid sealant (Three Bond 1207 B or equivalent) to the mating surfaces of the crankcase as shown.



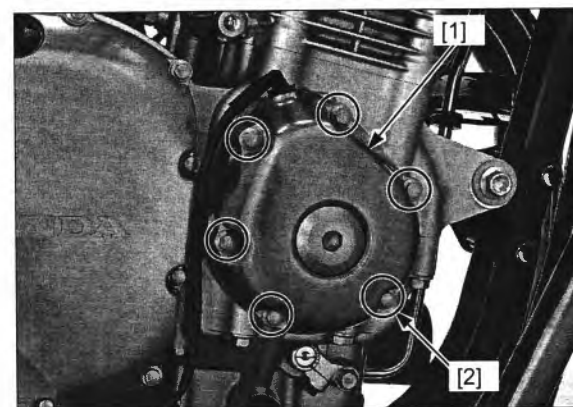
Apply liquid sealant (Three Bond 1207 B or equivalent) to the mating surfaces of the right crankcase cover as shown.



Install the dowel pins [1].

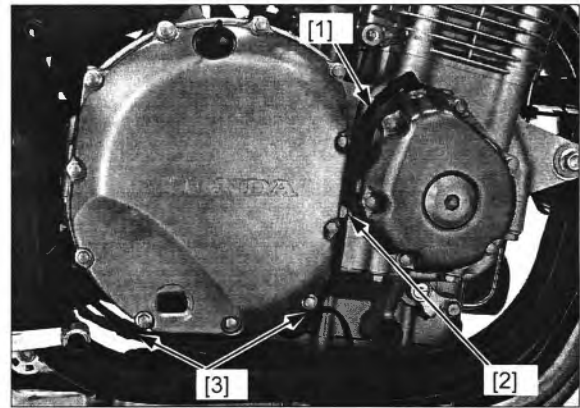


Install the right crankcase cover [1] and tighten the bolts [2] securely.



IGNITION SYSTEM

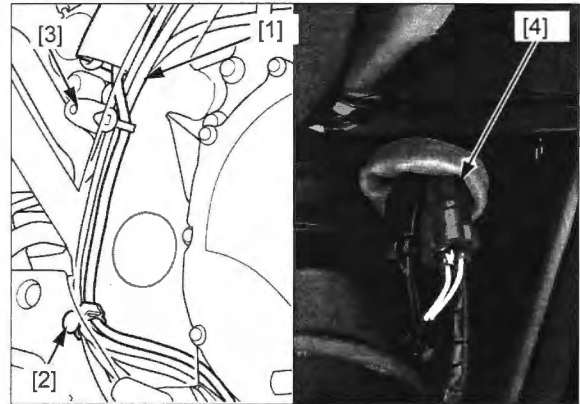
Route the CKP sensor wire properly (page 1-21).
Route the CKP sensor wire [1] properly and clamp the wire with the guide [2] and clamps [3].



Route the CKP sensor wire [1] properly and clamp the wire with the harness clamp [2] and harness band clip [3].

Connect the CKP sensor 2P (Red) connector [4].

Install the right side cover (page 2-4).



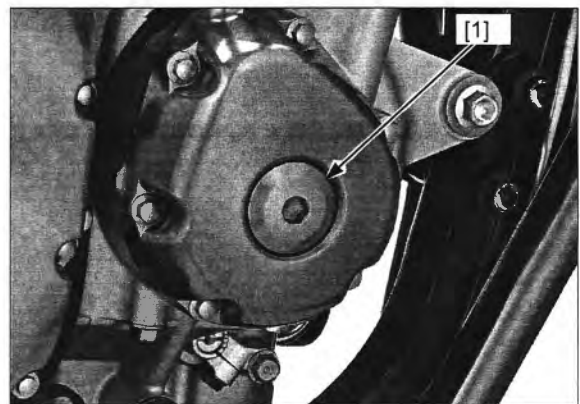
IGNITION TIMING

NOTE:

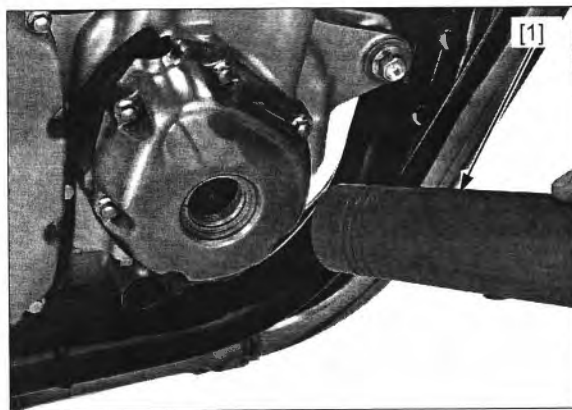
- The engine must be warm for accurate ignition timing inspection.
- When the engine temperature is too high, the ignition timing might be not correct.
- No adjustment can be made to the ignition timing.
- Read the instructions for timing light operation.

Warm up the engine.

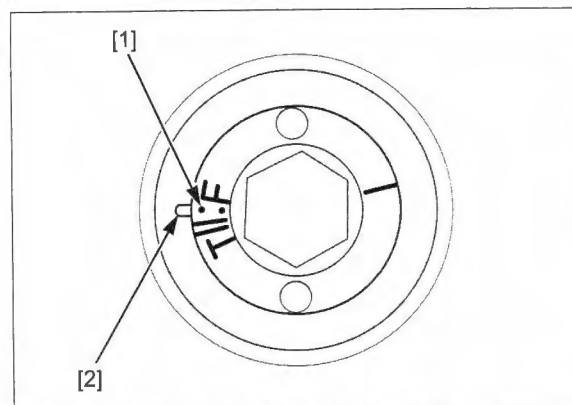
Stop the engine and remove the timing hole cap [1].



Connect the timing light [1] to the No.1 spark plug wire.
Start the engine and let it idle (page 3-17).



The ignition timing is correct if the "F" mark [1] on the CKP sensor rotor aligns with the index notch [2] on the right crankcase cover as shown.

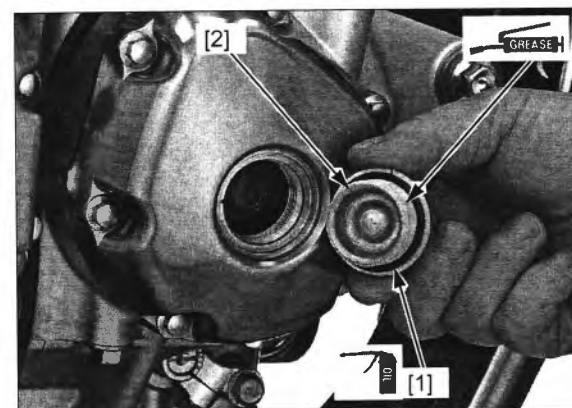


Check the O-ring [1] is in good condition, replace if necessary.

Apply engine oil to the O-ring and install it onto the timing hole cap [2].

Apply grease to the timing hole cap threads.
Install and tighten the timing hole cap to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

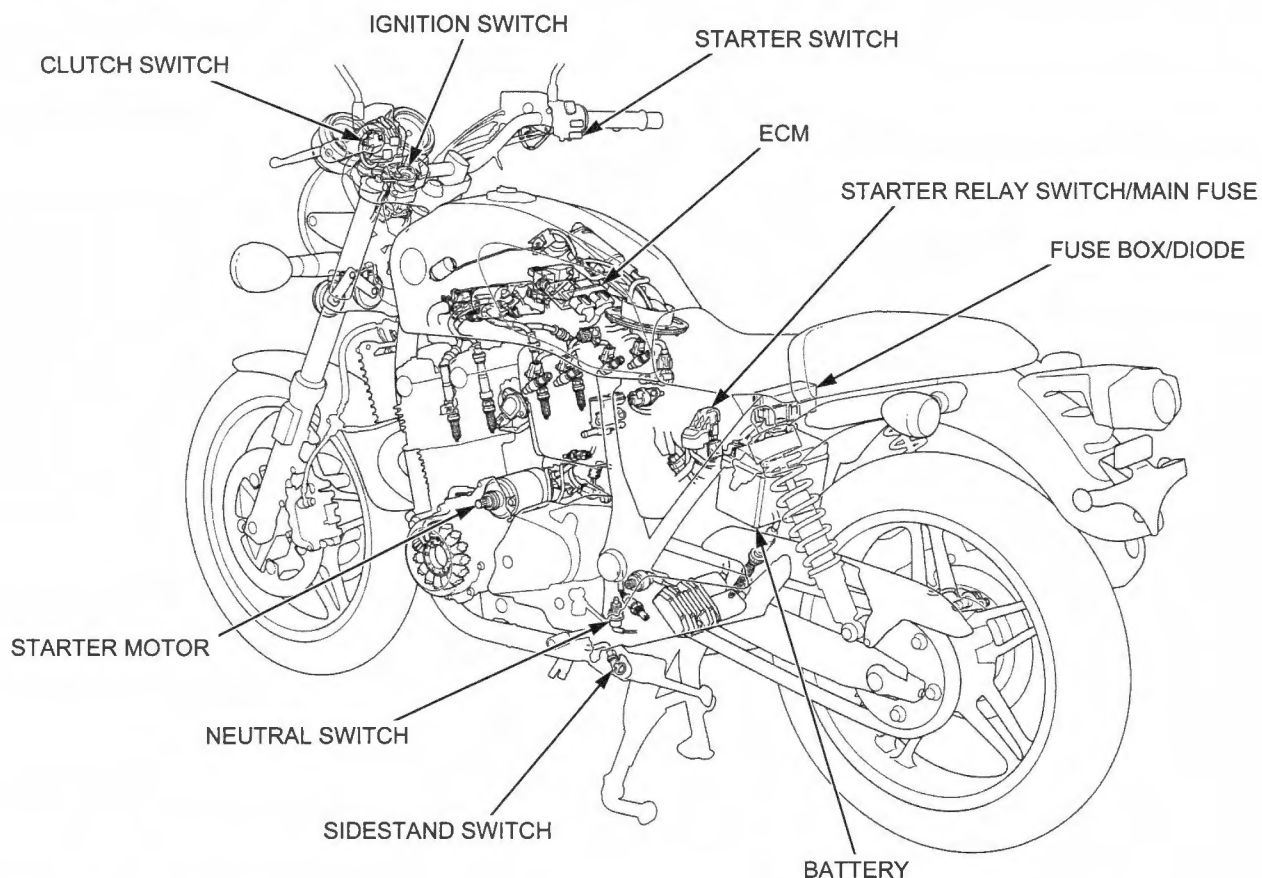


MEMO

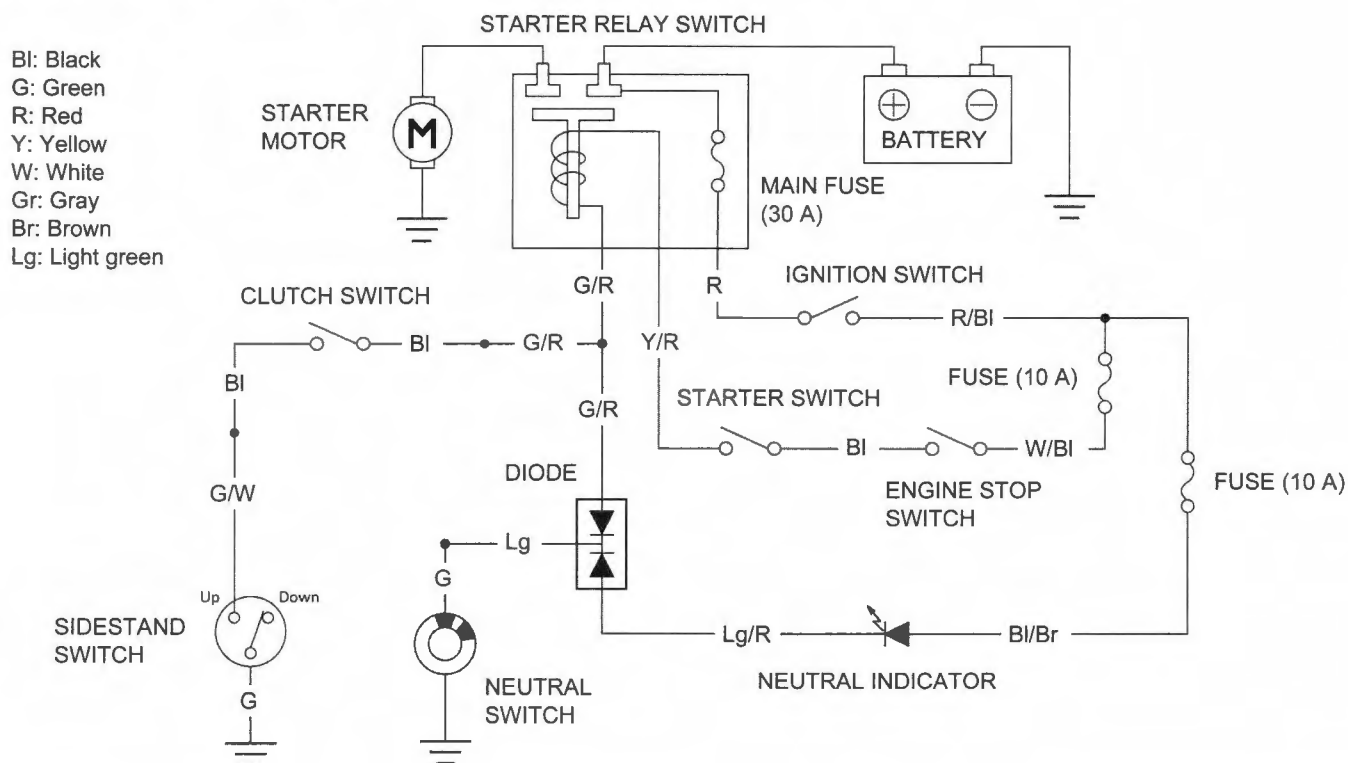
18. ELECTRIC STARTER

SYSTEM LOCATION	18-2	STARTER MOTOR.....	18-6
SYSTEM DIAGRAM	18-2	STARTER RELAY SWITCH	18-15
SERVICE INFORMATION.....	18-3	DIODE	18-16
TROUBLESHOOTING	18-4		

SYSTEM LOCATION



SYSTEM DIAGRAM



SERVICE INFORMATION

GENERAL

NOTICE

Always turn the ignition switch OFF before servicing the starter motor. The motor could suddenly start, causing serious injury.

- When checking the starter system, always follow the steps in the troubleshooting flow chart (page 18-4).
- A weak battery may be unable to turn the starter motor quickly enough, or supply adequate ignition current.
- If the current is kept flowing through the starter motor to turn it while the engine is not cranking over, the starter motor may be damaged.
- Refer to the following component informations.
 - Clutch switch (page 19-32)
 - Engine stop switch ('13 model: page 19-30, After '13: page 19-31)
 - Ignition switch (page 19-29)
 - Neutral switch (page 19-33)
 - Sidestand switch (page 19-33)
 - Starter switch ('13 model: page 19-30, After '13: page 19-31)

SPECIFICATION

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Starter motor brush length	12.0 (0.47)	6.5 (0.26)

TORQUE VALUES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Starter motor brush screw	1	5	3.7 (0.4, 2.7)	
Starter motor case bolt	2	5	4.9 (0.5, 3.6)	
Starter motor terminal nut	1	6	12 (1.2, 9)	

TROUBLESHOOTING

Starter motor does not turn

1. Fuse Inspection

Check for blown main fuse (30 A) or sub fuse (START 10 A).

Is the fuse blown?

YES – Replace the fuse.

NO – GO TO STEP 2.

2. Battery Inspection

Make sure the battery is fully charged and in good condition.

Is the battery in good condition?

YES – GO TO STEP 3.

NO – Charge or replace the battery.

3. Starter Relay Switch Operation

Check the starter relay switch operation (page 18-15).

You should hear the relay "CLICK" when the starter switch button is depressed.

Does the "CLICK" hear?

YES – GO TO STEP 4.

NO – GO TO STEP 5.

4. Starter Motor Inspection

Connect the starter motor terminal directly to the battery positive terminal. (Do not use a thin wire because a large amount of current flows)

Does the starter motor turn?

YES – • Poorly connected starter motor cable
• Faulty starter relay switch (page 18-15)

NO – Faulty starter motor (page 18-6)

5. Relay Coil Ground Wire Lines Inspection

Disconnect the starter relay switch 4P (Black) connector, and check the relay coil ground wire lines as below for continuity:

1. Green/red terminal – clutch switch diode – neutral switch line (with the transmission in neutral and clutch lever released).
2. Green/red terminal – clutch switch – sidestand switch line (in any gear except neutral, and with the clutch lever pulled in and the sidestand up).

Is there continuity?

YES – GO TO STEP 6.

NO – • Faulty neutral switch (page 19-33)
• Faulty clutch diode (page 18-16)
• Faulty clutch switch (page 19-32)
• Faulty sidestand switch (page 19-33)
• Loose or poor contact connector
• Open circuit in wire harness

6. Starter Relay Voltage Inspection

Connect the starter relay switch 4P (Black) connector.

With the ignition switch turned ON and the engine stop switch to "○". Check the continuity at the starter relay switch 4P (Black) connector while the starter switch button depressed (between Yellow/red and Red).

Is there continuity?

YES – GO TO STEP 7.

NO – • Faulty ignition switch (page 19-29)
• Faulty engine stop switch (page 19-30)
• Faulty starter switch (page 19-30)
• Blown out main fuse (30 A) or sub-fuse (START 10 A)
• Loose or poor contact connector
• Open circuit in wire harness

7. Starter Relay Switch Operation

Check the starter relay switch operation (page 18-15).

Does the starter relay switch function properly?

YES – Loose or poor contact starter relay switch 4P (Black) connector

NO – Faulty starter relay switch

The starter motor turns when the transmission is in neutral, but does not turn with the transmission in any position except neutral, with the sidestand up and the clutch lever pulled in.

1. Clutch Switch Inspection

Check the clutch switch operation (page 19-32).

Is the clutch switch operation normal?

YES – GO TO STEP 2.

NO – Faulty clutch switch

2. Sidestand Switch Inspection

Check the sidestand switch operation (page 19-33).

Is the sidestand switch operation normal?

YES – • Open circuit in wire harness
• Loose or poor contact connector

NO – Faulty sidestand switch (page 19-33)

Starter motor turns engine slowly

- Low battery voltage
- Poorly connected battery cables
- Poorly connected starter motor cable
- Faulty starter motor
- Worn or damaged brushes

Starter motor turns, but engine does not turn

- Starter motor is running backwards
 - Case assembled improperly
 - Terminals connected improperly
- Faulty starter clutch
- Damaged or faulty starter reduction gear

Starter relay switch "CLICK", but engine does not turn over

- Crankshaft does not turn due to engine problems

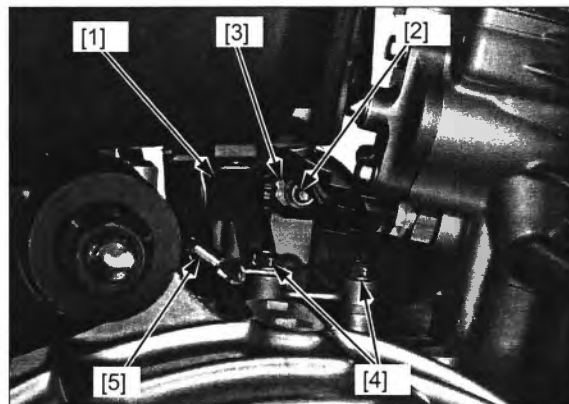
STARTER MOTOR

REMOVAL

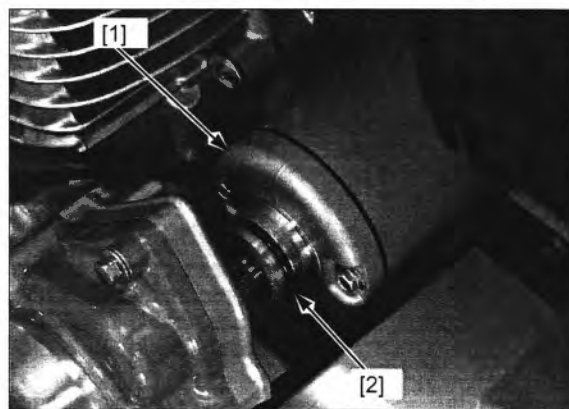
- With the ignition switch OFF, disconnect the battery negative (-) cable before servicing the starter motor (page 16-6).

Remove the rubber cap [1] and terminal nut [2].
Disconnect the starter motor cable [3].

Remove the starter motor mounting bolts [4] and
ground cable [5].

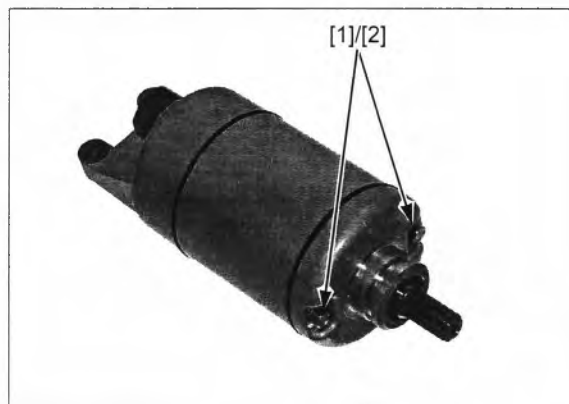


Pull the starter motor [1] out of the crankcase.
Remove the O-ring [2] from the starter motor.

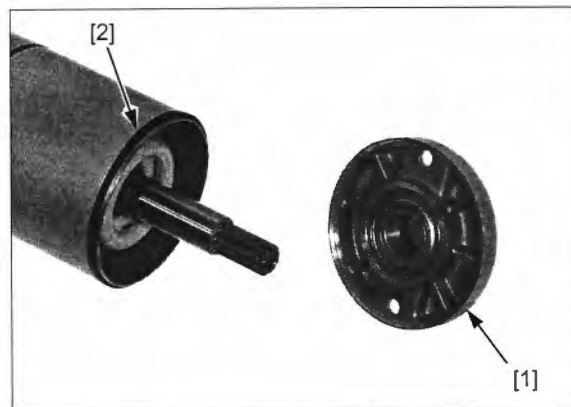


DISASSEMBLY

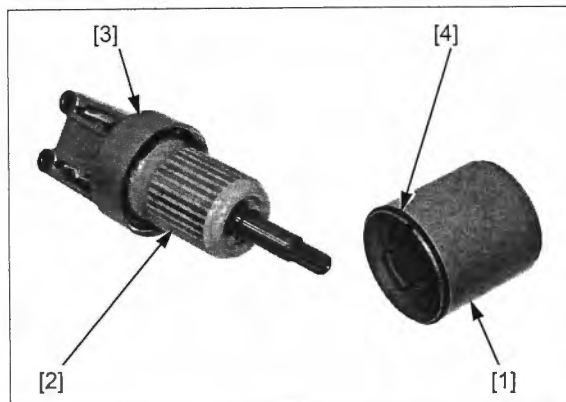
Remove the starter motor case bolts [1] and O-rings [2].



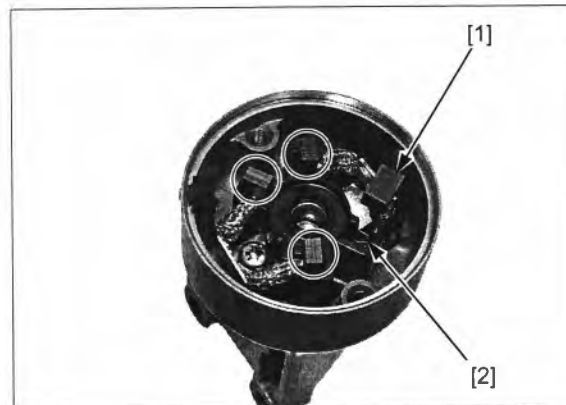
Remove the front cover [1] and seal ring [2].



Remove the starter motor case [1], then remove the armature [2] from the rear cover assembly [3]. Remove the seal ring [4] from the starter motor case.



Remove the brushes [1] and brush springs [2] from the brush holder.



INSPECTION

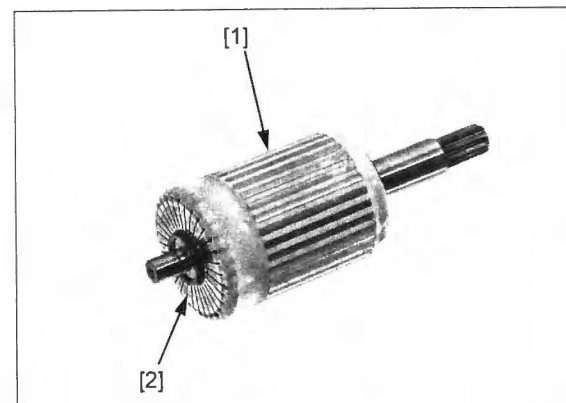
Check the armature [1] for damage or abnormal wear.

Check the commutator bars [2] for discoloration.

Do not use emery or sand paper on the commutator.

Clean the metallic debris off between the commutator bars.

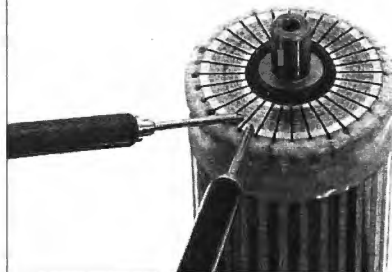
Replace the armature with a new one if necessary.



ELECTRIC STARTER

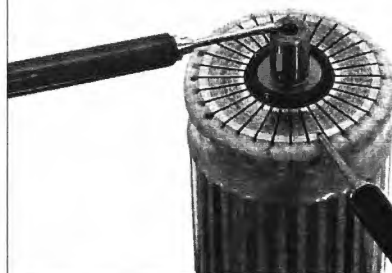
Check the continuity between pairs of the commutator bars.
There should be continuity.

Continuity:



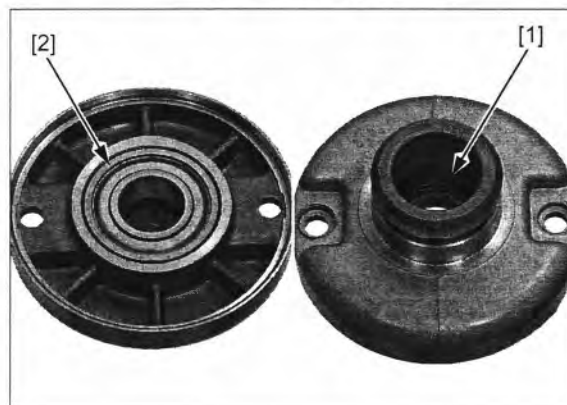
Check the continuity between each individual commutator bar and armature shaft.
There should be no continuity.

