
CONTENTS

	GENERAL INFORMATION	1
	FRAME/BODY PANELS/EXHAUST SYSTEM	2
	MAINTENANCE	3
ENGINE AND DRIVE TRAIN	LUBRICATION SYSTEM	4
	FUEL SYSTEM (PGM-FI)	5
	COOLING SYSTEM	6
	ENGINE REMOVAL/INSTALLATION	7
	CYLINDER HEAD/VALVES	8
	CYLINDER/PISTON	9
	CLUTCH/GEARSHIFT LINKAGE	10
	ALTERNATOR/STARTER CLUTCH	11
	CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER	12
CHASSIS	FRONT WHEEL/SUSPENSION/STEERING	13
	REAR WHEEL/SUSPENSION	14
	HYDRAULIC BRAKE	15
	ANTI-LOCK BRAKE SYSTEM (ABS)	16
ELECTRICAL	BATTERY/CHARGING SYSTEM	17
	IGNITION SYSTEM	18
	ELECTRIC STARTER	19
	LIGHTS/METERS/SWITCHES	20
	WIRING DIAGRAMS	21
	TROUBLESHOOTING	22
	INDEX	

1. GENERAL INFORMATION

1

SERVICE RULES	1-2	FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS	1-10
MODEL IDENTIFICATION	1-3	REAR WHEEL/SUSPENSION SPECIFICATIONS	1-10
GENERAL SPECIFICATIONS	1-5	HYDRAULIC BRAKE SPECIFICATIONS	1-10
LUBRICATION SYSTEM SPECIFICATIONS	1-7	BATTERY/CHARGING SYSTEM SPECIFICATIONS	1-11
FUEL SYSTEM (PGM-FI) SPECIFICATIONS	1-7	IGNITION SYSTEM SPECIFICATIONS	1-11
COOLING SYSTEM SPECIFICATIONS	1-7	ELECTRIC STARTER SPECIFICATION	1-11
CYLINDER HEAD/VALVES SPECIFICATIONS	1-8	LIGHTS/METERS/SWITCHES SPECIFICATIONS	1-11
CYLINDER/PISTON SPECIFICATIONS	1-8	TORQUE VALUES	1-12
CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS	1-8	LUBRICATION & SEAL POINTS	1-16
ALTERNATOR/STARTER CLUTCH SPECIFICATIONS	1-9	CABLE & HARNESS ROUTING	1-18
CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER SPECIFICATIONS	1-9	EMISSION CONTROL SYSTEMS	1-47

GENERAL INFORMATION

SERVICE RULES

1. Use Honda Genuine or Honda-recommended parts and lubricants or their equivalents. Parts that do not meet Honda's design specifications may cause damage to the motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing the motorcycle. Metric bolts, nuts and screws are not interchangeable with English fasteners.
4. Install new gaskets, O-rings, cotter pins, and lock plates when reassembling.
5. When tightening bolts or nuts, begin with the larger diameter or inner bolt first. Then tighten to the specified torque diagonally in incremental steps unless a particular sequence is specified.
6. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as shown in the Cable and Harness Routing (page 1-18).
9. Do not bend or twist control cables. Damaged control cables will not operate smoothly and may stick or bind.

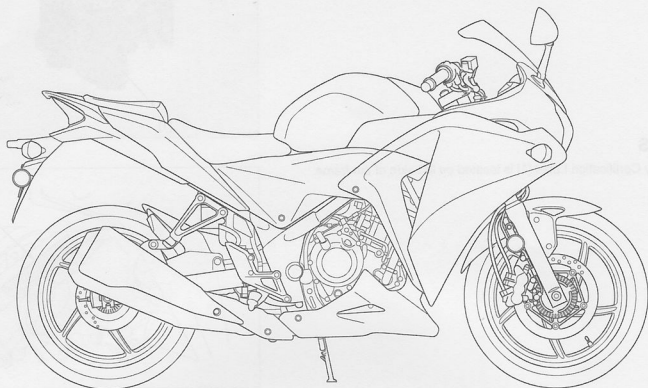
ABBREVIATION

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

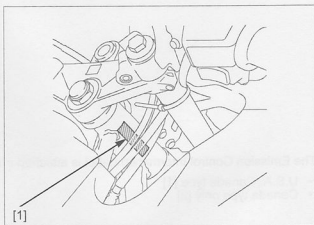
Abbrev. term	Full term
ABS	Anti-lock Brake System
CKP sensor	Crankshaft Position sensor
DLC	Data Link Connector
DTC	Diagnostic Trouble Code
ECM	Engine Control Module
ECT sensor	Engine Coolant Temperature sensor
EEPROM	Electrically Erasable Programmable Read Only Memory
EVAP	Evaporative Emission
HDS	Honda Diagnostic System
IACV	Idle Air Control Valve
IAT sensor	Intake Air Temperature sensor
MAP sensor	Manifold Absolute Pressure sensor
MIL	Malfunction Indicator Lamp
PAIR	Pulse Secondary Air Injection
PCV	Proportional Control Valve
PGM-FI	Programmed Fuel Injection
SCS Service connector	Service Check Short Service connector
TP sensor	Throttle Position sensor
VS sensor	Vehicle Speed sensor

MODEL IDENTIFICATION

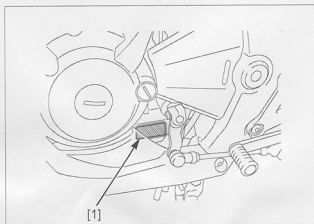
CBR250RA shown:

**SERIAL NUMBERS**

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

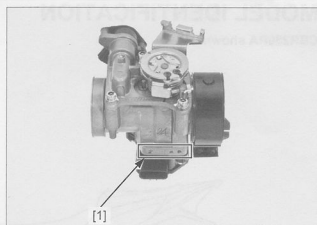


The engine serial number [1] is stamped on the lower left side of the crankcase.



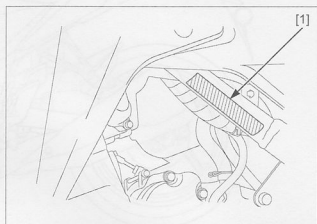
GENERAL INFORMATION

The throttle body identification number [1] is stamped on the lower left side of the throttle body.

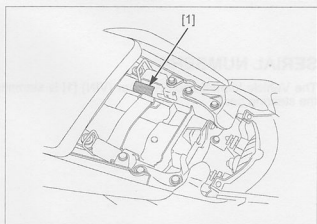


LABELS

The Safety Certification Label [1] is located on left side of the frame.

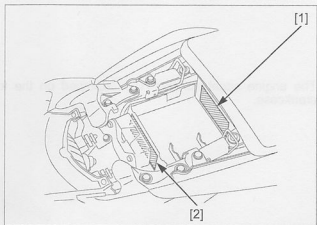


The color label [1] is attached on the frame under the passenger seat. When ordering color-coded parts, always specify the designated color code.



The Emission Control Information Label is attached on the rear fender.

- U.S.A./Canada type [1]
- Canada type only [2]



GENERAL SPECIFICATIONS

ITEM			SPECIFICATION
DIMENSIONS	Overall length		2,035 mm (80.1 in)
	Overall width		720 mm (28.3 in)
	Overall height		1,125 mm (44.3 in)
	Wheelbase		1,370 mm (53.9 in)
	Seat height		780 mm (30.7 in)
	Footpeg height		328 mm (12.9 in)
	Ground clearance		145 mm (5.7 in)
	Curb weight	CBR250R	162 kg (357 lbs)
FRAME		CBR250RA	166 kg (366 lbs)
	Maximum weight capacity	CBR250R	217 kg (478 lbs)
		CBR250RA	219 kg (483 lbs)
	Frame type		Twin-spar
	Front suspension		Telescopic fork
	Front axle travel		118 mm (4.6 in)
	Rear suspension		Swingarm
	Rear axle travel		104 mm (4.1 in)
ENGINE	Tire size	Front	110/70-17M/C 54S
		Rear	140/70-17M/C 66S
	Tire brand	Front	RX-01FD (IRC)
		Rear	RX-01RZ (IRC)
	Front brake		Hydraulic single disc
	Rear brake		Hydraulic single disc
	Caster angle		25° 30'
	Trail length		98.6 mm (3.88 in)
	Fuel tank capacity		13.0 liters (3.43 US gal, 2.86 Imp gal)
	Cylinder arrangement		Single cylinder inclined 20° from vertical
	Bore and stroke		76.0 x 55.0 mm (2.99 x 2.17 in)
	Displacement		249.6 cm ³ (15.2 cu-in)
	Compression ratio		10.7:1
	Valve train		Chain driven DOHC with rocker arm
	Intake valve	opens at 1.0 mm (0.04 in) lift	20° BTDC
		closes at 1.0 mm (0.04 in) lift	35° ABDC
FUEL DELIVERY SYSTEM	Exhaust valve	opens at 1.0 mm (0.04 in) lift	40° BBDC
		closes at 1.0 mm (0.04 in) lift	0° TDC
	Lubrication system		Forced pressure and wet sump
	Oil pump type		Trochoid
	Cooling system		Liquid cooled
	Air filtration		Viscous paper filter
	Engine dry weight		35.4 kg (78.0 lbs)
	Type		PGM-FI
DRIVE TRAIN	Throttle bore		38 mm (1.5 in)
	Clutch system		Multi-plate, wet
	Clutch operation system		Cable operating
	Transmission		Constant mesh, 6 speeds
	Primary reduction		2.808 (73/26)
	Final reduction		2.714 (38/14)
	Gear ratio	1st	3.333 (40/12)
		2nd	2.117 (36/17)
		3rd	1.571 (33/21)
		4th	1.304 (30/23)
		5th	1.115 (29/26)
		6th	0.962 (26/27)
	Gearshift pattern		Left foot operated return system 1 - N - 2 - 3 - 4 - 5 - 6

GENERAL INFORMATION

ITEM		SPECIFICATION
ELECTRICAL	Ignition system	Computer-controlled digital transistorized with electric advance
	Starting system	Electric starter motor
	Charging system	Triple phase output alternator
	Regulator/rectifier	SCR shorted, triple phase full-wave rectification
	Lighting system	Battery

LUBRICATION SYSTEM SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	At draining	1.4 liters (1.5 US qt, 1.2 Imp qt)	—
	At oil filter change	1.5 liters (1.6 US qt, 1.3 Imp qt)	—
	At disassembly	1.8 liters (1.9 US qt, 1.6 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 pump rotor	Tip clearance	0.15 (0.006)	0.20 (0.008)
	Body clearance	0.15 – 0.22 (0.006 – 0.009)	0.35 (0.014)
	Side clearance	0.02 – 0.09 (0.001 – 0.004)	0.10 (0.004)

FUEL SYSTEM (PGM-FI) SPECIFICATIONS

ITEM	SPECIFICATION
Throttle body identification number	GQ9JA
Engine idle speed	1,400 ± 100 rpm
Throttle grip freewheel	2 – 6 mm (1/16 – 1/4 in)
Fuel injector resistance (20°C/68°F)	11 – 13 Ω
Fuel pressure at idle	294 kPa (3.0 kgf/cm ² , 43 psi)
Fuel pump flow (at 12 V)	69.2 cm ³ (2.34 US oz, 2.44 Imp oz) minimum/10 seconds
PAIR control solenoid valve resistance (20°C/68°F)	24 – 28 Ω
EVAP purge control solenoid valve resistance (20°C/68°F)	30 – 34 Ω

COOLING SYSTEM SPECIFICATIONS

ITEM	SPECIFICATION
Coolant capacity	Radiator and engine
	At draining
	Reserve tank
Radiator cap relief pressure	93.2 – 122.6 kPa (0.95 – 1.25 kgf/cm ² , 13.5 – 17.8 psi)
Thermostat	Begin to open
	Fully open
	Valve lift
Recommended antifreeze	Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing silicate-free corrosion inhibitors
Standard coolant concentration	1:1 (mixture with distilled water)

GENERAL INFORMATION

CYLINDER HEAD/VALVES SPECIFICATIONS

ITEM			STANDARD	SERVICE LIMIT
Cylinder compression at 490 rpm			1,294 kPa (13.2 kgf/cm ² , 188 psi)	—
Valve clearance			0.16 ± 0.03 (0.006 ± 0.001)	—
Valve, valve guide	Valve stem O.D.	IN	0.27 ± 0.03 (0.011 ± 0.001)	—
		EX	4.470 – 4.495 (0.1760 – 0.1770)	4.46 (0.176)
	Valve guide I.D.	IN	4.460 – 4.485 (0.1756 – 0.1766)	4.45 (0.175)
		IN/EX	4.500 – 4.512 (0.1772 – 0.1776)	4.540 (0.1787)
	Stem-to-guide clearance	IN	0.005 – 0.042 (0.0002 – 0.0017)	0.07 (0.003)
	Valve guide height	EX	0.015 – 0.052 (0.0006 – 0.0020)	0.08 (0.003)
Valve spring	Valve seat width	IN/EX	13.8 – 14.0 (0.54 – 0.55)	—
		IN/EX	0.90 – 1.10 (0.035 – 0.043)	1.50 (0.059)
	Free length	Inner	34.58 (1.361)	32.85 (1.293)
Rocker arm, rocker arm shaft	Outer	Inner	40.37 (1.589)	38.35 (1.510)
		IN/EX	10.000 – 10.015 (0.3937 – 0.3943)	10.10 (0.398)
	Shaft O.D.	IN/EX	9.972 – 9.987 (0.3926 – 0.3932)	9.75 (0.384)
Camshaft	Arm-to-shaft clearance	IN/EX	0.013 – 0.043 (0.0005 – 0.0017)	0.10 (0.004)
		IN	30.931 – 31.171 (1.2178 – 1.2272)	30.911 (1.2170)
	Oil clearance	EX	30.839 – 31.079 (1.2163 – 1.2236)	30.819 (1.2133)
Cylinder head warpage			0.020 – 0.062 (0.0008 – 0.0024)	0.10 (0.004)
			—	0.05 (0.002)

CYLINDER/PISTON SPECIFICATIONS

				Unit: mm (in)
ITEM			STANDARD	SERVICE LIMIT
Cylinder	I.D.		76.000 – 76.010 (2.9921 – 2.9925)	76.04 (2.994)
	Out-of-round		–	0.010 (0.0004)
	Taper		–	0.010 (0.0004)
	Warpage		–	0.05 (0.002)
Piston, piston pin, piston ring	Piston O.D. at 11 mm (0.4 in) from bottom		75.960 – 75.980 (2.9905 – 2.9913)	75.89 (2.988)
	Piston pin hole I.D.		17.002 – 17.008 (0.6694 – 0.6696)	17.030 (0.6705)
	Piston pin O.D.		16.994 – 17.000 (0.6690 – 0.6693)	16.980 (0.6685)
	Piston-to-piston pin clearance		0.002 – 0.014 (0.0001 – 0.0006)	0.08 (0.003)
	Piston ring end gap	Top	0.22 – 0.32 (0.009 – 0.013)	0.40 (0.016)
		Second	0.40 – 0.55 (0.016 – 0.022)	0.70 (0.028)
		Oil (side rail)	0.20 – 0.70 (0.008 – 0.028)	1.10 (0.043)
	Piston ring-to-ring groove clearance	Top	0.040 – 0.080 (0.0016 – 0.0032)	0.10 (0.004)
		Second	0.015 – 0.050 (0.0006 – 0.0020)	0.09 (0.004)
	Cylinder-to-piston clearance		0.020 – 0.050 (0.0008 – 0.0020)	0.09 (0.004)
Connecting rod small end I.D.		17.016 – 17.034 (0.6699 – 0.6706)	17.06 (0.672)	
Connecting rod-to-piston pin clearance		0.016 – 0.040 (0.0006 – 0.0016)	0.10 (0.004)	

CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS

			Unit: mm (in)	
ITEM		STANDARD		SERVICE LIMIT
Clutch lever freeplay		10 – 20 (3/8 – 13/16)		—
Clutch	Spring free length	41.5 (1.63)		37.5 (1.48)
	Disc thickness	2.30 – 2.50 (0.091 – 0.098)		2.27 (0.089)
	Plate warpage	—		0.3 (0.01)
Clutch outer guide I.D.		20.000 – 20.021 (0.7874 – 0.7882)		20.04 (0.789)
Mainshaft O.D. at clutch outer guide		19.967 – 19.980 (0.7861 – 0.7866)		19.947 (0.7853)

ALTERNATOR/STARTER CLUTCH SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Starter driven gear	I.D.	34.000 – 34.013 (1.3386 – 1.3391)	34.033 (1.3399)
	O.D.	51.705 – 51.718 (2.0356 – 2.0361)	51.685 (2.0348)

CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Runout			0.03 (0.001)
	Connecting rod big end radial clearance		0.004 – 0.016 (0.0002 – 0.0006)	0.05 (0.002)
	Connecting rod big end side clearance		0.05 – 0.50 (0.002 – 0.020)	0.85 (0.033)
	Main journal oil clearance		0.018 – 0.045 (0.0007 – 0.0018)	0.075 (0.0030)
	Main journal O.D.		33.985 – 34.000 (1.3380 – 1.3386)	33.975 (1.3376)
Main journal bearing area I.D.			38.000 – 38.018 (1.4961 – 1.4968)	38.036 (1.4975)
Transmission	Gear I.D.	M5, M6	23.000 – 23.021 (0.9055 – 0.9063)	23.07 (0.908)
		C1	23.020 – 23.041 (0.9063 – 0.9071)	23.09 (0.909)
		C2	25.000 – 25.021 (0.9843 – 0.9851)	25.04 (0.986)
		C3, C4	28.000 – 28.021 (1.1024 – 1.1032)	28.04 (1.104)
	Bushing O.D.	M5, M6	22.959 – 22.980 (0.9039 – 0.9047)	22.91 (0.902)
		C1	22.984 – 23.005 (0.9049 – 0.9057)	22.47 (0.885)
		C2	24.959 – 24.980 (0.9826 – 0.9835)	24.90 (0.980)
		C3, C4	27.959 – 27.980 (1.1007 – 1.1016)	27.95 (1.100)
	Gear-to-bushing clearance	M5, M6, C2, C3, C4	0.020 – 0.062 (0.0008 – 0.0024)	0.10 (0.004)
		C1	0.015 – 0.057 (0.0006 – 0.0022)	0.10 (0.004)
	Bushing I.D.	M5, C1	20.000 – 20.021 (0.7874 – 0.7882)	20.05 (0.789)
		C2	22.000 – 22.021 (0.8661 – 0.8670)	22.07 (0.869)
		C3	25.000 – 25.021 (0.9843 – 0.9851)	25.04 (0.986)
	Mainshaft / countershaft O.D.	at M5 bushing	19.959 – 19.980 (0.7858 – 0.7866)	19.91 (0.784)
		at C1 bushing	19.959 – 19.980 (0.7858 – 0.7866)	19.91 (0.784)
		at C2 bushing	21.959 – 21.980 (0.8645 – 0.8653)	21.91 (0.863)
		at C3 bushing	24.959 – 24.980 (0.9826 – 0.9835)	24.90 (0.980)
	Bushing-to-shaft clearance		M5, C1, C2, C3	0.020 – 0.062 (0.0008 – 0.0024)
Shift fork, shift fork shaft	Shift fork shaft O.D.		11.957 – 11.968 (0.4707 – 0.4712)	11.95 (0.470)
	Shift fork I.D.		12.000 – 12.018 (0.4724 – 0.4731)	12.05 (0.474)
	Shift fork claw thickness		4.93 – 5.00 (0.194 – 0.197)	4.82 (0.190)
Shift drum	Shift drum O.D.	Left side	13.966 – 13.984 (0.5498 – 0.5506)	13.94 (0.549)
	Shift drum journal I.D.	Left side	14.000 – 14.027 (0.5512 – 0.5522)	14.06 (0.554)
	Shift drum-to-shift drum journal clearance	Left side	0.016 – 0.061 (0.0006 – 0.0024)	0.08 (0.003)

GENERAL INFORMATION

FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Minimum tire thread depth		—	1.5 (0.06)
Cold tire pressure	Driver only	200 kPa (2.00 kgf/cm ² , 29 psi)	—
	Driver and passenger	200 kPa (2.00 kgf/cm ² , 29 psi)	—
Axle runout		—	0.2 (0.01)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel balancer weight		—	60 g max.
Fork	Spring free length	421.8 (16.61)	—
	Pipe runout	—	0.20 (0.008)
	Recommended fork fluid	Pro Honda Suspension Fluid SS-8 (10W)	—
	Fluid level	150 (5.9)	—
	Fluid capacity	331 ± 2.5 cm ³ (11.2 ± 0.08 US oz, 11.7 ± 0.09 Imp oz)	—
Steering head bearing pre-load		15.7 – 24.5 N (1.6 – 2.5 kgf, 3.5 – 5.5 lbf)	—

REAR WHEEL/SUSPENSION SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Minimum tire thread depth			—	2.0 (0.08)
Cold tire pressure	Driver only		200 kPa (2.00 kgf/cm ² , 29 psi)	—
	Driver and passenger		225 kPa (2.25 kgf/cm ² , 33 psi)	—
Axle runout			—	0.2 (0.01)
Wheel rim runout	Radial		—	2.0 (0.08)
	Axial		—	2.0 (0.08)
Wheel balancer weight			—	60 g max.
Drive chain	Size/link	DID	DID520VF-108LE	—
		RK	RK520KLO-108LE	—
	Slack		20 – 30 (0.8 – 1.2)	—

HYDRAULIC BRAKE SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Front	Specified brake fluid		DOT 3 or DOT 4	—
	Brake pad wear indicator		—	To groove
	Brake disc thickness		4.3 – 4.7 (0.17 – 0.19)	3.5 (0.14)
	Brake disc warpage		—	0.3 (0.01)
	Master cylinder I.D.	CBR250R	11.000 – 11.043 (0.4331 – 0.4348)	11.055 (0.4352)
		CBR250RA	12.700 – 12.743 (0.5000 – 0.5017)	12.755 (0.5022)
	Master piston O.D.	CBR250R	10.957 – 10.984 (0.4314 – 0.4324)	10.945 (0.4309)
		CBR250RA	12.657 – 12.684 (0.4983 – 0.4994)	12.645 (0.4978)
	Caliper cylinder I.D. (CBR250R)		25.400 – 25.450 (1.0000 – 1.0020)	25.460 (1.0024)
	Caliper cylinder I.D. (CBR250RA)	Caliper cylinder A	22.650 – 22.700 (0.8917 – 0.8937)	22.710 (0.8941)
		Caliper cylinder B	27.000 – 27.050 (1.0630 – 1.0650)	27.060 (1.0654)
	Caliper piston O.D. (CBR250R)		25.318 – 25.368 (0.9968 – 0.9987)	25.31 (0.996)
	Caliper piston O.D. (CBR250RA)	Caliper piston A	22.585 – 22.618 (0.8892 – 0.8905)	22.56 (0.888)
		Caliper piston B	26.918 – 26.968 (1.0598 – 1.0617)	26.91 (1.059)
Rear	Specified brake fluid		DOT 3 or DOT 4	—
	Brake pad wear indicator		—	To groove
	Brake disc thickness		4.8 – 5.2 (0.19 – 0.20)	4.0 (0.16)
	Brake disc warpage		—	0.3 (0.01)
	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.		38.098 – 38.148 (1.4999 – 1.5019)	38.09 (1.500)
	Brake pedal height		66.5 – 68.5 (2.62 – 2.70)	—

BATTERY/CHARGING SYSTEM SPECIFICATIONS

ITEM			SPECIFICATION
Battery	Type		YTXL-BS
	Capacity		12 V - 6 Ah
	Current leakage		0.34 mA max.
	Voltage (20°C/68°F)	Fully charged	13.0 - 13.2 V
		Needs charging	Below 12.3 V
	Charging current	Normal	0.6 A/5 - 10 h
		Quick	3 A/1 h
Alternator	Capacity		0.34 kW/5,000 rpm
	Charging coil resistance (20°C/68°F)		0.1 - 1.0 Ω

IGNITION SYSTEM SPECIFICATIONS

ITEM		SPECIFICATION
Spark plug		SIMR8A9 (NGK)
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)		10° BTDC at idle

ELECTRIC STARTER SPECIFICATION

ITEM	STANDARD	SERVICE LIMIT
Starter motor brush length	11.8 - 12.3 (0.46 - 0.48)	6.5 (0.26)

Unit: mm (in)

LIGHTS/METERS/SWITCHES SPECIFICATIONS

ITEM			SPECIFICATION
Bulbs	Headlight		12 V - 60/55 W
	Position light		12 V - 5 W x 2
	Brake/tail light		12 V - 21/5 W
	Turn signal light		12 V - 21 W x 4
	License light		12 V - 5 W
	Instrument light		LED
	Turn signal indicator		LED
	High beam indicator		LED
	Neutral indicator		12 V - 1.7 W
	MIL		LED
	ABS indicator (CBR250RA)		LED
	Main fuse		30 A
Fuse	Sub fuse	CBR250R	10 A x 5
		CBR250RA	30 A x 2, 10 A x 6

GENERAL INFORMATION

TORQUE VALUES

STANDARD TORQUE VALUES

FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)	FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)
5 mm bolt and nut	5.2 (0.5, 3.8)	5 mm screw	4.2 (0.4, 3.1)
6 mm bolt and nut (Includes SH flange bolt)	10 (1.0, 7)	6 mm screw	9.0 (0.9, 6.6)
8 mm bolt and nut	22 (2.2, 16)	6 mm flange bolt (8 mm head, large flange) and nut	12 (1.2, 9)
10 mm bolt and nut	34 (3.5, 25)	8 mm flange bolt and nut	27 (2.8, 20)
12 mm bolt and nut	54 (5.5, 40)	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
Rearview mirror mounting socket bolt	4	6	5.2 (0.5, 3.8)	
Front turn signal light mounting nut	2	10	21 (2.1, 15)	
Headlight mounting screw	6	5	1.1 (0.1, 0.8)	U-nut
Front side reflector stay mounting nut	2	6	1.5 (0.2, 1.1)	
Brake/tail light mounting screw	4	5	1.1 (0.1, 0.8)	U-nut
Side reflector mounting nut	4	6	1.5 (0.2, 1.1)	
Reflector mounting nut	1	5	1.5 (0.2, 1.1)	U-nut
Muffler band bolt	1	8	22.5 (2.3, 17)	
Exhaust pipe joint nut	2	8	18 (1.8, 13)	
Exhaust pipe stud bolt	2	8	—	See page 2-22

MAINTENANCE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Spark plug	1	10	16 (1.6, 12)	
Crankshaft hole cap	1	30	8.0 (0.8, 5.9)	Apply engine oil to the threads.
Oil drain bolt	1	12	24 (2.4, 18)	
Throttle cable A adjuster lock nut (grip side)	1	7	3.8 (0.4, 2.8)	
Throttle cable A adjuster lock nut (throttle body side)	1	6	3.0 (0.3, 2.2)	
Air cleaner cover screw	10	5	1.1 (0.1, 0.8)	
Drive chain adjuster lock nut	2	8	21 (2.1, 15)	
Sidestand pivot bolt	1	10	10 (1.0, 7)	
Sidestand pivot lock nut	1	10	30 (3.1, 22)	U-nut

FUEL SYSTEM (PGM-FI)

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
O ₂ sensor	1	12	25 (2.5, 18)	
Insulator band screw	2	5	4.2 (0.4, 3.1)	See page 5-49
Throttle cable stay screw	2	5	3.4 (0.3, 2.5)	
Clamper stay screw	1	5	3.4 (0.3, 2.5)	
IACV setting plate torx screw	2	4	2.1 (0.2, 1.5)	
Sensor unit torx screw	3	5	3.4 (0.3, 2.5)	
Fuel injector joint mounting bolt	2	5	5.1 (0.5, 3.8)	
ECT sensor	1	12	25 (2.5, 18)	
Fuel pump setting plate nut	6	6	12 (1.2, 9)	See page 5-42
Throttle cable A joint nut (grip side)	1	10	1.5 (0.2, 1.1)	
Throttle cable B joint nut (grip side)	1	12	1.5 (0.2, 1.1)	
Throttle cable B (throttle body side)	1	6	3.0 (0.3, 2.2)	
Bank angle sensor mounting nut	2	6	10 (1.0, 7)	

COOLING SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Water pump impeller	1	7	10 (1.0, 7)	See page 6-10
Water hose band screw	4	—	—	
Fan motor shroud mounting bolt	3	6	8.5 (0.9, 6.3)	Apply locking agent to the threads.
Fan motor screw	3	4	2.8 (0.3, 2.1)	
Cooling fan nut	1	3	1.1 (0.1, 0.8)	

ENGINE REMOVAL/INSTALLATION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Front engine mounting nut	2	10	45 (4.6, 33)	
Front engine hanger plate bolt	2	10	45 (4.6, 33)	
Rear engine mounting nut	2	10	45 (4.6, 33)	
Drive sprocket fixing plate bolt	2	6	10 (1.0, 7)	

CYLINDER HEAD/VALVES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Cylinder head cover bolt	2	6	10 (1.0, 7)	Apply engine oil to the threads and seating surface. Apply engine oil to the threads and seating surface.
Camshaft holder mounting bolt	8	6	12 (1.2, 9)	
Cylinder head mounting nut	4	10	51 (5.2, 38)	
PAIR check valve cover bolt	2	5	5.2 (0.5, 3.8)	
Cam chain tensioner lifter plug	1	6	4.2 (0.4, 3.1)	

CYLINDER/PISTON

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Cylinder stud bolt	4	10	—	See page 9-8

CLUTCH/GEARSHIFT LINKAGE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Clutch center lock nut	1	16	108 (11.0, 80)	Lock nut; replace with a new one and stake. Apply engine oil to the threads and seating surface.
Primary drive gear lock nut	1	16	108 (11.0, 80)	Apply engine oil to the threads and seating surface.
Shift drum stopper arm bolt	1	6	10 (1.0, 7)	Apply locking agent to the threads.
Shift drum stopper plate bolt	1	6	10 (1.0, 7)	Apply locking agent to the threads.
Clutch lifter plate bolt	5	6	12 (1.2, 9)	Apply locking agent to the threads.
Gearshift spindle return spring pin	1	8	30 (3.1, 22)	

ALTERNATOR/STARTER CLUTCH

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Starter clutch socket bolt	6	8	30 (3.1, 22)	Apply locking agent to the threads.
Flywheel bolt	1	12	128 (13.0, 94)	Apply engine oil to the threads and seating surface.
Stator mounting socket bolt	3	6	10 (1.0, 7)	Apply locking agent to the threads. Coating width: 6.5 ± 1.0 mm (0.26 ± 0.04 in) from tip
CKP sensor mounting socket bolt	2	6	10 (1.0, 7)	

GENERAL INFORMATION

CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N-m (kgf-m, lbf-ft)	REMARKS
Cam chain tensioner pivot bolt	1	6	10 (1.0, 7)	Apply locking agent to the threads. Coating width: 6.5 ± 1.0 mm (0.26 ± 0.04 in) from tip
Balancer shaft nut	1	14	44 (4.5, 32)	Apply engine oil to the threads and seating surface.

FRONT WHEEL/SUSPENSION/STEERING

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N-m (kgf-m, lbf-ft)	REMARKS
Handlebar pinch bolt	2	8	27 (2.8, 20)	U-nut
Handlebar switch housing screw	4	5	2.5 (0.3, 1.8)	
Front axle nut	1	12	59 (6.0, 44)	
Front axle pinch bolt	1	8	22 (2.2, 16)	ALOC bolt; replace with a new one.
Front pulser ring mounting bolt (CBR250RA)	3	5	7.0 (0.7, 5.2)	
Front brake disc bolt	6	6	20 (2.0, 15)	
Fork bolt	2	33	22 (2.2, 16)	ALOC bolt; replace with a new one.
Fork socket bolt	2	8	20 (2.0, 15)	
Steering stem nut	1	24	103 (10.5, 76)	Apply locking agent to the threads.
Steering stem adjusting nut	1	26	—	
Top bridge pinch bolt	2	8	22 (2.2, 16)	Apply engine oil to the threads. See page 13-33
Bottom bridge pinch bolt	2	10	32 (3.3, 24)	
Front brake hose stay bolt	1	6	12 (1.2, 9)	
Brake hose mounting bolt (CBR250RA)	1	6	10 (1.0, 7)	Apply locking agent to the threads.
Clutch lever pivot bolt	1	6	1.0 (0.1, 0.7)	
Clutch lever pivot nut	1	6	5.9 (0.6, 4.4)	

REAR WHEEL/SUSPENSION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N-m (kgf-m, lbf-ft)	REMARKS
Rear axle nut	1	16	88 (9.0, 65)	U-nut
Driven sprocket nut	6	10	75 (7.6, 55)	U-nut
Rear pulser ring mounting bolt (CBR250RA)	4	5	7.0 (0.7, 5.2)	ALOC bolt; replace with a new one.
Rear brake disc bolt	4	8	42 (4.3, 31)	ALOC bolt; replace with a new one.
Shock absorber mounting nut	2	10	36 (3.7, 27)	U-nut
Shock arm nut	1	10	75 (7.6, 55)	U-nut
Shock link nut	2	10	75 (7.6, 55)	U-nut
Swingarm pivot nut	1	14	88 (9.0, 65)	U-nut
Rear brake hose guide mounting screw	1	5	1.3 (0.1, 1.0)	ALOC screw; replace with a new one.

HYDRAULIC BRAKE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Brake hose oil bolt (CBR250R)	4	10	34 (3.5, 25)	Apply 0.10 g (0.004 oz) silicone grease to the sliding surface.
Brake hose oil bolt (CBR250RA)	5	10	34 (3.5, 25)	
Brake caliper bleed valve (CBR250R)	2	8	5.4 (0.6, 4.0)	
Brake caliper bleed valve (CBR250RA)	3	8	5.4 (0.6, 4.0)	
Front master cylinder reservoir cover screw	2	4	1.5 (0.2, 1.1)	
Front master cylinder holder bolt	2	6	12 (1.2, 9)	
Front brake light switch screw	1	4	1.2 (0.1, 0.9)	
Brake lever pivot bolt	1	6	1.0 (0.1, 0.7)	
Brake lever pivot nut	1	6	5.9 (0.6, 4.4)	
Front brake caliper mounting bolt	2	8	30 (3.1, 22)	
Front brake caliper bracket pin	1	8	13 (1.3, 10)	Apply locking agent to the threads.
Front brake caliper pin	1	8	22 (2.2, 16)	Apply locking agent to the threads.
Front brake pad hanger pin	1	10	18 (1.8, 13)	Apply locking agent to the threads.
Pad pin plug (CBR250R)	1	10	2.4 (0.2, 1.8)	
Rear reservoir cover screw	2	4	1.5 (0.2, 1.1)	
Rear master cylinder mounting bolt	2	6	12 (1.2, 9)	
Rear master cylinder push rod lock nut	1	8	17 (1.7, 13)	
Rear master cylinder hose joint screw	1	4	1.5 (0.2, 1.1)	
Rear reservoir mounting bolt	1	6	10 (1.0, 7)	
Rear brake pad hanger pin	1	10	17 (1.7, 13)	
Rear brake caliper pin	1	12	27 (2.8, 20)	
Main step holder mounting socket bolt	4	8	27 (2.8, 20)	
Main step cap bolt	2	8	11 (1.1, 8)	Apply locking agent to the threads.
Passenger step holder mounting socket bolt	4	8	27 (2.8, 20)	

ANTI-LOCK BRAKE SYSTEM (ABS) (CBR250RA)

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Brake pipe joint nut	14	10	14 (1.4, 10)	Apply brake fluid to the threads.
PCV mounting bolt	2	6	10 (1.0, 7)	
Delay valve mounting bolt	2	6	10 (1.0, 7)	

IGNITION SYSTEM

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

ELECTRIC STARTER

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Negative brush screw	1	5	3.7 (0.4, 2.7)	
Starter motor assembly bolt	2	5	4.9 (0.5, 3.6)	

LIGHTS/METERS/SWITCHES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Rear turn signal light mounting nut	2	10	21 (2.1, 15)	One-way bolt; replace with a new one.
Ignition switch mounting bolt	2	8	24 (2.4, 18)	
Combination meter mounting screw	3	5	1.1 (0.1, 0.8)	
Neutral switch	1	10	12 (1.2, 9)	

GENERAL INFORMATION

LUBRICATION & SEAL POINTS

ENGINE

MATERIAL	LOCATION	REMARKS
Liquid sealant (Three bond 1207B, 1215 or equivalent)	Left crankcase mating surface Alternator/CKP sensor wire grommet sealing surface	See page 12-25
Liquid sealant (Three bond 5211C, SS KE45, 1207B, 1215 or equivalent)	Cylinder head semi-circular cut-out	
Engine oil	Oil pump rotor entire surface Oil pump shaft outer surface Water pump shaft outer surface Cam chain whole surface Cylinder inner surface Piston pin hole inner surface, ring groove and sliding surface Piston ring entire surface Clutch disc entire surface Gearshift spindle shaft outer surface Starter one-way clutch sprag Starter driven gear sliding surface Each oil seal lips Each bearing rotating area Each gear teeth Each O-ring	
Multi-purpose grease	Each oil seal lips (clutch lifter arm, gearshift spindle, countershaft, water pump)	
Molybdenum oil solution (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease)	Valve stem sliding surface Camshaft lobes and journal Rocker arm shaft outer surface Rocker arm inner surface, roller surface and slipper surface Piston pin outer surface Clutch outer guide inner surface Clutch lifter arm sliding surface Starter reduction gear inner surface Starter reduction gear shaft outer surface Crankshaft main journal bearing sliding surface Connecting rod big end sliding surface Connecting rod small end inner surface Left crankshaft needle bearing rotating surface Balancer driven gear and sub gear sliding surface Shift fork inner surface and guide pin Shift fork shaft outer surface Shift drum journal outer surface and grooves M5, C1, C2, C3 gear bushing entire surface M6, C4 gear bushing outer surface	
Locking agent	Mainshaft bearing setting plate bolt threads	Coating width: 6.5 ± 1.0 mm (0.26 ± 0.04 in) from tip

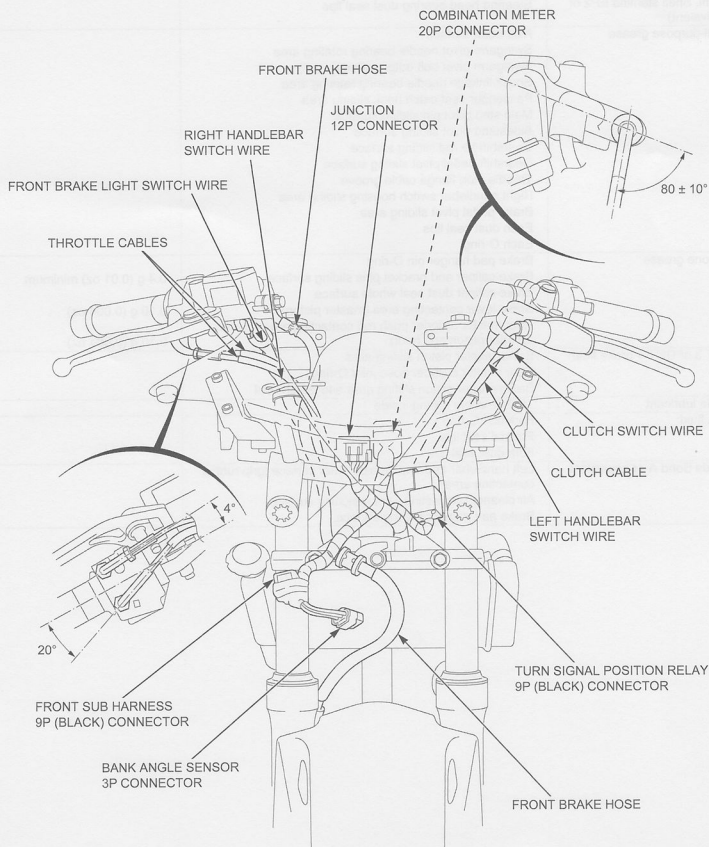
FRAME

MATERIAL	LOCATION	REMARKS
Urea based multi-purpose grease with extreme pressure (example: Kyodo Yushi, Shell stamina EP2 or equivalent)	Steering head bearing inner race and outer race rolling surface Steering head bearing dust seal lips	3.0 – 5.0 g (0.11 – 0.18 oz) minimum
Multi-purpose grease	Axle outer surface Swingarm pivot needle bearing rotating area Swingarm pivot bolt outer surface Shock linkage needle bearing rotating area Passenger seat catch hook sliding area Main step pivot pin sliding surface Sidestand pivot sliding surface Gearshift tie rod sliding surface Gearshift pedal pivot sliding surface Throttle pipe flange cable groove Right handlebar switch housing sliding area Brake pedal pivot sliding area Each dust seal lips Each O-ring	
Silicone grease	Brake pad hanger pin O-ring Brake caliper and bracket pins sliding surface Brake caliper dust seal whole surface Brake lever contacting area (master piston) Rear master cylinder push rod contacting area (master cylinder piston and boot)	0.4 g (0.01 oz) minimum 0.10 g (0.004 oz) 0.10 g (0.004 oz)
DOT 3 or DOT 4 brake fluid	Brake master piston sliding area Rear master cylinder hose joint O-ring Brake caliper piston sliding area and piston seal	
Cable lubricant	Throttle cable casing inside	
Fork fluid	Fork bolt O-ring Fork oil seal lips Fork dust seal lips	
Honda Bond A or equivalent	Left handlebar and throttle pipe outer surface (grip rubber contacting area) Air cleaner connecting boot matching surface Brake pad retainer mating surface	

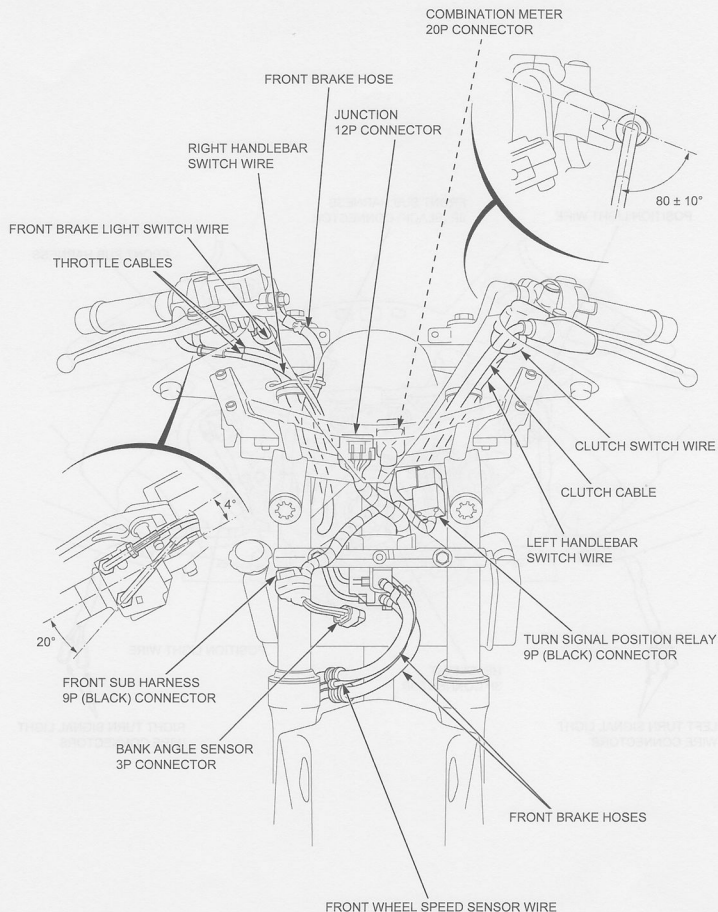
GENERAL INFORMATION

CABLE & HARNESS ROUTING

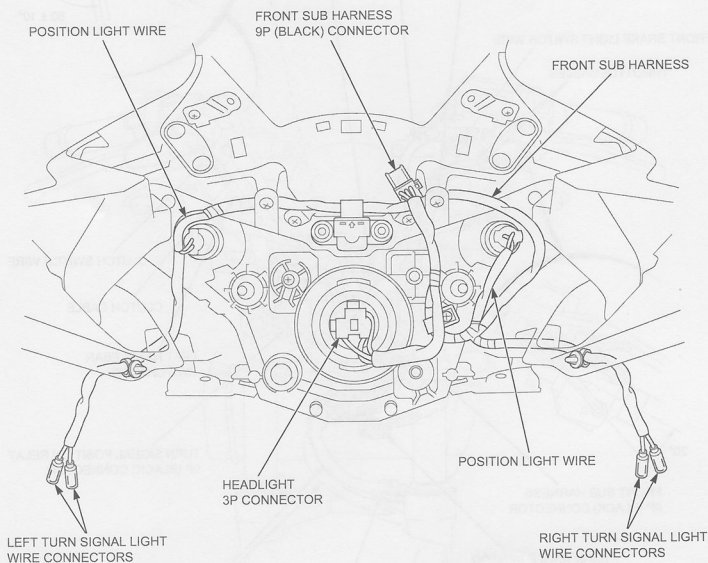
CBR250R:

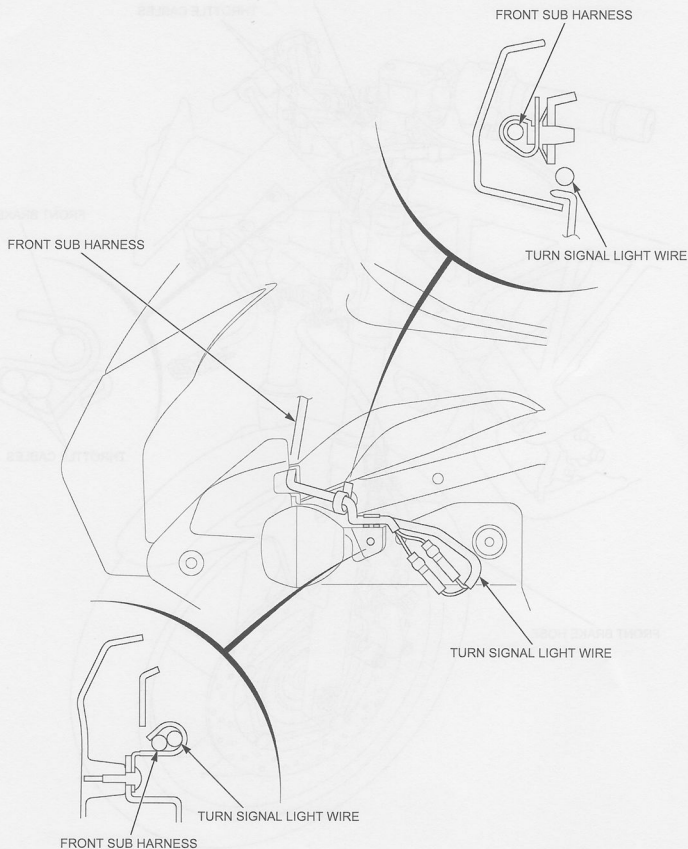


CBR250RA:



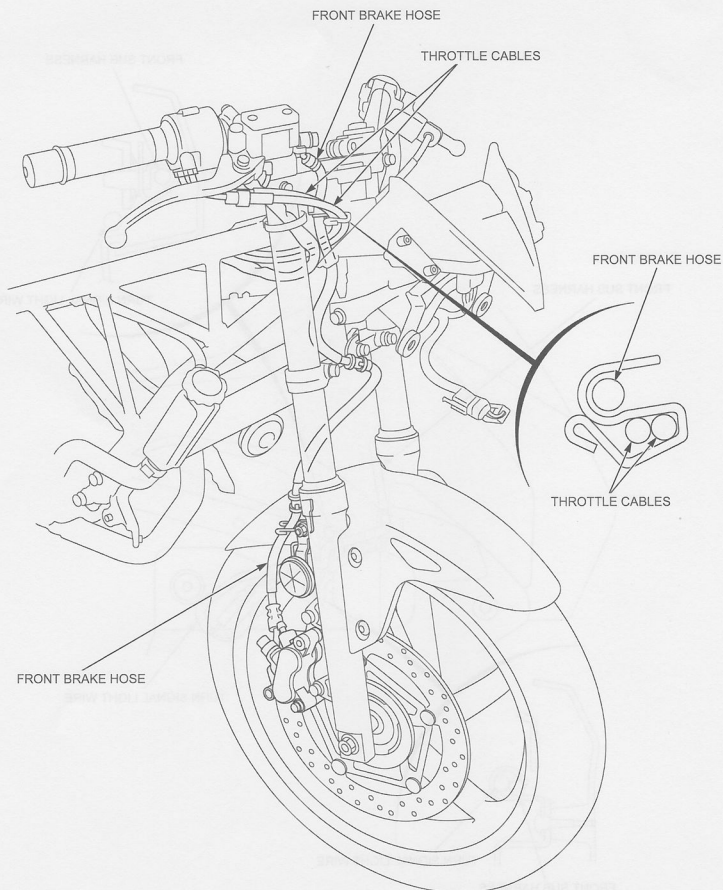
GENERAL INFORMATION



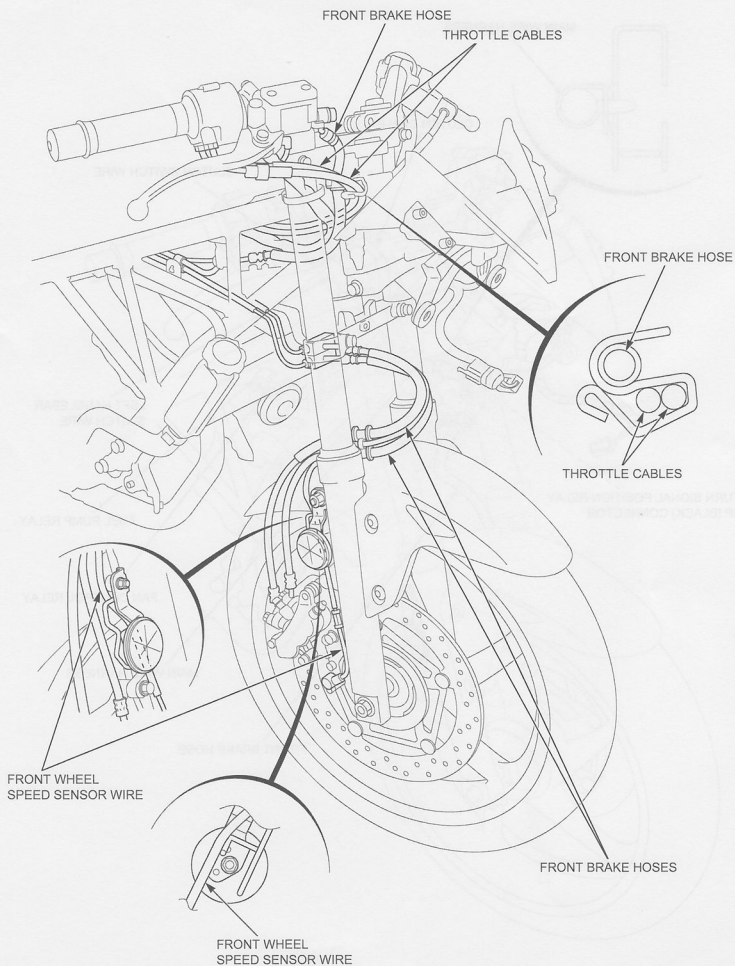


GENERAL INFORMATION

CBR250R:

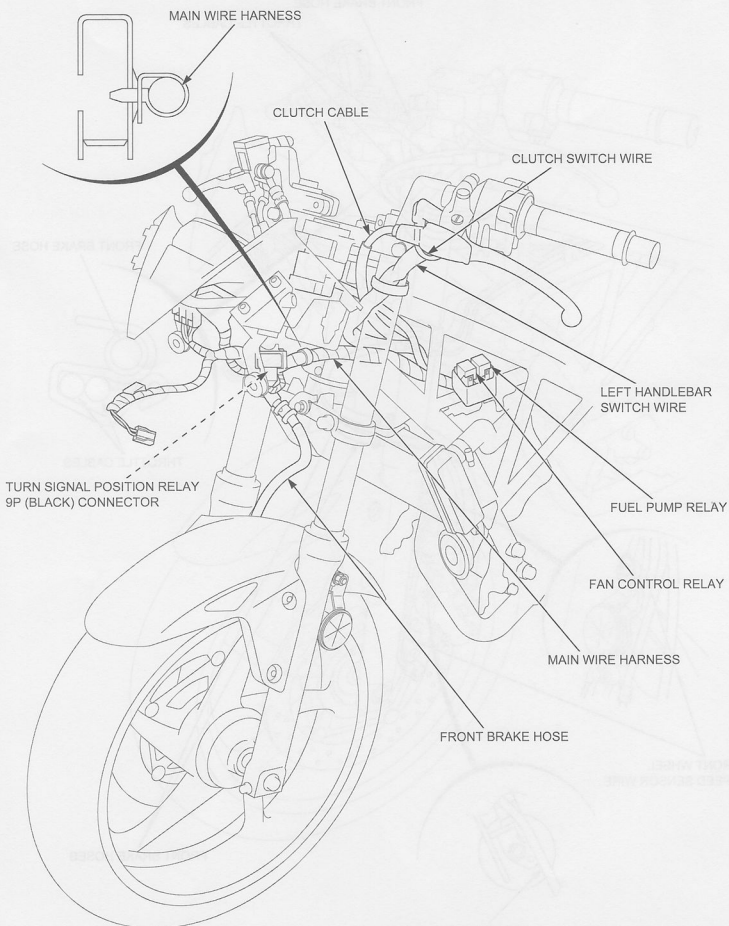


CBR250RA:

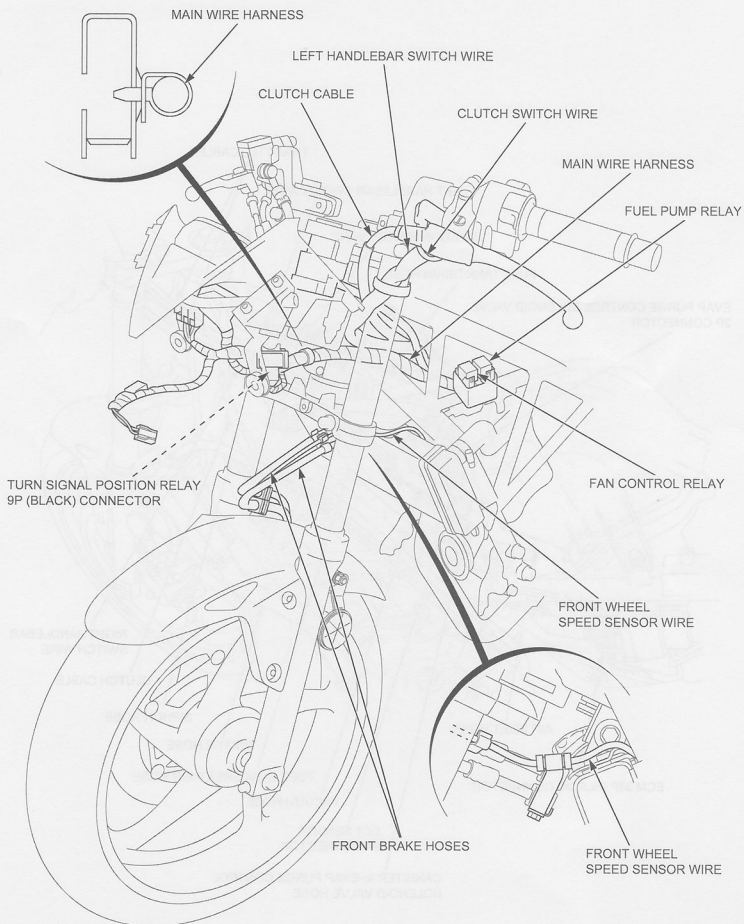


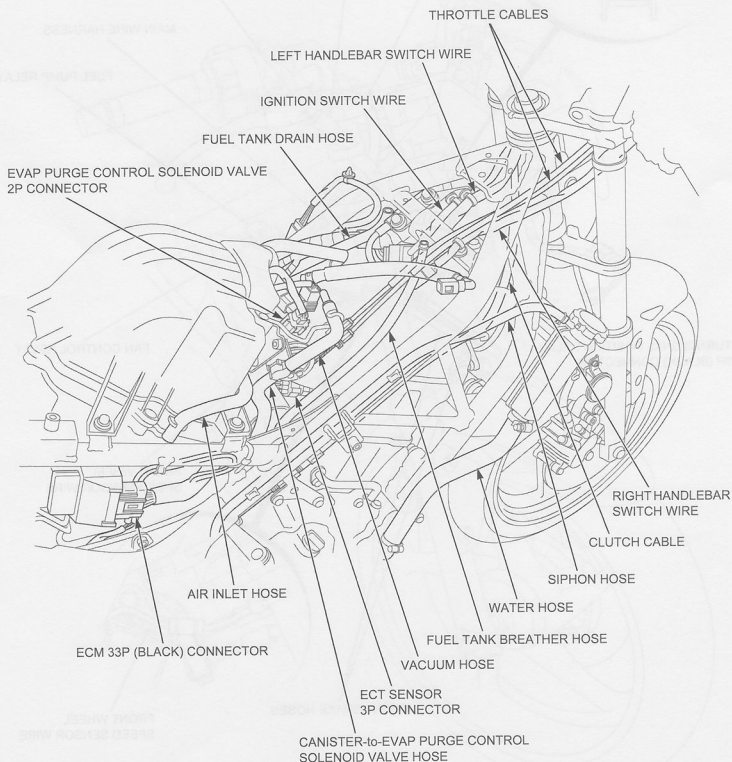
GENERAL INFORMATION

CBR250R:

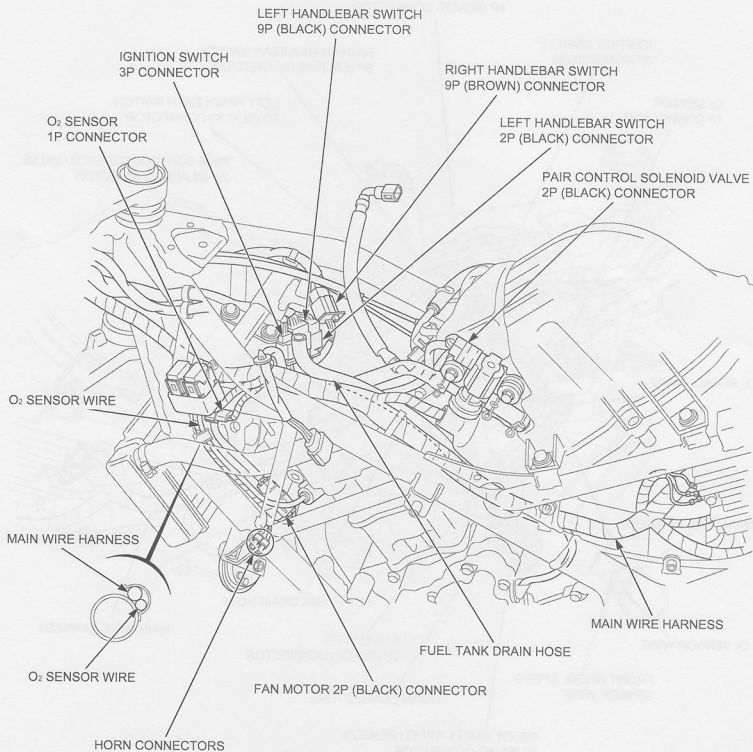


CBR250RA:



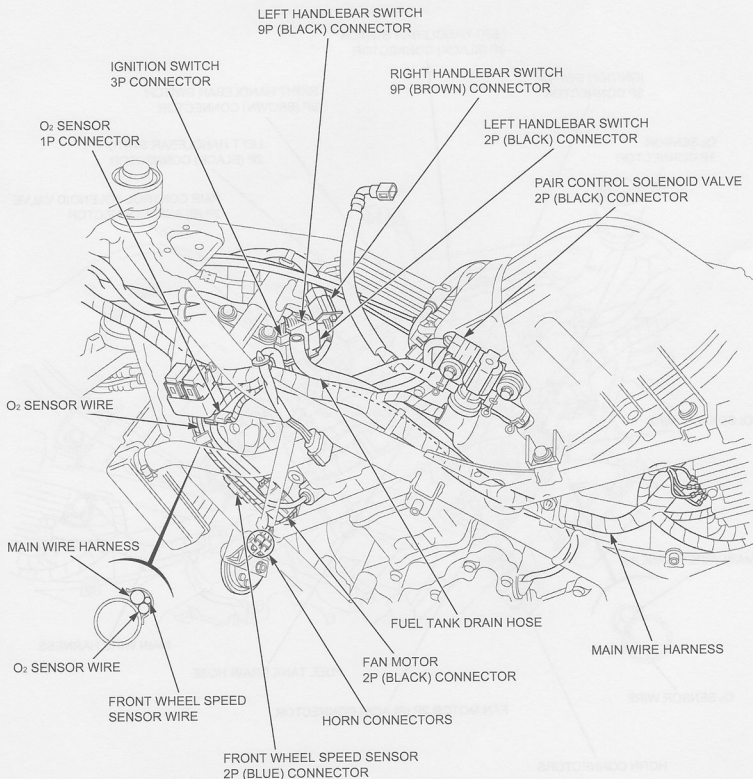


CBR250R:

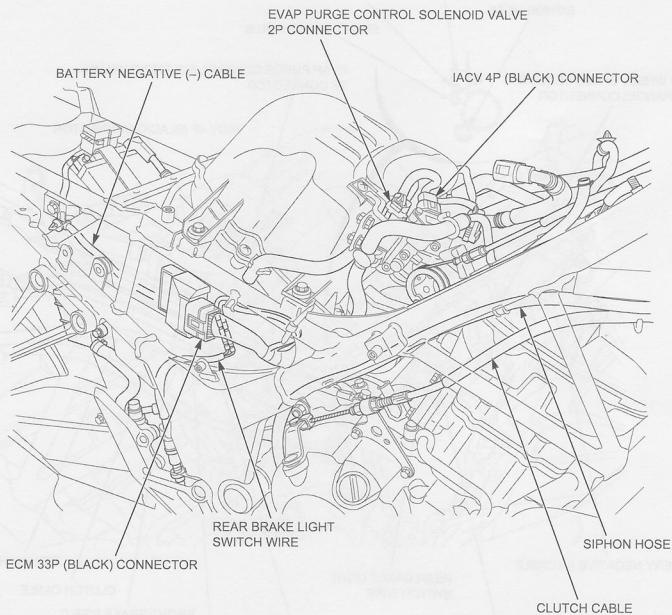


GENERAL INFORMATION

CBR250RA:

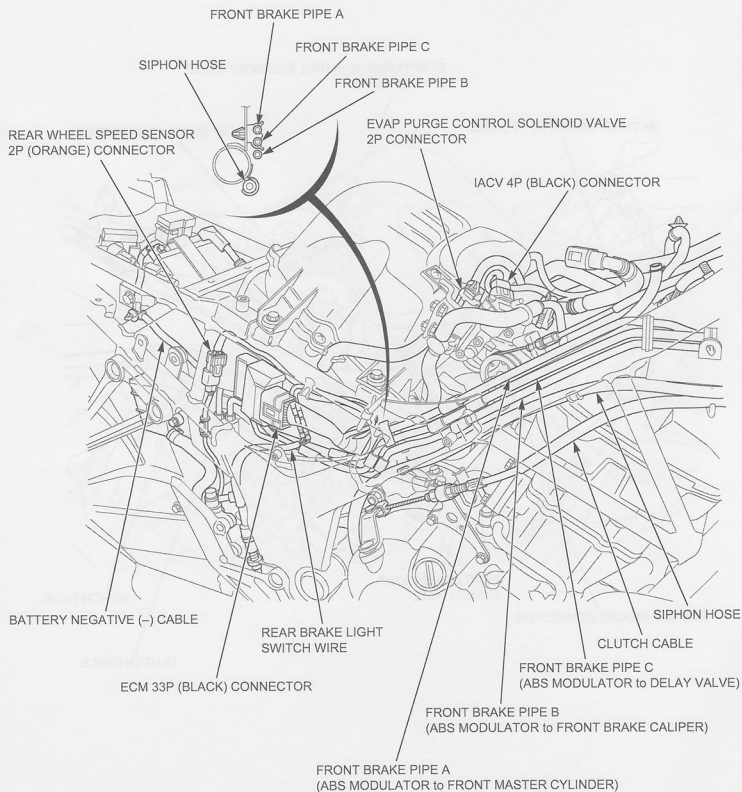


CBR250R:

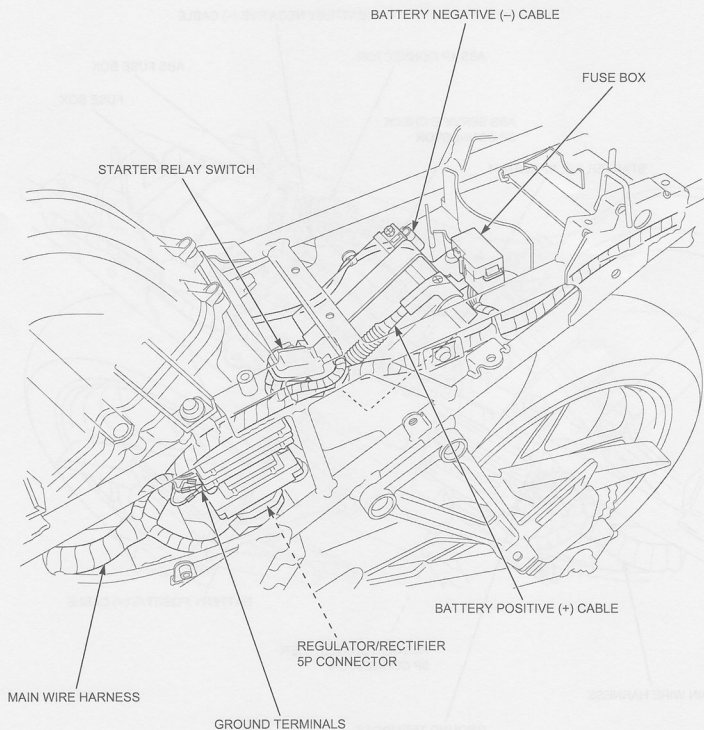


GENERAL INFORMATION

CBR250RA:

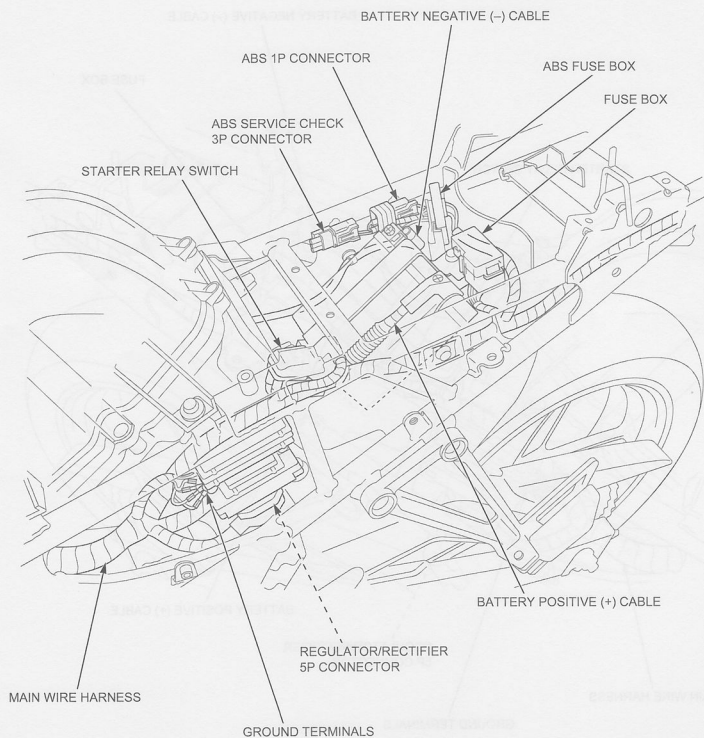


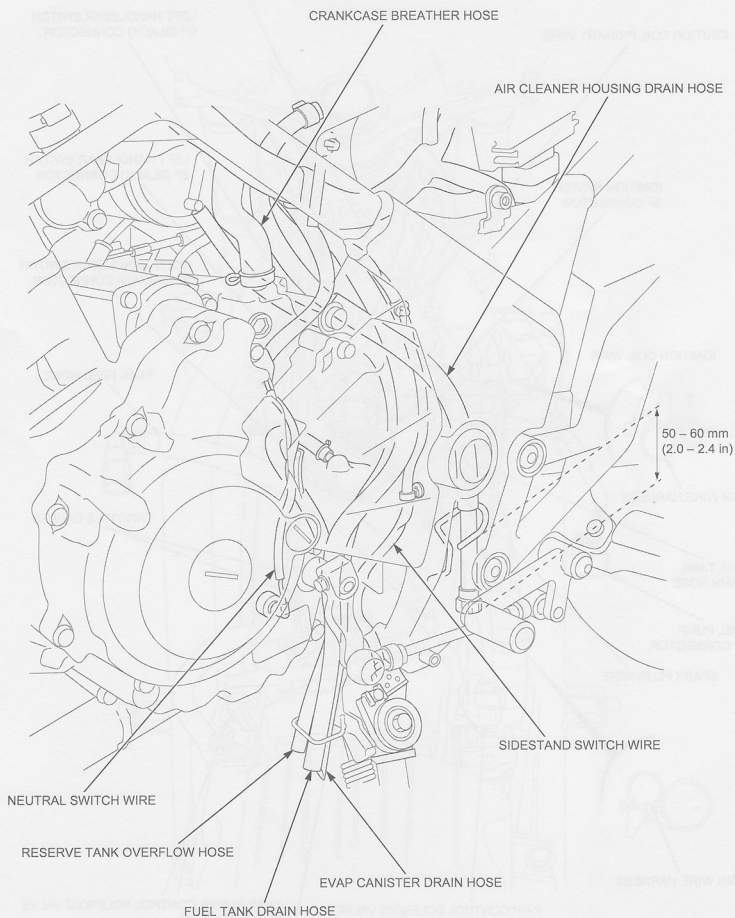
CBR250R:



GENERAL INFORMATION

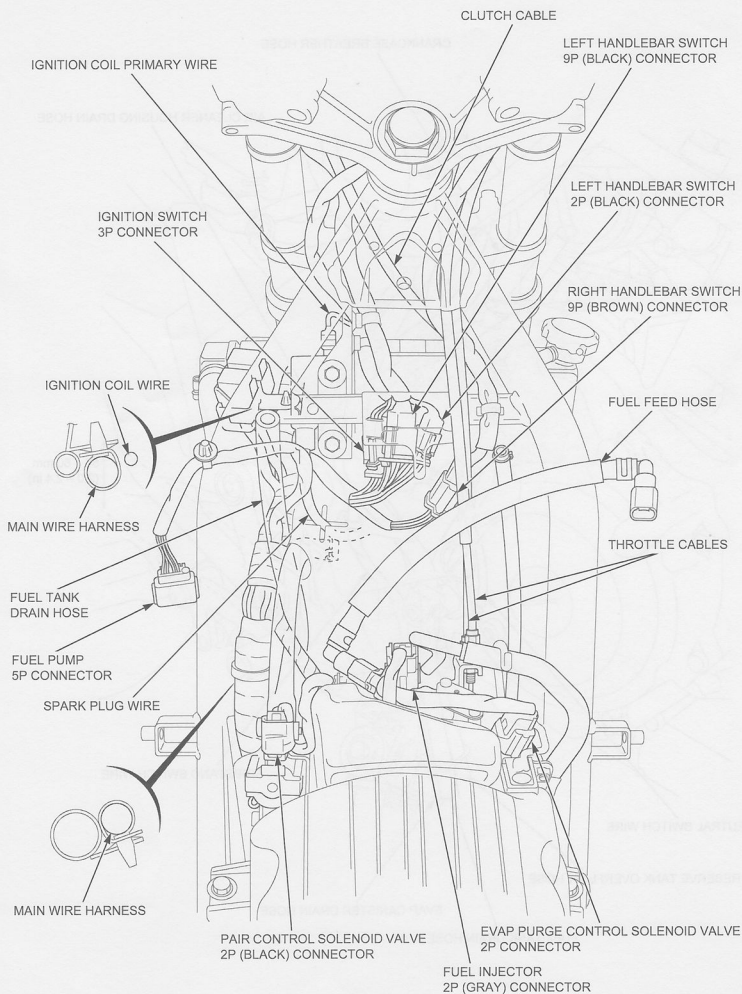
CBR250RA:



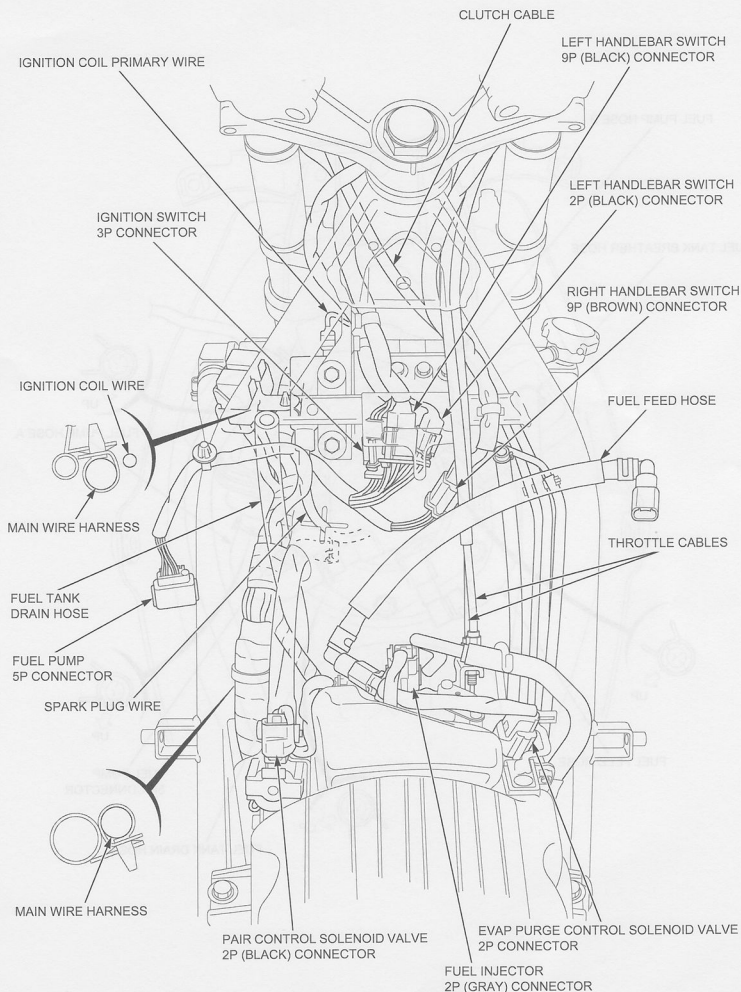


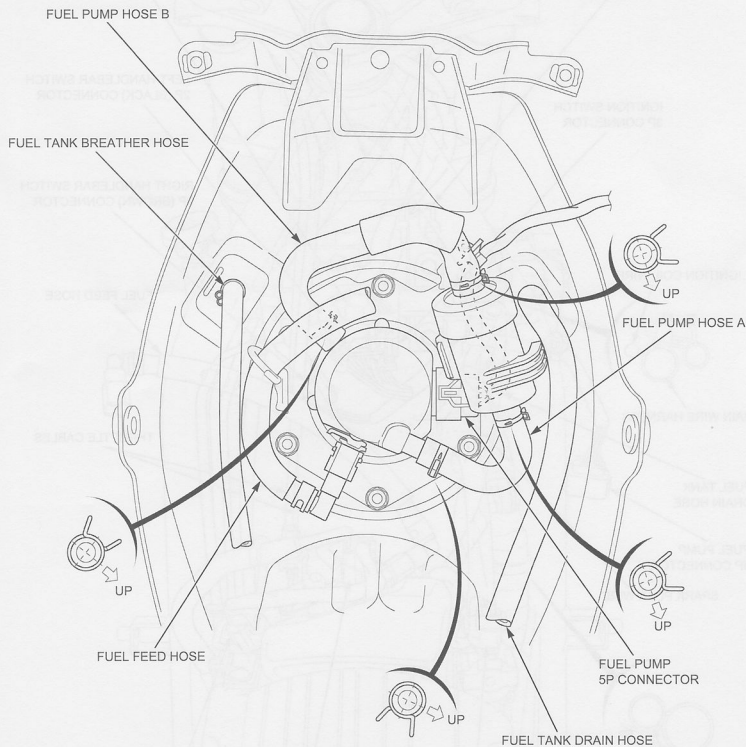
GENERAL INFORMATION

CBR250R:



CBR250RA:

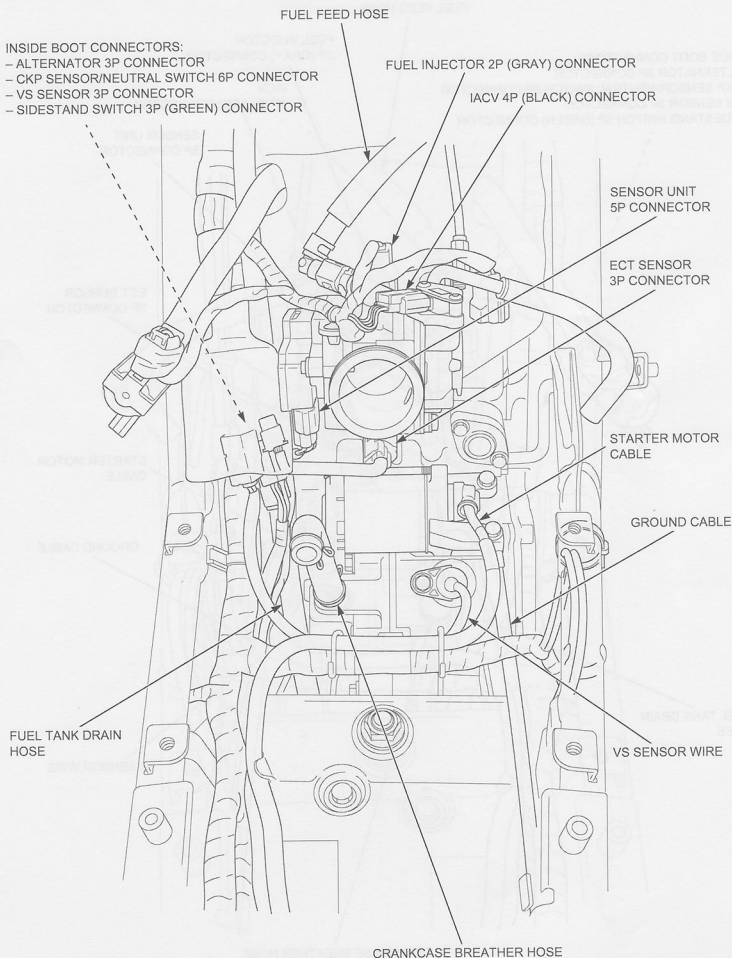




CBR250R:

INSIDE BOOT CONNECTORS:

- ALTERNATOR 3P CONNECTOR
- CKP SENSOR/NEUTRAL SWITCH 6P CONNECTOR
- VS SENSOR 3P CONNECTOR
- SIDE STAND SWITCH 3P (GREEN) CONNECTOR



GENERAL INFORMATION

CBR250RA:

INSIDE BOOT CONNECTORS:

- ALTERNATOR 3P CONNECTOR
- CKP SENSOR/NEUTRAL SWITCH 6P CONNECTOR
- VS SENSOR 3P CONNECTOR
- SIDESTAND SWITCH 3P (GREEN) CONNECTOR

FUEL FEED HOSE

FUEL INJECTOR
2P (GRAY) CONNECTOR

IACV
4P (BLACK) CONNECTOR

SENSOR UNIT
5P CONNECTOR

ECT SENSOR
3P CONNECTOR

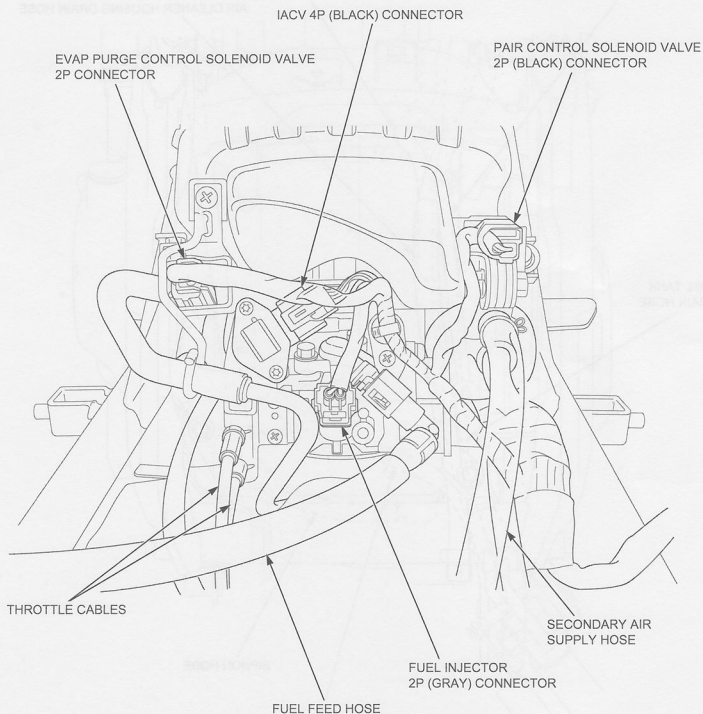
STARTER MOTOR
CABLE

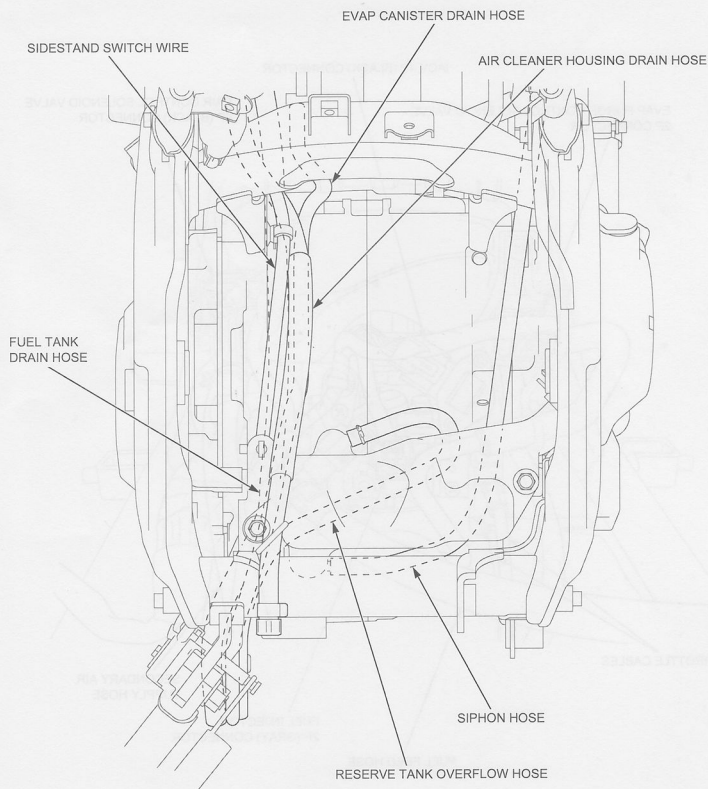
GROUND CABLE

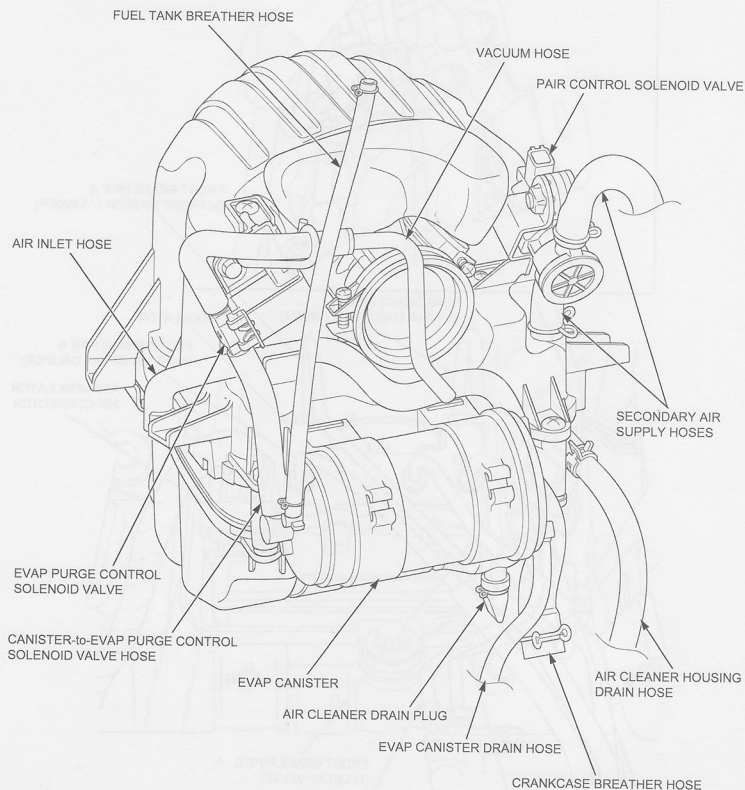
FUEL TANK DRAIN
HOSE

VS SENSOR WIRE

CRANKCASE BREATHER HOSE



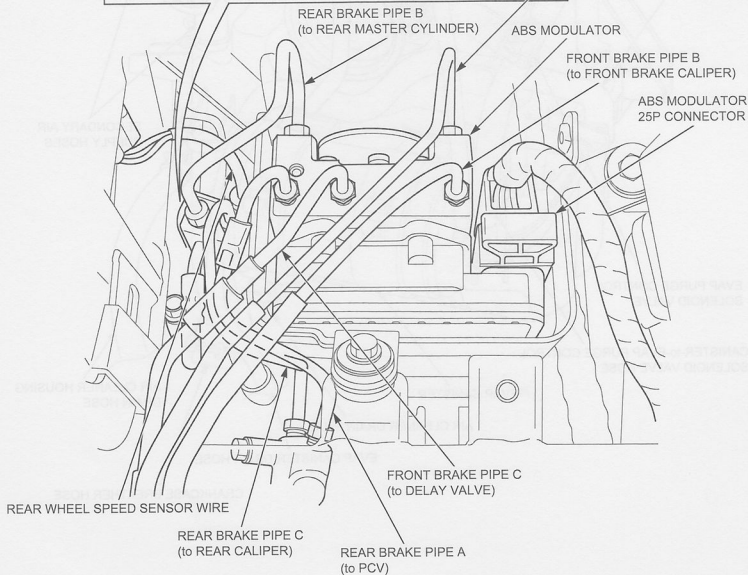
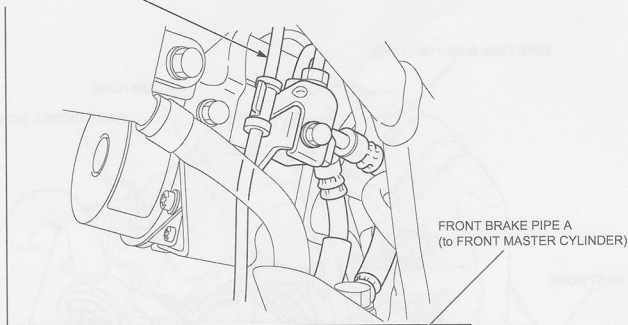




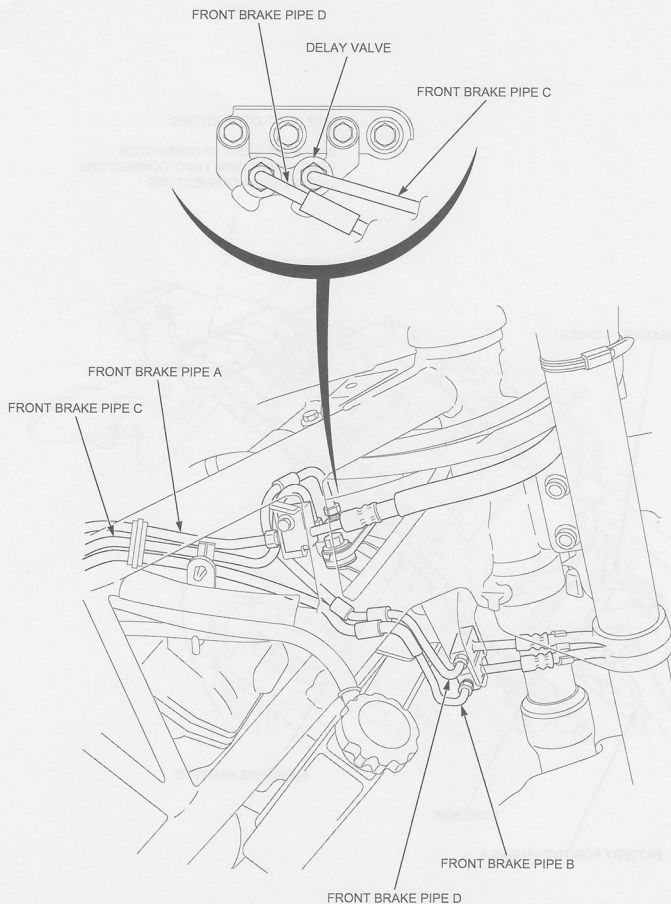
GENERAL INFORMATION

CBR250RA:

REAR WHEEL SPEED SENSOR WIRE



CBR250RA:



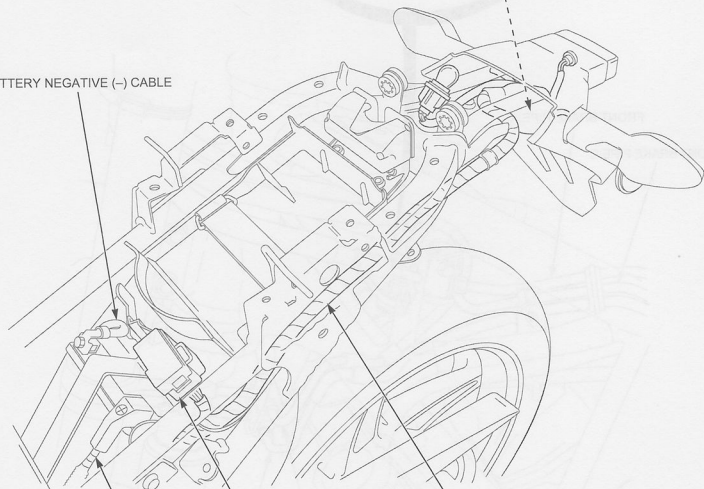
GENERAL INFORMATION

CBR250R:

INSIDE BOOT CONNECTORS:

- DLC
- BRAKE/TAIL LIGHT 2P CONNECTOR
- REAR TURN SIGNAL LIGHT CONNECTORS
- LICENSE LIGHT CONNECTORS

BATTERY NEGATIVE (-) CABLE

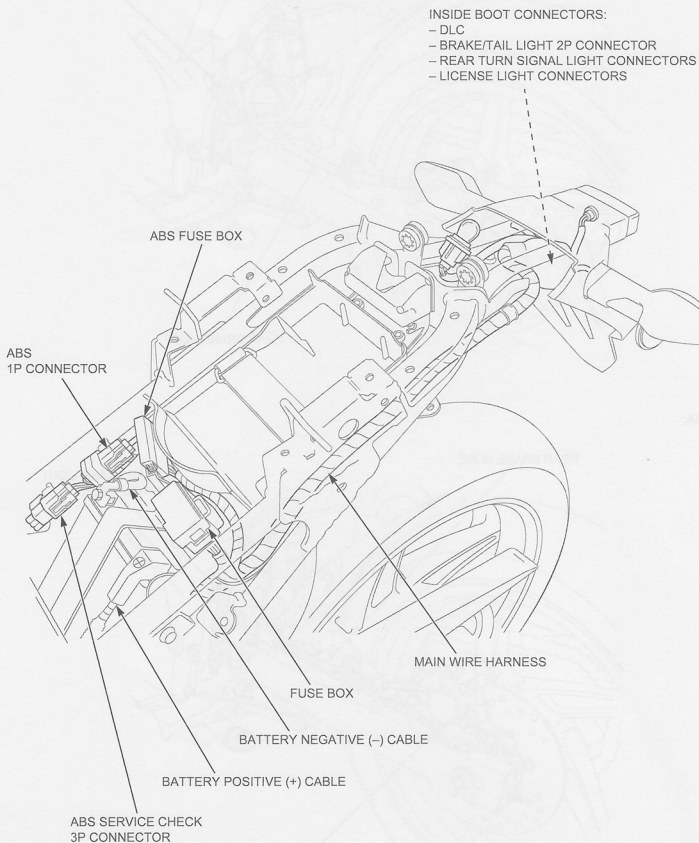


MAIN WIRE HARNESS

FUSE BOX

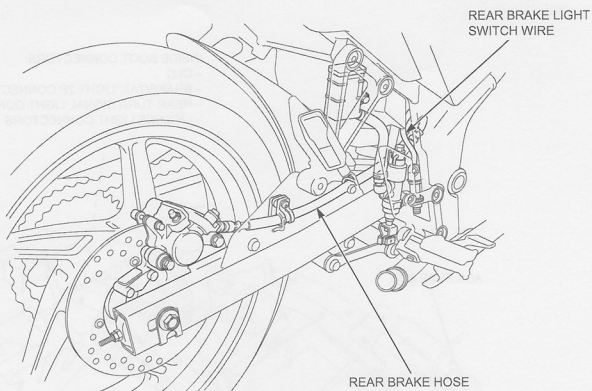
BATTERY POSITIVE (+) CABLE

CBR250RA:

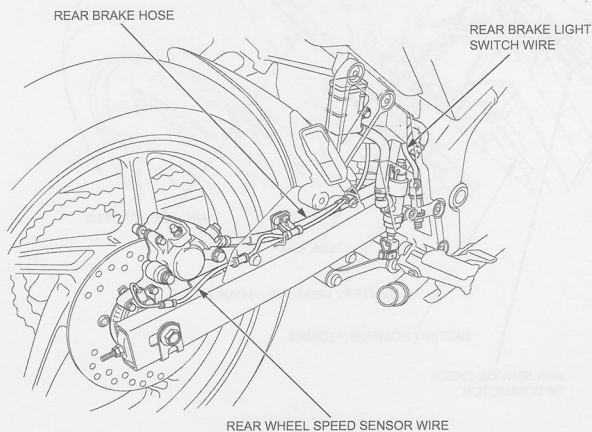


GENERAL INFORMATION

CBR250R:



CBR250RA:



EMISSION CONTROL SYSTEMS

EXHAUST EMISSION REQUIREMENT

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

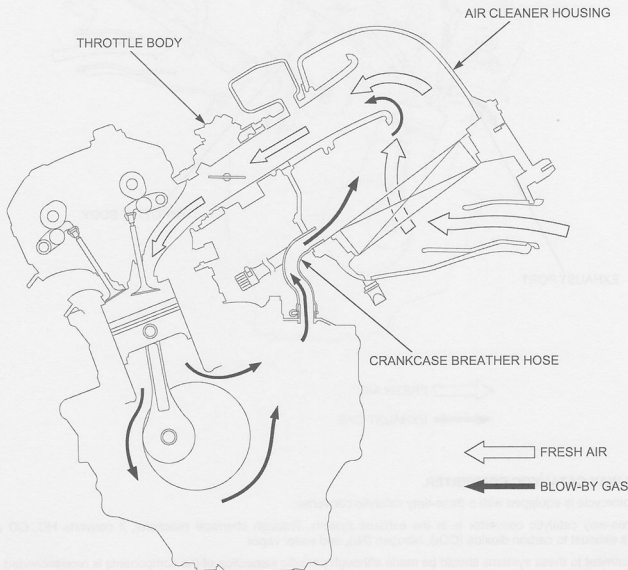
The combustion process produces carbon monoxide (CO), oxides of nitrogen (NOx) and hydrocarbons (HC). Fuel evaporation produces hydrocarbon emissions. The control of hydrocarbons and oxides of nitrogen is very important because, under certain conditions, they react to form photochemical smog when subjected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

Honda Motor Co., Ltd. utilizes various systems (page 1-48) 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 housing and throttle body.



GENERAL INFORMATION

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.

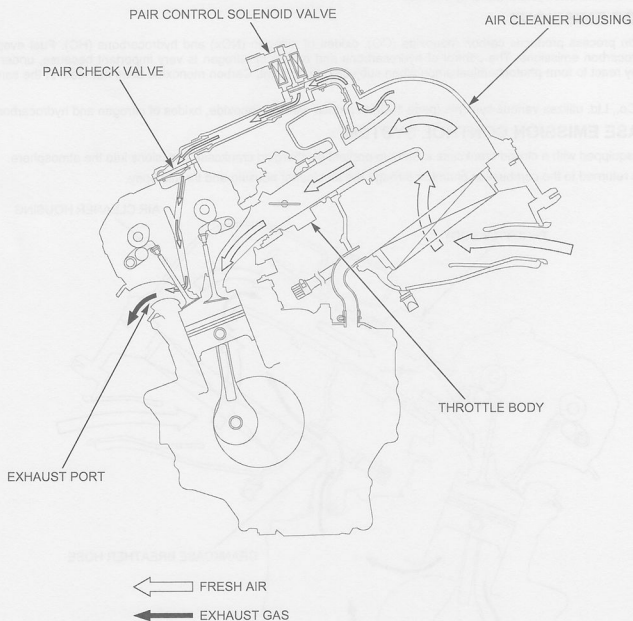
SECONDARY AIR SUPPLY SYSTEM

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 the running condition (ECT/IAT/TP/MAP sensor and engine revolution).

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



THREE-WAY CATALYTIC CONVERTER

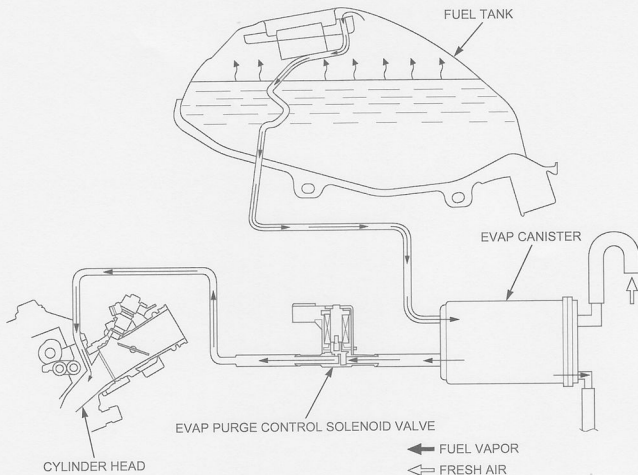
This motorcycle is equipped with a three-way catalytic converter.

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.

EVAPORATIVE EMISSION CONTROL SYSTEM

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 engine through the cylinder head.



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. Replacing any moving parts of the vehicle, or parts of the exhaust or intake system, with parts other than those specified by the manufacturer.

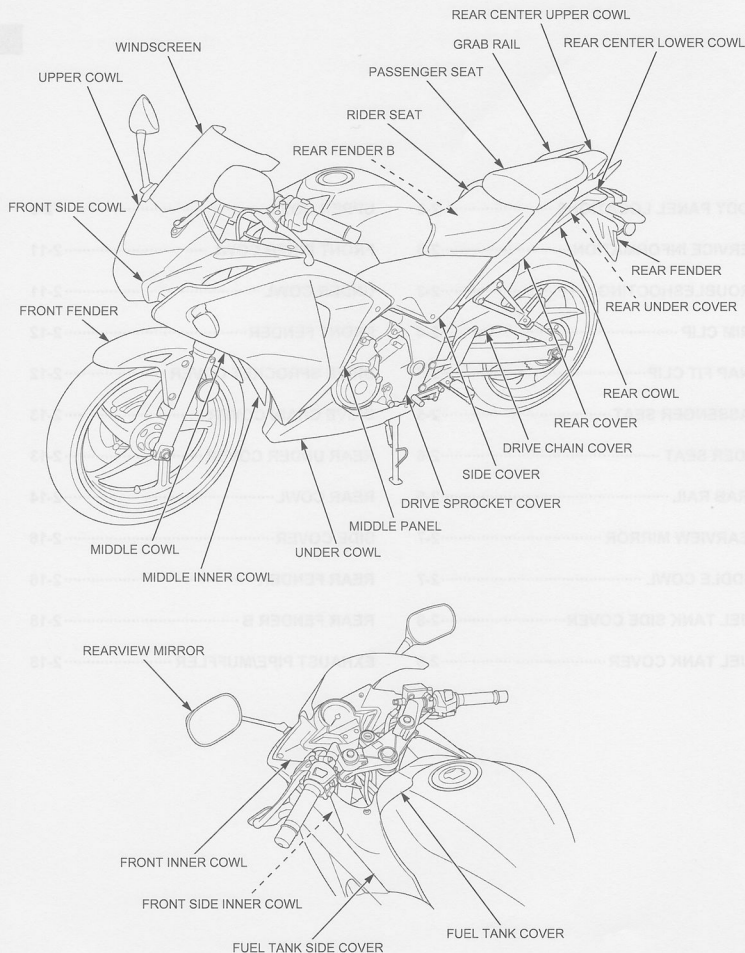
FUEL PERMEATION EMISSION CONTROL SYSTEM

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	UPPER COWL	2-9
SERVICE INFORMATION	2-3	FRONT INNER COWL	2-11
TROUBLESHOOTING	2-3	UNDER COWL	2-11
TRIM CLIP	2-4	FRONT FENDER	2-12
SNAP FIT CLIP	2-5	DRIVE SPROCKET COVER	2-12
PASSENGER SEAT	2-5	DRIVE CHAIN COVER	2-13
RIDER SEAT	2-6	REAR UNDER COVER	2-13
GRAB RAIL	2-6	REAR COWL	2-14
REARVIEW MIRROR	2-7	SIDE COVER	2-16
MIDDLE COWL	2-7	REAR FENDER	2-16
FUEL TANK SIDE COVER	2-8	REAR FENDER B	2-18
FUEL TANK COVER	2-9	EXHAUST PIPE/MUFFLER	2-18

BODY PANEL LOCATIONS



SERVICE INFORMATION

GENERAL

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

TORQUE VALUES

Rearview mirror mounting socket bolt	5.2 N·m (0.5 kgf-m, 3.8 lbf-ft)	
Front turn signal light mounting nut	21 N·m (2.1 kgf-m, 15 lbf-ft)	
Headlight mounting screw	1.1 N·m (0.1 kgf-m, 0.8 lbf-ft)	
Front side reflector stay mounting nut	1.5 N·m (0.2 kgf-m, 1.1 lbf-ft)	U-nut
Brake/tail light mounting screw	1.1 N·m (0.1 kgf-m, 0.8 lbf-ft)	
Side reflector mounting nut	1.5 N·m (0.2 kgf-m, 1.1 lbf-ft)	U-nut
Reflector mounting nut	1.5 N·m (0.2 kgf-m, 1.1 lbf-ft)	U-nut
Muffler band bolt	22.5 N·m (2.3 kgf-m, 17 lbf-ft)	
Exhaust pipe joint nut	18 N·m (1.8 kgf-m, 13 lbf-ft)	
Exhaust pipe stud bolt	—	

See page 2-22

TROUBLESHOOTING

Excessive exhaust noise

- Broken exhaust system
- Exhaust gas leak

Poor performance

- Deformed exhaust system
- Exhaust gas leak
- Clogged muffler

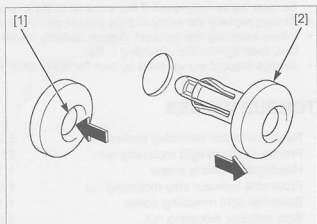
TRIM CLIP

TRIM CLIP A

REMOVAL

Push the center pin [1].

Remove the trim clip [2].

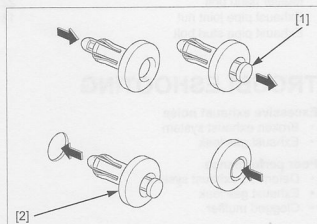


INSTALLATION

Raise the center pin [1] by pushing the center pin back.

Install the trim clip [2].

Push the center pin until the pin is flush with the outer casing.



TRIM CLIP B

REMOVAL/INSTALLATION

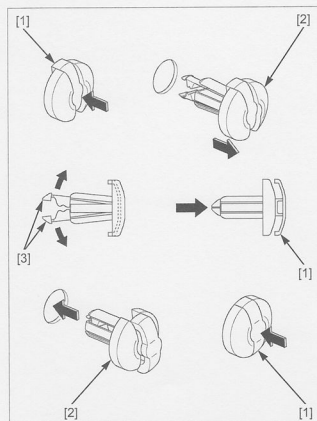
Push the center pin [1] of the trim clip [2].

Remove the trim clip.

Raise the center pin by pushing the retaining tabs [3] back.

Install the trim clip.

Push the center pin until the pin is flush with the outer casing.



SNAP FIT CLIP

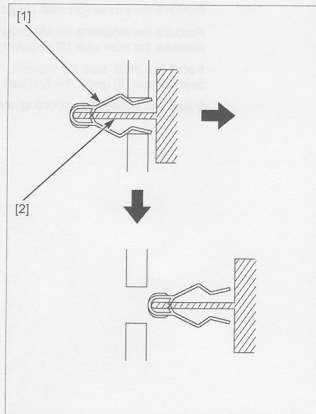
REMOVAL/INSTALLATION

Make sure that the insertion of the clip is not tilted when removing or installing the snap fit clip. If tilted upon removal or installation, damage to the insertion and/or the hole may occur.

Separate the parts by pulling the snap fit clip [1] straight out of the hole, being careful not to tilt the insertion of the clip [2].

Check the snap fit clip for damage and replace if necessary.

Install the parts by inserting the snap fit clip straight into the hole, being careful not to tilt the insertion of the clip.



PASSENGER SEAT

REMOVAL/INSTALLATION

Unhook the passenger seat lock using the ignition key [1].