No continuity:



Check the dust seal [1] for deterioration, wear, or damage.

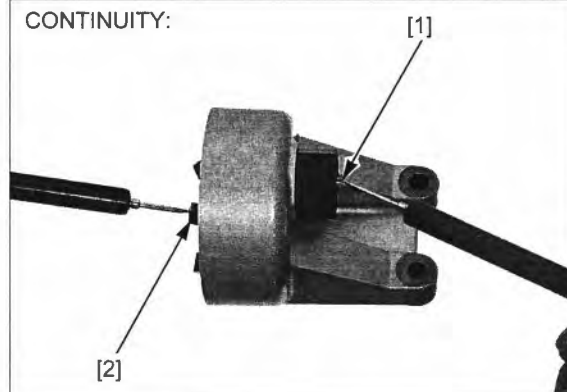
Turn the inner race of the front cover bearing [2] with your finger.
The bearing should turn smoothly and quietly, also check that the outer race fits tightly in the front cover.



REAR COVER DISASSEMBLY/INSPECTION

Check the continuity between the starter motor cable terminal [1] and positive (+) brushes [2].
There should be continuity.

CONTINUITY:

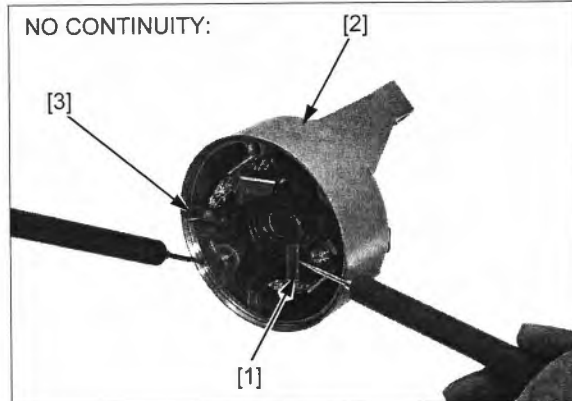


Check the continuity between the positive (+) brushes [1] (terminal bolt side) and rear cover [2].
There should be no continuity.

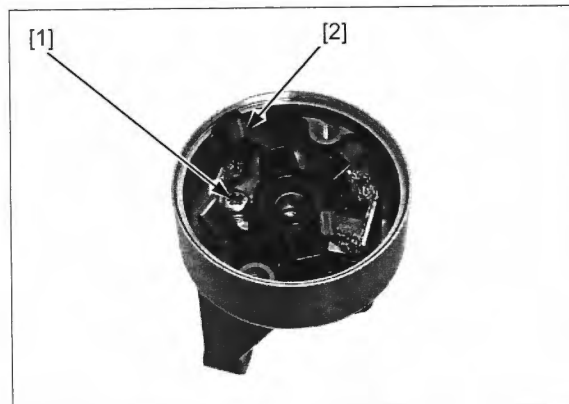
Check the continuity between the negative (-) brushes [3] (terminal bolt side) and rear cover.
There should be continuity.

Check the continuity between the positive (+) and negative (-) brushes.
There should be no continuity.

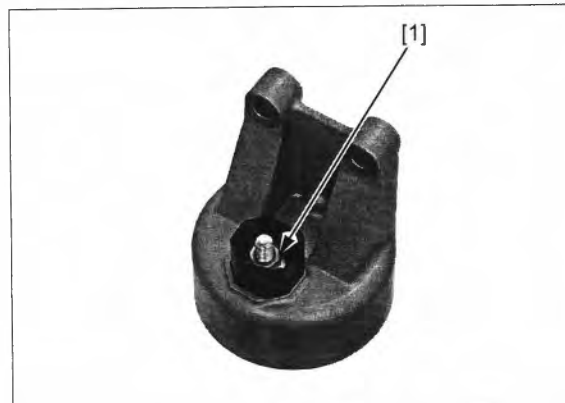
NO CONTINUITY:



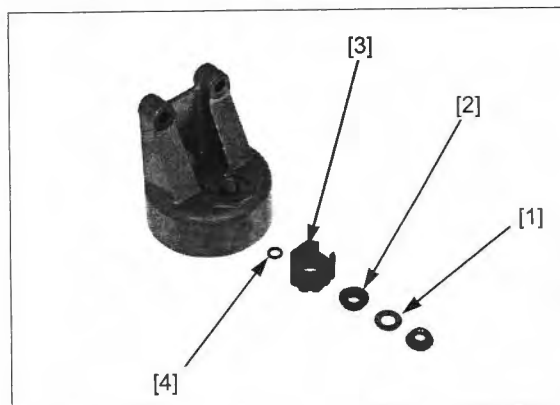
Remove the screw [1] and negative (-) brushes [2].



Remove the nut [1].

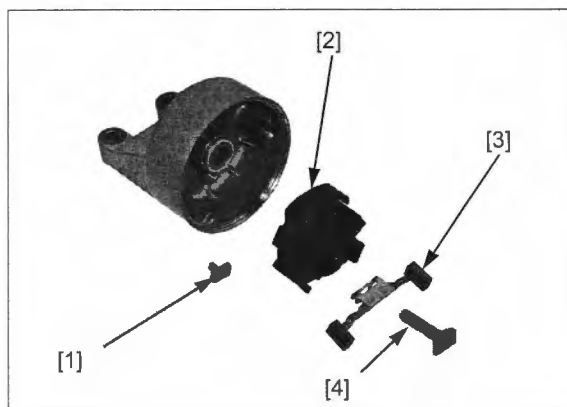


Remove the washer [1], insulator [2], terminal stopper [3], and O-ring [4] from the rear cover.



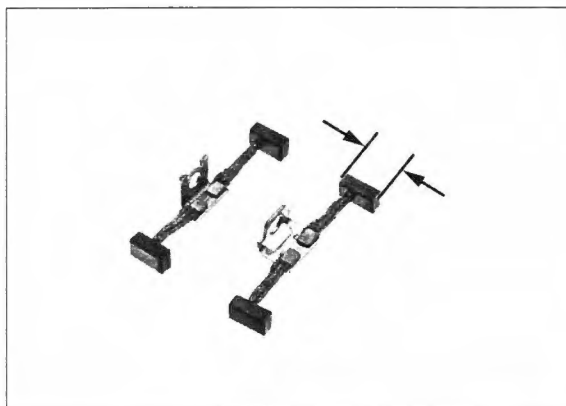
ELECTRIC STARTER

Remove the stopper [1], brush holder [2], positive (+) brushes [3], and terminal bolt [4].

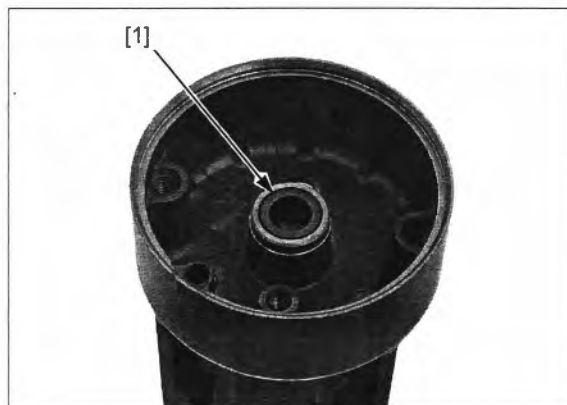


Inspect the brushes for damage and measure each brush length.

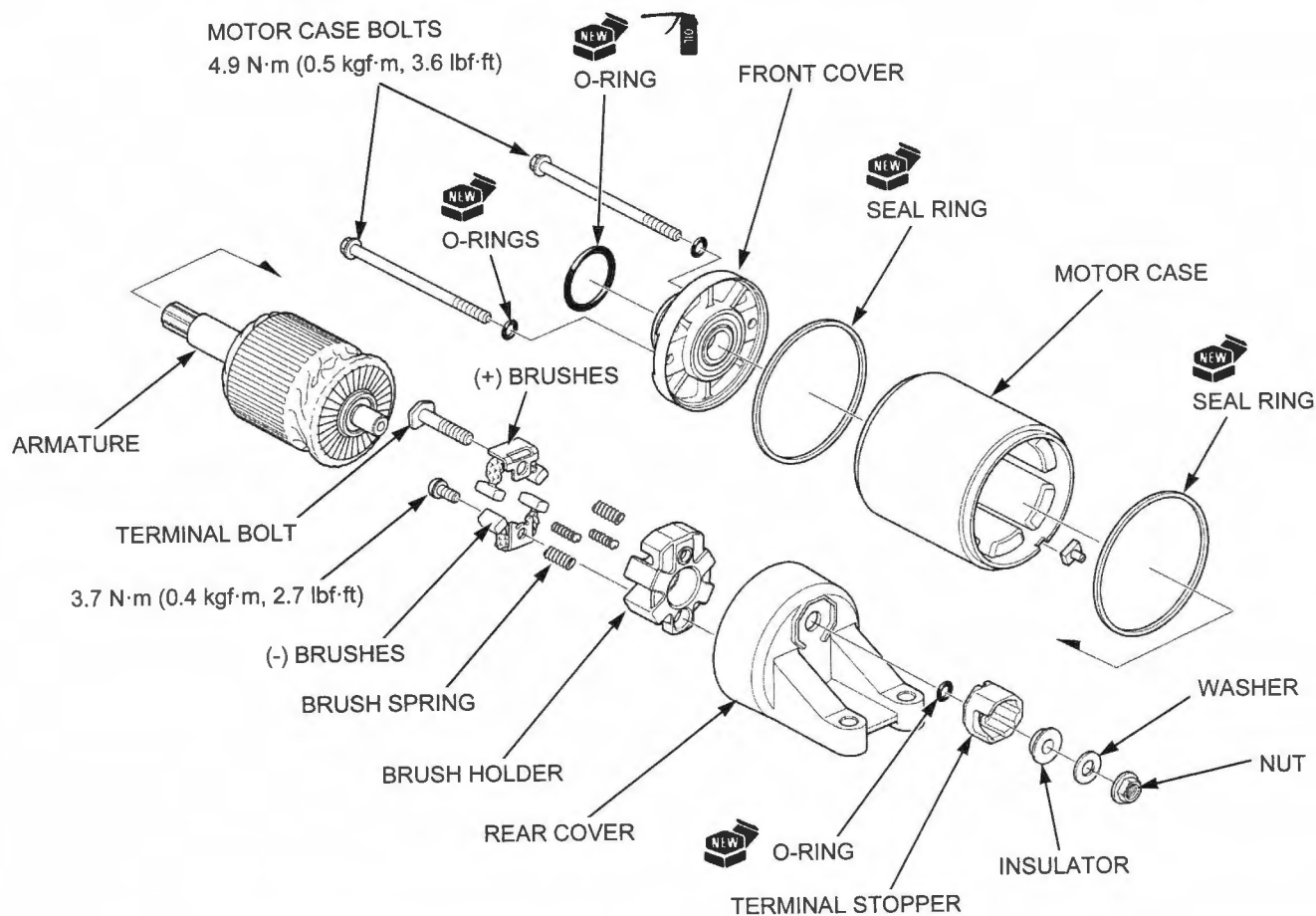
SERVICE LIMIT: 6.5 mm (0.26 in)



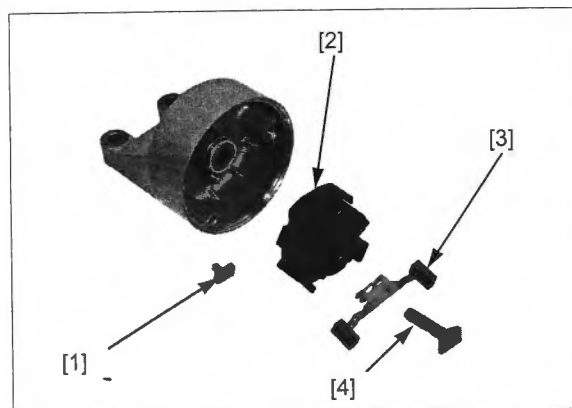
Check the bushing [1] in the rear cover for wear or damage.



ASSEMBLY



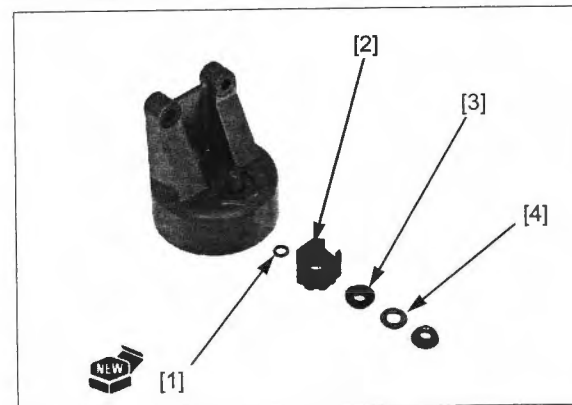
Install the stopper [1], brush holder [2], positive (+) brushes [3], and terminal bolt [4] to the rear cover.



Install the following (onto the terminal bolt):

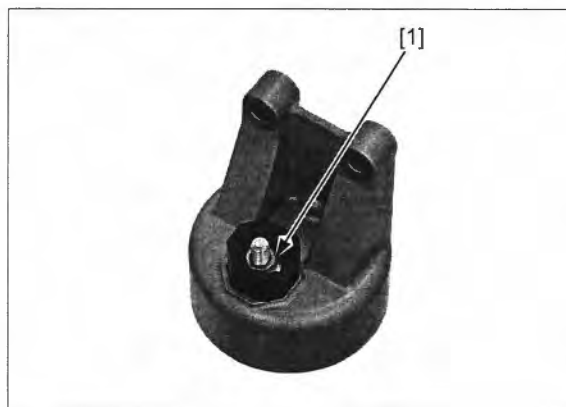
Note the direction of the terminal stopper.

- New O-ring [1]
- Terminal stopper [2]
- Insulator [3]
- Washer [4]



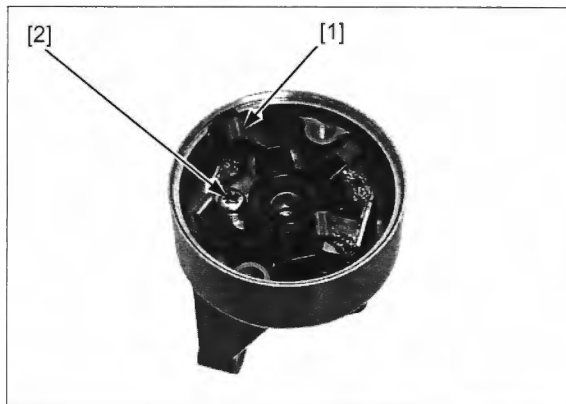
ELECTRIC STARTER

Install and tighten the nut [1] securely.

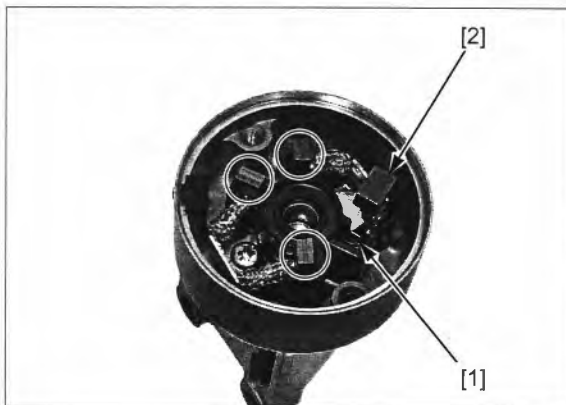


Install the negative (-) brushes [1] and screw [2].
Tighten the screw to the specified torque.

TORQUE: 3.7 N·m (0.4 kgf·m, 2.7 lbf·ft)

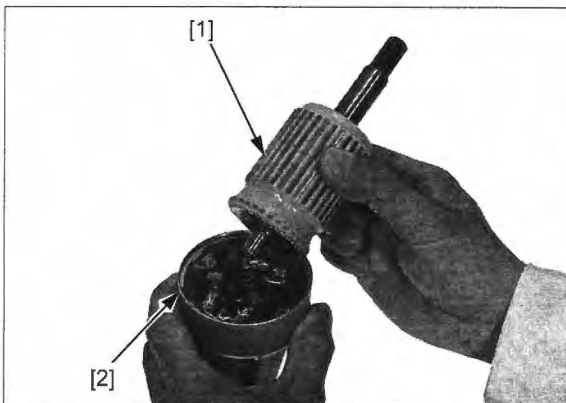


Install the brush springs [1] and brushes [2] into the brush holder.



*Be careful not to
damage the
brushes and
commutator bars.*

Install the armature [1] onto the rear cover assembly [2].

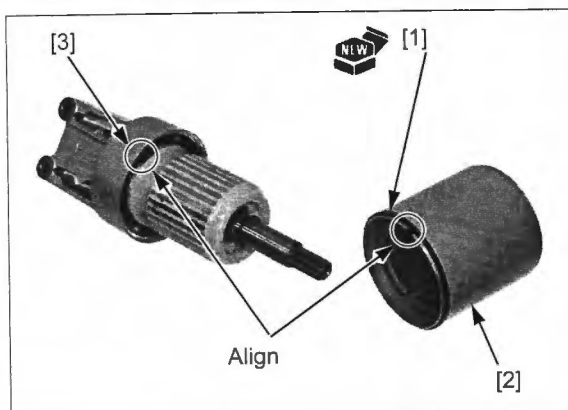


Install a new seal ring [1] onto the starter motor case [2].

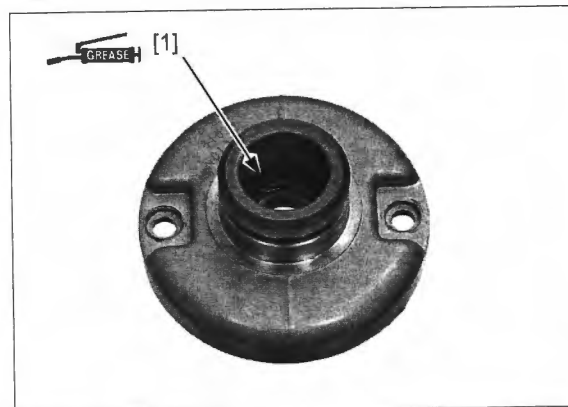
NOTICE

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

Install the starter motor case aligning its groove with the stopper [3] on the rear cover.



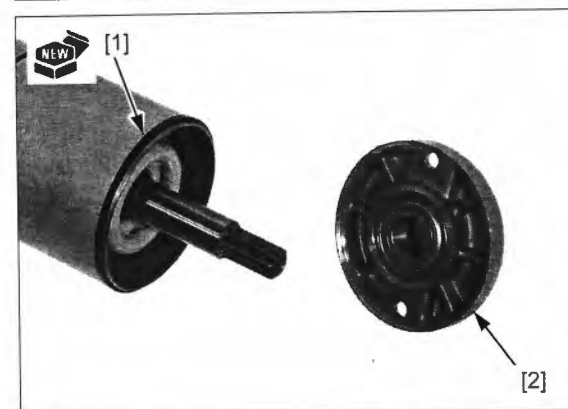
Apply grease to the front cover dust seal [1] lip.



Install a new seal ring [1] onto the starter motor case, then install the front cover [2].

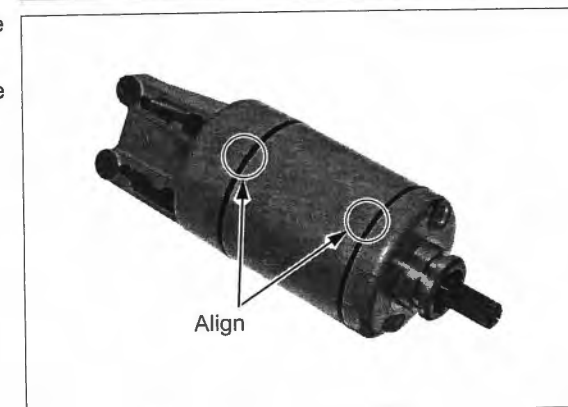
NOTE:

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



Align the front cover index line with the motor case index line.

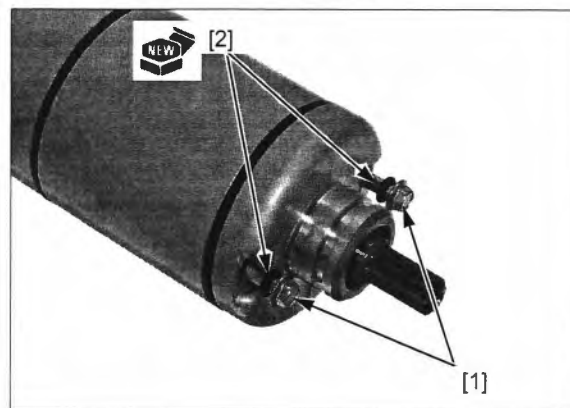
Make sure that the motor case index line align with the rear cover as shown.



ELECTRIC STARTER

Install the starter motor case bolts [1] with new O-rings [2].
Tighten the motor case bolts to the specified torque.

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



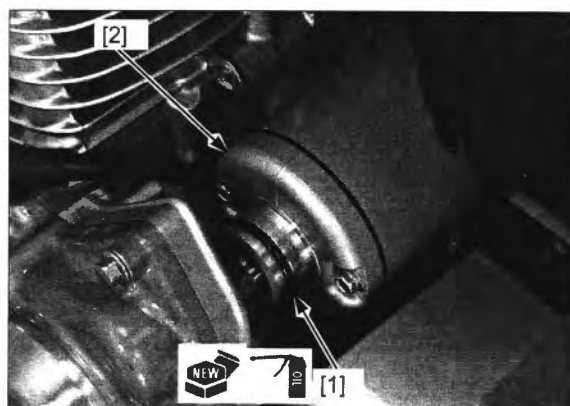
INSTALLATION

NOTE:

Route the starter motor cable and ground cable properly (page 1-21).

Coat a new O-ring [1] with engine oil and install it into the starter motor [2] groove.

Align the starter motor shaft teeth with the reduction gear teeth, then install the starter motor into the crankcase.



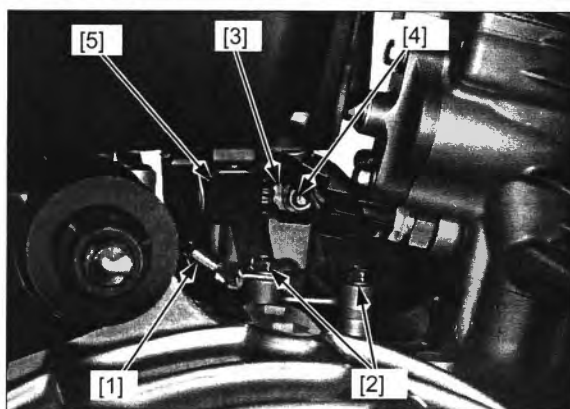
Install the ground cable [1] and mounting bolts [2] and tighten the bolts securely.

Connect the starter motor cable [3], then tighten the terminal nut [4] to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the rubber cap [5] securely.

Connect the battery negative (-) cable (page 16-6).



STARTER RELAY SWITCH

OPERATION INSPECTION

Remove the left side cover (page 2-4).

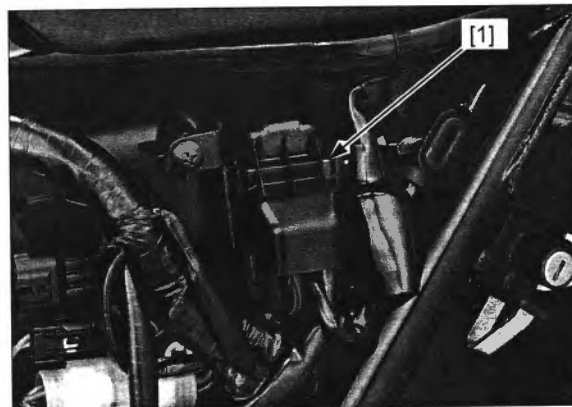
Shift the transmission into neutral.

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

Press the starter switch button.

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

If you don't hear the switch "CLICK", inspect the relay switch using the procedure below.



GROUND LINE INSPECTION

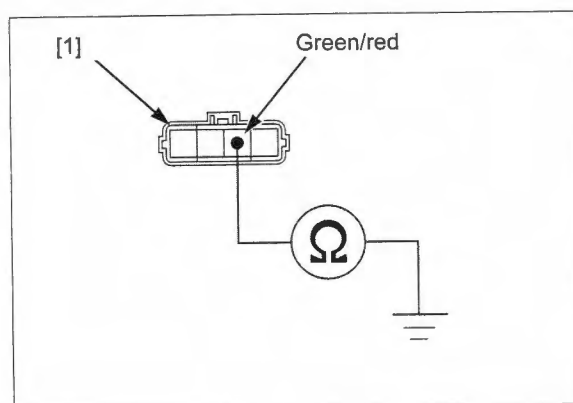
Remove the starter relay switch cover.

Disconnect the starter relay switch 4P (Black) connector [1].

Check the continuity between the Green/red wire (ground line) and ground.

In neutral, there is a slight resistance due to the diode.

There should be continuity when the transmission is in neutral and clutch lever released, or when the clutch lever is pulled with the sidestand retracted.



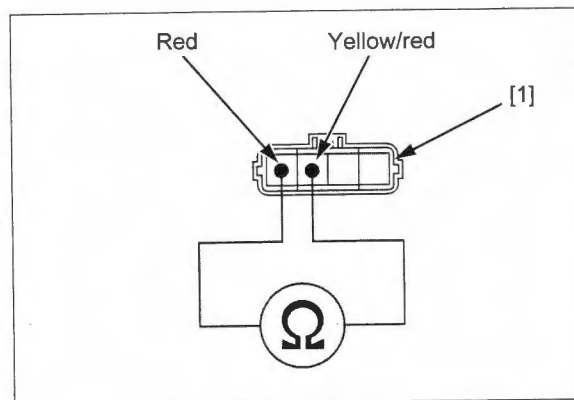
INPUT LINE INSPECTION

Remove the starter relay switch cover.

Disconnect the starter relay switch 4P (Black) connector [1].

Check the continuity between the Yellow/red and Red wires.