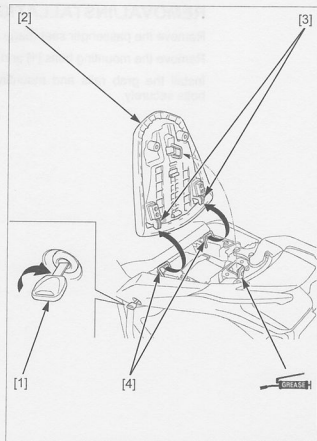
Remove the passenger seat [2] by pulling it rearward.

NOTE:

Apply grease to the passenger seat catch hook sliding area if necessary.

Install the passenger seat by inserting the hooks [3] into the seat retainers [4].

Push the passenger seat down to lock it.



RIDER SEAT

REMOVAL/INSTALLATION

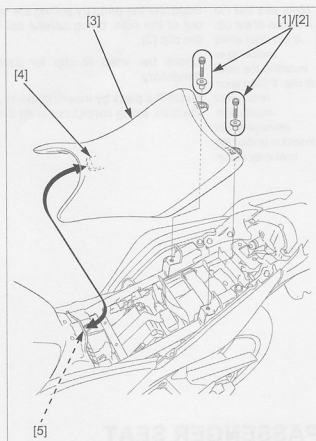
Remove the passenger seat (page 2-5).

Remove the mounting socket bolts [1] and collars [2].

Remove the rider seat [3] by pulling it rearward.

Install the rider seat by inserting its hook [4] into the seat bracket [5] under the fuel tank.

Install and tighten the mounting socket bolts securely.



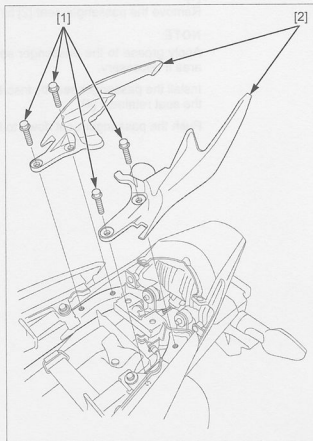
GRAB RAIL

REMOVAL/INSTALLATION

Remove the passenger seat (page 2-5).

Remove the mounting bolts [1] and grab rails [2].

Install the grab rails and mounting bolts, tighten the bolts securely.



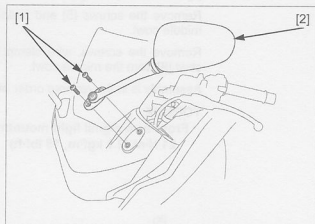
REARVIEW MIRROR

REMOVAL/INSTALLATION

Remove the mounting socket bolts [1] and rearview mirror [2].

Install the rearview mirror and mounting socket bolts. Tighten the mounting socket bolts to the specified torque.

TORQUE: 5.2 N·m (0.5 kgf·m, 3.8 lbf·ft)



MIDDLE COWL

REMOVAL/INSTALLATION

Remove the socket bolts [1].

Remove the middle cowl [2] by releasing its snap fit clips [3].

NOTE:

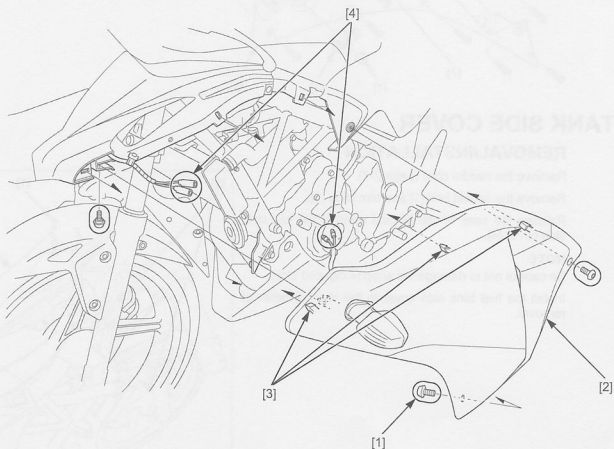
Be careful not to damage the snap fit clips and slots.

Disconnect the turn signal light connectors [4].

Install the middle cowl in the reverse order of removal.

NOTE:

Route the wires properly (page 1-18).



DISASSEMBLY/ASSEMBLY

Remove the front turn signal light mounting nut [1], stay [2] and turn signal light [3] from the middle cowl [4].

Remove the screws [5] and middle panel [6] from the middle cowl.

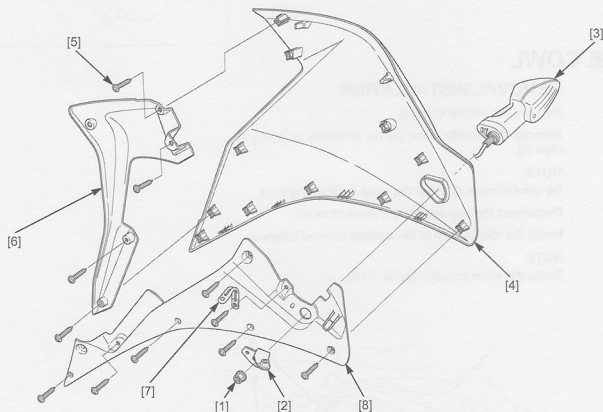
Remove the screws, wire clamp [7] and middle inner cowl [8] from the middle cowl.

Assembly is in the reverse order of disassembly.

TORQUE:

Front turn signal light mounting nut:

21 N·m (2.1 kgf·m, 15 lbf·ft)



FUEL TANK SIDE COVER

REMOVAL/INSTALLATION

Remove the middle cowl (page 2-7).

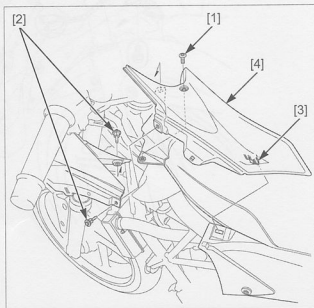
Remove the socket bolt [1] and trim clips [2].

Release the snap fit clip [3] and remove the fuel tank side cover [4].

NOTE:

Be careful not to damage the snap fit clip and slots.

Install the fuel tank side cover in the reverse order of removal.



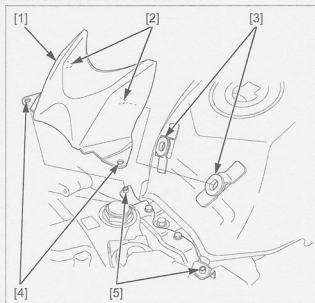
FUEL TANK COVER

REMOVAL/INSTALLATION

Remove the fuel tank side covers (page 2-8).

Remove the fuel tank cover [1] by releasing its bosses [2] from the fuel tank grommets [3] and holes [4] from the fuel tank stay bosses [5].

Install the fuel tank cover in the reverse order of removal.



UPPER COWL

REMOVAL/INSTALLATION

Remove the following:

- Rearview mirrors (page 2-7)
- Fuel tank side covers (page 2-8)

Remove the socket bolts [1] and release the front inner cowl snap fit clips [2] from the front side inner cowl slots.

NOTE:

Be careful not to damage the snap fit clips and slots.

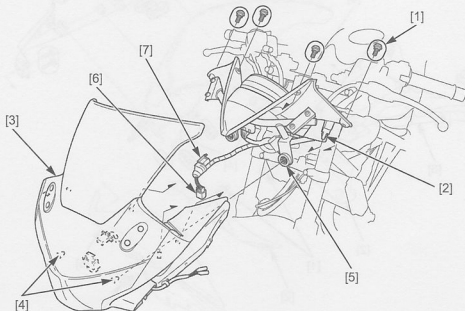
Remove the upper cowl [3] by releasing its bosses [4] from the frame grommets [5].

Disconnect the bank angle sensor 3P connector [6] and front sub harness 9P (Black) connector [7].

Install the upper cowl in the reverse order of removal.

NOTE:

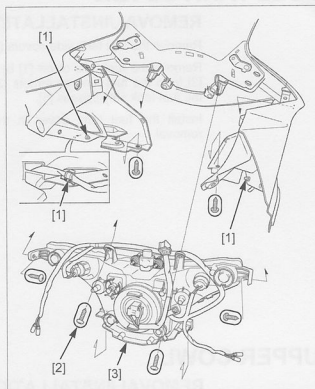
Route the wires properly (page 1-18).



DISASSEMBLY/ASSEMBLY

Release the turn signal light wires from the clamps [1].

Remove the screws [2] and headlight [3].



Remove the trim clips [1] and front side inner cowls [2].

Remove the screws [3], stays [4] and windscreen [5].

Remove the screws and front side cowl [6] from the upper cowl [7].

Remove the wire clamps [8] from the front side cowls.

Assembly is in the reverse order of disassembly.

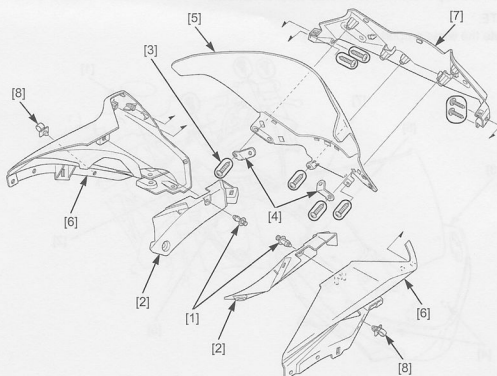
TORQUE:

Headlight mounting screw:

1.1 N·m (0.1 kgf·m, 0.8 lbf·ft)

NOTE:

Route the wires properly (page 1-18).



FRONT INNER COWL

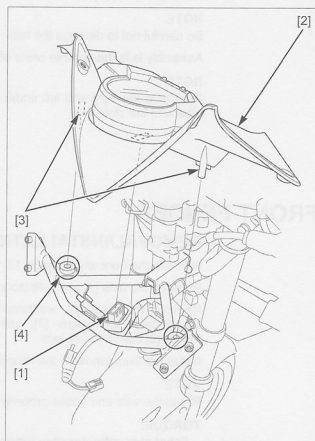
REMOVAL/INSTALLATION

Remove the upper cowl (page 2-9).

Disconnect the combination meter 20P connector [1].

Remove the front inner cowl [2] by releasing its bosses [3] from the frame grommets [4].

Install the front inner cowl in the reverse order of removal.



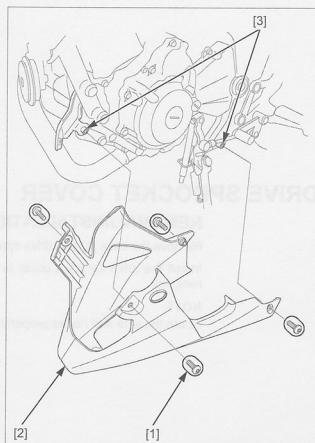
UNDER COWL

REMOVAL/INSTALLATION

Remove the middle cowl (page 2-7).

Remove the socket bolts [1] and under cowl [2] by releasing its holes from the frame bosses [3].

Install the under cowl in the reverse order of removal.



FRAME/BODY PANELS/EXHAUST SYSTEM

DISASSEMBLY/ASSEMBLY

Remove the socket bolt [1] and separate the right and left under cowls [2].

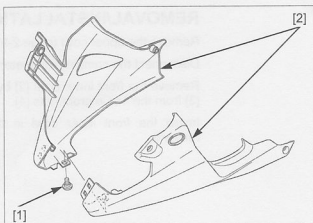
NOTE:

Be careful not to damage the tabs.

Assembly is in the reverse order of disassembly.

NOTE:

Assemble the right and left under cowls by aligning its tabs with the slots.



FRONT FENDER

REMOVAL/INSTALLATION

Remove the front wheel (page 13-14).

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

Remove the bolts [3], washers [4], hose guide [5], socket bolts [6], collars [7], grommets [8] and front fender [9] from the fork legs.

Install the front fender in the reverse order of removal.

NOTE:

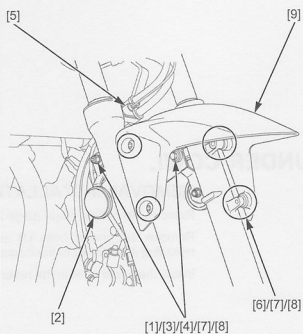
Route the wire and hoses properly (page 1-18).

TORQUE:

Front side reflector stay mounting nut:

1.5 N·m (0.2 kgf-m, 1.1 lbf-ft)

CBR250RA shown:



DRIVE SPROCKET COVER

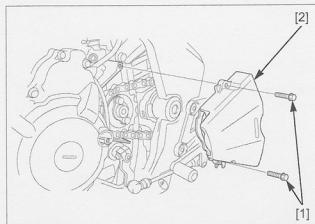
REMOVAL/INSTALLATION

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

Install the drive sprocket cover in the reverse order of removal.

NOTE:

Route the wire and hoses properly (page 1-18).

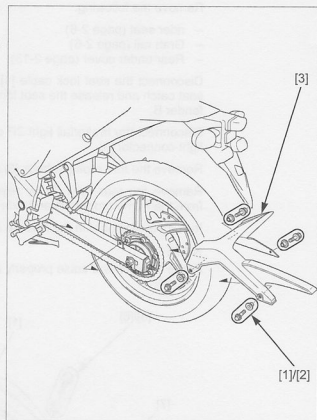


DRIVE CHAIN COVER

REMOVAL/INSTALLATION

Remove the bolts [1], collar [2] and drive chain cover [3].

Install the drive chain cover in the reverse order of removal.

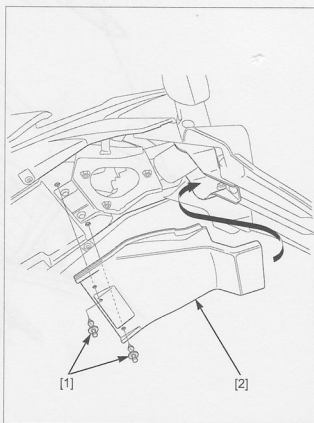


REAR UNDER COVER

REMOVAL/INSTALLATION

Remove the trim clips [1] and rear under cover [2].

Install the rear under cover in the reverse order of removal.



REAR COWL

REMOVAL/INSTALLATION

Remove the following:

- rider seat (page 2-6)
- Grab rail (page 2-6)
- Rear under cover (page 2-13)

Disconnect the seat lock cable [1] from the passenger seat catch and release the seat lock cable from the rear fender B.

Disconnect the brake/tail light 2P connector [2] and tail light connector [3].

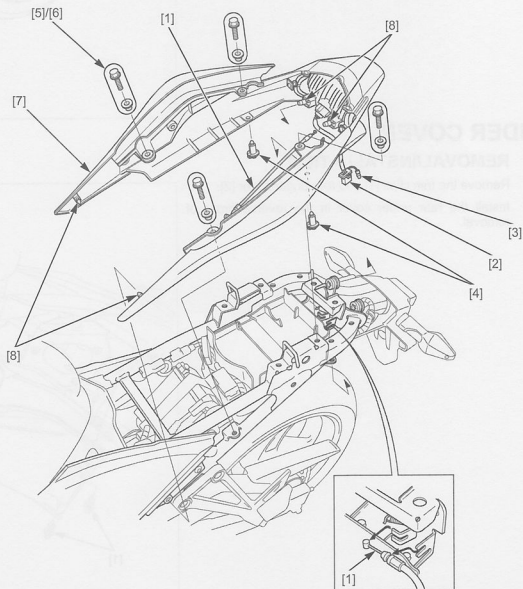
Remove the trim clips [4], bolts [5] and collars [6].

Remove the rear cowl [7] by releasing its bosses [8] from the frame grommets and side cover grommets.

Install the rear cowl in the reverse order of removal.

NOTE:

Route the wire and cable properly (page 1-18).



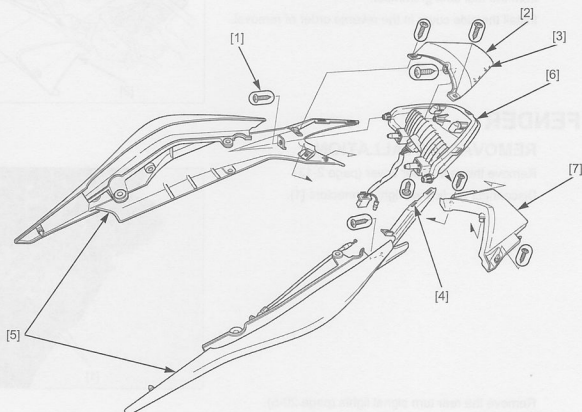
DISASSEMBLY/ASSEMBLY

Be careful not to damage the tabs.

Remove the screws [1] and rear center upper cowl [2] by releasing its tabs [3] from the rear cowl/covers grooves [4].

Remove the screws and separate the rear cowl/covers [5] and brake/tail light assembly [6].

Remove the screw and rear center lower cowl [7] from the brake/tail light assembly.



Remove the seat lock cable [1], clip [2], cable guide [3], rubber [4] and seat lock [5].

Remove the screws [6] and rear cover [7] from the rear cowl [8].

Assembly is in the reverse order of disassembly.

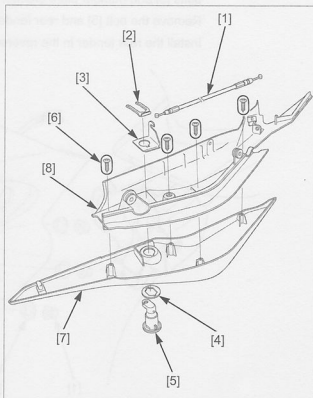
TORQUE:

Brake/tail light mounting screw:

1.1 N·m (0.1 kgf·m, 0.8 lbf·ft)

NOTE:

- Install the rear cowl/cover by aligning its hole with the tab of the rear center lower cowl.
- Install the rubber by aligning its narrow slot with the tab of the seat lock.



SIDE COVER

REMOVAL/INSTALLATION

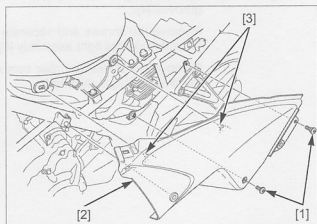
Remove the following:

- Middle cowl (page 2-7)
- Fuel tank side cover (page 2-8)
- Rear cowl (page 2-14)

Remove the socket bolts [1].

Remove the side cover [2] by releasing its bosses [3] from the fuel tank grommets.

Install the side cover in the reverse order of removal.

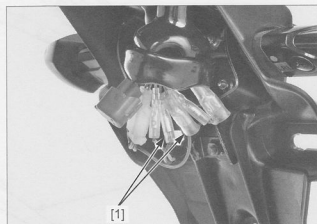


REAR FENDER

REMOVAL/INSTALLATION

Remove the rear under cover (page 2-13).

Disconnect the license light connectors [1].

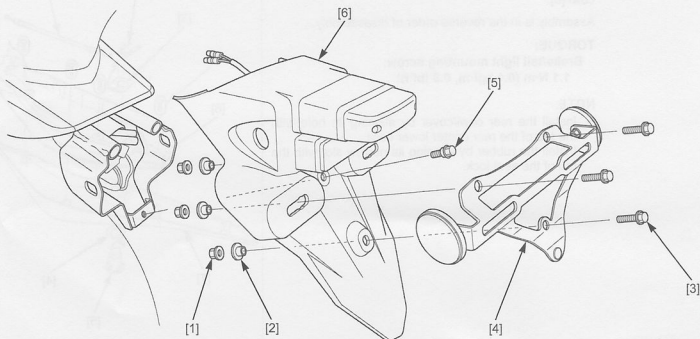


Remove the rear turn signal lights (page 20-5).

Remove the number plate bracket nuts [1], collars [2], bolts [3] and number plate bracket assembly [4].

Remove the bolt [5] and rear fender assembly [6].

Install the rear fender in the reverse order of removal.



DISASSEMBLY/ASSEMBLY

Remove the license light bracket screws [1] and license light bracket [2] with the license light [3].

Remove the reflector mounting nut [4] and reflector [5].

Remove the license light mounting nuts [6], collars [7], rubber [8] and license light.

Remove the nuts [9] and side reflectors [10].

Remove the hole plug [11].

Assemble is in the reverse order of disassembly.

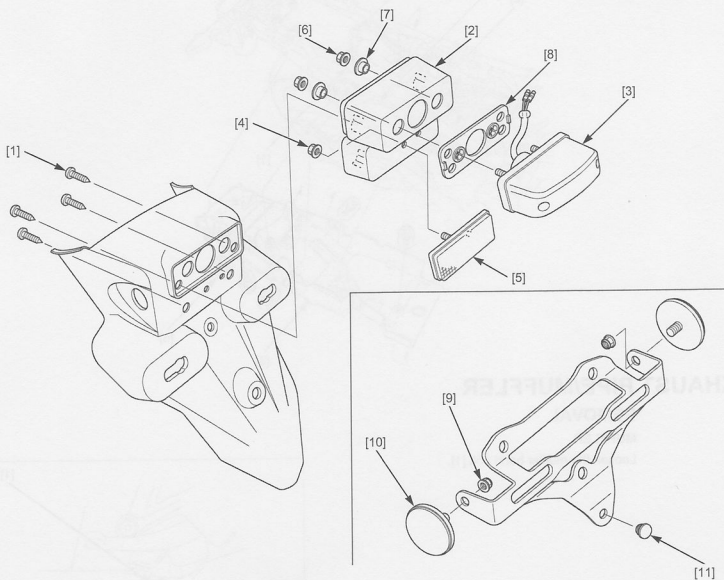
TORQUE:

Reflector mounting nut:

1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)

Side reflector mounting nut:

1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)



REAR FENDER B

REMOVAL/INSTALLATION

Remove the following:

- Side covers (page 2-16)
- Air cleaner housing (page 5-43)
- Battery (page 17-6)

Release the fuse box [1] and starter relay switch [2] from the rear fender B [3].

CBR250RA: Release the ABS fuse box [4] from the rear fender B.

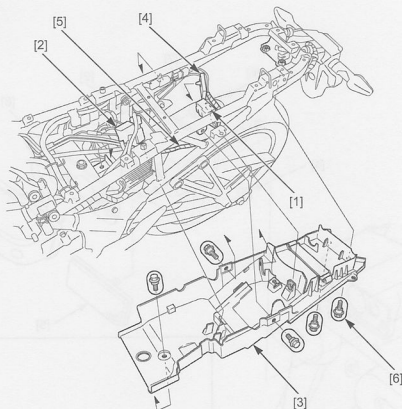
Release the wire harness [5] from the rear fender B.

Remove the bolts [6] and rear fender B.

Install the rear fender B in the reverse order of removal.

NOTE:

Route the wire harness properly (page 1-18).

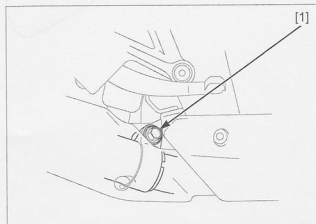


EXHAUST PIPE/MUFFLER

REMOVAL

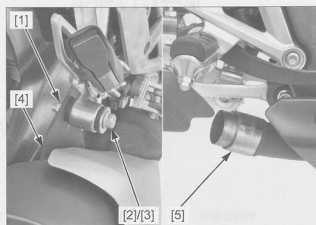
MUFFLER

Loosen the muffler band bolt [1].



Remove the muffler mounting nut [1], bolt [2] and washer [3].

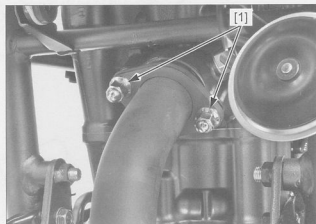
Remove the muffler [4] and gasket [5].



EXHAUST PIPE

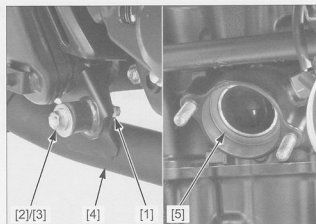
Remove the under cowl (page 2-11).

Remove the exhaust pipe joint nuts [1].



Remove the exhaust pipe mounting nut [1], bolt [2], washer [3] and exhaust pipe [4].

Remove the exhaust pipe gasket [5].



DISASSEMBLY/ASSEMBLY

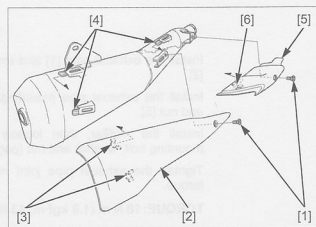
Remove the socket bolt [1].

Remove the muffler cover A [2] by releasing its slots [3] from the muffler bosses [4].

Remove the socket bolt.

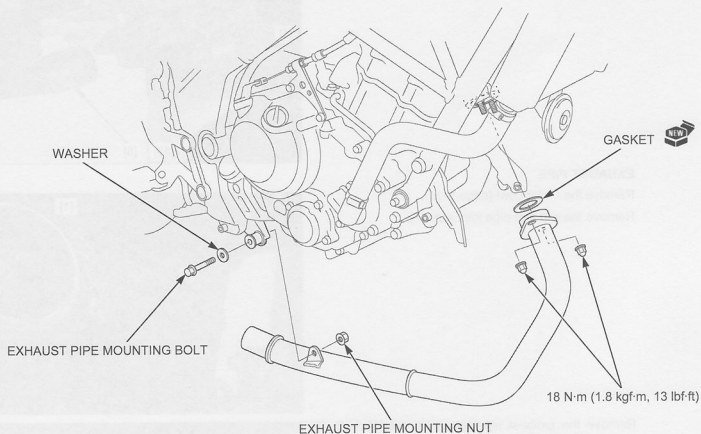
Remove the muffler cover B [5] by releasing its slots [6] from the muffler boss.

Assembly is in the reverse order of disassembly.

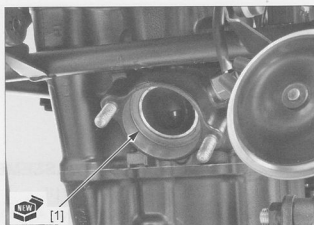


INSTALLATION

EXHAUST PIPE



Install a new exhaust pipe gasket [1] to the exhaust port of the cylinder head.



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

Install the exhaust pipe mounting bolt [3], washer [4] and nut [5].

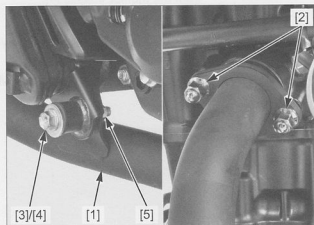
Install the muffler, then loosely install the muffler mounting bolt, washer and nut (page 2-21).

Tighten the exhaust pipe joint nuts to the specified torque.

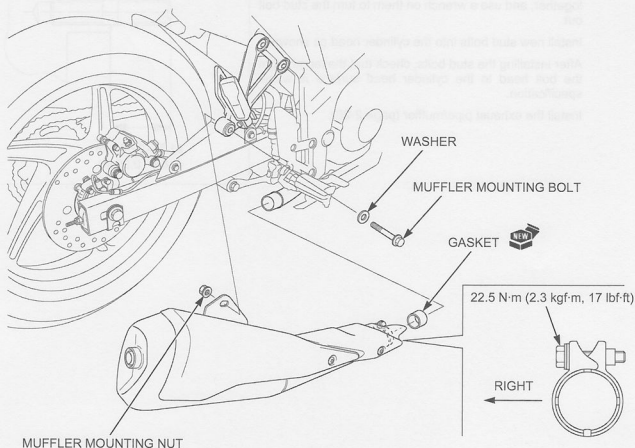
TORQUE: 18 N·m (1.8 kgf-m, 13 lbf-ft)

Tighten the exhaust pipe mounting nut securely.

Install the under cowl (page 2-11).



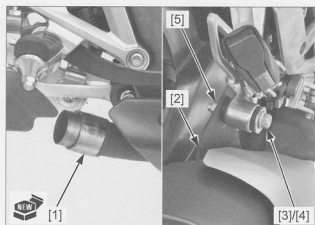
MUFFLER



Install a new gasket [1].

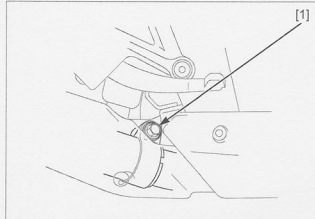
Install the muffler [2], muffler mounting bolt [3], washer [4] and nut [5].

Tighten the muffler mounting nut securely.



Tighten the muffler band bolt [1] to the specified torque.

TORQUE: 22.5 N·m (2.3 kgf·m, 17 lbf·ft)



FRAME/BODY PANELS/EXHAUST SYSTEM

STUD BOLT REPLACEMENT

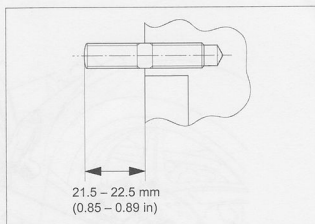
Remove the exhaust pipe/muffler (page 2-18).

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

Install new stud bolts into the cylinder head as shown.

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

Install the exhaust pipe/muffler (page 2-20).



SERVICE INFORMATION	3-2
MAINTENANCE SCHEDULE	3-4
FUEL LINE	3-5
THROTTLE OPERATION	3-6
AIR CLEANER	3-7
CRANKCASE BREATHER	3-7
SPARK PLUG	3-8
VALVE CLEARANCE	3-11
ENGINE OIL	3-13
ENGINE OIL FILTER	3-15
ENGINE IDLE SPEED	3-16
RADIATOR COOLANT	3-16
COOLING SYSTEM	3-17
SECONDARY AIR SUPPLY SYSTEM	3-17

EVAPORATIVE EMISSION CONTROL SYSTEM	3-18
DRIVE CHAIN	3-18
BRAKE FLUID	3-23
BRAKE PADS WEAR	3-24
BRAKE SYSTEM	3-25
BRAKE LIGHT SWITCH	3-26
HEADLIGHT AIM	3-26
CLUTCH SYSTEM	3-26
SIDESTAND	3-27
SUSPENSION	3-28
NUTS, BOLTS, FASTENERS	3-29
WHEELS/TIRES	3-29
STEERING HEAD BEARINGS	3-30

SERVICE INFORMATION

GENERAL

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

SPECIFICATIONS

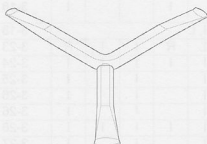
ITEM			SPECIFICATION
Throttle grip freeplay			2 – 6 mm (1/16 – 1/4 in)
Spark plug			SIMR8A9 (NGK)
Spark plug gap			0.80 – 0.90 mm (0.031 – 0.035 in)
Valve clearance	IN		0.16 ± 0.03 mm (0.006 ± 0.001 in)
	EX		0.27 ± 0.03 mm (0.011 ± 0.001 in)
Engine oil capacity	At draining		1.4 liters (1.5 US qt, 1.2 Imp qt)
	At oil filter change		1.5 liters (1.6 US qt, 1.3 Imp qt)
	At disassembly		1.8 liters (1.9 US qt, 1.6 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
Engine idle speed			1,400 ± 100 rpm
Recommended antifreeze			Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing silicate-free corrosion inhibitors
Drive chain	Size/link	DID	DID520VF-108LE
		RK	RK520KLO-108LE
	Slack		20 – 30 mm (0.8 – 1.2 in)
Specified brake fluid			DOT 3 or DOT 4
Brake pedal height			66.5 – 68.5 mm (2.62 – 2.70 in)
Clutch lever freeplay			10 – 20 mm (3/8 – 13/16 in)
Cold tire pressure	Front	Driver only	200 kPa (2.00 kgf/cm ² , 29 psi)
		Driver and passenger	200 kPa (2.00 kgf/cm ² , 29 psi)
	Rear	Driver only	200 kPa (2.00 kgf/cm ² , 29 psi)
		Driver and passenger	225 kPa (2.25 kgf/cm ² , 33 psi)
Tire size	Front		110/70-17M/C 54S
	Rear		140/70-17M/C 66S
Tire brand	Front		RX-01FD (IRC)
	Rear		RX-01RZ (IRC)
Minimum tire tread depth	Front		1.5 mm (0.06 in)
	Rear		2.0 mm (0.08 in)

TORQUE VALUES

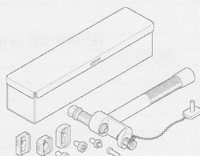
Air cleaner cover screw	1.1 N·m (0.1 kgf-m, 0.8 lbf-ft)	
Spark plug	16 N·m (1.6 kgf-m, 12 lbf-ft)	
Timing hole cap	6.0 N·m (0.6 kgf-m, 4.4 lbf-ft)	Apply engine oil to the threads.
Crankshaft hole cap	8.0 N·m (0.8 kgf-m, 5.9 lbf-ft)	Apply engine oil to the threads.
Oil drain bolt	24 N·m (2.4 kgf-m, 18 lbf-ft)	
Water hose band screw	—	See page 6-10
Rear axle nut	88 N·m (9.0 kgf-m, 65 lbf-ft)	U-nut
Drive sprocket fixing plate bolt	10 N·m (1.0 kgf-m, 7 lbf-ft)	
Driven sprocket nut	75 N·m (7.6 kgf-m, 55 lbf-ft)	U-nut
Front master cylinder reservoir cover screw	1.5 N·m (0.2 kgf-m, 1.1 lbf-ft)	
Rear reservoir cover screw	1.5 N·m (0.2 kgf-m, 1.1 lbf-ft)	
Sidestand pivot bolt	10 N·m (1.0 kgf-m, 7 lbf-ft)	
Sidestand pivot lock nut	30 N·m (3.0 kgf-m, 22 lbf-ft)	U-nut
Throttle cable A adjuster lock nut (throttle body side)	3.0 N·m (0.3 kgf-m, 2.2 lbf-ft)	
Throttle cable A adjuster lock nut (grip side)	3.8 N·m (0.4 kgf-m, 2.8 lbf-ft)	
Drive chain adjuster lock nut	21 N·m (2.1 kgf-m, 15 lbf-ft)	

TOOLS

Timing cap wrench
07709-0010001



Drive chain tool set
07HMH-MR10103



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

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.

ITEMS		FREQUENCY	ODOMETER READING (NOTE 1)								REFER TO PAGE
			x 1,000 mi x 1,000 km	0.6 1.0	4 6.4	8 12.8	12 19.2	16 25.6	20 32.0	24 38.4	
EMISSION RELATED ITEMS	* FUEL LINE				I		I		I	3-5	
	* THROTTLE OPERATION				I		I		I	3-6	
	AIR CLEANER	(NOTE 2)				R			R	3-7	
	CRANKCASE BREATHER	(NOTE 3)			C	C	C	C	C	3-7	
	* SPARK PLUG		EVERY 16,000 mi (25,600 Km) I, EVERY 32,000 mi (51,200 Km) R							3-8	
	* VALVE CLEARANCE			I			I			3-11	
	ENGINE OIL		INITIAL = 600 mi (1,000 km) or 1 month: R REGULAR = EVERY 8,000 mi (12,800 km) or 12 months: R							3-13	
	ENGINE OIL FILTER			R		R		R		3-15	
	* ENGINE IDLE SPEED			I	I	I	I	I	I	3-16	
	RADIATOR COOLANT	(NOTE 4)			I		I		R	3-16	
* COOLING SYSTEM				I		I		I	3-17		
* SECONDARY AIR SUPPLY SYSTEM					I		I		I	3-17	
* EVAPORATIVE EMISSION CONTROL SYSTEM						I			I	3-18	
NON-EMISSION RELATED ITEMS	DRIVE CHAIN		EVERY 500 mi (800 Km) I, L							3-18	
	BRAKE FLUID	(NOTE 4)			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	3-26
	* HEADLIGHT AIM						I	I		I	3-26
	CLUTCH SYSTEM			I	I	I	I	I	I	I	3-26
	SIDESTAND					I		I		I	3-27
	* SUSPENSION						I		I	I	3-28
	* NUTS, BOLTS, FASTENERS			I		I		I		I	3-29
	** WHEELS/TIRES								I	I	3-29
	** STEERING HEAD BEARINGS			I		I		I		I	3-30

* 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.

NOTES:

- At higher odometer readings, repeat at the frequency interval established here.
- Service more frequently when riding in unusually wet or dusty areas.
- Service more frequently when riding in rain or at full throttle.
- Replace every 2 years, or at indicated odometer interval, whichever comes first. Replacement requires mechanical skill.

FUEL LINE

FUEL TANK LIFTING/LOWERING

Remove the following:

- Middle cowl (page 2-7)
- Fuel tank side cover (page 2-8)
- Remove the rider seat (page 2-6)
- Fuel tank cover (page 2-9)

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

Be careful not to damage the side cowl.

Release the bosses [3] from the grommets of the fuel tank.

Lift the front end of the fuel tank and disconnect the following:

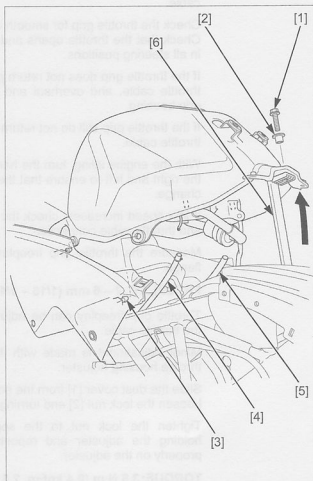
- Fuel tank breather hose [4]
- Fuel tank drain hose [5]

Support the fuel tank using the suitable support [6].

Install the removed parts in the reverse order of removal.

NOTE:

Route the hoses properly (page 1-18).



INSPECTION

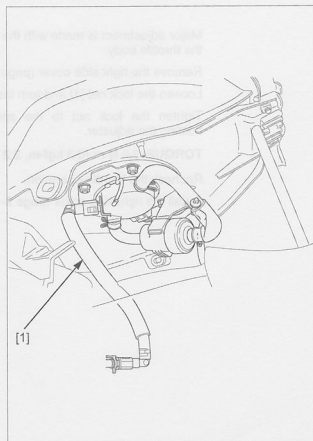
Lift and support the fuel tank (page 3-5).

Check the quick connect fitting for looseness.

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

Check the quick connect fittings for dirt, and clean if necessary.

Replace the fuel pump packing if necessary (page 5-41).



THROTTLE OPERATION

Check for any deterioration or damage to the throttle cable.

Check the throttle grip for smooth operation. Check that the throttle opens and automatically closes in all steering positions.

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

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

With the engine idling, turn the handlebar all the way to the right and left to ensure that the idle speed does not change.

If idle speed increases, check the throttle grip freeplay and throttle cable connection.

Measure the throttle grip freeplay at the throttle grip flange.

FREEPLAY: 2 – 6 mm (1/16 – 1/4 in)

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

Minor adjustment is made with the upper adjuster at throttle housing adjuster.

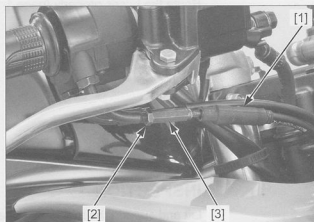
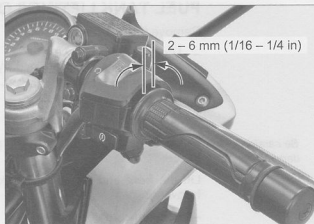
Slide the dust cover [1] from the adjuster.

Loosen the lock nut [2] and turning the adjuster [3].

Tighten the lock nut to the specified torque while holding the adjuster and reposition the dust cover properly on the adjuster.

TORQUE: 3.8 N·m (0.4 kgf·m, 2.8 lbf·ft)

Recheck the throttle operation.



Major adjustment is made with the lower adjuster nut at the throttle body.

Remove the right side cover (page 2-16).

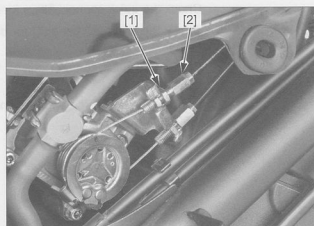
Loosen the lock nut [1] and turn the adjuster [2].

Tighten the lock nut to the specified torque while holding the adjuster.

TORQUE: 3.0 N·m (0.3 kgf·m, 2.2 lbf·ft)

Recheck the throttle operation.

Install the right side cover (page 2-16).

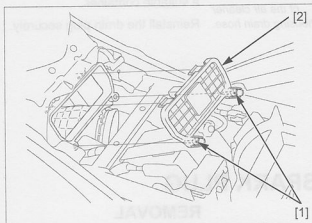


AIR CLEANER

REMOVAL/INSTALLATION

Remove the rider seat (page 2-6).

Remove the screws [1], element holder lid [2] and packings.



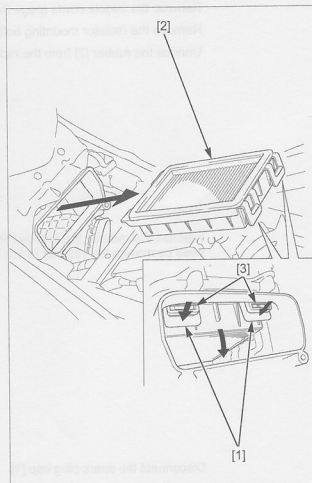
Push the tabs [1] and remove the air cleaner element [2] downward.

Inspect the air cleaner element in accordance with the maintenance schedule (page 3-4) or any time it is excessively dirt or damaged.

Install the air cleaner element in the reverse order of removal.

NOTE:

- After installing air cleaner element, make sure the air cleaner element tabs are installed into the element holder slots [3].
- Check that the condition of the packings, replace them if necessary.



TORQUE:

Air cleaner cover screw:

1.1 N·m (0.1 kgf·m, 0.8 lbf·ft)

CRANKCASE BREATHER

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

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

Replace the crankcase breather hose if necessary.



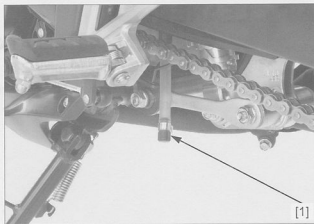
MAINTENANCE

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

Check the air cleaner housing drain hose.

If necessary, remove the drain plug [1] from the air cleaner housing drain hose and drain the deposits into a suitable container.

Reinstall the drain plug securely.



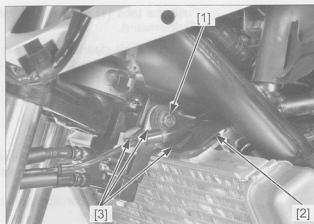
SPARK PLUG

REMOVAL

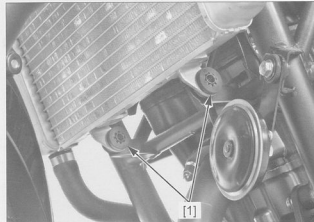
Remove the middle cowls (page 2-7).

Remove the radiator mounting bolt [1].

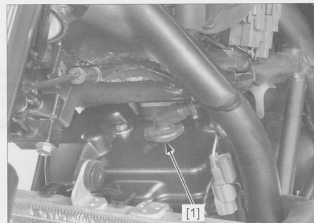
Unhook the rubber [2] from the radiator tabs [3].



Release the radiator lower grommets [1] from the frame boss by moving the radiator to the left.



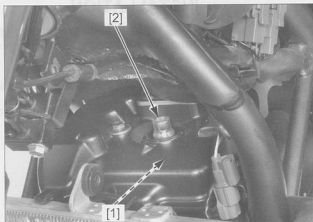
Disconnect the spark plug cap [1].



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

Remove the spark plug [1] using a spark plug wrench [2].

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



INSPECTION

Check the following and replace if necessary (recommended spark plug: page 3-9)

NOTE:

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

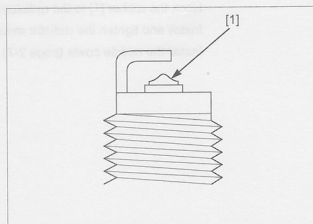
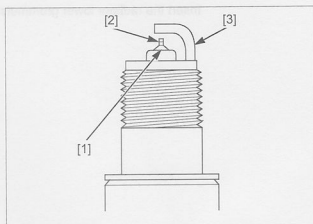
If the electrodes are contaminated with accumulated objects or dirt, replace the spark plug.

This motorcycle's spark plug is equipped with an iridium center electrode. Replace the spark plug if the electrodes are contaminated.

Always use specified spark plugs on this motorcycle.

Replace the plug if the center electrode [1] is rounded as shown in the illustration.

SPECIFIED SPARK PLUG:
NGK: SIMR8A9



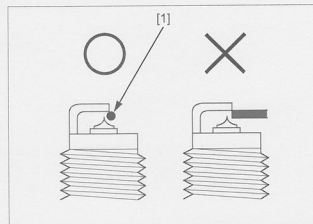
To prevent damaging the iridium center electrode, use a wire type feeler gauge to check the spark plug gap.

Check the spark plug gap between the center and side electrodes with a wire type feeler gauge [1].

Make sure that the Φ 1.0 mm (0.04 in) plug gauge does not insert between the gap.

Do not adjust the spark plug gap. If the gap is out of specification, replace with a new one.

If the gauge can be inserted into the gap, replace the plug with a new one.

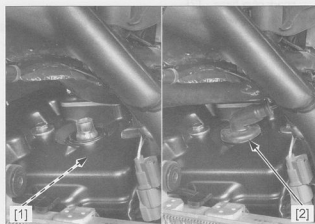


INSTALLATION

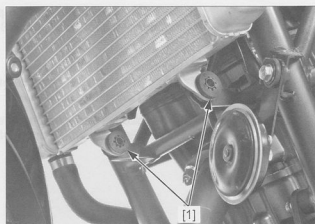
Install and hand tighten the spark plug [1] to the cylinder head, then tighten the spark plug to the specified torque using a spark plug wrench.

TORQUE: 16 N·m (1.6 kgf·m, 12 lbf·ft)

Connect the spark plug cap [2] securely.



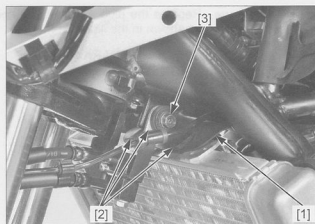
Insert the radiator lower grommets [1] to the frame.



Hook the rubber [1] to the radiator tabs [2].

Install and tighten the radiator mounting bolt [3].

Install the middle cowl (page 2-7).



VALVE CLEARANCE

INSPECTION

NOTE:

- Inspect and adjust the valve clearance while the engine is cold (below 35°C/95°F).
- After the valve clearance inspection, check the engine idle speed (page 3-16).
- Inspect and adjust the valve clearance can be serviced with the engine installed in the frame.

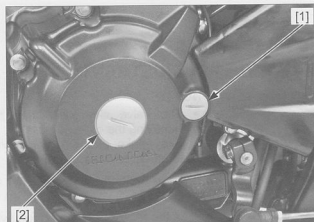
Remove the cylinder head cover (page 8-6).

Remove the timing hole cap [1] and crankshaft hole cap [2].

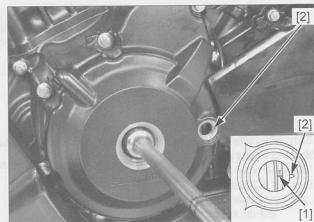
TOOL:

Timing cap wrench

07709-0010001

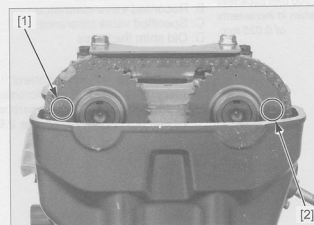


Rotate the crankshaft counterclockwise and align the "T" mark [1] on the flywheel with the index notch [2] on the left crankcase cover.



Make sure that the outside index lines ("IN" [1] and "EX" [2] marks) on the cam sprockets are flush with the cylinder head top surface and facing outward as shown.

If the "IN" and "EX" marks are facing inward, turn the crankshaft counterclockwise one full turn (360°) and realign the "T" mark with the index notch.



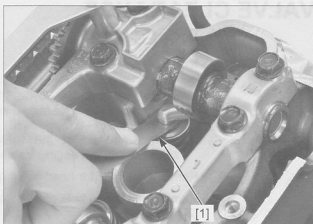
MAINTENANCE

Check the valve clearance by inserting a feeler gauge [1] between the rocker arm and shim.

VALVE CLEARANCE:

IN: 0.16 ± 0.03 mm (0.006 ± 0.001 in)

EX: 0.27 ± 0.03 mm (0.011 ± 0.001 in)



ADJUSTMENT

NOTE:

- The valve clearances can be adjusted without removing the camshafts.
- The intake and exhaust valve clearance service procedures are the same.

Remove the bolt, sealing washer and rocker arm shaft (page 8-14).

Slide the rocker arm [1] and remove the shims [2].

NOTE:

- Do not allow the shims to fall into the crankcase.
- Mark all shims to ensure correct reassembly in their original locations.
- The shims can be easily removed with a tweezers or magnet.



Sixty-nine different thickness shims are available from the thinnest 1.200 mm thickness shim to the thickest 2.900 mm thickness shim in increments 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

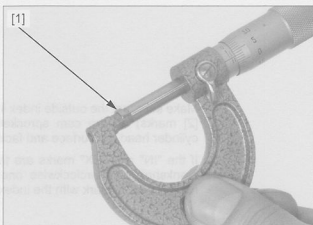
B: Recorded valve clearance

C: Specified valve clearance

D: Old shim thickness

NOTE:

- 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.



1.80 mm



1.825 mm



1.85 mm



1.875 mm

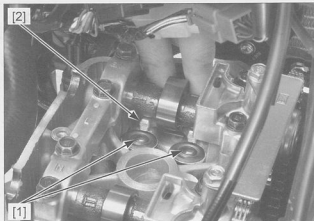
Do not allow the shims to fall into the crankcase.

Install the newly selected shim [1] on the valve spring retainer.

Install the rocker arm shaft while aligning the hole of the rocker arm [2] and cylinder head (page 8-14).

Rotate the camshafts by rotating the crankshaft clockwise several times.

Recheck the valve clearance.



Install the cylinder head cover (page 8-6).

Apply engine oil to new O-rings [1] and install them to each hole cap.

Apply engine oil to timing hole cap [2] and crankshaft hole cap [3] threads.

Install and tighten the timing hole cap and crankshaft hole cap to the specified torque.

TOOL:

Timing cap wrench

07709-0010001

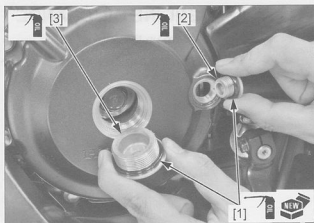
TORQUE:

Timing hole cap:

6.0 N·m (0.6 kgf·m, 4.4 lbf·ft)

Crankshaft hole cap:

8.0 N·m (0.8 kgf·m, 5.9 lbf·ft)



ENGINE OIL

OIL LEVEL INSPECTION

Hold the motorcycle in an upright position.

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

Stop the engine and wait 2 – 3 minutes.

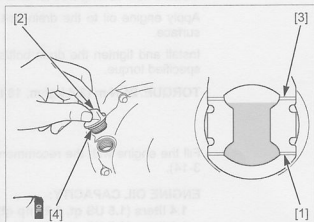
Check the oil level through the inspection window.

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

Check that the O-ring [4] is in good condition, replace it if necessary.

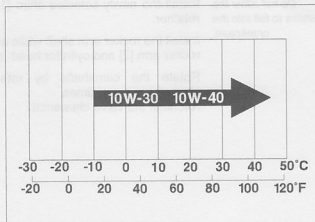
Apply engine oil to the O-ring.

Install the oil filler cap.



RECOMMENDED ENGINE OIL:

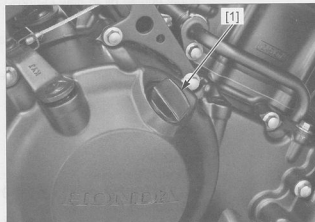
Pro Honda GN4 4-stroke oil (U.S.A. and Canada) or equivalent motor oil
API service classification: SG or Higher
JASO T 903 standard: MA
Viscosity: 10W-30



ENGINE OIL CHANGE

Warm up the engine.

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



Place an oil pan under the engine to catch the engine oil, then remove the engine oil drain bolt [1]/sealing washer [2].

Drain the engine oil completely.

Install a new sealing washer onto the drain bolt.

Apply engine oil to the drain bolt threads and seating surface.

Install and tighten the drain bolt/sealing washer to the specified torque.

TORQUE: 24 N·m (2.4 kgf·m, 18 lbf·ft)



Fill the engine with the recommended engine oil (page 3-14).

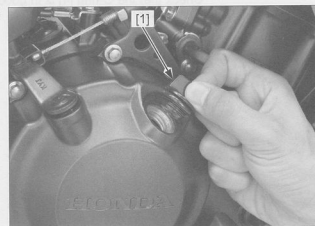
ENGINE OIL CAPACITY:

- 1.4 liters (1.5 US qt, 1.2 Imp qt) at draining
- 1.5 liters (1.6 US qt, 1.3 Imp qt) at oil filter change
- 1.8 liters (1.9 US qt, 1.6 Imp qt) at disassembly

Install the oil filler cap [1].

Check the oil level (page 3-13).

Make sure there are no oil leaks.



ENGINE OIL FILTER

Remove the under cowl (page 2-11).
Drain the engine oil (page 3-14).

Remove the following:

- Bolts [1]
- Oil filter cover [2]
- Gasket [3]
- Spring [4]

Remove the oil filter [1].

Install a new oil filter with the "OUT-SIDE" mark [2] facing out.

NOTE:

Installing the oil filter backwards will result in severe engine damage.

Install the oil filter spring [1] into the oil filter cover [2].

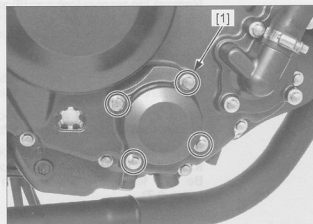
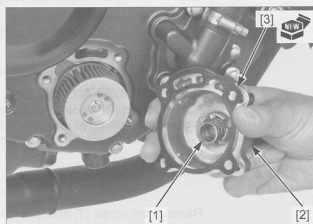
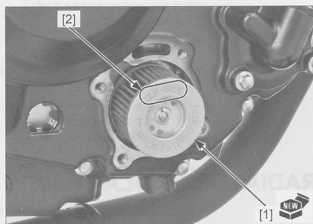
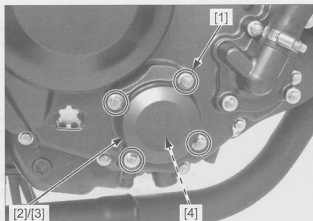
Install a new gasket [3] and oil filter cover.

Install and tighten the bolts [1] securely.

Fill the engine with the recommended engine oil (page 3-14).

Make sure there are no oil leaks.

Install the under cowl (page 2-11).



ENGINE IDLE SPEED

NOTE:

- Inspect the idle speed after all other engine maintenance items have been performed and are within specifications.
- Before checking the idle speed, inspect the following items.
 - No DTC and MIL blinking
 - Spark plug condition (page 3-8)
 - Air cleaner element condition (page 3-7)
- The engine must be warm for accurate idle speed inspection.
- This system eliminates the need for manual idle speed adjustment compared to previous designs.

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

Start the engine and let it idle.

Check the idle speed.

IDLE SPEED: 1,400 ± 100 rpm

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

- Intake air leak or engine top-end problem (page 8-5)
- Throttle operation and freewheel (page 3-6)
- IACV operation (page 5-53)

RADIATOR COOLANT

Check the coolant level of the reserve tank with the engine running at normal operating temperature.

The level should be between the "UPPER" and "LOWER" level lines with the motorcycle in an upright position.

If necessary, add recommended coolant.

RECOMMENDED ANTIFREEZE:

Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing silicate-free corrosion inhibitors

Remove the screw [1] and reserve tank cover [2].

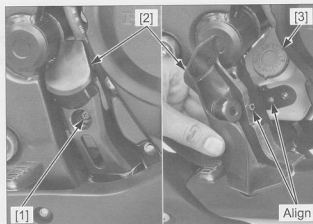
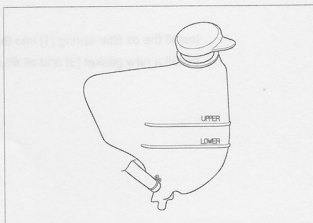
Remove the reserve tank cap [3] and add the coolant to the "UPPER" level line with a 1:1 mixture of distilled water and antifreeze (coolant preparation: page 6-6).

Reinstall the reserve tank cap.

Install the reserve tank cover while aligning the tab on the reserve tank cover with the hole of frame.

Check to see if there are any coolant leaks when the coolant level decreases very rapidly.

If the reserve tank becomes completely empty, there is a possibility of air getting into the cooling system. Be sure to remove any air from the cooling system (page 6-7).



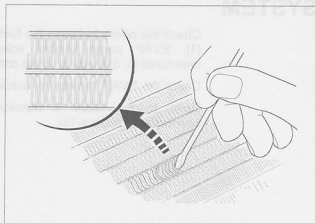
COOLING SYSTEM

Remove the middle cowl (page 2-7).

Check the radiator air passages for clogging or damage.

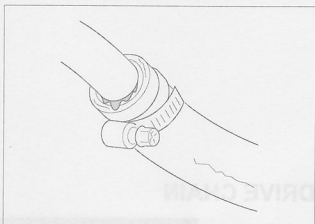
Straighten bent fins, and remove insects, mud or other obstructions with compressed air or low water pressure.

Replace the radiator if the air flow is restricted over more than 20 % of the radiating surface.



Inspect the water hoses for cracks or deterioration, and replace them if necessary.

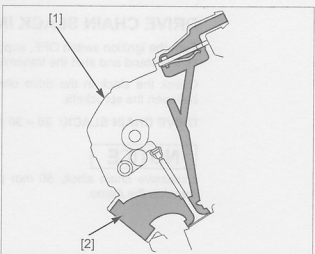
Check the tightness of all water hose band screws (page 6-10).



SECONDARY AIR SUPPLY SYSTEM

NOTE:

- This model is equipped with a 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.



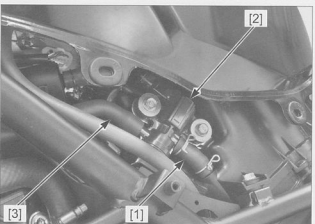
Remove the left side cover (page 2-16).

If the hoses show any signs of heat damage, inspect the PAIR check valves in the cylinder head covers for damage (page 5-60).

Check the PAIR air supply hose [1] between the PAIR control solenoid valve [2] and cylinder head cover for deterioration, damage or loose connections. Make sure that the hoses are not cracked.

Check the air suction hose [3] between the air cleaner and PAIR control solenoid valve for deterioration, damage or loose connections.

Make sure that the hoses are not kinked, pinched or cracked.



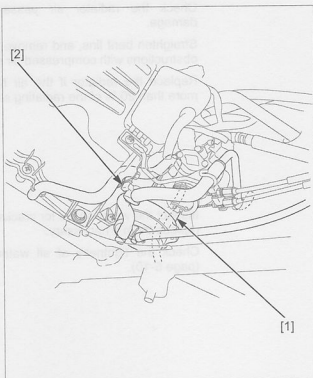
MAINTENANCE

EVAPORATIVE EMISSION CONTROL SYSTEM

Check the hoses between the fuel tank, EVAP canister [1], 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 1-18).



DRIVE CHAIN

⚠ WARNING

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

DRIVE CHAIN SLACK INSPECTION

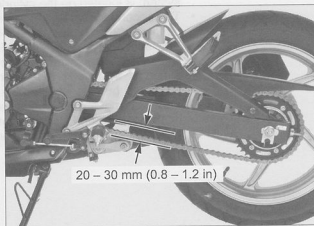
Turn the ignition switch OFF, support the motorcycle on its sidestand and shift the transmission into neutral.

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

DRIVE CHAIN SLACK: 20 – 30 mm (0.8 – 1.2 in)

NOTICE

Excessive chain slack, 50 mm (2.0 in) or more, may damage the frame.



ADJUSTMENT

Loosen the rear axle nut [1].

Loosen the lock nuts [2] and turn the adjusting nuts [3] until the correct drive chain slack is obtained.

Make sure the index lines [4] on both adjusting plates are aligned with the rear end of the axle slots [5] in the swingarm.

Tighten the axle nut to the specified torque.

TORQUE: 88 N·m (9.0 kgf·m, 65 lbf·ft)

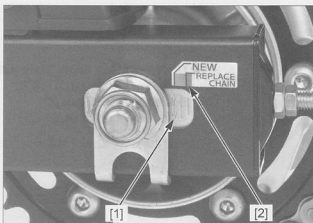
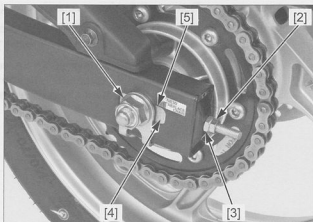
Hold the adjusting nuts and tighten the lock nuts to the specified torque.

TORQUE: 21 N·m (2.1 kgf·m, 15 lbf·ft)

Recheck the drive chain slack and free wheel rotation.

Check the drive chain wear indicator label attached on the left swingarm.

If the drive chain adjuster arrow mark [1] reaches red zone [2] of the indicator label, replace the drive chain with a new one (page 3-21).



CLEANING AND LUBRICATION

Clean the drive chain [1] with a chain cleaner designed specifically for O-ring chains or a neutral detergent. Use a soft brush if the drive chain is dirty.

NOTICE

Do not use a steam cleaner, high pressure cleaner, wire brush, volatile solvent such as gasoline and benzene, abrasive cleaner or a chain cleaner NOT designed specifically for O-ring chains to clean the drive chain.

Inspect the drive chain for possible damage or wear.

Replace any drive chain that has damaged rollers, loose fitting links, or otherwise appears unserviceable.

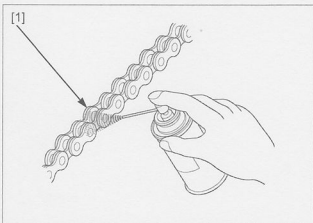
Be sure the drive chain has dried completely before lubricating.

Lubricate the drive chain with Pro Honda Chain Lube or equivalent chain lubricant designed specifically for use on O-ring chains.

NOTICE

Do not use a chain lubricant NOT designed specifically for use with O-ring chains to lubricate the drive chain.

Wipe off the excess oil or drive chain lubricant.

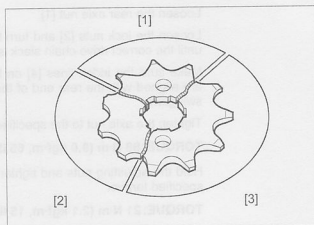


SPROCKET INSPECTION

Remove the drive sprocket cover (page 2-12).

Inspect the drive and driven sprocket teeth for wear [1] or damage [2], replace if necessary.

Never use a new drive chain on worn sprockets. Both chain and sprockets must be in good condition [3], or new replacement chain will wear rapidly.



Check the attaching bolts and nuts on the drive and driven sprockets.

If any are loose, torque them.

TORQUE:

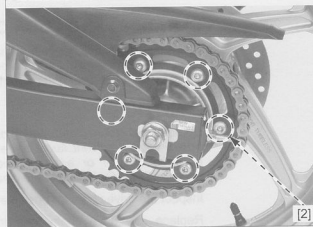
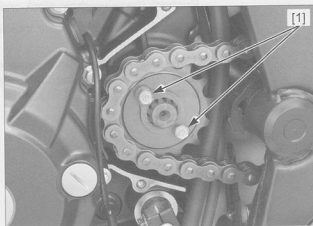
Drive sprocket fixing plate bolt [1]:

10 N·m (1.0 kgf-m, 7 lbf-ft)

Driven sprocket nut [2]:

75 N·m (7.6 kgf-m, 55 lbf-ft)

Install the drive sprocket cover (page 2-12).



REPLACEMENT

This motorcycle uses a drive chain with a staked master link.

Loosen the drive chain (page 3-19).

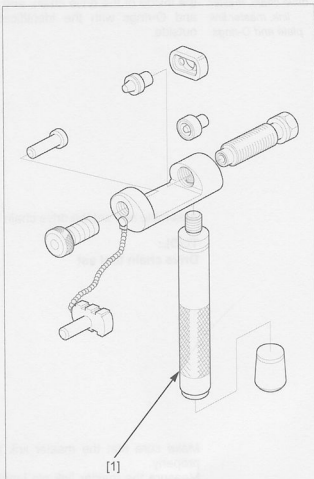
Assemble the special tool as shown.

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

TOOL:

Drive chain tool set [1]

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



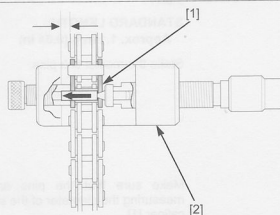
Locate the crimped pin ends of the master link [1] from the outside of the drive chain, and remove the link with the drive chain tool set [2].

TOOL:

Drive chain tool set

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

Remove the drive chain.



Include the master link when you count the drive chain links.

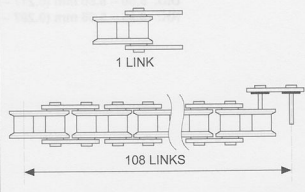
Remove the excess drive chain links from a new drive chain with the drive chain tool set.

STANDARD LINKS: 108 LINKS

REPLACEMENT CHAIN

DID: DID520VF

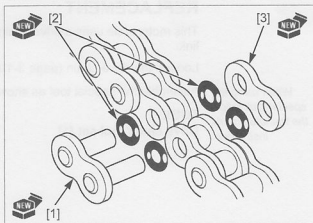
RK: RK520KLO



MAINTENANCE

Never reuse the old drive chain, master link, master link plate and O-rings.

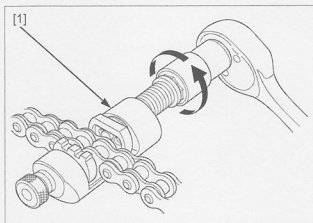
Insert a new master link [1] with new O-rings [2] from the inside of the drive chain, and install a new plate [3] and O-rings with the identification mark facing the outside.



Assemble and set the drive chain tool set [1].

TOOL:
Drive chain tool set

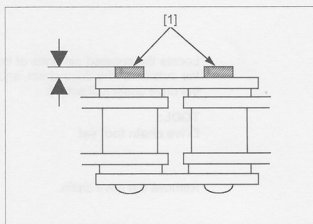
07HMH-MR10103 or
07HMH-MR1010C
(U.S.A. only)



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

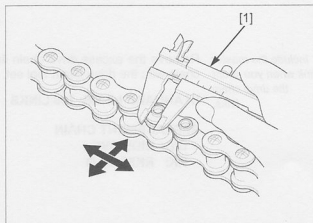
STANDARD LENGTH:
Approx. 1.1 mm (0.04 in)

Stake the master link pins.



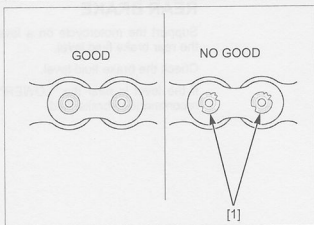
Make sure that the pins are staked properly by measuring the diameter of the staked area using a slide caliper [1].

DIAMETER OF THE STAKED AREA:
DID: 5.50 – 5.80 mm (0.217 – 0.228 in)
RK: 5.25 – 5.65 mm (0.207 – 0.222 in)



A drive chain with a clip-type master link must not be used.

After staking, check the staked area of the master link for cracks [1].
If there is any cracking, replace the master link, O-rings and plate.



BRAKE FLUID

NOTICE

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

NOTE:

- Do not mix different types of fluid, as they are not compatible with each other.
- Do not allow foreign material to enter the system when filling the reservoir.
- When the fluid level is low, check the brake pads for wear (page 3-24).
- A low fluid level may be due to wear of the brake pads. If the brake pads are worn and caliper pistons are pushed out, this accounts for a low fluid level. If the brake pads are not worn and fluid level is low, check the entire system for leaks (page 3-25).

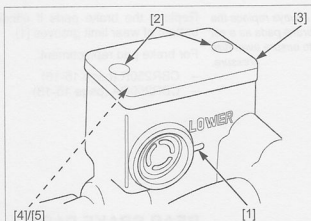
FRONT BRAKE

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

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

Remove the following:

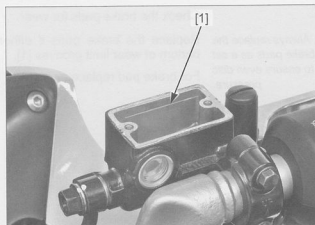
- Screws [2]
- Reservoir cover [3]
- Set plate [4]
- Diaphragm [5]



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

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

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

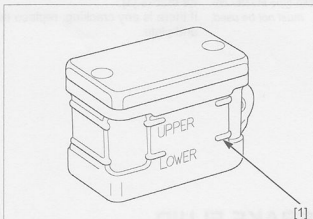


REAR BRAKE

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

Check the brake fluid level.

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



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

Remove the cover screws [3], reservoir cover [4], set plate [5] and diaphragm [6].

Add the reservoir with DOT 3 or DOT 4 brake fluid from a sealed container to the "UPPER" level line [7].

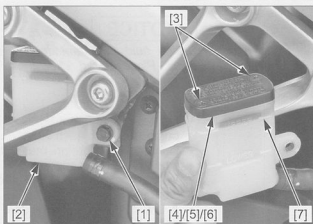
Install the diaphragm, set plate and reservoir cover.

Install and tighten the cover screws to the specified torque.

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

Install the reservoir and bolt.

Tighten the bolt securely.



BRAKE PADS WEAR

FRONT BRAKE PADS

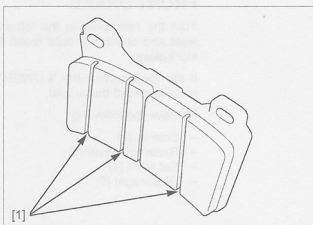
Check the brake pads for wear.

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

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

For brake pad replacement:

- CBR250R (page 15-16)
- CBR250RA (page 15-18)



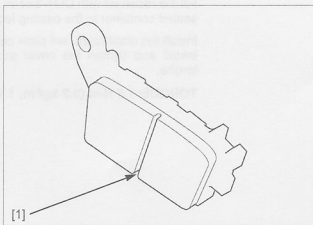
REAR BRAKE PADS

Check the brake pads for wear.

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

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

For brake pad replacement (page 15-19).



BRAKE SYSTEM

INSPECTION

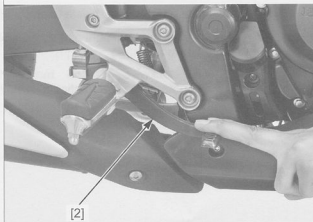
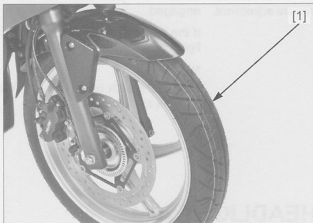
CBR250RA: This model is equipped with a Combined Brake System.

Check the front and rear brake operation as follows:

Support the motorcycle securely and raise the front wheel [1] off the ground.

Apply the brake pedal [2].

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



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.

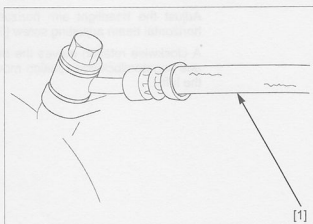
For brake air bleeding:

- CBR250R (page 15-8)
- CBR250RA (page 15-12)

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

Tighten any loose fittings.

Replace hoses and fittings as required.

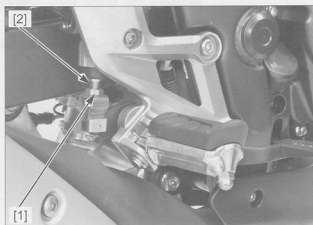


BRAKE PEDAL HEIGHT ADJUSTMENT

Loosen the lock nut [1] and turn the push rod [2] until the correct pedal height is obtained (page 15-28).

STANDARD LENGTH: 66.5 – 68.5 mm (2.62 – 2.70 in)

After adjustment, tighten the lock nut securely.



MAINTENANCE

BRAKE LIGHT SWITCH

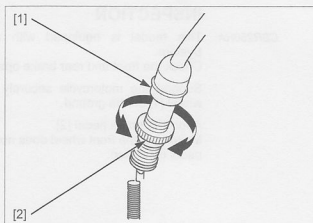
The front brake light switch does not require adjustment.

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.

NOTE:

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



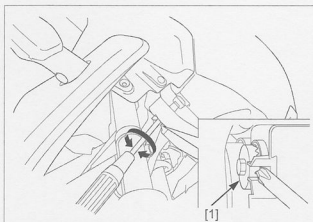
HEADLIGHT AIM

Support the motorcycle in an upright position.

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

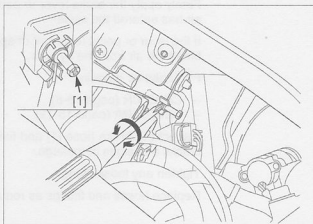
Adjust the headlight aim vertically by turning the vertical beam adjusting screw [1].

A clockwise rotation moves the beam up and counterclockwise rotation moves the beam down.



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

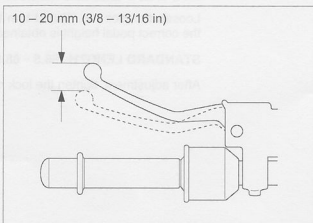
A clockwise rotation moves the beam toward the right and counterclockwise rotation moves the beam toward the left.



CLUTCH SYSTEM

Measure the clutch lever freeplay at the end of the clutch lever.

FREEPLAY: 10 – 20 mm (3/8 – 13/16 in)



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

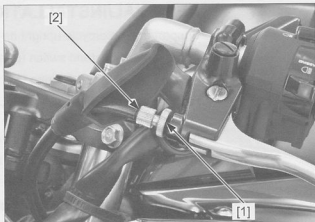
Minor adjustment is made with the upper adjuster at the clutch lever.

Loosen the lock nut [1] and turn the adjuster [2].

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

Tighten the lock nut while holding the adjuster.

Recheck the clutch lever freeplay.

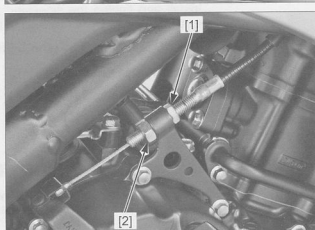


Major adjustment is made with the lower adjusting nut [1] at the clutch lifter lever.

Loosen the lock nut [2] and turn the adjusting nut to adjust the freeplay.

Tighten the lock nut while holding the adjusting nut.

If proper freeplay cannot be obtained, or the clutch slips during test ride, disassemble and inspect the clutch (page 10-12).



SIDESTAND

INSPECTION

Support the motorcycle using a safety stand or hoist.

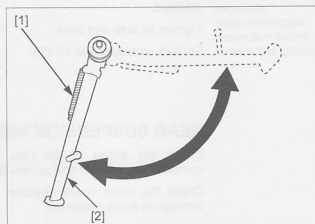
Check the sidestand spring [1] for damage or loss of tension.

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

Check the sidestand ignition cut-off system:

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

If there is a problem with the system, check the sidestand switch (page 20-17).



REMOVAL/INSTALLATION

Support the motorcycle upright on a level surface.

Remove the sidestand switch (page 20-18).

Remove the sidestand spring [1].

Remove the sidestand pivot lock nut [2], bolt [3] and sidestand [4].

Apply grease to the sidestand pivot sliding surface.

Install the sidestand and sidestand pivot bolt.

Tighten the sidestand pivot bolt to the specified torque.

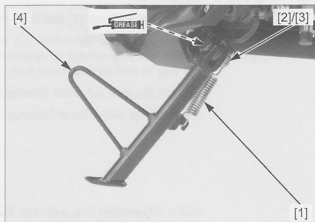
TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install and tighten the sidestand pivot lock nut to the specified torque while holding the pivot bolt.

TORQUE: 30 N·m (3.0 kgf·m, 22 lbf·ft)

Install the sidestand spring.

Install the sidestand switch (page 20-18).



SUSPENSION

FRONT SUSPENSION INSPECTION

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

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

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

Replace damaged components which cannot be repaired.

Tighten all nuts and bolts.

For fork service (page 13-20).



REAR SUSPENSION INSPECTION

Check the action of the rear shock absorber by compressing the rear end several times.

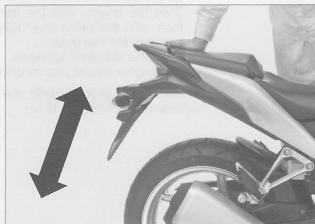
Check the entire shock absorber assembly for leaks, damage or loose fasteners.

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

Replace damaged components which cannot be repaired.

Tighten all nuts and bolts.

For shock absorber service (page 14-13).

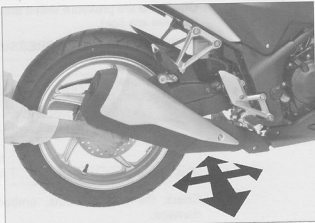


Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.

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

Replace the bushings if any looseness is noted.

For swingarm service (page 14-17).



NUTS, BOLTS, FASTENERS

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

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

WHEELS/TIRES

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

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

For front wheel service (page 13-14).



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

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

For rear wheel service (page 14-6).



MAINTENANCE

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

RECOMMENDED TIRE PRESSURE AND TIRE SIZE:

		Front	Rear
Tire pressure kPa (kgf/cm ² , psi)	Driver only	200 (2.00, 29)	200 (2.00, 29)
	Driver and passenger	200 (2.00, 29)	225 (2.25, 33)
Tire size		110/70-17 M/C 54S	140/70-17 M/C 66S
Tire brand		IRC	RX-01FD RX-01RZ

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

Check the front and rear wheels for trueness.

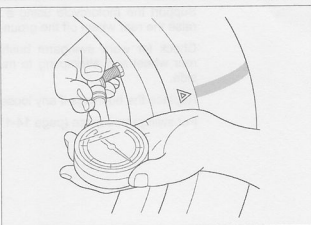
Measure the tread depth at the center of the tires.

Replace the tires when the tread depth reaches the following limits.

MINIMUM TIRE TREAD DEPTH

Front: 1.5 mm (0.06 in)

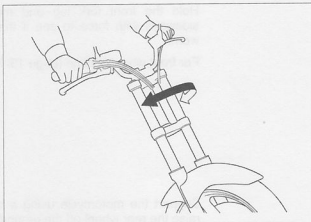
Rear: 2.0 mm (0.08 in)



STEERING HEAD BEARINGS

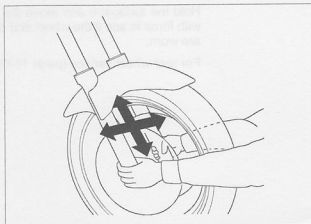
Support the motorcycle using a safety stand or hoist, raise the front wheel off the ground.

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



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

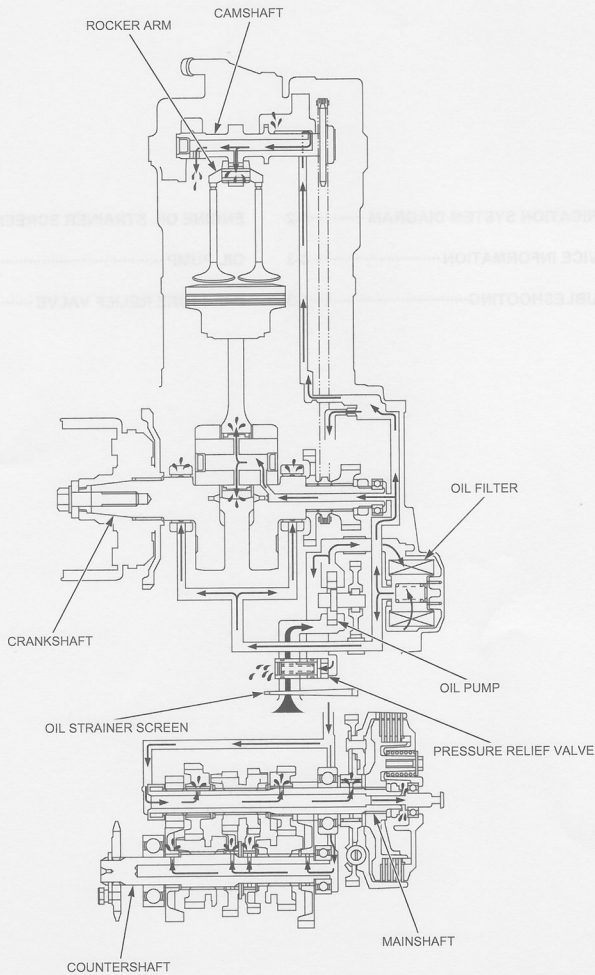
If the handlebar moves unevenly, binds, or has vertical movement, inspect the steering head bearings (page 13-29).



4. LUBRICATION SYSTEM

LUBRICATION SYSTEM DIAGRAM	4-2	ENGINE OIL STRAINER SCREEN	4-4
SERVICE INFORMATION	4-3	OIL PUMP	4-4
TROUBLESHOOTING	4-3	PRESSURE RELIEF VALVE	4-9

LUBRICATION SYSTEM DIAGRAM



SERVICE INFORMATION

GENERAL

⚠ CAUTION

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

- 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.
- For engine oil level check (page 3-13)
- For engine oil change (page 3-14)
- For engine oil filter change (page 3-15)

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	At draining	1.4 liters (1.5 US qt, 1.2 Imp qt)	—
	At oil filter change	1.5 liters (1.6 US qt, 1.3 Imp qt)	—
	At disassembly	1.8 liters (1.9 US qt, 1.6 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 pump rotor	Tip clearance	0.15 (0.006)	0.20 (0.008)
	Body clearance	0.15 – 0.22 (0.006 – 0.009)	0.35 (0.014)
	Side clearance	0.02 – 0.09 (0.001 – 0.004)	0.10 (0.004)

TROUBLESHOOTING

Engine oil level too low, high oil consumption

- Oil consumption
- External oil leaks
- Worn valve guide or stem seal
- Worn piston rings
- Improperly installed piston rings
- Worn cylinder

Engine oil contamination

- Oil not changed often enough
- Worn valve guide or stem seal
- Worn piston rings
- Improperly installed piston rings
- Worn cylinder

Oil emulsification

- Faulty cylinder head gasket
- Leaky coolant passage
- Entry of water
- Faulty water pump mechanical seal

LUBRICATION SYSTEM

ENGINE OIL STRAINER SCREEN

REMOVAL/INSTALLATION

Remove the right crankcase cover (page 10-6).

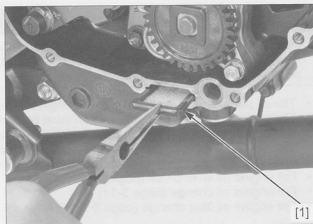
Be careful not to damage the oil strainer screen.

Pull the oil strainer screen [1] out of the crankcase.

Wash the oil strainer screen thoroughly in nonflammable or high flash point solvent until all accumulated dirt has been removed.

Blow it dry with compressed air to clean completely.

Before installing the strainer, it should be examined closely for damage, and make sure the sealing rubber is in good condition.



Install the oil strainer screen with the thin edge facing in and flange side facing up as shown.

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

OIL STRAINER SCREEN DIRECTION:

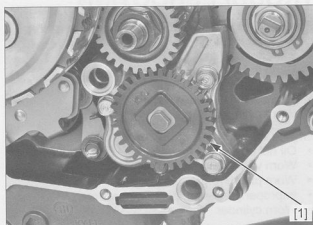


OIL PUMP

REMOVAL/DISASSEMBLY

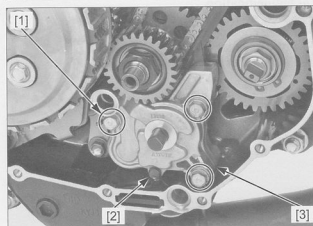
Remove the right crankcase cover (page 10-6).

Remove the oil pump driven gear [1].



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

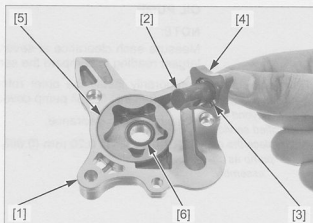
Remove the oil pump cover assembly [3].



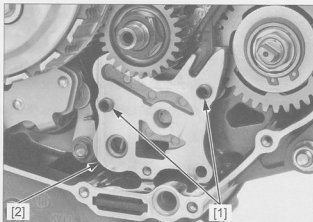
Remove the inner rotor assembly from the oil pump cover [1] while holding oil pump shaft [2].

Remove the oil pump shaft and lock pin [3] from the inner rotor [4].

Remove the outer rotor [5] and washer [6].

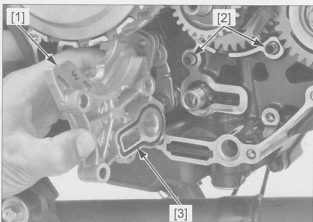


Remove the dowel pins [1] from the oil pump body [2].



Remove the oil pump body [1] and dowel pins [2].

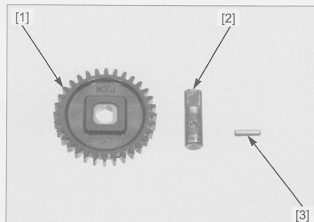
Remove the O-ring [3] from the oil pump body.



INSPECTION

OIL PUMP DRIVEN GEAR/OIL PUMP SHAFT/LOCK PIN

Check the oil pump driven gear [1] teeth, oil pump shaft [2] and lock pin [3] for wear or damage, replace them if necessary.



LUBRICATION SYSTEM

OIL PUMP

NOTE:

Measure each clearance at several points and use the largest reading to compare the service limit.

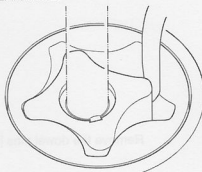
If any portion of the oil pump is worn beyond the specified service limit, replace the oil pump as an assembly.

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

Measure the tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)

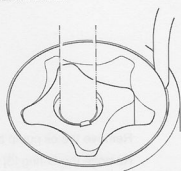
TIP CLEARANCE:



Measure the body clearance.

SERVICE LIMIT: 0.35 mm (0.014 in)

BODY CLEARANCE:

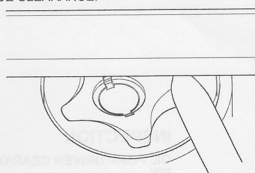


Remove the oil pump shaft.

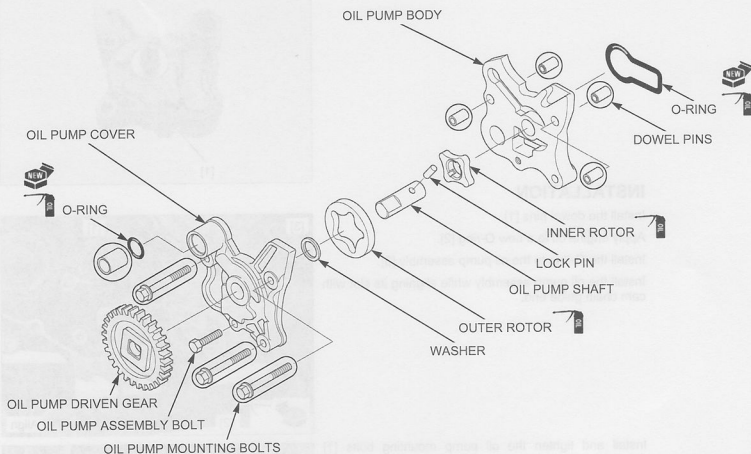
Measure the side clearance using a straight edge and feeler gauge.

SERVICE LIMIT: 0.10 mm (0.004 in)

SIDE CLEARANCE:



ASSEMBLY

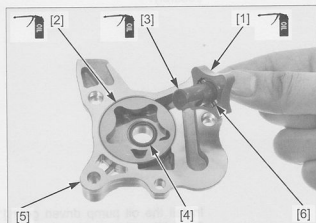


Apply engine oil to the inner rotor [1] and outer rotor [2] entire surface.

Apply engine oil to the oil pump shaft [3] outer surface.

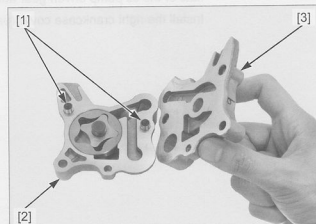
Install the outer rotor and washer [4] into the oil pump cover [5].

Install the lock pin [6] into the oil pump shaft, then install the inner rotor while aligning its groove with the lock pin. Install the inner rotor assembly into the oil pump cover.



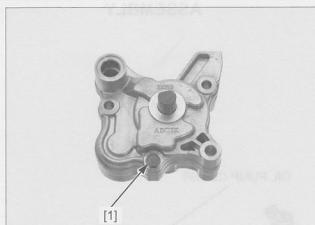
Install the dowel pins [1] to the oil pump cover [2].

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



LUBRICATION SYSTEM

Install and tighten the oil pump assembly bolt [1] securely.



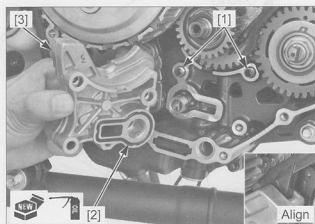
INSTALLATION

Install the dowel pins [1].

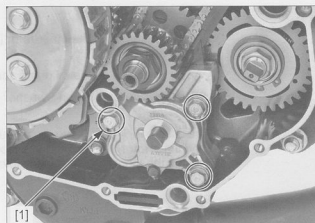
Apply engine oil to a new O-ring [2].

Install the O-ring to the oil pump assembly [3].

Install the oil pump assembly while aligning its slot with cam chain guide end.

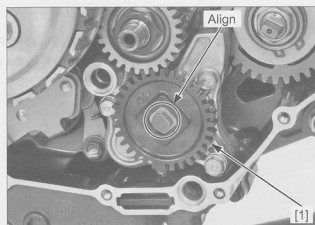


Install and tighten the oil pump mounting bolts [1] securely.



Install the oil pump driven gear [1] while aligning the flats of the oil pump driven gear and oil pump shaft.

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



PRESSURE RELIEF VALVE

REMOVAL/INSTALLATION

Remove the oil pump (page 4-4).

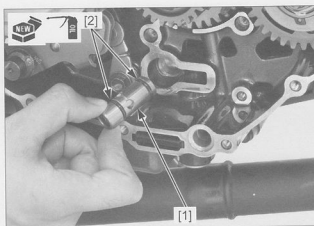
Remove the oil pressure relief valve [1] and O-rings [2].

Apply engine oil to new O-rings.

Install the O-rings to the oil pressure relief valve grooves.

Install the oil pressure relief valve into the right crankcase with the piston side facing outside.

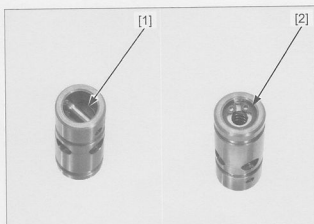
Install the oil pump (page 4-8).



PRESSURE RELIEF VALVE INSPECTION

Check the operation of the pressure relief valve by pushing on the piston [1].

Disassemble the pressure relief valve by removing the snap ring [2].



Remove the washer [1], spring [2] and piston [3].

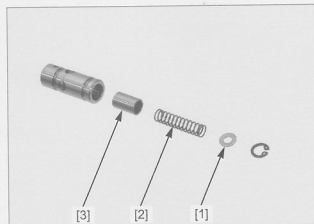
Check the piston for wear, sticking or damage.

Check the spring for fatigue or damage.

Assemble the pressure relief valve in the reverse order of disassembly.

NOTE:

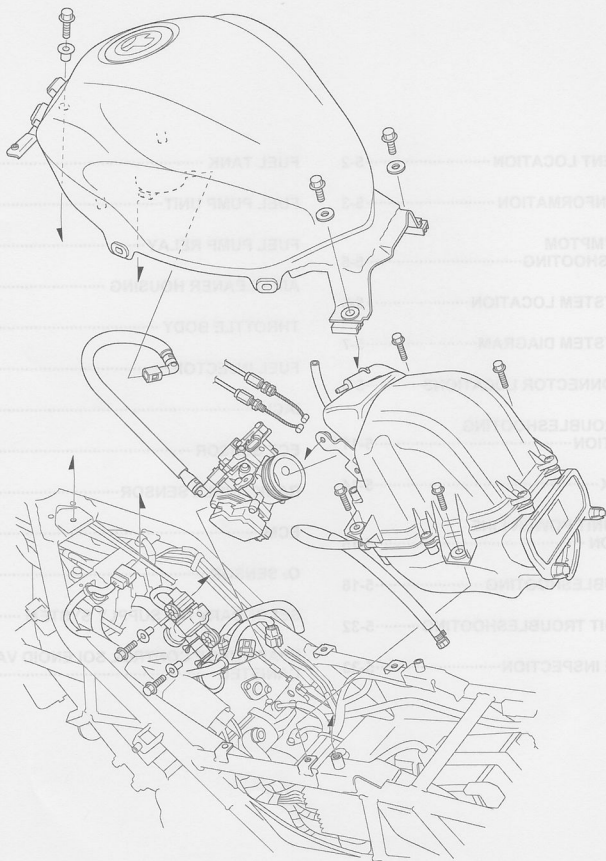
- Install the snap ring with the chamfered edges facing the thrust load side.
- Make sure the snap ring is seated in the groove.



5. FUEL SYSTEM (PGM-FI)

COMPONENT LOCATION	5-2	FUEL TANK	5-39
SERVICE INFORMATION	5-3	FUEL PUMP UNIT	5-39
PGM-FI SYMPTOM TROUBLESHOOTING	5-5	FUEL PUMP RELAY	5-42
PGM-FI SYSTEM LOCATION	5-6	AIR CLEANER HOUSING	5-43
PGM-FI SYSTEM DIAGRAM	5-7	THROTTLE BODY	5-46
PGM-FI CONNECTOR LOCATIONS	5-8	FUEL INJECTOR	5-51
PGM-FI TROUBLESHOOTING INFORMATION	5-11	IACV	5-53
DTC INDEX	5-14	ECT SENSOR	5-54
SENSOR UNIT POWER LINE INSPECTION	5-15	BANK ANGLE SENSOR	5-55
DTC TROUBLESHOOTING	5-16	ECM	5-56
MIL CIRCUIT TROUBLESHOOTING	5-32	O ₂ SENSOR	5-57
FUEL LINE INSPECTION	5-33	SECONDARY AIR SUPPLY SYSTEM	5-58
		EVAP PURGE CONTROL SOLENOID VALVE/ CANISTER	5-61

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where gasoline is stored can cause a fire or explosion.
- Before disconnecting the fuel feed hose, relieve fuel pressure from the system by disconnecting the quick connect fitting from the system (page 5-33).
- Bending or twisting the control cables will impair smooth operation and could cause the cables to stick or bind, resulting in loss of vehicle control.
- Do not snap the throttle valve from full open to full close after the throttle cable has been removed. It may cause incorrect idle operation.
- Seal the intake ports with tape or a clean cloth to keep dirt and debris from entering the engine after the throttle body has been removed.
- Do not damage the throttle body. It may cause incorrect throttle valve operation.
- Prevent dirt and debris from entering the throttle bore and air passages after the throttle body has been removed. Clean them using compressed air if necessary.
- Do not loosen or tighten the white painted nut and screw of the throttle body. Loosening or tightening them can cause throttle valve and idle control failure.
- The parts of the throttle body not shown in this manual should not be disassembled.
- A faulty PGM-FI system is often related to poorly connected or corroded connectors. Check those connections before proceeding.
- When disassembling the PGM-FI system parts, note the location of the O-rings. Replace them with new ones upon reassembly.
- Use a digital tester for PGM-FI system inspection.
- For fuel level sensor inspection (page 20-19).

SPECIFICATIONS

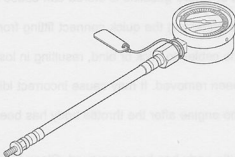
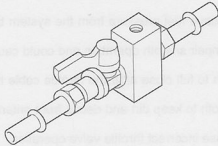
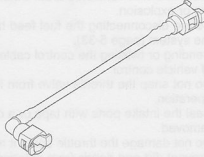
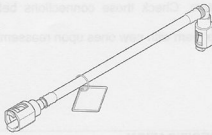


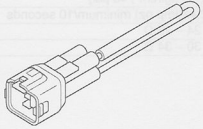
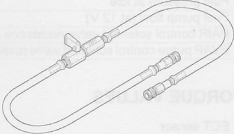
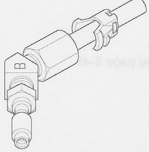
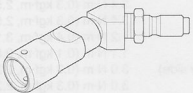
ITEM	SPECIFICATION
Throttle body identification number	GQ9JA
Engine idle speed	1,400 ± 100 rpm
Throttle grip freeplay	2 – 6 mm (1/16 – 1/4 in)
Fuel injector resistance (20°C/68°F)	11 – 13 Ω
Fuel pressure at idle	294 kPa (3.0 kgf/cm ² , 43 psi)
Fuel pump flow (at 12 V)	69.2 cm ³ (2.34 US oz, 2.44 Imp oz) minimum/10 seconds
PAIR control solenoid valve resistance (20°C/68°F)	24 – 28 Ω
EVAP purge control solenoid valve resistance (20°C/68°F)	30 – 34 Ω

TORQUE VALUES

ECT sensor	25 N·m (2.5 kgf-m, 18 lbf-ft)	
Fuel pump setting plate nut	12 N·m (1.2 kgf-m, 9 lbf-ft)	See page 5-42
Fuel injector joint mounting bolt	5.1 N·m (0.5 kgf-m, 3.8 lbf-ft)	
O ₂ sensor	25 N·m (2.5 kgf-m, 18 lbf-ft)	
Sensor unit torx screw	3.4 N·m (0.3 kgf-m, 2.5 lbf-ft)	
IACV setting plate torx screw	2.1 N·m (0.2 kgf-m, 1.5 lbf-ft)	
Throttle cable stay screw	3.4 N·m (0.3 kgf-m, 2.5 lbf-ft)	
Clamper stay screw	3.4 N·m (0.3 kgf-m, 2.5 lbf-ft)	
Insulator band screw	4.2 N·m (0.4 kgf-m, 3.1 lbf-ft)	See page 5-49
Air cleaner cover screw	1.1 N·m (0.1 kgf-m, 0.8 lbf-ft)	
Throttle cable A adjuster lock nut (throttle body side)	3.0 N·m (0.3 kgf-m, 2.2 lbf-ft)	
Throttle cable B (throttle body side)	3.0 N·m (0.3 kgf-m, 2.2 lbf-ft)	
PAIR check valve cover bolt	5.2 N·m (0.5 kgf-m, 3.8 lbf-ft)	
Bank angle sensor mounting nut	10 N·m (1.0 kgf-m, 7 lbf-ft)	

FUEL SYSTEM (PGM-FI)

TOOLS

<p>Fuel pressure gauge, 0 – 100 psi 07406-0040004</p>  <p>or 07406-004000B (U.S.A. only)</p>	<p>Pressure gauge manifold 07ZAJ-S5A0111</p>  <p>(Not available in U.S.A.)</p>	<p>Hose attachment, 9 mm/9 mm 07ZAJ-S5A0120</p>  <p>(Not available in U.S.A.)</p>
<p>Hose attachment, 6 mm/9 mm 07ZAJ-S5A0130</p>  <p>(Not available in U.S.A.)</p>	<p>Attachment joint, 6 mm/9 mm 07ZAJ-S5A0150</p>  <p>(Not available in U.S.A.)</p>	<p>HDS pocket tester TDS3557-0112-01 (U.S.A. only)</p> 
<p>SCS Service connector 070PZ-ZY30100</p> 	<p>Test probe 07ZAJ-RDJA110</p> 	<p>Pressure manifold hose 07AMJ-HW3A100 (U.S.A. only)</p> 
<p>Adaptor, male "B" 07AAJ-S6MA200 (U.S.A. only)</p> 	<p>Adaptor, female "B" 07AAJ-S6MA400 (U.S.A. only)</p> 	

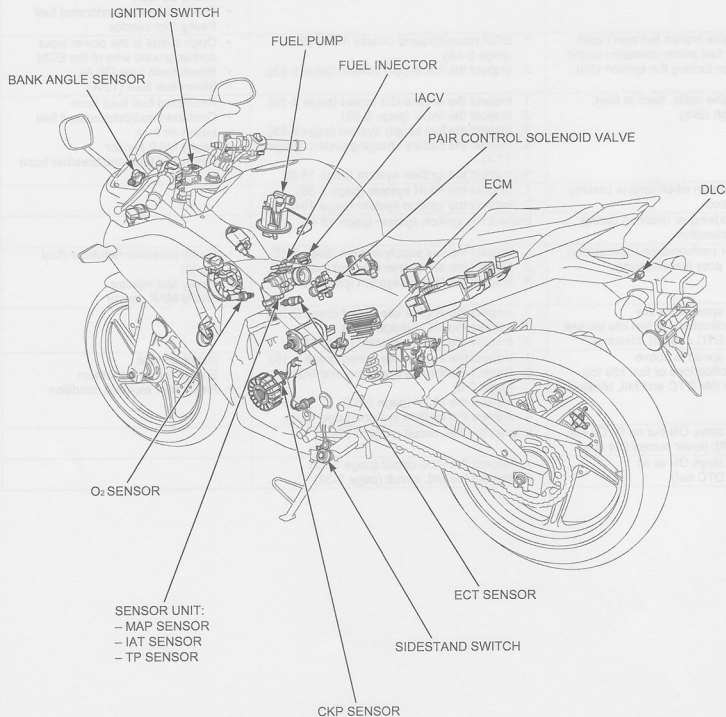
PGM-FI SYMPTOM TROUBLESHOOTING

When the motorcycle has one of these symptoms, check the DTC or MIL blinking, refer to the DTC index (page 5-14) 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.

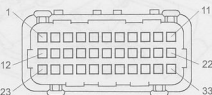
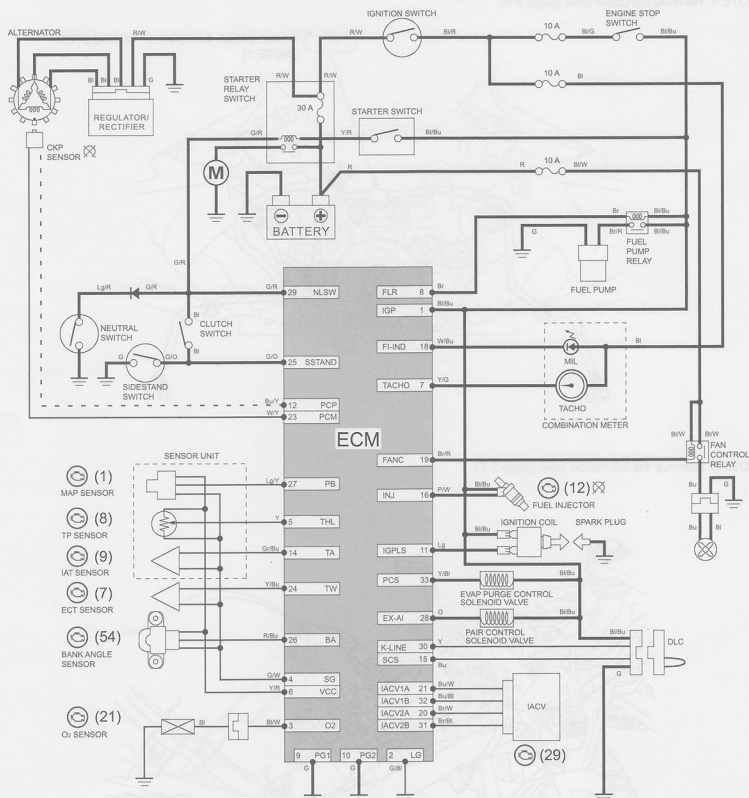
Symptom	Diagnosis procedure	Also check for
Engine cranks but won't start (No DTC and MIL blinking)	<ol style="list-style-type: none"> 1. Inspect the IACV (page 5-53). 2. Inspect the fuel supply system (page 5-33). 3. Inspect the ignition system (page 18-6). 	<ul style="list-style-type: none"> • No fuel to fuel injector <ul style="list-style-type: none"> – Clogged fuel filter – Pinched or clogged fuel feed hose – Faulty fuel pump – Faulty fuel pump circuits • Intake air leak • Contaminated/deteriorated fuel • Faulty fuel injector
Engine cranks but won't start (No fuel pump operation sound when turning the ignition ON)	<ol style="list-style-type: none"> 1. ECM power/ground circuits malfunction (page 5-56). 2. Inspect the fuel supply system (page 5-33). 	<ul style="list-style-type: none"> • Open circuit in the power input and/or ground wire of the ECM • Blown main fuse (30 A) • Blown sub fuse (10 A)
Engine stalls, hard to start, rough idling	<ol style="list-style-type: none"> 1. Inspect the engine idle speed (page 3-16). 2. Inspect the IACV (page 5-53). 3. Inspect the fuel supply system (page 5-33). 4. Inspect the battery charging system (page 17-7). 5. Inspect the ignition system (page 18-6). 	<ul style="list-style-type: none"> • Restricted fuel feed hose • Contaminated/deteriorated fuel • Intake air leak • Faulty MAP sensor • Restricted fuel tank breather hose
Afterburn when engine braking is used	<ol style="list-style-type: none"> 1. Inspect the PAIR system (page 5-58). 2. Inspect the ignition system (page 18-6). 	
Backfiring or misfiring during acceleration	Inspect the ignition system (page 18-6).	
Poor performance (driveability) and poor fuel economy	<ol style="list-style-type: none"> 1. Inspect the fuel supply system (page 5-33). 2. Inspect the air cleaner element (page 3-7). 3. Inspect the ignition system (page 18-6). 	<ul style="list-style-type: none"> • Faulty pressure regulator (fuel pump) • Faulty fuel injector • Faulty MAP sensor
Idle speed is below specifications or fast idle too low (No DTC and MIL blinking)	<ol style="list-style-type: none"> 1. Inspect the engine idle speed (page 3-16). 2. Inspect the IACV (page 5-53). 3. Inspect the ignition system (page 18-6). 	
Idle speed is above specifications or fast idle too high (No DTC and MIL blinking)	<ol style="list-style-type: none"> 1. Inspect the engine idle speed (page 3-16). 2. Inspect the throttle operation and freelay (page 3-6). 3. Inspect the IACV (page 5-53). 4. Inspect the ignition system (page 18-6). 	<ul style="list-style-type: none"> • Intake air leak • Engine top-end problem • Air cleaner element condition
MIL stays ON but no DTCs set, or MIL never comes ON at all	Inspect the MIL circuit (page 5-32).	
MIL stays ON at all (No DTC set)	<ol style="list-style-type: none"> 1. Inspect the DLC circuit (page 5-32). 2. Inspect the MIL circuit (page 5-32). 	

FUEL SYSTEM (PGM-FI)

PGM-FI SYSTEM LOCATION



PGM-FI SYSTEM DIAGRAM

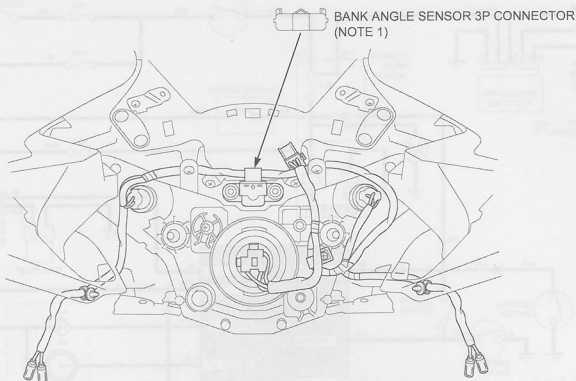


ECM 33P CONNECTOR
ECM side of male terminals

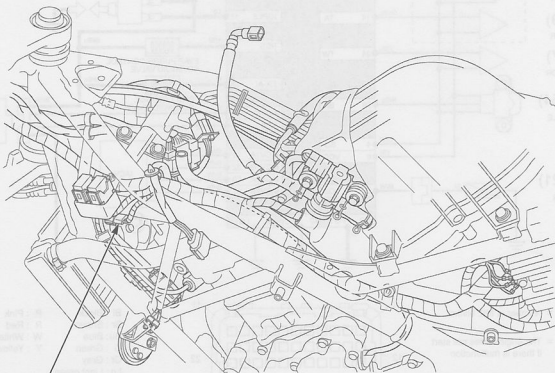
FUEL SYSTEM (PGM-FI)

PGM-FI CONNECTOR LOCATIONS

NOTE 1: Remove the upper cowl (page 2-9).

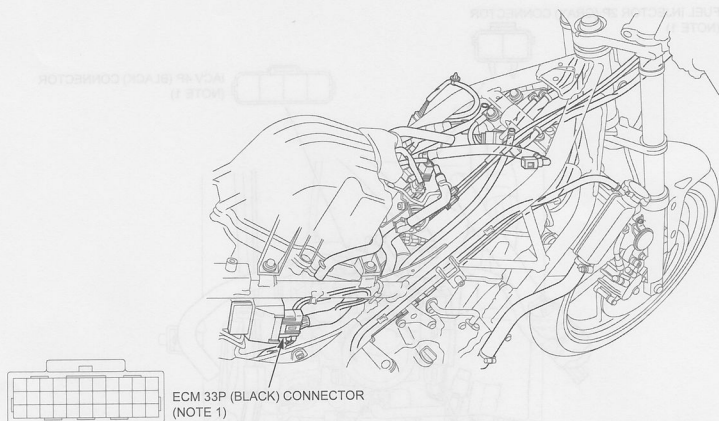


NOTE 2: Remove the left middle cowl (page 2-7).

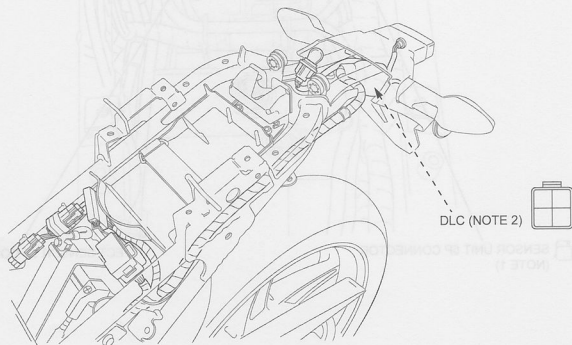


O₂ SENSOR 1P CONNECTOR
(NOTE 2)

NOTE 1: Remove the right side cover (page 2-16).



NOTE 2: Remove the rear under cover (page 2-13).



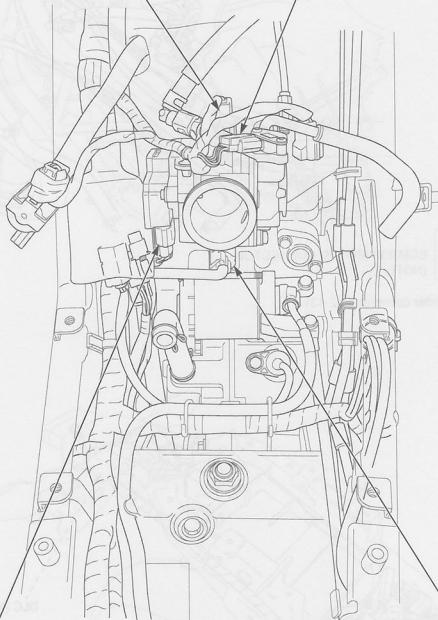
FUEL SYSTEM (PGM-FI)

NOTE 1: Lift and support the fuel tank (page 3-5).

FUEL INJECTOR 2P (GRAY) CONNECTOR
(NOTE 1)



IACV 4P (BLACK) CONNECTOR
(NOTE 1)



SENSOR UNIT 5P CONNECTOR
(NOTE 1)

ECT SENSOR 3P CONNECTOR



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 something 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 5-5).

SYSTEM DESCRIPTION

SELF-DIAGNOSIS SYSTEM

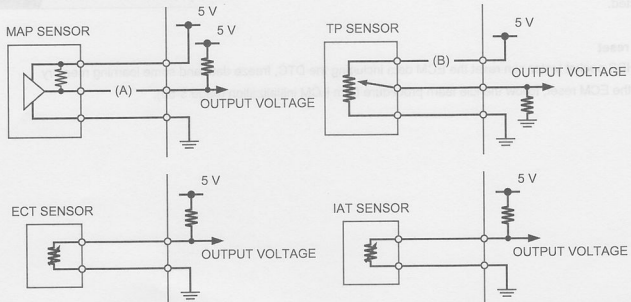
The PGM-FI system is equipped with the self-diagnostic system. When any abnormality occurs in the system, the ECM turns on the MIL and stores a DTC in its erasable memory.

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-programmed value in the simulated program map. When any abnormality is detected in the fuel injector, the fail-safe function stops the engine to protect it from damage.

DTC

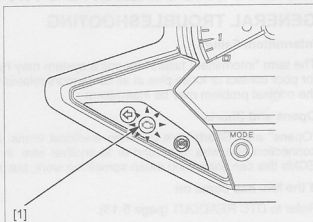
- The DTC is composed of a main code and a sub code and it is displayed as a hyphenated number when retrieved from the ECM with the HDS pocket tester.
The digits in front of the hyphen are the main code, they indicate the component of function failure.
The digits behind the hyphen are the sub code, they 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, ECT, 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 HDS pocket tester.
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.



FUEL SYSTEM (PGM-FI)

MIL Blink Pattern

- If the HDS pocket tester is not available, DTC can be read from the ECM memory by the MIL [1] 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 and engine stop switch "O" or idling with the sidestand down. The MIL will stay ON when the engine speed is over 1,900 rpm or with the sidestand up.
- The MIL has two types of blinks, a long blink and short blink. The long blinking lasts for 1.3 seconds, the short blinking lasts for 0.3 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 "O" the MIL will stay on for a few seconds, then go off. If the MIL does not come on, troubleshoot the MIL circuit (page 5-32).

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).

HDS POCKET TESTER INFORMATION

- The HDS pocket tester can readout the DTC, freeze data, current data and other ECM condition.

How to connect the HDS pocket tester

Turn the ignition switch OFF.

Remove the rear under cover (page 2-13).

Remove the dummy connector [1] from the DLC [2].

Connect the HDS pocket tester to the DLC.

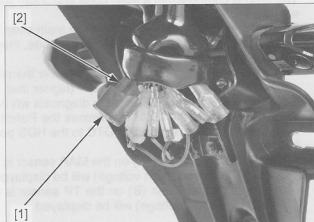
TOOL:

HDS pocket tester TDS3557-0112-01
(U.S.A. only)

Turn the ignition switch ON and engine stop switch "O" check the DTC and freeze data.

NOTE:

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



ECM reset

The HDS pocket tester can reset the ECM data including the DTC, freeze data and some learning memory.

After the ECM reset, follow the idle learn procedure from ECM initialization (page 5-50).

DTC READOUT

Start the engine and check the MIL.

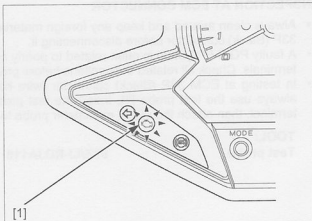
NOTE:

When the ignition switch is turned ON and engine stop switch "O", the MIL will stay on for a few seconds, then go off.

If the MIL stays on or blinks, connect the HDS pocket tester to the DLC (page 5-12).

Read the DTC, freeze data and follow the troubleshooting index (page 5-14).

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



Reading DTC with the MIL

Turn the ignition switch OFF.

Remove the rear under cover (page 2-13).

Remove the dummy connector [1] from the DLC [2].

Short the DLC terminals using a special tool.

TOOL:

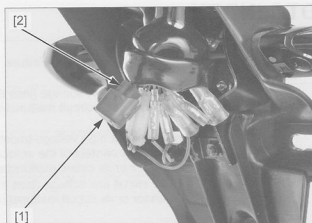
SCS Service connector 070PZ-ZY30100

Connection: Blue – Green

Turn the ignition switch ON and engine stop switch "O", read, note the MIL blinks and refer to the DTC index (page 5-14).

NOTE:

If the ECM has any DTC in its memory, the MIL will start blinking.



ERASING DTC

Connect the HDS pocket tester to the DLC (page 5-12).

Erase the DTC with the HDS pocket tester while the engine is stopped.

To erase the DTC without HDS pocket tester, refer to the following procedure.

How to erase the DTC with SCS Service connector

1. Turn the ignition switch OFF.

2. Remove the dummy connector from the DLC [1].

Short the DLC terminals using a special tool.

TOOL:

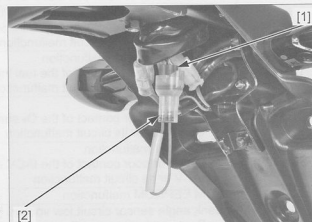
SCS Service connector [2] 070PZ-ZY30100

Connection: Blue – Green

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

4. Remove the special tool from the DLC.

5. The MIL will light for approximately 5 seconds. While the MIL lights, short the DLC terminals again with a special tool. The self-diagnostic memory is erased if the MIL goes off and starts blinking.



NOTE:

- The DLC must be jumped while the MIL lights. If not, the MIL will not start blinking.
- Note that the self-diagnostic memory cannot be erased if the ignition switch is turned OFF before the MIL starts blinking.

FUEL SYSTEM (PGM-FI)

CIRCUIT INSPECTION

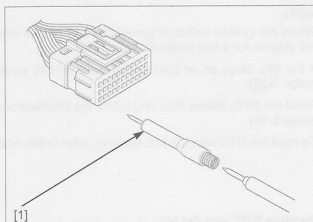
INSPECTION AT ECM CONNECTOR

- Always clean around and keep any foreign material away from the ECM 33P (Black) connector before disconnecting it.
- A faulty PGM-FI system is often related to poorly connected or corroded terminals. Check all related connections before proceeding.
- In testing at ECM 33P (Black) 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

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 0.19 V) • MAP sensor or its circuit malfunction	• Engine operates normally • Pre-program value: 698 mmHg/ 930 hPa	5-16
1-2 (1)	MAP sensor circuit high voltage (more than 3.84 V) • Loose or poor contact of the sensor unit connector • MAP sensor or its circuit malfunction	• Engine operates normally • Pre-program value: 698 mmHg/ 930 hPa	5-17
7-1 (7)	ECT sensor circuit low voltage (less than 0.07 V) • ECT sensor or its circuit malfunction	• Hard start at a low temperature • Pre-program value: 80°C/176°F • Cooling fan turns on	5-18
7-2 (7)	ECT sensor circuit high voltage (more than 4.92 V) • Loose or poor contact of the ECT sensor connector • ECT sensor or its circuit malfunction	• Hard start at a low temperature • Pre-program value: 80°C/176°F • Cooling fan turns on	5-19
8-1 (8)	TP sensor circuit low voltage (less than 0.21 V) • Loose or poor contact of the sensor unit connector • TP sensor or its circuit malfunction	• Poor engine acceleration • Pre-program value: 0°	5-20
8-2 (8)	TP sensor circuit high voltage (more than 4.92 V) • TP sensor or its circuit malfunction	• Poor engine acceleration • Pre-program value: 0°	5-21
9-1 (9)	IAT sensor circuit low voltage (less than 0.07 V) • IAT sensor or its circuit malfunction	• Engine operates normally • Pre-program value: 35°C/95°F	5-22
9-2 (9)	IAT sensor circuit high voltage (more than 4.92 V) • Loose or poor contact of the sensor unit connector • IAT sensor or its circuit malfunction	• Engine operates normally • Pre-program value: 35°C/95°F	5-23
12-1 (12)	Fuel injector circuit malfunction • Loose or poor contact of the fuel injector connector • Fuel injector or its circuit malfunction	• Engine does not start • Fuel injector, fuel pump and ignition coil shut down	5-24
21-1 (21)	O ₂ sensor malfunction • Loose or poor contact of the O ₂ sensor connector • O ₂ sensor or its circuit malfunction	• Engine operates normally	5-26
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	5-27
33-2 (-)	ECM EEPROM malfunction	• Engine operates normally	5-28
54-1 (54)	Bank angle sensor circuit low voltage (less than 0.31 V) • Bank angle sensor or its circuit malfunction	• Engine operates normally • Engine stop function does not operate	5-29
54-2 (54)	Bank angle sensor circuit high voltage (more than 4.53 V) • Loose or poor contact of the bank angle sensor connector • Bank angle sensor or its circuit malfunction	• Engine operates normally • Engine stop function does not operate	5-30

SENSOR UNIT POWER LINE INSPECTION

BEFORE DTC TROUBLESHOOTING

NOTE:

- When the DTC displays 1-1, 1-2, 8-1, 8-2, 9-1 and 9-2, check the following before DTC troubleshooting.
- Before starting the inspection, check for loose or poor contact on the sensor unit 5P connector and ECM 33P (Black) connector.

1. Sensor Unit Power Input Voltage Inspection

Turn the ignition switch OFF.

Disconnect the sensor unit 5P connector [1].

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

Measure the voltage at the wire side.

Connection: Yellow/red (+) – Green/white (–)

Standard: 4.75 – 5.25 V

Is the voltage within 4.75 – 5.25 V?

YES – Turn the ignition switch OFF. Connect the sensor unit 5P connector and start the DTC troubleshooting (page 5-16).

NO – GO TO STEP 2.

2. Sensor Unit Input Voltage Line Short Circuit Inspection

Turn the ignition switch OFF.

Check for continuity between the sensor unit 5P connector [1] of the wire side and ground.

Connection: Yellow/red – Ground

Is there continuity?

YES – Short circuit in Yellow/red wire

NO – GO TO STEP 3.

3. Sensor Unit Power Line Open Circuit Inspection

Disconnect the ECM 33P (Black) connector [1]. Check for continuities at the Yellow/red and Green/white wires between the sensor unit 5P connector [2] and ECM 33P (Black) connector.

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

TOOL:

Test probe

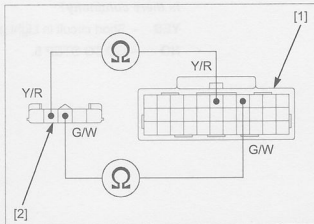
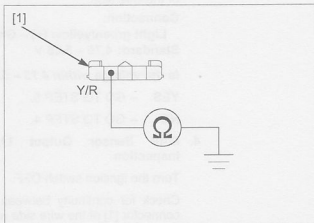
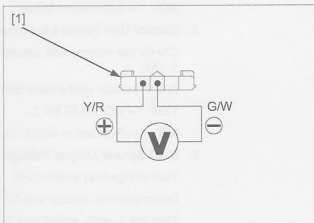
07ZAJ-RDJA110

Is there continuity?

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

NO –

- Open circuit in Yellow/red wire
- Open circuit in Green/white wire



DTC TROUBLESHOOTING

DTC 1-1 (MAP SENSOR LOW VOLTAGE)

1. MAP Sensor System Inspection

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

Check the MAP sensor with the HDS pocket tester.

Is about 0 V indicated?

YES — GO TO STEP 2.

NO — Intermittent failure

2. Sensor Unit Power Line Inspection

Check the sensor unit power line inspection (page 5-15).

Is the sensor unit power line normal?

YES — GO TO STEP 3.

NO — Replace or repair the abnormal circuit.

3. MAP Sensor Output Voltage Inspection

Turn the ignition switch OFF.

Disconnect the sensor unit 5P connector [1].

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

Measure the voltage at the sensor unit 5P connector of the wire side.

Connection:

Light green/yellow (+) — Green/white (-)

Standard: 4.75 — 5.25 V

Is the voltage within 4.75 — 5.25 V?

YES — GO TO STEP 5.

NO — GO TO STEP 4.

4. MAP Sensor Output Line Short Circuit Inspection

Turn the ignition switch OFF.

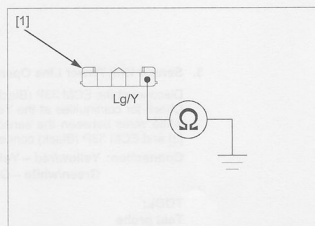
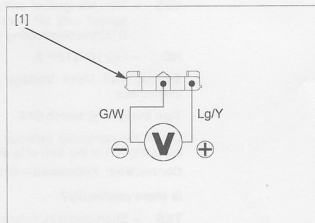
Check for continuity between the sensor unit 5P connector [1] of the wire side and ground.

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 sensor unit with a known good one (page 5-46).

Erase the DTC's (page 5-13).

Turn the ignition switch OFF.

Connect the sensor unit 5P connector.

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

Check the MAP sensor with the HDS pocket tester.

Is DTC 1-1 indicated?

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

NO – Faulty original sensor unit (MAP sensor)

DTC 1-2 (MAP SENSOR HIGH VOLTAGE)**1. MAP Sensor System Inspection 1**

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

Check the MAP sensor with the HDS pocket tester.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO –

- Intermittent failure
- Loose or poor contact on the sensor unit 5P connector

2. Sensor Unit Power Line Inspection

Check the sensor unit power line inspection (page 5-15).

Is the sensor unit power line normal?

YES – GO TO STEP 3.

NO – Replace or repair the abnormal circuit.

3. MAP Sensor System Inspection 2

Turn the ignition switch OFF.

Disconnect the sensor unit 5P connector [1].

Connect the sensor unit 5P connector terminals at the wire side with a jumper wire [2].

Connection:

Light green/yellow – Green/white

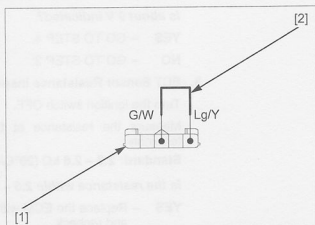
Turn the ignition switch ON and engine stop switch "O".

Check the MAP sensor with the HDS pocket tester.

Is about 0 V indicated?

YES – Faulty sensor unit (MAP sensor)

NO – GO TO STEP 4.



FUEL SYSTEM (PGM-FI)

4. MAP Sensor Output Line Open Circuit Inspection

Turn the ignition switch OFF.

Remove the jumper wire.

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

Check the continuity between the ECM 33P (Black) connector and sensor unit 5P connector [2] of the wire side.

Connection:

Light green/yellow – Light green/yellow

TOOL:

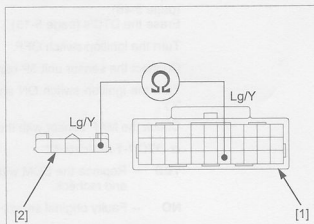
Test probe

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 7-1 (ECT SENSOR LOW VOLTAGE)

1. ECT Sensor System Inspection

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

Check the ECT sensor with the HDS pocket tester.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. ECT Sensor Inspection

Turn the ignition switch OFF.

Disconnect the ECT sensor 3P connector.

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

Check the ECT sensor with the HDS pocket tester.

Is about 0 V indicated?

YES – GO TO STEP 4.

NO – GO TO STEP 3.

3. ECT Sensor Resistance Inspection

Turn the ignition switch OFF.

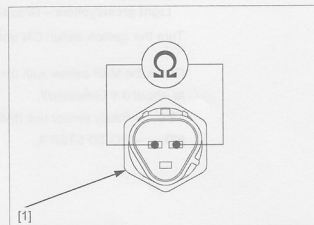
Measure the resistance at the ECT sensor [1] terminals.

Standard: 2.3 – 2.6 kΩ (20°C/68°F)

Is the resistance within 2.3 – 2.6 kΩ (20°C/68°F)?

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

NO – Faulty ECT sensor



4. ECT Sensor Short Circuit Inspection

Turn the ignition switch OFF.

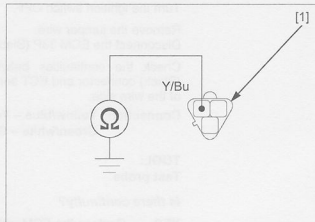
Check for continuity between the ECT sensor 3P connector [1] of the wire side and ground.

Connection: Yellow/blue – Ground

Is there continuity?

YES – Short circuit in Yellow/blue wire

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

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

NOTE:

Before starting the inspection, check for loose or poor contact on the ECT sensor 3P connector and recheck the DTC.

1. ECT Sensor System Inspection

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

Check the ECT sensor with the HDS pocket tester.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO –

- Intermittent failure
- Loose or poor contact on the ECT sensor 3P connector

2. ECT Sensor Inspection

Turn the ignition switch OFF.

Disconnect the ECT sensor 3P connector [1].

Connect the ECT sensor 3P connector terminals at the wire side with a jumper wire [2].

Connection: Yellow/blue – Green/white

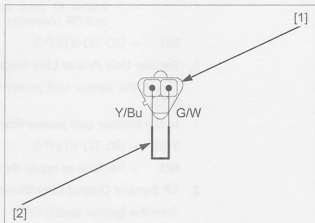
Turn the ignition switch ON and engine stop switch "O".

Check the ECT sensor with the HDS pocket tester.

Is about 0 V indicated?

YES – Inspect the ECT sensor (page 20-12).

NO – GO TO STEP 3.



FUEL SYSTEM (PGM-FI)

3. ECT Sensor Open Circuit Inspection

Turn the ignition switch OFF.

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

Check the continuities between the ECM 33P (Black) connector and ECT sensor 3P connector [2] of the wire side.

Connection: Yellow/blue – Yellow/blue
Green/white – Green/white

TOOL:

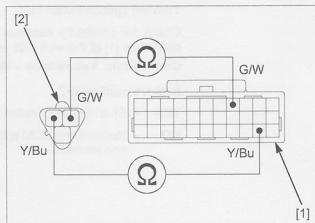
Test probe

07ZAJ-RDJA110

Is there continuity?

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

NO –
• Open circuit in Yellow/blue wire
• Open circuit in Green/white wire



DTC 8-1 (TP SENSOR LOW VOLTAGE)

NOTE:

Before starting the inspection, check for loose or poor contact on the sensor unit 5P connector and recheck the DTC.

1. TP Sensor System Inspection

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

Check the TP sensor with the HDS pocket tester when the throttle fully closed.

Is about 0 V indicated?

YES –
• Intermittent failure
• Loose or poor contact on the sensor unit 5P connector

NO – GO TO STEP 2.

2. Sensor Unit Power Line Inspection

Check the sensor unit power line inspection (page 5-15).

Is the sensor unit power line normal?

YES – GO TO STEP 3.

NO – Replace or repair the abnormal circuit.

3. TP Sensor Output Line Short Circuit Inspection

Turn the ignition switch OFF.

Disconnect the sensor unit 5P connector [1].

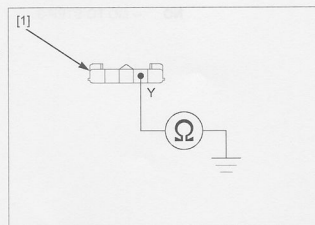
Check for continuity between the sensor unit 5P connector of the wire side and ground.

Connection: Yellow – Ground

Is there continuity?

YES – Short circuit in Yellow wire

NO – GO TO STEP 4.



4. TP Sensor Output Line Open Circuit Inspection

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

Check for continuity between the ECM 33P (Black) connector and sensor unit 5P connector [2] of the wire side.

Connection: Yellow – Yellow

TOOL:

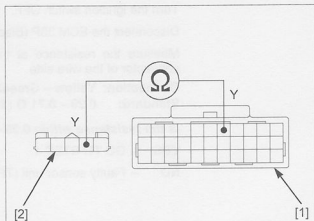
Test probe

07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in Yellow wire

**5. TP Sensor Inspection**

Replace the sensor unit with a known good one (page 5-46).

Connect the sensor unit 5P and ECM 33P (Black) connectors.

Erase the DTC's (page 5-13).

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

Check the TP sensor with the HDS pocket tester.

Is DTC 8-1 indicated?

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

NO – Faulty original sensor unit (TP sensor)

DTC 8-2 (TP SENSOR HIGH VOLTAGE)**1. TP Sensor System Inspection**

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

Check the TP sensor with the HDS pocket tester.

Is about 5 V indicated?

YES – GO TO STEP 3.

NO – GO TO STEP 2.

2. TP Sensor Inspection

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

Is the voltage increase continuously?

YES – Intermittent failure

NO – Replace the TP sensor (sensor unit) with a known good one, and recheck.

FUEL SYSTEM (PGM-FI)

3. TP Sensor Resistance Inspection

Turn the ignition switch OFF.

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

Measure the resistance at the ECM 33P (Black) connector of the wire side.

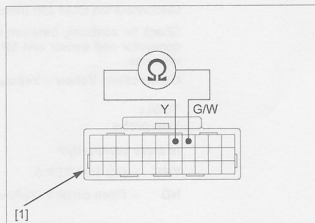
Connection: Yellow – Green/white

Standard: 0.29 – 0.71 Ω (20°C/68°F)

Is the resistance within 0.29 – 0.71 Ω ?

YES – GO TO STEP 4.

NO – Faulty sensor unit (TP sensor)



4. TP Sensor Power Input Voltage Inspection

Connect the ECM 33P (Black) connector.

Disconnect the sensor unit 5P connector [1].

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

Measure the voltage at the sensor unit 5P connector of the wire side.

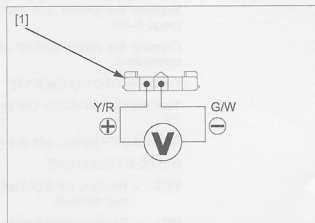
Connection: Yellow/red (+) – Green/white (–)

Standard: 4.75 – 5.25 V

Is the voltage within 4.75 – 5.25 V?

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

NO – • Open circuit in Green/white wire
• Open circuit in Yellow/red wire



DTC 9-1 (IAT SENSOR LOW VOLTAGE)

1. IAT Sensor System Inspection

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

Check the IAT sensor with the HDS pocket tester.

Is about 0 V indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. IAT Sensor Inspection

Turn the ignition switch OFF.

Disconnect the sensor unit 5P connector.

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

Check the IAT sensor with the HDS pocket tester.

Is about 0 V indicated?

YES – GO TO STEP 3.

NO – Faulty sensor unit (IAT sensor)

3. IAT Sensor Voltage Input Line Short Circuit Inspection

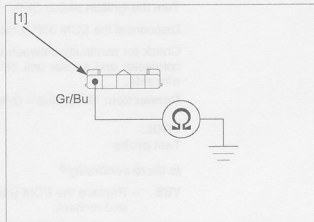
Check for continuity between the sensor unit 5P connector [1] of the wire side and ground.

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)

NOTE:

Before starting the inspection, check for loose or poor contact on the sensor unit 5P connector and recheck the DTC.

1. IAT Sensor System Inspection

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

Check the IAT sensor with the HDS pocket tester.

Is about 5 V indicated?

YES – GO TO STEP 2.

NO –

- Intermittent failure
- Loose or poor contact on the sensor unit 5P connector

2. Sensor Unit Power Line Inspection

Check the sensor unit power line inspection (page 5-15).

Is the sensor unit power line normal?

YES – GO TO STEP 3.

NO – Replace or repair the abnormal circuit.

3. IAT Sensor Inspection

Turn the ignition switch OFF.

Disconnect the sensor unit 5P connector [1].

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

Connection: Gray/blue – Green/white

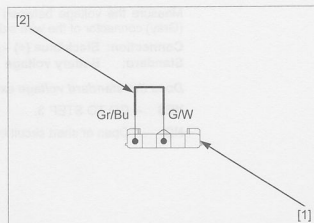
Turn the ignition switch ON and engine stop switch "O".

Check the IAT sensor with the HDS pocket tester.

Is about 0 V indicated?

YES – Faulty sensor unit (IAT sensor)

NO – GO TO STEP 4.



FUEL SYSTEM (PGM-FI)

4. IAT Sensor Voltage Input Line Open Circuit Inspection

Turn the ignition switch OFF.

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

Check for continuity between the ECM 33P (Black) connector and sensor unit 5P connector [2] of the wire side.

Connection: Gray/blue – Gray/blue

TOOL:

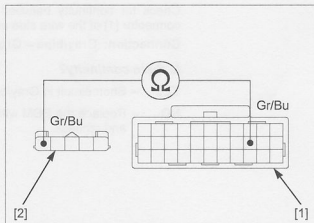
Test probe

07ZAJ-RDJA110

Is there continuity?

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

NO – Open circuit in Gray/blue wire



DTC 12-1 (FUEL INJECTOR)

NOTE:

Before starting the inspection, check for loose or poor contact on the fuel injector connector and recheck the DTC.

1. Fuel Injector System Inspection

Erase the DTC's (page 5-13).

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

Start the engine and check the fuel injector with the HDS pocket tester.

Is the DTC 12-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure
• Loose or poor contact on the fuel injector 2P (Gray) connector

2. Fuel Injector Input Voltage Inspection

Turn the ignition switch OFF.

Disconnect the fuel injector 2P (Gray) connector [1].

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

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

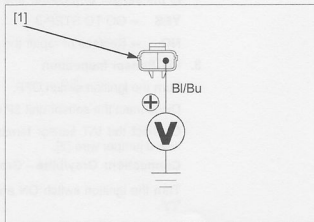
Connection: Black/blue (+) – Ground (-)

Standard: Battery voltage

Does the standard voltage exist?

YES – GO TO STEP 3.

NO – Open or short circuit in Black/blue wire



3. Fuel injector Signal Line Short Circuit Inspection

Turn the ignition switch OFF.

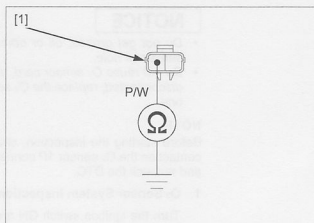
Check for continuity between the fuel injector 2P (Gray) connector [1] of wire side and ground.

Connection: Pink/white – Ground

Is there continuity?

YES – Short circuit in Pink/white wire

NO – GO TO STEP 4.



4. Fuel injector Resistance Inspection

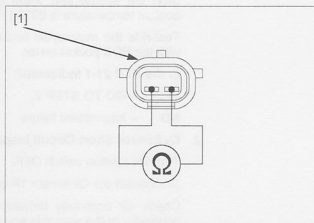
Measure the resistance between the fuel injector 2P (Gray) connector [1] terminals.

Standard: 8 – 16 Ω (20°C/68°F)

Is the resistance within 8 – 16 Ω (20°C/68°F)?

YES – GO TO STEP 5.

NO – Faulty fuel injector



5. 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 (Gray) connector [2] of the wire side.

Connection: Pink/white – Pink/white

TOOL:

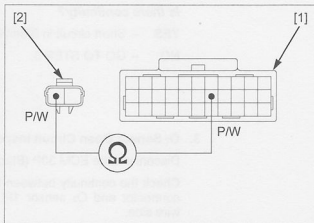
Test probe

07ZAJ-RDJA110

Is there continuity?

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

NO – Open circuit in Pink/white wire



DTC 21-1 (O₂ SENSOR)

NOTICE

- Do not get grease, oil or other materials in the O₂ sensor air hole.
- Do not reuse O₂ sensor cord, if the O₂ sensor cap is disconnected, replace the O₂ sensor cord with a new one.

NOTE:

Before starting the inspection, check for loose or poor contact on the O₂ sensor 1P connector or O₂ sensor cap and recheck the DTC.

1. O₂ Sensor System Inspection

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

Start the engine and warm up the engine up to coolant temperature is 80°C (176°F).

Test-ride the motorcycle and check the O₂ sensor with the HDS pocket tester.

Is the DTC 21-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. O₂ Sensor Short Circuit Inspection

Turn the ignition switch OFF.

Disconnect the O₂ sensor 1P connector [1].

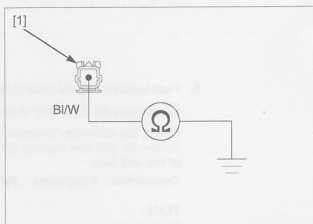
Check for continuity between the O₂ sensor 1P connector of the wire side and ground.

Connection: Black/white – Ground

Is there continuity?

YES – Short circuit in Black/white wire

NO – GO TO STEP 3.



3. O₂ Sensor Open Circuit Inspection

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

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

Connection: Black/white – Black/white

TOOL:

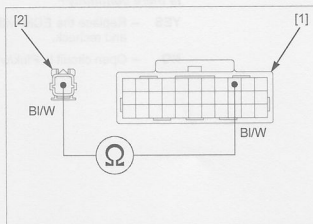
Test probe

07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 4.

NO – Open circuit in Black/white wire



4. O₂ Sensor Inspection

Replace the O₂ sensor and O₂ sensor cord with a known good one (page 5-57).
Erase the DTC's (page 5-13).

Connect the O₂ sensor 1P connector and ECM 33P (Black) connector.

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

Start the engine and warm up the engine up to coolant temperature is 80°C (176°C).

Test-ride the motorcycle and recheck the O₂ sensor with the HDS pocket tester.

Is the DTC 21-1 indicated?

- YES** – Replace the ECM with a known good one, and recheck.
- NO** – Faulty original O₂ sensor and/or O₂ sensor cord

DTC 29-1 (IACV)**NOTE:**

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

1. Reread DTC

Erase the DTC's (page 5-13).

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

Check the IACV with the HDS pocket tester.

Is the DTC 29-1 indicated?

- YES** – GO TO STEP 2.
- NO** –
- Intermittent failure
 - Loose or poor contact on the IACV 4P (Black) connector

2. IACV Short Circuit Inspection

Turn the ignition switch OFF.

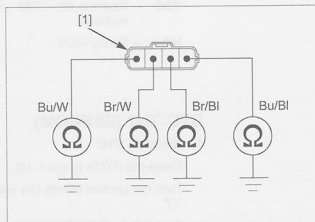
Disconnect the IACV 4P (Black) connector [1].

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

Connection: Blue/white – Ground
Brown/white – Ground
Brown/black – Ground
Blue/black – Ground

Is there continuity?

- YES** –
- Short circuit in Blue/white or Brown/white wire
 - Short circuit in Brown/black or Blue/black wire
- NO** – GO TO STEP 3.



FUEL SYSTEM (PGM-FI)

3. IACV Open Circuit Inspection

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

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

Connection: Brown/white – Brown/white
Blue/white – Blue/white
Brown/black – Brown/black
Blue/black – Blue/black

TOOL:

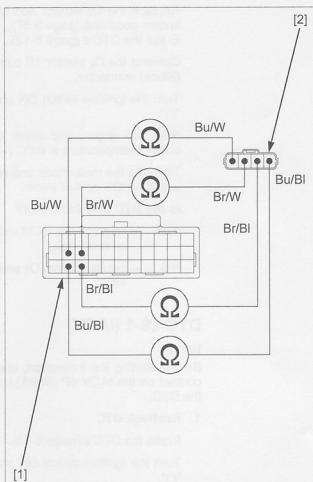
Test probe

07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 4.

NO – • Open circuit in Blue/white or Brown/white wire
• Open circuit in Brown/black or Blue/black wire



4. IACV Resistance Inspection

Measure the resistance at the IACV 4P (Black) connector [1] at the motor side.

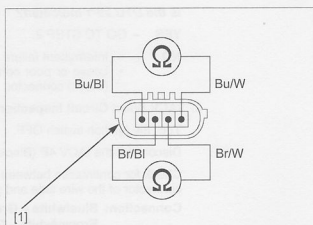
Connection: Blue/white – Blue/black
Brown/white – Brown/black

Standard: 110 – 150 Ω (25°C/77°F)

Is the resistance within 110 – 150 Ω (25°C/77°F)?

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

NO – Faulty IACV



DTC 33-2 (EEPROM)

1. Recheck DTC

Erase the DTC's (page 5-13).

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

Recheck the ECM EEPROM.

Is the DTC 33-2 indicated?

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

NO – Intermittent failure

DTC 54-1 (BANK ANGLE SENSOR LOW VOLTAGE)

1. Recheck DTC

Erase the DTC's (page 5-13).

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

Check the bank angle sensor with the HDS pocket tester.

Is the DTC 54-1 indicated?

YES – GO TO STEP 2.

NO – Intermittent failure

2. Bank Angle Sensor Power Input Voltage Inspection

Turn the ignition switch OFF.

Disconnect the bank angle sensor 3P connector [1].

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

Measure the voltage at the bank angle sensor connector of the wire side.

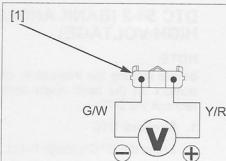
Connection: Yellow/red (+) – Green/white (–)

Standard: 4.75 – 5.25 V

Is the voltage within 4.75 – 5.25 V?

YES – GO TO STEP 4.

NO – GO TO STEP 3.



3. Bank Angle Sensor Input Voltage Line Short Circuit Inspection

Turn the ignition switch OFF.

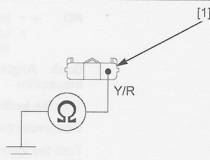
Check the continuity between the bank angle sensor 3P connector [1] of the wire side and ground.

Connection: Yellow/red – Ground

Is there continuity?

YES – Short circuit in Yellow/red wire

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



4. Bank Angle Sensor Output Line Short Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ECM 33P (Black) connector.

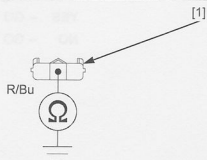
Check the continuity between the bank angle sensor 3P connector [1] of the wire side and ground.

Connection: Red/blue – Ground

Is there continuity?

YES – Short circuit in Red/blue wire

NO – GO TO STEP 5.



5. Bank Angle Sensor Inspection

Replace the bank angle sensor with a known good one (page 5-55).

Erase the DTC's (page 5-13).

Connect the bank angle sensor 3P connector.

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

Check the bank angle sensor with the HDS pocket tester.

Is DTC 54-2 indicated?

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

NO — Faulty original bank angle sensor

DTC 54-2 (BANK ANGLE SENSOR HIGH VOLTAGE)

NOTE:

Before starting the inspection, check for loose or poor contact on the bank angle sensor 3P connector and recheck the DTC.

1. Recheck DTC

Erase the DTC's (page 5-13).

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

Check the bank angle sensor with the HDS pocket tester.

Is the DTC 54-2 indicated?

YES — GO TO STEP 2.

NO —

- Intermittent failure
- Loose or poor contact on the bank angle sensor 3P connector

2. Bank Angle Sensor Power Input Voltage Inspection

Turn the ignition switch OFF.

Disconnect the bank angle sensor 3P connector [1].

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

Measure the voltage at the bank angle sensor 3P connector of the wire side.

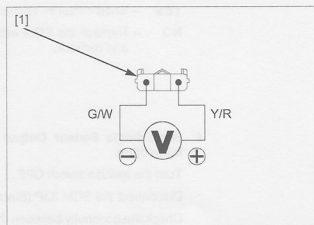
Connection: Yellow/red (+) – Green/white (–)

Standard: 4.75 – 5.25 V

Is the voltage within 4.75 – 5.25 V?

YES — GO TO STEP 4.

NO — GO TO STEP 3.



3. Bank Angle Sensor Input Voltage Line Open Circuit Inspection

Turn the ignition switch OFF.

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

Check the continuities between the ECM 33P (Black) connector and bank angle sensor 3P connector [2] of the wire side.

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

TOOL:

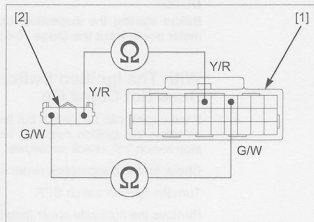
Test probe

07ZAJ-RDJA110

Are there continuities?

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

NO – • Open circuit in Yellow/red wire
• Open circuit in Green/white wire



4. Bank Angle Sensor Output Line Open Circuit Inspection

Turn the ignition switch OFF.

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

Check the continuity between the ECM 33P (Black) connector and bank angle sensor 3P connector [2] of the wire side.

Connection: Red/blue – Red/blue

TOOL:

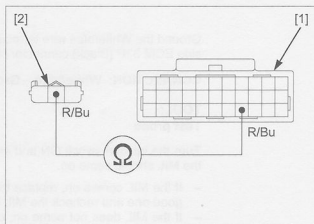
Test probe

07ZAJ-RDJA110

Is there continuity?

YES – Inspect the bank angle sensor (page 5-55).

NO – Open circuit in Red/blue wire



MIL CIRCUIT TROUBLESHOOTING

NOTE:

Before starting the inspection, check the combination meter power input line (page 20-6).

With The Ignition Switch ON, The MIL Does Not Come On

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

Check for the combination meter function.

Turn the ignition switch OFF.

Remove the right side cover (page 2-16).

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



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

CONNECTION: White/blue – Ground

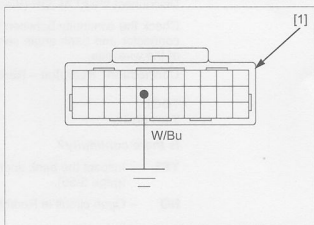
TOOL:

Test probe

07ZAJ-RDJA110

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

- If the MIL comes on, replace the ECM with a known good one and recheck the MIL indication.
- If the MIL does not come on, check for open circuit in the White/blue wire between the MIL and ECM 33P (Black) connector.
- If the wire is OK, replace the combination meter.



With The Ignition Switch ON, The MIL Does Not Go Off Within A Few Seconds (Engine starts)

Turn the ignition switch OFF.

Remove the right side cover (page 2-16).

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

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

- If the MIL come on, check for short circuit in the White/blue wire between the combination meter and ECM. If the White/blue wire is OK, replace the ECM with a known good one and recheck.
- If the MIL turns off, check the following.



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

CONNECTION: Blue – Ground
STANDARD: No continuity

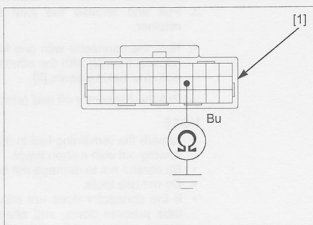
TOOL:

Test probe

07ZAJ-RDJA110

If there is continuity, check for short circuit in the Blue wire between the DLC and ECM.

If there is no continuity, replace the ECM with a known good one and recheck.



FUEL LINE INSPECTION

FUEL PRESSURE RELIEVING

NOTE:

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

1. Turn the ignition switch OFF.
2. Lift and support the fuel tank (page 3-5).
3. Disconnect the fuel pump 5P connector [1].
 Turn the ignition switch ON and engine stop switch "C".
4. Start the engine, and let it idle until the engine stalls.
5. Turn the ignition switch OFF.
6. Disconnect the battery negative (-) cable (page 17-6).



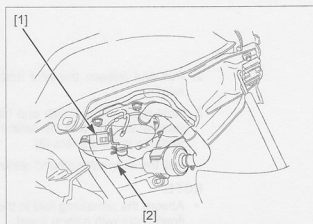
QUICK CONNECT FITTING REMOVAL

NOTE:

Do not bend or twist fuel feed hose.

FUEL PUMP SIDE

1. Relieve the fuel pressure (page 5-33).
2. Check the fuel quick connect fitting [1] for dirt, and clean if necessary.
 Place a shop towel [2] over the quick connect fitting.

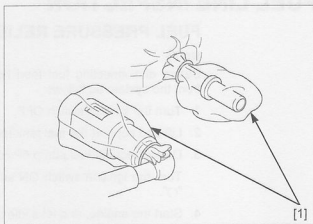
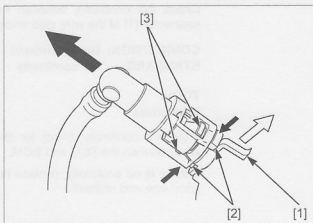


FUEL SYSTEM (PGM-FI)

3. Pull and release the joint rubber [1] from the retainer.
 4. 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 off and remove the retainer.

NOTE:

- Absorb the remaining fuel in the fuel feed 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.
5. To prevent damage and keep foreign matter out, cover the disconnected connector and pipe end with the plastic bags [1].



FUEL INJECTOR SIDE

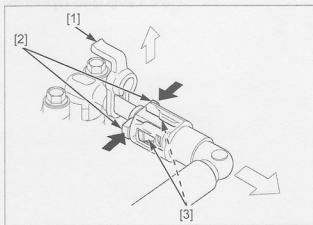
1. Relieve the fuel pressure (page 5-33).
- Check the fuel quick connect fitting [1] for dirt, and clean if necessary.
- Place a shop towel over the quick connect fitting.



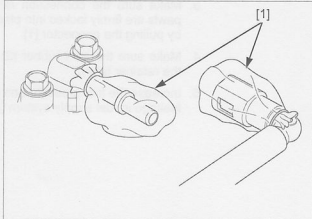
2. Pull and release the joint rubber [1] tabs from the retainer.
 3. Hold the connector with one hand and squeeze the retainer tabs [2] with the other hand to release them from the locking pawls [3].
- Pull the connector off and remove the retainer.

NOTE:

- Absorb the remaining fuel in the fuel feed 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.



4. To prevent damage and keep foreign matter out, cover the disconnected connector and pipe end with the plastic bags [1].



QUICK CONNECT FITTING INSTALLATION

NOTE:

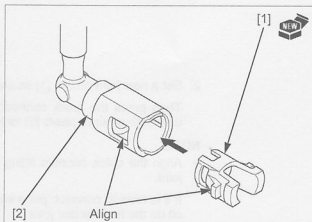
- Always replace the retainer and joint rubber of the quick connect fitting when the fuel feed hose is disconnected.
- Replace the retainer and joint rubber with the same manufacturer's item that was removed.
- Do not bent or twist fuel feed hose.

FUEL PUMP SIDE

1. Insert a new retainer [1] into the connector [2].

NOTE:

- Align new retainer locking pawls with the connector grooves.

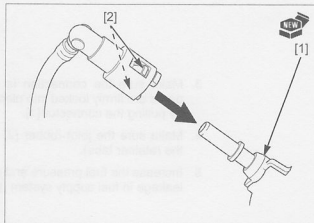


2. Set a new joint rubber [1] as shown.

Then press the quick connect fitting onto the pipe until both retainer pawls [2] lock with a "CLICK".

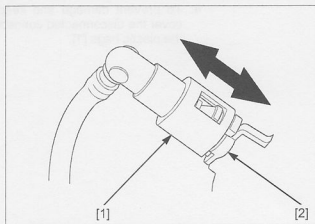
NOTE:

- Align the quick connect fitting with the pipe.
- If it is hard to connect, put a small amount of engine oil on the pipe end.



FUEL SYSTEM (PGM-FI)

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 joint rubber [2] is in place (between the retainer tabs).
5. Increase the fuel pressure and check that there is no leakage in fuel supply system (page 5-37).

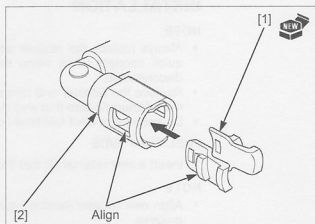


FUEL INJECTOR SIDE

1. Insert a new retainer [1] into the connector [2].

NOTE:

- Align new retainer locking pawls with the connector grooves.



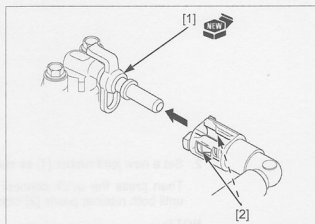
2. Set a new joint rubber [1] as shown.

Then press the quick connect fitting onto the pipe until both retainer pawls [2] lock with a "CLICK".

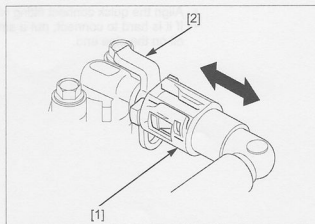
NOTE:

- Align the quick connect fitting with the fuel injector joint.

If it is hard to connect, put a small amount of engine oil on the fuel injector joint.



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 joint rubber [2] is in place (between the retainer tabs).
5. Increase the fuel pressure and check that there is no leakage in fuel supply system (page 5-37).



FUEL PRESSURE NORMALIZATION

1. Connect the fuel pump 5P connector [1].
Connect the battery negative (–) cable (page 17-6).
2. Turn the ignition switch ON and engine stop switch "C".

NOTE:

- Do not start the engine.
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.
Turn the ignition switch OFF.
Remove the suitable support and close the fuel tank (page 3-5).



FUEL PRESSURE TEST

Relieve the fuel pressure and disconnect the quick connect fitting from the fuel pump (page 5-33).

Attach the fuel pressure gauge, attachments and manifold.

TOOLS:

Fuel pressure gauge, 0 – 100 psi [1]	07406-0040004
Pressure gauge manifold [2]	07ZAJ-S5A0111
Hose attachment, 9 mm/9 mm [3]	07ZAJ-S5A0120
Hose attachment, 6 mm/9 mm [4]	07ZAJ-S5A0130
Attachment joint, 6 mm/9 mm [5]	07ZAJ-S5A0150

TOOLS, U.S.A. only:

Fuel pressure gauge, 0 – 100 psi	07406-004000B
Pressure manifold hose	07AMJ-HW3A100
Adaptor, male "B"	07AAJ-S6MA200
Adaptor, female "B"	07AAJ-S6MA400

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

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

Start the engine and let it idle.

Read the fuel pressure.

STANDARD: 294 kPa (3.0 kgf/cm², 43 psi)

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

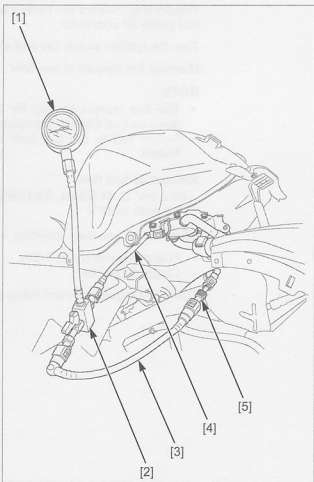
If the fuel pressure is extremely lower than specified, inspect the following:

- Fuel line leaking
- Pinched or clogged fuel feed hose or fuel tank breather hose
- Fuel pump unit (page 5-39)
- Clogged fuel filter

After inspection, relieve the fuel pressure (page 5-33).

Remove the fuel pressure gauge, attachment and manifold from the fuel pump.

Connect the quick connect fitting (page 5-35).



FUEL SYSTEM (PGM-FI)

FUEL FLOW INSPECTION

Relieve the fuel pressure and disconnect the quick connect fitting (page 5-33).

Wipe off spilled gasoline.

Connect the special tool to the fuel pump joint.

TOOL:

Hose attachment,
6 mm/9 mm [1]

07ZAJ-S5A0130

NOTE:

Make sure the fuel pressure gauge is installed when using U.S.A. tools.

TOOLS, U.S.A. only:

Fuel pressure gauge,
0 – 100 psi

07406-004000B

Pressure manifold hose

07AMJ-HW3A100

Adaptor, female "B"

07AAJ-S6MA400

Place the end of the hose into an approved gasoline container.

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

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

Measure the amount of fuel flow.

NOTE:

- The fuel pump operates for 2 seconds. Repeat 5 times so that the total measuring time.
- Return fuel to the fuel tank when the first fuel is flowed.

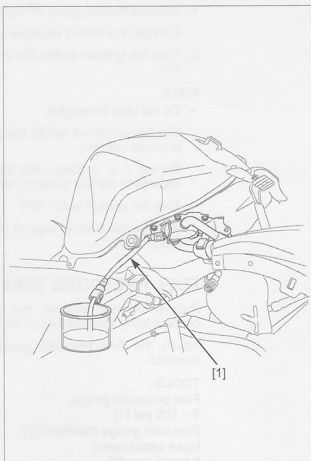
Amount of fuel flow:

69.2 cm³ (2.34 US oz, 2.44 Imp oz) minimum/10 seconds at 12 V

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

- Fuel pump unit (page 5-39)
- Clogged fuel filter

Connect the quick connect fitting (page 5-35).



FUEL TANK

REMOVAL/INSTALLATION

Relieve the fuel pressure and disconnect the quick connect fitting (page 5-33).

Release the fuel feed hose [1] from the hose guide [2].

Release the clamp [3] from the setting plate.

Remove the bolts [4], collar [5], washers [6], mounting rubbers [7] and fuel tank [8].

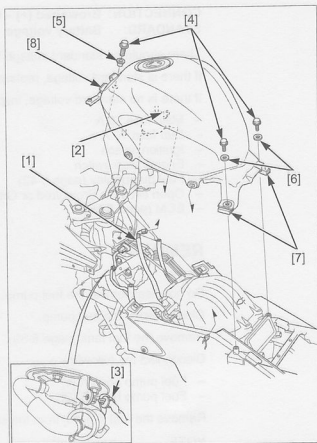
NOTE:

Place the suitable support under the front side of the removed fuel tank to avoid damage the fuel filter.

Install the fuel tank in the reverse order of removal.

Connect the quick connect fitting (page 5-35).

Route the hose and wire properly (page 1-18).



FUEL PUMP UNIT

INSPECTION

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

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

Turn the ignition switch OFF.

Lift and support the fuel tank (page 3-5).

Disconnect the fuel pump 5P connector [1].



FUEL SYSTEM (PGM-FI)

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

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

CONNECTION: Brown/red (+) – Green (–)

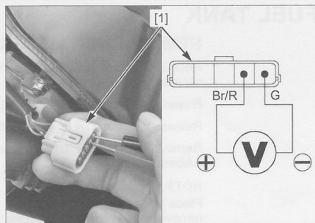
STANDARD: Battery voltage

There should be standard voltage for a few seconds.

If there is standard voltage, replace the fuel pump unit.

If there is no standard voltage, inspect the following:

- Main fuse 30 A
- Sub fuse 10 A
- Ignition switch
- Engine stop switch
- Fuel pump relay (page 5-42)
- Open circuit in Brown/red or Green wire
- ECM (page 5-56)



REMOVAL

NOTE:

Do not disassemble the fuel pump.

Clean around the fuel pump.

Remove the fuel tank (page 5-39).

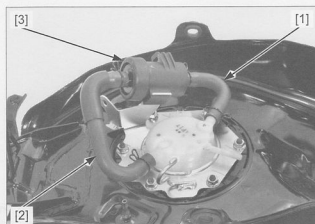
Disconnect the following:

- Fuel pump hose A [1]
- Fuel pump hose B [2]

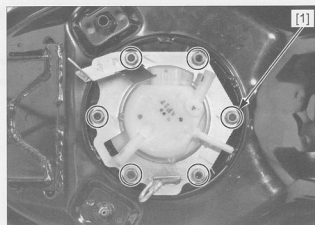
Remove the fuel filter [3] from the setting plate.

NOTE:

Prevent the remaining fuel in the fuel pump hoses and fuel filter from the flowing out with a shop towel.

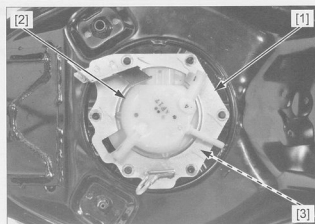


Loosen the fuel pump setting plate nuts [1] in a crisscross pattern in 2 or 3 steps and remove the nuts.



Be careful not to damage the fuel level sensor float arm.

Remove the setting plate [1], fuel pump unit [2] and packing [3].



INSPECTION

Check the fuel pump unit for wear or damage, replace it if necessary.



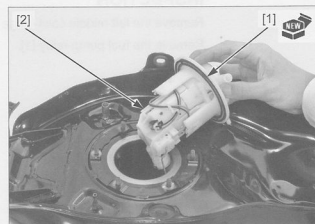
INSTALLATION

Always replace the packing with a new one. Be careful not to get dirt and debris between the fuel pump unit and packing.

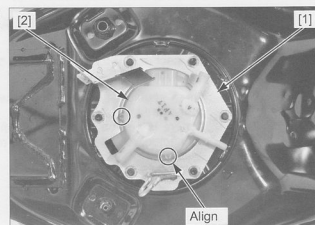
Install a new packing [1] onto the fuel pump unit [2].

Be careful not to damage the fuel level sensor float arm.

Install the fuel pump unit into the fuel tank.



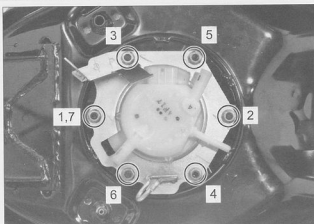
Install the fuel pump setting plate [1] onto the fuel pump unit [2] by aligning the slots of the setting plate and tabs of the fuel pump unit.



FUEL SYSTEM (PGM-FI)

Install and tighten the fuel pump setting plate nuts to the specified sequence as shown.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Route the pump unit wire properly (page 1-18).

Install the fuel filter [1] to the setting plate with the flange side facing forward.

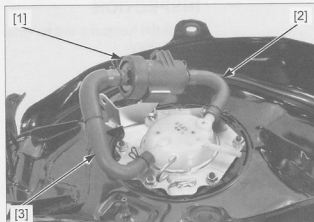
Connect the following:

- Fuel pump hose A [2]
- Fuel pump hose B [3]

NOTE:

Install the hoses aligning its paint mark with bosses of filter.

Install the fuel tank (page 5-39).

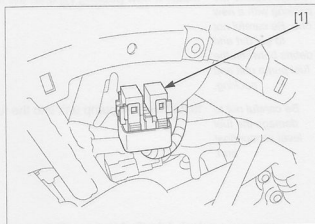


FUEL PUMP RELAY

INSPECTION

Remove the left middle cowl (page 2-7).

Remove the fuel pump relay [1].

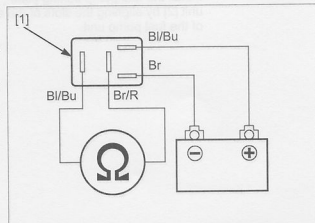


Connect a ohmmeter to the fuel pump relay [1] terminals.

Connect a 12 V battery to the fuel pump relay terminals as shown.

There should be continuity only when 12 V battery is connected.

If there is no continuity only when the 12 V battery is connected, replace the fuel pump relay.



AIR CLEANER HOUSING

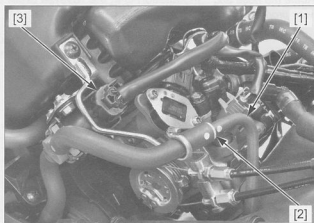
REMOVAL/INSTALLATION

Remove the fuel tank (page 5-39).

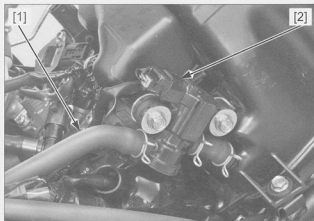
Rotate the side cover out of the way to allow access.

Disconnect the vacuum hose [1] from the hose joint [2].

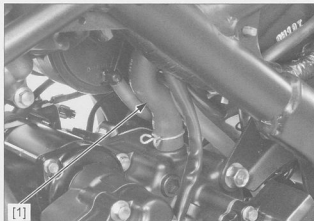
Disconnect the EVAP purge control solenoid valve 2P connector [3].



Disconnect the secondary air supply hose [1] and PAIR control solenoid valve 2P (Black) connector [2].



Disconnect the crankcase breather hose [1].



Loosen the connecting hose band screw [1].



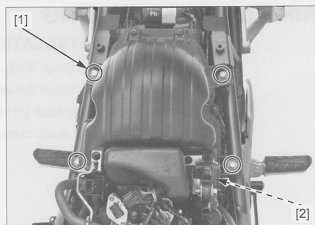
FUEL SYSTEM (PGM-FI)

Remove the bolts [1] and air cleaner housing.
Disconnect the air cleaner housing drain hose [2].

Installation is in the reverse order of removal.

NOTE:

After installing the air cleaner housing, make sure the air cleaner housing drain hose is not kinked or pinched.



Route the hose and wire properly (page 1-18).

DISASSEMBLY/ASSEMBLY

Remove the PAIR control solenoid valve (page 5-59).

Remove the screw [1] and PAIR control solenoid valve stay [2].

Remove the Air cleaner cover screws [3] and element holder lid [4].

Remove the air cleaner element [5].

Loosen the band screw [6].

Remove the resonator [7] by releasing its tab [8] from the air cleaner cover [9] slot.

Disconnect the canister-to-EVAP purge control solenoid valve hose [10] from the canister [11].

Remove the screw [12], EVAP purge control solenoid valve [13] and stay [14].

Remove the canister from the air cleaner cover tabs.

Remove the following:

- Air cleaner cover screws
- Air cleaner cover
- Packings [15]
- Element holder [16]
- Air cleaner case [17]

Assembly is in the reverse order of disassembly.

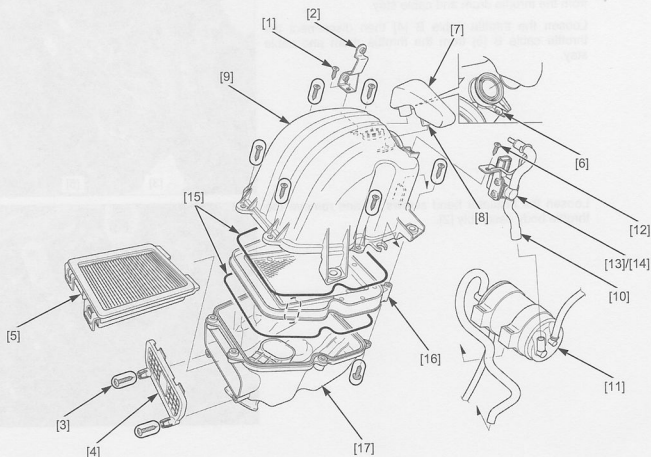
NOTE:

Make sure the packings are in good condition, replace them with new one if necessary.

TORQUE:

Air cleaner cover screw:

1.1 N·m (0.1 kgf·m, 0.8 lbf·ft)



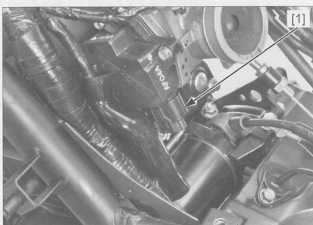
THROTTLE BODY

REMOVAL

Relieve the fuel pressure and disconnect the quick connect fitting from the fuel injector side (page 5-34).

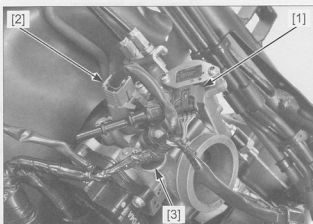
Remove the air cleaner housing (page 5-43).

Disconnect the sensor unit 5P connector [1].



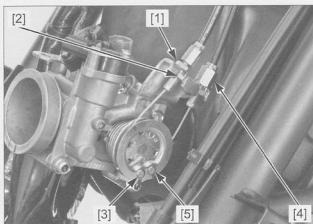
Disconnect the IACV 4P (Black) connector [1] and fuel injector 2P (Gray) connector [2].

Release the clamp [3] from the clamber stay.

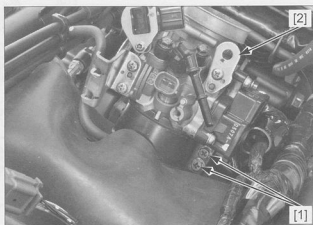


Loosen the throttle cable A adjuster lock nut [1] and adjusting nut [2] then disconnect the throttle cable A [3] from the throttle drum and cable stay.

Loosen the throttle cable B [4] then disconnect the throttle cable B [5] from the throttle drum and cable stay.



Loosen the insulator band screws [1] and remove the throttle body assembly [2].



DISASSEMBLY

NOTICE

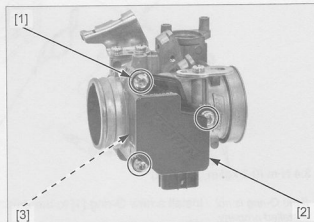
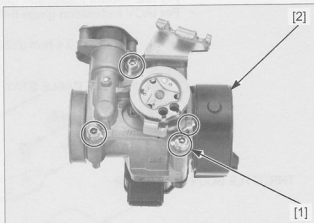
- Do not remove the sensor unit unless it is replaced.
- The throttle body/sensor unit is factory pre-set. Do not disassemble in a way other than shown in this manual.
- Do not snap the throttle valve from full open to full close after the throttle cable has been removed. It may cause incorrect idle operation.
- Do not damage the throttle body. It may cause incorrect throttle valve operation.
- Do not loosen or tighten the white painted nut and screw [1] of the throttle body. Loosening or tightening it can cause throttle valve and idle control failure.
- Always clean around the throttle body before each sensor removal to prevent dirt and debris from entering the air passage.

NOTE:

- For fuel injector removal (page 5-51).
- For IACV removal (page 5-53).

Remove the throttle body insulator [2].

Remove the sensor unit torx screws [1], sensor unit [2] and O-ring [3].



Cleaning the air passages and sensor hole with a piece of wire will damage the throttle body.

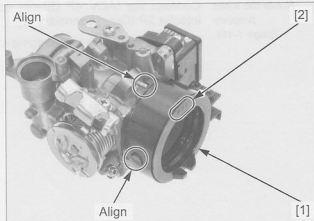
Clean the air passage of the throttle body using compressed air.
Check the air passage for clogs.



Install the throttle body insulator [1] to the throttle body by aligning the tab of the throttle body with the groove of the throttle body insulator.

NOTE:

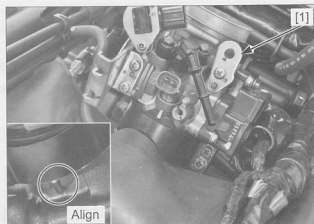
- Install the throttle body insulator with "KYJ" mark [2] facing cylinder head.
- Align the insulator band hole with the insulator boss.



INSTALLATION

Correctly position the rubber blanket against the back of the cylinder head.

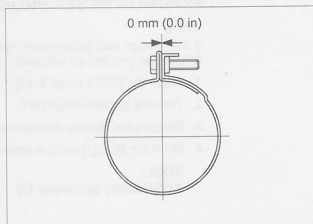
Install the throttle body assembly [1] to the cylinder head by aligning the tab of the cylinder head with the groove of the throttle body insulator.



Tighten the insulator band screws to the specified torque.

TORQUE: 4.2 N·m (0.4 kgf·m, 3.1 lbf·ft)

After tightening the insulator band screws, check that the width between the band ends clearance is within specification.



Connect the throttle cables [1] to the throttle drum and throttle cable stay.

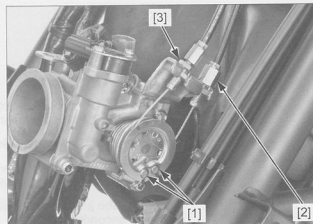
Tighten the throttle cable B [2] to the specified torque.

TORQUE: 3.0 N·m (0.3 kgf·m, 2.2 lbf·ft)

Tighten the throttle cable A adjuster lock nut [3] to the specified torque.

TORQUE: 3.0 N·m (0.3 kgf·m, 2.2 lbf·ft)

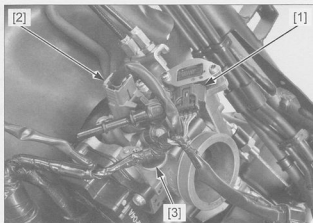
Adjust the throttle grip freeplay (page 3-6)



FUEL SYSTEM (PGM-FI)

Route the wires properly (page 1-18).

Connect the IACV 4P (Black) connector [1] and fuel injector 2P (Gray) connector [2].
Install the clamp [3] to the clamp stay.

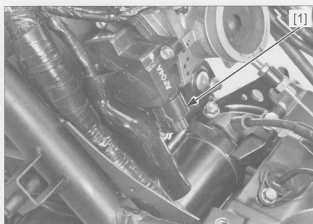


Connect the sensor unit 5P connector [1].

NOTE:

If the sensor unit is removed, reset the throttle valve fully closed position (page 5-50).

Install the air cleaner housing (page 5-43).



Route the hose and wire properly (page 1-18).

Connect the quick connect fitting to the fuel injector side (page 5-36).

THROTTLE VALVE FULLY CLOSED POSITION RESET PROCEDURE

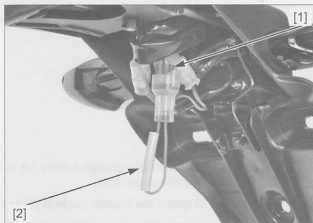
NOTE:

If the sensor unit is removed, reset the throttle valve fully closed position as following.

1. Erase the DTC's (page 5-13).
2. Turn the ignition switch OFF.
3. Remove the dummy connector.
4. Short the DLC [1] using a special tool.

TOOL:

SCS Service connector [2] 070PZ-ZY30100



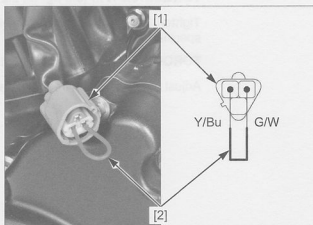
5. Disconnect the ECT sensor 3P connector [1].

Short the ECT sensor 3P connector terminals of the wire harness side with a jumper wire [2].

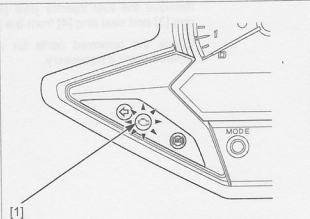
Connection: Yellow/blue – Green/white

6. Turn the ignition switch ON and engine stop switch "C", the MIL will then start blinking.

Disconnect the jumper wire while the MIL is blinking (within 10 seconds).

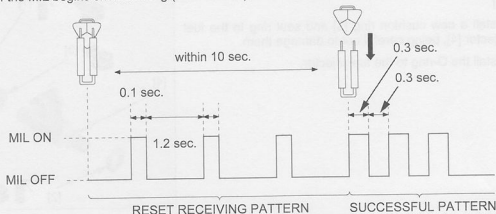


7. After disconnection of the jumper wire, the MIL [1] will start short blinking.



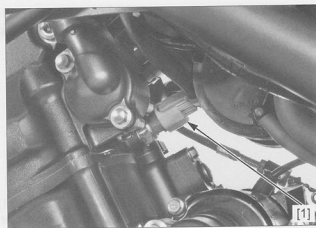
8. Check if the MIL blinks.

If the MIL begins short blinking (0.3 seconds), the throttle valve fully closed position is reset.



If the MIL stays lit, the throttle valve fully closed position is not reset, repeat the reset procedure from step 1.

9. Turn the ignition switch OFF.
10. Connect the ECT sensor 3P connector [1].



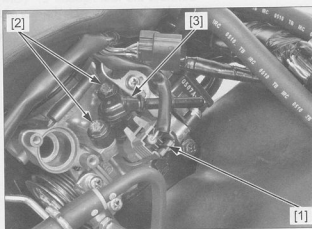
FUEL INJECTOR

REMOVAL

Relieve the fuel pressure and disconnect the quick connect fitting from the fuel injector side (page 5-34).

Disconnect the fuel injector 2P (Gray) connector [1].

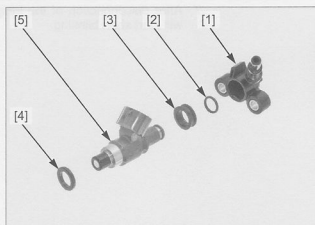
Remove the bolts [2] and fuel injector assembly [3] from the throttle body.



FUEL SYSTEM (PGM-FI)

Remove the fuel injector joint [1], O-ring [2], cushion ring [3] and seal ring [4] from the fuel injector [5].

Check the removed parts for wear or damage and replace them if necessary.

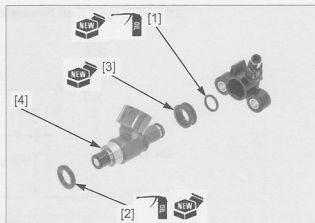


INSTALLATION

Apply engine oil to a new O-ring [1] and a new seal ring [2].

Install a new cushion ring [3] and seal ring to the fuel injector [4], being careful not to damage them.

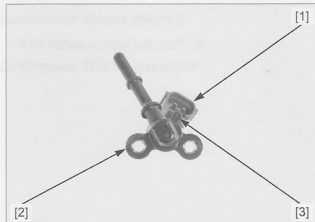
Install the O-ring to the fuel injector.



Install the fuel injector [1] into the fuel injector joint [2], being careful not to damage the O-ring.

NOTE:

Align the fuel injector body with the fuel injector joint [3] as shown.



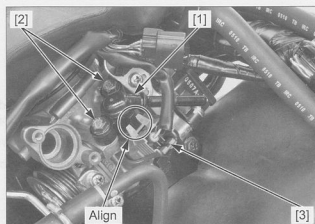
Be careful not to damage the seal ring.

Install the fuel injector assembly [1] to the throttle body. Install and tighten the fuel injector joint mounting bolts [2] alternately to the specified torque.

TORQUE: 5.1 N·m (0.5 kgf·m, 3.8 lbf·ft)

Connect the fuel injector 2P (Gray) connector [3] while aligning its groove with the tab of the fuel injector joint.

Connect the quick connect fitting to the fuel injector side (page 5-36).



IACV

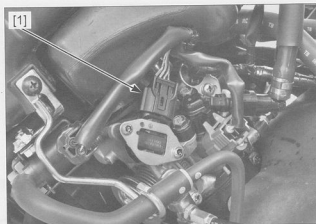
REMOVAL/INSPECTION

Lift and support the fuel tank (page 3-5).

The IACV is installed on the throttle body and is operated by the step motor. When the ignition switch is turned ON and engine stop switch "O", the IACV operates for a few seconds.

Check the step motor operating (beep) sound with the ignition switch turned ON and engine stop switch "O".

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



Remove the IACV setting plate torx screws [1] and setting plate [2].

Remove the IACV [3] and O-ring [4].

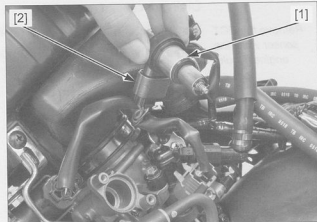


Check the IACV [1] for wear or damage.

The IACV operation can be checked visually as follows:

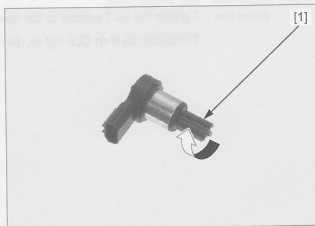
1. Connect the IACV 4P (Black) connector [2].
2. Turn ignition switch ON and engine stop switch "O", check the IACV operation.

Disconnect the IACV 4P (Black) connector.



INSTALLATION

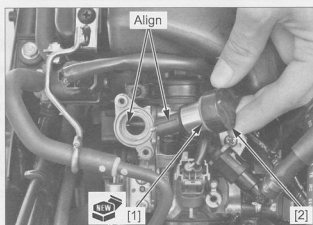
Turn the slide valve [1] clockwise until lightly seated on IACV.



FUEL SYSTEM (PGM-FI)

Install a new O-ring [1] to the IACV [2].

Install the IACV by aligning its groove with the slide valve housing pin.



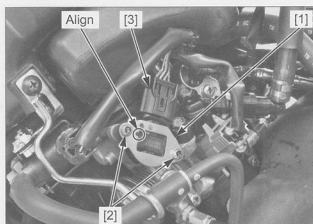
Install the setting plate [1] while aligning its cut-out with the tab on the IACV.

Install and tighten the IACV setting plate torx screws [2] to the specified torque.

TORQUE: 2.1 N-m (0.2 kgf-m, 1.5 lbf-ft)

Connect the IACV 4P (Black) connector [3].

Remove the suitable support and close the fuel tank (page 3-5).



ECT SENSOR

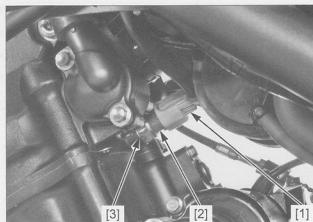
REMOVAL/INSTALLATION

Drain the coolant (page 6-7).

Remove the ECT sensor while the engine is cold.

Disconnect the ECT sensor 3P connector [1].

Remove the ECT sensor [2] and sealing washer [3].

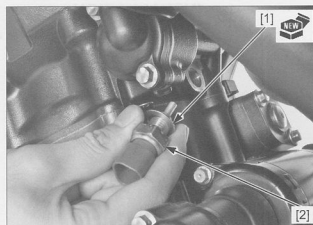


Always replace a sealing washer with a new one.

Install a new sealing washer [1] onto the ECT sensor [2] and install them.

Tighten the ECT sensor to the specified torque.

TORQUE: 25 N-m (2.5 kgf-m, 18 lbf-ft)



Connect the ECT sensor 3P connector [1].

Fill the cooling system with recommended coolant (page 6-6).

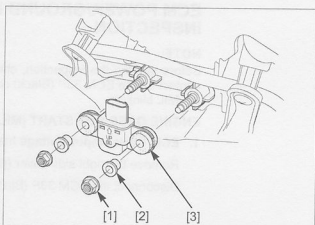


BANK ANGLE SENSOR

REMOVAL/INSTALLATION

Remove the upper cowl (page 2-9).

Remove the bank angle sensor mounting nuts [1], collars [2] and bank angle sensor [3].



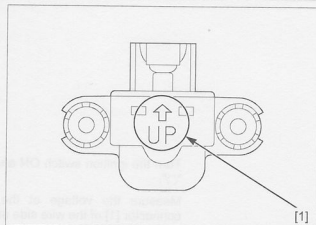
Install the bank angle sensor with its "UP" mark [1] facing up.

Install the bank angle sensor, collars and mounting nuts.

Tighten the bank angle sensor mounting nuts to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the upper cowl (page 2-9).



SYSTEM INSPECTION

Connect the HDS pocket tester (page 5-12).

Remove the bank angle sensor (page 5-55).

Connect the bank angle sensor 3P connector.

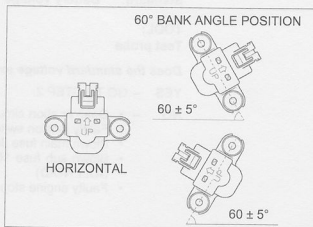
Place the bank angle sensor is horizontal as shown.

Turn the ignition switch ON and engine stop switch "C".
Read the voltage with the HDS pocket tester.

STANDARD: 3.6 – 4.4 V

Incline the bank angle sensor $60 \pm 5^\circ$ to the left or right with keeping the ignition switch ON.
Read the voltage with HDS pocket tester.

STANDARD: 0.7 – 1.3 V



ECM

REMOVAL/INSTALLATION

Remove the right side cover (page 2-16).

Turn the ignition switch OFF.

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

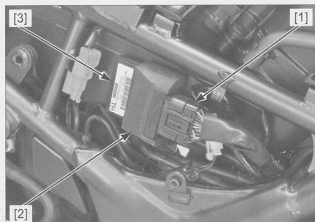
Remove the rubber holder [2] and ECM [3].

Remove the ECM from the rubber holder.

Install the ECM to the rubber holder install them to the frame.

Connect the ECM 33P (Black) connector.

Install the right side cover (page 2-16).



ECM POWER/GROUND LINE INSPECTION

NOTE:

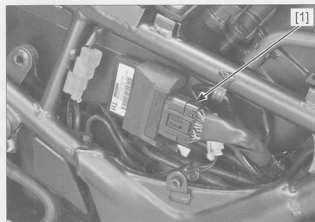
Before starting the inspection, check for loose or poor contact on the ECM 33P (Black) connector and recheck the MIL blinking.

ENGINE DOES NOT START (MIL does not blink)

1. ECM Power Input Voltage Inspection

Remove the right side cover (page 2-16).

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 [1] of the wire side and ground.

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

Standard: Battery voltage

TOOL:

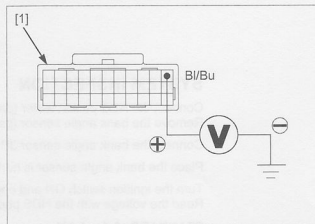
Test probe

07ZAJ-RDJA110

Does the standard voltage exist?

YES – GO TO STEP 2.

- NO –
- Open or short circuit in Black/blue wire
 - Faulty ignition switch
 - Blown main fuse 30 A
 - Blown sub fuse 10 A (IGP, PUMP, FI, SOLENOID)
 - Faulty engine stop switch



2. ECM Ground Line Inspection

Turn the ignition switch OFF.

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

Connection: Green/black – Ground
 Green – Ground
 Green – Ground

TOOL:

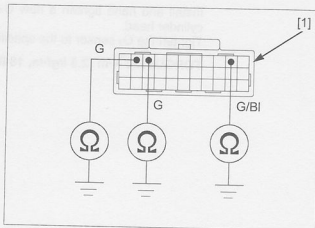
Test probe

07ZAJ-RDJA110

Is there continuity?

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

NO – • Open circuit in Green/black wire
 • Open circuit in Green wires

**O₂ SENSOR****NOTICE**

- Do not get grease, oil or other materials in the O₂ sensor air hole.
- The O₂ sensor may be damaged if dropped. Replace it with a new one, if dropped.

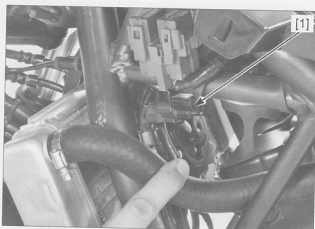
NOTE:

- Handle the O₂ sensor with care.
- Do not service the O₂ sensor while it is hot.

REMOVAL

Remove the left middle cowl (page 2-7).

Disconnect the O₂ sensor 1P connector [1].



Disconnect the O₂ sensor cap [1].

Remove the O₂ sensor [2].

NOTICE

Do not use an impact wrench while removing or installing the O₂ sensor, or it may be damaged.



FUEL SYSTEM (PGM-FI)

INSTALLATION

Install and hand tighten a new O₂ sensor [1] onto the cylinder head.

Tighten the O₂ sensor to the specified torque.

TORQUE: 25 N·m (2.5 kgf-m, 18 lbf-ft)



Connect the O₂ sensor cap [1].

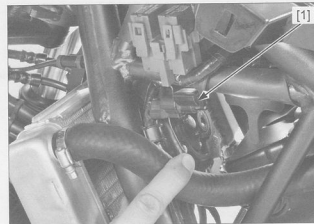
NOTICE

- Take care not to tilt the O₂ sensor cap when connecting the cap to the O₂ sensor.
- Do not turn the O₂ sensor cap, after connecting it.



Connect the O₂ sensor 1P connector [1].

Install the left middle cowl (page 2-7).



SECONDARY AIR SUPPLY SYSTEM

SYSTEM INSPECTION

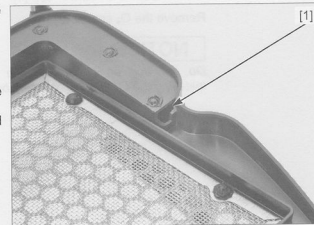
Start the engine and warm it up to coolant temperature is 80°C (176°F).

Stop the engine.

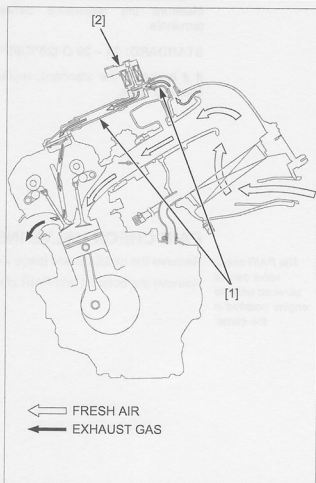
Disassemble the air cleaner housing (page 5-45).

Check that the secondary air intake port [1] of the element holder is clean and free of carbon deposits.

Check the PAIR check valve if the port is carbon fouled (page 5-60).



Start the engine and open the throttle slightly to be certain that air is sucked in through the air supply hose. If the air is not drawn in, check the air supply hoses [1] for clogs and PAIR control solenoid valve [2] (page 5-59).



PAIR CONTROL SOLENOID VALVE

REMOVAL/INSTALLATION

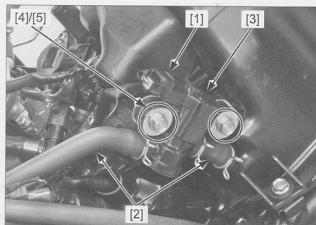
Lift and support the fuel tank (page 3-5).

Disconnect the PAIR control solenoid valve 2P (Black) connector [1].

Disconnect the air supply hoses [2] from the PAIR control solenoid valve [3].

Remove the bolts [4], collars [5] and PAIR control solenoid valve from the stay.

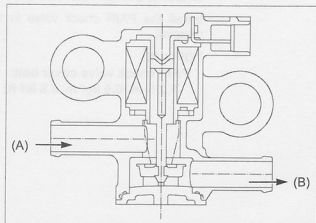
Installation is in the reverse order of removal.



INSPECTION

Remove the PAIR control solenoid valve (page 5-59).

Check that air does not flow (A) to (B) when the 12 V battery is connected to the PAIR control solenoid valve terminals. Air should flow (A) to (B) when there is no voltage applied to the PAIR control solenoid valve terminals.

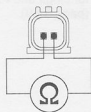


FUEL SYSTEM (PGM-FI)

Measure the resistance between the connector terminals.

STANDARD: 24 – 28 Ω (20°C/68°F)

If it is out of the standard, replace the PAIR control solenoid valve.

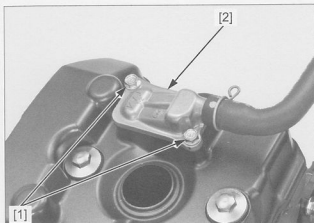


PAIR CHECK VALVE INSPECTION

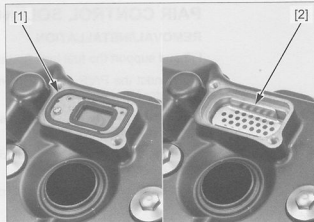
The PAIR check valve can be serviced with the engine installed in the frame.

Remove the middle cowls (page 2-7).

Remove the bolts [1] and PAIR check valve cover [2].



Remove the PAIR check valve [1] and baffle plate [2] from the cylinder head cover.



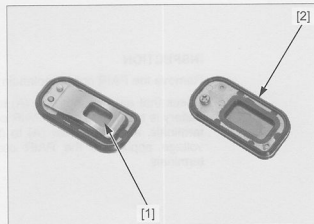
Check the reed [1] for damage or fatigue. Replace if necessary.

Replace the PAIR check valve if the rubber seat [2] is cracked, deteriorated or damaged, or if there is clearance between the reed and seat.

Install the PAIR check valve in the reverse order of removal.

TORQUE:

PAIR check valve cover bolt:
5.2 N·m (0.5 kgf·m, 3.8 lbf·ft)



EVAP PURGE CONTROL SOLENOID VALVE/CANISTER

REMOVAL/INSTALLATION

EVAP PURGE CONTROL SOLENOID VALVE

Lift and support the fuel tank (page 3-5).

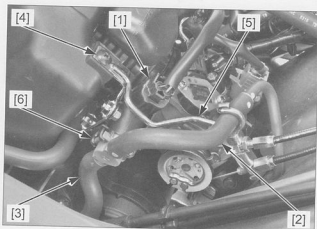
Disconnect the following:

- EVAP purge control solenoid valve 2P connector [1]
- Vacuum hose [2]
- Canister-to-EVAP purge control solenoid valve hose [3]

Remove the screw [4], stay [5] and EVAP purge control solenoid valve [6].

Installation is in the reverse order of removal.

Route the hoses and wire properly (page 1-18).



CANISTER

Remove the air cleaner housing (page 5-43)

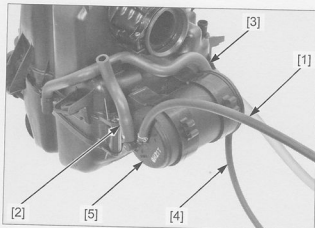
Disconnect the following from the EVAP canister:

- Fuel tank breather hose [1]
- Canister-to-EVAP purge control solenoid valve hose [2]
- Air inlet hose [3]
- EVAP canister drain hose [4]

Remove the canister [5] from the air cleaner cover tabs.

Installation is in the reverse order of removal.

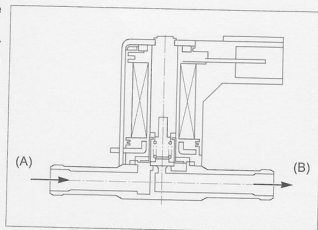
Route the hoses and wire properly (page 1-18).



INSPECTION

Remove the EVAP purge control solenoid valve (page 5-61).

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

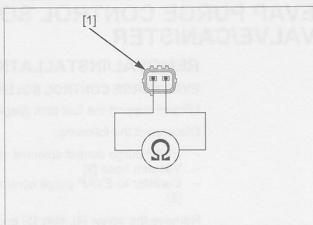


FUEL SYSTEM (PGM-FI)

Measure the resistance at the EVAP purge control solenoid valve [1] terminals.

STANDARD 30 – 34 Ω (20°C/68°F)

If the resistance is out specification, replace the EVAP purge control solenoid valve.

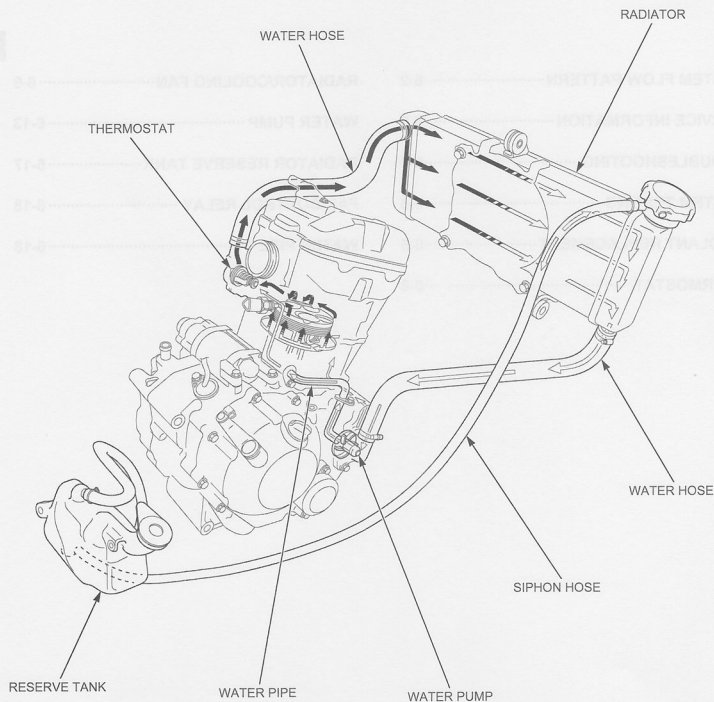


6. COOLING SYSTEM

6

SYSTEM FLOW PATTERN.....	6-2	RADIATOR/COOLING FAN.....	6-9
SERVICE INFORMATION.....	6-3	WATER PUMP.....	6-13
TROUBLESHOOTING.....	6-4	RADIATOR RESERVE TANK.....	6-17
SYSTEM TESTING.....	6-5	FAN CONTROL RELAY.....	6-18
COOLANT REPLACEMENT.....	6-6	WATER PIPE.....	6-18
THERMOSTAT.....	6-8		

SYSTEM FLOW PATTERN



SERVICE INFORMATION

GENERAL

⚠ WARNING

Removing the radiator cap while the engine is hot can allow the coolant to spray out, seriously scalding you. Always let the engine and radiator cool down before removing the radiator cap.

NOTICE

Using coolant with silicate inhibitors may cause premature wear of water pump seals or blockage of radiator passages. Using tap water may cause engine damage.

- Add cooling system at the reserve tank. Do not remove the radiator cap except to refill or drain the system.
- All cooling system services can be done with the engine installed in the frame.
- Avoid spilling coolant on painted surfaces.
- After servicing the system, check for leaks with a cooling system tester.
- For ECT sensor inspection (page 20-13).
- For ECT sensor removal/installation (page 5-54).

SPECIFICATIONS

ITEM		SPECIFICATION
Coolant capacity	Radiator and engine	1.10 liters (1.16 US qt, 0.97 Imp qt)
	At draining	0.79 liter (0.83 US qt, 0.70 Imp qt)
	Reserve tank	0.25 liter (0.26 US qt, 0.22 Imp qt)
Radiator cap relief pressure		93.2 – 122.6 kPa (0.95 – 1.25 kgf/cm ² , 13.5 – 17.8 psi)
Thermostat	Begin to open	81 – 84°C (178 – 183°F)
	Fully open	95°C (203°F)
	Valve lift	4.5 mm (0.18 in) minimum
Recommended antifreeze		Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing silicate-free corrosion inhibitors
Standard coolant concentration		1:1 (mixture with distilled water)

TORQUE VALUES

Water pump impeller	10 N·m (1.0 kgf-m, 7 lbf-ft)
Cooling fan nut	1.1 N·m (0.1 kgf-m, 0.8 lbf-ft)
Fan motor screw	2.8 N·m (0.3 kgf-m, 2.1 lbf-ft)
Fan motor shroud mounting bolt	8.5 N·m (0.9 kgf-m, 6.3 lbf-ft)
Water hose band screw	—





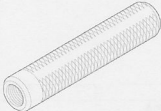
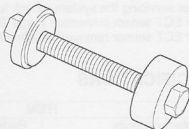
Apply locking agent to the threads.

See page 6-10

TOOLS

<p>Bearing remover set, 12 mm 07936-1660101</p>  <p>(Not available in U.S.A.)</p>	<p>Remover weight 07741-0010201</p>  <p>or 07936-371020A (U.S.A. only)</p>	<p>Driver 07749-0010000</p> 
---	--	--

COOLING SYSTEM

<p>Attachment, 28 x 30 mm 07946-1870100</p> 	<p>Pilot, 12 mm 07746-0040200</p> 	<p>Oil seal driver, 30 x 36 mm 07HMF-KR10101</p> 
<p>Bearing remover, 12 mm 07936-166010A (U.S.A. only)</p> 	<p>Remover handle 07936-3710100 (U.S.A. only)</p> 	<p>Mechanical seal installer 07965-415000A (U.S.A. only)</p> 

TROUBLESHOOTING

Engine temperature too high

- Faulty temperature gauge or ECT sensor
- Thermostat stuck closed
- Faulty radiator cap
- Insufficient coolant
- Passage blocked in radiator, hoses or water jacket
- Air in system
- Faulty cooling fan motor
- Faulty fan control relay
- Faulty water pump

Engine temperature too low

- Faulty temperature gauge or ECT sensor
- Thermostat stuck open
- Faulty fan control relay

Coolant leak

- Faulty water pump mechanical seal
- Deteriorated O-ring
- Faulty radiator cap
- Damaged or deteriorated cylinder head gasket
- Loose hose connection or clamp
- Damaged or deteriorated hoses
- Damaged radiator

SYSTEM TESTING

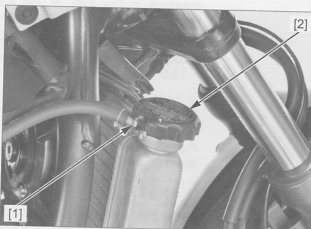
⚠ CAUTION

The engine must be cool before removing the radiator cap, or severe scalding may result.

COOLANT (HYDROMETER TEST)

Remove the right middle cowl (page 2-7).

Remove the screw [1] and radiator cap [2].



Test the coolant gravity using a hydrometer [1] (see below for "COOLANT GRAVITY CHART").

Look for contamination and replace the coolant if necessary.

After checking the gravity, install the radiator cap and screw securely.

Install the right middle cowl (page 2-7).

**COOLANT GRAVITY CHART**

			Coolant temperature °C (°F)											
			0 (32)	5 (41)	10 (50)	15 (59)	20 (68)	25 (77)	30 (86)	35 (95)	40 (104)	45 (113)	50 (122)	
Coolant ratio%		5	1.009	1.009	1.008	1.008	1.007	1.006	1.005	1.003	1.001	0.999	0.997	
		10	1.018	1.017	1.017	1.016	1.015	1.014	1.013	1.011	1.009	1.007	1.005	
		15	1.028	1.027	1.026	1.025	1.024	1.022	1.020	1.018	1.016	1.014	1.012	
		20	1.036	1.035	1.034	1.033	1.031	1.029	1.027	1.025	1.023	1.021	1.019	
		25	1.045	1.044	1.043	1.042	1.040	1.038	1.036	1.034	1.031	1.028	1.025	
		30	1.053	1.052	1.051	1.049	1.047	1.045	1.043	1.041	1.038	1.035	1.032	
		35	1.063	1.062	1.060	1.058	1.056	1.054	1.052	1.049	1.046	1.043	1.040	
		40	1.072	1.070	1.068	1.066	1.064	1.062	1.059	1.056	1.053	1.050	1.047	
		45	1.080	1.078	1.076	1.074	1.072	1.069	1.066	1.063	1.060	1.057	1.054	
		50	1.086	1.084	1.082	1.080	1.077	1.074	1.071	1.068	1.065	1.062	1.059	
		55	1.095	1.093	1.091	1.088	1.085	1.082	1.079	1.076	1.073	1.070	1.067	
		60	1.100	1.098	1.095	1.092	1.089	1.086	1.083	1.080	1.077	1.074	1.071	

COOLING SYSTEM

RADIATOR CAP/SYSTEM PRESSURE INSPECTION

Remove the radiator cap [1] (page 6-5).

Wet the sealing surfaces of the cap, then install the cap onto the tester [2].

Pressurize the radiator cap using the tester. Replace the radiator cap if it does not hold pressure, or if relief pressure is too high or too low. It must hold the specified pressure for at least 6 seconds.

RADIATOR CAP RELIEF PRESSURE:

93.2 – 122.6 kPa (0.95 – 1.25 kgf/cm²,
13.5 – 17.8 psi)

Pressurize the radiator, engine and hoses using the tester [1], and check for leaks.

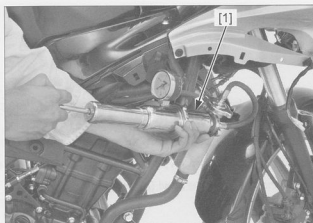
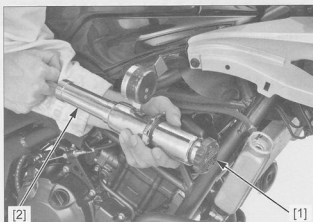
NOTICE

Excessive pressure can damage the cooling system components. Do not exceed 122.6 kPa (1.25 kgf/cm², 17.8 psi).

Repair or replace components if the system will not hold the specified pressure for at least 6 seconds.

Remove the tester.

Install the radiator cap (page 6-5).



COOLANT REPLACEMENT

PREPARATION

NOTE:

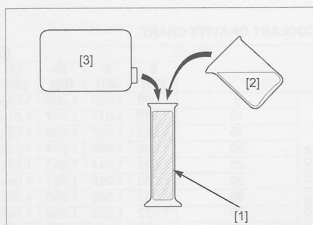
- The effectiveness of coolant [1] decreases with the accumulation of rust or if there is a change in the mixing proportion during usage. Therefore, for best performance change the coolant regularly as specified in the maintenance schedule.
- Mix only distilled, low mineral water [2] with the recommended antifreeze [3].

RECOMMENDED ANTIFREEZE:

Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing silicate-free corrosion inhibitors

STANDARD COOLANT CONCENTRATION:

1:1 (mixture with distilled water)



REPLACEMENT/AIR BLEEDING

Remove the following:

- Under cowl (page 2-11)
- Radiator cap (page 6-5)

Remove the drain bolt [1] and sealing washer [2] on the water pump cover and drain the system coolant.

Reinstall the drain bolt with a new sealing washer. Install and tighten the drain bolt securely.

CAUTION

The engine must be cool before removing the radiator cap, or severe scalding may result.

Disconnect the siphon hose [1] from the radiator and release it to the clamps [2].

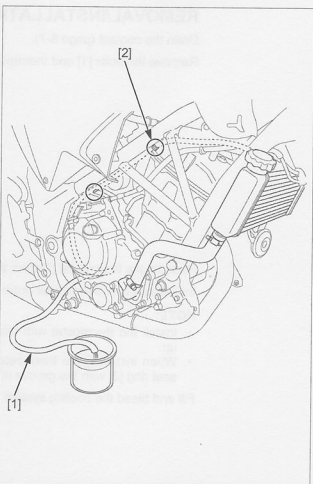
Drain the coolant from the reserve tank.

Empty the coolant and rinse the inside of the reserve tank with water.

Install the siphon hose to the clamps and connect it to the radiator.

NOTE:

Route the hose properly (page 1-18).

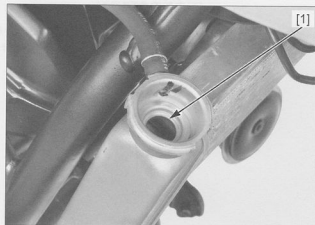


When filling the system or reserve tank with coolant (checking coolant level), support the motorcycle on a level surface.

Fill the system with the recommended coolant through the filler opening up to filler neck [1].

Bleed air from the system as follows:

1. Shift the transmission into neutral.
Start the engine and let it idle for 2 – 3 minutes.
2. Snap the throttle 3 – 4 times to bleed air from the system.
3. Stop the engine and add the coolant up to the filler neck.
4. Install the radiator cap (page 6-5).

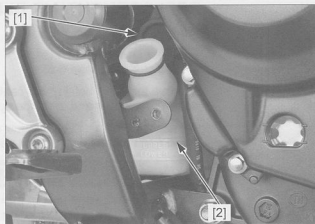


COOLING SYSTEM

Remove the reserve tank cap [1] and fill the reserve tank to the "UPPER" level line [2].

Install the reserve tank cap.

Install the under cowl (page 2-11).

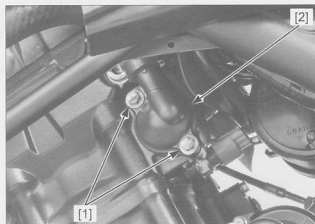


THERMOSTAT

REMOVAL/INSTALLATION

Drain the coolant (page 6-7).

Remove the bolts [1] and thermostat cover [2].



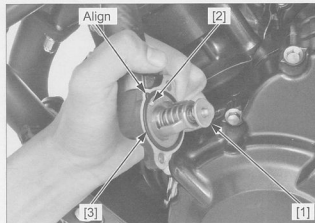
Remove the thermostat [1] from the cylinder head.

Installation is in the reverse order of removal.

NOTE:

- Install the thermostat with the bleed hole [2] facing up.
- When installing the thermostat, align the tab of the seal ring [3] with the groove of the thermostat cover.

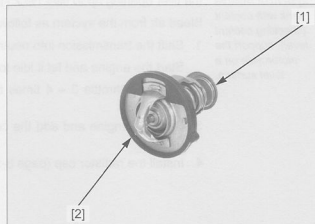
Fill and bleed the cooling system (page 6-6).



INSPECTION

Visually inspect the thermostat [1] for damage.

Check the seal ring [2] for damage.



Wear insulated gloves and adequate eye protection. Keep flammable materials away from the electric heating element. Do not let the thermostat or thermometer touch the pan, or you will get false reading.

Heat the water with an electric heating element to operating temperature for 5 minutes. Suspend the thermostat [1] in heated water to check its operation.

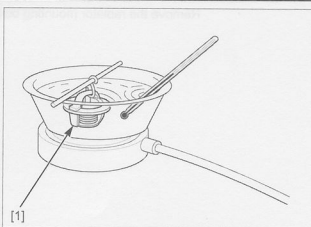
THERMOSTAT BEGIN TO OPEN:

81 – 84°C (178 – 183°F)

VALVE LIFT:

4.5 mm (0.18 in) minimum at 95°C (203°F)

Replace the thermostat if the valve open at a temperatures other than those specified.



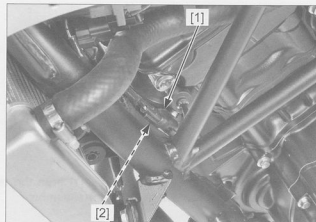
RADIATOR/COOLING FAN

REMOVAL/INSTALLATION

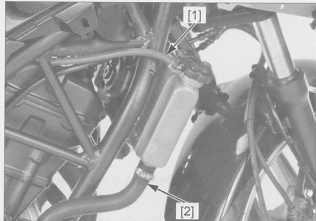
Drain the coolant (page 6-7).

Remove the middle cowl (page 2-7).

Disconnect the fan motor 2P (Black) connector [1] and remove it from the stay [2].



Disconnect the siphon hose [1] from the radiator. Loosen the water hose band screw and disconnect the lower water hose [2].

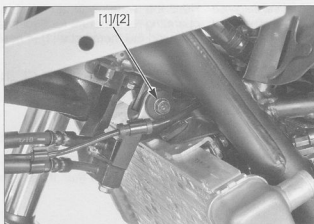


Loosen the water hose band screw and disconnect the upper water hose [1].

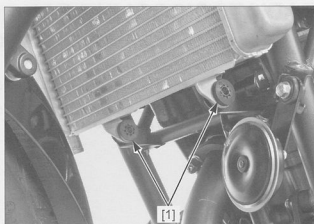


COOLING SYSTEM

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

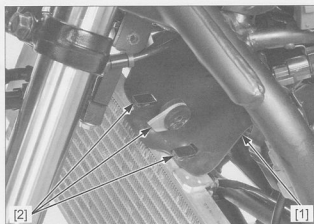


Release the radiator lower grommets [1] from the frame boss by moving the radiator to the left.



Be careful not to damage the radiator fins.

Unhook the rubber [1] from the radiator tabs [2], then remove the radiator assembly.



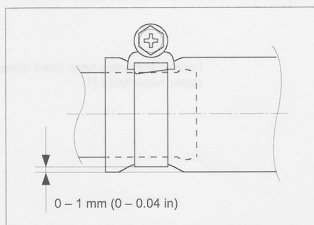
Installation is in the reverse order of removal.