If there is continuity when the starter switch button is pressed with the ignition switch turned ON and engine stop switch to "O", it is normal.



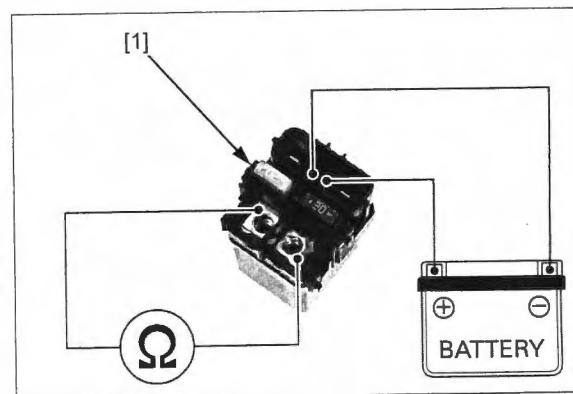
CONTINUITY INSPECTION

Remove the starter relay switch [1] (page 18-16).

Connect an ohmmeter to the starter relay switch large terminals.

Connect a fully charged 12 V battery to the starter relay switch connector terminals (Yellow/red and Green/red). Check the continuity between the starter relay switch cable terminals.

There should be continuity while a 12 V battery is connected to the starter relay switch connector terminals and there should be no continuity when the battery is disconnected.



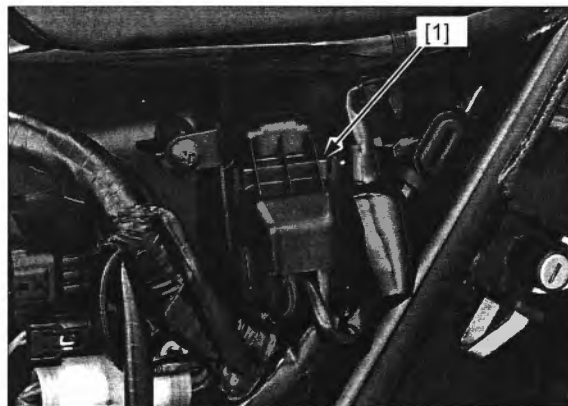
ELECTRIC STARTER

REMOVAL/INSTALLATION

Remove the left side cover (page 2-4).

Prevent the battery positive (+) cable from shorting on the frame, remove the battery (page 16-6).

Remove the starter relay switch cover [1].

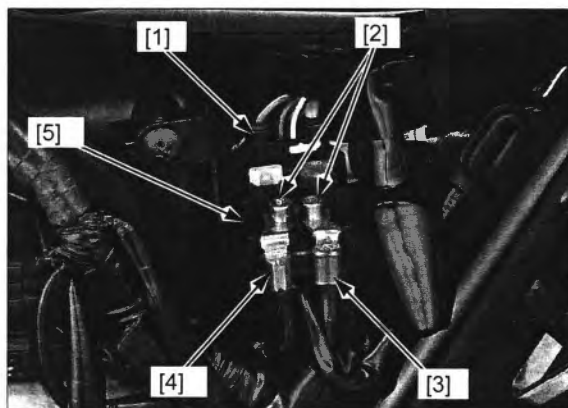


Disconnect the starter relay switch 4P (Black) connector [1].

Remove the terminal bolts [2] and disconnect the starter motor cable [3] and battery positive (+) cable [4] from the starter relay switch [5].

Remove the starter relay switch from the stay.

Installation is in the reverse order of removal.



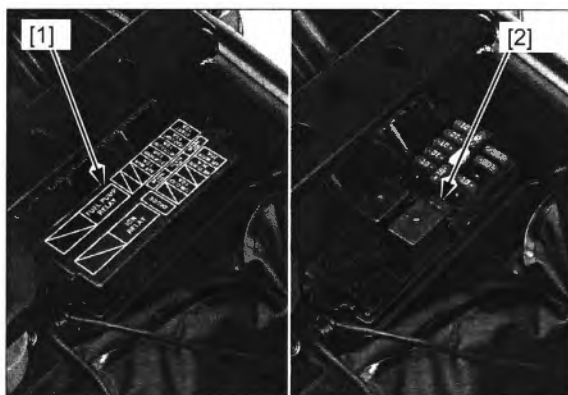
DIODE

REMOVAL/INSTALLATION

Remove the seat (page 2-4).

Remove the fuse box cover [1] and remove the diode [2].

Installation is in the reverse order of removal.



INSPECTION

Check the continuity between the diode [1] terminals.

CONNECTION:

A to B: CONTINUITY

A to C: NO CONTINUITY

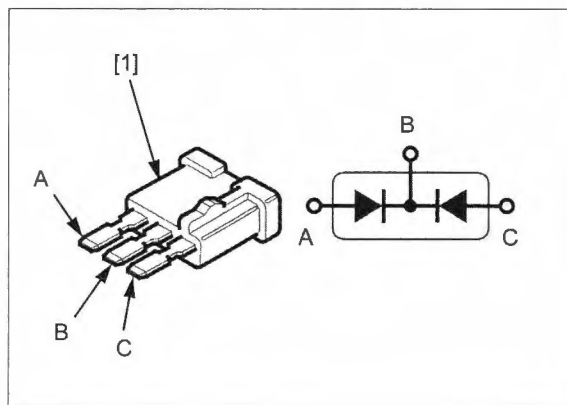
B to A: NO CONTINUITY

B to C: NO CONTINUITY

C to A: NO CONTINUITY

C to B: CONTINUITY

If there is abnormality in continuity, replace the diode with a new one.

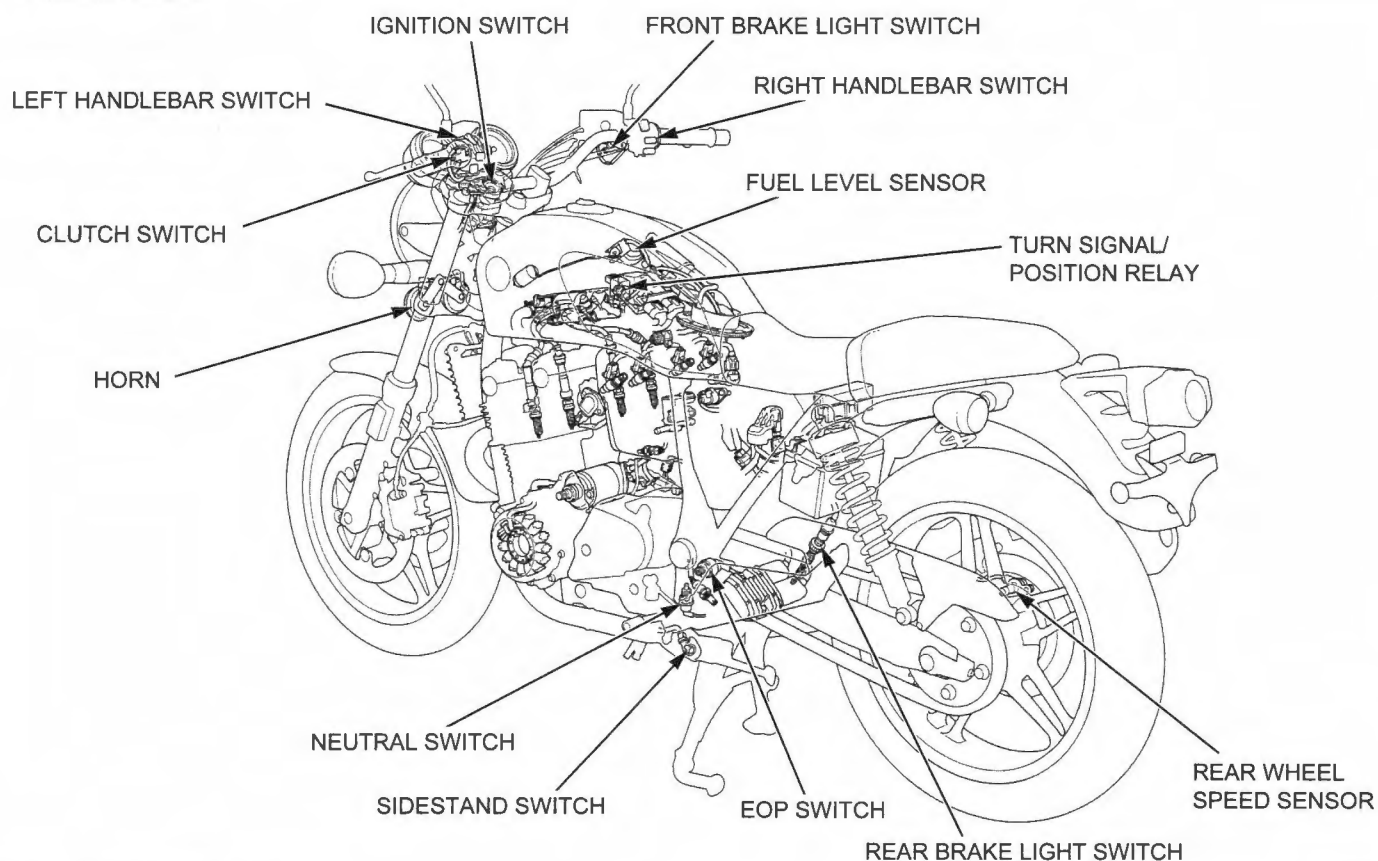


19. LIGHTS/METERS/SWITCHES

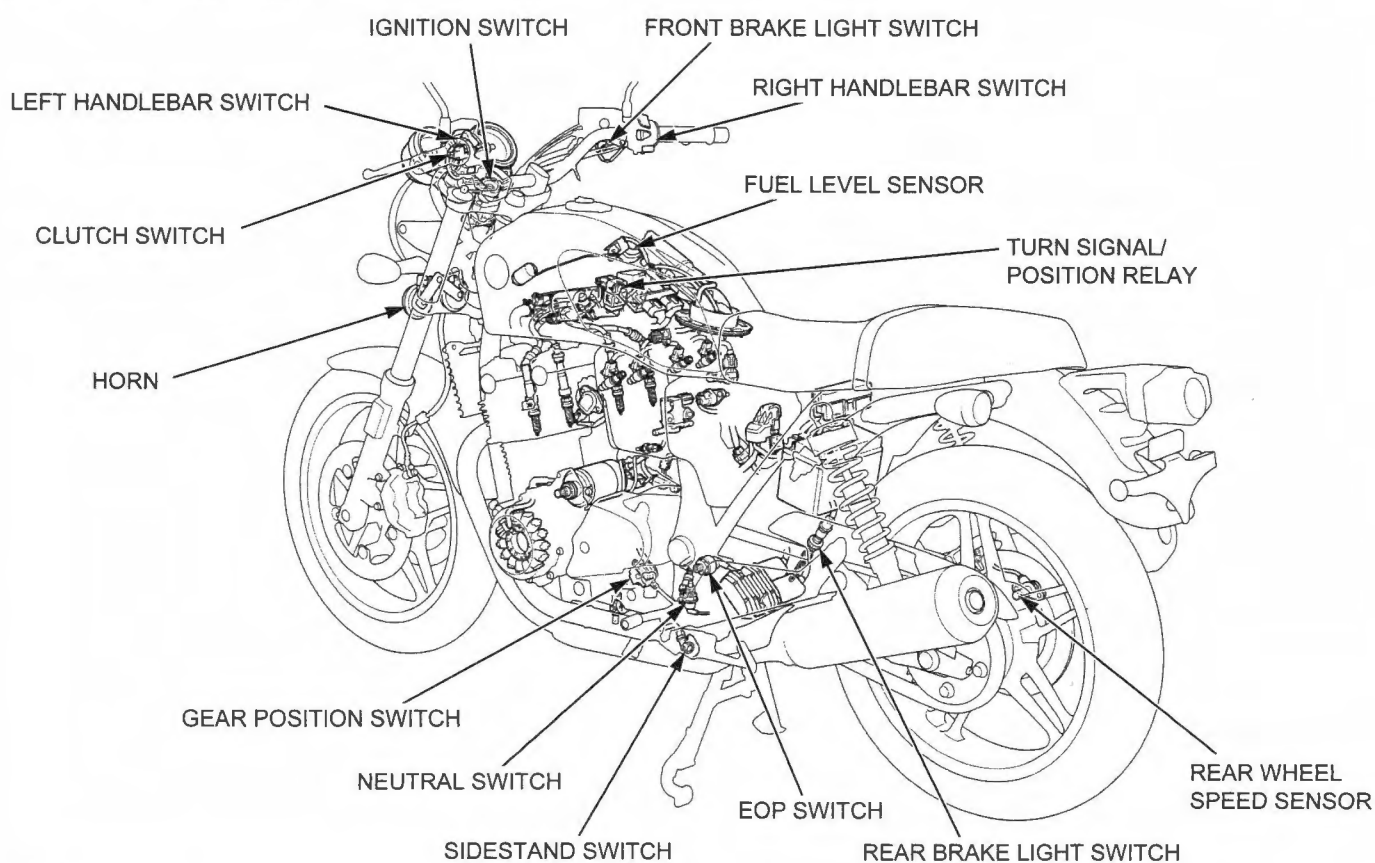
SYSTEM LOCATION	19-2	EOP SWITCH	19-26
SERVICE INFORMATION	19-3	FUEL LEVEL SENSOR ('13 model)	19-27
TROUBLESHOOTING ('13 model)	19-5	FUEL LEVEL SENSOR (After '13 model)	19-28
HEADLIGHT	19-7	IGNITION SWITCH	19-29
TURN SIGNAL LIGHT	19-9	HANDLEBAR SWITCHES ('13 model)	19-30
TAIL/BRAKE LIGHT	19-10	HANDLEBAR SWITCHES (After '13 model)	19-31
COMBINATION METER ('13 model)	19-11	BRAKE LIGHT SWITCH	19-32
COMBINATION METER (After '13 model)	19-14	CLUTCH SWITCH	19-32
SPEEDOMETER/REAR WHEEL SPEED SENSOR ('13 model)	19-18	NEUTRAL SWITCH	19-33
SPEEDOMETER/REAR WHEEL SPEED SENSOR (After '13 model)	19-21	SIDESTAND SWITCH	19-33
TACHOMETER ('13 model)	19-24	HORN	19-35
TACHOMETER (After '13 model)	19-24	TURN SIGNAL/POSITION RELAY	19-36
OIL TEMPERATURE INDICATOR ('13 model)	19-25	GEAR POSITION SWITCH (After '13 model)	19-38
OIL TEMPERATURE INDICATOR (After '13 model)	19-25		

SYSTEM LOCATION

'13 model shown:



After '13 CB1100SA shown:



SERVICE INFORMATION

GENERAL

- A halogen headlight bulb becomes very hot while the headlight is ON, and remains hot for a while after it is turned OFF. Be sure to let it cool down before servicing.
- Note the following when replacing the halogen headlight bulb.
 - Wear clean gloves while replacing the bulb. Do not put finger prints on the headlight bulb, as they may create hot spots on the bulb and cause it to fail.
 - If you touch the bulb with your bare hands, clean it with a cloth moistened with alcohol to prevent its early failure.
 - Be sure to install the dust cover after replacing the bulb.
- Check the battery condition before performing any inspection that requires proper battery voltage.
- A continuity test can be made with the switches installed on the motorcycle.
- The following color codes are used throughout this section.

Bu = Blue	G = Green	Lg = Light Green	R = Red
Bl = Black	Gr = Gray	O = Orange	W = White
Br = Brown	Lb = Light Blue	P = Pink	Y = Yellow

SPECIFICATIONS

ITEM			SPECIFICATIONS
Bulbs	Headlight	Hi	12 V – 60 W
		Lo	12 V – 55 W
	Tail/brake light		12 V – 5/21 W
	Turn signal light		12 V – 21 W x 4
	Instrument light		LED
	Turn signal indicator		LED
	High beam indicator		LED
	Oil temperature indicator		LED
	Neutral indicator		LED
	Oil pressure indicator		LED
	MIL		LED
	ABS indicator (CB1100A/SA)		LED
	Fuse	Main fuse	
Sub fuse		20 A x 1, 10 A x 5	
ABS solenoid fuse ('13 CB1100A)		30 A	
ABS motor fuse (CB1100A/SA)		30 A	
ABS main fuse (CB1100A/SA)		10 A	
Tachometer peak voltage			10.5 V minimum

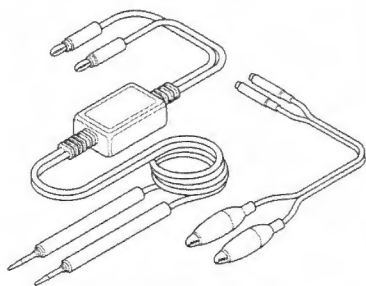
TORQUE VALUES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Tail/brake light lens bolt	2	6	9.8 (1.0, 7.2)	
Sidestand switch bolt	1	6	10 (1.0, 7)	ALOC bolt; replace with a new one.
Turn signal light lens screw	4	4	1.0 (0.1, 0.7)	
Turn signal light mounting bolt	4	6	5.1 (0.5, 3.8)	
Neutral switch	1	10	12 (1.2, 9)	
Gear position switch mounting bolt (After '13)	2	6	10 (1.0, 7)	

LIGHTS/METERS/SWITCHES

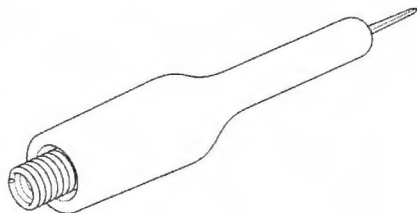
TOOLS

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

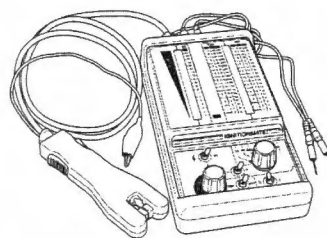


with commercially available digital
multimeter (impedance 10 M Ω /DCV
minimum)

Test probe, 2 pack
07ZAJ-RDJA110



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



TROUBLESHOOTING ('13 model)

REAR WHEEL SPEED SENSOR/SPEEDOMETER

The speedometer operates normally, but the odometer/trip meter does not operate
Faulty combination meter printed circuit board

The speedometer operation is abnormal (CB1100A)

1. Fuse Inspection

Check for blown main fuse (30 A) or sub fuse (METER, ILLUMI 10A).

Is the fuse blown?

YES – Replace the fuse.

NO – GO TO STEP 2.

2. Battery Inspection

Make sure the battery is fully charged and in good condition.

Is the battery in good condition?

YES – GO TO STEP 3.

NO – Charge or replace the battery.

3. Combination Meter Power Line Inspection

Check the combination meter 10P (Black) connector and 6P connector for loose or poor contact (page 19-13).

Measure the voltage at the combination meter connector with the ignition switch ON.

Is there Battery Voltage?

YES – GO TO STEP 4.

NO – • Loose or poor contact of related terminals
• Open circuit in Black/brown or Green wires between the battery and combination meter

4. ABS Problem Code Read Out

Turn the ignition switch ON and read out the ABS problem code (page 15-15).

Does the ABS indicator start problem code?

YES – ABS indicator problem code index (page 15-15)

NO – GO TO STEP 5.

5. Rear Wheel Speed Sensor Signal Inspection

With the ignition switch OFF, check for continuity of the Pink/green wire between the terminals of the ABS modulator and combination meter (page 19-19).

Is there continuity?

YES – Faulty speedometer

NO – • Open circuit in Pink/green wire
• Loose or poor contact of related terminals

LIGHTS/METERS/SWITCHES

The speedometer operation is abnormal (CB1100)

1. Fuse Inspection

Check for blown main fuse (30 A) or sub fuse (NEUTRAL, ILLUMI 10A).

Is the fuse blown?

YES – Replace the fuse.

NO – GO TO STEP 2.

2. Battery Inspection

Make sure the battery is fully charged and in good condition.

Is the battery in good condition?

NO – Charge or replace the battery.

YES – GO TO STEP 3.

3. Combination Meter Power Line Inspection

Check the combination meter 10P (Black) connector and 6P connector for loose or poor contact (page 19-13).

Measure the voltage at the combination meter connector with the ignition switch ON.

Is there Battery Voltage?

YES – GO TO STEP 4.

NO – • Loose or poor contact of related terminals
• Open circuit in Black/brown or Green wires between the battery and combination meter

4. Rear Wheel Speed Sensor System Inspection

Check the rear wheel speed sensor 2P (Blue) connector for loose or poor contact.

Measure the voltage at the rear wheel speed sensor 2P (Blue) connector wire harness side with the ignition switch ON (page 19-18).

Is there Battery Voltage?

YES – Faulty rear wheel speed sensor

NO – GO TO STEP 5.

5. Rear Wheel Speed Sensor Signal Line Open Circuit Inspection

Turn the ignition switch OFF and disconnect the combination meter connector and rear wheel speed sensor connector.

Check the continuity of the Pink/white and Green/red wires between the rear wheel speed sensor and combination meter.

Is there continuity?

YES – • Open circuit in Pink/white wire between the rear wheel speed sensor and combination meter
• Open circuit in Green/red wire between the rear wheel speed sensor and combination meter

NO – GO TO STEP 6.

6. Rear Wheel Speed Sensor Signal Line Short Circuit Inspection

Check the continuity of the Pink/white wire between the rear wheel speed sensor connector wire harness side and ground.

Is there continuity?

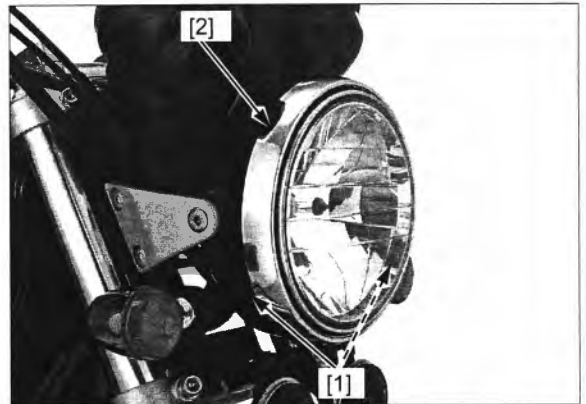
YES – Short circuit in Pink/white wire

NO – Faulty rear wheel speed sensor

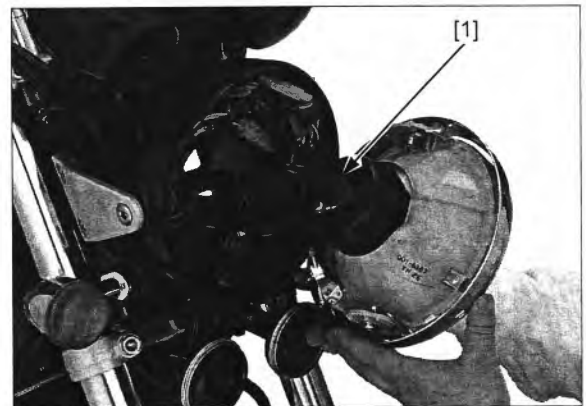
HEADLIGHT

HEADLIGHT UNIT REMOVAL

Remove the headlight unit mounting screws [1] and headlight unit [2] from the headlight case.



Disconnect the headlight connector [1] from the headlight unit.

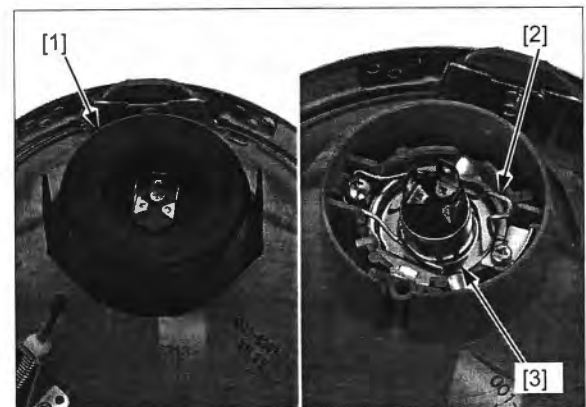


BULB REPLACEMENT

Remove the dust cover [1].

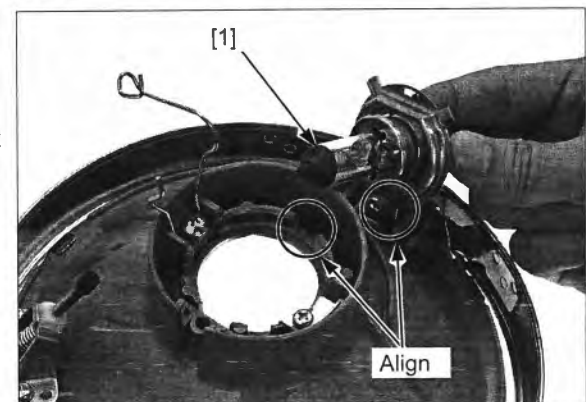
Be sure to let the bulb cool down before removal.

Unhook the bulb retainer [2] and remove the headlight bulb [3].



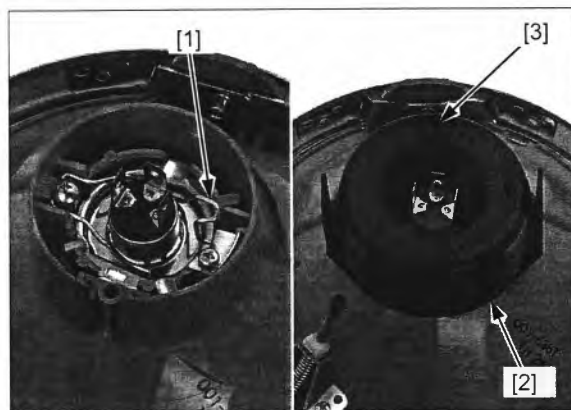
Install a new headlight bulb [1] aligning its tabs with the grooves in the headlight unit.

- Wear clean gloves while replacing the headlight bulb.
- If you touch the bulb with your bare hands, clean it with cloth moistened with denatured alcohol to prevent early bulb failure.



LIGHTS/METERS/SWITCHES

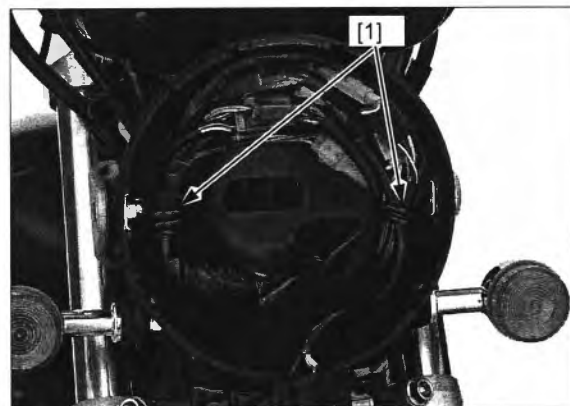
Hook the bulb retainer [1] on the headlight unit groove.
Install the dust cover [2] to the headlight unit with its "TOP" mark [3] facing up.