NOTE:

Route the wire and hoses properly (page 1-18).

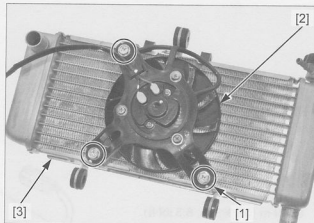
Tighten the hose band screw to the specified range.

Fill the system with the recommended coolant (page 6-6).



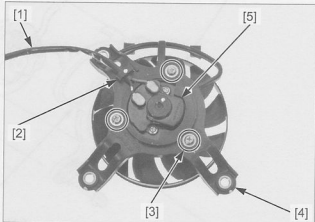
DISASSEMBLY

Remove the bolts [1] and fan motor assembly [2] from the radiator [3].

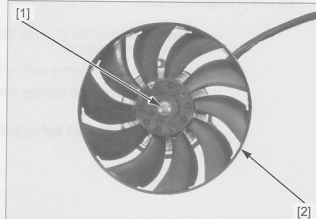


Unhook the fan motor wire [1] from the fan motor stay wire guide [2].

Remove the screws [3] and fan motor stay [4] from the fan motor [5].

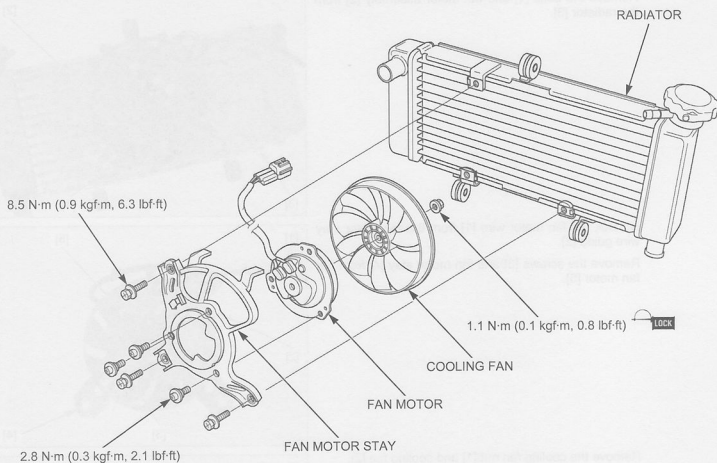


Remove the cooling fan nut [1] and cooling fan [2].



COOLING SYSTEM

ASSEMBLY

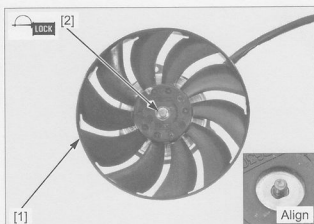


Install the cooling fan [1] onto the fan motor shaft by aligning the flat surfaces.

Apply locking agent to the cooling fan nut [2] threads.

Install and tighten the cooling fan nut to the specified torque.

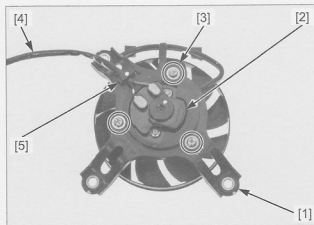
TORQUE: 1.1 N-m (0.1 kgf-m, 0.8 lbf-ft)



Install the fan motor stay [1] onto the fan motor [2].
Install and tighten the screws [3] to the specified torque.

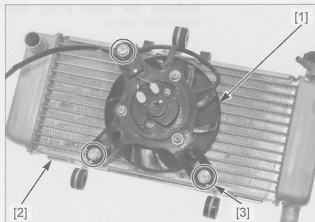
TORQUE: 2.8 N-m (0.3 kgf-m, 2.1 lbf-ft)

Hook the fan motor wire [4] to the fan motor stay wire guide [5].



Install the fan motor assembly [1] onto the radiator [2].
Install and tighten the bolts [3] to the specified torque.

TORQUE: 8.5 N·m (0.9 kgf·m, 6.3 lbf·ft)



WATER PUMP

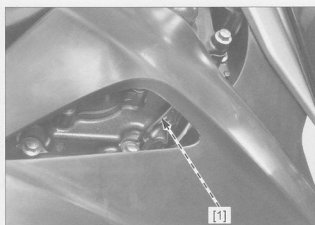
MECHANICAL SEAL INSPECTION

Check the inspection hole [1] of the water pump for signs of coolant leakage.

A small amount of coolant weeping from the inspection hole and/or residue is normal.

If there is continuous coolant leakage from the inspection hole while the engine is running, replace the mechanical seal (page 6-14).

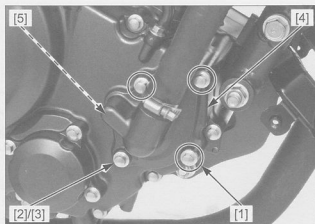
If oil leaks through the inspection hole, replace the oil seal (page 6-14).



REMOVAL

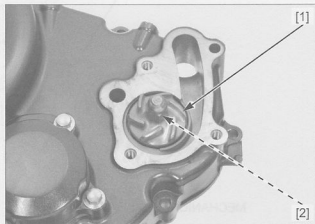
Drain the coolant (page 6-7).

Remove the bolts [1], drain bolt [2], sealing washer [3], water pump cover [4] and O-ring [5].



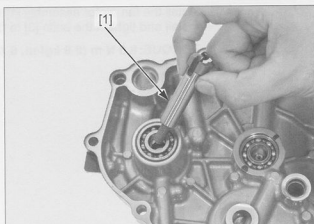
Remove the right crankcase cover (page 10-6).

Hold the water pump shaft and remove the impeller [1] and plain washer [2].

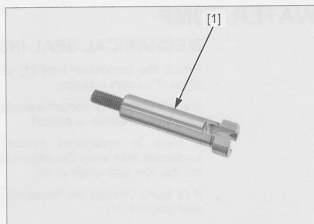


COOLING SYSTEM

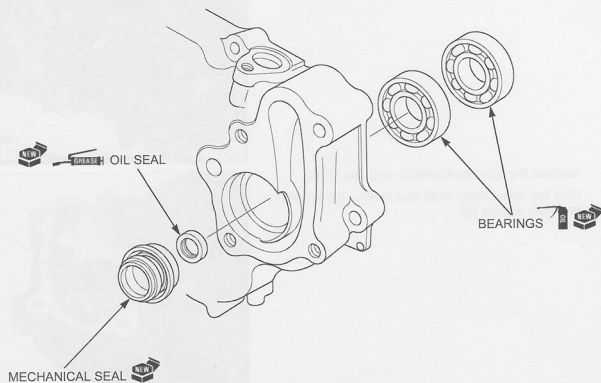
Remove the water pump shaft [1] from the right crankcase cover.



Check the water pump shaft [1] for wear or damage, replace it if necessary.



BEARING/MECHANICAL SEAL/OIL SEAL REPLACEMENT



Remove the water pump shaft bearings [1] using the special tools.

TOOLS:

Remover weight [2] 07741-0010201

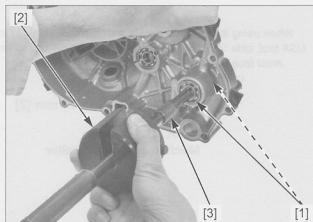
Bearing remover set, 12 mm [3] 07936-1660101

TOOLS, U.S.A. only:

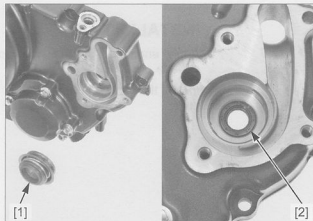
Bearing remover, 12 mm 07936-166010A

Remover handle 07936-3710100

Remover weight 07936-371020A

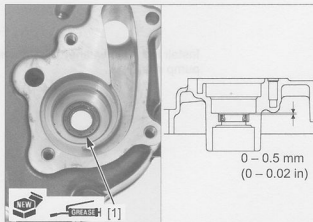


Remove the mechanical seal [1] and oil seal [2] from the right crankcase cover.



Apply grease to a new oil seal [1] lips.

Install the oil seal to the right crankcase cover as shown.



Drive in a new bearing squarely with the marking side facing up.

Drive in new bearings [1] into the right crankcase cover using the special tools.

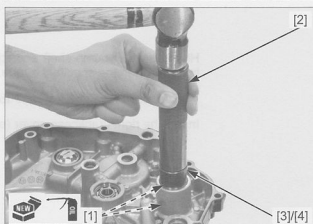
TOOLS:

Driver [2] 07749-0010000

Attachment, 28 x 30 mm [3] 07946-1870100

Pilot, 12 mm [4] 07746-0040200

After installing the bearing, lubricate it with engine oil.



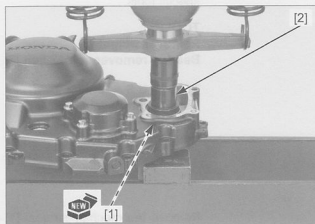
COOLING SYSTEM

When using the USA tool, side "A" must face the cover.

Press a new mechanical seal [1] until it is fully seated to the right crankcase cover using the hydraulic press and special tool.

TOOL:
Oil seal driver, 30 x 36 mm [2] 07HMF-KR10101

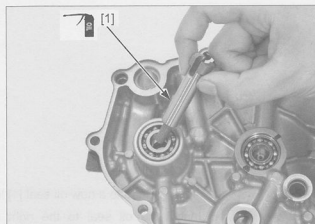
TOOL, U.S.A. only:
Mechanical seal installer 07965-41500A



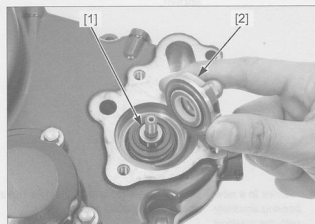
INSTALLATION

Apply engine oil to the water pump shaft [1] outer surface.

Install the water pump shaft to the right crankcase cover.



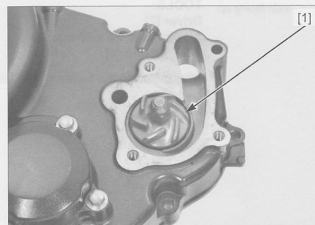
Install the plain washer [1] and impeller [2] to the water pump shaft.



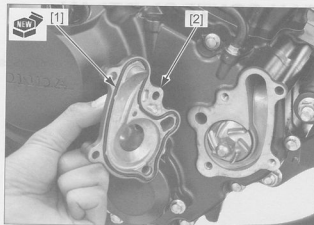
Hold the water pump shaft and tighten the water pump impeller [1] to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

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



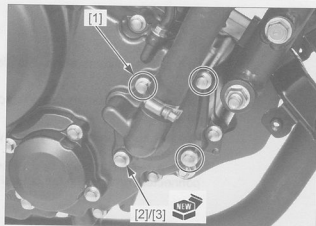
Install a new O-ring [1] to the water pump cover [2].



Install the water pump cover.

Install and tighten the bolts [1], drain bolt [2] and a new sealing washer [3] securely.

Fill the recommended coolant mixture to the filler neck and bleed the air (page 6-6).



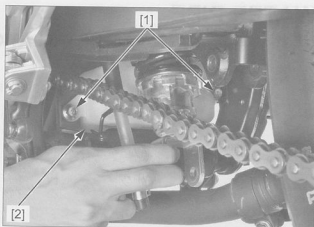
RADIATOR RESERVE TANK

REMOVAL/INSTALLATION

Remove the shock linkage (page 14-14).

Drain the coolant from the reserve tank (page 6-7).

Remove the bolts [1] and reserve tank [2].

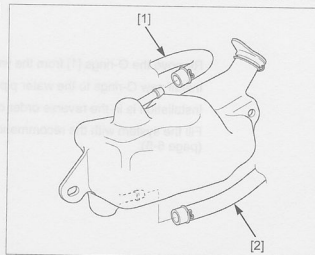


Disconnect the overflow hose [1] and siphon hose [2] from the reserve tank.

Route the hoses properly (page 1-18).

Installation is in the reverse order of removal.

Fill the reserve tank with coolant (page 6-6).



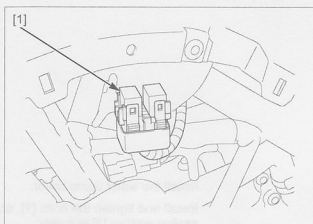
COOLING SYSTEM

FAN CONTROL RELAY

INSPECTION

Remove the left middle cowl (page 2-7).

Remove the fan control relay [1].

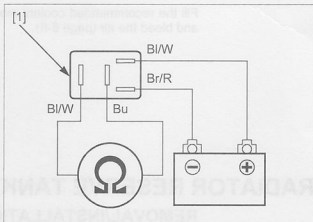


Connect a ohmmeter to the fan control relay [1] terminals.

Connect a 12 V battery to the fan control relay terminals as shown.

There should be continuity only when 12 V battery is connected.

If there is no continuity only when the 12 V battery is connected, replace the fan control relay.

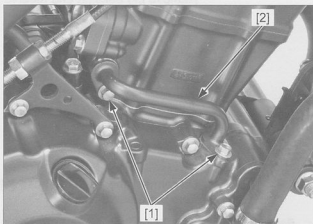


WATER PIPE

REMOVAL/INSTALLATION

Drain the coolant (page 6-7).

Remove the bolts [1] and water pipe [2].

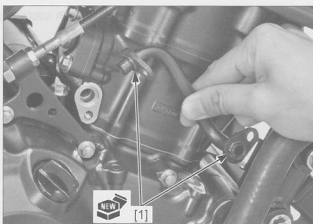


Remove the O-rings [1] from the water pipe.

Install new O-rings to the water pipe.

Installation is in the reverse order of removal.

Fill the system with the recommended coolant (page 6-6).



7. ENGINE REMOVAL/INSTALLATION

COMPONENT LOCATION7-2

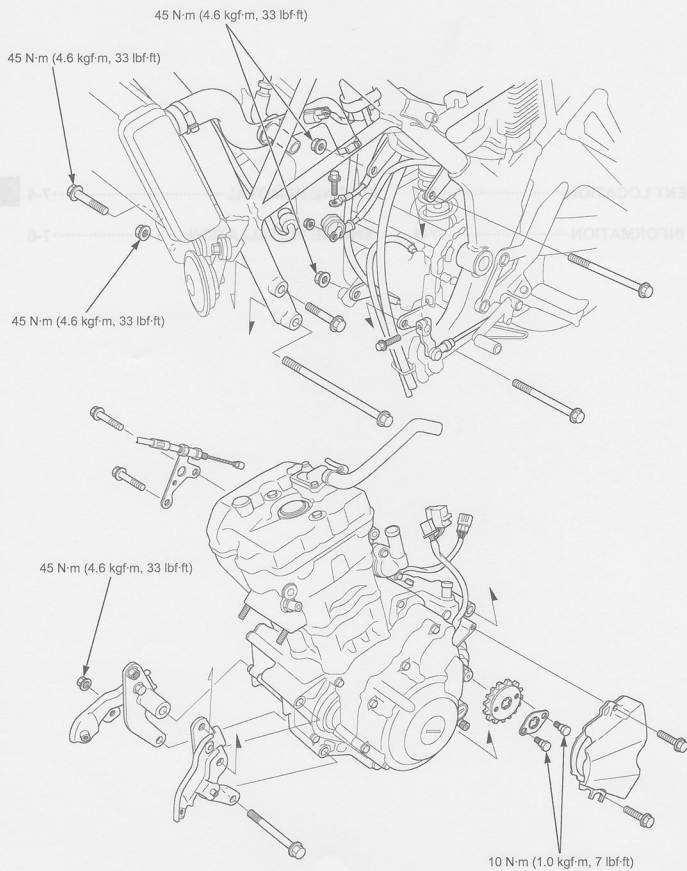
SERVICE INFORMATION7-3

ENGINE REMOVAL7-4

ENGINE INSTALLATION7-6

7

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- A hoist or equivalent is required to support the motorcycle when removing and installing the engine.
- When removing/installing the engine, tape the frame around the engine beforehand for frame protection.
- When installing the engine, be sure to tighten the engine mounting fasteners to the specified torque in the specified sequence. If you mistake the torque or sequence, loosen all mounting fasteners, then tighten them again to the specified torque in the correct sequence.
- The following components can be serviced with the engine installed in the frame.
 - Oil pump (page 4-4)
 - Throttle body (page 5-46)
 - Camshaft (page 8-7)
 - Water pump (page 6-13)
 - Clutch (page 10-12)
 - Gearshift linkage (page 10-18)
 - Stator/CKP sensor (page 11-5)
 - Flywheel (page 11-7)
 - Starter motor (page 19-6)
- The following components require engine removal for service.
 - Cylinder head/valves (page 8-15)
 - Cylinder/piston (page 9-5)
 - Crankshaft (page 12-8)
 - Transmission (page 12-14)
 - Balancer (page 12-19)

SPECIFICATIONS

ITEM		SPECIFICATION
Engine dry weight		35.4 kg (78.0 lbs)
Engine oil capacity	At draining	1.4 liters (1.5 US qt, 1.2 Imp qt)
	At oil filter change	1.5 liters (1.6 US qt, 1.3 Imp qt)
	At disassembly	1.8 liters (1.9 US qt, 1.6 Imp qt)
Coolant capacity	Radiator and Engine	1.10 liters (1.16 US qt, 0.97 Imp qt)
	At draining	0.79 liter (0.83 US qt, 0.70 Imp qt)
	Reserve tank	0.25 liter (0.26 US qt, 0.22 Imp qt)

TORQUE VALUES

Front engine hanger plate bolt	45 N·m (4.6 kgf·m, 33 lbf·ft)
Front engine mounting nut	45 N·m (4.6 kgf·m, 33 lbf·ft)
Rear engine mounting nut	45 N·m (4.6 kgf·m, 33 lbf·ft)
Drive sprocket fixing plate bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)

ENGINE REMOVAL

Drain the engine oil (page 3-14).
Drain the coolant (page 6-7).

Remove the following:

- Throttle body (page 5-46)
- Exhaust pipe/muffler (page 2-18)
- Drive sprocket cover (page 2-12)

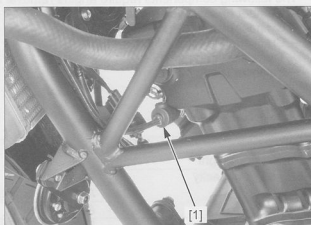
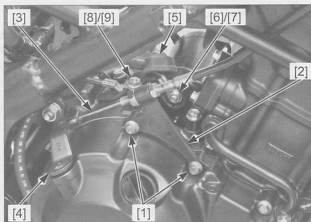
Remove the bolts [1] and clutch cable guide [2], then disconnect the clutch cable [3] from the clutch lifter arm [4].

Release the rubber cap [5].

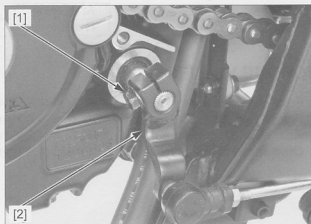
Remove the starter motor terminal nut [6] and starter motor cable [7].

Remove the starter motor mounting bolt [8] and ground cable [9].

Disconnect the O₂ sensor cap [1].



Remove the pinch bolt [1] and gearshift arm [2].

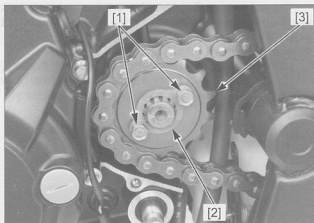


Loosen the rear axle nut [1], lock nuts [2] and adjusting nuts [3].

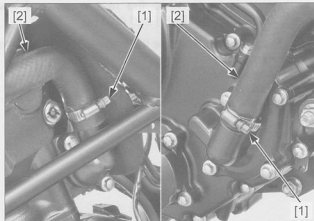
Push the rear wheel forward as far as it will go to slacken the drive chain.



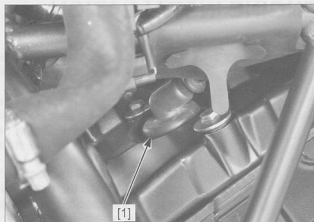
Remove the bolts [1], fixing plate [2] and drive sprocket [3].



Loosen the water hose band screws [1] and disconnect the water hoses [2].



Disconnect the spark plug cap [1].



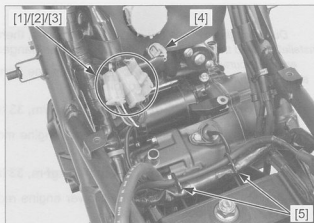
The green side stand connect does not need to be removed.

Disconnect the following:

- Alternator 3P connector [1]
- CKP sensor/neutral switch 6P connector [2]
- VS sensor 3P connector [3]
- ECT sensor 3P connector [4]

Release the VS sensor wire from the wire guides [5].

Disconnect the cooling fan 2P (black) connector from the stay and move it away from the engine.



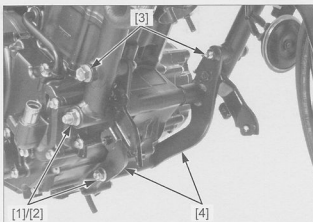
ENGINE REMOVAL/INSTALLATION

The jack height must be continually adjusted to relieve tension for ease of bolt removal.

Support the engine using a jack or other adjustable support to ease of engine hanger bolts removal.

Remove the following:

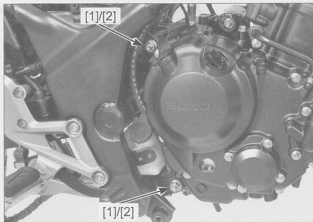
- Front engine mounting bolts [1] and nuts [2]
- Front engine hanger plate bolts [3]
- Front engine hanger plates [4]



Remove the rear upper and lower engine mounting bolts [1] and nuts [2].

Remove the engine from the frame.

During engine removal, hold the engine securely and be careful not to damage the frame or engine.



ENGINE INSTALLATION

NOTE:

- Note the direction of the engine hanger bolts.
- Place the jack or other adjustable support under the engine.
- The jack height must be continually adjusted to relieve tension for ease bolt installation.
- Carefully align the mounting points with the jack to prevent damage to engine, frame, water hose, wires and cables.
- Loosely install all the engine mounting bolts and nuts, then tighten the bolts and nuts to the specified torque in the specified sequence.
- Route the water hose, wires and cables properly (page 1-18).

During engine installation, hold the engine securely and be careful not to damage the frame or engine.

Place the engine in the frame, then loosely install all the bolts, nuts and front engine hanger plates.

Tighten the both front engine hanger plate bolts [1] to the specified torque.

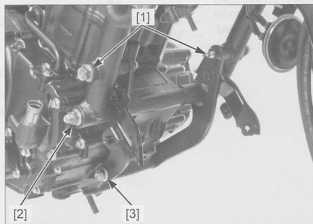
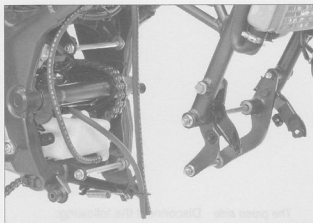
TORQUE: 45 N·m (4.6 kgf·m, 33 lbf·ft)

Tighten the front upper engine mounting nut [2] to the specified torque.

TORQUE: 45 N·m (4.6 kgf·m, 33 lbf·ft)

Tighten the front lower engine mounting nut [3] to the specified torque.

TORQUE: 45 N·m (4.6 kgf·m, 33 lbf·ft)

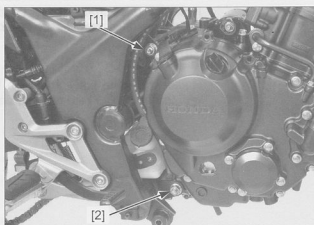


Tighten the rear upper engine mounting nuts [1] to the specified torque.

TORQUE: 45 N·m (4.6 kgf·m, 33 lbf·ft)

Tighten the rear lower engine mounting nut [2] to the specified torque.

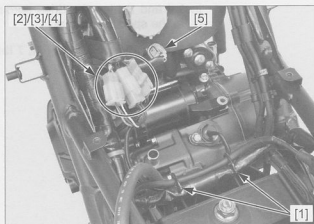
TORQUE: 45 N·m (4.6 kgf·m, 33 lbf·ft)



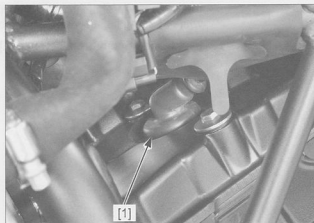
Install the VS sensor wire from the wire guides [1].

Connect the following:

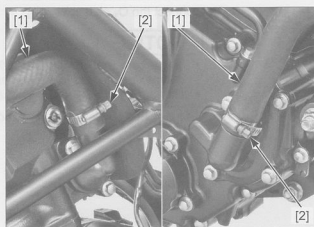
- Alternator 3P connector [2]
- CKP sensor/neutral switch 6P connector [3]
- VS sensor 3P connector [4]
- ECT sensor 3P connector [5]



Connect the spark plug cap [1].



Connect the water hoses [1] and tighten the water hose band screws [2] to the specified range (page 6-10).

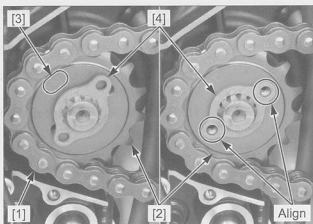


ENGINE REMOVAL/INSTALLATION

Install the drive chain [1] over the drive sprocket [2].
Install the drive sprocket to the countershaft with the "14T" mark [3] facing out.

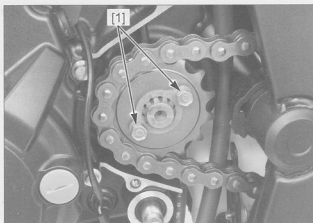
Install the fixing plate [4].

Rotate the fixing plate and align the hole in the plate with the bolt hole in the drive sprocket.



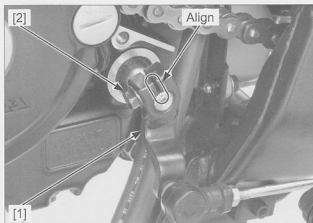
Install and tighten the drive sprocket fixing plate bolts [1] to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



Install the gearshift arm [1] onto the gearshift spindle, while aligning its slit with the punch mark.

Install and tighten the pinch bolt [2] securely.

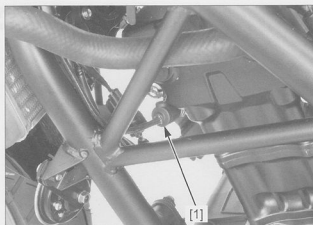


Connect the O₂ sensor cap [1].

NOTICE

- Take care not to tilt the O₂ sensor cap when connecting the cap to the O₂ sensor.
- Do not turn the O₂ sensor cap, after connecting it.

Connect the cooling fan 2P (black) connector to the stay.



Install the ground cable [1] and starter motor mounting bolt [2].
Tighten the mounting bolt securely.

Install the starter motor cable [3] and starter motor terminal nut [4].
Tighten the terminal nut securely and reposition the rubber cap [5] properly on the starter motor terminal.

Connect the clutch cable [6] to the clutch lifter arm [7].

Connect the clutch cable [6] to the clutch lifter arm [7].

Install clutch cable guide [8] and bolts [9].
Tighten the bolts securely.

Install the following:

- Drive sprocket cover (page 2-12)
- Exhaust pipe/muffler (page 2-20)
- Throttle body (page 5-49)
- Fuel tank (page 5-39)

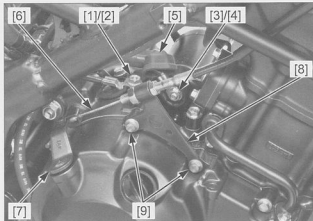
Inspect the following:

- Drive chain slack (page 3-18)
- Throttle grip freeplay (page 3-6)
- Clutch lever freeplay (page 3-26)

Fill the engine with the recommended engine oil (page 3-13).

Fill the recommended coolant mixture to the filler neck and bleed the air (page 6-6).

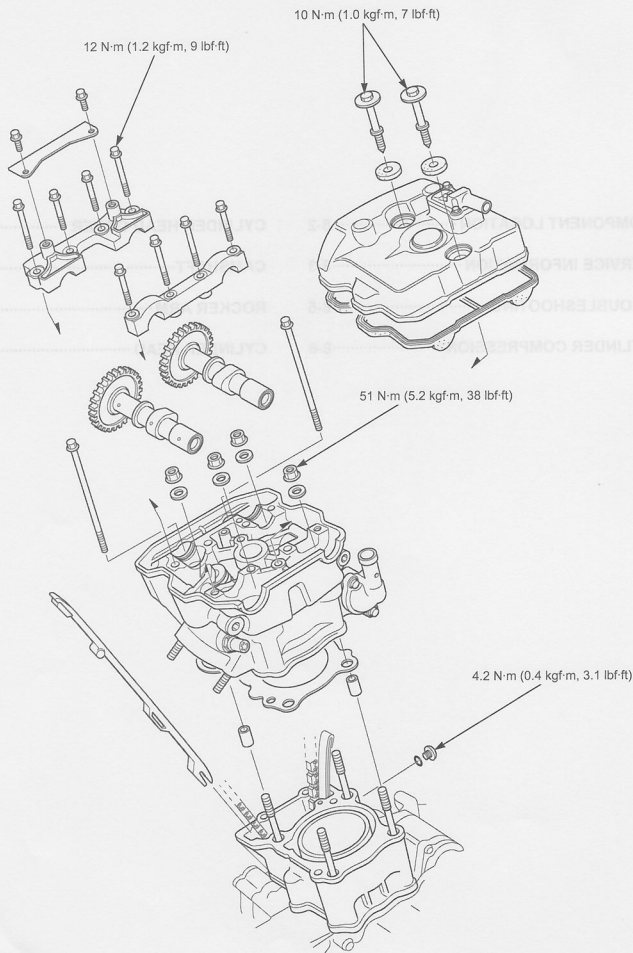
Check the exhaust system and cooling system for leaks.



8. CYLINDER HEAD/VALVES

COMPONENT LOCATION	8-2	CYLINDER HEAD COVER	8-6
SERVICE INFORMATION	8-3	CAMSHAFT	8-7
TROUBLESHOOTING	8-5	ROCKER ARM	8-14
CYLINDER COMPRESSION	8-6	CYLINDER HEAD	8-15

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers service of the cylinder head, valves, rocker arms and camshaft.
- The camshaft service can be done with the engine installed in the frame. The cylinder head service requires engine removal.
- Be careful not to damage the mating surfaces when removing the cylinder head cover and cylinder head. Do not strike the cylinder head cover and cylinder head too hard during removal.
- When disassembling, mark and store the disassembled parts to ensure that they are reinstalled in their original locations.
- Clean all disassembled parts with cleaning solvent and dry them by blowing them off with compressed air before inspection.
- Camshaft and rocker arm lubricating oil is fed through oil passage in the cylinder head (stud bolt hole) and camshaft holder. Clean the oil passage before assembling them.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cylinder compression at 490 rpm		1,294 kPa (13.2 kgf/cm ² , 188 psi)	—
Valve clearance	IN	0.16 ± 0.03 (0.006 ± 0.001)	—
	EX	0.27 ± 0.03 (0.011 ± 0.001)	—
Valve, valve guide	Valve stem O.D.	IN	4.470 – 4.495 (0.1760 – 0.1770)
		EX	4.460 – 4.485 (0.1756 – 0.1766)
	Valve guide I.D.	IN/EX	4.500 – 4.512 (0.1772 – 0.1776)
	Stem-to-guide clearance	IN	0.005 – 0.042 (0.0002 – 0.0017)
		EX	0.015 – 0.052 (0.0006 – 0.0020)
	Valve guide height	IN/EX	13.8 – 14.0 (0.54 – 0.55)
Valve spring	Valve seat width	IN/EX	0.90 – 1.10 (0.035 – 0.043)
	Free length	Inner	34.58 (1.361)
		Outer	40.37 (1.589)
Rocker arm, rocker arm shaft	Arm I.D.	IN/EX	10.000 – 10.015 (0.3937 – 0.3943)
	Shaft O.D.	IN/EX	9.972 – 9.987 (0.3926 – 0.3932)
	Arm-to-shaft clearance	IN/EX	0.013 – 0.043 (0.0005 – 0.0017)
Camshaft	Cam lobe height	IN	30.931 – 31.171 (1.2178 – 1.2272)
		EX	30.839 – 31.079 (1.2163 – 1.2236)
	Oil clearance		0.020 – 0.062 (0.0008 – 0.0024)
Cylinder head warpage		—	0.05 (0.002)

TORQUE VALUES

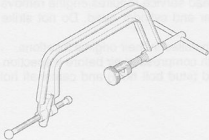
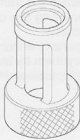
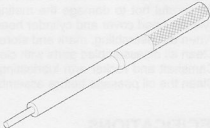






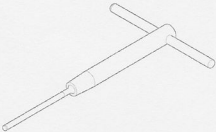

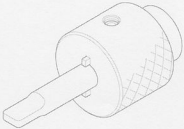
Cylinder head cover bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)
Camshaft holder mounting bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)
Cam chain tensioner lifter plug	4.2 N·m (0.4 kgf·m, 3.1 lbf·ft)
Cylinder head mounting nut	51 N·m (5.2 kgf·m, 38 lbf·ft)

Apply engine oil to the threads and seating surface.

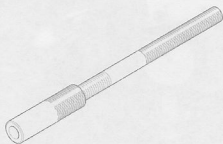
Apply engine oil to the threads and seating surface.

CYLINDER HEAD/VALVES

TOOLS

<p>Valve spring compressor 07757-0010000</p> 	<p>Valve spring compressor attachment 07959-KM30101</p> 	<p>Valve guide driver, 4.3 mm 07HMD-ML00101</p> 
<p>Seat cutter, 27.5 mm (45° EX) 07780-0010200</p>  <p>or equivalent commercially available in U.S.A.</p>	<p>Seat cutter, 33 mm (45° IN) 07780-0010800</p>  <p>or equivalent commercially available in U.S.A.</p>	<p>Flat cutter, 27 mm (32° EX) 07780-0013300</p>  <p>or equivalent commercially available in U.S.A.</p>
<p>Flat cutter, 30 mm (32° IN) 07780-0012200</p>  <p>or equivalent commercially available in U.S.A.</p>	<p>Interior cutter, 30 mm (60° EX) 07780-0014000</p>  <p>or equivalent commercially available in U.S.A.</p>	<p>Interior cutter, 37.5 mm (60° IN) 07780-0014100</p>  <p>or equivalent commercially available in U.S.A.</p>
<p>Cutter holder, 4.5 mm 07781-0010600</p>  <p>or equivalent commercially available in U.S.A.</p>	<p>Valve guide reamer, 4.5 mm 07HMH-ML00101</p>  <p>or 07HMH-ML0010B (U.S.A. only)</p>	<p>Tensioner stopper 070MG-0010100</p>  <p>or 07AMG-001A100 (U.S.A. only)</p>

Valve guide driver
07743-0020000



(Not available in U.S.A.)

TROUBLESHOOTING

- Engine top-end problems usually affect engine performance. These problems can be diagnosed by a compression test, or by tracing top-end noise 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 seized piston rings.

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

- Valves:
 - Incorrect valve adjustment
 - Burned or bent valve
 - Incorrect valve timing
 - Weak valve spring
 - Uneven valve seating
 - Valve stuck open
- Cylinder head:
 - Leaking or damaged cylinder head gasket
 - Warped or cracked cylinder head
 - Loose spark plug
- Faulty cylinder, piston or piston rings (page 9-5).

Compression too high, over-heating or knocking

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

Excessive smoke

- Worn valve stem or valve guide
- Damaged stem seal
- Faulty cylinder, piston or piston rings (page 9-5).

Excessive noise

- Incorrect valve adjustment
- Sticking valve or broken valve spring
- Worn or damaged camshaft
- Worn rocker arm and/or shaft
- Worn rocker arm and valve stem end
- Worn cam sprocket teeth
- Worn and loose cam chain
- Worn or damaged cam chain tensioner
- Faulty cylinder, piston or piston rings (page 9-5).

Rough idle

- Low cylinder compression
- Faulty fuel system

CYLINDER HEAD/VALVES

CYLINDER COMPRESSION

Warm the engine to normal operating temperature.

Stop the engine.

Remove the spark plug (page 3-8).

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

Turn the ignition switch ON and engine stop switch "O".
Shift the transmission into neutral.

*To avoid
discharging the
battery, do not
operate the starter
motor for more than
7 seconds.*

STANDARD:

1,294 kPa (13.2 kgf/cm², 188 psi) at 490 rpm

Low compression can be caused by:

- Blown cylinder head gasket
- Improper valve adjustment
- Valve leakage
- Worn piston ring or cylinder

High compression can be caused by:

- Carbon deposits in combustion chamber or on piston head



CYLINDER HEAD COVER

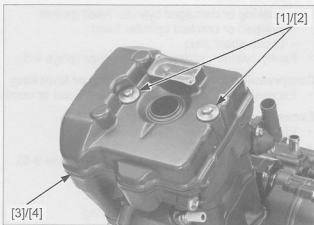
REMOVAL

Remove the following:

- Spark plug cap (page 3-8)
- PAIR check valve (page 5-60)

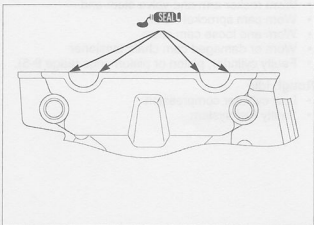
*The cylinder head
cover can be
serviced with the
engine installed in
the frame.*

Remove the cylinder head cover bolts [1], rubber seals [2], cylinder head cover [3] and packing [4].



INSTALLATION

Apply sealant (Three bond 5211C, SS KE45, 1207B, 1215 or equivalent) to the cylinder head semi-circular cut outs as shown.

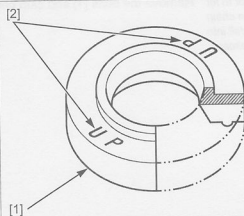


Install a new packing [1] into the cylinder head cover [2] groove.
Install the cylinder head cover onto the cylinder head.



Check the rubber seals [1] are in good condition, replace them if necessary.

Install the rubber seals to the cylinder head cover with their "UP" marks [2] facing up.

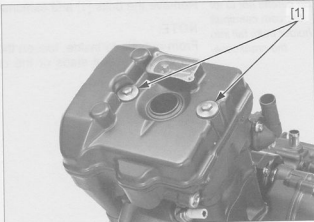


Install and tighten the cylinder head cover bolts [1] to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the following:

- PAIR check valve (page 5-60)
- Spark plug cap (page 3-10)



CAMSHAFT

REMOVAL

The camshaft can be serviced with the engine installed in the frame.

Remove the cylinder head cover (page 8-6).
Make sure the piston is at TDC (Top Dead Center) on the compression stroke (page 3-11).

Remove the cam chain tensioner lifter plug [1] and O-ring [2].



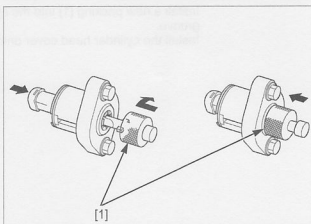
CYLINDER HEAD/VALVES

Turn the cam chain tensioner lifter shaft fully in (clockwise) and secure it using a tensioner stopper [1] to prevent damaging the cam chain.

TOOL:

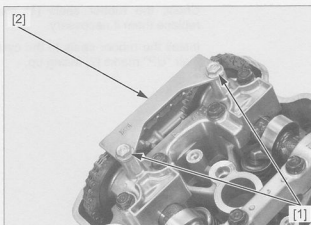
Tensioner stopper

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



Be careful not to let the cam chain guide bolts fall into the crankcase.

Remove the bolts [1] and cam chain guide B [2].

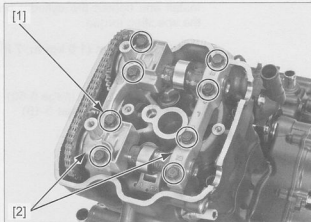


Be careful not to let the cam camshaft holder bolts fall into the crankcase.

Remove the bolts [1] and camshaft holders [2].

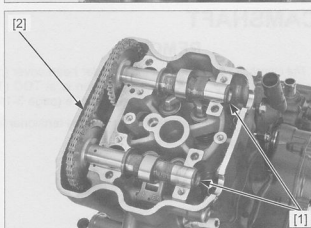
NOTE:

From outside to inside, loosen the bolts in a crisscross pattern in several steps or the camshaft holder might break.



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

Remove the camshafts [1] by removing the cam chain [2] from the cam sprockets.

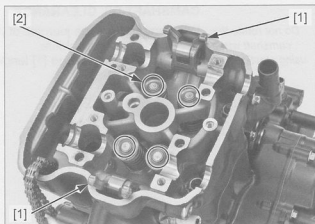


Lift the rocker arms [1].

Remove the shims [2].

NOTE:

- Do not allow the shims to fall into the crankcase.
- Mark all shims to ensure correct reassembly in their original locations.
- The shims can be easily removed with a tweezer or a magnet.



INSPECTION

CAMSHAFT

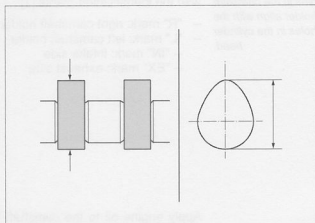
Check the cam lobe surfaces for scoring or evidence of insufficient lubricant.

Check the cam sprocket teeth for wear or damage.

Check the oil holes in the camshaft for clogging.

Measure the height of each cam lobe.

SERVICE LIMITS: IN: 30.911 mm (1.2170 in)
EX: 30.819 mm (1.2133 in)

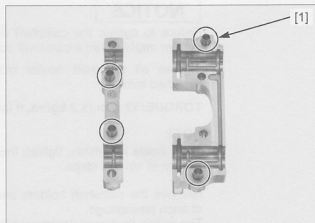


CAMSHAFT HOLDERS

Check the camshaft journal surfaces of each camshaft holder for scoring, scratches or evidence of insufficient lubrication.

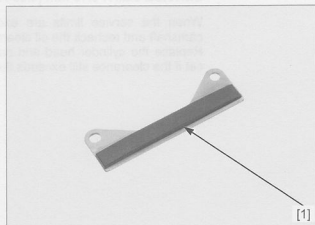
Check the camshaft holder for installation of the dowel pins [1].

Inspect the oil passages of the holders for clogging.



CAM CHAIN GUIDE B

Inspect the cam chain slipper surface [1] of the cam chain guide B for wear or damage.



CYLINDER HEAD/VALVES

CAMSHAFT OIL CLEARANCE

Do not rotate the camshaft when using plastigauge.

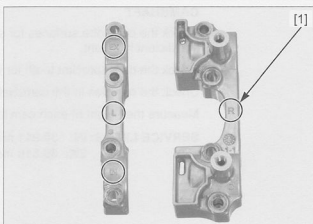
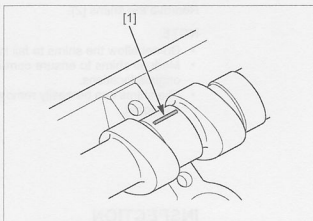
Wipe any oil from the journals of the camshaft, cylinder head and camshaft holders.

Lay a strip of plastigauge [1] lengthwise on top of each camshaft journal.

Be sure the dowel pins in the camshaft holder align with the holes in the cylinder head.

Install each camshaft holder to the correct locations with the identification marks [1].

- "R" mark: right camshaft holder
- "L" mark: left camshaft holder
- "IN" mark: intake side
- "EX" mark: exhaust side



Apply engine oil to the camshaft holder mounting bolt [1] threads and seating surface and install them.

NOTICE

Failure to tighten the camshaft holder in a crisscross pattern might cause a camshaft holder to break.

Tighten all camshaft holder mounting bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

NOTE:

From inside to outside, tighten the bolts in a crisscross pattern in several steps.

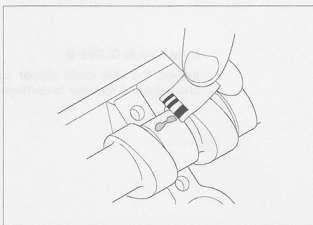
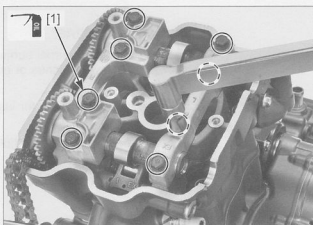
Remove the camshaft holders and measure the width of each plastigauge.

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.

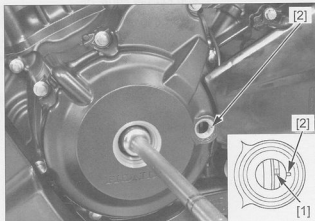
Replace the cylinder head and camshaft holders as a set if the clearance still exceeds the service limit.



INSTALLATION

Be careful not to jam the cam chain and timing sprocket on the crankshaft when rotating the crankshaft.

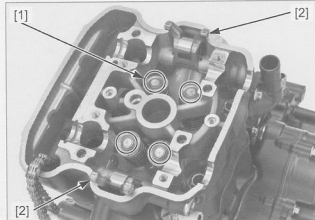
Rotate the crankshaft counterclockwise, and align the "T" mark [1] on the flywheel with the index notch [2] on the left crankcase cover.



Be careful not to let the shims fall into the crankcase.

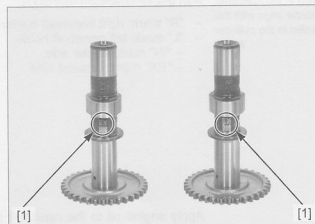
Install the shims [1] in their original locations on the valve retainer.

Lower the rocker arms [2].



Each camshaft has an identification mark [1].

- "IN" mark: intake camshaft
- "EX" mark: exhaust camshaft



CYLINDER HEAD/VALVES

Apply molybdenum oil solution to the camshaft lobes and journal surfaces.

Apply engine oil to the cam chain whole surface.

Install the camshafts [1] into the cylinder head while installing cam chain [2] onto the cam sprockets.

NOTE:

When installing the camshaft with its lobes facing up and align the outside index line ("IN" [3] and "EX" [4] marks) on the cam sprockets with the cylinder head top surface.

Be sure the dowel pins in the camshaft holder align with the holes in the cylinder head.

Install each camshaft holder to the correct locations with the identification marks [1].

- "R" mark: right camshaft holder
- "L" mark: left camshaft holder
- "IN" mark: intake side
- "EX" mark: exhaust side

Apply engine oil to the camshaft holder mounting bolt [1] threads and seating surface and install them.

NOTICE

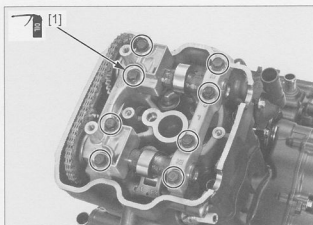
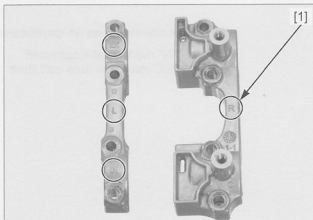
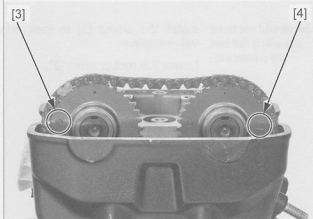
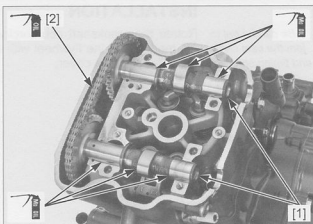
Failure to tighten the camshaft holder in a crisscross pattern might cause a camshaft holder to break.

Tighten all camshaft holder mounting bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

NOTE:

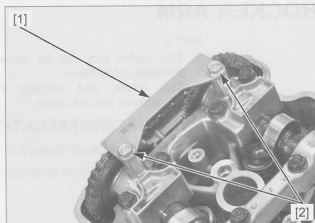
From inside to outside, tighten the bolts in a crisscross pattern in several steps.



Be careful not to let the bolts fall into the crankcase.

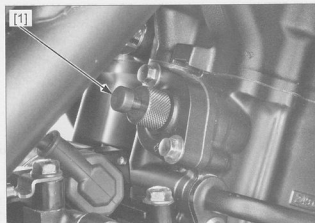
Install the cam chain guide B [1] and bolts [2].

Tighten the cam chain guide bolts securely.



Remove the tensioner stopper [1] from the cam chain tensioner lifter.

Recheck the valve timing.

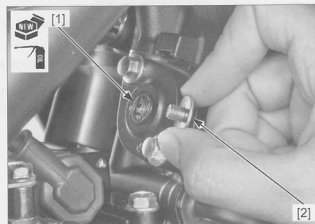


Apply engine oil to a new O-ring [1] and install it to the cam chain tensioner lifter.

Install and tighten the cam chain tensioner lifter plug [2] to the specified torque.

TORQUE: 4.2 N·m (0.4 kgf·m, 3.1 lbf·ft)

Install the cylinder head cover (page 8-6).



ROCKER ARM

NOTE:

- The rocker arm can be serviced with the engine installed in the frame.
- The intake and exhaust rocker arm service procedures are the same.

REMOVAL/INSTALLATION

Remove the camshafts (page 8-7).

Remove the bolt [1] and sealing washer [2].



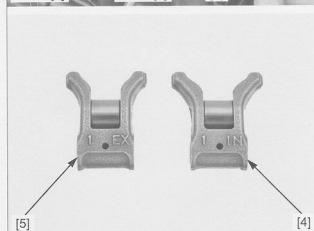
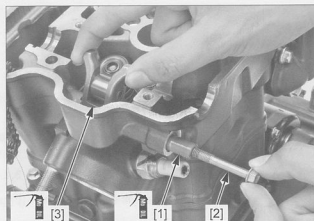
Remove the rocker arm shaft [1] using a 6 mm bolt [2] while holding the rocker arm [3].
Remove the rocker arm.

Apply molybdenum oil solution to the rocker arm inner surface, roller surface, slipper surface and rocker arm shaft outer surface.

Install the rocker arm and rocker arm shaft.

NOTE:

- The rocker arms are identified by the stamped marks:
 - "IN" mark: Intake rocker arm [4]
 - "EX" mark: Exhaust rocker arm [5]



Install a new sealing washer [1] and bolt [2].

Install the camshafts (page 8-11).



INSPECTION

Check the sliding surface of each rocker arm and rocker arm shaft for wear or damage.

Check the oil hole for clog of each rocker arm.

Measure the rocker arm I.D.

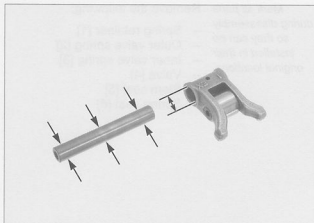
SERVICE LIMIT: 10.10 mm (0.398 in)

Measure the rocker arm shaft O.D. at three points.

SERVICE LIMIT: 9.75 mm (0.384 in)

Calculate the rocker arm-to-shaft clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)



CYLINDER HEAD

REMOVAL

Remove the following:

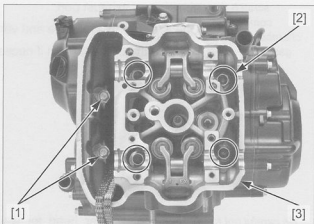
- Engine (page 7-4)
- Camshaft (page 8-7)

Be careful not to let the cylinder head bolts and nuts fall into the crankcase.

Remove the cylinder head bolts [1], nuts [2] and cylinder head [3].

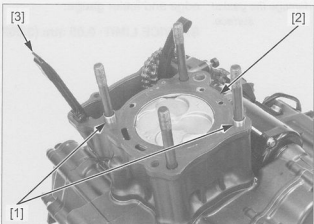
NOTE:

- Attach a piece of wire to the cam chain to prevent it from falling into the crankcase.
- Do not strike the cylinder too hard and do not damage the mating surface with a screwdriver.



Remove the following:

- Dowel pins [1]
- Gasket [2]
- Cam chain guide A [3]



CYLINDER HEAD/VALVES

DISASSEMBLY

Remove the following:

- Spark plug (page 3-8)
- O₂ sensor (page 5-57)
- Rocker arm (page 8-14)

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

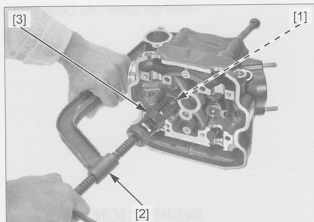
TOOLS:

Valve spring compressor [2]

07757-0010000

Valve spring compressor attachment [3]

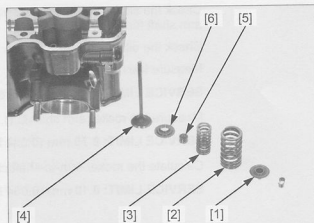
07959-KM30101



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

Remove the following:

- Spring retainer [1]
- Outer valve spring [2]
- Inner valve spring [3]
- Valve [4]
- Stem seal [5]
- Spring seat [6]



INSPECTION

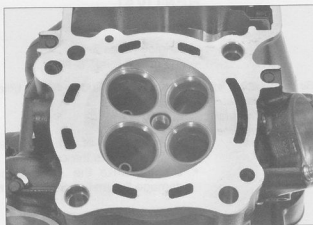
CYLINDER HEAD

Use care not to scratch the combustion chamber or head gasket surface.

Remove the carbon deposits from the combustion chamber or exhaust port.

Check the spark plug hole and valve area for cracks.

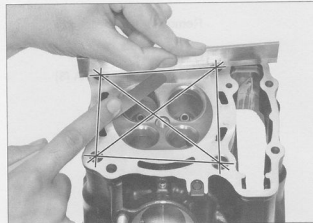
Replace the cylinder head if necessary.



Be careful not to damage the gasket surface.

Check the cylinder head for warpage with a straight edge and feeler gauge.

SERVICE LIMIT: 0.05 mm (0.002 in)



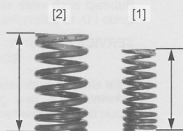
VALVE SPRING

Check the valve springs for fatigue or damage.

Measure the free length of the inner valve spring [1] and outer valve spring [2].

SERVICE LIMITS: Inner: 32.85 mm (1.293 in)
Outer: 38.35 mm (1.510 in)

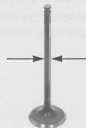
Replace the springs if they are shorter than the service limits.

**VALVE**

Check that the valve moves smoothly in the guide. Inspect each valve for bending, burning, scratches or abnormal stem wear.

Measure and record each valve stem O.D.

SERVICE LIMITS: IN: 4.46 mm (0.176 in)
EX: 4.45 mm (0.175 in)

**VALVE GUIDE**

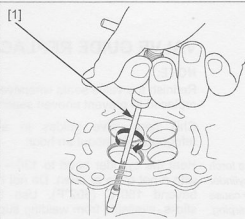
Ream the valve guide to remove any carbon build-up before measuring the guide I.D.

NOTE:

- Use cutting oil on the reamer during this operation.
- Take care not to tilt or lean the reamer in the guide while reaming. Otherwise, the valves may be installed slanted, causing oil leakage from the stem seal and improper valve seat contact. This may prevent valve seat refacing.
- Insert the reamer from the combustion chamber side of the head and always rotate the reamer clockwise.

TOOL:

Valve guide reamer, 4.5 mm [1] 07HMH-ML00101
or
07HMH-ML0010B
(U.S.A. only)



CYLINDER HEAD/VALVES

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

SERVICE LIMIT: IN/EX: 4.540 mm (0.1787 in)

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

SERVICE LIMITS: IN: 0.07 mm (0.003 in)

EX: 0.08 mm (0.003 in)

If the stem-to-guide clearance exceeds the service limit, determine if a new guide with standard dimensions would bring the clearance within tolerance.

If so, replace any guides as necessary and ream to fit.

If the stem-to-guide clearance exceeds the service limit with a new guide, also replace the valve.

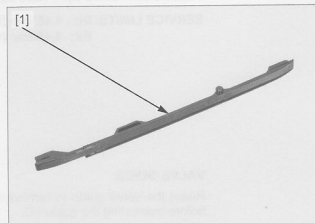
NOTE:

Inspect and reface the valve seats whenever the valve guides are replaced (page 8-20).



CAM CHAIN GUIDE A

Inspect the cam chain guide A [1] for excessive wear or damage, replace it if necessary.



VALVE GUIDE REPLACEMENT

NOTE:

Refinish the valve seats whenever the valve guides are replaced to prevent uneven seating.

Chill new valve guides in a freezer section of refrigerator for about an hour.

Do not use a torch to heat the cylinder head; it may cause warping.

Heat the cylinder head to 130 – 140°C (266 – 284°F) with a hot plate or oven. Do not heat the cylinder head beyond 150°C (302°F). Use temperature indicator sticks, available from welding supply stores, to be sure the cylinder head is heated to the proper temperature.

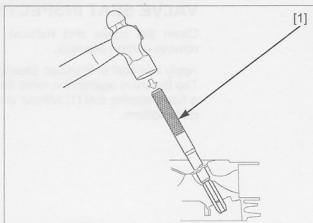
To avoid burns, wear insulated gloves when handling the heated cylinder head.



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

TOOL:

Valve guide driver, 4.3 mm [1] 07HMD-ML00101



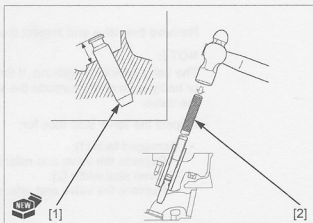
While the cylinder head is still heated, take new valve guides [1] from the freezer.

Adjust the valve guide driver to the valve guide height and drive in the valve guide from the camshaft side.

TOOL:

Valve guide driver [2]

07743-0020000
(Not available in
U.S.A.)

**SPECIFIED HEIGHT:**

IN/EX: 13.8 – 14.0 mm (0.54 – 0.55 in)

U.S.A. only installation:

Mark the depth of the valve guide using a marker.
Use the valve guide driver to correct the depth.

Let the cylinder head cool to room temperature.

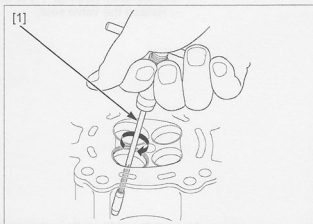
Ream a new valve guides.

TOOL:

Valve guide reamer, 4.5 mm [1] 07HMH-ML00101
or
07HMH-ML0010B
(U.S.A. only)

NOTE:

- Use cutting oil on the reamer during this operation.
- Take care not to tilt or lean the reamer in the guide while reaming. Otherwise, the valves may be installed slanted, causing oil leakage from the stem seal and improper valve seat contact. This may prevent valve seat refacing.
- Insert the reamer from the combustion chamber side of the head and always rotate the reamer clockwise.

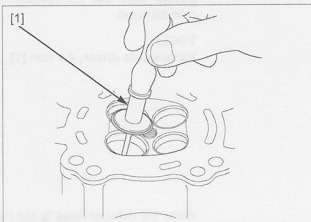


Clean the cylinder head thoroughly to remove any metal particles after reaming and reface the valve seat (page 8-21).

VALVE SEAT INSPECTION

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

Apply thin coat of Prussian Blue to each valve face. Tap the valve against the valve seat several times using a hand lapping tool [1] without rotating valve to make a clear pattern.



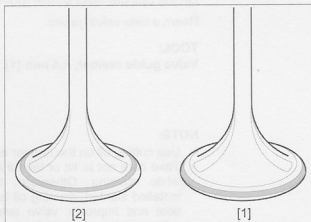
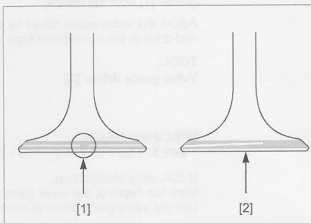
Remove the valve and inspect the valve seat face.

NOTE:

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

Inspect the valve seat face for:

- Damaged face [1]:
 - Replace the valve and reface the valve seat.
- Uneven seat width [2]:
 - Replace the valve and reface the valve seat.
- Contact area (too high [1] or too low [2] area):
 - Reface the valve seat.



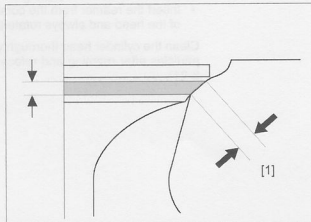
Inspect the width of the valve seat [1].

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

STANDARD: 0.90 – 1.10 mm (0.035 – 0.043 in)

SERVICE LIMIT: 1.50 mm (0.059 in)

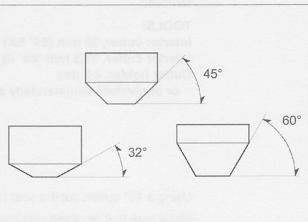
If the valve seat width is not within specification, reface the valve seat (page 8-21).



VALVE SEAT REFACING

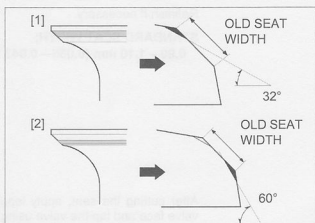
NOTE:

- Follow the refacing manufacturer's operating instructions.
- Reface the valve seat whenever the valve guide has been replaced.
- Be careful not to grind the seat more than necessary.



If the contact area is too high [1] on the valve, the seat must be lowered using a 32° flat cutter.

If the contact area is too low [2] on the valve, the seat must be raised using a 60° inner cutter.



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

Use a 45° cutter [1], remove any roughness [2] or irregularities from the seat.

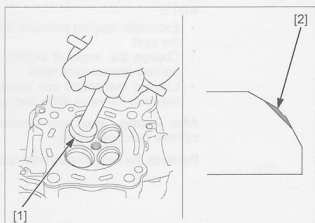
TOOLS:

Seat cutter, 27.5 mm (45° EX) 07780-0010200

Seat cutter, 33 mm (45° IN) 07780-0010800

Cutter holder, 4.5 mm 07781-0010600

or equivalent commercially available in U.S.A.



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

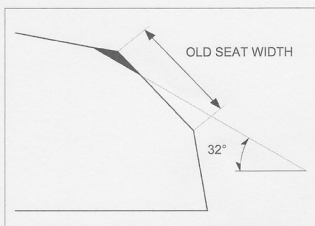
TOOLS:

Flat cutter, 27 mm (32° EX) 07780-0013300

Flat cutter, 30 mm (32° IN) 07780-0012200

Cutter holder, 4.5 mm 07781-0010600

or equivalent commercially available in U.S.A.



CYLINDER HEAD/VALVES

Using 60° cutter, remove the bottom 1/4 of the old seat.
Remove the cutter and inspect the area you have just removed.

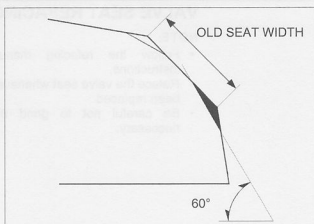
TOOLS:

Interior cutter, 30 mm (60° EX) 07780-0014000

Interior cutter, 37.5 mm (60° IN) 07780-0014100

Cutter holder, 4.5 mm 07781-0010600

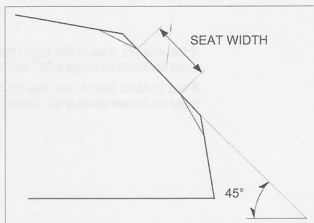
or equivalent commercially available in U.S.A.



Using a 45° cutter, cut the seat to proper width.
Make sure that all pitting and irregularities are removed.
Refinish if necessary.

STANDARD SEAT WIDTH:

0.90 – 1.10 mm (0.035 – 0.043 in)



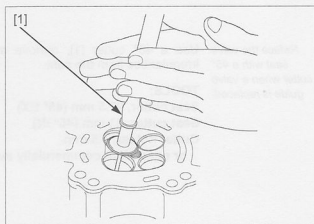
After cutting the seat, apply lapping compound to the valve face and lap the valve using light pressure.

NOTE:

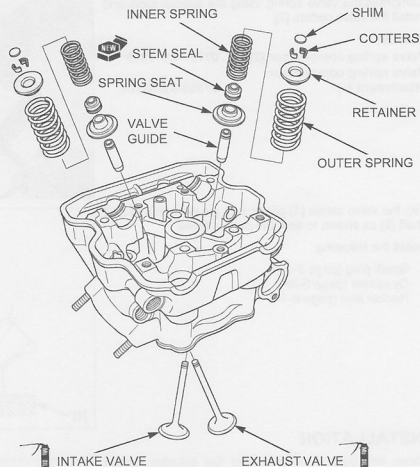
- Excessive lapping pressure may deform or damage the seat.
- Change the angle of lapping tool [1] frequently to prevent uneven seat wear.
- Lapping compound can cause damage if it enters between the valve stem and guide.

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

Recheck the seat contact after lapping.



ASSEMBLY



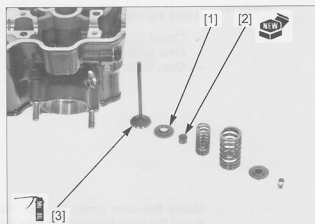
Clean the cylinder head assembly with solvent and blow through all oil passages with compressed air.

Install the spring seats [1] and new valve stem seals [2].

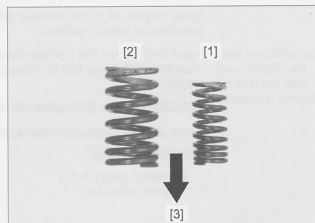
Apply molybdenum oil solution to each valve stem sliding surface.

To avoid damage to the seal, turn the valve slowly when inserting.

Insert the intake and exhaust valves [3] into the valve guides.



Install the inner valve spring [1] and outer valve spring [2] with the tightly wound coils should face toward the combustion chamber [3].



CYLINDER HEAD/VALVES

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

Install the spring retainer [1].

Compress the valve spring using the special tools and install the valve cotters [2].

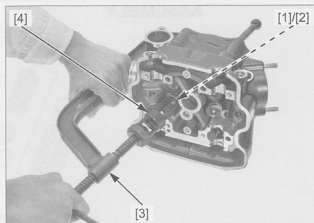
TOOLS:

Valve spring compressor [3]

07757-0010000

Valve spring compressor attachment [4]

07959-KM30101

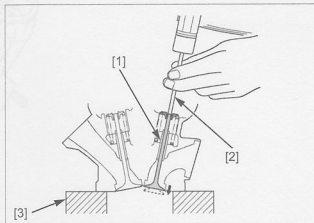


Support the cylinder head above the work bench [3] surface to prevent possible valve damage.

Tap the valve stems [1] gently with plastic hammer and shaft [2] as shown to seat the cotters firmly.

Install the following:

- Spark plug (page 3-10)
- O₂ sensor (page 5-58)
- Rocker arm (page 8-14)



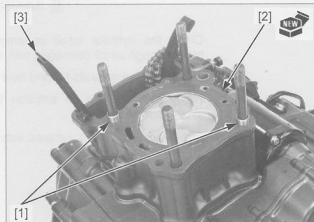
INSTALLATION

Do not allow dust and dirt to enter the crankcase.

Clean any gasket material from the cylinder mating surfaces.

Install the following:

- Dowel pins [1]
- New gasket [2]
- Cam chain guide A [3]



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

Apply engine oil to the cylinder head mounting nut [2] threads and seating surface.

Be careful not to let the cylinder head bolts and nuts fall into the crankcase.

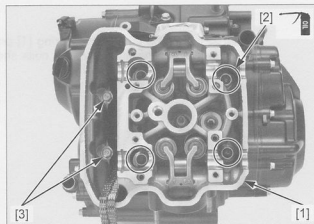
Install and tighten the cylinder head mounting nuts in a crisscross pattern in two or three steps to the specified torque.

TORQUE: 51 N·m (5.2 kgf·m, 38 lbf·ft)

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

Install the following:

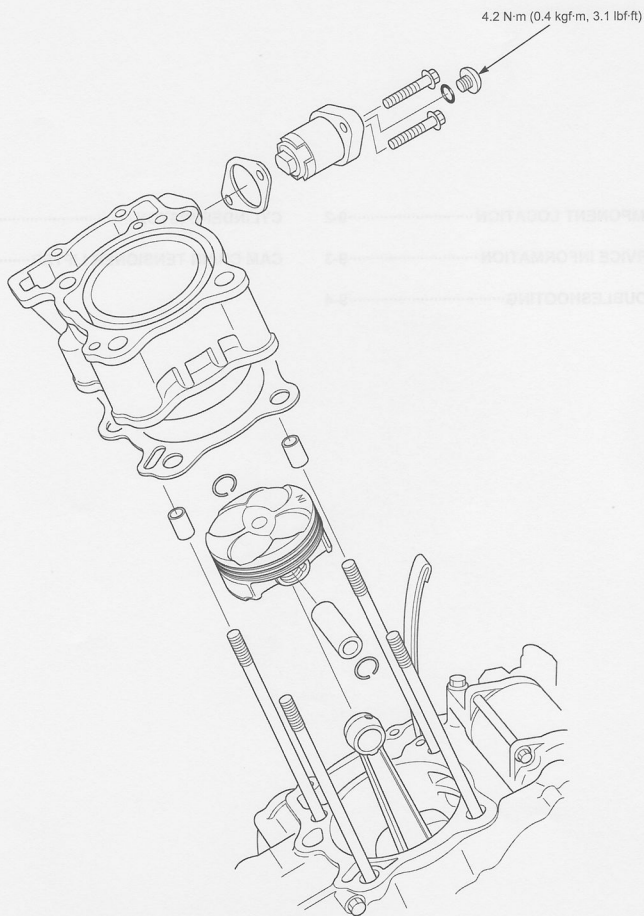
- Camshaft (page 8-11)
- Engine (page 7-6)



9. CYLINDER/PISTON

COMPONENT LOCATION	9-2	CYLINDER/PISTON	9-5
SERVICE INFORMATION	9-3	CAM CHAIN TENSIONER LIFTER	9-10
TROUBLESHOOTING	9-4		

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers maintenance of the cylinder and piston. To service these parts, the engine must be removed from the frame.
- Take care not to damage the cylinder wall and piston.
- Be careful not to damage the mating surfaces when removing the cylinder. Do not strike the cylinder too hard during removal.
- Camshaft and rocker arm lubricating oil is fed through an oil passage in the cylinder. Clean the oil passage before installing cylinder.
- Clean all disassembled parts with cleaning solvent before inspection, use compressed air to dry the parts.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cylinder	I.D.	76.000 – 76.010 (2.9921 – 2.9925)	76.04 (2.994)
	Out-of-round	—	0.010 (0.0004)
	Taper	—	0.010 (0.0004)
	Warpage	—	0.05 (0.002)
Piston, piston pin, piston ring	Piston O.D. at 11 mm (0.4 in) from bottom		75.960 – 75.980 (2.9905 – 2.9913)
	Piston pin hole I.D.		17.002 – 17.008 (0.6694 – 0.6696)
	Piston pin O.D.		16.994 – 17.000 (0.6690 – 0.6693)
	Piston-to-piston pin clearance		0.002 – 0.014 (0.0001 – 0.0006)
	Piston ring end gap	Top	0.22 – 0.32 (0.009 – 0.013)
		Second	0.40 – 0.55 (0.016 – 0.022)
		Oil (side rail)	0.20 – 0.70 (0.008 – 0.028)
	Piston ring-to-ring groove clearance	Top	0.040 – 0.080 (0.0016 – 0.0032)
		Second	0.015 – 0.050 (0.0006 – 0.0020)
	Cylinder-to-piston clearance		0.020 – 0.050 (0.0008 – 0.0020)
Connecting rod small end I.D.		17.016 – 17.034 (0.6699 – 0.6706)	17.06 (0.672)
Connecting rod-to-piston pin clearance		0.016 – 0.040 (0.0006 – 0.0016)	0.10 (0.004)

TORQUE VALUE

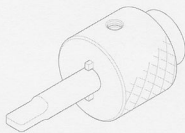
Cylinder stud bolt

Cam chain tensioner lifter plug

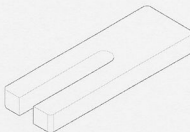
4.2 N·m (0.4 kgf-m, 3.1 lbf-ft)

See page 9-8

TOOL

Tensioner stopper
070MG-0010100

or 07AMG-001A100 (U.S.A. only)

Piston base
07958-250001

TROUBLESHOOTING

- Worn, stuck or broken piston rings
- Worn or damaged cylinder and piston
- Loose spark plug

- Excessive carbon built-up on piston or combustion chamber

- Faulty cylinder, piston and piston rings
- Improper installation of piston rings
- Scored or scratched piston or cylinder wall

- Worn piston pin or piston pin hole
- Faulty cylinder, piston or piston ring
- Worn connecting rod small end

CYLINDER/PISTON

CYLINDER REMOVAL

Remove the following:

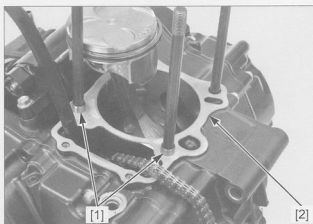
- Cylinder head (page 8-15)
- Water pipe (page 6-18)

Lift the cylinder [1] and remove it, being careful not to damage the piston with the stud bolts.

NOTE:

- Attach a piece of wire to the cam chain to prevent it from falling into the crankcase.
- Do not strike the cylinder too hard and do not damage the mating surface with a screwdriver.

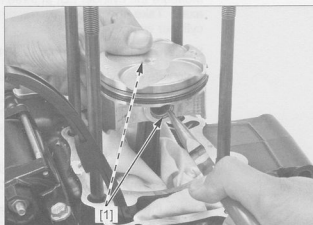
Remove the dowel pins [1] and gasket [2].



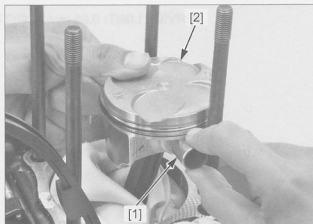
PISTON REMOVAL

Place a clean shop towel over the crankcase to prevent the piston pin clips from falling into the crankcase.

Remove the piston pin clips [1] with pliers.



Push the piston pin [1] out of the piston [2] and connecting rod, and remove the piston.

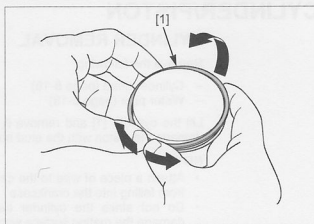


CYLINDER/PISTON

Spread each piston ring [1] and remove it by lifting up a point opposite the gap.

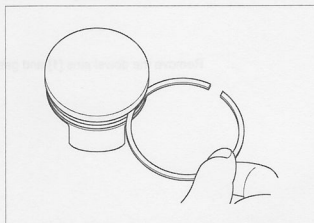
NOTE:

- Do not damage the piston ring by spreading the ends too far.
- Be careful not to damage the piston when the piston ring removal.



Never use a wire brush; it will scratch the grooves.

Clean carbon deposits from the piston ring grooves with a used piston ring that will be discarded.



INSPECTION

CYLINDER

Check the cylinder wall for scratches and wear.

Measure the cylinder I.D. at three levels on the X and Y axes. Take the maximum reading to determine the cylinder wear.

SERVICE LIMIT: 76.04 mm (2.994 in)

Calculate the cylinder-to-piston clearance (page 9-7).

Calculate the cylinder taper and out-of-round at three levels on the X and Y axis. Take the maximum reading to determine the taper and out-of-round.

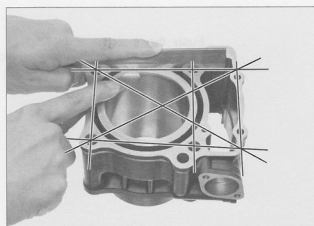
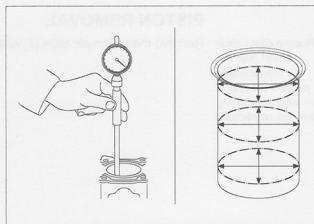
SERVICE LIMITS:

Taper: 0.010 mm (0.0004 in)

Out-of-round: 0.010 mm (0.0004 in)

Check the top of the cylinder for warpage with a straight edge and feeler gauge across the stud and bolt holes.

SERVICE LIMIT: 0.05 mm (0.002 in)



PISTON/PISTON RING

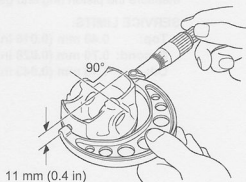
Check the piston for cracks or other damage. Check the ring grooves for excessive wear and carbon build-up.

Measure each piston O.D. at a point 11 mm (0.4 in) from the bottom and 90° to the piston pin hole.

SERVICE LIMIT: 75.89 mm (2.988 in)

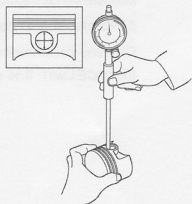
Calculate the cylinder-to-piston clearance. Take the maximum reading to determine the clearance (Cylinder I.D.: page 9-6).

SERVICE LIMIT: 0.09 mm (0.004 in)



Measure piston pin hole I.D.

SERVICE LIMIT: 17.030 mm (0.6705 in)

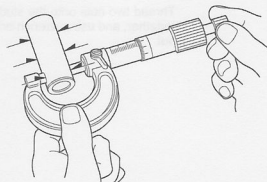


Measure the piston pin O.D. at three points.

SERVICE LIMIT: 16.980 mm (0.6685 in)

Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.08 mm (0.003 in)



Always replace the piston rings as a set.

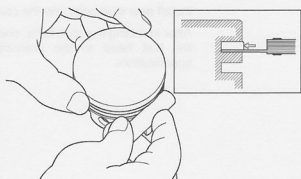
Inspect the piston rings for smooth movement by rotating them. The rings should be able to move in their grooves without catching.

Push in the ring until the outer surface of the piston ring is nearly flush with the piston and measure the ring-to-ring groove clearance using a feeler gauge.

SERVICE LIMITS:

Top: 0.10 mm (0.004 in)

Second: 0.09 mm (0.004 in)



CYLINDER/PISTON

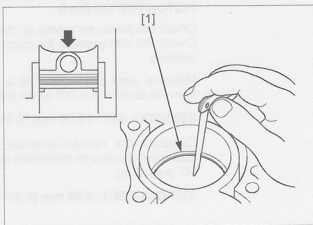
Insert the piston ring [1] into the bottom of the cylinder squarely using the piston crown. Measure the piston ring end gap.

SERVICE LIMITS:

Top: 0.40 mm (0.016 in)

Second: 0.70 mm (0.028 in)

Oil: 1.10 mm (0.043 in)



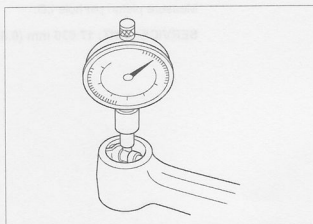
CONNECTING ROD

Measure the connecting rod small end I.D.

SERVICE LIMIT: 17.06 mm (0.672 in)

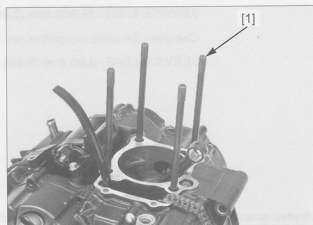
Calculate the connecting rod-to-piston pin clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)



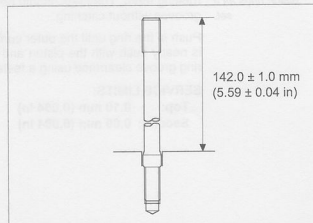
STUD BOLT REPLACEMENT

Thread two nuts onto the stud bolt [1] and tighten them together, and use a wrench on them to turn the stud bolt out.



Install new stud bolts into the crankcase as shown.

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



PISTON INSTALLATION

Apply engine oil to the piston ring grooves.
Apply engine oil to the piston ring entire surface.

Be careful not to damage the piston and rings.

Carefully install the piston rings into the piston ring grooves with the markings [1] facing up.

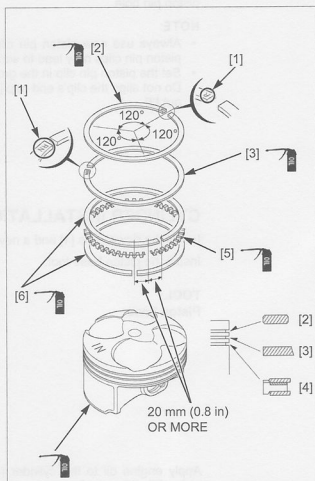
NOTE:

- Do not confuse the top ring [2] and second ring [3].
- To install the oil ring [4], install the spacer [5] first, then install the side rails [6].

Stagger the piston ring end gaps 120° apart from each other.

Stagger the side rail end gaps as shown.

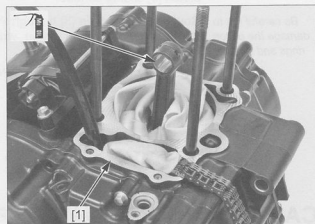
Apply engine oil to the piston pin hole inner surface and sliding surface.



When cleaning the cylinder mating surface, place a shop towel over the cylinder opening to prevent dust or dirt enter the crankcase.

Clean any gasket material from the cylinder mating surface [1] of the crankcase.

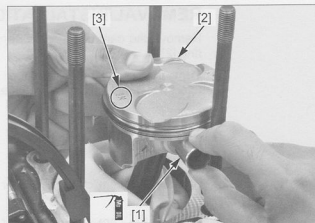
Apply molybdenum oil solution to the connecting rod small end inner surfaces.



Apply molybdenum oil solution to the piston pin [1] outer surfaces.

Install the piston [2] with its "IN" mark [3] facing intake side.

Install the piston pin.

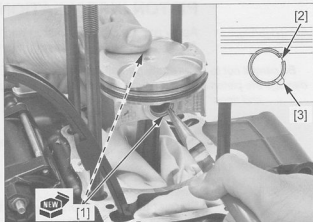


CYLINDER/PISTON

Install new piston pin clips [1] into the grooves of the piston pin hole.

NOTE:

- Always use new piston pin clips. Reinstalling used piston pin clips may lead to serious engine damage.
- Set the piston pin clip in the groove properly.
- Do not align the clip's end gap [2] with the piston cut-out [3].



CYLINDER INSTALLATION

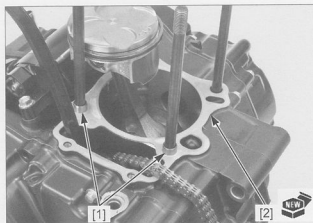
Install the dowel pins [1] and a new gasket [2].

Install the piston base tool.

TOOL:

Piston base

07958-250001

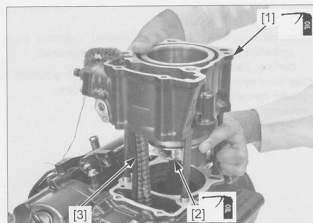


Apply engine oil to the cylinder [1] inner surface and piston [2] sliding surface.

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

Route the cam chain [3] through the cylinder and install the cylinder over the piston while compressing the piston rings with your fingers.

Install the cylinder head (page 8-24).



CAM CHAIN TENSIONER LIFTER

REMOVAL/INSTALLATION

Remove the cam chain tensioner lifter plug [1] and O-ring [2].

Turn the cam chain tensioner lifter shaft fully in (clockwise) and secure it using the special tool.

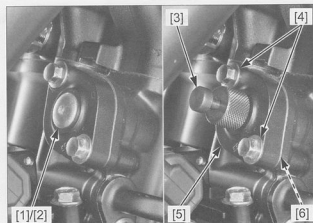
TOOL:

Tensioner stopper [3]

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

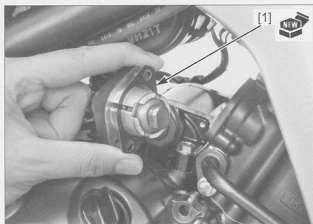
Remove the cam chain tensioner lifter mounting bolts [4].

Remove the cam chain tensioner lifter [5] and gasket [6].



Install a new gasket [1] on the cam chain tensioner lifter and install them to the cylinder.

Install and tighten the cam chain tensioner lifter mounting bolts.

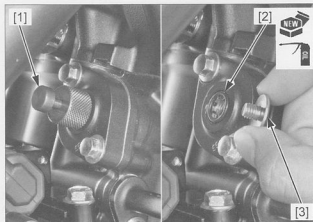


Remove the tensioner stopper [1] from the cam chain tensioner lifter.

Apply engine oil to a new O-ring [2] and install it to the cam chain tensioner lifter.

Install and tighten the cam chain tensioner lifter plug [3] to the specified torque.

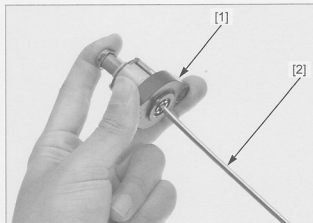
TORQUE: 4.2 N·m (0.4 kgf·m, 3.1 lbf·ft)



INSPECTION

Check the cam chain tensioner lifter [1] operation:

- The cam chain tensioner lifter shaft should not go into the cam chain tensioner lifter body when it is pushed.
- When it is turned clockwise with a tensioner stopper or a screwdriver [2], the cam chain tensioner lifter shaft should be pulled into the cam chain tensioner lifter body. The cam chain tensioner lifter shaft should spring out of the cam chain tensioner lifter body as soon as the stopper tool is released.

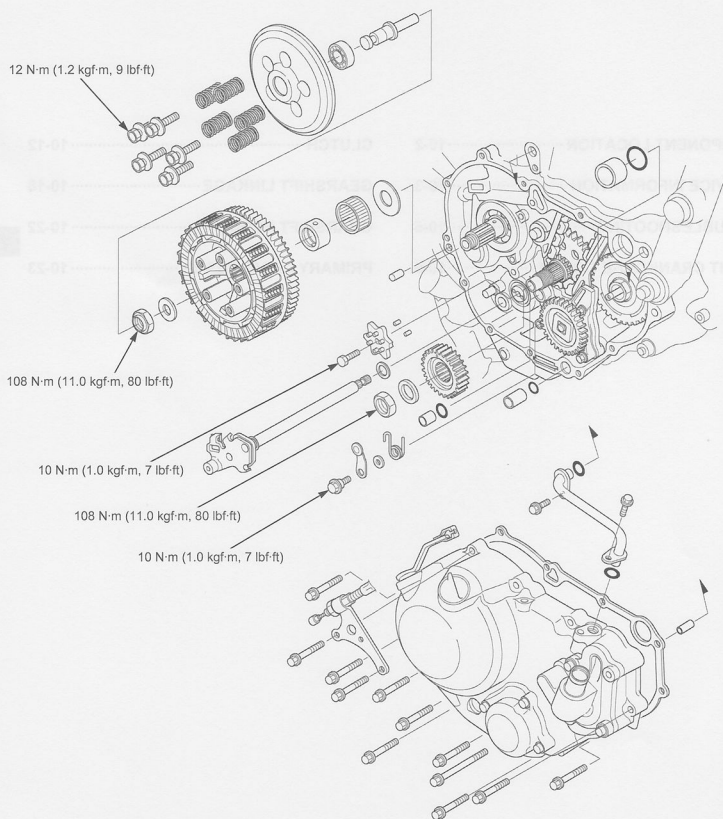


10. CLUTCH/GEARSHIFT LINKAGE

COMPONENT LOCATION	10-2	CLUTCH	10-12
SERVICE INFORMATION	10-3	GEARSHIFT LINKAGE	10-18
TROUBLESHOOTING	10-5	GEARSHIFT PEDAL	10-22
RIGHT CRANKCASE COVER	10-6	PRIMARY DRIVE GEAR	10-23

CLUTCH/GEARSHIFT LINKAGE

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers service of the clutch and gearshift linkage. All services can be done with the engine installed in the frame.
- Engine oil viscosity and level have an effect on clutch disengagement. Oil additives also effect clutch performance and are not recommended. When the clutch does not disengage or the motorcycle creeps with the clutch lever pulled in, inspect the engine oil level before servicing the clutch system.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Clutch lever freeplay		10 – 20 (3/8 – 13/16)	—
Clutch	Spring free length	41.5 (1.63)	37.5 (1.48)
	Disc thickness	2.30 – 2.50 (0.091 – 0.098)	2.27 (0.089)
	Plate warpage	—	0.3 (0.01)
Clutch outer guide I.D.		20.000 – 20.021 (0.7874 – 0.7882)	20.04 (0.789)
Mainshaft O.D. at clutch outer guide		19.967 – 19.980 (0.7861 – 0.7866)	19.947 (0.7853)

TORQUE VALUES

Clutch center lock nut

108 N·m (11.0 kgf-m, 80 lbf-ft)

Primary drive gear lock nut

108 N·m (11.0 kgf-m, 80 lbf-ft)

Shift drum stopper arm bolt

10 N·m (1.0 kgf-m, 7 lbf-ft)

Shift drum stopper plate bolt

10 N·m (1.0 kgf-m, 7 lbf-ft)

Clutch lifter plate bolt

12 N·m (1.2 kgf-m, 9 lbf-ft)

Lock nut; replace with a new one and stake.

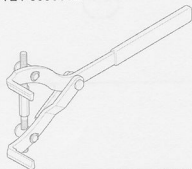
Apply engine oil to the threads and seating surface.

Apply engine oil to the threads and seating surface.

Apply locking agent to the threads.

Apply locking agent to the threads.

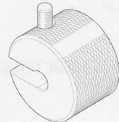
TOOLS

Clutch center holder
07724-0050002

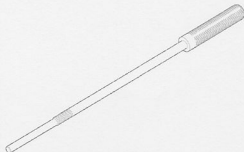
or equivalent commercially available in U.S.A.

Gear holder, M1.5
07724-0010200

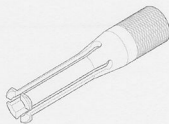
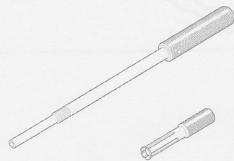
or 07724-001A200 (U.S.A. only)

Remover weight
07741-0010201

or 07936-371020A (U.S.A. only)

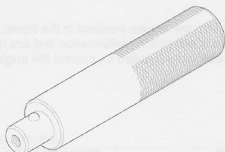






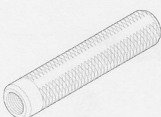

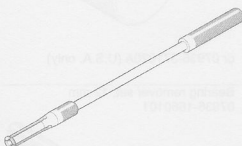

Bearing remover shaft, 15 mm
07936-KC10100

(Not available in U.S.A.)

Bearing remover head, 14 mm
07WMC-KFG0100Bearing remover set, 12 mm
07936-1660101

(Not available in U.S.A.)

CLUTCH/GEARSHIFT LINKAGE

<p>Driver 07749-0010000</p> 	<p>Attachment, 28 x 30 mm 07946-1870100</p> 	<p>Pilot, 12 mm 07746-0040200</p> 
<p>Pilot, 20 mm 07746-0040500</p> 	<p>Bearing remover head, 10 mm 07746-0050200</p> 	<p>Pilot collar, 16 mm 07PAF-0010620</p> 
<p>Bearing remover, 12 mm 07936-166010A (U.S.A. only)</p> 	<p>Remover handle 07936-3710100 (U.S.A. only)</p> 	<p>Pilot, 17 mm 07746-0040400</p> 
<p>Bearing remover shaft, 14 mm 07936-KC10500</p> 	<p>Attachment, 24 x 26 mm 07746-0010700</p> 	

TROUBLESHOOTING

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

Clutch lever too hard to pull in

- Damaged, kinked or dirty clutch cable
- Improperly routed clutch cable
- Damaged clutch lifter mechanism
- Faulty clutch lifter plate bearing

Clutch will not disengage or motorcycle creeps with clutch disengaged

- Excessive clutch lever freeplay
- Clutch plate warped
- Engine oil level too high, improper oil viscosity or additive used
- Loosen clutch center lock nut
- Damaged clutch lifter mechanism
- Clutch lifter piece installed improperly
- Worn clutch outer slot and clutch center grooves
- Improper clutch operation

Clutch slips

- Clutch lifter sticking
- Worn clutch discs
- Weak clutch springs
- No clutch lever freeplay
- Engine oil level too low or oil additive used

Hard to shift

- Misadjusted clutch cable
- Damaged or bent shift fork
- Bent shift fork shaft
- Incorrect engine oil viscosity
- Bent or damaged gearshift spindle
- Damaged shift drum stopper plate
- Damaged shift drum guide grooves

Transmission jumps out of gear

- Worn shift drum stopper arm
- Worn or broken gearshift spindle return spring
- Bent shift fork shaft
- Worn or damaged shift drum stopper plate
- Damaged shift drum guide grooves
- Worn gear dogs or dog holes

Gearshift pedal will not return

- Weak or broken gearshift spindle return spring
- Bent gearshift spindle

RIGHT CRANKCASE COVER

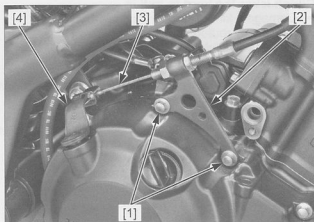
REMOVAL

Drain the engine oil (page 3-14).

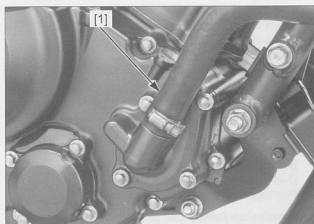
Drain the coolant (page 6-7).

Remove the water pipe (page 6-18).

Remove the bolts [1] and clutch cable guide [2], then disconnect the clutch cable [3] from the clutch lifter arm [4].



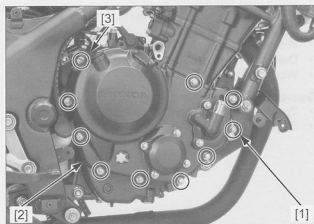
Loosen the water hose band screw and disconnect the water hose [1].



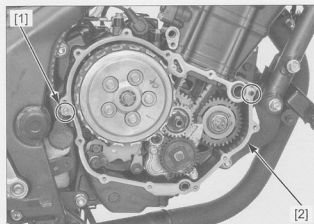
Loosen the right crankcase cover bolts [1] in a crisscross pattern in 2 or 3 steps, and remove the bolts.

Be careful not to let the return spring fall into the crankcase.

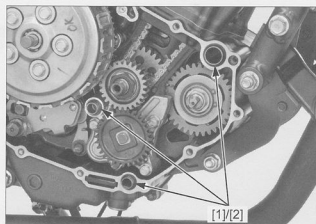
Remove the right crankcase cover [2] while turning the clutch lifter arm [3] counterclockwise to disengage the lifter arm spindle from the lifter piece.



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

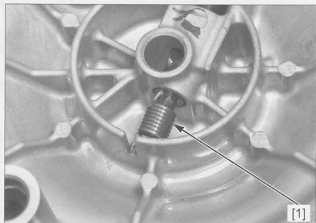


Remove the collars [1] and O-rings [2].

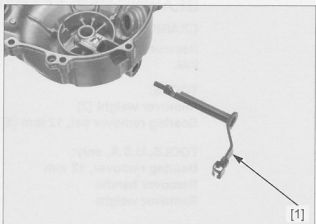


DISASSEMBLY

Remove the return spring [1] from the right crankcase cover.

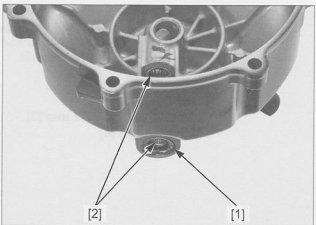


Remove the clutch lifter arm [1] from the right crankcase cover.



INSPECTION

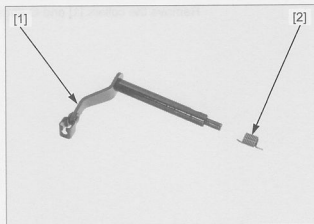
Check the oil seal [1] for fatigue or damage.
Check the needle bearings [2] for wear or damage.
Replace these parts if necessary (page 10-9).



CLUTCH/GEARSHIFT LINKAGE

Check the following:

- Lifter arm [1] for wear or damage
- Return spring [2] for fatigue or damage



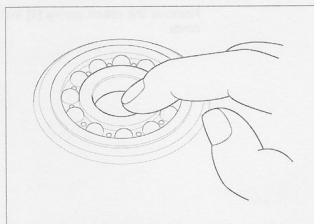
CRANKSHAFT BEARING

Turn the inner race of the crankshaft bearing with your finger.

The bearing should turn smoothly and quietly. Also check that the outer race fits tightly in the right crankcase cover.

Remove and discard the bearing if the races do not turn smoothly, quietly, or if they fit loosely in the right crankcase cover.

For crankshaft bearing replacement (page 10-8).



BEARING REPLACEMENT

CRANKSHAFT BEARING

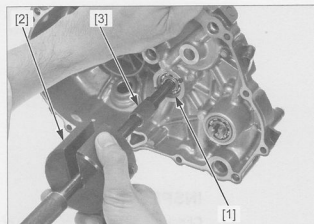
Remove the crankshaft bearing [1] using the special tool.

TOOLS:

Remover weight [2] 07741-0010201
Bearing remover set, 12 mm [3] 07936-1660101

TOOLS, U.S.A. only:

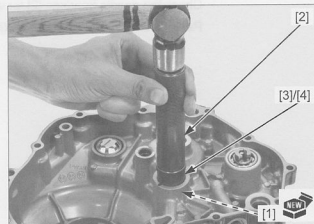
Bearing remover, 28 mm 07936-166010A
Remover handle 07936-3710100
Remover weight 07936-371020A



Drive in a new crankshaft bearing [1] into right crankcase cover with the marked side facing up until it is fully seated the special tools.

TOOLS:

Driver [2] 07749-0010000
Attachment, 28 x 30 mm [3] 07946-1870100
Pilot, 12 mm [4] 07746-0040200



CLUTCH LIFTER ARM NEEDLE BEARING

Remove the oil seal [1] from the right crankcase cover.

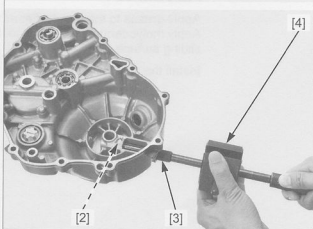
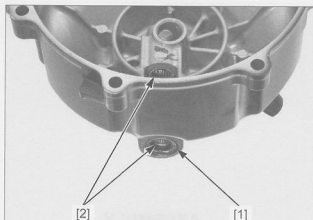
Remove the clutch lifter arm needle bearings [2] using the special tools.

TOOLS:

Bearing remover set, 12 mm [3] 07936-1660101
Remover weight [4] 07741-0010201

TOOLS, U.S.A. only:

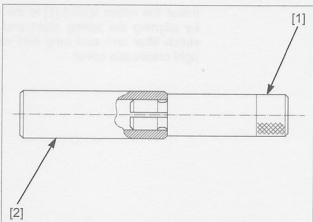
Bearing remover, 12 mm 07936-166010A
Remover handle 07936-3710100
Remover weight 07936-371020A



Install the bearing remover head [1] to the pilot collar [2] as shown.

TOOLS:

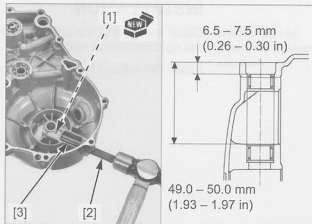
Bearing remover head, 10 mm 07746-0050200
Pilot collar, 16 mm 07PAF-0010620



Drive in a new clutch lifter arm needle bearings [1] using the special tools as shown.

TOOLS:

Bearing remover head, 10 mm [2] 07746-0050200
Pilot collar, 16 mm [3] 07PAF-0010620



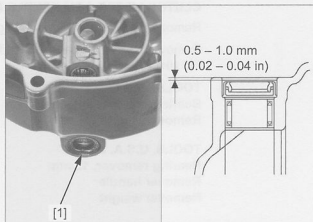
CLUTCH/GEARSHIFT LINKAGE

Install the oil seal [1] to the right crankcase cover as shown.

TOOLS:

Driver
Pilot, 17 mm

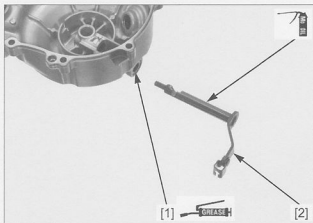
07749-0010000
07746-0040400



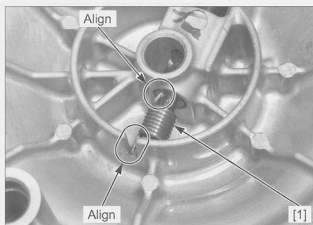
ASSEMBLY

Apply grease to the clutch lifter arm oil seal lips [1].
Apply molybdenum oil solution to the clutch lifter arm [2] sliding surface.

Install the clutch lifter arm.



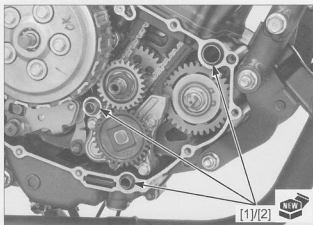
Install the return spring [1] to the right crankcase cover by aligning the spring short end with the hole of the clutch lifter arm and long end with the groove of the right crankcase cover.



INSTALLATION

Be careful not to damage the mating surfaces of the right crankcase and cover.

Install the collars [1] and new O-rings [2].



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

Be careful not to let the return spring fall into the crankcase.

Install the right crankcase cover [1] while engaging the water pump shaft groove with the balancer shaft tab and turning the clutch lifter arm [2] clockwise to engage the lifter arm spindle groove with the lifter piece flange.

Install and tighten the bolts [3] in a crisscross pattern in 2 or 3 steps.

Connect the water hose [1] and tighten the water hose band screw (page 6-10).

Connect the clutch cable [1] to the clutch lifter arm [2].

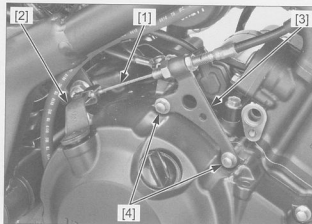
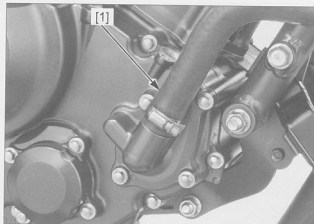
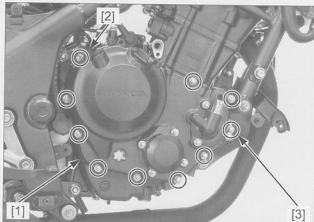
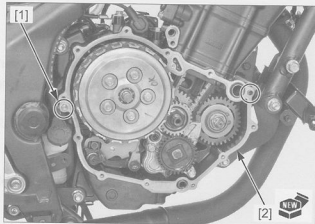
Install the clutch cable guide [3] and bolts [4]. Tighten the bolts securely.

Install the water pipe (page 6-18).

Adjust the clutch lever freeplay (page 3-26).

Fill the engine with the recommended engine oil (page 3-13).

Fill the recommended coolant mixture to the filler neck and bleed the air (page 6-6).



CLUTCH

REMOVAL

Remove the right crankcase cover (page 10-6).

Loosen the clutch lifter plate bolts [1] in a crisscross pattern in 2 or 3 steps.

Remove the clutch lifter plate bolts and clutch springs [2].

Remove the clutch lifter plate [3].

Remove the clutch discs [4] and plates [5].

Remove the clutch lifter piece [1].

Be careful not to damage the mainshaft threads.

Unstake the clutch center lock nut [1].

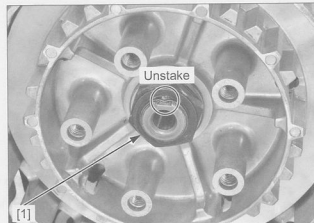
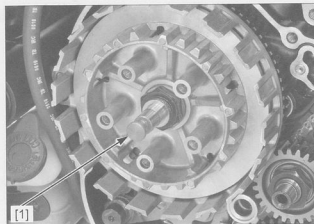
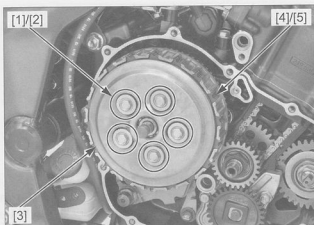
Hold the clutch center [1] with the special tool and loosen the clutch center lock nut [2].

TOOL:

Clutch center holder [3]

07724-0050002 or equivalent commercially available in U.S.A.

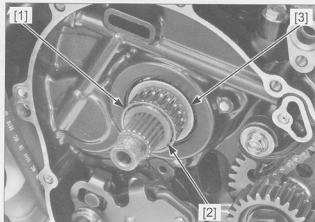
Remove the clutch center lock nut and washer [4].



Remove the washer [1] and clutch outer [2].



Remove the needle bearing [1] clutch outer guide [2] and washer [3] from the mainshaft.



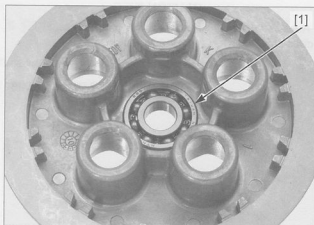
INSPECTION

CLUTCH LIFTER BEARING

Turn the inner race of the lifter plate bearing [1] with your finger.

The bearing should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the lifter plate.

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



Never install the old bearing, once the bearing has been removed, the bearings must be replaced with new ones.

TOOLS:

Driver [2]

Attachment, 28 x 30 mm [3]

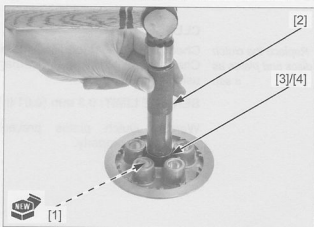
Pilot, 12 mm [4]

07749-0010000

07946-1870100

07746-0040200

After installation, apply engine oil to the bearing rotating area.



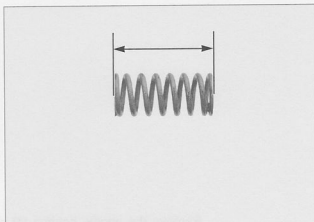
CLUTCH/GEARSHIFT LINKAGE

CLUTCH SPRING

Replace the clutch springs as a set.

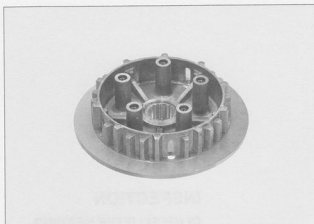
Check the clutch spring for fatigue or damage.
Measure the free length of the clutch spring.