HEADLIGHT CASE REMOVAL/INSTALLATION

Remove the headlight unit (page 19-7).

Release the wire harness from the harness clamps [1].
Disconnect all the connectors in the headlight case.

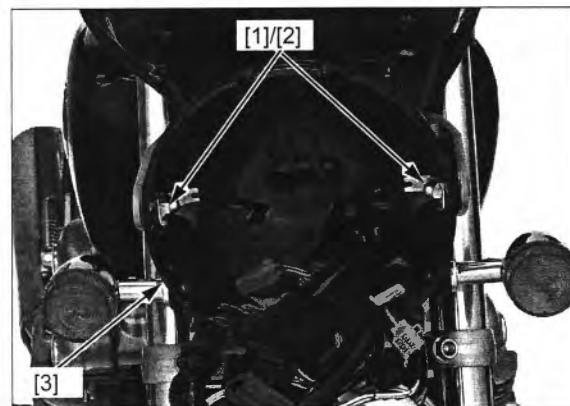


Remove the headlight case mounting bolts [1] and harness clamps [2].

Remove the headlight case [3].

Installation is in the reverse order of removal.

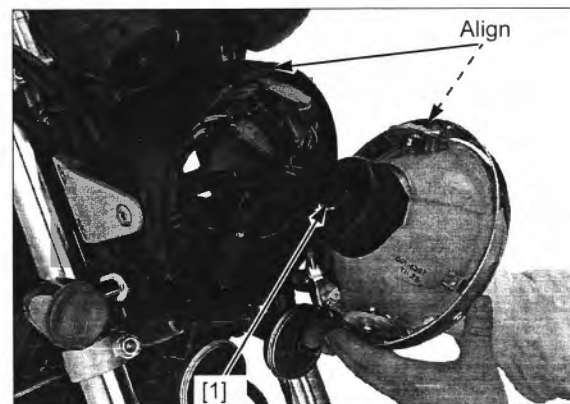
Route the wire harness properly (page 1-21).



HEADLIGHT UNIT INSTALLATION

Connect the headlight connector [1].

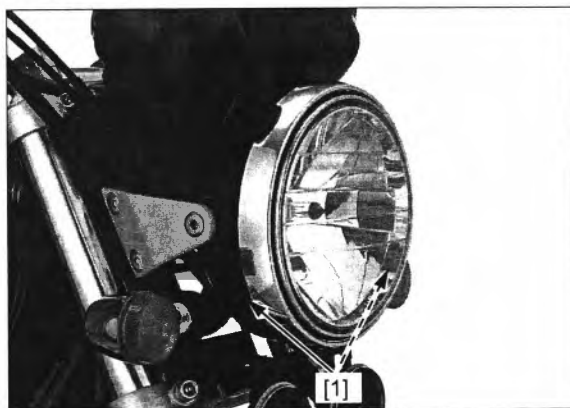
Install the headlight unit to the headlight case while aligning its tab with the groove in the headlight case.



Install and tighten the headlight unit mounting screws [1].

After installation, check the headlight and turn signal lights operation.

Adjust the headlight aim (page 3-27).



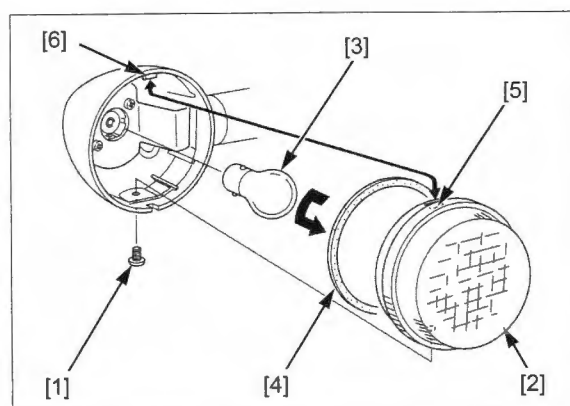
TURN SIGNAL LIGHT

BULB REPLACEMENT

Remove the screw [1] and turn signal light lens [2]. While pushing the bulb [3] in, turn it counterclockwise to remove it, and replace it with a new one.

Make sure the lens gasket [4] is installed in position and is in good condition, and replace it with a new one if necessary.

Install the lens, aligning its slot [5] with the tab [6] of the turn signal light, and tighten the screw securely.



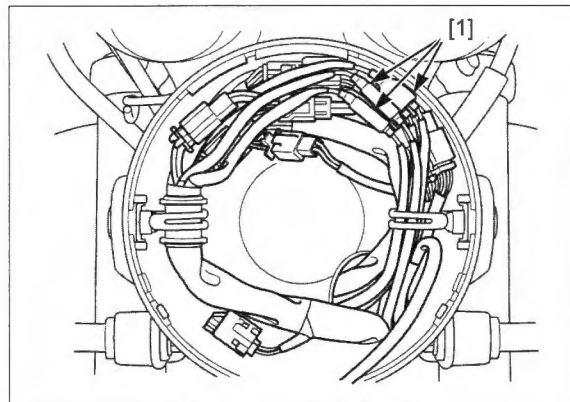
TURN SIGNAL LIGHT UNIT REMOVAL/INSTALLATION

Refer to rear turn signal light unit removal/installation (page 2-5).

FRONT

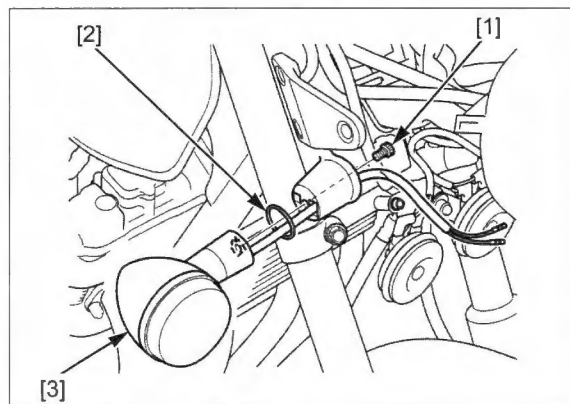
Remove the headlight unit (page 19-7).

Disconnect the front turn signal light connectors [1].



Remove the headlight case (page 19-8).

Remove the bolt [1], O-ring [2], and turn signal light unit [3].



Route the turn signal light wire properly (page 1-21).

Installation is in the reverse order of removal.

- At installation, align the tabs on the turn signal light unit and collar with the grooves on the headlight bracket.

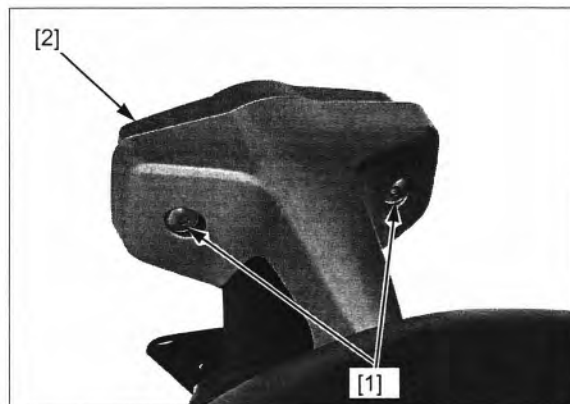
TORQUE:

Turn signal light mounting bolt:
5.1 N·m (0.5 kgf·m, 3.8 lbf·ft)

TAIL/BRAKE LIGHT

BULB REPLACEMENT

Remove the bolts [1] and tail/brake light lens [2].



Turn the bulb socket [1] counterclockwise to remove it from the tail/brake light lens.

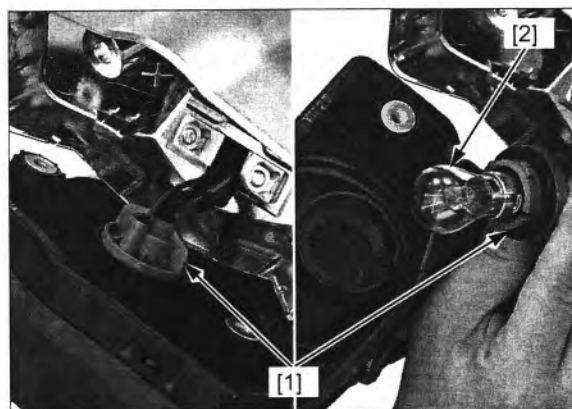
While pushing in, turn bulb [2] counterclockwise to remove it and replace with a new one.

Installation is in the reverse order of removal.

TORQUE:

Tail/brake light lens bolt:

9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)



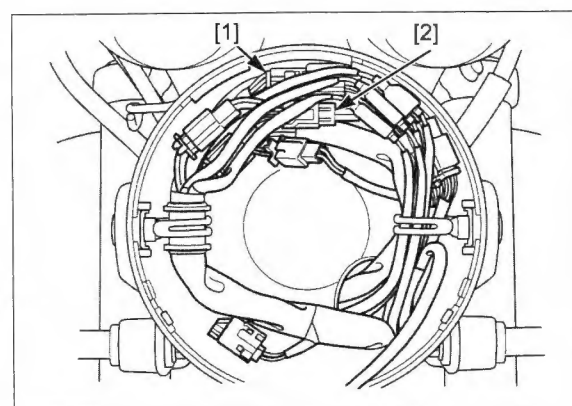
COMBINATION METER ('13 model)

REMOVAL/INSTALLATION

Remove the headlight unit (page 19-7).

Disconnect the combination meter 10P (Black) connector [1] and 6P connector [2].

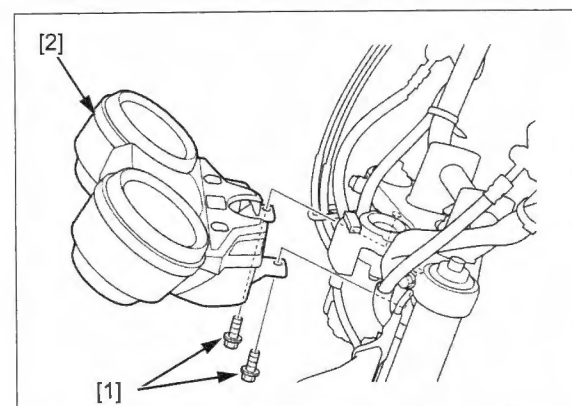
Remove the combination meter wire from the hole on the headlight case.



Remove the mounting bolts [1] and combination meter [2].

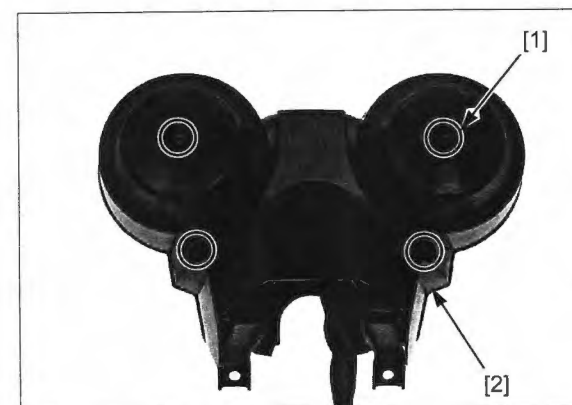
Installation is in the reverse order of removal.

Route the combination meter wire properly (page 1-21).



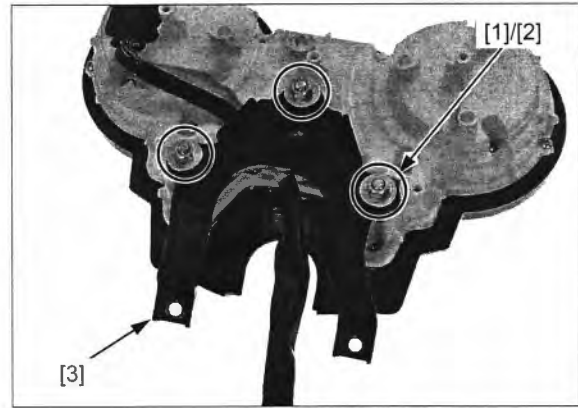
DISASSEMBLY/ASSEMBLY

Remove the screws [1] and lower cover [2].

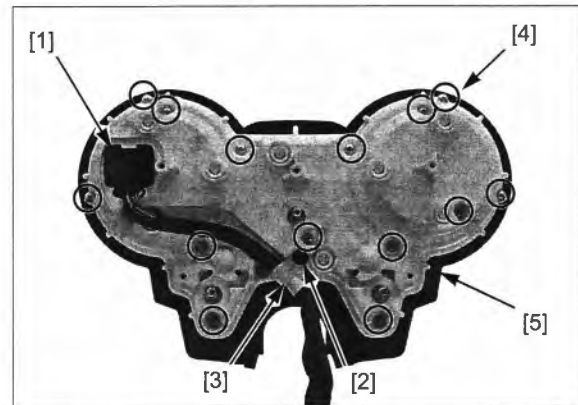


LIGHTS/METERS/SWITCHES

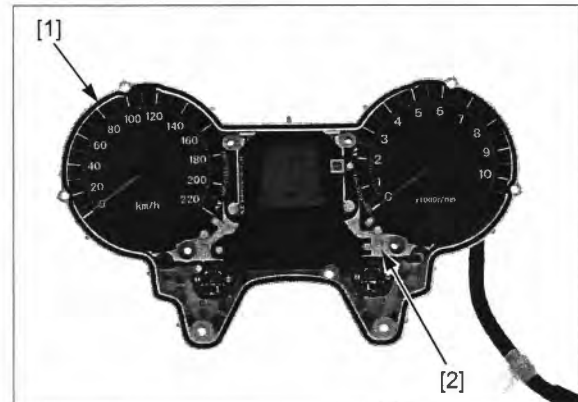
Remove the nuts [1], washers [2], and combination meter stay [3].



Remove the grommet [1].
Remove the screw [2] and wire clamp [3].
Remove the screws [4] and upper case [5].



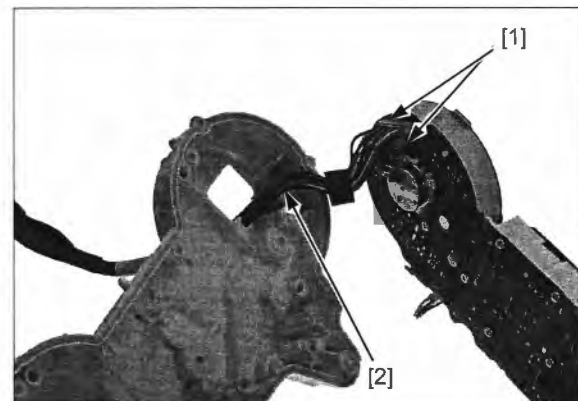
Remove the gasket [1] and combination meter printed circuit board assembly [2].



Disconnect the connectors [1], then remove the combination meter wire [2] from the combination meter printed circuit board assembly.

Do not disassemble the combination meter in a way other than shown in this manual.

Assembly is in the reverse order of disassembly.

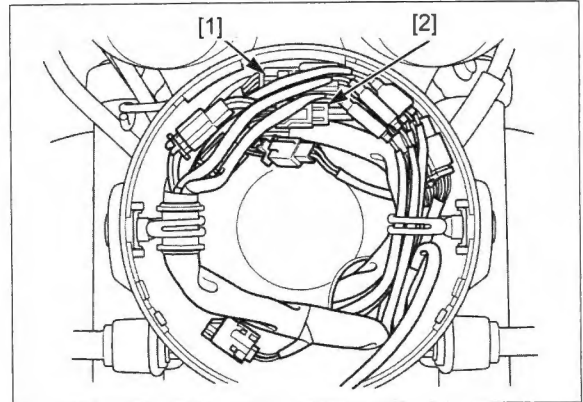


POWER/GROUND LINE INSPECTION

Remove the headlight unit (page 19-7).

Disconnect the combination meter 10P (Black) connector [1] and 6P connector [2].

Check the following at the wire harness side connector terminals of the combination meter.

**Power input line:**

Measure the voltage between the Black/brown wire terminal (+) of the 10P (Black) connector wire harness side [1] and body ground (-).

There should be battery voltage with the ignition switch ON.

If there is no voltage, check the Black/brown wire for an open circuit.

Back-up voltage line:

Measure the voltage between the Red/green wire terminal (+) of the 6P connector wire harness side [2] and body ground (-).

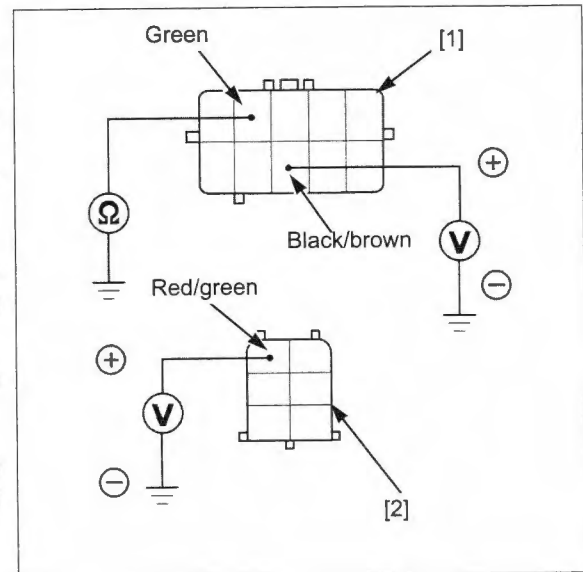
There should be battery voltage at all times.

If there is no voltage, check the Red/green wire for an open circuit.

Ground line:

Check the continuity between the Green wire terminal of the 10P (Black) connector wire harness side and body ground.

There should be continuity.



COMBINATION METER (After '13 model)

INITIAL OPERATION CHECK

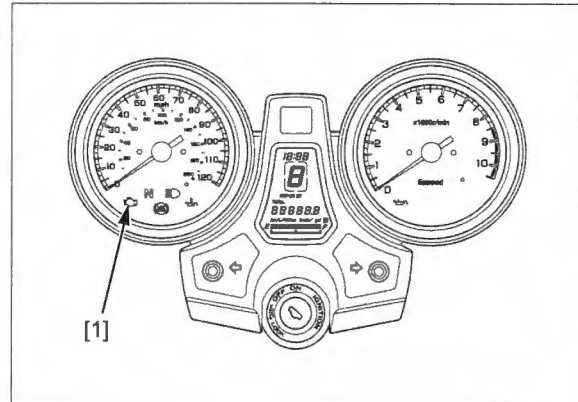
When the ignition switch is turned ON with the engine stop switch "O", the combination meter will show the entire digital display and the speedometer and tachometer needles will swing to the maximum scale on each dial once.

NOTE:

- If the MIL [1] stays on and it does not go off, refer to MIL circuit troubleshooting (page 5-44).

If the digital display does not function at all, inspect the combination meter power/ground line (page 19-14).

If the power and ground lines are OK, replace the combination meter (page 19-16).



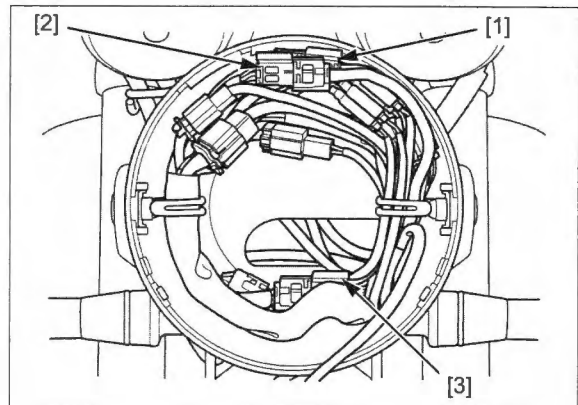
POWER/GROUND LINE INSPECTION

NOTE:

- The DTC 86-1 (serial communication malfunction) will be stored in the ECM if the power or ground line is abnormal. After the service is completed, check the DTC and erase it (page 5-14).

Remove the headlight unit (page 19-7).

Disconnect the combination meter 10P (Black) connector [1], 6P connector [2] and 8P (Gray) connector [3].



POWER INPUT LINE

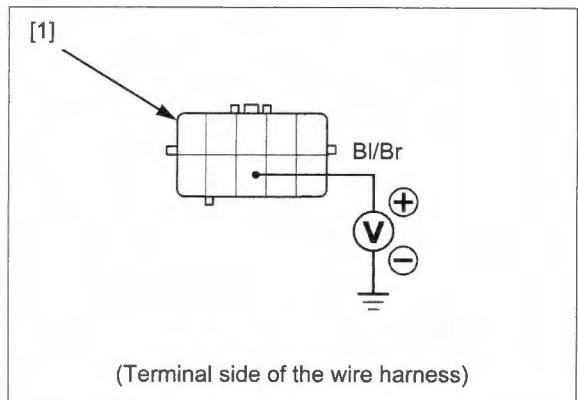
Measure the voltage between the combination meter 10P (Black) connector [1] terminal and ground.

CONNECTION: Black/blown (+) – Ground (–)

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

If there is no battery voltage, check the following:

- Black/blown wire between the fuse box and combination meter for open circuit
- METER, ILLUMI fuse (10 A)



BACK-UP VOLTAGE LINE

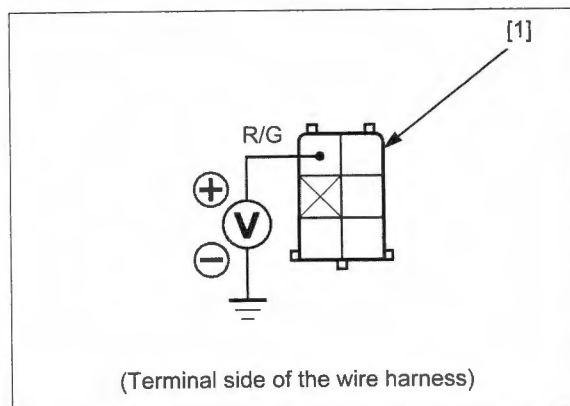
Measure the voltage between the combination meter 6P connector [1] terminal and ground.

CONNECTION: Red/green (+) – Ground (–)

There should be battery voltage at all times.

If there is no battery voltage, check the following:

- Red/green wire between the fuse box and combination meter for an open circuit
- TURN, CLOCK fuse (10 A)



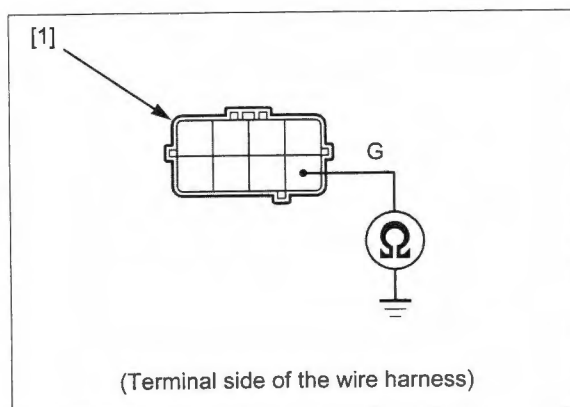
GROUND LINE

Check for continuity between the combination meter 8P (Gray) connector [1] terminal 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.

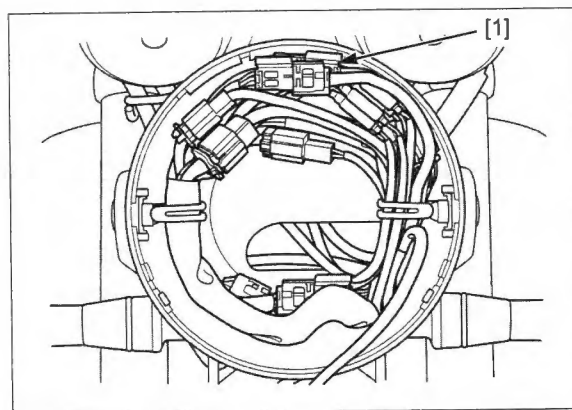


SERIAL COMMUNICATION LINE INSPECTION

Disconnect the ECM 33P (Black) connector (page 5-80).

Remove the headlight unit (page 19-7).

Disconnect the combination meter 10P (Black) connector [1].



LIGHTS/METERS/SWITCHES

1. Serial Communication Line Short Circuit Inspection

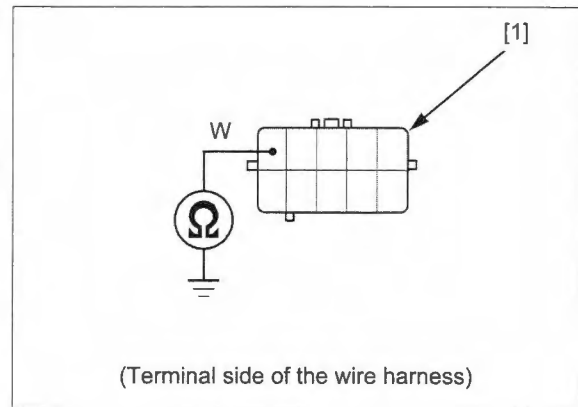
Check for continuity between the wire harness side 10P (Black) connector [1] terminal and ground.

CONNECTION: White – Ground

Is there continuity?

YES – Short circuit in the White wire between the combination meter and ECM

NO – GO TO STEP 2.



2. Serial Communication Line Open Circuit Inspection

Check for continuity between the wire harness side 10P (Black) connector [1] and ECM 33P (Gray) connector [2] terminals.

TOOL:

Test probe, 2 pack

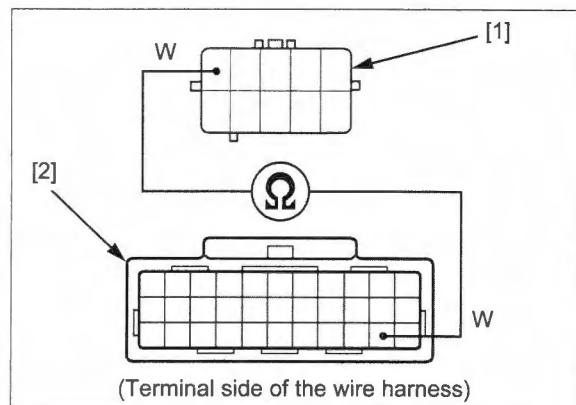
07ZAJ-RDJA110

CONNECTION: White – White

Is there continuity?

YES – Loose or poor contact on the related connectors.

NO – Open circuit in the White wire between the combination meter and ECM

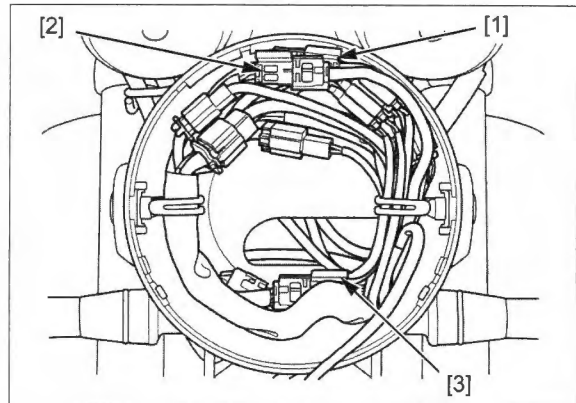


REMOVAL/INSTALLATION

Remove the headlight unit (page 19-7).

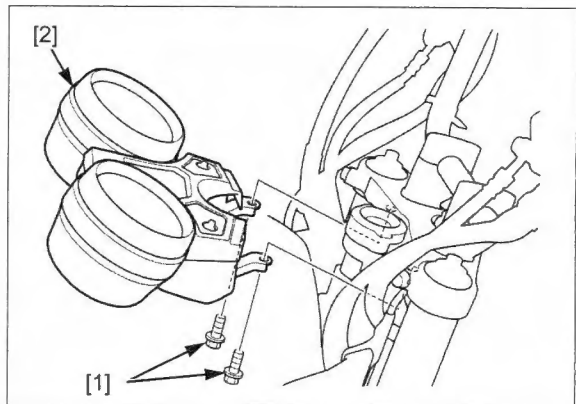
Disconnect the combination meter 10P (Black) connector [1], 6P connector [2] and 8P (Gray) connector [3].

Remove the combination meter wire from the hole on the headlight case.



Remove the mounting bolts [1] and combination meter [2].

Installation is in the reverse order of removal.

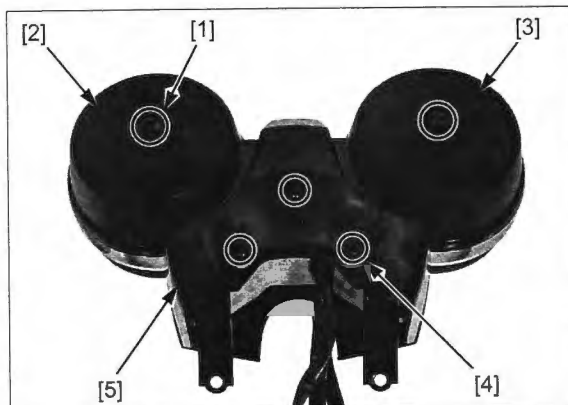


Route the combination meter wire properly (page 1-21).

DISASSEMBLY/ASSEMBLY

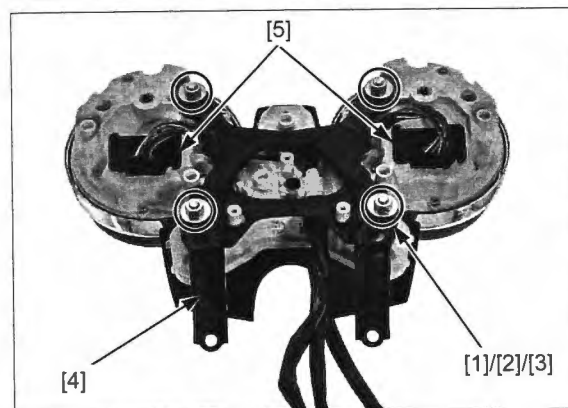
Remove the bolts [1], tachometer cover [2], and speedometer cover [3].

Remove the screws [4] and main cover [5].

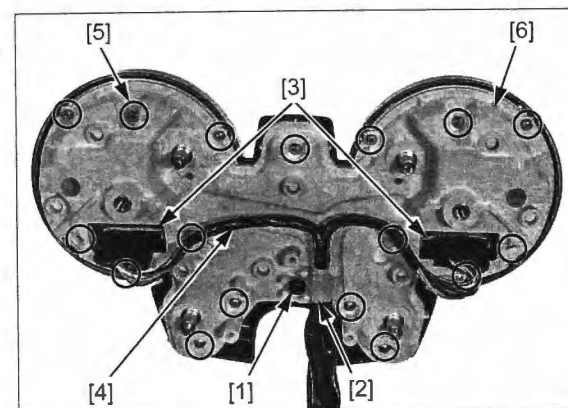


Remove the nuts [1], washers [2], set rubbers [3], and combination meter stay [4].

Remove the grommets [5].



Remove the screw [1] and wire clamp [2]. Disconnect the connectors [3], then remove the combination meter wire [4] from the combination meter printed circuit board assembly. Remove the screws [5] and lower case [6].

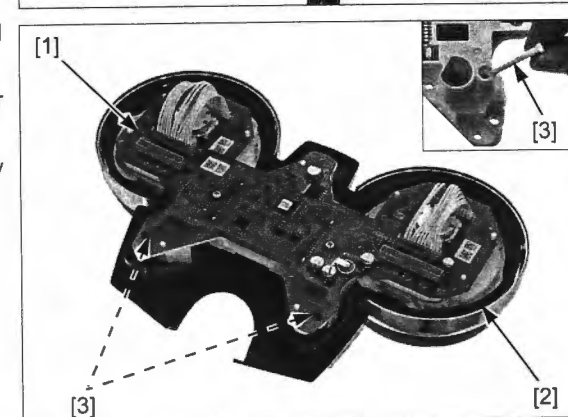


Remove the combination meter printed circuit board assembly [1] from the upper case [2].

Remove the top keys [3] from the combination meter printed circuit board assembly.

Do not disassemble the combination meter in a way other than shown in this manual.

Assembly is in the reverse order of disassembly.

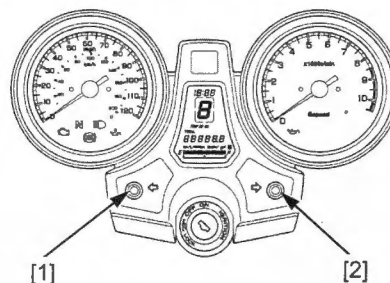


DIGITAL CLOCK SETTING PROCEDURE

Turn the ignition switch ON.

The control is automatically switched from the setting mode to the ordinary display if the button is not pressed for about 30 seconds.

1. Press and hold the A button [1] and B button [2] until the hour digits start flashing.
2. Press the A button until the desired hour is displayed (press and hold to advance the hour quickly).
3. Press the B button. The minute digits start flashing.
4. Press the A button until the desired minute is displayed (press and hold to advance the minute quickly).
5. Press the B button. The clock is set, and then the display moves to the changing of mileage unit. Turn the ignition switch OFF.



Clock setting display flow:

1. 2:34 → 2:34
2. 2:34 → 12:34
3. 12:34 → 12:34
4. 12:34 → 12:54

SPEEDOMETER/REAR WHEEL SPEED SENSOR ('13 model)

SYSTEM INSPECTION (CB1100A)

- Check for loose or poor contact of the combination meter 10P (Black) and 6P connectors.

When the ignition switch is turned ON, check that the speedometer needle moves to full scale and then returns to zero.

If the needle does not show initial function, check the combination meter power input line (page 19-13).

Check that the tachometer functions properly (page 19-24).

If they do not function, replace the combination meter (page 19-11).

If they function, read out the ABS problem code (page 15-15).

SYSTEM INSPECTION (CB1100)

- Check for loose or poor contact of the combination meter 10P (Black) and 6P connectors.

When the ignition switch turns ON, check that the speedometer needle moves to full scale and then returns to zero.

If the needle does not show initial function, check the combination meter power input line (page 19-13).

Check that the tachometer functions properly (page 19-24).

If they do not function, replace the combination meter (page 19-11).

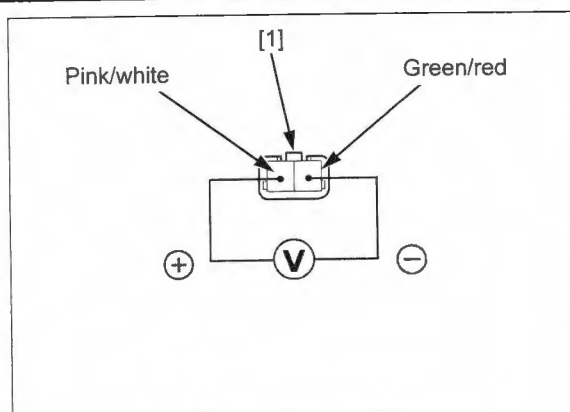
If they function, disconnect the rear wheel speed sensor 2P (Blue) connector, then perform the following inspection.

Shift the transmission into neutral and turn the ignition switch ON.

Measure the voltage between the Pink/white (+) and Green/red (-) wire terminals of the rear wheel speed sensor 2P (Blue) connector wire harness side [1].

STANDARD: Battery voltage

- If voltage appears, replace the rear wheel speed sensor (page 19-20).
 - If voltage does not appear, check for an open or short circuit in Pink/white wire.
- If the Pink/white wire is OK, replace the combination meter (page 19-11).



REAR WHEEL SPEED SENSOR INSPECTION (CB1100A)

REAR WHEEL SPEED SENSOR LINE INSPECTION:

Before inspection, check the followings:

- Combination meter (page 19-13)
- ABS (page 15-15)

Disconnect the ABS modulator 25P connector [1] and check for loose or poor contact of the connector terminals.

Disconnect the combination meter 10P (Black) connector [2].

Turn the ignition switch OFF and check the continuity between the ABS modulator 25P connector and combination meter 10P (Black) connector.

TOOL:

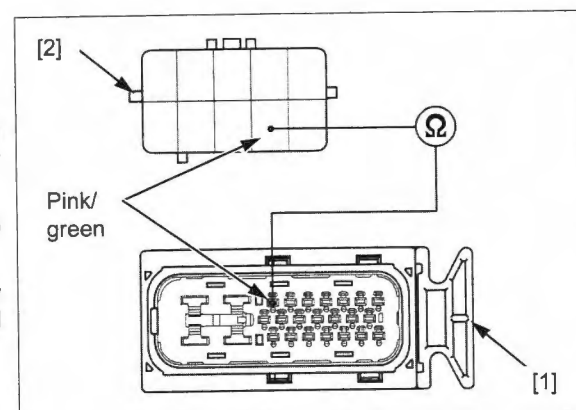
Test probe, 2 pack

07ZAJ-RDJA110

CONNECTION: Pink/green – Pink/green

STANDARD: Continuity

If there is no continuity, check for an open or short circuit in the wire harness.



REAR WHEEL SPEED SENSOR INSPECTION (CB1100)

AIR GAP INSPECTION:

Support the motorcycle securely using its centerstand and rise the rear wheel off the ground.

Measure the clearance (air gap) between the sensor and pulser ring at several points by turning the rear wheel slowly.

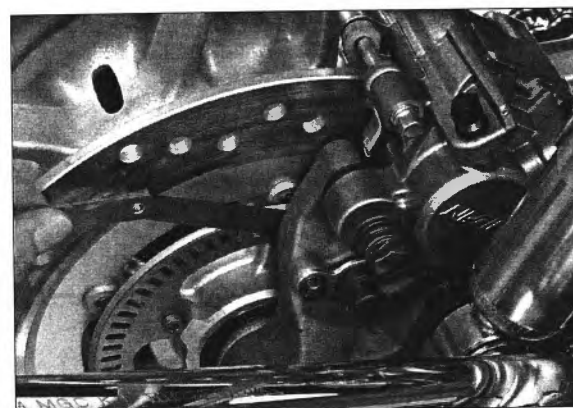
It must be within specification.

STANDARD: 0.4 - 1.2 mm (0.02 - 0.05 in)

The sensor air gap cannot be adjusted. If it is not within specification, check each installation part for deformation, looseness, or damage.

Check the wheel speed sensor for damage, and replace if necessary.

Check the rear pulser ring for deformation or damage, and replace if necessary (page 19-20).



REAR WHEEL SPEED SENSOR LINE INSPECTION:

Before inspection, check the combination meter (page 19-13).

Remove the right side cover (page 2-4).

Disconnect the rear wheel speed sensor 2P (Blue) connector [1] and check for loose or poor contact of the connector terminals.

Disconnect the combination meter 10P (Black) connector [2].

Turn the ignition switch OFF and check the continuity between the rear wheel speed sensor 2P (Blue) connector and combination meter 10P (Black) connector.

CONNECTION: Pink/white – Pink/white
Green/red – Green/red

STANDARD: Continuity

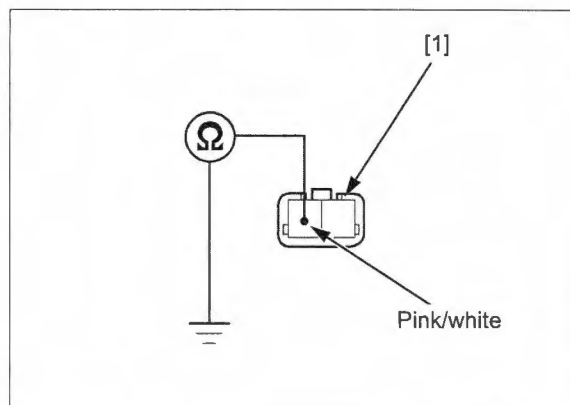
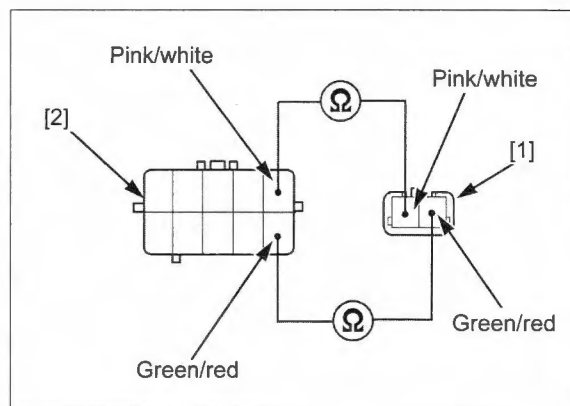
If there is no continuity, replace the wire harness.

Check for continuity between the rear wheel speed sensor 2P (Blue) connector [1] terminal and ground with the ignition switch OFF.

CONNECTION: Pink/white – Ground

STANDARD: Continuity

If there is continuity, replace the wire harness.



REMOVAL/INSTALLATION (CB1100)

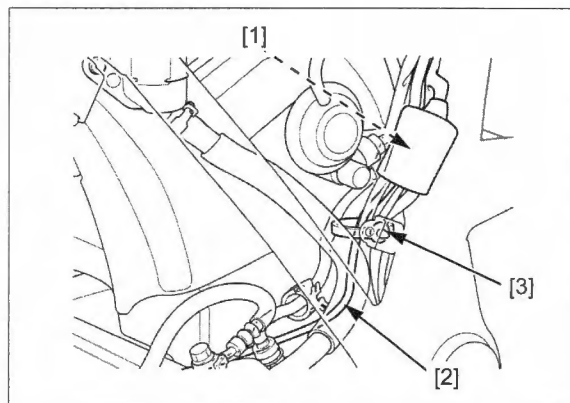
- Refer to rear wheel speed sensor (CB1100A) removal/installation (page 15-51).

Remove the following:

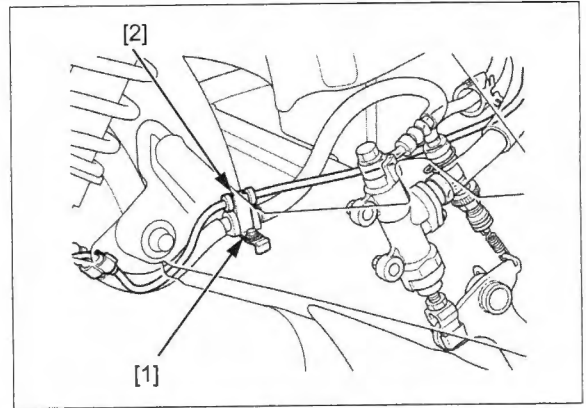
- Right side cover (page 2-4)
- Rear wheel (page 13-8)

Disconnect the rear wheel speed sensor 2P (Blue) connector [1].

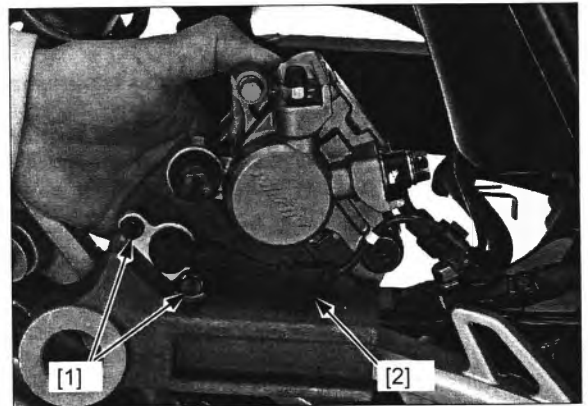
Release the rear wheel speed sensor wire [2] from the harness band clip [3].



Remove the bolt [1] and hose clamp [2].



Remove the mounting bolts [1] and sensor wire clamp [2].



Remove the rear wheel speed sensor [1] from the rear brake caliper bracket.

Clean around the mounting area of the sensor bracket thoroughly, and be sure that no foreign material is allowed to enter the mounting hole.

Route the rear wheel speed sensor wire properly (page 1-21).

Installation is in the reverse order of removal.

After installation, check the air gap (page 19-19).



SPEEDOMETER/REAR WHEEL SPEED SENSOR (After '13 model)

SYSTEM INSPECTION (CB1100A/SA)

- Check loose or poor contact of the combination meter 10P (Black), 6P and 8P (Gray) connectors.

If the speedometer does not operate, check the following:

- combination meter initial operation (page 19-14)
- combination meter indication when the serial communication line is abnormal (page 5-6)
- MIL blinking: If the MIL blinks 11 (DTC 11-1), check the rear wheel sensor system (page 5-29)

If the above items are OK, replace the combination meter (page 19-16).

SYSTEM INSPECTION (CB1100)

- Check loose or poor contact of the combination meter 10P (Black), 6P and 8P (Gray) connectors.

If the speedometer does not operate, check the following:

- combination meter initial operation (page 19-14)
- combination meter indication when the serial communication line is abnormal (page 5-6)
- MIL blinking: If the MIL blinks 11 (DTC 11-1), check the rear wheel sensor system (page 5-29)

If the above items are OK, replace the combination meter (page 19-16).

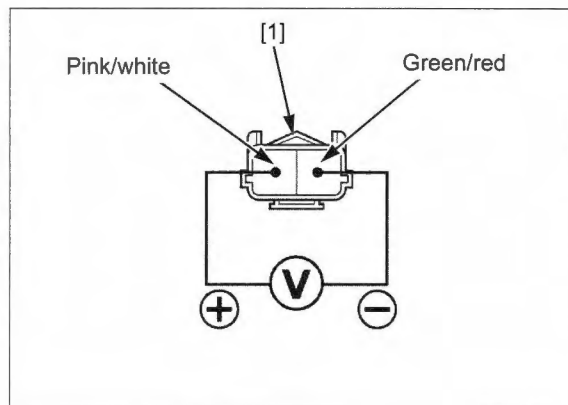
If they function, disconnect the rear wheel speed sensor 2P (Blue) connector, then perform the following inspection.

Shift the transmission into neutral and turn the ignition switch ON.

Measure the voltage between the Pink/white (+) and Green/red (-) wire terminals of the rear wheel speed sensor 2P (Blue) connector wire harness side [1].

STANDARD: Battery voltage

- If voltage appears, replace the rear wheel speed sensor (page 19-20).
- If voltage does not appear, check for an open or short circuit in Pink/white wire.
If the Pink/white wire is OK, replace the combination meter (page 19-16).



REAR WHEEL SPEED SENSOR INSPECTION (CB1100A/SA)

REAR WHEEL SPEED SENSOR LINE INSPECTION:

Before inspection, check the following:

- combination meter (page 19-14)
- ABS (page 15-16)

Disconnect the ABS modulator 18P connector [1] (page 15-14).

Disconnect the combination meter 10P (Black) connector [2] (page 19-14).

Check loose or poor contact of the ABS sub-harness 4P (Black) connector.

Turn the ignition switch OFF and check the continuity between the ABS modulator 18P connector and combination meter 10P (Black) connector.

TOOL:

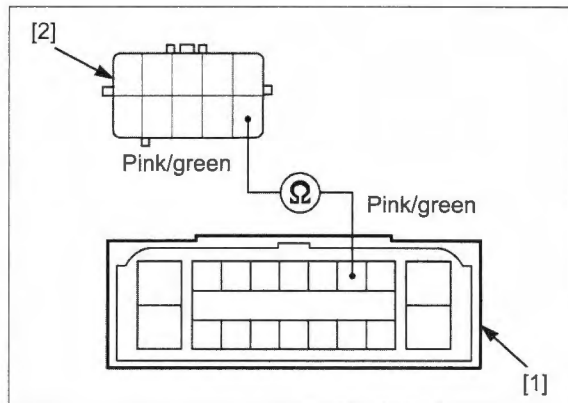
Test probe, 2 pack

07ZAJ-RDJA110

CONNECTION: Pink/green – Pink/green

STANDARD: Continuity

If there is no continuity, check for an open or short circuit in the main wire harness or ABS sub-harness.



REAR WHEEL SPEED SENSOR INSPECTION (CB1100)

REAR WHEEL SPEED SENSOR LINE INSPECTION:

Before inspection, check the following:

- rear wheel speed sensor air gap (page 19-19)
- combination meter (page 19-14)

Disconnect the rear wheel speed sensor 2P (Blue) connector [1] (page 19-20).

Disconnect the combination meter 10P (Black) connector [2] (page 19-14).

Turn the ignition switch OFF and check the continuity between the rear wheel speed sensor 2P (Blue) connector and combination meter 10P (Black) connector.

CONNECTION: Pink/white – Pink/white
Green/red – Green/red

STANDARD: Continuity

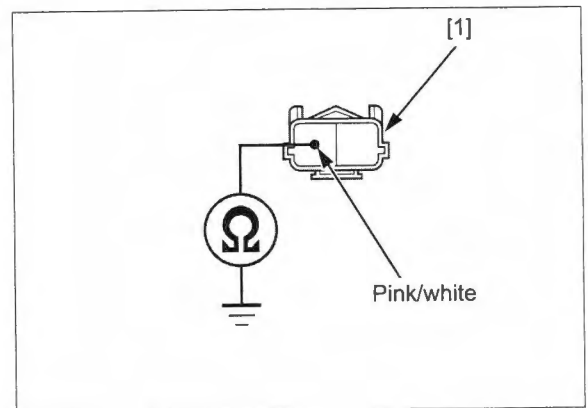
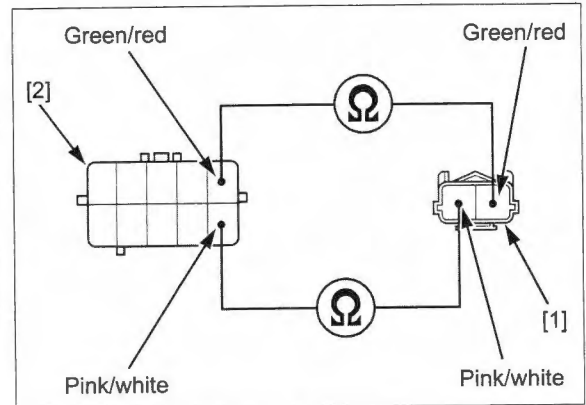
If there is no continuity, replace the wire harness.

Check for continuity between the rear wheel speed sensor 2P (Blue) connector [1] terminal and ground with the ignition switch OFF.

CONNECTION: Pink/white – Ground

STANDARD: Continuity

If there is continuity, replace the wire harness.



REMOVAL/INSTALLATION (CB1100)

- Refer to rear wheel speed sensor ('13 CB1100) removal/installation (page 19-20).

TACHOMETER ('13 model)

SYSTEM INSPECTION

- Check loose or poor contact of the combination meter 10P (Black) and 6P connectors.

When the ignition switch turned to ON, check that the tachometer needle moves to full scale and then returns to zero.

If the needle does not show initial function, check the combination meter power input line (page 19-13).

Remove the headlight unit (page 19-7).

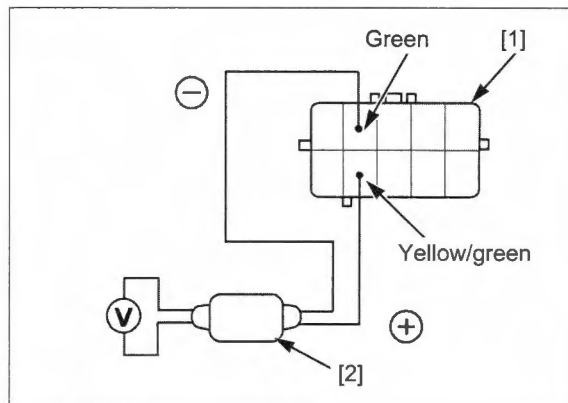
Disconnect the combination meter 10P (Black) connector [1].

Connect the peak voltage adaptor [2] or tester probes to the terminals of the combination meter 10P (Black) connector wire harness side.

TOOLS:

IgnitionMate peak voltage tester MTP07-0286
(U.S.A. only) or
Peak voltage adaptor 07HGJ-0020100
(Not available in U.S.A.)

with commercially available digital multimeter
(impedance 10 MΩ/DCV minimum)



CONNECTION: Yellow/green (+) – Green (-)

Start the engine and measure the tachometer input peak voltage.

PEAK VOLTAGE: 10.5 V minimum

If the measured value is normal, replace the combination meter printed circuit board (page 19-11).

If the measured value is below 10.5 V, replace the ECM (page 5-80).

If the measured value is 0 V, disconnect the ECM 33P (Gray) connector [1] (page 5-80).

Disconnect the combination meter 10P (Black) connector [2].