SERVICE LIMIT: 37.5 mm (1.48 in)



CLUTCH CENTER

Check the grooves of the clutch center for nicks, indentations or abnormal wear made by the clutch plates.



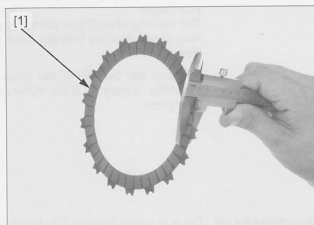
CLUTCH DISC

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: 2.27 mm (0.089 in)



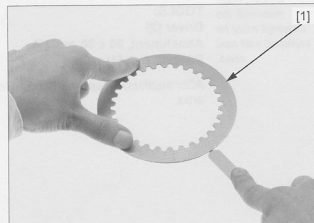
CLUTCH PLATE

Replace the clutch discs and plates as a set.

Check the plate [1] for discoloration.
Check the clutch plate for warpage on a surface plate using a feeler gauge.

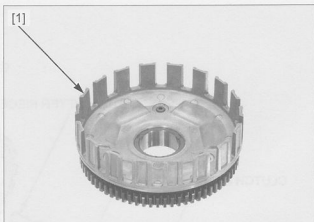
SERVICE LIMIT: 0.3 mm (0.01 in)

Warped clutch plates prevent the clutch from disengaging properly.



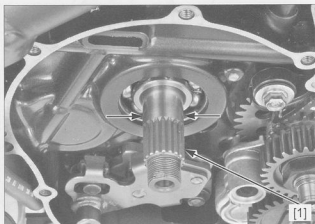
CLUTCH OUTER

Check the slots of the clutch outer [1] for nicks, cuts or indentations made by the clutch discs. Check the primary driven gear teeth for wear or damage.

**MAINSHAFT**

Measure the mainshaft [1] O.D. at the clutch outer guide.

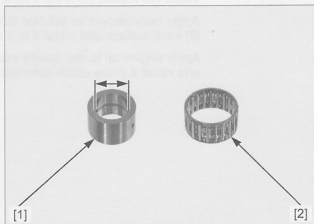
SERVICE LIMIT: 19.947 mm (0.7853 in)

**OUTER GUIDE/NEEDLE BEARING**

Measure the clutch outer guide [1] I.D.

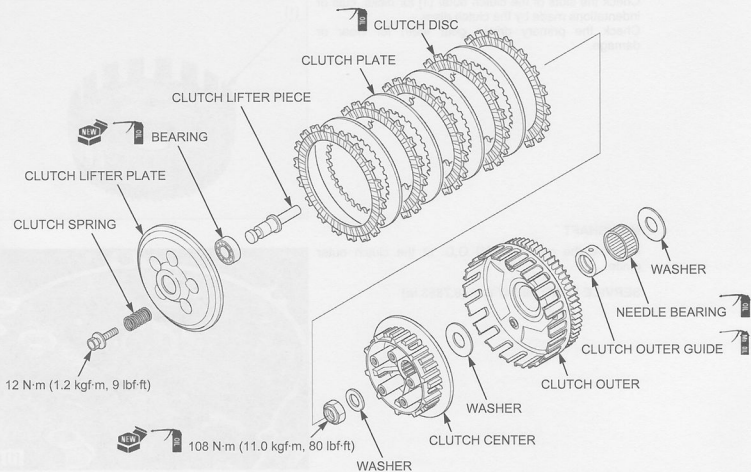
SERVICE LIMIT: 20.04 mm (0.789 in)

Check the needle bearing [2] for wear or damage. Replace the bearing if necessary.



CLUTCH/GEARSHIFT LINKAGE

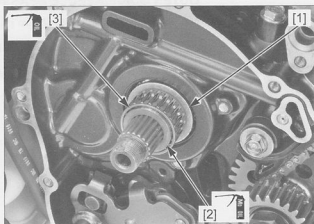
INSTALLATION



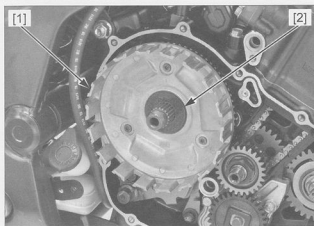
Install the washer [1] to the mainshaft.

Apply molybdenum oil solution to the clutch outer guide [2] inner surface and install it to the mainshaft.

Apply engine oil to the needle bearing [3] rotating area and install it to the clutch outer guide.

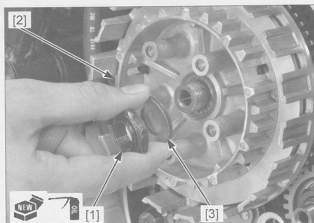


Install the clutch outer [1] and washer [2].



Apply engine oil to a new clutch center lock nut [1] threads and seating surface.

Install the clutch center [2], washer [3] and lock nut.



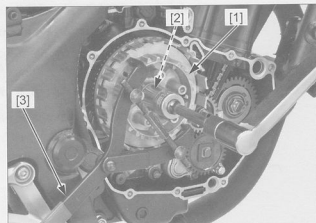
Hold the clutch center [1] with the special tool and tighten the lock nut [2] to the specified torque.

TOOL:

Clutch center holder [3]

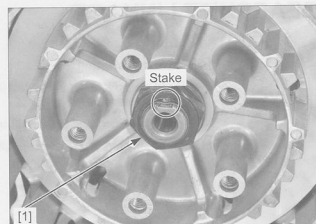
07724-0050002 or
equivalent
commercially
available in U.S.A.

TORQUE: 108 N·m (11.0 kgf·m, 80 lbf·ft)

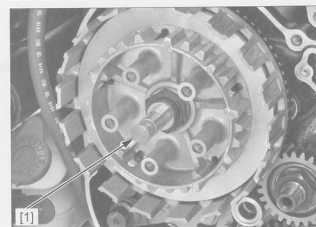


*Be careful not to
damage the
mainshaft threads.*

Stake the lock nut [1] into the mainshaft groove.



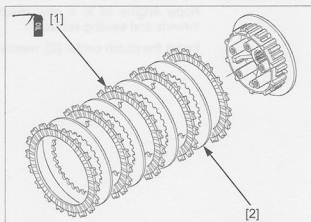
Install the clutch lifter piece [1].



CLUTCH/GEARSHIFT LINKAGE

Apply engine oil to the clutch discs [1] entire surface.

Install the clutch discs and plates [2] alternately, starting with the clutch disc.



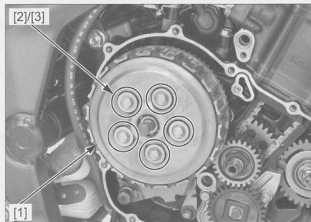
Install the clutch lifter plate [1].

Install the clutch springs [2] and bolts [3].

Tighten the clutch lifter plate bolts to the specified torque in a crisscross pattern in 2 or 3 steps.

TORQUE: 12 N·m (1.2 kgf-m, 9 lbf-ft)

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



GEARSHIFT LINKAGE

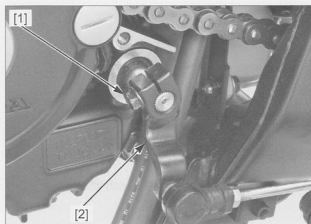
REMOVAL

Remove the following:

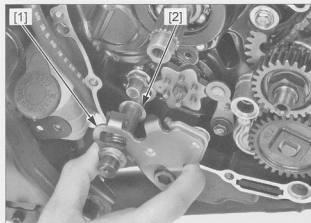
- Right crankcase cover (page 10-6)
- Clutch assembly (page 10-12)

Remove the pinch bolt [1] and gearshift arm [2].

Clean off any dirt from the gearshift spindle serration.



Pull out the gearshift spindle assembly [1] and washer [2] from the crankcase.



Remove the gearshift spindle oil seal [1].

Be careful not to let the removed parts fall into the crankcase.

Remove the following:

- Shift drum stopper arm bolt [1]
- Shift drum stopper arm [2]
- Washer [3]
- Return spring [4]
- Shift drum stopper plate bolt [5]
- Shift drum stopper plate [6]

Remove the dowel pins [1] from the shift drum.

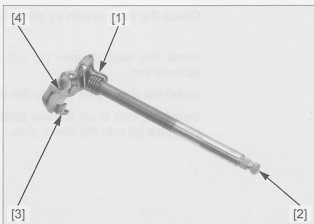
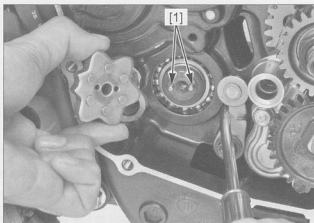
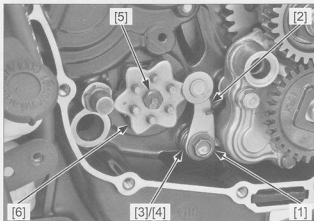
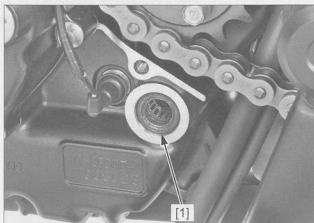
INSPECTION

Check the return spring [1] for fatigue or damage, replace it if necessary.

Check the following:

- Gearshift spindle [2] for wear or bend
- Spindle arm [3] for wear, damage or deformation
- Spindle arm spring [4] for fatigue or damage

Replace the gearshift spindle as an assembly if necessary.



GEARSHIFT SPINDLE NEEDLE BEARING REPLACEMENT

Remove the gearshift spindle needle bearing [1] using the special tools.

TOOLS:

Remover weight [2]
Bearing remover shaft,
15 mm [3]

07741-0010201
07936-KC10100
(Not available in
U.S.A.)

Bearing remover head,
14 mm [4]

07WMC-KFG0100

TOOLS, U.S.A. only:

Bearing remover shaft, 14 mm
Remover handle
Remover weight

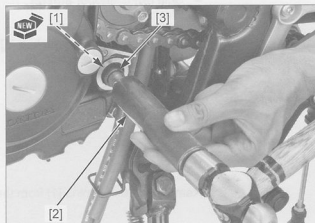
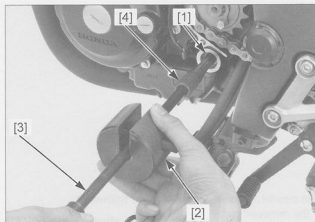
07936-KC10500
07936-3710100
07936-371020A

Drive in a new gearshift spindle needle bearing [1] into the left crankcase with the marked side facing outside of the left crankcase until it is fully seated using the special tools.

TOOLS:

Driver [2]
Pilot, 20 mm [3]

07749-0010000
07746-0040500



INSTALLATION

Install the stopper arm [1] and washer [2] to the shift drum stopper arm bolt [3].

Apply locking agent to the shift drum stopper arm bolt threads.

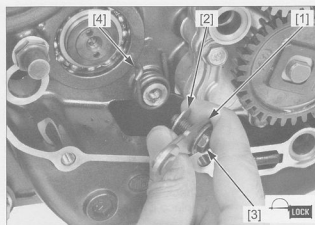
Install the return spring [4] to the right crankcase.

Install the washer, stopper arm and stopper arm bolt with hooking the return spring at the stopper arm groove.

Tighten the bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

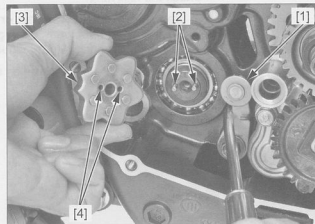
Check the stopper arm for proper operation.



Move the stopper arm [1] out of the way using a screwdriver.

Install the dowel pins [2] into the shift drum holes.

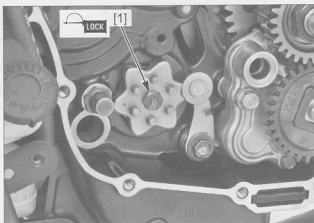
Install the shift drum stopper plate [3] while aligning its pin holes [4] with the dowel pins.



Apply locking agent to the shift drum stopper plate bolt [1] threads.

Install and tighten the shift drum stopper plate bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



Apply grease to a new gearshift spindle oil seal lip [1].

Install the gearshift spindle oil seal as shown.

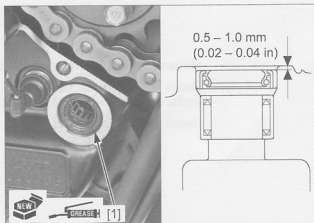
TOOLS, U.S.A. only:

Driver

07749-0010000

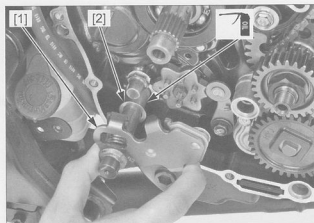
Attachment, 24 x 26 mm

07746-0010700



Apply engine oil to the gearshift spindle shaft [1] outer surface.

Install the gearshift spindle assembly and washer [2] to the crankcase by aligning the return spring ends with the spring pin.

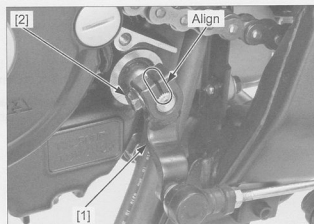


Install the gearshift arm [1] onto the gearshift spindle, while aligning its slit with the punch mark.

Install and tighten the pinch bolt [2] securely.

Install the following:

- Clutch assembly (page 10-16)
- Right crankcase cover (page 10-10)

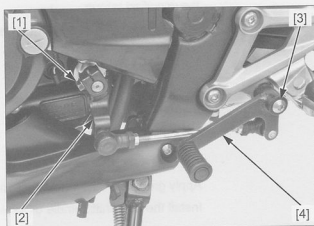


GEARSHIFT PEDAL

REMOVAL/INSTALLATION

Remove the pinch bolt [1] and gearshift arm [2].

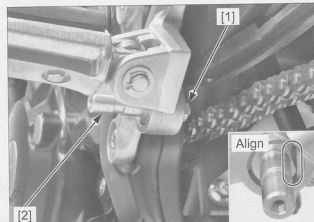
Remove the gearshift pedal mounting bolt [3] and gearshift pedal assembly [4].



Remove the nut [1] and gearshift pedal pivot [2].

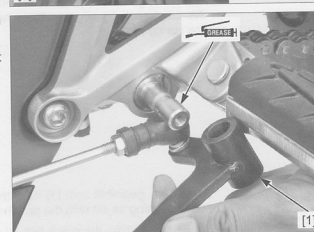
Install the gearshift pedal pivot by aligning its flat surface with the left step holder flat surface.

Install and tighten the nut.



Apply grease to the gearshift pedal pivot sliding surface.

Install the gearshift pedal assembly [1] to the gearshift pedal pivot.



Install the gearshift arm [1] onto the gearshift spindle, while aligning its slit with the punch mark.

Install and tighten the gearshift pedal mounting bolt [2] and gearshift arm pinch bolt [3] securely.



PRIMARY DRIVE GEAR

REMOVAL

Remove the clutch assembly (page 10-12).

Temporarily install the washer [1], clutch outer guide [2], needle bearing [3] and clutch outer [4].

Insert the gear holder [5] between the primary drive and driven gears.

TOOL:

Gear holder, M1.5

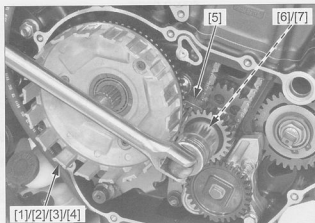
07724-0010200 or
07724-001A200
(U.S.A. only)

Loosen the primary drive gear lock nut [6].

Remove the clutch outer, needle bearing, clutch outer guide and washer.

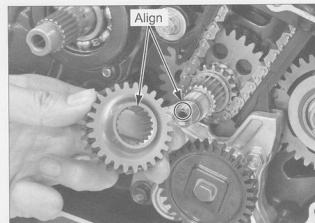
Remove the lock nut and washer [7].

Remove the primary drive gear [1].



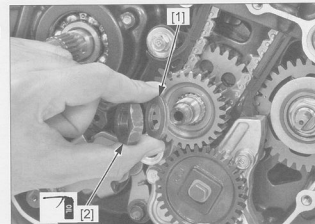
INSTALLATION

Install the primary drive gear while aligning its wide groove with the punch mark.



Install the washer [1].

Apply engine oil to the primary drive gear lock nut [2] threads and seating surface, and install it.



CLUTCH/GEARSHIFT LINKAGE

Temporarily install the washer [1], clutch outer guide [2], needle bearing [3] and clutch outer [4].

Insert the gear holder [5] between the primary drive and driven gears.

TOOL:

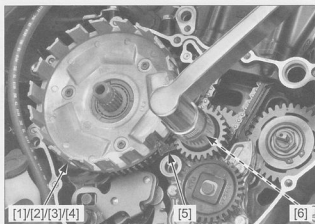
Gear holder, M1.5

07724-0010200 or
07724-001A200
(U.S.A. only)

Tighten the primary drive gear lock nut [6] to the specified torque.

TORQUE: 108 N·m (11.0 kgf·m, 80 lbf·ft)

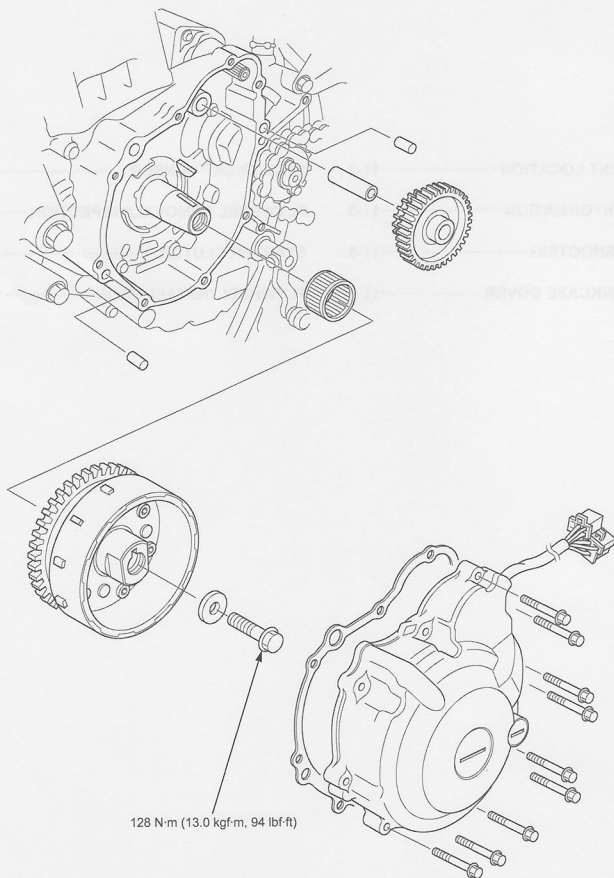
Install the clutch assembly (page 10-16).



11. ALTERNATOR/STARTER CLUTCH

COMPONENT LOCATION	11-2	STATOR/CKP SENSOR	11-5
SERVICE INFORMATION	11-3	FLYWHEEL REMOVAL/INSPECTION	11-7
TROUBLESHOOTING	11-3	STARTER CLUTCH	11-8
LEFT CRANKCASE COVER	11-4	FLYWHEEL INSTALLATION	11-11

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers the removal and installation of the flywheel, alternator and starter clutch. These services can be done with the engine installed in the frame.
- For alternator inspection (page 17-8).
- For CKP sensor inspection (page 18-7).
- For starter motor service (page 19-6).

SPECIFICATIONS

Unit: mm (in)

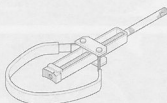
ITEM		STANDARD	SERVICE LIMIT
Starter driven gear	I.D.	34.000 – 34.013 (1.3386 – 1.3391)	34.033 (1.3399)
	O.D.	51.705 – 51.718 (2.0356 – 2.0361)	51.685 (2.0348)

TORQUE VALUES

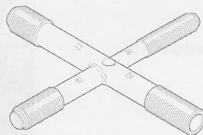
Flywheel bolt	128 N·m (13.0 kgf·m, 94 lbf·ft)	Apply engine oil to the threads and seating surface.
CKP sensor mounting socket bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)	Apply locking agent to the threads.
Stator mounting socket bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)	
Starter clutch socket bolt	30 N·m (3.1 kgf·m, 22 lbf·ft)	Apply locking agent to the threads.

TOOLS

Flywheel holder
07725-0040001



Flywheel puller
07733-0020001



or 07933-3950000 (U.S.A. only)

TROUBLESHOOTING

Starter motor turns, but engine does not turn

- Faulty starter clutch
- Damaged reduction gear
- Damaged or faulty starter motor pinion gear

Engine does not turn

- Faulty starter clutch
- Damaged reduction gear/shaft
- Faulty starter driven gear

ALTERNATOR/STARTER CLUTCH

LEFT CRANKCASE COVER

REMOVAL

Drain the engine oil (page 3-14).

Remove the following:

- Under cowl (page 2-11)
- Drive sprocket cover (page 2-12)

Disconnect the following:

- Alternator 3P connector [1]
- CKP sensor/neutral switch 6P connector [2]

Disconnect the neutral switch wire connector [1].

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

Loosen the left crankcase cover bolts [2] in a crisscross pattern in 2 or 3 steps and remove the bolts and left crankcase cover [3].

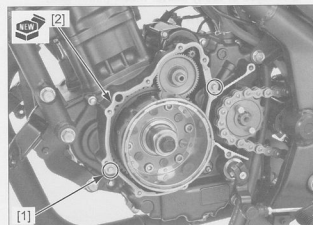
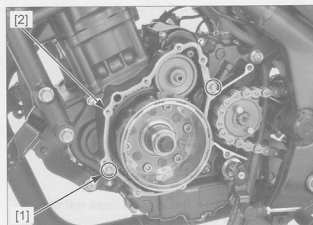
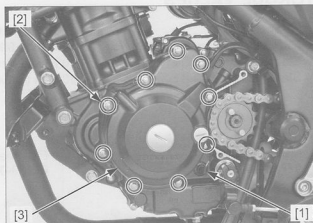
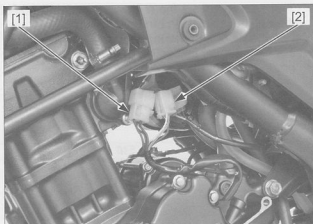
Remove the dowel pins [1] and gasket [2].

INSTALLATION

Be careful not to damage the mating surfaces.

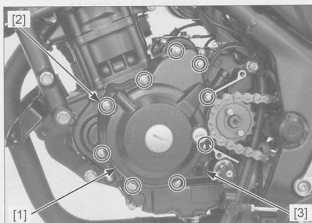
Clean any gasket material from the mating surfaces of the left crankcase and cover.

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



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

- Install the left crankcase cover [1] and bolts [2].
- Tighten the bolts in a crisscross pattern in 2 or 3 steps.
- Connect the neutral switch wire connector [3].



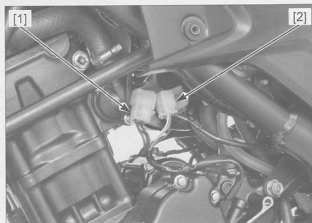
Route the wire properly (page 1-18).

- Connect the following:
 - Alternator 3P connector [1]
 - CKP sensor/neutral switch 6P connector [2]

Install the following:

- Under cowl (page 2-11)
- Drive sprocket cover (page 2-12)

Fill the engine with the recommended engine oil (page 3-13).



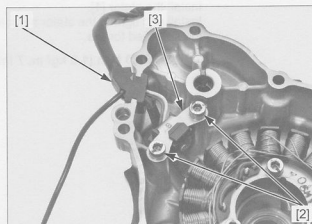
STATOR/CKP SENSOR

REMOVAL

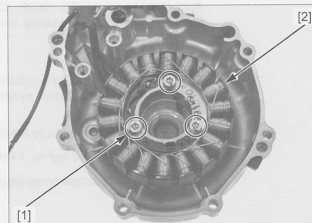
Remove the left crankcase cover (page 11-4).

Remove the grommet [1].

Remove the CKP sensor mounting socket bolts [2] and CKP sensor [3].

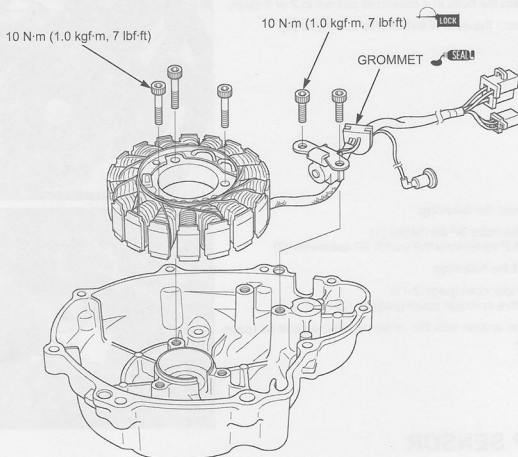


Remove the stator mounting socket bolts [1] and stator [2] from the left crankcase cover.



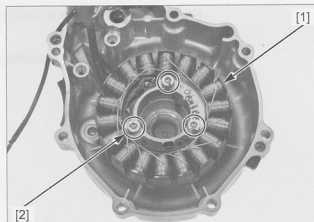
ALTERNATOR/STARTER CLUTCH

INSTALLATION



Install the stator [1].
Install and tighten the stator mounting socket bolts [2] to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



Apply liquid sealant (TB 1207B, 1215 or equivalent) to the wire grommet [1] sealing surface and install the grommet into the groove.

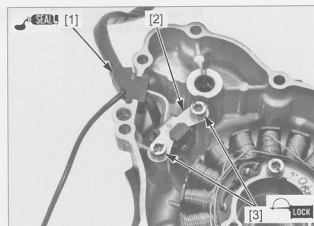
Install the CKP sensor [2].

Apply 6.5 ± 1.0 mm (0.26 ± 0.04 in) from tip of locking agent to the CKP sensor mounting socket bolt [3] threads.

Install and tighten the bolts to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

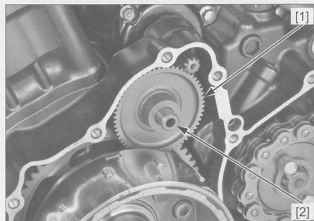
Install the left crankcase cover (page 11-4).



FLYWHEEL REMOVAL/INSPECTION

Remove the left crankcase cover (page 11-4).

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

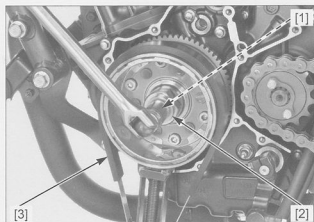


Hold the flywheel with a special tool and remove the flywheel bolt [1] and washer [2].

TOOL:

Flywheel holder [3]

07725-0040001

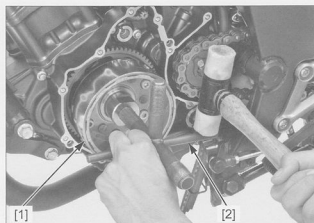


Remove the flywheel [1] using a special tool.

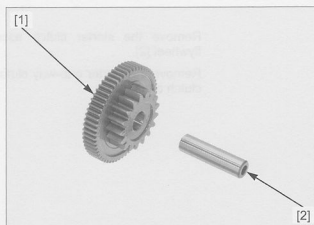
TOOL:

Flywheel puller [2]

07733-0020001 or
07933-3950000
(U.S.A. only)



Check the starter reduction gear [1] and shaft [2] for wear or damage.



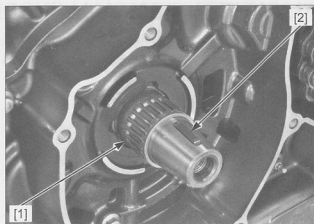
ALTERNATOR/STARTER CLUTCH

Remove the needle bearing [1].

Be careful not to damage the key groove and crankshaft.

Remove the woodruff key [2].

Check the needle bearing for wear or damage.

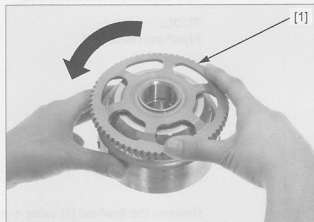


STARTER CLUTCH

REMOVAL

Remove the flywheel (page 11-7).

Remove the starter driven gear [1] while turning it counterclockwise.

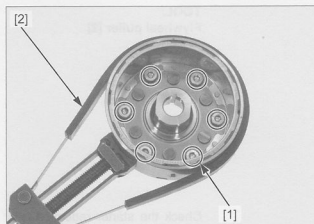


Hold the flywheel with a special tool and remove the starter clutch socket bolt [1].

TOOL:

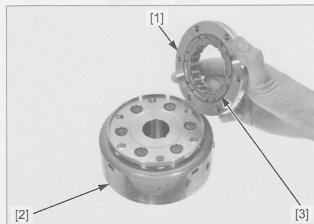
Flywheel holder [2]

07725-0040001



Remove the starter clutch assembly [1] from the flywheel [2].

Remove the starter one-way clutch [3] from the starter clutch outer.



INSPECTION

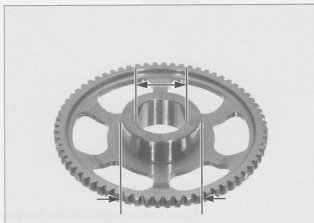
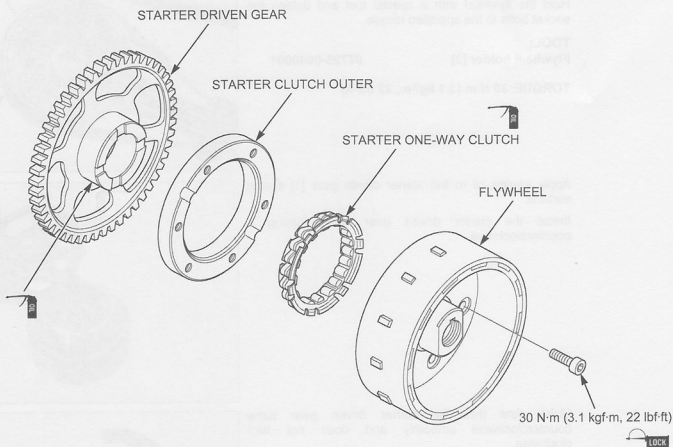
Check the starter driven gear teeth for wear or damage.
Check the roller contact surface for wear or damage.

Measure the starter driven gear boss I.D.

SERVICE LIMIT: 34.033 mm (1.3399 in)

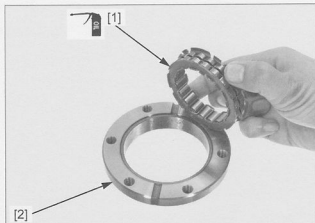
Measure the starter driven gear boss O.D.

SERVICE LIMIT: 51.685 mm (2.0348 in)

**INSTALLATION**

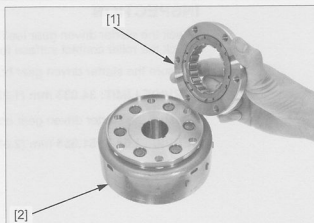
Apply engine oil to the starter one-way clutch sprag.

Install the starter one-way clutch [1] to the starter clutch outer [2].



ALTERNATOR/STARTER CLUTCH

Install the starter clutch assembly [1] to the flywheel [2] as shown.



Apply locking agent to the starter clutch socket bolts [1] threads.

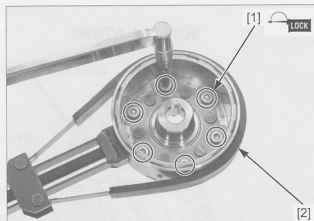
Install the starter clutch socket bolts. Hold the flywheel with a special tool and tighten the socket bolts to the specified torque.

TOOL:

Flywheel holder [2]

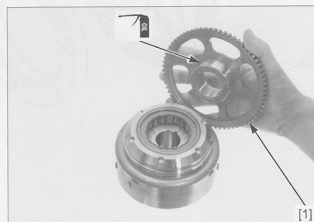
07725-0040001

TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)



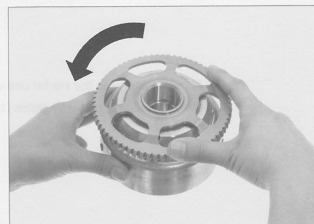
Apply engine oil to the starter driven gear [1] sliding surface.

Install the starter driven gear while turning it counterclockwise.



Make sure that the starter driven gear turns counterclockwise smoothly and does not turn clockwise.

Install the flywheel (page 11-11).



FLYWHEEL INSTALLATION

Apply molybdenum oil solution to the needle bearing [1] rotating area.

Install the needle bearing onto the crankshaft.

Clean any oil from the crankshaft taper.

Install the woodruff key [2] onto the crankshaft.

Be careful not to damage the key groove and crankshaft.

Install the flywheel while aligning the woodruff key on the crankshaft with flywheel keyway.

Apply engine oil to the flywheel bolt [1] threads and seating surface.

Install the washer [2] and bolt.

Hold the flywheel with a special tool and tighten the bolt to the specified torque.

TOOL:

Flywheel holder [3]

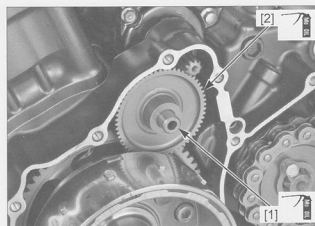
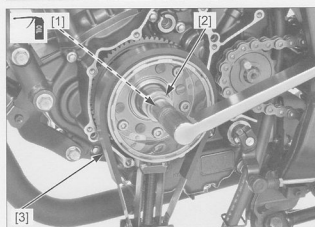
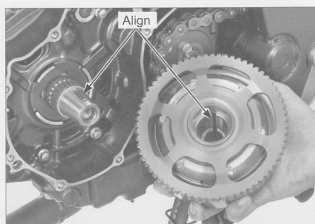
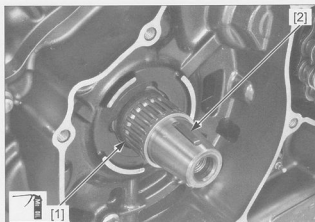
07725-0040001

TORQUE: 128 N·m (13.0 kgf·m, 94 lbf·ft)

Apply molybdenum oil solution to the starter reduction gear shaft [1] outer surface and starter reduction gear [2] inner surface.

Install the shaft and starter reduction gear.

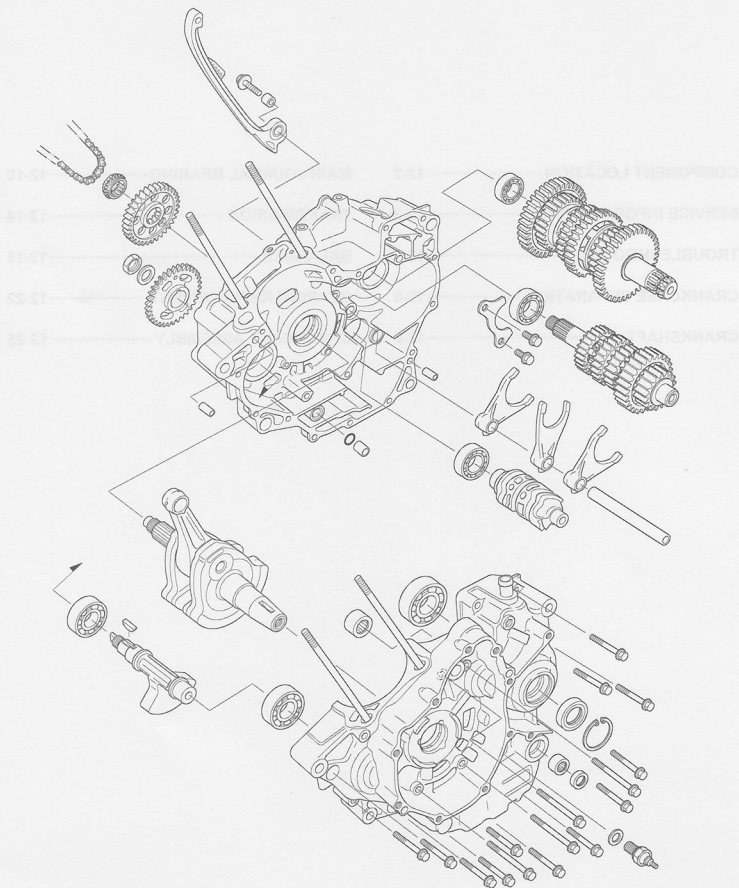
Install the left crankcase cover (page 11-4).



12. CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER

COMPONENT LOCATION	12-2	MAIN JOURNAL BEARING	12-10
SERVICE INFORMATION	12-3	TRANSMISSION	12-14
TROUBLESHOOTING	12-5	BALANCER	12-19
CRANKCASE SEPARATION	12-6	BEARING REPLACEMENT	12-22
CRANKSHAFT	12-8	CRANKCASE ASSEMBLY	12-25

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- This section covers crankcase separation for service of the crankshaft, transmission and balancer.
- The crankcase must be separated to service the crankshaft, balancer and transmission. To service these parts, the engine must be removed from the frame.
- The following components must be removed before separating the crankcase.
 - Engine (page 7-4)
 - Camshaft (page 8-7)
 - Cylinder head (page 8-15)
 - Cylinder/piston (page 9-5)
 - Clutch (page 10-12)
 - Gearshift linkage (page 10-18)
 - Oil pump (page 4-4)
 - Primary drive gear (page 10-23)
 - Flywheel (page 11-7)
 - Neutral switch (page 20-17)
 - Starter motor (page 19-6)
- Be careful not to damage the crankcase mating surfaces when servicing.
- Clean the oil passages before assembling the crankcase halves.
- Prior to assembling the crankcase halves, apply sealant to their mating surfaces. Wipe off excess sealant thoroughly.
- The main journal bearing inserts are select fit and are identified by color codes. Select replacement bearing from the code tables. After selecting a new bearing, recheck the oil clearance. Incorrect oil clearance can cause major engine damage.

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Runout		—	0.03 (0.001)
	Connecting rod big end radial clearance		0.004 – 0.016 (0.0002 – 0.0006)	0.05 (0.002)
	Connecting rod big end side clearance		0.05 – 0.50 (0.002 – 0.020)	0.85 (0.033)
	Main journal oil clearance		0.018 – 0.045 (0.0007 – 0.0018)	0.075 (0.0030)
	Main journal O.D.		33.985 – 34.000 (1.3380 – 1.3386)	33.975 (1.3376)
Main journal bearing area I.D.			38.000 – 38.018 (1.4961 – 1.4968)	38.036 (1.4975)
Transmission	Gear I.D.	M5, M6	23.000 – 23.021 (0.9055 – 0.9063)	23.07 (0.908)
		C1	23.020 – 23.041 (0.9063 – 0.9071)	23.09 (0.909)
		C2	25.000 – 25.021 (0.9843 – 0.9851)	25.04 (0.986)
		C3, C4	28.000 – 28.021 (1.1024 – 1.1032)	28.04 (1.104)
	Bushing O.D.	M5, M6	22.959 – 22.980 (0.9039 – 0.9047)	22.91 (0.902)
		C1	22.984 – 23.005 (0.9049 – 0.9057)	22.47 (0.885)
		C2	24.959 – 24.980 (0.9826 – 0.9835)	24.90 (0.980)
		C3, C4	27.959 – 27.980 (1.1007 – 1.1016)	27.95 (1.100)
	Gear-to-bushing clearance	M5, M6, C2, C3, C4	0.020 – 0.062 (0.0008 – 0.0024)	0.10 (0.004)
		C1	0.015 – 0.057 (0.0006 – 0.0022)	0.10 (0.004)
	Bushing I.D.	M5, C1	20.000 – 20.021 (0.7874 – 0.7882)	20.05 (0.789)
		C2	22.000 – 22.021 (0.8661 – 0.8670)	22.07 (0.869)
		C3	25.000 – 25.021 (0.9843 – 0.9851)	25.04 (0.986)
	Mainshaft / countershaft O.D.	at M5 bushing	19.959 – 19.980 (0.7858 – 0.7866)	19.91 (0.784)
		at C1 bushing	19.959 – 19.980 (0.7858 – 0.7866)	19.91 (0.784)
		at C2 bushing	21.959 – 21.980 (0.8645 – 0.8653)	21.91 (0.863)
		at C3 bushing	24.959 – 24.980 (0.9826 – 0.9835)	24.90 (0.980)
	Bushing-to-shaft clearance	M5, C1, C2, C3	0.020 – 0.062 (0.0008 – 0.0024)	0.10 (0.004)
Shift fork, shift fork shaft	Shift fork shaft O.D.		11.957 – 11.968 (0.4707 – 0.4712)	11.95 (0.470)
	Shift fork I.D.		12.000 – 12.018 (0.4724 – 0.4731)	12.05 (0.474)
	Shift fork claw thickness		4.93 – 5.00 (0.194 – 0.197)	4.82 (0.190)
Shift drum	Shift drum O.D.	Left side	13.966 – 13.984 (0.5498 – 0.5506)	13.94 (0.549)
	Shift drum journal I.D.	Left side	14.000 – 14.027 (0.5512 – 0.5522)	14.06 (0.554)
	Shift drum-to-shift drum journal clearance	Left side	0.016 – 0.061 (0.0006 – 0.0024)	0.08 (0.003)

CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER

TORQUE VALUES

Cam chain tensioner pivot bolt
Balancer shaft nut

10 N·m (1.0 kgf·m, 7 lbf·ft)
44 N·m (4.5 kgf·m, 32 lbf·ft)

Apply locking agent to the threads.
Apply engine oil to the threads and seating surface.

TOOLS

<p>Gear holder, M2.5 07724-0010100</p> 	<p>Bearing remover, 17 mm 07936-3710300</p> 	<p>Bearing remover, 20 mm 07936-3710600</p> 
<p>or 07724-001A100 (U.S.A. only)</p> <p>Remover handle 07936-3710100</p> 	<p>Remover weight 07741-0010201</p>  <p>or 07936-371020A (U.S.A. only)</p>	<p>Driver 07749-0010000</p> 
<p>Pilot, 17 mm 07746-0040400</p> 	<p>Pilot, 20 mm 07746-0040500</p> 	<p>Pilot, 22 mm 07746-0041000</p> 
<p>Attachment, 28 x 30 mm 07946-1870100</p> 	<p>Attachment, 37 x 40 mm 07746-0010200</p> 	<p>Attachment, 42 x 47 mm 07746-0010300</p> 

Attachment, 52 x 55 mm
07746-0010400



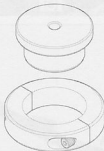
Driver, 30 x 36 mm
07HMF-KR10101



Base, 42 mm
07GAF-SD40200



Metal installer set
070MF-KYJ0100



TROUBLESHOOTING

Excessive engine noise

- Worn, seized or chipped transmission gear
- Worn or damaged transmission bearing
- Worn or damaged connecting rod big end bearing
- Worn main journal bearing
- Worn connecting rod small end
- Worn balancer shaft bearing
- Improper balancer timing

Hard to shift

- Bent shift fork
- Bent shift fork shaft
- Damaged shift drum guide groove
- Damaged shift fork guide pin
- Bent shift fork claw
- Damaged gearshift spindle
- Loose shift drum stopper arm bolt

Transmission jumps out of gear

- Worn gear dogs or dog holes
- Damaged shift drum guide groove
- Worn shift fork guide pin
- Worn shift fork groove in gear
- Worn shift fork shaft
- Bent shift fork shaft
- Weak or broken gearshift spindle return spring

Engine vibration

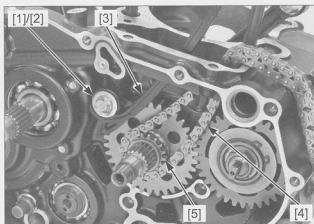
- Excessive crankshaft runout
- Improper balancer timing

CRANKCASE SEPARATION

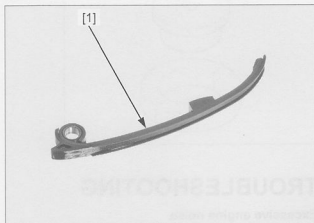
Refer to Service Information (page 12-3) for removal of necessary parts before disassembling the crankcase.

Remove the tensioner pivot bolt [1], collar [2] and cam chain tensioner [3].

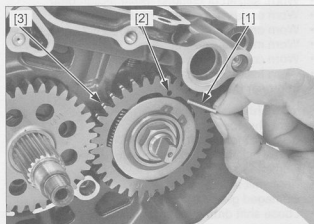
Remove the cam chain [4] and timing sprocket [5].



Check the cam chain tensioner [1] for excessive wear or damage, replace it if necessary.



Install an O.D. 3 mm pin [1] into the hole [2] of the balancer driven gear assembly [3].



Insert the gear holder [1] between the balancer drive gear [2] and balancer driven gear assembly [3].

TOOL:

Gear holder, M2.5

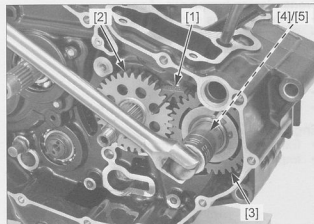
07724-0010100 or
07724-001A100
(U.S.A. only)

Loosen the balancer shaft nut [4].

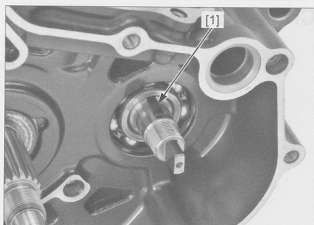
Remove the washer [5], nut, balancer driven gear assembly and balancer drive gear.

NOTE:

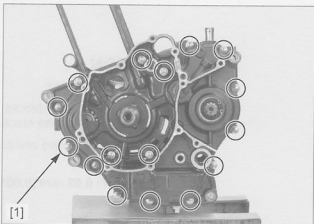
For balancer driven gear disassembly (page 12-20).



Remove the woodruff key [1] from the balancer shaft.



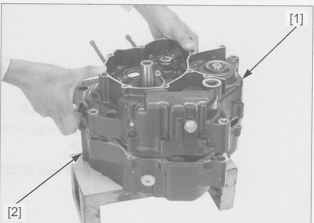
Loosen the left crankcase bolts [1] in a crisscross pattern in 2 or 3 steps, and remove the bolts.



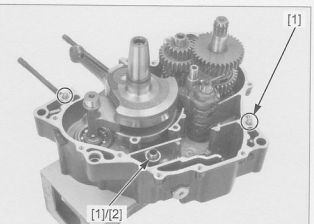
Place the crankcase assembly with the right crankcase down.

Do not pry the crankcase halves with a screwdriver.

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



Remove the dowel pins [1] and O-ring [2].

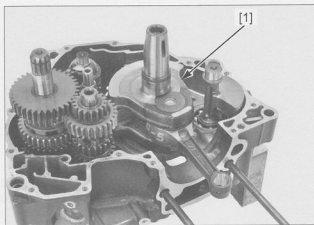


CRANKSHAFT

REMOVAL

Separate the crankcase halves (page 12-6).

Remove the crankshaft [1] from the right crankcase.



INSPECTION

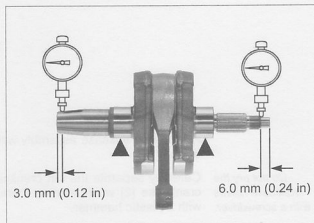
CRANKSHAFT RUNOUT

Place the crankshaft on V-blocks.

Set the dial indicator on the crankshaft.

Rotate the crankshaft two revolutions (720°) and read the runout.

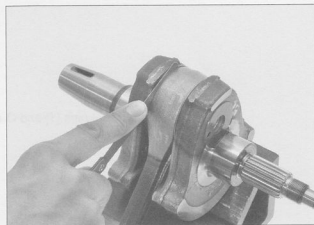
SERVICE LIMIT: 0.03 mm (0.001 in)



BIG END SIDE CLEARANCE

Measure the side clearance of the connecting rod big end with feeler gauge.

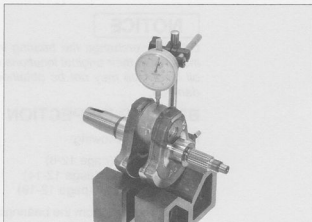
SERVICE LIMIT: 0.85 mm (0.033 in)



BIG END RADIAL CLEARANCE

Measure the radial clearance of the connecting rod big end.

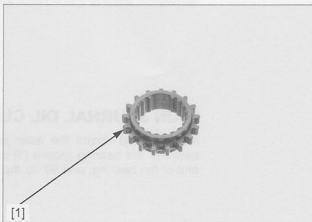
SERVICE LIMIT: 0.05 mm (0.002 in)



TIMING SPROCKET

Check the timing sprocket [1] teeth for wear or damage.

If the timing sprocket teeth are worn or damaged, check the cam chain, tensioner and cam sprockets.



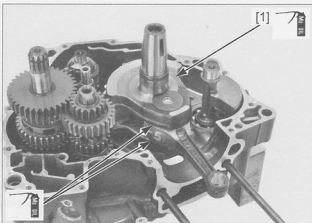
INSTALLATION

Apply molybdenum oil solution to the connecting rod big end sliding surface.

Apply molybdenum oil solution to the crankshaft main journal bearing sliding surface.

Install the crankshaft [1] into the right crankcase.

Assemble the crankcase (page 12-25).



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.

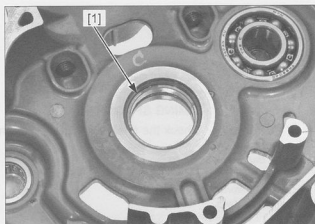
BEARING INSPECTION

Remove the following:

- Crankshaft (page 12-8)
- Transmission (page 12-14)
- Balancer shaft (page 12-19)

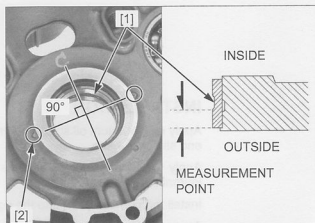
Clean off any oil from the bearings.

Check the main journal bearings [1] for unusual wear, damage or peeling and replace them if necessary.



MAIN JOURNAL OIL CLEARANCE

Measure and record the main journal bearing I.D. at between the bearing groove [1] and crankcase outside end of the bearing, and 90° to the index mark [2].



Clean off any oil from the crankshaft journals.

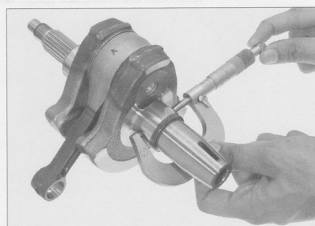
Measure and record the crankshaft main journal O.D.

SERVICE LIMIT: 33.975 mm (1.3376 in)

Calculate the oil clearance between the crankshaft main journal and main journal bearing.

SERVICE LIMIT: 0.075 mm (0.0030 in)

If the clearance exceeds the service limit, select the main journal bearing (page 12-11).



BEARING SELECTION

Remove the following:

- Crankshaft (page 12-8)
- Transmission (page 12-14)
- Balancer shaft (page 12-19)

Set a special tool and hydraulic press on the outside of the crankcase.

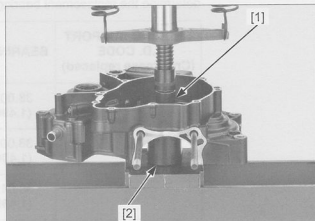
TOOLS:

Driver, 30 x 36 mm [1]

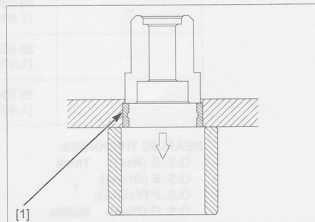
07HMF-KR10101

Base, 42 mm [2]

07GAF-SD40200



Press the main journal bearings [1] toward the inside of the crankcase.



Be careful not to damage the main journal bearing.

Measure and record the crankcase main journal bearing support I.D. at 90° to the index mark [1].

SERVICE LIMIT: 38.036 mm (1.4975 in)

Depending upon the results of the above measurements there are four possible scenarios for main journal bearing selection:

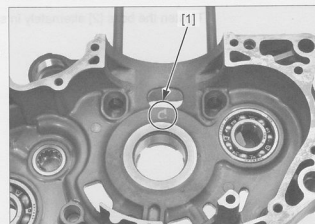
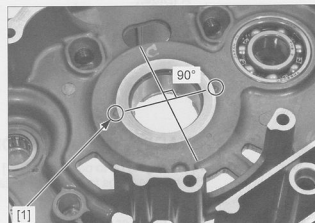
- Crankshaft and crankcase are replaced
- Crankcase only is replaced
- Crankshaft only is replaced
- Main journal bearings only are replaced

Carefully refer to the following instructions and tables for main journal bearing selection.

Record the bearing support I.D. code [1] letter.

NOTE:

Letters A, B or C on each crankcase is the code for the crankcase main journal bearing support I.D.



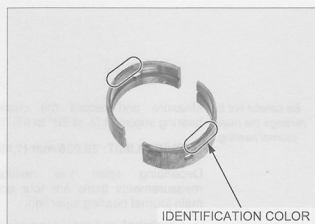
CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER

Cross-reference the crankshaft and crankcase codes to determine the replacement bearing color.

BEARING SUPPORT I.D. CODE (Crankcase replaced)	BEARING SUPPORT I.D.	MAIN JOURNAL O.D.	
		33.985 – 34.000 mm (1.3380 – 1.3386 in) (Crankshaft replaced)	33.975 – 33.985 mm (1.3376 – 1.3380 in)
A	38.000 – 38.006 mm (1.4961 – 1.4963 in)	C (Brown) 1.996 – 1.999 mm (0.0786 – 0.0787 in)	B (Black) 1.999 – 2.002 mm (0.0787 – 0.0788 in)
B	38.006 – 38.012 mm (1.4963 – 1.4965 in)	B (Black) 1.999 – 2.002 mm (0.0787 – 0.0788 in)	A (Blue) 2.002 – 2.005 mm (0.0788 – 0.0789 in)
C	38.012 – 38.018 mm (1.4965 – 1.4968 in)	A (Blue) 2.002 – 2.005 mm (0.0788 – 0.0789 in)	O.S. G (Pink) 2.005 – 2.008 mm (0.0789 – 0.0791 in)
—	38.018 – 38.024 mm (1.4968 – 1.4970 in)	O.S. G (Pink) 2.005 – 2.008 mm (0.0789 – 0.0791 in)	O.S. F (Yellow) 2.008 – 2.011 mm (0.0791 – 0.0792 in)
—	38.024 – 38.030 mm (1.4970 – 1.4972 in)	O.S. F (Yellow) 2.008 – 2.011 mm (0.0791 – 0.0792 in)	O.S. E (Green) 2.011 – 2.014 mm (0.0792 – 0.0793 in)
—	38.030 – 38.036 mm (1.4972 – 1.4975 in)	O.S. E (Green) 2.011 – 2.014 mm (0.0792 – 0.0793 in)	O.S. D (Red) 2.014 – 2.020 mm (0.0792 – 0.0795 in)

BEARING THICKNESS:

O.S. D (Red): Thick
O.S. E (Green): ↑
O.S. F (Yellow): ↑
O.S. G (Pink): Middle
A (Blue): ↓
B (Black): ↓
C (Brown): Thin



BEARING INSTALLATION

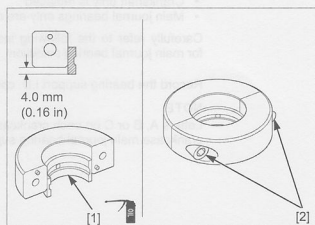
Apply engine oil to new bearing [1] surface.
Set new bearings to the metal installer as shown.

TOOL:

Metal installer set

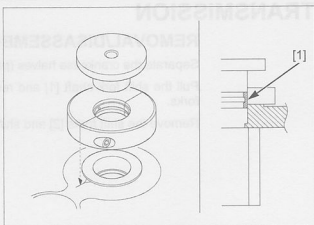
070MF-KYJ0100

Tighten the bolts [2] alternately in several steps.



Set the bearings [1] and special tools assembly on inside of the crankcase, fitting the bearing edge in the crankcase main journal.

Align the mating line of the bearings with the index mark on the crankcase as shown.



Set the hydraulic press.

TOOLS:

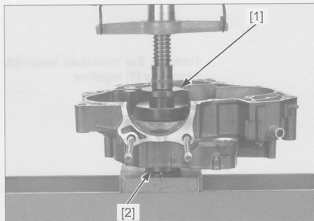
Metal installer set [1]

Base, 42 mm [2]

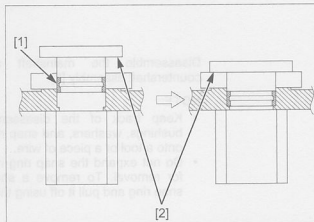
070MF-KYJ0100

07GAF-SD40200

Make sure the metal installer mating line align with the index mark on the crankcase.



Press the bearings [1] until the metal installer flange [2] fully seated.



Make sure the bearing mating line aligns with the index mark [1] on the crankcase.

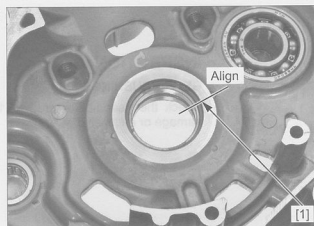
Check the oil clearance (page 12-10).

NOTE:

After selecting new bearings, recheck the oil clearance. Incorrect clearance can cause severe engine damage.

Install the following:

- Crankshaft (page 12-9)
- Transmission (page 12-17)
- Balancer shaft (page 12-19)



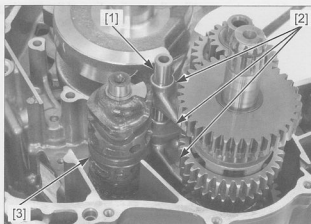
TRANSMISSION

REMOVAL/DISASSEMBLY

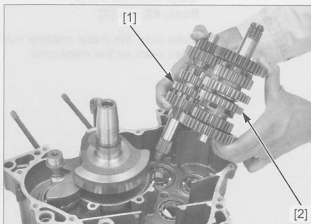
Separate the crankcase halves (page 12-6).

Pull the shift fork shaft [1] and remove it from the shift forks.

Remove the shift forks [2] and shift drum [3].



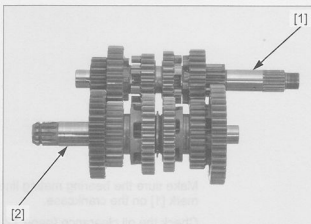
Remove the mainshaft assembly [1] and countershaft assembly [2] together.



Disassemble the mainshaft assembly [1] and countershaft assembly [2].

NOTE:

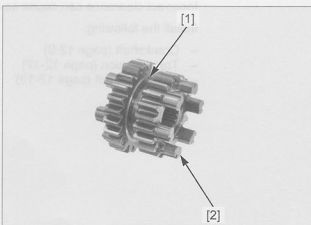
- Keep track of the disassembled parts (gears, bushings, washers, and snap rings) by sliding them onto a tool or a piece of wire.
- Do not expand the snap ring more than necessary for removal. To remove a snap ring, expand the snap ring and pull it off using the gear behind it.



INSPECTION

GEARS/BUSHINGS

Check the gear shifter groove [1] and, dogs [2], for damage or excessive wear.



Check the dog holes [1] and teeth for damage or excessive wear.

Measure the I.D. of each gear.

SERVICE LIMITS:

M5, M6:	23.07 mm (0.908 in)
C1:	23.09 mm (0.909 in)
C2:	25.04 mm (0.986 in)
C3, C4:	28.04 mm (1.104 in)

Check the bushings for wear or damage.

Measure the O.D. of each bushing.

SERVICE LIMITS:

M5, M6:	22.91 mm (0.902 in)
C1:	22.47 mm (0.885 in)
C2:	24.90 mm (0.980 in)
C3, C4:	27.95 mm (1.100 in)

Calculate the gear-to-bushing clearance.

SERVICE LIMITS:

M5, M6, C1, C2, C3, C4:	0.10 mm (0.004 in)
-------------------------	--------------------

Measure the I.D. of each bushing.

SERVICE LIMITS:

M5, C1:	20.05 mm (0.789 in)
C2:	22.07 mm (0.869 in)
C3:	25.04 mm (0.986 in)

MAINSHAFT/COUNTERSHAFT

Check the spline grooves and sliding surfaces for abnormal wear or damage.

Measure the O.D. of the mainshaft and countershaft at the bushing sliding areas.

SERVICE LIMITS:

Mainshaft:	
At M5 gear bushing:	19.91 mm (0.784 in)
Countershaft:	
At C1 gear bushing:	19.91 mm (0.784 in)
At C2 gear bushing:	21.91 mm (0.863 in)
At C3 gear bushing:	24.90 mm (0.980 in)

Calculate the bushing-to-shaft clearance.

SERVICE LIMITS:

M5, C1, C2, C3:	0.10 mm (0.004 in)
-----------------	--------------------

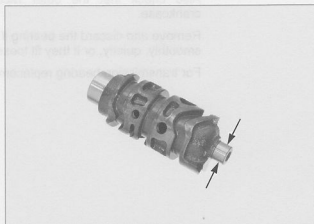
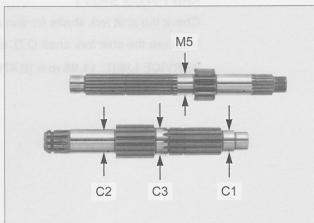
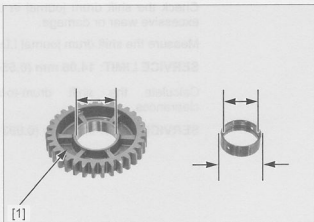
SHIFT DRUM/DRUM JOURNAL

Inspect the shift drum end for scoring, scratches, or evidence of un sufficient lubrication.

Check the shift drum grooves for abnormal wear or damage.

Measure the shift drum O.D. at left side.

SERVICE LIMIT: 13.94 mm (0.549 in)



CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER

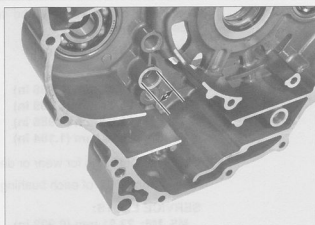
Check the shift drum journal in the left crankcase for excessive wear or damage.

Measure the shift drum journal I.D. at left crankcase.

SERVICE LIMIT: 14.06 mm (0.554 in)

Calculate the shift drum-to-shift drum journal clearances.

SERVICE LIMIT: 0.08 mm (0.003 in)



SHIFT FORK

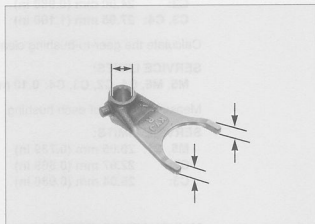
Check the shift forks for deformation or abnormal wear. Check the shift fork guide pin for abnormal wear or damage.

Measure each shift fork claw thickness.

SERVICE LIMIT: 4.82 mm (0.190 in)

Measure I.D. of each fork.

SERVICE LIMIT: 12.05 mm (0.474 in)

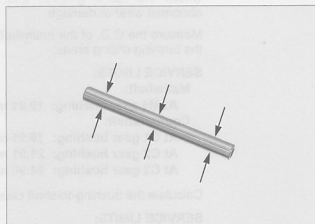


SHIFT FORK SHAFT

Check the shift fork shafts for damage and straightness.

Measure the shift fork shaft O.D. at three points.

SERVICE LIMIT: 11.95 mm (0.470 in)



TRANSMISSION BEARING

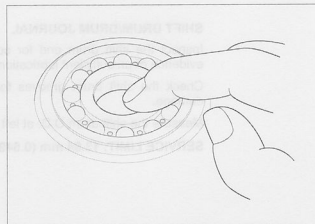
Turn the inner race of each bearing with your finger.

The bearings should turn smoothly and quietly.

Also check that the outer race fits tightly in the crankcase.

Remove and discard the bearing if the races do not turn smoothly, quietly, or if they fit loosely in the crankcase.

For transmission bearing replacement (page 12-22).



ASSEMBLY/INSTALLATION

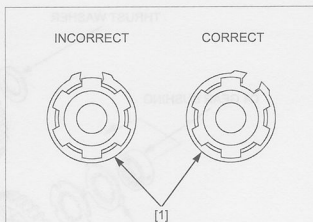
Clean all parts in solvent, and dry them thoroughly.

Apply molybdenum oil solution to the gear bushing entire surface (M5, C1, C2, C3), gear bushing outer surface (M6, C4) to ensure initial lubrication.

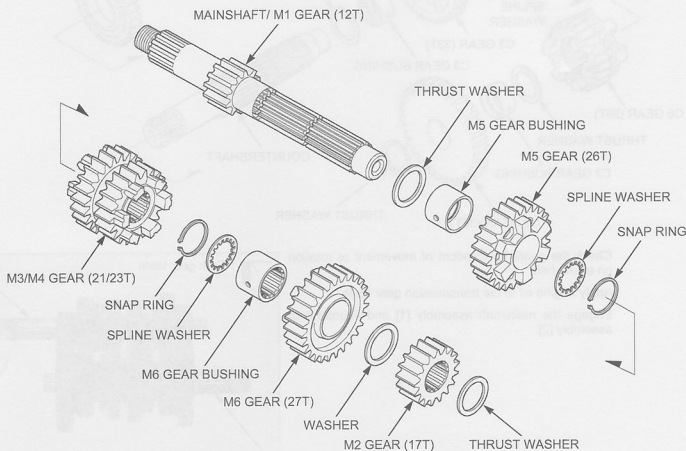
Assemble all parts into their original positions.

NOTE:

- Install the washers and snap rings [1] with the chamfered edge facing the thrust load side.
- Do not reuse worn snap ring which could easily spin in the groove.
- Check that the snap rings are seated in the grooves and align their end gaps with the grooves of the spline.

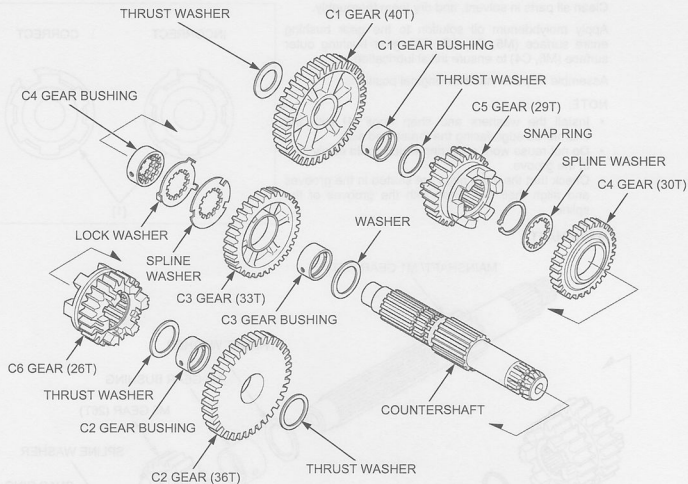


MAINSHAFT



CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER

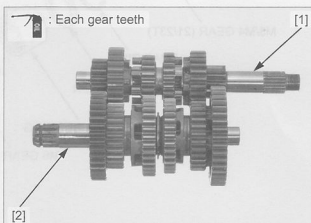
COUNTERSHAFT



Check the gears for freedom of movement or rotation on each shaft.

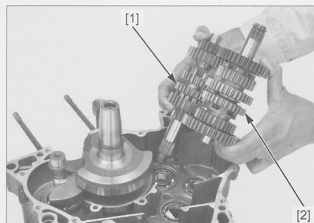
Apply engine oil to the transmission gear teeth.

Engage the mainshaft assembly [1] and countershaft assembly [2].

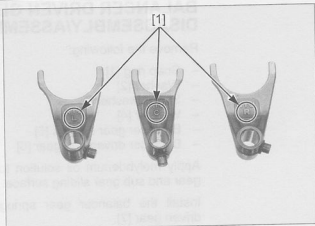


Install the mainshaft assembly [1] and countershaft assembly [2] together into the right crankcase.

Make sure the three thrust washers are installed (mainshaft; left only/countershaft; both ends).



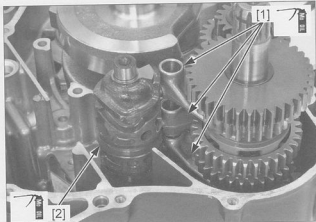
Each shift fork has an identification marks [1], "R" is for the right shift fork, "L" is the left shift fork and "C" is for the center shift fork.



Apply molybdenum oil solution to the shift fork inner surfaces and guide pins.

Install the shift forks [1] into the shifter gear grooves with the identification marks facing up (left crankcase side).

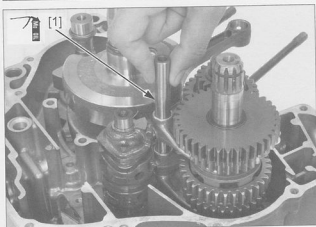
Apply molybdenum oil solution to the shift drum [2] journal outer surface and grooves, then install it while aligning the shift fork guide pins with the guide grooves.



Apply molybdenum oil solution to the shift fork shaft [1] outer surface and insert it through the shift forks into the right crankcase.

After installation, check for smooth transmission operation.

Assemble the crankcase (page 12-25).



BALANCER

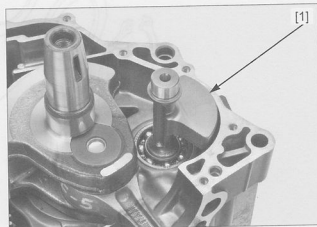
BALANCER SHAFT REMOVAL/INSTALLATION

Separate the crankcase halves (page 12-6).

Remove the balancer shaft [1] from the right crankcase.

Install the balancer shaft into the right crankcase.

Assemble the crankcase (page 12-25).



BALANCER DRIVEN GEAR DISASSEMBLY/ASSEMBLY

Remove the following:

- Snap ring [1]
- Washer [2]
- Spring washer [3]
- Washer [4]
- Balancer gear springs [5]
- Balancer driven sub gear [6]

Apply molybdenum oil solution to the balancer driven gear and sub gear sliding surface.

Install the balancer gear springs into the balancer driven gear [7].

Install the balancer driven sub gear with its "OUT" mark [8] facing out.

NOTE:

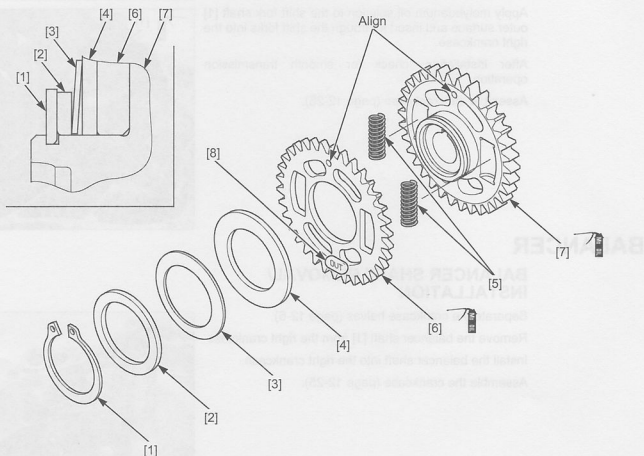
Align the holes of the balancer driven and sub gear.

Install the following:

- Washer
- Spring washer
- Washer
- Snap ring

NOTE:

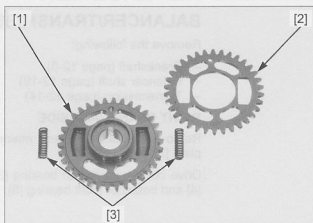
Make sure the snap ring is firmly seated in the groove.



INSPECTION

Check the balancer driven gear [1] and balancer driven sub gear [2] for excessive wear or damage, replace them if necessary.

Check the springs [3] for fatigue or damage, replace it if necessary.



Check the balancer shaft for excessive wear or damage.



Check the balancer drive gear for excessive wear or damage.



BEARING REPLACEMENT

BALANCER/TRANSMISSION BEARING

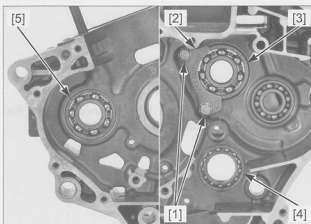
Remove the following:

- Crankshaft (page 12-8)
- Balancer shaft (page 12-19)
- Transmission (page 12-14)

RIGHT CRANKCASE SIDE

Remove the bolts [1] and mainshaft bearing setting plate [2].

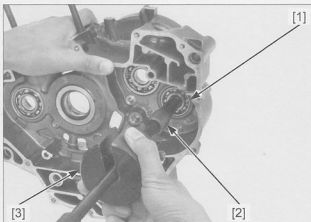
Drive out the mainshaft bearing [3], shift drum bearing [4] and balancer shaft bearing [5].



Remove the countershaft bearing [1] using the special tools.

TOOLS:

Bearing remover set, 17 mm [2]	07936-3710300
Remover handle	07936-3710100
Remover weight [3]	07741-0010201 or 07936-371020A (U.S.A. only)



Drive in new bearings into the right crankcase until they are fully seated using the special tools.

TOOLS:

Mainshaft bearing [1] (marked side facing up):

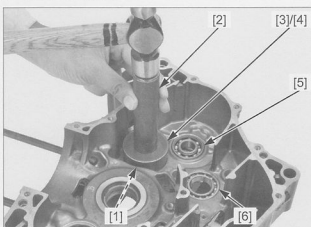
Driver [2]	07749-0010000
Attachment, 52 x 55 mm [3]	07746-0010400
Pilot, 20 mm [4]	07746-0040500

Countershaft bearing [5] (sealed side facing down):

Driver	07749-0010000
Attachment, 37 x 40 mm	07746-0010200
Pilot, 17 mm	07746-0040400

Shift drum bearing [6] (marked side facing up):

Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300



Drive in a new balancer shaft bearing into the right crankcase until it is fully seated using the special tools.

TOOLS:

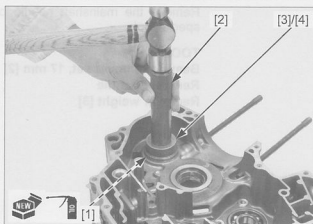
Balancer shaft bearing [1] (marked side facing up):

Driver [2] 07749-0010000

Attachment, 42 x 47 mm [3] 07746-0010300

Pilot, 20 mm [4] 07746-0040500

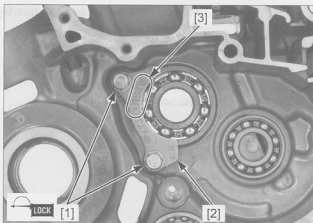
After installation, apply engine oil to each bearing rotating area.



Apply locking agent to the mainshaft bearing setting plate bolt [1] threads (page 1-16).

Install the setting plate [2] with its "OUTSIDE" mark [3] facing out.

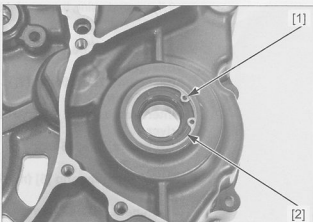
Install and tighten the bolts securely.



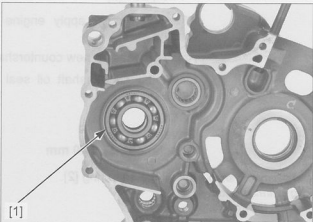
LEFT CRANKCASE SIDE

Remove the snap ring [1].

Remove the countershaft oil seal [2] from the left crankcase.



Drive out the countershaft bearing [1].

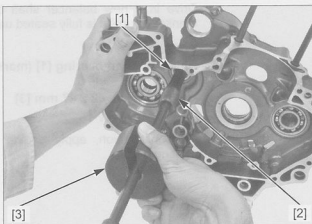


CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER

Remove the mainshaft needle bearing [1] using the special tools.

TOOLS:

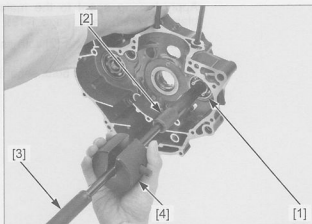
Bearing remover set, 17 mm [2] 07936-3710300
 Remover handle 07936-3710100
 Remover weight [3] 07741-0010201 or 07936-371020A (U.S.A. only)



Remove the balancer shaft bearing [1] using the special tools.

TOOLS:

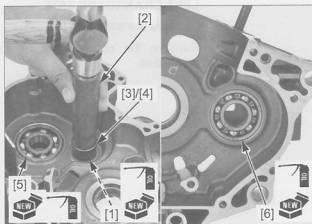
Bearing remover set, 20 mm [2] 07936-3710600
 Remover handle [3] 07936-3710100
 Remover weight [4] 07741-0010201 or 07936-371020A (U.S.A. only)



Drive in new bearings into the left crankcase until they are fully seated using the special tools.

TOOLS:

Mainshaft needle bearing [1]:
 Driver [2] 07749-0010000
 Attachment, 28 x 30 mm [3] 07946-1870100
 Pilot, 17 mm [4] 07746-0040400
Countershaft bearing [5] (marked side facing up):
 Driver 07749-0010000
 Attachment, 52 x 55 mm 07746-0010400
 Pilot, 22 mm 07746-0041000
Balancer shaft bearing [6] (marked side facing up):
 Driver 07749-0010000
 Attachment, 42 x 47 mm 07746-0010300
 Pilot, 20 mm 07746-0040500



After installation, apply engine oil to each bearing rotating area.

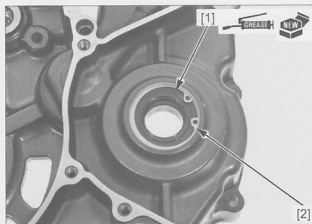
Apply grease to a new countershaft oil seal [1] lips.

Install the countershaft oil seal with its marked side facing up.

TOOLS:

Driver 07749-0010000
 Attachment, 37 x 40 mm 07746-0010200

Install the snap ring [2].

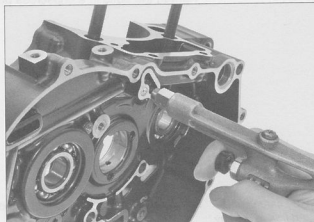


Make sure the snap ring is firmly seated in the groove.

CRANKCASE ASSEMBLY

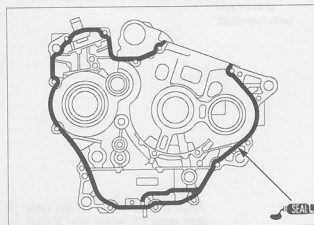
Clean the oil passages of each crankcase using compressed air.

Check the oil passage for clogs.



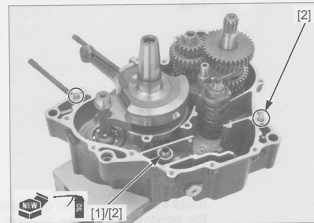
Clean the left and right crankcase mating surfaces thoroughly, being careful not to damage them and check for damage.

Apply a light but thorough coating of sealant (Three bond 1207B, 1215 or equivalent) to left crankcase mating surface except the oil passage area.



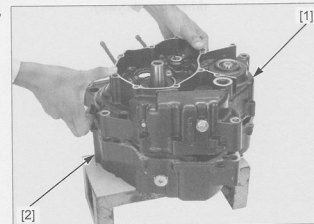
Apply engine oil to a new O-ring [1].

Install the dowel pins [2] and O-ring.



Do not force the crankcase halves together. If there is excessive force required, something is wrong. Remove the left crankcase and check for misaligned parts.

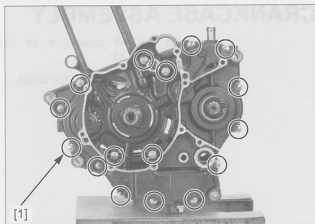
Install the left crankcase [1] on the right crankcase [2], being careful not to damage the oil seal lips.



CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER

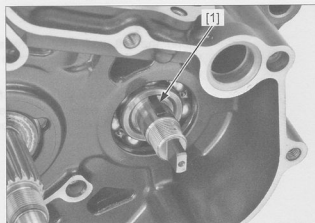
Install the right crankcase bolts [1].

Tighten the bolts in a crisscross pattern in 2 or 3 steps.

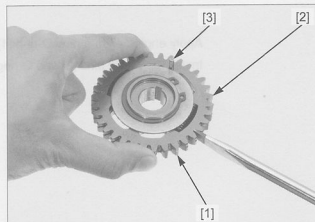


Be careful not to damage the key groove and balancer shaft.

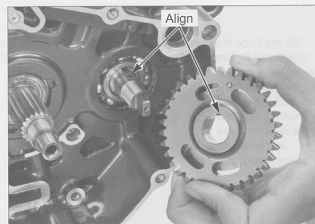
Install the woodruff key [1] onto the balancer shaft.



Align the balancer driven gear [1] and balancer driven sub gear [2] holes and install a 3 mm pin [3] into the hole.



Install the balancer driven gear assembly while aligning the woodruff key on the balancer shaft with balancer driven gear keyway.



Apply engine oil to the balancer shaft nut [1] threads and seating surface.

Install the washer [2] and balancer shaft nut.

Install the balancer drive gear [3] while aligning its wide groove with the punch mark on the crankshaft.

NOTE:

Install the balancer drive gear with its "OUT" mark [4] facing out.

Align the punch marks of the balancer drive gear and balancer driven gear.

Insert the gear holder [1] between the balancer drive gear [2] and balancer driven gear [3].

TOOL:

Gear holder, M2.5

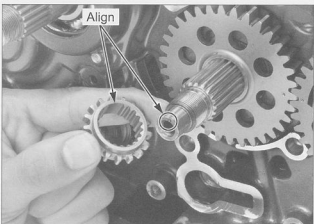
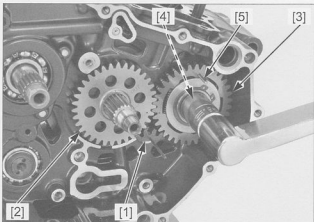
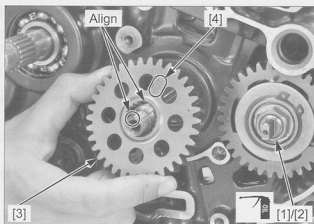
07724-0010100 or
07724-001A100
(U.S.A. only)

Tighten the balancer shaft nut [4] to the specified torque.

TORQUE: 44 N·m (4.5 kgf-m, 32 lbf-ft)

Remove an O.D. 3 mm pin [5] from the balancer driven gear assembly.

Install the timing sprocket while aligning its wide groove with the punch mark on the crankshaft.



CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER

Apply engine oil to the cam chain [1] whole surface.

Install the cam chain through the crankcase.

Install the cam chain over the timing sprocket [2].

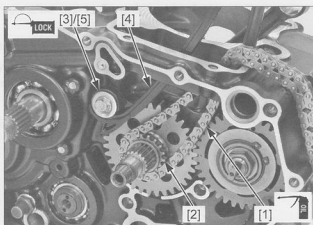
Apply locking agent to the cam chain tensioner pivot bolt [3] threads (page 1-12).

Install the cam chain tensioner [4], collar [5] and cam chain tensioner pivot bolt.

Tighten the cam chain tensioner pivot bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the removed parts (page 12-3) in the reverse order of removal.



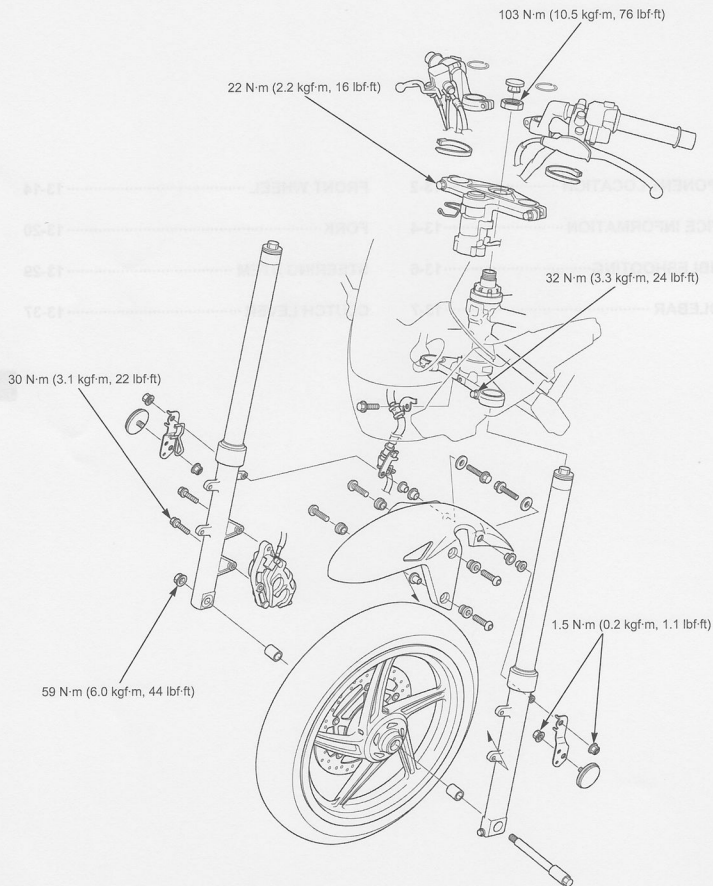
13. FRONT WHEEL/SUSPENSION/STEERING

COMPONENT LOCATION	13-2	FRONT WHEEL	13-14
SERVICE INFORMATION	13-4	FORK	13-20
TROUBLESHOOTING	13-6	STEERING STEM	13-29
HANDLEBAR	13-7	CLUTCH LEVER	13-37

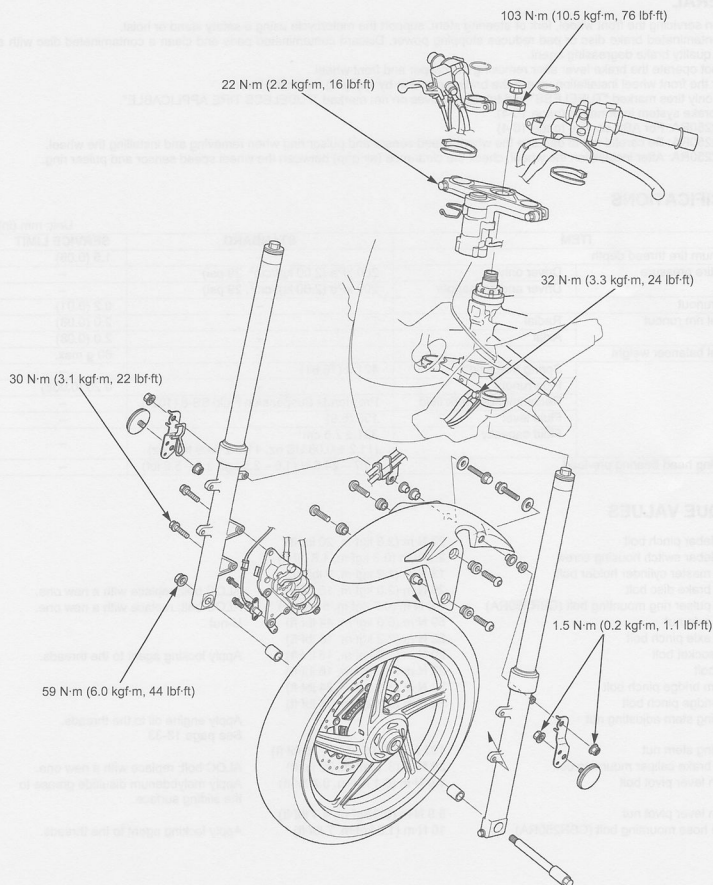
FRONT WHEEL/SUSPENSION/STEERING

COMPONENT LOCATION

CBR250R:



CBR250RA:



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.
- Do not operate the brake lever after removing the caliper and front wheel.
- After the front wheel installation, check the brake operation by applying the brake lever.
- Use only tires marked "TUBELESS" and tubeless valves on rim marked "TUBELESS TIRE APPLICABLE".
- For brake system information (page 15-4).
- CBR250RA: For ABS service (page 16-4).
- CBR250RA: Be careful not to damage the wheel speed sensor and pulser ring when removing and installing the wheel.
- CBR250RA: After installation the wheel, check the clearance (air gap) between the wheel speed sensor and pulser ring.

SPECIFICATIONS




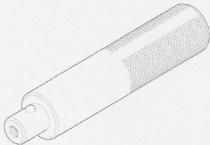
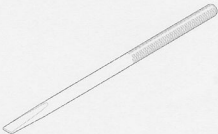
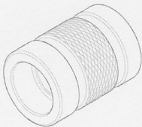


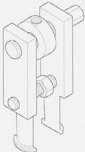
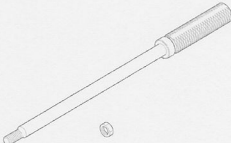
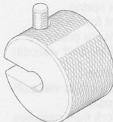
Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Minimum tire thread depth		—	1.5 (0.06)
Cold tire pressure	Driver only	200 kPa (2.00 kgf/cm ² , 29 psi)	—
	Driver and passenger	200 kPa (2.00 kgf/cm ² , 29 psi)	—
Axle runout		—	0.2 (0.01)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel balancer weight		—	60 g max.
Fork	Spring free length	421.8 (16.61)	—
	Pipe runout	—	0.20 (0.008)
	Recommended fork fluid	Pro Honda Suspension Fluid SS-8 (10W)	—
	Fluid level	150 (5.9)	—
	Fluid capacity	331 ± 2.5 cm ³ (11.2 ± 0.08 US oz, 11.7 ± 0.09 Imp oz)	—
Steering head bearing pre-load		15.7 – 24.5 N (1.6 – 2.5 kgf, 3.5 – 5.5 lbf)	—

TORQUE VALUES

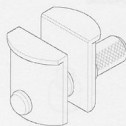
Handlebar pinch bolt	27 N·m (2.8 kgf-m, 20 lbf-ft)	
Handlebar switch housing screw	2.5 N·m (0.3 kgf-m, 1.8 lbf-ft)	
Front master cylinder holder bolt	12 N·m (1.2 kgf-m, 9 lbf-ft)	
Front brake disc bolt	20 N·m (2.0 kgf-m, 15 lbf-ft)	ALOC bolt; replace with a new one.
Front pulser ring mounting bolt (CBR250RA)	7.0 N·m (0.7 kgf-m, 5.2 lbf-ft)	ALOC bolt; replace with a new one.
Front axle nut	59 N·m (6.0 kgf-m, 44 lbf-ft)	U-nut
Front axle pinch bolt	22 N·m (2.2 kgf-m, 16 lbf-ft)	
Fork socket bolt	20 N·m (2.0 kgf-m, 15 lbf-ft)	Apply locking agent to the threads.
Fork bolt	22 N·m (2.2 kgf-m, 16 lbf-ft)	
Bottom bridge pinch bolt	32 N·m (3.3 kgf-m, 24 lbf-ft)	
Top bridge pinch bolt	22 N·m (2.2 kgf-m, 16 lbf-ft)	
Steering stem adjusting nut	—	Apply engine oil to the threads. See page 13-33
Steering stem nut	103 N·m (10.5 kgf-m, 76 lbf-ft)	
Front brake caliper mounting bolt	30 N·m (3.1 kgf-m, 22 lbf-ft)	ALOC bolt; replace with a new one.
Clutch lever pivot bolt	1.0 N·m (0.1 kgf-m, 0.7 lbf-ft)	Apply molybdenum disulfide grease to the sliding surface.
Clutch lever pivot nut	5.9 N·m (0.6 kgf-m, 4.4 lbf-ft)	
Brake hose mounting bolt (CBR250RA)	10 N·m (1.0 kgf-m, 7 lbf-ft)	Apply locking agent to the threads.

TOOLS

<p>Attachment, 42 x 47 mm 07746-0010300</p> 	<p>Attachment, 52 x 55 mm 07746-0010400</p> 	<p>Pilot, 15 mm 07746-0040300</p> 
<p>Driver 07749-0010000</p> 	<p>Bearing remover shaft 07746-0050100</p> 	<p>Bearing remover head, 15 mm 07746-0050400</p> 
<p>Fork seal driver 07747-0010100</p> 	<p>Fork seal driver attachment 07747-0010600</p> 	<p>Steering stem socket 07916-3710101</p>  <p>or 07702-0020001 (U.S.A. only)</p>
<p>Adjustable bearing remover head 07JAC-PH80100</p>  <p>or 07736-A1000B (U.S.A. only)</p> <p>NOTE: This tool is a part of adjustable bearing remover set (P/N 07JAC-PH80000).</p>	<p>Bearing remover shaft 07JAC-PH80200</p>  <p>NOTE: This tool is a part of adjustable bearing remover set (P/N 07JAC-PH80000).</p>	<p>Remover weight 07741-0010201</p>  <p>or 07936-371020A (U.S.A. only)</p> <p>NOTE: This tool is a part of adjustable bearing remover set (P/N 07JAC-PH80000).</p>

FRONT WHEEL/SUSPENSION/STEERING

Bearing remover
07946-3710500



Attachment, 30 mm I.D.
07746-0030300



Fork seal driver, 37 mm
07947-3710101 (U.S.A. only)



TROUBLESHOOTING

Hard steering

- Steering stem adjusting nut too tight
- Damaged steering head bearings
- Insufficient tire pressure
- Faulty tire

Steers to one side or does not track straight

- Bent fork pipe
- Bent axle
- Worn wheel bearing
- Unequal fork fluid quantity in each fork pipe
- Faulty steering head bearing
- Bent frame
- Faulty wheel bearing
- Weak front fork
- Loose steering stem adjusting nut

Front wheel wobbling

- Bent rim
- Worn wheel bearing
- Faulty tire
- Insufficient tire pressure
- Axle not tightened properly
- Unbalanced tire and wheel

Wheel hard to turn

- Faulty wheel bearing
- Bent axle
- Brake drag

Soft suspension

- Weak fork spring
- Insufficient fork fluid
- Insufficient tire pressure
- Incorrect fork fluid viscosity

Stiff suspension

- Incorrect fork fluid viscosity
- Bent fork pipe
- Clogged fork fluid passage
- Damaged fork pipe and/or fork slider
- Fork pipe binds
- High tire pressure

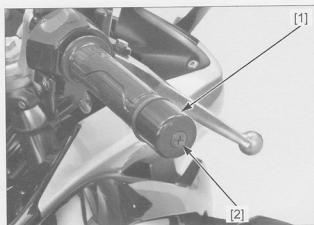
Front suspension noisy

- Insufficient fork fluid
- Loose fork fasteners
- Bent fork pipe

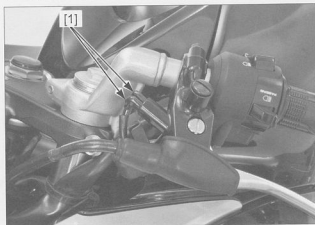
HANDLEBAR

REMOVAL

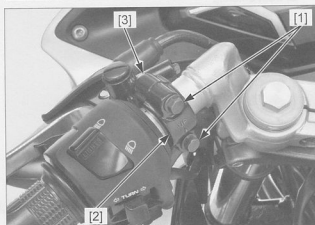
Hold the handlebar weight [1] and remove the screw [2], then remove both handlebar weights.



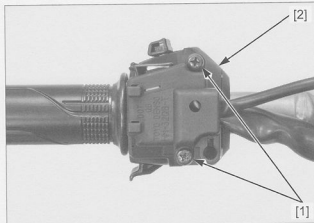
Disconnect the clutch switch connectors [1].



Remove the bolts [1], holder [2] and clutch lever bracket [3].

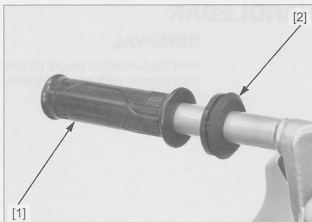


Remove the screws [1] and separate the left handlebar switch housing [2].

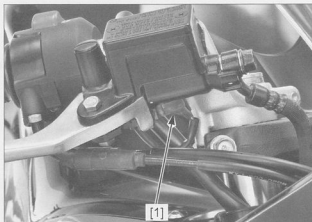


FRONT WHEEL/SUSPENSION/STEERING

Remove the left handlebar grip rubber [1] and housing cap [2].



Disconnect the brake light switch connectors [1].



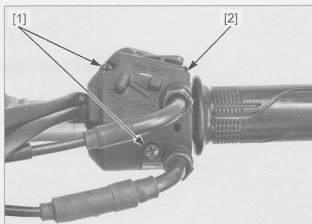
Support the brake master cylinder upright to prevent air from entering the hydraulic system. Do not let the master cylinder hang from the hydraulic brake hose.

Remove the bolts [1], holder [2] and master cylinder [3].

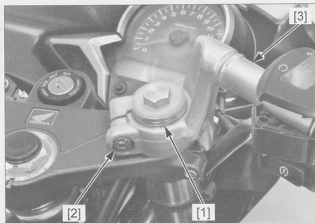


Remove the screws [1].

Separate the right handlebar switch housing [2].

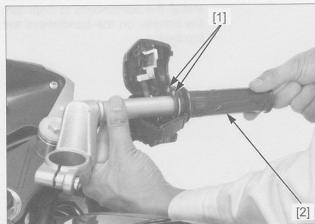


Remove the stopper rings [1] from both fork pipes.
Loosen the handlebar pinch bolts [2] and remove the handlebars [3].



Disconnect the throttle cables [1] from the throttle pipe [2], then remove the throttle pipe.

Remove the grip rubber, replace it if necessary.

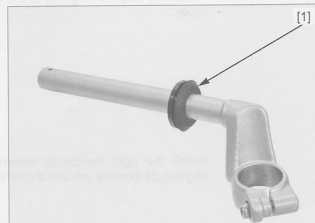


INSTALLATION

NOTE:

Route the wires, hoses and cables properly (page 1-18).

Install the housing cap [1] to the left handlebar.

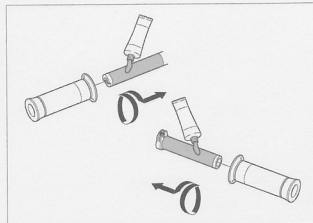


Clean the inside surface of the handlebar grip and outside surface of the handlebar and throttle pipe.

Apply Honda Bond A, Pro Honda Handgrip Cement (U.S.A. only) or equivalent to the inside surface of the grips and to the clean surface of the left handlebar and throttle pipe.

Wait 3 – 5 minutes and install the grip.
Rotate the grips for even application of the adhesive.

Allow the adhesive to dry for 1 hour before using.

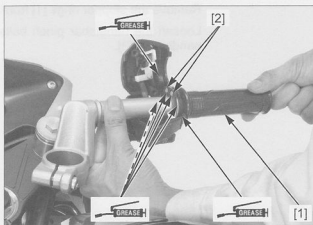


FRONT WHEEL/SUSPENSION/STEERING

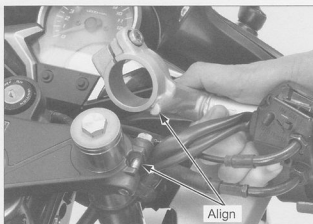
Apply grease to the throttle pipe flange cable groove and right handlebar switch housing sliding area.

Install the throttle pipe [1] to the right handlebar.

Connect the throttle cable [2] end to the throttle pipe.



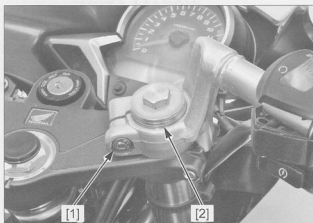
Install the handlebars to both fork pipes while aligning the bosses on the handlebars with the cut outs on the top bridge.



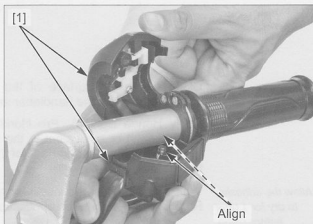
Tighten both handlebar pinch bolts [1] to the specified torque.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)

Install the stopper rings [2] to the grooves of both fork pipes.

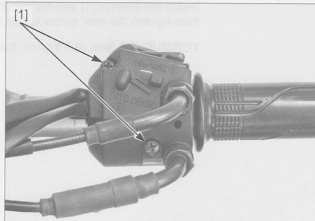


Install the right handlebar switch housing [1] while aligning its locating pin with the hole on the handlebar.



Install the screws [1] and tighten the forward screw first, then tighten the rear screw to the specified torque.

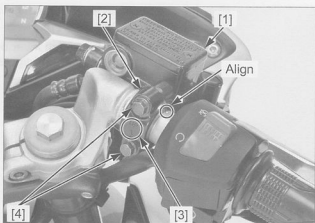
TORQUE: 2.5 N·m (0.3 kgf-m, 1.8 lbf-ft)



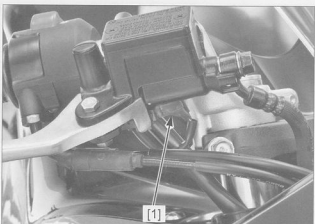
Install the master cylinder [1], holder [2] ("UP" mark [3] facing up) and bolts [4].

Align the end of the master cylinder with the punch mark on the handlebar and tighten the upper bolt first, then the lower bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf-m, 9 lbf-ft)

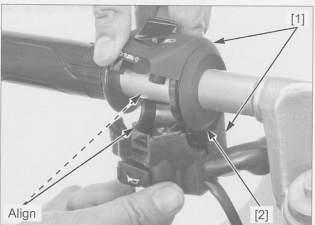


Connect the brake light switch connectors [1].



Set the left handlebar switch housing [1] groove to the housing cap [2] flange.

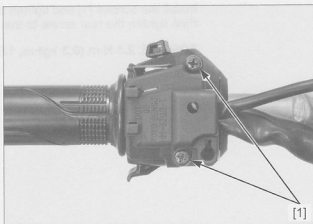
Install the left handlebar switch housing while aligning the locating pin in the housing with the hole in the handlebar.



FRONT WHEEL/SUSPENSION/STEERING

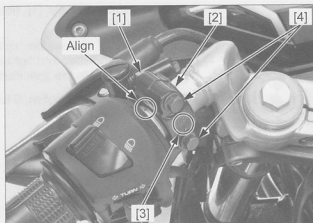
Install the screws [1] and tighten the forward screw first, then tighten the rear screw to the specified torque.

TORQUE: 2.5 N·m (0.3 kgf·m, 1.8 lbf·ft)

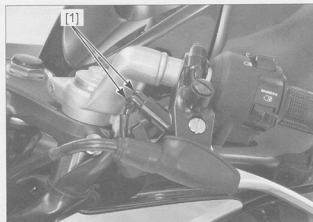


Install the clutch lever bracket [1], holder [2] ("UP" mark [3] facing up) and bolts [4].

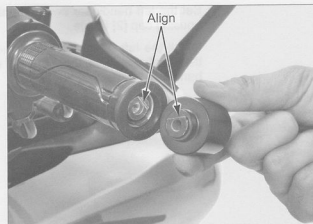
Align the end of the clutch lever bracket with the punch mark on the handlebar, and tighten the upper bolt first, then the lower bolt.



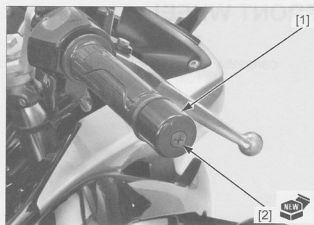
Connect the clutch switch connectors [1].



Install the handlebar weight to both handlebars aligning each cutout.



Hold the handlebar weight [1].
Install and tighten a new screw [2].
If the left handlebar removed adjust the clutch lever freeplay (page 3-26).
If the right handlebar removed adjust the throttle grip freeplay (page 3-6).



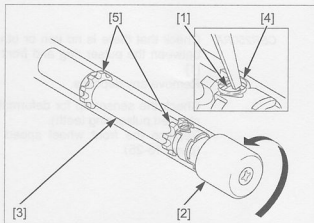
INNER WEIGHT REPLACEMENT

Remove the throttle pipe or grip rubber from the handlebar (page 13-7).

Straighten the retainer ring tab [1] by the screwdriver or punch.

Apply lubricant spray through the tab locking hole [4] to the rubber cushions [5] for easy removal.

Temporarily install the handlebar weight [2] and screw, then remove the inner weight assembly [3] by turning the handlebar weight.

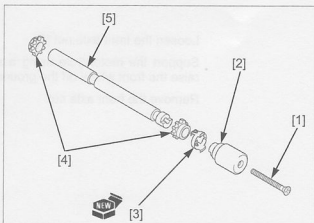


Remove the screw [1], handlebar weight [2], retainer ring [3] and rubber cushions [4] from the inner weight [5].

Install the rubber cushions and new retainer ring onto the inner weight.

Install the handlebar weight to the inner weight align with each cut-outs of the inner weight and handlebar weight.

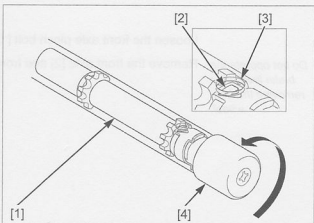
Install and tighten the handlebar weight screw.



Install the inner weight assembly [1] into the handlebar. Turn the inner weight and hook the weight retainer tab [2] with the tab locking hole [3] in the handlebar.

Remove the screw and handlebar weight [4].

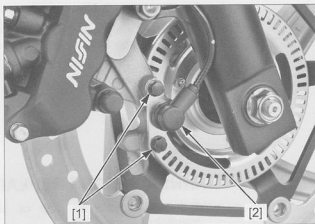
Install the throttle pipe and grip rubber to the handlebar (page 13-9).



FRONT WHEEL

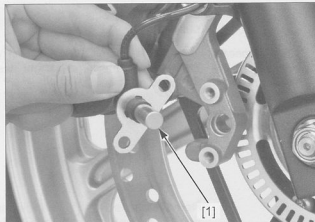
REMOVAL

CBR250RA: Remove the bolts [1] and front wheel speed sensor [2] from the caliper bracket.



CBR250RA: Check that there is no iron or other magnetic deposits between the pulser ring and front wheel speed sensor [1]. Remove any deposits.

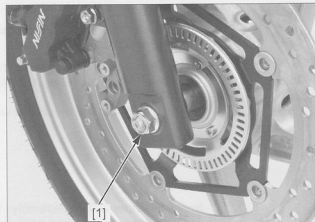
Check the sensor tip for deformation or damage (e.g., chipped pulser ring teeth). Replace the front wheel speed sensor if necessary (page 16-25).



Loosen the front axle nut [1].

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

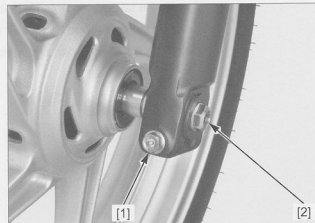
Remove the front axle nut.



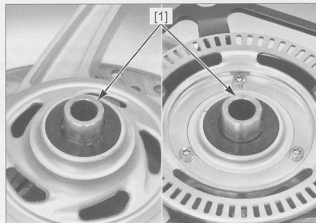
Loosen the front axle pinch bolt [1].

Do not operate the brake lever after removing the front wheel.

Remove the front axle [2] and front wheel.



Remove the side collars [1].



INSPECTION

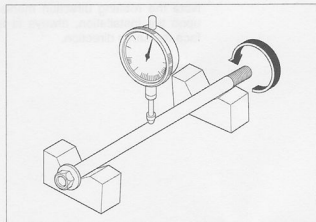
AXLE

Place the axle on V-blocks.

Turn the axle and measure the runout using a dial indicator.

Actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.2 mm (0.01 in)



WHEEL RIM

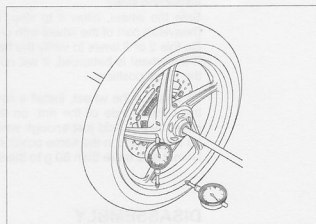
Check the wheel rim runout by placing the wheel in a truing stand.

Spin the wheel by hand and measure the runout using a dial indicator.

SERVICE LIMITS:

Radial: 2.0 mm (0.08 in)

Axial: 2.0 mm (0.08 in)



WHEEL BEARING

Turn the inner race of each bearing with your finger.

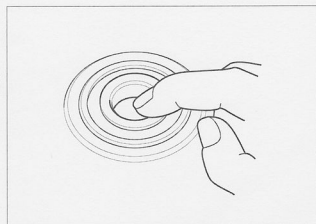
The bearings should turn smoothly and quietly.

Also check that the outer race fits tightly in the wheel hub.

Remove and discard the bearings if the races do not turn smoothly, quietly, or if they fit loosely in the wheel hub.

Replace the bearings in pairs.

Replace the wheel bearings, if necessary (page 13-16).

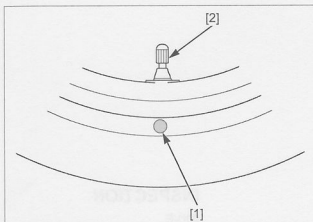


FRONT WHEEL/SUSPENSION/STEERING

WHEEL BALANCE

NOTE:

- Carefully check balance before installing the wheel.
- The wheel balance must be checked when the tire is remounted.
- For optimum balance, the tire balance mark [1] (light mass point: a paint dot on the side wall) must be located next to the valve stem [2]. Remount the tire if necessary.



Note the rotating direction marks [1] on the tire, and upon tire installation, always fit the tire so the marks face the same direction.



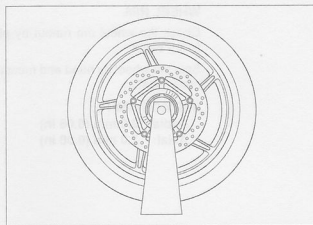
Mount the wheel, tire and brake disc assembly on an inspection stand.

Spin the wheel, allow it to stop, and mark the lowest (heaviest) part of the wheel with chalk.

Do this 2 or 3 times to verify the heaviest area.

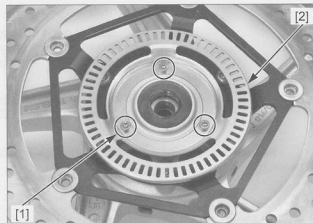
If the wheel is balanced, it will not stop consistently in the same position.

To balance the wheel, install a new balance weight on the lightest side of the rim, on the side opposite the chalk marks. Add just enough weight so the wheel will no longer stop in the same position when it is spun. Do not add more than 60 g to the wheel.



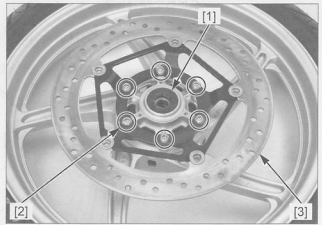
DISASSEMBLY

CBR250RA: Remove the bolts [1] and pulser ring [2].

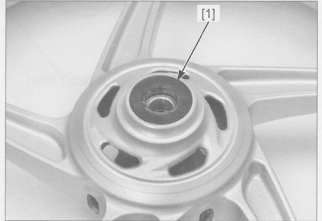


Remove the dust seal [1] from the right wheel hub.

Loosen the brake disc mounting bolts [2] in a crisscross pattern in 2 or 3 steps, and remove the bolts and brake disc [3].



Remove the dust seal [1] from the left wheel hub.



Install the bearing remover head [1] into the bearing [2]. From the opposite side, install the bearing remover shaft [3] and drive out the bearing from the wheel hub.

Remove the distance collar and drive out the other bearing.

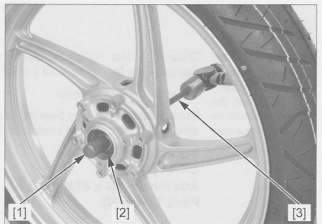
TOOLS:

Bearing remover head, 15 mm 07746-0050400

Bearing remover shaft 07746-0050100

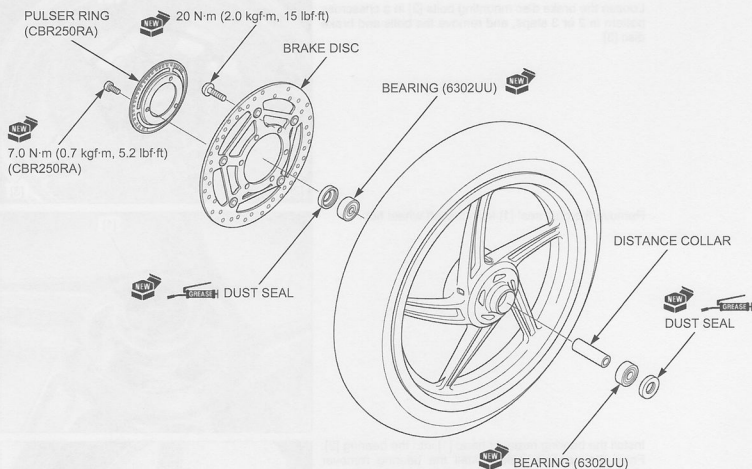
NOTE:

- Replace the wheel bearing in pairs.
- Do not reuse old bearing.



FRONT WHEEL/SUSPENSION/STEERING

ASSEMBLY



Never install the old bearing, once the bearing has been removed, the bearing must be replaced with a new one.

Drive in a new right side bearing [1] squarely with its marked side facing up until it is fully seated. Install the distance collar.

Drive in a new left side bearing squarely with its marked side facing up until it is seated on the distance collar.

TOOLS:

Driver [2]

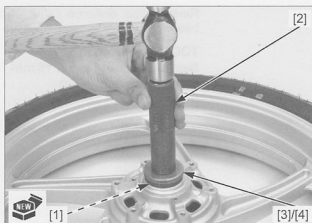
Attachment, 42 x 47 mm [3]

Pilot, 15 mm [4]

07749-0010000

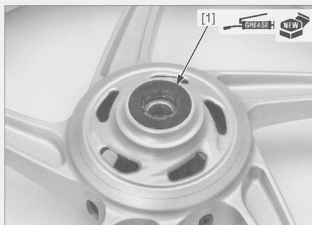
07746-0010300

07746-0040300



Apply grease to a new dust seal [1] lips.

Install the dust seal until it is fully seated to the left wheel hub.



Install the brake disc [1] with the arrow mark [2] facing outside.

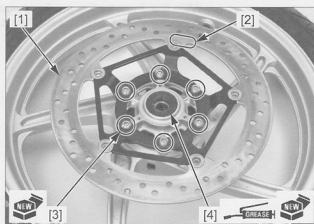
Install and tighten new brake disc bolts [3] to the specified torque in a crisscross pattern in 2 or 3 steps.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)

Do not get grease on the brake disc or stopping power will be reduced.

Apply grease to a new dust seal [4] lips.

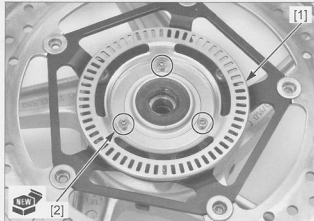
Install the dust seal until it is flush with the wheel hub surface to the right wheel hub.



CBR250RA: Install the front pulser ring [1] and new front pulser ring mounting bolts [2].

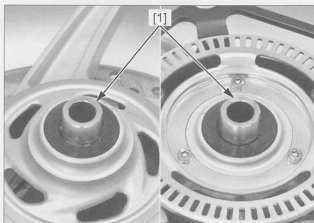
Tighten the bolts to the specified torque.

TORQUE: 7.0 N·m (0.7 kgf·m, 5.2 lbf·ft)



INSTALLATION

Install the side collars [1].



Install the front wheel between the fork legs so that the brake disc is positioned between the pads.

NOTE:

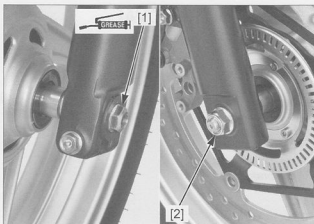
Be careful not to damage the brake pads.

Apply a thin coat of grease to the front axle [1] outer surface.

Install the front axle from left side.

Install and tighten the front axle nut [2] to the specified torque.

TORQUE: 59 N·m (6.0 kgf·m, 44 lbf·ft)



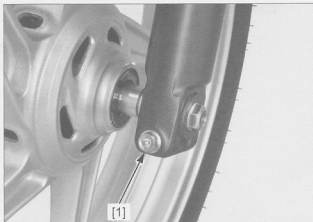
FRONT WHEEL/SUSPENSION/STEERING

With the front brake applied, pump the forks up and down several times to seat the axle and check brake operation.



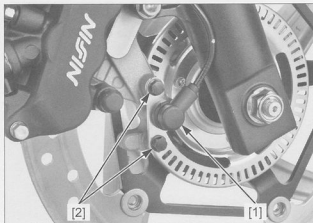
Tighten the front axle pinch bolt [1] to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)



CBR250RA: Install the front wheel speed sensor [1] and bolts [2]. Tighten the bolts securely.

Check the air gap between the front wheel speed sensor and pulser ring (page 16-24).



FORK

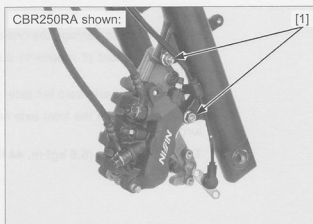
REMOVAL

Remove the following:

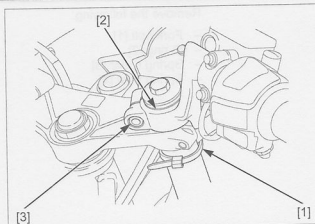
- Front wheel (page 13-14)
- Front fender (page 2-12)

Do not suspend the brake caliper/bracket assembly from the brake hose. Do not twist the brake hose.

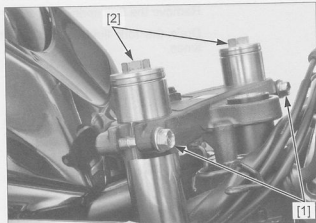
Remove the brake caliper mounting bolts [1] and brake caliper/bracket assembly.



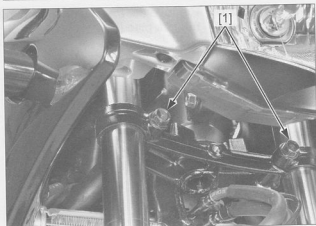
Remove the wire bands [1] from both fork pipes.
Remove the stopper rings [2] from both fork pipes.
Loosen the handlebar pinch bolts [3] and remove the handlebars.



Loosen the top bridge pinch bolts [1].
When the fork is ready to be disassembled, loosen the fork bolt [2].



Hold the fork legs and loosen the bottom bridge pinch bolts [1] and lower the fork legs, then remove it.



DISASSEMBLY

Be careful not to scratch the fork pipe.

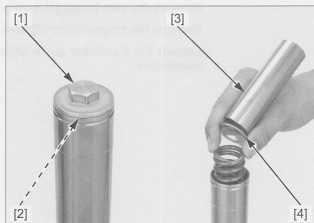
Remove the dust seal [1] and stopper ring [2].



FRONT WHEEL/SUSPENSION/STEERING

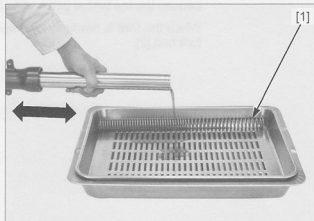
Remove the following:

- Fork bolt [1]
- O-ring [2]
- Spring collar [3]
- Spring seat [4]



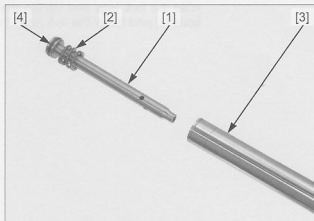
Remove the fork spring [1].

Drain the fork fluid by pumping the fork pipe several times.



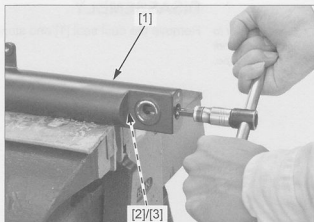
Do not remove the fork piston ring [4], unless replacing it with a new one.

Remove the fork piston [1] and rebound spring [2] from the fork pipe [3].



Do not over-tighten the vise on the fork slider.

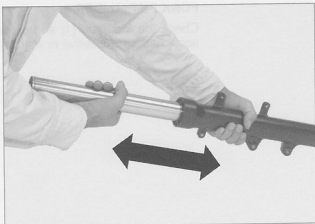
Set the fork slider [1] in a vise with a piece of wood or soft jaws to avoid damage.



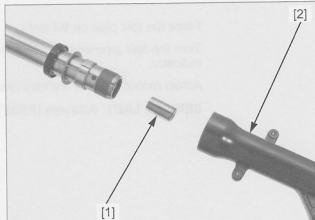
If the fork piston turns with the socket bolt, temporarily install the fork spring, spring seat, spring collar and fork bolt.

Remove the fork socket bolt [2] and sealing washer [3].

Using quick successive motions, pull the fork tube out of the fork slider.

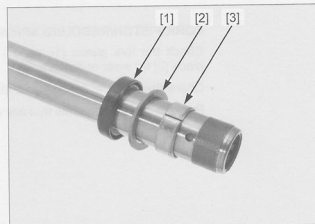


Remove the oil lock piece [1] from the fork slider [2].



Remove the following:

- Oil seal [1]
- Back-up ring [2]
- Guide bushing [3]



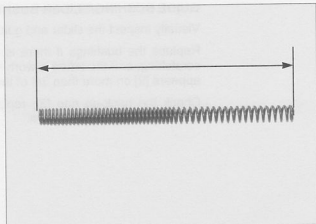
INSPECTION

FORK SPRING

Check the fork spring for fatigue or damage.

Measure the fork spring free length.

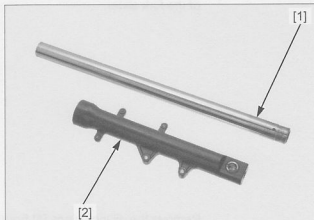
STANDARD: 421.8 mm (16.61 in)



FRONT WHEEL/SUSPENSION/STEERING

FORK PIPE/SLIDER

Check the fork pipe [1] and slider [2] for score marks, scratches, or excessive or abnormal wear.

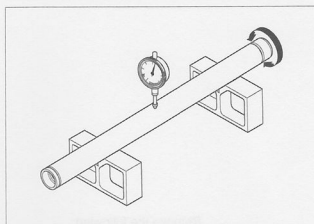


Place the fork pipe on V-blocks.

Turn the fork pipe and measure the runout using a dial indicator.

Actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.20 mm (0.008 in)

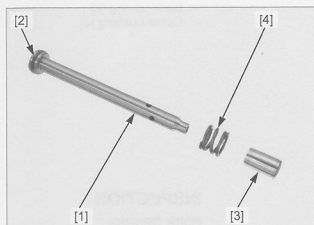


FORK PISTON/REBOUND SPRING/OIL LOCK PIECE

Check the fork piston [1], piston ring [2] and oil lock piece [3] for wear or damage.

Check the rebound spring [4] for fatigue or damage.

Replace any components that are worn or damaged.

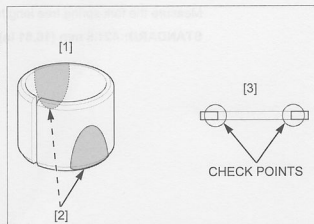


GUIDE BUSHING/SLIDER BUSHING/BACK-UP RING

Visually inspect the slider and guide bushings [1].

Replace the bushings if there is excessive scoring or scratching, or if the teflon is worn so the copper surface appears [2] 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 shown.

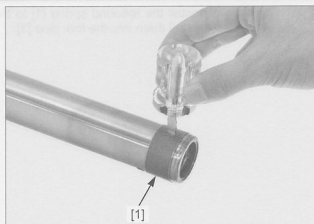


Do not damage the slider bushing, especially the sliding surface. To prevent loss of tension, do not open the bushing more than necessary.

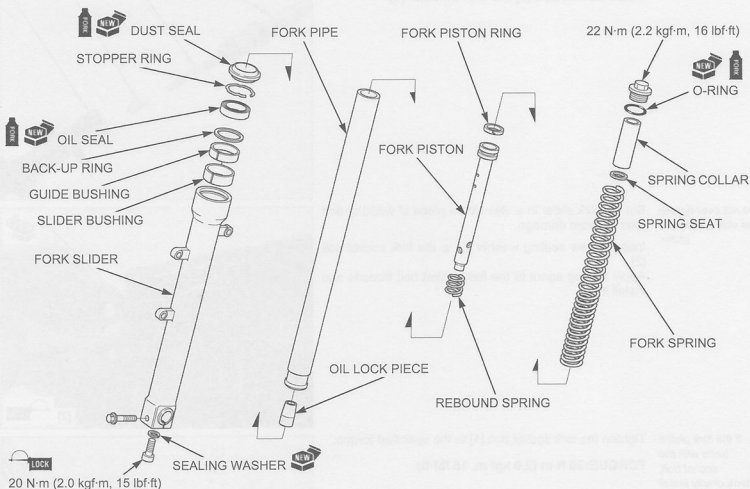
If the slider bushing [1] will be removed, carefully remove the slider bushing by prying the bushing gap with a screwdriver until the bushing can be pulled off by hand.

NOTE:

Do not remove the slider bushing, unless it is necessary to replace with a new one.



ASSEMBLY



Do not open the bushing slit more than necessary.

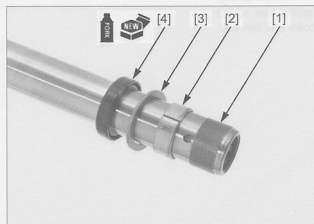
Install the slider bushing [1] being careful not to damage the coating of the bushing, if it has been removed.

Remove the burrs from the bushing mating surface, being careful not to peel off the coating.

Install the oil seal with its marked side facing up.

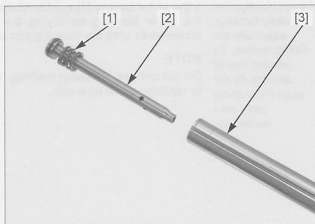
Apply fork fluid to a new oil seal lips.

Install the guide bushing [2], back-up ring [3] and oil seal [4] onto the fork tube.

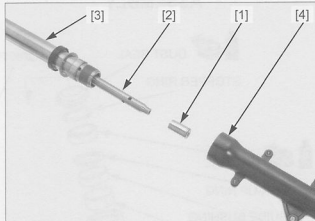


FRONT WHEEL/SUSPENSION/STEERING

Install the rebound spring [1] to the fork piston [2] and install them into the fork pipe [3].



Install the oil lock piece [1] onto the fork piston [2] end. Install the fork pipe [3] into the fork slider [4].

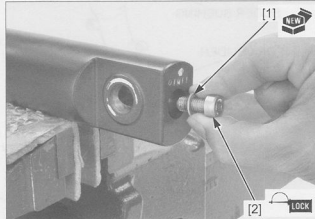


Do not over-tighten the vise on the fork slider.

Set the fork slider in a vise with a piece of wood or soft jaws to avoid damage.

Install a new sealing washer [1] to the fork socket end [2].

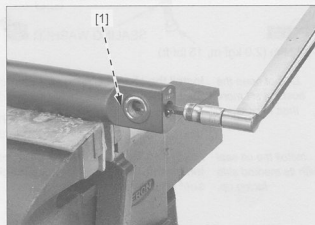
Apply locking agent to the fork socket bolt threads and install it.



If the fork piston turns with the socket bolt, temporarily install the fork spring, spring seat, spring collar and fork bolt.

Tighten the fork socket bolt [1] to the specified torque.

TORQUE: 20 N·m (2.0 kgf·m, 15 lbf·ft)



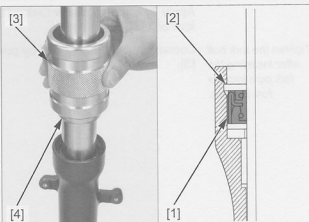
Drive the oil seal [1] until the stopper ring groove [2] is visible using the special tools.

TOOLS:

Fork seal driver [3] 07747-0010100
Fork seal driver attachment [4] 07747-0010600

TOOL, U.S.A. only:

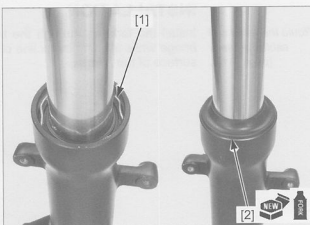
Fork seal driver, 37 mm 07947-3710101



Install the stopper ring [1] into the groove of the fork slider securely.

Apply fork fluid to a new dust seal lips.

Install the dust seal [2].



Pour the specified amount of recommended fork fluid into the fork pipe.

RECOMMENDED FORK FLUID:

Pro Honda Suspension Fluid SS-8 (10W)

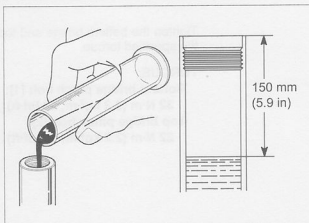
FORK FLUID CAPACITY:

$331 \pm 2.5 \text{ cm}^3$ ($11.2 \pm 0.08 \text{ US oz}$, $11.7 \pm 0.09 \text{ Imp oz}$)

Slowly pump the fork pipe several times to remove any trapped air from the lower portion of the fork pipe.

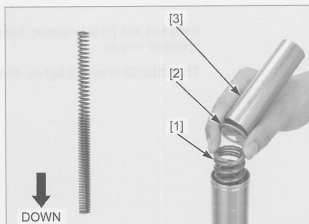
Compress the fork pipe fully and measure the fluid level from the top of the fork pipe.

FLUID LEVEL: 150 mm (5.9 in)



Pull the fork pipe up and install the fork spring [1] with the tightly wound coil side facing down.

Install the spring seat [2] and spring collar [3].

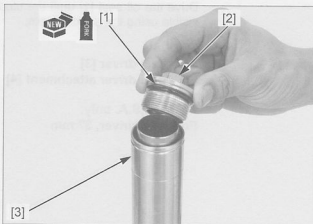


FRONT WHEEL/SUSPENSION/STEERING

Apply fork fluid to a new O-ring [1] and install it onto the fork bolt [2].

Tighten the fork bolt after installing the fork pipe into the fork bridges.

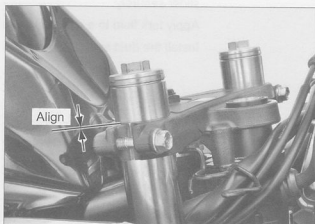
Loosely install the fork bolt by pushing it to the fork pipe [3].



INSTALLATION

Route the wires and cables properly (page 1-18).

Install the fork leg through the bottom bridge and top bridge while aligning index line of fork pipe with the top surface of top bridge.



Tighten the bottom bridge and top bridge pinch bolts to the specified torque.

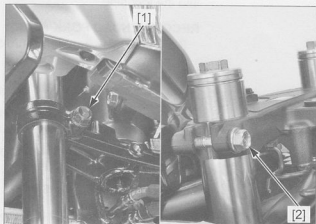
TORQUE:

Bottom bridge pinch bolt [1]:

32 N·m (3.3 kgf·m, 24 lbf·ft)

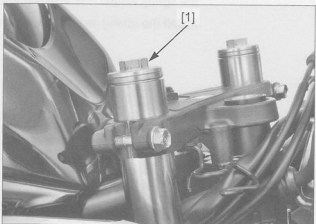
Top bridge pinch bolt [2]:

22 N·m (2.2 kgf·m, 16 lbf·ft)

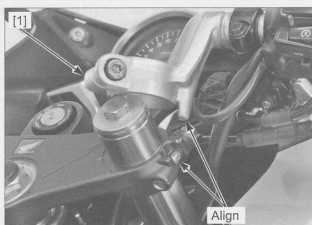


If the fork bolt [1] is loosened, tighten the fork bolt to the specified torque.

TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)



Install the handlebars [1] to both fork pipes while aligning the bosses on the handlebars with the cut outs on the top bridge.



Tighten both handlebar pinch bolts [1] to the specified torque.

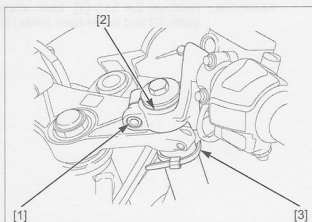
TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)

Install the stopper rings [2] to the grooves of both fork pipes.

Install the wire bands [3] to the both fork pipes.

NOTE:

Route the wire properly (page 1-18).

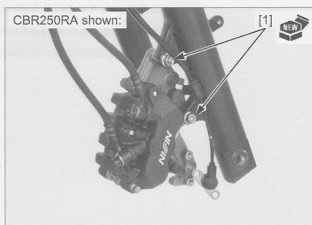


Install the front brake caliper/bracket assembly and tighten new brake caliper mounting bolts [1] to the specified torque.

TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)

Install the following:

- Front fender (page 2-12)
- Front wheel (page 13-19)



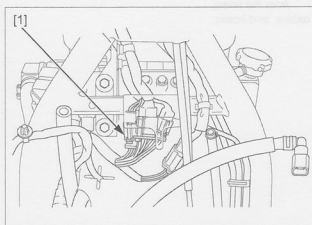
STEERING STEM

REMOVAL

Lift and support the fuel tank (page 3-5).

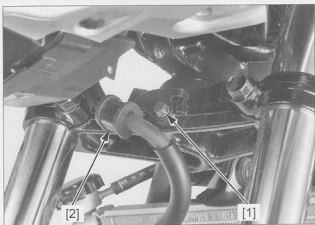
Open the rubber sheet.

Disconnect the ignition switch 3P connector [1].

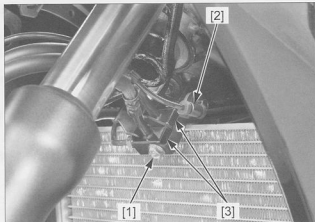


FRONT WHEEL/SUSPENSION/STEERING

CBR250R: Remove the bolt [1] and brake hose clamp [2] from the bottom bridge.



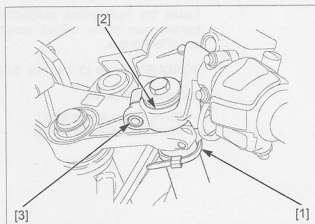
CBR250RA: Remove the bolt [1], front wheel speed sensor wire guide [2] and brake hose joints [3].



Remove the wire bands [1] from both fork pipes.

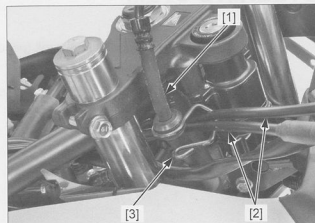
Remove the stopper rings [2] from both fork pipes.

Loosen the handlebar pinch bolts [3] and remove the handlebars.



Do not allow the handlebars to hang from the wires, cables, and hoses.

Release the brake hose [1] and throttle cable [2] from the hose guide [3].

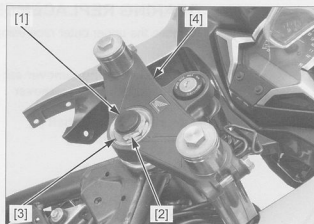


Remove the cap [1].

Loosen the steering stem nut [2].

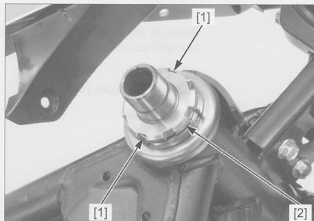
Remove the fork legs (page 13-20).

Remove the steering stem nut, washer [3] and top bridge [4].



Straighten the lock washer [1] tabs.

Remove the steering stem adjusting lock nut [2].



Loosen the steering stem adjusting nut [1] using a special tool.

TOOL:

Steering stem socket [2]

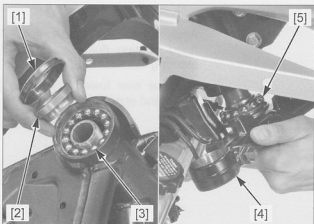
07916-3710101 or
07702-0020001
(U.S.A. only)

Hold the steering stem and remove the steering stem adjusting nut.



Remove the following:

- Dust seal [1]
- Upper bearing inner race [2]
- Upper steering head bearing [3]
- Steering stem [4]
- Lower steering head bearing [5]



FRONT WHEEL/SUSPENSION/STEERING

BEARING REPLACEMENT

Replace the bearing, outer and inner races as a set.

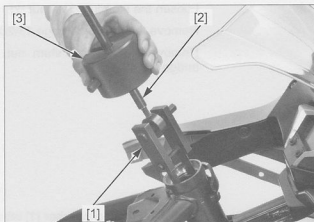
Remove the upper outer race using a special tool.

TOOLS:

Adjustable bearing remover set	07JAC-PH80000
Adjustable bearing remover head [1]	07JAC-PH80100
Bearing remover shaft [2]	07JAC-PH80200
Remover weight [3]	07741-0010201

TOOLS, U.S.A. only:

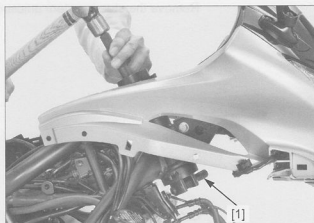
Adjustable bearing puller, 25 - 40 mm	07736-A1000B
and commercially available 3/8" x 16 slide hammer	



Remove the lower bearing outer race using the special tool and suitable shaft.

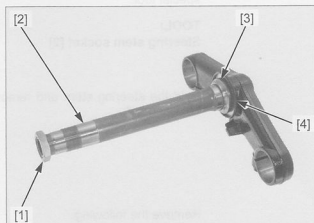
TOOL:

Bearing remover [1]	07946-3710500
---------------------	---------------



Temporarily install the steering stem nut [1] onto the steering stem [2] to prevent the threads from being damaged when removing the lower inner race [3] from the steering stem.

Remove the lower inner race with a chisel or equivalent tools, being careful not to damage the steering stem. Remove the steering head bearing dust seal [4].

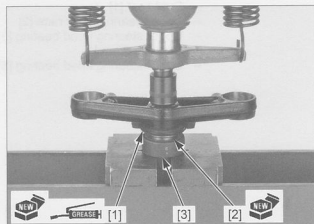


Apply specified grease (page 1-17) to a new steering head bearing dust seal [1] lips and install it to the steering stem.

Install a new lower inner race [2] using a hydraulic press and special tool.

TOOL:

Attachment, 30 mm I.D. [3]	07746-0030300
----------------------------	---------------



Drive in a new upper outer race [1] using the special tools.

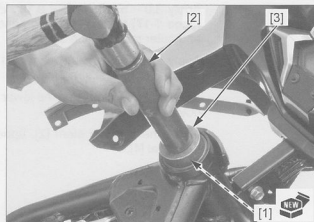
TOOLS:

Driver [2]

Attachment, 42 x 47 mm [3]

07749-0010000

07746-0010300



Drive in a new lower outer race [1] using the special tools.

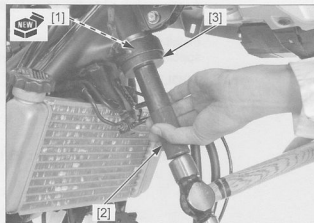
TOOLS:

Driver [2]

Attachment, 52 x 55 mm [3]

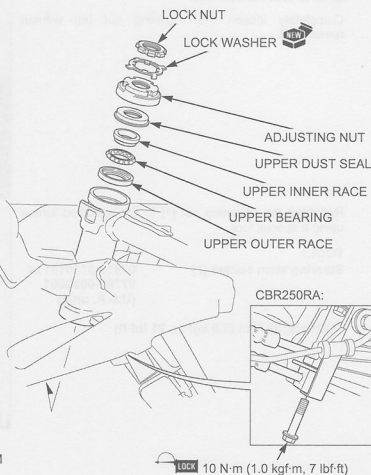
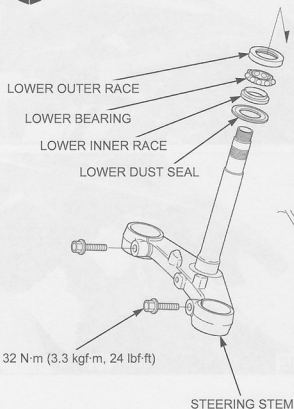
07749-0010000

07746-0010400



INSTALLATION

- : BEARINGS
- : BEARING RACES
- : DUST SEALS



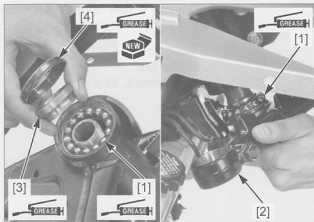
FRONT WHEEL/SUSPENSION/STEERING

Apply 3.0 ~ 5.0 g (0.11 ~ 0.18 oz) of specified grease (page 1-17) to each steering head bearing inner races and outer races rolling surface.

Apply specified grease (page 1-17) to a new steering head bearing dust seal lips.

Install the bearings [1] in the lower inner race and upper outer race.

Install the steering stem [2], upper inner race [3] and dust seal [4].



Apply engine oil to the steering stem adjusting nut [1] threads.

Install and tighten the steering stem adjusting nut to the specified torque using a special tool.

TOOL:

Steering stem socket [2]

07916-3710101 or
07702-0020001
(U.S.A. only)

TORQUE: 39 N·m (4.0 kgf·m, 29 lbf·ft)



Move the steering stem left and right, lock-to-lock five times to seat the bearings.

Completely loosen the adjusting nut but without removing it.



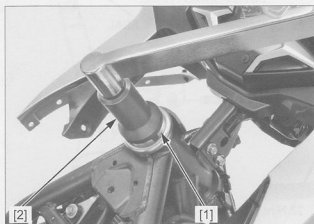
Retighten the adjusting nut [1] to the specified torque using a special tool.

TOOL:

Steering stem socket [2]

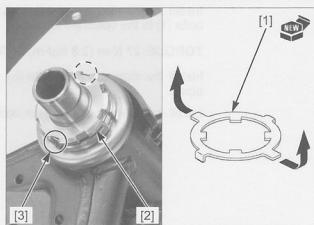
07916-3710101 or
07702-0020001
(U.S.A. only)

TORQUE: 29 N·m (3.0 kgf·m, 21 lbf·ft)



Install a new lock washer [1], aligning its short bent tabs with the grooves in the steering stem adjusting nut. Install the lock nut [2] until it contacts with the lock washer.

Further tighten the lock nut, no more than 90°, to align its grooves with the tabs of the lock washer. Bend up the long lock washer tabs [3] into the grooves of the lock nut.



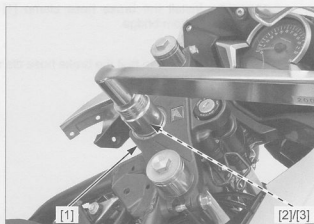
Install the top bridge [1], washer [2] and steering stem nut [3].

Temporarily install the fork legs (page 13-28).

Tighten the steering stem nut to the specified torque.

TORQUE: 103 N·m (10.5 kgf·m, 76 lbf·ft)

Turn the steering stem left and right, lock-to-lock several times to make sure the steering stem moves smoothly without play or binding.



Install the cap [1] to the steering stem nut.



Make sure the fork tube index line align with the top bridge upper surface.

Tighten the bottom bridge and top bridge pinch bolts to the specified torque.

TORQUE:

Bottom bridge pinch bolt [1]:

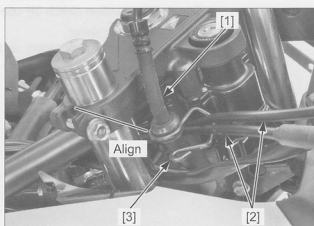
32 N·m (3.3 kgf·m, 24 lbf·ft)

Top bridge pinch bolt [2]:

22 N·m (2.2 kgf·m, 16 lbf·ft)

Route the wires, hose and cable properly (page 1-18).

Install the brake hose [1] and throttle cables [2] to the hose guide [3].



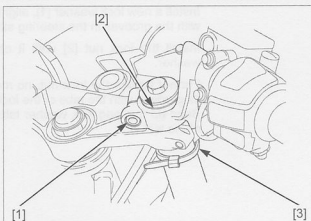
FRONT WHEEL/SUSPENSION/STEERING

Install the handlebars and tighten the handlebar pinch bolts [1] to the specified torque.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)

Install the stopper rings [2] to the grooves of both fork pipes.

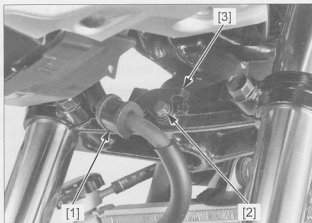
Install the wire bands [3] to the both fork pipes.



CBR250R: Install the brake hose clamp [1] and bolt [2] to the bottom bridge.

NOTE:

Be sure to rest the brake hose clamp tab [3] against the bottom bridge.

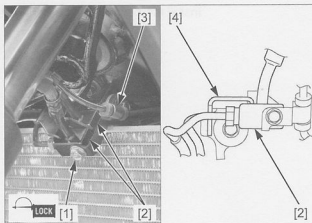


CBR250RA: Apply locking agent to the brake hose mounting bolt [1] threads.

Install the brake hose joints [2], front wheel speed sensor guide [3] and bolt.

Push the brake hose joints against the frame [4], then tighten the brake hose mounting bolt to the specified torque.

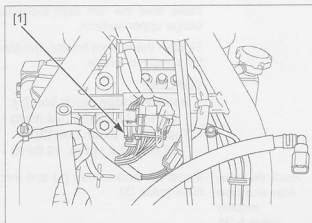
TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



Connect the ignition switch 3P connector [1].

Close the rubber sheet.

Remove the suitable support and close the fuel tank (page 3-5).



STEERING HEAD BEARING PRE-LOAD

Jack up the motorcycle to raise the front wheel off the ground.

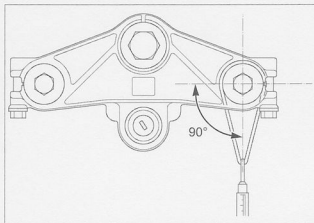
Position the steering stem to the straight ahead position.

Make sure that there is no cable or wire harness interference.

Hook a spring scale to the fork tube and measure the steering head bearing pre-load.

STANDARD: 15.7 – 24.5 N (1.6 – 2.5 kgf, 3.5 – 5.5 lbf)

If the readings do not fall within the standard value, adjust the steering stem adjusting nut (page 13-33).

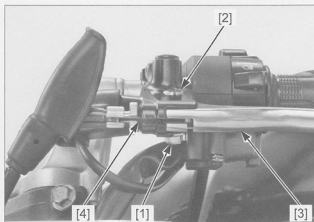


CLUTCH LEVER

REMOVAL/INSTALLATION

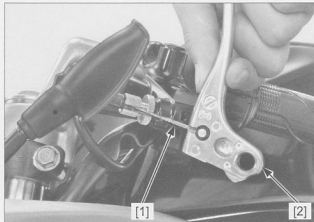
Remove the clutch lever pivot nut [1] and bolt [2].

Remove the clutch lever [3] and disconnect the clutch cable [4].



Connect the clutch cable [1] to the clutch lever [2].

Install the clutch lever to the clutch lever bracket.



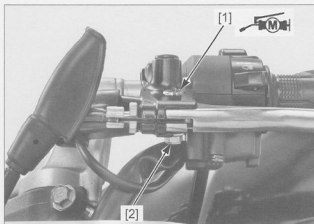
Apply molybdenum disulfide grease to the clutch lever pivot bolt [1] sliding surface.

Install and tighten the clutch lever pivot bolt to the specified torque.

TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)

Install and tighten the clutch lever pivot nut [2] to the specified torque while holding the clutch lever pivot bolt.

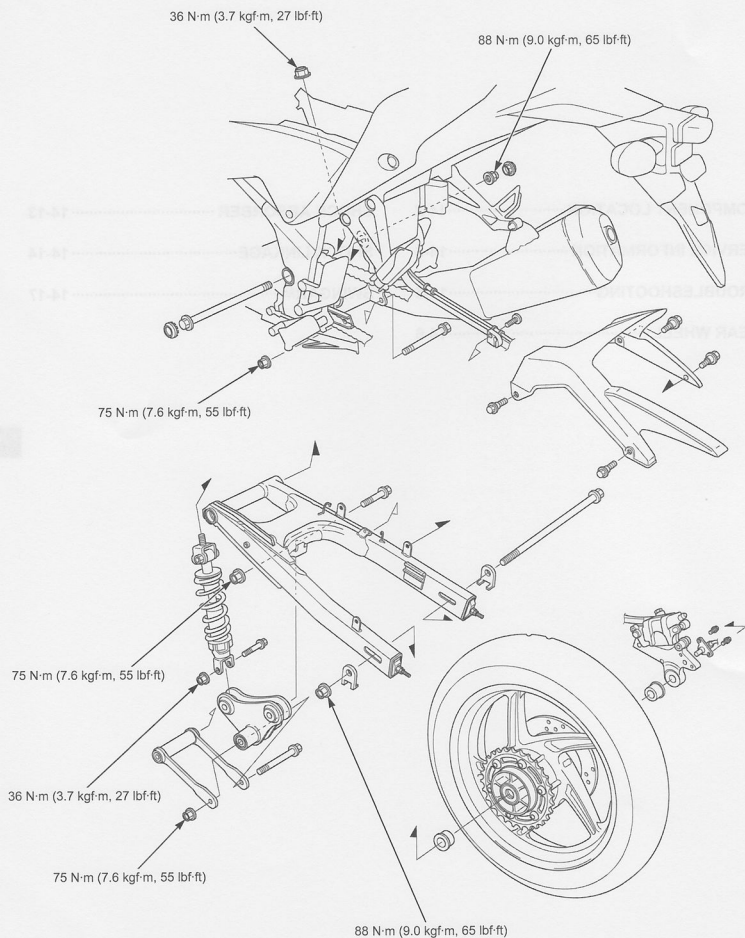
TORQUE: 5.9 N·m (0.6 kgf·m, 4.4 lbf·ft)



14. REAR WHEEL/SUSPENSION

COMPONENT LOCATION	14-2	SHOCK ABSORBER	14-13
SERVICE INFORMATION	14-3	SHOCK LINKAGE	14-14
TROUBLESHOOTING	14-5	SWINGARM	14-17
REAR WHEEL	14-6		

COMPONENT LOCATION



SERVICE INFORMATION

GENERAL

- When servicing the rear wheel and suspension, support the motorcycle using a safety stand or hoist.
- A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.
- After the rear wheel installation, check the brake operation by applying the brake pedal.
- Use only tires marked "TUBELESS" and tubeless valves on rim marked "TUBELESS TIRE APPLICABLE".
- Use genuine Honda replacement bolts and nuts for all suspension pivot and mounting point.
- For brake system information (page 15-4).
- CBR250RA: For ABS service (page 16-4).
- CBR250RA: Be careful not to damage the wheel speed sensor and pulser ring when removing and installing the wheel.
- CBR250RA: After installation the wheel, check the clearance (air gap) between the wheel speed sensor and pulser ring.

SPECIFICATIONS










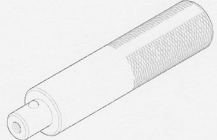

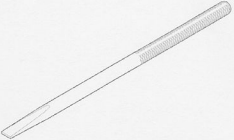
ITEM		STANDARD	SERVICE LIMIT
Minimum tire thread depth		—	2.0 (0.08)
Cold tire pressure	Driver only	200 kPa (2.00 kgf/cm ² , 29 psi)	—
	Driver and passenger	225 kPa (2.25 kgf/cm ² , 33 psi)	—
Axle runout		—	0.2 (0.01)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel balancer weight		—	60 g max.
Drive chain	Size/link	DID	DID520VF-108LE
		RK	RK520KLO-108LE
	Slack	20 – 30 (0.8 – 1.2)	—

TORQUE VALUES


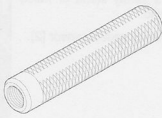

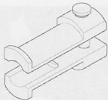
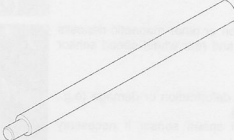
Driven sprocket nut	75 N·m (7.6 kgf-m, 55 lbf-ft)	U-nut
Rear axle nut	88 N·m (9.0 kgf-m, 65 lbf-ft)	U-nut
Rear brake disc bolt	42 N·m (4.3 kgf-m, 31 lbf-ft)	ALOC bolt; replace with a new one.
Rear pulser ring mounting bolt (CBR250RA)	7.0 N·m (0.7 kgf-m, 5.2 lbf-ft)	ALOC bolt; replace with a new one.
Shock absorber mounting nut	36 N·m (3.7 kgf-m, 27 lbf-ft)	U-nut
Shock arm nut	75 N·m (7.6 kgf-m, 55 lbf-ft)	U-nut
Shock link nut	75 N·m (7.6 kgf-m, 55 lbf-ft)	U-nut
Swingarm pivot nut	88 N·m (9.0 kgf-m, 65 lbf-ft)	U-nut
Rear brake hose guide mounting screw	1.3 N·m (0.1 kgf-m, 1.0 lbf-ft)	ALOC screw; replace with a new one.

REAR WHEEL/SUSPENSION

TOOLS

<p>Pilot, 15 mm 07746-0040300</p> 	<p>Pilot, 17 mm 07746-0040400</p> 	<p>Pilot, 20 mm 07746-0040500</p> 
<p>Pilot, 22 mm 07746-0041000</p> 	<p>Attachment, 22 x 24 mm 07746-0010800</p> 	<p>Attachment, 28 x 30 mm 07946-1870100</p> 
<p>Attachment, 32 x 35 mm 07746-0010100</p> 	<p>Attachment, 37 x 40 mm 07746-0010200</p> 	<p>Attachment, 42 x 47 mm 07746-0010300</p> 
<p>Driver 07749-0010000</p> 	<p>Bearing remover head, 17 mm 07746-0050500</p> 	<p>Bearing remover shaft 07746-0050100</p> 

REAR WHEEL/SUSPENSION

<p>Bearing remover, 17 mm 07936-3710300</p> 	<p>Remover handle 07936-3710100</p> 	<p>Remover weight 07741-0010201</p>  <p>or 07936-371020A (U.S.A. only)</p>
<p>Remover attachment, 22 mm 07GMD-KT70200</p> 	<p>Driver shaft 07946-MJ00100</p>  <p>or 07946-MJ0A100 (U.S.A. only)</p>	

TROUBLESHOOTING

Steers to one side or does not track straight

- Drive chain adjusters not adjusted equally
- Bent axle
- Bent frame
- Worn swingarm pivot components

Rear wheel wobbling

- Bent rim
- Worn wheel bearing
- Worn driven flange bearing
- Faulty tire
- Bent frame or swingarm
- Axle not tightened properly
- Unbalanced tire and wheel
- Insufficient tire pressure

Wheel hard to turn

- Brake drag
- Faulty wheel bearing
- Faulty driven flange bearing
- Bent axle
- Drive chain too tight (page 3-18)

Soft suspension

- Weak shock absorber spring
- Oil leakage from damper unit
- Insufficient tire pressure

Stiff suspension

- Bent shock absorber damper rod
- Damaged suspension or swingarm pivot bushing
- Bent swingarm pivot or frame

Rear suspension noisy

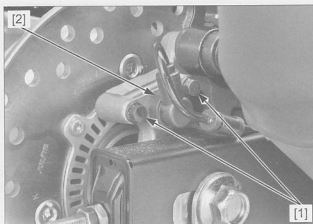
- Loose suspension fasteners
- Faulty shock absorber

REAR WHEEL

REMOVAL

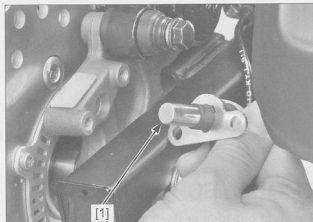
Support the motorcycle using a safety stand or hoist, raise the rear wheel off the ground.

CBR250RA: Remove the bolts [1] and rear wheel speed sensor [2].



CBR250RA: Check that there is no iron or other magnetic deposits between the pulser ring and rear wheel speed sensor [1].
Remove any deposits.

Check the sensor tip for deformation or damage (e.g., chipped pulser ring teeth).
Replace the rear wheel speed sensor if necessary (page 16-26).



Loosen the lock nut [1], drive chain adjusting nut [2] and axle nut [3].

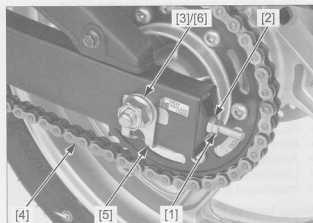
Push the rear wheel forward.

Derail the drive chain [4] from the driven sprocket.

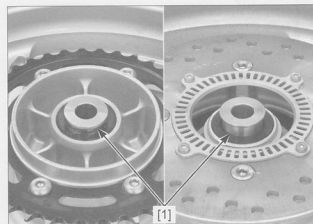
Remove the axle nut and adjusting plate [5].

Do not operate the brake pedal after removing the rear wheel.

Remove the axle [6], adjusting plate and rear wheel.



Remove the side collars [1].



INSPECTION

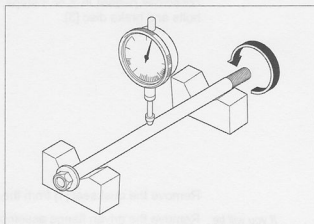
AXLE

Place the axle on V-blocks.

Turn the axle and measure the runout using a dial indicator.

Actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.2 mm (0.01 in)



WHEEL RIM

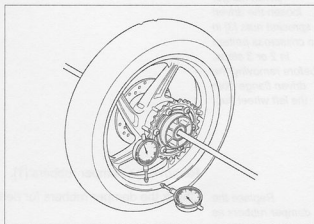
Check the rim runout by placing the wheel in a truing stand.

Spin the wheel by hand, and measure the runout using a dial indicator.

SERVICE LIMITS:

Radial: 2.0 mm (0.08 in)

Axial: 2.0 mm (0.08 in)



WHEEL AND DRIVEN FLANGE BEARINGS

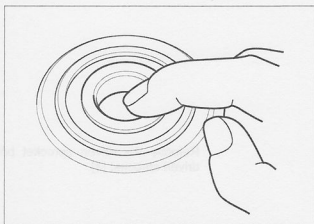
Turn the inner race of each bearing with your finger.

The bearings should turn smoothly and quietly.

Also check that the outer race fits tightly in the wheel hub and driven flange.

Replace the bearings as a set.

Remove and discard the bearings if the races do not turn smoothly, quietly, or if they fit loosely in the wheel hub and driven flange.



WHEEL BALANCE

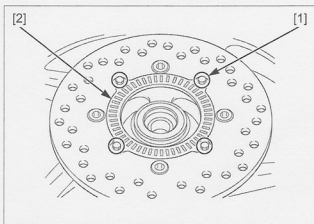
For wheel balance servicing (page 13-16).

DRIVEN SPROCKET

For driven sprocket inspection (page 3-20).

DISASSEMBLY

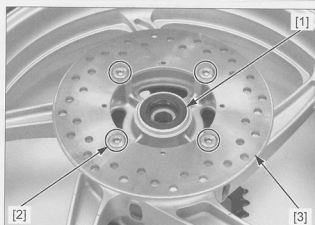
CBR250RA: Remove the rear pulser ring mounting bolts [1] and pulser ring [2].



REAR WHEEL/SUSPENSION

Remove the dust seal [1] from the right wheel hub.

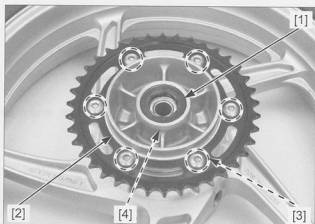
Loosen the rear brake disc mounting bolts [2] in a crisscross pattern in 2 or 3 steps, and remove the rear bolts and brake disc [3].



Remove the dust seal [1] from the driven flange [2].

Remove the driven flange assembly and O-ring [4].

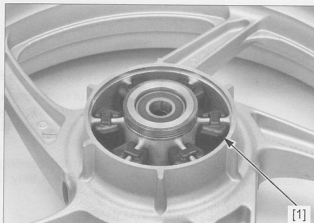
If you will be disassembling the driven flange, loosen the driven sprocket nuts [3] in a crisscross pattern in 2 or 3 steps, before removing the driven flange from the left wheel hub.



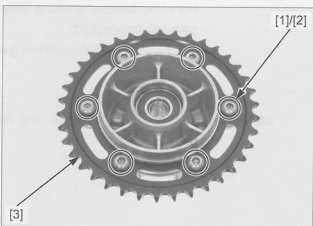
Remove the damper rubbers [1].

Replace the damper rubbers as a set.

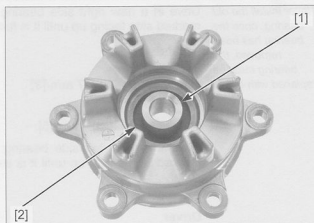
Check the damper rubbers for deterioration or damage.



Remove the driven sprocket bolts [1], nuts [2] and driven sprocket [3].



Remove the driven flange collar [1].
Drive out the driven flange bearing [2].



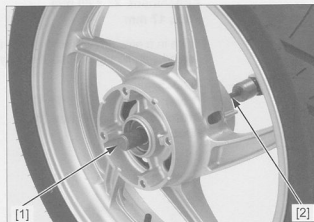
Install the bearing remover head [1] into the bearing.
From the opposite side, install the bearing remover shaft [2] and drive out the bearing from the wheel hub.

Remove the distance collar and drive out the other bearing.

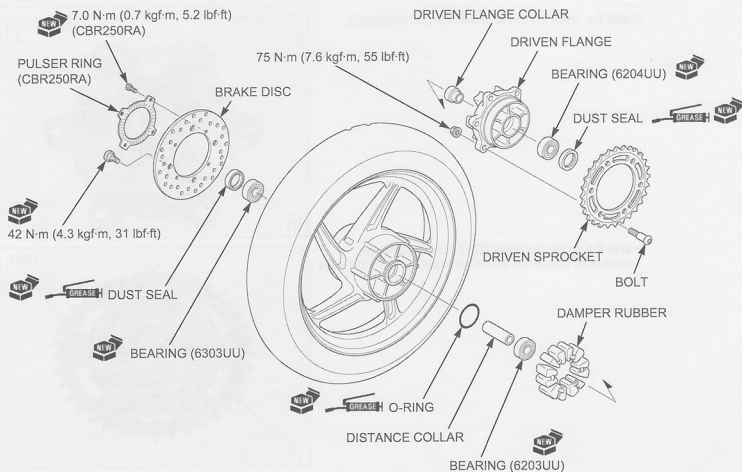
TOOLS:
Bearing remover head, 17 mm 07746-0050500
Bearing remover shaft 07746-0050100

NOTE:

- Replace the wheel bearing in pairs.
- Do not reuse old bearing.



ASSEMBLY



REAR WHEEL/SUSPENSION

Never install the old bearing, once the bearing has been removed, the bearing must be replaced with a new one.

Drive in a new right side bearing [1] squarely with its marked side facing up until it is fully seated.

TOOLS:

Driver [2]	07749-0010000
Attachment, 42 x 47 mm [3]	07746-0010300
Pilot, 17 mm [4]	07746-0040400

Install the distance collar [5].

Drive in a new left side bearing [6] squarely with its marked side facing up until it is seated on the distance collar.

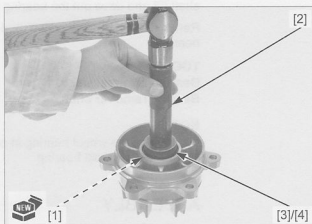
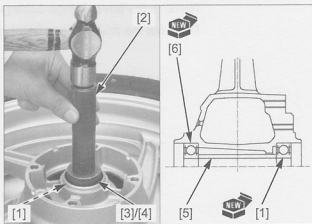
TOOLS:

Driver [2]	07749-0010000
Attachment, 37 x 40 mm [3]	07746-0010200
Pilot, 17 mm [4]	07746-0040400

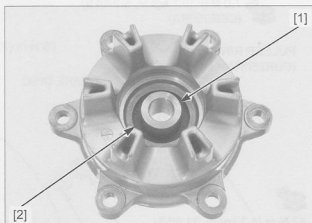
Drive in a new driven flange bearing [1] squarely with its sealed side facing up until it is fully seated.

TOOLS:

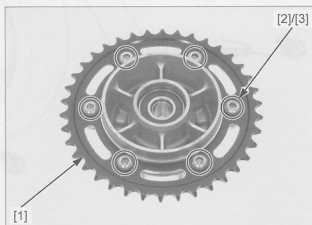
Driver [2]	07749-0010000
Attachment, 42 x 47 mm [3]	07746-0010300
Pilot, 20 mm [4]	07746-0040500



Install the collar [1] to the driven flange bearing [2].



Install the driven sprocket [1] to the driven flange. Temporarily install the driven sprocket nuts [2] and bolts [3].



Install the damper rubbers [1] into the left wheel hub.



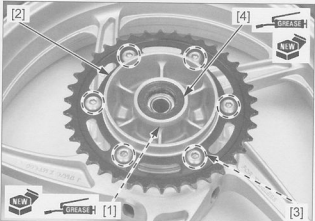
Apply grease to a new O-ring [1] and install it into the left wheel hub.

Install the driven flange assembly [2] into the left wheel hub.

Tighten the driven sprocket nuts [3] to the specified torque in a crisscross pattern in 2 or 3 steps.

TORQUE: 75 N·m (7.6 kgf·m, 55 lbf·ft)

Apply grease to a new dust seal lips [4] and install it to the driven flange.



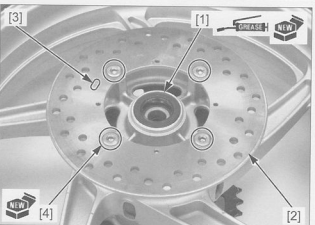
Do not get grease on the brake disc.

Apply grease to a new dust seal [1] lips and install it to the right wheel hub.

Install the rear brake disc [2] with its arrow mark [3] facing out.

Install and tighten new brake disc bolts [4] to the specified torque in a crisscross pattern in 2 or 3 steps.

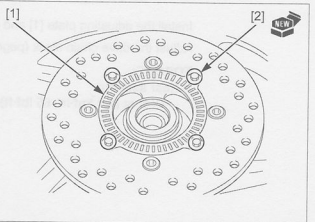
TORQUE: 42 N·m (4.3 kgf·m, 31 lbf·ft)



CBR250RA: Install the pulser ring [1] and new rear pulser ring mounting bolts [2].

Tighten the bolts to the specified torque.

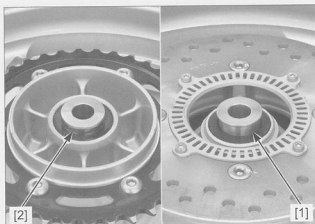
TORQUE: 7.0 N·m (0.7 kgf·m, 5.2 lbf·ft)



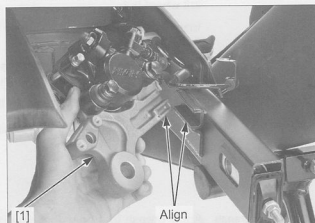
REAR WHEEL/SUSPENSION

INSTALLATION

Install the right side collar (long) [1] and left side collar (short) [2].



Install the brake caliper/bracket assembly [1] to the swingarm by aligning the bracket tab with the slide rail on the swingarm.

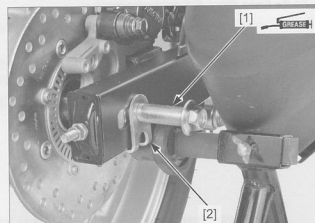


Be careful not to damage the brake pads.

Install the rear wheel in the swingarm aligning the brake disc between the brake pads.
Install the drive chain over the driven sprocket.

Apply a thin coat of grease to the rear axle [1] outer surface.

Install the rear axle from the right side through the axle adjusting plate [2], swingarm, rear wheel and collars.

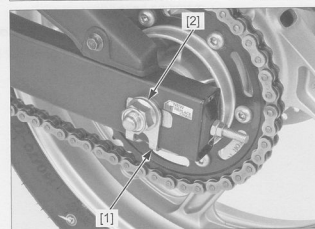


Install the adjusting plate [1] and rear axle nut [2].
Adjust the drive chain slack (page 3-19).

TORQUE:

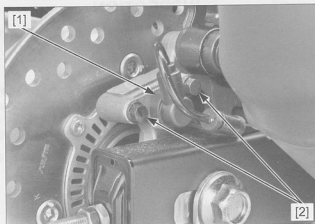
Rear axle nut:

88 N·m (9.0 kgf·m, 65 lbf·ft)



CBR250RA: Install the rear wheel speed sensor [1] and bolts [2]. Tighten the bolts securely.

Check the air gap between the rear wheel speed sensor and pulser ring (page 16-24).



SHOCK ABSORBER

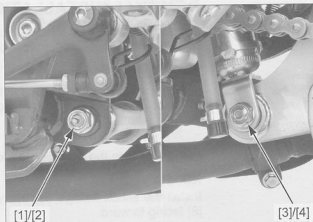
REMOVAL/INSTALLATION

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

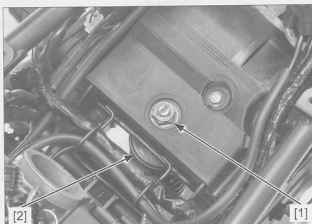
Remove the air cleaner housing (page 5-43).

Remove the shock link bolt [1] and nut [2].

Remove the shock absorber lower mounting bolt [3] and nut [4].



Remove the shock absorber upper mounting nut [1] and shock absorber [2].



Remove the bolt [1], nut [2] and upper holder [3].

Installation is in the reverse order of removal.

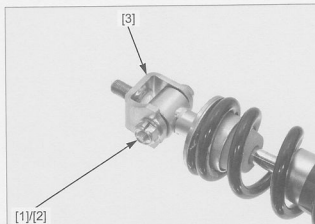
TORQUE:

Shock absorber mounting nut

36 N·m (3.7 kgf-m, 27 lbf-ft)

Shock link nut

75 N·m (7.6 kgf-m, 55 lbf-ft)



REAR WHEEL/SUSPENSION

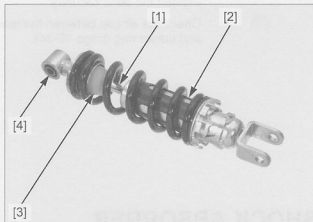
INSPECTION

Visually inspect the shock absorber for wear or damage.

Check the following:

- Damper rod [1] for bend or damage
- Damper unit [2] for deformation or oil leaks
- Rubber bumper [3] for wear or damage
- Bushing [4] for wear or damage

Replace the shock absorber as an assembly if necessary.



SHOCK LINKAGE

REMOVAL/INSTALLATION

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

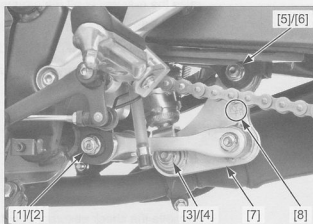
Remove the following:

- Front shock link bolt [1] and nut [2]
- Shock absorber lower mounting bolt [3] and nut [4]
- Shock arm bolt [5] and nut [6]
- Shock linkage assembly [7]

Installation is in the reverse order of removal.

NOTE:

Install the shock linkage assembly with its arrow mark [8] facing forward.



TORQUE:

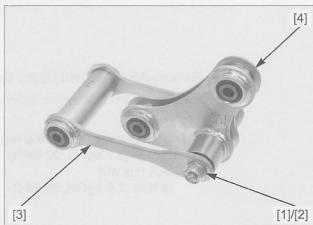
Shock absorber mounting nut
36 N·m (3.7 kgf·m, 27 lbf·ft)

Shock arm nut
75 N·m (7.6 kgf·m, 55 lbf·ft)

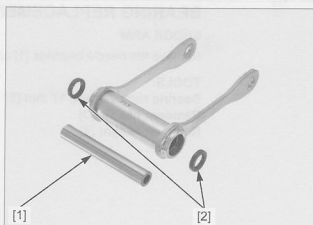
Shock link nut
75 N·m (7.6 kgf·m, 55 lbf·ft)

DISASSEMBLY

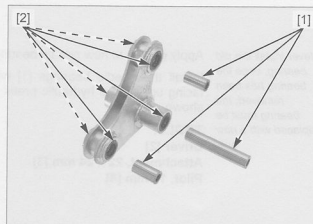
Remove the rear shock link bolt [1], nut [2] and shock link [3] from the shock arm [4].



Remove the collar [1] and dust seals [2] from the shock link.



Remove the collars [1] from the shock arm.
Remove the dust seals [2] from the shock arm.



INSPECTION

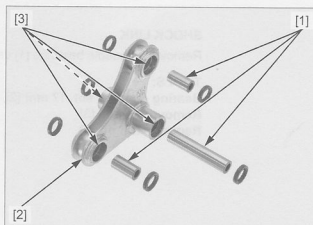
Check the collars [1] for wear, damage or fatigue.

Check the shock arm [2] for cracks or damage.

Replace them if necessary.

Check the needle bearings [3] for damage or loose fit.

If the needle bearings are damaged, replace them (page 14-16).



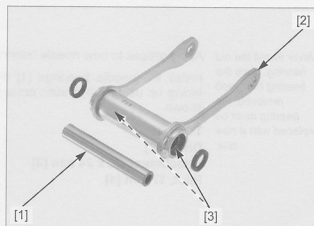
Check the collar [1] for wear, damage or fatigue.

Check the shock link [2] for cracks or damage.

Replace them if necessary.

Check the needle bearings [3] for damage or loose fit.

If the needle bearings are damaged, replace them (page 14-16).



REAR WHEEL/SUSPENSION

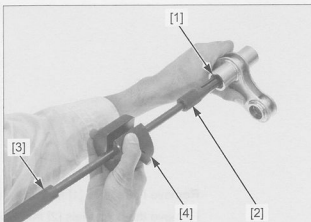
BEARING REPLACEMENT

SHOCK ARM

Remove the needle bearings [1] using the special tools.

TOOLS:

Bearing remover set, 17 mm [2] 07936-3710300
Remover handle [3] 07936-3710100
07741-0010201 or
07936-371020A
(U.S.A. only)
Remover weight [4]



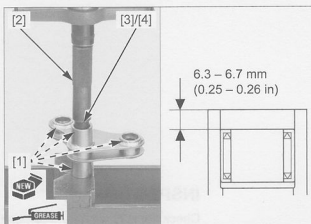
Never install the old bearing, once the bearing has been removed, the bearing must be replaced with a new one.

Apply grease to new needle bearings rotating area.

Install the needle bearings [1] with the marked side facing up using a hydraulic press and special tools as shown.

TOOLS:

Driver [2] 07749-0010000
Attachment, 22 x 24 mm [3] 07746-0010800
Pilot, 17 mm [4] 07746-0040400

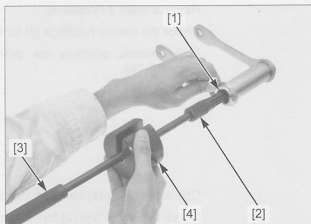


SHOCK LINK

Remove the needle bearings [1] using the special tools.

TOOLS:

Bearing remover set, 17 mm [2] 07936-3710300
Remover handle [3] 07936-3710100
07741-0010201 or
07936-371020A
(U.S.A. only)
Remover weight [4]



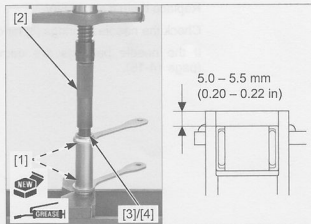
Never install the old bearing, once the bearing has been removed, the bearing must be replaced with a new one.

Apply grease to new needle bearings rotating area.

Install the needle bearings [1] with the marked side facing up using a hydraulic press and special tools as shown.

TOOLS:

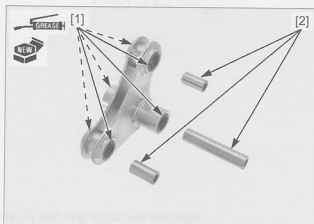
Driver [2] 07749-0010000
Attachment, 22 x 24 mm [3] 07746-0010800
Pilot, 17 mm [4] 07746-0040400



ASSEMBLY

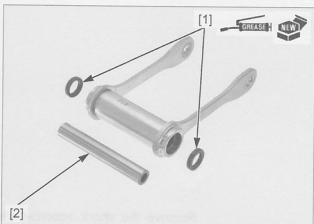
Apply grease to new dust seal lips [1].
Install the dust seals until it is flush with the shock arm surface.

Install the collars [2] to the shock arm.



Apply grease to new dust seal lips [1].
Install the dust seals until it is flush with the shock link surface.

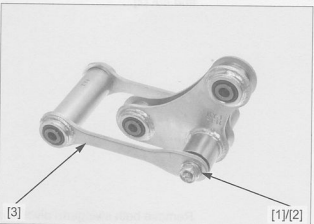
Install the collar [2] to the shock link.



Install the rear shock link bolt [1], nut [2] and shock link [3] to the shock arm.

Tighten the shock link nut to the specified torque.

TORQUE: 75 N·m (7.6 kgf·m, 55 lbf·ft)



SWINGARM

REMOVAL

Remove the following:

- Drive chain cover (page 2-13)
- Rear wheel (page 14-6)

Disconnect the air cleaner housing drain hose.

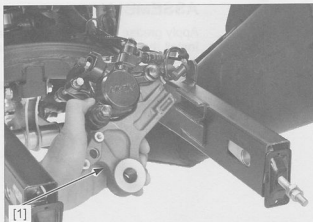
Remove the rear brake hose guide mounting screw [1] and brake hose guide [2].

Release the brake hose and rear wheel speed sensor wire (CBR250RA) from the clamp [3].

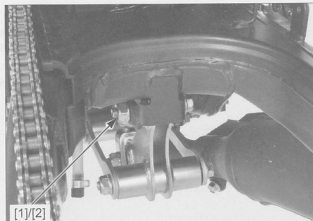


REAR WHEEL/SUSPENSION

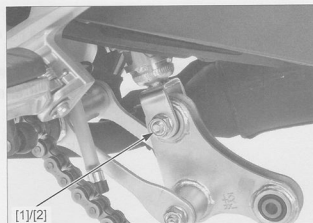
Remove the rear brake caliper/bracket assembly [1] from the swingarm.



Remove the shock arm bolt [1] and nut [2].



Remove the shock absorber lower mounting bolt [1] and nut [2].



Remove both swingarm pivot caps [1].



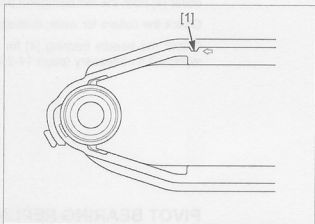
Remove the swingarm pivot nut [1], pivot bolt [2] and swingarm [3].



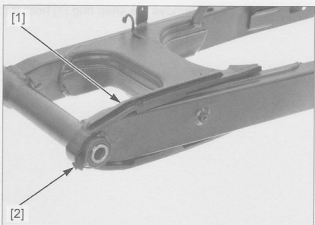
DISASSEMBLY

Check the drive chain slider for wear or damage.

The drive chain slider must be replaced if it is worn to the wear limit groove [1].

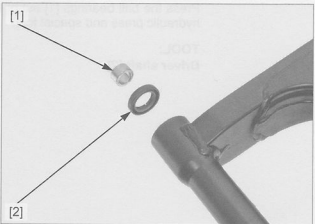


Remove the drive chain slider [1] by releasing the slider slots from the swingarm tab [2].



Remove the pivot collar [1] and dust seal [2] from the right swingarm pivot.

Check the collar for wear, damage or fatigue.

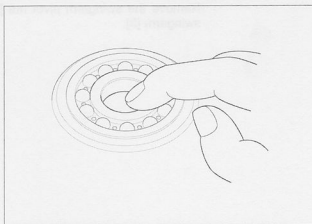


REAR WHEEL/SUSPENSION

Turn the inner race of the right side pivot ball bearings with your finger.

The bearing should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the swingarm pivot.

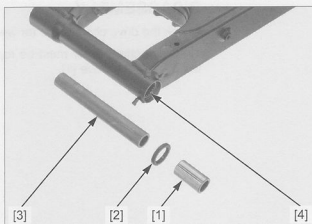
Remove and discard the bearing if the race does not turn smoothly and quietly, or if it fits loosely in the swingarm pivot (page 14-20).



Remove the pivot collar [1], dust seal [2] and distance collar [3] from the left swingarm pivot.

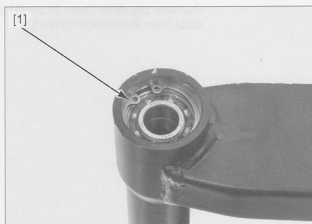
Check the collars for wear, damage or fatigue.

Check the needle bearing [4] for damage or loose fit, replace it if necessary (page 14-20).



PIVOT BEARING REPLACEMENT

Remove the snap ring [1] from the right pivot.

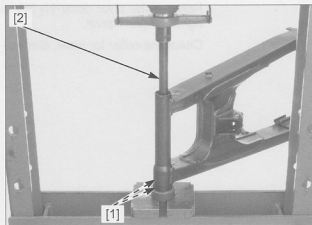


Press the ball bearings [1] out of the swingarm using a hydraulic press and special tool.

TOOL:

Driver shaft [2]

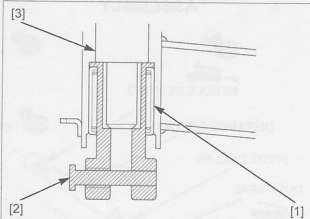
07946-MJ00100 or
07946-MJ0A100
(U.S.A. only)



Drive the needle bearing [1] out of the swingarm using a hydraulic press and special tools.

TOOLS:

Remover attachment, 22 mm [2] 07GMD-KT70200
 Driver shaft [3] 07946-MJ00100 or
 07946-MJ0A100
 (U.S.A. only)

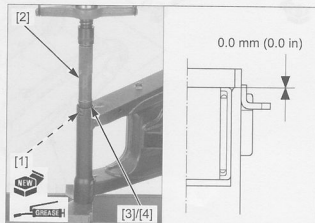


Apply grease to a new needle bearing rotating area.

Install the needle bearing [1] into the swingarm with the marked side facing up using a hydraulic press and special tools as shown.

TOOLS:

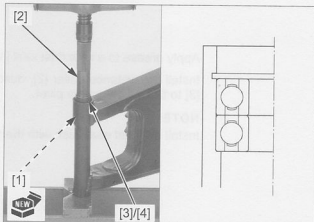
Driver [2] 07749-0010000
 Attachment, 28 x 30 mm [3] 07946-1870100
 Pilot, 22 mm [4] 07746-0041000



Install new ball bearings [1] into the swingarm with the marked side facing out until they are fully seated.

TOOLS:

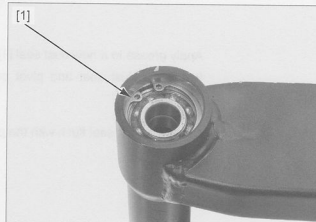
Driver [2] 07749-0010000
 Attachment, 32 x 35 mm [3] 07746-0010100
 Pilot, 15 mm [4] 07746-0040300



Install the snap ring [1] into the right pivot groove securely.

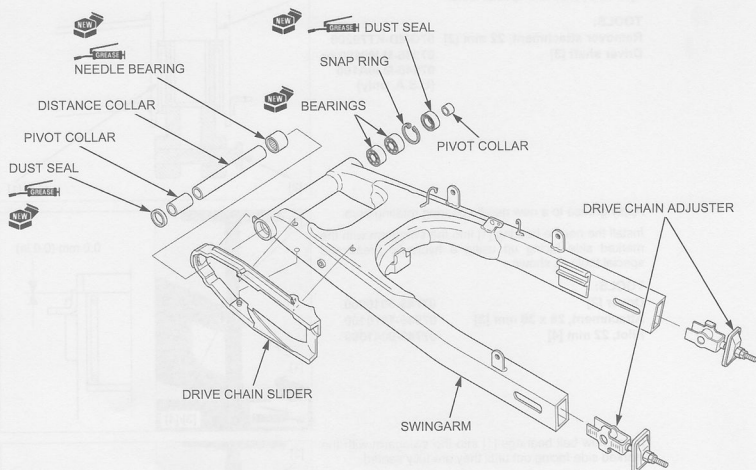
NOTE:

- Do not reuse the snap ring which could easily spin in the groove.
- Make sure that the snap ring is firmly seated in the groove.



REAR WHEEL/SUSPENSION

ASSEMBLY

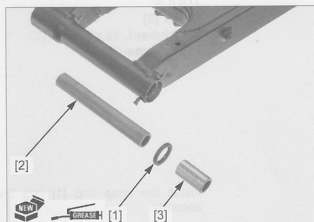


Apply grease to a new dust seal [1] rips.

Install the distance collar [2], dust seal and pivot collar [3] to the left swingarm pivot.

NOTE:

Install the dust seal flush with the pivot surface.

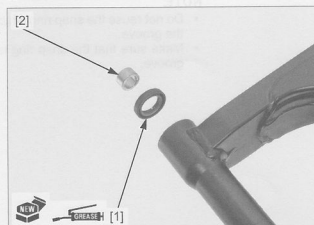


Apply grease to a new dust seal [1] rips.

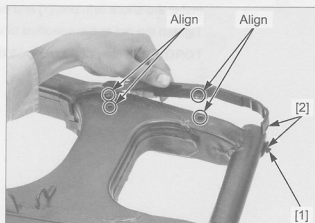
Install the dust seal and pivot collar [2] to the right swingarm pivot.

NOTE:

Install the dust seal flush with the pivot surface.



Install the drive chain slider while aligning the swingarm tab [1] with the slider slots [2] and swingarm holes with the slider tabs.

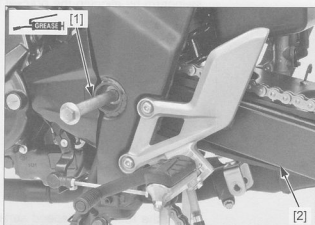


INSTALLATION

Apply a thin coat of grease to the swingarm pivot bolt [1] outer surface.

Set the drive chain onto the swingarm [2] and install the swingarm to the frame.

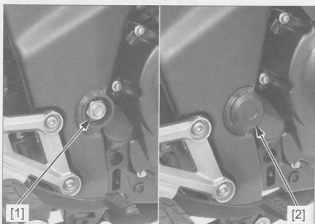
Install the swingarm pivot bolt from the left side.



Install and tighten the swingarm pivot nut [1] to the specified torque.

TORQUE: 88 N·m (9.0 kgf·m, 65 lbf·ft)

Install both swingarm pivot caps [2].



Install the shock absorber lower mounting bolt [1] and nut [2].

Tighten the nut to the specified torque.

TORQUE: 36 N·m (3.7 kgf·m, 27 lbf·ft)

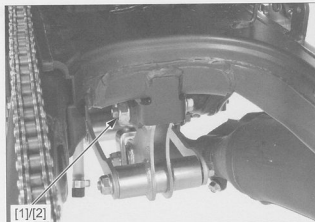


REAR WHEEL/SUSPENSION

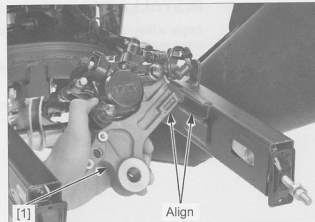
Install the shock arm bolt [1] and nut [2].

Tighten the nut to the specified torque.

TORQUE: 75 N·m (7.6 kgf·m, 55 lbf·ft)



Install the rear brake caliper/bracket assembly [1] to the swingarm by aligning the bracket tab with the slide rail on the swingarm.



Install the rear wheel speed sensor wire (CBR250RA) and brake hose to the clamp [1].

Install the brake hose guide [2].

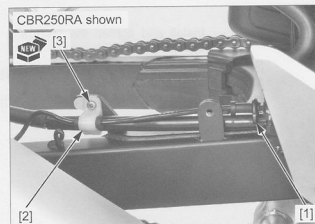
Install and tighten a new rear brake hose guide mounting screw [3] to the specified torque.

TORQUE: 1.3 N·m (0.1 kgf·m, 1.0 lbf·ft)

Install the following:

- Rear wheel (page 14-12)
- Drive chain cover (page 2-13)

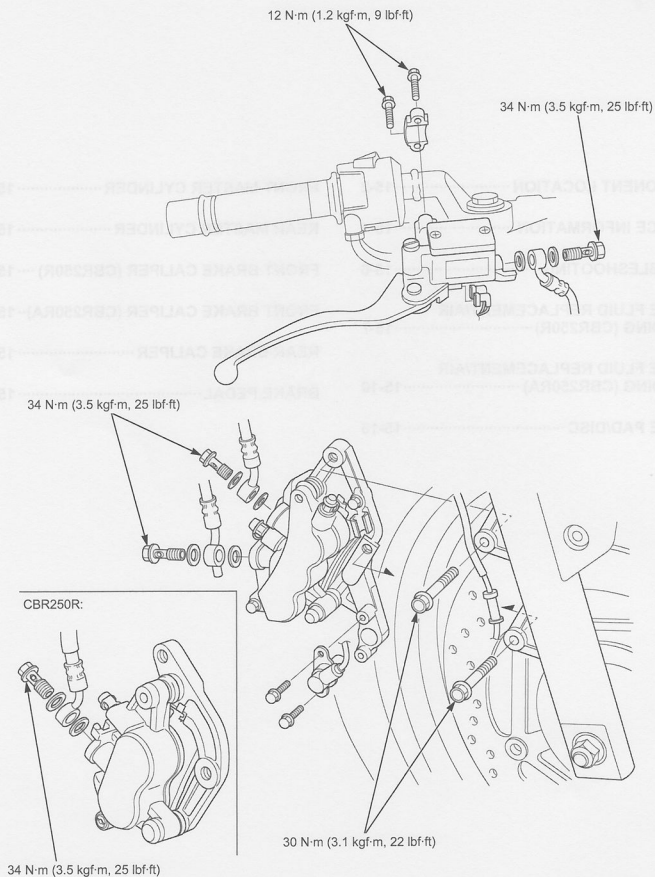
Adjust the drive chain slack (page 3-19).



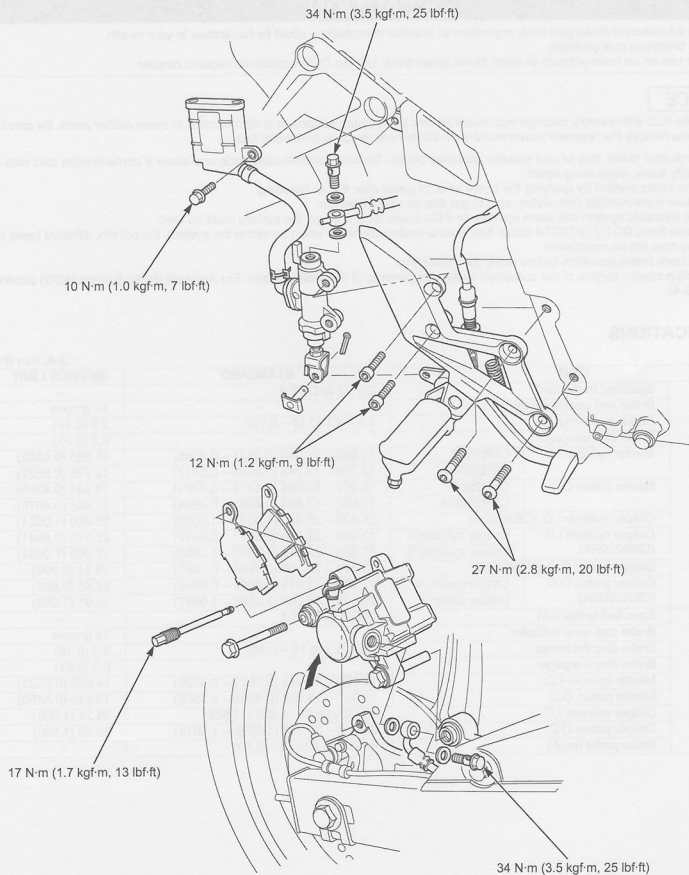
15. HYDRAULIC BRAKE

COMPONENT LOCATION	15-2	FRONT MASTER CYLINDER	15-20
SERVICE INFORMATION	15-4	REAR MASTER CYLINDER	15-25
TROUBLESHOOTING	15-6	FRONT BRAKE CALIPER (CBR250R)	15-30
BRAKE FLUID REPLACEMENT/AIR BLEEDING (CBR250R)	15-7	FRONT BRAKE CALIPER (CBR250RA)	15-34
BRAKE FLUID REPLACEMENT/AIR BLEEDING (CBR250RA)	15-10	REAR BRAKE CALIPER	15-37
BRAKE PAD/DISC	15-16	BRAKE PEDAL	15-40

COMPONENT LOCATION



CBR250RA 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

Spilling brake fluid will severely damage instrument lenses and painted surface. It is also harmful to some rubber parts. Be careful whenever you remove the reservoir cover; make sure the front reservoir is horizontal first.

- 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 DOT 3 or DOT 4 brake fluid from a sealed container when servicing the system. Do not mix different types of fluid, they may not be compatible.
- Always check brake operation before riding the motorcycle.
- This section covers service of the combined brake components of the brake system. For Anti-lock Brake System (ABS) service (page 16-4).

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Front	Specified brake fluid	DOT 3 or DOT 4	—
	Brake pad wear indicator	—	To groove
	Brake disc thickness	4.3 – 4.7 (0.17 – 0.19)	3.5 (0.14)
	Brake disc warpage	—	0.3 (0.01)
	Master cylinder I.D.	CBR250R	11.000 – 11.043 (0.4331 – 0.4348)
		CBR250RA	12.700 – 12.743 (0.5000 – 0.5017)
	Master piston O.D.	CBR250R	10.957 – 10.984 (0.4314 – 0.4324)
		CBR250RA	12.657 – 12.684 (0.4983 – 0.4994)
	Caliper cylinder I.D. (CBR250R)	25.400 – 25.450 (1.0000 – 1.0020)	25.460 (1.0024)
	Caliper cylinder I.D. (CBR250RA)	Caliper cylinder A	22.650 – 22.700 (0.8917 – 0.8937)
		Caliper cylinder B	27.000 – 27.050 (1.0630 – 1.0650)
	Caliper piston O.D. (CBR250R)	25.318 – 25.368 (0.9968 – 0.9987)	25.31 (0.996)
	Caliper piston O.D. (CBR250RA)	Caliper piston A	22.585 – 22.618 (0.8892 – 0.8905)
		Caliper piston B	26.918 – 26.968 (1.0598 – 1.0617)
Rear	Specified brake fluid	DOT 3 or DOT 4	—
	Brake pad wear indicator	—	To groove
	Brake disc thickness	4.8 – 5.2 (0.19 – 0.20)	4.0 (0.16)
	Brake disc warpage	—	0.3 (0.01)
	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.	38.098 – 38.148 (1.4999 – 1.5019)	38.09 (1.500)
	Brake pedal height	66.5 – 68.5 (2.62 – 2.70)	—

TORQUE VALUES

Brake hose oil bolt	34 N·m (3.5 kgf-m, 25 lbf-ft)
Brake caliper bleed valve	5.4 N·m (0.6 kgf-m, 4.0 lbf-ft)
Front master cylinder reservoir cover screw	1.5 N·m (0.2 kgf-m, 1.1 lbf-ft)
Front master cylinder holder bolt	12 N·m (1.2 kgf-m, 9 lbf-ft)
Front brake light switch screw	1.2 N·m (0.1 kgf-m, 0.9 lbf-ft)
Brake lever pivot bolt	1.0 N·m (0.1 kgf-m, 0.7 lbf-ft)
Brake lever pivot nut	5.9 N·m (0.6 kgf-m, 4.4 lbf-ft)
Front brake caliper mounting bolt	30 N·m (3.1 kgf-m, 22 lbf-ft)
Front brake caliper bracket pin	13 N·m (1.3 kgf-m, 10 lbf-ft)
Front brake caliper pin	22 N·m (2.2 kgf-m, 16 lbf-ft)
Front brake pad hanger pin	18 N·m (1.8 kgf-m, 13 lbf-ft)
Pad pin plug (CBR250R)	2.4 N·m (0.2 kgf-m, 1.8 lbf-ft)
Rear reservoir cover screw	1.5 N·m (0.2 kgf-m, 1.1 lbf-ft)
Rear master cylinder mounting bolt	12 N·m (1.2 kgf-m, 9 lbf-ft)
Rear master cylinder push rod lock nut	17 N·m (1.7 kgf-m, 13 lbf-ft)
Rear master cylinder hose joint screw	1.5 N·m (0.2 kgf-m, 1.1 lbf-ft)
Rear reservoir mounting bolt	10 N·m (1.0 kgf-m, 7 lbf-ft)
Rear brake pad hanger pin	17 N·m (1.7 kgf-m, 13 lbf-ft)
Rear brake caliper pin	27 N·m (2.8 kgf-m, 20 lbf-ft)
Main step holder mounting socket bolt	27 N·m (2.8 kgf-m, 20 lbf-ft)

ALOC: replace with a new one.

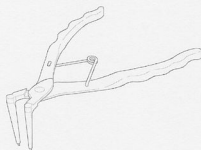
Apply locking agent to the threads.

Apply locking agent to the threads.

Apply locking agent to the threads.

TOOL

Snap ring pliers
07914-SA50001



HYDRAULIC BRAKE

TROUBLESHOOTING

Brake lever/pedal soft or spongy

- Air in hydraulic system
- Leaking hydraulic system
- Contaminated brake pad/disc
- Worn caliper piston seal
- Worn master cylinder piston cups
- Worn brake pad/disc
- Contaminated caliper
- Contaminated master cylinder
- Caliper not sliding properly
- Low brake fluid level
- Clogged fluid passage
- Warped/deformed brake disc
- Sticking/worn caliper piston
- Sticking/worn master cylinder piston
- Bent brake lever/pedal
- Faulty delay valve (CBR250RA)

Brake lever/pedal hard

- Clogged/restricted hydraulic system
- Sticking/worn caliper piston
- Caliper not sliding properly
- Worn caliper piston seal
- Sticking/worn master cylinder piston
- Bent brake lever/pedal
- Faulty delay valve (CBR250RA)

Brake drags

- Contaminated brake pad/disc
- Misaligned wheel
- Badly worn brake pad/disc
- Warped/deformed brake disc
- Caliper not sliding properly
- Clogged/restricted hydraulic system
- Sticking/worn caliper piston
- Clogged master cylinder port
- Sticking master cylinder piston
- Faulty delay valve (CBR250RA)

BRAKE FLUID REPLACEMENT/AIR BLEEDING (CBR250R)

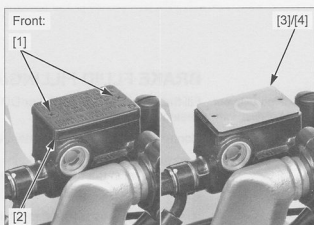
NOTE:

- Do not allow foreign material to enter the system when filling the reservoir.
- When using a commercially available brake bleeder, follow the manufacture's operating instructions.

BRAKE FLUID DRAINING

Front brake: Turn the handlebar until the reservoir is parallel to the ground.

Remove the reservoir cover screws [1], reservoir cover [2], set plate [3] and diaphragm [4].

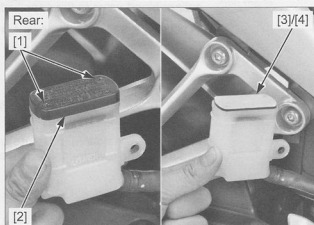


Rear brake: Support the motorcycle in an upright position.

Remove the rear reservoir mounting bolt [1] and reservoir [2].



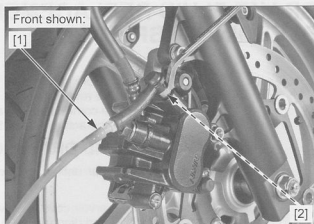
Rear brake: Remove the reservoir cover screws [1], reservoir cover [2], set plate [3] and diaphragm [4].



HYDRAULIC BRAKE

Connect a bleed hose [1] to the caliper bleed valve [2].

Loosen the bleed valve and pump the brake lever/pedal until no more fluid flows out of the bleed valve.



BRAKE FLUID FILLING/AIR BLEEDING

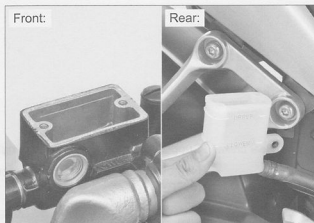
Fill the reservoir with DOT 3 or DOT 4 brake fluid from a sealed container.

Connect an automatic refill system to the reservoir.

If an automatic refill system is not used, add fluid when the fluid level in the reservoir is low.

NOTE:

- Check the fluid level often while bleeding the brake to prevent air from being pumped into the system.
- When using a brake bleeding tool, follow the manufacturer's operating instructions.



Connect a commercially available brake bleeder [1] to the bleed valve [2].

Operate the brake bleeder and loosen the bleed valve.



If air enters the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Perform the bleeding procedure until the system is completely flushed/bled.

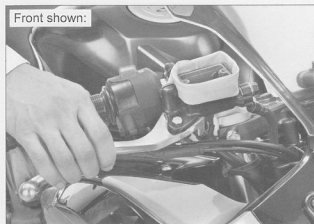
Close the bleed valve and operate the brake lever/pedal. If it still feels spongy, bleed the system again.

After bleeding the system completely, tighten the brake caliper bleed valve to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)

If the brake bleeder is not available, perform the following procedure.

Pump up the system pressure with the brake lever/pedal until the lever/pedal resistance is felt.



Connect a bleed hose [1] to the bleed valve [2].

1. Squeeze the brake lever/pedal all the way and loosen the bleed valve 1/4 turn. Wait several seconds and then close the bleed valve.

NOTE:

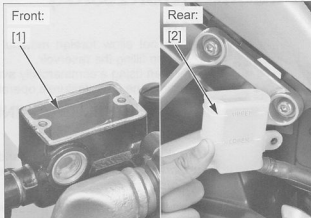
- Do not release the brake lever/pedal until the bleed valve has been closed.
2. Release the brake lever/pedal slowly and wait several seconds after it reaches the end of its travel.
 3. Repeat the steps 1 and 2 until there are no air bubbles in the bleed hose.

After bleeding the system completely, tighten the brake caliper bleed valve to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)

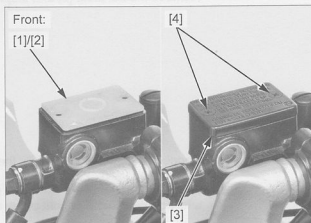
Do not mix different types of fluid, they are not compatible.

Add the reservoir with DOT 3 or DOT 4 brake fluid to the casting ledge [1]/upper level line [2].



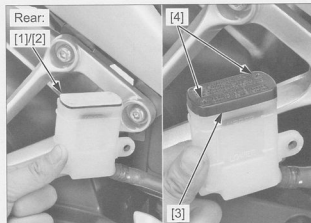
Front brake: Install the diaphragm [1], set plate [2], reservoir cover [3] and reservoir cover screws [4], then tighten the screws to the specified torque.

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



Rear brake: Install the diaphragm [1], set plate [2], reservoir cover [3] and reservoir cover screws [4], then tighten the screws to the specified torque.

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

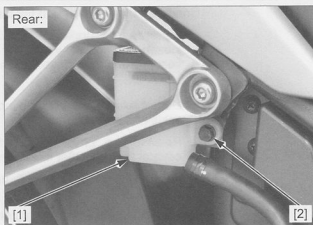


HYDRAULIC BRAKE

Rear brake: Install the rear reservoir [1] and reservoir mounting bolt [2].

Tighten the rear reservoir mounting bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



BRAKE FLUID REPLACEMENT/AIR BLEEDING (CBR250RA)

NOTE:

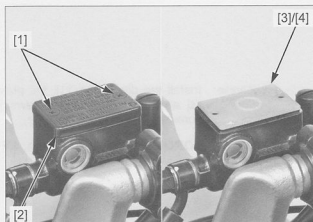
- Do not allow foreign material to enter the system when filling the reservoir.
- When using a commercially available brake bleeder, follow the manufacturer's operating instructions.

BRAKE FLUID DRAINING

LEVER BRAKE LINE

For the front brake, turn the handlebar to the left until the reservoir is parallel to the ground, before removing the reservoir cover.

Remove the screws [1] and reservoir cover [2].
Remove the set plate [3] and diaphragm [4].



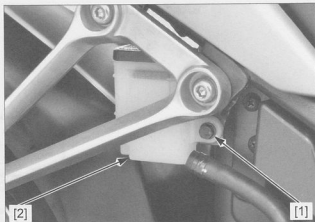
Connect a bleed hose [1] to the front brake caliper upper bleed valve [2].

Loosen the upper bleed valve and pump the brake lever until no more fluid flows out of the bleed valve.

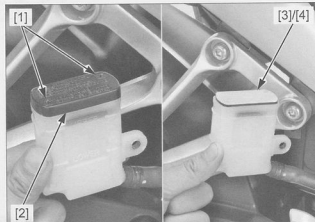


PEDAL (COMBINED) BRAKE LINE

Remove the reservoir mounting bolt [1] and reservoir [2].

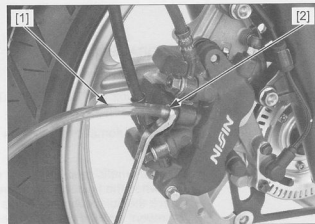


Remove the reservoir cover screws [1], reservoir cover [2], set plate [3] and diaphragm [4].



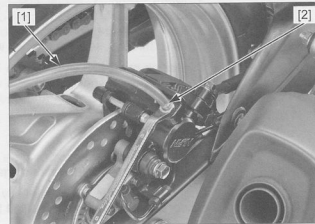
Connect a bleed hose [1] to the front brake caliper center bleed valve [2].

Loosen the center bleed valve and pump the brake pedal until no more fluid flows out of the bleed valve. Tighten the bleed valve.



Connect a bleed hose [1] to the rear brake caliper bleed valve [2].

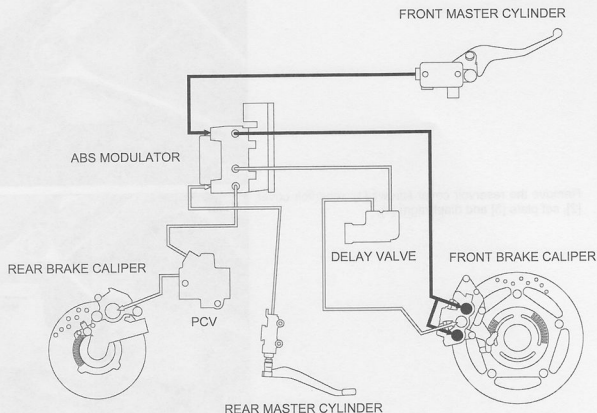
Loosen the bleed valve and pump the brake pedal until no more fluid flows out of the bleed valve. Tighten the bleed valve.



HYDRAULIC BRAKE

BRAKE FLUID FILLING/AIR BLEEDING

BRAKE FLUID LINE



LEVER BRAKE LINE

Close the bleed valves.

Do not mix different types of fluid, they are not compatible.

Fill the reservoir with DOT 3 or DOT 4 brake fluid from a sealed container.

Connect an automatic refill system to the reservoir.

NOTE:

- If an automatic refill system is not used, add brake fluid when the fluid level in the reservoir is low.
- Check the fluid level often while bleeding the brakes to prevent air from being pumped into the system.
- When using a brake bleeding tool, follow the manufacturer's operating instructions.
- If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.

Connect a commercially available brake bleeder [1] to the front brake caliper upper bleed valve.

Operate the brake bleeder and loosen the bleed valve.

Perform the bleeding procedure until the system is completely flushed/bled.

Close the bleed valve and operate the brake lever. If it is still spongy, bleed the system again.

After bleeding the air completely, tighten the brake caliper bleed valve to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)



Do not mix different types of fluid, they are not compatible.

If a brake bleeder is not available, use the following procedure:

Fill the reservoir with DOT 3 or DOT 4 brake fluid from a sealed container. Connect a bleed hose [1] to the front brake caliper upper bleed valve [2].

Pressurize the system with the brake lever until lever resistance is felt.

1. Squeeze the brake lever, open the bleed valve 1/4 turn and then close the valve.
2. Release the brake lever until the bleed valve has been closed.

NOTE:

- Do not release the lever until the bleed valve has been closed.



Repeat steps 1. and 2. until air bubbles do not appear in the bleed hose [1].

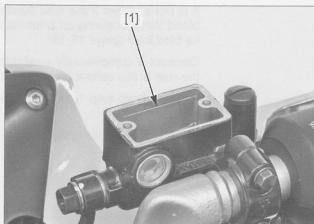
After bleeding the air completely, tighten the brake caliper bleed valve [2] to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)



Do not mix different types of fluid, they are not compatible.

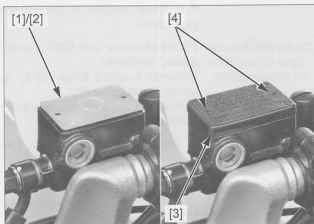
Fill the reservoir to upper level line (casting ledge) [1] with DOT 3 or DOT 4 brake fluid.



HYDRAULIC BRAKE

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)



PEDAL (COMBINED) BRAKE FLUID FILLING

Add fluid and bleed any air from the pedal brake line in the sequence as follow:

1. Front brake caliper center bleed valve
2. Rear brake caliper bleed valve

Fill the reservoir with DOT 3 or DOT 4 brake fluid from a sealed container.

NOTE:

Do not mix different types of fluid, they are not compatible.

Operate the brake pedal several times to bleed any air from the master cylinder.



Connect a commercially available brake bleeder [1] to the front brake caliper center bleed valve.

NOTE:

If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.

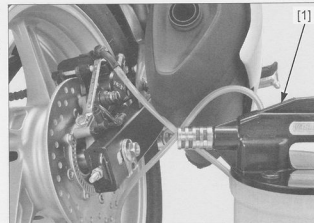
1. Operate the brake bleeder and loosen the front brake caliper center bleed valve. Add fluid when the fluid level in the master cylinder is low to prevent drawing air into the system.
2. Repeat the above procedures until a sufficient amount of fluid flows out of the front brake caliper center bleed valve.

It is not problem if the fluid flowing out from the center bleed valve contains air bubbles because the lines will be bled later (page 15-15).

Connect a commercially available brake bleeder [1] to the rear brake caliper bleed valve.

Repeat above step 1. and 2. for rear brake caliper bleed valve.

Bleed the hydraulic system (page 15-15).



If a brake bleeder is not available, use the following procedure:

Connect a bleed hose [1] to the front brake caliper center bleed valve [2].

1. Pump the brake pedal several (5 - 10) times quickly, then push the brake pedal all the way down, loosen the front brake caliper center bleed valve 1/4 of turn.

Wait several seconds and close the bleed valve.

Release the brake pedal slowly and wait several seconds after it reaches the end of its travel.

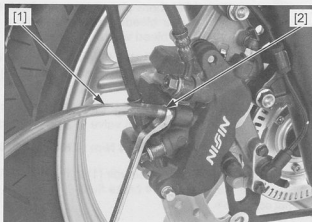
2. Repeat the above procedures until a sufficient amount of the fluid flows out from the front brake caliper center bleed valve.

It is not a problem if the fluid flowing out from the front brake caliper center bleed valve contains air bubbles because the lines will be bled later (page 15-15).

Connect a bleed hose [1] to the rear brake caliper bleed valve [2].

Repeat above steps 1. and 2. for the rear brake caliper bleed valve.

Bleed the rear hydraulic system (page 15-15).



PEDAL (COMBINED) BRAKE AIR BLEEDING

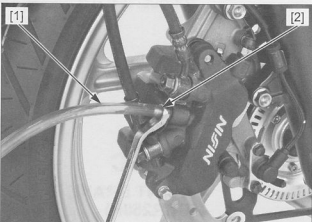
Connect a bleed hose [1] to the front brake caliper center bleed valve [2].

1. Pump the brake pedal several (5 - 10) times quickly, then push the brake pedal all the way down, loosen the front brake caliper center bleed valve 1/4 of turn.

Wait several seconds and close the bleed valve.

Release the brake pedal slowly and wait several seconds after it reaches the end of its travel.

2. Repeat the above procedures until air bubbles do not appear in the transparent hose.



Connect a bleed hose [1] to the rear brake caliper bleed valve [2].

Repeat above steps 1. and 2. for the rear brake caliper bleed valve.

Note that you may feel strong resistance on the rear (combined) brake pedal during pumping when bleeding air from the caliper. This symptom is caused by the PCV function. Be sure to apply the brake pedal fully.



HYDRAULIC BRAKE

[3]

After there are no more air bubbles in the fluid, repeat the air bleeding procedure about two or three times at each bleed valve.

Make sure the bleed valves are closed and operate the brake pedal. If it still feels spongy, bleed the system again.

After bleeding the air completely, tighten the brake caliper bleed valve to the specified torque.

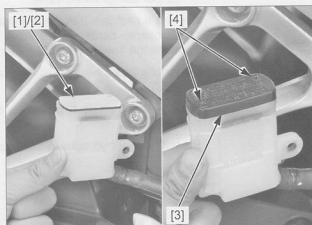
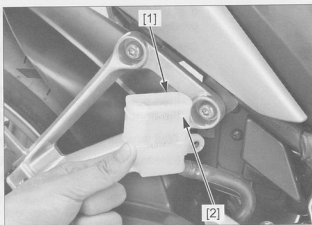
TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)

Do not mix different types of fluid, they are not compatible.