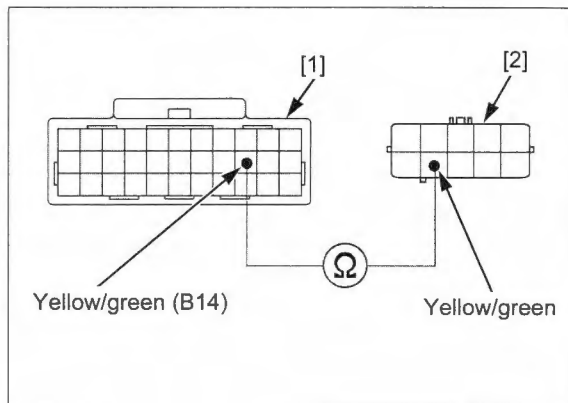
Check the continuity of the Yellow/green wire between the combination meter 10P (Black) connector and ECM 33P (Gray) connector.

TOOL:

Test probe, 2 pack 07ZAJ-RDJA110

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

If there is continuity, replace the ECM (page 5-80).



TACHOMETER (After '13 model)

SYSTEM INSPECTION

- Check loose or poor contact of the combination meter 10P (Black), 6P, and 8P (Gray) connectors.

If the tachometer does not operate, check the following:

- combination meter initial operation (page 19-14)
- combination meter indication when the serial communication line is abnormal (page 5-6)
- CKP sensor (page 17-8)

If the above items are OK, replace the combination meter (page 19-16).

OIL TEMPERATURE INDICATOR ('13 model)

INSPECTION

- When the ignition switch turned to ON, the oil temperature indicator comes on, then it goes off.

If the oil temperature indicator does not go off, check the MIL and EOT sensor (page 5-15).

If the oil temperature indicator does not come on, check the combination meter power input line (page 19-13).

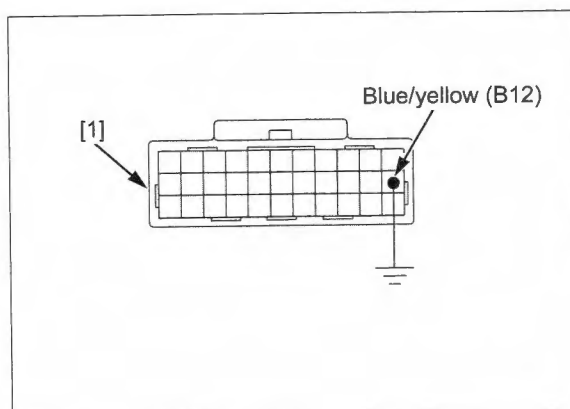
If the combination meter power input line is normal, check the following:

Disconnect the ECM 33P (Gray) connector [1]

Ground the Blue/yellow wire terminal of the ECM 33P (Gray) connector wire harness side using a jumper wire.

The oil temperature indicator comes on with the ignition switch turned to ON.

If the oil temperature indicator does not come on, replace the combination meter (page 19-11).



OIL TEMPERATURE INDICATOR (After '13 model)

SYSTEM INSPECTION

When the system is normal, the high oil temperature indicator [1] comes on when the ignition switch is turned ON with the engine stop switch "O", and then goes off.

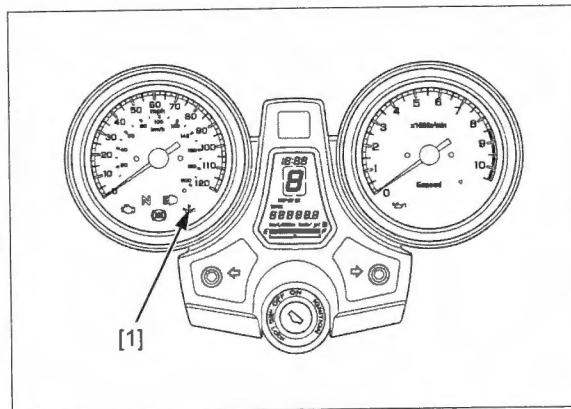
NOTE:

- If the high oil temperature indicator and digital display do not function at all, refer to combination meter initial operation check (page 19-14).

If the high oil temperature indicator does not operate properly, check the following:

- MIL blinking: If there are 7 blinks (DTC 7-1, 7-2), check the EOT sensor system (page 5-15)
- combination meter indication when the serial communication line is abnormal (page 5-6)

If the above items are OK, replace the combination meter (page 19-16).



EOP SWITCH

INSPECTION

Check the engine oil level before inspection (page 3-14).

Make sure that the oil pressure indicator comes on with the ignition switch ON.

Start the engine and make sure that the light goes out.

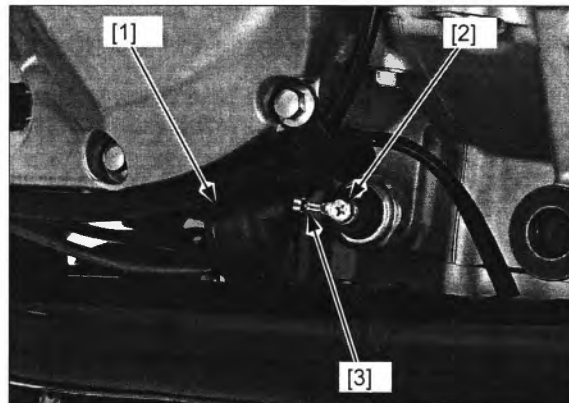
If the light does not go out, check the oil pressure (page 4-5).

If the oil pressure is normal, replace the EOP switch (page 4-5).

If the indicator does not come on, inspect as follows:

Remove the dust cover [1].

Remove the terminal bolt [2] and disconnect the EOP switch wire [3].



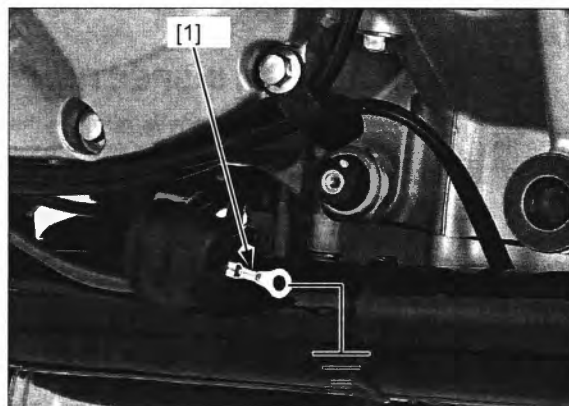
Ground the EOP switch wire terminal [1] using a jumper wire.

The oil pressure indicator comes on with the ignition switch turned to ON.

If the light does not come on, check for a blown sub fuse (METER, ILLUMI 10 A) or an open in the circuit.

If the sub-fuse (METER, ILLUMI 10 A) and wire harness are normal, replace the combination meter (page 19-11).

After inspection, connect the EOP switch wire with the terminal bolt, and tighten the terminal bolt to the specified torque.



TORQUE: 2.2 N·m (0.2 kgf·m, 1.6 lbf·ft)

Install the dust cover securely.

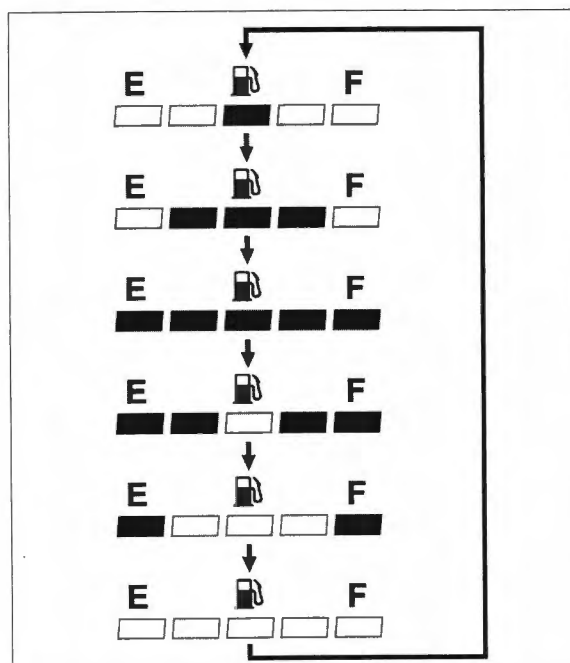
FUEL LEVEL SENSOR ('13 model)

OPEN CIRCUIT INSPECTION

If the fuel level indicator indicates as shown in the illustration, there is an open circuit in the fuel level indicator system.

Check for an open circuit in the wire harness and fuel level sensor.

If the wire harness and fuel level sensor are normal, replace the combination meter (page 19-11).



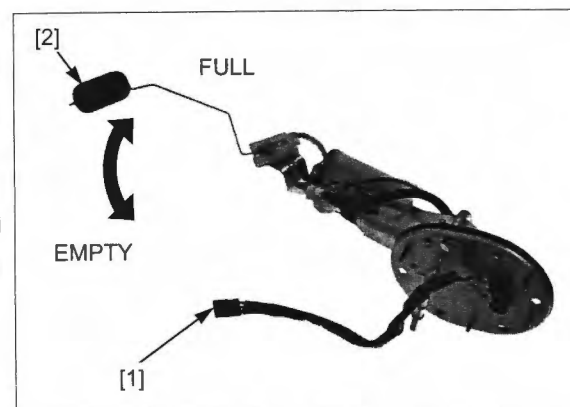
FUEL LEVEL SENSOR INSPECTION

Remove the fuel pump (page 5-50).

Connect an ohmmeter to the fuel pump 3P (Black) connector [1] Gray/black and Green terminals. Inspect the resistance of the float [2] at the top and bottom positions.

	FULL	EMPTY
Resistance	8 – 12 Ω	213 – 219 Ω

If it is out of specification, replace the fuel pump as an assembly (page 5-50).



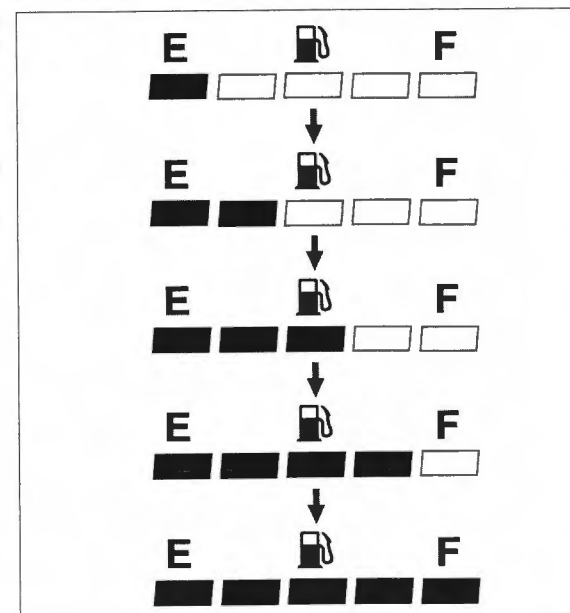
Connect the fuel pump 3P (Black) connector to the wire harness and move the float from empty to full to check the fuel meter display indication.

(in 15 seconds, 1 segment change)

Turn the ignition switch to "ON".

If the fuel meter does not indicate properly, check for an open or short circuit in the wire harness.

If the wire harness is good, replace the combination meter print board with a new one (page 19-11).



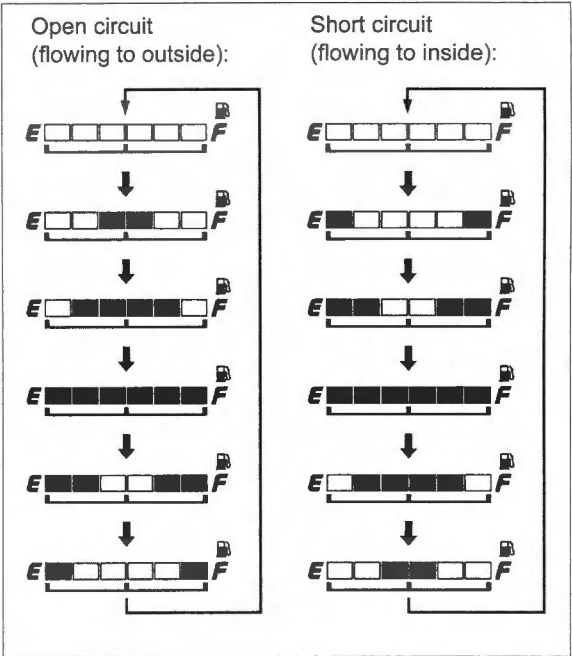
FUEL LEVEL SENSOR (After '13 model)

FUEL GAUGE INSPECTION

When a circuit malfunction occurs, the combination meter displays the flow pattern in the fuel gauge. If it is indicated, check for an open or short circuit in the Gray/black wire between the combination meter and fuel pump unit.

If the Gray/black wire is OK, check the fuel level sensor (page 19-28).

If the fuel level sensor is OK, replace the combination meter (page 19-16).



FUEL LEVEL SENSOR INSPECTION

Remove the fuel pump (page 5-53).

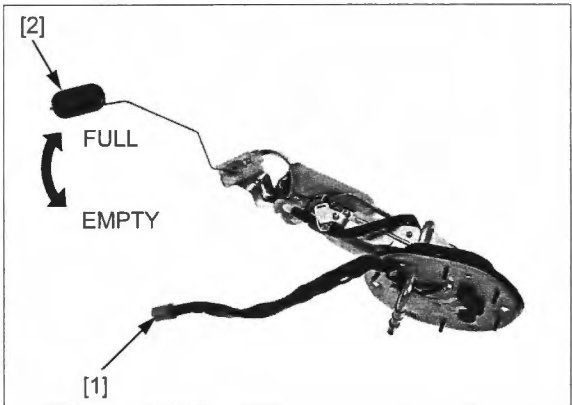
Measure the resistance between the fuel pump unit 4P (Black) connector [1] terminals.

CONNECTION: Red/black – Black/white

Inspect the resistance of the float [2] at the top and bottom positions.

	FULL	EMPTY
Resistance	5 – 7 Ω	204 – 210 Ω

If it is out of specification, replace the fuel pump as an assembly (page 5-53).

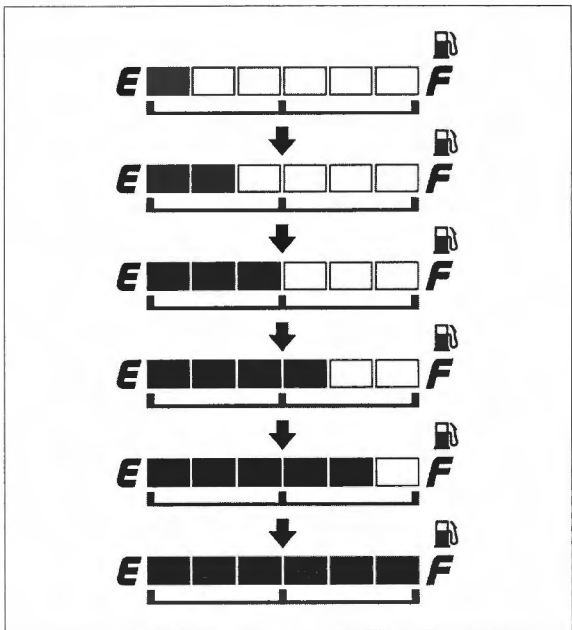


Connect the fuel pump 4P (Black) connector to the wire harness and move the float from empty to full to check the fuel meter display indication. (in 10 - 20 seconds, 1 segment change)

Turn the ignition switch to "ON".

If the fuel meter does not indicate properly, check for an open or short circuit in the wire harness.

If the wire harness is good, replace the combination meter print board with a new one (page 19-17).

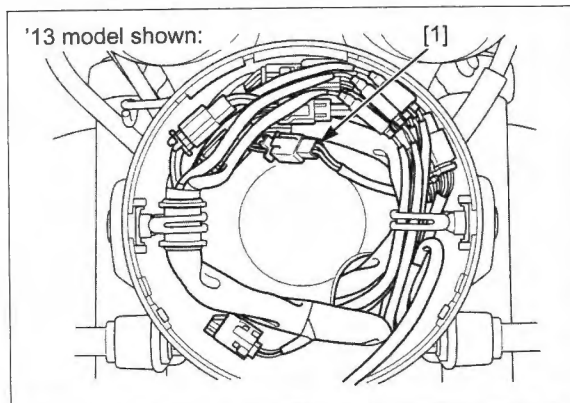


IGNITION SWITCH

INSPECTION

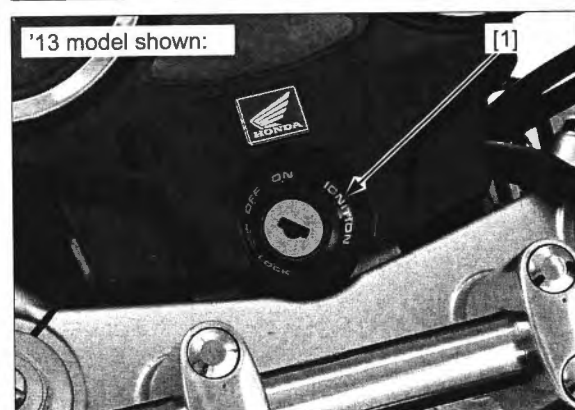
Remove the headlight unit (page 19-7).

Disconnect the ignition switch 2P (Brown) connector [1].



Check for continuity between the switch side connector terminals in each switch position according to the chart.

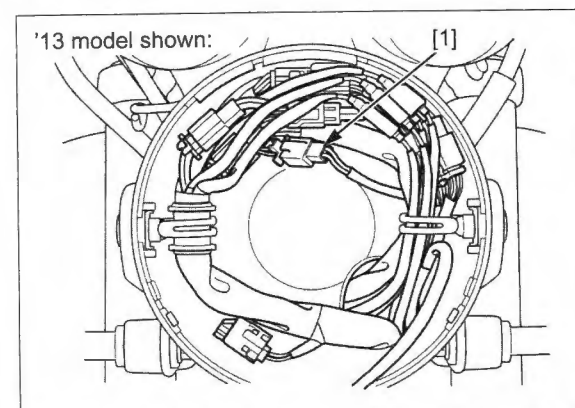
- '13 CB1100 (page 20-2)
- '13 CB1100A (page 20-3)
- After '13 CB1100 (page 20-4)
- After '13 CB1100A (page 20-5)
- After '13 CB1100SA (page 20-6)



REMOVAL/INSTALLATION

Remove the headlight unit (page 19-7).

Disconnect the ignition switch 2P (Brown) connector [1].

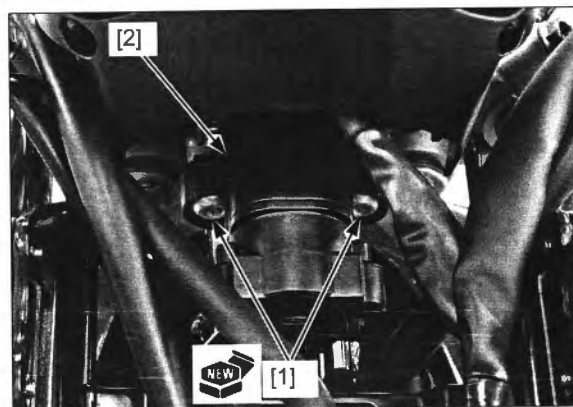


Remove the headlight case (page 19-8).

Remove the one-way bolts [1], then remove the ignition switch [2].

Install the ignition switch with new one-way bolts. Tighten the one-way bolts securely.

Install the removed parts in the reverse order of removal.

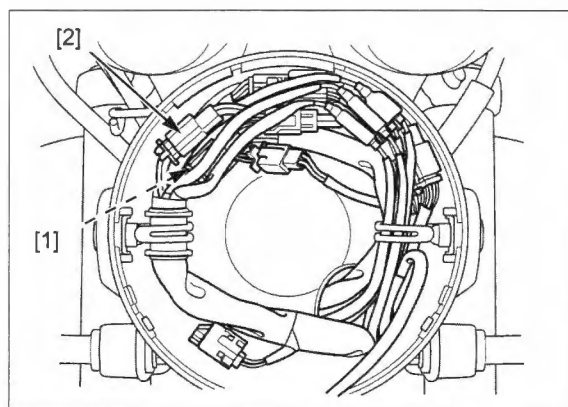


HANDLEBAR SWITCHES ('13 model)

RIGHT HANDLEBAR SWITCH

Remove the headlight unit (page 19-7).

Disconnect the right handlebar switch 9P (Brown) connector [1] and 2P (Brown) connector [2].



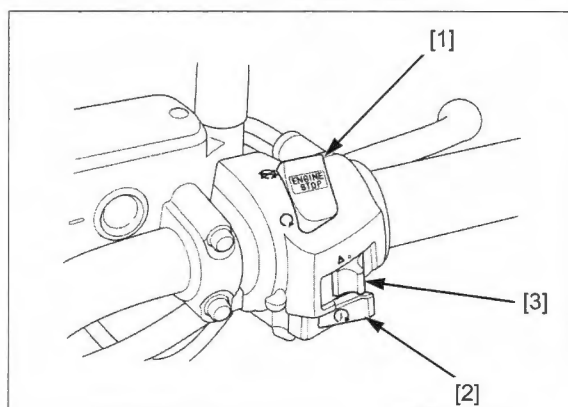
Check for continuity between the switch side connector terminals in each switch position according to the chart.

[1] ENGINE STOP SWITCH

[2] STARTER SWITCH

[3] HAZARD SWITCH

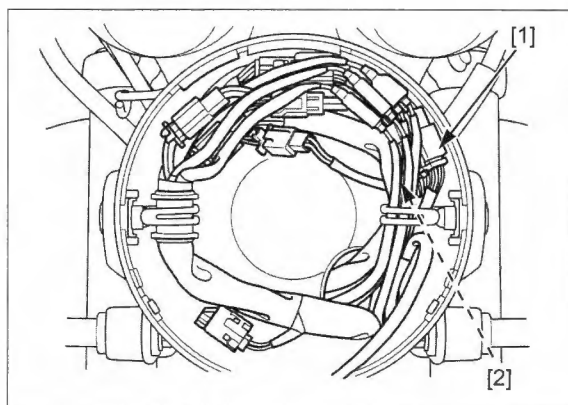
- CB1100 (page 20-2)
- CB1100A (page 20-3)



LEFT HANDLEBAR SWITCH

Remove the headlight unit (page 19-7).

Disconnect the left handlebar switch 6P (Black) connector [1] and 6P (Green) connector [2].



Check for continuity between the switch side connector terminals in each switch position according to the chart.

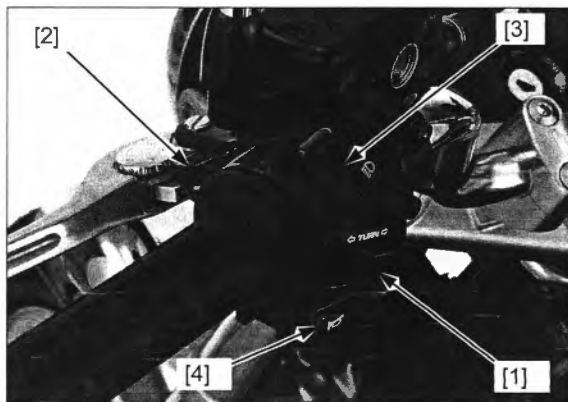
[1] TURN SIGNAL SWITCH

[2] PASSING SWITCH

[3] DIMMER SWITCH

[4] HORN SWITCH

- CB1100 (page 20-2)
- CB1100A (page 20-3)

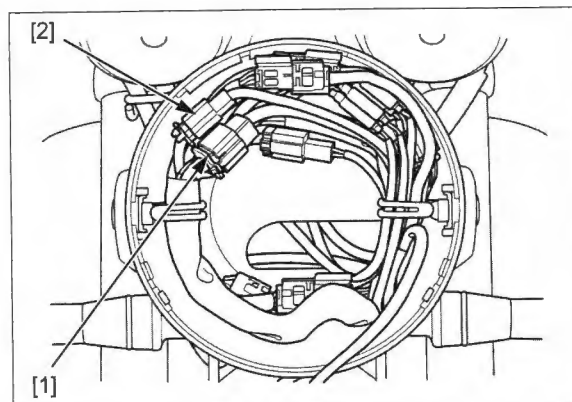


HANDLEBAR SWITCHES (After '13 model)

RIGHT HANDLEBAR SWITCH

Remove the headlight unit (page 19-7).

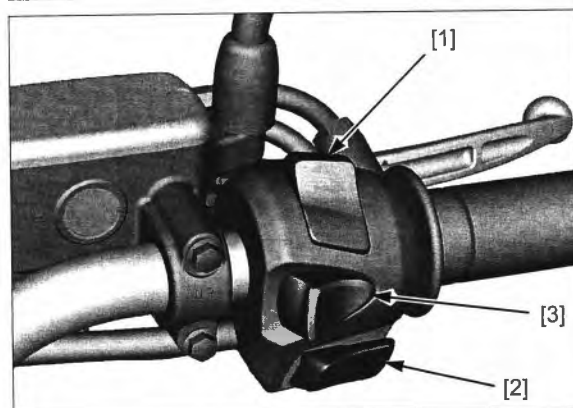
Disconnect the right handlebar switch 9P (Brown) connector [1] and 2P (Brown) connector [2].



Check for continuity between the switch side connector terminals in each switch position according to the chart.

- [1] ENGINE STOP SWITCH
- [2] STARTER SWITCH
- [3] HAZARD SWITCH

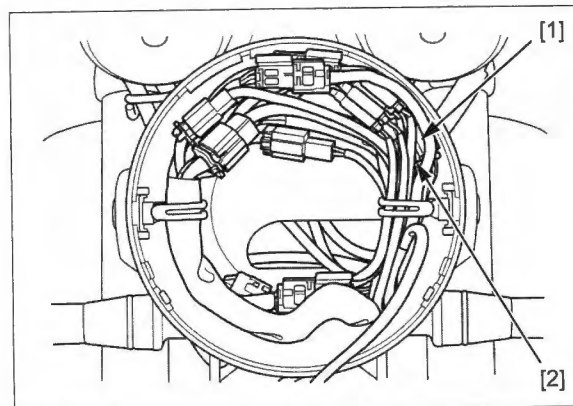
- CB1100 (page 20-4)
- CB1100A (page 20-5)
- CB1100SA (page 20-6)



LEFT HANDLEBAR SWITCH

Remove the headlight unit (page 19-7).