Fill the reservoir [1] to the "UPPER" level [2] with DOT 3 or DOT 4 brake fluid.

Install the diaphragm [1], set plate [2], reservoir cover [3] and reservoir cover screws [4], then tighten the screws to the specified torque.

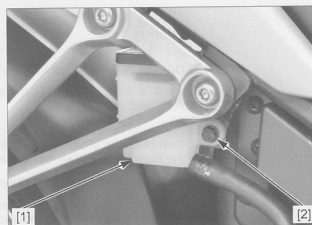
TORQUE: 1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)



Install the rear reservoir [1] and reservoir mounting bolt [2].

Tighten the rear reservoir mounting bolt to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



BRAKE PAD/DISC

FRONT BRAKE PAD REPLACEMENT (CBR250R)

Always replace the brake pads in pairs to ensure even disc pressure.

Push the caliper pistons all the way in to allow installation of new brake pads.

NOTE:

Check the brake fluid level in the brake master cylinder reservoir as this operation causes the level to rise.



Remove the pad pin plug [1] and brake pad hanger pin [2].

Do not operate the brake lever after removing the brake pads.

Remove the brake pads [1].

Install new brake pads to the brake caliper so their ends seat against the retainer.

NOTE:

Make sure that the retainer and pad spring [2] are installed to the brake caliper.

Install the brake pad hanger pin [1] by pushing the pads against the pad spring to align the hanger pin holes in the pads and brake caliper.

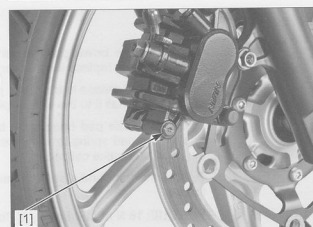
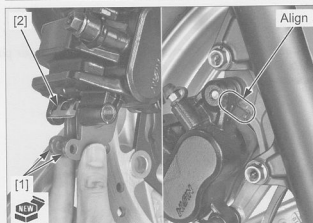
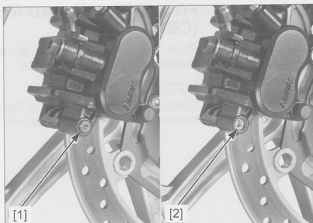
Tighten the brake pad hanger pin to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

Install and tighten the pad pin plug [1] to the specified torque.

TORQUE: 2.4 N·m (0.2 kgf·m, 1.8 lbf·ft)

Operate the brake lever to seat the caliper piston against the pads.



HYDRAULIC BRAKE

FRONT BRAKE PAD REPLACEMENT (CBR250RA)

Always replace the brake pads in pairs to ensure even disc pressure.

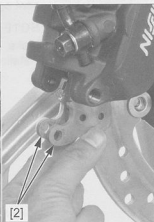
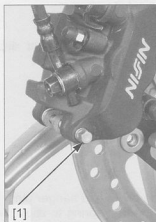
Push the caliper pistons all the way in to allow installation of new brake pads.

NOTE:

Check the brake fluid level in the brake master cylinder reservoir as this operation causes the level to rise.

Do not operate the brake lever after removing the brake pads.

Remove the brake pad hanger pin [1] and brake pads [2].



Install new brake pads [1] to the brake caliper so their ends seat against the retainers.

NOTE:

Make sure that the retainers is installed to the caliper bracket.



Check that the brake pad hanger pin O-ring [1] is in good condition, replace if necessary.

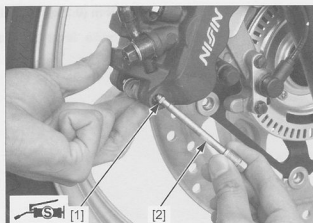
Apply silicone grease to the brake pad hanger pin O-ring and install it to the hanger pin [2] groove.

Install the brake pad hanger pin by pushing the pads against the pad spring to align the hanger pin holes in the pads and brake caliper.

Tighten the front brake pad hanger pin to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

Operate the brake lever to seat the caliper piston against the pads.



REAR BRAKE PAD REPLACEMENT

Always replace the brake pads in pairs to ensure even disc pressure.

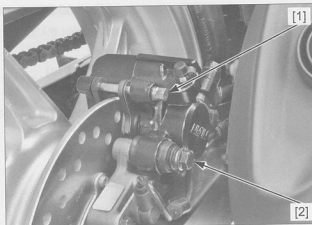
Push the caliper pistons all the way in to allow installation of new brake pads.

NOTE:

Check the brake fluid level in the brake master cylinder reservoir as this operation causes the level to rise.



Remove the brake pad hanger pin [1] and rear brake caliper mounting bolt [2].



Do not operate the brake pedal after removing the brake pads.

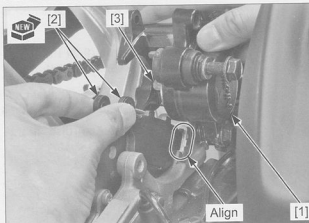
Lift the caliper [1] and remove the brake pads [2].

Install new brake pads to the brake caliper so their ends seat against the retainer.

NOTE:

Make sure that the retainer and pad spring [3] are installed to the brake caliper.

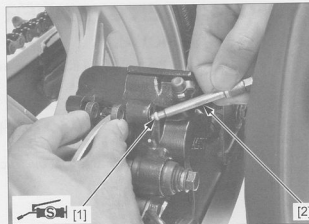
Lower the caliper.



Check that the brake pad hanger pin O-ring [1] is in good condition, replace it if necessary.

Apply silicone grease to the brake pad hanger pin O-ring and install it to the pad pin [2] groove.

Install the brake pad hanger pin by pushing the pads against the pad spring to align the hanger pin holes in the pads and brake caliper.



HYDRAULIC BRAKE

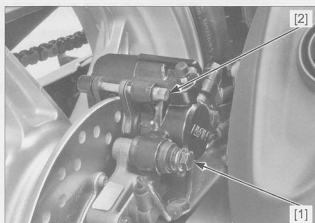
Install the rear brake caliper mounting bolt [1].

Tighten the rear brake caliper mounting bolt securely

Tighten the brake pad hanger pin [2] to the specified torque.

TORQUE: 17 N·m (1.7 kgf·m, 13 lbf·ft)

Operate the brake pedal to seat the caliper pistons against the pads.



BRAKE DISC INSPECTION

Visually inspect the brake discs for damage or crack.

Measure the brake disc thickness using a micrometer.

SERVICE LIMITS:

Front: 3.5 mm (0.14 in)

Rear: 4.0 mm (0.16 in)

Replace the brake disc if the smallest measurement is less than the service limit.



Measure the brake discs warpage using a dial indicator.

SERVICE LIMITS:

Front: 0.3 mm (0.01 in)

Rear: 0.3 mm (0.01 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

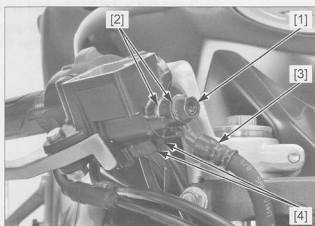
Drain the brake fluid from the hydraulic system:

- CBR250R (page 15-7)
- CBR250RA (page 15-10)

When removing the oil bolt, cover the end of the brake hose to prevent contamination.

Remove the brake hose oil bolt [1], sealing washers [2] and brake hose [3] eyelet.

Disconnect the brake light switch connectors [4].

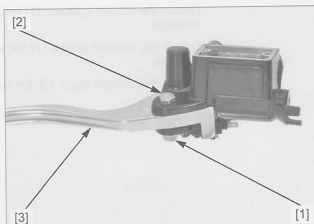


Remove the bolts [1], holder [2] and master cylinder [3].

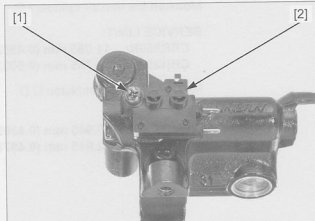


DISASSEMBLY

Remove the brake lever pivot nut [1], bolt [2] and brake lever [3].



Remove the screw [1] and brake light switch [2].



Be careful not to damage the boot.

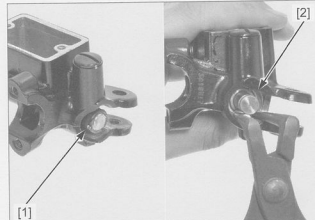
Remove the boot [1].

Remove the snap ring [2] using a special tool.

TOOL:

Snap ring pliers

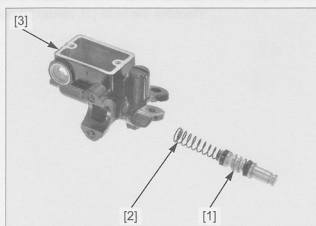
07914-SA50001



HYDRAULIC BRAKE

Remove the master piston [1]/spring [2] and separate them.

Clean the inside of the master cylinder [3], reservoir and master piston with brake fluid.

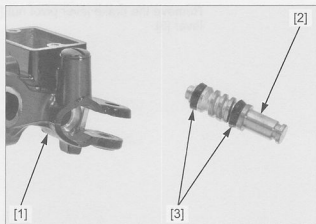


INSPECTION

Check the master cylinder [1] for scoring, scratches or damage.

Check the master piston [2] for scoring, scratches or damage.

Check the piston cups [3] for wear, deterioration or damage.



Measure the master cylinder I.D.

SERVICE LIMIT:

CBR250R: 11.055 mm (0.4352 in)

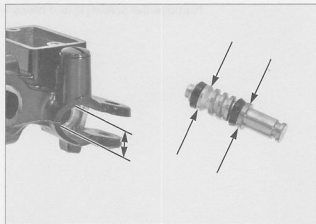
CBR250RA: 12.755 mm (0.5022 in)

Measure the master piston O.D.

SERVICE LIMIT:

CBR250R: 10.945 mm (0.4309 in)

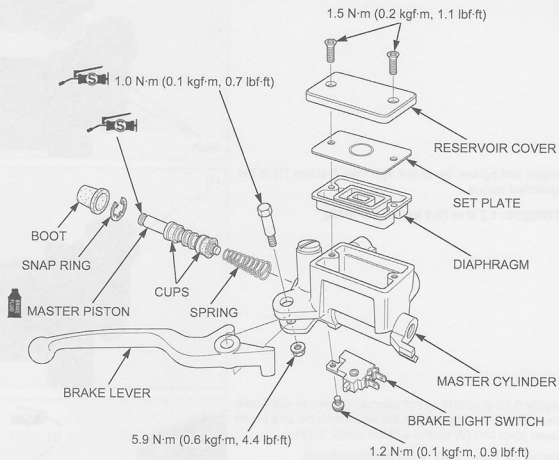
CBR250RA: 12.645 mm (0.4978 in)



ASSEMBLY

NOTE:

Replace the piston and cups as a set.

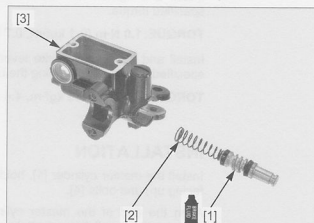


Apply brake fluid to the master piston [1] sliding area.

Install the spring [2] onto the piston end.

Do not allow the piston cup lips to turn inside out.

Install the master piston/spring into the master cylinder [3].



Make sure the snap ring is firmly seated in the groove.

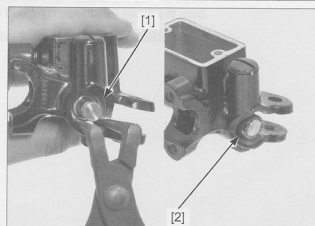
Install the snap ring [1] into the groove of the master cylinder using a special tool.

TOOL:

Snap ring pliers

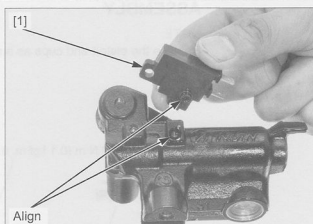
Install the boot [2] securely.

07914-SA50001



HYDRAULIC BRAKE

Install the brake light switch [1] to the master cylinder while aligning the brake light switch boss and master cylinder hole.



Install and tighten the brake light switch screw [1] to the specified torque.

TORQUE: 1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)



Apply 0.10 g (0.004 oz) of silicone grease to the brake lever [1] contacting area of the master piston and brake lever pivot bolt [2] sliding surface (page 1-17).

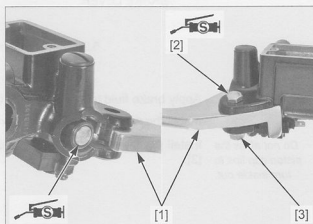
Install the brake lever to the master cylinder.

Install and tighten the brake lever pivot bolt to the specified torque.

TORQUE: 1.0 N·m (0.1 kgf·m, 0.7 lbf·ft)

Install and tighten the brake lever pivot nut [3] to the specified torque while holding the brake lever pivot bolt.

TORQUE: 5.9 N·m (0.6 kgf·m, 4.4 lbf·ft)

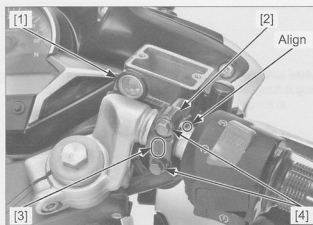


INSTALLATION

Install the master cylinder [1], holder [2] ("UP" mark [3] facing up) and bolts [4].

Align the end of the master cylinder with the punch mark on the handlebar, and tighten the upper bolt first, then the lower bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



Connect the brake light switch connectors [1].

Install the brake hose [2] eyelet with the brake hose oil bolt [3] and new sealing washers [4]. Push the brake hose eyelet joint against the stopper, then tighten the brake hose oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill the reservoir to the upper level and bleed the front brake system:

- CBR250R (page 15-8)
- CBR250RA (page 15-12)



REAR MASTER CYLINDER

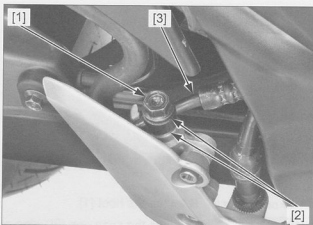
REMOVAL

Drain the brake fluid from the hydraulic system:

- CBR250R (page 15-7)
- CBR250RA (page 15-10)

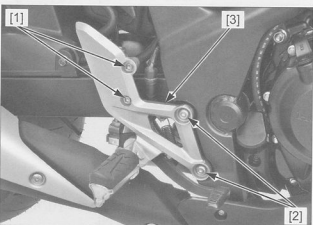
When removing the oil bolt, cover the end of the brake hose to prevent contamination.

Remove the brake hose oil bolt [1], sealing washers [2] and brake hose [3] eyelet.

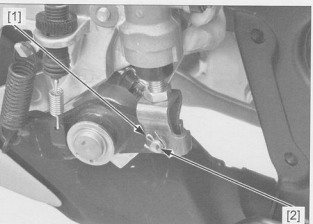


Loosen the master cylinder mounting bolts [1].

Remove the main step holder mounting socket bolts [2] and right main step holder assembly [3].

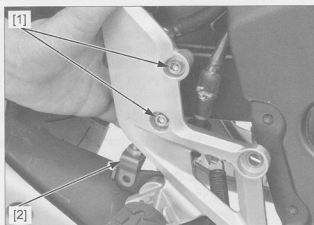


Remove the cotter pin [1], joint pin [2] and master cylinder from the brake pedal.



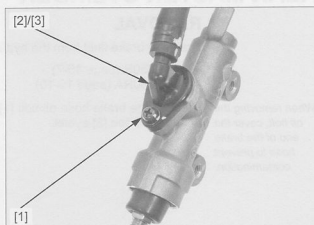
HYDRAULIC BRAKE

Remove the master cylinder mounting bolts [1] and master cylinder [2] from the right main step holder assembly.



DISASSEMBLY

Remove the hose joint screw [1], O-ring [2] and reservoir hose joint [3].



Be careful not to damage the boot.

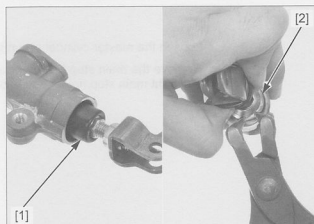
Remove the boot [1].

Remove the snap ring [2] using a special tool.

TOOL:

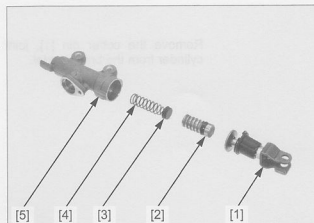
Snap ring pliers

07914-SA50001



Remove the push rod [1], master piston [2], piston cup [3] and spring [4].

Clean the inside of the master cylinder [5] and master piston with brake fluid.



INSPECTION

Check the master cylinder [1] for scoring, scratches or damage.

Check the master piston [2] for scoring, scratches or damage.

Check the piston cup [3] for wear, deterioration or damage.

Measure the master cylinder I.D.

SERVICE LIMIT: 14.055 mm (0.5533 in)

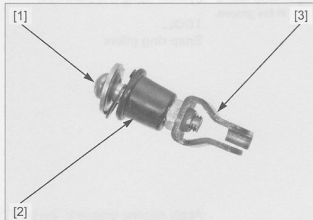
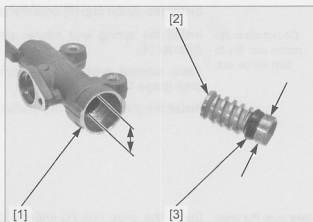
Measure the master piston O.D.

SERVICE LIMIT: 13.945 mm (0.5490 in)

Check the following:

- Push rod [1] for bent
- Boot [2] for damage
- Rod joint [3] for damage

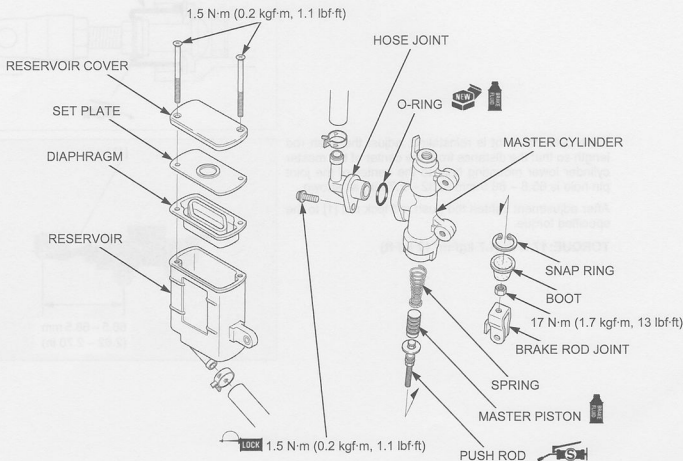
Replace the damaged part if necessary.



ASSEMBLY

NOTE:

Replace the piston, spring and cup as a set.



HYDRAULIC BRAKE

Apply brake fluid to the master piston [1] sliding area.

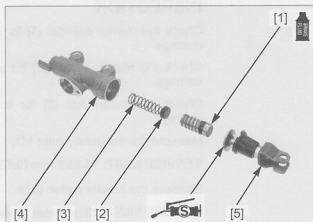
Install the piston cup [2] onto the spring end [3].

Do not allow the piston cup lips to turn inside out.

Install the spring and master piston into the master cylinder [4].

Apply silicone grease to the push rod [5] contacting area (page 1-17).

Install the push rod into the master cylinder.



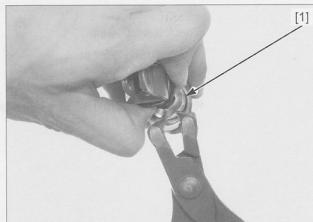
Make sure the snap ring is firmly seated in the groove.

Install the snap ring [1] into the groove of the master cylinder using a special tool.

TOOL:

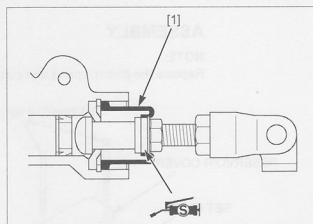
Snap ring pliers

07914-SA50001



Apply silicone grease to the boot [1] groove of the push rod.

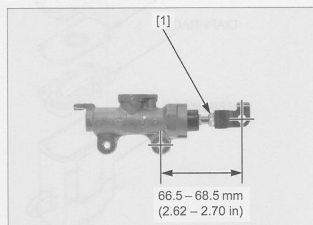
Install the boot securely.



If the push rod joint is reinstalled, adjust the push rod length so that the distance from the center of the master cylinder lower mounting hole to the center of the joint pin hole is 66.5 – 68.5 mm (2.62 – 2.70 in) as shown.

After adjustment tighten the push rod lock nut [1] to the specified torque.

TORQUE: 17 N·m (1.7 kgf·m, 12 lbf·ft)



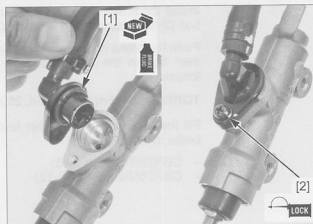
Apply brake fluid to a new O-ring [1].

Install the O-ring to the reservoir hose joint and install them to the master cylinder.

Apply locking agent to the hose joint screw [2] threads and install it.

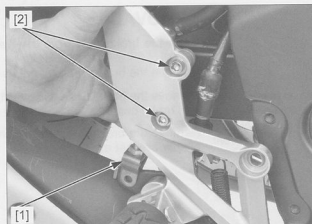
Tighten the hose joint screw to the specified torque.

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

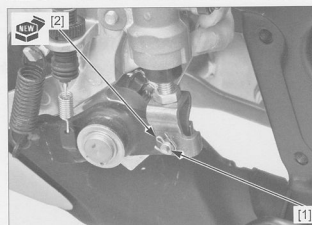


INSTALLATION

Install the master cylinder [1] and master cylinder mounting bolts [2] to the right main step holder assembly.



Install the master cylinder to the brake pedal and install the joint pin [1] and new cotter pin [2].

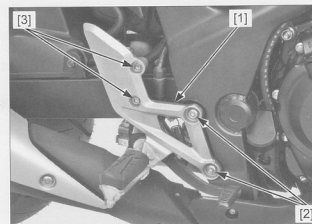


Install the right main step holder assembly [1] and step holder mounting socket bolts [2].
Tighten the step holder mounting socket bolts to the specified torque.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)

Tighten rear master cylinder mounting bolts [3] to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



HYDRAULIC BRAKE

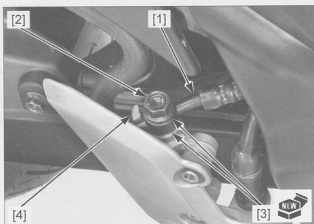
Install the brake hose [1] eyelet with the brake hose oil bolt [2] and new sealing washers [3].

Push the brake hose eyelet joint against the stopper [4], then tighten the brake hose oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill the reservoir to the upper level and bleed the rear brake system:

- CBR250R (page 15-8)
- CBR250RA (page 15-12)



FRONT BRAKE CALIPER (CBR250R)

REMOVAL

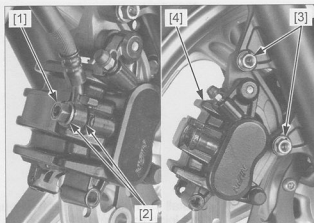
Drain the brake fluid from the hydraulic system (page 15-7).

Remove the brake pads (page 15-16).

When removing the oil bolt, cover the end of brake hose to prevent contamination.

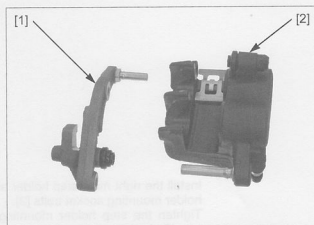
Remove the brake hose oil bolts [1], sealing washers [2] and brake hose eyelet.

Remove the brake caliper mounting bolts [3] and brake caliper/bracket assembly [4].



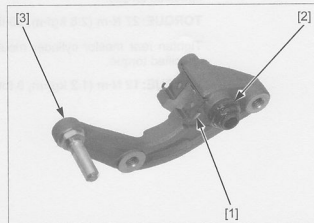
DISASSEMBLY

Remove the caliper bracket [1] from the caliper body [2].



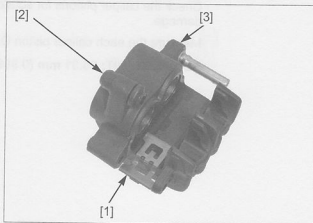
Remove the pad retainer [1] and caliper pin boot [2] from the caliper bracket [3].

If the caliper pin boot is hard or deteriorated, replace it with a new one.



Remove the pad spring [1] and bracket pin boot [2] from the caliper body [3].

If the bracket pin boot is hard or deteriorated, replace it with a new one.



Place a shop towel over the pistons.

Do not use high pressure air or bring the nozzle too close to the inlet.

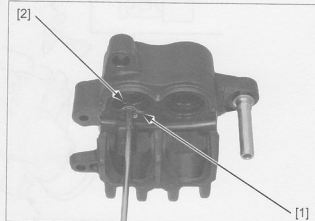
Position the caliper body with the pistons down and apply small squirts of air pressure to the fluid inlet to remove the pistons.



Be careful not to damage the piston sliding surface.

Push the dust seals [1] and piston seals [2] in and lift them out.

Clean the seal grooves with clean brake fluid.

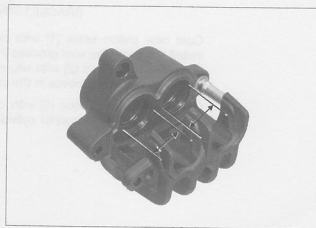


INSPECTION

Check the caliper cylinder for scoring or other damage.

Measure the each caliper cylinder I.D.

SERVICE LIMIT: 25.460 mm (1.0024 in)

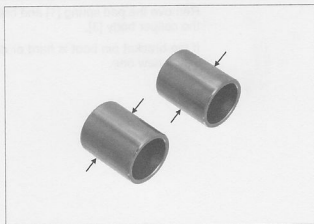


HYDRAULIC BRAKE

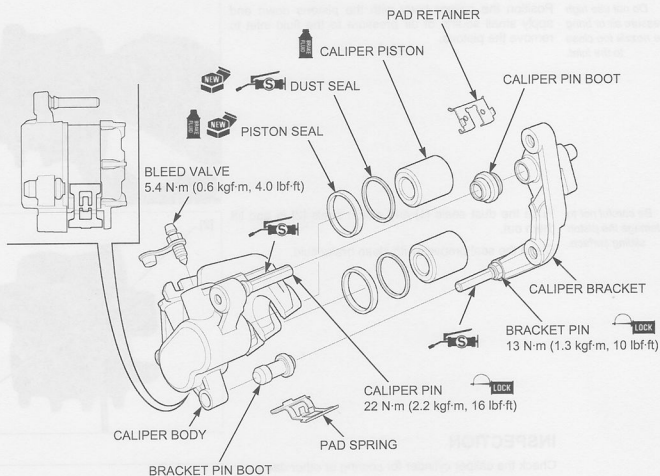
Check the caliper pistons for scratches, scoring or other damage.

Measure the each caliper piston O.D.

SERVICE LIMIT: 25.31 mm (0.996 in)

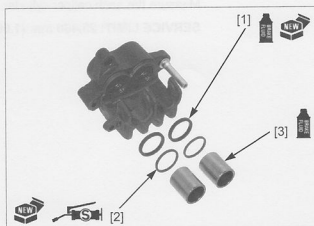


ASSEMBLY



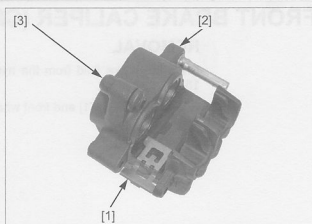
Coat new piston seals [1] with clean brake fluid and install them into the seal grooves in the caliper.
Coat new dust seals [2] with silicone grease and install them into the seal grooves in the caliper.

Coat the caliper pistons [3] with clean brake fluid and install them into the caliper cylinders with the opening toward the pads.



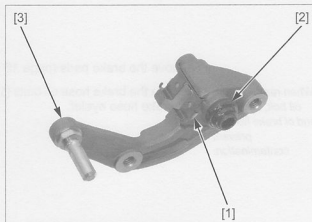
Note the installation direction of the pad spring.

- Install the pad spring [1] in the caliper body [2].
- Install the bracket pin boot [3] into the caliper body.

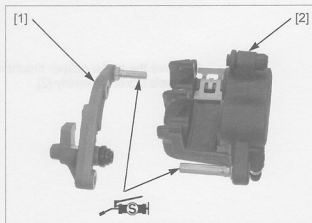


Apply Honda Bond A or equivalent to the brake pad retainer mating surface.

Install the brake pad retainer [1] and caliper pin boot [2] into the caliper bracket [3].



Apply 0.4 g (0.01 oz) minimum of silicone grease to the caliper and bracket pins sliding surface and install the caliper bracket [1] over the caliper body [2].



INSTALLATION

Install the brake caliper/bracket assembly [1] to the right fork leg.

Install new mounting bolts [2] and tighten them to the specified torque.

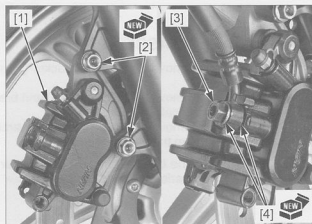
TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)

Install the brake hose eyelet between the stoppers with brake hose oil bolt [3] and new sealing washers [4]. Tighten the brake hose oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Install the brake pads (page 15-16).

Fill the reservoir to the upper level and bleed the front brake system (page 15-8).

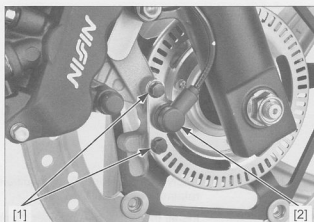


FRONT BRAKE CALIPER (CBR250RA)

REMOVAL

Drain the brake fluid from the hydraulic system (page 15-10).

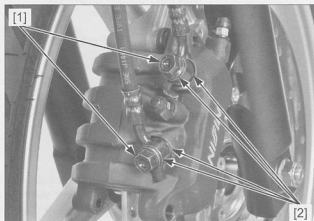
Remove the bolts [1] and front wheel speed sensor [2].



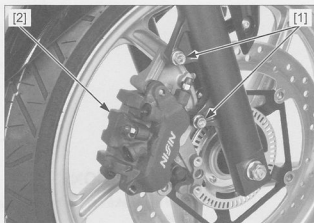
Remove the brake pads (page 15-18).

When removing the oil bolt, cover the end of brake hose to prevent contamination.

Remove the brake hose oil bolts [1], sealing washers [2] and brake hose eyelet.



Remove the brake caliper mounting bolts [1] and brake caliper/bracket assembly [2].



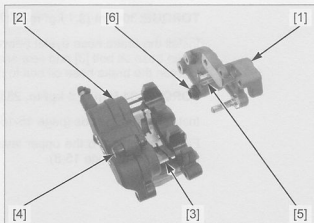
DISASSEMBLY

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 pad retainer [5] and caliper pin boot [6] from the caliper bracket.

If the bracket pin boot and caliper pin boot are hard or deteriorated, replace it with a new one.



Place a shop towel over the pistons.

Do not use high pressure air or bring the nozzle too close to the inlet.

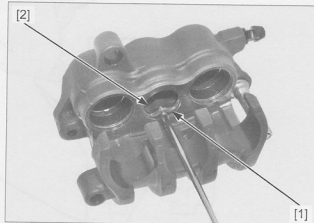
Position the caliper body with the pistons facing down and apply small squirts of air pressure to the fluid inlet to remove the pistons.



Be careful not to damage the piston sliding 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

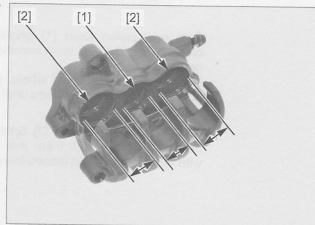
Check the caliper cylinders for scoring or other damage.

Measure the each caliper cylinder I.D.

SERVICE LIMIT:

Caliper cylinder A [1]: 22.710 mm (0.8941 in)

Caliper cylinder B [2]: 27.060 mm (1.0654 in)



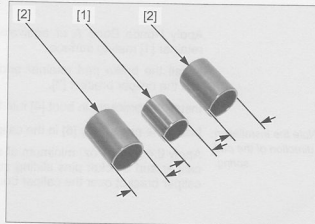
Check the caliper pistons for scratches, scoring or other damage.

Measure the each caliper piston O.D.

SERVICE LIMIT:

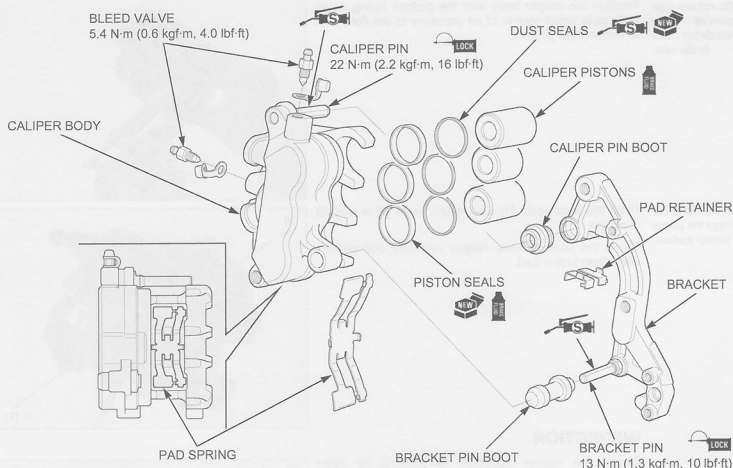
Caliper piston A [1]: 22.56 mm (0.888 in)

Caliper piston B [2]: 26.91 mm (1.059 in)



HYDRAULIC BRAKE

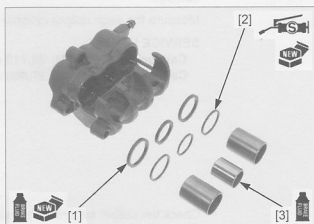
ASSEMBLY



Coat new piston seals [1] whole surface with clean brake fluid and install them into the seal grooves in the caliper cylinder.

Coat new dust seals [2] whole surface with silicone grease and install them into the seal grooves in the caliper cylinder.

Coat the caliper pistons [3] outer surface with clean brake fluid and install them into the caliper cylinders with the opening sides toward the pads.



Apply Honda Bond A or equivalent to the brake pad retainer [1] mating surface.

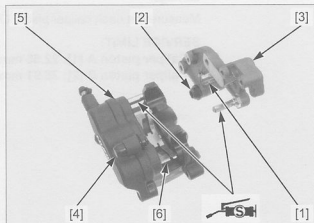
Install the brake pad retainer and caliper pin boot [2] into the caliper bracket [3].

Install the bracket pin boot [4] into the caliper body [5].

Install the pad spring [6] in the caliper body.

Apply 0.4 g (0.01 oz) minimum of silicone grease to the caliper and bracket pins sliding surface and install the caliper bracket over the caliper body.

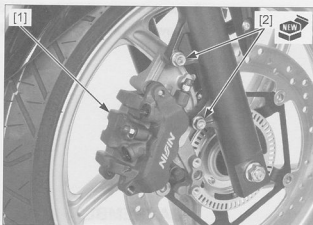
Note the installation direction of the pad spring.



INSTALLATION

Install the brake caliper/bracket assembly [1] to the right fork leg.
Install new mounting bolts [2] and tighten them to the specified torque.

TORQUE: 30 N·m (3.1 kgf·m, 22 lbf·ft)



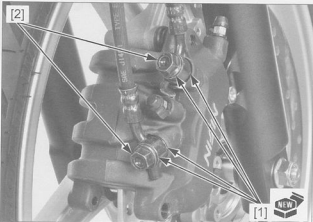
Install the brake hose eyelet to the caliper body with new sealing washers [1] and oil bolts [2].

Push the brake hose eyelet against the stopper on the caliper body, then tighten the brake hose oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

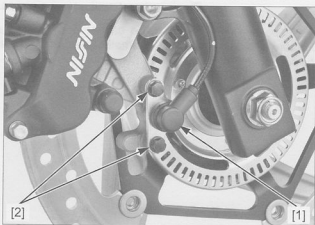
Install the brake pads (page 15-18).

Fill the reservoir to the upper level and bleed the front brake system (page 15-12).



Install the front wheel speed sensor [1] and bolts [2].
Tighten the bolts securely.

Check the air gap between the front wheel speed sensor and pulser ring (page 16-24).



REAR BRAKE CALIPER

REMOVAL

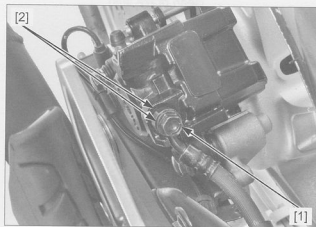
Drain the brake fluid from the hydraulic system:

- CBR250R (page 15-7)
- CBR250RA (page 15-12)

When removing the oil bolt, cover the end of brake hose to prevent contamination.

Remove the brake hose oil bolt [1] and sealing washers [2].

Remove the brake pads (page 15-19).

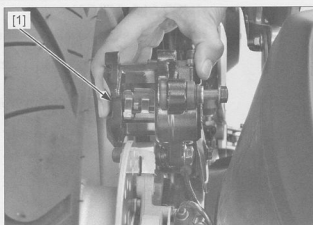


HYDRAULIC BRAKE

Remove the brake caliper [1] from the caliper bracket.

Remove the rear wheel (page 14-6).

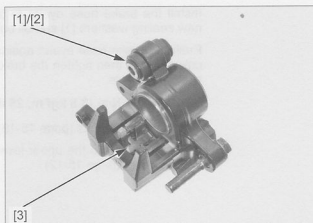
Remove the caliper bracket from the swingarm.



DISASSEMBLY

Remove the following:

- Collar [1]
- Pin boots [2]
- Pad spring [3]



Place a shop towel over the piston.

Do not use high pressure air or bring the nozzle too close to the inlet.

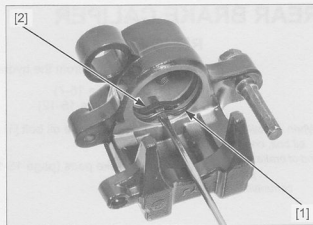
Position the caliper body with the piston facing down and apply small squirts of air pressure to the fluid inlet to remove the piston.



Be careful not to damage the piston sliding 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 for scoring, scratches or damage.

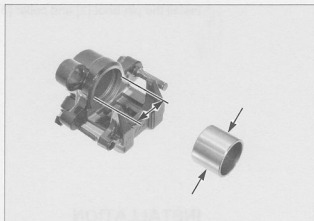
Measure the caliper cylinder I.D.

SERVICE LIMIT: 38.24 mm (1.506 in)

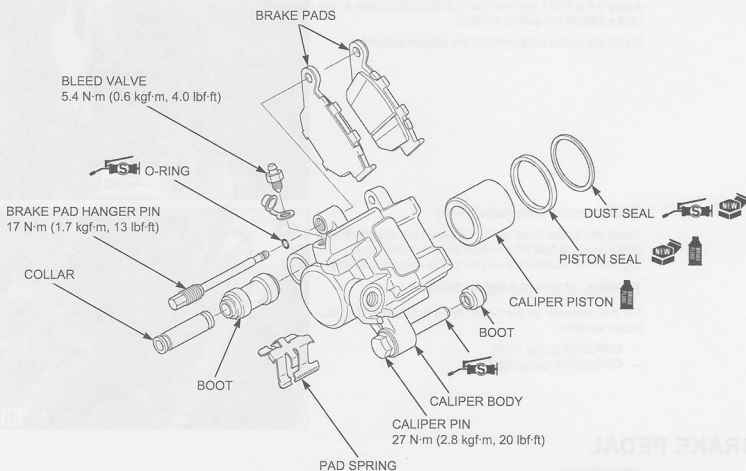
Check the caliper piston for scoring, scratches or damage.

Measure the caliper piston O.D.

SERVICE LIMIT: 38.09 mm (1.500 in)



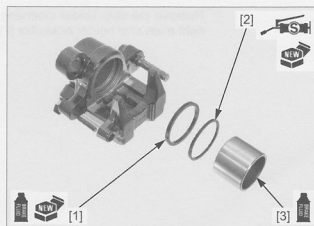
ASSEMBLY



Apply brake fluid to new piston seal [1].
Apply silicone grease to new dust seal [2].

Install the piston seal and dust seal into the seal grooves in the caliper body.

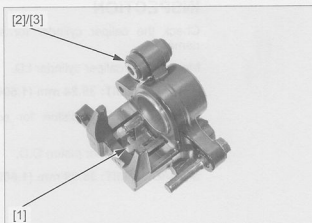
Apply brake fluid to the caliper piston [3] sliding area and install them into the caliper cylinder with the opening side toward the pad.



HYDRAULIC BRAKE

Install the pad spring [1] onto the caliper body.

Install the pin boot [2] and collar [3] to the caliper body.

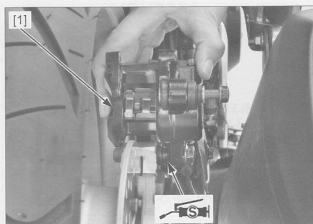


INSTALLATION

Install the caliper bracket and rear wheel (page 14-12).

Apply 0.4 g (0.01 oz) minimum of silicone grease to the brake caliper pin sliding surface.

Install the brake caliper [1] to the caliper bracket.



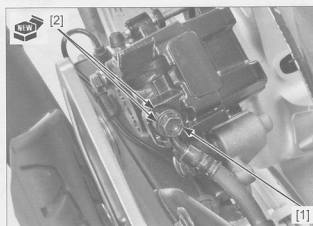
Install the brake pads (page 15-19).

Install the brake hose eyelet between the stoppers with brake hose oil bolt [1] and new sealing washers [2]. Tighten the brake hose oil bolt to the specified torque.

TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill the reservoir to the upper level and bleed the rear brake system:

- CBR250R (page 15-8)
- CBR250RA (page 15-12)



BRAKE PEDAL

REMOVAL

Remove the step holder mounting socket bolts [1] and right main step holder assembly [2].

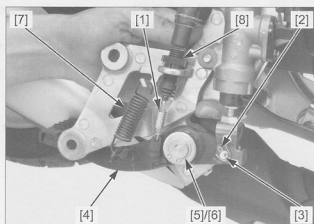


Unhook the brake light switch spring [1] from the brake pedal.

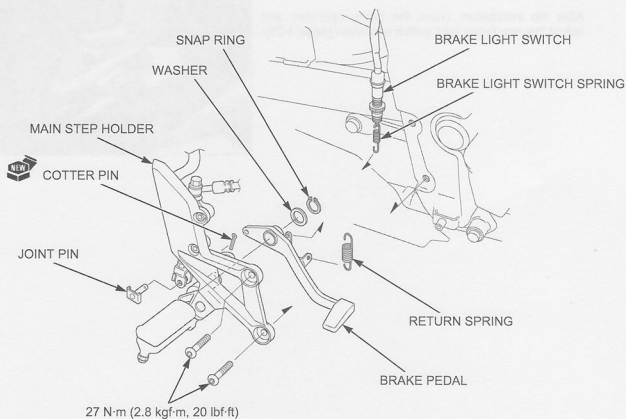
Remove and discard the brake pedal joint cotter pin [2]. Remove the joint pin [3] and disconnect the push rod lower joint from the brake pedal [4].

Remove the snap ring [5], washer [6], return spring [7] and brake pedal.

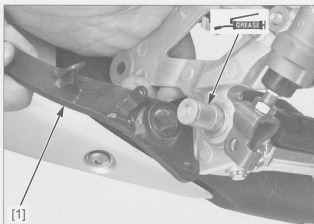
Remove the brake light switch [8].



INSTALLATION



Apply grease to the brake pedal [1] pivot sliding area and install the brake pedal into the right main step holder.



HYDRAULIC BRAKE

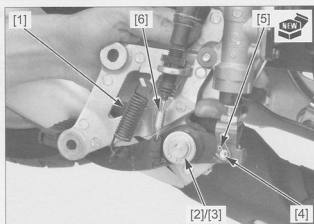
Install the brake pedal return spring [1] to the brake pedal and main step bracket.

Secure the brake pedal with the washer [2] and snap ring [3].

Connect the brake pedal to the push rod lower joint with the joint pin [4].

Install a new cotter pin [5].

Install the brake light switch spring [6] to the brake pedal.

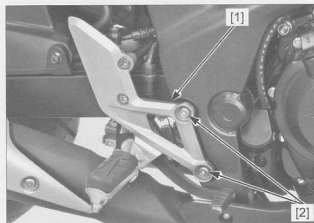


Install the right main step holder assembly [1].

Install and tighten the main step holder mounting socket bolts [2] to the specified torque.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)

After the installation, check the brake operation and adjust the rear brake light switch operation (page 3-26).

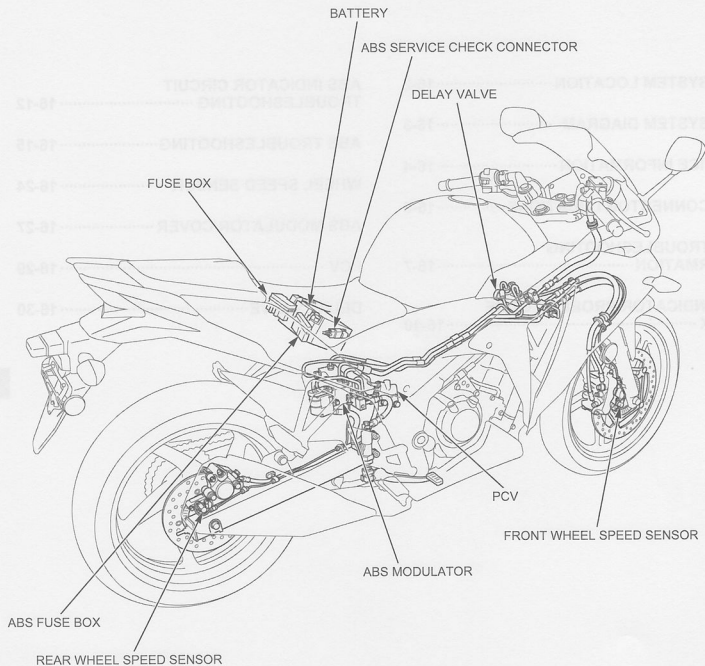


16. ANTI-LOCK BRAKE SYSTEM (ABS)

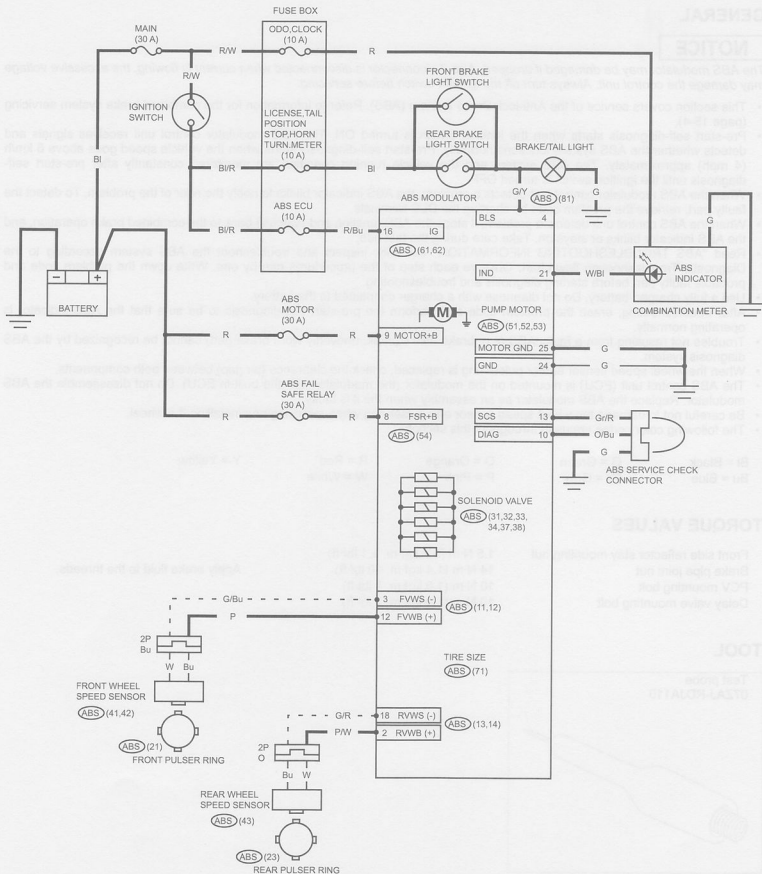
ABS SYSTEM LOCATION	16-2	ABS INDICATOR CIRCUIT TROUBLESHOOTING	16-12
ABS SYSTEM DIAGRAM	16-3	ABS TROUBLESHOOTING	16-15
SERVICE INFORMATION	16-4	WHEEL SPEED SENSOR	16-24
ABS CONNECTOR LOCATIONS	16-5	ABS MODULATOR/COVER	16-27
ABS TROUBLESHOOTING INFORMATION	16-7	PCV	16-29
ABS INDICATOR PROBLEM CODE INDEX	16-10	DELAY VALVE	16-30

ANTI-LOCK BRAKE SYSTEM (ABS)

ABS SYSTEM LOCATION



ABS SYSTEM DIAGRAM



ABS () = ABS Problem code number

ABS MODULATOR 25P CONNECTOR (MODULATOR SIDE)



BI : Black
 Bu : Blue
 G : Green
 Gr : Gray
 O : Orange
 P : Pink
 R : Red
 W : White
 Y : Yellow

ANTI-LOCK BRAKE SYSTEM (ABS)

SERVICE INFORMATION

GENERAL

NOTICE

The ABS modulator may be damaged if dropped. Also if a connector is disconnected when current is flowing, the excessive voltage may damage the control unit. Always turn off the ignition switch before servicing.

- This section covers service of the Anti-lock Brake System (ABS). Refer to information for the combined brake system servicing (page 15-4).
- Pre-start self-diagnosis starts when the ignition switch is turned ON. The ABS modulator control unit receives signals and detects whether the ABS system functions normally. Pre-start self-diagnosis starts when the vehicle speed goes above 6 km/h (4 mph) approximately. The ABS system and the vehicle running condition are monitored constantly after pre-start self-diagnosis until the ignition switch is turned OFF.
- When the ABS modulator control unit detects a problem, the ABS indicator blinks to notify the rider of the problem. To detect the faulty part, retrieve the problem code by shorting the DLC terminals.
- When the ABS control unit detects a problem, it stops the ABS function and switches back to the combined brake operation, and the ABS indicator blinks or stays on. Take care during the test ride.
- Read "ABS TROUBLESHOOTING INFORMATION" carefully. Inspect and troubleshoot the ABS system according to the Diagnostic Troubleshooting flow chart. Observe each step of the procedures one by one. Write down the problem code 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 problem code and perform the pre-start self-diagnosis to be sure that the ABS indicator is operating normally.
- 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, check the clearance (air gap) between both components.
- The ABS 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.
- Be careful not to damage the wheel speed sensor and pulser ring when removing and installing the wheel.
- The following color codes are used throughout this section.

Bl = Black
Bu = Blue

G = Green
Gr = Gray

O = Orange
P = Pink

R = Red
W = White

Y = Yellow

TORQUE VALUES

Front side reflector stay mounting nut	1.5 N·m (0.2 kgf·m, 1.1 lbf·ft)
Brake pipe joint nut	14 N·m (1.4 kgf·m, 10 lbf·ft)
PCV mounting bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)
Delay valve mounting bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)

Apply brake fluid to the threads.

TOOL

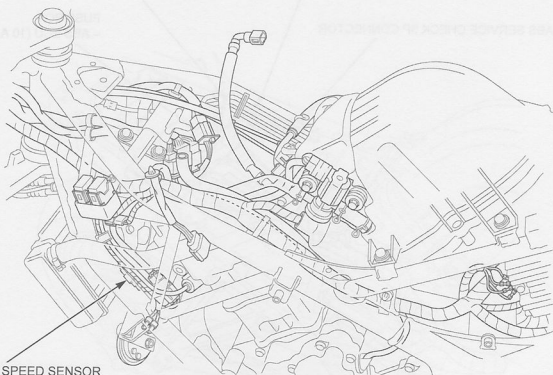
Test probe
07ZAJ-RDJA110



ABS CONNECTOR LOCATIONS

NOTE:

Remove the left middle cowl (page 2-7).

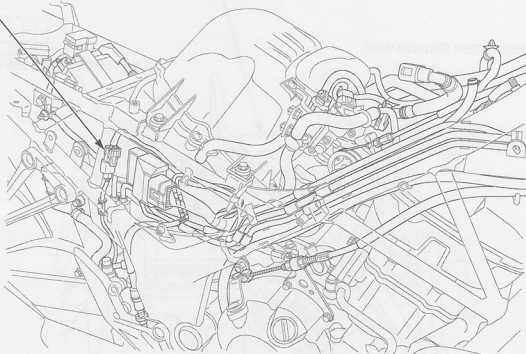


FRONT WHEEL SPEED SENSOR
2P (BLUE) CONNECTOR

NOTE:

Remove the right side cover (page 2-16).

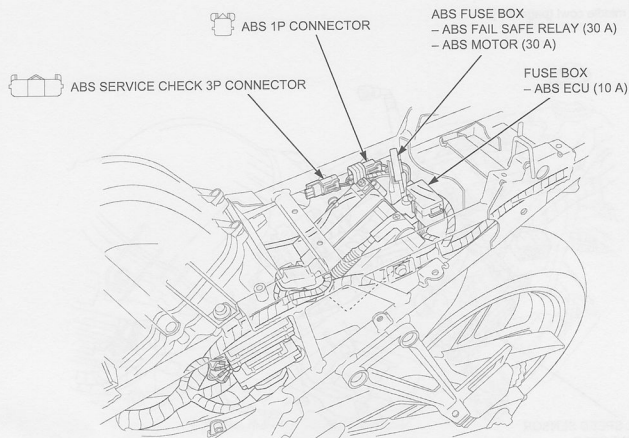
REAR WHEEL SPEED SENSOR
2P (ORANGE) CONNECTOR



ANTI-LOCK BRAKE SYSTEM (ABS)

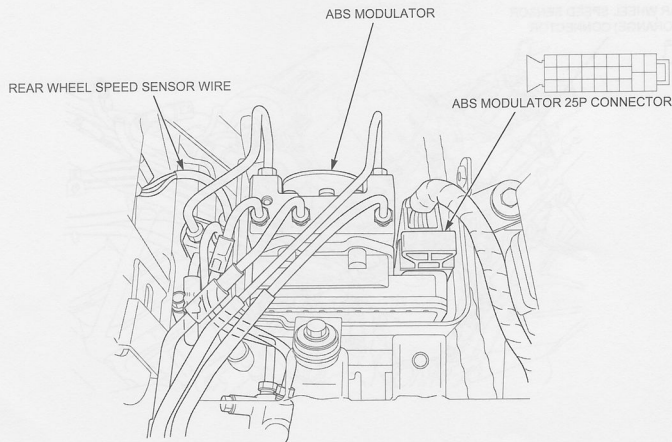
NOTE:

Remove the rider seat (page 2-6).



NOTE:

Remove the modulator cover A/B (page 16-27).



ABS TROUBLESHOOTING INFORMATION

SYSTEM DESCRIPTION

SUMMARY OF ABS PRE-START SELF-DIAGNOSIS SYSTEM

The ABS pre-start self-diagnosis system diagnoses the electrical system as well as the operating status of the modulator. When there is any abnormality, the problem and the associated part can be detected by reading the problem code.

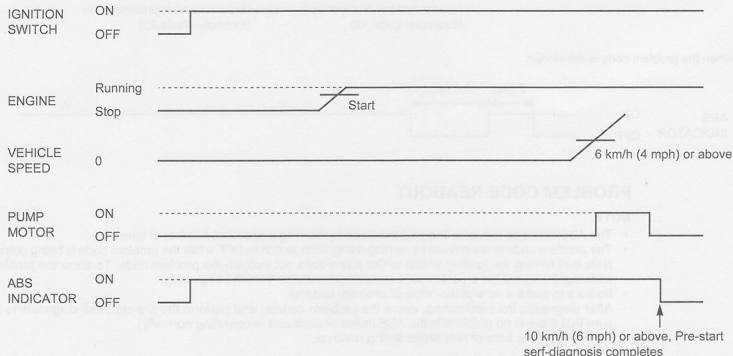
When the motorcycle is running, pulse signals generated at the front/rear wheel speed sensor are sent to the ABS Control Unit. When the ABS Control Unit detects that vehicle speed reaches 6 km/h (4 mph), the pump motor is temporarily operated to check if the ABS system functions normally. If the system is normal, pre-start self-diagnosis is complete by the time the vehicle speed reaches 10 km/h (6 mph) approximately.

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 ABS indicator blinks when a problem is detected.

When the ABS indicator blinks, the cause of the problem can be identified by retrieving the problem code following the specified retrieval procedure (page 16-8).

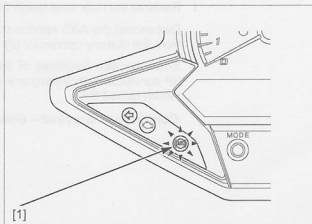
If the ABS indicator does not come on when the ignition switch is turned ON, or the ABS indicator stays on after the pre-start self-diagnosis procedure is complete, the ABS indicator may be faulty. Follow the troubleshooting (page 16-12).

Pre-start self-diagnosis when normal:



PRE-START SELF-DIAGNOSIS PROCEDURE

1. Turn the ignition switch ON and engine stop switch to "C".
2. Make sure the ABS indicator [1] 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.

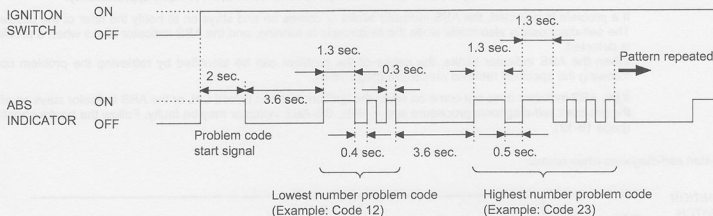


ANTI-LOCK BRAKE SYSTEM (ABS)

PROBLEM CODE INDICATION PATTERN

NOTE:

- The ABS indicator denotes the problem codes from 11 to 81. The ABS 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. When two long blinks occur, and three short blinks, that problem code is 23 (two long blinks = 20 blinks, three short blinks = 3 blinks). Then, 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 ABS indicator indicates code 12, then indicates code 23, two failures have occurred.



When the problem code is not stored:



PROBLEM CODE READOUT

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 perform the pre-start self-diagnosis to be sure that there is no problem in the ABS indicator (indicator is operating normally).
- Do not apply the front or rear brake during retrieval.

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

Start the engine and test ride the motorcycle above 10 km/h (6 mph).

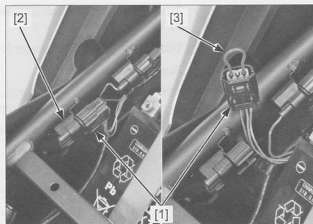
If the ABS indicator blinks or stays on, follow the steps described below:

1. Remove the rider seat (page 2-6).

Disconnect the ABS service check 3P connector [1] from the dummy connector [2].

Short the wire terminals of the ABS service check 3P connector with a jumper wire [3] with the ignition switch turned OFF.

Connection: Gray/red – Green



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

The ABS indicator [1] should come on 2 seconds (start signal) (then goes off 3.6 seconds) and starts problem code indication.

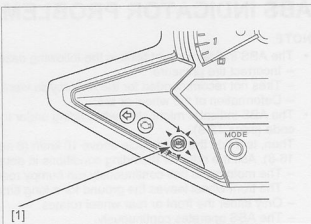
- The problem code is indicated by the number of the times of the ABS indicator blinking.

If the problem code is not stored, the ABS indicator stays on.

- Turn the ignition switch OFF and remove the jumper wire.

Connect the ABS service check 3P connector to the dummy connector.

Install the rider seat (page 2-6).



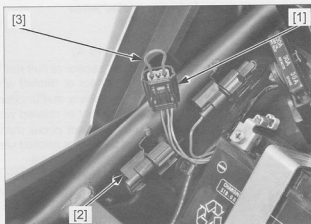
ERASING PROBLEM CODE

- Remove the rider seat (page 2-6).

Disconnect the ABS service check 3P connector [1] from the dummy connector [2].

- Short the wire terminals of the ABS service check 3P connector with a jumper wire [3] with the ignition switch turned OFF in the same manner as retrieval.

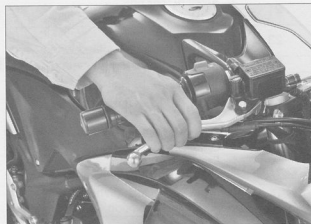
Connection: Gray/red – Green



- Turn the ignition switch ON and engine stop switch to "O" while squeezing the brake lever. The ABS indicator should come on 2 seconds and go off.

- Release the brake lever immediately after the ABS indicator is off. The ABS indicator should come on.

- Squeeze the brake lever immediately after the ABS indicator is on. The ABS indicator should go off.



- Release the brake lever immediately after the ABS indicator [1] is off.

When code erasure is complete, the ABS indicator blinks 2 times and stays on.

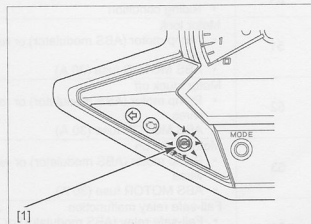
If the ABS indicator does not blink 2 times, the data has not been erased, so try again.

If the ABS indicator blinks 2 times and blinks, faulty ABS system, go to ABS troubleshooting (page 16-10)

- Turn the ignition switch OFF and remove the jumper wire.

Connect the ABS service check 3P connector to the dummy connector.

Install the rider seat (page 2-6).



ANTI-LOCK BRAKE SYSTEM (ABS)

ABS INDICATOR PROBLEM CODE INDEX

NOTE:

- The ABS indicator might blink in the following cases. Correct the faulty part.
 - Incorrect tire pressure.
 - Tires not recommended for the motorcycle were installed (incorrect tire size).
 - Deformation of the wheel or tire.
- The ABS indicator might blink while riding under the following conditions. This is temporary failure. Be sure to erase the problem code (page 16-9).

Then, test ride the motorcycle above 10 km/h (6 mph) and check the problem code by retrieving the self-diagnosis system (page 16-8). Ask the rider for the riding conditions in detail when the motorcycle is brought in for inspection.

 - The motorcycle has continuously run bumpy roads.
 - The front wheel leaves the ground for a long time when riding (wheelie).
 - Only either the front or rear wheel rotates.
 - The ABS operates continuously.
 - The ABS control unit has been disrupted by an extremely powerful radio wave (electromagnetic interference).

Problem Code	Function failure	Detection		Symptom/Fail-safe function	Refer to
		A	B		
01	<ul style="list-style-type: none"> ABS modulator voltage input line Indicator related wires Speedometer ABS modulator ABS ECU fuse (10 A) 			<ul style="list-style-type: none"> ABS indicator never come ON at all ABS indicator stays ON at all 	16-12 16-13
11	<ul style="list-style-type: none"> Front wheel speed sensor circuit malfunction Wheel speed sensor or related wires 	O	O	<ul style="list-style-type: none"> Stops ABS operation 	16-15
13	<ul style="list-style-type: none"> Rear wheel speed sensor malfunction Wheel speed sensor or related wires 	O	O		16-17
12	<ul style="list-style-type: none"> Front wheel speed sensor circuit malfunction Wheel speed sensor or related wires Electromagnetic interference 		O	<ul style="list-style-type: none"> Stops ABS operation 	16-15
14	<ul style="list-style-type: none"> Rear wheel speed sensor malfunction Wheel speed sensor, pulser ring or related wires Electromagnetic interference 		O		16-17
21	<ul style="list-style-type: none"> Front pulser ring Pulser ring or related wires 		O	<ul style="list-style-type: none"> Stops ABS operation 	16-15
23	<ul style="list-style-type: none"> Rear pulser ring Pulser ring or related wires 		O		16-17
31	Solenoid valve malfunction (ABS modulator)			<ul style="list-style-type: none"> Stops ABS operation 	16-19
32					
33					
34					
37					
38					
41	<ul style="list-style-type: none"> Front wheel lock Riding condition 		O	<ul style="list-style-type: none"> Stops ABS operation 	16-15
42	<ul style="list-style-type: none"> Front wheel lock (Wheelie) Riding condition 		O		
43	<ul style="list-style-type: none"> Rear wheel lock Riding condition 		O		16-17
51	<ul style="list-style-type: none"> Motor lock Pump motor (ABS modulator) or related wires ABS MOTOR fuse (30 A) 	O	O	<ul style="list-style-type: none"> Stops ABS operation 	16-20
52	<ul style="list-style-type: none"> Motor stuck off Pump motor (ABS modulator) or related wires ABS MOTOR fuse (30 A) 	O	O		
53	<ul style="list-style-type: none"> Motor stuck on Pump motor (ABS modulator) or related wires ABS MOTOR fuse (30 A) 	O	O		
54	<ul style="list-style-type: none"> Fail-safe relay malfunction Fail-safe relay (ABS modulator) or related wires ABS FAIL SAFE fuse (30 A) 	O	O	<ul style="list-style-type: none"> Stops ABS operation 	16-21

ANTI-LOCK BRAKE SYSTEM (ABS)

Problem Code	Function failure	Detection		Symptom/Fail-safe function	Refer to
		A	B		
61	Power circuit/Under voltage • Input voltage (too low) • ABS ECU fuse (10 A)	O	O	• Stops ABS operation	16-22
62	Power circuit/Over voltage • Input voltage (too high)	O	O	• Stops ABS operation	
71	Tire malfunction • Tire size		O	• Stops ABS operation	16-23
81	ABS control unit • ABS control unit malfunction (ABS modulator)	O	O	• Stops ABS operation	16-24

(A) Pre-start self-diagnosis (page 16-7)

(B) Ordinary self-diagnosis: diagnoses while the motorcycle is running (after pre-start self-diagnosis)



ABS INDICATOR CIRCUIT TROUBLESHOOTING

ABS INDICATOR DOES NOT COME ON (when the ignition switch turned ON)

1. Combination Meter Power/ground Line Inspection

Check the combination meter power and ground lines (page 20-6).

Are the wires normal?

YES – GO TO STEP 2.

NO – Open circuit in related wires

2. Indicator Operation Inspection

Pull up the lock lever [1] and disconnect the ABS modulator 25P connector [2].

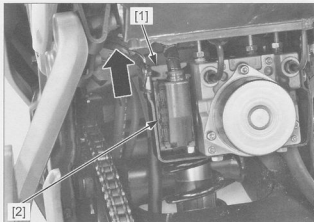
Turn the ignition switch ON and engine stop switch to "C".

Check the ABS indicator.

Does the ABS indicator come on?

YES – GO TO STEP 3.

NO – Faulty ABS modulator



3. Indicator Signal Line Short Circuit Inspection

Turn the ignition switch OFF.

Check for continuity between the White/black wire terminal of the ABS modulator 25P connector [1] and ground.

TOOL:

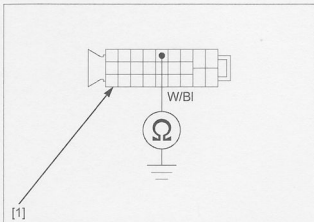
Test probe

07ZAJ-RDJA110

Is there continuity?

YES – Short circuit in White/black wire

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)

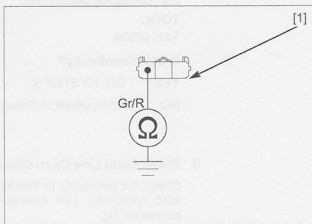
1. Service Check Line Short Circuit Inspection

Check for continuity between the Gray/red wire terminal of the ABS service check 3P connector [1] and ground.

Is there continuity?

YES – Short circuit in Gray/red wire

NO – GO TO STEP 2.



2. Indicator Operation Inspection

Remove the upper cowl (page 2-9).

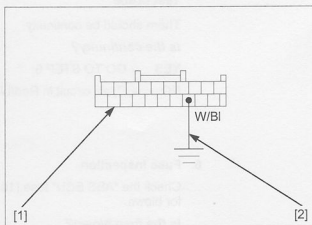
With the connector connected, short the White/black wire terminal of the combination meter 20P connector [1] and ground with a jumper wire [2]. Turn the ignition switch ON and engine stop switch to "C".

Check the ABS indicator.

Does it go off?

YES – GO TO STEP 3.

NO – Faulty combination meter



3. Indicator Signal Line Open Circuit Inspection

Turn the ignition switch OFF.

Remove the jumper wire from the combination meter 20P connector.

Disconnect the ABS modulator 25P connector [1]. Short the White/black wire terminal of the wire harness side ABS modulator 25P connector and ground with a jumper wire [2].

TOOL:

Test probe

07ZAJ-RDJA110

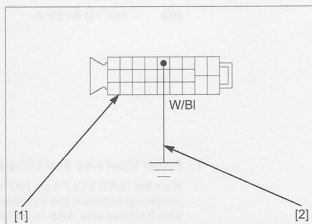
Turn the ignition switch ON and engine stop switch to "C".

Check the ABS indicator.

Does it go off?

YES – GO TO STEP 4.

NO – Open circuit in White/black wire



ANTI-LOCK BRAKE SYSTEM (ABS)

4. Logic Ground Line Open Circuit Inspection

Turn the ignition switch OFF.

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

TOOL:

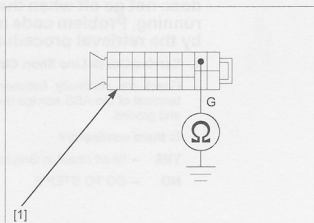
Test probe

07ZAJ-RDJA110

Is there continuity?

YES – GO TO STEP 5.

NO – Open circuit in Green wire



5. Power Input Line Open Circuit Inspection 1

Check for continuity in Red/blue wire between the ABS modulator 25P connector [1] and ABS 1P connector [2].

TOOL:

Test probe

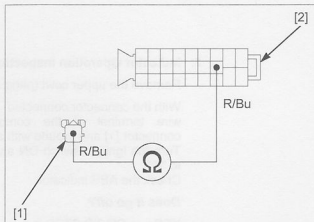
07ZAJ-RDJA110

There should be continuity.

Is the continuity?

YES – GO TO STEP 6.

NO – Open circuit in Red/blue wire



6. Fuse Inspection

Check the "ABS ECU" fuse (10 A) [1] in the fuse box for blown.

Is the fuse blown?

YES – GO TO STEP 7.

NO – GO TO STEP 8.



7. Power Input Line Short Circuit Inspection

With the "ABS ECU" fuse (10 A) removed, check for continuity between the Red/blue wire terminal of the wire harness side ABS modulator 25P connector [1] and ground.

TOOL:

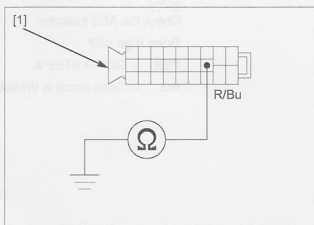
Test probe

07ZAJ-RDJA110

Is there continuity?

YES – Short circuit in Red/blue wire

NO – Intermittent failure. Replace the "ABS ECU" fuse (10 A) with a new one, and recheck.



8. Power Input Line Open Circuit Inspection 2

Measure the voltage between the Red/blue wire terminal of wire harness side ABS modulator 25P connector [1] and ground.

TOOL:

Test probe

07ZAJ-RDJA110

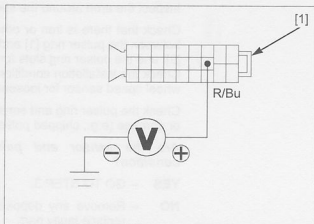
There should be battery voltage with the ignition switch turned ON and engine stop switch to "C".

Is there battery voltage?

YES – Faulty ABS modulator

NO –

- Open circuit in Red/blue or Black/red wire between the ABS modulator 25P connector and ignition switch
- If the wire is OK, check the charging system (page 17-7).



ABS TROUBLESHOOTING

NOTE:

- Perform inspection with the ignition switch OFF, unless otherwise specified.
- Refer to the ABS connector locations (page 16-5).
- 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 problem code (page 16-9) then test ride the motorcycle above 30 km/h (18 mph) and check the other problem code by retrieving the self-diagnosis system (page 16-8).
- Before starting the diagnosis and troubleshooting, check the ABS modulator power/ground line (page 16-22). Also, check the ABS indicator circuit (page 16-12).

PROBLEM CODE 11, 12, 21, 41 or 42 (Front Wheel Speed Sensor/Front Pulser Ring/Front Wheel Lock)

NOTE:

- The ABS indicator might blink under unusual riding or conditions (page 16-10). This is temporary failure. Erase the problem code (page 16-9) then test ride the motorcycle above 30 km/h (18 mph) and check the problem code by retrieving the self-diagnosis system (page 16-8).
- 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 16-24).

Is the air gap correct?

YES – GO TO STEP 2.

NO – Check each part for deformation and looseness and correct accordingly. Recheck the air gap.

ANTI-LOCK BRAKE SYSTEM (ABS)

2. Speed Sensor Condition Inspection

Inspect the area around the speed sensor:

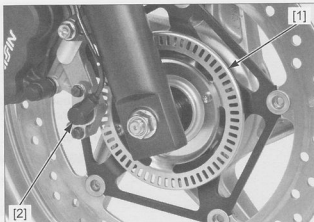
Check that there is iron or other magnetic deposits between the pulser ring [1] and wheel speed sensor [2], and the pulser ring slots for obstructions. Check the installation condition of the pulser ring or wheel speed sensor for looseness.

Check the pulser ring and sensor tip for deformation or damage (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 Input Voltage Inspection

Turn the ignition switch OFF.

Disconnect the front wheel speed sensor 2P (Blue) connector [1].

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

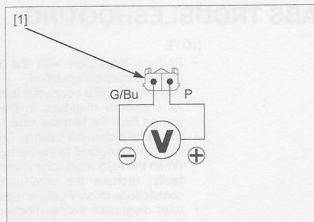
Measure the voltage at the front wheel speed sensor 2P (Blue) connector of the wire side.

Connection: Pink (+) – Green/blue (-)

Is there battery voltage?

YES – Faulty front wheel speed sensor

NO – GO TO STEP 4.



4. Front Wheel Speed Sensor Line Short Circuit Inspection

Turn the ignition switch OFF.

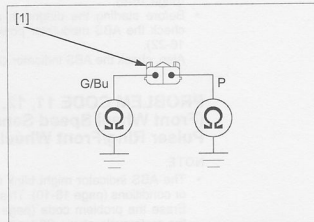
Check for continuity between each terminal of the wire side front wheel speed sensor 2P (Blue) connector [1] and ground.

**Connection: Pink – Ground
Green/blue – Ground**

Is there continuity?

YES – • Short circuit in Pink wire
• Short circuit in Green/blue wire

NO – GO TO STEP 5.



5. Speed Sensor Line Open Circuit Inspection

Disconnect the ABS modulator 25P connector [1].

Short the Pink and Green/blue wire terminals of the wire harness side ABS modulator 25P connector with a jumper wire [2].

TOOL:

Test probe

07ZAJ-RDJA110

Check for continuity between the terminals of the wire harness side front wheel speed sensor 2P (Blue) connector [3].

Is there continuity?

YES – GO TO STEP 6.

NO – Open circuit in Pink or Green/blue wire

6. Failure Reproduction with a New Speed Sensor

Replace the front wheel speed sensor with a new one (page 16-25).

Connect the ABS modulator 25P and front wheel speed sensor 2P (Blue) connectors.

Erase the problem code (page 16-9).

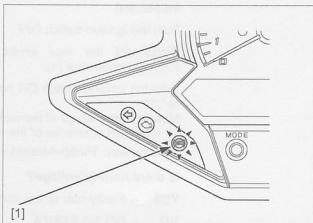
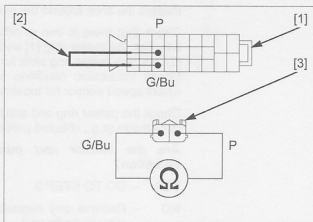
Test ride the motorcycle above 30 km/h (18 mph).

Retrieve the problem code (page 16-8) and recheck the ABS indicator [1].

Dose the ABS indicator indicate the code "11, 12, 21, 41 or 42"?

YES – Faulty ABS modulator

NO – Faulty removed wheel speed sensor


PROBLEM CODE 13, 14, 23 or 43 (Rear Wheel Speed Sensor/Rear Pulser Ring/Rear Wheel Lock)

NOTE:

- The ABS indicator might blink under unusual riding or conditions (page 16-10). This is temporary failure. Erase the problem code (page 16-9) then test ride the motorcycle above 30 km/h (18 mph) and check the problem code by retrieving the self-diagnosis system (page 16-8).
- If the problem code 43 is indicated, check the rear brake for drag.

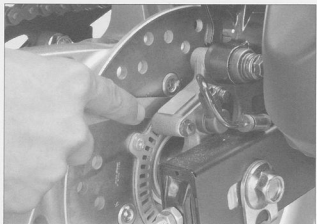
1. Speed Sensor Air Gap Inspection

Measure the air gap between the speed sensor and pulser ring (page 16-24).

Is the air gap correct?

YES – GO TO STEP 2.

NO – Check each part for deformation and looseness and correct accordingly. Recheck the air gap.



ANTI-LOCK BRAKE SYSTEM (ABS)

2. Speed Sensor Condition Inspection

Inspect the area around the speed sensor:

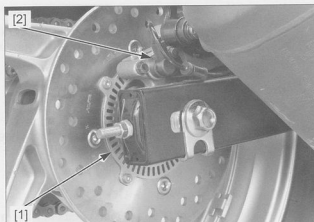
Check that there is iron or other magnetic deposits between the pulser ring [1] and wheel speed sensor [2], and the pulser ring slots for obstructions. Check installation condition of the pulser ring or wheel speed sensor for looseness.

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. Rear Wheel Speed Sensor Input Voltage Inspection

Turn the ignition switch OFF.

Disconnect the rear wheel speed sensor 2P (Orange) connector [1].

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

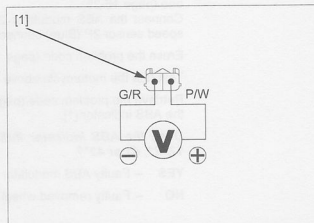
Measure the voltage at the rear wheel speed sensor 2P (Orange) connector of the wire side.

Connection: Pink/white (+) – Green/red (-)

Is there battery voltage?

YES – Faulty rear wheel speed sensor

NO – GO TO STEP 4.



4. Rear Wheel Speed Sensor Line Short Circuit Inspection

Turn the ignition switch OFF.

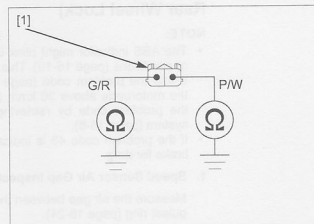
Check for continuity between each terminal of the wire side rear wheel speed sensor 2P (Orange) connector [1] and ground.

**Connection: Pink/white – Ground
Green/red – Ground**

Is there continuity?

YES – • Short circuit in Pink/white wire
• Short circuit in Green/red wire

NO – GO TO STEP 5.



5. Speed Sensor Line Open Circuit Inspection

Disconnect the ABS modulator 25P connector [1].
Short the Pink/white and Green/red wire terminals of the ABS modulator 25P connector with a jumper wire [2].

TOOL:

Test probe

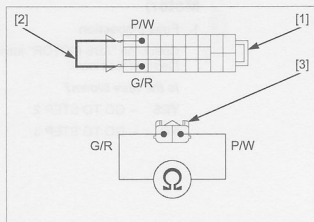
07ZAJ-RDJA110

Check for continuity between the terminals of the wire harness side rear wheel speed sensor 2P (Orange) connector [3].

Is there continuity?

YES – GO TO STEP 6.

NO – Open circuit in Pink/white or Green/red wire



6. Failure Reproduction with a New Speed Sensor

Replace the rear wheel speed sensor with a new one (page 16-26).

Connect the ABS modulator 25P and rear wheel speed sensor 2P (Orange) connectors.

Erase the problem code (page 16-9).

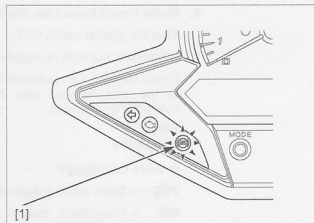
Test ride the motorcycle above 30 km/h (18 mph).

Retrieve the problem code (page 16-8) and recheck the ABS indicator [1].

Does the ABS indicator indicate the code "13, 14, 23 or 43"?

YES – Faulty ABS modulator

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 16-9).

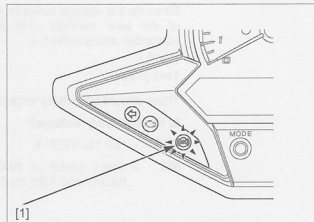
Test ride the motorcycle above 30 km/h (18 mph).

Retrieve the problem code (page 16-8) and recheck the ABS indicator [1].

Does the ABS indicator indicate the code "31, 32, 33, 34, 37 or 38"?

YES – Faulty ABS modulator

NO – Solenoid valve is normal (intermittent failure).



ANTI-LOCK BRAKE SYSTEM (ABS)

PROBLEM CODE 51, 52 or 53 (Pump Motor)

1. Fuse Inspection

Check the "ABS MOTOR" fuse (30 A) [1] in the ABS fuse box for blown.

Is the fuse blown?

YES – GO TO STEP 2.

NO – GO TO STEP 3.



2. Motor Power Input Line Short Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ABS modulator 25P connector [1].

Check for continuity between the Red wire terminal of the wire harness side ABS modulator 25P connector and ground.

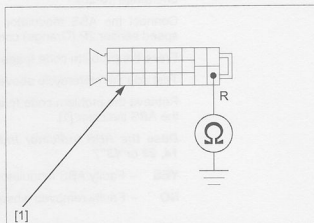
TOOL:

07ZAJ-RDJA110

Is there continuity?

YES – Short circuit in Red wire

NO – Intermittent failure. Replace the "ABS MOTOR" fuse (30 A) with a new one, and recheck.



3. Motor Power Input Line Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ABS modulator 25P connector [1].

Measure the voltage between Red wire terminal (+) of the wire harness side ABS modulator 25P connector and ground (-).

TOOL:

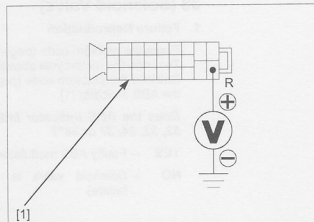
07ZAJ-RDJA110

There should be battery voltage at all times.

Is there battery voltage?

YES – GO TO STEP 4.

NO – Open circuit in Red wire between the battery and ABS modulator 25P connector



4. Failure Reproduction

Turn the ignition switch OFF.

Connect the ABS modulator 25P connector.

Erase the problem code (page 16-9).

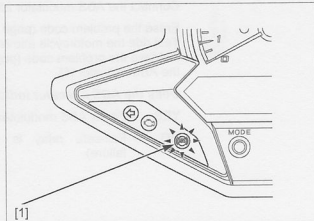
Test ride the motorcycle above 30 km/h (18 mph).

Retrieve the problem code (page 16-8) and recheck the ABS indicator [1].

Does the ABS indicator indicate the code "51, 52 or 53"?

YES – Faulty ABS modulator

NO – Pump motor is normal (intermittent failure).



PROBLEM CODE 54 (Fail-safe Relay)

1. Fuse Inspection

Check the "ABS FAIL SAFE RELAY" fuse (30 A) [1] in the ABS fuse box for blown.

Is the fuse blown?

YES – GO TO STEP 2.

NO – GO TO STEP 3.



2. Relay Power Input Line Short Circuit Inspection

Turn the ignition switch OFF.

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

TOOL:

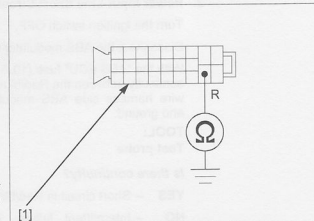
Test probe

07ZAJ-RDJA110

Is there continuity?

YES – Short circuit in Red wire

NO – Intermittent failure. Replace the "ABS FAIL SAFE RELAY" fuse (30 A) with a new one, and recheck.



3. Relay Power Input Line Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ABS modulator 25P connector [1]. Measure the voltage between Red wire terminal (+) of the wire harness side ABS modulator 25P connector and ground (-).

TOOL:

Test probe

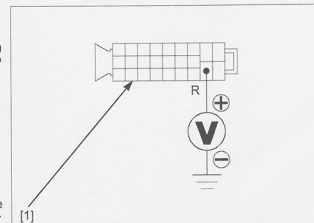
07ZAJ-RDJA110

There should be battery voltage at all times.

Is there battery voltage?

YES – GO TO STEP 4.

NO – Open circuit in Red wire between the battery and ABS modulator 25P connector



ANTI-LOCK BRAKE SYSTEM (ABS)

4. Failure Reproduction

Connect the ABS modulator 25P connector.

Erase the problem code (page 16-9).

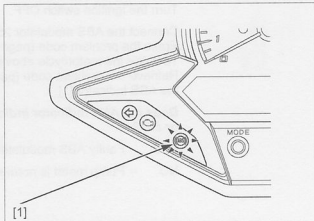
Test ride the motorcycle above 30 km/h (18 mph).

Retrieve the problem code (page 16-8) and recheck the ABS indicator [1].

Does the ABS indicator indicate the code "54"?

YES – Faulty ABS modulator

NO – Fail-safe relay is normal (intermittent failure)



PROBLEM CODE 61 or 62 (Power Circuit)

1. Fuse Inspection

Check the "ABS ECU" fuse (10 A) [1] in the fuse box for blown.

Is the fuse blown?

YES – GO TO STEP 2.

NO – GO TO STEP 3.



2. Power Input Line Short Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ABS modulator 25P connector [1].

With the "ABS ECU" fuse (10 A) removed, check for continuity between the Red/blue wire terminal of the wire harness side ABS modulator 25P connector and ground.

TOOL:

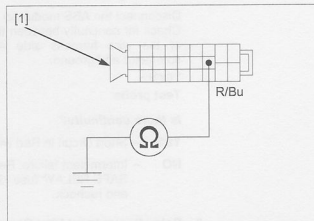
Test probe

07ZAJ-RDJA110

Is there continuity?

YES – Short circuit in Red/blue wire

NO – Intermittent failure. Replace the "ABS ECU" fuse (10 A) with a new one, and recheck.



3. Power Input Line Open Circuit Inspection

Turn the ignition switch OFF.

Disconnect the ABS modulator 25P connector [1].

Measure the voltage between the Red/blue wire terminal (+) of the wire harness side ABS modulator 25P connector and ground (-).

TOOL:

Test probe

07ZAJ-RDJA110

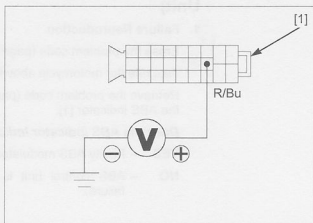
There should be battery voltage with the ignition switch turned ON and engine stop switch to "O".

Is there battery voltage?

YES - GO TO STEP 4.

NO -

- Open circuit in Red/blue or Black/red wire between the ABS modulator 25P connector and ignition switch
- If the wire is OK, check the charging system (page 17-7).



4. Failure Reproduction

Connect the ABS modulator 25P connector.

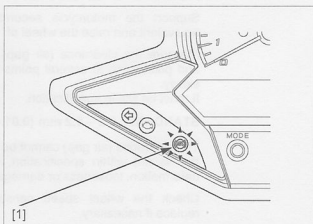
Erase the problem code (page 16-9).

Test ride the motorcycle above 30 km/h (18 mph). Retrieve the problem code (page 16-8) and recheck the ABS indicator [1].

Does the ABS indicator indicate the code "61 or 62"?

YES - Faulty ABS modulator

NO - Power circuit is normal (intermittent 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 16-9).

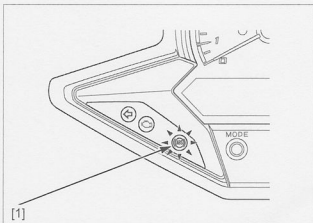
Test ride the motorcycle above 30 km/h (18 mph).

Retrieve the problem code (page 16-8) and recheck the ABS indicator [1].

Does the ABS indicator indicate the code "71"?

YES - Faulty ABS modulator

NO - Tire size is normal (intermittent failure)



PROBLEM CODE 81 (ABS Control Unit)

1. Failure Reproduction

Erase the problem code (page 16-9).

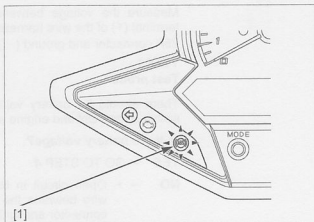
Test ride the motorcycle above 30 km/h (18 mph).

Retrieve the problem code (page 16-8) and recheck the ABS indicator [1].

Does the ABS indicator indicate the code "81"?

YES – Faulty ABS modulator

NO – ABS control unit is normal (intermittent failure)



WHEEL SPEED SENSOR

AIR GAP INSPECTION

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

Measure the clearance (air gap) between the sensor and pulser ring at several points by turning the wheel slowly.

It must be within specification.

STANDARD: 0.2 – 1.2 mm (0.01 – 0.05 in)

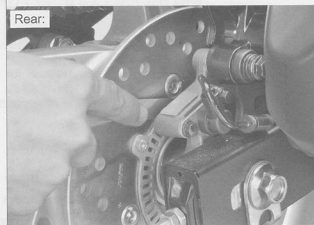
The clearance (air gap) cannot be adjusted.

If it is not within specification, check each part for deformation, looseness or damage.

Check the wheel speed sensor for damage, and replace if necessary.

Check the pulse ring for deformation or damage, and replace if necessary.

- Front pulser ring (page 13-16)
- Rear pulser ring (page 14-7)



WHEEL SPEED SENSOR REPLACEMENT

NOTE:

Refer to procedure for the pulser ring removal/ installation.

- Front pulser ring (page 13-16)
- Rear pulser ring (page 14-7)

FRONT WHEEL SPEED SENSOR REMOVAL/ INSTALLATION

Remove the following:

- Middle cowls (page 2-7)
- Front wheel (page 13-14)

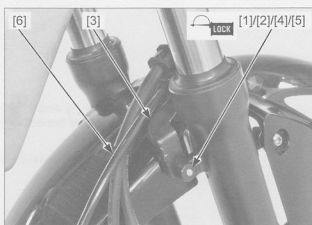
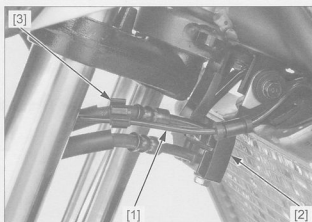
Remove the front wheel speed sensor 2P (Blue) connector [1] from the frame and disconnect the connector.

Remove the sensor wire [1] from the stay [2] and clamp [3].

Remove the nut and right front side reflector (page 2-12).

Remove the front fender mounting bolt [1], washer [2], hose guide [3], collar [4], grommet [5].

Remove the sensor wire [6] from the hose guide.



ANTI-LOCK BRAKE SYSTEM (ABS)

Remove the bolt [1], sensor wire guide [2] and front wheel speed sensor.

Installation is in the reverse order of removal.

NOTE:

Apply locking agent to the front fender mounting bolt threads.

TORQUE:

Front side reflector stay mounting nut:
1.5 N·m (0.2 kgf-m, 1.1 lbf-ft)



REAR WHEEL SPEED SENSOR REMOVAL/INSTALLATION

Remove the following:

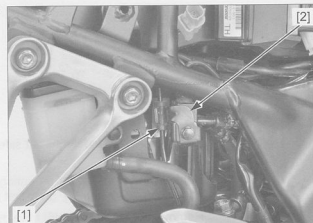
- Right side cover (page 2-16)
- Drive chain cover (page 2-13)

Remove the rear wheel speed sensor 2P (Orange) connector [1] from the frame and disconnect the connector.

Remove the screw [2] and ABS modulator cover B [3].



Release the sensor wire [1] from the sensor wire clamp [2].



Remove the screw [1] and brake hose guide [2], and release the rear wheel sensor wire from the brake hose guide.

Release the rear wheel sensor wire from the clamp [3].



Remove the bolt [1], sensor wire clamp [2] from the rear brake caliper bracket.

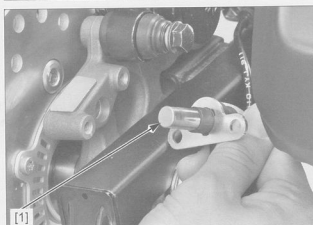
Remove the rear wheel speed sensor mounting bolts [3].



Remove the rear wheel speed sensor [1] from the caliper bracket.

Clean around the mounting area of the caliper bracket thoroughly, and be sure that no foreign material is allowed to enter the mounting hole.

Installation is in the reverse order of removal.



ABS MODULATOR/COVER

ABS MODULATOR COVER REMOVAL/INSTALLATION

Remove the screw [1] and ABS modulator cover B [2].

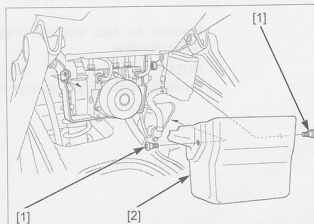


Remove the following:

- Rear wheel (page 14-6)
- Drive chain cover (page 2-13)

Remove the screws [1] and ABS modulator cover A [2].

Installation is in the reverse order of removal.



ANTI-LOCK BRAKE SYSTEM (ABS)

ABS MODULATOR REMOVAL/ INSTALLATION

NOTE:

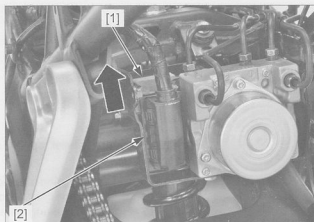
Be careful not to bend or damage the brake pipes during assembly or removal.

Drain the brake fluid from the lever/pedal brake line hydraulic systems (page 15-10).

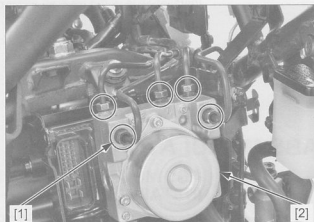
Remove the following:

- ABS modulator cover A/B (page 16-27)
- Rear fender B (page 2-18)

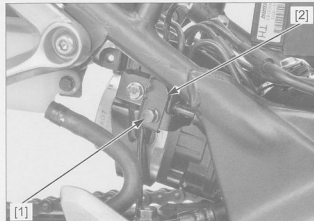
Pull up the lock lever [1] and disconnect the ABS modulator 25P connector [2].



Loosen the brake pipe joint nuts [1] and disconnect the brake pipes from the ABS modulator [2].



Remove the brake pipe 2-way joint bolt [1] and sensor wire clamp [2].



Remove the ABS modulator mounting bolts [1] and ABS modulator.

NOTE:

Be careful not to bent or damage the brake pipes.



Installation is in the reverse order of removal.

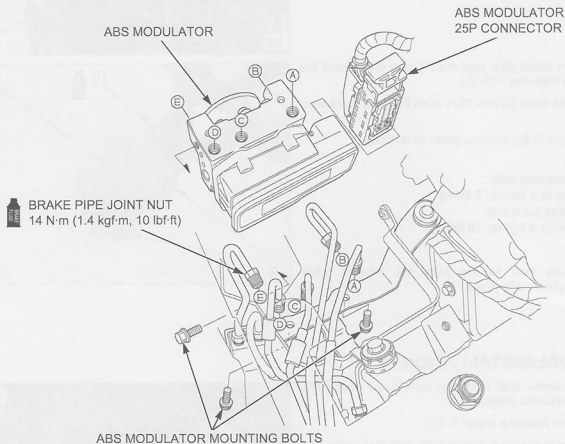
NOTE:

Apply brake fluid to the brake pipe joint nut threads while connecting the brake pipes.

TORQUE:

Brake pipe joint nut:

14 N·m (1.4 kgf·m, 10 lbf·ft)

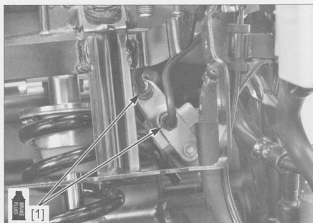


PCV

REMOVAL/INSTALLATION

Remove the ABS modulator (page 16-28).

Loosen the brake pipe joint nuts [1].



ANTI-LOCK BRAKE SYSTEM (ABS)

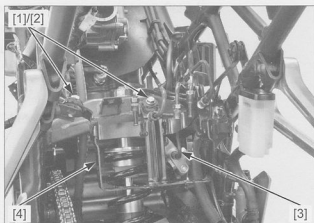
Remove the bolts [1] and collars [2].

Disconnect the brake pipe [3] from the PCV.

Remove the ABS modulator bracket/PCV [4] by releasing its bracket grommets from the frame bosses.

NOTE:

Be careful not to bent or damage the brake pipes.



Loosen the brake pipe joint nut [1], and disconnect the brake pipe from the PCV [2].

Remove the bolts [3] and PCV from the ABS modulator bracket.

Installation is in the reverse order of removal.

TORQUE:

PCV mounting bolt:

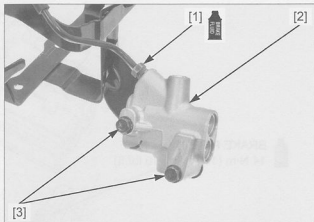
10 N·m (1.0 kgf·m, 7 lbf·ft)

Brake pipe joint nut:

14 N·m (1.4 kgf·m, 10 lbf·ft)

NOTE:

Apply brake fluid to the joint nut threads while connecting the brake pipes.



DELAY VALVE

REMOVAL/INSTALLATION

Drain the brake fluid from the lever/pedal brake line hydraulic systems (page 15-10).

Remove the fuel tank (page 5-39).

Loosen the brake pipe joint nut [1], and disconnect the brake pipe from the delay valve [2].

Remove the bolts [3] and delay valve.

Installation is in the reverse order of removal.

TORQUE:

Delay valve mounting bolt:

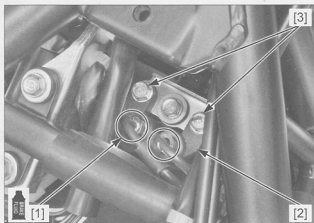
10 N·m (1.0 kgf·m, 7 lbf·ft)

Brake pipe joint nut:

14 N·m (1.4 kgf·m, 10 lbf·ft)

NOTE:

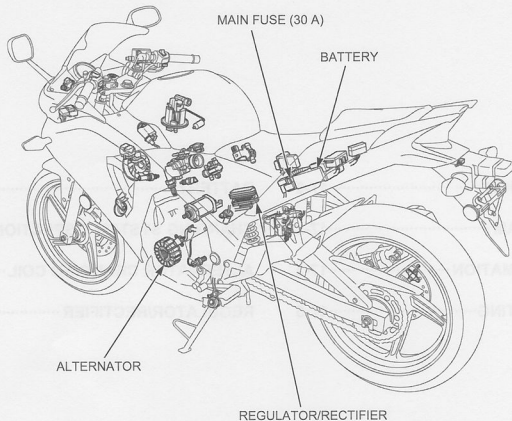
Apply brake fluid to the joint nut threads while connecting the brake pipes.



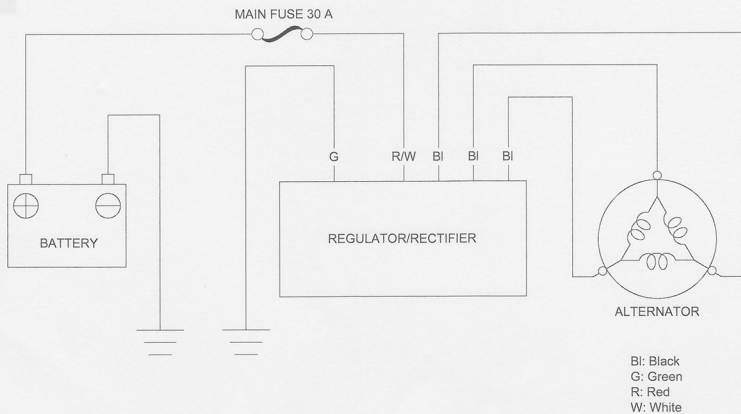
17. BATTERY/CHARGING SYSTEM

SYSTEM LOCATION.....	17-2	BATTERY.....	17-6
SYSTEM DIAGRAM.....	17-2	CHARGING SYSTEM INSPECTION.....	17-7
SERVICE INFORMATION.....	17-3	ALTERNATOR CHARGING COIL.....	17-8
TROUBLESHOOTING.....	17-5	REGULATOR/RECTIFIER.....	17-8

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 a physician immediately.

NOTICE

- Always turn OFF the ignition switch before disconnecting any electrical component.
- Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is ON and current is present.
- For extended storage, remove the battery, give it a full charge, and store it in a cool, dry space. For maximum service life, charge the stored battery every 2 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 a 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 tail light 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 2 weeks to prevent sulfation from occurring.
- When checking the charging system, always follow the steps in the troubleshooting flow chart (page 17-5).
- For alternator removal (page 11-5).

BATTERY CHARGING

- Turn power ON/OFF at the charger, not at the battery terminal.
- For battery charging, do not exceed the charging current and time specified on the battery. Using excessive current or extending the charging time may damage the battery.
- Quick charging should only be done in an emergency; slow charging is preferred.

BATTERY TESTING

Refer to the instruction of the Operation Manual for the recommended battery tester for details about battery testing. The recommended battery tester puts a "load" on the battery so the actual battery condition can be measured.

RECOMMENDED BATTERY TESTER: Micro 404XL (U.S.A. only)

SPECIFICATIONS

ITEM			SPECIFICATION
Battery	Type		YTX7L-BS
	Capacity		12 V - 6 Ah
	Current leakage		0.34 mA max.
	Voltage (20°C/ 68°F)	Fully charged	13.0 – 13.2 V
		Needs charging	Below 12.3 V
	Charging current	Normal	0.6 A/5 – 10 h
		Quick	3 A/1 h
Alternator	Capacity		0.34 kW/5,000 rpm
	Charging coil resistance (20°C/68°F)		0.1 – 1.0 Ω

TOOLS

A vintage Christie portable battery charger. The device is a rectangular box with a carrying handle on top. It features four analog gauges: two on the left labeled 'AMPERES' and 'VOLTS', and two on the right labeled 'AMPERES' and 'VOLTS'. Below the gauges are four control knobs. The brand name 'CHRISTIE' is prominently displayed in the center. Two sets of battery clips with connecting cables are shown in the foreground, attached to the bottom of the unit. The text 'AUTOMATIC BATTERY CHARGER' is visible above the brand name.

TROUBLESHOOTING

BATTERY IS DAMAGED OR WEAK

1. BATTERY TEST

Remove the battery (page 17-6).

Check the battery condition using a 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 17-6).

Check the battery current leakage test (Leak test; page 17-7).

Is the current leakage below 0.34 mA?

YES – GO TO STEP 4.

NO – GO TO STEP 3.

3. CURRENT LEAKAGE TEST WITHOUT REGULATOR/RECTIFIER CONNECTOR

Disconnect the regulator/rectifier 5P connector and recheck the battery current leakage.

Is the current leakage below 0.34 mA?

YES – Faulty regulator/rectifier

NO – • Shorted wire harness
• Faulty ignition switch

4. CHARGING VOLTAGE INSPECTION

Measure and record the battery voltage using a digital multimeter (page 17-6).

Start the engine.

Measure the charging voltage (page 17-7).

Compare the measurements to the results of the following calculation.

STANDARD:

Measured BV < Measured CV < 15.5 V

- BV = Battery Voltage
- CV = Charging Voltage

Is the measured charging voltage within the standard voltage?

YES – Faulty battery

NO – GO TO STEP 5.

5. ALTERNATOR CHARGING COIL INSPECTION

Check the alternator charging coil (page 17-8).

Is the alternator charging coil resistance within 0.1 – 1.0 Ω (20°C/68°F)?

YES – Faulty charging coil

NO – GO TO STEP 6.

6. REGULATOR/RECTIFIER SYSTEM INSPECTION

Check the voltage and resistance at the regulator/rectifier 5P connector (page 17-8).

Are the measurements correct?

YES – Faulty regulator/rectifier

NO – • Open circuit in related wire
• Loose or poor contacts of related terminal
• Shorted wire harness

BATTERY

REMOVAL/INSTALLATION

Remove the rider seat (page 2-6).

Turn the ignition switch OFF.

Disconnect the negative (-) cable [1] first and then the positive (+) cable [2].

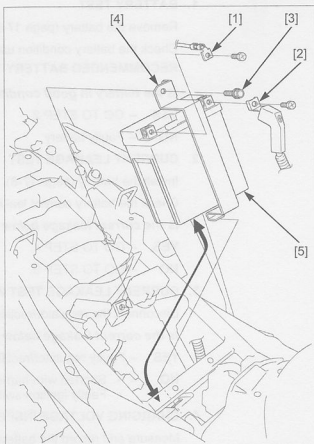
Remove the bolt [3], battery holder plate [4] and battery [5].

Install the battery in the reverse order of removal.

Connect the positive cable first and then the negative cable.

NOTE:

- Install the battery holder plate by aligning its hook with the slot of the rear fender B.
- For digital clock setting procedure (page 20-8).



VOLTAGE INSPECTION

Measure the battery voltage using a commercially available digital multimeter.

VOLTAGE (20°C/68°F):

Fully charged: 13.0 – 13.2 V

Under charged: Below 12.3 V

If the battery voltage is below 12.3 V, charge the battery.



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)

Remove the battery (page 17-6).

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 rider seat (page 2-6).

With the ignition switch turned OFF, disconnect the negative (-) cable [1].

Connect the ammeter (+) probe to the wire harness negative (-) cable and ammeter (-) probe to the battery negative (-) terminal [2].

With the ignition switch turned OFF, check for current leakage.

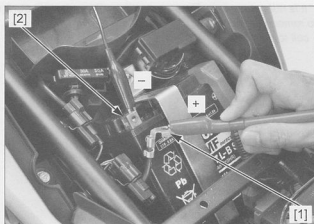
NOTE:

- When measuring current using a tester, set it to a high range, and then bring the range down to an appropriate level. Current flow higher than the range selected may blow the fuse in the tester.
- While measuring current, do not turn the ignition switch ON and engine stop switch to "C". A sudden surge of current may blow the fuse in the tester.

SPECIFIED CURRENT LEAKAGE: 0.34 mA max.

If current leakage exceeds the specified value, a shorted circuit is likely.

Locate the short by disconnecting connections one by one and measuring the current.



CHARGING VOLTAGE INSPECTION

Remove the rider seat (page 2-6).

Be sure the battery is in good condition before performing this test.

Warm up the engine to normal operating temperature.

Connect the multimeter between the battery positive (+) terminal [1] and negative (-) terminal [2].

NOTE:

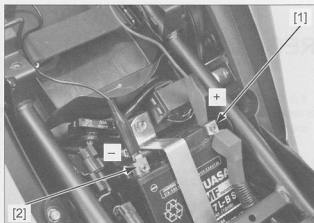
- To prevent a short, make absolutely certain which are the positive (+) and negative (-) terminal or cable.
- Do not disconnect the battery or any cable in the charging system without first turning the ignition switch OFF. Failure to follow this precaution can damage the tester or electrical components.

With the headlight high beam, measure the voltage on the multimeter when the engine runs at 5,000 rpm.

STANDARD:

Measured BV < Measured CV < 15.5 V

- BV = Battery Voltage
- CV = Charging Voltage



BATTERY/CHARGING SYSTEM

ALTERNATOR CHARGING COIL

INSPECTION

It is not necessary to remove the stator coil to perform this test.

Disconnect the alternator 3P connector [1].



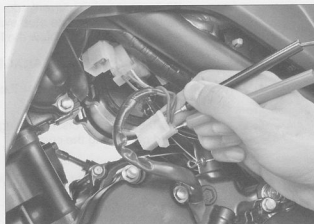
Measure the resistance between the Black wire terminals of the alternator side connector.

STANDARD: 0.1 – 1.0 Ω (20°C/68°F)

Check for continuity between each wire terminal of the alternator/stator side connector and ground. There should be no continuity.

Replace the alternator stator if the resistance is out of specification, or if any wire has continuity to ground.

For stator replacement (page 11-5).



REGULATOR/RECTIFIER

SYSTEM INSPECTION

It is not necessary to remove the stator coil to perform this test.

Turn the ignition switch OFF.

Disconnect the regulator/rectifier 5P connector [1], and check it for loose contacts or corroded terminals.



If the charging voltage reading (page 17-7) is out of the specification, check the following at the wire harness side connector:

Item	Terminal	Specification
Battery charging line	Red/white (+) and ground (-)	Battery voltage should register
Charging coil line	Black and Black	0.1 – 1.0 Ω at (20°C/68°F)
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 connector, replace the regulator/rectifier unit.



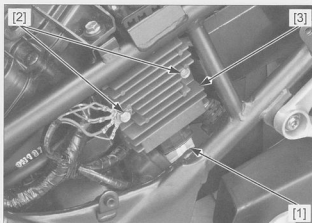
REMOVAL/INSTALLATION

Remove the side cover (page 2-16).

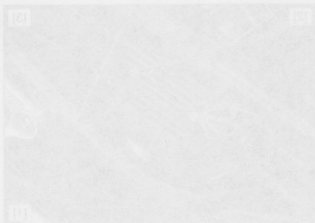
Disconnect the regulator/rectifier 5P connector [1].

Remove the bolts [2], ground terminals and regulator/rectifier [3] from the frame.

Install the regulator/rectifier in the reverse order of removal.



MEMO

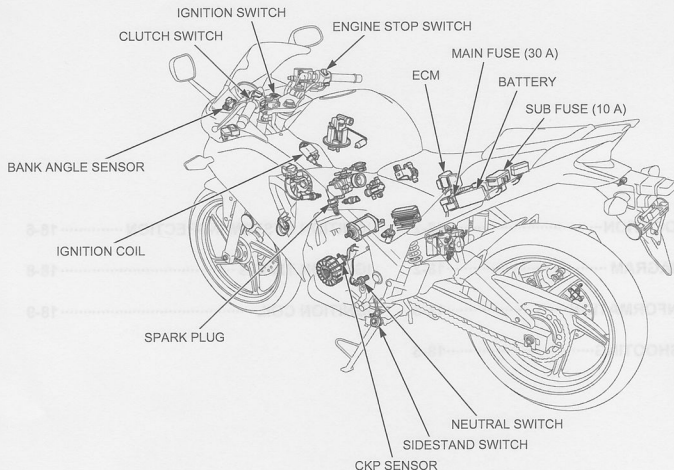


REMOVAL/INSTALLATION
Remove the side cover (page 2-16).
Disconnect the negative (-) terminal (-).
Remove the side (-) ground terminal and negative
terminal (-) from the frame.
Install the negative (-) terminal in the correct order of
terminal.

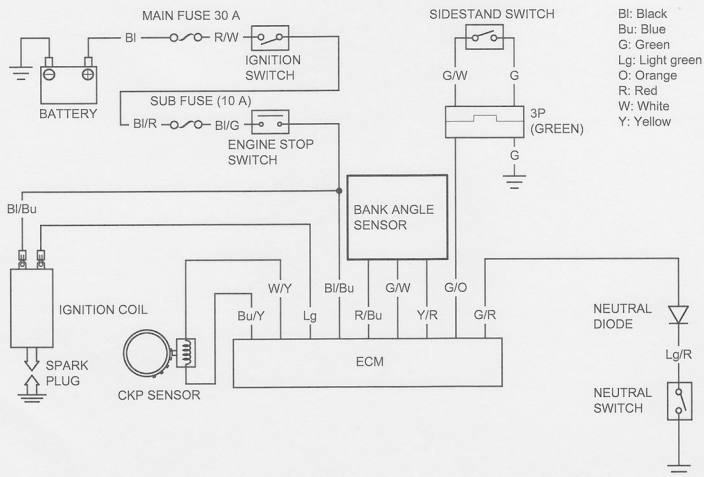
18. IGNITION SYSTEM

SYSTEM LOCATION	18-2	IGNITION SYSTEM INSPECTION	18-6
SYSTEM DIAGRAM	18-2	IGNITION TIMING	18-8
SERVICE INFORMATION	18-3	IGNITION COIL	18-9
TROUBLESHOOTING	18-5		

SYSTEM LOCATION



SYSTEM DIAGRAM



SERVICE INFORMATION

GENERAL

NOTICE

- 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.
- Use spark plug of the correct heat range. Using a spark plug with an incorrect heat range can damage the engine.
- When servicing the ignition system, always follow the steps in the troubleshooting table (page 18-5).
- Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is turned to ON position and current is present.
- A faulty ignition system is often related to poorly connected or corroded connections. Check those connections before proceeding.
- Make sure the battery is adequately charged. Using the starter motor with a weak battery results in a slower engine cranking speed as well as no spark at the spark plug.
- For CKP sensor service (page 18-7).
- For ECM service (page 5-56).
- Refer to following components informations:
 - Ignition switch (page 20-13)
 - Engine stop switch (page 20-14)
 - Bank angle sensor (page 5-55)
 - Sidestand switch (page 20-17)
 - Neutral switch (page 20-16)

SPECIFICATIONS

ITEM	SPECIFICATION
Spark plug	SIMR8A9 (NGK)
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)	10° BTDC at idle

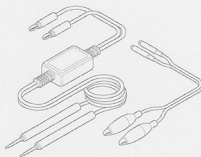
TORQUE VALUE

Timing hole cap

6.0 N·m (0.6 kgf·m, 4.4 lbf·ft)

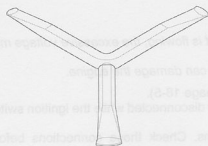
Apply engine oil to the threads.

TOOLS

IgnitionMate peak voltage tester
MTP07-0286 (U.S.A. only)Peak voltage adaptor
07HGJ-0020100 (Not available in
U.S.A.)with commercially available digital
multimeter (impedance 10 MΩ/DCV
minimum)Test probe
07ZAJ-RDJA110

IGNITION SYSTEM

Timing cap wrench
07709-0010001



SERVICE INFORMATION

GENERAL

NOTICE

- The ECM may be damaged if damaged. After the procedure is disconnected when connect is not.
- damage the module. Always turn off the ignition switch before working.
- Use great care of the correct fuel range. Using a spark plug with an incorrect heat range can damage the engine.
- When servicing the ignition system, always follow the steps in the troubleshooting steps (page 15-5).
- Some electrical components may be damaged if terminals or connections are connected to disconnected or if the ignition switch is turned to ON position and current is present.
- A faulty ignition system is often related to poorly connected or corroded connections. Check the connections before proceeding.
- Make sure the battery is adequately charged. Using the system under with a weak battery may cause a short engine starting.
- Make sure the spark plug is properly changed. Using the wrong spark plug with a weak battery may cause a short engine starting.
- For CKP sensor service (page 15-7).
- For ECU service (page 15-8).
- Refer to following components information:
 - Ignition system (page 15-10)
 - Ignition coil pack (page 15-11)
 - Ignition coil pack (page 15-11)
 - Ignition coil pack (page 15-11)
 - Ignition coil pack (page 15-11)
 - Ignition coil pack (page 15-11)

SPECIFICATIONS

ITEM	SPECIFICATION
Spark plug	Spark plug (page 15-11)
Ignition coil pack voltage	Ignition coil pack voltage (page 15-11)
CKP sensor peak voltage	CKP sensor peak voltage (page 15-11)
Ignition timing (°)	Ignition timing (°) (page 15-11)

TORQUE VALUE

Torque value (page 15-11)

TOOLS

Ignition coil pack voltage tester MT907-0288 (U.S.A. only)	Ignition coil pack voltage tester MT907-0288 (U.S.A. only)
Ignition coil pack voltage tester MT907-0288 (U.S.A. only)	Ignition coil pack voltage tester MT907-0288 (U.S.A. only)
Ignition coil pack voltage tester MT907-0288 (U.S.A. only)	Ignition coil pack voltage tester MT907-0288 (U.S.A. only)

TROUBLESHOOTING

- Inspect the following before diagnosing the system.
 - Faulty spark plug
 - Loose spark plug cap or spark plug wire connection
 - Water got into the spark plug cap (Leaking the ignition coil secondary voltage)
- If there is no spark at cylinder, temporarily exchange the ignition coil with a known-good one and perform the spark test. If there is spark, the original ignition coil is faulty.
- "Initial voltage" of the ignition primary coil is the battery voltage with the ignition switch turned ON and engine stop switch "C" (The engine is not cranked by the starter motor).

No spark at spark plug

Unusual condition		Probable cause (Check in numerical order)
Ignition coil primary voltage	No initial voltage with the ignition switch turned ON and engine stop switch "C" (Other electrical components are normal).	1. Faulty ignition switch 2. An open circuit in Black/blue wire between the ignition coil and engine stop switch 3. An open circuit in Black/green and/or Black/red wires between the engine stop switch and ignition switch 4. Loose or poor connection of the primary terminal, or an open circuit in the primary coil 5. Faulty ECM (in case when the initial voltage is normal with the ECM connector disconnected). 6. Faulty engine stop switch
	Initial voltage is normal, but it drops by 2 – 4 V while cranking the engine.	1. Incorrect peak voltage adaptor connections (System is normal if measured voltage is over the specifications with reverse connections). 2. Battery is undercharged (Voltage drops largely when the engine is started). 3. No voltage between the Black/blue (+) wire and body ground (–) at the ECM connector or loosen ECM connection 4. An open circuit or loose connection in Green/orange wire at the ECM 5. An open circuit or loose connection in Light green wire between the ignition coil and ECM 6. Faulty sidestand switch or neutral switch 7. Loose or poor connection or an open circuit in No. 6 related wires <ul style="list-style-type: none"> Sidestand switch line: Green/orange, Green/white and Green Neutral switch line: Green/red and Light green/red 8. Faulty CKP sensor (Measure peak voltage) 9. Faulty ECM (in case when above No. 1 through 8 are normal).
	Initial voltage is normal but there is no peak voltage while cranking the engine.	1. Incorrect peak voltage adaptor connections 2. Faulty peak voltage adaptor 3. Faulty CKP sensor 4. Faulty ECM (in case when above No. 1 through 3 are normal).
	Initial voltage is normal but peak voltage is lower than the standard value.	1. The multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed is too slow (Battery is undercharged). 3. The sampling timing of the tester and measured pulse were not synchronized (System is normal if measured voltage is over the standard voltage at least once). 4. Faulty ECM (in case when above No. 1 through 3 are normal).
	Initial and peak voltages are normal but no spark jumps.	1. Faulty spark plug or leaking ignition coil secondary current ampere 2. Faulty ignition coil
CKP sensor	Peak voltage is lower than standard value.	1. The multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed is too low. (Battery is undercharged.) 3. The sampling timing of the tester and measured pulse were not synchronized (System is normal if measured voltage is over the standard voltage at least once). 4. Faulty CKP sensor (in case when above No.1 through 3 are normal).
	No peak voltage	1. Faulty peak voltage adapter 2. Faulty CKP sensor

IGNITION SYSTEM INSPECTION

NOTE:

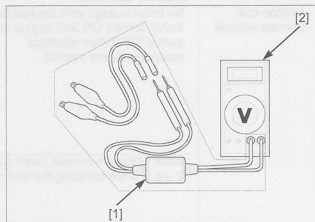
- If there is no spark at the plug, check all connections for loose or poor contact before measuring the peak voltage.
- Use a commercially available digital multimeter with an impedance of 10 M Ω /DCV minimum.
- The display value differs depending upon the internal impedance of the multimeter.
- If 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], or use the peak voltage tester.

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

NOTE:

- Check all system connections before performing this inspection. Loose connectors can cause incorrect readings.
- If the system is disconnected, incorrect peak voltage might be measured.
- Check the cylinder compression and check that the spark plug is installed correctly in the cylinder head.

Shift the transmission into neutral and disconnect the spark plug cap (page 3-8).

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



Remove the left middle cowl (page 2-7).

*Do not disconnect
the ignition coil
primary wire.*

With the ignition coil primary wire connected, connect the peak voltage tester (U.S.A. only) or peak voltage adaptor probes to the ignition coil primary terminal [1] 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 MΩ/DCV minimum)



CONNECTION: Light green (+) – Ground (–)

Shift the transmission into neutral.

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

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

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

PEAK VOLTAGE: 100 V minimum

If the peak voltage is abnormal, follow the checks described in the troubleshooting table (page 18-5).

Install the left middle cowl (page 2-7).

CKP SENSOR PEAK VOLTAGE

NOTE:

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

Disconnect the ECM 33P (Black) connector [1] (page 5-56).

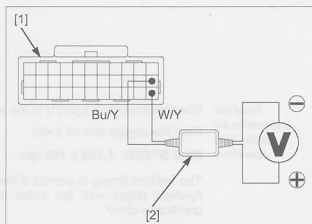
Connect the peak voltage tester (U.S.A. only) or peak voltage adaptor [2] probes to the ECM 33P (Black) connector terminals of the wire harness side.

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 MΩ/DCV minimum)



CONNECTION: Blue/yellow (+) – White/yellow (–)

Shift the transmission into neutral.

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

Crank the engine with the starter motor and measure the CKP sensor peak voltage.

PEAK VOLTAGE: 0.7 V minimum

If the peak voltage measured at the ECM 33P (Black) connector is abnormal, measure the peak voltage at the CKP sensor connector.

IGNITION SYSTEM

Turn the ignition switch OFF.

Disconnect the CKP sensor/neutral switch 6P connector [1] and connect the tester probes to the connector terminals of the CKP sensor side.

CONNECTION: Blue/yellow (+) – White/yellow (-)

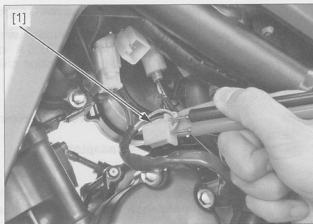
In the same manner as at the ECM 33P (Black) connector, measure the peak voltage and compare it to the voltage measured at the ECM 33P (Black) connector.

NOTE:

- If the peak voltage measured at the ECM is abnormal and the one measured at the CKP sensor is normal, the wire harness has an open or short circuit or loose connection.
- If the peak voltage of the CKP sensor side is lower than standard value, follow the checks described in the troubleshooting table (page 18-5).

For CKP sensor replacement (page 11-5).

Install the removed parts in the reverse order of removal.



IGNITION TIMING

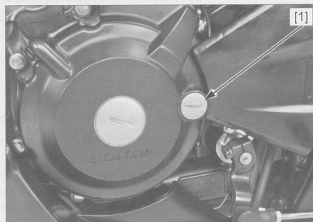
Warm up the engine.

Stop the engine and remove the timing hole cap [1] using a special tool.

TOOL:

Timing cap wrench

07709-0010001



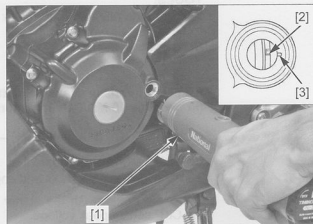
Read the instructions for timing light operation.

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

Start the engine and let it idle.

IDLE SPEED: 1,400 ± 100 rpm

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



Apply engine oil to a new O-ring [1] and install it to the timing hole cap.

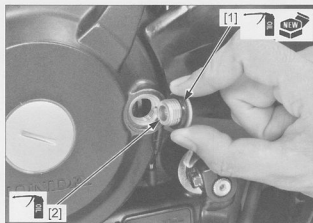
Apply engine oil to the timing hole cap [2] threads. Install and tighten the timing hole cap to the specified torque.

TOOL:

Timing cap wrench

07709-0010001

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



IGNITION COIL

REMOVAL/INSTALLATION

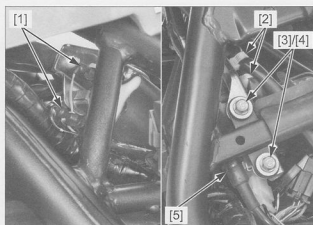
Remove the fuel tank (page 5-39).

Disconnect the spark plug cap (page 3-8).

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

Release the clamps [2] from the ignition coil stay.

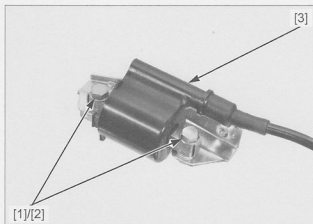
Remove the bolts [3], washers [4] and ignition coil assembly [5].



Remove the bolts [1], spacers [2] and ignition coil [3] from the ignition coil stay.

*Route the wire properly
(page 1-18).*

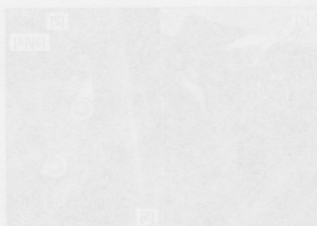
Install the removed parts in the reverse order of removal.





MEMO

Apply torque to a new spark plug with a torque wrench.
 Tighten the cap.
 Apply torque to the firing pin cap (2) through the
 firing pin cap.
 Tighten the firing pin cap to the specified
 torque.
 Tighten the cap.
 TORQUE: 6.5 Nm (6.5 kgf-cm or 4.7 in.-lb)



Remove the fuel tank (page 3-5).
 Disconnect the spark plug (page 3-5).
 Disconnect the primary wire connector (7) from the
 ignition coil.
 Release the spring (2) from the ignition coil cap.
 Remove the cap (2) from the ignition coil.
 Remove the cap (2) from the ignition coil.

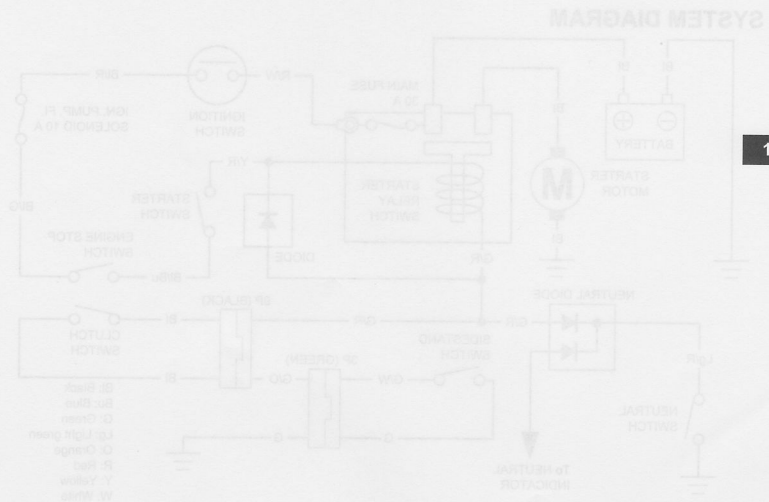


Remove the coil (7) from the ignition coil cap (2).
 Remove the coil (7) from the ignition coil cap (2).
 Remove the coil (7) from the ignition coil cap (2).

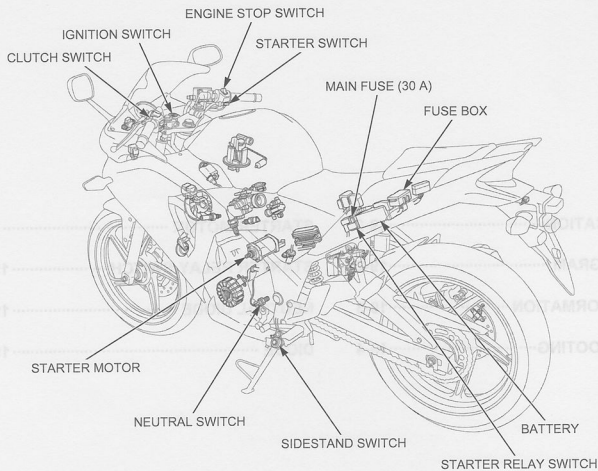
Remove the coil (7) from the ignition coil cap (2).
 Remove the coil (7) from the ignition coil cap (2).
 Remove the coil (7) from the ignition coil cap (2).

19. ELECTRIC STARTER

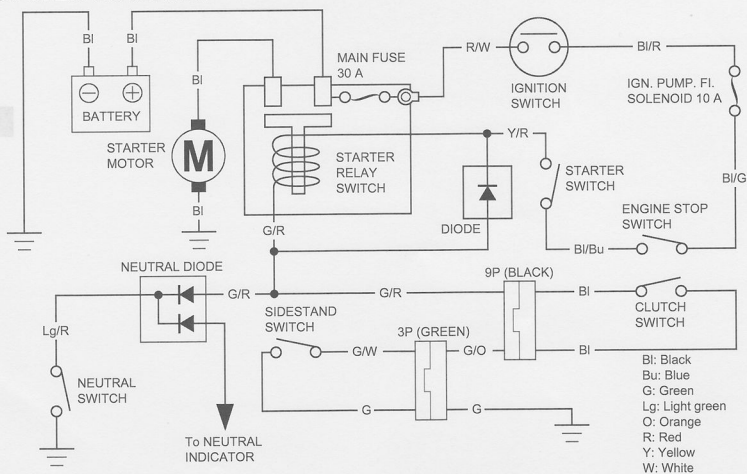
SYSTEM LOCATION.....	19-2	STARTER MOTOR	19-6
SYSTEM DIAGRAM	19-2	STARTER RELAY SWITCH	19-14
SERVICE INFORMATION	19-3	NEUTRAL DIODE	19-16
TROUBLESHOOTING.....	19-4	DIODE	19-16



SYSTEM LOCATION



SYSTEM DIAGRAM



SERVICE INFORMATION

GENERAL

NOTICE

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

- The starter motor can be serviced with the engine installed in the frame.
- Always turn the ignition switch OFF before servicing the starter motor. The motor could suddenly start, causing serious injury.
- A weak battery may be unable to turn the starter motor quickly enough, or supply adequate ignition current.
- When servicing the starter system, always follow the steps in the troubleshooting flow chart (page 19-4).
- Refer to the following components information:
 - Ignition switch (page 20-13)
 - Starter switch (page 20-14)
 - Engine stop switch (page 20-14)
 - Neutral switch (page 20-16)
 - Sidestand switch (page 20-17)
 - Clutch switch (page 20-19)

SPECIFICATION

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Starter motor brush length	11.8 – 12.3 (0.46 – 0.48)	6.5 (0.26)

TORQUE VALUES

Negative brush mounting screw	3.7 N·m (0.4 kgf·m, 2.7 lbf·ft)
Starter motor assembly bolt	4.9 N·m (0.5 kgf·m, 3.6 lbf·ft)

TROUBLESHOOTING

Starter motor does not turn**1. Fuse Inspection**

Check for blown main fuse 30 A or sub fuse 10 A (IGN. PUMP, FI. SOLENOID).

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 (page 17-6).

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.

You should hear the relay "CLICK" when the starter switch button is depressed.

Is there a "CLICK"?

- YES** – GO TO STEP 4.
NO – GO TO STEP 5.

4. Starter Motor Inspection

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

Does the starter motor turn?

- YES** – • Poorly contacted starter motor cable
 • Faulty starter relay switch (page 19-14)
NO – Faulty starter motor (page 19-6)

5. Relay Coil Ground Lines Inspection

Disconnect the starter relay switch connector, and check the relay coil ground wire line as below for continuity:

- Green/red terminal – neutral diode – neutral switch line (with the transmission in neutral and clutch lever released).
- Green/red terminal – clutch switch – sidestand switch (in any gear except neutral, and with the clutch lever pulled in and sidestand up.)

Is there continuity?

- YES** – GO TO STEP 6.
NO – • Loose or poor contact connector
 • Open circuit in wire harness
 • Faulty neutral diode (page 19-16)
 • Faulty neutral switch (page 20-16)
 • Faulty sidestand switch (page 20-17)
 • Faulty clutch switch (page 20-19)

6. Starter Relay Input Voltage Inspection

Connect the starter relay switch connector.

With the ignition switch ON and engine stop switch "O" and the starter switch is pushed, measure the voltage at the starter relay switch connector (between Yellow/red (+) and ground (-)).

Does the battery voltage exist?

- YES** – GO TO STEP 7.
NO – • Faulty ignition switch (page 20-13)
 • Faulty starter switch (page 20-14)
 • Faulty engine stop switch (page 20-14)
 • Loose or poor contact connector
 • Open circuit in wire harness

7. Starter Relay Switch Continuity Inspection

Remove and check the operation of the starter relay switch (page 19-14).

Is there continuity?

- YES** – Loose or poor contact starter relay switch 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 20-19).

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 20-17).

Is the sidestand switch operation normal?

- YES** – • Loose or poor contact connector
• Open circuit in wire harness
NO – Faulty sidestand switch

Starter motor turns slowly

- Low battery voltage
- Poorly connected battery terminal cable
- Poorly connected starter motor cable
- Faulty starter motor
- Poorly connected battery ground cable

Starter motor turns, but engine does not turn

- Starter motor is running backwards
 - Case assembled improperly
 - Terminals connected improperly
- Faulty starter clutch
- Damaged or faulty starter idle gear and/or reduction gear

Starter relay switch "Clicks", but engine does not turn over

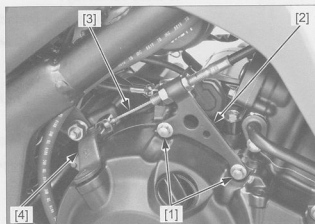
- Crankshaft does not turn due to engine problems

STARTER MOTOR

REMOVAL

Remove the bolts [1] and cable guide [2].

Disconnect the clutch cable [3] from the clutch lifter arm [4].



Remove the cam chain tensioner lifter (page 9-10).

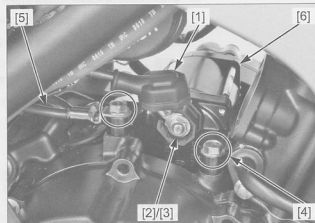
With the ignition switch OFF, remove the negative (-) cable at the battery before servicing the starter motor.

Release the rubber cap [1].

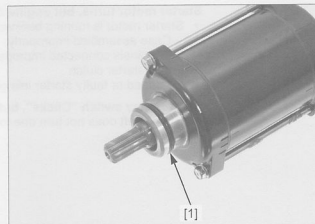
Remove the starter motor terminal nut [2] and starter motor cable [3].

Remove the starter motor mounting bolts [4] and ground cable [5].

Remove the starter motor [6].

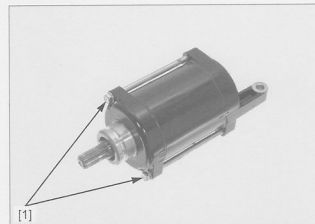


Remove the O-ring [1].

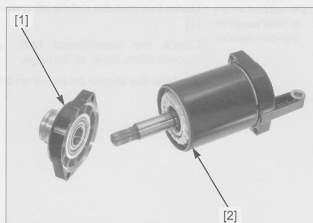


DISASSEMBLY/INSPECTION

Remove the starter motor assembly bolts [1].

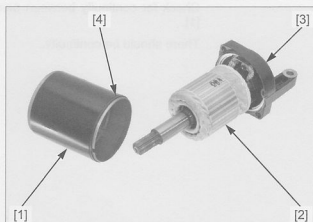


Remove the front cover [1] and seal ring [2].

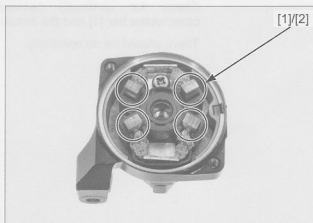


Remove the motor case [1], armature [2] from the rear cover [3].

Remove the seal ring [4] from the motor case.

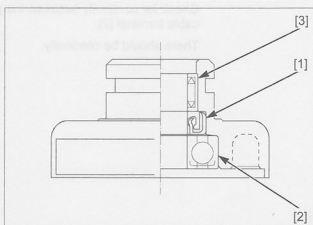


Remove the brushes [1] and springs [2] from the brush holder.



Check the oil seal [1] of the front cover for deterioration or damage.
Check the bearing [2] and needle bearing [3] for wear or damage.

Replace the starter motor as an assembly if necessary.



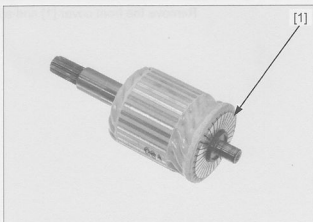
ELECTRIC STARTER

Do not use emery or sand paper on the commutator.

Clean the metallic debris off between commutator bars [1].

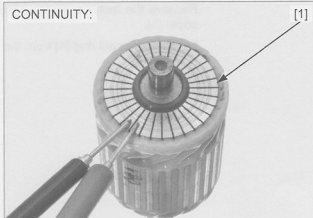
Check the commutator bars of the armature for discoloration, wear or damage.

Replace the starter motor as an assembly if necessary.



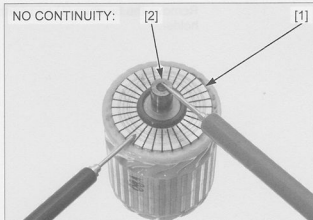
Check for continuity between pair of commutator bars [1].

There should be continuity.



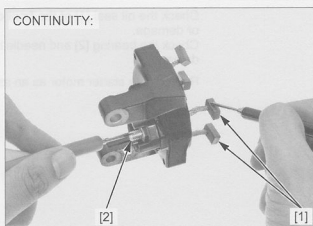
Check for continuity between each individual commutator bar [1] and the armature shaft [2].

There should be no continuity.



Check for continuity between the positive brush [1] and cable terminal [2].

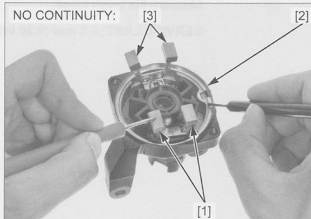
There should be continuity.



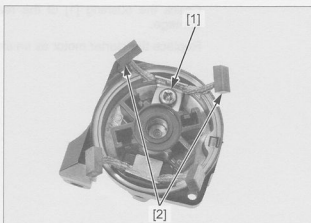
Check for continuity between the positive brush [1] and rear cover [2]. There should be no continuity.

Check for continuity between the positive and negative brushes [3]. There should be no continuity.

There should be no continuity.

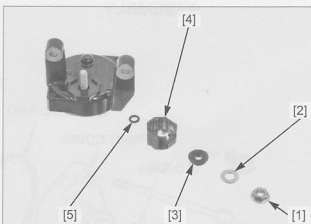


Remove the screw [1] and negative brushes [2] from the rear cover.

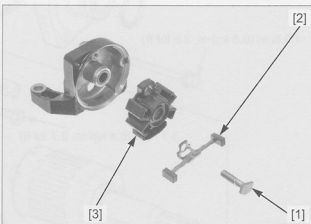


Remove the following:

- Nut [1]
- Washer [2]
- Insulator [3]
- Terminal stopper [4]
- O-ring [5]



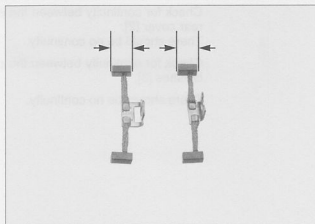
Remove the terminal bolt [1], positive brushes [2] and brush holder [3].



ELECTRIC STARTER

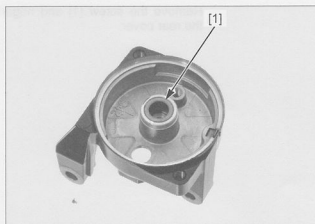
Measure the brush length.

SERVICE LIMIT: 6.5 mm (0.26 in)

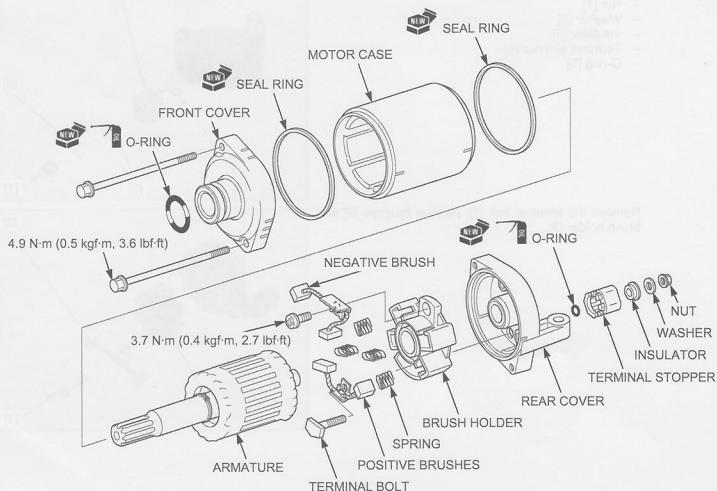


Check the bushing [1] of the rear cover for wear or damage.

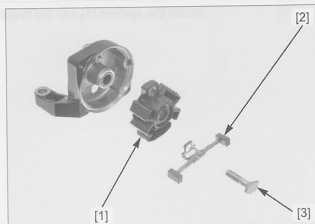
Replace the starter motor as an assembly if necessary.



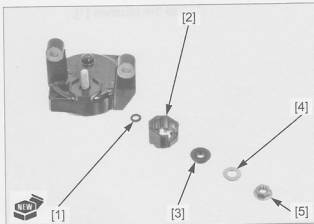
ASSEMBLY



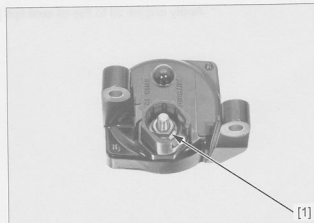
Install the brush holder [1], positive brushes [2] and terminal bolt [3].



Install a new O-ring [1], terminal stopper [2], insulator [3], washer [4] and nut [5].



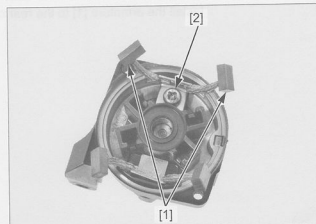
Tighten the nut [1] securely.



Install the negative brushes [1] and screw [2].

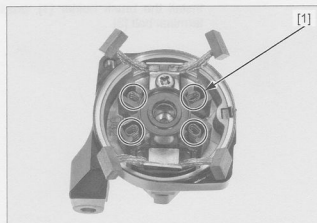
Tighten the screws to the specified torque.

TORQUE: 3.7 N·m (0.4 kgf·m, 2.7 lbf·ft)

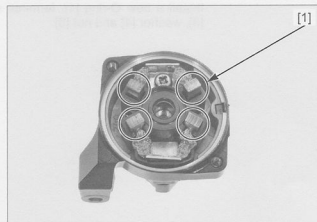


ELECTRIC STARTER

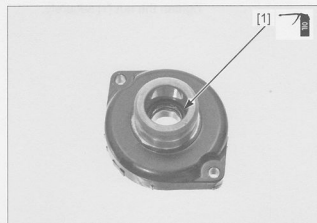
Install the springs [1] into the brush holder.



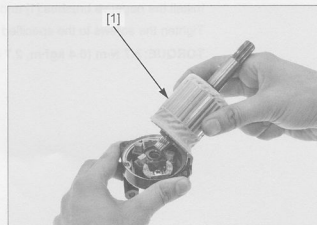
Install the brushes [1].



Apply engine oil to the oil seal lips [1].



Install the armature [1] to the rear cover.

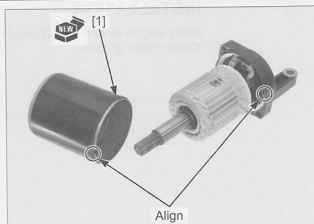


Install a new seal ring [1] to the motor case.

Install the motor case while holding the armature shaft tightly to keep the magnet of the motor case from pulling the armature shaft against it.

NOTICE

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

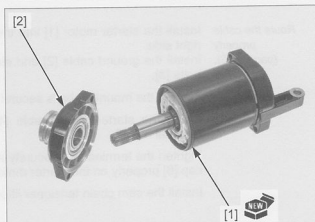


Install a new seal ring [1] to the motor case.

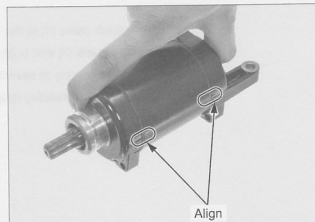
Install the front cover [2] to the motor case.

NOTE:

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

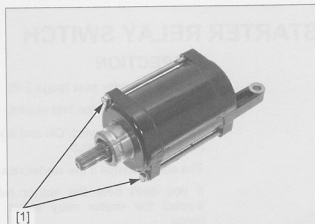


Align the index lines on the covers and motor case.



Install and tighten the starter motor assembly bolts [1] to the specified torque.

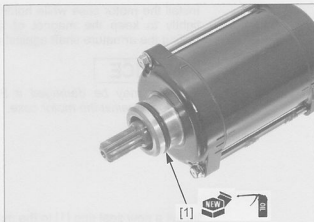
TORQUE: 4.9 N·m (0.5 kgf·m, 3.6 lbf·ft)



ELECTRIC STARTER

INSTALLATION

Apply engine oil to a new O-ring [1] and install it into the starter motor groove.



Route the cable properly (page 1-18).

Install the starter motor [1] into the crankcase from the right side.

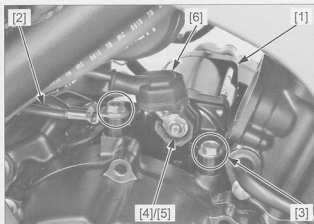
Install the ground cable [2] and starter motor mounting bolts [3].

Tighten the mounting bolts securely.

Install the starter motor cable [4] and starter motor terminal nut [5].

Tighten the terminal nut securely and reposition rubber cap [6] properly on the starter motor terminal.

Install the cam chain tensioner lifter (page 9-10).

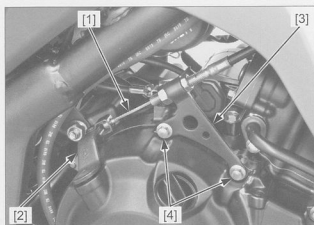


Connect the clutch cable [1] to the clutch lifter arm [2].

Install the cable guide [3] and bolts [4].

Tighten the bolts securely in several steps alternately.

Adjust the clutch lever freeplay (page 3-26).



STARTER RELAY SWITCH

INSPECTION

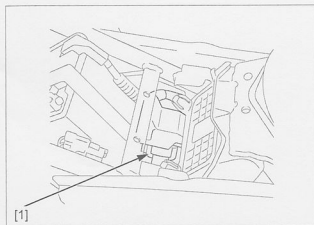
Remove the rider seat (page 2-6).

Shift the transmission into neutral.

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

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

If you don't hear the starter relay switch "CLICK", inspect the starter relay switch using a procedure below.

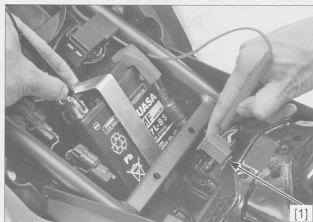


GROUND LINE

Disconnect the starter relay switch 4P (Red) connector [1].

Check for continuity between the Green/red wire of the wire harness side (ground line) and ground.

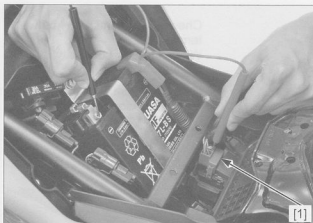
If there is continuity when the transmission is in neutral or when the clutch is disengaged and the sidestand is retracted, the ground circuit of the relay coil is normal. (In neutral, there is a slight resistance due to the diode.)

**STARTER RELAY INPUT VOLTAGE**

Connect the starter relay switch 4P (Red) connector [1]. Turn the ignition switch ON and engine stop switch "C".

Measure the voltage between the Yellow/red (+) wire terminal at the starter relay switch 4P (Red) connector and ground (-).

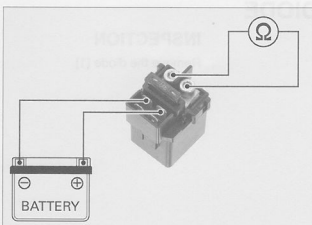
If the battery voltage appears only when the starter switch is pushed with the ignition switch ON and engine stop switch "C", the starter relay input voltage is normal.

**OPERATION CHECK**

Remove the starter relay switch (page 19-15).

Connect a 12 V battery to the starter relay switch as shown.

There should be continuity between the cable terminals when the battery is connected, and not continuity when the battery is disconnected.

**REMOVAL/INSTALLATION**

Remove the rider seat (page 2-6).

Release the rubber cover [1].

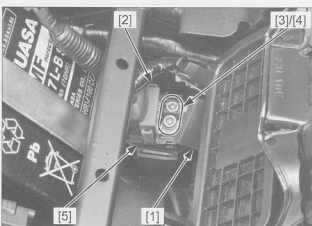
Disconnect the starter relay switch 4P (Red) connector [2].

Remove the bolts [3] and cables [4].

Remove the starter relay switch [5] from the stays with the shock rubber.

Remove the starter relay switch from the shock rubber.

Installation is in the reverse order of removal.



ELECTRIC STARTER

NEUTRAL DIODE

INSPECTION

Remove the rider seat (page 2-6).

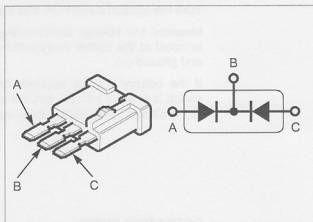
Open the fuse box cover and remove the neutral diode [1].



Check for continuity between the neutral diode terminals.

When there is continuity, a small resistance value will register.

If there is continuity, in direction shown by the arrow, the neutral diode is normal.



DIODE

INSPECTION

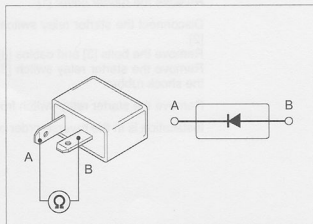
Remove the diode [1].



Check for continuity between the diode terminals.

When there is continuity, a small resistance value will register.

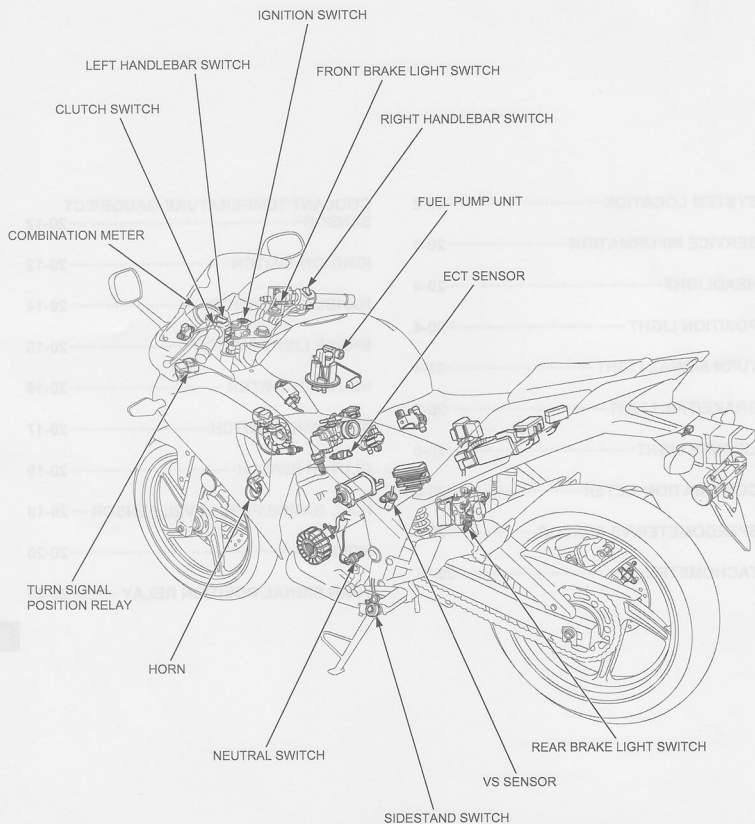
If there is continuity in one direction, the diode is normal.



20. LIGHTS/METERS/SWITCHES

SYSTEM LOCATION.....	20-2	COOLANT TEMPERATURE GAUGE/ECT SENSOR.....	20-12
SERVICE INFORMATION	20-3	IGNITION SWITCH.....	20-13
HEADLIGHT	20-4	HANDLEBAR SWITCH.....	20-14
POSITION LIGHT	20-4	BRAKE LIGHT SWITCH	20-15
TURN SIGNAL LIGHT	20-4	NEUTRAL SWITCH	20-16
BRAKE/TAIL LIGHT.....	20-5	SIDESTAND SWITCH.....	20-17
LICENSE LIGHT.....	20-6	CLUTCH SWITCH.....	20-19
COMBINATION METER.....	20-6	FUEL GAUGE/FUEL LEVEL SENSOR	20-19
SPEEDOMETER/VS SENSOR.....	20-9	HORN	20-20
TACHOMETER.....	20-11	TURN SIGNAL POSITION RELAY	20-20

SYSTEM LOCATION



SERVICE INFORMATION

GENERAL

NOTICE

- Note the following when replacing the halogen headlight bulb.
 - Wear clean gloves while replacing the bulb. Do not put fingerprints on the headlight bulb, as they may create hot spots on the bulb and cause it to fail.
 - If you touch the bulb with your bare hands, clean it with a cloth moistened with alcohol to prevent its early failure.
- Be sure to install the dust cover after replacing the headlight bulb.
- 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.
- Check the battery condition before performing any inspection that requires proper battery voltage.
- Use an electric heating element to heat the water/coolant mixture for the ECT sensor inspection. Keep flammable materials away from the electric heating element. Wear protective clothing, insulated gloves and eye protection.
- 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

Lb = Light Blue

O = Orange

R = Red

Y = Yellow

Bl = Black

Gr = Gray

Lg = Light Green

P = Pink

W = White

SPECIFICATIONS

ITEM		SPECIFICATION
Bulbs	Headlight	12 V - 60/55 W
	Position light	12 V - 5 W x 2
	Brake/tail light	12 V - 21/5 W
	Turn signal light	12 V - 21 W x 4
	License light	12 V - 5 W
	Instrument light	LED
	Turn signal indicator	LED
	High beam indicator	LED
	Neutral indicator	12 V - 1.7 W
	MIL	LED
	ABS indicator (CBR250RA)	LED
Fuse	Main fuse	30 A
	Sub fuse	10 A x 5
		30 A x 2, 10 A x 6

TORQUE VALUES

Rear turn signal light mounting nut
Ignition switch mounting bolt
Combination meter mounting screw
Neutral switch

21 N·m (2.1 kgf·m, 15 lbf·ft)
24 N·m (2.4 kgf·m, 18 lbf·ft)
1.1 N·m (0.1 kgf·m, 0.8 lbf·ft)
12 N·m (1.2 kgf·m, 9 lbf·ft)

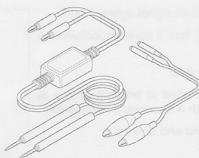
One-way bolt; replace with a new one.

TOOLS

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



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



with commercially available digital multimeter (impedance 10 MΩ/DCV minimum)

Test probe
07ZAJ-RDJA110



HEADLIGHT

NOTE:

For headlight unit removal/installation (page 2-9).

BULB REPLACEMENT

Disconnect the headlight 3P connector [1].

Remove the dust cover [2].

Unhook the bulb retainer [3] and remove the headlight bulb [4].

NOTICE

Avoid touching halogen headlight bulb. Finger prints can create hot spots that cause a bulb to break.

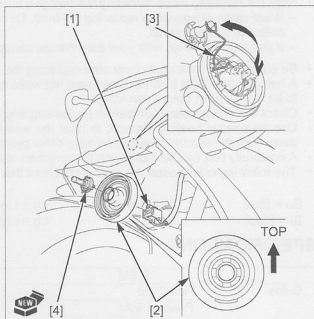
Install a new bulb, while aligning the tabs of the bulb with the slots of the headlight unit.

Hook the bulb retainer into the headlight unit groove.

Install the dust cover tightly against the headlight unit.

Connect the headlight 3P connector.

Rout the wires properly (page 1-18).



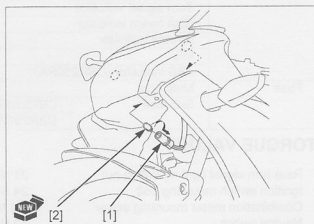
POSITION LIGHT

BULB REPLACEMENT

Turn the position light bulb socket [1] counterclockwise and remove it from the headlight unit.

Remove the position light bulb [2] from the socket and replace it with a new one.

Install the position light bulb sockets to the headlight unit.



TURN SIGNAL LIGHT

NOTE:

For front turn signal light removal/installation (page 2-7).

BULB REPLACEMENT

Remove the screws [1] and turn signal light lens [2].

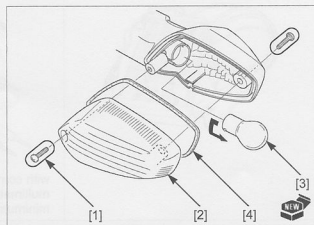
While pushing in the bulb [3], turn it counterclockwise to remove it.

Replace the bulb with a new one.

Check the packing [4] is installed in position and is in good condition, replace it with a new one if necessary.

Install the turn signal light lens and screws.

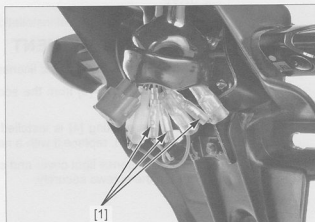
Tighten the screws securely.



REAR TURN SIGNAL LIGHT REMOVAL/INSTALLATION

Remove the rear under cover (page 2-13).

Disconnect the rear turn signal light connectors [1].



Remove the rear turn signal light mounting nut [1] and turn signal light [2].

*Rout the wire properly
(page 1-18).*

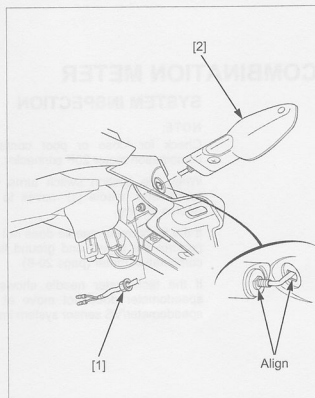
Install the rear turn signal light in the reverse order of removal.

TORQUE:

Rear turn signal light mounting nut:
21 N·m (2.1 kgf·m, 15 lbf·ft)

NOTE:

Install the rear turn signal light to the rear fender by aligning the flat surfaces.



BRAKE/TAIL LIGHT

NOTE:

For brake/tail light removal/installation (page 2-14).

BULB REPLACEMENT

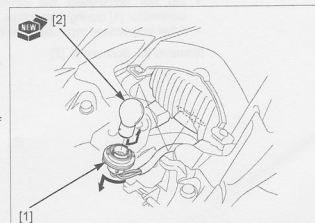
Remove the passenger seat (page 2-5).

Turn the bulb socket [1] counterclockwise and remove it.

While pushing in the bulb [2], turn it counterclockwise to remove it.

Replace the bulb with a new one.

Install the removed parts in the reverse order of removal.



LICENSE LIGHT

NOTE:

For license light removal/installation (page 2-16).

BULB REPLACEMENT

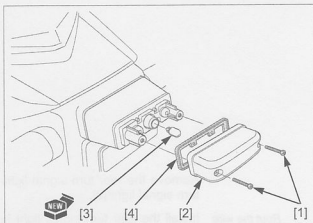
Remove the screws [1] and license light cover [2].

Remove the bulb [3] from the socket, replace it with a new one.

Check the packing [4] is installed in position and is in good condition, replace it with a new one if necessary.

Install the license light cover and screws.

Tighten the screws securely.



COMBINATION METER

SYSTEM INSPECTION

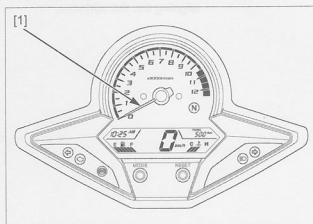
NOTE:

Check for loose or poor contact terminals at the combination meter 20P connector.

When the ignition switch turns ON, check that the tachometer needle [1] moves to full scale and then returns to zero.

If the tachometer needle does not show initial function, perform the power and ground line inspection of the combination meter (page 20-6).

If the tachometer needle shows initial function but speedometer does not move at running, check the speedometer/VS sensor system inspection (page 20-9).



POWER/GROUND LINES INSPECTION

Remove the upper cowl (page 2-9).

NOTE:

- Check the following at the wire harness side connector of the combination meter.
- Do not disconnect the combination meter 20P connector [1] during inspection.
- After inspection, reposition the dust cover securely.

Remove the dust cover [2].



POWER INPUT LINE

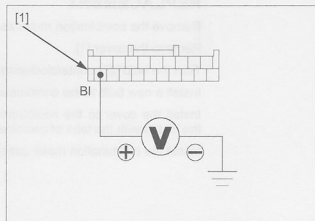
Measure the voltage between the combination meter 20P connector [1] and ground.

CONNECTION: Black (+) – Ground (–)

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

If there is no battery voltage, check the following:

- Open circuit in the Black wire
- Open circuit in Black/red wire between the fuse box and ignition switch
- Blown sub fuse 10 A (LICENSE, TAIL, POSITION, HORN, TURN, METER)



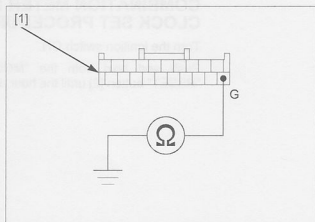
GROUND LINE

Check for continuity between the combination meter 20P connector [1] and ground.

CONNECTION: Green – Ground

There should be continuity at all times.

If there is no continuity, check for an open circuit in the Green wire.



BACK-UP VOLTAGE LINE

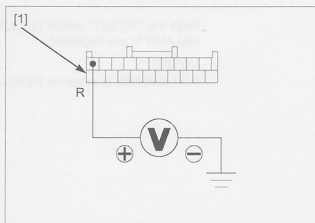
Measure the voltage between the combination meter 20P connector [1] and ground.

CONNECTION: Red (+) – Ground (–)

There should be battery voltage at all times.

If there is no battery voltage, check the following:

- Open circuit in the Red wire
- Blown sub fuse 10 A (ODO, CLOCK)
- Blown main fuse 30 A
- Open circuit in Red/white wire between the fuse box and starter relay switch



REMOVAL/INSTALLATION

Remove the front inner cowl (page 2-11).

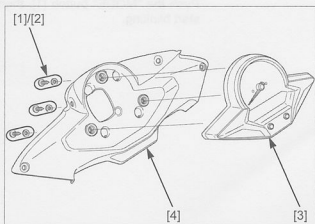
Remove the screws [1], washers [2] and combination meter assembly [3] from the front inner cowl [4].

Install the combination meter assembly in the reverse order of removal

TORQUE:

Combination meter mounting screw:

1.1 N·m (0.1 kgf·m, 0.8 lbf·ft)



NEUTRAL INDICATOR BULB REPLACEMENT

Remove the combination meter assembly (page 20-7).

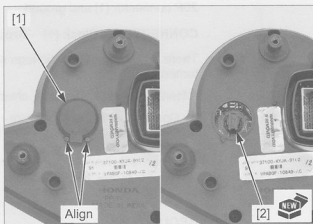
Remove the cover [1].

Turn the bulb [2] counterclockwise and remove it.

Install a new bulb to the combination meter.

Install the cover to the combination meter by aligning the its tab with the tabs of combination meter.

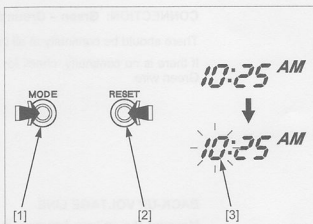
Install the combination meter assembly (page 20-7).



COMBINATION METER DIGITAL CLOCK SET PROCEDURE

Turn the ignition switch ON.

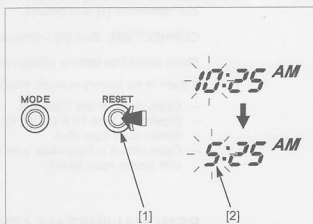
Push and hold both the "MODE" button [1] and "RESET" button [2] until the hour digits [3] start blinking.



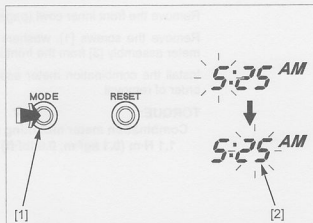
Push the "RESET" button [1] until the desired hour [2] and AM/PM are displayed.

NOTE:

Push and hold to advance the hour fast.



Push the "MODE" button [1], then the minute digits [2] start blinking.



Push the "RESET" button [1] until the desired minute [2] is displayed.

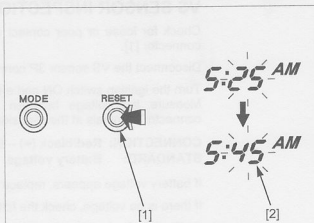
NOTE:

Push and hold to advance the minute fast.

Push the "MODE" button, then digital clock is set.

NOTE:

The time can also be set by turning the ignition switch OFF.



SPEEDOMETER/VS SENSOR

SYSTEM INSPECTION

NOTE:

- Before starting this inspection, check for combination meter system inspection (page 20-6).
- Check the following at the wire harness side connector of the combination meter.
- Do not disconnect the combination meter 20P connector during inspection.
- After inspection, reposition the dust cover securely.

Remove the upper cowl (page 2-9).

Remove the dust cover [1].



Shift the transmission into neutral.

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

Measure the voltage between the combination meter 20P connector [1] terminals.

CONNECTION: White/red (+) – Black/green (–)

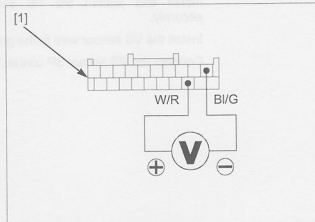
Slowly turn the rear wheel by hand.

There should be 0 V to 5 V pulse voltage.

If pulse voltage appears, replace the combination meter.

If pulse voltage does not appear, check the following:

- White/red wire open circuit
- Black/green wire open circuit
- If the wires are OK, check the VS sensor (page 20-10).



VS SENSOR INSPECTION

Check for loose or poor contact of the VS sensor 3P connector [1].

Disconnect the VS sensor 3P connector.

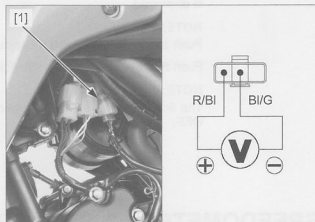
Turn the ignition switch ON and engine stop switch "O". Measure the voltage between the VS sensor 3P connector terminals at the wire side.

CONNECTION: Red/black (+) – Black/green (–)
STANDARD: Battery voltage

If battery voltage appears, replace the VS sensor.

If there is no voltage, check the following:

- Red/black wire open circuit
- Black/green wire open circuit
- Combination meter (page 20-6)



REMOVAL/INSTALLATION

Disconnect the VS sensor 3P connector [1].



Remove the VS sensor wire from the guide [1].

Remove the bolt [2], VS sensor [3] and O-ring [4].

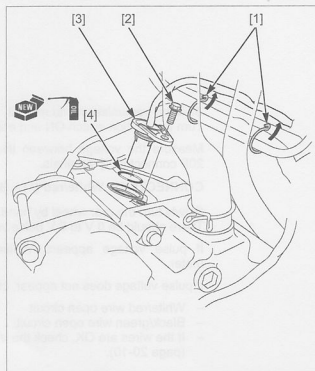
Apply engine oil to a new O-ring and install it to the VS sensor.

Install the VS sensor to the crankcase.

Install and tighten the VS sensor mounting bolt securely.

Install the VS sensor wire to the guide.

Connect the VS sensor 3P connector.



TACHOMETER

SYSTEM INSPECTION

NOTE:

Before starting this inspection, check for combination meter system inspection (page 20-6).

Remove the upper cowl (page 2-9).

Remove the dust cover [1].



Connect the peak voltage tester (U.S.A. only) or peak voltage adaptor [1] probes to the combination meter 20P connector [2] terminal at the wire harness side.

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 MΩ/DCV minimum)

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

Start the engine and measure the tachometer input peak voltage.

PEAK VOLTAGE: 10.5 V minimum

If the peak voltage is normal, replace the combination meter assembly (page 20-7).

If the measured value is below 10.5 V, replace the ECM (page 5-56).

If the value is 0 V, check for continuity between the combination meter 20P connector [1] and ECM 33P (Black) connector [2] terminals at the wire side.

TOOL:

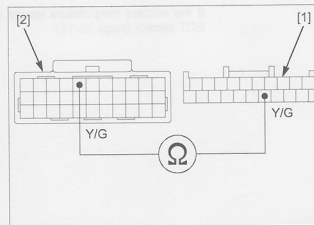
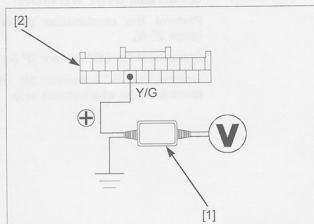
Test probe

07ZAJ-RDJA110

CONNECTION: Yellow/green – Yellow/green

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

If there is continuity, replace the combination meter assembly (page 20-7).

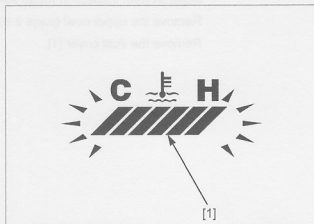


COOLANT TEMPERATURE GAUGE/ ECT SENSOR

COOLANT TEMPERATURE GAUGE INSPECTION

If the coolant temperature gauge [1] blinks, check for a short circuit in wire harness and the ECT sensor.

If the wire harness and ECT sensor are good, replace the combination meter assembly (page 20-7).

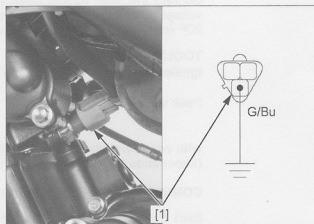


SYSTEM INSPECTION

Perform the combination meter system inspection (page 20-6).

Disconnect the ECT sensor 3P connector [1].

Ground the ECT sensor 3P connector Green/blue terminal at the wire harness side.

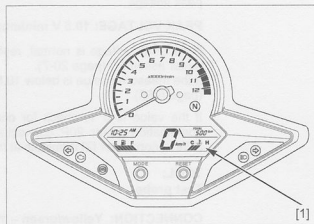


Turn the ignition switch ON and check the coolant temperature gauge [1].

The coolant temperature gauge indicate "H" with the ignition switch is ON.

If the coolant temperature gauge does not indicate, check the wires for loose connection or an open circuit.

If the coolant temperature gauge is normal, check the ECT sensor (page 20-13).



ECT SENSOR INSPECTION

Remove the ECT sensor [1] (page 5-54).

Wear insulated gloves and adequate eye protection.

Keep flammable materials away from the burner.

Heat the coolant (1:1 mixture) with an electric heating element.

Suspend the ECT sensor in heated coolant and check the continuity through the sensor as the coolant heats up.

NOTE:

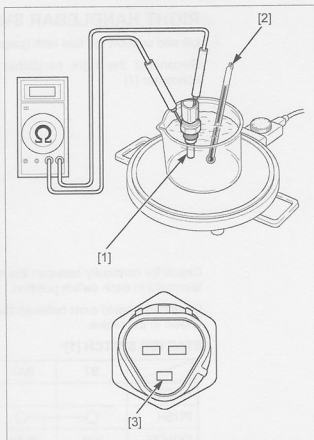
- Soak the ECT sensor in coolant up to its threads with at least 40 mm (1.6 in) from the bottom of the pan to the bottom of the ECT sensor.
- Keep temperature constant for 3 minutes before testing. A sudden change of temperature will result in incorrect readings. Do not let the thermometer [2] or ECT sensor touch the pan.

The ECT sensor terminal [3] is shown in the illustration.

Temperature	50°C (122°F)	80°C (176°F)
Resistance	6.8 – 7.4 kΩ	2.1 – 2.7 kΩ

Replace the ECT sensor if it is out of specification by more than 10% at any temperature listed.

Install the ECT sensor (page 5-54).



IGNITION SWITCH

INSPECTION

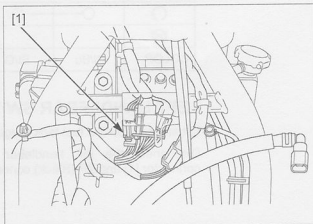
Lift and support the fuel tank (page 3-5).

Disconnect the ignition switch 3P connector [1].

Check for continuity between the switch side connector terminals in each switch position.

Continuity should exist between the color coded wires as shown in the table.

	BAT	IG
ON	○	○
OFF		○
LOCK		○
COLOR	R/W	Bl/R



REMOVAL/INSTALLATION

Remove the top bridge (page 13-29).

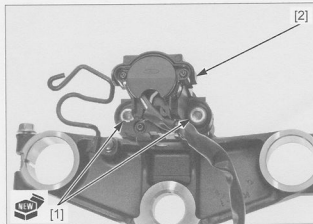
Remove the ignition switch mounting bolts [1] and ignition switch [2].

Install the ignition switch onto the top bridge.

Install and tighten new ignition switch mounting bolts to the specified torque.

TORQUE: 24 N·m (2.4 kgf·m, 18 lbf·ft)

Install the top bridge in the reverse order of removal.

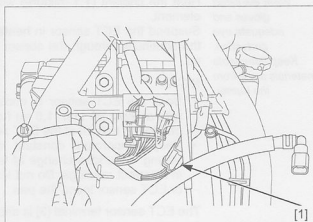


HANDLEBAR SWITCH

RIGHT HANDLEBAR SWITCH

Lift and support the fuel tank (page 3-5).

Disconnect the right handlebar switch 9P (Brown) connector [1].

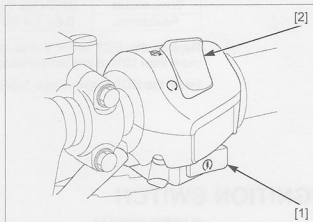


Check for continuity between the switch side connector terminals in each switch position.

Continuity should exist between the color coded wire as shown in the tables.

STARTER SWITCH [1]:

	ST	BAT
FREE		
PUSH	○	○
COLOR	Y/R	Bl/Bu



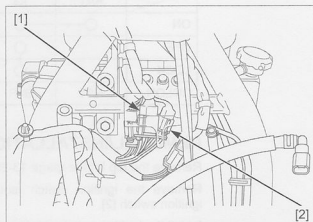
ENGINE STOP SWITCH [2]:

	IG	BAT
○	○	○
⊗		
COLOR	Bl/Bu	Bl/G

LEFT HANDLEBAR SWITCH

Lift and support the fuel tank (page 3-5).

Disconnect the left handlebar switch 9P (Black) connector [1] and 2P (Black) connector [2].



Check for continuity between the switch side connector terminals in each switch position.

Continuity should exist between the color coded wire as shown in the tables.

DIMMER SWITCH [1]:

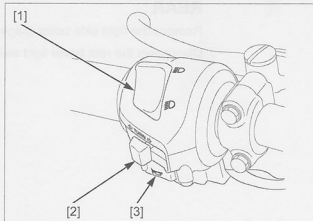
	HL	LO	HI
	○	○	○
(N)	○	○	○
	○	○	○
COLOR	Bu/W	W	Bu

TURN SIGNAL SWITCH [2]:

	WR	L	R
	○	○	
N			
	○		○
COLOR	Gr	O	Lb

HORN SWITCH [3]:

	HO	BAT
FREE		
PUSH	○	○
COLOR	Lg	Bl

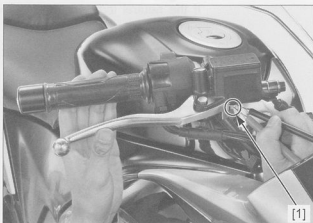


BRAKE LIGHT SWITCH

FRONT

Disconnect the front brake light switch connectors [1] and check for continuity between the switch terminals.

There should be continuity with the brake lever squeezed, and no continuity with the brake lever released.

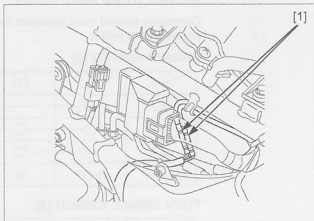


LIGHTS/METERS/SWITCHES

REAR

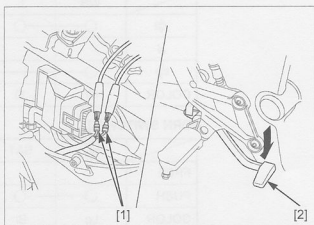
Remove the right side cover (page 2-16).

Disconnect the rear brake light switch connectors [1].



Check for continuity between the switch side connectors [1].

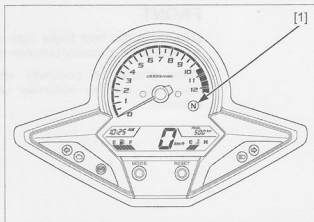
There should be continuity with the brake pedal [2] depressed, and no continuity when the brake pedal released.



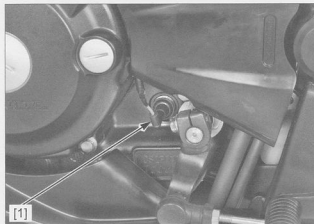
NEUTRAL SWITCH

INSPECTION

Make sure that the neutral indicator [1] come on with the ignition switch ON and transmission is in neutral. If the neutral indicator does not come on, inspect as follows:



Disconnect the neutral switch wire connector [1].



Check for continuity between the switch terminal and engine ground.

There should be continuity with the transmission is in neutral, and no continuity when the transmission is into gear.

If the continuity inspection is normal, open circuit in Light green/red wire between neutral switch wire connector and neutral indicator.

If the continuity inspection is abnormal, replace the neutral switch (page 20-17).



REMOVAL/INSTALLATION

Drain the engine oil (page 3-14).

Disconnect the neutral switch wire connector [1].

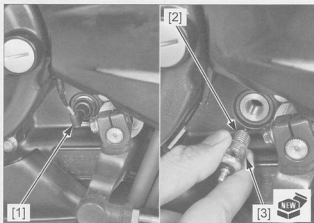
Remove the neutral switch [2] and sealing washer [3].

Install the neutral switch with a new sealing washer. Tighten the neutral switch to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Connect the neutral switch wire connector.

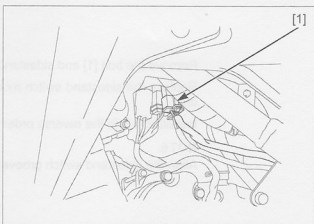
Fill the engine with the recommended engine oil (page 3-14).



SIDESTAND SWITCH

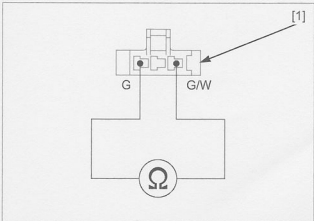
INSPECTION

Disconnect the sidestand switch 3P (Green) connector [1].



Check for continuity at the sidestand switch 3P (Green) connector of the switch side connector.

There should be continuity with the sidestand retracted and no continuity with the sidestand lowered.

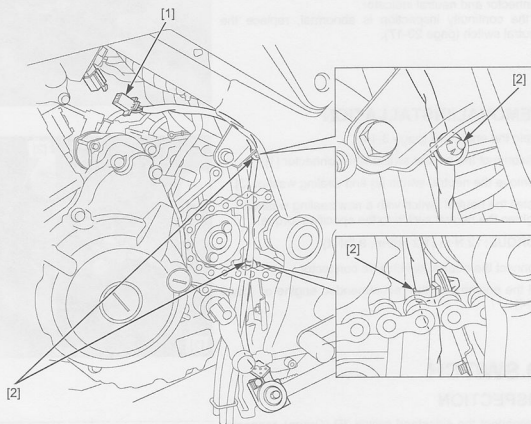


REMOVAL/INSTALLATION

Remove the under cowl (page 2-11).

Disconnect the sidestand switch 3P (Green) connector [1].

Remove the clamps [2] from the frame.



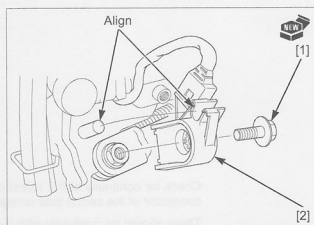
Remove the bolt [1] and sidestand switch [2].

Replace the sidestand switch mounting bolt with a new one.

Installation is in the reverse order of removal.

NOTE:

Align the sidestand switch groove with the frame pin.



CLUTCH SWITCH

Disconnect the clutch switch wire connectors and check for continuity between the switch terminals.

There should be continuity with the clutch lever squeezed and no continuity with the clutch lever released.



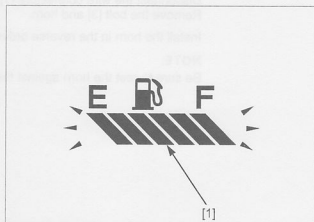
FUEL GAUGE/FUEL LEVEL SENSOR

FUEL GAUGE INSPECTION

If the fuel gauge [1] short blinks (0.5 seconds), check for an open circuit in wire harness and the fuel level sensor.

If the fuel gauge long blinks (1.0 seconds), check for a short circuit in wire harness and the fuel level sensor.

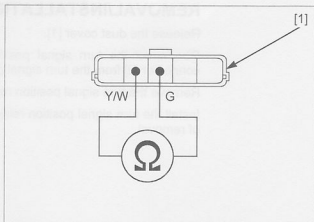
If the wire harness and fuel level sensor are good, replace the combination meter assembly (page 20-7).



FUEL LEVEL SENSOR INSPECTION

Remove the fuel pump unit (page 5-40).

Connect the ohmmeter to the fuel pump 5P connector [1] Yellow/white and Green terminals.

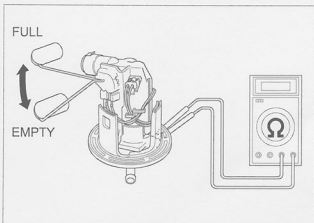


Inspect the resistance of the float at the full and empty positions.

Float position	FULL	EMPTY
Resistance	6 – 10 Ω	180 – 186 Ω

Replace the fuel pump unit assembly if fuel level sensor is out of specification.

Install the fuel pump unit (page 5-41).



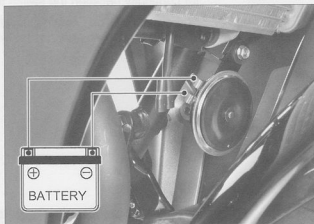
HORN

INSPECTION

Disconnect the connectors from the horn.

Connect a 12 V battery to the horn terminals.

The horn is normal if it sounds when the 12 V battery is connected across the horn terminals.



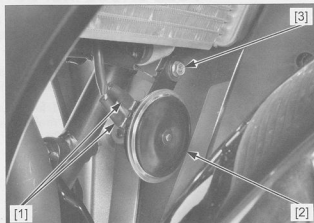
REMOVAL/INSTALLATION

Disconnect the wire connectors [1] from the horn [2].
Remove the bolt [3] and horn.

Install the horn in the reverse order of removal.

NOTE:

Be sure to rest the horn against the stay.



TURN SIGNAL POSITION RELAY

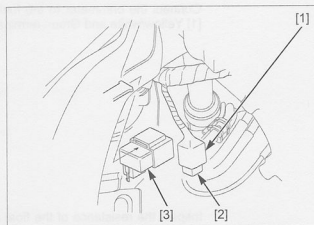
REMOVAL/INSTALLATION

Release the dust cover [1].

Disconnect the turn signal position relay 9P (Black) connector [2] from the turn signal position relay [3].

Remove the turn signal position relay from the frame.

Install the turn signal position relay in the reverse order of removal.



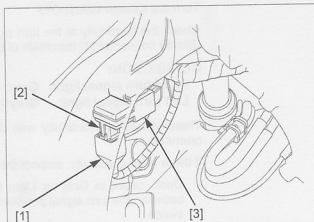
INSPECTION

Check the following:

- Battery condition
- Burned out bulb or non-specified wattage
- Blown sub fuse 10 A (LICENSE, TAIL, POSITION, STOP, HORN, TURN, METER)
- Ignition switch function (page 20-13)
- Turn signal switch function (page 20-14)
- Loose connector

Release the dust cover [1].

Disconnect the turn signal position relay 9P (Black) connector [2] from the turn signal position relay [3], inspect the following.



Power Input Voltage Inspection

Turn the ignition switch ON.

Measure the voltage at the turn signal position relay 9P (Black) connector [1] terminals of the wire side.

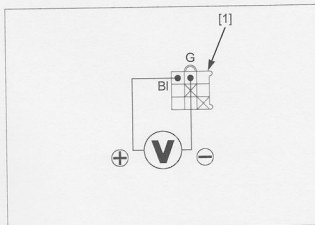
CONNECTION: Black (+) – Green (-)

STANDARD: Battery voltage

There should be standard voltage.

If there is no standard voltage, inspect the following:

- Open circuit in Green wire
- Open circuit in Black or Black/red wire between the turn signal position relay and ignition switch



Turn Signal Circuit Inspection

Turn the ignition switch OFF.

Short the following terminals of the turn signal position relay 9P (Black) connector [1] with a jumper wire.

Front right turn signal light:

Black – Light blue/white

Front left turn signal light:

Black – Orange/white

Rear right turn signal light:

Black – Light blue

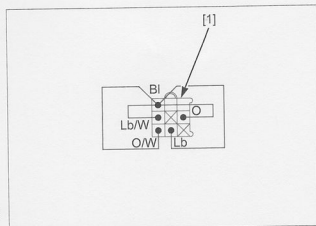
Rear left turn signal light:

Black – Orange

Turn the ignition switch ON and check the turn signal light.

If each turn signal light does not come on, inspect the following:

- Open circuit in each wire between the turn signal position relay and turn signal light
- Open circuit in green wire between the turn signal light and ground



LIGHTS/METERS/SWITCHES

Turn Signal Switch Line Inspection

Turn the ignition switch OFF.

Check the continuity at the turn signal position relay 9P (Black) connector [1] terminals of the wire side.

CONNECTION:

Right turn signal light: Gray – Light blue

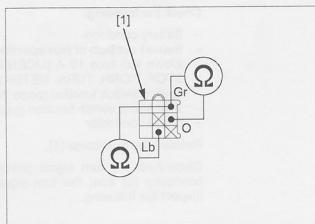
Left turn signal light: Gray – Orange

There should be continuity with the turn signal switch operated.

If there is no continuity, inspect the following:

- Open circuit in Gray or Light blue or Orange wire between the turn signal position relay and turn signal switch

If the wire is OK, replace the turn signal position relay.

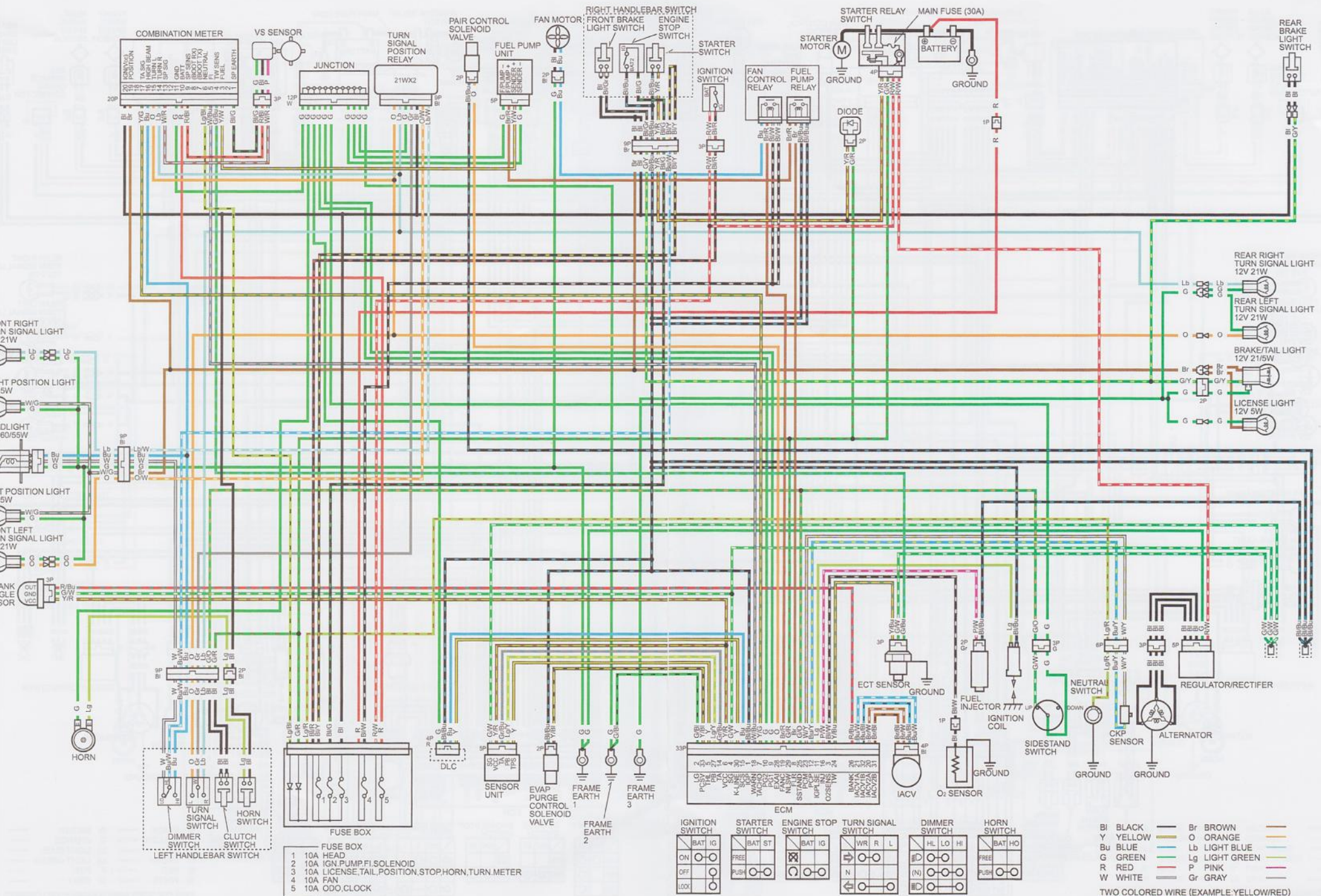


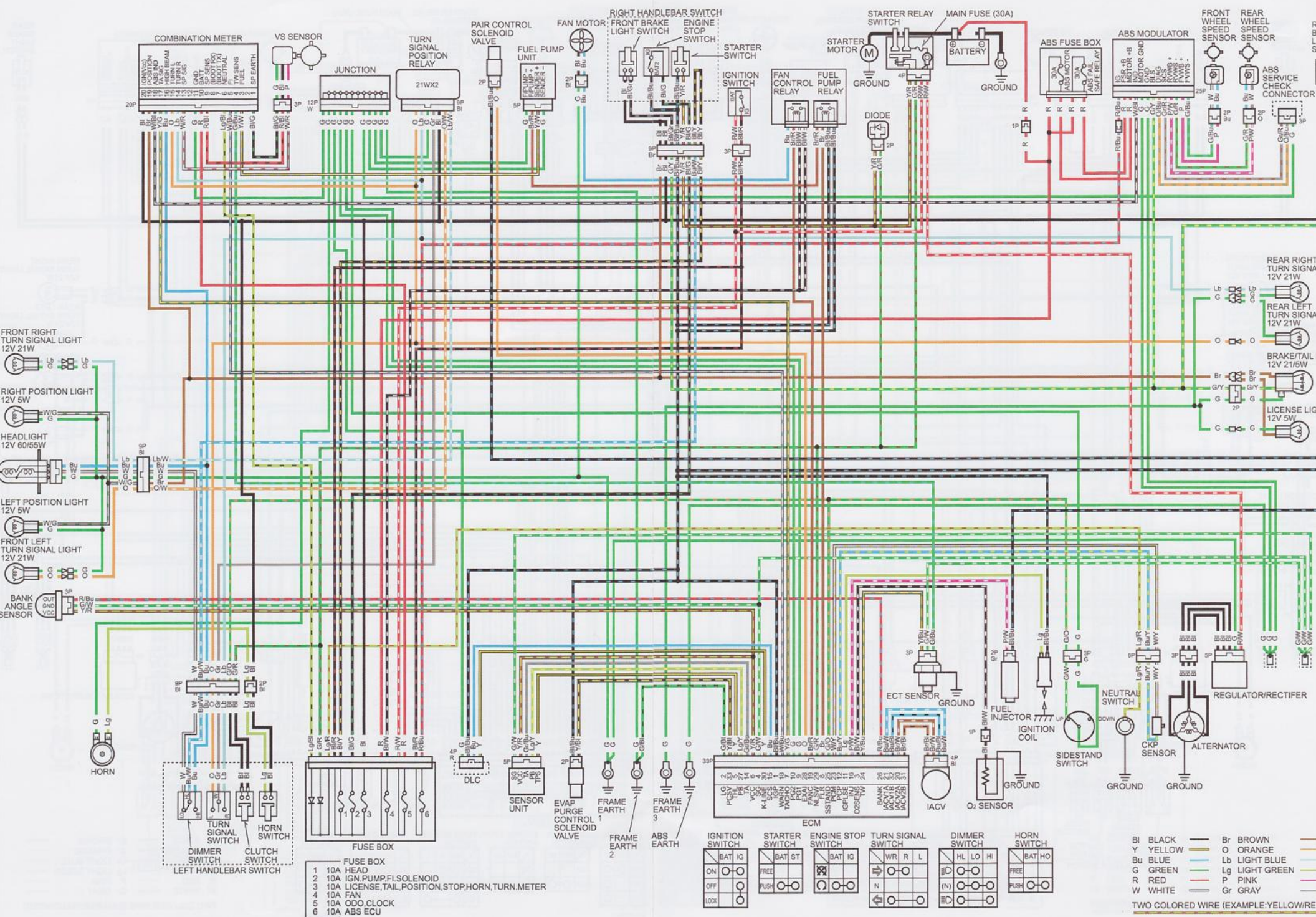
21. WIRING DIAGRAMS

CBR250R.....21-2

CBR250RA.....21-3

BR250R





22. TROUBLESHOOTING

ENGINE DOES NOT START OR IS HARD TO START22-2

ENGINE LACKS POWER22-3

POOR PERFORMANCE AT LOW AND IDLE SPEED22-5

POOR PERFORMANCE AT HIGH SPEED 22-6

POOR HANDLING22-6

ENGINE DOES NOT START OR IS HARD TO START

1. Spark Plug Inspection

Remove and inspect spark plug.

Is the spark plug in good condition?

YES – GO TO STEP 2.

NO –

- Incorrect spark plug heat range
- Incorrect spark plug gap
- Dirty air cleaner

2. Spark Test

Perform spark test.

Is there good spark?

YES – GO TO STEP 3.

NO –

- Faulty spark plug
- Loose or disconnected ignition system wires
- Broken or shorted spark plug wire
- Faulty ignition coil
- Faulty CKP sensor
- Faulty ignition switch
- Faulty ECM
- Faulty engine stop switch

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

4. PGM-FI System Inspection

Check the PGM-FI system (page 5-11).

Is the PGM-FI system normal?

YES – GO TO STEP 5.

NO – Faulty PGM-FI system (page 5-14)

5. Cylinder Compression

Test cylinder compression.

Is the compression specified?

YES –

- Valve stuck open
- Worn cylinder and piston rings
- Damaged cylinder head gasket
- Seized valve
- Improper valve timing

NO – GO TO STEP 6.

6. Engine Starting Condition

Start by following normal procedure.

Does the engine start then stops?

YES –

- Faulty IACV
- Leaking insulator
- Improper ignition timing (Faulty ECM or CKP sensor)
- Contaminated fuel

ENGINE LACKS POWER

1. Drive Train Inspection

Raise wheel off the ground and spin it by hand.

Does the wheel spin freely?

YES — GO TO STEP 2.

NO —

- Brake dragging
- Worn or damaged wheel bearings
- Bent axle

2. Tire Pressure Inspection

Check tire pressure.

Are the tire pressures low?

YES —

- Faulty tire valve
- Punctured tire

NO — GO TO STEP 3.

3. Clutch Inspection

Accelerate rapidly, shift from first to second.

Does the engine speed change accordingly when the gearshift pedal is applied?

YES — GO TO STEP 4.

NO —

- Clutch slipping
- Worn clutch discs/plates
- Warped clutch discs/plates
- Weak clutch spring
- Sticking clutch lifter mechanism
- Additive in engine oil
- Incorrect clutch lever adjustment

4. Engine Performance Inspection

Accelerate lightly.

Does the engine speed increase?

YES — GO TO STEP 5.

NO —

- Dirty air cleaner
- Restricted fuel flow
- Clogged exhaust system.

5. Spark Plug Inspection

Remove and inspect spark plug.

Is the spark plug fouled or discolored?

YES — GO TO STEP 6.

NO —

- Spark plug not serviced frequently enough
- Incorrect spark plug heat range
- Incorrect spark plug gap

6. Engine Oil Inspection

Check oil level and condition.

Is there correct level and good condition?

YES — GO TO STEP 7.

NO —

- Oil level too high
- Oil level too low
- Contaminated oil

7. Ignition Timing Inspection

Check ignition timing.

Is the ignition timing correct?

YES – GO TO STEP 8.

NO – • Faulty ECM
• Faulty CKP sensor

8. Cylinder compression Inspection

Test the cylinder compression.

Is the compression as specified?

YES – GO TO STEP 9.

NO – • Improper valve clearance
• Valve stuck open
• Worn cylinder and piston rings
• Damaged cylinder head gasket
• Improper valve timing

9. Fuel Pump Inspection

Inspect the fuel flow.

Is the fuel pump unit normal?

YES – GO TO STEP 10.

NO – Faulty fuel pump unit

10. PGM-FI system Inspection

Check the PGM-FI system (page 5-11).

Is the PGM-FI system normal?

YES – GO TO STEP 11.

NO – Faulty PGM-FI system (page 5-14)

11. Lubrication Inspection

Remove cylinder head cover and inspect lubrication.

Is the valve train lubricated properly?

YES – GO TO STEP 12.

NO – • Clogged oil passage
• Faulty oil pump
• Oil strainer screen not serviced frequently enough

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 there knocking?

YES – • Worn piston and cylinder
• Wrong type of fuel
• Excessive carbon build-up in combustion chamber
• Ignition timing too advance (Faulty ECM or CKP sensor)

NO – Engine does not knock.

POOR PERFORMANCE AT LOW AND IDLE SPEED

1. Spark Plug Inspection

Remove and inspect the spark plug.

Is the spark plug in good condition?

YES – GO TO STEP 2.

NO –

- Plug not serviced frequently enough
- Incorrect spark plug heat range
- Incorrect spark plug gap

2. Ignition Timing Inspection

Check the ignition timing.

Is the ignition timing as specified?

YES – GO TO STEP 3.

NO –

- Faulty ECM
- Faulty CKP sensor
- Improper valve timing

3. Fuel Pump Inspection

Inspect the fuel flow.

Is the fuel pump unit normal?

YES – GO TO STEP 4.

NO – Faulty fuel pump unit

4. PGM-FI System Inspection

Check the PGM-FI system (page 5-11).

Is the PGM-FI system normal?

YES – GO TO STEP 5.

NO – Faulty PGM-FI system (page 5-14)

5. IACV Inspection

Check the IACV operation.

Does the IACV operates normal?

YES – GO TO STEP 6.

NO – Faulty IACV

6. Intake Pipes Leaking Inspection

Check for leaks at the insulator.

Are there leaks?

YES –

- Loose insulator
- Damaged insulator

POOR PERFORMANCE AT HIGH SPEED

1. Ignition Timing Inspection

Check the ignition timing.

Is the ignition timing as specified?

YES – GO TO STEP 2.

NO –

- Faulty ECM
- Faulty CKP sensor
- Improper valve timing

2. Fuel Pump Inspection

Inspect the fuel flow.

In the fuel pump unit operation normal?

YES – GO TO STEP 3.

NO – Faulty fuel pump unit

3. PGM-FI System Inspection

Check the PGM-FI system (page 5-11).

Is the PGM-FI system normal?

YES – GO TO STEP 4.

NO – Faulty PGM-FI system (page 5-14)

4. Valve Timing Inspection

Check the valve timing.

Is the valve timing correct?

YES – GO TO STEP 5.

NO – Cam sprocket not installed properly.

5. Valve Spring Inspection

Check valve springs.

Is the valve spring free length as specified?

YES – GO TO STEP 6.

NO – Faulty valve spring

6. Camshaft Inspection

Remove and inspect the camshaft.

Is the cam lobe height as specified?

YES – Camshaft is OK.

NO – Faulty camshaft

POOR HANDLING

Steering is heavy

- Steering stem adjusting nut too tight
- Damaged steering head bearings
- Insufficient tire pressure
- Faulty tire

Either wheel is wobbling

- Excessive wheel bearing play
- Bent rim
- Improperly installed wheel hub
- Excessively worn swingarm pivot bushings
- Bent frame

Motorcycle pulls to one side

- Front and rear wheels not aligned
- Bent fork
- Bent swingarm
- Bent axle
- Bent frame

ABS CONNECTOR LOCATIONS	16-5	DELAY VALVE	16-30
ABS INDICATOR CIRCUIT TROUBLESHOOTING	16-12	DIODE	19-16
ABS INDICATOR PROBLEM CODE INDEX	16-10	DRIVE CHAIN	3-18
ABS MODULATOR/COVER	16-27	DRIVE CHAIN COVER	2-13
ABS SYSTEM DIAGRAM	16-3	DRIVE SPROCKET COVER	2-12
ABS SYSTEM LOCATION	16-2	DTC INDEX	5-14
ABS TROUBLESHOOTING	16-15	DTC TROUBLESHOOTING	5-16
ABS TROUBLESHOOTING INFORMATION	16-7	ECM	5-56
AIR CLEANER	3-7	ECT SENSOR	5-54
AIR CLEANER HOUSING	5-43	ELECTRIC STARTER SPECIFICATION	1-11
ALTERNATOR CHARGING COIL	17-8	EMISSION CONTROL SYSTEMS	1-47
ALTERNATOR/STARTER CLUTCH SPECIFICATIONS	1-9	ENGINE DOES NOT START OR IS HARD TO START	22-2
BALANCER	12-19	ENGINE IDLE SPEED	3-16
BANK ANGLE SENSOR	5-55	ENGINE INSTALLATION	7-6
BATTERY	17-6	ENGINE LACKS POWER	22-3
BATTERY/CHARGING SYSTEM SPECIFICATIONS	1-11	ENGINE OIL	3-13
BEARING REPLACEMENT	12-22	ENGINE OIL FILTER	3-15
BODY PANEL LOCATIONS	2-2	ENGINE OIL STRAINER SCREEN	4-4
BRAKE FLUID	3-23	ENGINE REMOVAL	7-4
BRAKE FLUID REPLACEMENT/AIR BLEEDING (CBR250R)	15-7	EVAP PURGE CONTROL SOLENOID VALVE/CANISTER	5-61
BRAKE FLUID REPLACEMENT/AIR BLEEDING (CBR250RA)	15-10	EVAPORATIVE EMISSION CONTROL SYSTEM	3-18
BRAKE LIGHT SWITCH		EXHAUST PIPE/MUFFLER	2-18
LIGHTS/METERS/SWITCHES	20-15	FAN CONTROL RELAY	6-18
MAINTENANCE	3-26	FLYWHEEL INSTALLATION	11-11
BRAKE PAD/DISC	15-16	FLYWHEEL REMOVAL/INSPECTION	11-7
BRAKE PADS WEAR	3-24	FORK	13-20
BRAKE PEDAL	15-40	FRONT BRAKE CALIPER (CBR250R)	15-30
BRAKE SYSTEM	3-25	FRONT BRAKE CALIPER (CBR250RA)	15-34
BRAKE/TAIL LIGHT	20-5	FRONT FENDER	2-12
CABLE & HARNESS ROUTING	1-18	FRONT INNER COWL	2-11
CAM CHAIN TENSIONER LIFTER	9-10	FRONT MASTER CYLINDER	15-20
CAMSHAFT	8-7	FRONT WHEEL	13-14
CHARGING SYSTEM INSPECTION	17-7	FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS	1-10
CLUTCH	10-12	FUEL GAUGE/FUEL LEVEL SENSOR	20-19
CLUTCH LEVER	13-37	FUEL INJECTOR	5-51
CLUTCH SWITCH	20-19	FUEL LINE	3-5
CLUTCH SYSTEM	3-26	FUEL LINE INSPECTION	5-33
CLUTCH/GEARSHIFT LINKAGE SPECIFICATIONS	1-8	FUEL PUMP RELAY	5-42
COMBINATION METER	20-6	FUEL PUMP UNIT	5-39
COMPONENT LOCATION		FUEL SYSTEM (PGM-FI) SPECIFICATIONS	1-7
ALTERNATOR/STARTER CLUTCH	11-2	FUEL TANK	5-39
CLUTCH/GEARSHIFT LINKAGE	10-2	FUEL TANK COVER	2-9
CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER	12-2	FUEL TANK SIDE COVER	2-8
CYLINDER HEAD/VALVES	8-2	GEARSHIFT LINKAGE	10-18
CYLINDER/PISTON	9-2	GEARSHIFT PEDAL	10-22
ENGINE REMOVAL/INSTALLATION	7-2	GENERAL SPECIFICATIONS	1-5
FRONT WHEEL/SUSPENSION/STEERING	13-2	GRAB RAIL	2-6
FUEL SYSTEM (PGM-FI)	5-2	HANDLEBAR	13-7
HYDRAULIC BRAKE	15-2	HANDLEBAR SWITCH	20-14
REAR WHEEL/SUSPENSION	14-2	HEADLIGHT	20-4
COOLANT REPLACEMENT	6-6	HEADLIGHT AIM	3-26
COOLANT TEMPERATURE GAUGE/ECT SENSOR	20-12	HORN	20-20
COOLING SYSTEM	3-17	HYDRAULIC BRAKE SPECIFICATIONS	1-10
COOLING SYSTEM SPECIFICATIONS	1-7	IACV	5-53
CRANKCASE ASSEMBLY	12-25	IGNITION COIL	18-9
CRANKCASE BREATHER	3-7	IGNITION SWITCH	20-13
CRANKCASE SEPARATION	12-6	IGNITION SYSTEM INSPECTION	18-6
CRANKCASE/CRANKSHAFT/TRANSMISSION/BALANCER SPECIFICATIONS	1-9	IGNITION SYSTEM SPECIFICATIONS	1-11
CRANKSHAFT	12-8	IGNITION TIMING	18-8
CYLINDER COMPRESSION	8-6	LEFT CRANKCASE COVER	11-4
CYLINDER HEAD	8-15	LICENSE LIGHT	20-6
CYLINDER HEAD COVER	8-6	LIGHTS/METERS/SWITCHES SPECIFICATIONS	1-11
CYLINDER HEAD/VALVES SPECIFICATIONS	1-8	LUBRICATION & SEAL POINTS	1-16
CYLINDER/PISTON	9-5	LUBRICATION SYSTEM DIAGRAM	4-2
CYLINDER/PISTON SPECIFICATIONS	1-8	LUBRICATION SYSTEM SPECIFICATIONS	1-7
		MAIN JOURNAL BEARING	12-10

INDEX

MAINTENANCE SCHEDULE	3-4	SHOCK ABSORBER	14-13
MIDDLE COWL	2-7	SHOCK LINKAGE	14-14
MIL CIRCUIT TROUBLESHOOTING	5-32	SIDE COVER	2-16
MODEL IDENTIFICATION	1-3	SIDESTAND	3-27
NEUTRAL DIODE	19-16	SIDESTAND SWITCH	20-17
NEUTRAL SWITCH	20-16	SINGLE SEAT	2-6
NUTS, BOLTS, FASTENERS	3-29	SNAP FIT CLIP	2-5
O2 SENSOR	5-57	SPARK PLUG	3-8
OIL PUMP	4-4	SPEEDOMETER/VS SENSOR	20-9
PCV	16-29	STARTER CLUTCH	11-8
PGM-FI CONNECTOR LOCATIONS	5-8	STARTER MOTOR	19-6
PGM-FI SYMPTOM TROUBLESHOOTING	5-5	STARTER RELAY SWITCH	19-14
PGM-FI SYSTEM DIAGRAM	5-7	STATOR/CKP SENSOR	11-5
PGM-FI SYSTEM LOCATION	5-6	STEERING HEAD BEARINGS	3-30
PGM-FI TROUBLESHOOTING INFORMATION	5-11	STEERING STEM	13-29
PILLION SEAT	2-5	SUSPENSION	3-28
POOR HANDLING	22-6	SWINGARM	14-17
POOR PERFORMANCE AT HIGH SPEED	22-6	SYSTEM DIAGRAM	
POOR PERFORMANCE AT LOW AND IDLE SPEED	22-5	BATTERY/CHARGING SYSTEM	17-2
POSITION LIGHT	20-4	ELECTRIC STARTER	19-2
PRESSURE RELIEF VALVE	4-9	IGNITION SYSTEM	18-2
PRIMARY DRIVE GEAR	10-23	SYSTEM FLOW PATTERN	6-2
RADIATOR COOLANT	3-16	SYSTEM LOCATION	
RADIATOR RESERVE TANK	6-17	BATTERY/CHARGING SYSTEM	17-2
RADIATOR/COOLING FAN	6-9	ELECTRIC STARTER	19-2
REAR BRAKE CALIPER	15-37	IGNITION SYSTEM	18-2
REAR COWL	2-14	LIGHTS/METERS/SWITCHES	20-2
REAR FENDER	2-16	SYSTEM TESTING	6-5
REAR FENDER B	2-18	TACHOMETER	20-11
REAR MASTER CYLINDER	15-25	THERMOSTAT	6-8
REAR UNDER COVER	2-13	THROTTLE BODY	5-46
REAR WHEEL	14-6	THROTTLE OPERATION	3-6
REAR WHEEL/SUSPENSION SPECIFICATIONS	1-10	TORQUE VALUES	1-12
REARVIEW MIRROR	2-7	TRANSMISSION	12-14
REGULATOR/RECTIFIER	17-8	TRIM CLIP	2-4
RIGHT CRANKCASE COVER	10-6	TROUBLESHOOTING	
ROCKER ARM	8-14	ALTERNATOR/STARTER CLUTCH	11-3
SECONDARY AIR SUPPLY SYSTEM		BATTERY/CHARGING SYSTEM	17-5
FUEL SYSTEM (PGM-FI)	5-58	CLUTCH/GEARSHIFT LINKAGE	10-5
MAINTENANCE	3-17	COOLING SYSTEM	6-4
SENSOR UNIT POWER LINE INSPECTION	5-15	CRANKCASE/CRANKSHAFT/TRANSMISSION/	
SERVICE INFORMATION		BALANCER	12-5
ALTERNATOR/STARTER CLUTCH	11-3	CYLINDER HEAD/VALVES	8-5
ANTI-LOCK BRAKE SYSTEM (ABS)	16-4	CYLINDER/PISTON	9-4
BATTERY/CHARGING SYSTEM	17-3	ELECTRIC STARTER	19-4
CLUTCH/GEARSHIFT LINKAGE	10-3	FRAME/BODY PANELS/EXHAUST SYSTEM	2-3
COOLING SYSTEM	6-3	FRONT WHEEL/SUSPENSION/STEERING	13-6
CRANKCASE/CRANKSHAFT/TRANSMISSION/		HYDRAULIC BRAKE	15-6
BALANCER	12-3	IGNITION SYSTEM	18-5
CYLINDER HEAD/VALVES	8-3	LUBRICATION SYSTEM	4-3
CYLINDER/PISTON	9-3	REAR WHEEL/SUSPENSION	14-5
ELECTRIC STARTER	19-3	TURN SIGNAL LIGHT	20-4
ENGINE REMOVAL/INSTALLATION	7-3	TURN SIGNAL POSITION RELAY	20-20
FRAME/BODY PANELS/EXHAUST SYSTEM	2-3	UNDER COWL	2-11
FRONT WHEEL/SUSPENSION/STEERING	13-4	UPPER COWL	2-9
FUEL SYSTEM (PGM-FI)	5-3	VALVE CLEARANCE	3-11
HYDRAULIC BRAKE	15-4	WATER PIPE	6-18
IGNITION SYSTEM	18-3	WATER PUMP	6-13
LIGHTS/METERS/SWITCHES	20-3	WHEEL SPEED SENSOR	16-24
LUBRICATION SYSTEM	4-3	WHEELS/TIRES	3-29
MAINTENANCE	3-2	WIRING DIAGRAMS	
REAR WHEEL/SUSPENSION	14-3	CBR250R	21-2
SERVICE RULES	1-2	CBR250RA	21-3