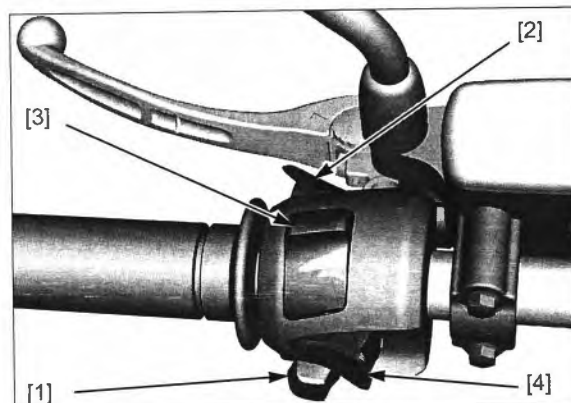
Disconnect the left handlebar switch 6P (Black) connector [1] and 6P (Green) connector [2].



Check for continuity between the switch side connector terminals in each switch position according to the chart.

- [1] TURN SIGNAL SWITCH
- [2] PASSING SWITCH
- [3] DIMMER SWITCH
- [4] HORN SWITCH

- CB1100 (page 20-4)
- CB1100A (page 20-5)
- CB1100SA (page 20-6)



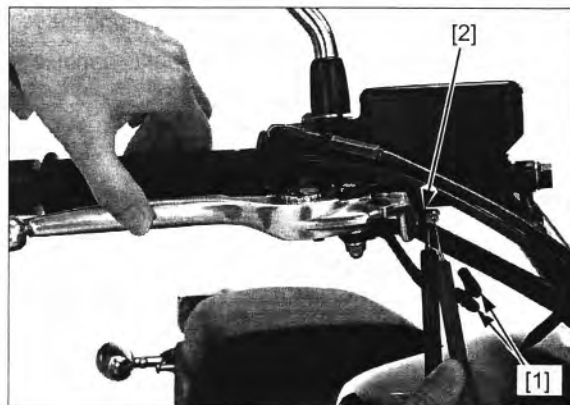
BRAKE LIGHT SWITCH

INSPECTION

FRONT:

Disconnect the front brake light switch connectors [1] and check the continuity between the switch [2] terminals.

There should be continuity with the brake lever applied, and there should be no continuity with the brake lever is released.

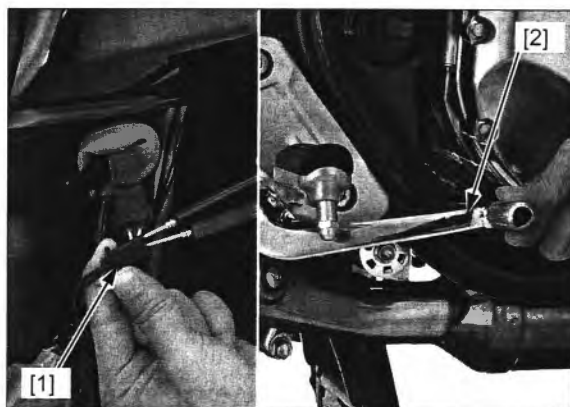


REAR:

Remove the right side cover (page 2-4).

Disconnect the rear brake light switch 2P (Black) connector [1] and check the continuity between the terminals.

There should be continuity with the brake pedal [2] depressed, and there should be no continuity with the brake pedal released.



CLUTCH SWITCH

Disconnect the clutch switch connectors [1] and check the continuity between the switch [2] terminals.

There should be continuity with the clutch lever applied, and there should be no continuity with the clutch lever released.



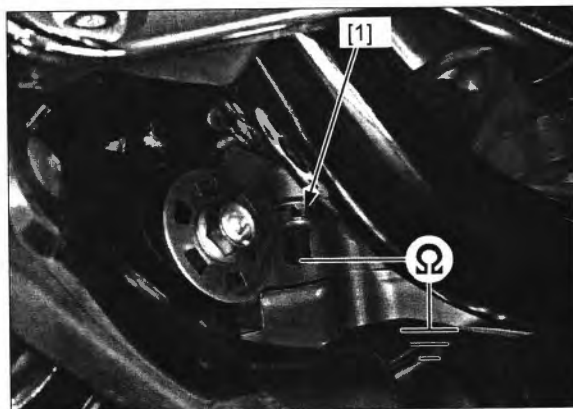
NEUTRAL SWITCH

INSPECTION

Disconnect the wire connector from the neutral switch [1].

Check the continuity between the neutral switch terminal and engine ground.

There should be continuity when the transmission is in neutral, and no continuity when the transmission is in gear.



REMOVAL/INSTALLATION

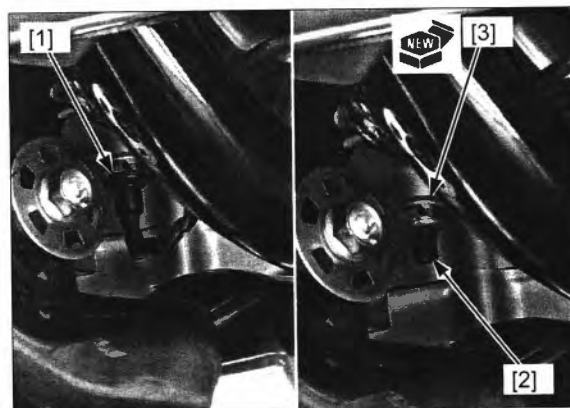
Disconnect the neutral switch connector [1].

Remove the neutral switch [2] and sealing washer [3].

Install the neutral switch with a new sealing washer.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Connect the neutral switch connector.



SIDESTAND SWITCH

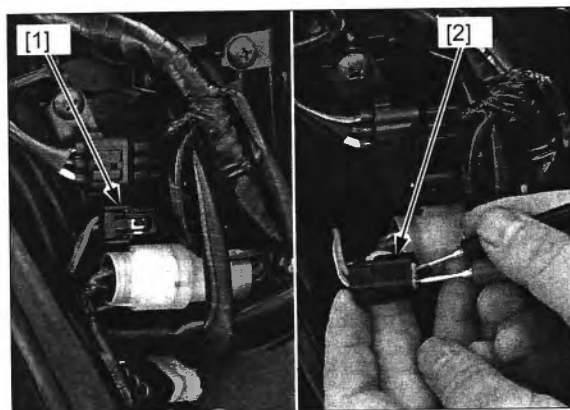
INSPECTION

Remove the left side cover (page 2-4).

Disconnect the sidestand switch 2P (Black) connector [1].

Check the continuity between the wire terminals of the switch side connector [2].

Continuity should exist only when the sidestand is retracted.



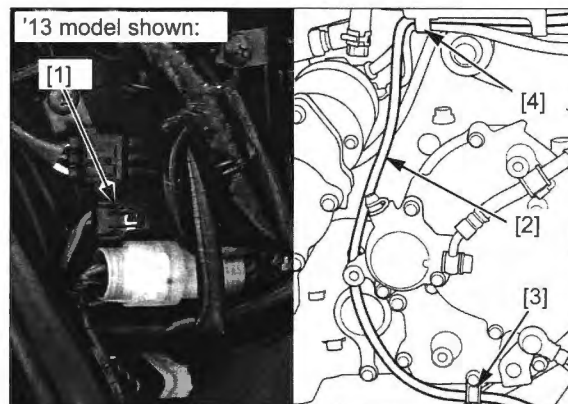
REMOVAL

Remove the left side cover (page 2-4).

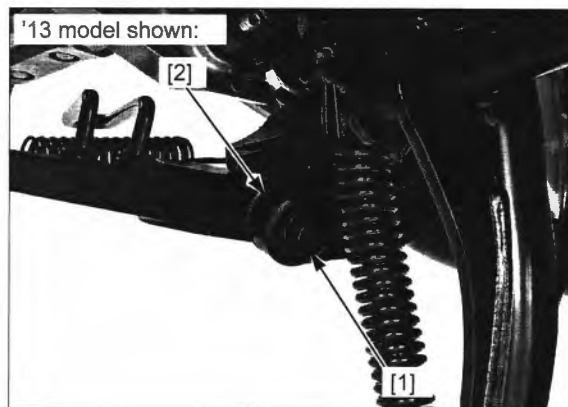
Remove the left crankcase side cover (page 6-4).

Disconnect the sidestand switch 2P (Black) connector [1].

Release the sidestand switch wire [2] from the clamp [3] and guide [4] of the front air cleaner housing.

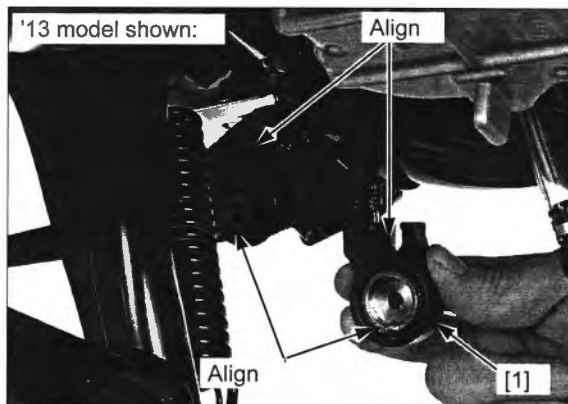


Remove the bolt [1] and sidestand switch [2].



INSTALLATION

Install the sidestand switch [1] by aligning its pin with the sidestand hole and the switch groove with the bracket pin.



Install and tighten a new bolt [1] to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



Route the sidestand switch wire properly (page 1-21).

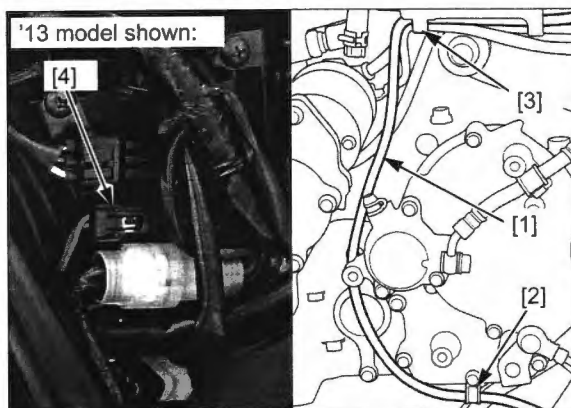
Install the sidestand switch wire [1] to the clamp [2] and guide [3] of the front air cleaner housing.

Connect the sidestand switch 2P (Black) connector [4].

Install the left crankcase side cover (page 6-12).

Install the left side cover (page 2-4).

'13 model shown:

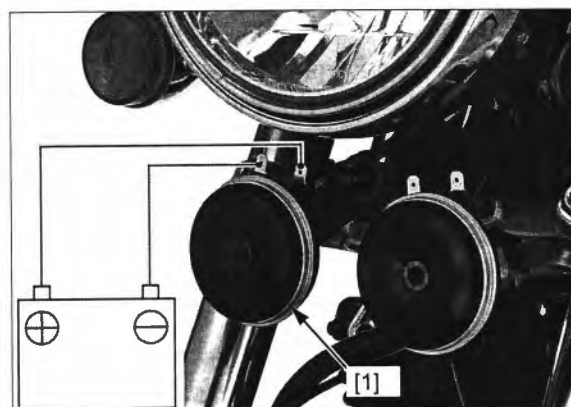


HORN

INSPECTION

Disconnect the wire connectors from the horn [1].

Connect a 12 V battery to the horn terminals directly. The horn is normal if it sounds when the 12 V battery is connected across the horn terminals.



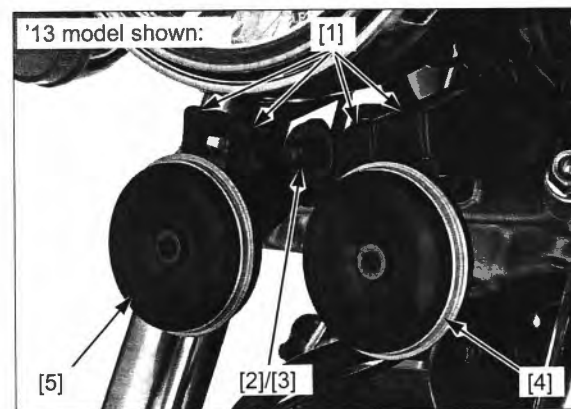
REMOVAL/INSTALLATION

Disconnect the horn wire connectors [1].

Remove the nut [2] and washer [3], then remove the horn (Low) [4] and horn (High) [5] from the stay.

Installation is in the reverse order of removal.

- Install the horn (High), then install the horn (Low).



TURN SIGNAL/POSITION RELAY

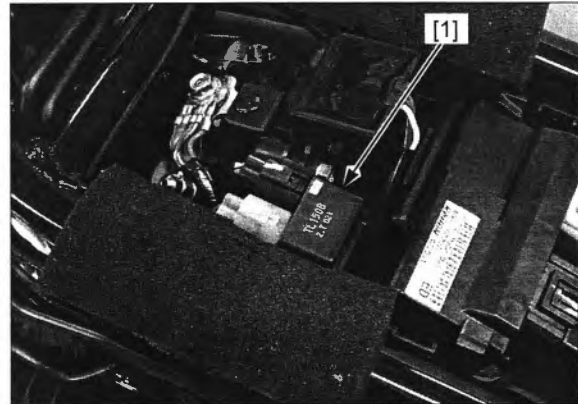
SYSTEM INSPECTION

Related Circuit Inspection

Remove the fuel tank (page 5-55).

Before turn signal/position relay [1] inspection, check the following:

- Battery condition (page 16-6)
- Burned or non-specified wattage bulb
- Blown sub-fuses (TURN,CLOCK 10 A and STOP/HORN 10 A)
- Ignition switch function (page 19-29)
- Turn signal light (left handlebar) switch function
 - '13 model (page 19-30)
 - After '13 model (page 19-31)
- Hazard (right handlebar) switch function
 - '13 model (page 19-30)
 - After '13 model (page 19-31)
- Loose connectors



Power Input Line Inspection

Turn the ignition switch OFF.

Disconnect the turn signal/position relay 4P connector [1].

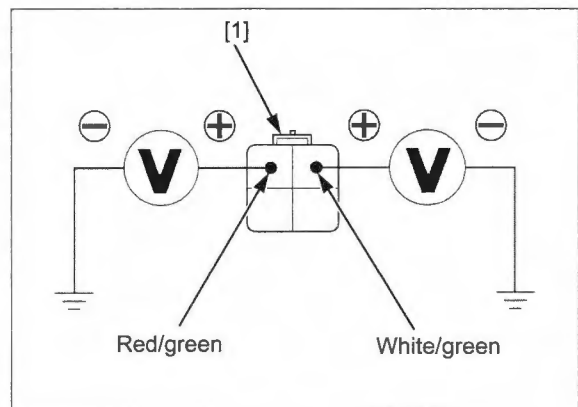
Check the voltage between the wire harness side terminals of the turn signal/position relay 4P connector and frame ground.

CONNECTION: Red/green (+) – Ground (-)

There should be battery voltage at all times.

CONNECTION: White/green (+) – Ground (-)

There should be battery voltage when the ignition switch is turned ON.



Ground Line Inspection

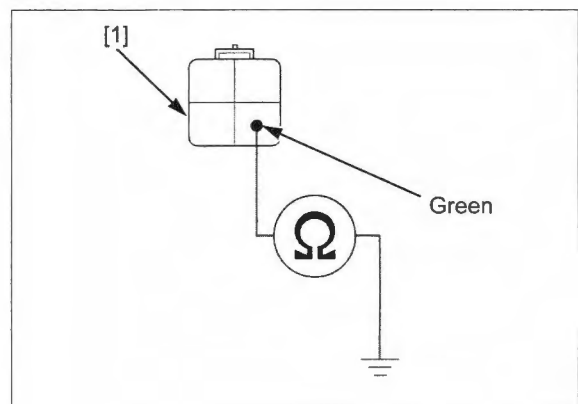
Turn the ignition switch OFF.

Disconnect the turn signal/position relay 4P connector [1].

Check the continuity between the wire harness side terminal of the turn signal/position relay 4P connector and frame ground.

CONNECTION: Green – Ground

There should be continuity at all times.



Signal Line Inspection 1

Connect the turn signal/position relay 4P connector.

Disconnect the turn signal/position relay 4P (Black) connector [1].

Turn the ignition switch ON.

Check the voltage between the wire harness side terminals of the turn signal/position relay 4P (Black) connector and frame ground.

CONNECTION:

With the turn signal switch turned to right
Orange (+) – Ground (-)

With the turn signal switch turned to left
Light blue (+) – Ground (-)

There should be battery voltage at each switch position.

If there is battery voltage, check the continuity between the turn signal/position relay connector terminals and each front turn signal unit.

If the circuit is normal, replace the turn signal/position relay with a known good one and recheck.

If there is no battery voltage, inspect as follows:

Signal Line Inspection 2

Turn the ignition switch OFF.

Disconnect the turn signal/position relay 4P connector [1].

Check the continuity between the wire harness side terminals of the turn signal/position relay 4P connector and 4P (Black) connector [2].

CONNECTION:

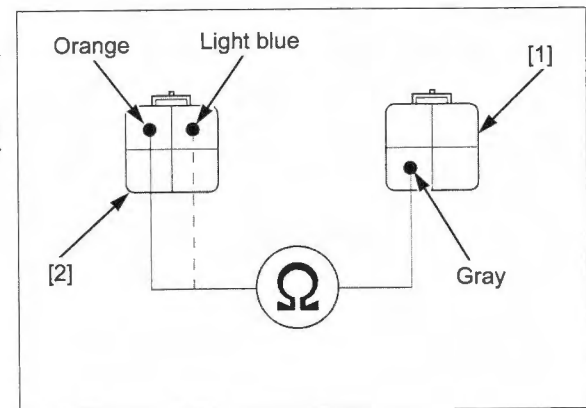
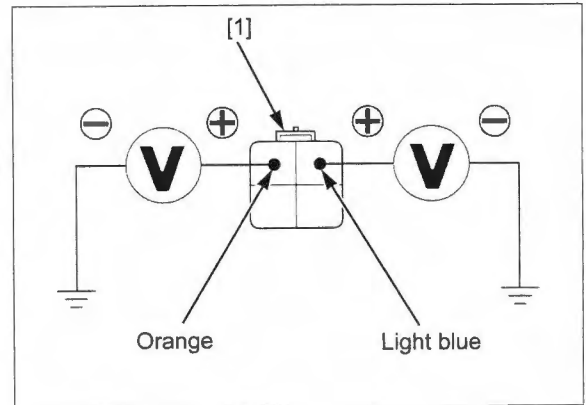
With the turn signal switch turned to right
Orange – Gray

With the turn signal switch turned to left
Light blue – Gray

With the hazard switch turned ON
Light blue and Orange – Gray

If there is continuity at each position, replace the turn signal/position relay with a known good one and recheck.

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



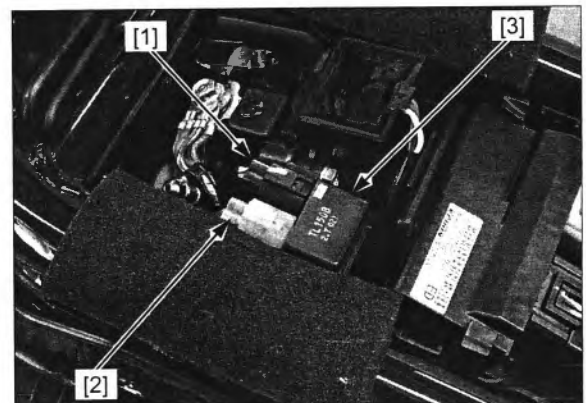
REMOVAL/INSTALLATION

Remove the fuel tank (page 5-55).

Disconnect the turn signal relay 4P (Black) connector [1] and 4P connector [2].

Remove the turn signal relay [3] from the stay.

Installation is in the reverse order of removal.



GEAR POSITION SWITCH (After '13 model)

INSPECTION

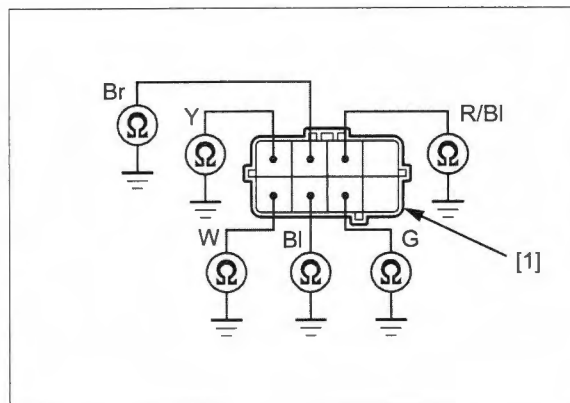
Turn the ignition switch OFF.

Remove the headlight unit (page 19-7).

Disconnect the combination meter 8P (Gray) connector [1].

Check for continuity between each gear position switch wire terminal of the combination meter 8P (Gray) connector wire harness side and ground.

There should be continuity only at the terminals that correspond to the each gear position shown below, and there should be no continuity at the other terminals.



You must test each of the six wires in each change pedal position. Therefore, you need to make 36 tests, between each gear position switch wire terminal and ground.

If the test result is abnormal, disconnect the gear position switch 6P (Black) connector.

Color Position	Y	Br	R/BI (R)	W	BI	G	GND
1	1	2	3	4	5	6	7
2	7	8	9	10	11	12	13
3	13	14	15	16	17	18	19
4	19	20	21	22	23	24	25
5	25	26	27	28	29	30	31
6	31	32	33	34	35	36	37

Perform the continuity test at the gear position switch 6P (Black) connector [1] switch side in the same manner.

- If the test result at the combination meter 8P (Gray) connector is abnormal and the one at the gear position switch 6P (Black) connector is normal, check for an open or short circuit, or loose or poor connector contact.
- If the both test results are abnormal, replace the gear position switch.



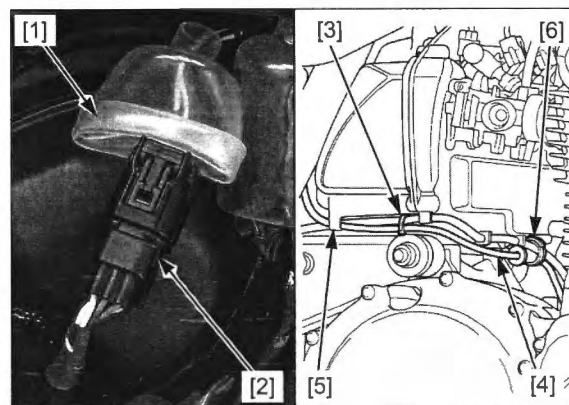
REPLACEMENT

Remove the following:

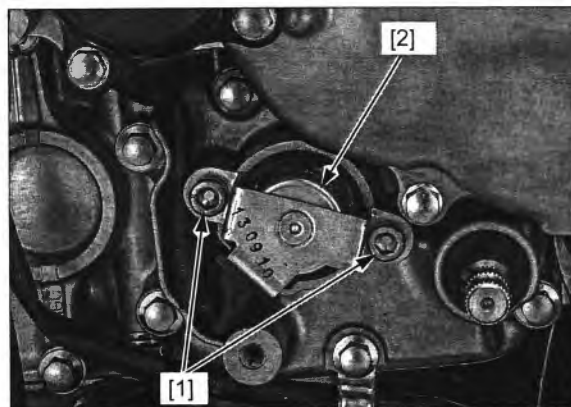
- right side cover (page 2-4)
- right air cleaner housing side cover (page 2-5)
- left crankcase side cover (page 6-4)

Pull up the boot [1] and disconnect the gear position switch 6P (Black) connector [2].

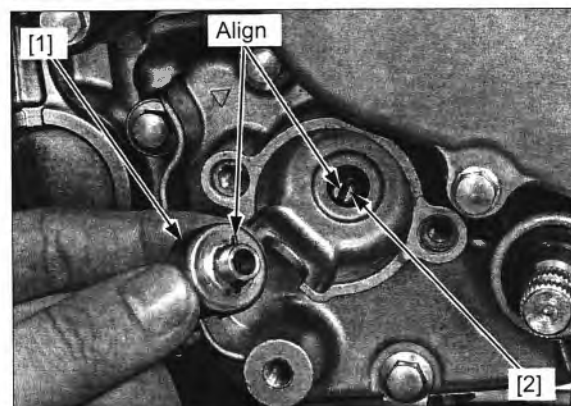
Remove the wire band [3] and release the gear position switch wire [4] from the guide [5] of air cleaner housing and clip [6].



Shift the transmission into neutral.
Remove the socket bolts [1] and the gear position switch [2] from the crankcase.



Remove the collar [1] from the switch drive shaft [2].
Install the collar by aligning its pin with the slot of the switch drive shaft.

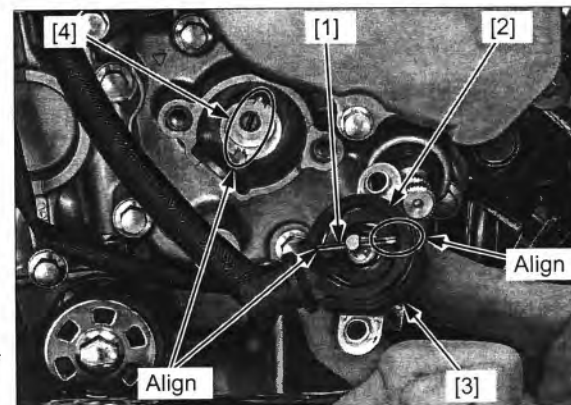


Make sure that the transmission is in neutral.
Rotate the switch pin [1] to align its paint mark with the rib on the grommet [2].
Install the gear position switch [3] by aligning the switch pin with the slots [4] of the collar, being careful not to damage the switch pin.
Install the socket bolts and tighten them to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Route the gear position switch wire properly (page 1-21).

Connect the gear position switch 6P (Black) connector.
Install the removed parts in the reverse order of removal.

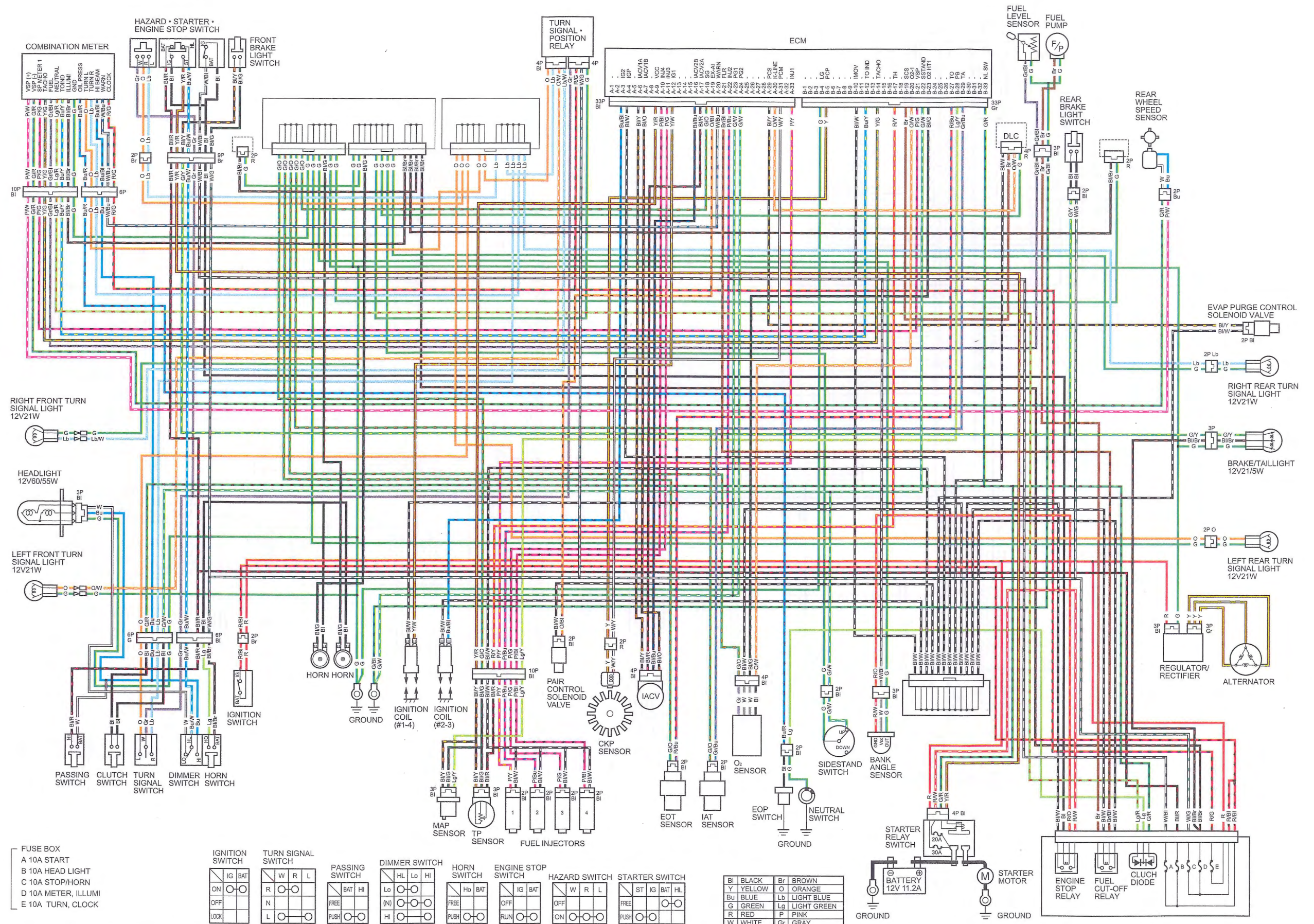


MEMO

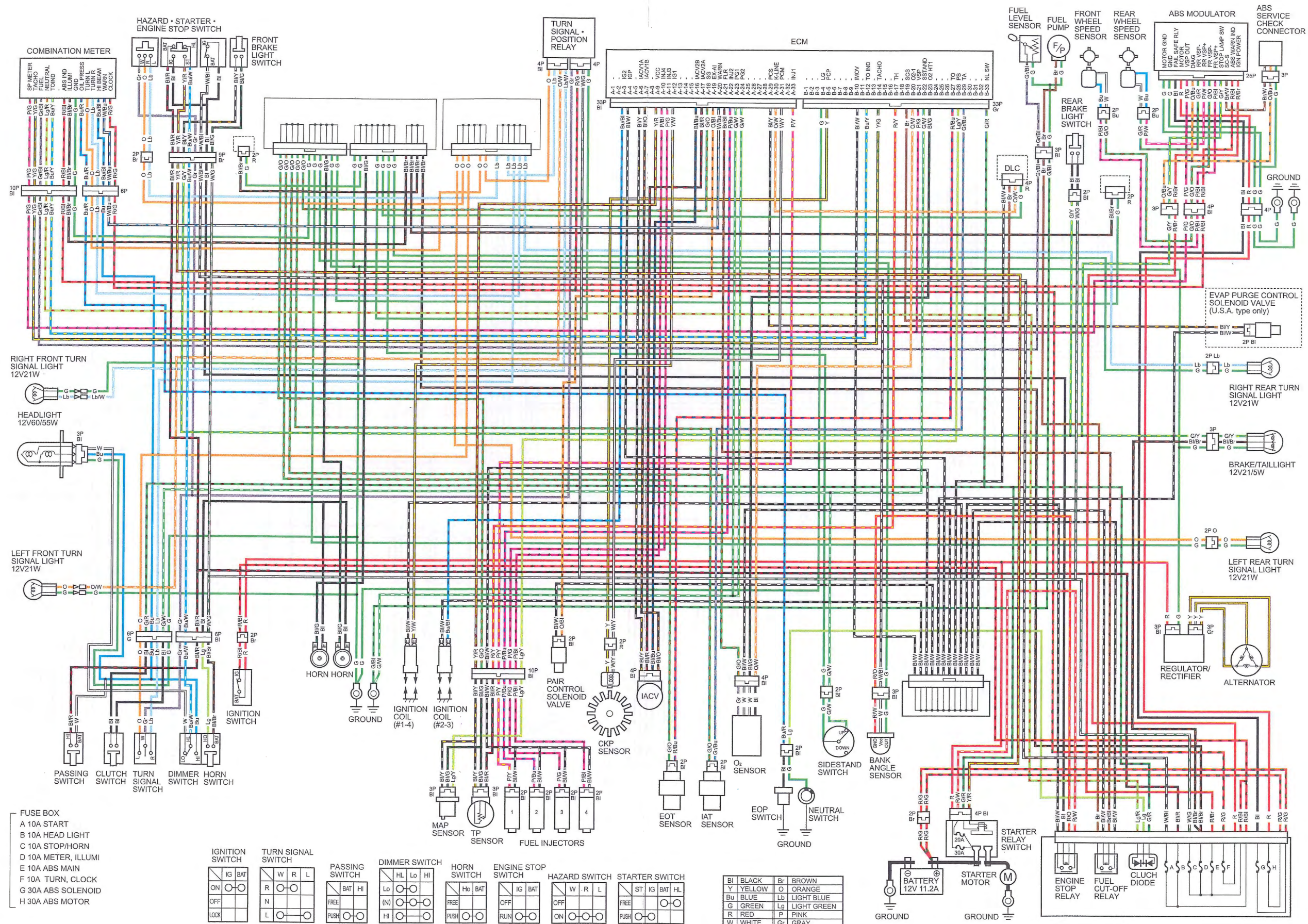
20. WIRING DIAGRAMS

CB1100 ('13 model)	20-2	CB1100A (After '13 model)	20-5
CB1100A ('13 model)	20-3	CB1100SA (After '13 model)	20-6
CB1100 (After '13 model)	20-4		

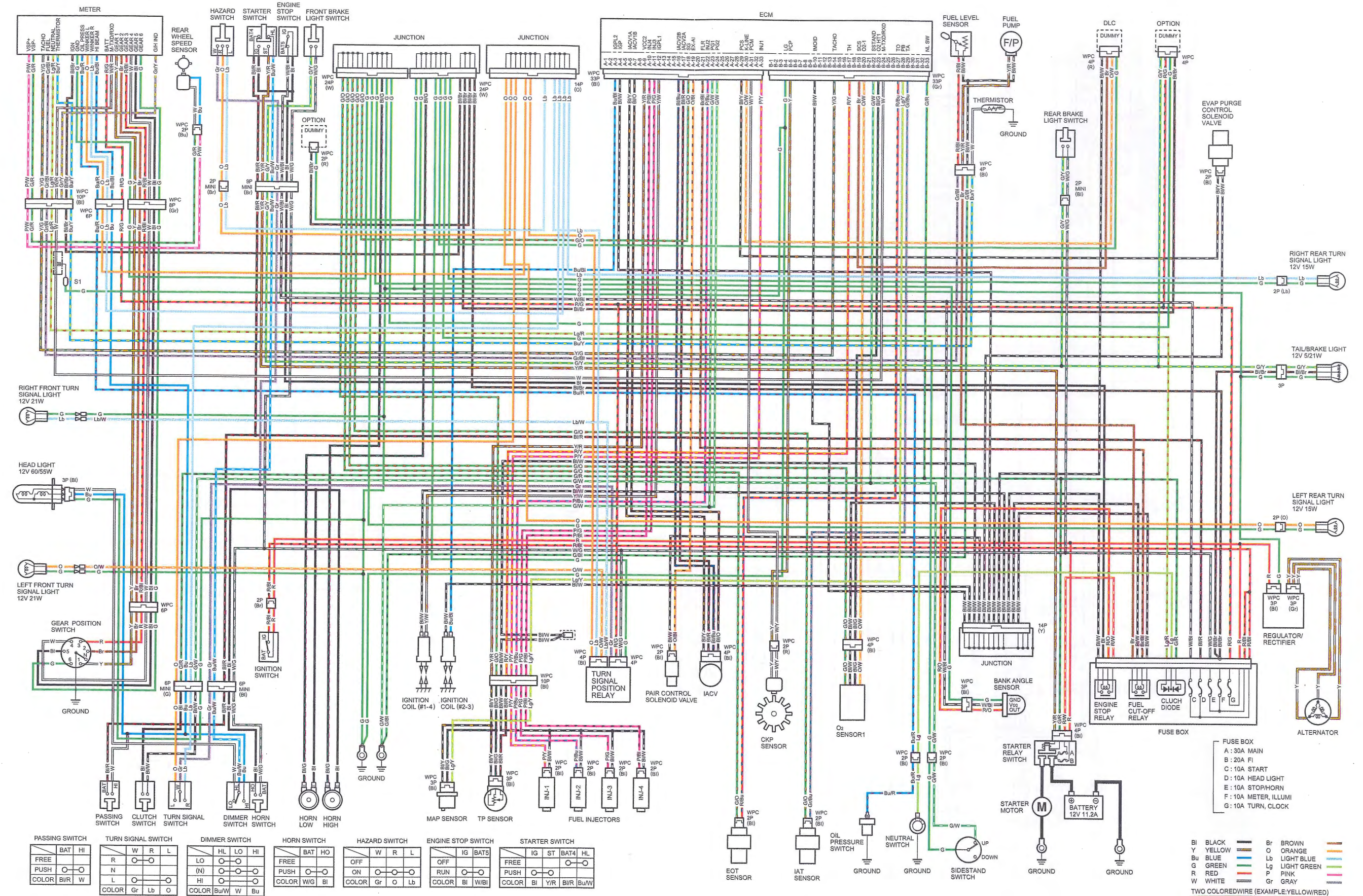
CB1100 ('13 model):



CB1100A ('13 model):

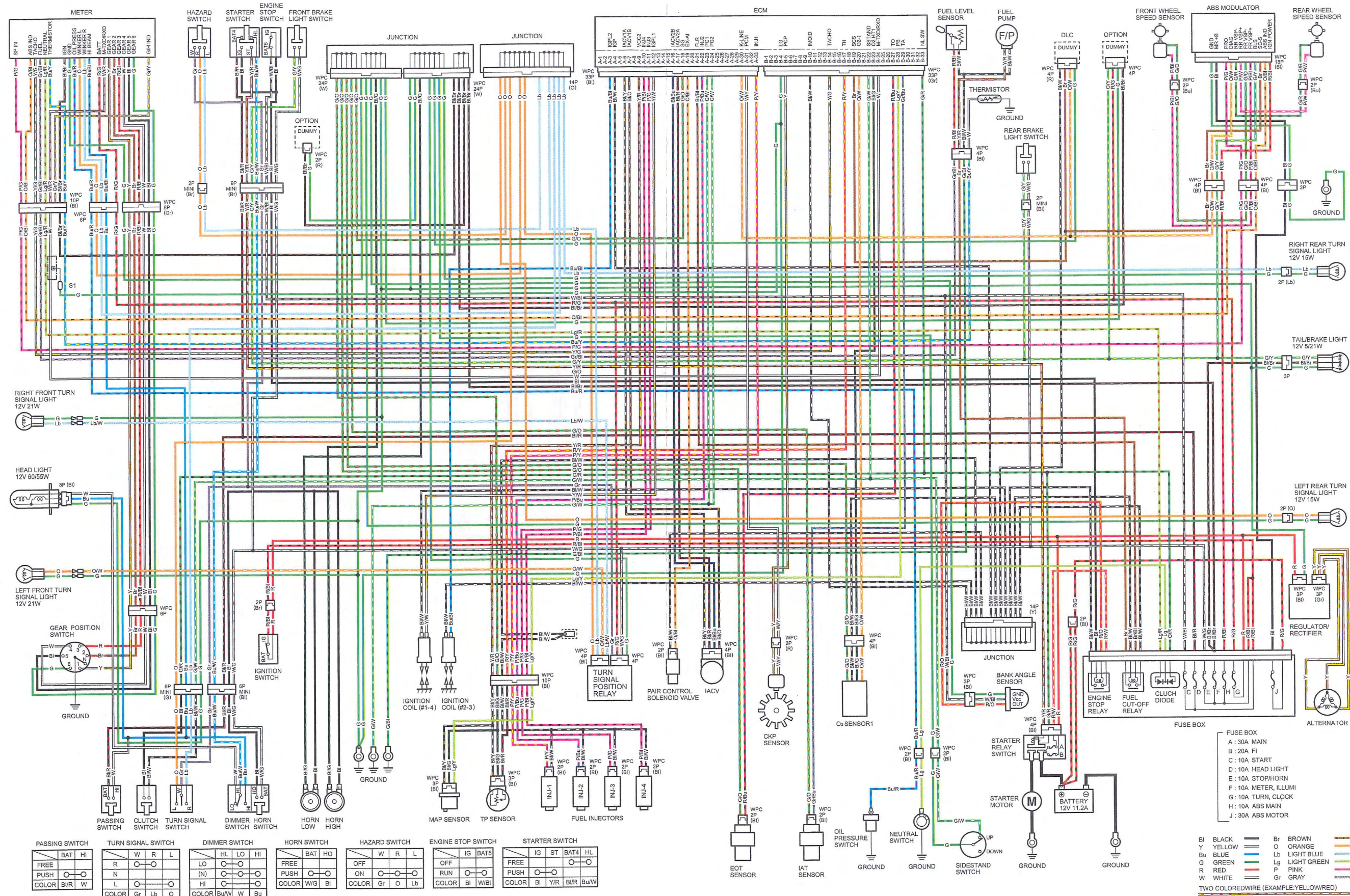


CB1100 (After '13 model):

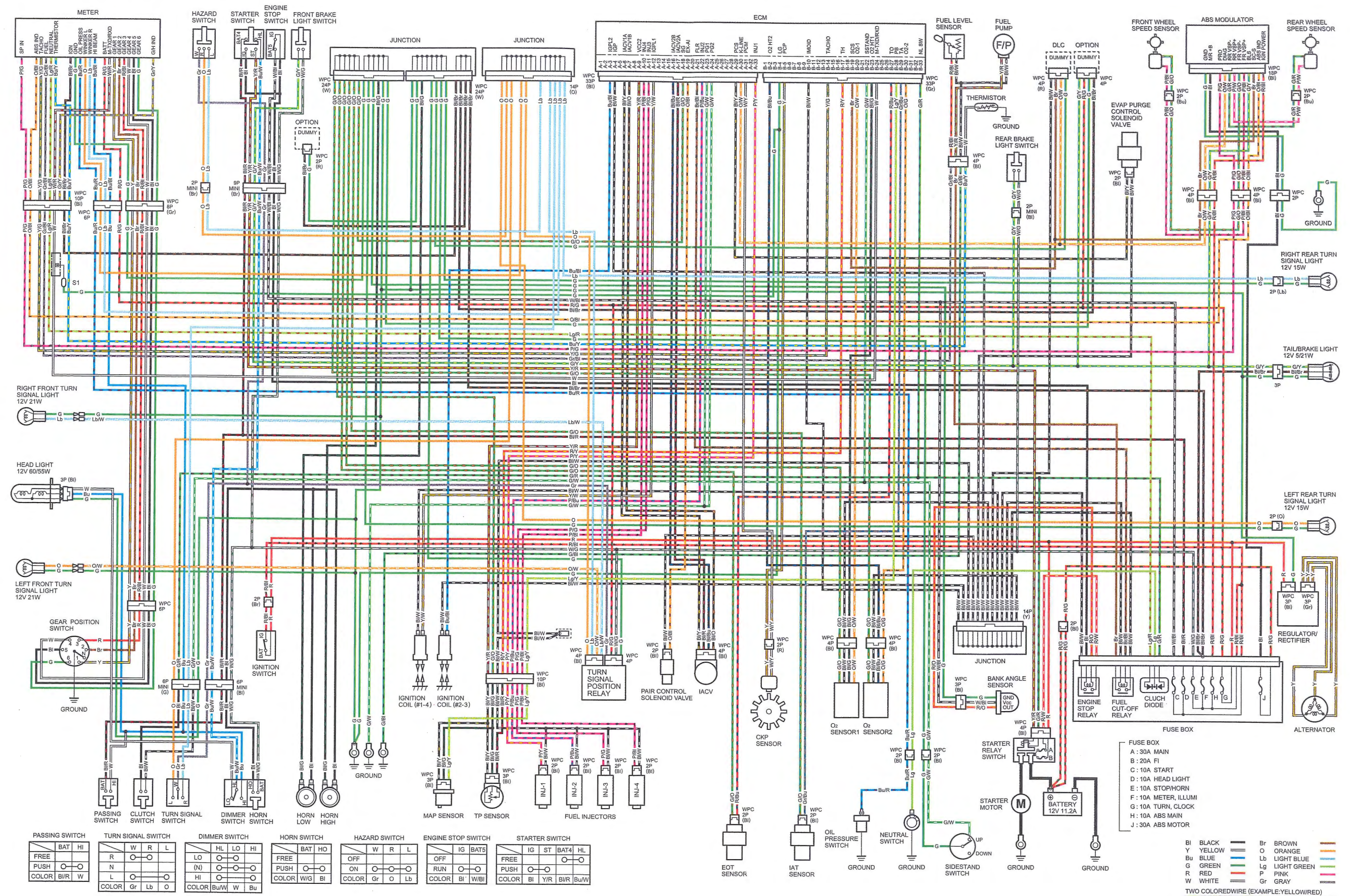


WIRING DIAGRAMS

CB1100A (After '13 model):



CB1100SA (After '13 model):



MEMO

21. TROUBLESHOOTING

ENGINE DOES NOT START OR IS
HARD TO START 21-2

ENGINE LACKS POWER 21-3

POOR PERFORMANCE
AT LOW AND IDLE SPEED 21-5

POOR PERFORMANCE
AT HIGH SPEED 21-6

POOR HANDLING 21-6

ENGINE DOES NOT START OR IS HARD TO START

1. Spark Plug Inspection

Remove and inspect spark plugs.

Are the spark plugs in good condition?

YES – GO TO STEP 2.

NO –

- Incorrect each spark plug heat range
- Incorrect each spark plug gap
- Dirty air cleaner

2. Spark Test

Perform spark test.

Are there good sparks?

YES – GO TO STEP 3.

NO –

- Faulty spark plug
- Loose or disconnected ignition system wires
- Faulty ignition coils
- Broken or shorted spark plug wires
- Faulty CKP sensor
- Faulty engine stop switch
- Faulty ECM

3. Fuel Pump Inspection

Check for operation of the fuel pump and inspect the fuel flow.

Is the fuel pump unit normal?

YES – GO TO STEP 4.

NO – Faulty fuel pump unit (page 5-45).

4. PGM-FI System Inspection

Check the PGM-FI system.

Is the PGM-FI system normally?

YES – GO TO STEP 5.

NO – Faulty PGM-FI system (page 5-12).

5. Cylinder compression Inspection

Test the cylinder compression.

Is the compression specified?

YES – GO TO STEP 6.

NO –

- Valves stuck open
- Worn cylinders and piston rings
- Damaged cylinder head gasket
- Seized valves
- Improper each valve timing

6. Engine Start Condition

Start by following normal procedure.

Does the engine start but stops?

YES –

- Leaking intake manifolds
- Faulty IACV
- Improper ignition timing (Faulty ECM or CKP sensor)
- Contaminated fuel

ENGINE LACKS POWER

1. Drive Train Inspection

Raise wheel off the ground and spin by hand.

Does the wheel spin freely?

YES – GO TO STEP 2.

NO – • Brake dragging
• Worn or damaged wheel bearings
• Wheel installed improperly
• Drive chain too tight

2. Tire Pressure Inspection

Check the tire pressures.

Are there tire pressure correct?

YES – GO TO STEP 3.

NO – • Faulty tire valves
• Punctured tires

3. Clutch Inspection

Accelerate rapidly, shift from first to second.

Does the engine speed change accordingly when clutch is released?

YES – GO TO STEP 4.

NO – • Clutch slipping
• Worn clutch discs/plates
• Warped clutch discs/plates
• Weak clutch springs
• Faulty hydraulic clutch system
• Additive in engine oil

4. Engine Performance Inspection

Accelerate lightly.

Does the Engine speed increase?

YES – GO TO STEP 5.

NO – • Dirty air cleaner
• Restricted fuel flow
• Clogged muffler

5. Spark Plug Inspection

Remove and inspect spark plugs.

Are the spark plugs in good condition?

YES – GO TO STEP 6.

NO – • Plugs not serviced frequently enough
• Incorrect each spark plug heat range
• Incorrect each spark plug gap

6. Engine Oil Inspection

Check the oil level and condition.

Is the engine oil good condition?

YES – GO TO STEP 7.

NO – • Oil level too high
• Oil level too low
• Contaminated oil

TROUBLESHOOTING

7. Ignition Timing Inspection

Check the ignition timing.

Is the ignition timing specified?

YES – GO TO STEP 8.

NO –

- Faulty ECM
- Faulty CKP sensor
- Faulty TP sensor
- Improper each valve timing

8. Cylinder compression Inspection

Test the cylinder compression.

Is the compression specified?

YES – GO TO STEP 10.

NO –

- Each valve clearance too small
- Valves stuck open
- Worn cylinders and piston rings
- Damaged cylinder head gasket
- Improper each valve timing

9. Fuel Pump Inspection

Check for operation of the fuel pump and inspect the fuel flow.

Is the fuel pump unit normal?

YES – GO TO STEP 10.

NO – Faulty fuel pump unit (page 5-45).

10. PGM-FI System Inspection

Check the PGM-FI system.

Is the PGM-FI system normally?

YES – GO TO STEP 11.

NO – Faulty PGM-FI system (page 5-12).

11. Lubrication Inspection

Remove cylinder head cover and inspect lubrication.

Is the valve train lubricated properly?

YES – GO TO STEP 12.

NO –

- Oil level too low
- Faulty oil pump drive mechanism
- Faulty oil pump
- Clogged oil strainer
- Clogged oil passage
- Faulty pressure relief valve

12. Over Heating Inspection

Check for engine over heating.

Is the engine over heating?

YES –

- Excessive carbon build-up in combustion chamber
- Use of poor quality fuel
- Wrong type of fuel
- Clutch slipping

NO – GO TO STEP 13.

13. Engine Knocking Inspection

Accelerate or run at high speed.

Is the engine knocking?

- YES** – • Worn pistons and cylinders
• Wrong type of fuel
• Excessive carbon build-up in combustion chamber
• Ignition timing too advance (Faulty ECM)
• Faulty CKP sensor

- NO** – • Engine does not knock

POOR PERFORMANCE AT LOW AND IDLE SPEED

1. Spark Plug Inspection

Remove and inspect spark plugs.

Are the spark plugs in good condition?

YES – GO TO STEP 2.

- NO** – • Plugs not serviced frequently enough
• Incorrect each spark plug heat range
• Incorrect each spark plug gap

2. Ignition Timing Inspection

Check the ignition timing.

Is the ignition timing specified?

YES – GO TO STEP 4.

- NO** – • Faulty ECM
• Faulty CKP sensor
• Faulty TP sensor
• Improper each valve timing

3. Fuel Pump Inspection

Check for operation of the fuel pump and inspect the fuel flow.

Is the fuel pump unit normal?

YES – GO TO STEP 4.

- NO** – Faulty fuel pump unit (page 5-45).

4. PGM-FI System Inspection

Check the PGM-FI system.

Is the PGM-FI system normally?

- NO** – Faulty PGM-FI system (page 5-12).

YES – GO TO STEP 5.

5. IACV Inspection

Check the IACV operation (page 5-74).

Does the IACV operates normally?

YES – GO TO STEP 6.

- NO** – Faulty IACV.

6. Intake Pipes Leaking Inspection

Check for leaks intake manifold pipes.

Is there leaking?

- YES** – • Loose insulators
• Damaged insulators

TROUBLESHOOTING

POOR PERFORMANCE AT HIGH SPEED

1. Ignition Timing Inspection

Check the ignition timing.

Is the ignition timing specified?

YES – GO TO STEP 2.

NO –

- Faulty ECM
- Faulty CKP sensor
- Faulty TP sensor
- Improper each valve timing

2. Fuel Pump Inspection

Check for operation of the fuel pump and inspect the fuel flow.

Is the fuel pump unit operation normal?

YES – GO TO STEP 3.

NO – Faulty fuel pump unit (page 5-45).

3. PGM-FI System Inspection

Check the PGM-FI system.

Is the PGM-FI system normally?

YES – GO TO STEP 4.

NO – Faulty PGM-FI system (page 5-12).

4. Valve Timing Inspection

Check each valve timing.

Does the valve timing correct?

YES – GO TO STEP 5.

NO – Camshafts not installed properly

5. Valve Spring Inspection

Check for the valve springs.

Is the valve spring free length as specified?

YES – Not weak

NO – Faulty valve springs

POOR HANDLING

Steering is heavy

- Steering bearing adjustment nut too tight
- Damaged steering head bearings
- Tire pressure too low

Either wheel is wobbling

- Excessive wheel bearing play
- Bent rim
- Improper installed wheel hub
- Swingarm pivot bearing excessively worn
- Bent frame

The motorcycle pulled to one side

- Front and rear wheel not aligned
- Faulty shock absorber
- Bent fork
- Bent swingarm
- Bent axle
- Bent frame

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